

Aero Modeller

APRIL 1968

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INCORPORATING

MODEL AIRCRAFT



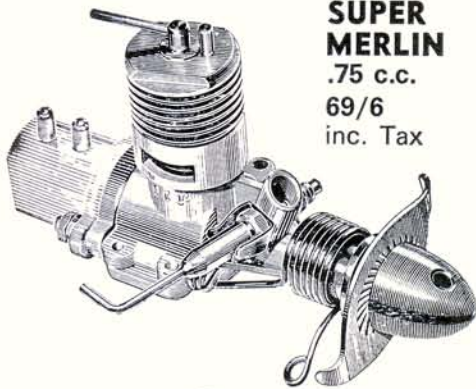
HOBBY MAGAZINE



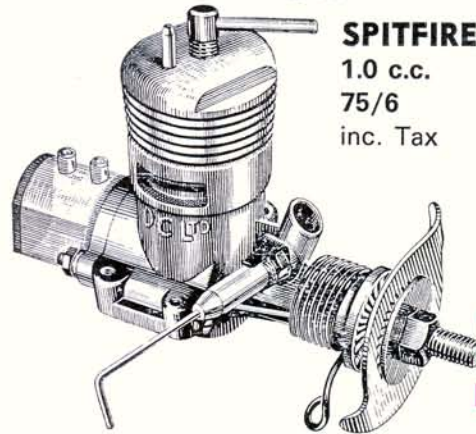
THE GREATEST RANGE OF SPORTS FLYERS' ENGINES



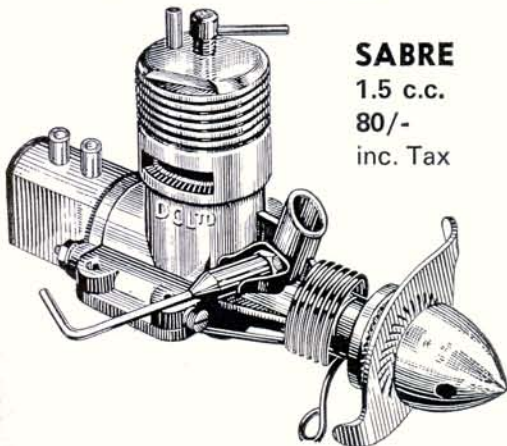
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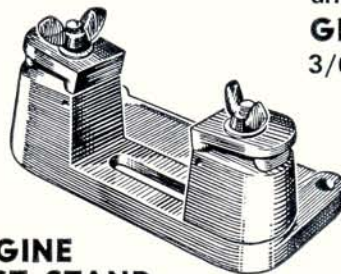


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Highest quality engineering using the latest precision techniques brings you the greatest range of model diesel engines for sports flying. Renowned for ease of starting, long life and consistent operation the "Quickstart" series are also among the quietest of engines when fitted with the inexpensive special silencer exhaust manifold. Marine versions too! These engines can be supplied with water cooled head, and special flywheel for model boat operation. Other specialities in our range include the famous D-C Control-line handle, Test Stand, Nylon Propellers, Quickclip Connector, Quickstart Glowplugs and a full range of spares so that no Quickstart engine owner need ever be concerned about being "grounded".

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**ENGINE
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**DIESEL FUEL
and
GLOW FUEL**
3/6 1/2 pint



Aero Modeller

INCORPORATING

MODEL AIRCRAFT

April 1968

VOLUME XXXIII No. 387

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HOBBY MAGAZINE



also MODEL BOATS . MODEL CARS . RADIO CONTROL MODELS & ELECTRONICS . MODEL ENGINEER and MODEL RAILWAY NEWS.

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Editorial Director **D. J. LAIDLAW-DICKSON**
EDITOR **R. G. MOULTON**
Advertisement Manager **ROLAND SUTTON**

COMMENT

We're not altogether convinced that the rash of Union Jack transfers which have appeared in the recent 'BACK BRITAIN' campaign are much more than opportunist enterprise despite our sympathy for the cause of which they are symbolic. In this day and age any product stands on its own merit in a tough world of commercial competition. Our British model shops carry a range of goods that are truly international in source. In fact we would go so far as to say that nowhere else in the world is the aeromodeller faced with such a galaxy of kits, engines, radio control and accessory lines as in Great Britain. One has to travel to realise this little appreciated fact. Only the bulky ready-made multi-control models from Japan and the U.S.A. remain outside our shops (and here for the sake of aeromodelling we say *thank goodness!*)

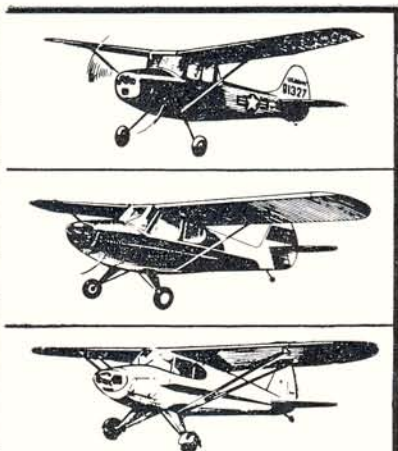
So the home product gets its fill of competition right on the doorstep. What do we find? British model engines, particularly the smaller capacity diesels command a reputation that is the envy of manufacturers overseas. Their variety, reliability and quality supports eight companies. Just try to find another nation, even of vast continental proportions which can boast as many engine marques in current production. Seven of these are reviewed and advertised in our columns this issue and the eighth (FROG) had a full page announcement last month. We're more than pleased to have them with us. Proud in fact, because here's a section of our industry that backs itself and has been waving the flag royally for years.

on the cover

Made by A. R. Lowe and members of 209 Squadron R.A.F. at Seletar, Singapore this 5/8ths 'Fokker DRI' was built from the Lawrence Parasol monoplane to celebrate their 50th anniversary. Based on the Revell Kit, the 'model' is non flying. 209 Sqdn Pioneers (and Twin Pioneers) carry the Red Eagle falling in flames over a white disc on their fins, as seen in background.

next month

Plans for free flight (**Coupe d'Hiver**) control-line (**2.5 Combat**) sports (a **low wing run-about**) plus Engine Test of the **Taipan 1.5**, **Magnet steering** three views, **Australian Nats** and the latest from the **trade shows** in May issue, on sale April 19th.



QUICKBUILD ALL *Balsa* *Rubber Powered* SCALE FLYING AIRCRAFT

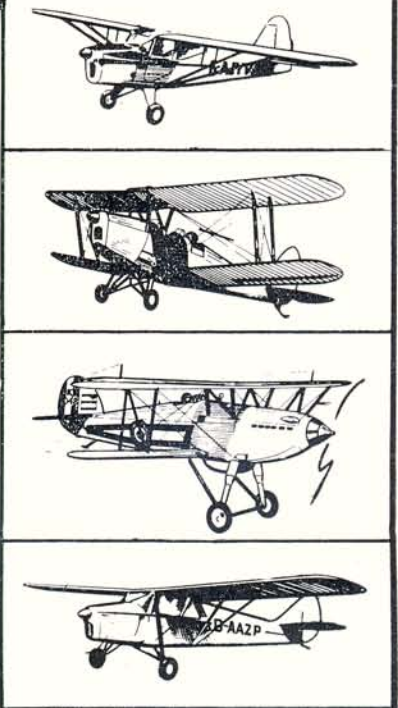
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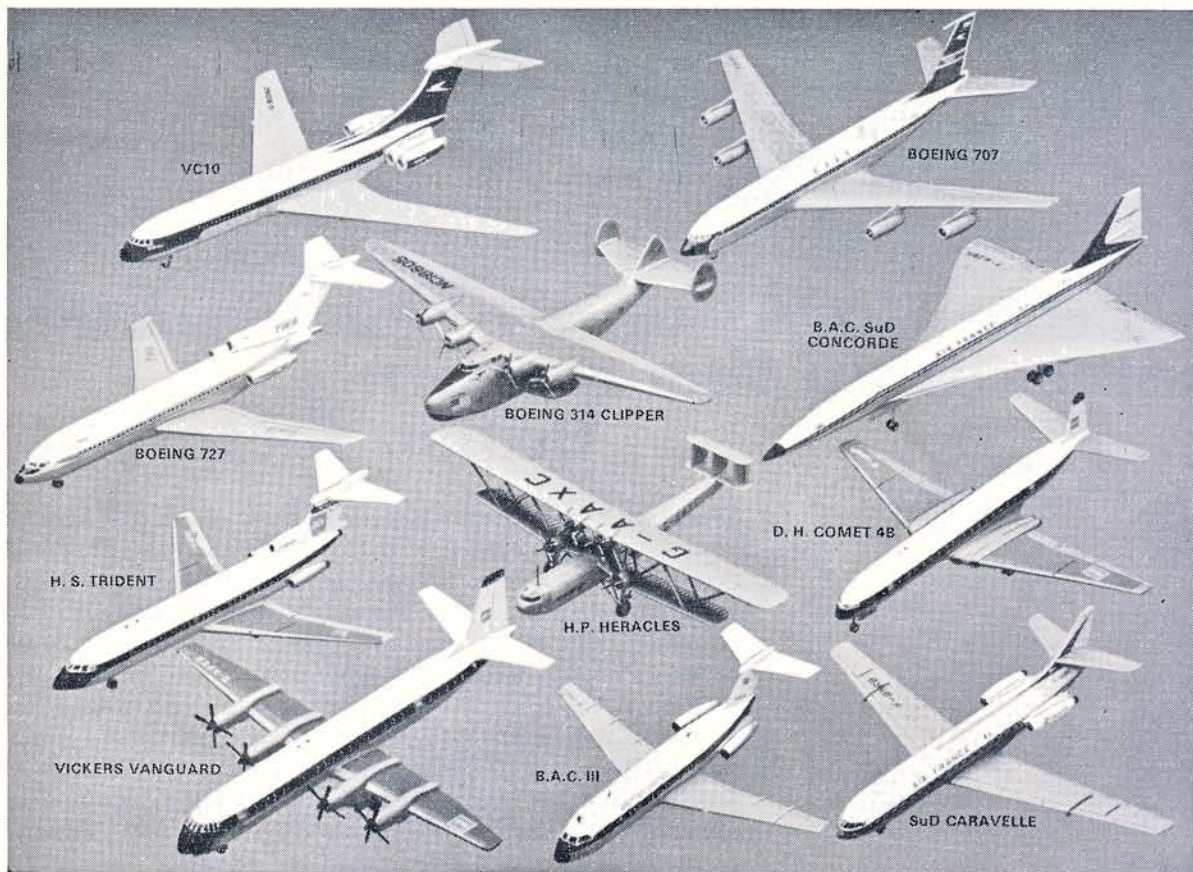
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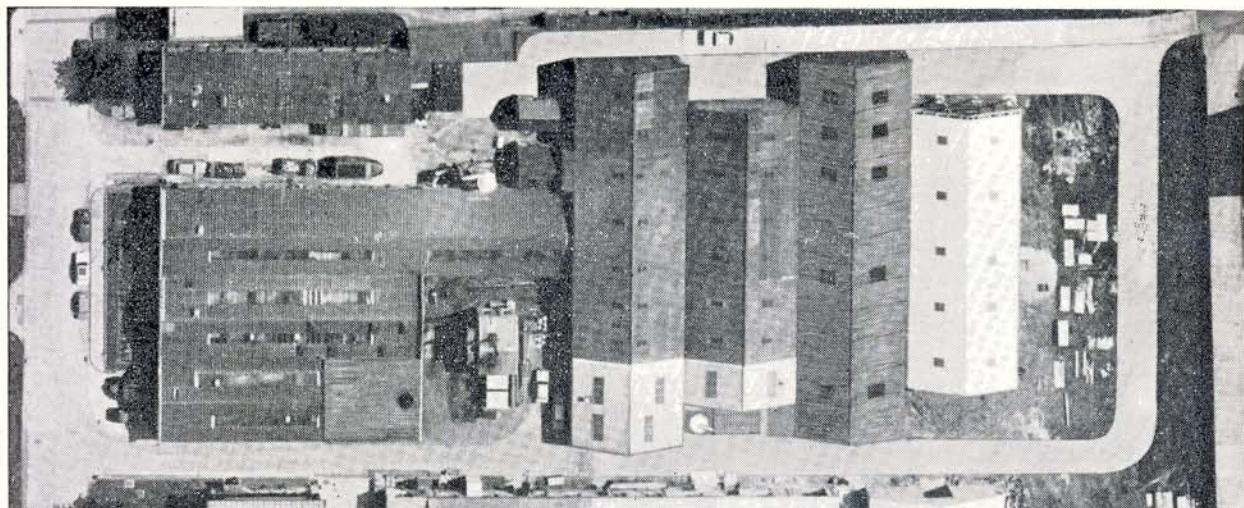
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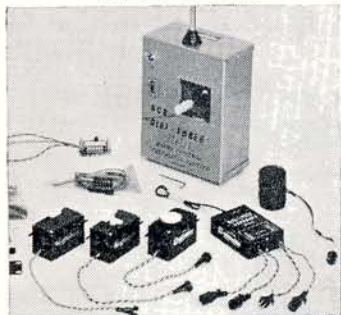
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S.A.E. brings brochure "An Introduction to R/C Equipment"

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COME FOR A WEEKEND

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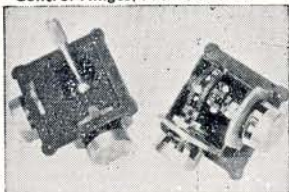
Bermuda Princess 41 1/2" £12.19.6
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Polyurethane Paints, all colours † Pt. 7/6

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Winking Lights, Red, Green and White 12/6
Cockpit Canopy 8" 5/9, 11" 7/11, 14" 9/11,
Nylon Tube & Cable 30" One Nylon Quick Link 4/3
" " " 48" Two Nylon Quick Links 6/11
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Miniature Soldering Iron 240V. a.c. 29/-
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	A	B		A	B
6" x 3"	2/9	3/6	9" x 6"	6/9	9/11
6" x 4"	2/9	3/6	9" x 7"	6/9	9/11
7" x 4"	4/9	4/11	10" x 3 1/2"	7/9	11/-
7" x 6"	4/9	4/11	10" x 6"	7/9	11/-
8" x 4"	5/9	7/3	11" x 4"	11/6	12/3
8" x 6"	5/9	7/3	11" x 6"	11/6	12/3
9" x 4"	6/9	9/11	12" x 6"	15/6	17/4

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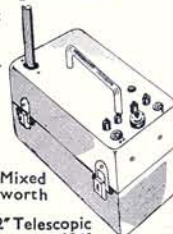
Instructions but no guarantee Only £3.0.0.

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Four for £6.0.0 R.E.P. 10 Chl. Reed Bank 3 K. £2.0.0 NEW

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154 MERTON ROAD, WIMBLEDON CHE 4887 I, THE CENTRE, WESTON-SUPER-MARE. WESTON 6600

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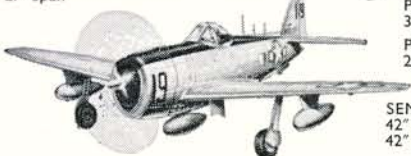
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P-47 THUNDERBOLT 107/6
27" span



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37" span DE LUXE KIT

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28" span for .15-.29 engines

SEMI-SCALE STUNTERS:—
42" sp. **HURRICANE 83/6**
42" sp. **TIGER SHARK 83/6**

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Absolutely FULLY PREFABBED KITS which you can assemble in a single evening! Specially designed for top performance on .049 engines, each model is 18" span. Ideal for scale combat.

HELLCAT . . . JAPANESE ZERO . . . THUNDERBOLT.

Just the job for that spare 1/2-A engine!



29/11 each

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PEACEMAKER de luxe stunt .. 107/6
FLITE STREAK Combat..15-35's.. 72/6
FLITE STREAK JNR. for .09-25's.. 47/6

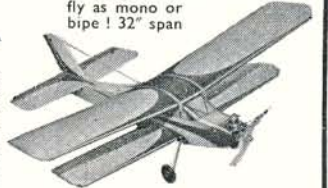
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Completely modern ALL SHEET BALSA CONSTRUCTION with every single part accurately die-cut. The TOP FLITE 'COMPACTS' are outstanding value for money—every one an outstanding performer!

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Most Beautiful R/C Ever Kitted!

54" span-Engines -19 to .40

A SUPERB KIT 259/6
Here's the most beautiful R/C model ever kitted — a Goodyear Racer with enough stability for ANYONE to handle! For 6, 8, 10 channel or proportional. You can use 'Shoestring' for Sport or Contest flying and pylon racing.



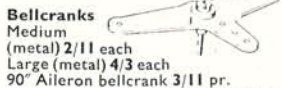
Single or Twin!
Jr SKYLARK .. 77/6
37" span .049 or twin 02's
SKYLARK 56 .. 174/6
56" span for single to 10 channel Engines .09 to .19 (single or twin)



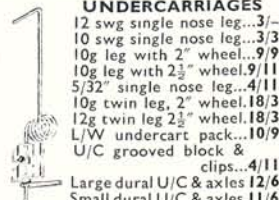
SKYLANE 42" span .. 90/-
62" span .. 375/-
Two beautiful models — the '42' for single channel and the '62' for multi or proportional. Both fully prefabbed kits.



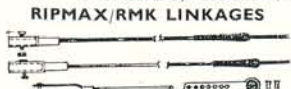
RIPMAX 'MG' Spinners (metalised nylon)
40 mm. .. 10/6
50 mm. .. 12/-
60 mm. .. 13/6



Bellcranks
Medium (metal) 2/11 each
Large (metal) 4/3 each
90° Aileron bellcrank 3/11 pr.



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10 swg single nose leg...3/3
10g leg with 2" wheel...9/9
10g leg with 2 1/2" wheel...9/11
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12g twin leg 2 1/2" wheel...18/3
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U/C grooved block & clips...4/11
Large dural U/C & axles 12/6
Small dural U/C & axles 11/6



RIPMAX/RMK LINKAGES
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Pushrod moulded end linkage, pair 8/6



TORQUE ROD & CONTROL HORN
brazed on horn and hinge tubes.
Small (14g) .3/- Large (12g) .4/6



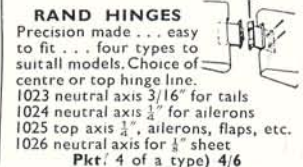
GLIDER WINCHES
CHARON towline winch .. 21/-
TEMPO tow launcher .. 52/6
TOWMASTER glider winch...49/6
Alloy C/L handle .. 8/9
Plastic C/L handle .. 1/11



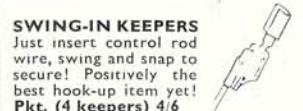
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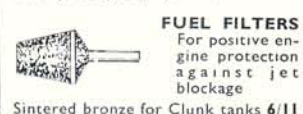
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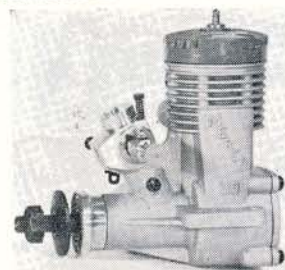
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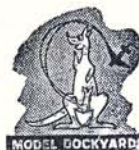
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Kenneth McDonough

Man's greatest exploratory efforts have always centred upon the conquest of the Atlantic ocean. Author Ken McDonough traces the authentic history of North Atlantic aerial crossings, 1919-1939 with positively complete factual data and vivid description of each pioneer effort.

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Articles include world record holder Wisniewski on Tuned Exhaust Pipes; other speed flying articles; Fuel Tanks for Control liners; Dr. Hawkins on Jap WWII Colour Schemes; Prop Carving; Woodwork for Modellers; Flexwing flying models; plus drawings of the world's models of the year, including r/c, contest and sports power, Winter Cup, slope soarers, chuck gliders, helicopters, indoor.

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RADIO CONTROL MANUAL 2

This is the second *Radio Control Manual*, bringing news and information on all the latest developments within the R/C hobby. From the simplest single channel systems, up to the most sophisticated, there is something for everyone. In this new edition, Ron Warring discusses control surface design, while well known engine expert Peter Chinn disusses R/C engine developments, tracing them from the very first, more than ten years ago. He completes the picture with tabular data on over 100 current R/C power-plants. For R/C boat enthusiasts Don Carless provides expert advice on the art of multi model racing, the fastest growing sport within the model boat movement, and still in the water, Don Baxter provides hints and tips on the operation of R/C water planes. Racing has become very much part of the radio control hobby. In the aircraft field, models are patterned after the famous full size 'Goodyear' racers of the late 1940s and raced around a triangular course at astounding speed. It is not surprising that in the last two years, this activity has become very popular. Britain's top ace in this field is Peter Waters, who passes on the secrets for successes in R/C Goodyear racing. Added to all this valuable information are 17 scale drawings of some of the world's leading model designs which, in all, make *Radio Control Manual No. 2* an invaluable reference work for all radio control enthusiasts.

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CONTROL LINE MANUAL

R. G. Moulton

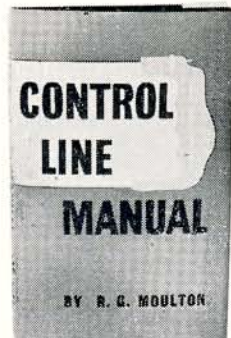
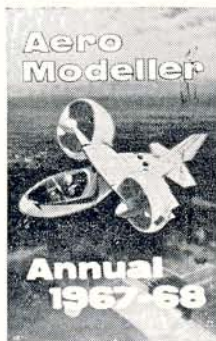
Here are some of the chapter headings: Why Control Line?; Basic U-Control; Basic Monoline; Basic Flight Control; Learning to Fly; Aerobatics; Speed; Team Racing; Combat; Carrier; Cargo and Endurance; Scale Models; Jet: The Engine in Control Line; Towards the Indestructible; Looking after the Lines; Variations on the Theme. Plus appendix. The manual represents the accumulation of 16 years' experience by the author in the flying of control line models including the pioneering of aerobatics, team racing and combat in Great Britain. He has condensed all the trials and tribulations of his long acquaintance with the subject in an informative and non-technical style that will be immediately appreciated by the experts as well as the beginner. It will be a constant guide and reference work for all who fly models by any of the many control-line systems.

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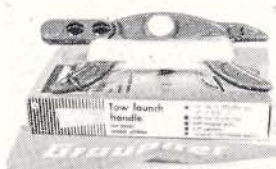


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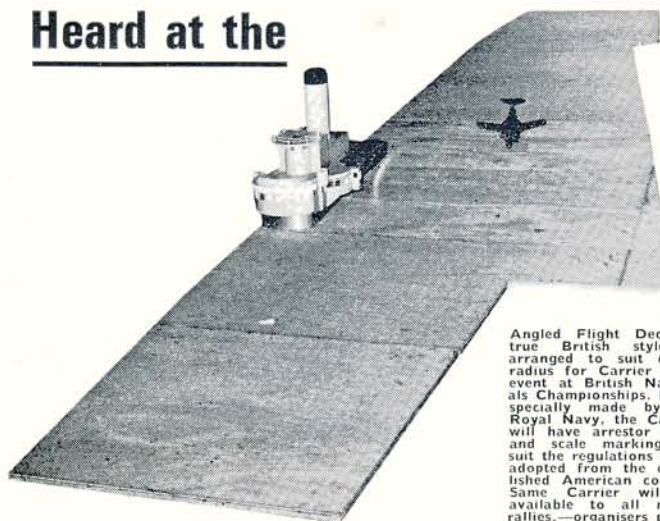
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VISITOR'S IMPRESSION of the New Zealand Nats given to us by Bob Ives helps us to appreciate the difference between events 'down under' and in the U.K. There being no equivalent to the SMAE programme of contests which are spread throughout the year, modellers in New Zealand tend not to specialise in one class, and 'have a go' at a variety of model types. When the Nats arrives at the turn of the year (their mid-summer) and is spread over a whole week, it becomes a family holiday with each entrant taking along a fleet of models. The pace is leisurely, though crack of dawn starts for free flight might give the wrong impression. These are scheduled early to 'beat the weather'. Being a top line team race pitman (and team manager for G.B. at the 1968 Criterium of Aces) Bob Ives' interests naturally centred upon the control-line events at Rangiora Showgrounds, 30 miles from Christchurch. Most impressive was the Class B (5cc.) team racing with other classes comparable with the standards in Great Britain. Rule inter-

pretation difficulties made for Combat and FAI Team Racing complications. Strangely enough this was the first time a segmented circle had been used in N.Z. — and the technique of having the pitman remain at his refuelling point has yet to be fully adopted as standard practice. This same feature of European and U.S. team racer refuelling techniques never fails to raise a gasp when we show our own films of World Championships to audiences yet to be initiated in the arts and crafts of circle burning. How else could one land, refuel and release a model within seven seconds?

RALLYE is an automobile word, and when used in an aeromodelling context, could mean almost anything! This time however, it's the official term for a new style R/C contest to be held in Belgium on May 25/26. Object of the exercise is to launch models at five minute intervals from Wavre, chase 14.3 miles to Mellery, spot land and reverse the process by returning to Wavre. Winner takes £60, tenth gets £3. Anyone fancy their chances?



F/Lt Ray Lawrence made this ultra-light for a Triumph motorcycle engine while with 66 Squadron at Kuching in Sarawak. Thus it became the first aircraft to be made in that Country. Test flights were successful; but a posting back to Singapore meant that it had to be dismantled. Subsequently it became the Fokker DR1 seen on the cover. Needless to say, Ray is an aeromodeller.

HANGAR DOORS

We have details at the editorial offices.

CAMPERS, those habitués who provide so much colour at the annual Nats will after all, have their site at R.N.A.S. Yeovilton on June 2/3. Application forms will be circulated in due course to all SMAE members through their club secretaries. The site will be adjacent to the runways, will have a large car park zone, and fresh water supply! Those not in the SMAE will be able to use a recognised camping and caravan site, at the nearby village of Ilchester, less than two miles from the airfield. Incidentally, we have been surprised at the number of readers who have written to ask the whereabouts of Yeovilton, the most important and certainly largest of the Royal Naval Air Stations in the country. It is on the A303 six miles north of Yeovil, close to the junction with the A37.

GRANTS, those elusive, unattainable centres of controversy which make, break or tantalise so many 'amateur' organisations are always beyond the grasp of our own SMAE. In Italy it's a different story, for our contemporary *Modelli Sport* reports that the club at Luca has been given £300, and that at Verona £100 for construction of bases for R/C and C/L flying. To cap such good fortune, the magazine includes a feature on how to make your own ideal C/L circuit!

POWER, from the new type engines, and the advent of the 'tuned length exhaust' has brought with it some concern for the use of capacity limits in the Radio Control classes. The AMA has taken a line that tuned exhausts should *not* be permitted in Pylon Racers. Such is the price of development!

COUPE D'HIVER International Challenge, held at Chavenay near Paris on February 25th under the kind auspices of Maurice Bayet and "Modele Reduit d'Avion" was not so successful an event for the British participants as in previous years. Well organised by the Paris region clubs, the entry totalled 232 models, but bitterly cold winds had their effect on enthusiasm! Jacques Griveau suprisingly raised three max's for clear victory and he was closely challenged by Jean-Pierre Challine (348 secs.) In third place was Roberto Giolitto of Turin, Italy with 333 secs. He was also placed second in the December Winter Cup event at Nice. Top British contestant was John O'Donnell, 25th with 284 secs.



Radio Control at a Film Studio . . .

described by W. C. HANNAN

AS THE P.T. Barnum type title might suggest, this event had direct connections with the Hollywood movie industry, and, in fact, was held on the grounds of Universal City Studios. Universal is well-known for its motion pictures, and also for its many television productions, including: *Run for Your Life*, *The Virginian*, *Dragnet* and *The Munsters* to name a few.

Additionally, local radio station KFWB carried extensive publicity announcements plus on-the-spot broadcasts from the meeting. Universal Studios felt that the presence of the model aircraft show would help attract visitors to their studio tours, and, no doubt, they did. During the two-day proceedings, a pair of twin girls quietly circulated through the crowd taking a survey as to the appeal of the event. They wanted to find out if the spectators were there to see the planes or to take the tour. If it was to see the planes, they were asked to consider the possibility of attending the tour at some future time, and also questioned on the possibility of attendance at future model meetings.

The model air show itself, consisted of static displays, stunt demonstrations, R/C combat (streamer) flying, and Model Goodyear racing. Most of the well-known

Top right: an overall view of the flying site, with the San Fernando Valley spread out in the background. One pylon may be seen in the right middle ground, with two of the model racers actually flying while this view was taken from the spectator's vantage point.

Bottom left: the Williams Brothers, Granger and Larry, pose with their K & B 40 powered "La Jolita" racer, just after placing second in a heat race. To right is Joe Foster's extremely fast K & B 40 powered "Rivets", featuring Orbit electronics.





Above: a Pit scene with Phil Kraft's Bar-Fli original in foreground; To right is Cliff Weirick's "portable heater", Charlene Jones, who has become well-known since she is usually featured in the advertisements for the radio control equipment which Cliff manufactures. Charlene is employed at Disneyland. The "other model" in the photo, is Cliff's Goodyear racer "Rivets". Fur coat gives some indication of the extreme (for Southern California) cold weather.

Californian R/Cers were on hand, including AMA President Cliff Weirick, World Champion Phil Kraft, the Williams Brothers, Jerry Nelson, etc.

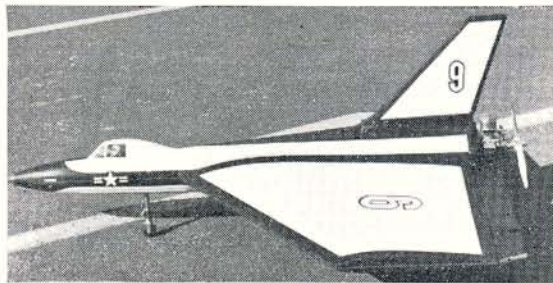
The actual flying site was most unusual, to understate the case. This portion of the studio is quite literally on the side of a mountain, which has been terraced to provide several levels of car parking space. Model flying was done from one level, while spectators and the pit area were located on higher levels. From a spectator's standpoint, the arrangement was ideal, as the elevated vantage point provided a sweeping panorama of the model flying, against the background of the entire San Fernando Valley situated far below. And, for a pleasant change, the area was clear of smog, so visibility was excellent. On the other hand, the cold wind which was responsible for cleaning the pollution out of the air, also caused extreme problems to the models, not to mention their flyers! Most of those who appeared on Saturday, clad only in Summer-weight garb, returned on Sunday wearing foul-weather jackets and gloves. Even the usual flock of min-skirted females which abound near every movie studio, were forced to add heavy coats to their wardrobes.

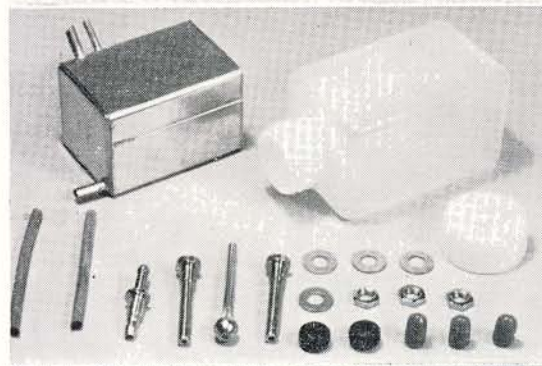
In addition to being handicapped by the high winds, the model flyers were faced with the challenge of operating in and out of a confined area, complete with trees, bushes, curbing, and other hazards. The flying site was surrounded on three sides by a drop-off, much more appropriate to slope-soaring than to pylon racing. The net result was not unlike operating on and off an aircraft carrier, and unfortunately, more than a few models ended up 'in the drink'. To quote Cliff Weirick who damaged his racer early Saturday, *'I ran out of airspeed, altitude, and ideas, all at the same time!'*

The spectators really got their money's worth, and probably regarded the frequent crashes as part of the routine. For a while it looked as though the modellers might run out of aircraft to demonstrate, long before the affair was scheduled to end, but thanks to hasty repairs and spares, things were kept moving. Very popular with the crowd were the combat demonstrations, complete with *Red Baron Vs Snoopy* narration over the public address system. Each near-miss would draw excited 'ohs' and 'ahs' from the appreciative audience.

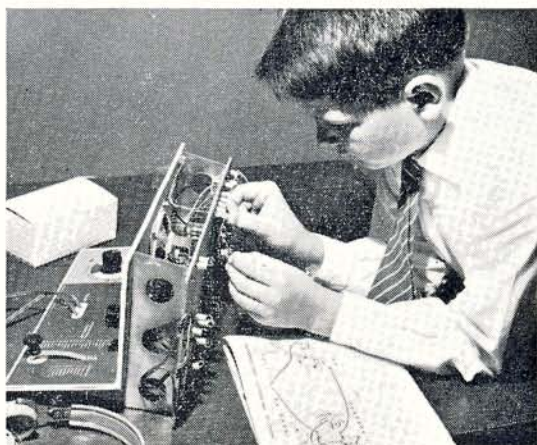
A touch of colour was added by the appearance of a few 'extras' still in costume from a Western scene. And one of them, wearing a sheriff's badge and '10 gallon hat' unknowingly struck a real blow in favour of scale models, as compared to nonentity types, when he asked, *'How come some of these models look slightly real, but the others don't look like anything?'*

An all-plastic 44" span delta, designed and constructed by Phil Garrard. Model featured a vacuum formed fuselage, Enya 60 power, and weighed 10½ pounds. Although well-tested at other flying sites, model was badly damaged when it hit parking-lot curbing during take-off. At right is an experimental gyro copter as displayed by Bob Thomas. Super Tigre 56 power.





The uncovered airframe of the 62" span Cessna Skylane, built from a standard kit. Spacious fuselage will take a variety of Radio gear. Right: The Airfix He 177-5A is an extremely finely detailed model with the usual moving surfaces, turrets, propellers, etc. that are virtually standard on the larger models.



TRADE NOTES

OUR FIRST picture this month shows one of the Authentic camouflage paint kits by **Humbrol** for aircraft and military equipment. Each contains six half-ounce tins. There are twelve kits, covering practically every colour including one WW1. This paint gives a matt surface quite free from brush marks and has the special attributes of drying in 3 minutes. As a result one can paint different colours in quick sequence. Purchase Tax has been pushed onto the paint kits, but they are still well worth their 9s. 6d.

Ever put too much solder on a joint? If you are prone to doing this then the **Adamin** 240v Type T18 de-soldering tool is an essential item for your workshop. The heated bit is applied to joint until the solder melts and then on releasing the balloon the solder or surplus solder is sucked away. Retailing at £3 10s. 0d. it may appear a little expensive, but extremely useful. Also shown in our picture is the C15L Lightweight soldering iron which, complete with $\frac{3}{16}$ in., $\frac{1}{4}$ in., $\frac{3}{32}$ in. and 1 mm copper bits, retails at £2 1s. 6d. Both instruments are of the Litesold/Adamin types and are distributed to the model trade by Ripmax.

Two examples of **Graupner** tanks shown are the metal type for diamond type mounting (corner downwards), and the translucent clunk tank complete with fittings. The metal type comes in 45 c.c. and 60 c.c. sizes at 14s. 6d. and 14s. 11d. respectively and the clunk tanks in 100 c.c., 250 c.c. and 500 c.c. sizes at 11s. 6d., 12s. 6d. and 14s. 11d.

Also from **Ripmax** is the popular semi-scale **Cessna Skylane** 62 in. R/C model kit by **Carl Goldberg**. Retailing at £18 15s. 0d. this kit is extensively prefabricated, with excellent materials and die cutting (even $\frac{1}{2}$ in. ply parts). The Skylane will take a variety of equipment and engines of 3.5-6 c.c. Our test model is now completed and looks very smart. A full review is to appear in our sister magazine *Radio Control Models and Electronics*.



Left: Knight Kits offer a fine range of electronic outfits. Right: Aero-Skin covering lends enormous realism to Renwal's D.H.2 and Fokker E 111. Second photo shows Japanese Emily flying boat but does not do justice to the exquisite detail. Below: The Airfix Autogyro built in its James Bond form complete with firing rockets.

For those who like making up Radio and Electronic equipment, **Knight Kits** by Electroniques of Edinburgh Way, Harlow, offer a large range of subjects in a very informative 64 page free catalogue, from HI-FI and stereo to test equipment and educational kits.

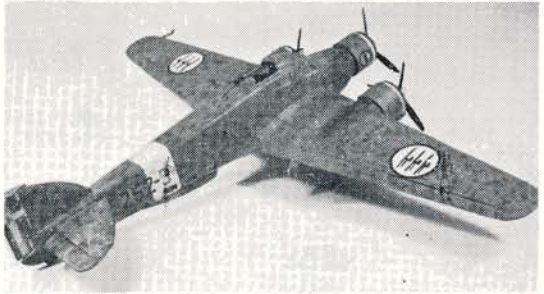
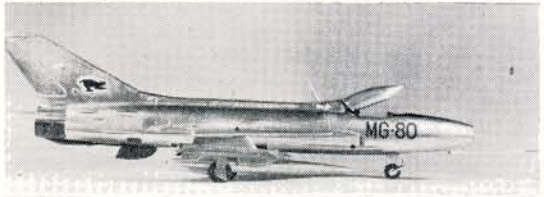
Unusual subject for a plastic kit is the 166 part kit by **Airfix** of the Heinkel He 177-5 A bomber. Known as **Grief** (Griffon), the name '**Grief**' could well be applicable to the full size aircraft due to enormous losses through accidents. This was the only heavy bomber produced by Germany and utilised two engines in each nacelle. The detailed kit allows for making the version which carried radio controlled glide bombs in addition to the conventional bomber. Control surfaces, turrets, wheels and propellers are movable and at 8s. 6d. represents the good value we come to expect from Airfix.

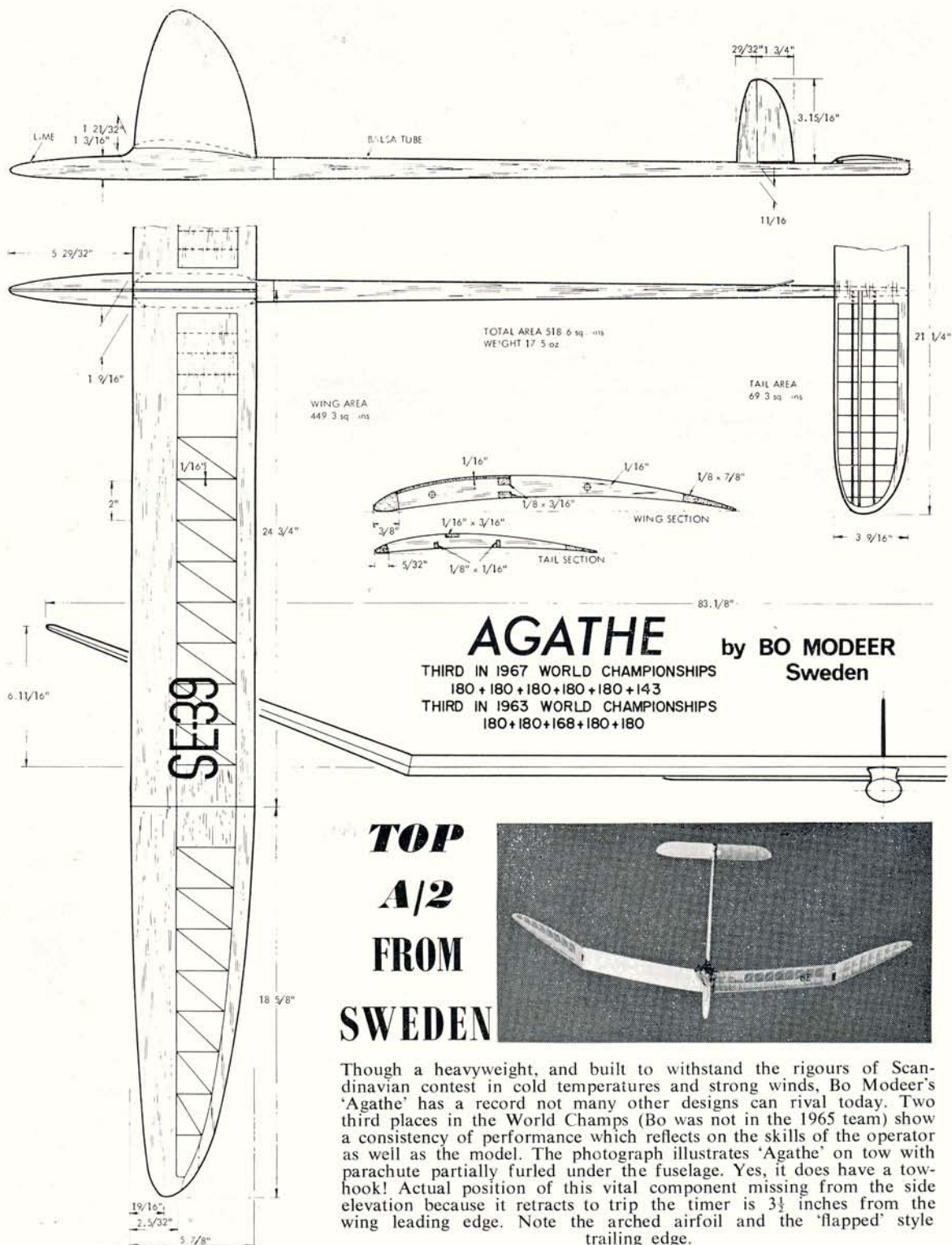
Following the success of the 'James Bond' Aston Martin, Airfix have now produced a stablemate in the shape of the 'James Bond' Autogyro, complete with the appropriate armament. Alternatively the kit will make up an accurate 1/24th scale model of the Wallis WA-116 Autogyro. With over 100 detailed parts this retails at 5s. and is a novelty, not only for its unusual scale but also in its appearance.

New plastic kits from **Renwal** are a series of 1/48th scale models using framed structures and '**Aero-Skin**' fabric type surface. This new line of thought in plastics, provides covering which is pre-coloured to give a very realistic effect to older types of Aircraft. The models shown are the DH2 in the markings of Major Lanoe Hawker's machine and the Fokker E111 of Max Immelmann. These attractive models are marred by a few inaccuracies, much too large wheels, slightly out of proportion wings and outline in the DH2, and slightly large wings on the E111 together, with only one gun (Immelmann had two) and this is poorly moulded. The general details are also not exceptional but the effect is remarkable. No agency for these plastics seems to have been established in GB, though one could try BMW of Wimbledon who also sell what is probably the largest 1/72 model aircraft kit in production. Made by the **Hasegawa Model Co., Ltd.**, of Japan the Kawanishi Type 2 (Emily) flying boat kit is one of the most detailed and impressive we have yet reviewed. Removeable wing panels reveal similar construction of the full size. There had been criticisms regarding the accuracy of this model, but comparatively little is known of the full size aircraft. Despite this we would rate it as one of the most exotic plastics we have seen. Retailing at £2 9s. 11d. this is more than one usually pays for a plastic aircraft kit but having completed the finished article we think it well worth the extra if only for its rarity value.

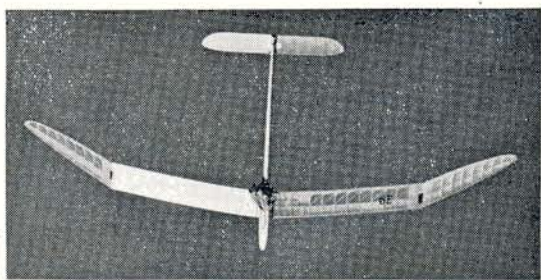
Two more 1/72 kits from Airfix in the shape of a typical, accurate and easy to build Mig-21-F from 40 parts and retailing at 3s. 6d. and the Savoia-Marchetti SM79Mk.II Italian WW2 bomber. This latter kit has over 100 parts and is generally impressive, but we are informed on good authority that inaccuracies exist, the most obvious being the ribbing of the wings. They should have a smooth ply finish, also the upper gun position and cockpit interior are incorrect together with a few other minor details, but these do not detract too much from what can be made into an impressive model, retailing at 7s.

Lastly is another 1/72 scale model of the popular P51B Mustang by **Monogram**. This kit builds into a very neat detailed model of this WW2 aircraft to the high standard for which the American company is now renowned. Authentic 'decals', neat mouldings and a crisp appearance distinguish the Monogram series which sell at 10s. 6d.





**TOP
A/2
FROM
SWEDEN**



Though a heavyweight, and built to withstand the rigours of Scandinavian contest in cold temperatures and strong winds, Bo Modeer's 'Agathe' has a record not many other designs can rival today. Two third places in the World Champs (Bo was not in the 1965 team) show a consistency of performance which reflects on the skills of the operator as well as the model. The photograph illustrates 'Agathe' on tow with parachute partially furled under the fuselage. Yes, it does have a tow-hook! Actual position of this vital component missing from the side elevation because it retracts to trip the timer is $3 \frac{1}{2}$ inches from the wing leading edge. Note the arched airfoil and the 'flapped' style trailing edge.



MAGNET STEERED SLOPE SOARING

PART TWO by Trevor Faulkner

(seen at left, practising what he preaches)

Some idea of what is implied can be gained by the following personal experience. On two consecutive Sundays last summer, using two models on each occasion, between 30 and 40 flights *per session* were made: each flight D/T'd at about 3 minutes, and so the flying time can be roughly calculated.

Now, as these flying sessions occupied no more than 4 hours each, it can be seen how much time is spent 'airborne', how little is spent recovering models and re-trimming, and how often the model has to hit the ground on D/T. Add to these factors that the model must be handled twice each flight, and you will appreciate why, certain severely practical features of construction are advocated.

The full implication is that the model can simply be picked up, checked visually, re-fused and re-launched; it is important for wing and tail mounts and fuselage to be able to take landings on rough and sloping terrain in their stride, and for the model to be strong enough to avoid the lift developed by the wing breaking this member before launching. (There is no towline to cushion gust effect, and the modeller must have a firm grip on the model before the moment of release.)

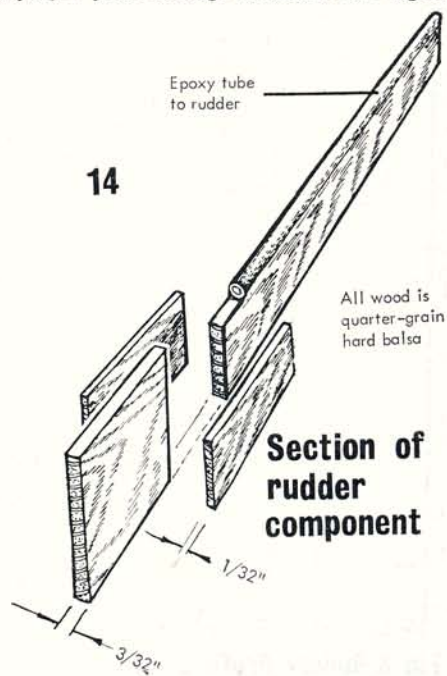
Fortunately, in view of the long moment arms usually employed, 2 piece fuselage structures are logical and

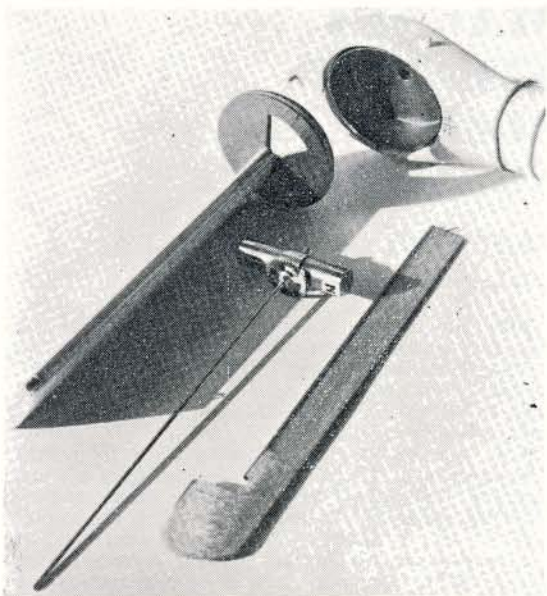
SHAPING and balancing of the rudder for Magnet Steering are critical if the best results are to be expected (14). The epoxy bonding of the tube to the main member can, advantageously, extend well up the tube sides to provide a smooth fairing into the required shape. Again, warm the resin for best results. After adding the small wire key to the bottom of the rudder, shape the entire component as per drawing (15) give 4 or 5 coats of dope, sand well and balance by adding lead as indicated. Check final balance by slipping an 18 g. length of wire inside the tube, and adjust to neutral cant.

When all parts have been constructed, assemble everything except the rudder: this will give you a chance to see that the magnet post runs uniformly free when checked against the fin T.E. If your construction has been accurate so far, the only likely adjustment will be that of the upper bearing loop. If the magnet-post does not clear the T.E. uniformly, suspect its alignment with the line of the lower bearing pin. After checking (and correcting, if necessary), thread the rudder onto the magnet post, and give the final check for clearance of movement of the entire unit. One word of advice: familiarise yourself with the building and assembly procedures involved in unit construction: mark out all work with sharp tools and check constantly as you progress. This approach will pay dividends in trouble-free operation in the field.

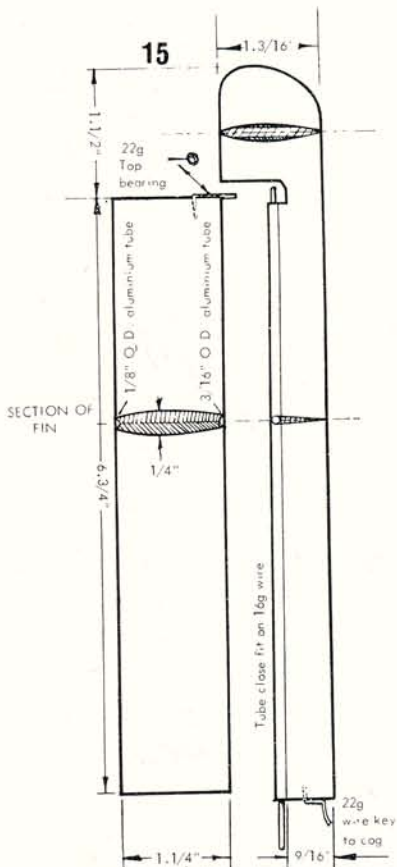
General Construction

As these models are not the province of the beginner, I do not intend to describe constructional techniques for the entire model in the detailed manner used for the steering unit. However, because of the specialised layout and use of these machines, a number of well-tried constructional methods will be mentioned, so that a modeller of some experience will understand more fully the type of handling (and abuse) his model will get.

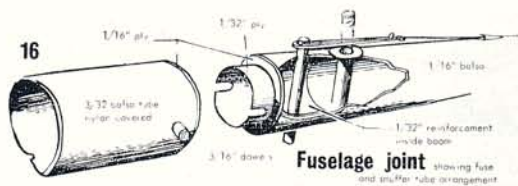




Photograph above shows the general assembly of a nose mounted magnet controlled rudder. The magnet is attached to the vertical spindle which in turn will engage the rudder. The nose fin is on a ply disc base which fits into the top of the swirl canister mounted in the fuselage, see also diagram on page opposite.



Fin & Rudder Profiles

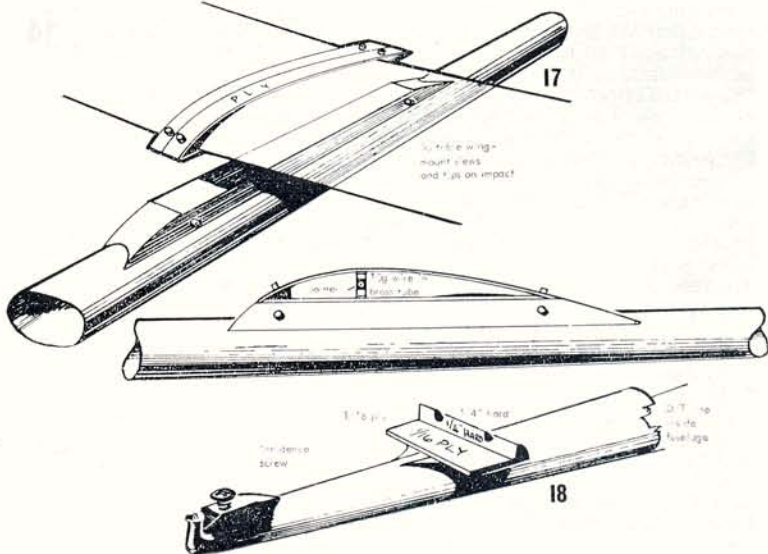


Fuselage joint showing fuse and stabilizer tube arrangement

hard-wearing. I have no doubts as to the superiority of the circular-section fuselage in this respect. A rectangular, 1/2 in. by 1 in. section, 2 piece fuselage has been in regular use for the past 3 years. Compared with an older, circular section fuselage, it has had more light repairs; in fact, the circular fuselage has never needed repair.

A detailed joint is shown (16), and is of the type now familiarly used in F.A.I. rubber models. Although wing mounts are not subject to the same variety of strain as those of the towline glider, they must have certain other characteristics. As 90% of landings are under D/T, and one wing tip will hit a slope well before the other, I feel that the wing must be able to "rock" on its mount as well as slew round with impact. The narrow platform (3/8 in.) mount looks inadequate, but in practise it excels. The steel dowel allow a degree of flexibility (useful under launch conditions), and do not, surprisingly, inhibit magnet reaction at distances greater than 12 in. See diag. 17.

The stabilizer, similarly, is subjected to twisting and rocking forces under most conditions of landing. A deep forward step prevents overriding (whilst a fairly large platform permits slewing without the stab pulling clear - so avoiding damage in the L.E. region. Still dealing with the stabilizers, I have found it necessary when using high A/R flying surfaces, to be able to vary the angle of tip under D/T. An easy method of adjusting this angle is to attach a nylon line to the D/T band hook, anchoring its other end to a suitable pin-head. By inserting the pin at various positions along the fuselage, the tail-angle can be altered very quickly, should your original estimate be at fault. As a rough guide, too low an angle of tip can induce spinning under D/T. A steep angle tends to give looping or stalling characteristics; a ridiculously low angle or weak stab bands, can give the same effect (as would over-elevation, e.g. looping or stalling, but for different reasons).



18

Mention has already been made of the necessity for 'tuning' the model to fly at various chosen speeds. In several of the techniques which can be used for this purpose, it is convenient to be able to alter the angle of the stabilizer. To avoid the inconvenience of packing, a screw adjustment is recommended and has proved most valuable in practice (18).

A final practical point is this: always use plenty of holding down bands where appropriate - and be sure to hold down the fin platform securely. This type of model gives quite a 'lurch' when the tail pops (even, sometimes, a loop), and all components must be secure.

Practical flying

Anyone flying slope soarers for any length of time will have become aware of two main facts. First, wind speed at various heights relative to the slope is not constant (and not always greater higher up!). Second, wind direction at various levels is not constant.

This second item is of major importance: although one may *assume* that a magnet-model is trimmed to head into wind, the truth is that it is trimmed only to fly in one particular direction. Theoretically, these should be identical settings: actually, the wind *deviates* from a constant, whereas compass directions are, in this context, unchanged.

A model therefore, maintaining a constant magnetic heading, may appear to be crabbing its way through the air because this heading does not bring it into line with the wind (*Diag. 7 last month*).

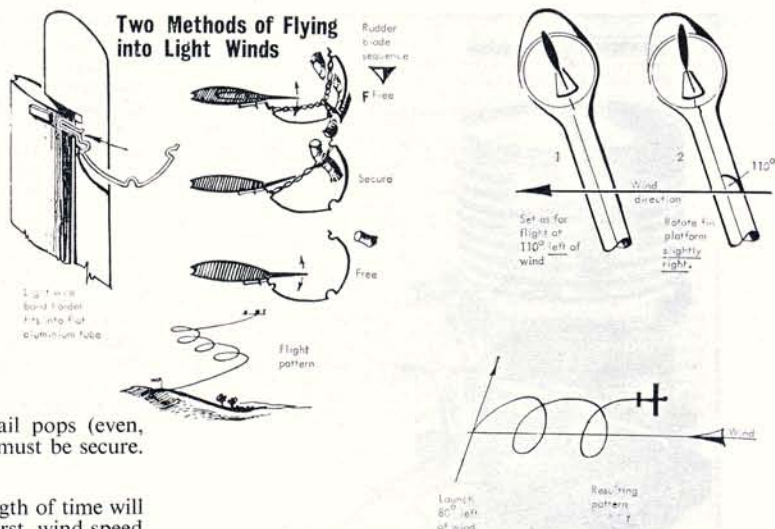
Individual slopes vary enormously, on moving to the North I was quite amazed to observe on one outing that the cloud drift was at an angle of about 120° to the surface wind direction. This was, I feel certain, a phenomenon exaggerated by the type of terrain: my previous flying had been mainly from a ridge overlooking a plain; the new site overlooked an area of the Peak District - quite a different kettle of fish.

On this particular day, therefore, the wind direction was changing radically between ground and cloud level, and it was necessary to discover what was happening 100-200 ft. up - the 'layer' in which I expected the models to do most of their flying.

Estimating that this layer might be moving from about 20° further left than the ground level air, I set the model for this line of flight. A launch was made about 10° right of the wind. The first part of the climb away from the slope would increasingly head into wind as the model tried to fly its set course some 30° left of the launching direction. It became possible, then, to observe what *really* was going on aloft: after several short-fused 'probes', the optimum setting was established for the relevant air flow in which we intended to fly. Ground level wind direction was forgotten, and corrections to course were made after successively longer flights.

To refer to the problem of wind/flying speeds, it might be better to quote an actual example. Whilst flying at Ivinghoe in 1965, my model, a.u.w. of 16 ozs. was carrying $1\frac{1}{2}$ lbs. of lead ballast at the C.G. to increase its flying speed.

Although this expedient was reasonably successful, I have active sentiments about giving free rides to lumps of lead. Obviously, some efficiency was being sacrificed,



so why not under-elevate and leave the ballast alone? This, again, proved successful within limits, but a point is soon reached where a ballasted model climbs higher than its unladen equivalent flying at the same speed!

The greatest speed range with one basic model became available when the C.G. was varied in conjunction with changes of decalage and tailplane section.

Neg tail incidence - Increased - lower speed - stall
decreased - higher speed - dive

Constant Stab. Incidence - Flat based section - level flight
U/C section - dive

Trimmed for best glide - Flat based section - less decalage, gives higher flying speed.
- U/C section - more decalage gives lower flying speed.

Knowledge of the above, and experience with individual models will help you trim for flight within the lift zone of a slope under widely varying wind speeds. To begin with, at least, a 50% C.G. will allow you considerable latitude in which to detect the results of an adjustment before a critical point is reached.

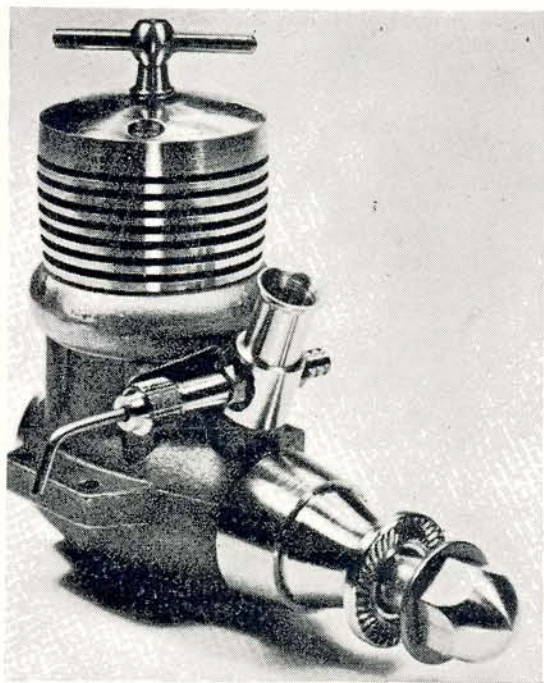
As most of your slope-soaring will probably be done in company with Radio Modellers, it may help to add one or two words of warning. First, choose your own launching site: your A2 type model differs from the radio soarer in two main ways: it climbs faster due to weight and design features and it flies more slowly. So if the Boffin Brigade fly from a crest, make up your own mind as to your model's chances and performance from near the top or somewhat lower down the slope in possibly gentler air. You should always aim to progress out from the hill initially, and the model's climb will see it gaining height more quickly than most R/C soarers.

Similarly, avoid promontaries or little plateaux where the air spills and froths: use air passing over a 'smooth' area of slope if possible, and if some long grass is in the vicinity, launch near it. The ripple effect will give you warnings of sudden gusts and make sure that you have the nearest thing to a visual indication of wind behaviour possible.

In addition, trim your model to 'crab' slightly away from woods, car parks, roads, etc. whilst you complete your trimming. Fly away from any congested parts even if this is less dramatic and entertaining for spectators.

Remember, when a model causes damage, *someone* rather than *something* has failed.

(Next issue - Plans of Models and latest Developments)



THE REPUTATION of the Oliver engine or 'J.A.O.' (from the initials of its designer/manufacture, John A. Oliver) as it was originally known, was established on the model car tracks of Great Britain and the Continent during the heyday of the i.c. engined model racing car in the late forties and early fifties. Innumerable records fell to Oliver Tiger engined cars in the 2.5c.c. and 1.5c.c. classes during this period and, not surprisingly, Oliver motors soon attracted the attention of contest minded model aircraft enthusiasts.

Happily, for Oliver fortunes, the establishment of the S.M.A.E. Class A (2.5c.c.) team racer class (later adopted by the F.A.I. as the basis of the T/R World Championship category) and the choice of a 2.5c.c. limit for the World Free-Flight Power Championships, more or less coincided with the declining popularity of model car racing. In 1954, Oliver Engineering announced the Tiger Mk. III aircraft unit and soon the demand for it was so great that the manufacturer was obliged to suspend production of all other models in an endeavour to deal with a mounting backlog of orders.

The Tiger Mk. IV, which is the subject of our report this month, was introduced last year and is, of course, the successor to the long established Mk. III. The basic design layout: shaft induction, twin ball-bearings, radial cylinder porting and a stroke/bore ratio well above unity, is unaltered, as is the general construction, but the engine incorporates a re-designed crankcase and practically all other components are, in some way, modified, so that only a few minor parts are actually interchangeable with those of the Mk. III.

Construction

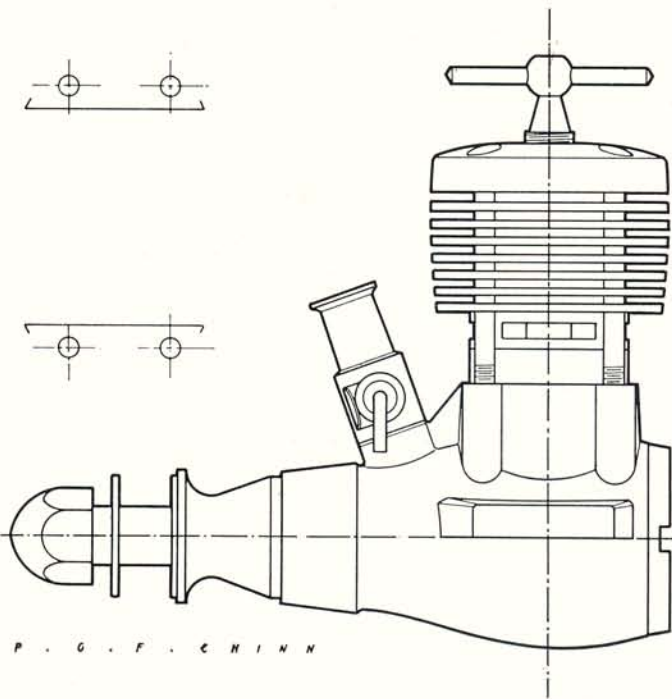
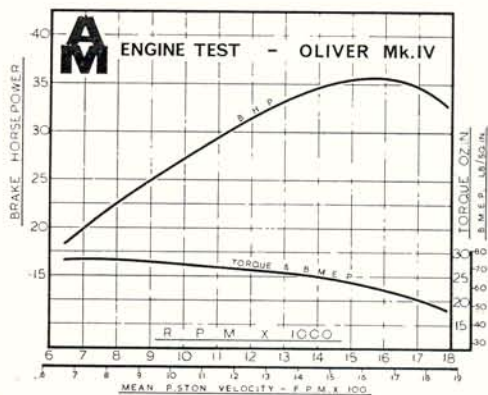
The Mk. IV is assembled around a nicely proportioned crankcase casting having a stronger front end than the

ENGINE TEST

BY PETER CHINN

OLIVER TIGER

Mark IV



previous model. The crankshaft remains at 0.375 in. maximum journal diameter and now has a disc web with machined-in crescent counterbalance. A circular valve port registers with a circular intake aperture and gives an induction period (standard model) of 155 degree, timed from 65 deg. A.B.D.C. to 40 deg. A.T.D.C. The shaft is supported in an 8-ball Hoffmann bearing at the rear and an 8-ball R.M.B. (Swiss) bearing at the front. The front bearing is now more fully protected by the prop drive collet, the rear end of which is partially enclosed by the extended front bearing housing.

The bore and stroke of the Mk. IV remains nominally the same as the Mk. III's but the cylinder is slightly modified with a thicker wall above the ports. A conical crown is retained, together with a contra piston of matching shape. A slightly larger diameter cylinder jacket, giving increased cooling fin area is now used. As before, the cylinder is flanged at exhaust port level where it is vertically located in the crankcase and four machine screws are used to tie the complete cylinder assembly to the crankcase. Four exhaust ports, spaced at 90 degree intervals around the bore are used and are timed to give a 135 degree exhaust period. The four transfer ports are steeply inclined through the cylinder wall and emerge through the exhaust ports. They are fed from four flutes machined in the wall of the crankcase casting.

At extra cost, the Mk. IV can be supplied with a hard-chromed cylinder and, as with previous models, it is also obtainable in a 'works-tuned' version at extra cost. The same work can also be carried out on customers' own standard engines. Tuning consists, primarily, of modifications to the transfer and crankshaft porting, plus piston lightening and may add 10 percent or more to the peak b.h.p. of the engine. The Mk. IV shown dismantled in the 'parts' photo is, in fact, a works-tuned unit, but our tests were actually carried out on a standard version with chromed cylinder fitted.

Performance

Oliver Tigers have always been easy to start and the Mk. IV submitted for test was no exception. No port priming was necessary. We simply choked the intake sufficiently to draw fuel through the needle-valve and the engine then started within a couple of flicks of the prop when compression setting was right. This ease of starting was maintained almost irrespective of prop size. Only when prop diameter was reduced to less than 8 inches did starting deteriorate (the lack of 'flywheel action' in a 7 x 4, for example, causing the usual 'bitten' finger) but such sizes are below those used in practice and would cause the engine to run up to speeds above its peak in the air, and thereby lose power.



SPECIFICATION

Type: Single-cylinder, aircooled compression-ignition two-stroke with shaft rotary-valve induction and twin ball-bearings.
Bore: 0.552 in. **Stroke:** 0.625 in.
Swept Volume: 0.1496 cu. in.—2.452 c.c.
Stroke/Bore Ratio: 1.128:1
Weight: 6 oz. (less exhaust collector)

General Structural Data

Crankcase/bearing housing casting of LM.4 aluminium alloy, extensively machined, Counterbalanced *crankshaft* of EN.36 65 ton nickel-chromium steel with 3/8 in. diameter main journal, 7/32 in. bore gas passage and 13/64 in. diameter crankpin and supported in one Hoffmann 3/8 in. i.d. x 7/8 in. o.d. x 7/32 in. ball journal bearing (rear) and one RMB 1/2 in. i.d. x 3/8 in. o.d. x 5 mm. ball journal bearing (front). Hardened, ground, lapped and honed *cylinder* of EN.32 steel. Meehanite cast-iron piston with pressed-in 11/64 in. dia. tubular *gudgeon-pin*. Machined RR.56 high-duty aluminium alloy *connecting-rod* with bronze bushed small end. Machined Hiduminium alloy finned *cylinder jacket* and screw-in *crankcase backplate*. Machined alloy *prop driver* mounted on shaft via steel split taper collet. Sleeve nut type propeller fitting. Screw-in machined carburettor venturi with brass spraybar type needle-valve assembly, reversible for left or right hand control. Beam mounting lugs.

OPTIONAL EXTRAS

Diamond-lapped hard-chrome-plated cylinder. (£1 4s. 5d.)
 Single outlet exhaust collector-ring. (12s. 8d.)
 Works tuning modifications. (£2 11s. 10d.)

TEST CONDITIONS

Test Engine: standard model but with chromed cylinder. No exhaust collector.

Running time prior to test: Approx. 2 hours.

Fuel used: 47 per cent Kerosene, 30 per cent ICI Technical Ether, 20 per cent Duckham's Racing Castor-oil, 3 per cent amyl-nitrate.

Air Temperature: 42 deg.F.

Barometer: 29.9 in.Hg. **Silencer:** Nil.

A performance test on an Oliver Tiger seems almost superfluous as its standing among contest flyers is obviously well known, especially as regards modified engines. However, even the best engines, Tiger included, vary from one example to another, so it was interesting to have the opportunity of checking out this non-modified engine.

As one might expect, torque reached a notably high figure: 28.5 oz. in., equivalent to a brake mean effective pressure of 74 lb./sq. in., at around the 7,000 r.p.m. mark. Torque fell off only very gradually as load was reduced and the peak was realised at between 15,500 and 16,000 where a figure of nearly 0.36 b.h.p. was determined. Typical prop r.p.m. recorded included 10,400 on a 10 x 3 1/2 Top-Flite wood, 10,350 on a 9 x 5 Top-Flite wood, 11,600 on a 9 x 4 Keilcraft nylon, 11,900 on an 8 x 6 P.A.W. Trucut, 13,800 on an 8 x 4 Top-Flite nylon and 15,300 on an 8 x 4 P.A.W. Trucut wood.

A tendency we have encountered with previous models at around 13,000 to 14,000 for the engine to spit as it warmed up and make adjustment somewhat critical was also detected with the Mk. 4, but this disappeared and the engine smoothed out again as load was further reduced and revs rose above 15,000. The running qualities of the Tiger were, in fact, beyond reproach in all other respects and the engine had those delightfully free-running characteristics (hard to put into words more adequately) that set apart a really well made and perfectly fitted diesel from its lesser companions.

Since the introduction of the original Tiger engines, the standards of many other manufacturers have risen, yet the Oliver still remains unsurpassed in all round excellence of construction and finish. A really first-class product.

Power/Weight Ratio (as tested): 0.95 b.h.p./lb.

Specific Output (as tested); 144 b.h.p./litre.

Engine parts shown here are actually those of works tuned model. Parts are same as for standard model and are simply reworked to improve gas flow and reduce reciprocating weight. Heading photo shows engine with exhaust collector ring fitted.



Dear Sir,

I started aeromodelling about three years ago and have built a *Veron Cardinal* On Meir airfield, I lost it after a long steady flight in tight circles. After searching through undergrowth six feet high for about two hours I found no trace of it, so as it was getting late in the evening I left it and returned to the airfield on the next night. I found it in a field, with cattle in it, who had broken the wings and eaten most of the tissue away. As it is rather difficult to carry the *Cardinal* on a bus, which is the only way to get to the airfield for me, I repaired it and made the wing in two halves which are bolted together with 10 BA bolts, at the airfield. I put two layers of tissue on the wings which resulted in them being as strong as nylon. The last time I flew the *Cardinal* was on a Sunday afternoon about two weeks ago and this time I managed to get about twenty flights before it pranged into the runway. After about a dozen attempts I managed to get it to take-off from the runway, landing on the runway. There is a lot of multi channel radio flying at Meir, as well as single channel and control line flying. I was there with a *Keil Kraft Joker* with a 1 c.c. Frog 100, the same engine which I use in my *Cardinal*. The *Joker* was a very fast and aerobatic model with that engine and after about twenty attempts with the maximum duration of two laps and the model zooming all over the sky, I gave it up and built a simple trainer model which I have not tried yet. Recently I bought a secondhand 049 glow plug engine which I intend to put in *Grasshopper*, a 24 in. span biplane featured in the November '64 issue of *Aeromodeller*. I think *Aeromodeller* is a very informative and interesting magazine and I have been reading it regularly for about two years now.

Stoke-on-Trent Alan Whetton

Dear Sir,

I have just received a PAW 1.49 and it says that you should mix your own fuel and my mother and father will not let me do this and not only that, I can't even get the different things that you need, because nowhere I know sells it. Could you tell me what ready mixed fuel is the best for my PAW.

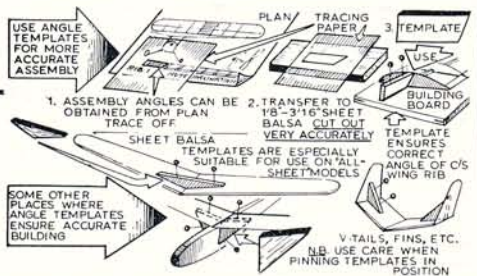
Elm Park, Hornchurch Stephen Walker

We can understand your parent's concern but perhaps they did not appreciate that you are endeavouring to economise by mixing your own fuel. There is some danger in the handling of many diesel fuel constituents, particularly Ether and the additives Amyl Nitrate or Nitrite.

Diesel fuel constituents can normally be ordered through any dispensing Chemist, apart from the lubricating oil and paraffin.

There are several commercial fuels which would suit your engine. We do not have any particular recommendation since preference for any one brand would be based on personal opinion only, and could be likened

Why not join this grand junior Aeromodelling Club?



TIP OF THE MONTH

A Matter of Alignment

Balsa cement is an excellent adhesive, but it does tend to pull fins, ribs, sheet wings, etc., out of true as it dries — often despite pinning. The answer is quite simple — use assembly templates. The correct assembly angles between a wing panel and fuselage, between a tailplane and fin (or fins), etc., can be obtained from the plan. Using these angles a suitable assembly template can be traced on to $\frac{1}{8}$, $\frac{3}{16}$ or $\frac{1}{4}$ in. sheet, and cut out. An important, if obvious, point here is,

you must trace and cut out your template accurately. The use of some assembly templates is clearly shown in the sketches. Other useful ones will readily suggest themselves as you study the plan of the model you are building. Assembly templates make sure that when you leave an assembly to dry, it will dry in the exact position required without being pulled out of true by the contracting action of the cement.

to the competition for popularity among the various washing powders. No one fuel appears to be 'blacker than black' in the exhaust spots it creates!

Dear Sir,

Thank you for my membership to your club. I have been modelling for a year now. I find it an enjoyable hobby. Have you any idea if there are any kits or Complete-a-Pac kits for the control-line *Dusty* cropduster by I. W. Barrett or the *Hush Buggy*. Both plans appeared in *Aeromodeller* but you cannot buy anything in the way of balsa modelling here! No engines, no fuel, no nothing. I send away for all my needs.

Falkland Island W Robson

We have no doubt that Mr. Scott of Complete-a-Pac West High Street, Earlsdon, Berwickshire would make up a kit of parts for you of 'Dusty' bearing in mind your unusual situation. Otherwise you can order a set of materials through most of the mail order houses in this Country. The materials list was not incorporated on the plan which was rather a slip on our part.

Hush Buggy can also be dealt with in a

similar way. We are not surprised that you do not have a Model Shop in the Falkland Island but believe that you have some pretty good tree free flying areas.

Dear Sir,

My friend and I, being Golden Wingers wondered if embroidered badges could be obtained as I am sure they would appeal to a few more members. Could you also give us a price if they are obtainable.

My friend and I are trying very hard to get a club going in Huntly but so far there are only three of us.

If anyone would like to have a pen-pal I am sure we could oblige by writing to anyone who would be interested. We are both 15 years old. The addresses are: Mervyn Rosier, Roslyn, Victoria Road, Huntly, Aberdeenshire and John Mann, Claremont, Gladstone Road, Huntly, Aberdeenshire. Huntly, Aberdeenshire Mervyn Rosier

Sorry lads! We regret that we do not have embroidered badges. It's a little outside our normal sphere to offer anything other than lapel badges and transfers to Golden Wingers.

Dear John Bridge,

I am between 10 & 16 years of age and would like to become a member of the "Golden Wings Club". With this application I enclose postal order (International Money Order) for 2/6d. to cover cost of the enamel club badge, two coloured transfers and membership card.

NAME IN FULL

ADDRESS

YEAR OF BIRTH SCHOOL

NAME OF ANY OTHER CLUB OR CLUBS TO WHICH I

BELONG (if any)

SEND TO:- GOLDEN WINGS CLUB, AEROMODELLER, 13-35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS

Your Free Plan!



Aeromacchi-Lockheed 'Santa Maria'

**Semi-scale model of 35 inch wingspan
for 0.8 cc engines and single channel radio
control introduced by David Boddington**

WHEN a free flight profile model of the 'Santa Maria' appeared as a full size plan in the August 1963 issue of the *AEROMODELLER* I made a mental note to make an R/C version of it one day. It took me nearly four years to get around to producing the plans but when the prototype, made by David Toyer flew, I knew the wait was worthwhile. The Santa Maria makes an attractive and compact model with ample fuselage area for any radio installations although the Mono Pack featured in January *AEROMODELLER* is recommended for it. In spite of the ample width of the fuselage on the model it is in fact, still over an $\frac{1}{2}$ in. less than scale! The tailplane area and dihedral angle of the wings are also non-scale but it is suggested that these, as shown on the plan, are adhered to in the interests of achieving an easy to fly stable model. This design is *not* intended for the scale purist but for the sports flyer who likes a simple to build model with the appearance of a full size aircraft. The Santa Maria is also tough enough to cope with the week-end button pusher without too much experience.

Construction

Cut out *all* parts before commencing construction and check for accuracy against the plan. PVA white glue can be used for all parts of the construction and, although it takes longer to dry, is generally superior in strength to balsa cement, particularly where hardwood or plywood is being used. Brief notes only on construction are given here as the model is quite straightforward and should present no difficulties to the modeller of any experience. It is not recommended as an *absolute* beginners model.

Cut out the fuselage sides and mark on the positions of doublers, formers, longerons and uprights (one left hand and one right hand side). Glue in position the doublers, longerons and uprights and leave to dry. Add the formers F2 with U/C leg fixed, F3 and 4, noting the angle of F2 to provide engine side and down thrust. When set add formers F1 and F5 and block balsa at the rear of the fuselage. The main undercarriage wire should be sewn and glued to the $\frac{1}{8}$ in. ply, plate before

being fixed to the underside of the fuselage, make sure that this plate is well glued to the fuselage sides and doublers. After the top and bottom sheeting has been completed the corners of the fuselage rear and underside can be slightly rounded off and the cabin front and nose shaped as shown on the plan.

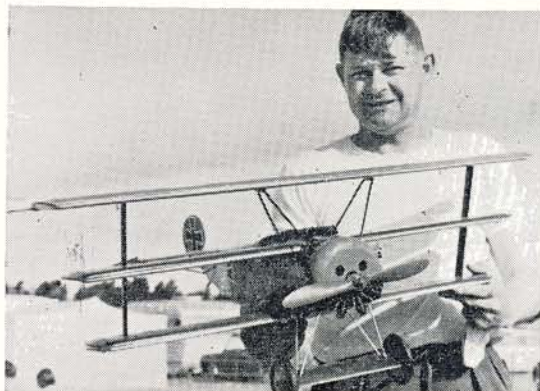
Notch the port wing trailing edge and pin down with the lower spar. Cement ribs in place. Add leading edge. Fit dihedral brace and top spar. Add rough shaped tip block and remove from plan. The starboard panel is built over remaining plan. While the panel is still pinned in place, join halves by brace. Add centre section sheeting.

Tail Surfaces are of simple basic construction, the rudder should not be hinged to the fin until the completion of decorating and fuel proofing, etc. to obtain as free an action as possible. The trim tab is hinged with aluminium strip or soft wire.

For maximum strength and durability the model is best covered with lightweight nylon or silk and this is to be recommended. Try to keep the weight of the decoration to a reasonable minimum, a useful tip here is to use Humbrol *Matt* enamel, followed by fuel proofer. The matt enamels have more covering power due to a lighter pigment content than the gloss enamels and most models require a fuel proof finish anyway. Always be liberal with the proofer in the engine bay area.

Before attempting any test flights, check that the radio is operating 100 per cent (not 98 per cent or 99 per cent correctly; but 100 per cent); that all the linkages are free from binding; that the balance point is correct and the engine is running smoothly. First flights can be attempted with the propeller fitted *backwards* to reduce the thrust of the engine, this is a safer way than by reducing the revs. with the needle valve when the engine setting may vary. The 'Santa Maria' makes a stable model, reasonably fast flying and able to cope with moderate winds and quite responsive to rudder.

Good flying and lots of luck - you did remember to wind the escapement rubber didn't you - *and* put your name and address on the model?

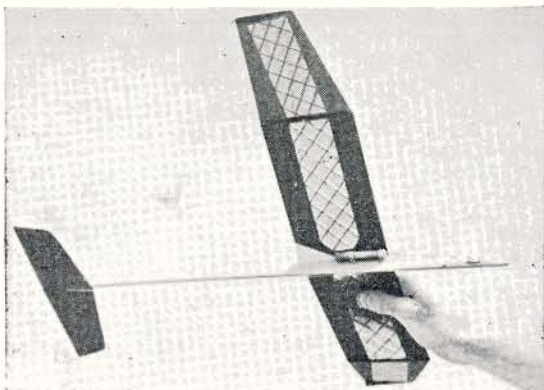


DECEMBER 27 to a lot of people meant indigestion after Xmas Day, but to 121 entrants signified the commencement of the Nationals in New Zealand. Held at the Rangiora A & P Showgrounds, a few miles from Kaiapoi, first views of the site appeared bleak, but on settling in it was immediately apparent that the Kaiapoi Club members had gone to a lot of time, trouble and expense to ensure that everyone enjoyed their stay in the South Island.

The first day was allotted to arrival and registration of competitors and during the evening a contestants meeting was held, during which various points and queries were clarified.

The flying site was a marvellous area of hundreds of acres of flat paddocks which stretched *forever* into the distance and more than compensated for the 13 miles of travel, both ways, necessary each day, in order to reach it. Quite a few entrants were completely entranced, having never seen such a vast expanse of flat ground before!

The morning of Thursday, 28 December dawned to find an overcast sky with a light drizzle with an Easterly wind. Sharp at 5.30 a.m. the Nordic A/2 contests commenced, but few modellers made official flights, in the hope that conditions would improve, but, in actual fact this weather remained with us till after the third round. During the contest the conditions were hampered by a wind gradient which tended to lull quite a lot of flyers into the trap of thinking they had lift with the results that quite a few were let down rather sharply. In round one only two maxes were scored which were indicative of the conditions, considering there were 40 entries. Round two saw only one max, but in round three the conditions improved slightly to bring 3 maxes of which Frank Postlethwaite of Christchurch, had two. In round four conditions improved rapidly and models were being lifted away in maxes all the time. At this stage Paul Lagan of Chch. nosed his way in front of fellow clubman F. Postlethwaite, so of course quite a few breaths were held when round five commenced. During this round I saw one modeller tow into lift to be immediately followed into the same bubble by no fewer than eight other models.



Reported by J. Malkin
Photographs by R. Ives

D. Dunn's Fokker DR1 Triplane with O.S 35 is 36 ins span, weighs 2½ lbs. for control-line, looks impressive.

1. P. Lagan	Chch.	820
2. F. Postlethwaite	Chch.	784
3. P. Clark	P.N.	757

On another part of this vast paddock Class A Radio (Rudder only) was being flown and it was quite a pleasure to see at last some really recognizable patterns. Perhaps my comments in last year's report got home to these modellers. Unluckiest man in my opinion was Graham Brown of Nelson, who flew an immaculate pattern with all of his manoeuvres, barring the spirals, below 50 ft. altitude. Graham couldn't get his model to take off and this was lucky for a few as it made the difference between winning and placing fourth.

1. C. G. Truman	Auckland Radio Modellers	566½ pts.
2. G. B. Roots	Wellington	552
3. A. I. McDonald	Chch.	551

During the day Aerobatics were being flown back at Camp and once again the regulars came out on top. The winner, Dennis Tristram of Papatoetoe, put on an exhibition for the spectators, and if his judged flight was as good, then it was obvious why he placed first. Dennis flew his U.2 which he had modified slightly, due to an unintentional arrival on the ground a few weeks before the Nationals.

1. D. Tristram	Papa.	1081 pts.
2. P. Wheeler	Kaiapoi.	948
3. P. Lagan	Chch.	798

Throughout the afternoon Class 1 (2.5 c.c.) Speed was flown and this event was a Super Tigre G.15 benefit. Peter Clark of P.N. was one of the first to fly and he quickly got his model going and set a new N.Z. record of 130.4 mph. only to have this taken off him by P. Lagan, whose monoline model sizzled round at 133.3 mph. Either Paul had not flown monoline very much before or else he could not achieve a decent type of trot around the pylon, because at one time I thought he was going to find his legs out horizontal.

1. P. Lagan	Chch.	133.3 mph
2. P. Clark	P.N.	130.4
3. P. Staples	Wanganui	125.9

Class IV (10 c.c.) Speed was also flown during the afternoon and obviously this event is now only being used as a points getting event, as only 5 recorded times and even the fastest was unimpressive. Unluckiest man in this event must be Steve Townley of Tamaki, who used all his allotted time and immediately after flew again to record 128.6. Results:

1. G. Nally	Sthland.	115.4 mph
2. D. McAnelly	Sthland.	109.1
3. S. Townley	Tamaki	107.8

Class B Radio (Rudder and Elevator with Motor) was flown out at Eyreton (THE Flying Field) during the afternoon and the majority of flyers used their Propo. rigs in models utilizing only three controls. The first two placings flew very well as the results show, but the others were very mediocre. Results:

1. M. Kendrick	Wanganui	875 pts.
	(Micro Avionics Merco 49)	
2. C. G. Truman	Auck. R.M.	828
	(Citizenship gear O.S.58)	
3. H. Richardson	Palm. Nth.	588
	(Micro Avionics Merco 35)	

Paul Lagan's 'chuck' glider is 24 ins span, Elmic timer used for d/t by dropping weight. Note built up surface, total weight is 1¼ ozs. Hoerner tips on wing.

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Only 11 contestants flew in **FAI Power** on Friday morning and though the day was fine the wind was blowing approx. 15 mph with once again a gradient making maxes long retrieves. Quite a few models were using auto rudders but only one (Lagan) was using auto stab and rudder. Lagan's G.15 model was climbing extremely well and his height gain over the others was really noticeable. Graham Brown of Nelson, was flying a ST powered Pulteri which was flying very well and, but for a lost model, and a damaged reserve, would have won the contest, but had to suffice with second equal, flying virtually only four rounds as he attempted to patch up his reserve for the fifth round only to have it wind in for a 6 sec. flight. Results:

1. P. Lagan	Chch.	787 pts.
2. M. Stringer	Auck.	713
2. G. Brown	Nelson	713

The first round of **Radio Control Class C (Multi)** was also flown this morning and here again it was apparent that the N.Z. team members of the Australian trip, had learnt a good deal from our Australian neighbours. They were presenting their patterns in the best place for the judge and although their patterns were not as good as other years, I think the reason would be that they had been flying the old FAI pattern all year. Of the nine that flew only one used reeds, namely Sonntag, of Dunedin, who though placing 7th did very well against all the Propo opposition. First Round Results:

1. M. Kendrick	Wanga	332 pts. Mic.Av.
2. N. Dawson	Wgntn.	299
3. P. Cavanagh	Gore	271

Flown concurrently with **FAI Power and Radio was Free Flight Scale** and it was unfortunate that the wind was blowing as some of the models owed their demise to the conditions. Very few new models were present this year, the majority being at least one year old, and one I saw was built 17 years ago! Brian Stannish of Auckland was airing his BE2A this year for his second time and after his frustrations of last year, was extremely pleased to come out on tops. Results:

1. B. Stannish	Auck.	BE2A	1984 pts.
2. N. Morris	Auck.	Piper Super Cruiser	1625
3. A. Graves	Ham.	Hanriot HD1	1199

During the afternoon **1/4 A Team Race** was flown and the majority of these were quite slow but the final looked as though it could be quite exciting till Gavin Titmus of Chch. was accidentally hit by Williams of Rotorua's model. Bill Long of Chch. whose Tiger Cub powered model was well pitted won this event after something of an anti-climax. Results:

1. W. Long	Chch.	5:39.3
2. G. Titmus	Chch.	98 Laps
3. C. Williams	Rotorua	83 "

In the evening **Indoor Hand Launch Glider** was flown in Cowles Stadium which has a ceiling of 38 ft. but some 8 ft. of this was cluttered up with lights and only the consistent throwers were able to utilize the full height. With 26 entered it was apparent that some control was necessary, and so the evening was broken up into 15 min. segments, being 12 segments in all with 6 for official and 6 for test flying. Right from the start it was obvious that some good times would be recorded. Russell Leong was throwing his 'Sweepette' (this was a Sweepette benefit) extremely well. Paul Lagan was also throwing a Sweepette which I suspected was lighter than Leong's and though both were greasing the ceiling it was the weight penalty that beat Russell. Results:

1. P. Lagan	Chch.	33.3 (One flight)
2. R. Leong	Hamilton	32.4
3. C. Stace	Chch.	30.2

Saturday's scheduled events were **Wakefield, H/L Glider**, the second round of **R/C Multi** in the morning, and during the afternoon **C/L Combat** and **Class III (5 c.c.) Speed**.

For Wakefield the weather commenced with an extensive area of mist which lifted after an hour and brought beautiful weather with lots of lift, and of course, with the ups, lots of downs. This contest was one of the best I have flown in for some time as during the whole contest nobody was ever in a commanding lead, and positions changed virtually every flight. Sixteen entrants made for a somewhat relaxing contest to the organisers, but proved very nerve-racking to the majority of top fliers. Highest climbing model was Brian Root's



Hoppy Richardson, one of the N.Z. team that recently went to the international event in Australia, still carries sponsor's name on Taurus wing. Placed 4th, uses ST 56, Micro Avionics R/C.

'Miser' with a 16 strand motor which really impressed everyone on his last flight as he launched into a real solid thermal and when his prop folded, was close to 800 ft. up. Winner Ron Magill of Auckland, must consider himself fortunate as on his last flight he launched into sinking air and was only up 50 ft. when his model hit lift which was triggered off by a small belt of trees and he soared away for a max. Fourth place entrant G. Speedie of Wgntn. should have placed 2nd but for an error caused, I think, by contest nerves, he used a 12 strand motor instead of a 14 strand in the last round. Results:

1. R. Magill	Auck.	870
2. J. Malkin	Wgntn.	830
3. G. B. Roots	Wgntn.	815

In **Hand Launch Glider** quite a lot of maxes were put in early in the morning as the mist was rising but after that the thermals were quite big and violent, causing quite a few spin-ins. A lot of modellers were using dethermalisers on their models, which shows the state of the art in this country. Results:

1. R. Magill	Auck.	371
2. P. Lagan	Chch.	365
3. M. Stringer	Auck.	327

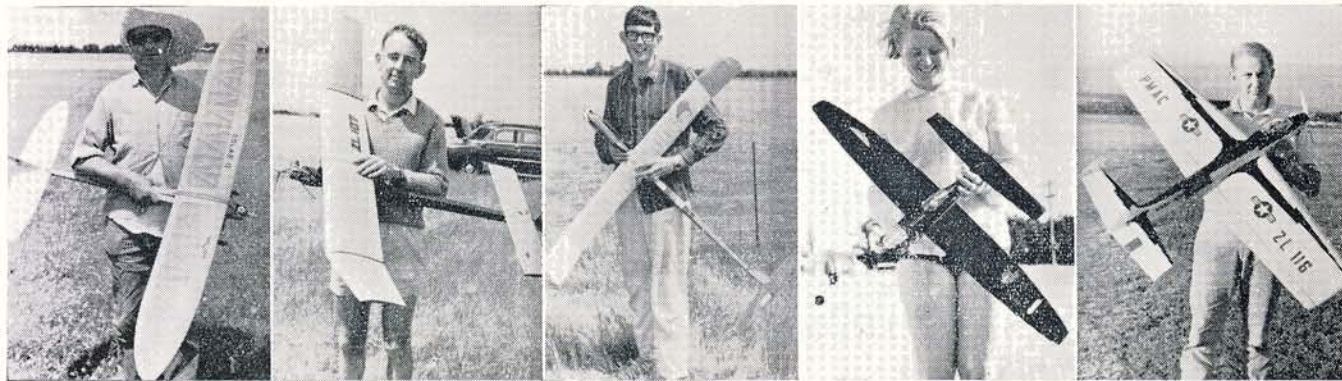
The second round of **Class C Radio** was also flown this morning and even though the flights looked good, virtually everyone scored less points than in the first round, with the exception of Mike Kendrick.

After the contest proper, Kendrick and Dawson put on a flying display for the crowd and during some formation aerobatics one model drifted into the other model making some expensive noises. The net result was that Dawson arrived back on the ground far quicker than he intended and totalled his model whilst Kendrick came off best with just a lost wingtip. Results:

1. M. Kendrick	Wang.	660 pts. Total
2. N. Dawson	Wgntn.	644
3. R. Cavanagh	Gore	554



Modified 'Early Bird' with Veco 19 and Top Flite 7 x 6 held by Combat winner C. Allen with his crew, happy after victory.



Left to Right: G. Roots, 2nd PAAload, Cox TD .09 54 in. "Solar" weighs 12 oz; Paul Lagan Nats Champ and ST. G15 "18 Tons" 64 in Open Power winner; Centre is Ron Magill and Wakefield "Backmarker" won its class; Diana Long holds Hubble's "B" Racer with oversize Eta 15, right is stunt winner Den Tristram an APS "U-2" with O.S. Max 35, 10 x 6 prop, weighs 55 oz.

The afternoon saw **Combat** and **C/L Speed 111 (5 c.c.)** flown and in 5 c.c. speed, which is a very popular event, there seemed to be an abnormal number of crashes etc. with the result that only three recorded speeds. In combat the wind proved to be the best eliminator but when two good jousters did fly they seemed very chary to exhibit their prowess, preferring instead to chase each other round in straight and level with just the odd sortie, to have a nibble at the other's streamer. Results:

Combat	1. C. Allen	New Plymouth	
	2. P. Lethbridge	Hamilton	
Class III Speed	1. P. Staples	Wang	137.4 mph
	2. P. Clark	P.N.	126.8
	3. G. Nally	Southland	95.2

Microfilm Class B (Easy B) and D (Open) were flown at Cowles Stadium during the evening and though entries were low it was pleasing to see more juniors participating. Results:

Class B	1. P. Lagan	Chch.	4:41
	2. A. MacDonald	Auck.	4:01
	3. B. Keegan	Auck.	3:41
Class D	1. B. Keegan	Auck.	8:36
	2. P. Lagan	Chch.	4:49
	3. A. Graves	Hamilton	3:13

Sunday, 31 December was devoted to **Class A Power (Open)** and **Payload**, and in Open Power some very potent machines were evident and it looked like a fly-off would be necessary but the last flights of quite a few were upset by the Easterly wind which was blowing approx. 15-20 mph.

Paul Lagan had taken the ballast out of his FAI Power model and on 10 secs, was getting a terrific height and he recorded the only perfect score. Results:

1. P. Lagan	Chch.	540
2. C. Duthie	Chch.	479
3. P. Clark	P.N.	475

Payload saw the usual number of 049 size models together with a smattering of 09 to 15 size models, but Graham Brown, who was flying a .15 powered O/D made up for his 2nd place in FAI Power by showing a clean pair of heels to the other competitors. During these two events it was surprising the number of motor over-runs that occurred and from what I saw I should say that the majority of flyers don't believe in cleaning their timers. Results:

1. G. Brown	Nelson	506
2. B. Keegan	Auck.	471
3. G. B. Roots	Wgntn.	461

The afternoon saw the introduction of **FAI Class Team Racing** and it was obvious who had flown this event and who hadn't. It was unfortunate that a few modellers came to these Nationals apparently with the sole idea of trying to prove that this class is no good for NZ and as a consequence these people had condemned the event before even giving it a serious try. As a marshal in this event I would say that this would be the safest Team Race Class ever and all the run-ins etc. were only due to bad technique, by the crews. The Kaiapoi Club who had flown this event all through the year showed the way home, and in my opinion deserved their placings. Results:

1. W. Forbes	Kaiapoi	11:46.8
2. W. Buckingham	Kaiapoi	50 Laps
3. D. Broome	Kaiapoi	10 Laps

Flown concurrently with FAI T/R was **Speed Class V (Jet)** but unfortunately the ground was too rough for the majority of flyers and only Phil Staples of Wanganui managed to get off. His time of 139.5 equalled his own NZ record.

Control Line Scale was flown immediately after FAI and there were 12 entries, but some unfortunately didn't have sufficient power to make an official flight. Winner Mike Kingsbury of Ashburton, flew his Piper Pawnee extremely well as he did in the last Kaiapoi Nats. Noel Maurice was flying a nicely built Hurricane which made quite a good flight

but not up to the Pawnees flight. Noel Hewitson was flying his vintage Gulfhawk which he built some 16 years ago but still was good enough to displace some of the other more recent machines. Results:

1. M. Kingsbury	Ashburton	617 Piper Pawnee
2. N. Maurice	Auck.	474 Hawker Hurricane
3. N. Hewitson	Auck.	427 Gruman Gulfhawk

In the evening **1/2 hour Aggregate** was flown and the weather was absolutely perfect, and when the DC yelled 'Go' the sight of 29 models boring off all over the place was quite something. All during the half hour, it was amazing to see the models careering everywhere, with only one mid-air collision. The winner used a machine that had homing pigeon instincts, as it returned back to its take-off point virtually every flight. Colin Duthie of Chch. established a new New Zealand record for this event and such were the conditions that the top four placings all broke the existing record. Results:

1. C. Duthie	Chch.	1199 secs.
2. P. Wheeler	Kaiapoi	1198
3. D. Simon	Wgntn.	1189

Nordic A/I was flown on Monday, January 1 and on arrival at the flying site it was observed that a Nor'wester could be expected. This is an easy observation to make, as when a Nor'wester blows it normally forms a great Lenticular cloud (known locally as the North West Arch) formed from the Southern Alps, which are approx. 60 miles away. With these conditions expected, it was decided to throw the rounds open, but before the Nor'wester really asserted itself we had two patches of calm weather following two southerly line squalls which appeared from nowhere. Most modellers were utilising the Jedelsky wing design which performs so well, and Paul Lagan really deserved his win. It was a pleasure to watch somebody tow and hold the model on the line waiting for lift. Because of the forecast conditions, most modellers rushed through their flights quickly with the result that quite a few put up poor times because of the early wind conditions. Geoff Hardwick of Ashburton was unfortunate to have one really bad flight, otherwise the placings could well have been reversed. Results:

1. P. Lagan	Chch.	712 secs.
2. G. Hardwick	Ash.	699
3. M. Stringer	Auck.	553

In the afternoon **Class II (3.5 c.c.) Speed** and **Class B Team Race (5 c.c.)** were flown and in Class 11 Speed Paul Lagan set a NZ record using a Super Tigre G.15/19 which was really on tune.

Class B Team Race had some very good heats with the OS.29H ousting the Etas from the top placings. All the finalists had models doing the 'Tun' and Phil Staples of Wanganui having the quickest at about 127 mph, but he suffered a line failure which though causing no injury, wrote the model off. Results:

Class B	1. W. Buckingham	Southland	6:48.8
	2. D. McAnelly	Southland	9:54.8
	3. P. Staples	Wanganui	115 laps
Class 11	1. P. Lagan	Chch.	138.7 mph
	2. P. Staples	Wang.	128.6
	3. P. Clark	Palm. N.	125.0

The Prizegiving concluded this Nationals with the Mayor of Kaiapoi presenting the 'Loot' and the various Champions were announced. To all those who read this report, locally or overseas, I would extend a cordial invitation to visit us and see what a real 'down under' Nationals is like.



A fine scale control-line
design for 2.5 cc.-5 cc. engines

SAAB 'Safir'

designed by Hoh Fang chiun

FEW SINGLE-ENGINE airplanes with tricycle undercarriage have been converted to control line scale models. In view of this I decided to scale down and build such a model. Having made the earlier Saab 91B Safir some years ago, I had confidence in this type's performance. Therefore, when the civil version of the Saab Safir, the 91C, appeared, I designed a control-liner to fit the Oliver Tiger 2.5 cc. motor (See test in this issue - ED.)

In order to reproduce the aeroplane as accurately as possible, I obtained a detailed 3-view drawing and photos of the airplane as well as data concerning its full colour scheme directly from the Saab Aircraft Company.

Although designed primarily for a 2.5 cc. size engine, the model would take any power up to 5.0 cc. The large nose provides ample space for any engine available on the market. Also, the huge cockpit would certainly accommodate any type of speed-control device. The model spans 37 inches and its overall length is 27 inches. Its wing area is approximately 170 square inches and the prototype has an all-up weight of 28 ounces.

The most enjoyable part of flying a control-line model with tricycle undercarriage comes with the take-off

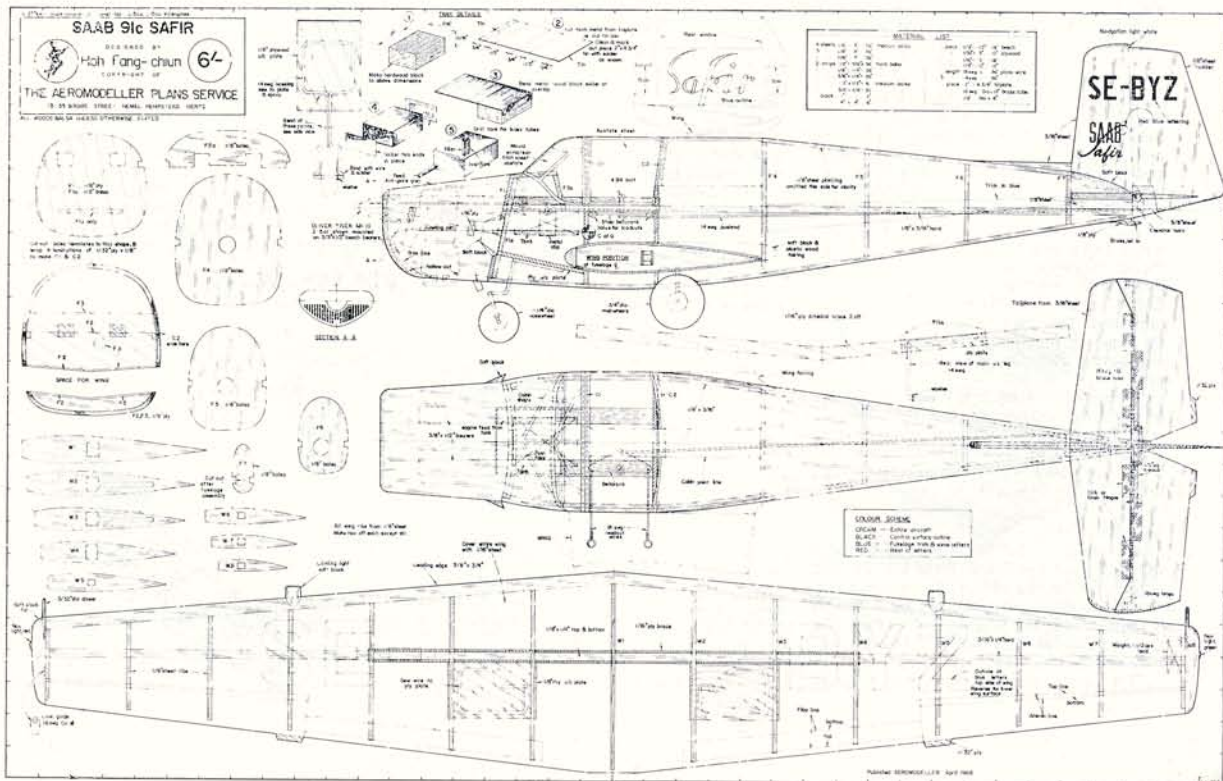
and this model is no exception. Unlike models with the conventional two-wheel landing gear where take-off runs are usually made within a quarter-of-a-lap, my Safir model requires almost a full half-lap for realistic take-off. Hold the elevator perfectly neutral until the speed has built up, then apply very slight 'up', and the model will rise off the ground smoothly, just like the full-size airplane. Once airborne, it flies very fast and responds readily on elevator.

To simplify the construction without sacrificing the structure of the model, I have used balsa sheet for the entire covering and planking.

Start by making the complete wing first. The fuselage is then assembled around the finished wing. Commencing this by gluing very precisely the formers F2 and F3 onto the centre section of the wing as shown on the plan. Add crutches, the remaining formers and complete the fuselage in usual manner. The engine cowling, which is detachable, is held in place by four wood or sheet metal screws.

Colour scheme of my Safir is basic cream-yellow with blue and red trim and the top of the cowling is in light grey. This follows faithfully the real aeroplane colouring.

FULL SIZE COPIES OF THIS 1/4TH SCALE REPRODUCTION ARE AVAILABLE THROUGH AEROMODELLER PLANS SERVICE AS PLAN CL/966. PRICE 6/- PLUS 6d. POSTAGE. BORDER SCALE REPRESENTS 1 INCH DIVISIONS.





WE ARE now able to include a parts photograph of the new British small capacity diesel first revealed in last month's *Engine News*. If, gentle reader, your recollections go back to the early post-war years of the model diesel, we think you may now understand our earlier remarks about the very traditional appearance of the Embee.

On closer inspection, too, little will be found to suggest that the Embee 75 makes any concessions to current trends in model diesel design and construction. As will be obvious from the photos, the engine is of the 3-port two-stroke type - i.e. the cylinder includes the induction port as well as the exhaust and transfer ports, just like the dear old Mills and, for that matter, the Swiss Dyno, the grandad of them all. It also features an extremely long stroke - cylinder bore is only $\frac{7}{8}$ in. - and porting is similar to that of the Mills.

An unusual feature of the Embee is the timing ring which locates the vertical position of the cylinder in the crankcase. The engine is actually supplied with three of these, each of a different depth (7/64, 1/8 and 9/64 in.). It is fitted with the middle size ring, but the user is invited to try the thinner or thicker rings. Using a thicker ring and thereby raising the cylinder will, of course, lengthen both the exhaust and transfer opening periods, but decreases the induction period, whereas the thinner ring will have exactly the opposite effect. Changing the rings is simply achieved by removing the two screws which pass through the machined alloy cooling jacket and tie the cylinder assembly to the crankcase.

Rather larger than other current engines of similar displacement, the Embee 75 is just under 2½ in. high from crankcase to cylinder-head, 3½ in. long overall and weighs 3 oz. We hope to have an engine for actual test in the near future.

Oliver Notes

Elsewhere in this issue will be found a test report on the Oliver Tiger Mk. IV. The Oliver Tiger is one of the most outstanding model engines ever produced by a British manufacturer, but is one with which the average fly-for-fun modeller, nowadays, may not be too well acquainted.

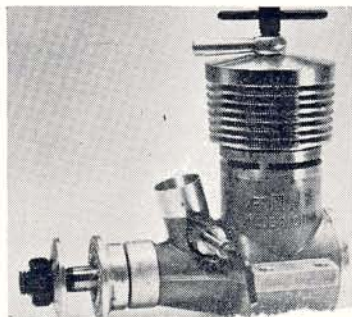
The plain fact is that Oliver engines

cannot be seen at the local model shop and have not been advertised in the model journals for some years. To contest modellers all over the world, however, and especially those who have been concerned with the international free-flight power class or with FAI team-racing, the Oliver name is synonymous with quality and performance. Oliver engines first became known to model aircraft enthusiasts fourteen or fifteen years ago through favourable reports in the model press and through early contest successes and, within a year or so, demand for them was far outstripping the supply. It is much to the credit of the Olivers, John A. and John S. that, at this period, they refused to be panicked into turning out more Tigers than they could comfortably handle and still maintain the high standard that has always been the Oliver watchword. There can be no doubt that they lost many orders in their efforts to be absolutely fair about delivery delays and to take orders in strict rotation only, but they also gained a lot of grateful customers by refusing to compromise on quality. Oliver diesels are, today, still the essentially 'hand built' motors that they have always been, still produced in relatively small numbers and, despite the inroads made by racing glow motors in international free-flight and by other good 2.5 c.c. diesels in team-racing, they still have a faithful following. Currently, Oliver Tigers are, for example, very much the 'in' motor for Class A Combat.

LATEST ENGINE NEWS

from Peter Chinn

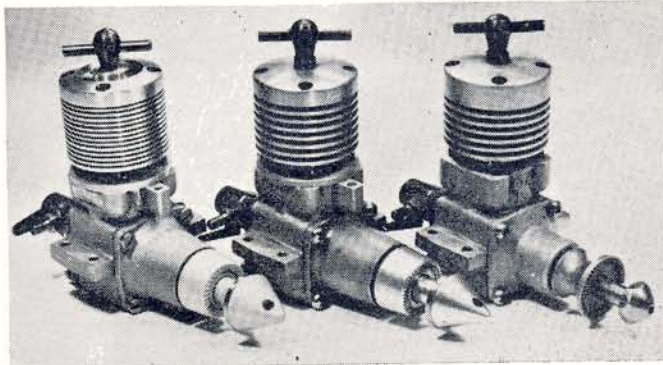
Left: Highly unusual feature of the Embee 75 is the use of spacer rings of different depths to alter port timing. Below: Current version of the Chinese built Silver-Swallow 2.47 c.c. diesel. Engine looks quite attractive with deep gold anodised fins and clean casting.



Oliver engine sales are now on a factory-to-customer basis only and all enquiries should, therefore, be directed to John Oliver Engineering at 'Four Acres', 248 Ringwood Road, Ferndown, Dorset. As mentioned in the Engine Test report, the Tiger Mk IV is obtainable in standard or special versions. Prices, including UK delivery and purchase-tax, start at £73s. 4d. for the standard model without exhaust collector, rising to £11 12s. 3d. for the factory-tuned version with hard-chromed liner and exhaust collector ring. Overseas customers should note that these prices are substantially reduced on export orders on which UK purchase-tax is not payable.

ETA Elite Mk. II

Having dealt with the Oliver Mk. IV, it

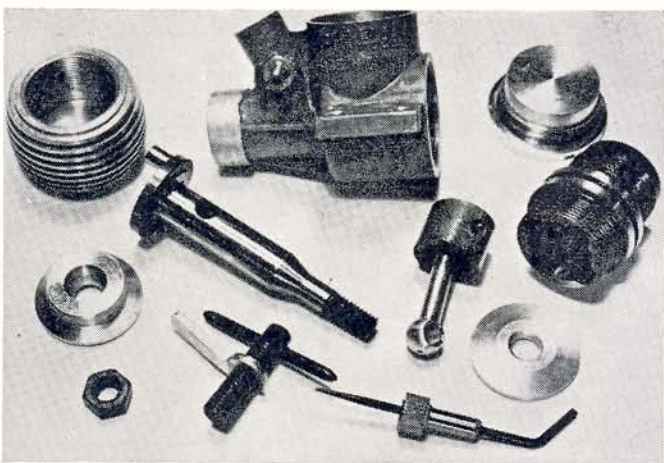


Three of the five Eta 2.5 c.c. competition models that have been produced to date. Right to left: they are a 1960 model of the original Eta 15 Mk. I, 1964-5 Mk. III and 1968 Elite Mk. II.

is only fair to mention that other most notable British 2.5 c.c. competition diesel, the Eta 15, especially as it has recently appeared in a newly revised version, the Elite Mk II.

This is the fifth model in the Eta 15 series since the original 15 Mk. I was introduced just over eight years ago. At that time, Ken Bedford of Eta Instruments Ltd., really set out to achieve a performance that would equal or exceed the best in the 2.5 c.c. diesel class. In due course the Mk. I made its mark in team-racing and in free-flight - one of its early successes in the latter being in the 1960 World Free-Flight Championships where, after that famous 12-round marathon flyoff at Cranfield, two of the five declared joint champion models were Eta powered, in company with an Oliver Tiger, an OS15 and a Super-Tigre G.20. The improved Mk II Eta was announced three years later and within a very short time, became the most widely favoured team racing engine in use anywhere. Its outstanding 1964 international season included the World Team race Championship win at Budapest by Britain's Don Haworth and Dick Place. The Mk. III superseded the Mk. II in the following year, the main difference here being the provision of a new crankcase, designed to take the Eta silencer system.

The first Elite model was announced at the end of 1965 and included several changes, among which were a bigger crankshaft, new bearings and housing and a modified rear induction unit embodying a steel faced backplate and a larger bore carburettor. The new Elite Mk. II takes this several stages further as a result of an intensive six-month development programme completed by Ken



model aircraft motor to be mass-produced in China, was bought in Hong-Kong and came complete with combination spanner, a set of mounting bolts, nuts and spring washers and an instruction leaflet printed in English as well as Chinese.

The Yin-Yan or, to give it its English name, 'Silver Swallow', was an orthodox plain bearing shaft-valve, radial port diesel following established practice. It proved to be as well made as most moderately priced European equivalents and better than some we could name. We put the engine on test where it recorded a maximum torque of just over 22 oz.in. at 8,000 rpm and proved to be



Top: Parts of the Silver Swallow 1.49. Design is orthodox. Engine is supplied complete with combination spanner and mounting bolts.

Right: Silver Swallow 1.49 c.c. diesel. Similar in design to the 2.47 c.c. model but not so well finished externally.

Left: Parts of the Eta Elite Mk. II are well made and fits are quite good.

Below left: The new Eta Elite Mk. II. Note vent holes in head and greatly increased cylinder fin area for extra cooling. Engine incorporates several other improvements.



Bedford at the end of last year. In the course of this programme, it was decided that the real test lay in actual model performance and each stage was therefore accompanied by numerous flying tests.

We shall be describing these developments, with illustrations, in next month's LEN and following up with a full Engine test report.

Silver Swallow 1.5 and 2.5 Diesels

Some five years ago, we acquired our first example of a model engine built in China - Red China that is - in the shape of the 2.47 c.c. 'Yin-Yan' diesel, a product of the Teh-Ming Sports Goods Factory, Shanghai. This engine, understood to be the first

a bit of a vibrator. It delivered a peak output of 0.27 bhp at 14,500 rpm, however, which was not bad.

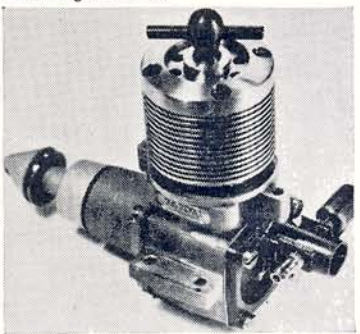
Since that time, the Chinese have produced several more engines including glowplug motors of 2.5, 5 and 10 c.c. and recently, during his trip to Singapore, editor Ron Moulton picked up a couple of more recent Silver Swallows, a 1.49 c.c. model and an improved version of the 2.47 c.c. unit from Balbir's model shop (see directory at back of this issue).

The photos of these two engines and their component parts will give a good idea of their general design and construction. Both are quite conventional. The 2.47 c.c. job shows some improvement on the earlier model as regards finish. The pressure diecast

crankcase is clean and the machine-work quite good. The gas passage through the shaft has been opened up and the induction period considerably extended, which may mean some increase in power.

Both engines use internal flute type transfer porting, that on the 2.47 closely resembling the original (and extensively copied) Webra Mach-1 porting and consists of six flutes immediately below three radial exhaust slits. The 1.5 uses four flutes and four exhaust ports.

The 2.47 retains the familiar 15 x 14 mm. bore and stroke combination for a swept volume of 2.474 c.c. and weighs 4.0 oz. The 1.5 has a bore and stroke of 12.8 x 11.6 mm. and weighs 3.7 oz.



TOPICAL T W \ S T S

by 'Pylonius': illustrated by 'Sherry'

Time Machines

According to a report in a national newspaper, U.F.O. sightings can be attributed to the pranks of playful radio modellers. Whenever a police car finishes up in a ditch or the villagers take to the hills, it's not because of the Martians, the Venusians, or even the Meteorological Office; it's just old Joe Bloggs of the Little Gripping Radio Society having his bit of aeronautical fun.

But this is just layman nonsense - radio models are much too precious to be used in such a frivolous way. And, in any case, they look nothing like flying saucers. In fact, by flying saucers standards most of them have very much of a vintage look. For instance, a recent model design, which I thought to be a sophisticated advance on accepted R/C design, turned out to be a twenty year old F/F model. Thus, the older folk do not so much quake with fear at seeing a radio model as to be overcome with a feeling of wistful nostalgia for the old days when Graham White and Bleriot were household words.

By way of a sidelight it is this vintage appearance which gives them such value in the film world. Those grand old crates of yesteryear, in which the grim-faced heroes go tight lipped into oblivion are not full size mock-ups but radio models doing just what you see them doing every Sunday morning.

Back Britain

It seems, from all reports, that the model engine market is going very much the same way as the motor bike and scooter market. The tank might be British but the Tiger is very much Italiano. And if you're out for world class honours anything with an Anglican name is about as up to date as Brooklands is to the motor racing world.

At least I can claim to have been with it all these years, using up Italian motors by the yard (Pirelli), and looking to the Japanese for a fast finish (tissue).

Plane Jane

I see that the publication, 'Janes All the World's Aircraft', has produced its usual survey of the more rigid form of winged creatures, which is very decent of her. From this we have a feminine reference which is quite intriguing, nothing less than a 'Quant' Russian fighter. No doubt, if the protocol used in the naming of Japanese aircraft, 'Betty' and so on, is to be followed, it will be known as 'Mary'. Odd thing about this is that, in Russia, the mini-skirt never got off the ground.

Aye, Aye, Sir

Novel feature of the Nationals will be the use of a special Aircraft carrier - a take off of the real thing - for C/L flying. As by that time this will be the only carrier in commission, model flyers are reminded that the naval attendants looking after the carrier should correctly be addressed as 'Admiral'.

Bear Facts

A writer in a club mag. suggests that A/2 flying is as obsolete as bear baiting. Now, I agree that bear baiting is out, not so much because of the lack of demand for the sport, but that, in these days of national economy, we must consider the bear cost. But, as far as A/2 flying is concerned, it is not actually obsolete, it is just that, because of tactical flying, it's such ages before the things get launched. As a matter of fact the spectacle of A/2 timekeeper baiting can be enjoyed every Sunday on Chobham Common, thermals permitting.

The same writer refers to Open Rubber as just a glorious Vintage Event. This, however, is not strictly true, as J. O'D no longer flies his original 'Maxie', although it is possible that those competitors who fly in both Vintage and Open events have trouble in deciding which model should fly in which. Currently the Vintage dateline is 1951, and it looks as if it must stay that way, as Open Contest design has not conspicuously changed since 1953. Come to think of it, neither have the fliers. This has a somewhat off-putting effect on the young, would-be contest flier. When he sees all those grey heads bobbing about he imagines the greyness is due to the harrowing nature of competitive life, whereas it is nothing more than jolly old anno domini - daddy-o's getting a bit of youthful uplift.

This is one reason why, in a desperate effort to reduce contest performance, the F.A.I. have put such emphasis on athleticism. To go on after five rounds would require more energy than is obtainable from whatever fortifies the over forties, and that at least puts the oldies out of the running.

One more point. In future when contests are referred to as Vintage, the term will not relate to archaic craft, but to the senility of the competitors.

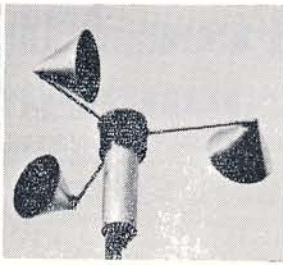
Blush Button Age

We live in the age of the Button. No, I don't mean the one you press or the one you anchor your braces to, but the with-it one you wear. You know, the ones with those saucy little slogans like 'Back! Britain', which the French are reputed to wear.

What about Buttons for model flyers, then? Model type slogans shouldn't be hard to think up. 'Come fly with me' immediately suggests itself, as does, 'Ban the Baz Bomb'. For Rubber flyers you could have, 'Fancy Winding Up Here' and for Glider flyers, 'Tow the Line'.



"It's all that film work he's been doing—gone to his head—or something!"



... too windy to go out flying? Discover the true prospect without leaving the home by installing a roof top wind speed meter

Build yourself a simple

ANEMOMETER

A. C. MacKechnie Jarvis offers a great boon to town-dwellers

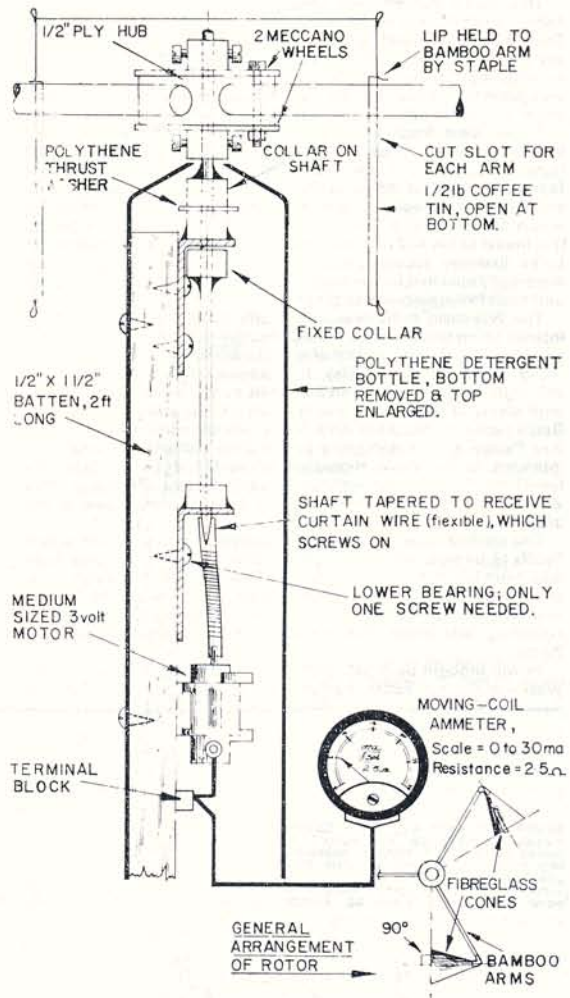
THIS INSTRUMENT uses two readily available electrical components; a three-volt model motor, of medium size, and a moving-coil ammeter, whose scale and resistance in this case are 0 - 30 mA and 2.5 ohms. The motor is directly coupled to the rotor, and the meter is connected in series.

The rotor must be as light as possible; bear in mind that it will rotate and respond more quickly if it is not too large. I used three 10 in. bamboo sticks, about 1 cm. in diameter, to each of which is attached a thin fibreglass cone. These were moulded in a convenient sized (6 in.) plastic funnel. The cones are fixed with a fibreglass fillet onto the bamboo arms. Note that the arm is not perpendicular to the axis of the cone. (See diagram). The hub is a piece of $\frac{1}{2}$ in. ply with holes carefully drilled to take the bamboo rods. I also reinforced this with glass-fibre. Alternatively, the cups could be made from thin aluminium, but the total rotor weight should be kept under eight ounces. A Meccano wheel, screwed above and below the hub, completes the assembly, which should then be balanced accurately. The hub cover is a $\frac{1}{2}$ lb. coffee tin, which is thoroughly painted inside and out. It is retained by forcing a galvanised staple over each arm, and a lip which is formed as in diagram.

The spindle and bearings are Meccano parts; the alignment of the bearings is important, but the flexible shaft to the motor eliminates the need for precision here. Do not forget the two retaining collars which should be adjusted so that the weight is borne by the polythene washer. A plastic detergent bottle covers all the stationary parts. The terminal block must be close to the motor, so that there is no appreciable weight of wire pulling at the soldered motor terminals. Neglect of this point caused one failure on my unit.

After painting thoroughly, the unit on its hardwood strip is now ready for mounting. This should of course be as high as safety will permit. I mounted mine on a ten-foot length of 2 in. x 2 in., which is probably the limit for this timber thickness - vibration being the limiting factor. Remember to use brass screws throughout the construction.

My own unit has operated well over the past year, and approximate performance is as follows: a current of 10 mA is generated for each 20 kt. of wind up to about 50 knots. There is a tendency for the output to fluctuate at low speeds, but this is dependent upon the quality of the motor used.





Gordon Cornell warms up his AM25 diesel before fly-off in Blackheath gala—a rare choice these days.

First contest of 1968 was the Blackheath Gala, held at Chobham on 21st January. As the rubber event was for the 'Bill White' Trophy it is perhaps worth recalling that this contest was once traditionally (1950's) held on the first Sunday in the year, weather notwithstanding.

This year's contest was blessed with ideal flying weather; calm, overcast (and misty) and hardly cold for the time of year. There was consequently a fair entry by present-day standards. Some events were slow to start, especially open rubber and power where entrants were obviously concerned about the low cloud base. This was justified as I found to my cost, when my 'Maxine' was clocked off at 2 minutes odd o.o.s. upwards! Luckily re-entry was allowed.

Glider went much more smoothly. Conditions were right for tactical flying (although the lift was very weak low down) and I joined several well known faces waiting downwind. Even so I failed to centre the model in the third thermal and dropped a few seconds. Surprisingly no-one managed a treble, and runner-up was Al Wisler flying a 'Pelican' to a total of 8:43. Just why he prefers this model to his A/2s I have yet to find out, unless it is because the bulky fuselage accommodates his 'audible location device', an electrically operated buzzer triggered by the D.T. (surely the complete antithesis to the silencer complex!)

The Wakefield event was quite hotly contested with additional interest being generated by the opportunity to 'double up' flights for the Hornchurch Winter Wakefield Marathon (the 6 round event being staged by Bob Wells). Not surprisingly scores were high, although no one managed five maxs in a row. Flying downhill and with plenty of 'good air' it was certainly not the still air contest that Bob's report in 'Northern Area News' would indicate. Winner was Ray Pavely despite damaging in a mid-air collision the model he intended to fly. Dave Hipperson under-D.T.'d (with clockwork timer) one flight — but without affecting his second place. Mike Woodhouse took third despite losing a model somewhere in the undergrowth.

The contest closed early and this allowed the rubber and power flyoffs to be held in leisurely fashion. First away in the rubber flyoff was John Lorimer who contacted the best air of all, only to go o.o.s. at about 5 minutes. He was not pleased as the model did 7½. Top scores were very close with Dave Hipperson starting the year well by collecting first place. Runners-up were John Mabey and Dave Pimm.

Power brought back memories of a few seasons ago when John West and George Fuller regularly vied for top positions. This time

Free Flight comment

BY JOHN O'DONNELL

John won with a TD15 powered model that still looks very much like a 'Dixielander' George's flight, with a somewhat larger derivative with an Eta 29, was terminated by a tree! Third place went to Pete Buskell flying a normal (i.e. FAI) size 'Slick Stick' with an Eta 29 (Seeing Pete's youngsters flying a power model made me realise how long some of us have been in this game!)

Contest programme

Moving from the particular to the general, details are now available regarding the S.M.A.E.'s contest programme. As predicted last month the programme is very much the same as usual. Basically we have six area-centralised meetings, Nationals, Northern and Southern Galas, and two Trials. I am always surprised that the contest ants accept so readily (almost apathetically) this traditional fare. Typical of the disinterest is the continued choice of two different events on the same day for the club and individual f/f championships. Whilst Brighton flew hard and successfully, for the Plugge last year, does anyone know (or care?) who won the individual Junior and Senior awards? When the S.M.A.E. do not consider the results of their own events important enough to publish I wonder why they still stage them.

The 1968 Trials may or may not select the British Teams to compete in the 1969 Championships. The proposals of merely selecting a 'short list' at the Trials (with the final choice to be made later) have not been resolved. Whilst the scheme has advantages I wonder when further selection is practical. There are few suitable centralised meetings in the first half of the year — and a specially staged one is, in effect, a third Trials.

The f/f timetable for the 1968 Nationals at Yeovilton does not strike me as at all logical. Sunday has open rubber and glider (and could feature the late fly offs tried last year and well worth repeating) plus the 'minority' events for the ladies, juniors and the tailless devotees. The restoration of the Lady Shelley to the Nats is certainly a triumph for John Pool whose relentless propaganda is all that has kept tailless interest alive.

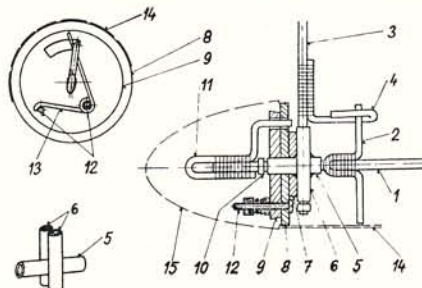
However, Monday which closes early due to travel considerations is comparatively overloaded. There is open and ½A power, plus separate classes for the three FAI categories. As no doubling up is permitted this gives five distinct events, three of them for power models! Rearrangement would surely have been advantageous. Too many conflicting events (and f/f has plenty) only result in the same competitors being spread thinner over more events.

Comment would be incomplete without mention of the increased entry fees (from 2s. 6d. to 5s. 0d.) for 1968. There has been much adverse comment in the news-sheets and many regular participants have said that the contests (especially the area centralised) are not worth the increased charge. I can remember when similar things were said about the increase from one shilling!

The situation is basically simple. The fee is immaterial and can be anything the organisers care to charge provided that it produces adequate returns to participants and winners. If it does not, then no one need be surprised if the 'customers' look elsewhere.

Pre-tensioning

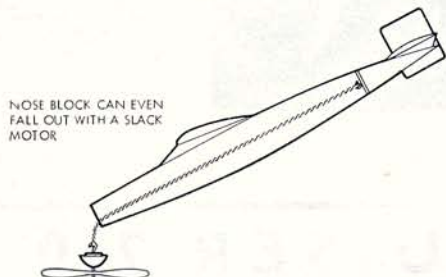
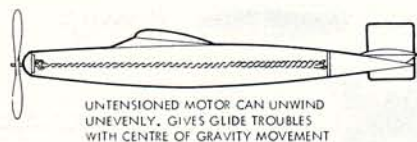
It is now opportune to discuss an aspect of rubber models that the editor assures me is a real problem for many people. This is the mystery which surrounds pre-tensioning.



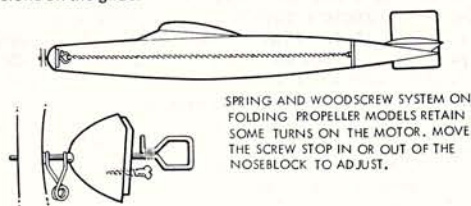
1. 2.5 mm. (12 s.w.g.) Shaft
2. 1.5 mm. (16 s.w.g.) Tee piece
3. 2 mm. (14 s.w.g.) Blade root
4. 1.5 mm. (16 s.w.g.) Torque arm
5. Tube on shaft
6. Tubes for Blade roots (free fit)
- 7/8/9. Spinner backplate
10. Stop washer
11. Winding loop and torque balance peg
- 12/13. Torque balance spring
14. Rear cover
15. Spinner.

Sketch and code Key from Czechoslovakian magazine "Modelar" explains some of the mystery surrounding torque controlled variable Pitch propeller blades for rubber driven models. Wire gauges, lengths of parts 2 and 4 could be critical.

This is a way of accommodating a long rubber motor in a relatively short fuselage *without* problems attendant to the unwound motor distributing itself unevenly inside the model. As such it is characteristic of 'open' models as distinct from the 'restricted' Wakefield and Cd'H classes that have so little rubber that motors are invariably taut between anchorages.

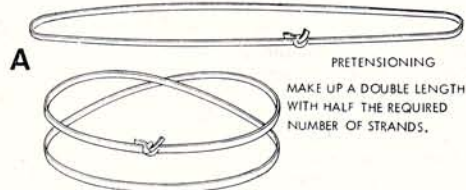


Many rubber designs with folding propellers (using the conventional 'spring and wood screw' stop system) side-step the problem by retaining the final few turns (which provide little or no power) on the motor. This is easily accomplished by suitable adjustment of the stop. A complete row of knots can be expected to be even, but a partial row can be left at either nose or tail with resultant repercussions on the glide.



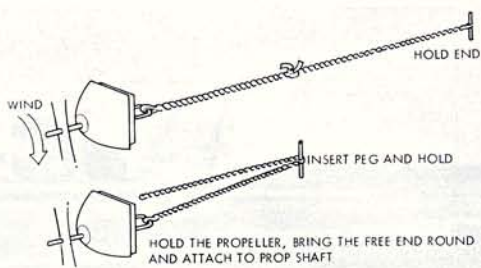
Models with free-wheeling (i.e. all small kit designs), feathering, free-wheel-folding, and some with conventional folding propellers employ pre-tensioned motors. The rubber is plaited, or twisted on itself, so that when unwound it forms a 'rope' in which individual strands (being spirally disposed) are longer than the overall length of the motor. The effective length of the motor, and hence its capacity for withstanding turns, is still effectively the length of the strands. To be pedantic the maximum turns *are* reduced slightly due to the residual turns used to pre-tension.

The easiest method of so treating a motor is to make up a motor of twice the intended length and half the required number of strands (it might not be superfluous to say that a loop is *two* strands).

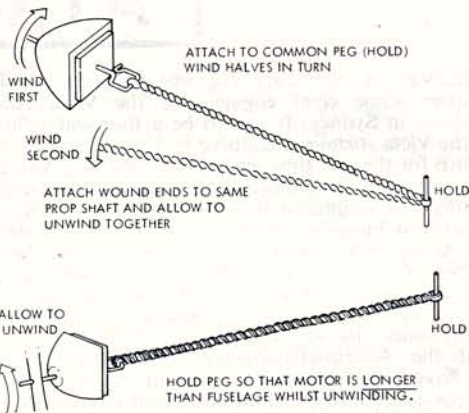
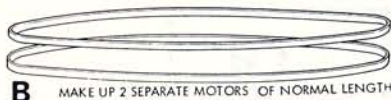


A number of turns is applied to one end of this motor whilst the other is held stationary. The two ends are brought together, attached to a propeller, and allowed to unwind whilst the middle is held. The motor forms itself into a plaited skein.

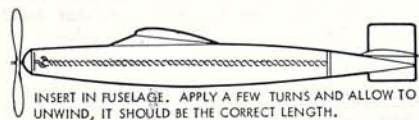
The main snags with this system are that the preliminary turns may not be uniform and that the 'doubled over' part of the motor may not be its mid-point. This can lead to a motor that *sometimes still* 'bunches' inside the fuselage. The system also only works with motors of 4 strands or multiples thereof.



A better and more versatile system is to make up two *separate* motors of the normal specified length, but of half (or plus or minus one) the number of strands. For a 14 strand motor make up an 8 and a 6 strand motor. These are attached to the same rear fitting, wound in turn, attached to the same propeller, and allowed to unwind together



This ensures the two 'halves' have the same length and same turns. Even an *odd* number of strands can be managed by including a separate strand (with a loop on each end) in one 'side.'



In all cases the number of turns required has to be determined by experiment as it depends on the number of strands as well as motor and fuselage length. It *should* also depend on the propeller *type*. A free-wheeling propeller should have the motor *just* tight enough for the propeller noseblock to remain in place on the glide, but slack enough for the propeller to 'knock out' rather than break on landing.

A (free wheel) folder model should have a *tighter* motor as the noseblock must stay in place during the jolt of the propeller being stopped at the end of the motor run.

Pretensioning turns should be let unwind *under tension* to produce evenly distributed tensioning turns. This gives a motor longer than will result under normal conditions, so after tensioning and before flight apply a small fraction of 'contest' turns and allow the motor to unwind *in the model*. If the tension is not as required then repeat with more or less turns as appropriate. Then record the number for future applications.

Finally it is generally considered inadvisable to leave a motor tensioned for periods of several days or more. The rubber takes on a permanently wavy form - a hardly desirable feature.



AIRCRAFT DESCRIBED Number 172

drawn by
Felix Pawlowicz

Photo clearly shows wide track undercarriage and general small overall size to good effect. Note the position of landing light directly under the airscrew spinner, and the obvious angles of down thrust and side thrust. The swept fin and clean cabin lines make this rugged little four seater a very graceful aircraft.

Victa

AIRCROUISER 210

THE VICTA Aircruiser 210 was designed by Henry Millicer while chief engineer of the Victa Aircraft Division in Sydney. It was to be a four-seat follow-on to the Victa *Airtourer*, featured in November 1966 issue. Flown for the first time on July 17, 1966, the Aircruiser, like its admirable forerunner has been the victim of apathy and disinterest in the hard commercial world of Australian business. While the rights to manufacture the *Airtourer* have now moved to Aero Engine Services of New Zealand the future of the 210 (despite its speed and range) must remain in doubt and submerged under the welter of U.S. imports. Because like the protesting Australians who want a light-plane industry, we too feel that the Aircruiser deserves credit and recognition we have included the prototype in this series of well proportioned aircraft suitable for scale modelling.

In general dimensions the Aircruiser has much the same flying surfaces as its smaller capacity predecessor with the centre section extended at the leading edge to increased wing area by nine square feet. As the proportions are so much the same, it follows that the Aircruiser is just as suitable for radio control as our established design RC/922 for a 2.24" = 1' scale model featured in December 1966 RADIO CONTROL MODELS & ELECTRONICS (and for which the huge bubble canopies can now be obtained through G.T. Models). But, whereas the *Airtourer* was blunt, functional and lacking in curves, the bigger design is a streamlined beauty.

Actually by clever designing the cabin profile contributes up to twenty per cent of the total lift, which in turn compensates for the short span of only twenty-six feet. This also permits a very rapid rate of roll. The Aircruiser is fully aerobatic at 1900 lbs. all up weight and its handling is claimed as leaving nothing to be desired. The control system is conventional by modern light plane standards, duplicate push-pull yokes, rudder pedals and a flap lever which is situated in the centre of the cockpit floor. Coupled flaps offer full span aileron control at low speeds, so making short field operation practical with a stalling speed of only 56 mph. true airspeed. Take off and landing run are only 200 yards!

Initial rate climb is 1200 feet per minute at maximum all-up weight and three quarters power gives a cruising

speed of 170 mph. at 6,500 ft. with a maximum still air range of 1,000 miles.

The power plant is a Rolls Royce Continental 10-360D motor with fuel injection, which is rated at 210 horsepower driving a constant speed Hartzell propeller.

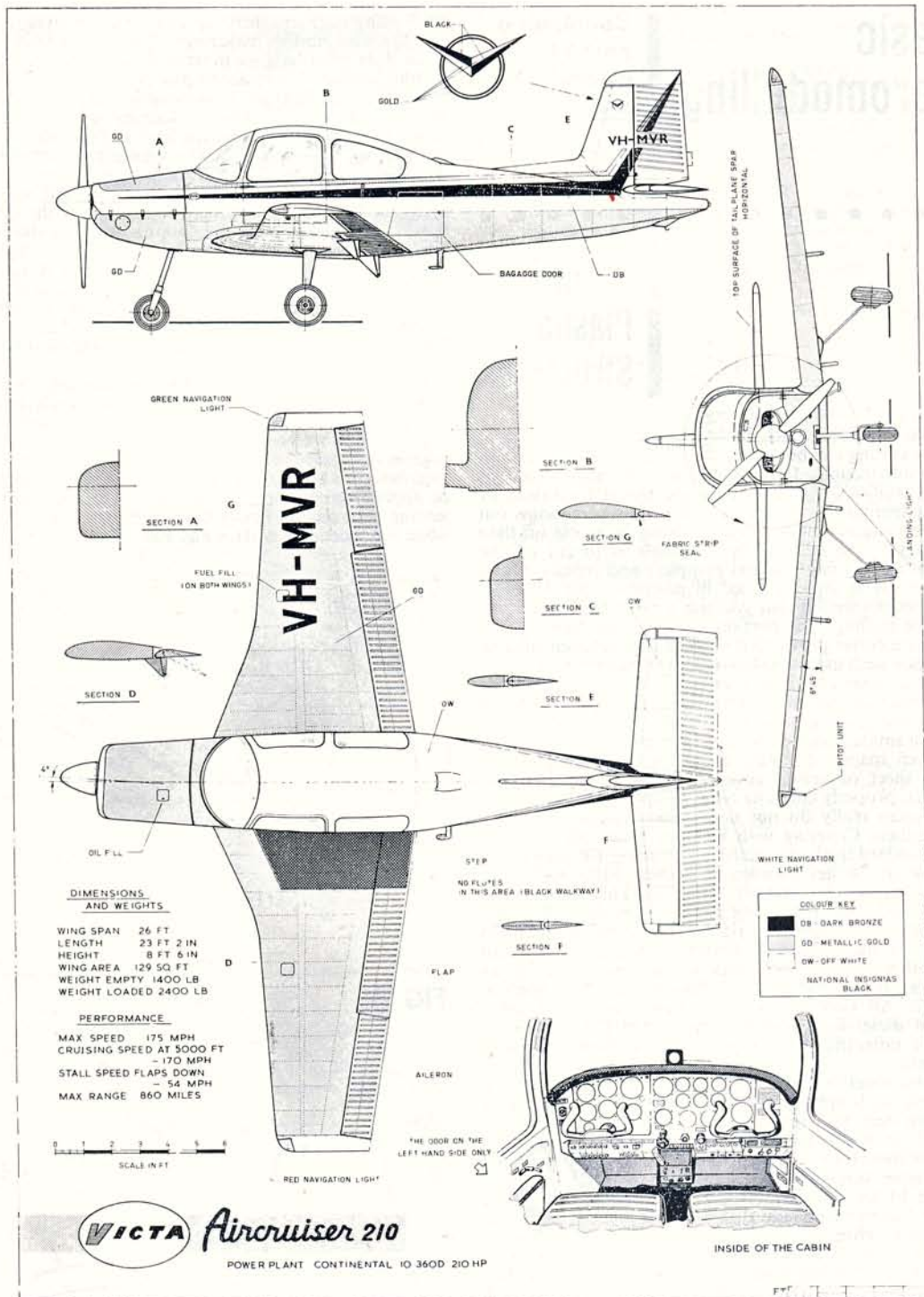
The wing structure consists of T section main spars, spliced in the centre with joining plates bolted together and pressed light alloy ribs with alclad all metal covering. Heavy duty skin wing walks of 2 ft. width are situated on either side of the cockpit. These also serve to distribute the main undercarriage loads. Flaps and ailerons are all metal ribless, externally fluted skins characteristic of the light aircraft industry. Fuel tanks fitted in two inboard wing sections, are of flexible rubber giving a total fuel capacity of 42.5 imp. gallons and the tank shape is such that only $\frac{1}{2}$ gallon of space is wasted.

The fuselage is constructed of extruded longerons with sturdy stressed skin, with one strong frame in the rear fuselage to prevent the skin from buckling. Longerons are fitted with replaceable splices to facilitate repair and the whole rear fuselage, carrying the conventional fin and large area tailplane, is removable from the cockpit.

From single spring leaf, with attachments encased in rubber, the main undercarriage provides a very wide track, so wide in fact that operation in up to twenty knot crosswinds is a practical proposition.

With ten feet from firewall to rear bulkhead the cabin, which must be one of the largest among four-seater light aircraft, includes a luggage compartment behind the rear seat.

Whilst the design has so much in its favour (and Australian enthusiasts have been loud in their clamour for Government support) the *Airtourer* remains an enigma and its future is as obscure as that of a few military projects one could recall. It seems a great pity that each attempt by an Australian industrialist to establish an aviation industry with indigenous designs should be killed by disinterest. A country so vast, and rich in resources should surely be able to support a light aircraft design and production and we look forward to the day when the two Millicer designs and their inevitable derivatives are mass produced in their country of origin.



Reprints of this 1/72nd scale drawing and dye line parts of the 1/24th scale original are available as Plan Pack 2878 from Aero Modeller Plans Service Price 2/6d plus 6d postage

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Foam
Plastic
Structures

WING CORES which have not come out quite right in the cutting can be 'salvaged' by various means. A very common trouble, for instance, is a poorly defined or wavy trailing edge. It is no good trying to correct by sandpapering the core. This will merely tear lumps out of the material and you will probably be worse off than when you started. The best solution is to cut off the faulty trailing edge section complete and replace with a shaped balsa section, glued in position - see Fig. 100. It is recommended that you use a razor saw for cutting off the trailing edge portion, although you can use the hot wire cutter provided it is supported between suitable guides - such as two hardwood strips pinned to top and bottom of the core from root to tip. The cut is then made with the bow held at an angle and run from root to tip along the guiding hardwood straight edges.

In a similar manner you can inset a balsa leading edge, or even spars - Fig. 101. Such a wing would then not need sheet or veneer covering to strengthen further. In fact, properly cut wing cores of up to about 18 inches semi-span really do not need sheet covering at all to strengthen. Covering with balsa or veneer is, however, the standard method of finishing all larger EP wing cores.

The choice lies between thin sheet balsa and hardwood veneer for overall covering. This produces a very strong and rigid wing panel, the covering forming, in effect, a stressed skin rigidly supported by the foam core. At the same time covering produces an overall smoothness which EP plastic surfaces do not have, as well as protecting the core material against chemical attack. All Glow fuels, for example, and to a lesser extent diesel fuels, dissolve and soften EP plastic and so an untreated EP wing cannot be used on power models.

Balsa sheet is more readily available than hardwood veneer, and apparently lighter. However, this latter feature need not apply. Veneer of adequate strength - say about .020 inches or 20 thou. in mahogany, is actually lighter than 1/16 in. sheet medium balsa. It also provides a tougher surface and, being much thinner, is actually easier to apply as a covering than balsa sheet. Other factors in its favour are that it is more readily bent into curves to cover round the leading edge, and the fact that it is readily available in sheets up to 12 in. or 14 in. wide from handicraft shops; or even in greater widths if required. Thus veneer can be obtained wide enough to cover a complete wing panel top and bottom in a single piece, eliminating edge joints completely. It is, however, more usual to cover wing cores in three pieces - one piece about 6 in. wide or less for wrapping around

the leading edge and then two further pieces to complete the top and bottom coverings. Covering a core with balsa sheet must be done in strips of 3 in. or 4 in. width, although it is rather easier to produce neat joint lines.

For veneer covering a suitable contact adhesive is recommended (e.g. Copydex). Starting with a strip cut to a suitable width for covering around the leading edge, both core and one face of the veneer are coated with adhesive and allowed to dry. The veneer strip is then laid adhesive side up, on a flat surface and sprayed evenly with water. The core leading edge is then positioned carefully, holding the core vertically as shown in Fig. 102. Pressing it in place will cause the veneer to adhere strongly to the leading edge, when it can be smoothed round the curve, top and bottom, and pressed down firmly with a damp cloth. The two remaining veneer panels can then be added, adhesive applied to both surfaces and then pressed and smoothed down in place.

With sheet balsa covering, PVA is probably the best adhesive to use. For a fully waterproof job, use Cascamite. Selected sheet can be wrapped right around the leading edge for the first covering panel, as with veneer, but it is generally easiest to avoid this and inset a balsa leading edge into the EP core. Top and bottom balsa can then be applied quite simply up to the leading edge and the leading edge section finally finished by sanding to shape when the sheeting has set - Fig. 103.

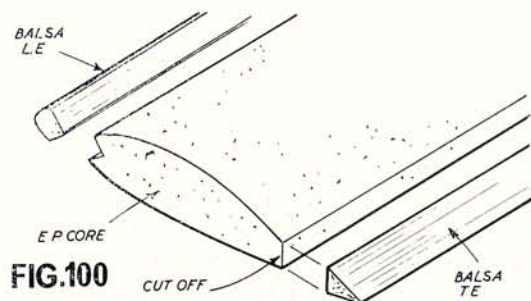


FIG.100

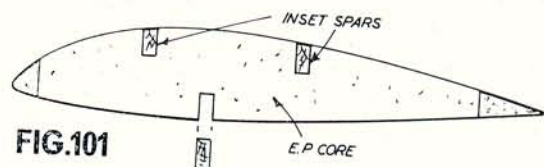


FIG.101

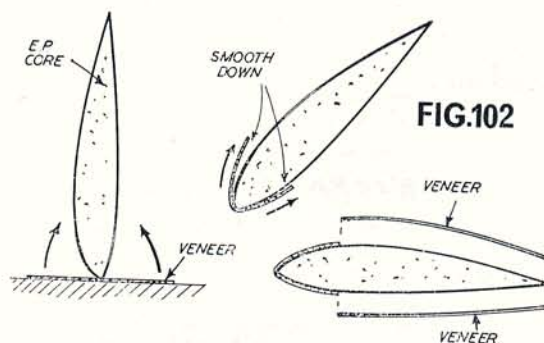


FIG.102



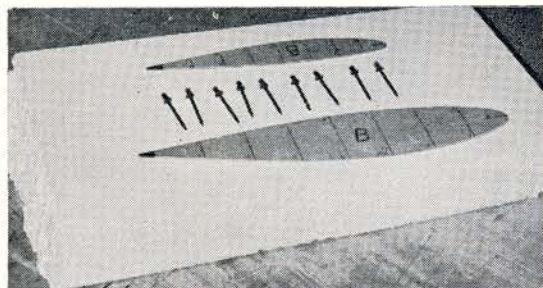
A block of Expanded Polystyrene, as used by Aviette Kits to prepare hot-wire cut wing cores and the special adhesive they advise known as "Styro-Bond".

Final surface finishing, in either case, follows the usual technique of sanding smooth, filling and doping, etc.; or equally one can apply Monokote or Solarfilm directly over the finish sanded surface.

Cores which are not veneered or balsa covered still require surface finishing in most cases, if only to fuel-proof them. The simplest way of filling the surface is to paint with ordinary emulsion paint. This can be used to provide both surface filling and a colour finish, when a final coat of fuel proofer can be given to render the surface resistant to fuels, etc. Two coats of emulsion paint may be adequate, applied quite thickly and flattened with garnet paper between coats. If this still leaves patches, these can be covered with further local application of emulsion paint. One overall coat of fuel proofer will then complete the finishing scheme. The main disadvantage is that such a finishing scheme usually adds appreciable weight to the wing.

Another simple method of finishing is to cover the core with 'wet strength' tissue, stuck down all over with PVA adhesive or 'Polycell' wallpaper adhesive. This will add appreciable strength to the core as well as giving a relatively smooth surface which will take subsequent dope finishes, if required, or you can just use fuel proofer over coloured tissue. For greater strength you can use a thicker paper, such as ordinary brown wrapping paper, shiny side up. This will also give a much smoother surface than tissue for it will not sag into surface imperfections in the EP material. It will, however, be appreciably heavier than tissue covering.

The third method is to use special sealers and fillers to paint onto the core surface, which can then be rubbed down with garnet paper. Such fillers are inert to both the EP core material and conventional dope finishes, so they are basically a pretreatment for finishing the EP wing with conventional finishes. They are, however, not particularly satisfactory unless one is prepared to spend a very long time on the job. It is all too easy to scratch or tear the surface sanding down between coats,



for example, requiring considerable refilling and flattening. Their main advantage is that they do seal and fill the EP surface with minimum added weight.

The choice of finishing methods is, therefore, quite wide. For convenience of reference we will summarise them as under:

- (i) Plain cores, untreated – suitable for small wings on rubber or glider models. Colour restricted to white (natural colour of the EP material) which will get dirty with age. Wing only as strong as the core material; also surface will be attacked by engine fuels.
- (ii) Plain cores, untreated – may be strengthened, if required, with inset balsa spars.
- (iii) Plain cores, emulsion painted – quick and easy method of finishing smaller wings in any colour. No added strength, but may be fuel proofed with ordinary proofer. Fairly heavy finish. If used on wings with inset spars, etc., joint lines will almost inevitably show up.
- (iv) plain cores, filled and doped – tedious method, but one which adds least weight for finishing with conventional dopes, etc. Equally applicable to cores with inset spars.
- (v) plain cores, tissue covered – simple and easy method which also adds strength to the wing with no great increase in weight. A good smooth finish is virtually impossible unless very thick paper is used, adding weight.
- (vi) plain cores, veneer covered – particularly suitable for large wings and greatly increases strength. Also produces the smoothest possible surface for finishing in any way desired.
- (vii) plain cores, balsa covered – suitable for medium and large wings and appreciably increases strength. Requires some filling for best finish results using conventional finishes (like solid balsa). Can be heavier than veneer coverings.

Note that finishing schemes (iii), (iv) and (v) are applied *after* joining wing panels to make a complete wing with dihedral angle. Finishing schemes (vi) and (vii) are normally applied to the separate wing cores *before* joining, although this is not an invariable rule.

Besides wings, EP plastic can be used for the construction of other components. Tailplanes and fins, for example, are merely smaller wing-shaped panels of lower aspect ratio. Where these involve outline shapes which are straight lines the technique of making can be quite similar. However, with other shapes the outline would have to be cut first, when a template would have to be used for guiding the cutting wire. Subsequent cutting to aerofoil section then becomes even trickier – which is a very good reason why built-up or solid balsa construction is usually preferred! There is, in fact, very little advantage to be gained for using EP plastic for tailplanes and fins, particularly the latter.

Fuselages represent difficult shapes to cut with a hot wire bow and freehand work is excluded. Cutting must be done using templates as a guide, otherwise the resulting shapes will be hopelessly inaccurate. The job is by no means impossible, but requires careful pre-planning and working out. Once again, however, the advantages are not all that appreciable compared with conventional

Ply templates, each marked off in eight segments to time the rate of cutting on a tapered wing and to ensure that the cutting wire is being moved parallel to the chord. Pins hold template at root and tip.

A hot-wire cut core for a wing is being removed from a rectangular block at Messrs. Aviette Kite's works, the clearance being small, the block also becomes perfect packing for transit.

built-up balsa construction and surface finishing or covering can be particularly difficult if a really first class finish is aimed at. Fuselage shapes are best produced in EP plastic by expanding in suitable moulds.

Simple box-type float shapes can be cut from EP block without too much difficulty. Again templates are essential to guide the cutter - see Fig. 104. A further advantage of keeping to simple 'box' shapes here is that skinning is dead easy with balsa sheet (or veneer if preferred). More rounded float forms, again, are best produced by moulding. For the modeller who finds EP an attractive constructional material it might well be worth while experimenting with simple moulds into which EP pellets can be introduced and expanded with steam fed into the mould. Material cost is low enough to accept a high proportion of rejects as inevitable until the best technique has been evolved on a trial and error basis. If attempting mouldings, purchase pre-expanded pellets - or pre-expand normal pellets - to produce the lightest density mouldings. Working details on this subject are available from suppliers of EP pellets for moulding.

Although fairly readily 'dentable', expanded polystyrene shapes have good form rigidity. That is to say, they retain their shape well, even if damaged. Repairs to damaged areas normally involve no more than cutting out the damaged area and replacing with a scrap piece of EP, or soft balsa block, then reshaping flush when set. Smaller dents may be repaired with 'Polyfilla'. Even complete breaks can be repaired with relative ease by gluing the surfaces back together, although some reinforcement is always advisable in such cases. This can comprise dowels to pin the joint, or stub spars set into the material across the joint line. Alternatively, with a complete break in a wing panel, for example, gluing back together and then binding over the joint lines with gauze bandage will restore original strength, if not original appearance.

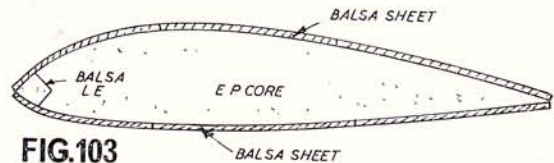
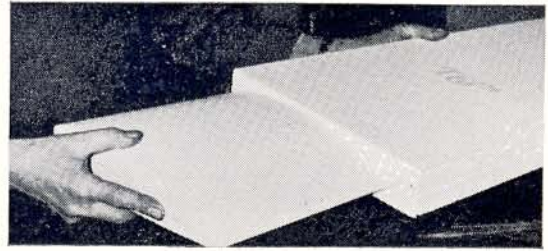


FIG.103

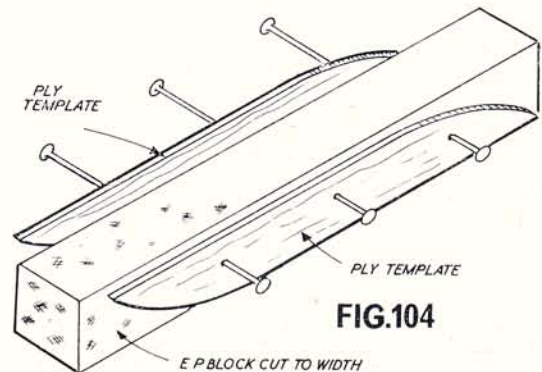


FIG.104

Contest Calendar

March 24th	*FAI Glider (K & M.A.A. Cup) Area Open Power (Frog Snr) Centralised †Open Rubber Venues
March	Halifax Tailless International Challenge Trophy Contest At March 1968. Attractive prizes free, entry forms 1/- each from John Pool, 3 Rothwell Drive, Halifax
March 30th	Southern Area Auction—Summerside School, School- way, Finchley, N12, all welcome Funds in aid of C/L circuit
April 7th	East Grinstead Gala All in F.A.I. A/1-1/2/A Power Coupe d'Hiver. Re-entry, 2/6d per event. 10.30 start at Chobham Common
April 14/15th	North Western Area SMAE Easter Rally. 14th April—Combat, Rat Race, 1/2A T/R, Open Rubber, All-in FAI (3 x 3) R/C Scale, Multi, 10.00-17.00. 15th April—Combat (cont), C/L Stunt, FAI, T/R, Open power, Open glider, Chuck Glider and R/C Multi. 09.30-16.30 SMAE Members only. Subject to Foot and Mouth restriction Phone checks for cancel- lation 0619004162 and Lyrm 2979, R.A.F. Tern Hill, Market Drayton, Shropshire
April 21st	Bradford R/C Rally—all classes Details and entry forms from Mr. D. Pask, Brandon Nurseries, Brandon Lane, Shadwell, Leeds 17 at R.A.F. Topcliffe
April 21st	FAI Power (Halifax Trophy) Area Open Rubber (Gamage Cup) Centralised †Open Glider Venues Control-Line Trials R.A.F. Upwood
April 28th	Amesbury R/C Rally—Multi (FAI) Details from D. Saunders, 'The Packway', Larkhill, Nr. Salisbury AAC Middle Wallop, A343 09 30
April 28th	Devon Rally. Open R/G/P. Chuck Glider, All-in F.A.I. Coupe d'Hiver at Woodbury Common, Nr. Exmouth
April 28th	F.A.C.T. Combat Rally 'A' Combat only Pre-entry 5/- G.H.W. Johnson, 37 Oxford Road, Kirtlington, Oxon New Barn Farm, Weston-on-the-Green, Nr Bicester, Oxford Off A.43
May 5th	Southern Gala—Open Rubber (Flight Cup), Open Power, (Short Cup), Open Glider (Pulcher Cup), 1/2A Power (Quickstart Trophy), Chuck Glider, R/C Multi Race (Aeromodeller Trophy), 1/2A Team Race, 'B' Team Race (Davies 'B' Trophy), Combat, at R.A.F. Odiham unless unforeseen flying

*Denotes Plugge Trophy event

†Denotes Free Flight Individual Championship event

May 12th	West Mendip Single Surface Slope Soaring limited flying time (3 min.) event, pylon and Poor Man's Limbo Pre entry 2/- P. Heeley, Catcott, Station Road, St Georges, Weston-Super-Mare, Crookes Peak, near Weston-Super-Mare (off A38 between Weston Cheddar
May 12th	Eastbourne Slope Soaring Long Man, Wilmington, Sussex
May 12th	Amesbury R/C Rally—Rudder only engine optional Details D Saunders, 'The Packway', Larkhill, Nr Salisbury
May 19th	Croydon FAI Gala in 7 x 1 hour rounds. Start 10 a.m. Chobham Common
June 9th	West Mendip R/C Slope Soaring aerobatics, pairs racing, Superhet only Pre entry 2/- P. Heeley, as 12th May event.
June 16th	Scottish C/L Nats 1/2A, FAI, R/R and Combat (SAA) East Fortune, B1347 on A1, between Dunbar and Haddington.
June 23rd	Croydon Open Gala. Open R/G/P., 1/2A Power, A/1 and Coupe d'hiver. 10 a.m. Chobham Common
June 30th	Boscombe Down Model Rally F/F Scramble, Rat Race 15 (2.5) and 40 (6.5 cc) R/C Spot Landing Max spins in 3 min
July 6th	Esk Valley C/L Rally, 1/2A FAI, R/R and Combat (SAA) East Fortune
July 7th	Croydon FAI (Evening). All in FAI. 6.00 p.m. Chobham Common
July 7th	Scottish R/C Nats (SAA) at Leven.
July 13th	Croydon Open (Evening). Open R/G/P 6.00 p.m. Chobham Common
July 14th	Clywd Slope Soaring.
July 20th	Croydon FAI (Evening). All in FAI. 6.00 p.m. Chobham Common
July 27th	Croydon Open (Evening). Open R/G/P 6.00 p.m. Chobham Common
July 28th	Hornets C/L Gala, 1/2A, FAI, and R/R (SAA) College Milton, East Fortune
July 28th	South Coast R/C Rally—Golden Cross, Lewes, Sussex.
August 4th	Hornets Scale Gala (SAA)—venue, East Kilbride.
August 4th	FAI Gala. 7 x 1 hour rounds. Start 10 a.m. Chobham Common
October 6th	Scottish Gala 1/2A, FAI R/R, Combat and possibly R/C Spot (SAA), East Fortune.
October 6th	NA Vintage—Topcliffe

CLUB NEWS

Suddenly it's April, March came as a bit of a blow . . . Anyway, this is the time when those who fly for comfort rather than glory start sniffing the warmer air, armed with their favourite aerial contraptions - umbrellas!

We start off with something of an apology from the **Godalming & District MFC**. They (I never know whether to call a club 'it' or 'they') say that, whilst not too conspicuous at last year's rallies they are still very much alive and kicking. And to prove that all is not Godalming that glitters much good free flight flying has been going on in the anonymity of the local common, not to mention some Waterloo C/L working out on the playing fields outside the club room (next door to perfection). The general anti-flying character of our fire-crouching winter has placed the emphasis very much on the workbench front, and in case Jack becomes a dull boy, the occasional rendezvous at the local Club regret is the difficulty of recruiting new members from the substantial domiciles of Godalming and Guildford. If, therefore, gentle, unattached reader, you would like to add conviviality to your pastime, call in at Godalming Youth Centre at 7.30 p.m. on Fridays.

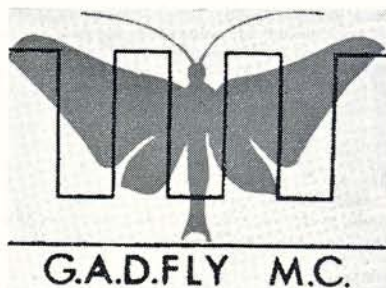
Seems I put my size twelve into it when I quoted that bit from the **Belfast MFC** Newsletter about the *Yahoos*. At least one member has taken umbrage (not a fatal dose) over a possible distortion of the club image. Most of us over here thought Dr. Who had disposed of the *Yahoos* ages ago. The Club Boxing Day meeting went off remarkably well - the weather producing one of its less weathery sort of days. Keeness was exemplified by the way expatriates David Black and Sam Senior flew in from foreign parts - the former from Ottawa and the latter from Rotterdam. This added an exciting dash of internationalism to the meeting. Results: Graham Dickson won Combat, Maurice Doyle Chuck Glider, and Derek Wilson Concours.

A club which remains loyal to its C/L traditions is the **Nottingham MAC**. Mr. R. Tebbutt, the PRO, tells us that more or less the whole of the club membership of 29 are wire and wing over technicians, although a few do dabble in such trendy gimmicks as radio and free flight. Quite an active membership, too (no paper Tigre operators) since about 50 per cent take part in regular competitions. The club is fortunate in having the use of a Sports Ground for C/L, but must look elsewhere for free flight and radio. Meeting place is the Russell Youth Club, Lowtham St., Monday evenings. Comps for Rat Race, Combat and Stunt add up to the Grain Trophy which goes to the highest place scorer in these events. Combat was won by Colin Grange in spite of gallant attempts by Harry Parkinson to patch up a torn off elevator horn. Four ETAs, a Fox and a McCoy set an exciting pace in the Rat Race (reads like a fable). Dennis Orange's Fox 29A adding to the drama by running its shaft, and letting the two ETAs romp home one and two, Bill Draper having the controlling interest over number one. The same redoubtable laddie also won Stunt with his McCoy powered o/d Avenger with Colin Grange the runner up. It was Colin, however, who assembled the highest points tally to win the Grain Trophy. Double congrats called for as he is still a junior. (Juniors are the ones with mini-trousers).

Highly nostalgic article in *Turbulator* Newsletter of the **Crawley Club**, recalls those far-off days of Warneford Stick models and the famous *Cruiser Pup*, designed, I think, by 'Rip' C. A. Rippon. The writer also mentions the brown paper covered *Daily Express* Glider, which hardly hit the headlines for performance. Oddly enough, glider performance in the engineless era was on the poor side. Auto rudders were not yet developed and the models towed up by ponderous winching methods. The reminiscer might like to know that I, too, started off modelling with a Puss Moth, a design, which like me, now has whiskers on it. The Newsletter gives a thoughtful word of thanks to all who have served the South East Area so well over the past year. Nice for a change to see satisfaction expressed at the way things are run.

In the January issue of the now famous **N. A. News** we are reminded that the mag is entering its 9th year of continuous publication. High standard maintained, and good things as usual in the current issue. Trevor Faulkner writes with authority and insight on contest rules, making some startling and thought-provoking comments. He suggests, for instance, that A/2 flying is as obsolete as bear-baiting, on the grounds that it is King Thermal rather than aeronautical skill that is the deciding contest factor. For the same reasons he designates Open Rubber as a form of Vintage event. He pins his contest faith on magnetic steered gliders which, he claims, is a pure merit, non-tactical type of contest model. But read all about it in this journal. In another N.A. News spot John Turner

Another new club badge this month, showing that simplicity of design can be very effective. The initials stand for Greenwich & District Model Club and the square wave symbol is an indication of their radio control interest.



suggests a tightening up of controls as a means of scotching the worst excesses of the thermal tacticians. Flying in strict order, as he advocates, might well achieve this particular end, but the object of any contest is to throw up the best combination of man and machine, merely taking the self selection out of the thermal hazard does nothing to achieve this purpose. A whole section of the mag is given over to Tailless topics. John Pool in the chair.

We all know that the sweet lass dwells in permanence on Richmond Hill, but are you aware that the **Richmond & District MAC** has recently changed its 'domicile' to the Waterman's Arms, corner of Lonsdale Road and Barnes High Street, S.W. 13. Meetings every Friday as usual, bring your own breathalyser.

Yet another Newsheet has blossomed forth. This time from the **Heswell MAC** (near Wirral, Cheshire). It carries a fulsome programme of club events, ranging from a 1/16th Balsa comp to a club flying display. One feature of proud concern to this journal is a recital of models built from APS plans. Certainly a convincing demonstration of the value of the plans service to the average modeller. And just to show how the chips can be made to fly, John Lee built a free plan *Wee Wun* in one wee evening. Made a neat job of it, too. Club joke: 'Are you a ducted fan?' 'No, I'm a wing supporter'. They build some jolly good models, though.

A club with cause for gratitude to an accommodating RAF Station Commander is the **Melton & District Model Club** (Melton Mowbray) who have the use of RAF Cottesmore. And what is more, they have their own personal clubroom at Kirby Lane Community Centre, where meetings are held at 7.30 p.m. each Wednesday. In my experience fine facilities such as these are not handed out on a plate; they are usually the result of much diligence on the part of the club officials. Notable event for the club is its 3rd Annual Exhibition, to be held at Gloucester House, Park Road, Melton Mowbray on April 27, 10 a.m. onwards. Previous exhibitions have been well attended, with the proceeds giving the club funds a welcome boost. The Exhibitions do at least publicise the club's activities to the local populace. For the record, the club is not wholly an aeromodelling one, although this comprises the largest part, with a strong tendency towards Radio Control.

Question raised in the **Whitefield MAC** Newsletter, 'If it takes a man and a half an hour and a half to dig a hole and a half, how long does it take a club to build a demonstration team?' No answer given, but I suspect that you start by isolating the C/L factor, eliminating the rooted squares and getting things circulating. Seriously though, show business is a tough game, with new acts always in demand. Gone are the days when you could roll 'em in the aisles with a couple of wing overs and a bunt; Spectacle is what the groundlings crave, and to meet the demand the club is offering a year's free subs to the member producing the best new act. The result of the **Woomera International Postal** De Luxe put Whitefield right on the world map. Out of 74 entries from 5 countries J. O'Donnell placed first in both Wakefield and A/2. M. Reeves came 5th in A/2, and FAI Power Flyers, A. Moss, B. Worthington and G. Smith placed 3rd, 4th and 5th. A creditable effort.

The **North Western Area's Message** is not so much that as a way of life, or so I would judge from the huge bulk of this well produced mag which gives voluminous coverage on the whole hectic year. Good contest report, some attractive plans, but need the humour be so unrelatedly zany?

You find mention of model flying turning up in the remotest corners of this concrete covered globe. Take the **Novocastria MAC** (Newcastle-on-Tyne) for example. The venue of their C/L rally is a car park on a trading estate! (March Contest Calendar). The club has the unique facility of the use of machine tools at its HQ, at Manors Station, Newcastle, where the mainly C/L section meets every second and fourth Friday in the month, and the up and coming Radio section every third Friday. New members welcome. Referring

back to the C/L Rally, it would seem desirable for the competitor to make himself conversant with the special rules.

Yet another C/L Rally to look out for. This to be held by the **Elliott Model Eng. Club** on 16 June. Details forthcoming.

Peter Jenkins of the **Norwich MAC**, provides the club with a monthly Newsletter service. Peter claims that it has been well received, and that it has had a cohesive effect on club life. The club now hopes to expand the Newsheet service and to supply a six-page Newsletter to each member as a part of the amenities given in return for the 6s. per annum subscription. The same Mr. Jenkins also provided the cup for the club's first Single Channel Radio event, but in future contest prizes are to be found out of entry fees. This, incidentally, was the club's first R/C comp since the club was formed 47 years ago. If only they'd held it 47 years ago what history they'd have made! Club comment on how to build up club status and interest: read up articles like this journal's *How to Organise Model Aero Clubs*, and to get the odd sponsor or two to put a bit in the kitty for newsheets, cups and the like. A quite ambitious programme has been arranged for the year, and a wider net has been cast for members, particularly R/C fans. We await with interest the first edition of what is to be known as the Broads Sheet. Get the pun? Good thing this isn't America, though.

Are you an 'A' streamer? Combat wise, that is, although there is just a sniff of the academics if an event is to be held in Oxford. The one in question is an 'A' Combat event for the **FACCT Club Trophy** scheduled for April 28. (See Contest Calendar.) Entry fee is the now standard price of 5s., and pre-entry is to G. Johnson, 37 Oxford Road, Kirtlington, Oxon. Club indoor flying, Rat Racing on 7 ft. lines, calls for strong nerves and even stronger cables. Heats are over 500 laps and finals 1,000 laps. Record holder is Neil Webb (ex-Abingdon) whose Merlin powered Wing averaged about 70 m.p.h. Survivors are tinkering with a .15 Combat glow job in the great outside - strictly for sport, though.

Clubs are always grateful to those old faithfuls who turn up at all meetings, rain or shine, but few reward such loyalty. However, **Finchley and District MAC** is at least one club prepared to give concrete recognition to its stalwarts by the gift of a Mk. II Oliver Tiger for good attendance and support of club comps. Clive Huggins had the right sort of frequency, and the second and third most familiar faces received £1 and 10s. respectively. Other prizes awarded on the Club Night was the 'Minute' Cup to G. C. Crawley. Clive Huggins is also out on his own as the club Jetex speed expert. His formica and plywood gadgets knock up a startling 113 m p h. on 9 ft. lines. Electronically timed, let me add. Outdoor, Rat Racing A & B interest is on the upsurge, with 'A' most popular, vying with 'A' Combat. There is also a definite glow of interest in speed and FAI T/R. Any down country clubs interested in a grand 'Southern Area Auction'? All south of a line Bristol to the Wash invited. Details of this glorious junk-in from the PRO, David R. Edwards, 236 Shenley Road, Boreham Wood, Herts. A new set of 'A' Rat rules is being tried out, with everyone flying in at least three heats. 'Too complicated' goes the cry, but as the rules are devised to beat the more familiar 'We wuz robbed!', let's just see how things work out.

One of the highlights of the **Debdenairs MFC** Winter programme was a film show and talk by *Aeromodeller* Editor, Ron Moulton. A bigger room and larger audience is promised if Ron will come again. The next item of importance on the club agenda is participation in the Chigwell Sports Festival. What's that about a standing still, turning round race? Question: Do you have first aid available on your flying field? The need for such sensible provision indicated by the experience of veteran flyer Roy Collins. He got a bad prop slash on his finger, did not get immediate treatment, and the wound turned septic. Apparently fuel oil is particularly infective, and must be cleaned out of any cut or injury immediately. Guess who gets the club's 'Woodman's Trophy', a silver-plated model type axe on a block? It goes to the one who 'trees' most models during the year, of course. Not true, though, that the runner-up gets a photograph of Twiggy. Hardware lifting champion of 1967 was the Hon. Sec., Brian H. Dawson. He took a threesome of Club Champ, Open Glider and Open Power. Due later this year, a Par Avia three cornered contest between Debdenairs, Christchurch, Hants, and Newcastle NSW. Two well known personalities involved are John Tidey of Newcastle and C. A. Rippon (whom we mentioned earlier) of Christchurch. Look out for Roy Collins's Super Tigre powered FAI job. Pressure fed tank, VI tailplane and polyurethane finish. Viva la French!

Club names are getting as way out as pop group titles. We have not yet got The What or Mother Buggin's Sunday Orphans, but we have at least the **Tudor Falcons** of Sutton Coldfield. The club has been going for some 18 months, and now a branch is being formed in the Handsworth Area. Meetings get a comfortable

congregation of 25, and the club programme is simply one of building models and showing others how to Details from M. Beacon, PRO and Sec., 11 Queens Wood Road, Four Oaks, Sutton Coldfield, Works.

And yet another historic name. **The Flying Druids MAC** no less. No, they don't meet in an openwork stone clubroom, but in a flat of member Den Burgess every other Friday. 24 members, too. There'd be a human sacrifice in my house if I brought that lot home. The club has recently been re-formed, and has the use of an Army sports field, and also an RAF dropping zone for weekends.

Found by Ron Truelove of the **Valkyrie Model Club** (somewhere in the Aylesbury area) an A/2 glider. Pod and boom type with tip dihedral Yellow flying surfaces. Wing has a special double undercamber aerofoil. No name and address, though. Stand up the lad responsible, or better still, ring Ron at Aylesbury 5398.

And that about winds it up for this month, as the modeller said as his rubber motor burst

THE CLUBMAN

Hornchurch Wakefield Competition

The First Round, scheduled for January 3, was postponed because of arctic gales blowing over Chobham Common, until January 17. This second choice was a good one. Weather was ideal, calm but not too cold, with no sun to produce unwanted lift. This gave for good comparative results, with machines showing their true form. Most impressive was Ray Paveley's almost full house score of 886 seconds for the five flights. The model, a well 'seasoned' one (see plan of it in current NA News) has a steady 45 seconds prop run, and a still air time of about 3:30. Dave Hipperson also produced some good form, making a slightly faltering start but pulling up with three consecutive maxes to take second place. Mike Woodhouse's excellent model was also much in prominence, getting him a worthy third place. The foreigners having shown the way, British modellers are fast catching up.

Weather was not so accommodating for the second round on the 4 February. It began fairly reasonably, but soon gusted up to an almost unflyable degree. Nothing much learned from this round except that launching techniques for very rough weather are not all they could be. Gallant the few who flew, although none completed the five flight schedule. Still, out of the entry of 15, there were five at least who put in four flights. Alan Wells, who won with 505, even did a max! It is to be hoped that better weather favours the subsequent rounds.

Boxing Day FF Rally

Chris Hayward and Colin Morris had the right sort of optimism in putting on a Midwinter comp., even in this perverse climate. Certainly Christmas Day was full of angry foreboding, weatherwise, but cheerfulness broke through on Boxing Day to present a breezy, but bright and flyable day. The contest got under way with a 50 m p h. wind turbulating over the common, making it desirable to restrict the max limit to 2½ minutes for Open, and 2 minutes for A/1. Happily the wind dropped to a less battering 5-10 m.p.h. during the afternoon, giving opportunity for the models to show their true paces. 'Full houses' were achieved in Rubber, Open Power and A/1, although Open Glider seemed to suffer from the lack of summery lift. Of the participants the most way-out hailed (?) from Manchester, throwing shame on those London Area experts who failed to put in an appearance. Was it the CG, of the pud or the green eye of the breathalyser?

The Rally concluded with the very un-Chobham-like spectacle of a Scramble. At least it had a warming up effect on the chilly visitors, although contesters who had put in some 20 flights showed signs of strain.

Just four seconds separated A. Crisp, flying an A/1 with 14 mins 19 secs and Fentham with 14.15. The latter flew a well trimmed chuck glider - and is still a Junior - so watch it Tony Slater. A very creditable performance indeed. This was a pretty hectic Comp, and I feel 15 mins. would be ample time, especially for the over 30's. Andy Crisp admits to being a keep-fit fanatic, and Fentham is still a junior, but the rest of the field showed distinct signs of exhaustion towards the end, and nobody else came within 5 mins. of the top two scores.

It was also nice to see Reg Boxall on the Common again, after a long stay in hospital - almost like old times.

RESULTS: *Open Rubber* 1st. A. Crisp (Croydon) 7:30 2 L. Burrows (Blackheath) 6:35. *Open Glider* 1. Worrall (Working) 6:28. 2. D. Glue (Brighton) 6:17. *Open Power* 1. Stewart (Cookham) 7:30. 2. G. Fuller (St Albans) 6:50. *Coupe d'Hiver* 1. J. Mabey (Lee Bees) 4:43. 2. D. Tipper (St Albans) 4:41. *A/1 Glider* 1. M. Dilly (Croydon) 6:00. 1. C. Hayward (Croydon) 5:39. ½/A Power 1. P. Jellis (Croydon) 2:30. ½ Hour Scramble 1. A. Crisp (Croydon) 14:19. 2. Fentham (Richmond) 14:15.

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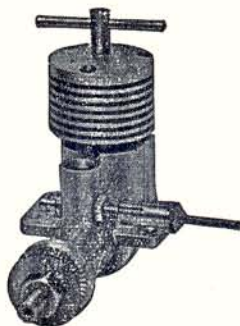
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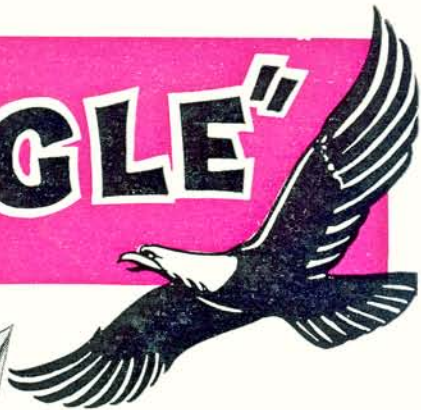
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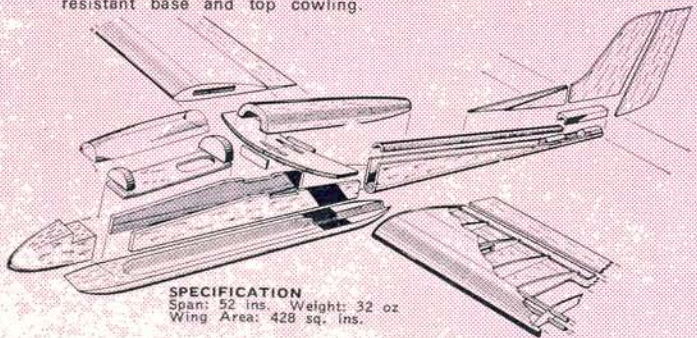
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Span: 52 ins. Weight: 32 oz

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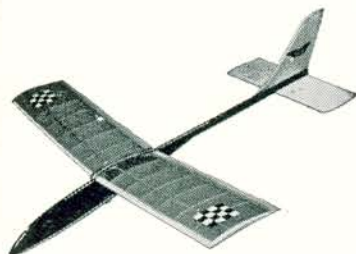


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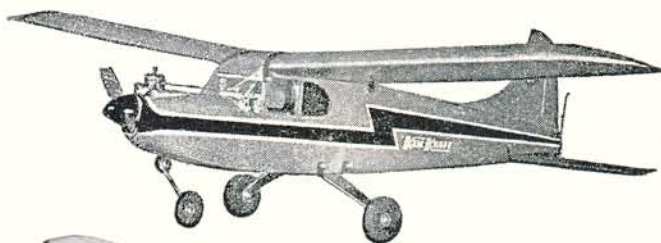
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