

WORLD CHAMPIONSHIP TEAM RACER PLANS

# Aero Modeller

MAY 1967

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INCORPORATING

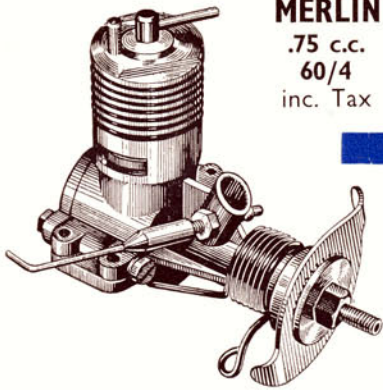
MODEL AIRCRAFT



HOBBY MAGAZINE

- Cox .049 test
- 18" Rubber design full size plans
- Polish 'Zefir' glider
- Winter Cup feature





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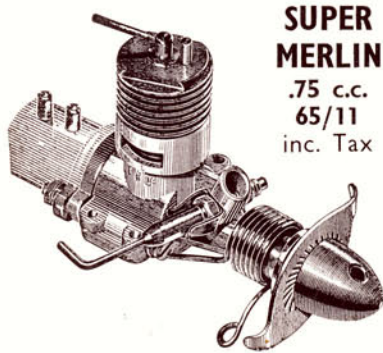


**Big "H" means HUSH**

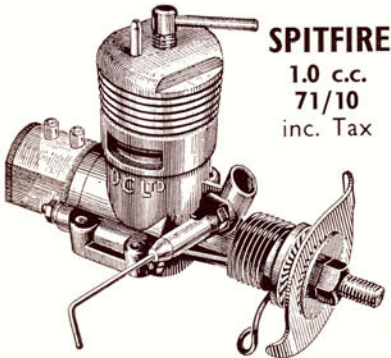
**. . . and you'll get it with**

**QUICKSTART**

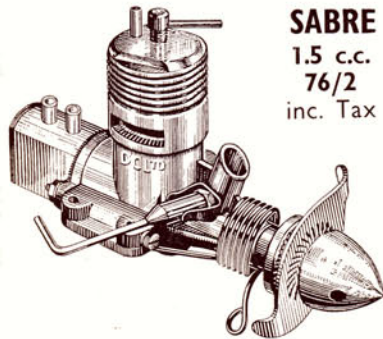
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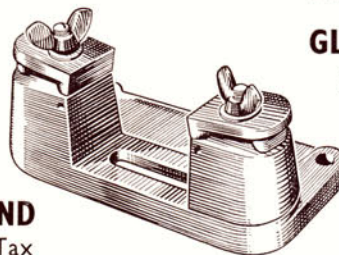


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 and  
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# Aero Modeller

INCORPORATING  
**MODEL AIRCRAFT**

May 1967

VOLUME XXXII No 376

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AN  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**  
Assistant Editor **J. FRANKLIN**

## COMMENT

The success of the Symposium and Exhibition of Radio Controlled models held at Brooklands County Technical College, Weybridge on April 1st and 2nd was a great credit to two extremely well organised clubs.

Esher D.M.F.C. and Chichester M.F.C. have succeeded where others stopped at the pipe dream stage. They attracted over 2,500 enthusiasts from all parts of the country to a show that will rival those famous Dorland Hall exhibitions of fond memory. For two days the lecture hall was packed and the flying area lined with spectators. Twenty-one exhibiting traders (including ourselves) were amazed at the response. It was as though the world of radio control was beating a path to our door. Had we kept a diary of visitors to our R.C.M. & E. stand, it would read like a modelling "who's who" of V.I.Ps. in the professional, manufacturing, contest and designing spheres.

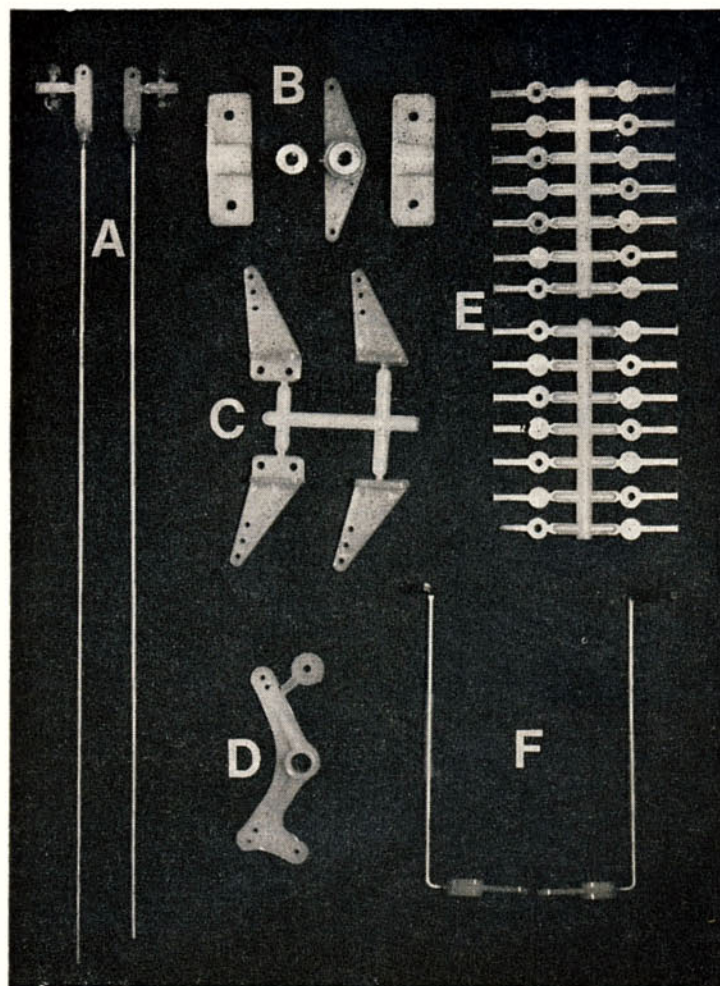
Next month's editions will carry illustrated reports. For the time being we heartily congratulate Esher and Chichester for their enterprise. By leaving the carping criticism to the pen pushers, riding all their problems with fortitude and working very hard, their twin committees have shown the true value of club activity in the finest possible manner—here's to the next time!

## cover

Return to sunny skies, calm air and shirt sleeve flying conditions is heralded by this photo of George French and his veteran "Ramrod" 750. Powered by a Fox 40 BB with Spinaflo Silencer, this model first appeared at the 1961 Nats, and has since become a regular Nats entry, missing only 1965. It has won several Rally contests, and collected the Frog Sr. Trophy in 1963. George also has four other various size Ramrods in reserve!

## next month

Dave White's Mini-glider for the A.1 Class "Strolling Bone" appears as a full size pull-out plan and backed by Stan Zurad's "Komar" an elementary rubber job. Each is perfect for the novice. Frank Palmer (remember his Pfalz DIII and Brisfit?) offers his simply magnificent Free Flight or Radio Controlled Focke-Wulf 190 which is 34½ in. span (1/12th scale). These plans are enough to satisfy anyone for a mere half crown but... we have more surprise items in store as well as all the regular features, out on May 19th.



# ASK IN YOUR LOCAL MODEL SHOP FOR THESE NEW R/C ACCESSORIES FROM MERCURY



**A** Nylon clevises complete with spare pivot, threaded on to 12" wire rods. Adjustable, no-noise, strong and reliable linkages at the economic price of 4/9 per pair.

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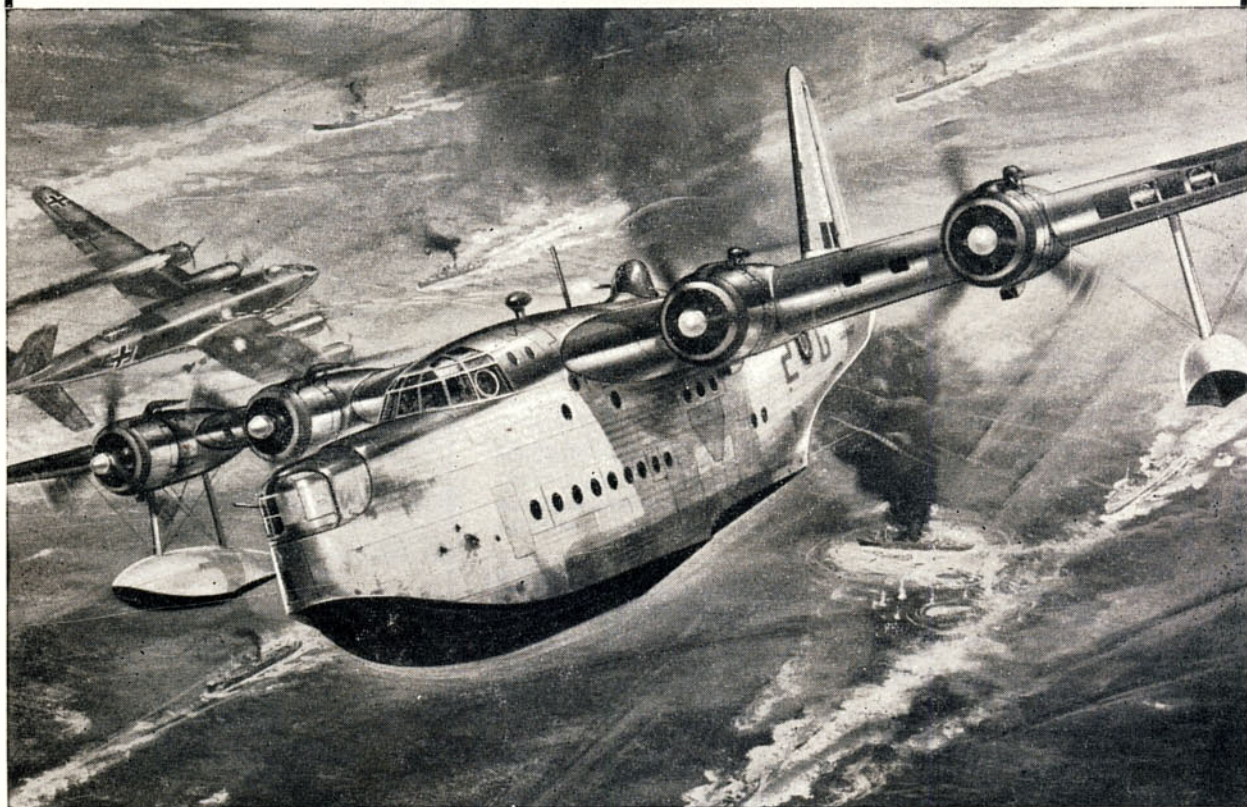
**F** Aileron cranks for strip ailerons. With adjustable nylon horns, 4" arms and no-noise nylon hinge tube already fitted. Per pair 5/9.

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that **REALLY FLY!** . . .

ONLY **3/6** EACH

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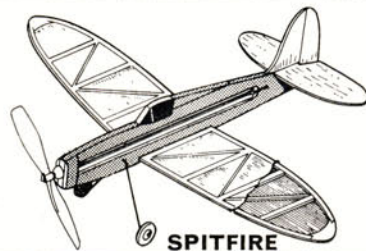
LOOK FOR THIS  
PACK ON DISPLAY  
AT YOUR LOCAL  
SHOP NOW!



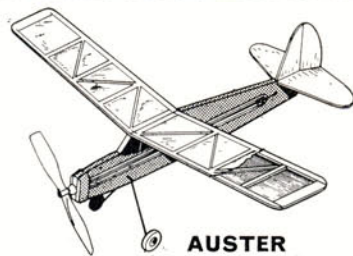
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SPITFIRE



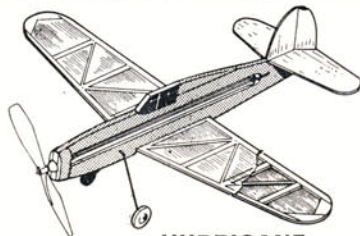
AUSTER



MUSTANG



BIRDDOG



HURRICANE



PIPER

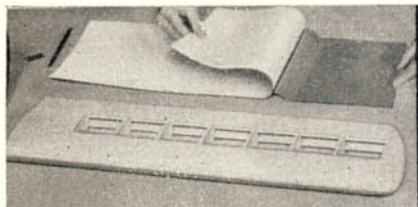
Revolutionary New!

# TOP FLITE MONOKOTE

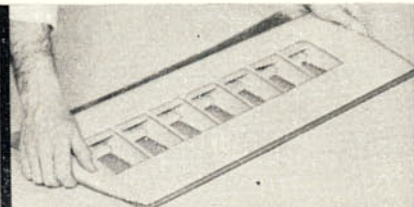
FROM ...

# RipMax

The covering with the built-in finish



● Simply cut out 'Monokote' slightly oversize



● Lay structure over 'Monokote' panel



● Use a warm iron to seal down edges



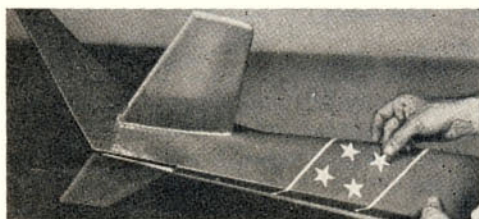
● Trim off surplus covering around edges



● Iron all over in smooth strokes to draw taut



● Finish off tip covering with overlap



### TRIM ...

Cut out MONOKOTE to pattern, coat adhesive side with soapy water and slide into position. Leave 1-2 hours to dry, then iron in place with just enough heat to activate adhesive.

## Replaces all other covering materials!

NO MORE DOPING ... SANDING ... SEALING ... POLISHING!

Undoubtedly the greatest advance yet in covering and finishing technique for ALL types of models—used and proven by tens of thousands of aeromodellers. MONOKOTE is EVEN BETTER than was first thought. Study these latest tips from the experts.

### OPEN FRAME STRUCTURES

Cover the framework with lightweight Modelspan tissue first in the normal way and give one light coat of dope. Then apply final MONOKOTE covering in the same manner as for sheet covering. Use this technique for covering all open structures even if partially sheet covered, but restrict the tissue covering to the open areas only. No sagging covering with this method!

### SHEET COVERED SURFACES

Lay the MONOKOTE covering in place and then pull as smooth and tight as possible by hand—just as you would do with tissue covering. Apply a warm iron to the edges to seal in place, then iron all over with smooth strokes. Then increase iron heat until there is the merest suggestion of colour change and repeat.

### ENGINE BAYS

For a positive fuelproof covering overlap edges of MONOKOTE as much as possible and seal down with parts you can reach with an iron. Finally seal all round edges with Araldite, warmed and smeared on with a finger.

### COMPOUND CURVES

Prestretch as much as possible by hand, use low iron heat to position, finally seal and finish with a hotter iron. Do not over-iron or over-heat. Overlap any V-cuts.

COSMIC GOLD, GLOSTER GREEN, INSIGNIA BLUE, RED . WHITE . BLACK . YELLOW . ORANGE . SILVER SHEETS 36" x 26" price 25/- per sheet

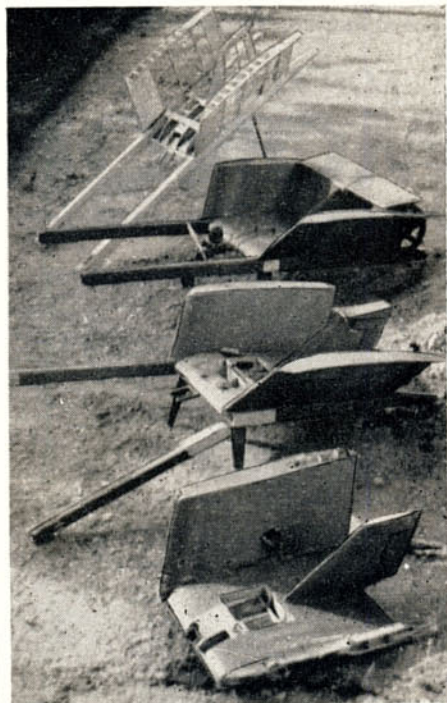
- ★EASY—no tricky technique, it's EASY to use!
- ★FAST—cuts model finishing time to a few hours!
- ★LIGHT—half the weight of nylon and dopes!
- ★TOUGH—resistant to punctures, tears, crashes!
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- ★ LONG LASTING ★ MOISTURE PROOF

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80 HIGHGATE RD, LONDON NW5

KINDLY MENTION "AEROMODELLER" WHEN REPLYING TO ADVERTISEMENTS



## BALSA MODELS DO FLY BETTER . . .

It looks like a gardening scene far remote from aeromodelling, but actually those are FLYING wheelbarrows you are looking at! Quite a forceful illustration of the fact that 'Balsa models Fly Better'—we can't think of any other material which would be both light and strong enough for this particular type of flying model! They are the product of a clever French enthusiast, designed for free flight—not control line—and fitted with radio control. He is currently running a model shop in Paris and if you are ever visiting that city a visit to his 'garden' would seem very worthwhile!

Of course, we have had 'flying road signs' and other oddities in this country, and flying saucers were quite commonplace at one time. It's mainly a case of balancing out the aerodynamics involved and building them light and strong. The same with an orthodox flying model. Automatically you choose Balsa when you want maximum performance and the easiest of construction. Just as automatically you should always choose the best Balsa available, and that's the simplest job of the lot. Just ask for Solarbo Balsa by name—or make your final selection from the stock of Solarbo Balsa your model shop is sure to carry. Solarbo is top quality Balsa—specially selected and graded for aeromodelling use. And Solarbo Balsa is readily available in all the sizes you are likely to need.

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COMMERCE WAY, LANCING, SUSSEX

THE BEST YOU CAN BUY  
**ALWAYS ASK FOR IT BY NAME**

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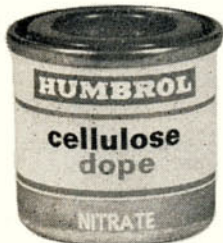


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The latest Humbrol Nitrate Cellulose Dope is the product of experience, research, development and strict laboratory control. Now available in the new 10d.  $\frac{1}{2}$  oz. tinlet and in 2 oz.,  $\frac{1}{4}$  pint and  $\frac{1}{2}$  pint tins.

# HUMBROL

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## RipMax 'F' series DIESELS

LOOK AT  
THESE  
PRICES!  
(59/6)

### RIPMAX F-10

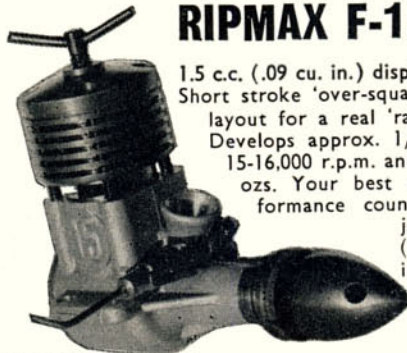


1 c.c. (.06 cu. in.) displ. A fabulous little sports engine, compact in layout and built to last! Develops approx.  $\frac{1}{5}$  horsepower at 15,000 r.p.m. and is equally at home for free flight or control line. Front (crankshaft) rotary induction. Bronze anodised cylinder jacket, prop driver, spinner and backplate. Weight 3 ozs.

Swept vol. 0.94 cc.  
Bore .394 in. (10 mm);  
Stroke .427 in. (12 mm).

### RIPMAX F-15

(62/6)



1.5 c.c. (.09 cu. in.) displ. Short stroke 'over-square' layout for a real 'racing' performance. Develops approx.  $\frac{1}{5}$  horse power at 15-16,000 r.p.m. and weight is only  $3\frac{1}{2}$  ozs. Your best choice where performance counts! Blue anodised jacket etc. Front (crankshaft) rotary induction.

Swept vol. 1.5 cc.  
Bore .492 in. (12 mm).  
Stroke .472 in. (12 mm).

### RIPMAX F-25

(69/6)



2.5 c.c. (.15 cu. in.) displ. Here's real performance—over  $\frac{1}{3}$  horsepower—at a price you can afford! Sturdy dependability is built right into this design to bring out the best in any free flight or control line model. Front (crankshaft) rotary induction. Green anodised jackets, etc. Weight 5 ozs. It's a winner!

Swept vol 2.5 cc.  
Bore .591 in. (15 mm);  
Stroke .551 in. (14 mm).

### RIPMAX 'F' SERIES ACCESSORIES

Spares available for all engines in this series. Ask your model shop for details of matching silencers, etc.

**See Them at your Model Shop Today!**

DISTRIBUTORS — **RipMax** 80 HIGHGATE ROAD,  
LONDON, N.W.5

*Now's the time to prepare for the  
greatest Model Show yet*

# Model Engineer Exhibition 1968

**Contests**

**Demo's**

**Trade Show**

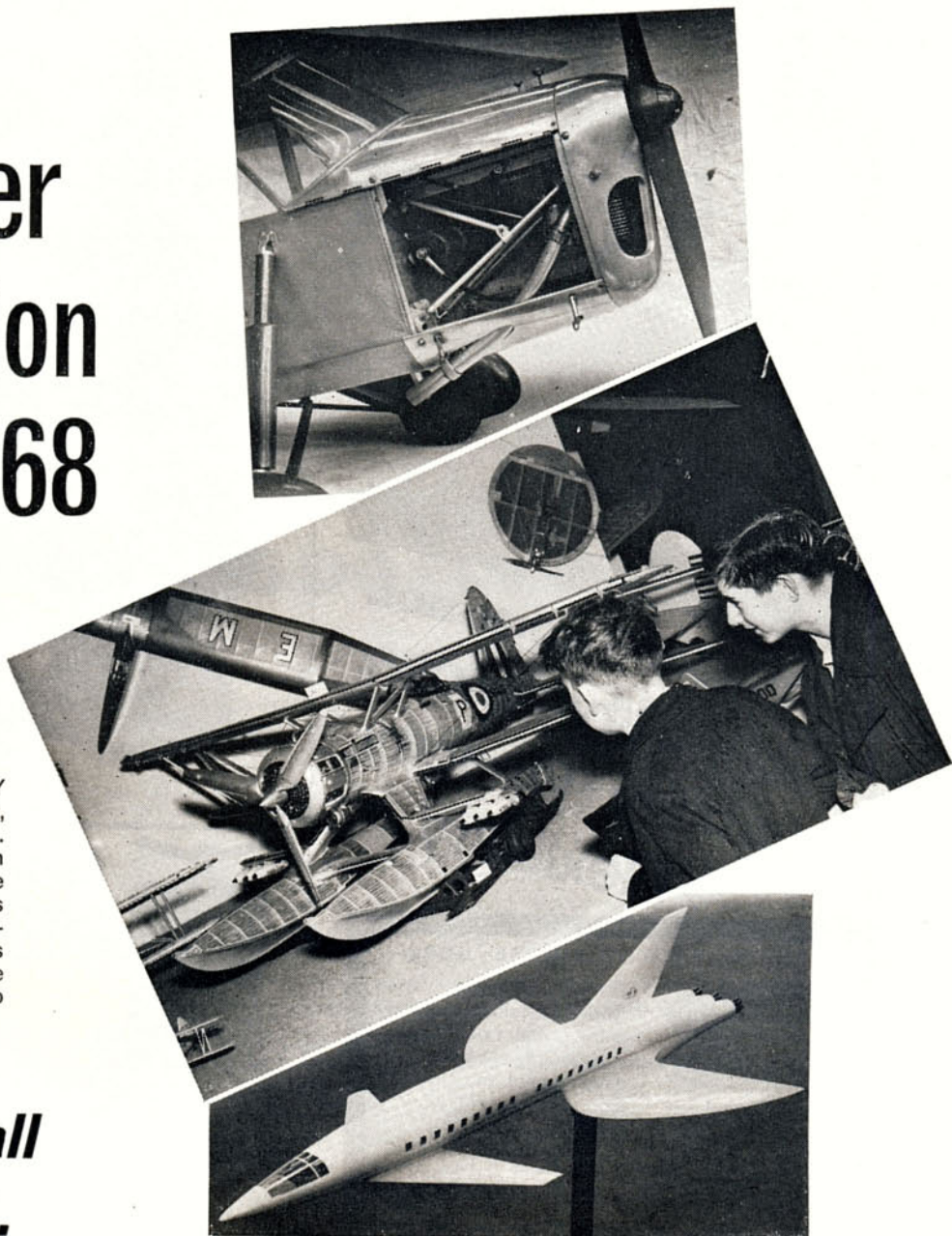
THIS WILL BE A HOLIDAY TREAT for every modeller, whatever his interests . . . every kind of model will be on show competing for a score and more of silver trophies . . . there will be demonstrations of modelling methods . . . trade stands with the latest model goods . . . radio controlled aircraft and cars.

**Seymour Hall  
London W.1.**

**January 3rd - 13th 1968**

**MODEL CARS · BOATS · LOCOMOTIVES · RAILWAYS · AIRCRAFT · RADIO CONTROL · ENGINEERING · TRADE · DEMONSTRATIONS · CONTESTS**

KINDLY MENTION "AEROMODELLER" WHEN REPLYING TO ADVERTISEMENT



**ALL TOGETHER!** Ginger Toohey, Ian Cuffwright and Frank Huish, of R.A.F. Akrotiri, Cyprus, have a comparative comp at Ladies' Mile Salt Flats with their Coupe d'Hiver models.

**ENGINE COLLECTION** of considerable value, and certain renown is to be sold by the widow of Ed Rogers. Over 60 different engines, many new and in original boxes range from the Ouragon 3 cc. diesel to a 30 cc. Atom Minor petrol engine. Ed was famed for his huge "Shadow" series. A twin engined variant made in 1952 was intended to crack the World's duration record, then 6 hours, 23 minutes, but Ed spent so much time helping others, lecturing to schools and in activities with the St. George's Heights club which he founded at Weybridge that we did not hear of any actual attempts.

Ed's mutton-chop whiskers and Vintage Austin 7 carrying huge models on its roof were a feature of all the rallies for many post-war years. He was obliged to give up modelling because of heart trouble and moved to Worthing, where he died last October, aged 66. Genuinely interested collectors are invited to contact Mrs. M. E. Rogers at 31 Offington Avenue, Worthing, Sussex, regarding sale of the engines.

**INTERFERENCE**, even with the sanction of the G.P.O., made Chris Olsen a martyr to the Army exercise "Stardust" on March 16th. His latest "Upset" design was swamped out of the sky when the British Army transmitted on the 27 Mc/s band. Checking with authorities we discover that the Army has been using "our" model control band for ten years! Perhaps this is the answer to many inexplicable crashes. The equipment used has a range of up to 30 miles and is normally located in the Southern region, based around Salisbury Plain. Com-



## Heard at the HANGAR DOORS

plaints have been lodged and the outcome of this hazardous situation is eagerly awaited. It seems incredible that after years of complaints against illegal operation of walkie-talkies the G.P.O. itself should permit a mixture of R/T and model control. The prospect of damage to model equipment as well as the risk of bodily injury does not appear to have received any consideration.

**PAPER DART** class winners in the "Scientific American" contest as distinct from our own small epic mentioned last month were Fred Hooven with 10.2 seconds in duration, Bob Meuser 89 ft. for distance and Ed Ralstan and Capt. R. Barnaby, U.S.N., for aerobatics. The latter personality should be known to all gliding enthusiasts. He was a pioneer glider pilot in the U.S. Navy, and was launched from an airship once like the "Sparrowhawk" featured last month. Entries totalled 10,941 ranging from a folded dollar bill to two paper plates cemented together. In size they varied from 11 ft. long to 1/16 in.! There were over 50 entries from Britain.

**LOST MODELS** awaiting collection at Chippenham Constabulary are identified by number 54334 and 7450. Owners who may have failed to recover them from last year's Nationals at R.A.F. Hullavington are advised to give further identification when claiming. The telephone number is Chippenham 2222.

**S.M.A.E.** membership renewals (all due on March 31st) are being serviced with supply of the new rule book for each full member. Concise in nature, incorporating all the 1966/67 amendments, the rule book is easy to follow and incorporates many new items.

Non-members can obtain a copy (price 5s. 0d. plus 6d. postage) from the Hon. Treasurer, S. Lawton, 53 Blakelow Road, Blakelow, Macclesfield, Cheshire.

**MODEL MASTER** is the heading title of a remarkable feature reprinted and issued by Ed. T. Packard, of Cleveland Model & Supply Co., 4506 Lorain Avenue, Cleveland 2, Ohio, U.S.A. It is part of Ed's latest catalogue dealing with his vast range of scale model plans. When Doug McHard mentioned the Cleveland plans in a recent issue and illustrated his column with photos of his little rubber powered Boeing P 12C (January issue) we were asked for the address from many parts of the world—now you have it!

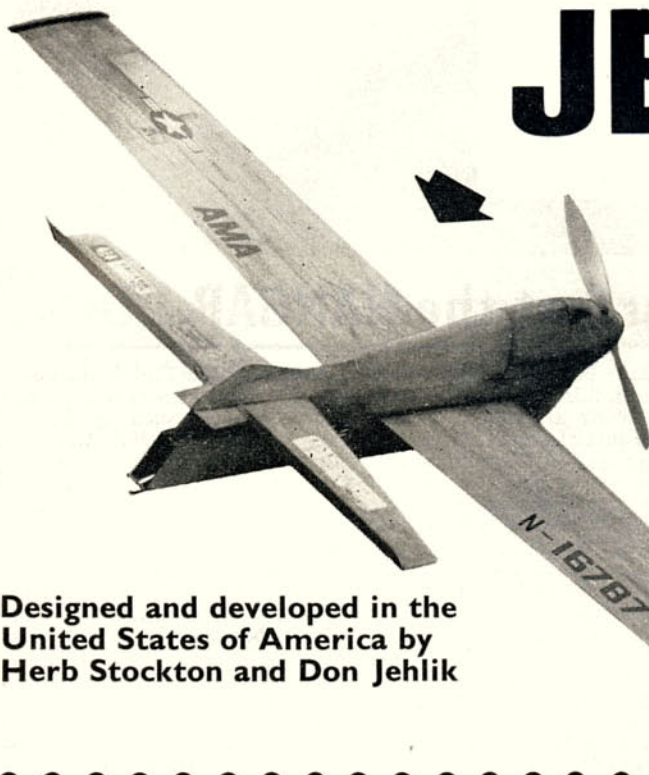
**SYMBOL** of the World Championships for free flight classes is reproduced below left. The Czechoslovakian Aero Club is undertaking the task of organisation in a most proficient manner. Official supporters may accompany the team and have accommodation and feeding for a fee of 50 U.S. dollars and additionally, there will be a camp site at Sazena airfield for the equivalent of about 2s. 6d. per day. Actual contest days will be August 16th for *A/2 glider* August 17th for *F.A.I. Power* and August 18th for *Wakefield*.

Every possible facility will be laid on for those wishing to extend their visit to the World Champs into a holiday.

**PREVIEW** of the World R/C Champs site at Campo dell'Oro Airfield, Ajaccio, Corsica, was the fortunate privilege of Fritz Bosch, Walter Schmit, Fritz Heese and Walter Claas, the manufacturer of "Simprop" R/C gear from Germany. Flying in a Beech Queen-Air, the German modellers were able to check atmospheric conditions with the local meteorologist and actually flew on the site to be used in June. Their report, published in the German Model Press indicates that all's well and the site selected is ideal. Holiday opportunities on Corsica make this a particularly attractive contest.



# JEFE II



1966 World Team Race  
Championship winning  
model from the U.S.A.  
28" span for 2.5cc engines.

Designed and developed in the  
United States of America by  
Herb Stockton and Don Jehlik

Fastest heat  
time recorded  
with Jefe 4:13!

DEVELOPED over six years of top class international team racing the Jefe story originated in 1961. When the prototype placed 15th in the *World Championships* at Kiev U.S.S.R. with a heat time of 4:54. It was then powered by a Super Tigre G20 diesel. In '62 the team won the *U.S. Nationals* F.A.I. Class with an Eta .15 and 4:33 heat time. In '63 they hit an all-time high of 4:13 for 100 laps getting them into the *U.S. Nationals* final race, but this time they placed third in the final, again with an Eta. 1964-65 was spent with Super Tigres giving them a 4:15 heat, and 4:37 when they placed 2nd at the *Criterium of Aces* in Liege and 1st again at the 1965 *U.S. Nationals*. Last year they changed back to Eta but this time much modified to win the *World Championships* (4:25) and *U.S. Nationals* with a 4:14 heat time.

During this period they finished within the first 3 places in all but 5 of approximately 30 contests entered and only failed to have the fastest qualifying heat 3 times, two of these being due to engine failure. Stockton/Jehlik have used the single-stop technique since '63, reaching a peak of 75 laps on 10 cc. tanks in '66. Prior to this, the best time with three stops was 4:48, two stops 4:33 and with 75 laps for one pit stop, 4:13. The "Dynamic Duo" (no not the T.V. pair) have promised Eta modification details and fuel formulation for a future issue, and some techniques they use. It is interesting to note they did not use any ether in '63-'65. The S-J team takes special pride in the fact that all their nine models are in flying condition, only one model has been damaged in competition, and this was not their fault.

Some modellers may not think the lines of Jefe II are aesthetic enough for a team racer; but this is a purely functional model, built for the purpose of winning and to combine reliability, strength and good handling.

Commence construction with the 3 layer laminated wing. Inlay the outboard leading edge hardwood sheet in centre  $\frac{1}{8}$  in. sheet, also leadout tubes, and cut out bellcrank hatch area, and line hatch. Imbed four 6BA blind nuts around the edge of the line hatch, then crimp the  $\frac{1}{8}$  in. or 6 swg thin wall alloy tube for the tip leadout tube and epoxy this in place. Trowel a thin layer of glass fibre resin on the two sheets of  $\frac{1}{8}$  in. and clamp them firmly above and below the  $\frac{1}{8}$  in. core, with heavyweight glass fibre cloth between lower  $\frac{1}{8}$  in. and centre  $\frac{1}{8}$  in. lamination at the trailing edge. Now carve the wing to a flat bottom section (sort of 4 per cent Clarke Y) and leave the centre section square for true mounting onto the crutch. Add  $\frac{3}{8}$  in. ply bellcrank mounting plate and either machine the circular bellcrank and pushrod connector as shown on the plan or replace it with a conventional triangular one, using the same bearing hole centres. Now install the bellcrank, leadout wires and completely finish the wing with glass fibre resin and tubular tip skids, before installing it in the model. The glass resin finish replaces sanding sealer and dope.

The tailplane is also laminated, but from two sheets of  $\frac{1}{8}$  in. sheet with a lightweight glass fibre cloth inserted in the leading edge. Wind the elevator horn from 18 swg piano wire and solder it to the 16 swg torque rod. Slip the alloy tubes over the

Heading photo at left shows Jefe II in its World Championship winning form with glass fibre propeller. Note the exhaust outlet under tailplane and tubular tip skids. Cockpit is smaller than the one shown on the plan for last year's regulations. Right: Don Jehlik, left, holds 'Alfred', the U.S.A. team mascot and Jefe II at Swindon while Herb Stockton is on the right. Note the air intake on the top of the engine and forward of the cockpit.



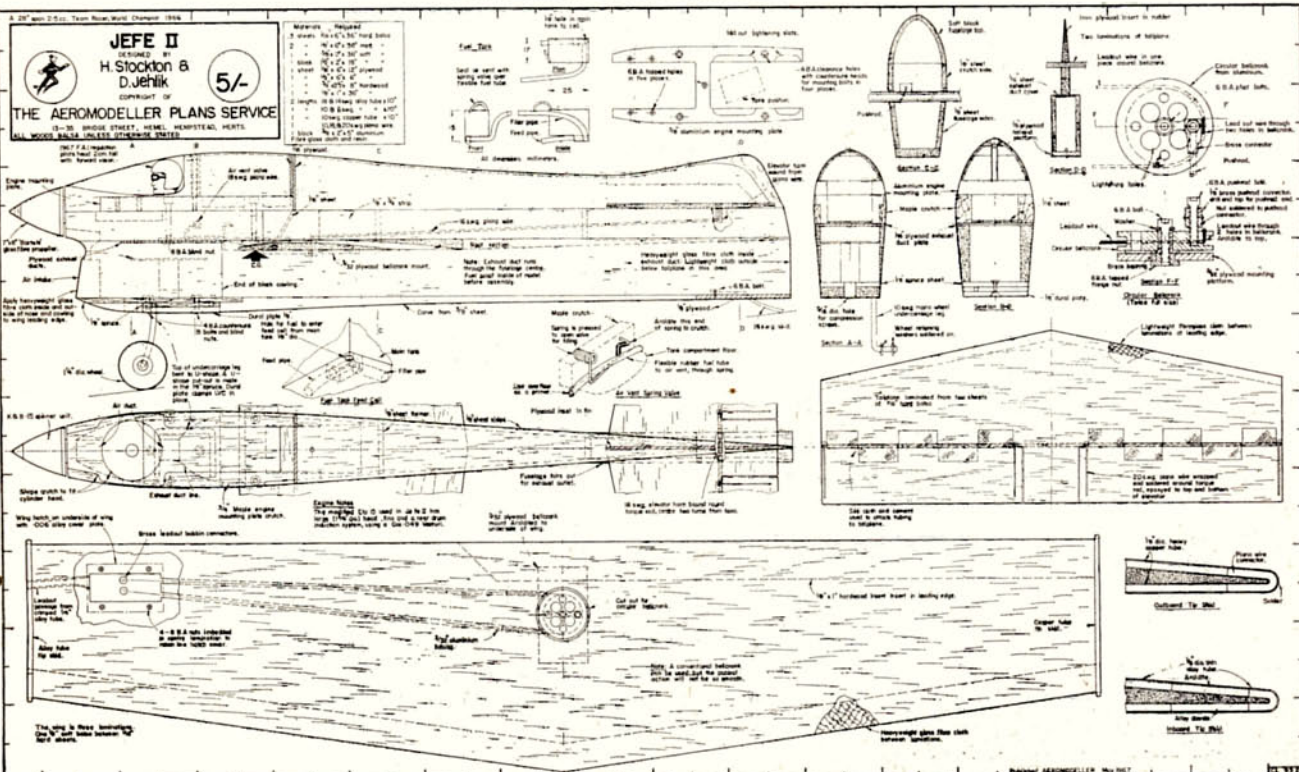
torque rod, then solder the 20 swg wires to the centre and ends coiling them around the rods so they clip over and under the elevators. Now tape the elevator and tailplane to alternate alloy tubes, then Epoxy 20 swg wires to elevators. Again finish in glass fibre resin before installation.

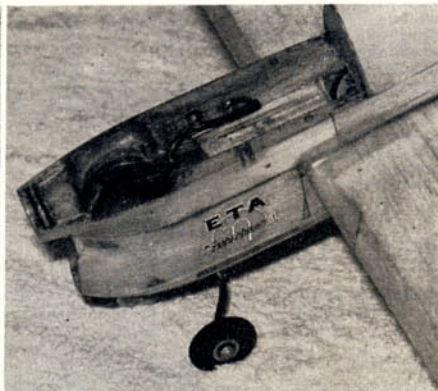
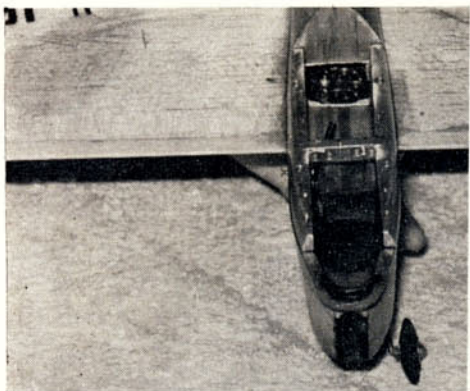
Next comes the difficult part, hacksaw and file, or machine the engine mounting plate from 1/4 in. aluminium, not Dural as this is considerably heavier. Tap the engine mounting holes and blue the engine to the plate, checking rock with feeler gauges. If you can get a .003 feeler gauge under

any part of the engine lugs with the engine lightly bolted in, keep scraping the lugs or plate until every thing is true or you will lose speed through distortion when flying, even though it may feel fine on the ground. Fret the 1/2 in. maple or equivalent hardwood crutch leaving the front end as one piece, just carving away to clear the front housing. Now drill holes in mounting plate and crutch to match and make sure the engine fits without binding on anything, add blind nut mounting bolts

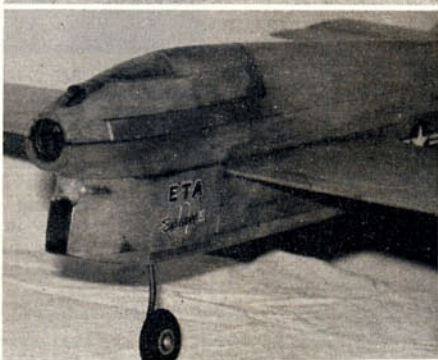
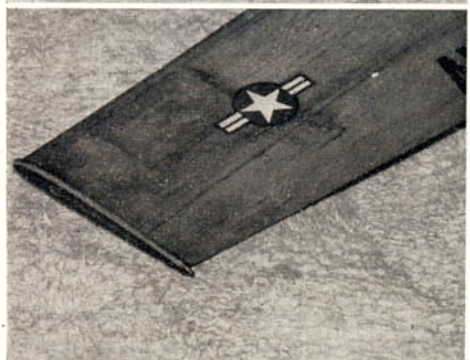
(Continued on page 238)

FULL SIZE COPIES OF THIS 1/5th SCALE REPRODUCTION ARE AVAILABLE FROM A.P.S. PRICE 5/- PLUS 6d. POST. QUOTE PLAN NUMBER CL 932 WHEN ORDERING.





Top left: engine mounting plate from aluminium is a must while circular bellcrank can be seen at rear. Note inward off set on mono wheel.



Top right: fuel tubing pinch spring for overflow and engine primer is secured to outer bearer. Exhaust is ducted up fuselage from ply manifold.

Lower left: tip-skid has one leadout tube for both lines in it and top side of line hatch is filled and covered in with a plywood patch.

Lower right: nose close up shows air intake and plywood plate of U/C. Note the deep hardwood engine mounting plate crutch and small cockpit.

## Fuselage

Cement  $\frac{3}{8}$  x  $\frac{1}{2}$  in. side strips on to crutch chamfering ends and join. Now epoxy wing onto crutch and side sheets, keying the bellcrank mount, add push rod. Cut the  $\frac{1}{8}$  in. sheet fuselage sides and  $\frac{1}{8}$  in. bottom to shape and thoroughly fuel proof the inside faces, adding heavyweight glass fibre inside the fuselage in the area under the tail plane. Carve the cowl from the block to fit around the engine then add exhaust duct separators from plywood and cement cowl onto the crutch, next cement  $\frac{1}{8}$  in. sides in place. All that now remains is for the aluminium undercarriage mounting plate and plywood plate to be cut to shape. Add these and the pre fuel-proofed  $\frac{3}{8}$  in. bottom sheet in place, not forgetting the tail skid and its plywood platform. Bend the undercarriage leg from 10 swg piano wire and only make each bend once, as this will prevent a possible failure on a hard landing. Make sure the U shaped top end is a snug fit in the centre plywood plate with the cut out for it and that the alloy cover plate bolt holes line up with the blind nuts in the longest plywood plate that form the cowl bottom.

With the lower half of the model complete, link the pushrod to the tailplane and epoxy the pre-finished tailplane in place. Carve the top block and canopy to the section shown, cementing block top to top of fuselage with plywood formers as shown. Add plywood 'fin', and construction is finished apart from tank and pilot.

The fuel tank is in fact a 'chicken hopper' type, as they are popularly known, of constant feed from a small header tank. The header is beneath the tank to the rear of the outboard face. The feed pipe under the main tank extends right into this, almost to the end wall and the filler pipe goes to the inboard face

of the header filling the main tank via the  $\frac{1}{8}$  in. dia. hole in the top of the header tank (which is the bottom of the main tank). Air is vented through the pipe on top of the main tank which is sealed off after filling by the 'mouse trap' type spring fixed to the bearers. This pinches a thin walled rubber extension of the air vent. Mount the tank in the dotted position shown on the engine mounting plate, using 18 swg steel straps soldered to it and bolted to the mounting plate.

Install a pilot with a head at least 2 cm tall so that he would have forward vision and is clearly visible from the outside, then epoxy the cockpit canopy in place. Rub the fuselage smooth and finish with a coat of glass fibre resin, the wing and tail being already finished. Finally add the silencer of your choice. The two sided airfoil section type shown in 'Silencers and Noise' page 486, September '66 *Aero Modeller* is ideally suited to the through-fuselage air duct.

## Flying

The large elevator is there for a purpose—to stop the model quickly after the engine cuts. One of Herb and Don's pit stops at the 1966 World Championship was accomplished within a third of a lap after the engine cut. Quick application of alternative up and down control braked the model and saved an extra lap that would have added six seconds to their heat time of 4:25 and thus, lost the World title! Line length for regulation races is 30 swg, or if you can get it 0.3 mm piano wire, 52 ft. 2  $\frac{1}{2}$  ins. long. Airspeed with a good stock 2.5 cc. diesel will be in the region of 90 m.p.h. and as tests have shown, one can still use the single stop technique even with the new 7 cc. tank capacity.



# 23rd Coupe d'Hiver

and  
AEROMODELLER  
POSTAL EVENT

## AEROMODELLER POSTAL CONTEST

### RESULTS

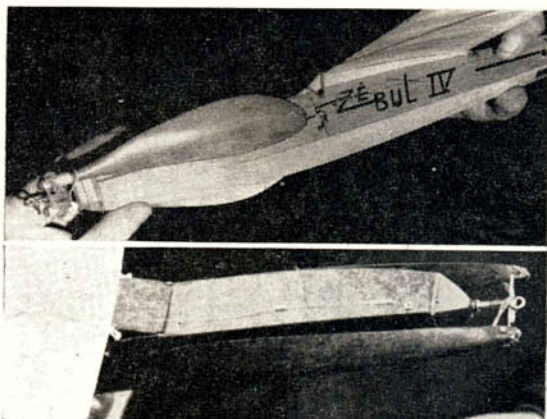
1. B. Rowe, *St. Albans*, 335; 2. D. Pymm, *Walsall*, 331; 3. S. Horton, *Crawley*, 321; 4. W. Horton, *Crawley*, 307; 5. A. Schwarz, Jnr., *Kolibris (D)*, 305; 6. V. Taylor, *St. Albans*, 302; 6. G. Cornell, *Croydon*, 302; 8. J. O'Donnell, *Whitefield*, 294; 9. R. Johnson, *St. Albans*, 292; 10. L. Burrows, *Blackheath*, 291; 11. M. Fantham, *Richmond*, 279; 12. J. Oulds, *Crawley*, 272; 13. D. Tripper, *St. Albans*, 264; 13. T. D. Wilson, *Belfast*, 264; 13. F. Monts, *Wichitlahawks (U.S.A.)*, 264; 16. D. Linstrum, *Kirkwood (U.S.A.)*, 262; 17. B. Bow, *Bristol and West*, 258; 18. J. Wilson, *Crawley*, 254; 19. G. Dallimer, *Stevenage*, 253; 20. D. Hipperson, *Croydon*, 247; 21. J. Pool, *Halifax*, 246; 22. CH/T French, *RAF Akrotiri (CY)*, 244; 23. J. Lorimer, *Woking*, 240; 24. A. Schwarz Sen., *Kolibris (D)*, 239; 25. C. King, *Cambridge*, 237; 26. J. Down, *South Bristol*, 235; 27. M. Reeves, *Lee Bees*, 228; 28. L. Sonneborn, *Amsterdam M.A.C. (N.A.)*, 225; 29. M. Gaze, *Cliff Cloud Climbers (U.S.A.)*, 223.5; 30. R. Elliott, *Lee Bees*, 223; 31. H. Tubbs, *Baldon*, 222; 31. P. Cameron, *Crawley*, 222; 33. J. Mabey, *Lee Bees*, 220; 34. Sgt. Truluck, *RAF Lyneham M.A.C.*, 219; 35. C. Baucke Jnr., *Cliff Cloud Climbers (U.S.A.)*, 211; 36. K. Attiwell, *Halifax*, 210; 36. J. Brookes, *Stevenage*, 210; 38. G. Hannah, *St. Albans*, 204; 39. W. Jordan, *Kolibris (D)*, 199; 40. S. Spencer, *South Bristol*, 197; 41. G. Pink, *Bristol*, 194; 42. T. Poots, *Belfast M.F.C.*, 193; 43. Sgt. Hadland, *RAF Brize Norton*, 188; 44. E. Drew, *Bristol and West*, 180; 45. R. Brownson, *Timperley*, 176; 46. M. Cowley, *Northampton M.A.C.*, 172; 47. R. Firth, *Sheffield S.A.*, 171; 48. Sgt. Boonham, *RAF Lyneham MAC*, 169; 49. M. Doyle, *Belfast M.F.C.*, 164; 49. G. Abbott, *York*, 164; 51. J. De Bode, *"De Muggen" MFC (N.A.)*, 153; 52. R. Ruysink, *Numegeen MAC (N.A.)*, 158; 53. A. Burgess, *Bristol and West*, 155; 54. A. Payne, *Stevenage*, 143.5; 55. R. Wade, *South Bristol MAC*, 141; 56. B. Faulkner, *Cheadle*, 129; 57. CH/T French, *RAF Akrotiri MAC (CY)*, 125; 58. H. Schweinsberg, *Delft MAC (N.A.)*, 120; 59. T. Faulkner, *Sheffield S.A.*, 113; 60. W. Banen, *Amsterdam MAC (N.A.)*, 106; 61. J. Radcliffe, *Timperley*, 102; 62. J. Cooper, *Northampton*, 99; 63. R. Hoff, *Sheffield S.A.*, 97; 64. J. de Vos, *Amsterdam MAC (N.A.)*, 91; 65. W. Thimme, *"De Muggen" MFC (N.A.)*, 84; 66. J. Van R.J., *Zevenaar (N.A.)*, 78; 67. J.T. Cuffwright, *RAF Akrotiri MAC (CY)*, 67; 68. CH/T Huish, *RAF Akrotiri MAC (CY)*, 61.

IN THE FEW YEARS that it has taken the French Winter Cup class of rubber driven model contest to become internationally established, so it has also become part of the scene that the weather should be amazingly mild and relatively calm in France whilst elsewhere the wild winds do blow and rains pour down.

It is traditional for the Coupe d'Hiver final, as originated by the French magazine *Le Model Reduit d'Avion* under the guidance of Maurice Bayet to be run on the last Sunday of February. Our own postal event is arranged to coincide and also permits the prior Sunday to be used as a "first chance" date in the light of experience with British weather. 1967 lived up to all expectations. Both dates were pretty foul for all postal entrants, whether they were in this country, the Netherlands, U.S.A. or Cyprus, and yet for the 200 models at

At top, part of the British Group with their own and proxy models. Back, R. Johnson, Shirley and Bill Horton, J. Wright and V. Taylor. Front, O'Donnell and H. Tubbs. Left, in Postal contest, J. Cuffwright winds up in 20 m.p.h. winds over Cyprus salt flats. Below is Frank Monts' model flown by O'Donnell, on scale recently described in John's column.





Gimmicks; Top is Dupuis "Zebul" auto-rudder tripped by prop tip, next, Laurie Burrow's sliding wing, tripped by prop shaft. Below are Henry Tubbs's and Bill Horton's models zipping away at fast rate in a left bank from rise off ground points. Typical Coupe d'Hiver model attitudes immediately after release.



In the Postal contest, Trevor Faulkner prepares a model which has travelled to earlier French meetings. Roy Hoff makes sure the dethermaliser fuse is alight before release on Ringinglow Moors near Sheffield.



Chavenay, near Paris, on February 26th, the over-cast was high and the wind never more than 10 m.p.h.

All credit, therefore to the leading high time places in the postal contest results at left. The first three will be rewarded with *Aero Modeller* subscriptions.

A party of 17 flew by Air France Boeing 707-328 to Paris under the wing of *Aero Modeller*, and were smartly transported by specially arranged Air France coach in the city. Came the next morning, and another coach ride to Chavenay, about 14 miles S.W. of Paris.

The French National Federation of Aviation now organises the event. Jean Ganier was in charge, backed up by many well-known personalities in the fields of free flight, scale and control-line modelling. Timekeepers were reasonably numerous but with a potential 600 flights to record, each by two timekeepers, a queue was inevitable. As a round system was employed, flying tactics were changed from previous years, and for those with several models, especially the proxies who had in some cases not seen their charges until they were unpacked on the field, it was rather a mad start to the day. If any complaint could be made, it should be that the long luncheon break should be discarded and the time dissipated into the round system to permit more flying time.

Bill Horton, Dick Johnson and Henry Tubbs each collected a max in the first round. John O'Donnell's model sank quickly on the glide after gaining good height, to return 1½ mins. and when he was winding Frank Monts' model a motor break tore the front former away. Hastily pinned repairs gave reasonable if peculiar trim for 113 secs. Vince Taylor managed 114 secs. and as far as one could gather the British were more than holding their own.

As Bill Horton reeled off one more max after lunch break, John O'Donnell made sure of another though he broke motors in both his and F. Monts' model. Laurie Burrows also maxed with his moving wing machine and Jim Wright found a bump for R. Monts' proxy model. Henry Tubbs was out of luck, he did better with Bauke's proxy this time. His fellow clubster, Barry Lumb from Leeds had the motor peg come out so that after 30 seconds of inspiring climb his model discharged prop and motor for a lightly loaded descent.

The final round was rather a dash to avoid rough weather and hold what lift might be around. Our info was that four modellers had double max's,





Left to Right, J. C. Neglais and his winning model, unusual from many aspects, see following page for plan. Centre is past winner Alan Landeau who entered five model and came third with a total of 348 seconds. Right is Dupuis in a characteristic launching attitude. Model is rather small for C d'H, see prop detail opposite.

Dupuis, Neglais, Templier and Bill Horton, so hopes were high. Alas, Bill's ultimate flight was a 67 seconds effort against an obvious downdraught, and to grind it in, wife Shirley came up with a beautiful flight to top the lot. Dark Horse Shirley had steadily improved times with her own model and had also fought a running repair battle with Dave Linstrum's "Dwarf Dip" which de-pyloned itself and flew better with temporary fixing. Dick Johnson was flying the model sent over by Fudo Takagi in '66 as he thought he understood its ways, but 36 seconds on the last flight will forever remain a mystery for him. After a lengthy hold with full winds on the motor, John O'Donnell misjudged the air and was down in 84 seconds, but Vince Taylor caught lift with Charlie Sotich's "Dip" and so did his St. Albans clubmate Dave Tipper. Incidentally Dave also flew Brian Donn's "Dinky Bear"—ever seen flexible sparless C d'H. wings? This one has them as a special feature.

Meanwhile the French camp were not exactly hanging about. Both Dupuis and Neglais maxed in their last rounds, and the perpetual second man as they call him in France, Jean-Paul Templier, was only one second short of a perfect total. We expected a fly-off between two interesting models of direct contrast. But it was not to be, for Dupuis had not maxed three times with the same model. He had more than one entry.

Conclusions? To the layman, Coupe d'Hiver contest like this 'en masse where no less than 167 models actually flew must leave one impressed. It's the event which matches expert and comparative novice, where a rough field repair often results in better flights, where one has the chance to experiment and most of all, where one finds a lot of FUN in flying.

Below left, Madame Dupuis also flies Coupe d'Hiver, note how similar is the climb to that of hubbie's above right. Centre, Danielle Templier with her husband's larger model, she also flies, and at right, best British performer Shirley Horton releases Dave Linstrum's flown by proxy.



### 23rd Coupe d'Hiver Chavenay Results

1. Neglais, 360; 2. Meritte, 359; 3. Landeau, 348; 4. Cabanes, 347; 5. Grandrupt 346; 6. Sargentini, 339; 7. Landeau, 331; 8. Dupuis, 329; 9. Meritte, 328; 10. Dupuis 324; 11. Matherat, 322; 12. Perineau, 321; 12. Horton, S. (Mrs.), 321; 14. Garrigou 316; 15. Garrigou, 315; 21. Horton, W., 307; 26. Taylor, 302; 28. O'Donnell, 294; 31. Sotich (V. Taylor), 292; 31. Johnson, 292; 34. Burrows, 291; 47. F. Monts (O'Donnell), 284; 47. Tipper, 284; 52. R. Monts (J. Wright), 260; 66. Tipper, 245; 70. Linstrum (S. Horton), 234; 75. Johnson, 230; 76. Batiuk (L. Burrows), 229; 80. Tubbs, 222; 81. Lumb, 220; 88. Linstrum (S. Horton), 216; 92. Bauke (H. Tubbs) 211; 93. Tubbs, 209; 97. Donn (Tipper), 201; 103. Tubbs, 196; 105. Takagi (R Johnson), 194; 112. Macdonald (French Proxy), 174; 115. J. Wright, 164; 139 K. Johnson (French Proxy), 105.

### Neglais' winner

Made at the end of the 1965 season, Jean Claude Neglais' design is based on the *Rare Bird* introduced by the Wakefield exponent, Marc Chevrolot. The model placed 18th at the 1966 event and has been used as Jean's first model since then. A feature of the design is the very high wing position where it is said to be in the most effective area of propeller slipstream. The combined downthrust and incidence angles offer 6 degrees angle of attack on the wing, and 3 degrees on the tail. This combination is claimed to provide rapid climb of the style characterised by the Breguet 941.

Take off attitude should be arranged 30 degrees to the left of wind direction and during the 27 to 33 seconds of motor run, the "Rare Bird" follows a regular flight pattern of spiral climb, gaining 30ft. in the first zoom across the wind. A tight left turn in the glide (arranged by tail tilt) normally gives a duration of 140 secs. plus. Only weak point of the structure is the attachment of the wing pylon on the fuselage. That is the reason for the triangular reinforcement plate ahead, and the ply base below the pylon. As Jean tells us, one must be careful with strengthening ideas which increase weight but the pylon has so much to commend it, that the additions are beneficial in this case. Jean also gives credit to fellow French CdH enthusiasts whose team work shares his victory. Paul Bollinger, Emile Gouverne and Bernard Raulin are regular fellow competitors at the Chavenay meetings and Roger Caye of Nancy played a special part in helping win the 23rd Coupe d'Hiver.

Details, with full size ribs, cross sections, pylon wing seat and propeller blade shape are overleaf so readers can take up the challenge for next year!

### FULL SIZE PARTS PLAN OVERLEAF



# L'OIZORAR (RARE BIRD)

by Jean-Claude Neglais

Winner

23rd Coupe d'Hiver

France 1967

Power: 6 strands  
6.35 mm. *Pirelli*

+ 4°

54% C.G. position

Wing  
(all spars drawn  
actual metric size)  
+ 1°

2° downthrust

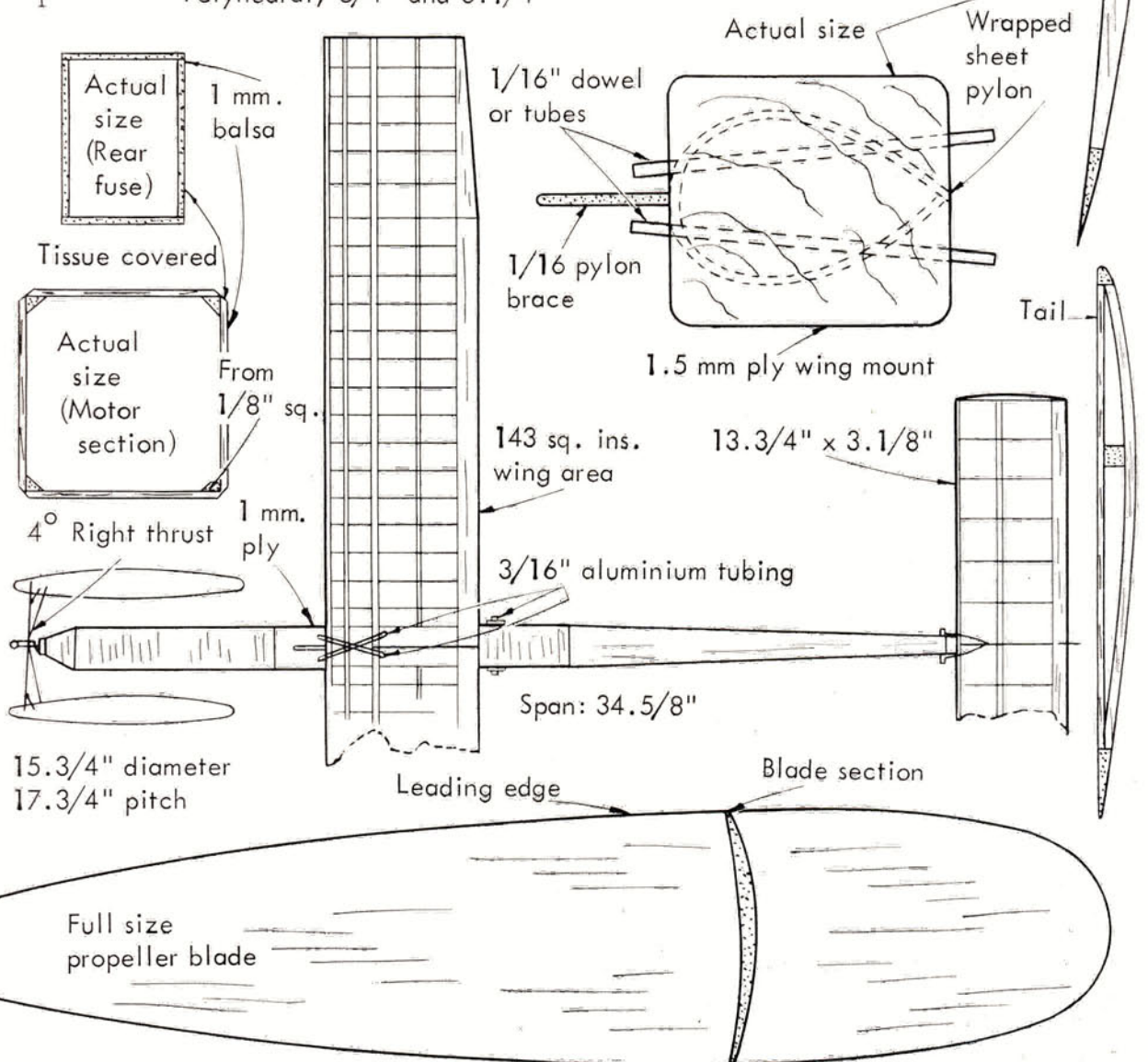
Rear peg  
position

Trim  
tab

Weights: Wing .9 oz, Tail .2 oz, Fuselage 1.1 oz.  
Side and Plan views are 1/5th scale

Ribs from  
1 mm balsa

Polyhedral, 3/4" and 3.1/4"





# IT'S ALL A GAME FOR MEN

**Boy killed as Marshes no place for these models hits cables**

**Two Lost—One Grounded**

Two models were lost and one run over by a car on Sunday when high winds upset Apsley Model Flying Club's first contest of the year.

**Art Carving to Aid Dental Study Plans**

Whether or not a student can carve a thick stick of chalk into the shape of a flying P-38 may determine whether he decides to enter dental school. This is a sample test for manual dexterity, a necessity

## IN THE PRESS

Yet another fatality through electrocution by overhead high tension cables occurred on March 5th.

Brian Collett, a very keen 15-year-old member of Cophorne Club was flying his control-line model at Burcot, near Oxford during a visit to his Grandparents.

To quote the "Oxford Mail" *Suddenly the craft shot towards some overhead electricity wires and eye witnesses said they heard two bangs and saw a flash of light. The next minute Brian was lying on the ground.*

First aid attempts were unsuccessful and mercifully, Brian knew little of what happened to him.

He had contacted a local grid line carrying 11000 volts. This is a relatively light load when compared with the National Grid and serves to emphasise the enormous risk one takes when flying anywhere near an overhead cable.

At the inquest on March 21st. the Coroner was good enough to consider the information we provided concerning other fatalities and issued a warning which received a lot (though not really enough) of publicity in the local and National Press, to quote again from the "Oxford Mail":—*There were also many cases of serious shock through children and adults becoming absorbed in flying their aeroplanes and getting too near overhead electricity cables.*

*"Mr. Gardiner said that it was generally thought that there was no danger in controlling models with nylon or cord but this was not so, as damp nylon was just as good a conductor of electricity as wire.*

*"It also seemed that actual contact with a cable was not necessary as there has been a case where a spark had leapt nine feet from a cable to run down a control-line."*

Is it not too much to hope that the Central Electricity Generating Board publicity dept. might consider the issue of a warning poster for permanent display in all model clubs?

### Battle of Southend

*"It is high time the Corporation banned the flying of powered model aircraft on Leigh Marshes,"* is from the Southend Press leading a letter from Mrs. Pat King, once Lady Champion Aeromodeller of Great Britain and Director of Contest Kits, operator of a Model Shop, and strong protagonist for the hobby of aeromodelling. Pat went on to say *"I was a modeller myself so have every sympathy with flyers and would not wish to stop this worth-*

*while fascinating sport, but I believe flying should be moved to a field further away from a residential area. The safety factors should not be overlooked. A radio-controlled model which can be anything up to six foot wing span flying out of range could inflict serious damage to life and property. In fact a neighbour of mine was most upset by one of these large models crashing in her garden where her three year old child might easily have been playing."*

Pat's views are not to be lightly dismissed by anyone. They are probably shared by many another modeller with family responsibilities. The answer is not easy to procure but happily we learn that there is a strong possibility of Southend area fliers obtaining a more suitable field on the outskirts of the town.

### A Game?

Heading above, was from a feature in the nationally circulated *Reveille* weekly. Contributor Dora Templeton worked on the theory that each of us is an exhibitionist. *"At last the maestro was content with the size of his audience. Carefully he placed his plane in the middle of the field, flapped his arms importantly in a 'stand back' gesture tucked his radio control unit under his arm and started up the engine."* But a prang dismissed the expert image. *"Wreckage was everywhere. The crowd rushed to the spot an almost smug grin on every face."* Boat operators and kite fliers were treated similarly. For exaggeration of a superficial observation on the modelling hobby, one would be hard pressed to find a more ridiculous piece of journalese.

### Dental Skills

It's an established fact that we have many dentists among our ranks—and we're not referring to those who habitually fly models into other people's faces! From the Californian Press we learn that San Fernando State College students are to be required to carve a model P.38 Lightning from a stick of chalk as part of their dexterity test. Sounds a sticky task to us!

### Off the Band

When four radio controlled models in the L.A.R.C.A.S. club were dashed to the ground with control failure through interference, it was reported in the Manchester Press that the Monitor was picking up transmission of a brass band! We've heard of dog control, racing tipsters spying out form on Newmarket Heath and even garage door opening devices illegally operating on 27 Mc/s but the thought of a Walkie-Talkie churning out the best of Colonel Bogey seems like the giddy limit.

# CONTROL «Бесстрашный LINE Фред» NEWS

From:- U.S.S.R., G.B.,

France and U.S.A.



## “FEARLESS FRED”

### Fearless Fred flies again

Referring back to the Pee Wit F.A.I. racer by Boris Chkourski with the inverted cockpit that caused all the fuss and bother over the semi scale rule and pilot positioning (November 1965 Aeromodeller), which eventually lead to the present 2 cm. tall pilots head requirement, we find the U.S.S.R. model magazines are also trying to make racing models more realistic.

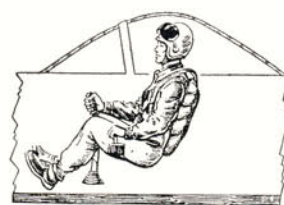
A quote from “Young Modeller Constructor” makes it quite clear how they feel about this.

*“Not only has the aeromodeller of today to understand the theory of flight, but he should also study aircraft design in relation to his own models. However, few flying models resemble an actual aeroplane or glider. This is not so in the case of a control line model (excluding of course, scale models) where the centre of the fuselage is restricted to 39 cm<sup>2</sup>, and its cockpit is similar to that of an aeroplane. Whilst designing such a model the author studied numerous modern aircraft before he decided upon its contours.*

*Some modellers, however, regard aeromodelling solely as a sport. Instead of using a single wheel retractable undercarriage—the simplest mechanism available—the middle of the fuselage is reduced to a minimum at the expense of the cockpit canopy, and any similarity that the control line team race model may bear to a conventional aeroplane is thus eliminated. Naturally drag on such models is less than in the case of ordinary control line models and as a result they have better flying qualities, but they have no recognisable value. It is worth remembering that the rules of the F.A.I. and many national aeromodelling clubs stipulate that team race models must resemble actual aircraft. It is for this reason that a limitation was placed on the middle of the fuselage and a cockpit canopy made a necessity.*

*British aeromodellers wish it to be made compulsory to install, and make visible a standard “Fearless Fred” pilot in the fuselage of all team racers. This would appear to be a very good idea. In the Soviet Union we are already witnessing the appearance of the pilot in his cockpit especially in competition between modellers.”*

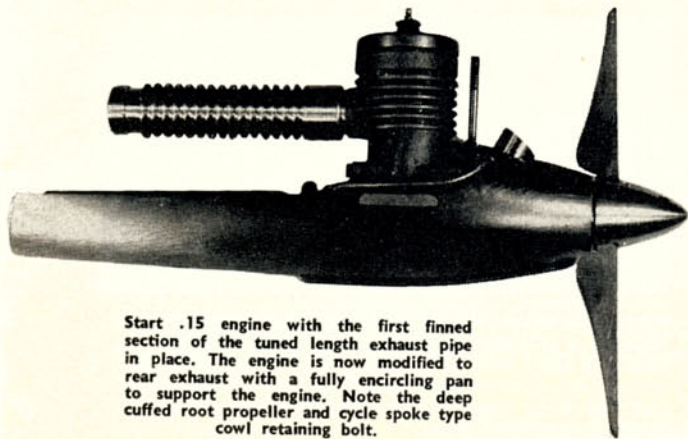
Drawings from “Young Modeller Constructor” shows Fred contemplating his flying position above, while below their illustration of a correct installation.



### The Seasons First Comps.

In the U.S.A. the Californians had their first two F.A.I. competitions in January, for team race and speed events. The speed saw Bill Wisniewski take top spot with 151 m.p.h. followed by Roger Theobald at 150 m.p.h. both using T.W.A. engines with tuned length pipes. Arnie Nelson made a Super Tigre G15 go pretty fast at 144 m.p.h. also using a pipe. In team race the Barr/Theobald team used an Old Super Tigre G.20 diesel-powered model to record 4:39 with two pit stops on a 7 cc. tank, the fastest yet to the '67 specs. In the 200 lap final they won with 10:05.3 whilst Jackson/Wilbourn (also Super Tigre) placed 2nd with 12:41.6 and in third place came Burke/Jones using a T.W.A. glow and tuned length pipe. They made *some 16 pit stops* for 14:50.2, flying at 112 m.p.h., with 17-18 laps, leaking fuel out of the engine at the front end and with the wrong timing causing fuel to be rejected out of the venturi. Their pipe “comes in” after 1½ laps.

Guy Revell reports the French races on 7 cc. tanks where Magne/Malfait made 5:00 with a Micron 2.5 doing 97 m.p.h. for 34 laps to win the first meeting, followed by Chenal/Maraget also using a Micron but doing just over 50 laps at 95 m.p.h. for 5:29. Fastest in practice the Bador brothers were low on laps but hit 101 m.p.h., using a pressure refueling system to quicken their pit stops. Guy points out that the greatest drawback of the 7 cc. tanks is checking their capacity. He had to repeat checks three or four times. Three burettes of different glass thickness were found to give a variation of as much as 0.4 cc. Due to the different capillary attraction of water and kerosene, commercial precision burettes deliver 10 cc. of water



Start .15 engine with the first finned section of the tuned length exhaust pipe in place. The engine is now modified to rear exhaust with a fully encircling pan to support the engine. Note the deep cuffed root propeller and cycle spoke type cowl retaining bolt.

and 9.5 cc. of kerosene when filled with 10 cc. of both fluids. It is thought that the only accurate way of checking the capacity within 0.3 cc. is by weighing with white spirit of known density, this being checked at each purchase as it can vary by 0.1 in weight. This is a lengthy method and could be used at important meetings, where the competition justified it.

Back at home Dave Balch and Richard King (Feltham-Hayes) have won both F.A.I. races to date with their Oliver Mk. III powered *Trident*. They recorded 4:45 at the London Area Championships in awful conditions on 7 cc. and 4:50 at the N.W. Area Easter Meeting on 10 cc. Each of these meetings were stricken with high winds but their lightweight model flew smoothly whilst others were all over the sky. Another team to watch who are on the way "up" is Heaton/Ross (Leigh) who produce very nice models their latest being M.V.V.S. powered. Alan Laurie (Novocastria) is using a Moki this season as well as his Super Tigre glow model the Moki making 45 laps on 7 cc.

### Tuned Length Exhausts in U.S.S.R.

After Bill Wisniewski's demonstration of the tuned length exhaust at the World Control Line Champs, it was expected that other Nations would soon catch on to the ideas application to model engines.

Top U.S.S.R. speed man P. Natalenko uses a Start .15 in his latest F.A.I. speed model mounted in a half length speed pan of the type that encircles the front housing, and fitted with a tuned length exhaust pipe. This was produced to the Wisniewski formula. An engine pressurised fuel tank is used. Test flights are being made during April in Odessa on the Black Sea coast where the first competitions of the season are being held. Tests indicate that the performance increase with the pipe is less than that experienced by Bill Wisniewski but it is still high, producing .65 b.h.p. at 28,500 r.p.m.

A modified Super Tigre G20 recorded 140 m.p.h. last year for Natalenko peaking at 25,500 r.p.m. The Start does 28,500 on the same propeller with a pipe, Nick Turkin our correspondent points out that they are working in the hope that their speeds will rise to over 150 m.p.h., but they foresee difficulties with the fuel feed system. Incidentally, the Hungarians also have tuned length pipes. Laszlo Toth of Moki has one on a new rear exhaust engine.

### Control line at the Nationals

This years' National Championships at R.A.F. Hullavington has seven events for the control-line enthusiasts with Rat Racing coming in for the first time. Sunday May 28th has the handicap speed event where all classes are combined and measured against the current British record to establish one overall winner. A special prize is to be presented to the fastest junior flier on handicap and every assistance will be given to juniors who enter this event by the North Sheffield club, the organisers, to help foster more interest. Also on the first day are the combat heats and a team race (F.A.I.). This event is being run by Wanstead M.A.C. and a more thorough processing of models and more spot checks a few seconds before the race starts are planned to make sure all models comply with rules. The tank capacity will be 7 cc. and clearly visible pilots 2 cm. tall will be needed. Unlike the N.W. Area Easter meeting, where last years rules were used, the Nationals will be for the *latest rules* with *no semi-final* as in past years. Scale will also be flown.

Monday May 29th has more control line events. Including the final rounds of combat. Control line Aerobatics and  $\frac{1}{2}$ A Team Racing, run by the R.A.F. M.A.A. Also the scale control line models will be judged. Rat Racing is on the Monday.

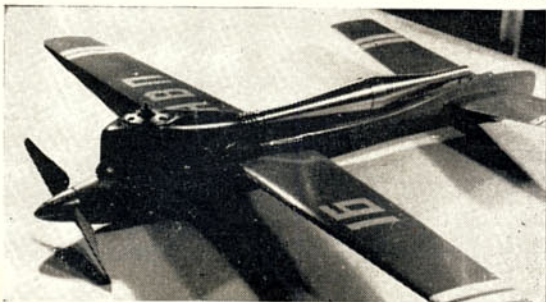
#### Rat-Race rules for British Nationals

- 1) Max. engine capacity 0.40 cu. ins.
- 2) Lines plus model—60 ft. (no mono-line) x .0148 in. dia. minimum. (Light Laystrate is too thin).
- 3) (a) Everyone flies once in heats of three, for 70 laps with at least one stop. (b) Fastest eight fly again in two semi-finals of four, for 70 laps including one stop. (c) Fastest four (on semi-final times) fly in final of 140 laps including two stops.
- 4) A Le Mans start is used for all races.
- 5) Segment circle system used as in team-racing.
- 6) No model restrictions.
- 7) 20G line pull tests for 10 secs.

#### General Flying Conduct

- 1) All pilots must walk around the centre circle.
- 2) All pitmen must withdraw model for servicing.
- 3) For any team to fly they must have timed at least once; any team not assisting in this manner will be disqualified.
- 4) The 70 lap heats will be restricted to 10 minutes.
- 5) Anyone flying in other events who want preferential treatment in the flying order *must* produce proof, i.e. a note signed by the appropriate contest director.

Natalenko's complete speed model with the tuned length pipe—built to the Wisniewski formula. The start engine produces .65 b.h.p. using straight fuel (methanol) and castor) and the pipe.



## AIRCRAFT DESCRIBED No. 162

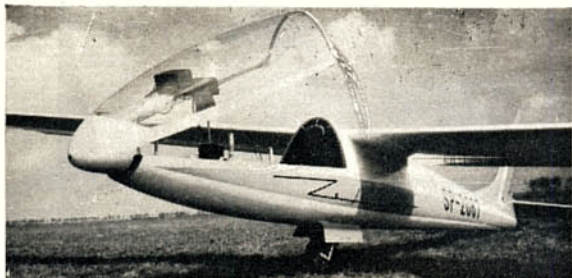
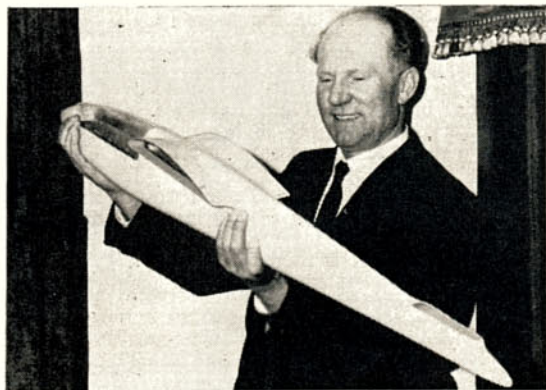
S. Z. D.

## ZEFIR

High performance Polish Sailplane  
 Drawn by F. Pawlowicz

**D**ESIGNED by a team under the guidance of Bogumil Szuba the Zefir sailplane has been built in fair numbers by the "Szybowcowy Zaklad Doswiadczalny" (Sailplane Experimental Centre) and is also known under the designation "SZD-19-2".

Since the "Zefir" was created as a sailplane for competition work it incorporates a wing with laminar profile. This ensures a high lift coefficient with small drag losses. Wide spar strips also form the wing skin, making it very rigid and exceptionally strong (during static tests steel cables broke, but not the spar). The profile accuracy is to closest possible limits over



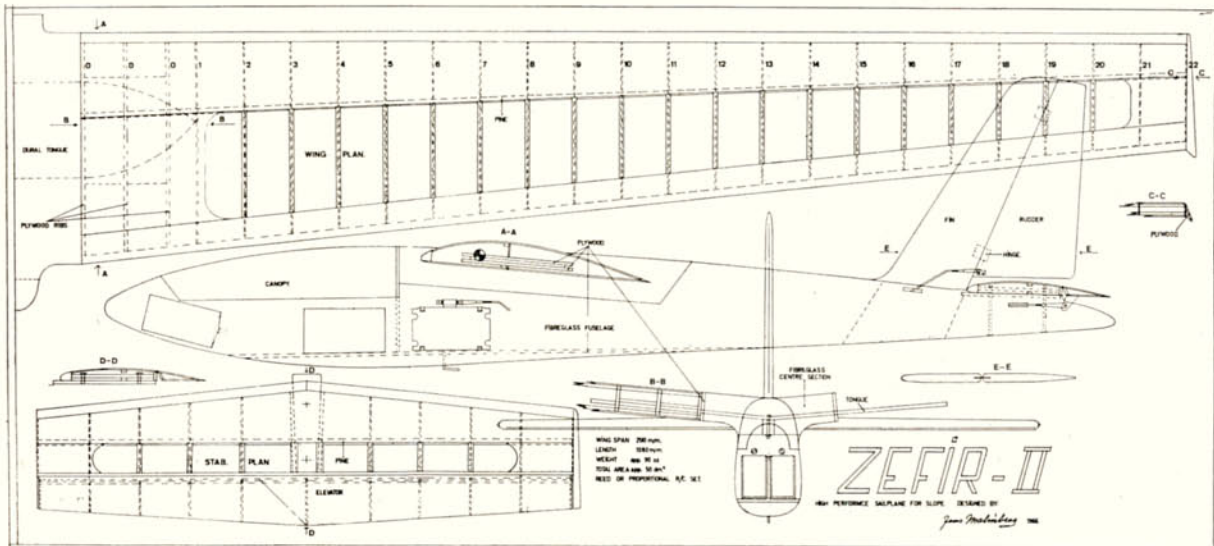
almost the whole wing—deviations do not exceed one fifth of a millimetre! The wing is also unusual in that it is fitted with 35 per cent VZLU (Fowler) flaps, non-slotted ailerons and small end plates which protect the wing tips against possible damage during landing.

Plastics are extensively used for building the wing both for the sandwich nose section, flaps, and for the trailing edges.

Use of plastic material—polyester laminate—is especially evident in the fuselage. Since this material allows easy reproduction of any shape, and is very strong—the entire front section of the fuselage is covered with it, both on the outside and on the inside. Laminate has also been used for all streamlined elements, and fairings. The reclining position of the pilot reduces frontal area to an absolute minimum and also involves unusual controls (the prototype had hydraulic controls). High quality Polish instruments (as employed on many British sailplanes) are fitted as well as radio and oxygen apparatus of very small dimensions and a barograph. A tail parachute serves the same purpose as the air brakes fitted normally in the wings and can be released if necessary. Production "Zefir" sailplanes are equipped with tail parachutes for repeated use.

The tail units also have laminar profiles and are

Don Bateman (Luton) and glass fibre semi scale Zefir model fuselage sold by Danish modeller Jens Malmberg for plan reproduced 1/8th size below. Dragoncraft also market a 45½ in. fuselage at £6 1s. 0d. for 10 ft. 4 in. model.



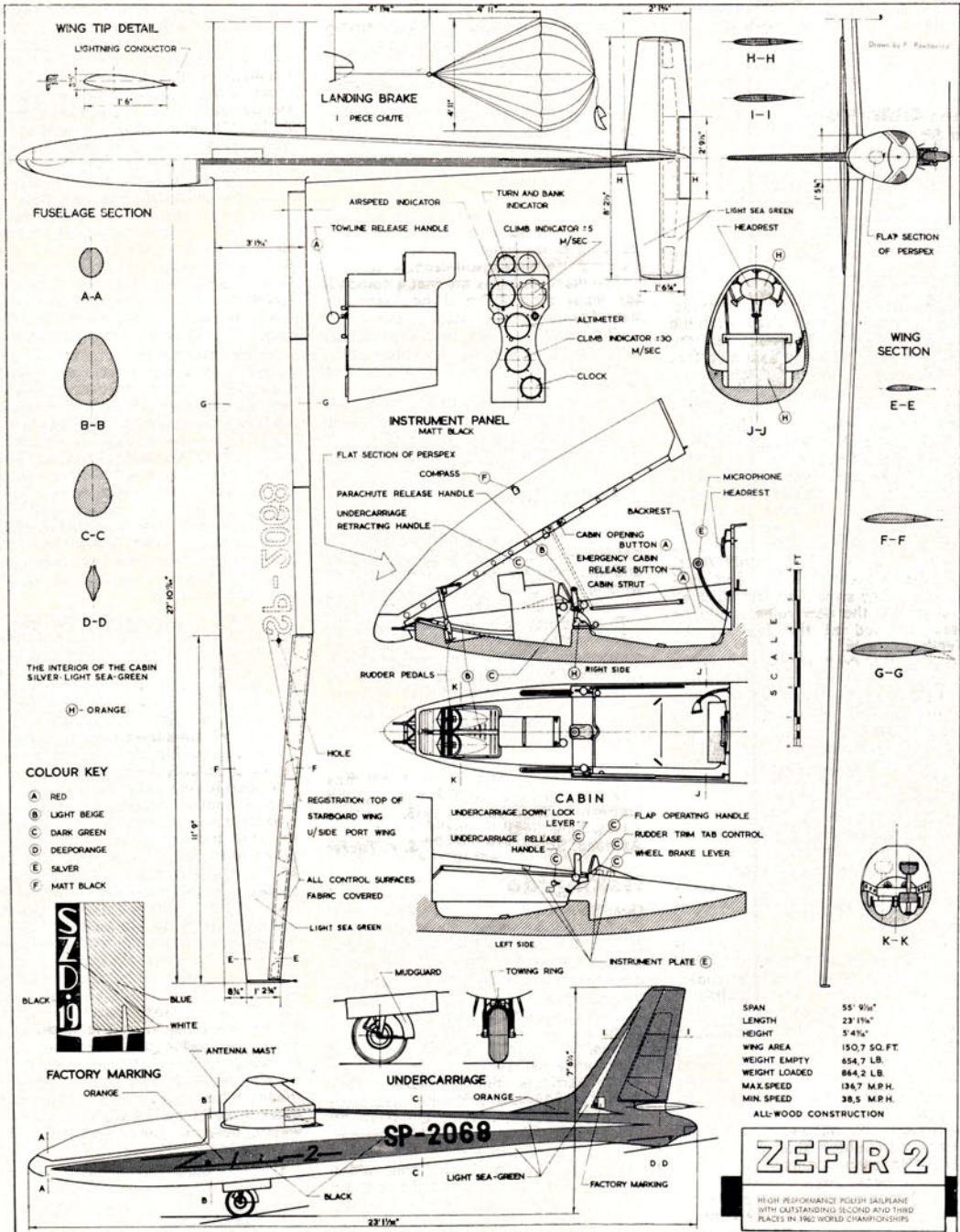
wooden structures. The fin and tailplane have sandwich skin, the rudder and elevator are fabric covered.

The single leg landing gear is retracted on release of the launch towing rope and is hidden completely in the fuselage.

From its introduction, the Zefir met with success

in domestic and International events. The subsequent "Foka" design is now exported in quantity, at least one is in regular use in Britain and modellers everywhere have followed the inspiring lines of these sailplanes for slope-soaring and who could blame them for copying?

Reprints of this 1/72nd scale drawing and dye line parts of the large scale original are available as Plan Pack 2866 from Aero Modeller Plans Service



# Reader's Letters

The editor is not bound to be in agreement with any view expressed.

## Rule changes

Dear Sir,

With reference to John O'Donnell's article in this month's *Aeromodeller* the Free-Flight Sub-Committee submitted the draft rules to the S.M.A.E. Technical Secretary on the 25th July, 1966. At the same time Mr. O'Donnell was sent a copy of these rules and arising out of his comments some very minor amendments were made to clarify certain issues but these did not affect the three model rule and the revised draft was sent to the S.M.A.E. Technical Secretary on the 1st November. I naturally assumed that the Technical Secretary obtained the approval of the Society's Council to the whole of the rule book before it went to print and I was never informed at any time that the draft rules had not been adopted in their entirety.

When it became clear that the new rule book would be partially distributed by the 25th March, the date of the first contest this year, I approached the Society's Chairman on the 4th March, handed him a copy of the draft rules, went through them with him and suggested that they should be issued to all Areas so that the new rules would be universally used at the first of the Society's contests.

Naturally the draft was circulated in accordance therewith and included the use of three models. The Sub-committee's decision to introduce the three model rule arose for the reasons stated in the article and in fact it was contended to me by a well-known modeller that he was entitled to use a third model in the fly-off under the old rules.

The Sub-Committee's contention was that whatever happened the matter must be made clear and that the use of three models seemed the best solution.

Have.

I. Lucas

Chairman, Free-Flight Sub-Committee

## Suggestion

Dear Sir,

The main problem in trying to limit the performance of open rubber models is that with the previous suggestions I have seen, a specialised type of model will result, built to take best advantage of the rules.

I have a set of rules which would reduce the performance, yet the models would still be open models as we know them now.

The rules are as follows:

1. Each competitor shall use only 1 rubber motor for the 3 official flights and the fly-off (if necessary).

2. If a motor breaks, the competitor can repair this motor, but a new motor may not be used.

3. The rubber motor shall be marked by the contest organisers and the timekeepers shall check that this motor is used before each flight. (The motor could be marked with ink by a small rubber stamp.)

To stop the motor breaking and becoming too tired the motors will have to be wound up less than normally and hence performance will drop.

The disadvantages are that a competitor must stop flying if he loses his model or breaks the motor in a big way.

The advantages are that: (a) reduced performance is achieved; (b) no processing is needed; (c) existing models can be used.

I believe that the advantages outweigh the disadvantages and that these rules would work well in a competition.

Gateshead, Co. Durham. B. G. Martin

## Time flies!

Dear Sir,

I was interested to see in the February *Aeromodeller* a photo. of D. A. Russell and his son, Captain Michael Russell, who is now Chief Training Captain for Channel Airways at Southend Airport.

Readers may be interested to see three other photos of Michael Russell at an earlier age in previous issues of the *Aeromodeller*, viz. Page 25 of December 1943, where he is shown with his own design glider "The Challenger", Page 195 in March 1945 and Page 164 in February 1946, these two being in connection with the exhibitions at Dorland Hall. I remember seeing this 14 year old boy briefly for the electric R.T.P. circuit at the first exhibition in January 1945.

How time flies!

Ashtead, Surrey.

S. V. Tucker

## Making 'do'

Dear Sir,

Reading the comments on the Editorial page of the February issue of the *Aeromodeller*, relating to the aeromodelling problems in the Falkland Isles, it brought back to memory some of the obstacles I experienced during part of my seven years Active Service with the Armed Forces, in order to do a little model flying while overseas.

One particular notable incident was back in May 1944. At that time I was serving with a Secret Service Organisation about eight miles outside Algiers, and one night there was a particularly heavy air-raid on the city. During this raid a HE.111 flew into a barrage balloon cable in the vicinity and was brought down, the battered remnants of the barrage balloon falling on our Headquarters. A colleague

and I discovered that some of the short "ropes" attached to the balloon were about  $\frac{1}{2}$ in. diameter "Bungee" cord, comprising about 48 strands of .05in. square rubber under several layers of cotton covering. Before the R.A.F. lads arrived to retrieve their wrecked balloon, my friend and I "acquired" about six yards of this bungee. The next few evenings we were off duty we spent the time carefully removing the cotton covering from the precious rubber. The next step was to obtain some kind of modelling materials, and to this end I visited the local Arab coffin maker-cum-joiner/Handyman. Holding a tin of 50 cigarettes under his nose (strictly illegal!) I explained that I wanted several lengths of timber about 3 mm. square and approximately one metre long, also glue of some kind. He pocketed the cigarettes and asked me to return the following evening. Meanwhile my colleague had managed to obtain a small quantity of thin varnish and a number of sheets of ordinary tissue paper used for wrapping flowers. It began to look as though we were in business, so I prepared a design for a 36in. span high wing rubber model.

The following evening I returned to the premises (?) of the Arab to see if he had managed to obtain any timber, and was astounded to be handed a bundle of "Sticks" about  $\frac{1}{2}$ in. square and a yard long, each one obviously individually produced and beautifully finished. Goodness knows how long it took him to produce these, and to complete the deal he also supplied a tin of the good old-fashioned fish glue used in woodwork in my schoolboy days, along with a small basket made from thin match-box type wood, from which we cut our ribs for wing and tailplane!

My friend and I began building furiously and completed a model each during the following week. We had only one problem left—airscrews. A few days later, another member of our organisation happened to mention that he had seen a small all-metal structure, fabric-covered single-seater light plane hung up in a large bicycle shop in Algiers. As I was off duty the following afternoon I decided to pay a visit to this shop, as I was extremely interested in this home-built light aircraft. I had the good fortune to make the acquaintance of the proprietor/designer/manufacturer Monsieur M. Ducceschi and during our long conversation I mentioned our recent modelling activities with primitive materials, adding that it looked as though we would be obliged to carve our own props from chunks of firewood! He disappeared for a few moments then arrived back with two beautiful high pitch props of about 12in. diameter, similar to the type imported into Britain from Japan in the mid-thirties, called paulownia props if I remember correctly.

I shall never forget the first flights of these make-shift models. Practically every Arab in the locality turned out to watch, even if they were somewhat bewildered!

Looking back on 38 years of aeromodelling I can't help feeling we had more FUN then than the average young modeller of to-day.

Cheadle, Cheshire.

R. Booth



## Trecovery

Dear Sir,

You may be interested in the following item concerning our School Model Club.

Our school field is surrounded by trees and the immediate district outside is not much better. Needless to say, we have a School Model Club, the members of which can be divided into genuine modellers and co-opted tree climbers. It is with interest that we have studied and put into effective practice many of the recovery methods suggested in Aero-modeller. It is surprising how reluctant games players can swing from branch to branch and throw javelin-like objects with great accuracy.

Even better than the escapades are the stories that are told afterwards. One might call them "Flights of fancy". The tree that was 60 feet high last week is 90 feet high this week. However, the most recent story is by far the best.

We had searched the district for about a week without success, but we were convinced that the model was flying over some very tall pine trees when it disappeared. Then it was young Harris (it usually is young Harris) who came triumphantly into the laboratory with the model in his arms and a grin ear to ear. Got it Sir", says Harris, "it was up one of those tall trees". Those tall trees were on a building site. "And how did you get it down?" said I. "I didn't", said Harris, "The builder saw it, got his bulldozer, pushed the tree down, picked up the plane and handed it over. It's very easy Sir".

I trust some of your readers will be interested in this method of recovery, which is most effective.

Baughurst, Hants

R. J. Hughes

## Back in production?

Dear Sir,

Please send us one copy of G.A. Drawing of the de Havilland Mosquito.

If a charge is made for the drawing please include the invoice and payment will be made promptly.

Hatfield, Herts.

Hawker Siddeley Aviation Ltd.

## A rare brew

Dear Sir,

Your comment in the February issue, in which the plight of the gentleman from the Falkland Isles was made plain, brought back memories of better days, when flying fields were a plenty, and radio control was in its infancy, and engines ran free without the need for silencers. . .

Whilst a schoolboy I acquired an E.D. Bee, and mounted it into a scaled down "Hells Angel". Fuel was, then, and still is, an expensive commodity, so I experimented with various foul brews. I was, however, forced to find a substitute for ether after being caught "red handed" in the Chemical Laboratories, so one day more in fun than in the pursuit of knowledge, I mixed equal quantities of "3-in-1" oil and "Thawpit", and tanked up. To my astonishment, after a few flicks and slight adjustment of the settings, (high compression as I remember), the wretched engine started amidst clouds

of black evil smelling smoke. Overcome by fascination I launched the plane from the back garden of my friend's house whereupon, with a full tank she went o.o.s. leaving a glorious vapour trail in the calm air.

I never did find the plane again, so had no chance to examine the engine for signs of wear, worse though, none of my aeromodelling friends believed the tale of achievement and woe. My friend from whose garden the plane was launched was the only witness apart from the gardener of the adjacent house who was anti-us, as the previous week we had embedded a Jetex job into the greenhouse in which he was working at the time . . . (what ever happened to Jetex by the way . . . ?)

From that day on, a friend whose father was a chemist, supplied me with ether and I have never since tried the old "brew"; it may do for the empty spaces of the Falkland Isles though.

May I in conclusion thank you for keeping up the high standard of the Aero-modeller . . .

Charlton Kings, Glos.

R. W. Fear

P.S.—I have returned to the aeromodelling ranks after a period of some 15 years—things have changed!

## How to do it

Dear Sir,

The March issue of the Aeromodeller containing information concerning the organisation of Clubs prompts me to describe to you the organisation behind a New Zealand Club which is an example to clubs everywhere.

The club was founded in 1957. The aim was to establish a well run club and to provide a clubhouse with modelling facilities for the youth of the district. The club committee was formed and undertook the following projects. The club was to be known as the Roskill Model Builders Club. This is significant. The name and the organisation that went with it enabled all types of modelling to be carried out within the club, e.g. Aircraft, Boats, Cars etc. After the organisation was established along these lines, an approach was made to the local Rotary Club for assistance in money raising schemes. Assistance to a normal aeromodelling club would not have been forthcoming because it would have catered for too small a section of the community.

Next the committee sought out a site for a clubhouse. This was found—on unused council land. An official approach was made to the Mayor and councillors by deputation and in writing and permission was, after some delay, obtained to build the clubhouse as planned.

A Building Committee was formed to finance and build the clubhouse. Money was raised mainly by Sale Days, when Mothers and Wives donated cakes, sweets, magazines etc. and then turned up with local residents (who had been informed of the event by advertisement in the local Newspaper and by Post) and purchased everything available. Every house in the district received an invitation to attend. The takings were usually between £20—£40.

Further funds were raised by collecting bottles from all the houses in the district.

The time of the collection was usually carefully planned as was the area. Shortly after Christmas proved to be the best. The bottles were then sold to a local bottle dealer. Average income for a Saturdays work, £30—£70.

The members designed and built their own clubhouse with the funds that they had raised themselves. Some help was given by specialists, and most were pleased to help free of charge.

After near completion of the clubhouse, the committee was reorganised. Regular weekly meetings were held. The club was registered as an Incorporated Society, *The Roskill Modellers Club Inc.*

A source of steady income was established. Soft drinks were purchased wholesale and sold retail at all club meetings. The income was sufficient to maintain the club on a sound financial footing and to finance other projects. Subscriptions remained at 5/- p.a. for Juniors and £1 p.a. for Seniors. A permanent mailing address was established. A Post Office Box was hired. That meant that changes of Secretary did not mean changes of address. A Typewriter and Duplicating machine were bought and a club Newsletter established. Film shows with a borrowed Projector were held frequently, the films being obtained from Airlines and Oil Companies.

In 1961 the club broke new ground when it sent, entirely at club expense the most promising junior member to the New Zealand National Championships. The member was chosen because he was a good all-rounder as well as a good aeromodeller. He won a place at the Championships. This scheme was continued in later years and this has resulted in a source of leaders and championship modellers within the club. By 1962/63 the Club was reaching its peak, aeromodelling remained predominant. Regular canvassing for new members was practised, mainly by articles in the local Newspaper, Advertising Cards in local model shops and by flying displays.

The results achieved were, as always the efforts of a devoted few. Many others were either disinterested or even sceptical. There were disappointments and worries but there was also success. I hope that other clubs may find some inspiration from this club.

Cologne, W.Germany. D. Hope-Cross, Life Member, Roskill Modellers Club.

## Prop-er correction

Dear Sir,

With reference to my article on "Jig Construction of Single Bladed Folding Propellers" which is in April *Aeromodeller* I notice that a small discrepancy has crept in. To be strictly correct the phrase "... the mid-point of the blade should be at an angle of Tan 26/23 or 22°. 32'." should read "... an angle of Tan<sup>-1</sup> 26/63 or 22°. 32'."

The explanation of this term is as follows:

The Tangent of an Angle is a number whilst: The Tangent Tan<sup>-1</sup> of a number is an angle.

No doubt someone will write in over this—so I've beaten 'em to it!!  
Pudsey, Yorks. C. Westerman

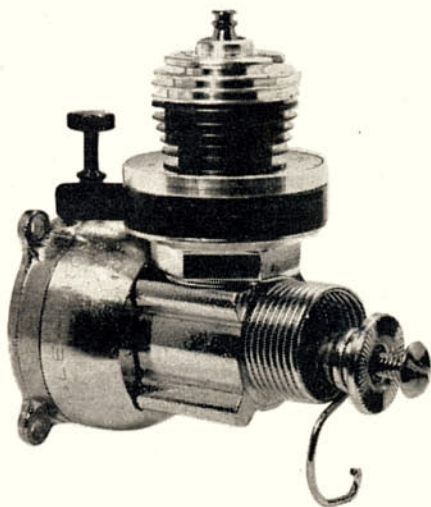
# ENGINE TEST

By Peter Chinn

Schh. . . it's the Quiet Zone!

## COX - 049 QZ

The latest Cox with built-in fuel tank, spring starter and silencer



THE Cox "QZ" 049 is a development of the low-priced Cox Babe-Bee engine which, for a number of years, has been produced in vast quantities at the L. M. Cox plant in California, primarily for that company's well-known range of ready-to-operate plastic models. "QZ" means "Quiet Zone", a name evidently intended to convey the impression that the engine can be operated in urban areas where the noise level of the ordinary unsilenced model engine is unacceptable. The QZ 049 is equipped with the Cox Muffler, a simple annular expansion chamber, and is, in fact, the first American model engine to be sold with an exhaust silencer as a standard fitting.

Apart from the silencer, the main differences between the Babe-Bee and QZ engines are to be found in the cylinder assembly. Hitherto, all Cox engines have featured sub-piston air induction via the exhaust ports—i.e. the piston skirt clears the bottom edge of the exhaust port at the top of the stroke, thereby opening the crankcase to atmospheric pressure for more complete charging of the primary compression chamber. The snag here, when an exhaust silencer is fitted, is that, instead of pure air, a proportion of burnt gas will be drawn into the crankcase. This will dilute the existing fuel/air mixture and, at the same time, its residual heat will cause premature expansion of the fresh charge. This can cause a sizeable power loss and such was the case when the Babe-Bee was equipped with the Cox muffler.

Cox engineers Bill Atwood and Dale Kirn therefore set about designing a new cylinder for the QZ. Firstly, they eliminated sub-piston induction by raising the lower edge of the exhaust ports. This, presumably, slightly reduced power compared with the standard Bee and, since the silencer was bound to reduce output still further, two more cylinder modifications were adopted. These consisted of adding an extra transfer flute and fitting a trumpet-type cylinder head in place of the standard hemispherical head. Both these are features of the very high performance Tee-Dee 049 contest engine and the overall effect has been to make a very significant difference to the QZ's power output.

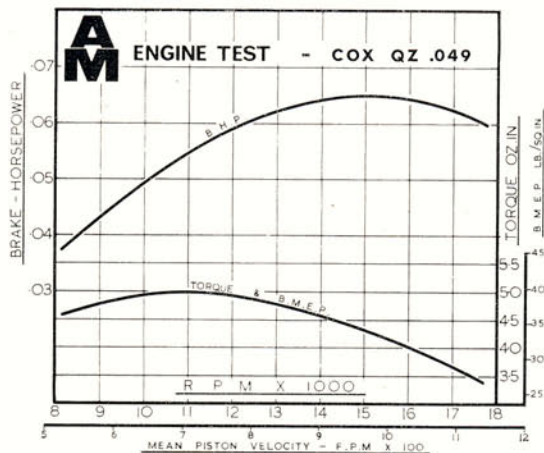
The Cox muffler comprises three parts. The body is of machined aluminium, with an outlet slot through which the engine can be primed for starting. It has an internal diameter of  $\frac{3}{16}$  in. and is surrounded by a flat spring steel strap that can be rotated around the body to open or close the outlet slot. The third

part is the thin steel top cover plate. The complete muffler is slipped over the lower part of the cylinder and is clamped between the crankcase and bottom cylinder fin when the cylinder is screwed into the crankcase.

The remaining parts of the QZ are mostly identical with those of the Babe-Bee and are, therefore, of somewhat unorthodox design. The engine is of the reed-valve type and the complete induction system is enclosed within a self-contained radial tank mount. The tank backplate, which also carries four lugs for mounting the engine to the front fuselage bulkhead, includes filler and vent tubes and a pressed-in steel thread insert for the needle-valve. The fuel inlet to the needle-valve is inside the tank. Air is conveyed to the engine, from a channel in the rear face of the backplate, through a gauze dust filter and, after picking up fuel from the internal jet hole, through an induction tube which passes through the centre of the tank. The induction tube is an integral part of the bell-shaped machined aluminium fuel tank (which also serves as a crankcase backplate) and gas is admitted to the crankcase via a reed-valve assembly consisting of a thin copper-beryllium X-shaped reed held in place by an internal wire circlip.

The tank backplate is the only casting used in the engine. The crankcase is machined from extruded aluminium and its nose section supports a hardened functional, lightweight machined parts of the .049 QZ laid out for inspection.





crankshaft having the traditional Cox arrangement of a relieved centre section to form separate front and rear ground journals. The ball joint piston/conrod assembly is also typically Cox, incorporating a flat crown piston, hardened only on its working surface, its interior being protected during hardening by a plating of copper so that the small-end socket for the conrod remains sufficiently malleable for swaging after the conrod is inserted.

The engine is supplied complete with a starter spring. This can, if preferred, be discarded but it is necessary to remove the cylinder and silencer to do so. In this event the top cover of the muffler should be inverted before replacement so that its inner rim projects upward. This is to take up the extra clearance created by the removal of the starter spring, the anchorage loop of which is normally clamped between the crankcase and the hexagonal base of the silencer.

## Performance

As one would expect of a basic design (the Babe-Bee) that has been responsible for successfully introducing a very large number of youngsters to power-driven models, the QZ is extremely easy to handle. The maker's recommended starting procedure calls for priming the cylinder by moving the muffler spring, to expose the outlet slot, so that a few drops of fuel can be dropped into one of the exhaust ports. In fact, we found that this preliminary stage could be dispensed with. Using a squeeze bottle to fill the tank until it overflowed through the vent, the intake, instead was automatically primed and, by using the starter spring, we were then able to obtain, usually, an instant start.

Ordinary hand starting was almost equally effective and there was no difference in ease of starting whether the silencer was open or closed. The slot in the silencer is always partially covered by the spring but the exposed outlet is still of large area. Nevertheless, with the slot completely closed, there is very little loss of power.

On a 7x3 Top-Flite wood prop, for example, rpm dropped by only 100 to 9,900 rpm with the silencer completely closed, compared with the fully open position. Similar reductions were recorded on 6x4 Tornado, Power-Prop, Top-Flite wood and Top-Flite nylon props, which were turned at speeds ranging from 11,000 to 11,600 rpm. On 6x3 props

## SPECIFICATION

**Type:** Single cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, glowplug ignition. Reed-valve induction. Plain bearings.

**Bore:** 0.406in. **Stroke:** 0.386in.

**Swept Volume:** 0.0499cu. in.—0.817 cc.

**Stroke/Bore Ratio:** 0.951 : 1.

**Weight:** 2.1oz. (including starter spring and silencer).

## General Structural Data:

**Crankcase and main bearing (unbushed)** machined from extruded aluminium bar. Hardened and ground steel, **crankshaft** with full disc web and crescent counterbalance. 0.219in. dia. divided main journal, 0.109in. dia. crankpin. Shaft end knurled for pressed-on aluminium **prop driver** and tapped for **prop retaining screw**. Unhardened steel **cylinder** with integral fins and blued finish. Steel **piston** hardened on skirt surface only and fitted to ball ended hardened steel **connecting-rod** by means of swaged cup. Screw-in aluminium alloy **glow-head**, seating on soft copper gasket. **Crankcase backplate, reed-valve housing, induction pipe and fuel tank** machined in one piece from aluminium alloy. **Reed valve** of .001in. copper-beryllium. Pressure diecast zinc-alloy **fuel tank backplate** with integral **needle-valve assembly**. Complete tank and induction assembly secured to crankcase with four screws and can be re-positioned for inverted or side-mounted installations. Radial mounting only.

## TEST CONDITIONS:

**Running time prior to test:** Approx. 15 minutes.

**Fuel used:** Cox Thimble-drome glow fuel (approx. 15 per cent nitromethane.).

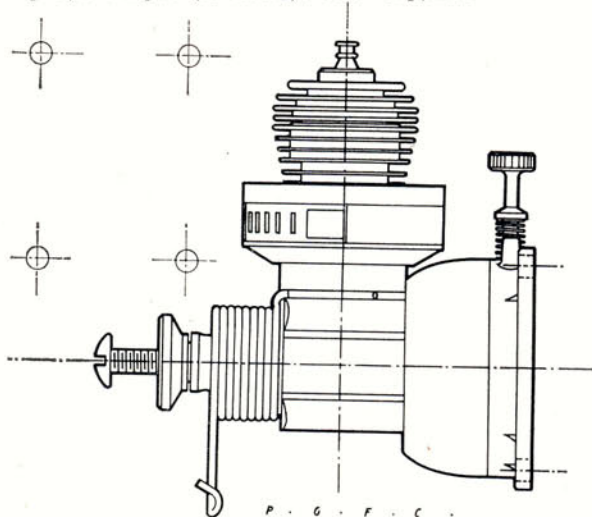
**Air temperature:** 72 deg. F (22 deg. C).

**Barometer:** 29.75in. Hg.

**Silencer type:** Cox Muffler (expansion chamber) as supplied.

(static speeds of 13,400 to 14,100 and well suited to the bhp curve of this engine) the loss was only 200 rpm. In contrast, the degree of silencing obtained with the outlet closed was quite good and effectively cut off the harsh crack of the typical glow 049.

Briefly, this is an engine that one can confidently recommend to a young beginner or, equally, to any modeller who wants an economically priced motor of good performance for small sport type models. **Power/Weight Ratio** (as tested): 0.50 bhp/lb. **Specific Output** (as tested): 79.5 bhp/litre.



# HELLSTAR

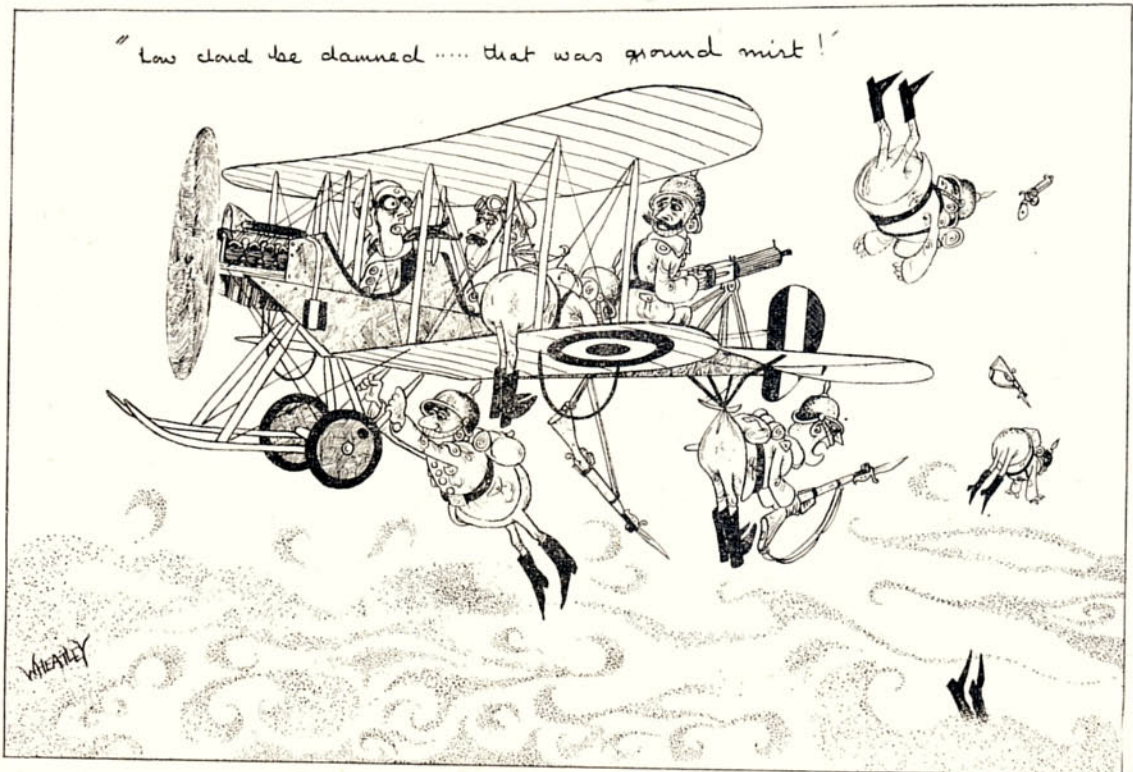
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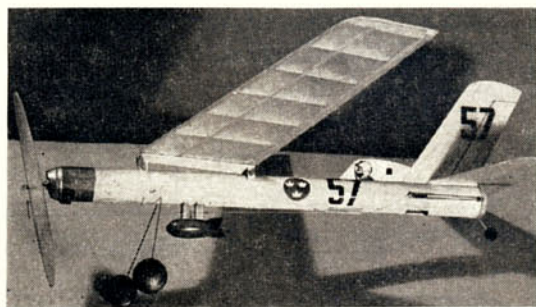
**Ray  
Malmstrom  
rings the  
bell again  
with an 18"  
dandy  
for indoor  
activity**

dry, preferably over-night. Cut out the circular formers, B, C, D, E. Open out the balsa tube and lightly mark their positions on the inside. Cement in place, close up the tube and cement well along the join. Hold in position as before until set. Draw a line down the centre of the fuselage tube to help you line up the wing mounts, tailplane block, etc. If you are going to fit the release gear cut the rear dowel slot, otherwise just drill on  $\frac{1}{8}$  in. dia. hole. Reinforce the slot with two layers of tissue doped on. Also, cut a small rubber motor access hole, fix the fuselage below the rear dowel peg. Add former A to nose. This is chamfered as shown to give down-thrust to the noseblock. Bend tailwheel wire and push upper end into former E. Hold with a small piece of silk or tape, well cemented. Add tail former E. Bend u/c wire to shape and cement in place on fuselage tube, reinforce with silk or tape. Put 1 in. dia. wheels (K.K. plastic streamlines) on axles and retain with a piece of elec. tubing from which the wire has been removed. The tubing must be a tight fit on the axle ends. Cut out the two wing mounts, mark their positions on the tube and cement in place. Cut two pieces of  $\frac{1}{8}$  in. sht. and make the wing seating on top of the mounts. Add  $\frac{1}{8}$  in. dia. dowel rods to the wing mounts. The wing on Hellstar is adjustable and removable and these dowels hold the rubber bands retaining the wing in position. Cut the tailplane block from  $\frac{3}{8}$  in. sht. shape carefully, and cement centrally at end of fuselage. Give entire fuselage one coat of clear dope and *very* lightly sandpaper. The insignia of the Swedish Royal Air Force on our original Hellstar

**H**ELLSTAR POSSESSES what the car salesmen call an "optional extra", in the form of a simple to install bomb (or midget glider) dropping gear. Fit it—or forget it—as you wish, Hellstar turns in a great flying performance either way, and unlike that optional extra on a new car you get the extra on this job for free. Feel inclined to have-a-bash? *Great!* Then let's get cracking with the simple structure. Soak a 13 in. x 3 in. sheet of balsa in warm water for about 20 mins. Then wrap it around a broomstick, dowel rod etc. of approx.  $\frac{3}{4}$  in diam. Rubber bands or thread will hold the balsa sheet in position, leave it to

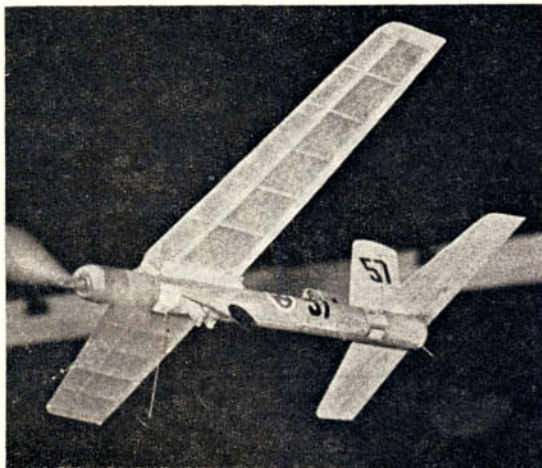


were painted on thin paper with poster colours, and when dry rubbed with candle grease and polished with a piece of clean rag. This not only improves the appearance but gives some measure of water-proofing the markings. They were then cemented in position. A band of coloured tissue is doped around the nose for decoration and added strength. Cut the fin and tailplane from  $\frac{1}{8}$  in. sht, sand round the edges and give the parts a coat of clear dope one side at a time and pinning to building board while drying to avoid warps. The squadron numerals on the fin and fuselage are waterslide transfers. Cement tailplane to tailplane block seeing that it is at zero incidence. Slot the fin into the tailplane and cement, checking that it is upright. Cut out cockpit piece G, give a coat of dope and paint in the pilot, cement to fuselage and fin. Build a left and right wing panel. Use centre rib template to obtain correct angle of centre ribs, join panels together. Check that there is  $2\frac{1}{2}$  in. dihedral under each wing tip. Cover wing with lightweight



Off on a mission, complete with bomb, Hellstar prototype shows off its novel tube fuselage and trigger release.

tissue, shrink and give one coat of clear dope. Pin one wing panel at a time to building board. Use little  $\frac{1}{4}$  in. sheet balsa blocks under leading and trailing edges to keep wet undersurfaces clear of board. With this method you avoid our old enemy, warps. Build up the nose block, noting that when viewed from the top and rear the hole for the brass bearing bush should be drilled a little to the right. This angle (off-set) will take care of propeller torque, use a 6 in. diam. hardwood KeilKraft prop (from your model shop) and fit the simple freewheel shown on the plan. If you wish to fit the bomb release gear cement the bomb mounts centrally below the fuselage where indicated. Also on the centre line cement a small length of neoprene tubing. Hold in place with two layers of doped-on tissue. This tube acts as a guide for the release thread. Make a wire release pin from 22 s.w.g. wire, to the pin tie a length of fine thread. Run the thread through the tubing and tie it to one side of the rear dowel peg. Arrange this so that when the peg goes to the rear end of the slot the release pin will be clear of the bomb hook. Make bomb from soft block fins from thin card. Weight nose of bomb with a tiny piece of lead. If you would like to drop a midget glider we suggest that you make the glider from  $\frac{1}{8}$ th in.,  $\frac{1}{16}$ nd in. with a wing span of around 4 to 5 in. Swedish marking on the wings of our own Hellstar are cut from blue tissue (the wings are yellow tissue) to save weight. A 4 in. long, approx., rubber band operates the bomb release, the band is slipped over

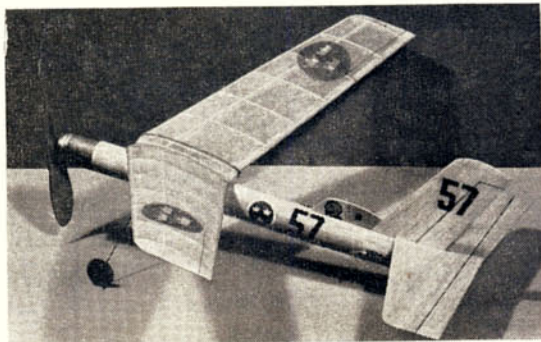


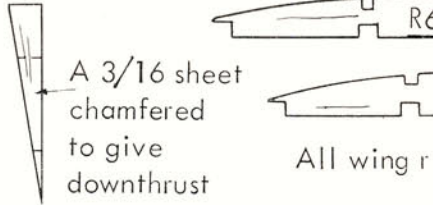
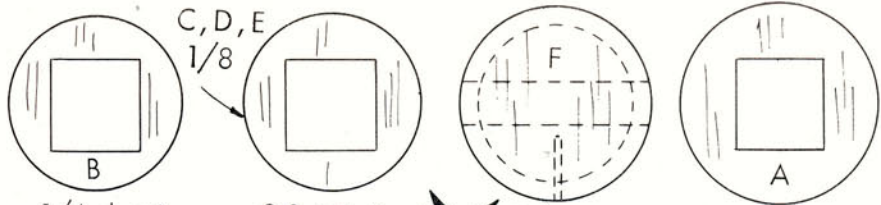
Round-the-pole action after Ray releases (far left). Don't forget to duck when the rubber drive runs down!

one end of the dowel peg, passed around the end of the fuselage through the slot in tail former F, and slipped onto the other end of the dowel peg. Some adjustment (by trial and error) of the tightness of the rubber band may be necessary to get the best moment for releasing the bomb. You can now install the rubber motor (first lubricate well) and balance your Hellstar. Balancing is very important, *don't skip it!* It should hang level both from front and side views when suspended by a pin and thread from the balance point. A tiny amount of weight may be added to nose or tail to achieve correct balance.

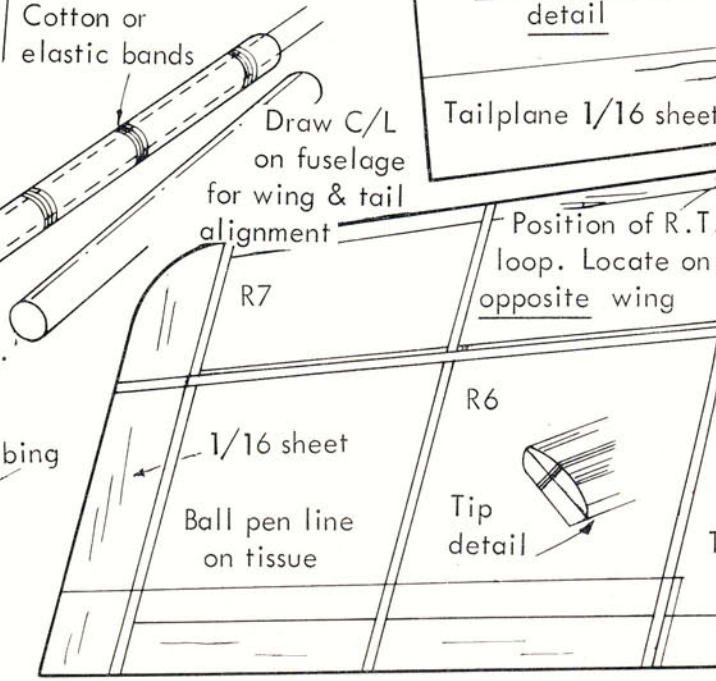
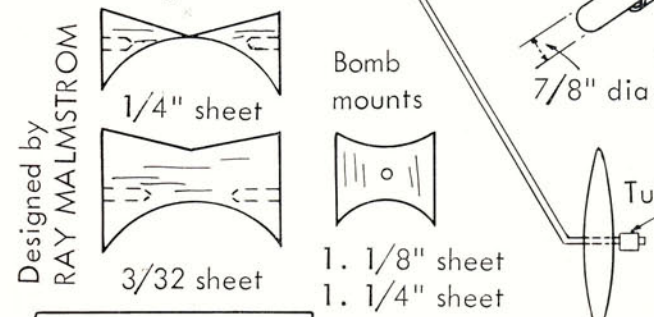
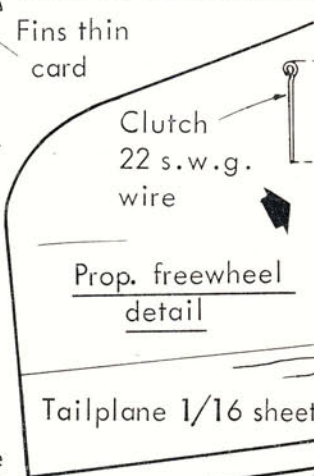
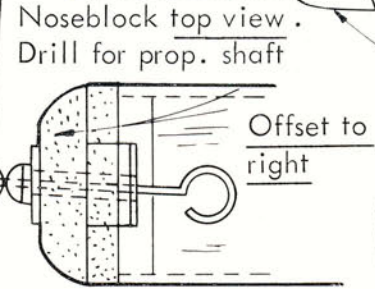
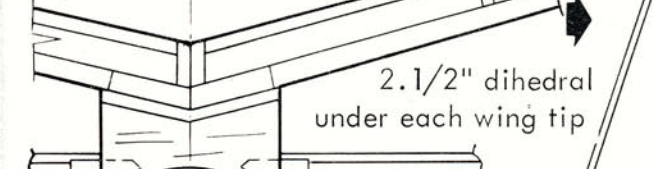
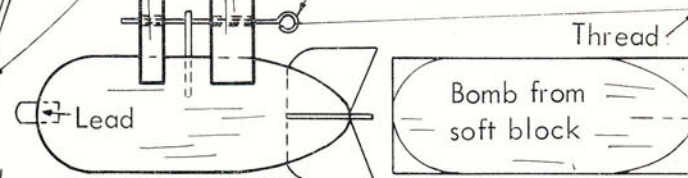
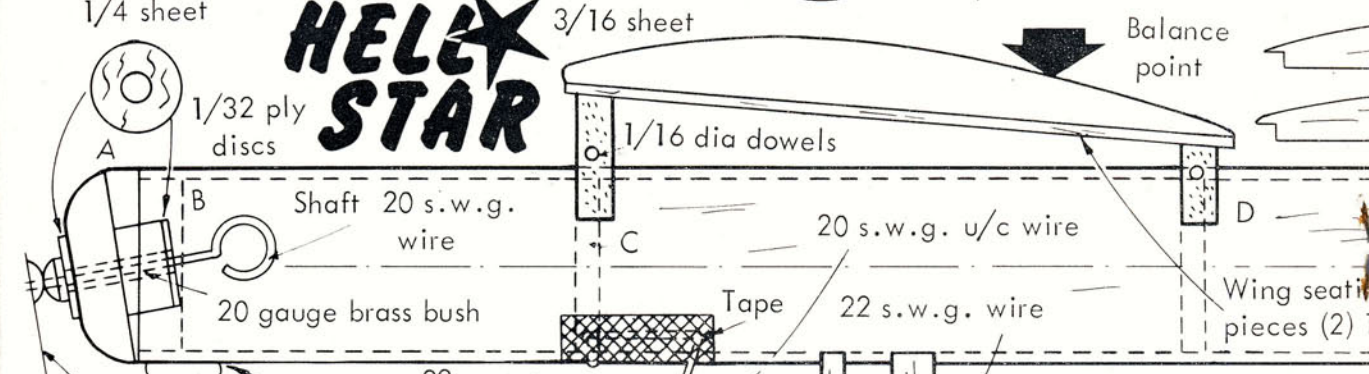
Test glide over long grass on a calm day. From a hand launch (launch *gently*, never *throw* the model) Hellstar should glide down to land about 20-25 ft. in front of the point of launch. Obtain a straight glide. Slightly bending the rudder trailing edge will correct a turn. Bend in *opposite* direction to the turn. You can then try a "power-on" flight. If model dives, reduce the downthrust, if it stalls increase it, if it banks violently to the left increase the off-set angle. Take time with your trimming and you will be delighted with Hellstar's performance. 35-45 sec. flights are common even with the commercial prop. Fit a carefully carved balsa prop and you'll be heading for the minute. *Chocks away—lets roll!*

## TURN PAGE FOR FULL-SIZE PLANS

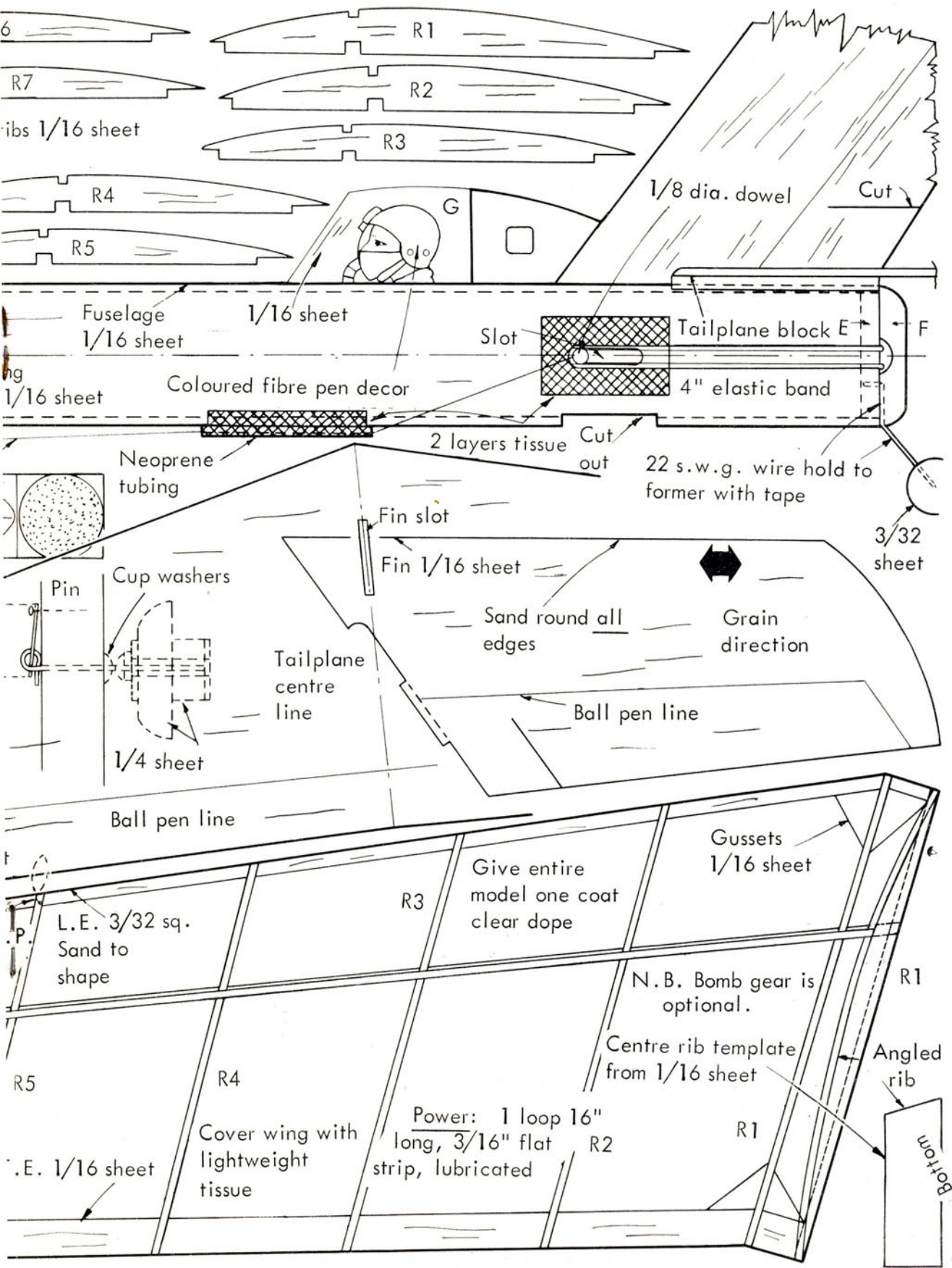




# HELL STAR



Designed by RAY MALMSTROM





## Correspondence from the members

Dear Sir,

I hope you will help me to solve this problem. I own a Cox .09 Tee Dee engine and every time after each flight the glow plug would cease to be of any use. I have tried using extremely low grade fuel but that did not make any difference. Will an adaptor of a different make with a different glow plug be of any help. If it will, could you kindly inform me of where I can get one and what the cost would be. Will the conversion have a bad effect on the engines performance? I like your club very much and I always look forward to your column every month. I have found two pen friends through the club and I am very grateful.

Singapore.

R. Choy

Many modellers have troubles like this and the only advice we can offer is as follows. Make sure you are using a 1.5 volt battery as the Cox head will definitely burn out on 2 volts. Try another copper gasket under the cylinder head and longer leads on the glow plug battery. We would not advise the substitution of another head as the Cox units are very good already and you might suffer a power loss. If all else fails send the engine back to a Cox Agent or the model shop where you purchased it.

★ ★

Dear Sir,

I have recently purchased the Keil Kraft Marquis kit and although it is stated that it will stunt I have my doubts about it. Could you please tell me if it will stunt and could you also tell me if an A.M.15 is a suitable engine for the Veron Bomb-Bat. I plan to put my 1.7 Webra engine in the Keil Kraft Marquis.

Worksop, Notts.

J. Patches

The Keil Kraft Marquis is a good little stunt model and you need have no doubts about its ability to do all the basic 'round' aerobatics. The A.M. .15 is ideal for the Veron Bomb-Bat, in fact I flew the Bomb-Bat with this engine many years ago, and it was a very nippy little aircraft.

★ ★

Dear Sir,

Please could you tell me where I could get the plan for Schoolmaster (39in. span radio plane made by Top Flite). Also could you tell me the price of the plan and postage and the price of the wood and wheels etc.

Warrington, Lancs.

M. Millington

The plan for Schoolmaster is in the Aeromodeller Plans Service range as plan number RC 875 price 6/6d. plus 6d. postage and available from 13-45 Bridge Street, Hemel Hempstead, Herts. A list of all the materials required to construct this model is on the plan but we never give any costs as these always vary from the choice of the products each modeller uses.

Dear Sir,

I have a Keil Kraft Ranger powered by an AM10 Mk. II diesel engine. When I first built the plane, I put in the original tank that fits on the back of the engine, but then found out that when I installed the engine in the model upside down, the fuel tubing which sucked the fuel through to the engine was higher than the air intake, therefore the engine would not suck the fuel through.

Then one evening when I was browsing through my Aeromodeller Annuals I saw that Andrew Read of Bolton had sent in a diagram of how to make a fuel tank from a Jetex fuel tin. I decided to make one of these and installed it just in front of the former FI. Thanks to Andrew I can now fly my Ranger.

Maldon, Essex.

S. J. Richardson

★ ★

Dear Sir,

I have only just started building models from plans and this is my first venture into model flying. All the parts that I have cut out from the plan then pinned down and glued, stick to the plan and I can't get them up without pulling the plan to pieces. Also the paper is stuck to the parts and all needs sanding off—not very easy when it's almost solid balsa cement. Can the wood or plan be treated to stop the glue sticking?

Leeds, Yorks.

T. Carson

There is a very simple answer to your problem, this is to cover the plan with a sheet of waxed paper or to smear it with candle wax, this stops the cement sticking to the plan. It sounds as though you are applying too much cement anyway as the cement is usually meant to go in the joint and a good fit with the correct amount of cement should not leave much to run over the plan.

★ ★

Dear Sir,

I am a control line fan and so are my friends. We have recently formed a club, The Gilwern M.C. We only have six members, how do you think we can get more members? One idea we have brought up is to give a display at our local playing fields. We have a club engine and 12 planes built between us, some our own designs. We have 3-Wen Mac .049s, E.D. Racer, E.D. 1cc., Frog 500, 3 Jetex and some more engines. I hope you think this is a good start to a club, please reply to this.

Gilwern, Brecks.

G. Priestly

For six members you have a good selection of engines and we see no reason why your club should not be successful. The Club Survey booklet contained in our March issue gives you all the information you should require and provides many tips on how to run a club and what to do at the club meetings.

Dear Sir,

I am a keen modeller and when I started reading the Aeromodeller I noticed a section called Readers Letters so could you please oblige me by giving me some tips on starting my M.E. Heron 1 cc. diesel engine, also could you give me some advice on recommended fuels and kits. The fuel I tried first was Power-mix and I felt uncertain about this fuel. I decided to try a different type, this time Keil Kraft, this was successful and I managed to get the engine going for about 10 minutes, the engine is now difficult to start and as I am raring to get flying, please send me some advice.

Blyth, Northumberland.

K. Anderson

Sorting out starting troubles by post is almost impossible and unfortunately we cannot undertake to run engines at the editorial offices. Once again we would recommend our booklet Choosing Your Engine as this contains all the information you should need. Each of the fuels you mention is to be thoroughly recommended.

★ ★

Dear Sir,

I am very interested in model aircraft and have made three. One of them is diesel powered. One of the gliders is yellow and the other blue. My powered model is a Keil Kraft Ranger and this has a red stripe down the centre of the fuselage which is blue, the wings are green and the tailplane orange. It is yet to be tested as the winds have not been favourable. I have enclosed the form and a 2/6d. postal order. I am hoping to get a kit to make a transmitter for my birthday which is in June and a receiver for some other celebration.

Hale, Cheshire.

J. Richards

★ ★

Dear Sir,

I am building a Keil Kraft Phantom Mite using a Frog 80 engine and find that if the engine is fitted in accordance with the plans the starter spring fouls the bottom block.

Could you please tell me which of these would be the better method: 1. Dispense with the use of the spring starter unit (after the engine has been run in) or 2. Cut out the bottom block to clear the obstruction.

Rochdale, Lancs.

A. Kearny

We suggest you cut the cowling bottom block to clear the spring starter. As you say, you could remove the starter unit after the engine has been run in, and you have become used to the starting habits.

★ ★

Dear Sir,

I am thinking of making the radio controlled Morane Saulnier given away with the February Issue of Aeromodeller. I shall be grateful if you will send me a pamphlet on Aero engines.

Brentwood, Essex.

M. G. Butler

The correct size of engine for the Morane is shown on the plan you have and to choose your engine we recommend our booklet Choosing Your Engine, price 1/- This gives illustrations and details of every British engine and a complete summary of Aeromodeller "Engine Test" facts.

2d. in the 1/- Rebate  
coupon for  
Golden Wings  
Membership  
No.....



Dear Sir,

I wonder if you could tell me if it is possible to fit a silencer to a Frog 150 engine, Frog do not manufacture one, but I wonder if any other make would fit?

I have applied for membership of the "Golden Wings Club" with this letter and I am about to build a Keil Kraft Marquis as soon as I get out of Hospital, I can't wait to get started.

West Hartlepool.

P. M. Hogg.

*Frog do make silencers, the one that fits the Frog 150 and 100 only costs 6/1 and should be available from your local model shop.*

### **GOLDEN WINGS CLUB members are invited to send photos of their models**

Dear Sir,

I am a newcomer to Aeromodelling. I went to someone's house for tea once, and saw a "thing" hanging in the porch, it turned out to be a fuselage drying! I enquired about aeromodelling and decided to make a model. With the help of my friend Mr. B. Mellor I chose the *Conquest*. I then bought *Aeromodeller* magazine and I found the *Golden Wings Club* page and joined. I have found it extremely helpful.

Huddersfield, Yorks.

I. Holton

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.

Dear Sir,

I am now at the end of my membership of your *Golden Wings Club* and am interested in becoming a member of the S.M.A.E. Could you forward information about this club as I do not know the address, including subscription charges. Wingrave, Bucks.

M. E. Beddow  
The S.M.A.E. (Society of Model Aeronautical Engineers Ltd.) is not a club in the same sense as a local model club. It is the Governing Body for Aeromodelling in Great Britain and nearly all the modelling

clubs are members. Full details of S.M.A.E. membership and club organisation were given in our Club Survey published in last month's *Aeromodeller*. We strongly advise you to join a club as a lot of modelling techniques can be learned from other members that you may never discover being a lone hand. Anyone requiring more detailed information should send a stamped addressed envelope for a free leaflet to John Bridge (S.M.A.E.) 13-35 Bridge Street, Hemel Hempstead, Herts.

## **Questions and Answers**

(Older modellers may be excused for sneaking ideas from this page)

### *Make a note of these hints and tips—especially the Juniors*

How can I draw neat lines and edges to colour decoration on my models without spending a lot of money on using up professional masking tape?

*Lines are easily drawn by using a ruler and artists ruling pen, the type which holds ink between two halves of a nib adjustable for different thickness lines. Use coloured dope or Humbrol paint instead of ink in the pen and draw a fairly thick line on the edge of your coloured panel, it is then simple to fill in and paint up to the line which blends in and gives a perfect straight edge. If you would like to use masking tape but find it a bit expensive, buy a small reel (about 2/-), stick one end to the edge of a table and draw off the length required, then holding it taut run a modelling knife down the centre of it so that you have two pieces. One wavy side does not matter and the tape is nearly always wider than the average modeller needs. Incidentally, cutting down the middle with scissors just gets you all stuck up, so don't try it!*

I have just finished my first power model and had the engine running in it quite all right, but as soon as I release it and it starts to climb the engine stops. How can I cure this?

*Your trouble is that the tank is probably mounted incorrectly. To give the correct feed your tank should be mounted as near as possible on the same level as the engine spray bar. If the tank is mounted higher or lower than the engine it will cut out as soon as the model is displaced from a level position, for example when it starts to climb.*

How can I solder wheels on easily? I find that a washer moves around when I am trying to solder it, and then some of the plastic wheels start to melt.

*Start by pushing a small piece of sandpaper or thin card over the axle, this will just keep the heat of soldering away from the wheel.*

*If you find it difficult to solder a washer, get some fairly thin soft copper wire and wind a turn or two around the end of the axle. This will stay firmly in position while you run solder over it to fix it permanently. Then remove the piece of card and the wheel will run freely.*

I would often like to put a number of my initials on my models but I find it difficult to draw them so that they look neat. How can I do this easily?

*A simple way to produce letters or numbers is to buy a plastic letter as used for house names or numbers and draw around it with a soft pencil, then paint this outline. This is easily done on a sheet surface such as a fuselage, but you must use a very soft pencil and very little pressure on a tissue surface such as a wing. These letters and numbers can be bought quite cheaply in most Woolworth's branches or ironmongers.*

How can I drill neat holes in balsa wood? I find that a drill often tears the wood and makes a ragged hole which is then larger than it was meant to be.

*A good way to do this is to use a piece of metal tubing to cut the hole instead of drilling. Practically any tubing can be used for the job, and you can soon collect odd pieces of different diameter to cover most sizes of dowel holes, etc. Run a file around the outer edge of the tubing to give it a cutting edge, then press it into the wood and twirl it between the finger and thumb at the same time. This method can be extended to cover larger jobs too; many times it can be used to cut very neat lightening holes in ribs or formers. With larger holes you will find that many small round metal containers can be used, the tops of them are often sharp enough to cut even without filing. Make a point of collecting containers for this from such things as vitamin pills, headache tablets, cough sweets, etc.; someone in the family is always throwing away this sort of thing.*

Is there any stronger form of tape for hinges on control line elevators or flaps?

*A modern approach to the old idea of using tape or bandage for various strengthening jobs is to use nylon ribbon obtained from any drapers. This is available in widths from ¼ in. up to 2 in., is very thin and very strong. The narrow ribbon is excellent for control line hinges and neater and stronger than tape, while the really wide ribbon makes a really strong thin bracing over a join in a sheet wing. Another use is over the trailing of small wings at the centre to stop the wing attaching bands from cutting in; with plenty of cement rubbed in the nylon bonds itself into a really hard covering.*

## David Boddington goes back to basics with

### Tips on construction

**T**HIS MONTH'S column is not necessarily directed at R/C enthusiasts only, as it deals with modelling hints and tips which are equally applicable to all of the aeromodelling fraternity. I have always been interested in the way fellow modellers have tackled the various problems encountered in building a complete model; from framework to finish. Many of the tips I have picked up I have included in my general building habits and for what use they may be to others, I pass them on here.

Most books on modelling start in the first chapter with a statement to the effect that the only tools required for building are a razor blade, pair of multi purpose pliers, packet of pins and a tube of glue. In reality this is over-simplification. Nothing is more frustrating than not having the correct tool for the job. To anyone just commencing aeromodelling I would suggest they build up, at earliest possible time, as comprehensive a stock of tools and materials as possible. Do not, however, fall into the trap of buying inferior tools, this is a false economy as first quality equipment should last a life time. One should not have to "pay the earth" for these tools, some good ex-government surplus stock is obtainable or the auction sales can also provide second-hand tools at very reasonable costs. The main aim should be to acquire a wide assortment of files, screwdrivers, pliers, drills, etc; the better equipped you are the quicker and more pleasurable becomes the building.

The "razor plane" was only introduced to me a few years ago and yet now I fail to see how I managed without it before—it must have been sheer hard work. There are a number of items that could be placed in the same class as the "razor plane".

These include sanding blocks of all shapes and grades and razor saw, the latter is ideal for cutting all strip balsa over  $\frac{1}{8}$  in. square and straight cross grain cuts in sheet. Also of prime importance is the building board, naturally this must be perfectly flat but it must also accept pins (glass headed variety) pushed into its surface without too much effort. The best form of board I have discovered is known as "K" quality hardboard, (used extensively for pinboards in schools) unfortunately this is not generally available at D-I-Y shops but should be obtainable from the larger timber merchants. The board is in  $\frac{3}{8}$  in. and  $\frac{1}{2}$  in. thickness's and must therefore be supported on a stouter base, if you are making a bench a hardboard faced flush door makes a first rate base board.

Using tools is largely a matter of experience but there are right and wrong ways of using most of them. The humble hand fretsaw seems to be a most misused instrument, properly handled it can give a very accurate cut in a variety of materials. I have seen people struggling over a fretsaw only too thankful to finish up with a shape vaguely representing the required part and satisfied to cut and sand it afterwards. Most frequent of the mistakes in fretsawing appears to be trying to turn the saw around corners instead of turning the material being cut.



The saw should be moved up and down at a steady rate and the material moved into it without too much pressure being applied. To keep accurately on the line to be cut, always look slightly ahead of the saw blade and not directly at it (This applies to all methods of cutting incidentally, and drawing freehand lines as well). Finally use a solid substantial cutting table well fixed to the table or bench and allow yourself plenty of elbow room.

Sanding, to me, is one of those necessary evils; it is somewhat like having a haircut where you have to pay to lose something. To keep sanding, therefore, to a minimum, I try to cut all parts as accurately as possible including spars, longerons, wing leading edge sheeting etc. It is amazing how much time can be saved in this way particularly if *all* the parts are cut out before any construction is undertaken. Sooner or later some trimming and sanding will have to be done so let's make it as painless as possible. Firstly the material itself—common sandpaper is a fairly inferior product for our purposes and much more preferable is Garnet paper or, now available in decorating shops, flour paper recognisable by its white powdering surface. Both of these types of paper have the advantage of being harder wearing and non-clogging. Arm yourself with plenty of sanding blocks—these simply comprise of different shapes of blocks of wood with the abrasive paper glued or pinned to it. To try sanding, say a fuselage, just holding the paper in your hand is to invite trouble; the resilience of the flesh will follow the existing contours of the wood and will sand away the soft parts and leave the hard wood proud. Do not be afraid to start with coarse paper on areas that require a lot of shaping, you are more likely to arrive at the form by being bold initially and gradually working down to the finer grades. How many of us have been horrified when, during the final sanding stage, we have found "pock marks" in the balsa caused by resting the model on a rough blob of cement stuck to the bench or something similar. This can be completely avoided by using a piece of foam rubber or plastic to rest the model on during sanding it also absorbs a lot of the dust and makes one more popular in the home. Some of the most difficult areas to sand are angled junctions (i.e. Wing dihedral joint on the top) as it is so easy to slip and gauge a groove in the opposite side. The way around

this one is to mask off the adjacent panel with Sellotape or masking tape so even if the sanding block slips no damage will be done. It is easier to sand on a flat level bench than by holding something in one hand, why not sand sheet balsa before using it on large sheeted areas?

How do you mark out the parts to be cut from balsa when working from a plan? I used to religiously follow the whole of the outline with a pencil and carbon paper between the plan and balsa. Unfortunately with soft balsa the carboned line was very indistinct and with hard balsa the pencil would often follow the grain of the balsa instead of the line on the plan. I now prefer to use the pin pricking method where the outline is pricked through the plan on to the balsa. Where there are straight lines it is only necessary to make a couple of pricks at either end and then join them up with a straight edge for cutting. I am more fortunate than most when it comes to plywood formers etc., I take an additional print of these parts and if you do not mind cutting up your plan make a pattern for formers etc. and glue them direct

onto the plywood for cutting. Where a number of identically shaped parts are required, i.e., wing ribs, a common way of achieving this is by the "sandwich method". Use 8BA threaded rod (studding) with a nut and washer at either end to hold the templates. These ribs (I use Paxolin fibre if I expect to use them a lot and  $\frac{1}{8}$  in. plywood for a one off, etc.) are drilled together and the balsa blanks drilled in a block. The screwed rod gives full adjustment for ranging widths of blanks and allows for tightening the block and preventing slipping. (See sketch on page 261.)

Have you ever been left holding a fuselage, when joining the sides and formers together, until the adhesive has dried because you cannot think of another way of holding it together? The old method was to use rubber bands but it is difficult to get the precise amount of tension required without either the bands cutting into the balsa or the sides springing apart. The rear end is simple enough, clothes pegs will hold the sides together but for the nose and wing areas try wrapping masking tape around the fuselage to hold it in position.

Since covering my first model with nylon I have done all possible to persuade modellers into using it, even for the smaller lightweight models. The additional strength and puncture resistance obtained with the inherent strength of nylon is well worth the slight additional weight involved. I bought most of my nylon from the local market but beware as it is possible to purchase the wrong material. The 2 oz. weight material is most suitable for models and it should be close grained i.e. the weave should not be open otherwise too much dope will be required to fill it. Other materials, such as Terylene etc., resemble nylon but are not suitable for our purposes, they can be identified by a slightly more "crinkled"

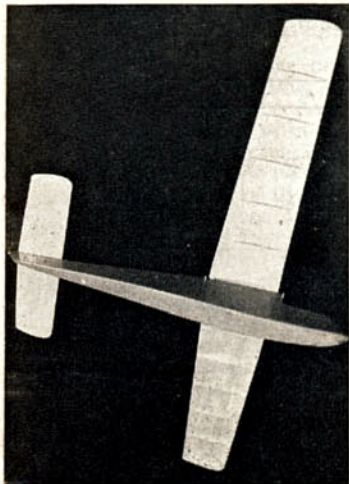
finish and "greasy" feel; they also do not absorb water as readily as nylon. Covering with nylon need not be very much more difficult than with tissue and it is a matter of experience mainly in obtaining good results. A pair of pinking scissors are most useful for cutting the material to prevent the loose strands of nylon from getting all over the place. To make sure the warp and welt (long and cross threads of the material) follow the axis of the wing or fuselage a thread should be "drawn" where the material is to be cut. This cut will then give a true edge to work to when covering and avoid warps caused by the nylon stretching diagonally across the structure. From the strength point of view it is better to overlap the nylon at joints, such as wing leading and trailing edges, and provided this is done neatly with pinking shears the resulting scale like effect can be acceptable.

Finally, a couple of quick hints. Wooden dowels for wing and undercarriage holding down bands have a habit of breaking at the most inconvenient moments leaving the stub of the dowel in the fuselage and very difficult to remove. Why not use dural dowels? One can use a size smaller than the comparable wooden ones so there is very little increase in weight and they are virtually unbreakable.

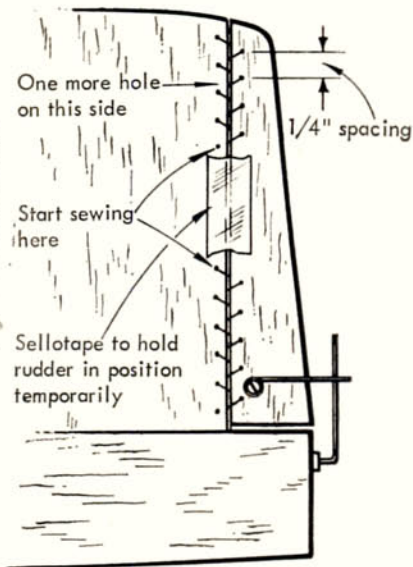
Thread hinges, for escapement operated radio models, are probably the most suitable and friction free provided they are neatly carried out. The secret here is to mark out all the hole positions carefully before hand.

I prefer to sew the control surfaces *after* the model has been covered, doped and fuel proofed, this prevents the hinge becoming "gummed" up during the finishing processes. Use a strong nylon or linen thread for the hinge and it can then be used single stranded without any risk of it failing with continuous use. The most difficult part of sewing the hinge is in getting started while the rudder is flapping about loose. Stick a piece of sellotape across the centre of fin and rudder, on both sides, to hold it temporarily in place. Start sewing on the inside of the hinge and the thread can then be slipped down the gap between the fin and rudder instead of having to push the needle through the gap each time—it results in a tighter hinging.

Well, that's it for another month—the next article will deal with preparation for the flying field and flying routines. See you at the rallies?



Heading shows David out for a Sunday session with a few of his single channel models. A new project with sheet balsa wing is seen at left and will appear in a later edition of our companion magazine, R.C.M.&E. At right is David's tip for sewn hinges.



# BASIC AEROMODELLING

A SERIES INTENDED FOR THE NEWCOMER

## PART 10 Plotting Airfoil sections

**A**IRFOIL sections represent very special shapes and the only way in which they can be drawn *accurately* is to plot them out from airfoil data given in the form of a *table of ordinates*. We might mention that not all aeromodellers take this trouble! Some people are content to work with approximate airfoil shapes, or 'practical' outlines of their own devising (usually ones which fit a curve they may have). But plotting airfoils is a quite straightforward process and if you *do* want to use a particular section, it is the only way to go about it. You just cannot 'scale up' an airfoil section drawing accurately, as you can with a plan.



FIG 50

STATION	0	5	10	20	30	40	50	60	70	80	90	100
UPPER	1.0	5.1	6.5	8.5	8.7	8.8	8.3	7.4	6.2	4.5	2.8	.2
LOWER	1.0	.5	.9	2.1	3.1	3.7	3.8	3.7	3.4	2.5	1.5	.2

FIG 51

STATION	0	5	10	20	30	40	50	60	70	80	90	100
UPPER	.06	.506	.390	.498	.522	.528	.498	.444	.372	.270	.168	.12
LOWER	.06	.018	.054	.126	.186	.222	.228	.222	.204	.150	.096	.12

A table of ordinates always takes the form shown in Fig. 50 often with the airfoil shape also shown (which is a Hacklinger section) as in this diagram. This shape, as reproduced, may not always be all that accurate, although it can be relied upon to show the general form of the airfoil.

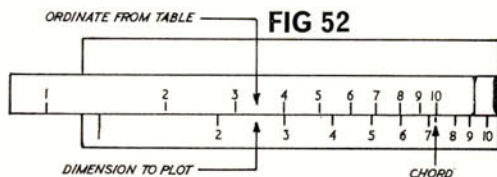


FIG 52

All the figures in the table of ordinates refer to dimensions expressed as a percentage of the chord length. For a start, therefore, it is necessary to recalculate each table figure for the chord length you are using. For the sake of example, suppose the chord length required is 6in. Then calculation proceeds as follows.

At station 0 the upper surface ordinate is  $6 \times 1(\%) = .06\text{in.}$  and the lower surface ordinate is  $6 \times 1(\%) = .06\text{in.}$

At station 5 the station value becomes  $6 \times 5/100 = .3\text{in.}$  the upper surface ordinate is  $6 \times .51(\%) = .306\text{in.}$  and the lower surface ordinate is  $6 \times .018(\%) = .108\text{in.}$  and so on.

The complete table of ordinates, recalculated for a 6in. chord is shown in Fig. 51.

This is all quite straightforward—merely a matter of simple arithmetic—provided we are using whole number chord lengths. Where a chord length involving fractions of an inch are involved, such as  $7\frac{3}{8}\text{in.}$ , the calculation becomes much more tedious since, in this case, we would have to multiply by  $7.375$ . It is far simpler, and very much quicker, to use a slide rule for calculation in such cases. All you have to do then is to set the '10' on the slide against the actual chord length on the fixed scale, when you can read off the equivalent ordinates directly—see Fig. 52. If these come off the slide rule scale, move the slide so that the '1' comes against the chord length. If you have never used a slide rule before you will find it quite easy if you follow this simple instruction.

FIG 53

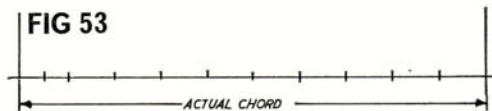
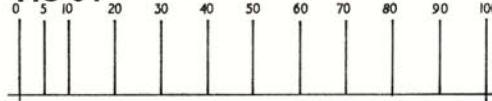


FIG 54



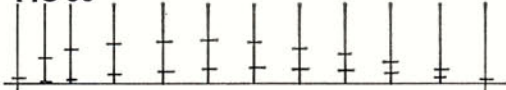
We now have a recalculated table of ordinates for the chord length we want to plot. Next step is simply to draw a straight line, representing the reference chord, and subdivide it into the various stations, as given by the station figures calculated for the table—Fig. 53. Station 0 is the leading edge position and station 100 the trailing edge position.

Vertical lines are now drawn at each station position, as in Fig. 54. These need only be drawn above the reference chord line if all the figures given in the original table of ordinates are *positive*. If the original table shows *negative* figures, this means that these ordinates extend below the reference chord line and so the station verticals will have to be extended below the chord line as well.

The next step is simply a matter of transferring the calculated ordinate dimensions (Fig. 51) to the basic layout. At station 0 upper and lower surface ordinate figures are the same, representing the leading edge. Mark this point with the measured dimension. At station 5 there will be two points to mark—the upper and lower surface ordinates, respectively. Remember that ordinates only mean 'heights' above the chord reference line and it should be quite clear what you are doing. At the next station there will again be upper and lower points to mark; and so on.

A word about transferring the ordinate dimensions to the drawing. Rather than do this directly off a ruler use a pair of dividers set to the dimension on the rule and then transfer the dimension to the drawing with the dividers. A scale divided in 1/50ths inch is recommended for this

FIG 55

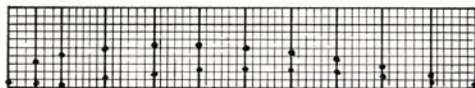


work. An ordinary ruler divided into tenths of an inch is not accurate enough.

Another tip. It is usually quickest to mark off all the upper surface ordinates first, and then all the lower surface ordinates. This is also less liable to lead to errors, as if you miss a station it will usually show up right away. When you have finished, check that the complete set of points marked do conform to a smooth curve for the top and bottom surface. If any point seems out of position—too high or too low—remeasure. If it still agrees with the calculated dimension, check your calculation for that station!

There is a quicker method of plotting out ordinates, which is a little less accurate. This is to draw the chord line and stations on squared graph paper, e.g., with 1/10th inch squares. Then instead of actually having to measure each ordinate and transfer it to the drawing you can estimate its position directly by counting its height in squares—Fig. 56.

FIG 56



Either way you end up with the same thing—a basic drawing comprising a horizontal line representing the reference chord and vertical lines representing the station positions, on which are spotted or marked the actual ordinates at each station. It is then only a matter of fairing in these points with a smooth curve to complete the drawing of the airfoil section—Fig. 57. This should always be done using French curves or draughtsman's curves—not freehand. If you do not want to go to the expense of buying curves a single 'flexible curve' will do the job and can be bent to any shape; and these are quite inexpensive. The main thing is that having taken care to calculate and plot the airfoil section accurately it is pointless to waste all that work by drawing in the final outline inaccurately.

FIG 57

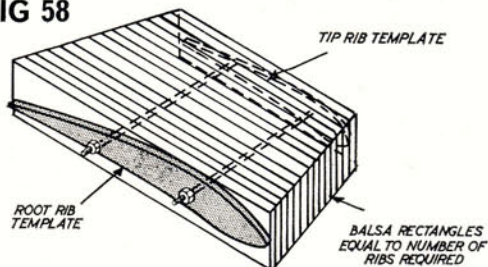


Taper wings present additional plotting problems for here all the chord lengths are different, needing a different set of calculations in order to be able to plot each rib. In practice it is usually only necessary to plot the largest (root) and smallest (tip) ribs. Intermediate ribs are then cut in the form of rectangles, sandwiched between finished shaped root and tip ribs and the whole lot then carved and sanded down as a block—Fig. 58. This ensures a perfect set of taper wing ribs, and one which is likely to be more accurate than a set of ribs cut individually from separate plottings for each rib.

There is a short-cut method of plotting individual ribs in a taper wing which saves having to calculate ordinates for each intermediate rib chord. This is also particularly useful for plotting the individual ribs in a large wing where the section, as well as chord length, may change from root to tip. The basic method is shown in Fig. 59.

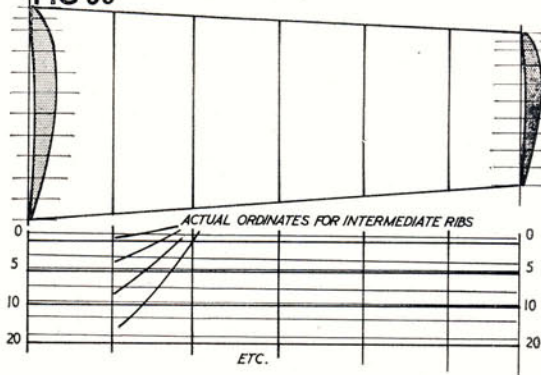
Root and tip ribs must be fully calculated and plotted. The drawing is then extended in the form of a series of root to tip cross section lines at each station, as shown. Corresponding ordinates for intermediate rib positions can then be measured directly off this drawing. For clarity and ease of working, separate root to tip cross sections are usually drawn for the upper and lower ordinates.

FIG 58



To conclude the subject of plotting accurate curved shapes, the use of ordinates is not confined to airfoil sections. Complex fuselage cross sections are sometimes presented in the same way, although this is seldom employed in model design. The use of ordinates, however, is an excellent method of plotting large ellipses for wing or tail planforms.

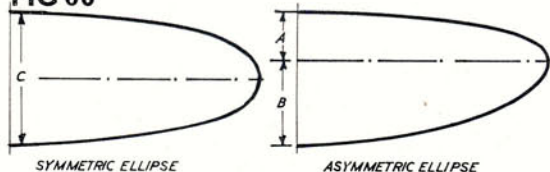
FIG 59



STATION	0	10	20	30	40	50	60	70	80	90	100
ORDINATE	1.00	.995	.979	.954	.917	.866	.800	.714	.600	.436	0

Figure 59 shows a table of ordinates for plotting an ellipse with 10 per cent stations. Thus in the case of a wing, sub-divided the semi-span into ten equal parts as stations and simply calculate the ordinates for each station. In the case of a symmetrical ellipse the basic factor is  $C/2$  (where  $C$  is the wing chord)—see Fig. 60. For an asymmetric ellipse then the front half is calculated with dimension  $A$  as the basic factor; and the rear half with dimension  $B$  as the basic factor. The root chord is equal to  $A+B$ , the position of the nominal wing centreline determining the respective values of  $A$  and  $B$ . Normally  $A$  would be about  $33\frac{1}{3}$  to 40 per cent of the chord for a pleasing asymmetric elliptic planform without sweep.

FIG 60





# TOPICAL TWISTS

by 'Pylonius': illustrated by 'Sherry'

## Function-al Flying

CHANGE doesn't often come in great big leaps; it invariably creeps up you like old age and soggy tissue. There we are, one big happidrome on the aerodrome, with Radio and Sports model flying cheep to cowl in the same patch of damp air, then next thing we know we have drifted into a new era, with the grand old, all-together rally as dead as the dodo. What we find in its place is the new style communal jamboree, where kindred spirits get into a non-competitive (more or less) huddle to enjoy their particular obsession in all its ritual panoply and splendour. There are lectures, film shows, static displays, and, yes, even some model flying.

This one-at-a-time get together is quite a scientific advance on the all-modellers muddle that prevailed until recently. If, for instance, you are free flight type, you need a good straight run down the airfield in order to spot which particular tree your model lands in, or, if it is crop bound, to reach it before the combine harvester gets it. Now this isn't possible where the C/L excursion boys have covered the airfield in a fine wire mesh, or where the Rolls Radio guests have straddled it with transmitter gear.

Naturally, we look to America to stage the one class event on a big scale, and that's just what the recent All Scale Rally was, Big Scale. The emphasis at this non-functional function was very much on flying for fun, suggesting thereby that eccentrics who fly non-scale models do so just for the grim agony of it, and there is common rejoicing at the 'real thing' event that the purists in mind do not have to witness such suffering.

Quite the opposite is the Radio man's approach. His modern style get-together, of which we have recent evidence, is more on the lines of a Trade Convention, where appropriate dress is pin stripe and briefcase rather than windcheater and plimsolls. P.R.O., success would be to get a report of the Meeting in the Financial Times.

I myself will continue to vie with kite and reddi-built rubber on the local common.

"Should be all right anywhere here, those kids will soon move."



"Just look at that—it actually flies without radio!"

## In The Wake

England may be swinging, but in certain other acrobatic pursuits, we are told, it is severely lacking. We may be in Concord with our continental friends in some areas but in others we are definitely sub-sonic. Mainly the trouble would seem to be a spot of ancestor worship on the part of our esteemed manufacturers. Too much homage is paid to the crude concepts of early model man, particularly on the Beginners Kit production lines, where is to be found the same bulbous designs which first delighted the eye of Granddad way back in those halcyon days when balsa was the wonder discovery of the age.

Now, when the Beginner, that is the odd one who resists the lure of multi radio, shops around for a simple rubber job he has the quaint experience of embarking upon his model career as a vintage flyer. Often do I see these relics of our dear, but apparently not quite dead, past, come popping up on park and common; rather corpulent, blunt looking instruments, making up in bulk what they lack in twenty five years of development.

If we are to get more up-to-date content in our kits it's a question of "Wake up England, and get a Wake up."

## Sans of Time

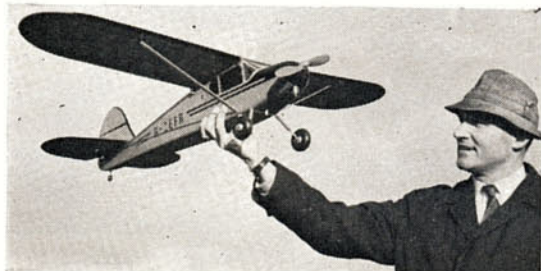
Time was when model flying was a young man's hobby. Not in its brave pioneering days when the archetype modeller was the scientist/technologist of the new age at play, but when prowess on the field demanded a healthy set of sinews as well as a head full of skill. Unless you could hot foot it across the airfield, and into the bracken beyond, in near Olympic style your chances of getting a second flight in before dusk were, like your undernourished legs, extremely thin. But now that the model flyer—minority adherent excepted—is switching from athleticism to automation there is a positive swing towards the maturer flyer on the flying field. Even the arthritic fingers of the ageing daddy-o can operate the simple radio lever, and crotchety legs are required only to hobble a few steps to the obliging cathode-come-home model.

To the model flyer to whom a non-modelling existence is unthinkable this can make an extension of life. It is not that the over forties need fortifying so much as automating. Given the electronic means you can carry on with many a crafty figure of eight whilst almost everything listed by the Bard. And even your final operation will be that of shuffling off this mortal coil.



JUST a few short years ago, the idea of fitting radio control to a scale model was viewed with grave misgivings, but a few scale enthusiasts persevered and in 1961 the first R/C Scale competition in this country was held at Wellesbourne by the Sutton Coldfield Radio Club. Now, with the news that this year a trophy has been presented for annual competition at the Nationals, the event can be regarded as having finally 'arrived'. Indeed, it has already become one of the biggest crowd pleasers in the contest calendar, bidding fair to oust multi in spectator appeal.

In view of the comparative newness of the class, the competition rules have been largely a question of trial and error, consisting largely of an amalgam of Control-



Dennis Thumpston gives

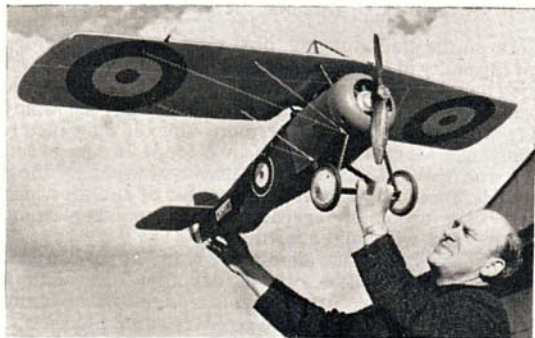
## R/C SCALE

comment with a viewpoint on judging

line Scale and R/C Multi as far as the flying schedule is concerned, and whilst this was a good basis from which to start, it loaded the scoring quite heavily in favour of the aerobatic type. As readers may know, the flying schedule consists of an obligatory set pattern, comprising take-off, a number of course flying figures, approach, and landing, all of which are given 'K' factors; in addition, a competitor may perform, from a given list, up to five optional manoeuvres, most of which are of an aerobatic nature and carrying high 'K' factors.

This has meant that a model of, for example, a *Handley Page Hannibal*, an *Antoinette* or, for that matter, a *Druine Turbulent*, stood no chance of winning since none of these aircraft was aerobatic, or dropped bombs, or retracted its undercarriage, and thus each had a much lower scoring potential, as it could perform none of the high-scoring optional manoeuvres.

Now, since the *sine qua non* of competitive flying is that each contestant shall have an equal chance of winning, the SMAE Scale Sub-Committee has been devoting some attention to this disparity, and has arrived at the conclusion that the problem could be solved by the



Bill Kitching's 1/6th scale Sopwith "Swallow" has a Merco 29, weighs 5 lbs. and is controlled by Stockman and Wesley single channel Rx with Bonner Varicomp selective compound actuator on rudder and kick-up elevator plus quick blip engine control via Rising clockwork escapement. The model is well detailed even has individual rounds in the ammunition belts!

following methods. Firstly, by eliminating the 'K' factor for optional manoeuvres, i.e., making  $K=1$ , so that the weight of the scoring in the flying section would be for

Left: author does not always fly scale! This 49 in. one-and-a-half times Frog "Zephyr" is powered by Mills 1.3, weighs 2 lbs., has Grundig 6 channel control on elevator, aileron, motor and is fully aerobatic! Right: New Zealander Mike Kendrick has been flying this fine multi-channel "Chipmunk" for several seasons.



the obligatory items, the options then being regarded as small bonuses. Secondly by widening the scope of the optional items so that even the *Wright Flyer* could find five manoeuvres which it could perform! These additional items would include such things as flight in a rectangular circuit, sideslipping, overshoot, touch and go, or a special option peculiar to the aircraft to be nominated by the competitor. (In fact, the four latter items have been accepted by the FAI at the recent meeting in Paris, but 'K' factors for options have been retained.)

Critics of these suggested remedies have put forward the objection that, by providing no incentive for the aerobatic model with retracting gear, flaps, etc., builders would choose the simplest prototypes with fixed undercarriage and no extras; but this assumption is groundless,

(Continued overleaf)

The Jodel "Abeille" by Air Alma kits (France) is a striking example of effective realism with relatively simple lines. Designed by Robert Lestournaud, the Jodel flies exactly like the real machine. It is equipped with a Veco 45 and French "Radio Pilote" proportional control, wt. 6 lbs, 68 in. span, 1/6th scale.



**R/C SCALE COMMENT** (continued)

since on the static judging, high marks may be awarded for ingenuity in construction, and this would amply cover such items. And, anyone who has tried to fly an accurate rectangular circuit with a slow-flying model on a windy day will know that it is far more difficult than merely applying up-elevator to perform a loop! In any event, the true scale modeller is not usually swayed by these considerations; most have a mental list of aircraft which they *want* to build, regardless of any points-gleaning factors, and will build accordingly.

With the Nationals almost upon us, let us consider what the judges will be looking for in the flying section. One of the most important aspects, and one which many flyers overlook, is realism in flight. Whilst this is a specific item for which points are awarded, all flying manoeuvres are in fact judged with the performance of the full-size aeroplane in mind.

On take-off a Spitfire would take quite a long straight run before climbing away fairly steeply, whilst a light aircraft would be permitted a slight amount of swing at the commencement of its run, followed by a shallow climb with perhaps the occasional drop of a wing. A W.W.1 scout would take a very short run indeed, as anyone who has watched the S.E.5 taking off will know. Scale speed needs no comment, but aerobatics require special attention. Watch a Tiger Moth performing a loop and it will be observed that a fairly long shallow dive is needed in order to pick up the necessary speed, then, at the top of the loop the motor will cut, and the aircraft will ease out of the resultant dive at the completion of the manoeuvre. Three consecutive loops as performed on the multi schedule would be quite wrong in the case of the Tiger Moth. Similarly, an aircraft with a retractable undercarriage would never perform aerobatics with wheels down, therefore a model which did so would be penalised. Other examples will readily spring to mind.

With judging in mind, this may be an opportune moment to impress upon those who intend flying in the scale events this year, the importance of providing adequate documentation. This must include a statement of the scale, an accurate three-view drawing, photographs of the original, and details of the sources of other information used in the preparation of the model. These items are clearly requested in the rules, and whilst judges have been fairly lenient in the past, lack of provision of documentation this year will incur disqualification, so be forewarned and arm yourself accordingly!

Fritz Lindgren and his Piper PA 30 Twin Comanche at the U.S. Nationals model weighs 14 lbs. 5½ oz. and has two Veco 45 engines. Span is 72 in. and scale 1/6th full size. Controls are for rudder elevator ailerons flaps, brakes, lights, retractable undercarriage and throttles. Not exactly a light project. Radio is a "GA 1-12".



# Try WHIP power



**Michael  
Payne**

**proves that  
your flying  
field can  
be the back  
garden**

**T**HERE has always been a nucleus of modellers for whom the scale model is the only really satisfying form of flight. Radio control has opened up exciting new possibilities in this field, but not everyone has the ability the means, or the time to devote to its operation. Control-line has produced its share of exceptional realism in scale models; but here again we have encountered the difficulties of suitable flying sites, noise and danger to spectators.

There is, however, a simple solution to each of these problems—**whip-control**, which brings the successful flying of any scale model, however simple, or however ambitious, within the reach of any modeller, beginner or expert.

There is no noise. There is no engine. Airscrews, if any, windmill as the model flies round the operator on a single line. Finding a flying site is relatively easy—any open space with a clear 60 foot diameter and a level section on which to touch down will suffice. For years I have flown an ever increasing variety of models from my own lawn. Most modellers can find some such open space near their homes.

The line, which is nylon C/L thread comes from a reel on a rod, rather like a fishing rod, but more rigid. At the model end is a wire clip (a paper clip will serve) which snaps on to a wire attachment point built into each model. The correct location of this point is very important as it determines the manner in which the model flies. It must be ¼ in. forward of the C.G. on the side of the fuselage of a single engined aircraft. On twins it usually occurs where the L.E. of the wing joins the engine nacelle, or perhaps just above this point on the nacelle itself.



The C.G. should lie just aft of the L.E. and the tail-plane should always have at least 2 deg. less incidence than the wing, thus giving longitudinal dihedral. This ensures that any increase in airspeed induced by more vigorous whipping will result in the aircraft climbing away.

## Size and loading

Models are mostly 1/24th scale, and depending on the aerodynamic cleanliness of the model, up to 25ft. of line can be used. An assistant can hand-launch the model, or if he is alone, the operator can reel out the line as he turns. Left hand circuits come quite naturally to C/L flyer, with the rod held in the left hand. In this way, since the line "leads" the model, one always faces the aircraft.

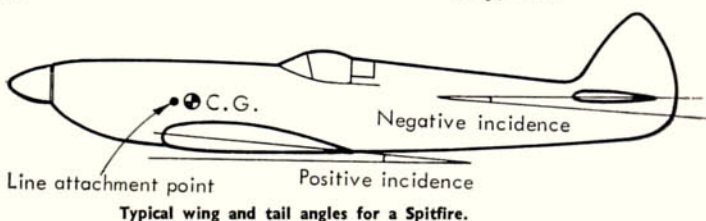
Of course, the wing loading also has an effect on the way each model flies and it has been found that about 7oz./100sq.in. produces a model which is lively enough in flight, and which will "penetrate" any light wind gusts. It can still be built strongly enough to survive any but the disastrous landing. Thus the *Typhoon* (84sq.in.) weighs just over 5oz., a *Beaufighter* (108sq.in.) weighs 7½oz., while a *B-17 Fortress* (195sq.in.) weighs 12oz., which is about the limit for comfortable flying. These weights permit a very strong structure to be built, especially around the undercarriage, and a paint scheme to be applied which can be as lavish and accurate as any scale modeller could wish without the weight penalty usually encountered in rubber powered scale models. In fact, beginners would do well to work from any of the wide range of 18in.-20in. semi scale kits, strengthening and ballasting where necessary and building in a sprung 16 s.w.g. undercarriage. It is also advisable to fit doughnut style wheels, as these will run better over grass.

## Formation flying

Control-line aerobatics are of course impossible, except such as near wing-overs and stall turns. But glider-towing, spot landings with arrester gear are possible, and movable flaps operated by a second line can make slow flying more interesting. If two operators fly together, formation flying can call for some rapid footwork.

There is virtually no limitation to the types of aircraft that can be flown by this method—jets, twins or 4 engined machines. The author has built and flown successfully over 50 different types, from the minute *D.H.2* of W.W.I. to the vast *Vulcan* of today, and he has learned a great deal of interesting facts about wing sections, flap angles, slats and the peculiarities of delta plan-forms. He has also enjoyed the fascination of seeing exact replicas of aircraft of the past flying under controlled conditions.

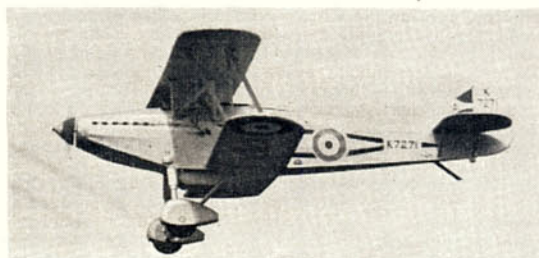
Moreover, the simplicity of the system has much to commend it. Just a rod and line and a model—no engine, no fuel, no expensive accessories, no noise, no elaborate preparation, and no need to travel miles to find some wide open space in which to fly. And of course, the ability to fly models of the types of aircraft impossible to fly in any other way.



Typical wing and tail angles for a Spitfire.



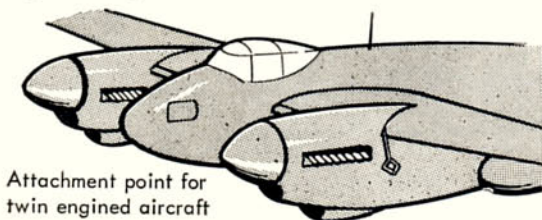
Avro Lancaster B.2. (Special) Dambuster airborne. Model in heading is a Douglas Boston.



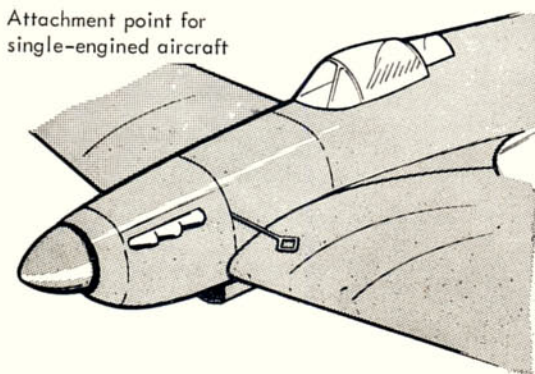
22½ in. Fury weighs 7 oz., has line from the fuselage.



Lockheed Hudson looks realistic in climbing attitude.



Attachment point for twin engined aircraft

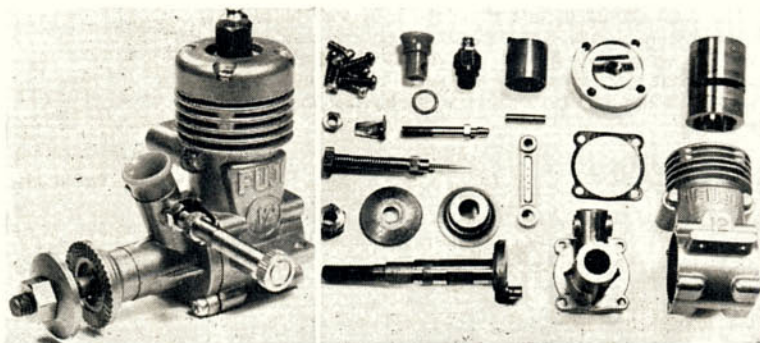


Attachment point for single-engined aircraft

# LATEST ENGINE NEWS

By Peter Chinn

Midway between the popular 1.5 and 2.5 c.c. groups, the Fuji .12 (2 c.c.) revives a capacity that was commonly used 20 years ago. Basically it is a bored and stroked version of the Fuji 099-S.



Elsewhere in this issue, there is a test report on the Cox "QZ" 049 engine. The L.M. Cox Manufacturing Company Inc., are the world's largest manufacturers of model i.c. engines, turning out something like a million motors per year. Including those engaged in Cox's extensive ready-made model and slot-car business, the factory currently employs some 800 people and its buildings total approximately 160,000 square feet in area.

All this has grown from an extremely modest beginning in 1944 when Leroy M. Cox, founder and president of the present company, gave up the electrical trade in which he had been engaged for twenty years and, with less than £800 capital, began quantity manufacture of wooden toys. At the time, good quality toys were (understandably, as it was wartime) rather scarce and Cox came up with an idea for a better popgun. For this, as for the proverbial better mousetrap, customers beat a path to his door and the business was an instant success. Production, which had started in Cox's garage, was soon moved to an old foundry building.

In 1946, with the war over and metal again available, Roy Cox went into partnership with a friend, Mark Miér, to produce a simple racing car. The following year the Cox "Champion" model car appeared. This, a scale model of the typical American midjet racer of the period, was of diecast metal construction and was the forerunner of the first Cox engine-powered model. The engine driven version appeared in 1948, powered by a special 2.5 c.c. glowplug motor manufactured by the Cameron Precision Engineering Company. Costing only about £7, it brought the then current sport of tethered model car racing (the hobby that established, in the competition field, such famous engines as the Hornet, McCoy and Dooling) to a much wider public and, in that year, Cox sales topped half a million dollars.

By the end of 1949, however, the popularity of engine powered model car racing had declined sharply, never to recover. Cox reasoned that a big market was, nevertheless, still untapped. If a really easy-starting, dependable power unit could be manufactured, engine-driven models could penetrate the toy industry instead of being confined only to the mechanically minded model builder. Accordingly, a bold decision was taken. All existing

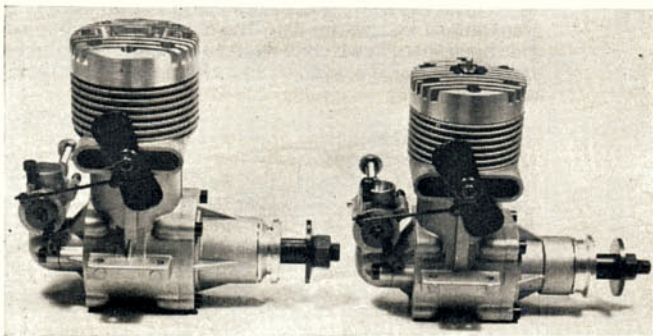
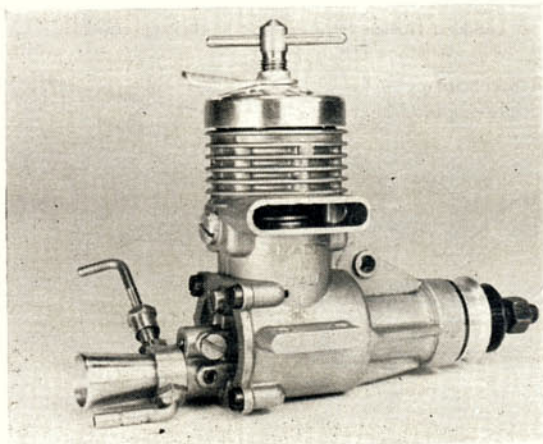
products were discontinued and most of the year 1950 was devoted to experimental work on engines.

The outcome of this was the Cox *Space-Bug* 049 motor, a brilliant piece of work that was a milestone in the history of model aircraft engine development, combining, as it did, originality of design, a new approach to production techniques and a performance superior to that of any other motor of similar capacity of that time. The *Space-Bug* was, of course, primarily intended as a power unit for Cox's new ready-made models, the first of which was a 24 inch span control-liner with double surfaced aluminium wing and a moulded plastic fuselage, but the engine's superior power was quickly appreciated by contest modellers and, in due course, a free-flight version of the *Space-Bug*, the famous *Thermal Hopper*, together with various special "hop-up" parts were put on the market. Ever since that time, for more than fifteen years in fact, Cox has managed to maintain an almost uninterrupted lead in the 1/4 A class contest engine field, the current favourite being, of course, the well-known *Tee-Dee* 049.

At the present time, Cox lists fourteen engine types ranging from .010 cu. in. (0.163 c.c.) to .1525 cu. in. (2.499 c.c.). These include the reed-valve *Pee-Wee*, *Bee* and *QZ* models mainly intended for the Cox ready-mades, the *Tee-Dee* and *Special* contest range and the intermediate *Medallion* models for which throttle control units are available for adaption to radio-control.

Cox production methods pioneered new standards in the model industry by combining ultra high precision machine work with automated systems for the volume production of model engines. Nearly all engine parts are turned out on automatic screw machines, while the grinding and honing of working parts takes place in an air conditioned room with tolerances held to within a few millionths of an inch on pistons and cylinders so that any piston is an acceptable fit in any cylinder and selective assembly is virtually eliminated.

Left, surprise new engine from Super-Tigre. Obviously based on the G15 racing glow engine in its rear disc-valve version, this is the G.15D-RV diesel, presumably intended for FAI team racing and, possibly, free-flight. Note long carburettor intake. Below, currently the world's largest production model aircraft engine, the 13.24 c.c. O.S. Max-H 80 R/C, compared with the Max-H 60 R/C. Like the 60, the 80 features rear drum valve induction, twin ball-bearings and, of course, a ringed piston. It also has a twin plug head and a caged roller big-end bearing. Further details on these engines in the April issue of R.C.M. & E.



### Fuji 12

The subject of last month's "Engine Test" report was the Fuji 099-S glowplug engine of 1.609 c.c. or .0982 cu. in. A development of this motor is the Fuji 12, an example of which was recently submitted to us for examination. Externally, the 12 looks almost identical to the 099-S and, apart from the figure "12" embossed on the crankcase, the only readily visible outward difference is the cylinder head which is plain instead of being finned. It goes without saying that they both fit the same mountings. The 12 is just a trifle taller due to its thicker cylinder-head.

As its name suggests, the Fuji 12 has a bigger swept volume. According to measurements of our sample, bore and stroke are increased by 0.9 mm. to 13.6 × 13.6 mm. to give a capacity of 1.975 c.c. or 0.1205 cu. in. This has called for slight modifications to the main casting to cope with the larger o.d. of the cylinder liner (now 19 mm. instead of 17.8 mm.) and wider spacing of the cylinder head screws. The crankshaft has the same diameter journal (8 mm.) but a heavier web and, of course, longer crank throw.

With nearly 25 per cent. greater piston displacement, the Fuji 12 should offer a worthwhile power increase. Weight is up by only 0.3 oz. to 4.1 oz. less silencer, or 5.1 oz. with Fuji silencer.

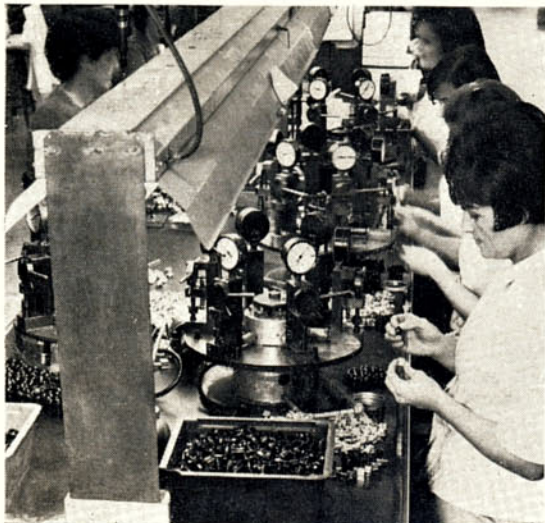
### New Olive Tiger

The first major change to the Olive Tiger 2.5 c.c. diesel for nearly twelve years has been announced in the shape of the new Tiger Mark IV. The engine is still a twin ball-bearing shaft-valve motor of similar appearance to the Mk. III but nearly all the component parts are new and only a few minor parts will be interchangeable with those of the earlier model.

An obvious change is the new crankcase which is of stiffer proportions than the old one. The upper section of the cylinder also has thicker walls and the cylinder jacket provides extra cooling fin area. The bore and stroke are unchanged but there is a modification to the transfer porting. Crankshaft diameter stays at  $\frac{1}{4}$  in. but a new counterbalance design provides higher primary compression. The weight of the engine is slightly increased but improved crash resistance is claimed.

As usual, the makers offer the engine in standard and works-tuned versions. Prices, with purchase tax, are £7 1s 4d. for the standard version and £9 13s. 2d. for the tuned version. If preferred, a diamond-lapped, hard-chromed cylinder liner will also be obtainable. This pushes the respective prices up to £8 5s. 9d.

Above right, at the L. M. Cox plant at Santa Ana, California. A view of the machine shop where Cox engine parts are produced on these big automatic machines. Below right, honing cylinders at the Cox factory. Grinding and honing are done in a temperature controlled room, enabling tolerances of a few millionths of an inch to be maintained. Below, assembling Cox Babe-Bee engines. Each operator has a battery of six air pressure gauges on which piston/cylinder assemblies are tested for compression seal before being united with the crankshaft and crankcase.



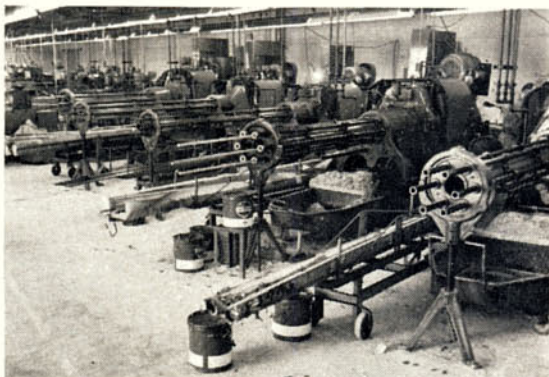
and £10 17s. 7d. Other optional extras include a new single outlet exhaust collector ring and the Mk. IV will also be offered in marine and throttle equipped versions.

We hope, in due course, to publish a complete illustrated report on this new Oliver engine. Incidentally, old Oliver customers will be interested to know that John A. Oliver, founder of the Oliver Engineering father-and-son business, is now in semi-retirement. Former partner John S. Oliver is now in charge.

### In Brief

Production of the long-awaited Brice "Four Aces" 10 c.c. 4-cylinder engine should begin within the next few weeks. The manufacturing rights for this motor have now been purchased by the Calmec Manufacturing Corporation of Los Angeles, California and William Brice, who developed this geared radial based on four Cox Medallion 15 units, has joined Calmec to take charge of the production programme.

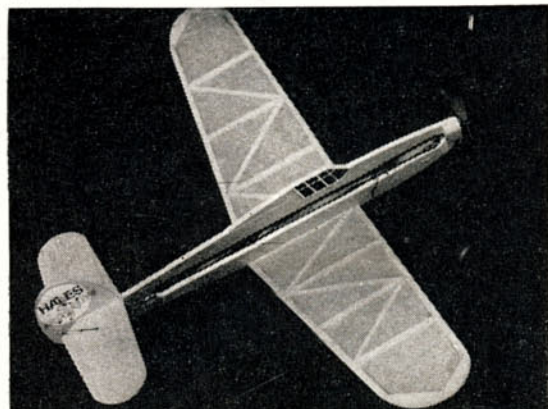
We often think that it is a pity that modern engines are permitted in some of the now popular "Old Timer" or "Vintage" contests, but the plain fact is that there are just not enough good-condition, spark-ignition petrol motors available (at reasonable prices) to power all the quarter century old model designs that are now being built for such events. Interest in old-timer contests still seems to be growing in America.



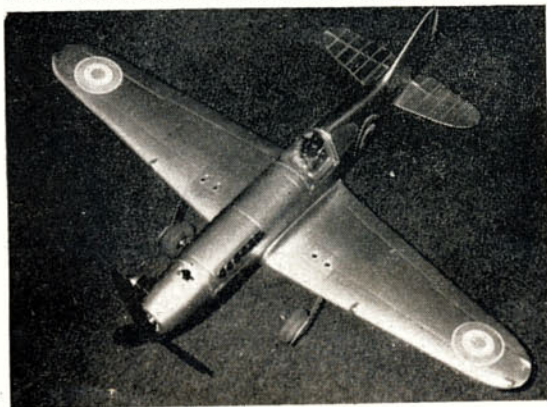
# PICTURE PARADE.....



Our recent comment on the lack of new kit designs from the British has drawn the fire of more than one manufacturer and the support of several aeromodellers who like to encourage the juniors. They'll be as pleased as we are to see the new models from **A. A. Hales Ltd.** A *Hawker Fury* and a *Puss Moth* (above) join the pre-printed balsa sheet Frogflite Quickbuild series for the absolute novice. In the



"Quick 'N' Easy" range there now are six different semi-scale profile types, of which we illustrate the *Hawker Hurricane* above. At 3s. 6d., these form a good transition model betwixt the complete pre-fab and the larger designs. They have tissue covered wings with built up structure and teach one how to handle balsa wood. Flight performance is surprisingly good for a small model. *Clipper* and *Super Clipper* are two other new Hales kits we advise newcomers to consider. Each is an all-sheet balsa glider.



## TRADE NOTES

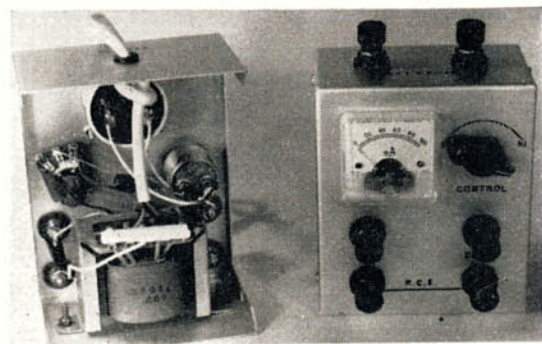
While in France for the Coupe d'Hiver event we spotted an extremely rare bird which does not ever seem to have been blessed with any publicity, even in its home land. It is plastic ready-to-fly model of the *Dewoitine D 520Z* made by **Vercours Aviation** of Villard-de-Lans. Powered by the universal Cox .049, the span is about 19 in. and it sells at £7 10s. (picture below left).

The **Surform** is now part of most household tool kits; but the average modeller would never think



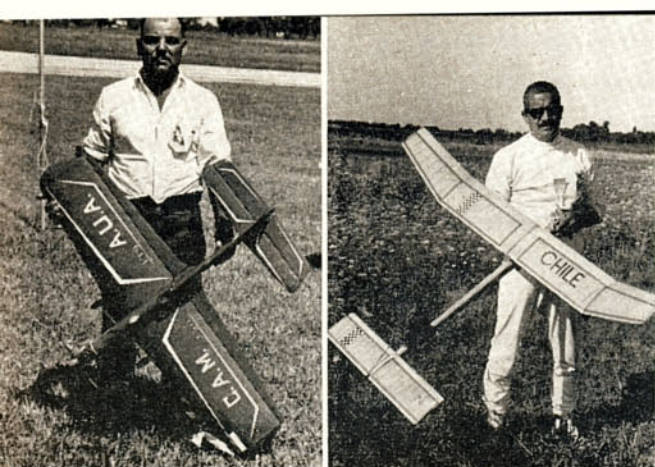
of using one for smoothing out balsa. Ideal for rough carving propellers the Surform tools are now issued in new shapes and sizes of greater appeal and purpose. In particular the Round file sold as No. 124A at 11s. will make short work of carving a hardwood or balsa prop. Our photo illustrates a team race prop coming off the line. Another neat Surform to consider is the Standard File, No. 101A.

Widespread use of the DEAC Nickel Cadmium cell demands a special charger and the reader will find quite a variety on the market. One which has an extra feature is the "308" *Field Charger* which works from a 12v. car battery and sells at £4 10s. It will charge DEACs and a 2v. accumulator



simultaneously. The "308 *Universal* charger for mains operation in the home is £5 19s. 6d., also from **H. J. Nicholls & Son.** Photo shows the "works".

We have been putting the new **Humbrol** three stage enamel application to the test and it really works. Provided one works at four hour intervals, a coat of primer, undercoat and top enamel gives you a superb finish within a day, and this applies to household uses as well as modelling.



## AND OVERSEAS NEWS

The South American Championships were held from January 21st to 23rd at the airfield of Mariano Moreno, about 18 miles from Buenos Aires in Argentina. Teams were sent by Brazil, Chile, Uruguay and Venezuela as well as the host nation. The Champs gained considerable publicity and attracted a lot of spectators. Weather was extremely hot and humid, up to 28 degrees Centigrade. Typical of the entries were the stunt model from Uruguay and the free flight power entry from Chile seen at top. Above right are the F.A.I. speed leaders, all



using Super Tigre G.15 engines, the winner was Roberto Borel of Brazil (in centre) at 192 km/h and Marcello Leys and J. Pardal of Argentina flank him as second and third placers.

The photo at the bottom of the column shows the team from Uruguay in F.A.I. free flight power. The general finish and decoration of all the models in these South American Championships seems to have been to a very high standard.

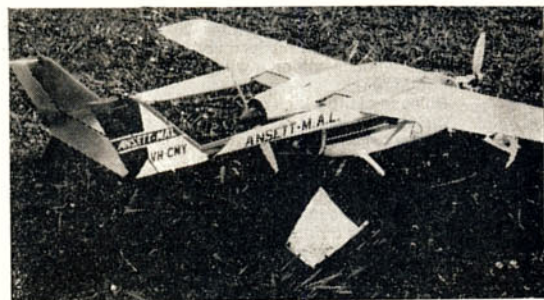
In the final results, the team from Chile stands out for improvement from earlier events. Winners



of the A/2 glider contest, they also placed second in F.A.I. Power. Modellers from Argentina won team race (200 laps in 10:55) Junior and Senior C/1 stunt, Junior A/2 and F.A.I. Power, as well as speed. Uruguay won the team event in Wakefield, but individual honours went to Benedini (Argentina) after a thrilling fly-off. Brazil had the honour of leading multi-channel results as a team, with Veres of the Argentine top individual. He was flying a *Taurus* with Veco 45 and Bonner Digimite.



From away across the Pacific, our photo of a twin boom Cessna 336 comes from the New South Wales State Champs in Australia. This model placed second in the C/L scale event, one of no less than 19 on the programme. Ross Woodcock made this model which has twin motors in push-pull arrangement and is coloured as a local Ansett aircraft. High times in racing by Brian Eather were a star point of the show. He broke the Australian record with 4:24.3 for 100 laps. Wakefield was also exciting and produced a beautiful model from J. Cavanagh with prop hub assembly turned from solid aluminium and carrying two ball-races. The model went out of sight into the blue on its fourth flight after 23 minutes.



In radio, Tom Prosser won every class, four in all, including scale!

In the Northern Hemisphere, the Canadian Mid-winter event of February 12th started in a temperature of 20 degrees below zero! The sky was brilliant blue, winds light, and thermals abundant so the standard was very good. See photo of Doug. Row-sell and own design glider at middle left. Event was won by Dave Surrey with a perfect score. Mike Thomas did the same in open rubber.

# FREE FLIGHT COMMENT

By John O'Donnell

By the time this appears in print, S.M.A.E. Full Members should have been supplied with their copies of the new and long awaited edition of the Rule book. The required revision and updating was entrusted to the various S.M.A.E. sub-committees under the editorship of the Technical Secretary, Paul Newell.

Object of the revisions was to remove ambiguities. Some changes in rules have been made. In the case of F/F these have been such as to lead Ian Lucas (Chairman of the F/F sub-committee) to circulate Area Secretaries with a list of the more important alterations.

Unfortunately, one of the alterations which have been removed from the original draft copy of the revised rules still appeared in Ian's circular and so contradicts the new rule book. This concerns the original Sub-committee proposal to permit **three** models instead of **two** for "Open" events. The rule book does not carry any such alteration and is perfectly correct in stating that *only two models may be used* and this includes the fly-off by implication.

Reason for the original proposition was that during the 1966 Nationals some competitors in Open Rubber reached the fly-off at the expense of two models. Then it was argued that the fly-off was not part of the contest (which is only three flights) and hence the two model limitation did not apply! At least one person did actually use three different models!

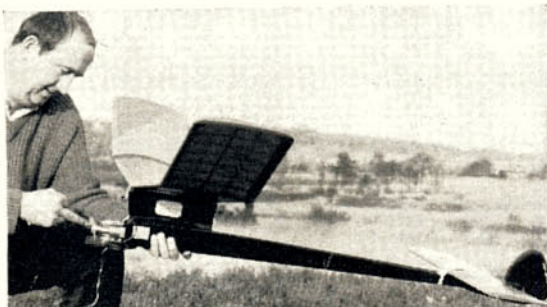
The view of the F/F sub-committee was that the case might well repeat itself so why not put everybody on the same basis. This seems to me to be an extremely casual way to alter a very fundamental rule.

Certainly the N.W. Area reactions to the 3 model concept was extremely unfavourable in view of the advantage given to those blessed with plenty of time and money. If a model per flight was allowed a competitor could wait for weather improvement almost to the last minute of a contest, and launch his models one after another. With help he could have all three airborne simultaneously.

Paragraphs in the new rule book worthy of note by the free-flight enthusiasts include the following:—

- 5.5.3 Second attempts of under 20 seconds are now defined as counting for score (I wonder what happens when a glider towline breaks on the second attempt.)
- 5.7.5. Release of the winch cancels the flight, but release of the towline is permitted provided it carries no more than a twice-size pennant at the ground end.
- 5.8.1. and 5.8.8. The case of the timekeepers recording different scores is detailed. Should the discrepancy exceed 10 records the matter is to be referred to the Contest Director for a decision. However in the case of this occurring on the all-important fly-off he has no option but to accept the average of the scores.
- 6.2. The upper limit to the Wakefield Area has been corrected.
- 6.13, 6.14, 6.15. Rules for Chuck Gliders, Coupe d'Hiver and A/I Glider have been included.
- 6.8. A single unlimited fly-off now applies for F.A.I. events other than the trials. The reasons are purely practical in that progressive fly-offs could continue until the time limit of one hour after the contest close, or even till dark.

Another rule change has been made subsequent to the Rule Book being finalised. It has been made in the proper manner i.e. via a proposal on a S.M.A.E. Council Meeting Agenda. This is the requirement that **snuffer tubes** be mandatory on all models using fuse D.T. This rule is effective immediately (a phenomenon

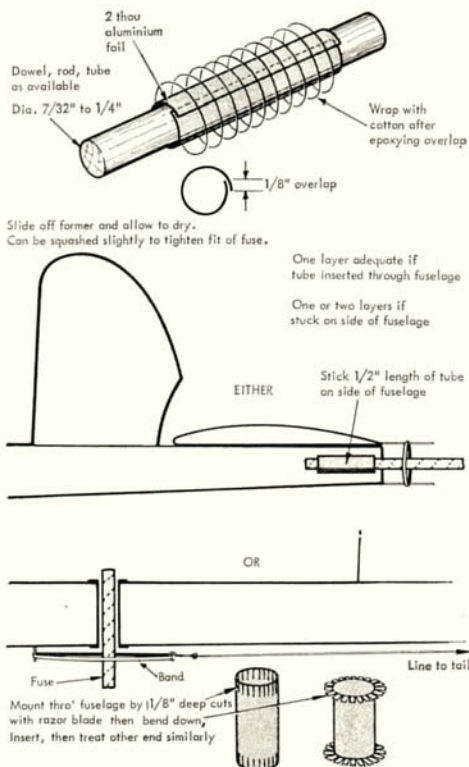


The coming season is bringing forward a rash of large engined high powered models, in the London Area, no doubt the results of George Fuller's success last year with a Fox .59. Here Paul Price of Richmond starts his O.S.29R for a trimming flight at the Croydon Mini Gala. Original design has 550 sq. in. wing area. The O.S. engine weighs 11 oz., with a silencer.

worthy of comment in its own right) and is intended to alleviate the fire hazard associated with fuse. Jettisoning of fuse remnants will now be prevented but is this really *the* hazard? If surroundings are *that* inflammable then any model landing (as distinct from D.T.ing)\_with fuse afloat is liable to have a short life.

As the model itself is more inflammable than most objects, the fire risk was considered when dethermalisers first appeared (many years ago) early in my contest activities. My club members then *tried* to ignite doped tissue with a piece of burning fuse—and failed miserably. The most that could be done was to burn holes in the tissue and to char the balsa structure. The *brand* of dope used could be critical as one well-advertised make has been connected with a couple of pyrotechnical suicides.

Continued at foot of opposite page



## SNUFFER TUBE CONSTRUCTION AND MODEL INSTALLATION

# CLUB and CONTEST NEWS

Send your Club News to  
"Clubman", Aeromodeller,  
13/35, Bridge Street,  
Hemel Hempstead, Herts.

## Wanstead Flattery

Wanstead M.A.C.'s second annual Dinner/Dance was well attended with over 100 bodies present to hear the Club president Henry J. Nicholls tell one of his stories and to be presented with a little bottle of something for his past years services. Other guests included Ken McDonough, Sid Lawton, David Hughes, Ron Moulton and the West Essex-Bromley clubs. A week prior to this Ken McDonough gave the club a fascinating insight into the problems of Authorship and aviation research when he talked about his book *Atlantic Wings* published by M.A.P. Looking ahead, their F.A.I. team race of Franklin/Ives, Allen/Bedford, Gillespie/Goddard Atwell/Harknett and Green/Manser are all getting ready, the first four all using identical designed glass fibre fuselaged Eta powered models with internal silencers whilst the latter pair are still putting their faith in Copeman tuned Oliver Tigers. It is hoped to hold film shows one month at the Clubroom and the club may purchase a 16mm projector (with sound) to lessen hire charges. Basil Murley has his Digitrio finished in a silver anodised homemade case and Bill Forester's Bristol Fighter for control line scale is reported to be out of this world, wing nuts (less than 1/16in. across the wings), unscrew on the cowl! Dave Platt's Douglas Dauntless is well under way and Pete Ball has gone to a lot of trouble to get a Kittyhawk scale model retracting U/C working. Mick Reeves the stunt flier has caught the scale 'bug' and is entering the Nats in C/L. Plenty of junior members are coming in and their interests are mainly control line sports flying with a leaning towards Combat.

## Free Flight Comment

The snuffer tube requirement *does* have merit and it is to be hoped that it does not fall into the disrepute afforded some other rules (e.g. that requiring numbers on wings). I did hear one suggestion, for a different reason, that mechanical timers be mandatory. This was intended to help keep models in the space available by more accurate D.T. setting. It is true that timers are more accurate than fuse, but they are also more prone to complete failure through susceptibility to dirt, vibration and the like. The timers currently available are also expensive and rather heavy for many models.

As I have had to fit snuffers to several models perhaps some practical advice might be useful. I don't know of any convenient commercial source of suitable tube so have had to make my own. This is easily accomplished by rolling aluminium foil round a suitable dowel, tube or rod and epoxy-gluing the seam. Two thou. thick foil is about right, whilst 1/2 thou. cooking foil is too thin! The overlapping surfaces should be roughened by sanding or scraping before applying the adhesive and the assembly should be wrapped with cotton before sliding off the former and allowing to set. The cotton can be peeled-off afterwards. The tube should be put back on the former for cutting to length. Foil of the recommended thickness can be cut easily with a razor blade. The former diameter should not be too near that of the fuse, otherwise insertion of the fuse (with its usual frayed end) will be difficult.



Seen at R.A.F. Wroughton in Vintage. Above, R. Wells Keil Kraft "Gipsy" climbing away after a launch. Right, R. Burgess with a Spitfire powered "Stinger" will recall old times for many readers.



## WESTERN AREA WINTER RALLY

Winter was the operative word at R.A.F. Wroughton on February 19th. Gale force winds, torrential rain, hail and even some sunshine, but a good turnout of far travelled modellers. Most elected to leave their models in their boxes, but hats off to those who flew. *Combined F.A.I.* was an A/2 glider benefit apart from an ill fated power attempt from Rowsell. Many towlines and wings were snapped but John O'Donnell demonstrated how to beat this with his winchless ground grabbing, drag line technique. John Caddick (Swindon) used conventional launch with his *A.P.S. Floridian* to beat J. O'Donnell into second place, Paul Newell took third place with only two flights. The *Combined Vintage* event was an all rubber triumph except for Noel Barker who braved the elements with his huge *Miss Philadelphia*. Winner was Jim Berryman flying a classical lightweight *Cats Whisker* that put up an astonishing performance despite its small size. In keeping with the winner second place Bob Wells had an intense repairing session on his *Keil Kraft Gipsy* but Ray Wade's third place *Simplex Club Contest* remained fairly well intact. No one returned a full score in *A/1*. Bert Turner and Tony Rodgers made 2 minute maxes on their first flights, but more consistent John Bailey edged them both out. The R.A.F.M.A.A. made an all out attack on *Coupe d'Hiver* with the winner C. Hadland ending up with an extremely mangled model. Results: *Combined F.A.I.*—1, J. Caddick (Swindon) 6 : 15. 2, J. O'Donnell (Whitefield) 5 : 25. 3, P. Newell (Surbiton) 4 : 01. *Combined Vintage*—1, J. Berryman (Bristol and West) 5 : 12. 2, R. Wells (Hornchurch) 3 : 07.3, R. Wade (S. Bristol). *A/1 Glider*—1, J. Bailey (Bristol and West) 2 : 45.2, A. Turner (Southampton) 2 : 31; 3, A. Rodgers (Swindon) 2 : 00. *Coupe d'Hiver*—1, C. Hadland (Brize Norton) 1 : 53. 2, D. Truluck (Lyneham) 1 : 30. 2, A. Boonham (Lyneham) 0 : 50.

## Slope Soaring in the S.E.

The forecast of Force 6 winds and rain later in the day did not deter over 25 enthusiasts with 17 models from the South East from climbing The 'Long Man' at Wilmington, near Eastbourne on March 12th. The occasion was the first area meeting of the year and the main event was the 'Long Man Trophy' for single channel gliders.

Trimming proved difficult in the gusty winds, and the scoring was based on the error from the three minutes target duration time. N. Neve's (Brighton) A.P.S. design 'Aires' was flown to first place with 83 seconds error. J. Whittaker (Tonbridge Wells) was second with 161 seconds error whilst P. Newell (Surbiton) placed third. The first in a series of three meetings the forthcoming event dates will be announced in 'Seadog'

With the normal location of fuse at the extreme tail of the model a 1/4 in. long tube can simply be stuck (with epoxy) on to the fuselage side where the fuse would normally rest. This looks very crude but is practical and contributes nothing to drag when containing fuse.

This, however, is hardly the best place for fuse especially on fast and sensitive models. It is far from logical or consistent to make fine adjustments to a carefully positioned trim-tab (often by screw adjustment) and then fit a variable length of fuse in an indeterminate position just where it acts most effectively as a rudder. Having wrecked one model for this reason I have tended to mount the fuse in a more forward position whenever possible. This means a line to the tail - but saves worry about turn and CG effects - and incidentally goes well with the snuffer system.

One final word on snuffers. I would advise mounting them so they are open at *both* ends so as to facilitate ejection of fuse remnants. It also permits adjustment by pulling the unlit end.

Contest reports this month are pretty well covered by independent reports on the Western Rally and the *Coupe d'Hiver* events.

I was less shaken by the wind and car parking restrictions at Wroughton than by the Authorities' ban on the use of pedal-cycles for retrieving. If this becomes general then I suppose I will have to learn either to roller-skate or to ride a horse!

## Coming Events

- April 16** S.M.A.E. Area Centralised. F.A.I. Power (Halifax Trophy), Open Rubber (Gamage Cup), Open Glider and Coupe d'Hiver.
- April 16** Novocastrian Control Line Rally, Thornaby Aerodrome, ½ A.A. Team Race, A Combat and B Rat Race. Pre-entry 3/- to: A. Laurie, 21 Douglas Gardens, Dunston-on-Tyne, Co. Durham.
- April 16** East Anglian Control Line Rally. R.A.F. Duxford, on A 505, Cambs. A Combat and B Rat Race. Pre-entry 3/- to: R. Baker, 35 Manson Road, Cambridge, Cambs.
- April 15 and 16** S.M.A.E. Radio Control Trials. R.A.F. Upwood, Hunts on B 1040 Nr. Ramsey, starts Saturday 2 p.m.
- April 23** Wanstead Control Line Rally, Hayes Circuit, Charville Lane. A Team Race and A Combat. Pre-entry 2/6 to: R. Ives, 15 Falmouth Ave., Highams Park, London, E.4.
- April 23** Devon Free Flight Rally, Woodbury Common, Open R/G/P and Chuck Glider.
- April 30** Airtech Free Flight Rally, Haddenham, Bucks., on A 418. Open R/G/P and Chuck Glider. Airtech Challenge Shield for Rubber, starts 10 a.m., proof of insurance required.
- April 30** Rolls Royce Radio Control Pylon Race, Thulston Field, Nr. Derby, Single Channel, Goodyear and Open Event. Rules from D. R. Foskett, 26 Fenton Road, Micklesover, Derby.
- April 30** Finchley Control Line Rally, Hayes Circuit, Charville Lane. Snr. and Jnr. Stunt, A and B Combat. Pre-entry 2/6 to: K. D. Lesser, 20 Squires Lane, Finchley, London, N.3.
- May 6 and May 14** S.M.A.E. Free Flight Trials, R.A.F. Odiham, Hants. Richmond Gala, Chobham Common, Open R/G/P. (Power 30 secs. engine run over three rounds). Two models only in Rubber.
- May 14** Imperial College. Control Line Rally. I.C.U. Sports Ground, Sipsion Lane, Harlington. A Combat, B Rat Race. Pre-entry 2/6 to: I. W. Kaynes, 11 Parkside Road, Sunningdale, Berks.
- May 21** East Grinstead Gala. Chobham Common, Open R/G/P, A/I Glider, Coupe d'Hiver, Chuck Glider, Entry 2/6. Re-entry, starts 10 a.m.
- May 28 and 29** S.M.A.E. National and Area Championships. R.A.F. Hullavington, A 420 between Malmesbury and Chippenham, Wiltshire. **May 28—Sunday Events** 10.00—18.00 \*Open Rubber (Model Aircraft Trophy), \*Open Glider (Thurston Cup). Radio Control Scale—Qualifying flights (Radio Modeller Trophy) Multi R/C Aerobatics, after scale (S.M.A.E. Trophy), C/L Scale Flights (Knocke No. 2 trophy), \*Class A T/R (Davies A Trophy), Handicap Speed, Combat heats, Unorthodox event 19.30—20.00 hrs. in hangar. Fly off 20.00 hrs. **May 29th Monday Events:** 09.00—17.00 hrs. \*Open Power (Sir John Shelley), Wakefield, \*½ A T/R (R.A.F.M.A.A. Trophy), Open R/G/P (Womans Cup), \*Multi R/C Aerobatics (S.M.A.E. Trophy), Combat heats and Finals, Rat Racing, C/L Aerobatics (Gold Trophy), Control Line and Radio Scale Judging. Fly offs 18.00 hrs.

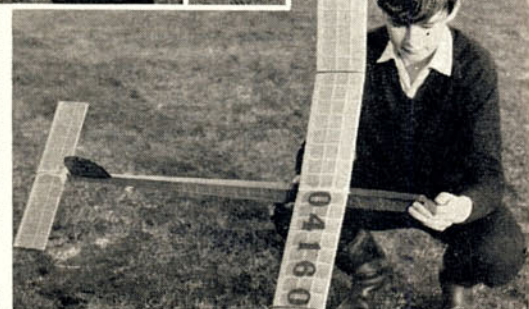
\* Events for Area Championships and Whitney Straight Trophy

## New Events

- July 9** S. Midland Area National Combat Rally. R.A.F. Upwood, Hunts.
- June 18** Bristol R/C Rally, R.A.F. Colerne
- July 30** Northampton M.A.C. Combat Rally. Midsummer Meadow, Northampton. Pre-entry 2/6d., details:— R. J. Ashby, 20 Hester Street, Northampton.
- July 30** East Anglian Area F/F Gala. R.A.F. Upwood, Open R/G/P Coupe d'Hiver and Combined F.A.I.



Pics from the Croydon Mini Gala. Above left ½ A power winner Rodney Kenward with Gottingen flat bottom sectioned Hipperson designed "Slow-Worm". Powered by a T.D. .049 with a Cox muffler, 50 per cent nitro fuel and 5 ½ in. x 3 in. prop. Silver tape on fuselage, wing and rudder for visibility. Above right: A.1 winner Mike Coomes with his "Gemini 13" original. Uses "Telstar" airfoil and built exactly to weight requirement. As in the majority of cases, uses D.T. clockwork timer.



Woking junior John Lorimer shows his elders the way winning Coupe d'Hiver with a full house, the only treble max of the day. His A.P.S. "Baron Knight" was beautifully finished.

## BASINGSTOKE MEMBERSHIP UP

Basingstoke M.A.C. are seriously thinking of calling themselves the 'Lost and Found' club, the number of recent flyaways having seemed to enlarge the local police force and news paper staff who have been very good to them. Flying takes place on Basingstoke common, which, for turbulence is a cross between Cape Horn and Mount Everest, free flight is predominant but they fly most other classes as well. Since they secured a decent club hut, (a Wardens shelter of '39-'45 vintage) their membership has risen to 25 from a mere handful. At present they are trying to get on an R.A.F. airfield but unless they join the Air Force it seems a pretty slim hope.

## Croydon Mini Gala

This, the first of three 1967 rallies organised by the Croydon Club was held at Chobham Common on March 5th with fine winter weather. The event of the day was *Coupe d'Hiver* with nearly thirty entries, half the total entry. The standard here was quite incredible with times of approximately five minutes placing around 8th, but only one scored three maxes. This was J. Lorimer of Woking who after leading most of the day with a time of just over five minutes was prised from pole position by Bob Bailey, Ray Elliot and Pete Cameron. He re-entered with an hour to spare and pipped them all at the post when it was too late for the others to re-enter, *hot strategy!* ½ A Power was disappointing with 12 entries and R. Kenwood showed up as a promising new country member by winning with a modified *Slow-worm*. He was promptly "Bought Up" by the Croydon club, John Boxall came in second with 7:49 due to a poor third flight of just over 2 minutes. *All glider* was won by M. Coomes (East Grinstead) with 7:42 followed by M. Dilly with 7:20. The meeting closed at 5:30 which gave full use of the daylight hours and plenty of time for people to fly in more than one class. Results: *All Glider*—1, M. Coomes (East Grinstead) 7:42, 2, M. Dilly (Croydon) 7:20, 3, B. Edwards (Croydon) 6:31, ½ A Power—1, R. Kenwood (Croydon) 8:00, 2, J. Boxall (Croydon) 7:49, 3, D. Welch (Brighton) 7:42. *Vintage*—1, A. R. Wells (Hornchurch) 8:04. *Chuck Glider*—1, A. Slater (Leatherhead) 4:19. *Coupe d'Hiver*—1, J. Lorimer (Woking) 6:00, 2, P. Cameron (Crawley) 5:30, 3, R. Bailey (Croydon) 5:23.

## TRAGIC LOSS

Copthorn M.A.C. from Coventry elected an official committee at their A.G.M. and a solid scale model of an *Armstrong Whitworth Argosy* was presented to the club to be awarded to the best all rounder at the end of each season. The meeting was marred by the tragic death of Brian Collet, only two days before, one of their keenest members who was killed when flying his control line model near overhead power lines. Brian was a lover of Combat and was intending to enter some contests this year. He was no beginner to flying and this was an accident that could have been avoided. OTHER MODELLERS PLEASE NOTE! FLYING EVEN NEAR OVERHEAD POWER LINES CAN KILL YOU. THE MODEL DOES NOT HAVE TO TOUCH THE POWER LINE AS THE SPARK WILL JUMP AND NYLON LINES ARE JUST AS LETHAL AS STEEL IF THEY CONTACT THE WIRES. STAY ALIVE, KEEP AWAY FROM POWER LINES. THIS CAN APPLY TO GLIDER TOW LINES AS WELL!!!

## R.A.F. NEWS

The R.A.F.M.A.A. Secretary Flt.Lt. John Knight has moved and is now stationed at R.A.F. Northolt and modellers in the R.A.F. should amend their rule books accordingly. R.A.F. Lyneham M.A.C. had a very successful outing at the Western Area Winter Rally held at R.A.F. Wroughton. Despite the atrocious weather some 150 competitors were present and R.A.F. Lyneham won the first three places in Coupe D'Hiver, C/T Truluck had the misfortune to fold his A/2 wings on the third flight when he had gained a commanding position with his first two flights.



**S.M.A.E. Nats organising committee:**  
 Back row, left to right, Malcolm Douglass (R/C) Martin Dilly (PRO) Ian Lucas (F/F), Syd Lawton (Treasurer), Norman Couling (Field equip.), Ron Moulton (Vice-chairman and Secretary). Front, Cesare Milani (Scale), Stan Wade (Records), Henry Nicholls (Chairman), Tom Jolley (C/L).



## Two Airfields

Grantham & D.M.A.S. are a very lucky club with two local airfields to fly on and 47 members with the main interest in control line flying. Chairman A. H. Percival expressed great satisfaction at the A.G.M. with the progress of the club over the year and winter activities have included film shows and a Dinner Dance. The club funds are in a healthy state and a series of monthly contests with local clubs have been arranged.

## Midland Scale News

The latest *Midland Area News* has an interesting scale modelling series in it, written by Tony Day, twice Nation Control Line Scale Champion. Tony's methods of getting a matt fuel proof finish will interest all scale modellers and these are (1) Humbrol matt enamel paint oversprayed with Kingston Translac clear polyurethane finish (obtainable in glossy eggshell and matt). (2) Kingston Diamond Eggshell polyurethane, sprayed or brushed on as this gives a tough fuel proof finish. Dennis Thumpston used this on his tremendous *Bristol Monoplane* to place 2nd at '66 Nats in R/C scale and John Simmance used it on his C/L scale winning *Marauder*. If the colours you want are not in the Diamond range have a look at Helmsmen Polyurethane Yacht Enamel colour chart, as Diamond and Helmsman are one and the same enamel marketed in different cans by the manufacturer.

## One Model contest in Alsager

After the publicity given to the club in December Aeromodeller Alsager M.A.C. is now functioning again, but they could still do with more members and have decided to run a simple one model contest on their local field. This contest is aimed at the juniors and there will be prizes. Scheduled for the end of May, details can be obtained from E. W. Wilshaw, 35, Harper Crescent, Alsager, Stoke on Trent, Staffs.

## Combat and Displays

After a highly successful display last year during the Scottish week Forres M.A.C. have once again been asked to give a display of combat flying at this event, and it is a big event. The members are looking forward to a combat session with Elgin M.A.C. and their mainstay models are A.P.S. Dominators. One member has a Cox Special '15 and this is being used in a *Goldberg Junior Satan*, he is also flying a McCoy '35 powered A.P.S., *Peacemaker*, that is until the engine shakes it to pieces.

## ST. ALBAN'S ACTIVITY

The St. Albans membership is as strong as ever with the majority free flight pot hunters. Other branches are picking up interest including some scale fans. Club facilities are excellent, three rooms being available at 96A Victoria Street, St. Albans, Herts, seven days a week and twenty-four hours a day. Modelling activities go on at all hours with one member building a 12 feet wingspan free flight power model for a Mc Coy '60! For modellers unable to make full use of these facilities they have introduced a much reduced cost country membership scheme. An indoor flying session held at the A.T.V. studios Boreham Wood produced a good crop of scale models and an ornithopter from Gordon Hannah the Secretary. R.T.P. was also flown for. If more entries are forthcoming at the next meeting they will have a go at the present record of 6 : 04 as there is plenty of space for two or three six foot poles with nine foot lines.

## Ten Years Old

The Debdenairs entered their 10th year as a model flying club on November 26th 1966, when they held their A.G.M. with all club members present to deal with the agenda. The retirement of R. G. Harris after 10 years was marked by a vote of sincere thanks from the members. Mr. Harris now intends to spend more time on the building board with the view to plenty of flying in this years contests. Building models is in fact a very keen subject with the club. Younger members on Friday club nights at Loughton Hall are each supplied with a suitable building board, plans and the necessary tools, and are expected to build a model with instructions given by the senior members. Lectures are arranged by qualified teachers and the blackboard demands a large amount of chalk. Members meet to fly at a local sports field.

## Irish Phoenix Rises

Phoenix Aeromodelling Club died a natural death some years ago but like the bird from which they get their name they have taken wing from their own ashes and are thriving quite well with 27 members. Like most other F/F clubs in Ireland the hold their club championship meetings on the Currage, Co. Kildare. This years annual Gala will be held on July 23rd.

## CLUB EXPANDING

Stockport and District M.A.C. are growing in size and at present have 40 active members and a programme of Control Line events with the emphasis on Combat and Rat Race. More large Stunt models are appearing and two members have four engined scale jobs on the stocks. In exactly the opposite direction, D. Daly has without a doubt the smallest *mini-Dominator* ever, a mere 12in. span, 4 1/2in. chord and only weighing 1 1/2in. ounces complete with TD .010 and *silencer*, on 20 feet lines it flies well and performs all the manoeuvres.

Empty Jugs at Northern Area Dinner, where we caught the committee taking a breather between rounds. L. to R. A. Brewster, W. Wiseman, D. Gilchrist, P. Scalf, J. Clements, R. Firth, T. Chambers, G. Doncaster, H. Tubbs and J. Turner.

## CIVIL SERVICE CLUB

The Civil Service Sports Association on the Catterick Camp, Yorks, is at present forming an Aeromodelling club, to date there are 14 members with most interest in R/C. It is hoped to cover all aspects of modelling and they are fortunate by having flying sites and hope to fly against local clubs and become registered with the S.M.A.E.?



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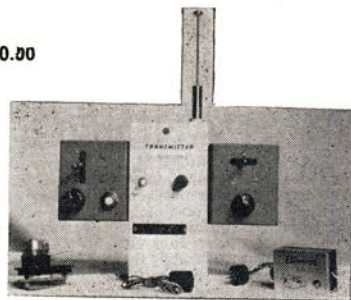
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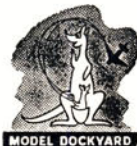
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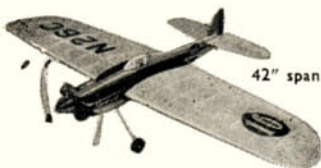
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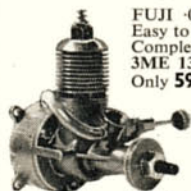
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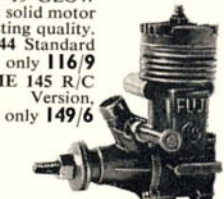
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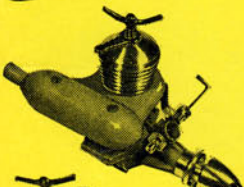
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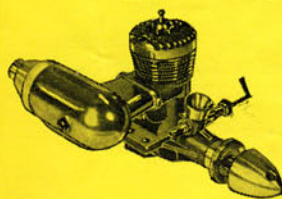
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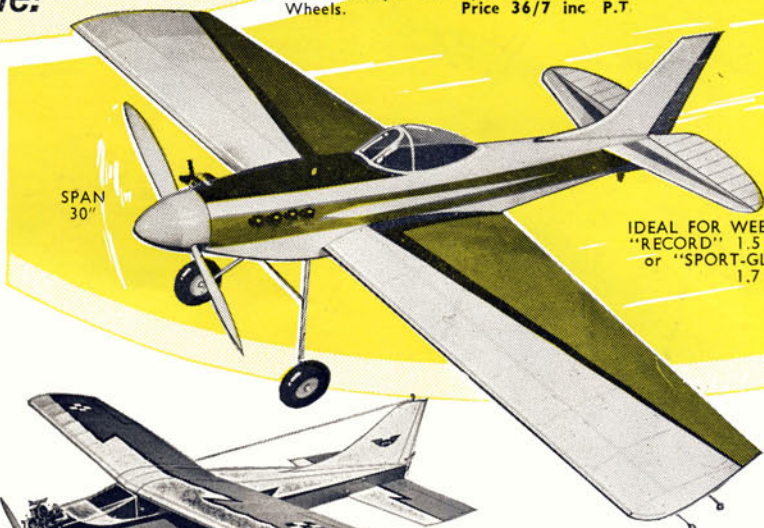
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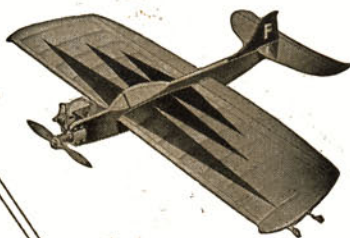


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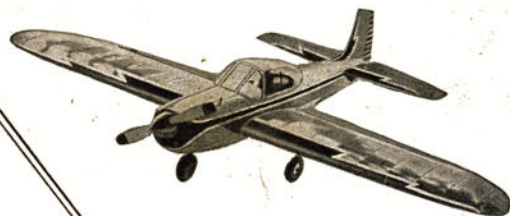
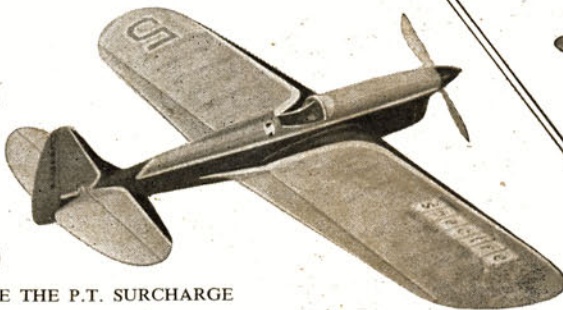
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