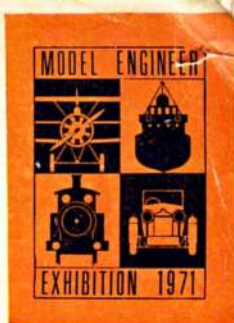


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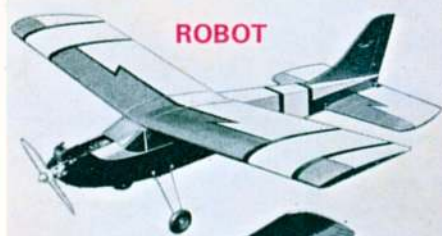
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December 1970

Volume XXXV No. 419

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**The Editor and Staff
of Aeromodeller send
seasonal greetings
and best wishes for a
happy and
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Year to all our
readers.**

on the cover

Walter Reger's colourful Boeing P-26A which was entered in the World Scale Model Championships. Has a wingspan of 56", weighs almost 10 lb. and the Super Tigre 60 engine is inclined, to be disguised as one of the radial engine cylinders.

next month

Plans for the Miles Sparrowhawk as a free flight scale model for engines up to .8 c.c. by D. M. Collin to 1½" equals 1 ft. scale Contest three-views. Engine Test. All the regular features plus a few "surprises" on sale 18th December.

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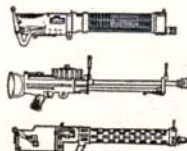
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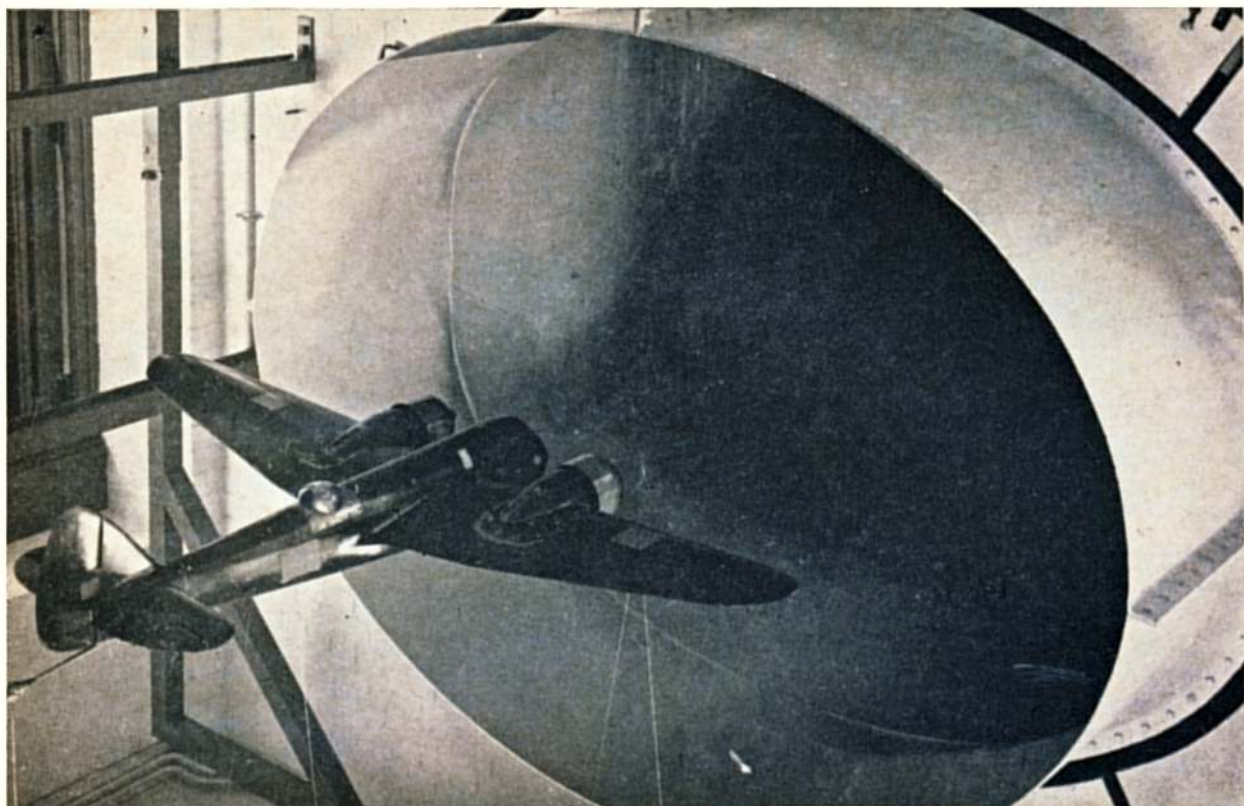


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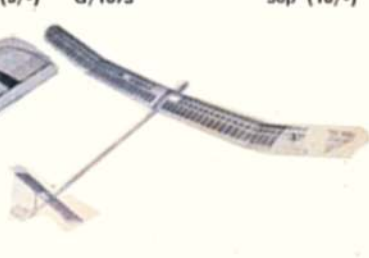
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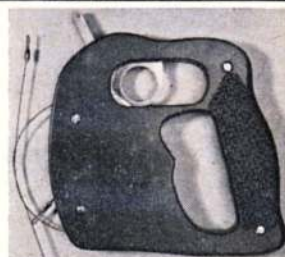
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As far as we know the only available commercial handle and bellcrank system for elevator and motor control on control-line models. Ideal for both Scale and Carrier events. Bellcrank available in up-right or suspended patterns. Handle £3.15.0; bellcrank 38/9.

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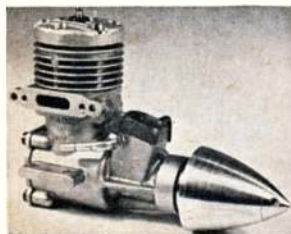
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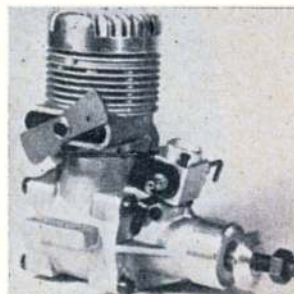
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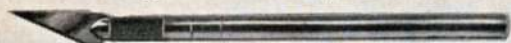
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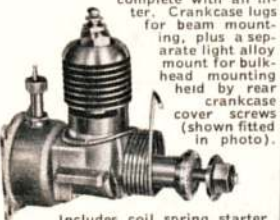
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Specially developed as a long-lasting radio control engine with twin ball race main bearings and fully flexible throttle control. £11.18.6 Develops well over 0.5 b.h.p.



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Loop-scavenged two-stroke glow motor... shaft rotary induction... new G-type races... with tapered throttle fuel flow control... Bore .944", Stroke .865", Displacement 606 cu. in. Weight 15 oz., RPM 2,500-14,000.

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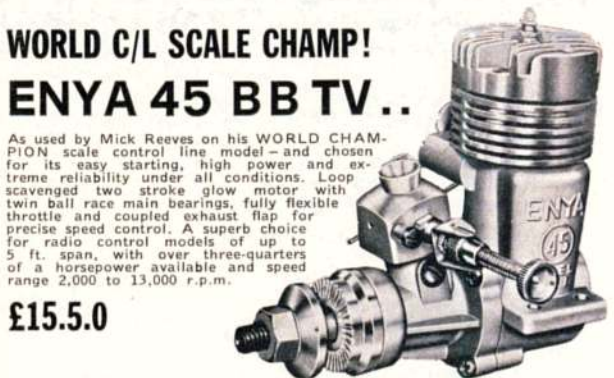


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ENYA 049	Light alloy	0.413 × 0.370	0.049(0.8cc)	1.9	—	8:1	0.06	—	8.000~17.000	5½×6×3	6×3
ENYA 09.III	Bronze	0.512 × 0.480	0.099(1.62cc)	3.4	4.1	7.5:1	0.20	0.16	8.000~16.000	2.000~13.000	7~8×4~3
ENYA 15.III	Bronze	0.590 × 0.551	0.15(2.47cc)	4.8	5.2	7.5:1	0.33	0.26	8.000~16.000	2.000~13.000	8×4
ENYA 19.V	Bronze	0.654 × 0.590	0.198(3.25cc)	5.3	5.7	7.5:1	0.42	0.34	8.000~16.000	2.000~13.000	8~9×6~5
ENYA 35.III	Bronze	0.803 × 0.704	0.357(5.85cc)	7.7	8.6	low7.5:1 high9.0:1	0.80	0.60	8.000~16.000	2.000~13.000	10×6
ENYA 35.III	Bronze	0.803 × 0.704	0.357(5.85cc)	7.7	8.6	low7.5:1 high9.0:1	0.80	0.60	8.000~16.000	2.000~13.000	10×6
ENYA 35.III	2 ball bearings	0.803 × 0.704	0.357(5.85cc)	8.6	9.1	low7.5:1 high9.5:1	0.85	0.65	10.000~17.000	2.000~13.000	10×6
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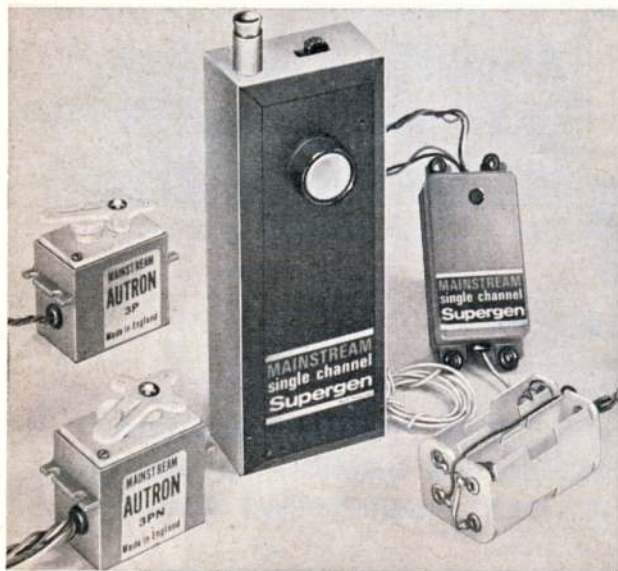
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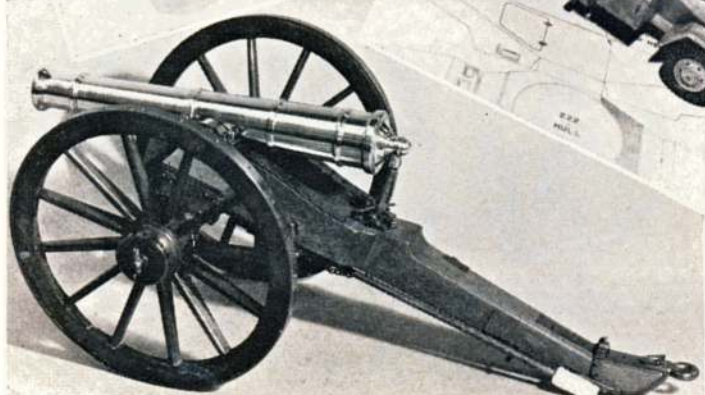
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Heard at the HANGAR DOORS

John Cooper in Northampton M.A.C. holds the A/2 with which he topped the S.M.A.E. Cup results and which helped him to win the 1970 Free Flight Championship with a gross total of 96:06.

view emphasises that the U.S.S.R. wishes to see the Mechanic more occupied during racing. Often, they state, the Mechanic is only used for 15 to 20 seconds in a 4½-minute race. They want to see an increase in the number of pit stops. Other proposals involving a change to specifications deal with indoor models where a minimum airframe weight of 1 gram is suggested or reduction of wing span to 50 cm. from 65 cm. with max. weight less motor of 0.7 grams. Procedures and provisional rules for Combat,

HELICOPTER achievements in recent months have been quite remarkable. Successful radio controlled flights have now been made in the U.S.S.R., this country (more, in a later issue) and as already reported, in West Germany. Following his record duration and distance accomplishments, Ing. Dieter Schlüter has now perfected his design in kit form for others to share the thrills of rotary winged flight. A recent batch of photos included the trio on this page where the Polyester fuselage representing a Bell Huey Cobra and the power unit with glass fibre cooling duct, clutch and gearbox can be seen. Cost of the complete kit is to be DM 985 ex-Mulheim. This will include all mechanical parts. Interested parties are invited to send enquiries care of the Editor, and they will be forwarded.

ENCOURAGING response to the 1970 Junior Kit Contest means that the S.M.A.E. will organise a similar one at the 1971 Nationals (Spring Bank Holiday Sunday). There will be an even greater choice of kits (see following list) and the young enthusiast will be allowed to fit autorudders and/or dethermalisers and use any form of tissue covering. (If the D/T



uses a fuse an effective snuffer tube must be used.)

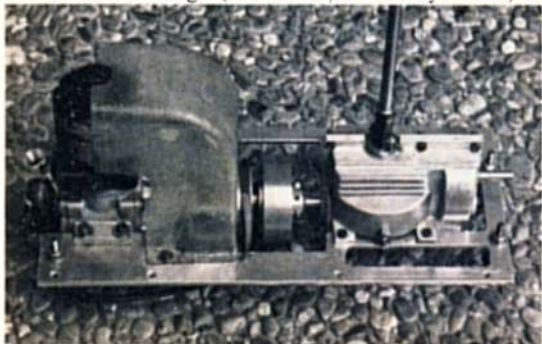
Arrangements are being sought to make entry even easier and details will be announced later. The eligible kits are:-

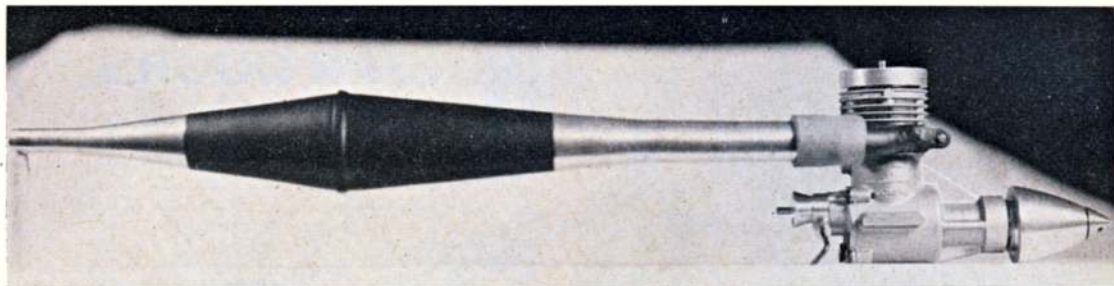
Gliders: KeilKraft *Invader*, Mercury *Swan* and *Martin*, Veron *Cirrosonic* and *Verosonic*, Performance Kits *Owl* and *Cosmic Cloud*.

Rubber: KeilKraft *Senator* and *Ajax*, Mercury *Mentor*, Veron *Sentinel*, Performance Kits *Kingfisher*.

PROPOSITIONS tabled for the C.I.A.M. meeting in Paris, 3/4th December, include an appeal for 4 c.c. tanks in F.A.I. Team Racers from the U.S.S.R. The reduction is backed by a report of tests already made, and the supporting

Team Racing, R/C Pylon, R/C Glider are subjects of other proposals which extend to over three dozen pages of typescript! Particularly interesting is the suggestion from the U.S. that in Aerobatic events, the top 15 from the first two rounds go to a final 'fly-off' to provide better spectacle and to group the top class entrants consecutively for improved judging. Views on these changes can be conveyed by the Editor should any contest modeller have constructive opinions which can be sent to these offices prior to 1st December. **ANNUAL GENERAL MEETING** date for the S.M.A.E. is 28th November, at the Great Northern Hotel, Kings Cross Station, London. The time: 2.30 p.m. Don't forget—all S.M.A.E. Club Delegates!





Super Tigre G.21-29 'Grand Prix'

**Modification techniques
for speed tuning a
popular Italian engine
by I. MAGROTTI**

THE motor chosen for tuning was the latest production version of the Super Tigre G21-29, which features an aluminium-filled flywheel and steel rotary valve. A powerful motor in standard production trim, these following modifications make a big improvement in power for speed flying, which underlines its good basic design. Running on standard F.A.I. fuel of 80-20 methanol-oil, the production engine turned a 9" x 4" Super Record propeller at 16,500 r.p.m., the modified unit achieving 19,500 r.p.m. – as will be appreciated a very significant power increase. Similar improvements were shown with a 7" x 9" propeller.

Would-be engine tuners are warned that these modifications are not possible unless one has fairly comprehensive workshop facilities, as well as the knowledge and skill to utilise them fully.

Crankshaft/Crankcase Assembly

Attention was first directed at reducing the work-load of the engine. If one compares the crankshaft, which has a diameter of 12 mm. with that of the racing Rossi 60, we see that this latter engine of double the capacity, has a shaft of only 9.5 mm. diameter. Obviously, the G.21 is stronger than necessary, and the additional weight gives an inertia which the motor has to overcome twice per revolution. Comparing the two types of ball races used in the two engines, the Rossi is better off having a 22mm. diameter, whereas in our G.21 the diameter is 28 mm which gives a noticeable difference in the peripheral velocity. So, to reduce the labour of the motor, we have to lessen the weight of the crankshaft by reducing its diameter, and substitute the rear ball bearing with one of smaller diameter. As is shown in figure 1, it is necessary to reduce the diameter of the crankshaft to accept a Hoffman S3V2 bearing, which has a 9.5 mm diameter hole.

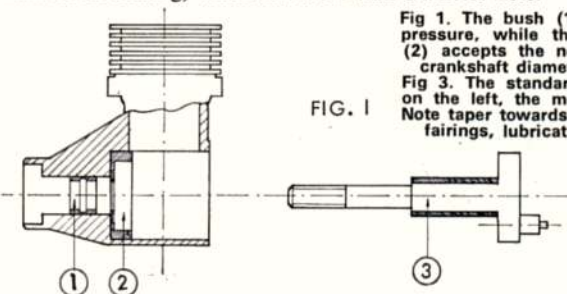


FIG. 1

Fig 1. The bush (1) retains crankcase pressure, while the aluminium spacer (2) accepts the new ballrace. Reduce crankshaft diameter (3) to 9.5 mm.
Fig 3. The standard con-rod is shown on the left, the modified one at right. Note taper towards small end, radiused fairings, lubrication hole and oval section.

To fit this new bearing into the crankcase an aluminium spacer must be turned to the external dimensions of the original bearing, and the internal dimensions to fit the new one.

In order to maintain the pressure in the crankcase, a bush with an internal dimension .03 mm larger than that of the crankshaft diameter must be made. This bush must also have an oil-retaining groove machined upon it to coincide with the oilway on the crankshaft.

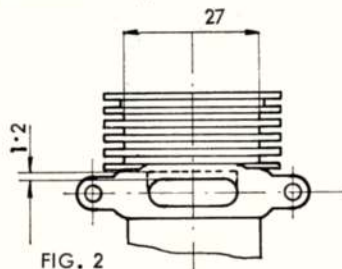


FIG. 2

Fig 2. Reduce the cooling fins to 27 mm diameter and extend the exhaust stack to match the increased exhaust port area.

To assemble, heat the spacer in hot water, then insert the bearing. Heat the crankcase in a similar fashion and insert this assembly, followed by the shaft with the bush. A little Loctite should be used to retain the bush and bearing in position, and to prevent their rotation. Check that the crankshaft revolves freely.

The only other modifications necessary to the crankcase are turning the cylinder head fins down to 27 mm diameter, and opening out the exhaust stack by 1.2 mm as shown in figure 2.

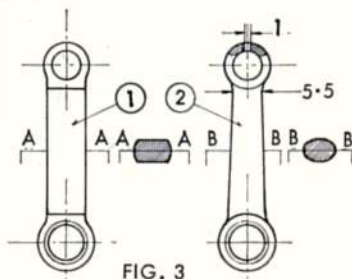


FIG. 3

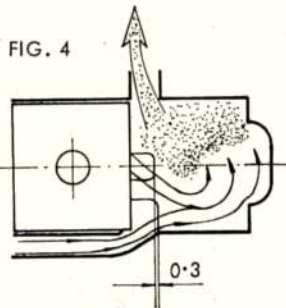


Fig 4. The addition of two flow 'correctors' leaning towards the wall opposite to the exhaust, compel the main flow to adhere to this wall so that the burnt gases do not mix with the fresh charge.

Connecting Rod

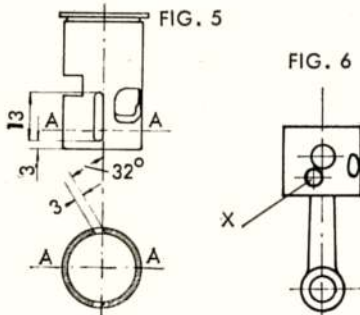
Lightening of the con-rod is most important, as a lowering in the weight of reciprocating parts enables higher r.p.m. to be achieved. The rod is tapered, given an oval section and has a 1 mm lubricating hole drilled in the small-end, see figure 3.

Piston/Liner

After several trials, the best results were obtained using 'Lubrisation' which is a thermal treating of the piston with 'Lubrite', and lapping-in. The piston retains an oil film on its porous surface, which is most important at the high r.p.m. of the modified engine. This treatment must be carried out by a specialist.

Our motor uses cross-flow scavenging. The main fault with this system is that the inlet ports are just in front of the exhaust ports, thus part of the fresh, incoming charge gets discharged with the previously burnt gases. To obviate this fault at least in part, it is necessary to add two flow 'correctors' which are simply two narrow ports cut in the liner, facing away from the exhaust outlet. These compel the flow of the fresh charge to adhere to the cylinder wall opposite the exhaust port, and without causing turbulence, nor mixing with the outgoing, burnt gases as illustrated in figure 4. These 'corrector' ports must open slightly later than the main transfer port so that the separate gas flows meet where the main flow has already begun to scavenge the combustion chamber. Modifications to the liner and piston are shown in figures 5, 6 and 7. To improve the gas flow, two additional ports must be cut in the sleeve, and a further two holes made in the piston to correspond with these when the latter lies at b.d.c. This modification, as well as freeing the gases trapped under the piston, also improves the lubrication and cooling of this item. See figures 8, 9 and 10.

Fig 5. Cut the two 'correctors', noting their direction. Fig 6. The fuel mixture passes through the holes (marked x) in the piston to the 'correctors' when the piston is at bottom dead centre.



All dimensions
in millimetres

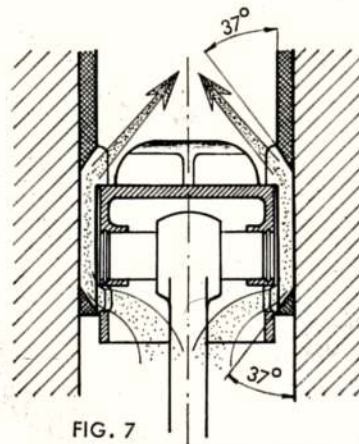


Fig. 7. The flow of the 'correctors' goes through the holes of the sleeve entering the cylinder when the piston opens the ports. The drawing shows the angle of the openings.

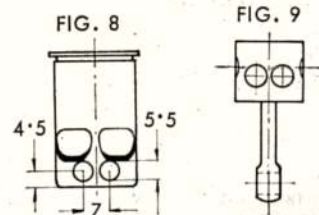
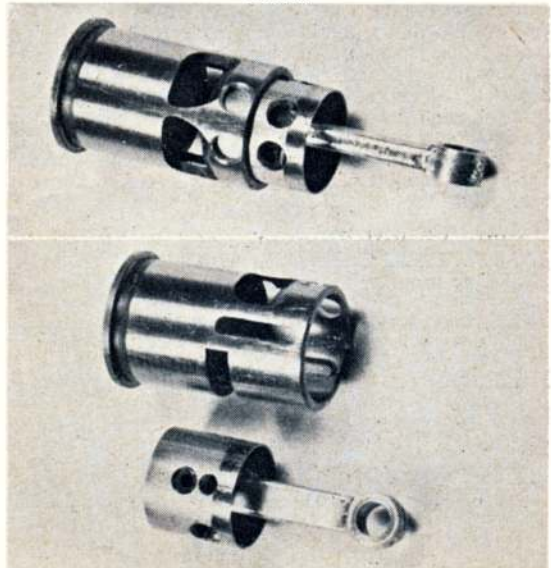


Fig. 8. Cut the sleeve as per drawing. Fig. 9. The flow of the 'correctors' pass through the two holes drilled in the piston, when the latter is at b.d.c.

The lower photo shows the 'corrector' ports and the corresponding holes in the piston, as described in figures 4 and 5, whilst above is shown the cylinder and piston modified as figures 8 and 9 to improve the flow of the fresh mixture.





Picture shows the modified Cox head within its adaptor placed in position. The modified cylinder head (seen alongside with a modified Cox head) clamps this new unit in position.

Combustion Chamber

Several different heads with varying combustion chamber shapes have been tried, but the most successful proved to be the ubiquitous Cox 2.5 c.c. glow head, modified as per figures 11 and 12. The head itself is turned down to the dimensions shown and an adaptor (part B) is turned from aluminium rod. Machining here must be really accurate, as the adaptor must be heated and shrunk onto the glow-head to produce a good seal. The existing head is then modified as shown, and is used to clamp the adaptor in position.

Timing

Only the exhaust timing has been altered, this being necessary due to the use of a resonant exhaust pipe. The exhaust timing is advanced to 162 degrees by increasing the height of the exhaust port as shown in figure 13.

Resonant Exhaust Pipe

The tuned pipe used is a modified version of the Italian MAPI unit, and is in fact the 'type A' designed to suit 2.5-4 c.c. engines. The pipe is modified by having an aluminium slat situated in the second cone, which acts as a gas 'brake' and helps the power at low r.p.m. This device was adopted after much trial and error and only modifies the power curve at the bottom end of the range, and does not affect full power at high revs. It is thus particularly useful for take-off with the necessarily rich setting required by the pipe.

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Fig. 11. The Cox head (above) is modified as shown, and the adaptor is machined from aluminium. Fig. 12 shows the alterations necessary to the existing head for it to act as a retaining clamp. Fig. 13. Extend the height of the exhaust port to suit the pipe requirement. Fig. 14. The 'tuned length' exhaust (a) Super Tigre 'elbow' or construct from 3 mm alum. flange and 14 x 16 mm alum. tubing. (b) Silicon rubber tubing. (c) aluminium tube 14 x 16 mm. (d) aluminium slat. (e) tail pipe from 8 x 10 mm. aluminium tube. Cones are .8 mm. alum., all joints soldered with 'Castolin' flux.

FIG. 14.

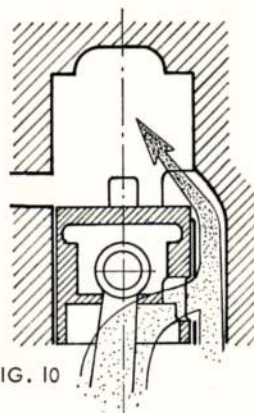
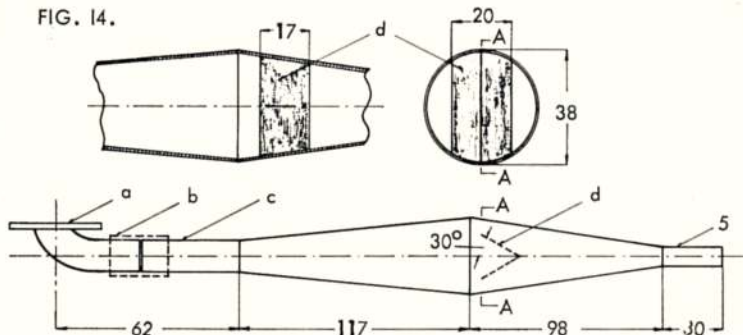


Fig. 10. After these additional modifications, mixture trapped beneath the piston is led to the combustion chamber, cooling and lubricating the piston at the same time.

Completion

The various engine parts should now be thoroughly cleaned with petrol and an air jet, particular attention being paid to the cylinder/liner. Oil all parts with thin machine oil, and see that all parts fit without forcing. Run-in the motor with a 9" x 4" propeller on a rich setting, for a total of half an hour, then change to an 8" x 4" for the next thirty minutes. Do not use the exhaust pipe during this process.

When running-in is completed the engine is tuned by attaching the exhaust pipe and starting the engine on the 9" x 4" propeller, using the same rich setting. Lengthen or shorten the silicone rubber pipe connector until resonance is found, varying the needle valve setting at the same time.

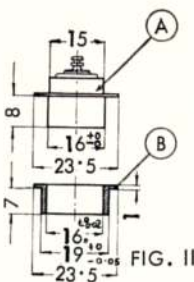


FIG. 12

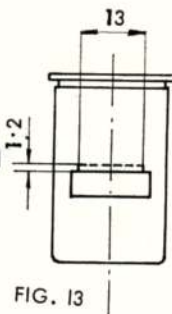
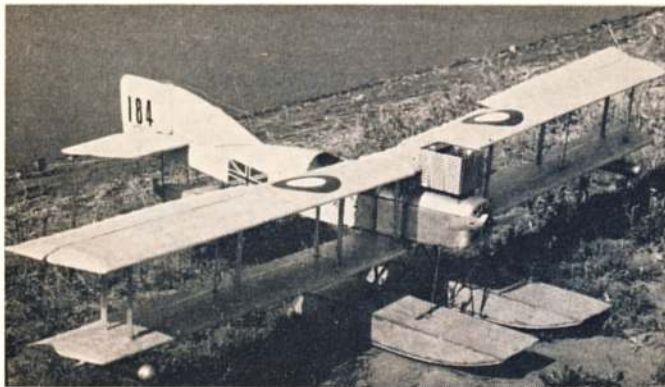


FIG. 13



Bill Hannan reports on a

Rise Off Water Scale Rally

ON 14th JUNE, the *North American Rockwell Flightmasters* club held their first r.o.w. scale contest. The initials r.o.w. seemed to stand for Remains On Water to a good many entrants, but the overall response was so encouraging that the event is expected to become an annual affair.

The site, Lake Elsinore, is located within about an hour's drive from San Diego and is also readily accessible from Los Angeles, but such is the drawing power of scale model event, that one group drove the entire distance from Las Vegas, Nevada to attend. Directly adjacent to Lake Elsinore is a glider port, and also a sport parachuting area, thus during occasional lulls in model flying, one could enjoy the sight of sky-divers (jumping from a rare Howard aircraft) and high-performance sailplanes being towed aloft in search of thermals.

The weather was ideal, combining a pleasant temperature (both air and water!) with very little wind, from early in the morning until well into the afternoon. A family-outing atmosphere prevailed and, in fact, a few contestants had set up camp on the site a day in advance.

All forms of r.o.w. aircraft were invited, including F/F, C/L, and R/C, which helped ensure the greatest possible number of participants. A fair quantity of non-scale machines were also in evidence, including a couple of hovercraft, an autogyro, and a hydrofoil.

Heading picture shows Chuck West's R/C short 184 - a smaller version of the same aircraft won the F/F class. Below, Fernando Ramos (who edits the *Flightmasters* newsletter) admires Vought 02U built by Jock McCracken. Powered by D.C. Bambi, model failed to R.O.W. although one of the best models at meeting. Below right, Bill Stroman demonstrates use of the 'rescue launch' in recovering his rubber powered Curtiss Racer. Right, a non-scale model was Ray Caswell's interesting, hydro-gyro, Cox powered.

Flightmaster President, Bill Stroman, thoughtfully provided a small boat to assist in retrieving remote landers, although fortunately a good portion of the lake was shallow enough to permit easy wading.

Several interesting R/C aircraft were on hand, including a Short 184, a Brandenburg W 29, a Piper J-95 and a PBY *Catalina*. The latter aircraft unfortunately crashed shortly after take-off, and was badly damaged. Sole C/L entries were the Gloster VI and Supermarine S-4 entries of the Williams brothers, Granger and Larry. These models are of special interest in that they were originally constructed during 1955 for use in demonstration flying by the F.A.S.T. (First All Speed Team) club. This organisation constructed many Schneider Cup Racers and flew them for public gatherings (even indoors!) for several

(continued on page 677)





W. I. BARRETT'S GURU

**A 40 inch span
free flight sportster
for .75-1.5 cc
engines**

GURU is an attempt to produce a cheap, robust free-fighter, capable of taking a variety of small engines, and having a slow, stable flight pattern. With the recent increases in cost of modelling materials, a major aim was to make the most economical use of balsa, without sacrificing ruggedness.

Construction is simple, as is the trimming and flying of this delightful little sportster, and it would thus form an ideal introduction to this side of the hobby for the beginner or younger modeller. *Guru* is by no means a contest model, but is well suited to those tired old engines left lying in a drawer at home – why not blow the dust off one of them and put it to some good use?

The fuselage is a simple all sheet structure built around the engine bearer assembly. Cut the bearers to length and drill the engine mounting holes, if using a beam mounted engine. Cut out formers F1 and 2 (F1, 1A and 2 for radial mounted engines) and glue to the bearers using P.V.A. glue. Bend the 14 s.w.g. undercarriage to shape, then bind and cement to the bearers. Cut the fuselage sides from 3/32" hard sheet, slot for the U/C legs, then slide them over the legs, glueing them securely to the assembly. When dry bring the fuselage ends together and add the remaining formers (noting grain direction) checking the fuselage for correct alignment.

Glue the fin in position, followed by the wing and tail mounts, before adding the top and bottom sheeting. Note that the grain on the bottom sheeting runs across the fuselage.

The wing is built as four separate panels, which are then joined together with the appropriate dihedral angles. Build the port inner panel first by cutting the leading and trailing edges to length and pinning over the plan. Cut out the 1/8" sheet full depth spar and likewise pin in position. Glue ribs R1, 3, 4 and 12 in position, adding the 3/32" sheet gussets. It is advisable to cut the diagonal ribs slightly overlength at the rear end, then trim them on assembly. Repeat for the starboard inner panel. The tips too are built in a similar fashion, ribs R13-18 and R6-11 being added.

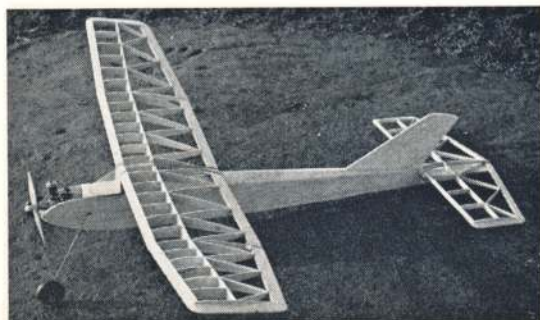
When all these assemblies are quite dry, pin the port inner panel over the plan, and add the port tip, raising it 2½" to match the dihedral. Chamfer the L.E. & T.E.

to suit. Glue securely, then add brace B, followed by ribs R2 and 5. Repeat for the opposite panels. Next, with one half wing still pinned flat over the plan, add the opposite half, raising the wing at R12, 1" above the surface. Again chamfer leading and trailing edges to fit before glueing the two brace 'A's in position.

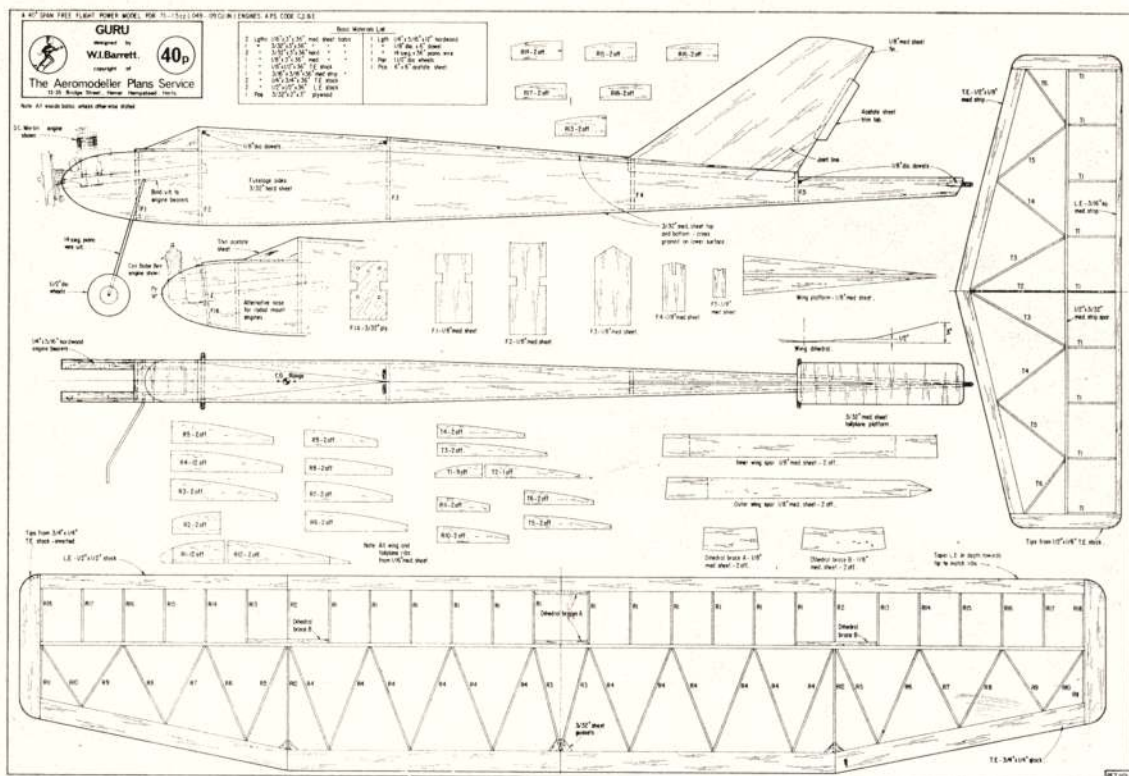
The tailplane is built in an identical fashion to the wing. Sand the whole model smooth, and cover it entirely with lightweight tissue – using coloured tissue for decoration, rather than paint, in order to save weight. Apply 2-3 coats of thinned dope, being careful to avoid warps, although this should not occur easily with the rigid structure. Add the wing and tail dowels before finally adding a coat of fuel proofer.

Before venturing to the flying field, check the balance point – which should be on, or just behind, the mainspar. With this in its correct position, some test glides may be attempted – providing the weather is kind and the wind not too brisk! Any sign of a stall should be removed by packing up the leading edge of the tailplane, while a steep glide can be cured by packing up the leading edge of the wing. When a long flat glide is obtained, try a short engine run at half throttle. A tendency to tighten or turn into a spiral should be corrected by the trim tab. Gradually work up to full power and a wide lazy climbing turn. The flight is not critical, and turns in either direction can be made.

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Simple yet sturdy construction is illustrated in this view of the model before covering. Diagonal ribs help to prevent warps creeping in at the doping stage. Note how the undercarriage protrudes through the fuselage sides.



R.O.W. SCALE RALLY (continued from page 675)

years. Granger's Gloster VI model was the first of the group's to have flown originally, and was also the last to have flown, by virtue of its entry in the Lake Elsinore contest. It had been long retired and was in the RussCraft model museum in San Marcos, California prior to being 'resurrected'. The Williams brothers also displayed their newest product, a complete dummy Le Rhone rotary engine, for use in scale models—in the past only the individual cylinders have been produced. The engine will be produced in several sizes soon, we are informed.

A sad note to the proceedings was the absence of one of the most highly respected *Flightmasters*, Vic Harden, who was stricken by a fatal heart attack only a few days prior to the contest. His Savoia Marchetti S-65 was in an advanced state of construction at the time and by special request of Vic's widow, Kingsley Kau and George Honda finished the model and brought it to the meet, where it received the award for outstanding fidelity to scale and workmanship. Mrs. Harden's total dedication to her husband and his hobby are truly inspirational.

By far the largest number of models were of the free flight variety, with, surprisingly, rubber-powered examples outnumbering all others. Outstanding among them were the Tiger Moths of Fernando Ramos and Jack McCracken, which looked as well as they flew. By a curious coincidence, both models suffered minor diagonal float strut failure at *exactly* the same place!

Scale judging was conducted *after* qualification flying, which certainly spared the judges a considerable amount of work (although depriving them of the opportunity to thoroughly examine some of the fascinating subjects). Trophies were in the form of attractive wall plaques, a pleasant change from the more usual 'pots'. In addition, a large variety of



Mrs. Vic Harden displays the beautifully constructed, rubber powered, Savoia Marchetti S-65, built by her late husband, which received top marks for scale and workmanship. Rubber powered models were most popular, outnumbering all other classes.

merchandise was awarded.

The contest proved very educational for all concerned, and the general consensus of opinion was 'It's not as easy as it appears!' Your reporter can vouch for this, as his Peanut Scale entry performed more in the manner of a submarine than an aircraft.



The newly introduced **Keil Kraft Hi-Jet** fills an important gap in the range of kits available for Jetex engines—a once popular form of power, which no doubt, due to difficulties in supply, has fallen from favour over the years. However, now that Keil Kraft are distributing both the PAA-Loader and the ever popular '50' unit, a large upsurge in interest could result, especially when helped by this new 21in. span design. Aimed primarily at beginners or younger modellers, construction could not be easier, and colour decoration is taken care of by self-adhesive decals. A complete Jetex 50 engine outfit, comprising of motor, fuel, fuse, etc., is included in the kit, which

Below, some of the component parts of the Elmira are displayed. In addition to the fuselage side, all ribs, formers, etc. are die-cut. Instruction booklet is very comprehensive. At right, a typical installation for the Dons Quick Fill valve, this being for a rat-race tank.



Left. A very straightforward, simple design, the 'Hi Jet' may be built in the minimum of time. Colour trim is printed on clear mylar, self-adhesive sheet, which is just pressed in position.

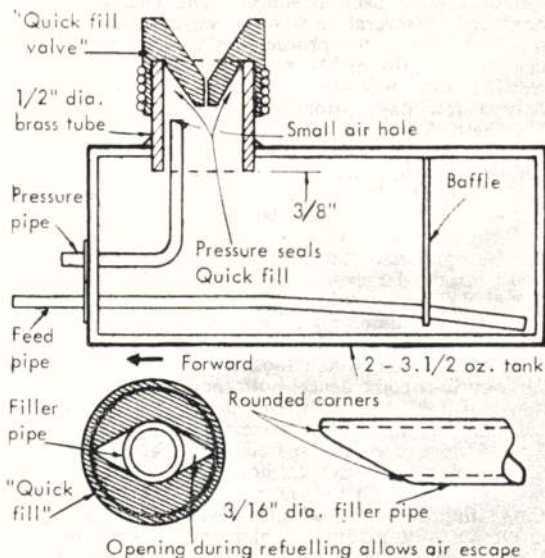
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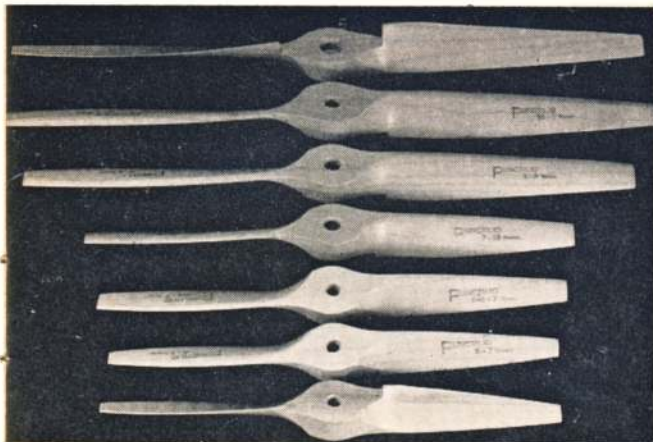
is priced at a very reasonable 25/-. A more detailed review of this model will be included in a future issue.

Also from Keil Kraft, but quite a contrast in size, is the 116 in. span *Elmira R/C Glider*. Of very elegant, semi-scale appearance, this model is designed for both slope and thermal soaring (although no tow-hook position is indicated!) and is for elevator and rudder control.

Construction is orthodox in the original meaning of the term (i.e. it does *not* feature a fibreglass fuselage or foam-cored wings!), resulting in a lightly-loaded aircraft which is a pleasure to build. The flat-bottomed wing is a three-piece unit, comprising of a 45 in. centre section and two 36 in. span tips—all joined together by wire dowels and tubes—which makes for easy transportation.

The kit is very complete, and apart from the crisply die-cut wing ribs, the fuselage sides and formers are likewise pre-prepared. There are ample full sheets of balsa included for such jobs as wing sheeting, etc., and the detachable, large canopy provides easy access to the R/C equipment. Accessories such as con-





Left, just a small selection of the Punctilio range of speed props - note the deeply cuffed hubs. At right, the latest Fox import, the 15 R/C, lightweight, rugged design is easy to handle.



trol horns and surface hinges are included in the price of £9.19.6.

Turning from the quiet and graceful side of the hobby to the fast and furious, **Irvine Engines** of New Barnet now have a supply of *Don's Quick Fills* - those indispensable, rubber, tank filler/valves used on pressure fed racing models - such as Rat Racers and Goodyears. These 'Quick Fills' have been in short supply for some time, judging by the possessive nature of those competitors who have a spare or two, and this new supply should ease the situation considerably. Price is 8/- each. Irvine Engines have also received a supply of the latest *Fox 15 R/C*, which should be in your local model shop by now. This is a lightweight powerful unit which throttles extremely well, and at £8.19.6 represents good value for money. The carburettor, in typical Fox manner, is rather unorthodox, but it works well and is easy to adjust. Ideal power plant for single channel or light weight multi R/C systems. A standard version is also available for those who do not weild 'gadget boxes'.

Punctilio propellers have rapidly achieved popu-

larity among both sport and contest modellers and their new range is aimed solely at the speed fliers, who have always been poorly served in these most important 'accessories'. The props are beautifully machined from a wood which closely resembles maple, featuring deeply cuffed hubs with thin, tapered blades, and are supplied ready varnished. Their new range is certainly comprehensive, with over thirty sizes ranging from 6 in. x 6 in. for 2.5 c.c. engines, right up to 10 in. x 13 in. for really powerful 60s. Non-availability of good props has been an enormous burden to speed fliers who, in the past, have had to import direct from the States, or buy up stocks as and when available, but now this is overcome. The smaller diameters have pitches, going up in increments of $\frac{1}{4}$ in., whilst larger ones increase by 1 in. Prices will range from 20-40p. (that's 4/- - 8/- in real money), but it is stressed that they will not be on sale until the New Year. The ones that are being tried out by top fliers, and the ones which we have for review, are purely prototypes. Production versions will be even better, with yet thinner material at the hubs, etc.

READERS' LETTERS

Dear Sir,

I am fascinated by your comment about F/F revival in the November *Aeromodeller*. Perhaps this is happening right across the country as a kind of 'revolt' against computerised life in all its forms, especially radio model flying!

As one who returns to aeromodelling after some twenty years away, I find what you suggest very refreshing. I began my F/F attempts with *Mendit* glue and matchsticks, when spruce and silk-covered wire-winged models were in the shops at out-of-this-world prices of 13/6d., 22/6d. complete ready-to-fly. The breakthrough was with a *Baby Gnome* 28 in. span model from America. I believe from the Green Book (catalogue of a London Model Shop) and priced 6/6d. We saved for weeks to pay, my brother and I. But how she flew and flew! We couldn't believe our eyes. With a new (undercambered) wing the *Baby Gnome* flew right across Evesham! At the same time (1937) we discovered the *Aeromodeller* on the station bookstall. September 18th saw us at the Midland Rally, Coleshill, near Birmingham, competing in Glider and Rubber. My brother's glider finished up on top of a Dutch Barn and my design (revolutionary diamond fuselage) pylon

wing job somehow just wouldn't go up... only down!

We worked all through the following year to perfect some new designs and were all set for the Midland Rally again on September 3rd, 1939. It was the greatest disappointment of our young lives that another more sinister Rally should get in the way...

However, through Army days I kept modelling going. The *Aeromodeller* gave encouragement in dark days by publishing some of my efforts. In 1940 the very first Evesham Club was formed and re-formed in 1948. We held a great rally on Pershore Aerodrome with prizes of £5 for all events. We took nearly £100 at the gate! Your then editor ticked me off for belated results and criticisms flew around about 'too large first prizes'. But we were very popular with the prizewinners. Of course, the inexperienced organisation just broke down under the strain of the large entry, but we got it sorted out in the end. Does anyone recall Pershore Aerodrome about July 1948?

Now, since August, my son and I built a kit glider. After test flying (and bashing!) on Cleeve Common we went along to Hullavington last Sunday to find ourselves flying against Elton Drew (so please send a copy of his plan!)

and we thought how mad can one get.

It is all very enjoyable: I now help to run a School Club and am trying to get the local Club interested in going to France for the Coupe d'Hiver event. Cheltenham, Glos.

R. Coleman

Dear Sir,

I note from 'Clubman's' comments in October, that he would like to know how to soften and retemper Piano Wire.

Unfortunately, this is impossible, because it cannot be restored to the 'as drawn' condition.

However, the following heat treatment will certainly restore most of the temper and avoid subsequent brittle fracture:

- (1) Heat the length of wire until cherry red and air cool.
- (2) When cool, form to shape.
- (3) Reheat to cherry red and quench in oil.
- (4) Rub bright with emery paper.
- (5) Heat to blue.
- (6) Immediately remove from heat and allow to air cool.

I trust the above information will be as much use to you as it has been to me.

A. E. Whittam

Hollywood, Birmingham.



Beautifully carved left-handed pusher prop on Doug Joyce's canard. This model is the latest development of his 'Lightning 7' design, which was drawn in the March 1964 *Aeromodeller*. Climb and glide were excellent, transition terrible! V.I.T. not used on this machine.

Free Flight team selection trials in the U.S.A.

Reported by BOB MEUSER (Stalking the wild thermal in New Mexico with plane and camera)

FOLLOWING the preliminary 'qualifications' and regional 'semi-finals', the U.S. FAI Selection Finals were held near Albuquerque (pronounced al-boo-ker-kee) New Mexico over September 5-7th, encompassing Labor Day, a national holiday. Situated in the southwest desert section of the United States, the site was anything but a flat, barren wasteland. Rather, it was rolling hills formed from the erosion products of the adjacent Sandia Mountains, covered knee deep in coarse desert plants and grasses, and creased with 'dry washes' or 'arroyos'—30 foot deep gouges which become raging torrents during the winter rains! Add to this a storm brought by a typhoon off Baha, California and the first cold front of the year moving in from the North, which resulted in wind conditions varying from light drift to 35 m.p.h., towline-snapping, wing-folding gales. Temperature varied from that of a bitter wind under a cloud-covered sky with a light drizzle of rain, to a searing desert sun under a cloudless clear sky. The 5,000 foot altitude of Albuquerque brought surprises to many used to flying at near sea-level altitudes—Wakefield props turned 20% faster and sinking speeds were up at least 17%. Changes in Reynolds number due to temperature, intensified by the low-

density air at 5,000 feet, caused trim changes and performance losses to Wakefield models especially. Some power fliers experienced no loss of r.p.m., while others lost 1000 r.p.m.—but even if r.p.m. is the same, power is down 17% at a 5000 ft. altitude. Hardly conditions for selecting the best team to represent the U.S. at the World Championships in Sweden! Some called it a retrieval and survival contest, rather than a model flying contest.

The original schedule called for five two-hour rounds for each of the three days. The first day was overcast all day—commencing with light winds, increasing to about 30 m.p.h. in the afternoon. The second day started out very cold and very windy, and the Contest Director delayed the start until 1 p.m. at which time the wind had stopped entirely. Only three 1½-hour rounds were flown. On the third day the sky was clear most of the day, and winds were from 10 to 20 m.p.h. Six 1½-hour rounds were flown for a total of 14 rounds.

Note that three of the nine to make the team were from Albuquerque, (Taylor, Averill, Allen) and three were from Southern California or 'Greater Los Angeles' area (White, Polansky, Bronco).



Far left, Annie Gieskieng was the only female to make the Finals and flew the most sophisticated Power model at the meeting, timer-operated wing camber changing flaps and V.I.T., fully cowled engine with all of the plumbing and timer inside fuselage. A lever projecting from side of fuselage holds timer in locked position until model is launched. Left, the 'team' of Lee and Suzanne Polansky placed second in the A/2 event. Right upper, Jim Taylor, first place in Power, prepares to start his Rossi 15 on his electric starter. Right lower, Mike Taibi assisted Dennis Bronco for the entire three days enabling him to place first in A/2. Far right, John Allen gains a few extra feet altitude in the launch of his first place Wakefield.

Several deadly rattlesnakes were reported to have been killed before and during the contest – fortunately nobody was bitten!

Power

First place: Jim Taylor, who represented the U.S. in A/2 at the 1969 World Championships. He made great use of a thermister thermal detector – often shutting off the engine and re-fueling if the detector indicated that conditions were less than perfect at the instant of launch. His model features an aluminium alloy tube as the forward section of the fuselage to which the aluminium alloy 'backbone' is screwed and epoxied. The wings are retained by nylon screws. The motor, one of the new Rossi 15's, is fired up with an electric starter, and tuned-in with a Heathkit tachometer.

Second place: Buzz Averill, who also used a Rossi 15 – equipped with a Bartels glass fibre propeller. His model was based on the very successful *Night Train*, and he too used an electric starter plus a thermal detector.

Third place: Tom Kerr. Not as well known in F.A.I. circles as his team-mates, Tom however flies in all AMA. power events. He uses a discontinued K & B Torpedo 15 Special for propulsion, fitted with a Cox 7" x 3½" prop.

A/2 Glider

First place: Dennis Bronco – an all-round free flyer who is also a former Junior and Senior National champion. He flew a new design by Lee Hines (of chuck glider fame) which utilises a Benedek B7457 section. This same model was used for all fourteen flights – most other competitors lost or destroyed at least one or two.

Second place: Lee Polansky – another all rounder and consistent winner in the highly competitive South California area. Lee, ably assisted by his wife Suzanne, flew a *Dragmaster* design by Tom Hutchinson and was one of the few glider competitors to use a thermal

detector. He made the longest towing runs of all – often running right to the edge of the deep arroyo.

Third place: Hugh Langevin – who will be making his third World Championship appearance. Hugh flew the latest variant of a long series of the well known *Osprey* design, featuring a string-turbulated Thomas F-4 airfoil, aluminium tube fuselage front section and pylon.

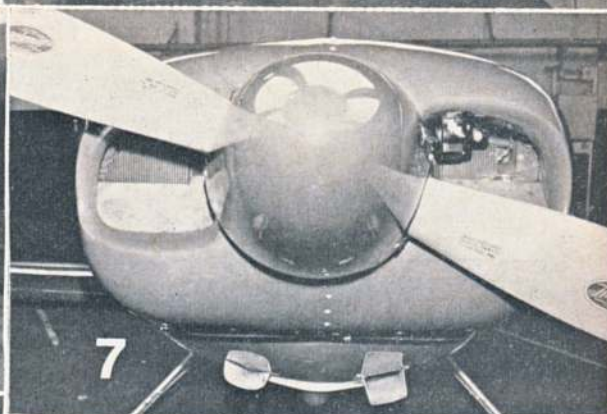
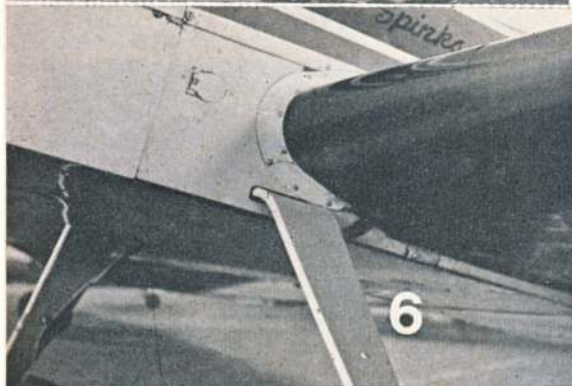
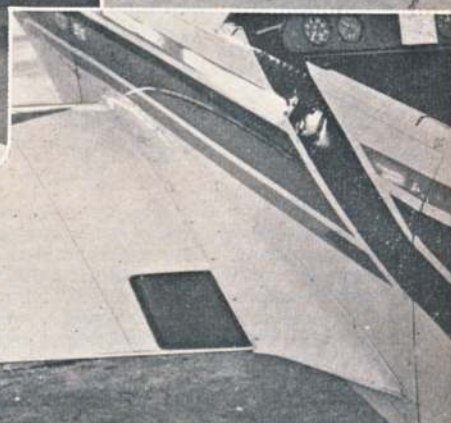
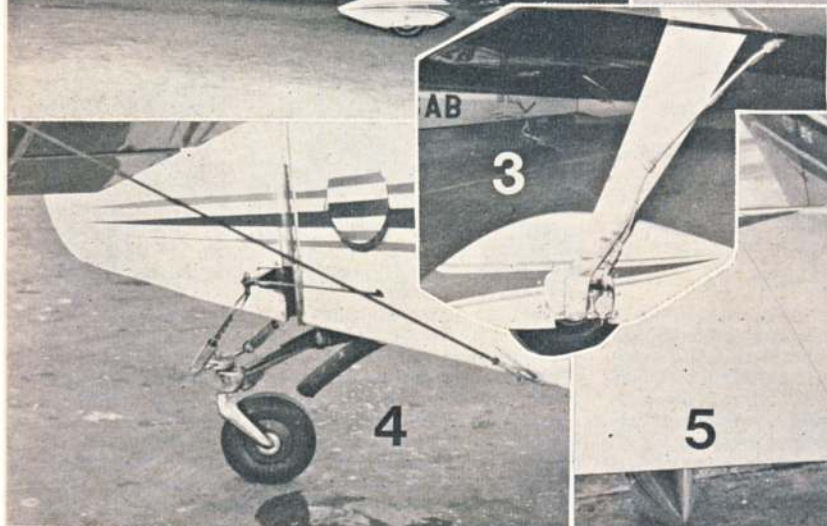
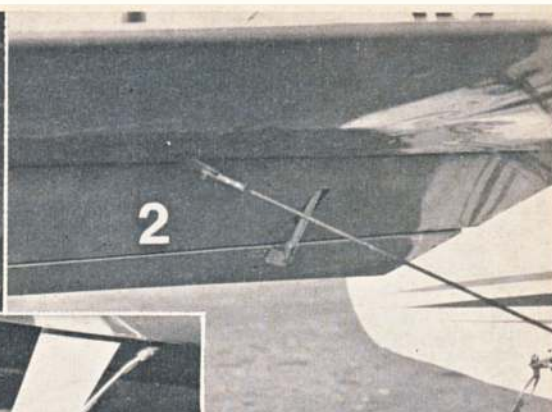
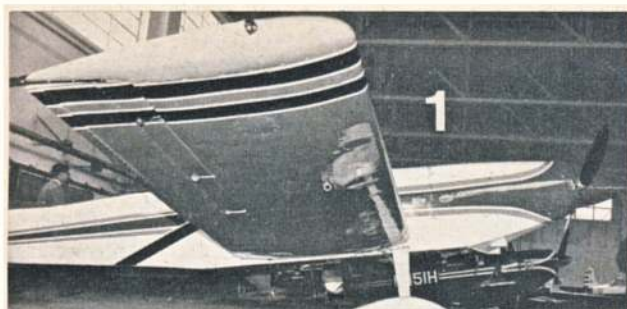
Wakefield

First place: John Allen flying his own *Apogee* designs – square wingtips and tailplanes for windy conditions, elliptical for calm. Model has thin-walled aluminium tube and rolled conical sheet balsa tail boom. A Seelig timer operates auto-tail, and the snap-on spinner conceals a 'Montreal' auto stop. John uses a Xenakis-type recording thermal detector with a remote sensor to aid his flying.

Second place: Frank Parmenter, who has twice before represented the U.S. in this category at World Championship meetings. His latest models use torque – controlled auto rudder and V.I.T. 'programmed' in a similar fashion to Xenakis's. His newest, and best, ship has sheet balsa covered, plug in wings, and square sheet covered forward fuselage, fairing into a triangular tailboom. A wing broke in half when he hit some power lines on the first day, but was repaired that night. The fuselage was destroyed later when the motor broke after the winding tube had been removed.

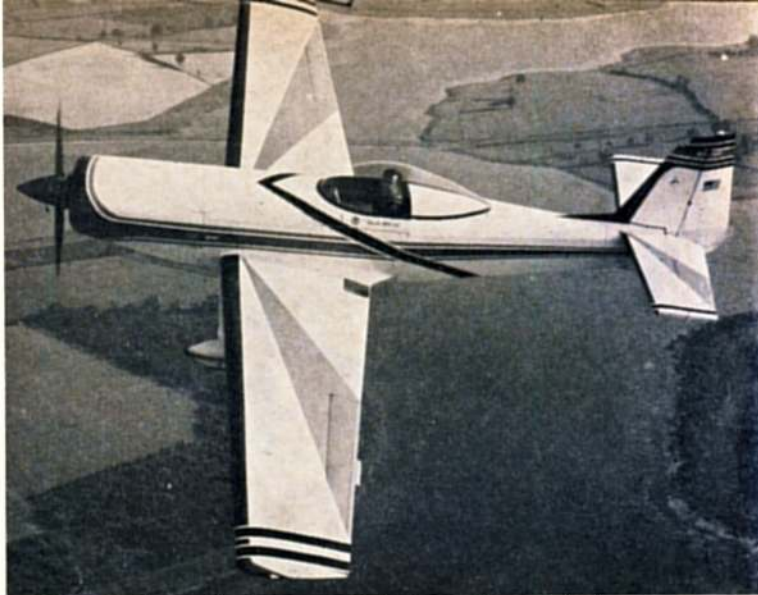
Third place: Bob White – twice holder of unlimited rubber records and consistent contest winner. His best model under the prevailing conditions was a minimum-area, windy weather machine which, in common with two other of his models, was lost. All his Wakefields use high (4") pylons, twin rudders, and do not utilise variable incidence tailplanes. He was lying in first place until the last round, despite being credited with only 128 seconds on an easy max when the timer lost sight of the models while switching to binoculars.





Spinks Akromaster

drawn by P. Lloyd



OF THE several special purpose aerobatic aircraft entered in the 1971 World Aerobatic Championships at R.A.F. Hullavington, the Akromaster had greatest appeal as a modelling subject. Its clean lines, proportioned as though for a control-line or radio controlled aerobatic model, and its tremendous performance which earned third place in the contest, endeared it to the hearts of all scale modellers.

Made by the R. & D. department of M. H. Spinks Enterprises in Fort Worth, Texas, the Akromaster is a no-expense-spared attempt to wrest the title of Champion from the well-established YAK and Zlin types. Piloted by Charles Hillard, who has qualified for the U.S. team three times, in '66, '68, and 1970, it came very close to achieving its purpose at the first attempt. With development, it might well eclipse the Yak 18, the Zlin 526 being decidedly overtaken.

The empty weight of 1,300 lbs, and high thrust from a 74 inch Hartzell constant speed propeller driven by injection Lycoming 10-360-A10 of 200 hp add up to a useful combination capable of upward rolls from level flight. This good power-weight ratio is matched by simple yet well tuned controls. There is nothing unconventional. Even the airfoil is the touring type NACA 23012, and sundry accessories such as the

cowling, wheel spats, tailwheel are 'borrowed' from other machines.

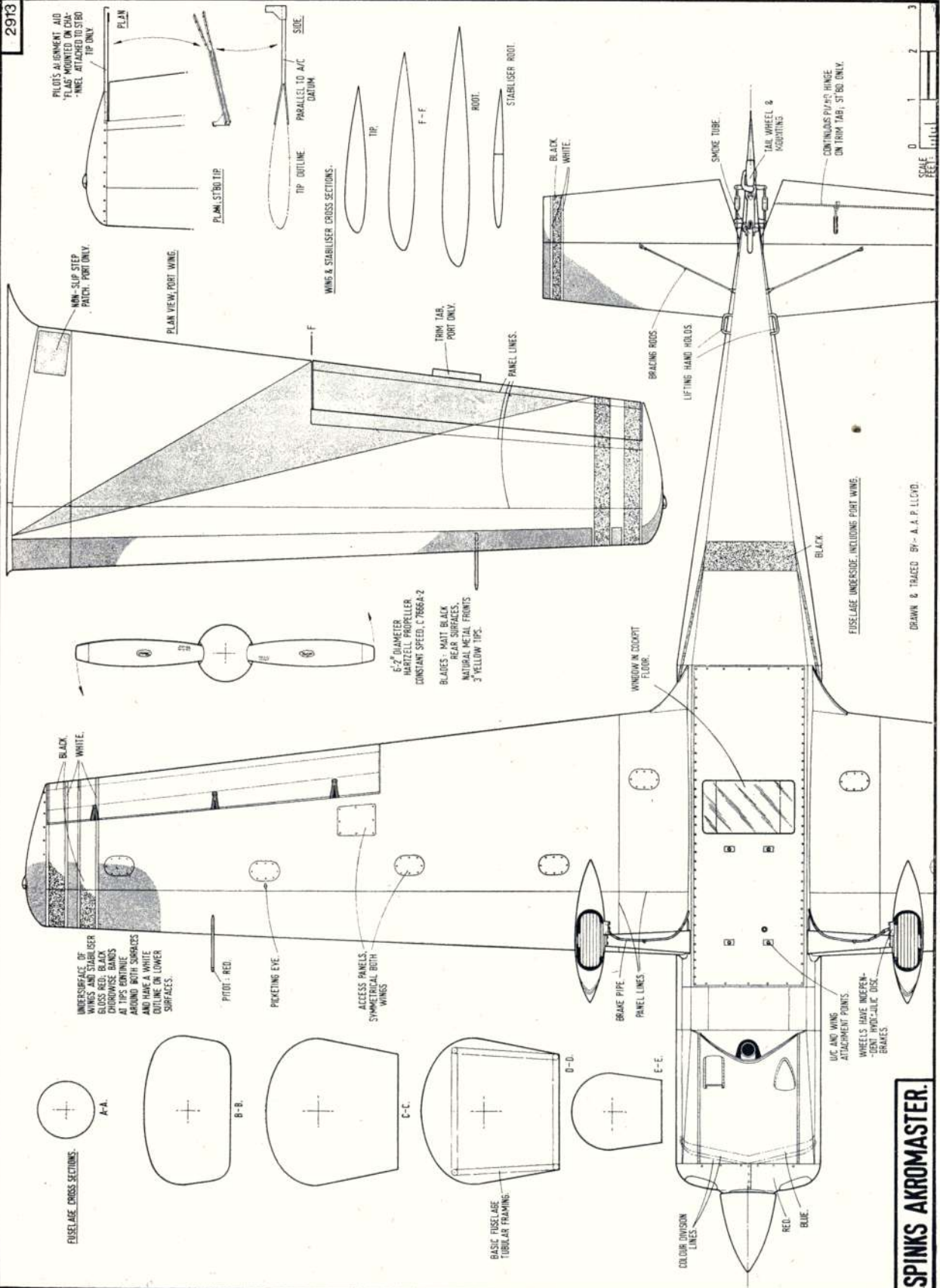
Apart from an area between the cockpit and tail surfaces, the Akromaster is metal skinned. The rear fuselage has fabric covering, as a weight saver, and the canopy is a standard California home builders accessory bought through the mail! Of tubular steel structure, the fuselage has vertical taper a feature adopted from biplanes which offers shoulder room without presenting too much wetted area.

The wing has one I spar and is in fact a development prototype for a two seat trainer scheduled to enter production in 1971. Stressed to 10 G's the Akromaster is a perfect example of well packaged know how. It has not been cheap to produce. Some estimates would have this one aircraft as costly as a sophisticated executive transport to bring it to its present state. It is entirely due to the unbridled enthusiasm of 'Pappy' Spinks for aerobatics that the project has been forged through.

Several variations of engine cowling and engine installation have been seen since the first flight in 1968. The drawings here were measured from the Akromaster at Hullavington in its July 1970 mode.

Top: 'Flight' photo of practice near Sywell. Below, views of the side-ways hinged cockpit cover. Opposite: 1, Plain ailerons are hung on hinges of decreasing length to give angled hingeline. 2, Wire-braced tail with elevator tab on one side only. 3, Stock Cessna 150 nose pant is adapted for the spring steel landing gear. 4, Tail wheel linked to rudder horn, oil breather tube leads to extreme rear from engine. 5, Root fairing and small walk patch. 6, How the gear fits, the circular panel is for external starter battery. 7, Power dept. 8, interior, with window between foot runners. 9, Tail root detail.





MAIN COLOUR KEY

- RED.
- WHITE.
- BLUE.
- BLACK.

ALL FINISH GLOSS EXCEPT
COWLING INTERIOR: MATT BLACK

THE DRAWING SHOWS THE SPINKS AKROMASTER
AS FLOWN INTO 3RD PLACE AT THE WORLD
REPUBLIC CHAMPIONSHIPS, WOLLEYINGTON AED 1970,
BY CHARLIE WILLARD.

'PENICIL' STICKER:
YELLOW, BLACK LETTERS
(COWLING FRONT & SPINNER CESSNA T101)

'CHAMPION' STICKER:
RED, WHITE & BLACK
INSTRUMENT OPENERS
WITH CANOPY
INST. PANEL

BADGE DETAIL: RED DISC,
BLUE DETAIL,
WHITE LETTERS

ENLARGED SCRIPT STYLE: BLACK

PILOT *'Charlie Willard'*

PALE GREEN TINTED CANOPY
CANOPY STIFFENERS: REAR HALF OF ROSSER
WITH RUBBER SEAL, SHIP DECKS WITH HATCH

WORLD CHAMPIONS
COMPETITION'S BADGE
RED OUTLINES
BLACK LETTERS

COMPETITION NO

30

T/PLANE
BRACING RODS

2-1/2" DOWNTHROUST

GROUND BOOSTER
BATTERY CONNECTION

EXHAUST PIPE

PORT SIDE ELEVATION: S180 SHOGULAR

FLOOR WINDOW

Spinks Akromaster

ACCESS PANELS
PORT & S180

STIFFENING PATCH

SMOKE TUBE

REVERSE OF
HUB CAP

DISC BRAKE CALLIPER

'INSIDE FACE OF SPAL'

COWLING HATCHING
PART INDICATED ONLY

DOTTED LINE INDICATES
LOWER EDGE OF FUSELAGE

FRONT ELEVATION

LEGS LOADED

FLYING

RUBBER EDGE SEAL

FUSELAGE: PLAN VIEW: WINGS OMITTED

Full size copies of the 1/12th scale original plus re-
prints of this 1/36th scale feature are available price
8/- plus post as plan pack F 2913 from Aero-
modeller Plans Service, 13/35 Bridge Street, Hemel
Hempstead, Herts.

SPINKS AKROMASTER.

DRAWN & TRACED BY: A. P. LLOYD

SCALE
FEET

0 1 2 3 4 5 6 7 8



Above, Gene Lapansie (Detroit) displays his F/F scale version of Captain Page's Curtis Navy Racer. Above right, another free flight entry - a P51 Mustang by Fernando Ramos, seen changing to his flying prop.

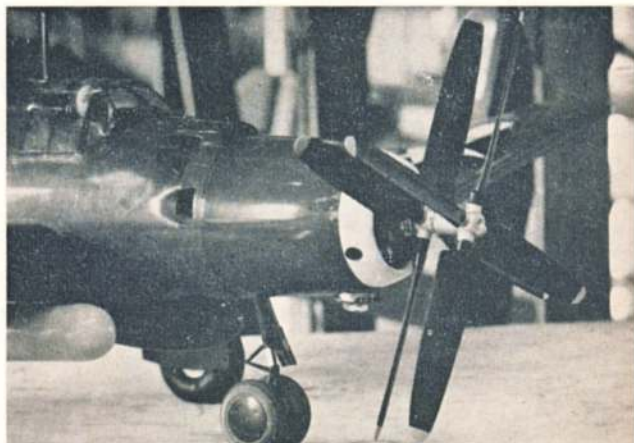


U.S. NATS Pictorial

through the lens
of Dick Stouffer



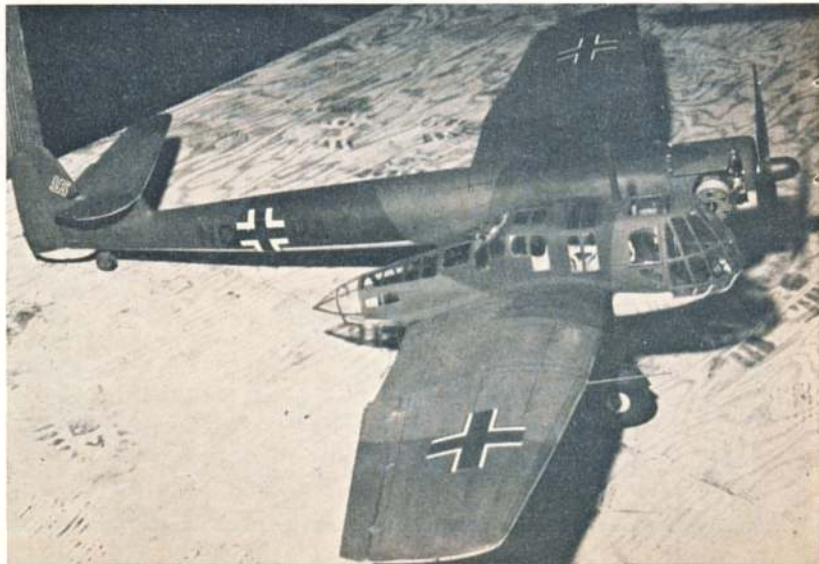
Beautiful C/L Grumman 'Mohawk' (above) was made by Ralph Bernstine to 1/12th scale. Weighs 9 lb., powered by Veco and K&B 35s. Excellent cockpit detail visible through very well moulded canopy.



Dangerous-looking snout seen above belongs to Claude McCullough's R/C entry, a Douglas XB-D2B. Unfortunately, contra-rotating props are dummies - conventional airscrew used for flying.



Above: no, you're not imagining things, you really can see three Bucker Jungmeisters with the same serial numbers. Model in foreground is rubber-powered, others F/F power. At right, Canadian Al Koehler's C/L entry was 1/16th scale Blohm and Voss, BV 141B-02. Unusual choice, superbly made, powered by O.S. 35. Note size of tailplane!



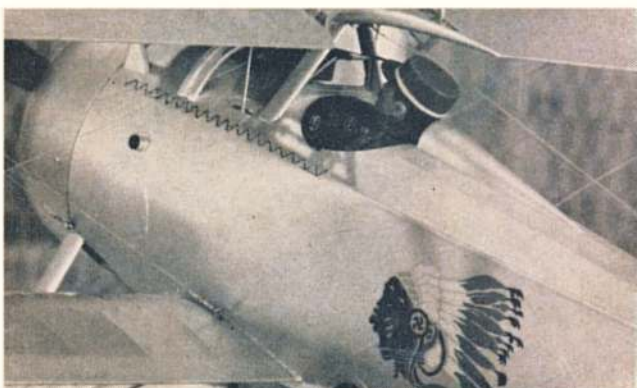


Ron Martelet prepares to 'pile on the turns' for his Bristol Midwing, while his wife assists with the count. Model held by neat wooden 'self winder' device.

Right: enormous 1/4 scale Fokker DVIII by Bill Bertrand is a regular competitor. O&R Compact 1.23 engine turns 17 in. x 6 in. prop. Model weighs 14½ lb. and flies at scale speed. Placed 4th.



Right, craftsmanship of Bill Johnson is evident in this detail shot of his Nieuport 17, R/C scale entry. Note typically French appearance of the pilot! Built from V.K. kit, and weighs only 5½ lbs.



Below, most impressive C/L Hawker Typhoon by Robert Talchik has operating flaps, retract gear and bombs. Weighs 10 lbs. and uses S.T.60 for power.



Right, beat that for detail! Spare 'ammunition' lies on the wing of Homer Hudson's C/L North American P 51, prior to being 'loaded'. Model weighs 8½ lb. and has a Super Tigre .71 for urge. Features operating flaps, evident by their drooped position.



At right, an R/C version of Consolidated B36 by Ken Drummond. You might think that a scale model of this size and complexity would be unique—wrong, another B.36 was entered in R/C! This one weighs 19 lb., uses six Enya 19 engines and has operating flaps, bomb doors and eight brakes! Below, Don Manson uses biplane configuration on his Clipper Cargo entry. Engine is a pusher, mounted behind the wing pylon.





Your TWO FREE PLANS!

Streamer Screamer

A 34 inch control-line wing for combat or sports flying with 2.5-7 c.c. engines designed by D. SPARKES

and
ALAN BROCKLEHURST
for contest or sports flying

STREAMER SCREAMER is the third development in a series of successful elliptical-winged combat models, having progressed from an 18" span, 1 c.c. powered version to its current form where a 'hot' .40 cu. in. glow engine may be fitted to suit Class B competition work. However, this design is not intended purely as an out and out combat ship, and may be flown with a variety of engines for sport flying. If a 2.5 or 3.5 c.c. motor is fitted the model is docile enough to use as a basic trainer for the beginner, yet is still sufficiently aerobatic for them to learn elementary manoeuvres.

It is the designer's belief that the spar-less construction is quite an advantage when firm contact with the ground is made, as the structure tends to flex, thus absorbing the shock, rather than break as would happen with an over-rigid framework.

Construction is straightforward, but care must be taken to prevent building in warps while the wing is in a flexible state. First, laminate the trailing edge from 3/16" hard balsa, 3/16" x 1/4" spruce, and 3/16" medium sheet - then add the first sections of the (laminated) tips. Next, cut out all the wing ribs and glue them to the trailing edge, using a set-square to ensure accuracy. When these have thoroughly set, add the 1/4" square spruce L.E. - take care here as this is where warps can creep in. Cut the 3/16" sheet wing tips to shape, noting grain direction, then add to the structure. Add the 1/8" sheet gussets where shown - if the models are to be used for combat, these gussets could also be added to each rib at the trailing edge for extra strength, and at both the L.E. & T.E. of the centre 1/8" ply rib. Install the bellcrank mount, noting that it slots through the centre rib - use an epoxy adhesive for this important unit. Pivot the bellcrank on a 4 B.A. bolt, checking that it moves freely but without slop. Add the leadouts and pushrod. Sheet cover the top of the centre section as shown with 1/16" balsa. Either construct a tank from tinplate, or buy a commercial unit, and install at this stage - using soft balsa packing to retain it in position - then add underside sheeting.

The engine bearers must be shaped to fit around the centre section sheeting. Note that the distance between them (and, of course, the hardwood spacer and shape of curvature of the bearers) may be varied to suit different engine widths. Epoxy the bearers in position making sure that they are square. Add the scrap balsa packing around the L.E., then epoxy and screw hardwood spacer in position. Drill the engine bearers to suit the engine and add blind nuts. Cut out the fuselage fairing from medium soft 1/4" block, then taper to shape and hollow out to clear the crankcase before glueing in position. When dry finish the shaping and sand smooth. For extra strength, cover the whole of this unit and its joint to the wing with glass fibre - using plenty of resin and ensuring that it penetrates the cloth thoroughly. When dry, file and sand smooth.

Sand the trailing edge and tips to shape, round off the L.E., then add the leadout guides to the inboard wing tip, and the 1 1/2 oz. weight to the opposite one. Sand the entire model smooth, then apply two coats of sanding sealer, rubbing down between each. Cover the model with nylon, applied wet, using P.V.A. glue as the adhesive. Apply three or four coats of thinned dope to seal the pores in the nylon, add any colour trim or transfers as required, then apply a coat of fuel-proofer - two if high nitro content glow fuel is to be used.

Cut the elevator from 3/16" sheet, sand to section, nylon cover, then dope and fuel-proof before sewing to the trailing edge. Bolt the elevator horn in position and bend the pushrod to length checking that all controls are at neutral, and that the elevator has approximately 35 degrees of movement in each direction.

Make sure that the model balances as shown - or slightly further forwards for the beginner. *Streamer Screamer* may be flown on lines varying from 50 to 70 feet long, depending on engine size, although, of course, for Class B combat the distance from centre line of the handle to the centre line of the model must be 60 ft. plus or minus 3".

Am I

URST'S A/1 glider
sports flying



THE FIRST A/1 GLIDER in this series had a wing similar to AmI, but had a balsa 'box' fuselage and 'T' tail. After one or two instances of tail flutter this was altered to a semi-high tail with dihedral... a layout which the designer still thinks has advantages for 'still' air. However, this arrangement gave poor towing characteristics although the glide was good, in fact, the model was eventually lost.

The second model was experimental (see *Aero Modeller* April 1970, Page 201, 8) having a glass fibre pod with alloy tube boom - the wing had a sunken 'box' spar. Again a good glide performance resulted but the use of a constant diameter tube caused the weight to be in the region of 7 or 8 ozs. This model was broken before it was fully trimmed.

Soon after, the present wing was started, the sunken spars being retained to try and maintain a laminar flow over the upper surface of the wing, and to avoid sudden changes in curvature usually present due to surface spars and tissue sag, which may cause early breakaway of air flow. This wing was then put away for some time while the fuselage was thought out.

When shown an AI size glass fibre blank, it was realised that this was the answer and a couple of days later the fuselage and tail were completed!

Trim flights in initially calm, but later gusty conditions, showed that the model design was sound. It was trimmed using Alan's own technique of hand launching to determine the direction of the natural turn, then making the auto rudder force the model to glide in the opposite way. Therefore, natural warps tend to stop the model spiralling in and give a tighter, more controllable turn.

No mention has been made on the plan about the use of a tubulator (sometimes required on a smooth wing) as a means of boundary-layer control. The wing is intended to be a laminar flow section (at a Reynolds Number* of 36,000 the airflow should tend to be

laminar) and as such should be better than a turbulent section provided the boundary layer does not separate before reaching the front edge of the T.E. However, in gusty conditions, random disturbances may cause the airflow to separate with a delay before reattachment.

The whole subject of boundary-layer theory is very complex and Alan does not intend to make any definite statement on this until he has a greater knowledge than at present, not wishing to influence people into sticking turbulators all over the place and possibly causing the flow to separate rather than causing the boundary-layer to re-energise.

As it stands, the model flies well without a turbulator although it is possible that there may be some advantage in using one, IF this is done correctly. However, it is suspected that the vortex street pattern may not form over a turbulator at such a low Reynolds number, and therefore a tubulator wrongly placed may itself promote early separation of the boundary layer.

Construction is best started with the wing, as this allows the dope to 'set' whilst the tail and fuselage are built. First make the tips from 7 laminations of $\frac{1}{32}'' \times \frac{1}{2}''$ balsa strip. This is most easily done by cutting out the tip shape from a piece of $\frac{1}{2}''$ plywood, as shown in figure 1. The strips should then be soaked in water to make them pliable, and are then bent round the male half of the former, each being glued with P.V.A. Now push the female mould in place and clamp in position, taking care not to glue the laminations to the plywood! The outline is roughly sanded to shape when set, final sanding being done on completion of the tip.

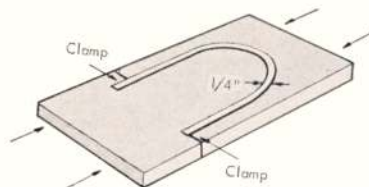


Figure 1. The clamp is made of $\frac{1}{2}''$ plywood, the wing tip laminations are then bent around the male portion, glued, and held in position by pushing the female portion in place.

Select the wood for the wings, so that each half will have equal strength and weight, using softer wood for the tips. Shape the leading and trailing edges with a 'razor plane' then finally sand smooth, before notching the T.E. for the ribs.

Build each panel in turn, starting with the centre section as described. Begin by pinning down the L.E. and T.E. - packing up the latter to suit the rib camber. Carefully cut out the ply ribs and templates, sandwich together and sand to shape. Drill the holes for the 14 s.w.g. tubing (No. 32 drill) in the centre ribs, then drill two $\frac{1}{16}''$ diameter holes in the rib templates at the upper spar positions.

Now strip a sheet of $\frac{1}{16}''$ balsa into $\frac{3}{4}''$ wide strips,

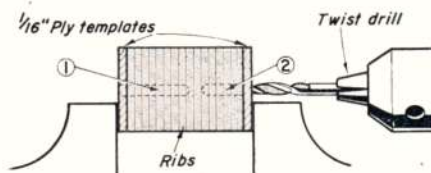


Figure 2. Clamp the rib blanks between the ply templates, sand to shape, then drill the upper spar holes from each side for accuracy.

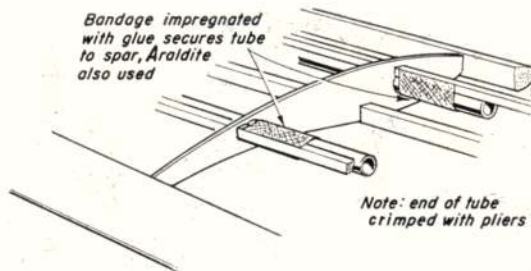
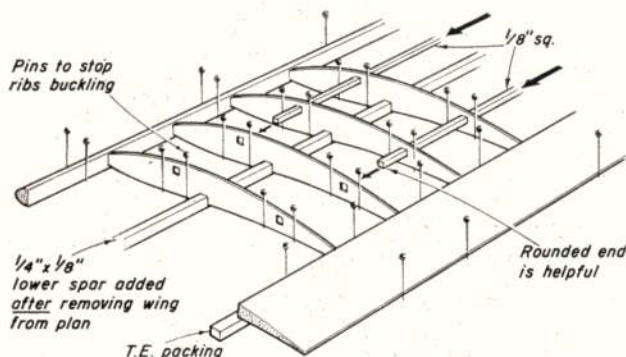


Figure 3 (left). Slot the upper spars through the holes in the ribs, which have been trimmed square. Take care to avoid splitting the ribs. Figure 4 (above). Use an epoxy adhesive and bandage to secure the wing joining tubes to the spars.

cutting them to $3\frac{1}{4}$ " lengths. Taking about ten at a time, sandwich them between the ply templates, and clamp in position. Carve and sand to shape then drill the $\frac{1}{8}$ " holes – drilling first from each side, and then straight through (see figure 2) for the spars. Also file out a slot for the lower spar ($\frac{1}{4}$ " x $\frac{1}{8}$ "). Repeat until all ribs are made – remembering to use lighter wood for the tips. When separated, trim the holes for the top spars square.

The balsa ribs may now be glued in position. Place pins either side of the ribs to prevent buckling when sliding the spars in position – spot cementing at one or two places to secure them – see figure 3. Remove from board, cement spars properly, add the lower spar and the sheeting near the dihedral break.

Build the opposite panel. Enlarge the holes in the ribs for the brass tube near the centre section. Assemble, and pin down together on a board, the 14 s.w.g. brass tubes, 14 s.w.g. wire joiners and ply centre ribs. Slide onto this assembly the wing centre panels, prop up $\frac{1}{4}$ " at the ends to suit the dihedral, and pin in position. The tubes may now be lightly epoxied to the spars – or alternatively, wrapped with tissue and balsa cemented in position. When dry, remove from board, add more adhesive, followed by reinforcing bandage and balsa cement around the tubes. The centre section may now be sheeted before the whole structure is carefully and thoroughly sanded.

The wing tips are built in an identical fashion, using lighter wood. Now cover each of the four separate panels with lightweight tissue, and apply 3 coats of thin (watery!) clear dope, pinning down between each coat. Make the two shear ribs from soft balsa, angled to give the correct dihedral of $3\frac{1}{2}$ ", when the inboard panel is laid flat. Now make the dihedral joints. Cover this joint with a $\frac{1}{2}$ " wide strip of heavyweight Modelspan. Add any trim, S.M.A.E. numbers etc., from lightweight tissue doped on, keeping them to the minimum to avoid interference with the airflow.

The tail plane is built in exactly the same way as the wing.

The fuselage needs little description. The most important point to note here is the way in which the various 'bits' are secured to the rod. The rod is marked out, then the front and rear are covered in lightweight tissue using balsa cement and dope, the tissue being wound round the rod two or three times. (See September issue).

When dry, the pylon parts, fin and tail platform can be simply glued in place. This method is strongly recommended and has been proved to be entirely satisfactory, being cheaper, quicker, lighter and less messy than using epoxy which is the usual practice. The same technique is used

for attaching the D/T snuffer tube and 'pin' tube. Note that a sound tail seating and wing location is very important, this is achieved by correct positioning of the $\frac{3}{16}$ " wood dowels for bands, and correctly packing the wing platform to account for the wing dihedral.

As for flying, suffice it to say that your chances of hooking a thermal are improved if you know your model well and are practiced at flying it. A trick that the designer finds useful is to use tail tilt to learn the model towards the required direction of turn at the top of the tow.

***FOOTNOTE.** The Reynolds Number, Re , is the ratio inertia forces $\frac{\rho v c}{\mu}$ (i.e. $\frac{\rho v c}{\mu}$ where ρ = density, μ = viscosity, c = chord, v = velocity) and this ratio is a dimensionless parameter governing the type of flow. At low Re , therefore, the flow is predominantly viscous in character (laminar). However, other factors such as surface roughness may cause the flow to locally behave otherwise, and hence promote separations.



"Now where did I put my fag....?!"



Though tactical flying was not an easy accomplishment at the Trials, there were occasions as rounds became critical when towing in close company created line crossing and some remarkable near misses. This trio have just been released and as can be seen, are fortunately heading on diverging courses.

Team Trials for 1971 and other events reported by JOHN O'DONNELL

'TRIBULATIONS' would be even better than 'Trials' as a description for the second meeting to select the teams to represent Britain at the 1971 Free-Flight World Championships. Held over the weekend of 3rd and 4th October 1970, the second Trials suffered from bad weather to an extent that would have 'killed' participation at any other contest. Being the Trials, the vast majority of those attending did fly – although many must have regretted it.

The prime cause of trouble was strong wind, which combined with the physical (or geographical?) features of the site to give severe low-level turbulence. R.A.F. Syerston is at the top of a tree-covered embankment overlooking the river Trent and a considerable stretch of flat, open countryside. On the weekend in question the wind blew across this unobstructed region onto the airfield. The embankment deflected the airstream and produced the attendant downstream vortices and turbulence familiar to all slope soarers. It was this turbulence, plus gusts, rather than sheer wind strength, that put paid to so many competitors' hopes and their models. Readings of over 20 m.p.h. were obtained on a wind-speed meter (anemometer to the technical) – but none near the figure of 27 m.p.h. at which the F.A.I. say flying may be interrupted. Contest administration was again in the hands of George Lynn, and followed the pattern of the First Trials. Due to being later in the year, Saturday's flying finished one round (A/2) earlier, with Sunday's extended to balance. Potential arguments regarding broken towlines (a situation not defined in the F.A.I. Code Sportif) were anticipated. Most of the S.M.A.E. F/F sub-committee were present, and they decided to apply the S.M.A.E. rules that classify a broken line as a non-scoring attempt (without option). Standard fuel (75 per cent methanol, 25 per cent castor oil) was provided – but only on the Sunday, and then too late for familiarisation runs. There was no processing whatsoever – even of the winning models at the close of flying – due to the absence of the S.M.A.E. Technical Secretary who had been involved in a serious road accident.

Choosing the teams on the basis of total score accumulated over two meetings, it was only to be expected that the second was not as well attended as the first. In practice, participation at the Second Trials was something like half that at the First.

It was particularly unfortunate that the weather was at its worst right at the start of the Second Trials. Contestants were thus 'thrown in the deep end' and the casualty rate was high – even amongst those who were well placed at the end of the initial seven rounds in August. It rapidly became apparent that the weather had 'opened up' the chance of a team place to most of those flying. This factor was undoubtedly responsible for so many people persevering to the bitter end.

The weather also stopped the Second Trials from being the out-and-out tactical event witnessed (at least in Wakefield and A/2) in August. However, it did not cut out this approach altogether, even though few people went as far downwind as the officially defined limit to the launching area. Perhaps this was due to the attention paid to Jack North's bubble generator and associated thermal detection equipment set up centrally in the flying area. Although operated for the benefit of Croydon members (who were

noticeably the only group who operated with any club or team spirit) the bubbles were the focal point of much attention. Following them met with mixed success – as indeed did attempts to launch under or after models that were apparently in good air.

For much of the weekend it was more important to launch at a time (and place) of relatively smooth and non-turbulent conditions than to worry unduly about catching real lift. This was particularly so in the first (or rather eighth) round when the flight pattern of many models was upset with catastrophic results. For an attempt to circumnavigate the turbulence, launching of Wakefields was attempted as far upwind as possible – almost on top of the embankment – but with little success. It proved better to go well downwind – at least as far as getting smoother conditions – but at the price of missing any thermal help if my flights were any indication. Surprisingly the top few positions in Wakefield changed very little at this stage (although Bryan Spooner wrecked his reserve model first launch) – but the situation was to prove somewhat unstable thereafter. Both Alan Armes and I dropped right out of the running the next round.

In comparison A/2 went topsy-turvy right from the start. Both the fliers with seven maxs recorded two non-scoring attempts for their eighth flight. Mike Reeves first broke a line, and then bent a solid $\frac{1}{4}$ in. dia. alloy wing joiner on his *Humblehound*. Bryan Spooner damaged two models, one on a premature release whilst paying out line and then his S.P.L. through a gust, wrenching it out of his helper's hands as he launched.

Incredibly, Bryan went on to become 'Man of the Meeting' by virtue of placing in both Wakefield and A/2 Teams. Although he attributed his perseverance to persuasion by his helpers-cum-retrievers (Ian Fairgrieve and Ted Pepper), this is obviously not the whole story. He was well organised, flew well, and 'had the breaks'.

No one else fared quite as well – and most far worse. Some idea of the difficulties encountered by contestants can be gained from the score-sheets. Apart from Laurie Barr and Bruce Rowe in Wakefield, and Mike Woodhouse in A/2, the remainder of the 'Top Ten' in these events only recorded scores in the 14-16 minute region at the Second Trials. Flights of under a minute were only too common, often al-



Laurie Barr, second member of the 1971 Wakefield team, about to launch his model with a fair amount of physical assistance. He had to leave promptly after the Trials to search for a missing model, hence was not able to appear in the 'team' photo (Page 693).

ternating with the occasional maxs. Conditions on the Sunday were better than the Saturday, with a somewhat different wind direction and reduced strength and turbulence. Visibility was indifferent at times, and so bad at the beginning of the 12th A/2 round that flying was postponed for three-quarters of an hour. Subsequent rounds were cut to 40 minutes, so as to finish the events well before dark. This was an eminently sensible decision.

Predictably power fliers did rather better than the others. In fact, the standard of flying in this category looked surprisingly good, especially in view of the conditions and the performances witnessed some six weeks earlier. Generally the power pattern possessed by the modern V.I.T. equipped machine is not too easily upset – and the height attained is sufficient to clear 'ground effects' and ensure a reasonably stable glide. There were certain unfortunate exceptions to the above – notable being George Fuller's model that I saw suddenly tipped right over by a gust to produce instant matchwood and a broken Miebach.

Heartbreaking in a different way were the experiences of Peter Williams of Richmond. He flew well in Saturday's rough weather, to emerge top of the A/2 lists – a position he maintained till the final round. His good model had been severely damaged in the 13th round through striking a tree and he subsequently used a newly-constructed duplicate that he had been testing between official flights (despite the weather). A dislodged and incorrectly re-aligned fin was blamed for a spiral dive and a 20.4 second official flight late in the 14th round. If he had used his No. 3 model he might well have provided a 'new' name in the lists. Peter's disappointment proved to be Elton Drew's opportunity, for he came through his last A/2 round into third place. In fact, the top positions were dominated by familiar faces, with the exception of Bryan Spooner, the team members have all flown already for Great Britain.

Ray Monks was in such a commanding position near the end of the Trials that he was able to short D/T (intentionally) his final flight and still head the Power results. His models follow the standard pylon, rear fin, elliptical wing tips and tail layout used by most F.A.I. power fliers nowadays. The model used for most flights at the Trials was an earlier version than was drawn out in *Free-Flight News* recently. Power unit can be described as an ex-Miebach G15 now fitted with a standard-timing piston and liner. This motor was turning a home-made (by Ray) fibre-glass copy of Rieke's 6½ in. x 4 in. prop at 21,500 r.p.m. Ray uses a Tatone engine timer, flood-off, and fuse D/T.

Pete Buskell was obviously on form at the Second Trials, as he only dropped two seconds (in the eleventh round) below a perfect score. This brought him up from 9th at the end of the First Trials to second place overall. He still had his troubles, as he severely damaged his best model when it tried to go through a fence downwind on D/T. Subsequently, his reserve model shed its tailplane on a test flight between rounds through 'throwing' a prop. Peter's re-appearance in the Team is due reward for many years of persistence with F.A.I. power. His models still display a certain amount of *Slick Stick* influence, but are the end product of much development. His best motors date back to 1956 when the timing was different to the current versions. Propellers used were Cox hard nylon 8 in. x 4 in. reshaped – but are inclined to disintegrate at the revs attained – or hand carved 7½ in. x 3½ in. Tufnol ones. The engine was stopped by simultaneous fuel line squash and pressure release – admittedly not as 'clean' as flood-off but not as hard on the engine. Timers were illustrated in a close-up photo

last month, but I would correct the captions in that the clockwork parts are Autoknips for the engine and Tatone for the D/T. The whole arrangement is well designed and fail-safe in that the fuse will trigger the D/T even if the mechanics do not 'work'. Modelwise, slightly unconventional features include side mounting of the engine and a cowl over the top part of the crankcase. Wing undercamber is more than currently fashionable.

Bob Bailey did seven maxs at the second Trials to qualify for the team, after a very rough time in August, including a 20-odd second flight! He flew a *Night Train* throughout – as plan except for slight structural modifications. Power was a G15 with a Cox 'Trumpet' head tapped straight through for the glowplug, mounted in a World Engines' Seelig-style pan, and turning a home-made 7½ x 3½ in. glass-fibre prop. An Autoknips timer stops the engine by pressure release and fuel-line squash, whilst a K&B timer actuates the D/T.

Wakefield saw Bruce Rowe maintain his first Trials lead throughout except for Laurie Barr temporarily overtaking him in the tenth and twelfth rounds. Bruce's model looks terribly old-fashioned with simple lines, box fuselage and parasol-mounted wing – but was very stable and flew very impressively. As recounted last month it flies on 13 strands of Pirelli, which, with a 24 in. x 31 in. prop, gives a very long run. Rubber was purchased direct from Pirelli in Italy about a year ago. The wing section is B7406f, the tailplane is flat bottomed, and a D/T timer is mounted under the parasol.

Laurie Barr was the only person to seriously contest Rowe's premier position at the Second Trials. Laurie's models are to Roy Wootton's design, with circular fuselage, low pylon, and anti-warp structure. Rubber used was 14 strands of Pirelli, purchased from H. J. Nichols, and capable of taking 400-480 turns through being undersize. Laurie is one of the few Wakefield fliers to use a conventional winding tube, as opposed to building the fuselage strong enough to withstand broken motors.

As already mentioned, Bryan Spooner made both Wakefield and A/2 Teams. His high aspect ratio German-influenced Wakefield was described and illustrated last month, but a few more details might be appropriate. The wing is two-piece, joined by wire, and is of sparless construction. The upper L.E. sheeting is 1 mm. thick, the complete lower surface is 1/32 in. sheet, and the two are joined by webs between the ribs. The prop is 22 in. x 27 in. nominal (i.e. at 70 per cent radius, with washed-out tips) and turned by 16 strands of Pirelli obtained as part of 'F.F.N.'s' bulk order from Italy. The prop stop-system has the prop hub move aft (when the turns run out) and engage in two slots in the front lip of the dorsal tube fuselage. This, likewise, permits the prop to be manually moved aft and 'locked' immovable after being wound so the model can be more easily held whilst awaiting lift.

Following the loss of one S.P.L. in August, Bryan built an English-style A/2 in the couple of weeks prior to Cranfield. It was obviously influenced by Elton Drew's *Lively Lady* – and in fact, used Elton's wing section. Differences included constant chord wings with square tips, and a fin mounted forward of the tail. It seemed well suited to the conditions, and was flown throughout the Second Trials.

Mike Woodhouse came up 'from nowhere' by dint of a startling treble max in the very rough conditions on the first day of the Second Trials. His *Wichita* design is well known – and the variant used for most of the event had a fishing rod fuselage with a ply keel, epoxy resin-cum-fibre-glass pod, 6 in. chord wings, and a Seelig D/T timer.

Derek Wain fared well until the penultimate round in the Power trials.



Bruce Rowe (St. Albans) 're-loads' his Wakefield with a 13 strand motor. He consistently held his position at the top of the team results.



Reserve in Wakefield is Dave Greaves of Birmingham.



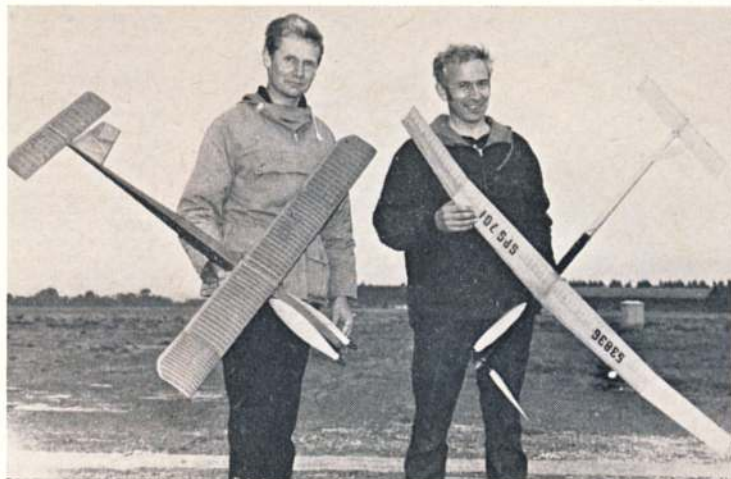
S.M.A.E. TEAM TRIALS RESULTS

(14 Rds.) R.A.F. Syerston, Notts

August 22/23rd, October 3/4th

WAKEFIELD

1	B. V. Rowe	St. Albans	38:17
2	L. G. Barr	Hayes	37:53
3	J. B. Spooner	Croydon	35:57
4	D. Greaves	Birmingham	35:11
5	R. Godden	Cambridge	34:16
6	J. R. Mabey	Croydon	34:02
7	J. Blount	Croydon	33:52
8	A. J. Jack	Tynemouth	33:28
9	A. C. Armes	Hayes	33:08
10	L. Burrows	Blackheath	32:40



Above, two-thirds of the Wakefield team in the form of Bruce Rowe of St. Albans (left) and Bryan Spooner (Croydon); quite a contrast in designs evident, Bruce retaining utter simplicity and Bryan adopting the sophisticated German techniques.



Above, the Power Team (from left to right) Ray Monks (Birmingham), Peter Buskell (Southampton) and Bob Bailey (Croydon). Ray and Peter are old hands with long power experience. Bob is in the Power team for the first time, having previously represented G.B. in Wakefield.

POWER

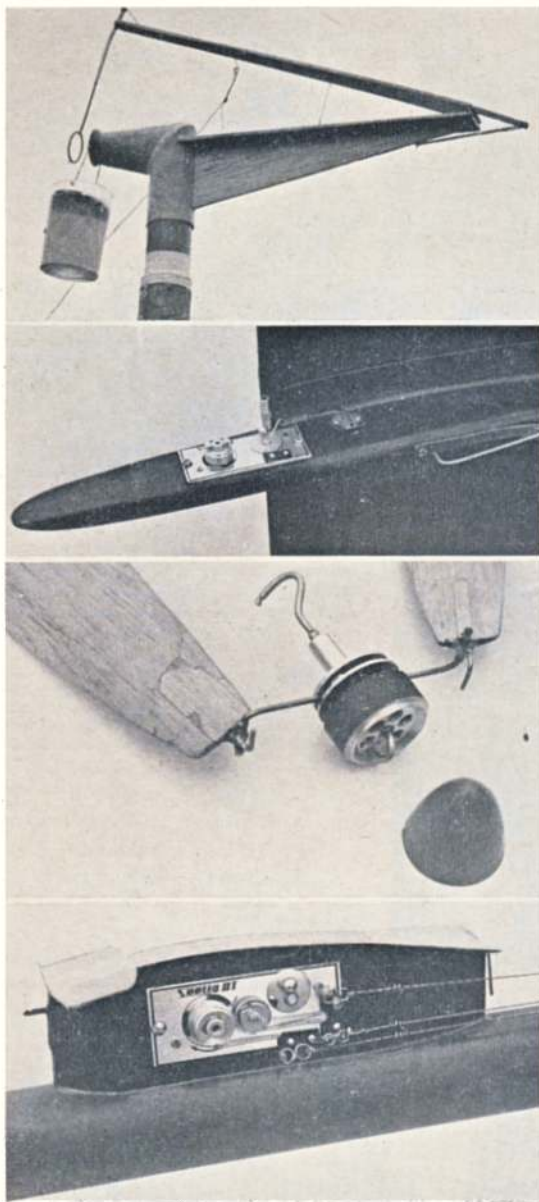
1	R. Monks	Birmingham	39:52
2	P. R. Buskell	Surbiton	38:59
3	R. H. Bailey	St. Albans	38:22
4	J. E. Allen	Brighton	37:15
5	D. J. Wain	S. Bristol	37:04
6	F. G. Chilton	Crookham	37:00
7	R. J. Baggott	Birmingham	36:50
8	R. A. Collins	Anglia	36:36
9	K. J. Glynn	Surbiton	35:07
10	R. Johnson	St. Albans	34:17

A/2 GLIDER

1	J. B. Spooner	Croydon	36:31
2	M. Woodhouse	Norwich	36:25
3	E. P. Drew	Bristol & West	35:24
4	A. G. Young	Croydon	34:53
5	J. R. Mabey	Croydon	34:39
6	C. P. Williams	Richmond	34:19
7	J. Baguley	Hayes	33:59
8	T. Dilkes	Spitfires	33:59
9	G. Ferer	Swindon	33:38
10	M. Dilly	Croydon	33:12

Team member again with a chance to defend his current World Champion title is Elton Drew (of Bristol) (left) with fellow-teamsters Mike Woodhouse (Norwich) and Bryan Spooner (Croydon) who proved to be 'man of the meeting' by securing a place in the Wakefield team as well.





Top: Soap bubble thermal detector working head on Croydon's 'machine' seen working at the trials. A blower forces air up a long tube, and the designer operator Jack North charges the ring dispenser by dipping the ring into the soap solution. On release, a stream of bubbles is created about 10 ft. above ground. Next is nose of Mike Woodhouse's A/2. Seelig timer and anti-fall-off hook used. Pod is epoxy/glass fibre on ply keel. Below is Bryan Spooner's Wakefield prop assembly—see November issue for details. At bottom, another view of Bryan Spooner's Wakefield shows the pylon-mounted timer.

Final member of the A/2 Team, and central figure in a final round 'cliff-hanger' in which he towed his A/2 backwards, forwards and across the launching area for 10 or 15 minutes, was Elton Drew. His final release was well clear of everyone else, and although initially far from hopeful the model subsequently found low level lift to edge Tony Young down to fourth place. Elton's models have been fully described in the past—but for once he flew (on the Sunday

at the Second Trials) the actual Championship winning model. He now has the chance to defend his title, an opportunity no champion can take for granted nowadays.

Area Events-cum-Midland Rally

The sixth and last of the S.M.A.E.'s area centralised meetings was held on 13th September. Also arranged for this date was the **Midland Area Rally** at R.A.F. Syerston. Additional F/F events (F.A.I. Power, Wakefield and Chuck Glider) were scheduled to complement the National events, and there were also a variety of C/L classes, plus R/C Thermal Soaring.

Flying was affected by the turbulence later experienced so severely at the Trials. Nevertheless, competitors recorded scores that were to prove useful enough in the S.M.A.E. events. This was especially true of Birmingham, who despite only fielding three Open Rubber fliers, out of the four allowed in a team, came third in the Farrow Shield. This was, however, only incidental to their real aim—the Plugge Cup for the season's overall Club Championship. With points being awarded for fly-off positions both Ray Monks and Dave Greaves made the 'extra' flight. Ray got away well for an O.O.S. thermal flight, but Dave's model (Wakefield components on an Open fuselage) dived in from a good height after a perfectly normal initial climb.

The effort was not in vain as Birmingham emerged at the top of the Plugge results with 1,317 points compared with St. Albans' 1,251, Brighton's 1,161 and Norwich's 1,022. Birmingham must be doubly pleased as it is the first time (as far as I know) that they have secured this award, and as they managed it without their anticipated help from Dave Wiseman (whom the S.M.A.E. would not allow to change clubs without paying a second affiliation fee).

Winners of the Farrow Shield were Norwich—with two members (Barry Halford and Bill Parker) flying at Watton and the other two (Darl Morley and George Sharp) at Syerston. Only Darl had a 'real' Open Rubber model and this became irretrievably lodged in a tree after its first max. After this he flew a Wakefield—like the rest of his club! St. Albans struggled hard at Chobham for second place in both Farrow and Plugge.

The S.M.A.E. Cup for A/2 gliders was convincingly won by John Cooper of Northampton, flying at the South Midland venue of R.A.F. Henlow. His seven flights took all day, despite an early start, but totalled 20:32. He dropped a few seconds on the first and last (taken in the rain) flights. One model was used throughout, and featured *Rolling Stone* surfaces on a conventional balsa box fuselage.

South Midland Rally

This year the South Midland Area was very much more fortunate with the weather for its annual Gala at Cranfield than the past couple of years. It was bright, sunny and warm, with a generally light wind (except in mid-afternoon) and abundant lift.

There was soon plenty of activity thanks to the inviting weather with drift the full length of the drome. Many models were flown tactically especially towline and chuck gliders, and Coupe d'Hiver.

The only events not to need flyoffs were helicopter and tailless, both being won by modellers who have flown these speciality events for years. Ian Dowsett topped helicopter; whilst Graham Gates (over on vacation from the U.S.A.) won tailless with a 14 year old and very large glider. Runner-up was Don Wylds with another glider, whilst third placer John Wassell presumably flew rubber.

Flyoffs commenced with those for the smaller classes being held more or less simultaneously. Ray Monks found good air with his 1/4A power model to D/T in sight for a 5:21 score. His elliptical tipped model is several seasons old, but has just had the wing recovered. The model has 230 sq. inches wing area, undercamber, auto-rudder and, inevitably, a TD 049. Runner-up Bob Bailey suffered from an off-pattern climb and slight sink thereafter. His model uses an 8 per cent Conover style section and V.I.T.

Coupe d'Hiver saw George Sharp and I wind simultaneously and wait for each other! I launched first, closely followed by George. His model got a little higher on a shorter motor run, but was in worse air on glide. When his model stalled low down it settled matters in my favour.

There was a three way flyoff in chuck glider thanks to the one minute max used in the contest. Dave Hipperson only took three launches to achieve his triple max, and went on to top the flyoff. Second place went to Bill Houghton (with 'Melinex' covered wings) and third to Barry Kershaw flying a reserve model after losing one model upwards.

Open Power was very close as Dave (Dusty) Miller beat Pete Buskell by but a single second. The winning model is in the Miller's usual *Climax* style, uses an O.S.15 and a fast, but roly climb. Pete's model is F.A.I. size but sports an ETA 29. Albert Fathers made up the power trio.

Open Rubber was just as close. I beat Dave Hipperson by a second, with Russell Peers only five behind Dave.

Both Dave and I flew a few minutes later than the rest and seemed to get a slightly calmer period. Nevertheless, all the rubber flyoffs were timed down to the skyline and it was not really a visibility contest. My model is the same *Maxine* used for the last four seasons and now getting rather the worse for wear. Rubber used goes back to the mid 1950s, when Wakefields were open-rubber models – but is still powerful. I assume Dave Hipperson used one of his 300 sq. inch wing area models, whilst Russell's was the model used to win at Lindholme.

Being downwind retrieving, I didn't see the 18-man glider flyoff. Lift was lacking and those flying A/2's could not equal John Boon's just 'assisted' 3:38 from his 1½ size *Caprice*. This model is a flyoff-special and weighs a mere 8 oz. ready-to-fly – thanks to the use of SIG balsa and little dope. Second was Nigel Clark with a plastic-covered A/2 – opaque Solarfilm on the wings and transparent I.C.I. polypropylene on the tail unit. Very close behind were Croydon members Martin Dilly and Jack North. Mike Woodhouse, who was first to start towing, and almost last to release, landed in the launch area after a lengthy airfield tour.

Rootes Trophy

Club Team events are rare enough these days outside the S.M.A.E. contest programme. The once-thriving L.D.I.C.C. (London District Inter Club Contest) and the Northern Area Knock-out events seem to have faded away. Lack of interest in such events is obviously due, in part, to the way aeromodelling has diversified over a wide range of categories in recent years. Hence clubs cannot raise sufficient people interested in any one type of model.

In this climate the N.W. Area's domestic event for the Rootes Trophy must be unique. Positions are determined by the total aggregate of a club's best two scores in each of rubber, glider, power and chuck glider events. This system enables everyone to fly, and avoids the disastrous results of a 'nominated team' member doing badly. Even so, this year's event showed the trend of the times with only my club (Whitefield) being able to field a full complement of fliers. No one else had two power fliers, and most clubs had several other 'vacancies' in addition.

Although the date, September 27th, was only a week before the Second Trials, any effects of this should have been more than counterbalanced by the ideal flying weather. It was calm from dawn till dusk, with the slight wind drift reversing during the day. Conditions were exemplified by Terry Dilks' *Humblehound* clocking 46:15 through a D/T timer failure and landing only 100 yards in front of its owner – chasing on foot.

The glider event was determined by difficulties in finding (or waiting for) the weak and 'patchy' thermals. There was only one treble – by Dave Yates, of Wigan – although several people had two maxes out of three. Runner-up was young Dave Barnes flying an *Accipiter*, followed by Charlie Wyatt with a nine-footer.

Power was a walk-over for Russell Peers, making three quick flights early in the morning with a ½ A model, and only missing a treble by five seconds. Whitefield club members Alan Wood (with a G15 powered F.A.I. model) and Brian Worthington were second and third.

Chuck glider was topped by Barry Kershaw flying the lowish A/R fibre glass fuselage (with cedar wood pod) design with which he has been doing well recently.

Rubber events often have the 'three-threes' rule criticised as a formality – and this was appropriate to the Rootes. Seven out of the ten entrants did a treble, with the others making nominal flights for team scores. The real rubber contest took place around 6.0 p.m., with the participants

Peter William's A/2 ready for launch in hands of wife Eleanor – disaster came in the 14th round after an almost 'certain' team position had been severed.



Fourth places in A/2 and Power at the team trials were taken by veterans Tony Young of Croydon (left) and Jack Allen (Brighton) right, who thus become first reserves.

winding almost simultaneously, and launching close together. My 3½-year-old, and heavy, *Maxine* outclimbed the opposition, but did not have the glide necessary to win. Russell Peers' large and light model glided well, especially low down, to take top position. His clubmate, John Boon, was third with the model he lost at Cranfield, heard about, and went for specially during the week.

Team results were hardly a surprise, with Whitefield in the lead by a substantial margin. Second and third were very close, with Congleton (or rather Peers and Boon) just ahead of Spitfires. Inevitably, suggestions of revising the team requirements have been heard. These ideas all acknowledge that clubs have trouble raising teams, and suggest changes accepting the situation rather than ways of improving it.

SOUTH MIDLAND AREA RALLY

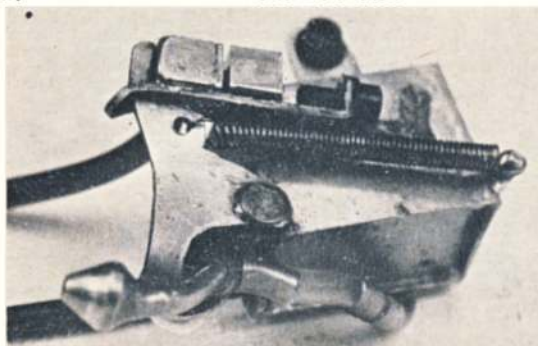
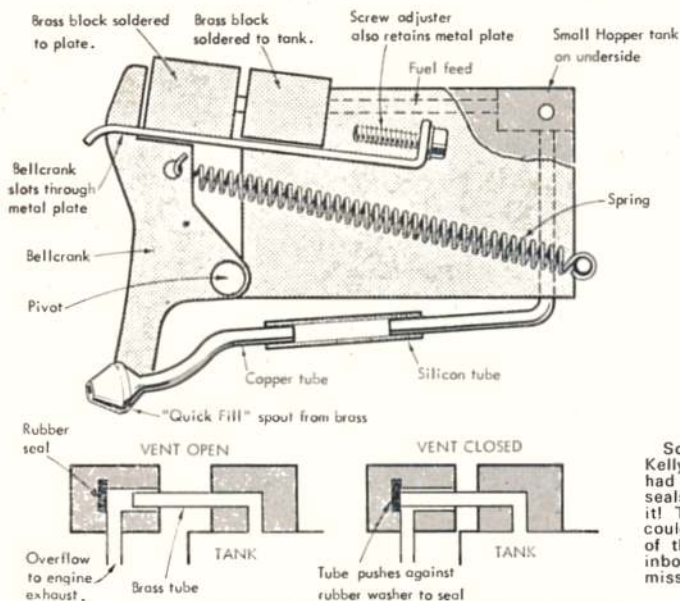
Open Rubber (12 in fly-off): 1, J. O'Donnell (Whitefield) M + 6:29; 2, D. Hipperson (Croydon) + 6:28; 3, R. Peers (Congleton) + 6:23. **Open Glider (18 in fly-off):** 1, J. Boon (Congleton) M + 3:38; 2, N. Clark (Richmond) + 3:00; 3, M. Dilly (Croydon) + 2:59. **Open Power (3 in fly-off):** 1, D. Miller (Cambridge) M + 3:45; 2, P. Buskell (Surrey) + 3:44; 3, A. Fathers (C/M) + 2:29. **JA Power:** 1, R. Monks (Birmingham) M + 5:21; 2, R. Bailey (St. Albans) M + 2:53; 3, R. Peers (Congleton) 8:23. **Coupe d'Hiver:** 1, J. O'Donnell (Whitefield) M + 1:52; 2, G. Sharp (Norwich) M + 1:35; 3, R. Wells (Norwich) 5:41. **Chuck Glider (3 in fly-off):** 1, D. Hipperson (Croydon) M + 0:37; 2, W. Houghton (Richmond) + 0:34; 3, B. Kershaw (Wigan) + 0:30. **Helicopter:** 1, I. Dowsett (C/M) 270 points; 2, J. Cooper (Northampton) 152 points; 3, J. Greenslade (C/M) 92 points. **Tailless:** 1, G. Gates (USA) 6:20; 2, D. Wylds (Crawley) 4:42; 3, J. Wassell (Hayes) 1:51.

ROOTES TROPHY

Teams: 1, Whitefield 52:26; 2, Congleton 41:21; 3, Spitfires 41:07. **Rubber (7 in fly-off):** 1, R. Peers (Congleton) + 6:45; 2, J. O'Donnell (Whitefield) + 5:59; 3, J. Boon (Congleton) + 5:29. **Glider:** 1, D. Yates (Wigan) 9:00; 2, D. Barnes (Liverpool) 8:34; 3, C. Wyatt (Ashton) 8:28. **Power:** 1, R. Peers (Congleton) 8:55; 2, A. Wood (Whitefield) 8:02; 3, B. Worthington (Whitefield) 6:49. **Chuck Glider:** 1, B. Kershaw (Wigan) 3:59; 2, B. Picken (West Lincs.) 3:23; 3, B. Wilson (Spitfires) 3:15.

Peter Harris of Evesham who was 2nd in JA at the Nats has now won the S.M.A.E. JA contest with a similar model on 13th September.





ITALIANS FONTANA AND AMODIO used a very neat variation on the Jehlik chicken-hopper style tank, featuring an 'automatic' over-flow seal, thus obviating the necessity of a separate device to perform this task—Jehlik using a spring to crush thin-walled rubber tubing to serve this purpose.

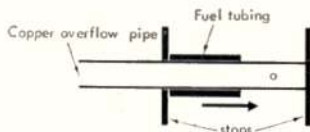
The tank, as sketched above, has a bellcrank pivoted at one corner, which carries the filler pipe on one end, and the sealing device on the other. When the refuelling bottle is placed on the filler, the bellcrank pivots backwards—the silicon tubing connector in the feed pipe absorbing this movement. Fuel is then forced into the tank, and the excess leaves via a hole in the top, leading into the brass block soldered to the tank. From here, the fuel is led to the second brass block mounted on the bellcrank arm which has opened the seal, and it is then fed into the engine exhaust stack to give a port-prime. As soon as the engine is primed, the fuel bottle is released, the spring returning the bellcrank to its former position which seals off the tube from the first brass block, by pressing a rubber washer against it, which is housed in the second moving block.



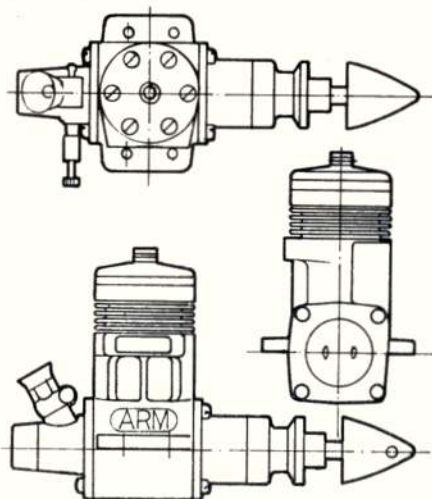
Left, the Hungarian produced quite a stir in the T/R circle by producing this mechanical starter. At right, a drawing of the very promising 'American Racing Machine' T/R motor. Like its brother, the T.W.A. speed engine, it may soon be marketed—at around \$85 each!

World Champ Technicalities

Sole Canadian representatives Kenny Parent and Dave Kelly were also users of the Jehlik team-race tank, and had what must have been one of the simplest ever air vent seals—with absolutely nothing which could go wrong with it! This consisted of a piece of rubber fuel tubing which could be slipped over a hole in the pipe to seal it. The end of the pipe was sealed with a flange, and another washer inboard of the vent hole prevented the rubber tubing from missing it's target! See sketch below.

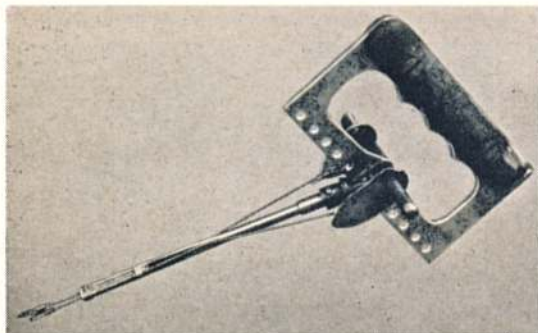


Pioneers of many interesting ideas for team racers, the Sundell brothers had two new features for their models. The old retracting gear model is now resigned to a No. 2 position, the latest model featuring the undercarriage leg bolted securely to the cylinder head of their Oliver! Their fuel cut-off device does not work off the down elevator movement, as do all the other users of this very useful accessory, but is electrically operated—just a touch on the button sprouting from the top of the control handle cuts the engine. Obvious advantages of this is that it cannot be operated accidentally when escaping from trouble (as happened to one of the Russian teams), and also, it can be operated 'in traffic' where the normal sudden twitch of down elevator can prove embarrassing. The battery to operate this system is carried in the pilot's pocket, two spade terminals providing a quick connection to the handle.



ionships

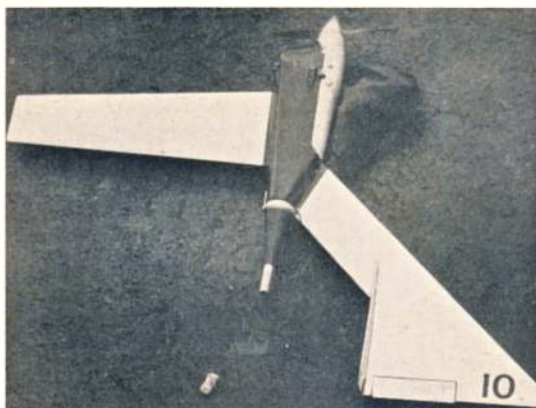
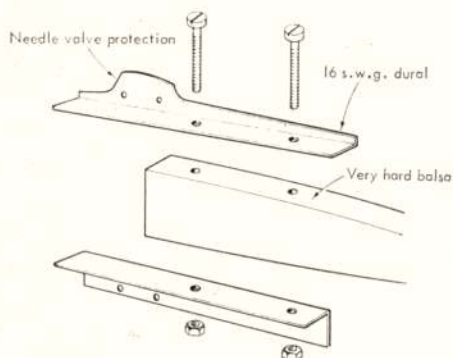
INSIDE INFORMATION ON NEW IDEAS SEEN AT NAMUR - by Peter Richardson



Long time speed competitor Jarry-Desloges of France used a very neat, home-built two-line geared handle, which also grouped the lines close together, in an effort to reduce drag.

Dunkin/Wright's reserve model was identical in design to their No. 1 machine being based on *Jefe* flying surfaces, but featured wings of thin gauge aluminium sheet with a soft balsa core. The result was that the model was a couple of ounces lighter than their conventionally-built racer. This was fitted with an ARM engine, but they used an H.P. 15D in their other model.

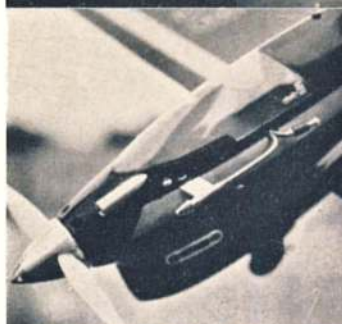
The Bulgarian combat models, while not noted for their strength in general did have quickly replaceable engine mounts on their 'wing' models. These consisted of right-angle sectioned aluminium channels, which were simply bolted together either side of a very hard balsa centre rib, over $\frac{1}{4}$ in. wide. The upper bearer incorporated an enlarged lug to protect the needle valve.



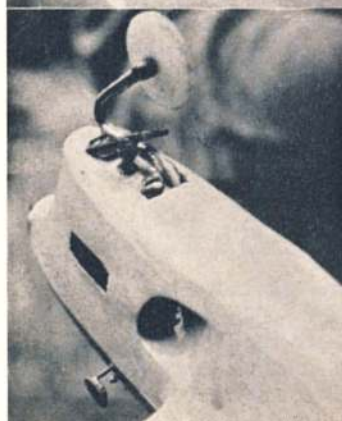
Above: Rodzhers of Russia produced this most unorthodox model, powered by a home-built reed induction engine. Wings are metal, and the glass-fibre fuselage contains the tuned pipe. Model was very stable, and although the motor run sounded first-class, it lacked the speed to place higher than sixth. Right, the bulky Hasling-built motor is only just concealed by the flimsy aluminium cowl of the Bob-jerg/Siggard racer.

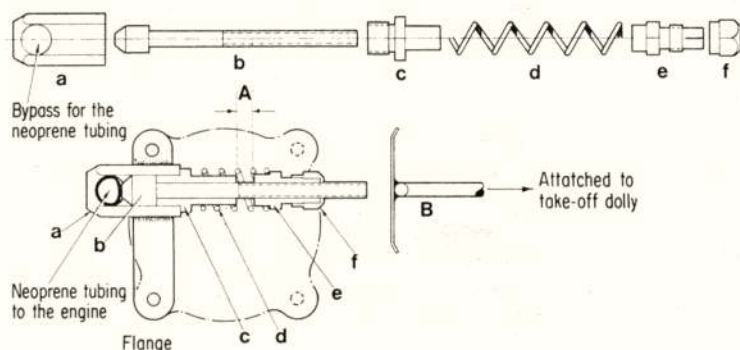


Close up of the 'sharp end' of the Parent/Kelly racer shows their simple vent seal, as described opposite. The large diameter tube provides ram air induction to the carburettor. Exhaust stack extension is flush with the cowl side.



The Sundell Bros. from Finland had their mono-wheel undercarriage bolted directly to the cylinder head of their Oliver Tiger. Re-set for their electrically operated fuel cut-off is seen at lower left of picture.

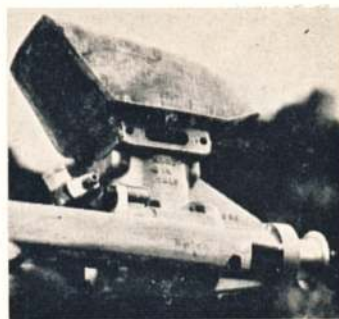




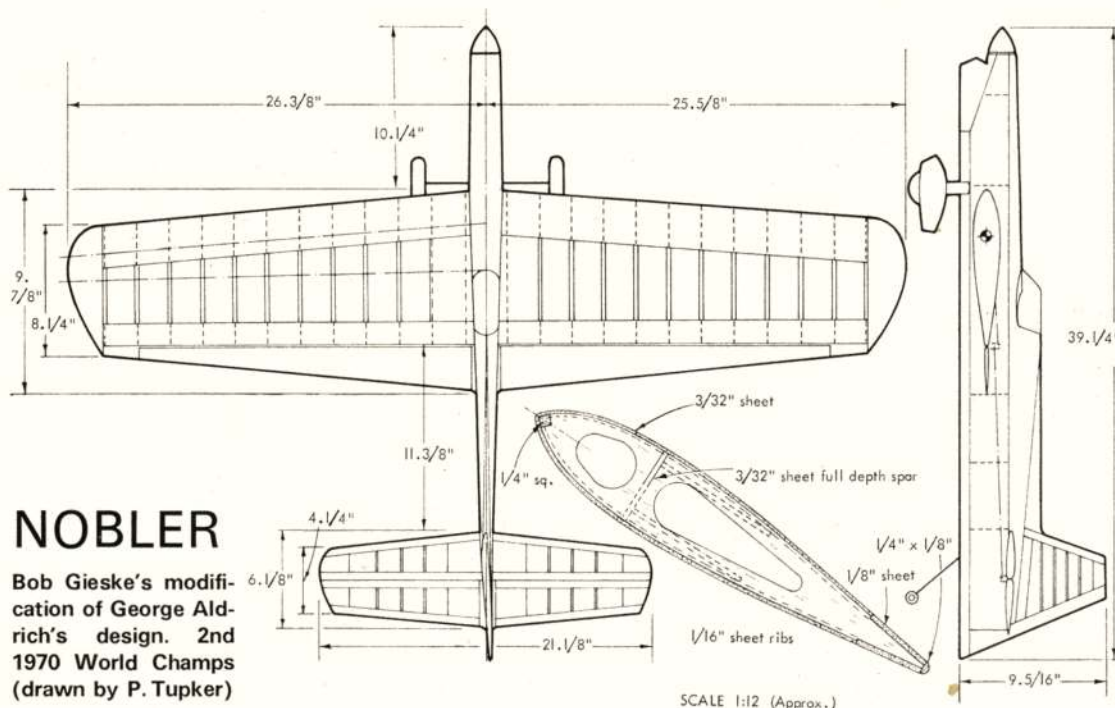
A very simple and effective fuel switch enabling a speed engine equipped with a tuned pipe to be set lean for take-off, yet have a rich enough air setting for when the pipe 'comes in', was used by the Italians for their promising Rossi engines, and, in fact, this system is now detailed in the instructions provided with these engines. This system differs from those currently being used in that it does not rely on centrifugal force operated, two needle systems, which can be tricky to adjust, but is operated by the drop-off dolly undercarriage.

The device illustrated is normally attached to the engine backplate, and is actuated by pressing against a plate (B) on the dolly, which pushes the shaft (b) against the fuel tubing, thereby reducing the fuel flow. After take-off, the spring (d) pushes shaft (b) back, thus releasing pressure on the fuel tubing. In-flight carburation is adjusted in the normal fashion with the needle valve, but ground running mixture is obtained by varying the distance (A). This may be done by screwing part (e) on shaft (b) and locking it with nut (f).

A pressurised fuel system is used, but instead of using a tapping from the crankcase, pressure is taken from the tuned pipe, at a point midway along the diverging cone.



Italians Fontana/Amodio still use an oil cooled engine—the brass radiator forming the cowl and being filled with very thin generator oil. Note the Tee Dee carburettor mounted on their Super Tigre G.15 R.V. Below, the dolly-operated fuel switch (as sketched) is shown installed behind Dusi's Rossi 15.



topical twists

by 'Pylonius'
illustrated by 'Sherry'



The Strain's the Game

IT TAKES all sorts to make the world, as Mr. Bassett said. And certainly if you visit one of the big model meetings you will see the highly variable homo sap operating at all possible gear ratios, from gentle revving to screaming accelerando. This, however, was not always the case. Back in the old days, a chap – as the gentlemanly young citizen was then known – took up model flying as something to do whilst listening to his steam radio. He would patiently and quietly wrestle with the particular intransigencies of cane and piano wire throughout his undistracted pre-telly week, and on Sunday morning take a leisurely walk to the local common to give his creation a few sportive, and very harmless, throws.

All that has changed. The model flyer of today approaches the sport as a psychological challenge, twitching the while to a background of frenzied pop music. He will select that particular branch of model flying which, he feels, will stretch his nervous reactions to the limit. Thus, the once gentle flying field has become a turmoil of almost diabolical activity, rather like one of those old 'hell' paintings where the homo sap is depicted in various states of frightful torment.

Take, for example, the torture device known as team racing. I cannot imagine, outside of the Inquisitorial chamber, ten minutes of greater human anguish than is to be found in the 100 m.p.h. hub of contortion, where the human body is thrown into postures that would make a hardened Yogi wince.

Then there is that rather novel nerve tensioner called pylon racing. I never could understand how anyone could summon up the courage to put a couple of hundred quid's worth of delicate radio equipment into a fragile and vulnerable model plane (come to that, I cannot understand anyone getting hold of two hundred quid for the equipment). But to submit all that invested wealth to kamikaze cavortings around distant poles seems to me to tax man's nervous capacity to the extreme limit.

On the free flight side, where it all began with a limp few feet of gentle descension, you come face to face with the ten second reign of terror. The white faced, trembling exponents of this particular self mortification live within a hairsbreadth of complete ruin. First of all, the multiplicity of systems must be in absolute working order, and these must be set and checked in the space of a few seconds, and then re-set and re-checked after the engine gets a touch of the splutters. Now as the

engine tuning needle is sadistically sited within a few millimetres of the knife whirring prop, curing the splutters is a popular way of collecting a fistful of mincemeat. If, by some superhuman chance, the operator has triumphed over his human fallibility, he gets his ten second dose of pure hell as a dubious reward, and possibly a lost model into the bargain.

Blue Skies

Still on the subject of chaps and non-chaps. Now that our humble hobby has become something of a national sport we are compounded of all the diverse types, from the well shorn to the excessively fungified, who jostle for a foothold on our overcrowded island. This leads us into some embarrassing situations as, whereas all chaps are by token, decent, hardly the same can be said of the non-chaps who make up, together – very much – with the non-chappesses, that part of society known as permissive.

Now, although very few of them could actually spell the word permissive, they show great versatility with those four-letter words which comprise the major part of their vocabulary. These bad names, not to mention the one they are giving the model movement, are to be seen scrawled over their model boxes and those assemblages which bear a crude and distant resemblance to a model plane. Since these contraptions show little inclination to fly the non-chaps spend the time in exchanging bawdy badinage and the filling of the model-less air with obscenities, all of which comes as something of a shock to those who look to model flying as the last citadel of decent chap decency.

Throw Back

After years of neglect in the out-and-back, the boomerang is making something of a comeback. Not since that outlaw bloke, Ned Jagger I think it was, armour plated his headpiece as protection against the aeronautical missiles, has the air around the billabongs been so thick with specimens of aboriginal man's archetypal chuck glider.

And they have become even more dangerous, going up to six foot or so in length, and with these hell-shaped things whizzing around it's a case of quick-stepping rather than a waltzing Matilda. And don't forget, when flying your boomerang be ready to duck, otherwise it will not be Ned Jagger frightening the natives but the headless man.



Are you between 10 and 16 years of age? Then don't delay, join today

Dear John,

I have recently come across a reference to 'thread turbulators' being used on glider wings, but do not know what they do or how they are used. Could you explain please?

K. Lee

Colchester, Essex.

A thread turbulator is simply a piece of ordinary thread running the full span of a glider wing, either mounted in front of and slightly above the leading edge, or else attached directly to the upper surface of the wing just aft of the leading edge. In the latter case the thread is frequently retained in position by applying a coat of dope.

Its function is to disturb the smooth flow of air which passes over the top surface of the wing, in order to make the airflow 'cling' to that surface and preventing it from breaking away so early, thereby improving the lift and efficiency of the airfoil.

Turbulators are sometimes made of thin balsa strip or piano wire.

Dear John,

I have just built my first model with an under-cambered wing section, and have had great difficulty with the tissue covering. I covered the wings in the usual way, but when I doped them, the tissue did not stick to the ribs as I had hoped. The result is now that in places the tissue is slack and has pulled away from the ribs, while in others the tissue has partly stuck to the ribs. How can you make the tissue stick firmly to the ribs, and will my model still fly properly as it is, or will it need re-covering?

J. Appleton

Northfleet, Kent.

Unfortunately John, the dope cannot be used as the adhesive as well as the shrinking agent, as in tautening the covering, the natural inclination is to pull the tissue into a straight line between the leading and trailing edge, and away from the ribs.

Instead, you should have coated each rib with tissue past before applying the covering (which must be used dry) and then making sure that the contact

is good by rubbing your finger down each rib. The result will not be very neat as it is impossible to apply the tissue very tautly, but when the whole of the tissue is sprayed with water and allowed to dry, all the creases will disappear—but make sure that the tissue cement is given ample time to dry before water shrinking. The wing is then doped in the normal way.

I am afraid that you have no alternative but to re-cover your wing, as where the tissue has pulled away from the rib you will be left with a flat-bottomed section, which will not provide as much lift as the undercambered section, making the model virtually impossible to trim correctly.

Dear John,

I am in the process of making a Cleaver combat model (A.P.S. No. CL799) but I have come across one major problem, that is in making the fuel tank. When I try and solder the pieces of tin plate together, the solder does not 'run' properly, but seems sticky and hardens with a white colour. I am using multi-core solder without flux—is this alright? Also, will my A.M.25 be suitable for this model?

S. Davis

Poole, Dorset.

Your soldering problem is definitely caused by using an iron which is too cool. For making fuel tanks etc. use at least a 60 watt soldering iron, otherwise the tinplate will conduct away too much of the heat. Also, if holding the tank in a vice during construction, insulate it with pieces of scrap balsa to prevent the large mass of the vice from dissipating the heat. A multi-core solder is fine—sufficient flux is contained within the cores, and no additional flux is required. As with all soldering jobs, ensure that the joint area is absolutely clean—any trace of grease or dirt, and the solder will run around the area, causing a poor joint and subsequent leaks.

Your A.M. 25 will certainly fit the Cleaver, and will provide sufficient power for all manoeuvres, although in a contest it would be outclassed by the more expensive competition motors.

Dear John,

Whenever I apply colour dope or enamel to my models I always get a lot of bumps and speckles in the finish which spoils the appearance. I suspect that this is caused by dust, but I am very careful not to paint in the same room as I have been sanding and leave the model well alone until the paint has dried. What causes this—is the paint at fault, or could it be caused by using a different make of thinners?

P. Benson

Cowley, Oxford.

The most likely cause is dust or paint residue in the brush which you are using. Whenever you are about to apply dope, it pays to 'tease' the hairs of the brush through your fingers for about five minutes. If you do this, you will be surprised at the amount of dust which appears—even with new brushes. If the brush has been used before it is possible that little lumps of dried paint are lodged in the top of the bristles. The cure then is to thoroughly soak the brush in thinners and clean carefully.

It is most unlikely that thinners are at fault—if you ever mix cellulose thinners with enamel paint or vice versa you will soon know!

Incidentally, make sure that you never wear a jersey when painting, it is quite amazing how many little pieces of wool find their way on to the finish!

Dear John,

My friend tells me that I must have a licence before I am allowed to fly my Mercury Matador, which is equipped with MacGregor single-channel radio control gear. Is this true, and if so where do I get one from—the local post office? Will my parents' T.V./Radio Licence cover me?

L. Rose

Sevenoaks, Kent.

Your friend is quite correct in that you need a licence to operate radio control equipment. An application form is available from: G.P.O. Radio and Broadcasting Dept., Waterloo Bridge House, Waterloo Road, London, S.E.1. The cost of a licence is 30/-, but this is valid for five years, so it is really quite cheap at just 6/- a year.

Your parents' T.V. licence will not cover you, as this is a receiving licence, and you need a transmitting licence.

Dear John,

I am designing my own team racer and would like to use an elliptical wing, as I believe it is more efficient, and besides it looks better. Snag is, how do you work out the area of an ellipse?

R. East

Sunderland, Co. Durham.

The area of an ellipse is easily calculated using the formulae πab where 'a' is equal to half the span, and 'b' is half the root chord. Another way of expressing this would be:

$$22 \times \text{span} \times \text{root chord}$$

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.

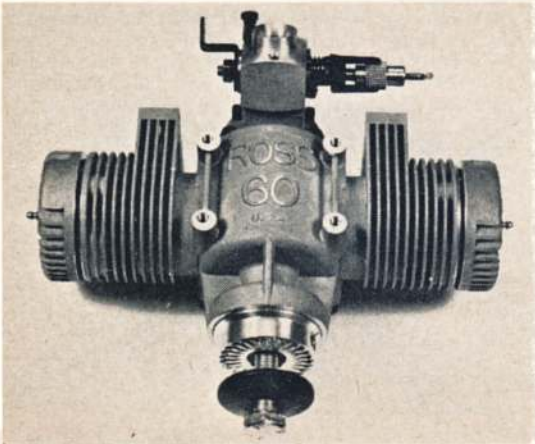


A new motor from O.S. that will begin reaching distribution early in 1971, is the entirely redesigned Mk. III version of the popular O.S. Pet 099.

EARLY IN 1971, the first deliveries of a new version of the popular O.S. Pet .099 (1.6 c.c.) engine will begin. The Pet, introduced in its original Mk. I version in the late nineteen-fifties, is the lowest-priced engine in the extensive O.S. range and is aimed primarily at the beginner's market. Production of the Mk. II version, of which more than a hundred and eighty thousand were made, ceased a few months ago to make way for the new model.

The Pet-III, like the Pet-II, is of the shaft-valve glowplug type. It has the same bore and stroke as the previous models but looks totally different due to an extensive redesign. Appearance is closer to that of the bigger and more expensive O.S. Max models, including a one-piece casting embracing the cylinder casing, crankcase and main bearing. The older models' radial backplate lugs, providing for optional bulkhead mounting, have been omitted in favour of orthodox beam lugs with a 30 mm x 11 mm bolt hole spacing. The cross-scavenged cylinder liner

Head-on view of the Ross 60 Twin showing its directly opposed cylinders and short overhang. Rear facing exhaust stacks would provide easy means of attaching twin vertical silencers. Kavan carburettor.



LATEST ENGINE NEWS

by PETER CHINN

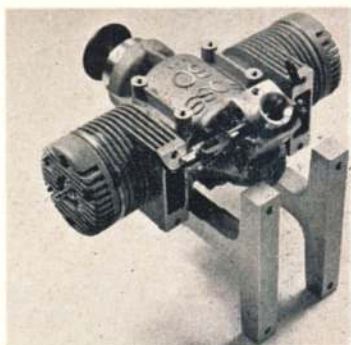
incorporates dual internal flute type transfer ports. The needle-valve assembly is installed at a 10 degree angle (rearwards) to bring the n.v. stem farther back from the prop.

An important advantage of the Mark III, compared with previous Pets, will be the provision of an O.S. silencer specially designed for the engine.

Ross 60 Twin

At the time when we wrote our preliminary comments in L.E.N. on this new American two-cylinder engine (see October issue) it had only just come into our hands. Since then we have tested the Ross and the opportunity has been taken to photograph its component parts.

There have, of course, been many horizontally opposed twin-cylinder model aircraft engines in the past. Several American flat twins were made before and after the war (e.g. O.K. Twin, Elf-Twin, Wasp-Twin, Scout-Twin, etc.) and in the U.K., several years back, Davies-Charlton made their 5 c.c. Tornado Twin for a while.

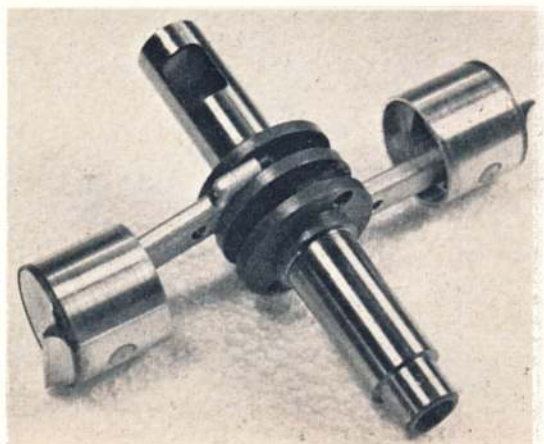


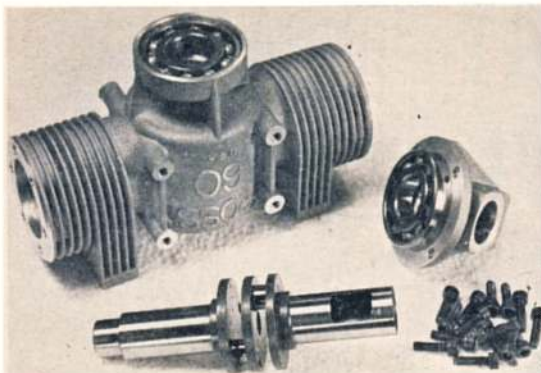
Rear view of Ross Twin shown mounted on its machined aluminium bulkhead mounting brackets. A beam mounting plate is also available.

None of these engines was exactly a howling success commercially. The reasons for this are not hard to find. In competition with single-cylinder model engines, all twins have something of an uphill struggle. For a start they are a great deal more expensive to manufacture. This becomes a vicious circle in which high costs mean a high selling price, fewer sales and less economic production volume, so maintaining high manufacturing costs. Secondly, model twins have never equalled the better single-cylinder engines in regard to specific power output and have not, therefore, attracted the modeller to whom high power is an important factor. Thirdly (and this applies most particularly to flat twin R/C glow engines sharing a common crank chamber and carburettor), an inherent tendency towards uneven cylinder charging becomes a major problem, causing one cylinder to stop firing when the engine is throttled down.

Notwithstanding the fascination of a twin and its acknowledged

The Ross Twin crankshaft with conrods and pistons. Engine features offset conrods with split big ends and machined alloy pistons have Dykes rings.





Compact one-piece Ross casting embracing cylinders and crankcase. Crankshaft is supported in two ball bearings at front and one at rear.

advantages of better balance and smoother running qualities, the practical snags mentioned above have been sufficient to discourage any of the present major model engine manufacturers from offering a twin. Clearly, these difficulties were not unknown to Louis Ross, designer/manufacture of the Ross Twin. However, it is also apparent that modellers, today, notably the multi-proportional R/C enthusiasts, are prepared to spend a great deal more on their models than at any time in the past, so that conditions now exist where a more sophisticated product is not necessarily rejected simply because it is expensive.

The Ross Twin costs in the USA, \$125 (approximately £52) which, compared with single-cylinder R/C engines of similar displacement, is about twice as much as the price of the most expensive ones and three times as high as the cheaper ones. It is reasonable to suppose that, at this figure, the Ross can be a commercial proposition for the manufacturer provided that a reasonable volume of sales is maintained and this, obviously, depends very much on whether modellers find its performance and reliability to be up to satisfactory standards. To this end, Ross set out, it seems, to overcome the problem of uneven cylinder charging and, that done, to raise the power output to a level comparable with the average single-cylinder 60.

On the basis of test findings with our particular example of the Ross Twin, we feel that Mr. Ross has gone a long way towards the attainment of these goals.

Firstly, the Ross 60 can be said to have set a new standard among flat twin glow engines as regards throttle response. With careful adjustment of the Kavan carburettor with which the engine is currently equipped, we were able to obtain an idling speed of 2,600 rpm on a 12 x 6 prop and provided that the idling periods were not unduly

prolonged, to regain full power again without risk of one cylinder cutting out. It would appear that the Ross arrangement of directly-opposed cylinders (connecting-rods, instead of the complete cylinder, being staggered, to line up with the crankpins) and having the transfer passages in front, instead of on top, has paid off here in achieving much more even mixture distribution.

Mechanically, offsetting the connecting-rods in the pistons is not a good thing and, perhaps as a precautionary measure, initial production models of the Ross Twin have been marketed in a relatively de-tuned state with moderate compression-ratio and early rotary-valve closure. However, Lou Ross has recently told us that the latest revised models are around 1,000 rpm better than the earlier engines and one would assume from this that the conrod bearings have been shown, in practice, to be capable of standing up reasonably well to the uneven loading. Typical prop rpm obtained with our test model Ross 60, on 5 per cent nitro fuel, included 9,600 rpm on a 12 x 6 Power-Prop, 10,500 on a 12 x 5 Power-Prop, 10,000 on an 11 x 7 Top-Flite Super-M and 10,900 rpm on an 11 x 6 Top-Flite Super-M. An improvement in the region of 1,000 rpm on these speeds, as claimed by Mr. Ross, would be the equivalent of an increase in bhp of around 30 per cent,

bringing the Twin's power output up to a level not far short of that of the average single-cylinder 60 R/C engine.

The latest Ross development is an experimental 20 c.c. four-cylinder engine based on the Ross Twin design but with reed type induction valves. This engine will be illustrated and described in the January issue of *Radio Control Models & Electronics*, which will also include some further details of the Ross Twin.

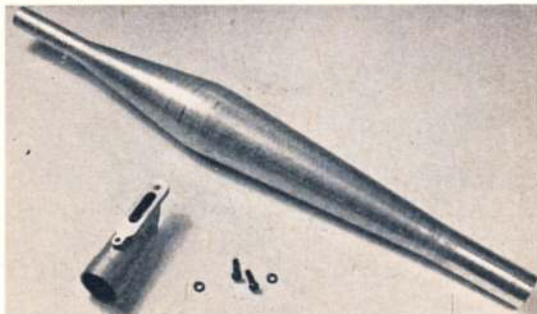
Cooper T/R Special

Alan G. Cooper of Shenley, Herts, has sent along details and photos of his latest home-grown team-racing diesel. This is a most interesting looking piece of work with several novel features that take it out of the rut.

The engine is mostly of machined construction. The crankcase was machined from L.64 light alloy bar stock, but the detachable front end is of S.96 steel. Steel was selected in order to avoid the thermal distortion problems sometimes encountered with aluminium housings. The ball race housings were bored from one end to ensure accuracy and the plain section between the bearings is a separate, replaceable item. The bearings are $\frac{1}{4} \times \frac{5}{8}$ in. and $\frac{3}{8} \times \frac{7}{8}$ in. high speed ball races. The extended prop driver has a special carborundum treated face for use with glass-fibre props.

The cylinder is a steel investment casting and similar in design to that of the Oliver with radial exhaust slits and inclined transfer ports fed by external flutes. The finned cooling jacket was shrunk on before the cylinder bore received its final honing. The piston is of Brico cast-iron. Four long screws tie the complete cylinder assembly to the crankcase, the cylinder having a Desaxé arrangement, offset to the thrust side 0.03 in.

An original departure from conventional diesel practice is the containment of the contra piston, not within the cylinder bore, but in the



Super Tigre tuned pipe is now available for 10 c.c. motors. Exhaust elbow is for Super-Tigre G.60 Speed engine. Many owners report an increase in r.p.m. just through using the elbow on its own.

cylinder head. The head looks more like a glow engine head in that it has deep vertical fins and fits *into* the top of the bore. This arrangement of having the contra piston within an alloy head has enabled light alloy to be used also for the contra piston itself. Aluminium contra pistons have been used in the past but they have always suffered from the disadvantage that, having a higher co-efficient of expansion than the surrounding steel or cast-iron cylinder, they have rapidly tightened in the bore as the engine warmed up and thereby prevented compression readjustments being made. This obviously will not occur with the Cooper engine. The system offers much more effective heat dissipation through the cylinder head than the conventional model diesel arrangement wherein the cylinder head does little or nothing to conduct heat away from the contra-piston.

The induction system resembles the Cox Tee-Dee set-up or, perhaps more correctly, the experimental (1960) Atwood rear-rotary valve redesign of the Cox Olympic that preceded it. A light alloy drum valve is used, driven by a crankpin extension. It runs in a steel-lined light alloy housing that is fitted with a Cox peripheral jet carburettor and intake housing.

The weight of the engine, which is assembled without gaskets, is given as 8.9 oz. It has a bore and stroke of 0.551 in. x 0.624 in., giving a swept volume of 0.1488 cu. in. or 2.438 c.c.

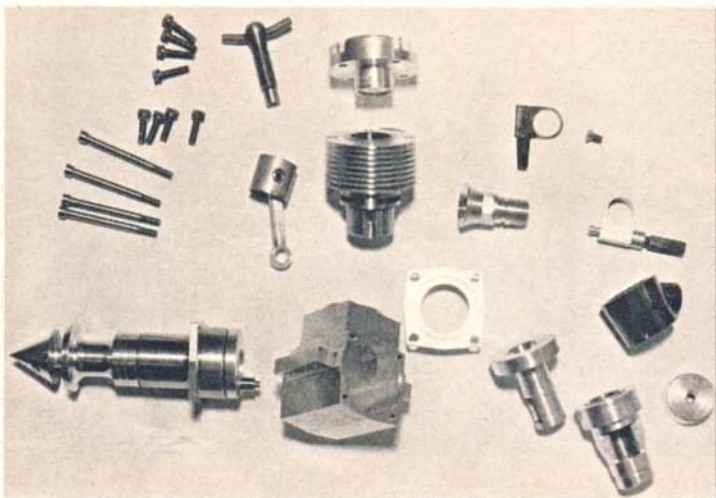
Mr. Cooper tells us that early test flights (engine not fully freed off) indicate average-to-good performance, insensitivity to fuel supply conditions and exceptionally good cooling. Prop rpm figures (static) obtained include 13,800 rpm on a 7 x 8 Bartels fibre-glass, 14,000 on a 7 x 8 Rev-Up and 15,600 rpm on an 8 x 4 Stant.

G.60 Tuned Pipe

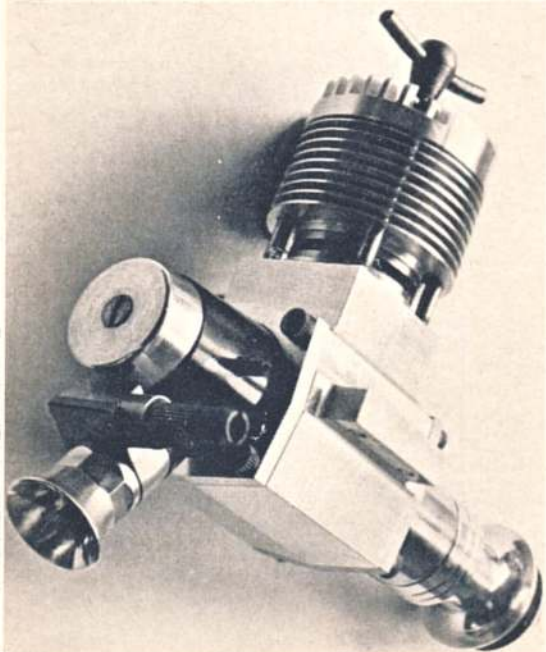
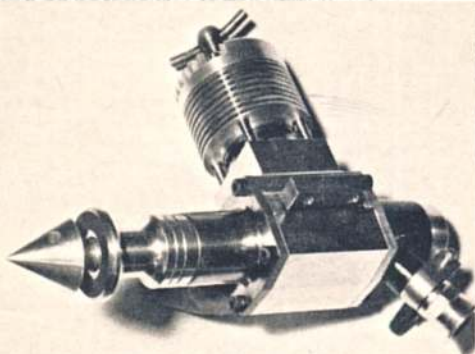
World Engines Ltd now have Super-Tigre tuned pipes available for the G.60 Speed engine as well as for the smaller models. The 60 size pipe weighs 67 grammes (2.36 oz.) or 82 grammes (2.89 oz.) complete with exhaust elbow. Overall length (less exhaust elbow) is 33 cm (13 in.), maximum outside diameter is 39.6 mm, inlet inside diameter is 18 mm and outlet i.d. 11.5 mm.

Taipan 15

Our test report on the Taipan 15 R/C last month omitted to mention that Messrs. Performance Kits are a main distributor for this Australian product.



Parts of the Cooper T/R diesel. Most unusual feature is location of contra-piston - in cylinder head.



Two views of Alan Cooper's highly interesting team racing special. The Cox Tee Dee carburettor and housing is clearly evident - see text for details.



Control-Line team trials for 1971

R.A.F. Cottesmore, September 27
reported by Peter Richardson

Team race members are (from left to right),
Laurie/Clark, Muncaster/Langworth and Heaton/
Ross - the fastest pair.

HELD UNDER good weather conditions on September 27th at R.A.F. Cottesmore, the Trials for the 1971 Criterium attracted relatively few fliers, particularly in the team-race category. In fact, this event, normally the best supported, had only five entries of whom only Heaton/Ross are regular contest winners. Strictly run by Peter Freebrey, the contest was held over five rounds so that each competitor had three flights each, and also flew against each other competitor at least once. The times were in general, slow; only two teams recording sub-five-minute races, being Heaton/Ross (4:40.2, 4:54) and Laurie/Clark (4:49.5). Third place was taken by Muncaster/Langworth at 5:10 with their very nicely-built, Oliver-powered models. Their best model, normally a fifty-lapper was reduced to two pit stops due to a loose backplate. Nixon/Ellis, long time race competitors, were right out of luck with their model, spending much of the day with their E.T.A. dismantled in search of an even needle setting.

Although the speed end of the runway was well populated only six people actually entered the event, and only four recorded times. Brian Jackson, the obvious favourite put in two good runs at 133.2 and 135.5 m.p.h. with his No. 2 T.W.A.-powered model - obviously saving his best engine for when the pressure is on. Bill Firbank, using the same model as at the World Championships, recorded 123.6 m.p.h. and seemed assured of a team place - incidentally, both he and Brian were using the new *Punctilio* speed props to record these times, which will be available in the New Year. Third place was a struggle between Ron Irvine and Gordon Isles, and was not decided until late in the day. Both using '66 vintage T.W.A.'s they each had trouble in getting the pipe to 'come in', Gordon putting in an official speed of 92.05. Ron meanwhile, having borrowed Jackson's tank and carb got in one good practice flight, then proceeded to fly an official flight immediately without altering the settings or changing the prop - very much a 'practice only' item. The result was 117.5 m.p.h. which Isles failed to beat, despite a last-minute effort at 106.5 m.p.h.

Aerobatics displayed the greatest interest with six entries, although barring misfortune it was fairly obvious that the first two places would be occupied by Messrs. Mannal and Blake, the real contest being to decide third place. Brian Turner, forsaking team race on this occasion, had been practising hard for some time with his *Nobler* - a little too hard if the recently repaired fin is anything to go by - and had Tony Davey from Grantham as his main challenger for this position.

The event comprised three rounds, the best two flights to score. First to fly, and to record the highest score of the day, was Steve Blake with a magnificent 910 - more than 70 points in front of any other competitor. Tony Davey followed with a good average score, while Mick Harvey was below form at 566. As expected, Jim Mannal put in a good flight at 818 to hold second place, while Pete Tindal had the misfortune to make a close inspection of the ground. Brian Turner just pipped his rival by 23 points. Round two saw a slight fall in all the scores, and this time Tony Davey scored 15 points more than Turner - the results would be decided on the third round. Steve Blake completed a hat-trick of scores unapproached by anyone else, and Jim Mannal was left in a secure second place. After Davey improved his flying in this round the third position was in doubt to the last flight of the day, but Brian Turner received his lowest score of the meeting, leaving Tony his victor for the day.

However, the widely-differing opinions of the three aero-

batic judges, discovered on close analysis of the score sheets, did not satisfy the S.M.A.E. council that this event had proved sufficiently definitive for the best possible team to represent this country, and thus a further selection trial is to be held early in the New Year.

Team Race. 1. Heaton/Ross (Leigh) 4:40.2; 2. Laurie/Clark (Nova) 4:49.5; 3. Muncaster/Langworth (5:10). **Speed.** 1. B. Jackson (N. Sheffield) 135.5 m.p.h.; 2. W. Firbank (N. Sheffield) 123.6 m.p.h.; 3. R. Irvine 117.5 m.p.h. **Aerobatics.** 1. S. Blake (Buckaneers) 1801 pts.; 2. J. Mannal (Buckaneers) 1652 pts.; 3. A. Davey (Grantham) 1527 pts.

Top placed stunt flyers (from left to right) were Steve Blake, Tony Davey and Jim Mannal, although the team itself is not yet decided. Below them are the speed team, Ron Irvine, Brian Jackson and Bill Firbank. Ron and Brian both used T.W.A.s, Bill an unpiped Super Tigre.





Duncan Barr follows in father's footsteps with an 'Easy B' paper stick model. This is an ideal beginner's project, simple to build and suitable both for high and low ceiling work.

Indoor flying Revival

High performances at Cardington
reported by BRUCE EDWARDS

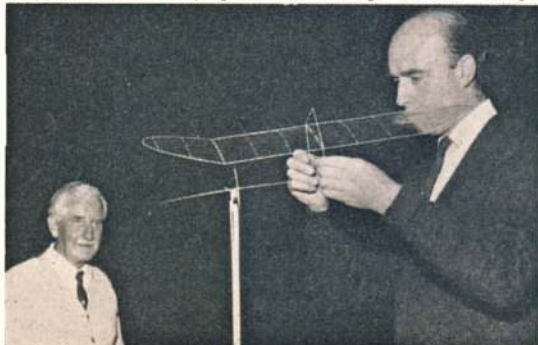
FIVE 'get together' flying meetings were held this year from June through to September, during which time newcomers have had the opportunity to find out what indoor is all about, and the old hands to adjust from the old F.A.I. 90 cm. size of model to the newer 65 cm. specification. New techniques and materials have come into common usage since indoor was last flown in this country so that the time available has been profitably used in getting 'sorted out'.

During July we were lucky enough to have an experienced American flier—Mannie Raddof—in attendance with a model which had done over 30 min. in Lakehurst hangar. Mannie spent much time helping us over our difficulties and showing us the tricks and short cuts used in America. He also offered to get us materials from the States which could represent a considerable saving in time and trouble.

On the whole, models have been considerably heavier than their American and European counterparts, but this has not been a bad thing, as there is every likelihood of a 1 gm. (.0353 oz.) minimum airframe weight restriction coming into force before the next world championships. It is highly probable, in view of the resurgence of interest in this country, that the S.M.A.E. will be expected to hold the 1972 championships here. This will be dependent on the availability of Cardington for an entire week, necessary for the holding of such a competition.

For the first four meetings flight times were kept down, and model weights up, by poor exterior weather conditions which set up turbulence and a high drift rate in the 'shed'. However, at the final meeting on 27th September conditions were ideal so that it was decided to stage an impromptu competition during the afternoon. Reg Parham's recently set 26 min. record took quite a beating. With the 'heat' on, hard luck stories abounded. John Blount scrambled his best model in the roof on his first flight on less turns than he had used earlier in the day. Laurie Barr had the misfortune of seeing his .023 oz. lightweight D/T when well set for 30 min., due to the motor coming off the rear hook. He then creamed it in a steering accident on his next flight. Junior Martin Shepherd's only model suffered a mid-air collision with Bruce Edwards' last microfilm model and had to continue flying with one complete wing bay sans film. Bruce

S.M.A.E. records officer, Stan Wade, assembles his F.A.I. 65 cm. model in run-down stand while old-timer Bob Gosling looks on. Stan's model, a straightforward design with low dihedral, has been flying for six meetings without damage.



continued with a condenser paper-covered *Top Cat IV* (M.A.N. Plan 87A from M.A.P.) which suffered from lack of courage on the part of the winder!

Reg Parham, flying steadily and calmly, topped the pile using his latest much-modified version of the Richmond design, weighing .003 oz. and on his last flight because the first person in the U.K. to top the 30 min. mark with the new model size. The cheer that went up from those present rocked the 40-year-old building to its foundations. One model 50 ft. up was seen to do a barrel roll! Second place man, S.M.A.E. Records Officer, Stan Wade was hot in pursuit, but just could not manage to catch Reg. Stan built two models at the beginning of the season and flew them at all five meetings without damage.

Only seven of the 20-odd fliers present entered the competition. It is interesting to compare the times with the last world champs results from which it will be seen that the top three could have placed 4th, 8th and 9th.

Old-timer Bob Gosling (*Ivory Gull* and *Nordic Tern*) flew a genuine vintage tissue model, 36 years old, which still did 3½ min. (better than it could manage in 1934.) The hand-carved balsa prop was a beautiful example of craftsmanship seldom seen today.

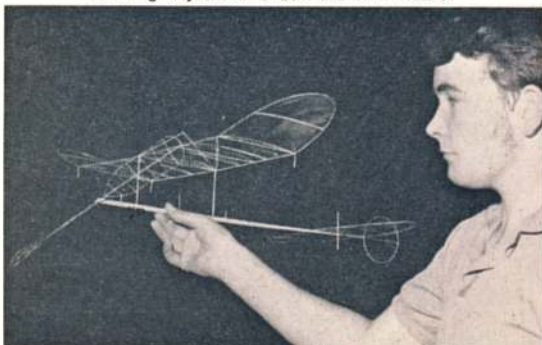
For the winter months we are looking for a suitable hall at an economical rent, as Chessington is no longer available. Anyone with any ideas, please contact Bruce Edwards at 01-969 7349.

Next year it is intended to book Cardington for six meetings, once a month, starting in April and ending with World Championship Team Trials in September. Roll up and join in the fun, like swimming, the water isn't cold once you are in!

	1	2	3	4	5	6	Total
R. Parham	27.40	26.39	29.55	33.13*			63.08
S. Wade	20.25	24.35	26.17	27.48	23.22		54.05
L. Barr	26.16	25.48					52.04
J. Blount	25.21	23.20	20.08				48.41
M. Fantham	16.51	15.20	16.05	17.24	18.02		35.26
M. Shepherd	17.40	12.20	13.00	8.41	14.03	16.58	34.38
B. Edwards	8.30	13.25	13.40	16.38			30.18

*New record awaiting ratification.

Martin Shepherd, St. Albans junior, with his well-made F.A.I. 65 cm. model, his chances in the comp. were spoilt by a mid-air collision which wiped the film from a couple of wing bays. Model still did 17 minutes.





BY WAY OF A CHANGE I thought I would start off this month by taking you on a round-the-airfield tour at one of our major model meetings. The meeting in question, the **South Midland Area Rally**, held on a sunny Sunday in September at the well-known and spacious field at Cranfield, has inherited some of the traditional club excursion atmosphere with which we used to associate the old *All Britain and Northern Heights Galas*.

Quite a number of clubs had turned up in force, most by private car, and others by more collective forms of transport. Some clubs had just come along to enjoy all the fun of the flying fair, whilst others were evidently highly geared for an intensive contesting foray. Typical of the former was the **Impington Village College M.A.C.**, under the genial aegis of artist and model maker Ray Malmstrom. Though perhaps, not too typical, as they made a quite unusual contribution to the sideshow aspect of the rally with a fine collection of vintage models. One, a true vintage machine, and not a modern copy, was a *Flying Minutes* Wakefield, dating from 1937, and still in good flying condition. Another pre-war model, which many of our older readers would have recognised, was a pre-war *Kanga Dragonfly Biplane*, finished like *Flying Minutes* and many pre-war machines in plain white tissue. For the engine spotter there was a *Movo Diesel* obtained from Italy at the end of the war – and a good-looking engine, too. The fly-for-fun club approach is typified by *Imp*, the small, radio-controlled club field glider by member T. King, which was featured in the October *Aeromodeller*.

Striking a more dynamic note by way of complete contrast was the **Maidenhead Combat Team** with an array of highly-finished, bat-like creations lined up outside club-bannered estate wagon. Each model was sat on its own polythene travelling bag, whilst another form of protection for the vulnerable, plastic helmets, were on sale at 15/- each. And demonstrating control par excellence at 120 m.p.h., was Mick Davies of the **Cannock Outlaws** (Staffs.). His 6 c.c. Fox 36X-powered American *Winder* seemed too impossible fast at 120 m.p.h. for anything but a computer to keep track of, let alone evolve. Also in good C/L contest trim was the **South Bristol** contingent with some twenty combat wings on display. Another well-organised group I spotted was the **Bilston M.A.C.**, who had travelled down from Wolverhampton in a converted ambulance – one way of beating the traffic jams.

Up at the free flight end of the drome the officials and timekeepers had a busy day coping with the sort of entry which turns theories on free flight extinction upside down: 70 in glider alone. All the usual F/F clubs well represented, e.g., **Croydon, Norwich, St. Albans**, etc. Good, exciting fly-offs in ideal conditions – no appreciable lift and good visibility.

Back to our usual round-up of reports and bulletins. First we have a letter from Roy Walter-Browne, P.R.O., of the **Denton and District Model Club**. Denton, apparently, is a district of Manchester, and the Denton club is not limited to model aircraft, but caters for all types of model making. A comprehensive turnout then, at the Denton show, where the club had its own stand. Mr. Walter-Browne tells us that the club has received much support and encouragement from the local council who have given permission for C/L flying on a local playing field and allowed the club the use of a room in the Festival Hall, Denton, at a moderate annual rent. Mr. K. Marks, M.P., who visited the exhibition, together with the Chairman and members of the Council, was impressed by the club display and showed a particular interest in the club's activities. We hope to hear more of Denton & D.M.C. in the future.

Summer goes all too quickly, even one as sunny and protracted as we have just enjoyed, and we need think of what to do during those club winter evenings. **Watford Wayfarers M.A.C.**, are hoping to put on a few film nights,

CLUB NEWS

The Chairman of the recently formed **Denton and District M.C.** busily makes a kit during the Club's display at a local exhibition. This type of 'live' demonstration always attracts attention, giving the public an idea of what is involved in the construction of our models.

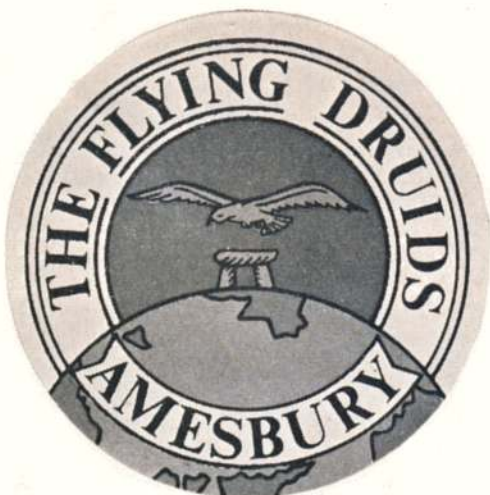
but would like to see members bringing along various items of interest – even model planes.

Something missing from Cranfield but now an integrated part of the movement is Thermal Soaring. This, of course, is R/C Glider flown 'flat' as opposed to Slope, and it is interesting to learn that the **Sussex R.F.C.** have recently introduced a two-tier membership system to cater especially for the new rapidly expanding Soaring section. Seems that, normally, a high membership fee is levied in order to pay for the club field, and presumably, the Soaring members, do not use this amenity, as they pay a lower, non-contributory fee. A slight correction to my previous remarks: the **Sussex Soarers** are not just 'flat' but slope also. Chris Foss, well known for his Soaring activities, is the Asst. Secretary of the club, and it is he who informs us that already the aerobatic soarers are being prepared for the 1971 season. And by way of getting out of the rut, Brian Shaw has produced a model with all moving wings instead of ailerons, but is now building a conventional set of wings. Perhaps the resulting flight pattern shook him rigid! The club now boasts two *Cirrus* models, one built by John Knight from a kit of the parts, and the other, by Ricky Shaw, was projected from a mini 3-view drawing in a model mag. Dead clever, these Chinese. Performances, incidentally, practically identical, though Ricky's all-sheet model rather tougher. Not much interest in Contest flying on behalf of the Power section of the club; the exception being the pylon racing activities of Alan Mann and Chris Foss. Alan flies a very fast *Brigand* which he handles adroitly enough to win such events as the Kent R/C Show on Sept. 6th. Club membership has now reached its permissible ceiling of 30. Limitation necessary because of shortage of parking rather than air space.

Contrary to anything we may have written previously, we are asked by Tony Grantham of the **East Grinstead M.F.C.** to state that his club enforces no ban on R/C models. In fact, a number of members do fly the things for sport, but mostly members are too involved in F/F contest flying to give much heed to such novelties. Paradoxically, Robert Owen actually thinks you lose more R/C models than you do F/F; and he should know, having experience of the homing instincts of both breeds. But club F/F flying is not all plain sailing; the soil at the Horne site seems productive of huge pylon growths. Fortunately they lie upwind of the usual prevailing draughts, but tactical glider fliers are warned against excessive perambulations. R/C fliers in the club are seeking expert advice on the possible effects of a H.T. current field on radio signals. Personally I have seen quite a bit of flying on a pylon-infested field where all crashes, etc. occurred for the usual nittyish reasons. No pylons, however, at cheerful Chobham, where the club is holding its usual Autumn Gala. Be all over before these words get into print, but I hope I manage to get along. Anyway, in order to provide good organisation and timekeeping, the club members will not be flying. To end on a note of silent caution, the club was asked to demonstrate C/L flying at a council site overlooked by the civic offices. A thumbs-up result, subject to all models being effectively silenced.

Mr. F. Powis, together with a few local model enthusiasts, is trying to form a club in the Preston (Lancs) district. The name of the club is to be **The Preston Model Aircraft Society**, and meetings are to be held fortnightly at 'Marge's', 30 Plungington Road, Preston. (Could it be a rather daring dress shop?) Anyone interested should get in touch with Mr. Powis at 197 Havelock Street, Preston, or phone Mr. Roland Whiting at Preston 718675. All types of modelling will be catered for (then it is a dress shop!).

Yet another new club under way – this time in Salisbury. Duncan Webb is the P.R.O. of the newly-formed **Sarum Skylarks M.A.C.**, and he writes to inform us that the inaugural meeting was held back in June and membership is



already in the region of 18. Club activities will cover the whole spectrum of model flying, and it is the purpose to achieve a nice balance between the various sections, so that you do not get the situation of which Mr. Webb has experience, where members are overawed by a centre core of multi radio fliers. Flying field is the entire acreage of a large farm, giving a wide choice of crops in which to come a cropper. Odd that none of the clubs in this area seem to use the celebrated Salisbury Plain for model flying. Either it is prohibited or the Plain is just another myth like Wigan Pier. You may find the answer to this if you drop in at the Salisbury Model Centre, Fisherton Street, on Tuesday at 8 p.m. Meetings held fortnightly.

A very stylish newsletter from a somewhat newish club, the **South Essex M.A.S.** The Chairman, D. G. Rolfe, who has kindly sent us along the copy, tells us that it is the first issue of what is hoped to be a regular monthly bulletin. He also informs us that the active and growing membership, now at 30-plus, involves itself in all aspects of the sport, including that rarified hybrid, indoor flying. In fact, the club is holding an open indoor meeting (yes, I know it sounds daft!) at the St. Augustine's Hall, Thorpe Bay, on Wednesday, 25th November at 8 p.m. Fly-for-fun only, refreshments available, and models will fly to music (not, please, the Lost Chord). A 2/- admission charge will be made to non-members. Thorpe Bay, incidentally, is just a cockle's throw along the Fenchurch Street line from Southend. A popular club event held back in August brought Dad's Air Force out in full nostalgic strength, if you could call six Keilcraft Ajax kit models that. But quite a lively afternoon on Leigh Marshes, with a nice cosy pre-war flavour about it. Winner of the event was the Chairman, who put up the quite astonishing three flight average of 72 seconds. He actually hooked a thermal. First talk of a series of monthly special meetings is to be given by Ken Tansley. His 'forty years on' model flying career goes back to the pre-balsa year of 1931, but still on the ascendancy, particularly as he has now taken up slope soaring. Why not add scope to your modelling career by phoning Mr. Rolfe at Southend 87633.

A club throwing down the gage, albeit in the most friendly way, to other clubs in the area, is the **Blackburn & D.M.A.C.** (Lancs.). Radio is the main interest, so presumably, the contest challenge is for this class of model. Popular equipment with members is Ripmax/Futaba *Digimax* gear, but no reason given, although this may be self-evident to radio fans. Club meetings are held at Pleasington Playing Fields on Sunday afternoons and at Laund Hey, Haslingdon, in the morning. C/L also flown. Telephone Norman McFarland, P.R.O., at Rossendale 4285.

Even in the aeromodelling, human nature now and again rears its ugly head, and it is because a few members have been letting their spleen get the better of their common sense that rumours of a possible closure of the **Heswall M.A.C.** have been circulating of late. However, such rumours are firmly discounted in the September newsletter, and to underline the fact that the club health is generally excellent in spite of a certain amount of bad blood an extra twenty seats will be available at future meetings, where discussion will be limited to modelling topics only. Catering amenities include refreshments and model goods. A poor attendance though, at the 'At Home' held in August, but nevertheless most enjoyable. Special guest, the Vice-Chairman of Wirral Council and his wife, were delighted with the displays, static and active, and were given a 1/48 Scale Hurricane as a memento. 'Mark', a junior who contributes a lively and informative column to the club newsletter, was impressed by the *Black Widow* he saw at the Woodford Rally. And very impressive, too, it looks in our November issue, that is, if

you can take your eyes off Miss Aeromodelling!

The **Wharfedale Club** took the recent Northern Area Rally by storm, with firsts in F.A.I., 1/4A and B team races and a number of other high placings. Big guns in action were combos Place/Howarth, Turner/Hughes and Horton/Kirton. In the Rally championship table, Wharfedale members were joint winners, and second, fourth and fifth. On the home front club funds have gone up by over £7 as a result of flying displays given at various functions.

It is pleasant to read of clubs giving time to the social side of things. The **Leicester M.A.C.** offers us a good example with a Social and Dance to be held at the Shakespeare's Head, Braunstone Lane, on November 27th. Tickets a modest 6/-.

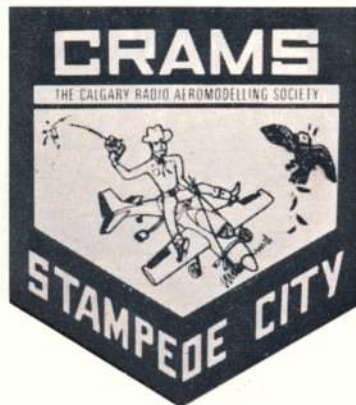
Seadog, the newsletter of the **South East Area** informs us that, due to the non-availability of Tangmere, the South Coast Gala was cancelled. Flying space, of course, very much at a premium in this congested corner of our island, yet nevertheless the enthusiasts make do with what they can get, and the newsletter is full of summertime contest results. Details are given here of the format for the *Towner Thermal Soaring Trophy* which is to be held annually under the area auspices. Rules are those which are now more or less standard for Soaring, and which work out very well in practice.

Back in August the **Buckaneers Model Club** had quite a field day at the Finmere Stunt C/L Championship where the top two places were filled by Buckaneer members: first Steve Blake and second Jim Mannall. The flying is said to have been to a very high standard.

It is all too easy to put a foot wrong in the delicate by-ways of airfield discipline. From *Message*, the **N.W. Area Newsletter**, we learn that the Area got something of a rocket from the C.O. of R.A.F. Burtonwood. Seems that when the model fliers manage to get hold of an airfield they make hay while the sun lasts. This over enthusiasm, however, prevents the grass contractors from making hay as it tends to flatten the tufty turfs. Even angels would fear to tread... Also rather amusing is a denial from the Area Chairman that R/C Pylon Racing was cancelled because of danger to the F/F contestants. In fact, it was cancelled due to danger to the public! The mag includes a mini-plan of Roy Roberts's *Dolphin* chuck glider. Very sleek-looking job. Shall try to build one during the winter - d.i.y. permitting.

Sorry to see that Maurice Doyle, whose name is almost synonymous with model flying in **Northern Ireland**, is retiring from the editorship of *Nitro* after three very industrious years. We can only hope that a worthy successor is found to carry on the good work. Commenting on our glorious summer - though too hot, by some standards in Northern Ireland - Maurice tries to recall when you could last indulge in purely vertical flying. No doubt there's been more 'vertical' days this year than for many a decade. Not that 'horizontal' flying gets much of chance these days. The report from the Castlereagh ground was of it being overrun by hordes of kick-happy footballers, whilst at Bishopscourt there was an Army parachuting exercise in full swing. Made the visitors in question wish they had picked up a couple of female hitchhikers after all.

Clubs may come and clubs may go, but steadfast to the cause of free flight, the **Croydon & D.M.A.C.** seems to march on for ever. This year again saw them battling for honours in the free flight trials. Hopes in the second leg were centred mainly on Bryan Spooner who had topped the A/2 list in the first trials and was fourth in Wakefield. And it proved to be his day right enough in more than one sense. As if a double-seven flight entry is not a tough enough ordeal he had to lay himself unconscious when the rear anchor of his motor slipped. (Was he looking down the winding tube at the time?) In spite of this, he maintained his glider position, as well as making the Wakefield team. Tony Young made a gallant recovery from a first leg four-



teenth in the A/2 to finish fourth and Martin Dilly and Pete Jellis suffered from a series of line crosses. Supporting cast included Jack North dispensing bubbles and John and Dawn Blount handing out the tea from their Caravette. An aquatic display was given by Captain John O'Donnell and crewman Martin Dilly in the former's leaky inflatable dinghy. A sort of Kon-Tiki in search of lost balsa models.

The fact that Stan Perry of the Wolves M.A.C. has been caught muttering and sanding away at broom handles has nothing to do with a new v.t.o. job for Hallowe'en - he has been making a stand for static displays.

Gallazzi Giuseppe, a young man from Italy, confesses to have been smitten by the glider bug. He has now gone radio and is keen to make a Kwik Fly Mk. III aerobatic job. He would also like to enter into correspondence with other young modellers. His address is Via G. Deledda 12, Busto Arsizio (VA), Italy.

Finally, if you are interested in swapping your *Scale Models* magazines for Czechoslovakian model mags., just drop a line to Jiri Sreiber, Teplicka 619/18a, Decin IV, Czechoslovakia.

A Happy Christmas to you all.

THE CLUBMAN

SOUTH EAST AREA C/L STUNT CHAMPIONSHIPS

Organised by the *Three Kings Club*, who also supplied the judges, this meeting attracted nine entries, mostly not 'regular' competition fliers. The weather, although dull, was calm, providing good conditions and the only prang of the day was attributed to R. Smith of Horsham, who failed to recover from a wing over with his nicely-finished *Aries*.

First to fly and eventual winner, Mick Harvey, making what proved to be his best flight of the day with his O.S.50-powered *Skyscraper*. The O.S. is detuned by fitting a smaller (5/16 in.) venturi, whilst the O.S. silencer has the rear reduction ring fitted, yet it still has ample power for the 68 oz. model. Pete Tindall from Dagenham flew his own-designed Sabre jet stunter (O.S.35 powered) to a well-deserved second place, in front of Dave Morbin (Three Kings) with his newly-built *Nobler* - similarly powered. His flying accuracy has greatly improved with this model.

Results:

1. M. Harvey (Three Kings) 893 pts.; 2. P. Tindall (Dagenham) 787 pts.; 3. D. Morbin (Three Kings) 697 pts.; 4. R. Stepney (Horsham) 634 pts.

SOUTHAMPTON M.A.C.'s C/L STUNT COMPETITION

The Southampton club's first stunt competition at Beaulieu on October 18th was blessed with fine weather and a good entry of 15. Most of the regulars were there and praised the ideal site, normally used for radio flying. The contest was won by Steve Blake with just 2 points over Jim Mannall with the rest of the field well bunched behind with average scores. Only one crash occurred when Mick Harvey connected his lines opposite on his *Skylark* - he ought to know better!

Results:

1. S. Blake (Buckaneers); 2. J. Mannall (Buckaneers); 3. B. Turner (Wharfedale); 4. F. Pateman.



Mick Harvey of the Three Kings Club, won the S.E. Area's stunt contest with his familiar O.S. 50-powered 'Skyscraper'. Large model prefers the calmer conditions, where it can demonstrate its smoothness.

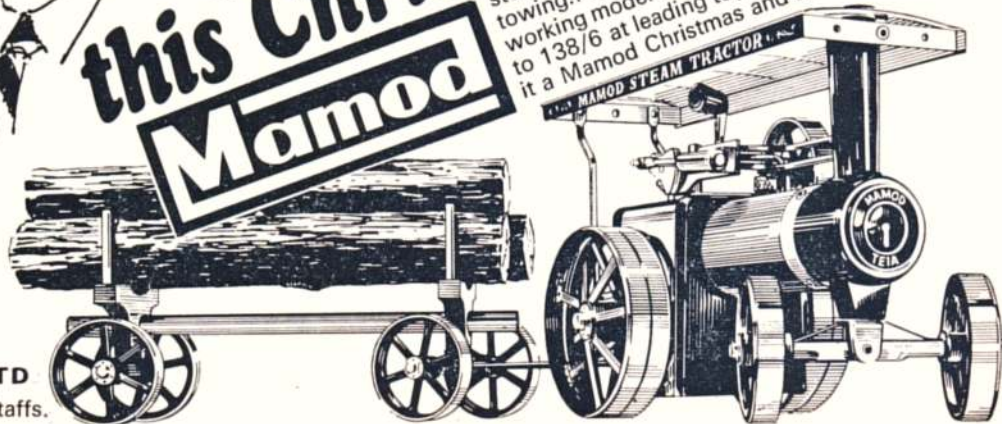


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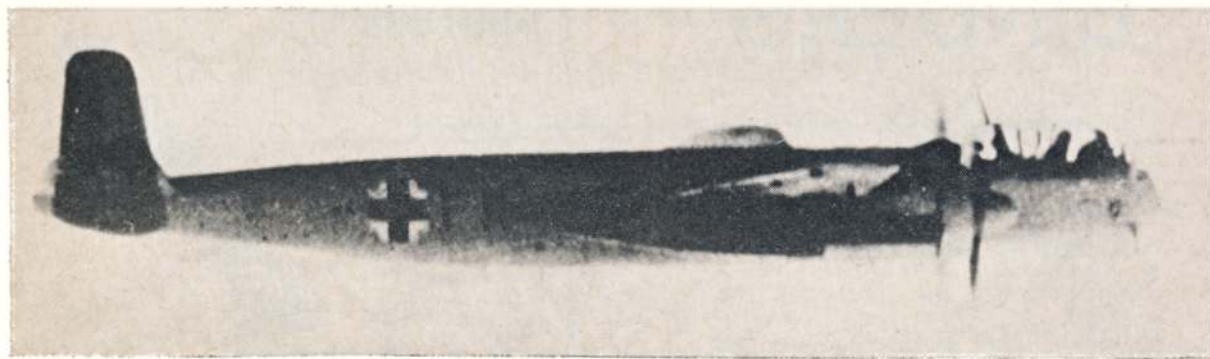
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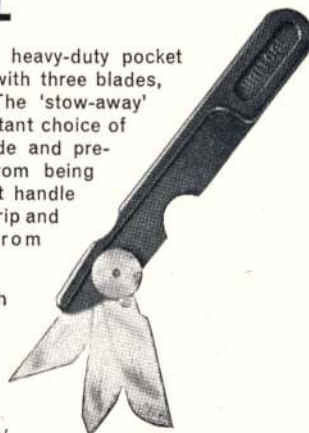


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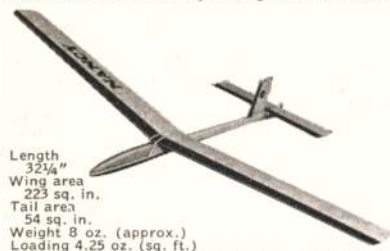
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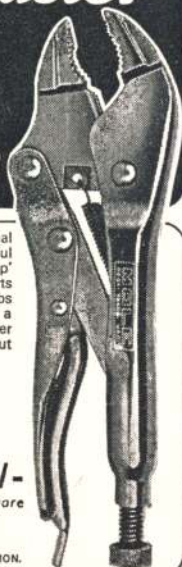
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Also in this issue will be plans from Switzerland for Franz Mein's 56 in. span Sopwith Camel. One of the most famous W.W.1 biplane fighters, the Camel is an obvious subject for R/C scale modelling and our two sheet plans provide all the detail necessary.

December issue marks the beginning of a new series on 'R/C Yachting for Beginners', which will explain in simple terms the techniques of sailing R/C model yachts. This series will be based on the use of commercially available equipment, avoiding the problem of home-made sail winches and other specialist equipment.

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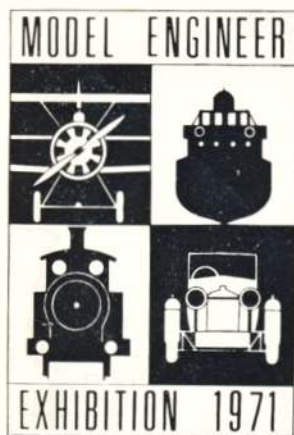
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SOUVENIR GUIDE

Another CHRISTMAS EXTRA issue of *Model Engineer* will be coming out 2nd Friday in December with entries, trade stands, articles galore to assist the visitor and solace the stay-at-home.

FEATURES

**RADIO CONTROL POOL
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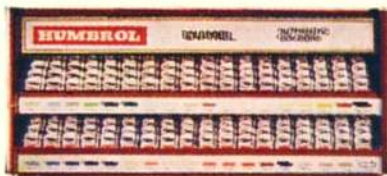


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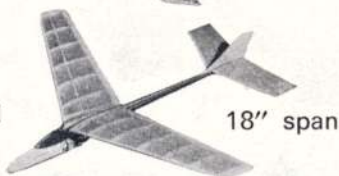
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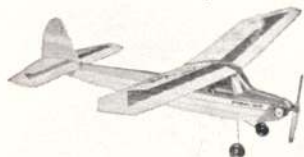
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