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MAY 1961

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Closing date: July 7

AIRCRAFT ENTRY CLASSES

SENIOR

AA Rubber-driven
AB Free-flight power-driven
AC Control-line
AD Sailplanes
AE Non-flying models
AF Scale free-flight or control-line
AG Radio-controlled models

JUNIOR

AH Any model by a junior under 16 on August 16, 1961.

CLUBS

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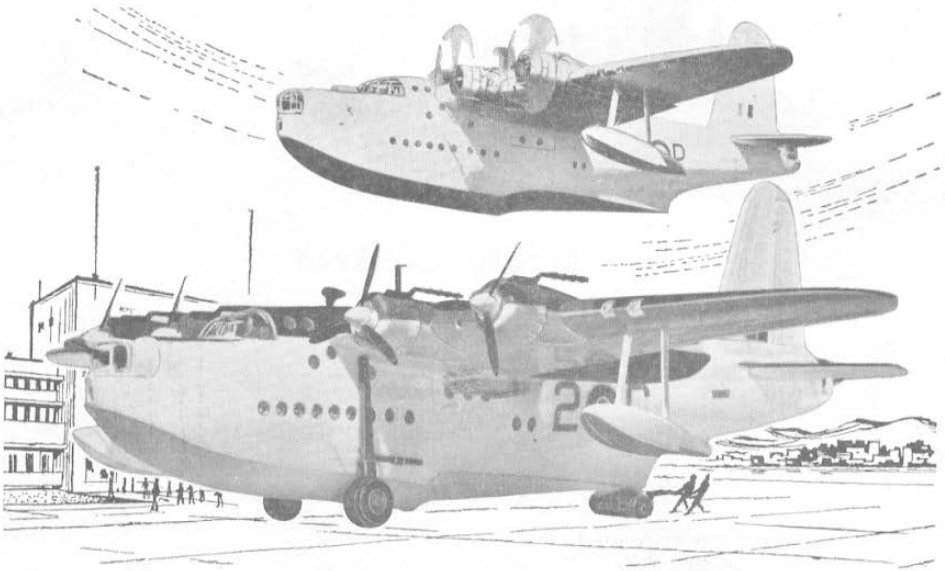
CENTRAL HALL S.W.1 · AUG 16 - 26

11 a.m.—9 p.m. daily. Closed Sunday. Admission 3s., under 15's 1s. 6d.

NOTE NEW VENUE: *This year's Exhibition will be held at Central Hall, Westminster, S.W.1, near Westminster Abbey in the heart of London. The emphasis will be on models more than extraneous attractions, so be sure to enter yours to win one of the numerous prizes.*



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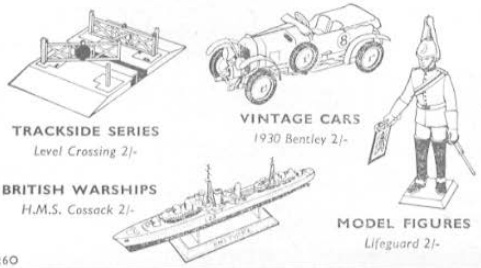

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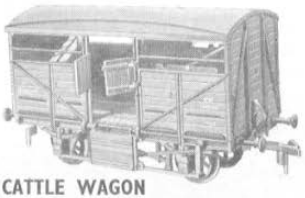

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MODEL aircraft

MAY 1961

No. 239 VOLUME 20

The official Journal of the SOCIETY OF MODEL AERONAUTICAL ENGINEERS

IN THIS ISSUE

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Here and There

IN our article "Radio Installation" last month we stated that weather permitting, we would be reporting, in this issue, on the flight testing of our *Super* 60.

Unfortunately, the weather did not permit! Following a spell of beautiful flying conditions while we were putting the finishing touches to the model, the weather broke, and, seeing from our office windows the flags that bedeck most of London's tall buildings stretched horizontal, reluctantly decided that our first R/C outing would have to wait. However, unless there are 30 non-flying days in the coming month, our report will definitely appear in the next issue.

Incidentally, we must correct an error in the article where we stated that it was important to use the 2 volt Fred Rising clockwork escapement for engine control. In fact, *all* the escapements are for 3 to 6 volts working. We fell into the trap of thinking that because the figures 2 and 4 were written on the box in the space marked voltage, this is to what they referred. The figures actually referred to the number of pawls.

Model Aeroplaning

WE recently received from J. S. Pole (a name that will become better known to readers of MODEL AIRCRAFT, as he is writing his impressions of flying "vintage" aircraft, which we will be publishing in conjunction with appropriate plans), a copy of a most fascinating handbook published in 1910 entitled "The Theory and Practice of Model Aeroplaning" by V. E. Johnson.

In his letter accompanying the book Mr. Pole states: "I think 'Aeroplaning' as a verb is a nice period touch. Before the first war I had a model aeroplane exactly like the tail-first pusher illustrated in the book. It was German, made from silk and aluminium tubes, and I lost it in the top of an elm tree in Hyde Park! Perhaps it's still there!"

Whether Mr. Pole's, or, come to that, any other models of the period, are, in fact, still in existence or not, some of the ideas in this book are definitely valid today. The frontispiece illustration, showing a pair of scales, is captioned "The most important 'tool' in the building of model aeroplanes." Will anyone quarrel with this statement?

Naturally, not all the advice has aged so well but in the basic aspects of "Model Aeroplaning" this book is virtually timeless. We wish it were possible to go into greater detail but three quotes, especially topical in view of Jack North's recent article on "Testing Rubber Motors," are worth recording.

Choice of Rubber. ". . . Only the best Para rubber should be bought;

to obtain it fresh it should be got in as large quantities as possible direct from a manufacturer or reliable rubber shop. The composition of the best Para rubber is as follows: carbon, 87.46 per cent.; hydrogen, 12 per cent.; oxygen and ash, 0.54 per cent. . . ."

On the use of "Lubricants." ". . . The only oil which is said to have no action on rubber, or practically none is castor oil; all the same, I do not advise its use as a lubricant. There are three lubricants only which we need consider: 1. Soda and water; 2. French chalk; 3. Pure redistilled glycerine.

The first is perfectly satisfactory when freshly applied, but soon dries up and evaporates. The second falls off; and unless the chalk be of the softest kind, free from all grit and hard particles, it will soon do more harm than good. The third, glycerine, is for ordinary purposes by far the best, and has a beneficial rather than a deleterious effect on the rubber; but it must be pure. . . ."

To Test Rubber. "Good elastic thread composed of pure Para rubber and sulphur should, if properly made, stretch to seven times its length, and then return to its original length. It should also possess a stretching limit at least 10 times its original length. . . ."

Flying Code

CONCERN over the proposed increase in model insurance premiums, suggests the need for modellers to emulate the Highway Code with their own safety-first code of flying field conduct. Like driving with care, flying with care is largely a matter of plain common sense and courtesy, plus, of course, a little know-how in avoiding the various hazards.

Accidents mostly occur when enthusiasm gets the better of restraint. The novice is all too eager to try out his new power model on the first available cabbage patch; the experienced modeller, who should know better, takes a chance with a suspect trim; the control liner stakes out his pitch in a small, crowded park; and the radio flyer prefers to overlook that sticking escapement. In other cases the flyer seems to be totally unaware of the damaging impact of which his model is capable.

Limited flying space, too, adds to the risks. Models, which by virtue of their size and speed, are suited only to wide, unobstructed stretches of out of town airfields, are too often flown on crowded commons and small open spaces. This is particularly true of radio and power competition models, and people who specialise in these types of model would be well advised to limit their activities to the occasions when they can get out to a sizable airfield. This should not be too great a hardship now that so many modellers have personal transport.

If we were to devise a simple set of safety rules which could be easily remembered, they would cover the following points:

1. Never fly upwind of a crowd.
2. Pack up rather than risk injury to the public.
3. Check your model before each flight.
4. Trim out in a quiet spot.
5. Never fly an unsafe model.
6. Never show off.

Space Suiting

WITH this small island of ours expanding within itself so rapidly, it is understandable that the problem of model flying space should become yearly more crucial. To aggravate the issue there is also the expansion within our own hobby to consider, the trend of which is towards an increase in the mechanical weightiness of one form or another of controlled flight.

The modeller often claims that he is deprived of his flying field by summary official action, arising out of complaints which he, himself, regards as trivial. In many cases his resentment is justified, but at the same time it behoves the modeller to fit himself into the communal pattern with the least possible friction all round. That is plain common sense, and in considering the use of a particular flying area he would be wise to ask himself a few adult and pertinent questions on the suitability of the type of model he wishes to fly. Nor would it be amiss for him to try to imagine himself in the position of anybody he is likely to offend.

There seems little point in protesting that such and such a site is the only one available in the district, when, indeed, the site, by its nature and locality, cannot be used for certain types of modelling without causing nuisance to the public. This is certainly true of C/L flying in the small open spaces of urban areas. The intrusive and continuous engine noise can be a nuisance, and all the arguments in favour of model flying as a culturally worthwhile hobby etc., cannot gainsay this very hard and obstinate fact. And it is very much a fact that must be responsibly considered if we expect to remain on good terms with the public and also the authorities who are often at pains to provide us with facilities.

Perhaps the best way that clubs and individuals can preserve, and, indeed, expand their flying facilities is to suit the model to the flying field. If reason suggests that your nearest open space is suited only for gliders and rubber models, then limit it to that form of recreation. Where the interests are more mechanical you may have to travel further afield. Tiresome, no doubt, but not impossible in these highly mobile days.

If we accept the restrictions that modern conditions impose on the hobby we are being realistic, and we only run into trouble by pretending they do not exist.

Exchange Arrangements

BY coincidence, our post bag the other morning contained two similar requests from opposite ends of the earth. J. D. Miller, 4, Ivy Avenue, Ryton, Co. Durham, edits the North Eastern Area News Sheet, and would like to send copies to clubs or persons abroad, particularly in the U.S.A. or Canada. K. Buckley, 13, Konine Road, Ellerslie, Auckland, New Zealand, edits his club's newsheet and would like to exchange copies (and ideas) with other clubs.

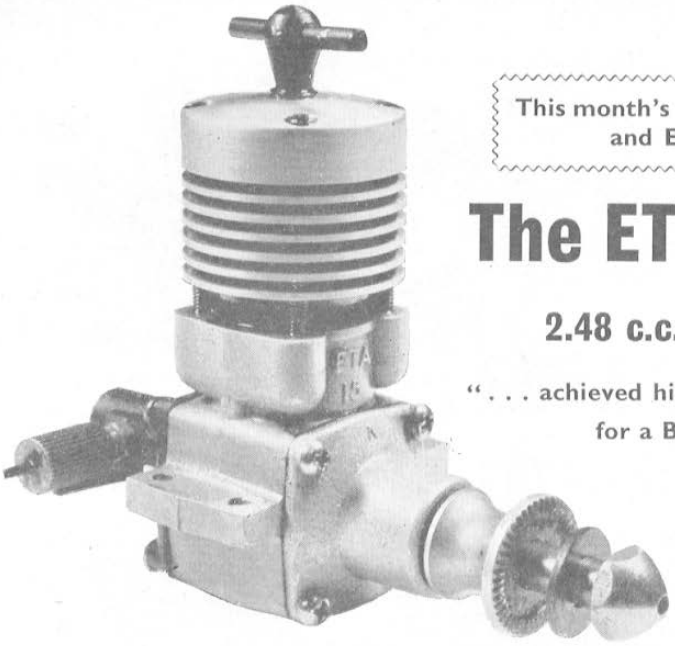
It certainly helps the international spirit of acromodelling to exchange news and views in this manner, and any readers interested should get in touch direct.

On the Cover

RADIO controlled gliders, although not a strong competition class, have a special fascination of their own. The example on our cover this month is the work of Rolf Campolongo of Switzerland and although fitted with rudder-only control is the machine with which he won the glider class at the 1958 International R/C Meeting.

M.E. Exhibition

ENTRY forms for this year's Exhibition, which is being held at the Central Hall, Westminster, from August 16th to 26th, are now ready and can be obtained from the Exhibition Manager, 19-20, Noel Street, London, W.1.



This month's tests—the ETA 15 Mk. I and Enya 15D Mk. II

The ETA 15 Mk. I

2.48 c.c. Diesel motor

". . . achieved highest output yet recorded for a British made stock 2.5 . . ."

FOR this month's report we have two of the most powerful diesels in the 2.5 c.c. international contest class at present available. These two engines, the British Eta 15 and the Mk. II version of the Japanese Enya 15-D, make an interesting comparison. Tested under similar conditions, their performances were extremely closely matched, yet each is of distinctive and quite different design. On the one hand we have a rear disc-valve induction motor with radial porting and having, among other things, smaller than average crankshaft, separate front housing, twin ball-bearings and a flat-crown piston with a new shape in combustion chambers. In contrast, our second motor is of the loop-scavenged layout, has front rotary-valve induction through a shaft of abnormally large proportions, integral front housing, containing a single large ball-bearing and a bronze outer bush, and a conical crown piston.

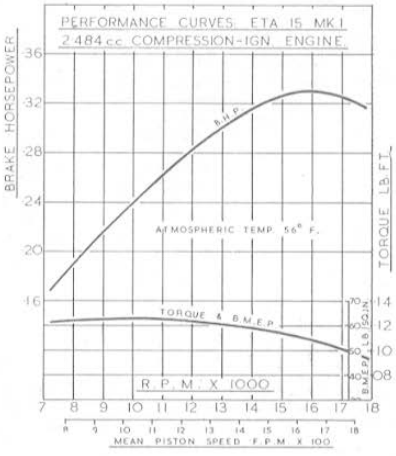
Eta 15 Mk. I

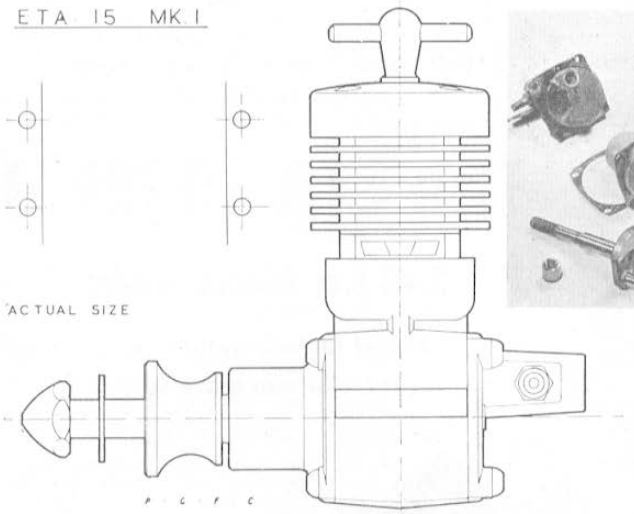
In 14 years of model engine production Eta Instruments Ltd., of Watford, have manufactured only four main types: a 5 c.c. diesel, the 0.29 cu. in. and 0.19 cu. in. glow-ignition series and the "15" diesel. Right from the original "5" diesel of 1947, however, Eta engines have been noted for high quality construction. Moreover, the "29"—incidentally, developed through at least eight or nine distinct production models in a dozen years—has been in a class of its own, so far as British engines are concerned, and has been the only domestic product capable of equalling or exceeding the performance of American equivalents in Class "B" team-racing.

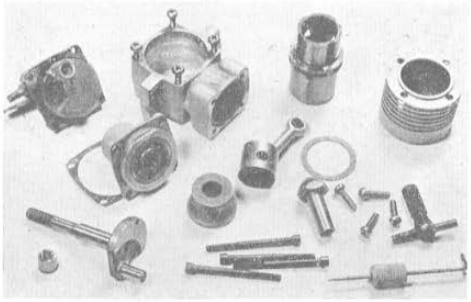
Even with such a background, however, the manufacturers, with no previous experience in 2.5 c.c. contest diesel design, were confronted with no easy task in their efforts to produce a new engine that would exceed the best stock 2.5 diesel performance then realised. The claim for an output of over 0.32 b.h.p. which accompanied the announcement of the Eta 15, just over a year ago, certainly caused a few raised eyebrows, but evidence that this was no idle boast is to be found not only in our test findings but also in the first-rate field performances which these engines have been achieving in both team-racing and F/F.

Like the Eta 29 and unlike any of its competitors, the 15 features detachable front and rear crankcase units, each of which is secured to the main casting by a squared flange and four Phillips head screws. Both units are positively aligned with the crankcase by closely fitting bosses. Paper gaskets are used between the joint faces. The front unit, forming the bearing housing, contains one $\frac{3}{16}$ in. i.d. × $\frac{1}{2}$ in. o.d. Hoffmann nine-ball precision bearing at the front and a $\frac{1}{4}$ × $\frac{3}{4}$ in. seven-ball bearing at the rear. The back component, comprising backplate, carburettor and rotary valve unit, features an integral intake and has a Tufnol valve rotor rotating on a fixed, screw-in pin. A pair of shim washers are provided with each engine to enable rotor wear to be taken up.

The carburettor has a venturi section and although throat diameter is not particularly large, actual choke area is quite generous since no spraybar is used, the needle passing across the throat to enter the jet drilled in the inlet nipple on the other side. Incidentally, the nipple is rather on the large side for fuel tubing such as would be used with normal diameter fuel-tank outlet pipes. This can be overcome by warming the nipple, when fitting the tubing, so that the latter is softened. The venturi opens smoothly into a quadrant valve aperture, which, in conjunction with a 90 deg. segment in the rotor, gives a 175 deg. induction period beginning at 50 deg. ABDC. There is a sub-piston







The component parts of the Eta 15 Mk. I.

supplementary air induction period of approximately 50 deg.

The crankshaft looks very small for a modern 2.5, mainly on account of its small journal, the larger diameter being only $\frac{1}{4}$ in., stepping down to $\frac{3}{16}$ in. at the front. Such modest dimensions would not, of course, be practical in a shaft-valve engine. The crankshaft is counterbalanced, having the web flanks cut away on the crankpin side and a machined-in counterweight on the opposite side. Both journal and crankpin are solid. Drive to the prop is conveyed through an alloy hub mounted on a steel split tapered collet. A $\frac{1}{4}$ in. dia. sleeve-nut offers ample length for the coarsest pitch props and requires shortening or packing with washers with some fine pitch airscrews.

Much of the Eta 15's high performance is undoubtedly due to its cylinder design. Radial porting is used, featuring four exhaust ports and four transfer ports spaced between them and fed from external flutes. Exhaust timing is approximately 72 deg. ABDC—72 deg. ATDC. In accordance with the latest trends, the transfer timing is within 5 deg. or so of the exhaust, although it is difficult to state the overlap to within a degree or two, since the transfer ports are very steeply inclined, so as to be at a shallow angle to the cylinder axis and thereby offer the minimum of directional changes for the inflowing gas. With such steeply inclined ports, extremely precise working becomes necessary to ensure that the height of each port, where it breaks into the bore, is exactly the same as its neighbours, but only a slight variation was apparent with the Eta. The ports and external flutes, incidentally, are of rectangular section instead of the usual round section. To give ample strength where the transfer and exhaust overlap, yet preserve adequate port area for the rapid initial release of exhaust gases, the exhaust ports are wider at their top edges and a substantial flange surrounds the liner at this point.

The actual cylinder walls are also very thick—i.e. 0.096 in. above the ports, where maximum heat is generated—to minimise the possibility of distortion and improve heat dissipation. Efficient heat transference is also aided by a closely fitting finned cooling barrel with dull, blue anodised finish. The lower section of the liner is closely fitted and accurately aligned in the crankcase and four long screws, passing through the barrel and into deep lugs in the main casting, tie the complete assembly together.

The crankcase is a very well produced pressure casting and incorporates feed channels which register with the transfer flutes in the liner. A neat refinement is the manner in which these channels are chamfered inward at the top to assist in directing the gas flow through the cylinder ports.

The piston is a conventional flat topped type but is used in conjunction with an unusual contra-piston design. This is flat over most of its under surface but has a central concave depression covering about 37 per cent. of the piston head area. (The complete lack of reliable theoretical information concerning model diesel combustion phenomena, discourages speculation on the precise effect of the Eta's combustion chamber shape, but it is interesting to note that, on examination of the test engine, carbon deposits on the piston crown were found to be entirely concentrated in the centre portion exposed to the concave section of the contra-piston.) The piston has a pressed-in gudgeon-pin and a machined dural connecting rod with bronze bushed ends. A washer is installed on the gudgeon-pin on one side of the conrod to limit sideways movement.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged, two-stroke cycle, compression ignition. Rear rotary disc-valve induction with sub-piston supplementary air induction.

Bore: 0.558 in. Stroke: 0.620 in.

Swept volume: 0.1516 cu. in. = 2.484 c.c.

Stroke/Bore Ratio: 1.11: 1.

Weight: 5.8 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase with detachable diecast front housing and backplate. Counterbalanced, hardened crankshaft of 5 per cent. nickel-chromium steel with $\frac{1}{4}$ in. dia. main journal and $\frac{3}{16}$ in. solid crankpin and running in two Hoffmann ball journal bearings. Cast steel cylinder liner, hardened, ground and honed. Piston of Mechanite with pressed-in silver steel tubular gudgeon-pin. Machined duralumin connecting-rod with phosphor-bronze big and small end bushes. Mechanite contra-piston. Tufnol valve rotor. Prop driver and sleeve nut machined from duralumin. Prop driver located on shaft by mild steel split taper collet. Mild steel compression screw with black anti-rust finish. Plated brass needle-valve assembly with spring-ratchet for needle setting. Beam mounting lugs.

Test Engine Data

Running time prior to test: 6 hours.

Fuel used: Frog Powa-Mix (castor base, 3 per cent. nitrate).

Performance

Starting qualities of the test Eta 15, both hot and cold, were excellent. It was unnecessary to port prime for a start from cold and warm re-starts merely required one preliminary choked flick. Easy starting was also maintained on quite small props. Simplicity of

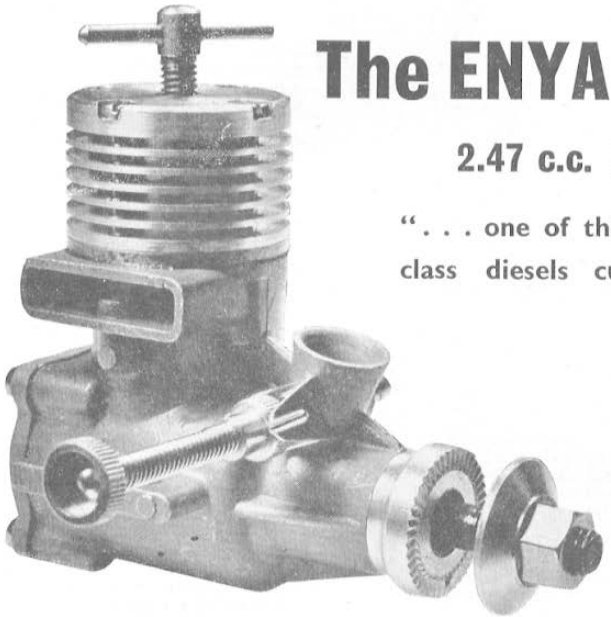
starting and the safely located needle-valve control are two good reasons for suggesting that this is one contest motor that even the most inexpert modeller could handle with confidence. Under light loads, however, the Eta did become a trifle critical to control adjustment, it being necessary to relate compression and mixture setting closely to maintain maximum power and even firing. There was, even after several hours running, a marked loss of power on warming up from cold at the lower speeds. This tendency was less evident as loads were reduced and was non-existent above 11,000 r.p.m.

On test, the Eta developed its maximum torque in the region of 10,000 r.p.m., relative b.m.e.p. reaching 63 lb. sq. in., which is very good indeed. The torque curve was very flat and declined slowly, as a result of which the maximum output was determined at just on 16,000 r.p.m. where the motor reached 0.33 b.h.p. In terms of propeller speeds, the Eta recorded 9,900 r.p.m. on a Top-Flite 10 × 3½, 10,400 on a Tornado 10 × 4, 9,150 on a Trucut 10 × 4 9,200 on a Tornado 9 × 6, 12,300 on a Keilkraft 9 × 4 and 14,100 r.p.m. on a Tornado 8 × 4.

In conclusion, it only remains to say that the Eta 15 achieved the highest power output yet recorded in this series for a British made stock 2.5 c.c. engine.

Power/Weight Ratio (as tested): 0.910 b.h.p./lb.

Specific Output (as tested): 12.8 b.h.p./litre.



The ENYA 15-D Mk. II

2.47 c.c. Diesel motor

". . . one of the best F.A.I. contest class diesels currently available."

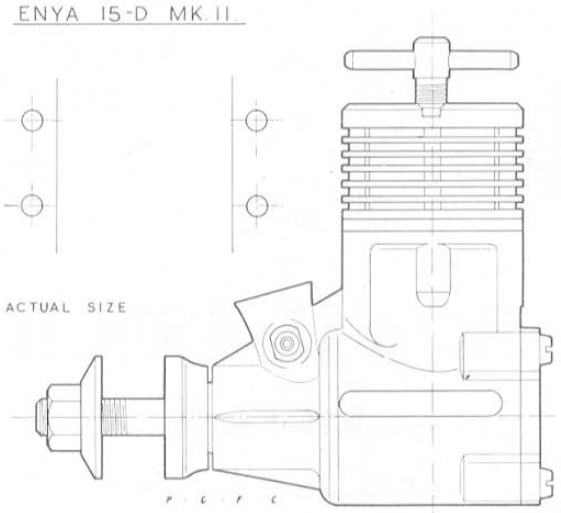
FOLLOWING the same original and distinctive basic design of the Enya 15-D Mk. I, the Mk. II model is, nevertheless, an entirely new engine and none of its major parts is interchangeable with the corresponding Mk. I component.

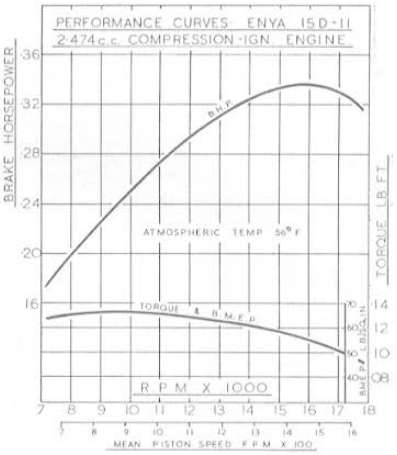
Features that set the original 15-D apart from other diesel 2.5's, on its introduction in 1956, were its loop-scavenged cylinder and oversize (10 mm.) crankshaft. Despite this generous shaft diameter and two subsequent material changes, however, the Mk. I was never entirely free from the trouble often experienced with other high-performance diesel 2.5's; namely, shaft fracture through the main journal. One reason for this may well have been the rigidity of the piston and rod assembly. This, which is continued in the Mk. II, comprises a very large diameter, well supported gudgeon-pin, a very stiff connecting-rod and a robust crankpin and crankweb. While such rugged construction is admirable and contributes to both performance and durability of the parts concerned, it does appear that the stresses so transmitted to the journal were sometimes more than even the Mk. I's shaft could endure. Designer Saburo Enya did not, however, yield to the temptation to use a more "whippy" gudgeon-pin and rod, but set about redesigning the whole engine around a new 11.5 mm. (0.453 in.) shaft which would also allow porting to be opened up for still greater power. This, incidentally, is the largest size journal used on any ball-bearing 2.5 to date.

This move also gave the opportunity to incorporate a number of other improvements. These include a new cylinder with thicker wall and chromed bore, a strengthened crankcase with longer mounting lugs and several minor alterations. All the earlier models' refinements are retained. The engine has a single eight-ball journal bearing supporting the crankshaft, supplemented by a bronze outer bush. The shaft is counterbalanced for rotating mass by a machined-in crescent counterweight and has a 0.256 in. dia. gas passage. The valve porting gives an induction timing of 50 deg. ABDC to 50 deg. ATDC. The cylinder liner, flanged above port level and accurately fitted to both crankcase and cooling barrel, gives fairly moderate port timing that may well have contributed to the very good specific fuel consumption shown by the test engine. The measured exhaust period is 124 deg. and the transfer period 100 deg. As on the earlier model, the piston skirt is cut away on the transfer side to aid smooth charge transfer from the crankcase.

The new crankcase casting is a very substantial unit, neatly cast and accurately machined. The carburettor intake is now shorter and, in place of the optional twin needle system of the older model, the Mk. II can be fitted with a special Enya barrel throttle that is exceptionally efficient. The cylinder assembly is secured to the main casting with four screws. As on the Mk. I, the cylinder head is fitted with a steel thread insert for the compression screw but is now also provided with an optional locking lever on the screw to lock the adjustment against any tendency to run back at high speeds.

The 15-D Mk. II is an extremely well-built motor. Internal fits and finishes on our test example could not be faulted in any way. Externally the engine is nicely finished without being





gaudy: the matt grey of the crankcase contrasting neatly with the machined alloy cylinder head and fins, prop driver, etc.

Specification

Type: Single-cylinder, air-cooled, loop scavenged two-stroke cycle, compression ignition. Crankshaft type rotary-valve induction. No sub-piston supplementary air induction. Also available with throttle control.

Bore: 15 mm. (0.5905 in.). Stroke: 14 mm. (0.5512 in.).

Swept Volume: 2.474 c.c. (0.151 cu. in.).

Stroke/Bore Ratio: 0.933: 1.

Weight: 6.25 oz.

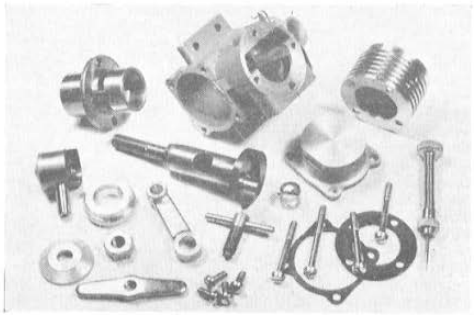
General Structural Data

Pressure diecast aluminium alloy crankcase with integral main bearing housing, exhaust and transfer ducts, carburettor intake and beam mounting lugs. Pressure diecast flange-fitting rear cover secured with four screws. Counterbalanced, hardened alloy steel crankshaft with 11.5 mm. dia. journal, 6.3 mm. dia. hollow crankpin and 6 mm. dia. propshaft section and running-in one ball journal bearing supplemented by bronze outer bush. Heavily proportioned diecast connecting-rod bronze-bushed at both ends. Lightweight piston with 5 mm. dia. fully-floating tubular gudgeon-pin having brass end pads. Unhardened steel cylinder with hard-chromed bore surface. One-piece cylinder head and cooling-barrel of machined duralumin with steel compression screw insert. Duralumin prop driver fitted to taper on crankshaft. Nickel-plated brass needle-valve assembly with spring ratchet device and flexible control stem. Optional locking lever on compression screw.

Test Engine Data

Running time prior to test: 3 hours.

Fuel used: Record "Powerplus" Diesel.



The component parts of the Enya 15D Mk II

Standard venturi insert retained for all tests.

Performance

Starting the 15-D Mk. II was found easy on all props although a little caution was needed on sizes smaller than 8 × 4 to avoid the risk of rapped fingers. Port priming was not found to be necessary and running at all times was notably steady, except for the usual warming-up power loss at low speeds. Controls were easy to adjust (the standard Enya needle-valve—used on most Enya engines—is always a delight to handle) but the compression locking lever was found to be necessary at speeds above 16,000.

Maximum torque developed by the Enya, 0.133 lb. ft. or 25.5 oz. in. at between 9,000 and 10,000 r.p.m. (and equivalent to a b.m.e.p. of nearly 67 lb./sq. in.) was the best yet recorded for a 2.5 diesel. The engine had quite remarkable flexibility. It proved capable of driving a 14 × 6 in. Top-Flite prop at 5,450 r.p.m., while a Power-Prop of half that diameter—7 × 4—was turned at 17,700 r.p.m. A Top-Flite 10 × 3½ was turned at 10,300 r.p.m., an 8 × 4 Top-Flite at 14,800 and an 8 × 3½ at 15,700 r.p.m. This latter figure was, incidentally, close to the peaking speed of the test Enya. Actual maximum b.h.p. recorded was 0.337 which is, of course, quite outstanding.

In all respects, it seems fair to say that the Enya 15-D Mk. II deserves recognition as one of the best F.A.I. contest class diesels currently available. It is imported into the U.K. by E. Keil & Co. Ltd.

Power/Weight Ratio (as tested): 0.864 b.h.p./lb.

Specific Output (as tested): 136.2 b.h.p./litre.

CONTROL-LINE WIRE STRENGTH

by Kevin Lindsey

A LARGE selection of C/L wires are available on the British market. All are reasonably priced and serve their purpose, but just how good they are, and how they compare with each other, has not been considered quantitively before. I have tried to do just this, and this article is a summary of my efforts.

There are three main types of C/L wire on sale:

(a) Plated (galvanised) piano wire.
(b) Unplated piano wire.
(c) Unplated (polished) stainless steel wire.

I compared these wires in various diameters, testing six samples of each to fracture. The accompanying table is the result—all breaking pull figures being rounded off to the nearest half pound.

A snag became apparent when I started testing. I found that conventional dry loops (no adhesive), cemented loops and soldered loops (all formed as in Fig. 1) were all weaker than the wire test length (12 in. long). The cemented loops behaved as though they were dry at about 80 per cent. of the wire breaking pull when the cement ceased to adhere to the wire. The dry (and effectively dry) loops broke as shown in Fig. 2. The soldered loops (Fig. 3.) held together satisfactorily up to fracture, but the result was always a break just where the solder ended due to slight softening of the wire during soldering.

The object of my tests was not to test loops but the wire itself, so I had to try and design a loop which was at least as strong as the wire. The loop shown in Fig. 4 is the result. With this loop, 85 per cent. of my samples fractured on the test length away from the loops. With the stainless wire, however, as it will not "take" solder, I had to use Bondaglass resin as an adhesive which gave 70 per cent. success.

The table can be interpreted thus: the strongest wire is, without doubt, unplated polished piano wire (189 tons/sq. in.). This is as expected, as plating (galvanising) wire causes slight metallurgical softening and stainless steel is not the strongest steel at room temperature. There is little to choose between plated piano wire and stainless from a breaking strength point of view; the galvanising is an effective rust preventive but can flake off, whereas, the stainless is more or less permanently rust proof, and, with its high surface finish, probably has slightly lower drag. I must admit preference for the stainless. One small point here, the stainless wire is slightly under nominal diameter—rule stretchers please note!

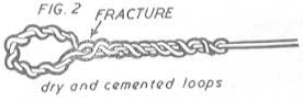
I tried deliberately kinking various wires but the results were inconclusive as I could not make a standard kink. But tests did show just how seriously a bad kink can affect the wire strength. A slight ripple in the wire can also cause a 20 per cent. decrease in breaking pull.

A few sundry points:

(1) With record attempts, where line diameter can be cut down to just stand the pull test, the lines can safely be used at 90 per cent. quoted breaking pull, so long as they are perfect, but with the slightest imperfection, they must be scrapped.
(2) The Class "B" team racing enthusiasts who use stranded wire, will note that the breaking pull and drag of three-strand Laystrate is far less favourable than 30 s.w.g. polished piano wire.
(3) It is possible to roughly work out a model's pull by hooking a spring balance to the C/L handle and trying to simulate the in-flight pull.
(4) Breaking pulls quoted are for one wire, so unless you are a monoline merchant, multiply the pulls quoted by two for the appropriate limit of your lines.

FIG. 1

FIG. 2 FRACTURE



dry and cemented loops

FIG. 3 FRACTURE

soldered loops

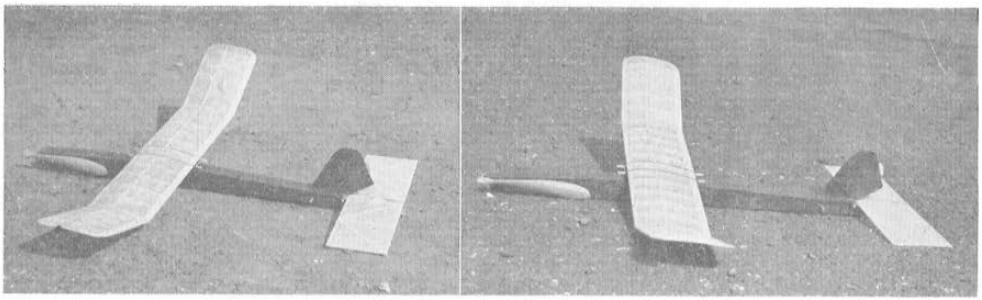
FIG. 4 SOLDER FILLET

Wire name	Nominal diameter or s.w.g.	Measured diameter (inches)	Breaking pull (lb.) 1	2	3	4	5	6	Breaking stress tons/sq. in.
H.S.S. Ltd. polished piano wire ...	30 s.w.g.	0.0126	51	50	52	53	52	53	189
Contest Kits plated	33 s.w.g. 0.010 in.	0.0100	25	24	25	25	24	18[1]	141
K.K. plated pack II	33 s.w.g. 0.010 in.	0.0100	25	27	25	26	25	26	153
Yeoman plated ...	33 s.w.g. 0.010 in.	0.0100	23	24	23	23	23.5	2[2]	136
K.K. stainless pack 21	0.010 in.	0.0098	25	26	26	25	25	24	154
Contest Kits plated	0.008 in.	0.0083	19	19	18.5	19	18.5	18	157
K.K. stainless pack Light Laystrate 3-strand	0.008 in. —	0.0077 0.0064 per strand	16.5 36	15.5 37	15 38	14 37	14 37	14 26[3]	158 174

1 and 3 Deliberately kinked badly. 2 Deliberately kinked slightly.

COMPACT !

A simple, rugged, but essentially 'flyable' rubber design for the not so expert modeller by LEN RANSON



Wings Club members can obtain the plans of COMPACT at a special price. See page 146 for details

FOR the not-so-expert modeller looking for a simple to build, high performance rubber model, *Compact* should be an ideal choice. Specially designed to bridge that difficult gap between the elementary beginners' model and the advanced contest machine, it combines a lively, easy to trim, performance with a rugged ability to survive the heartiest prang.

Some modellers might find the sheet sided fuselage an unusual feature in a small lightweight, but the net increase in weight is of a negligible order, partly because of the small cross section this type of construction allows. On the credit side it gives a virtually crashproof structure with robust handling qualities.

All other components, including the folding prop assembly, are equally rugged and uncomplicated, and, provided your model is carefully built, it should give you many strenuous hours of flying field pleasure—if you don't forget the D/T.

Fuselage

Choose a softish sheet of balsa for the fuselage sides. The grade should be just firm enough to be cut cleanly without crushing. And, remember, for soft balsa a really sharp cutting tool is necessary. Prepare one side from the plan by lightly pasting a tracing over the balsa, then use this completed side as a template for the other. Notch as shown and glue in the vertical braces and motor peg strengtheners, not forgetting to cross grain the latter to the fuselage. The spacers can now be inserted, working from the centre section outwards with constant reference to the plan for alignment. Finally add the wing mount, the supports of which are of 3/32 in. sheet, with the upper edges slightly concaved to take the $\frac{1}{8}$ in. dowel runners.

Wing

Prepare a rib template from thin plywood or metal, noting that each rib is notched into the trailing edge. Build the wing in one piece by pinning down the leading and trailing edges over the plan, with a 1/32 in. packing under the front of the T.E. After inserting the ribs fit the centre spar, then cut the outer panels free. The spar ends can now be cut to the 3 in. dihedral angle required, and the panels propped up and firmly cemented in place. Finish off the wing with careful sandpapering.

Propeller Assembly

The noseblock laminations can be cut either from very hard sheet, or from somewhat lighter stock if thin plywood facings are used on the face of the plug and between the noseblock and the plug. Drill to give a slight degree of right thrust. The hole should be just wide enough to allow the bush to be screwed tightly through.

Shape the propeller blank from medium $\frac{1}{8}$ in. sheet. Mark cutting lines along the edge of blank and carve the upper face first. Now remove the surplus from the underside to give a thin undercambered section. To form the hub, mark off the pitch angle on the plan diagram. The thickness of the hub should be $\frac{3}{8}$ in. including the two $\frac{1}{16}$ in. plywood facings. Insert a brass bush to complete.

Don't stint on wire wastage in making up the 18 s.w.g. shaft. It may take you several attempts to get it right, but a little perseverance here is well rewarded. Attach the propeller and secure, either with a soldered washer or a blob of solder, on to a few turns of fuse wire. Balance propeller, fit tensioning spring, then insert assembly in fuselage to get the correct folding position, which should be on the left-hand side of the fuselage. Use a small screw as a stop, embedded well into the noseblock.

Covering

Do not over-paste the fuselage sides, otherwise the sheet may distort. Cover the fin and tailplane on one side only. It is advisable to cover the prop blade to give added strength. Lightly water-spray all surfaces with the exception of the fin and tailplane which are left untreated. Add 50 per cent. thinners to the dope as full strength dope is liable to cause bad distortion.

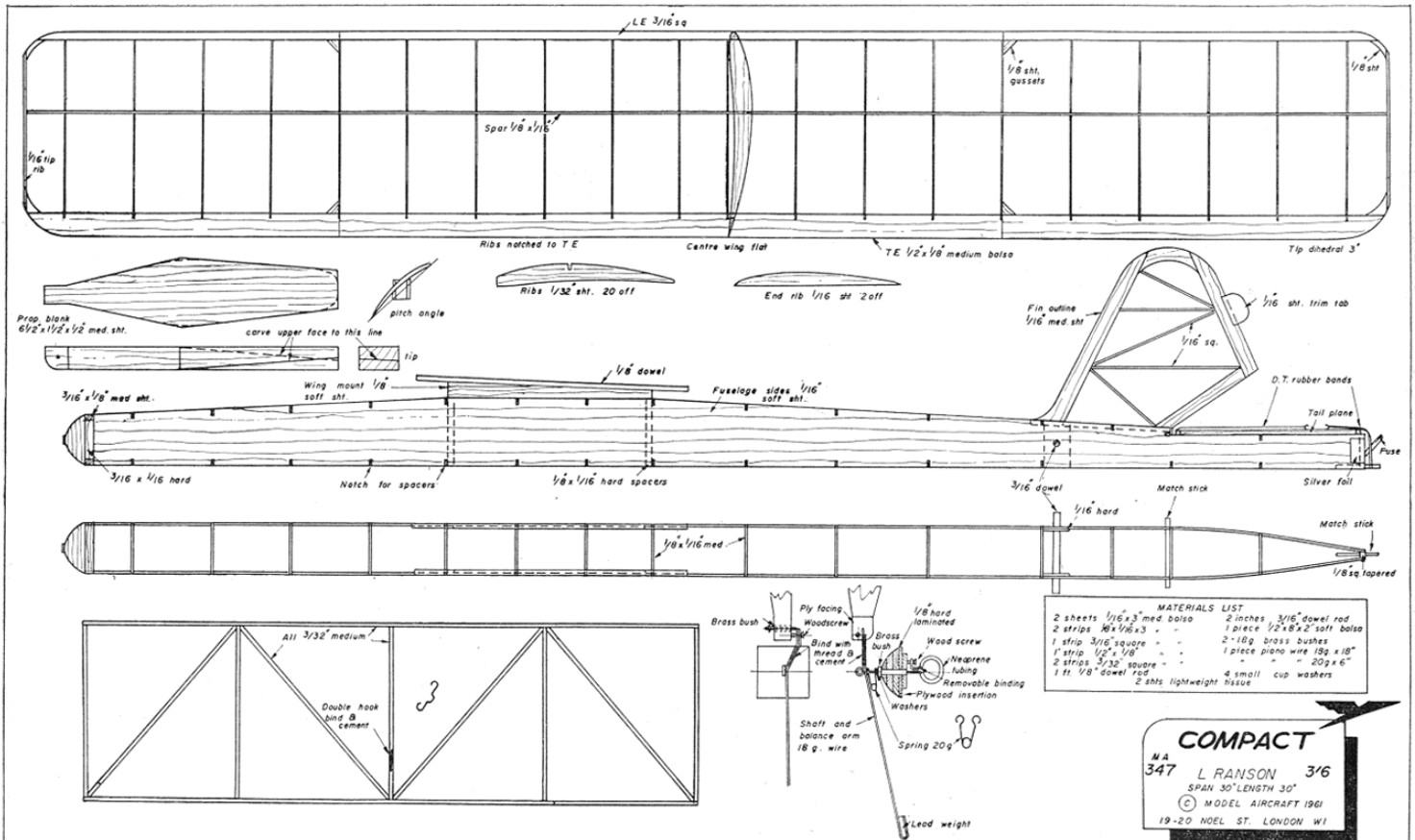
Flying

Gently hand launch over softish ground. Alter the wing position (a slight degree of movement is possible) for a flat glide. If this proves insufficient, pack up the T.E. of the tailplane to cure a nosedive, and add ballast to the nose if the model stalls (positive packing of the tailplane may make the model difficult to trim).

Now try a "power on" flight with some 200 turns. Carefully note behaviour both on power and glide. For correct trim the model should turn to the right, in a fairly tight circle under power, widening out on the glide.

The original model flew quite happily on six strands of $\frac{1}{4}$ in. flat rubber, 27 in. long, but, if you find this power insufficient, try an eight-strand, 30 in. motor.

The original *Compact* had a 2 min.-plus performance under varying conditions. Its last recorded flight was 2 min. 15 sec. at nine o'clock in the evening.



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT
19-20 NOEL STREET, LONDON W.1 PRICE 3s. 6d. POST FREE

Radio Topics

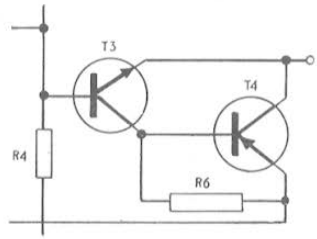
NEWS AND VIEWS FROM THE WORLD OF RADIO CONTROL

WATCHING a particularly good demonstration of flying recently someone made the comment—"Radio control is reaching finality, with reliable 10-channel equipment (if you can afford it), and standard kit designs which will do the book." Were that true, that still leaves most of us struggling along the route to "finality."

Actually, we seem quite a way off that finality—a very elusive subject anyway, where model aircraft are concerned. The top class aerobatic model today needs a top class pilot, with the necessary experience to bring out all its potentialities. To our mind (and others) even at world championship standard, it still suffers from one fault—it flies too fast. Too fast that is for the judges to follow eveything through and mark it down, and too fast to really appreciate the quality of the performance. The present trend seems to be all towards the faster model, with the demand for .49 (8 c.c.) and even larger engines, coupled with larger models. An excess of power can overcome a lot of inherent defects in the model design as regards manoeuvrability—so how about some thoughts on improving the aerodynamic design rather than the "brute force" approach? To our mind, a good .35 driving a fairly large diameter propeller, should provide all the necessary power for a complete aerobatic performance on a 5 ft. 6 in. to 6 ft. span, or possibly slightly larger model, and give a really smooth pattern. Stunting at 40 to 45 m.p.h. should be much prettier to watch than the same manoeuvres at 60-70 m.p.h. The clean biplane might also come into its own, although we have not seen a "double-decker" yet which was not like a bus—sluggish.

* * *

If we could only put time back we could probably have saved a lot of burnt out transistors. Sorry, we boobed when passing on the circuit for the Dunham four-transistor servo amplifier published in the March issue. This was reproduced, as stated, direct from the Swiss journal. What we did not notice was that the emitter and collector connections on T3 are reversed, with the result that the circuit, as drawn, burns out three of the four transistors as soon as it is connected up. Correct arrangement of that part of the circuit is shown here. As a reader remarked "R/C circuits in the model press are very unreliable." Although we did not draw



this circuit, we feel badly about not checking it completely—and will take the moral to heart with any other circuit we may pass on.

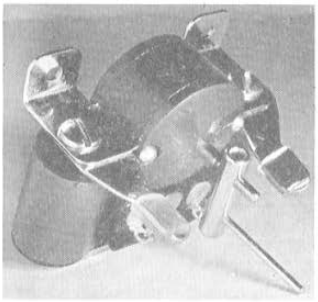
* * *

Sage actuator—right—is a rotary actuator specifically designed for proportional control with "pulse" systems. The only moving part consists of a cylindrical permanent magnet mounted in a housing between the ends of two large coils. Differential signals, as provided by the transmitter "pulse box," cause differential currents to flow in the energising coils so that the rotating magnet "dwells" at a corresponding displacement position. The torque arm is mounted directly onto the magnet and thus provides a pick-up point for mechanical linkage to the rudder. Total rotary movement of the magnet (and torque arm) is approximately 50 deg. either side of neutral, limited by stops.

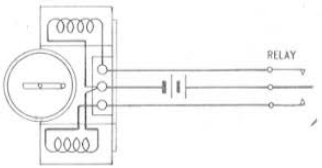
The whole unit is beautifully made, but relatively heavy (3½ oz.). Current consumption is low, giving excellent battery life on 3-6 volts, but torque is also fairly low—quoted as a maximum of 0.8 oz.-in. on 6 volts.

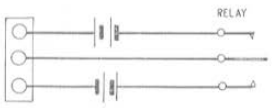
Intended application is for radio controlled gliders, where the weight is not important and control surface loads are low because of relatively low flying speeds. It should be suitable for unbalanced rudders on medium size models, but with the larger models some acrodynamic balance would help. The makers say that it is also suitable for (glider) elevator control with aerodynamic balance—but this we would be a little cautious about. Aerodynamic balance on model designs is very much a "hit-or-miss" effort at the moment, pending a lot more working data. The considerable speed range given by elevator control can cause all sorts of difficulties, and upset a lot of original "guesstimates," as to the amount of balance required.

The classic "car window" test seems to be the best answer. Try out the con-



trol response by holding outside a car and running at various speeds to investigate the set-up. At least, you then have a chance to see what is happening





ALTERNATIVE BATTERY HOOK-UP

before risking everything on flight tests. Don't do what an acquaintance of ours did, however. He had the bright idea of using the completely assembled model out of the car window, holding it by the wing projecting inside. The driver forgot to allow for the full span when passing something—a flight test would have been far less destructive!

* * *

Readers letters and readers queries we welcome—even the critical ones—for they only help to keep us on our toes. But we do get shaken by some of the demands for special circuits, or complete designs, which could take hours to work out, and demand more hours to check out with practical circuitry. We are, however, planning a series of circuits which will be tested and proven and then published as constructional articles covering, we hope, the most likely requirements for the "do-it-yourself" enthusiasts.

Basically, though, requirements for receiver and transmitter designs for home construction are well met by kits (e.g. R.E.P. kits and the imported Ace kits). It is not fair to the trade to cut too much across their path with a multiplicity of designs, and the trade has suffered quite a lot in this respect in the past. Without the specialised manufacturers there would not be much of a R/C movement.

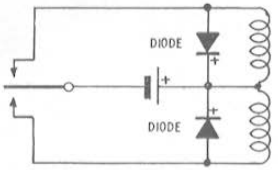
* * *

Speaking of letters, we had one which started:

Dear Sir,

"With regard to the circuit of . . . published in the . . . issue of "X magazine (it wasn't even one of ours), component value C1 could probably be increased to advantage to . . ."

Then went on for six pages commenting on possible changes to each and every component in the circuit. It then ended:



"Do you agree that the modifications I have suggested would give a similar performance?"

Yours faithfully, etc.

After struggling with the implications through the first part of the circuit we finally gave up and replied:

Dear Sir,

No.

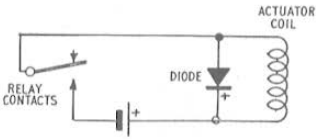
Yours faithfully, etc.

On second thoughts, our apologies to Mr. Blank. The answer could equally well have been "Yes." It *should* have been "Try it and see."

* * *

Reader asking for advice on suppression says . . . "I have read somewhere that a diode can be used instead of the usual resistor-capacitor combination. Is this true?" Yes, in point of fact a diode will suppress low frequency surges better than the usual resistor and capacitor connected in series across the relay points. Virtually any type of diode will do (germanium or selenium), usually, however, just a 50 ohm resistor will do an adequate job. The only things against the use of a diode is that it costs considerably more than a resistor, and also it is not so effective for suppressing RF interference.

You could well try a diode if the resistor or resistor-capacitor suppressor does not appear to do an adequate job, being sure to get the polarity correct. When using all three relay contacts (e.g. with "proportional" actuators), two diodes are required, of course. See the two diagrams above.

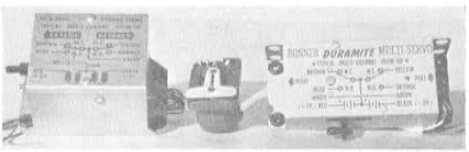


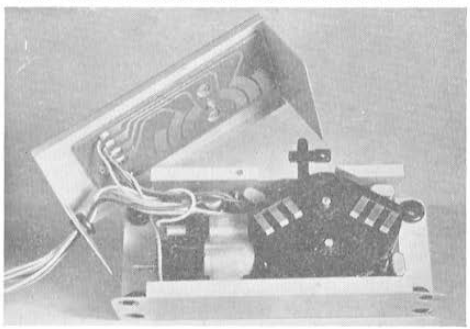
* * *

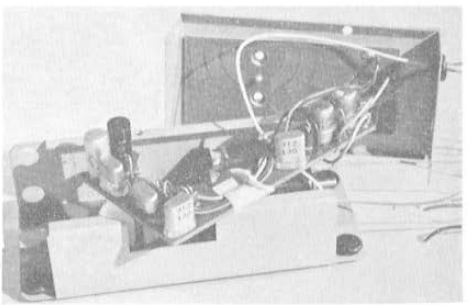
New Graupner "Unimatic" actuator is a motorised servo capable of being switched in three different modes, according to the appropriate switching panel employed. With No. 1 "steering disc" fitted the unit operates as a selective actuator—one press for right rudder, two for left rudder and three short blips for a third control (e.g. operation of a cascaded servo). With No. 2 "steering disc," operation is that of a normal sequence actuator—left-neutral-right-neutral, etc. With No. 3 "steering disc" (primarily for use as the cascaded unit for engine control), sequence is on-off-on, etc., i.e. full throttle—low throttle—full throttle, etc. The unit is self-neutralising only with discs Nos. 1 and 2.

The whole unit is enclosed within a neat injection moulded plastic case measuring $2\frac{15}{16} \times 1\frac{3}{4} \times 1\frac{1}{4}$ in. with an externally mounted bellcrank providing the mechanical movement (maximum push-pull movement 13/64 in. on either side of the neutral position). Weight of the unit 2 oz. Designed for operation on 2 to 2.5 volts, mechanical force available is specified as 2.77 oz.-in. (on 2.4 volts). A full revolution of the drive shaft takes 0.45 sec. (2.4 volts) equivalent to a rudder movement time (neutral to full control position) of approximately one-tenth of a sec.

We have not yet received an actual unit for test, but having been much







Right—original Bonner servo (left) and the current "Duramite" ("Transimite" identical in overall size). Besides being eminently more "stowable" and easy to mount, the "Transimite" has a new motor and improved gearing. In between the two Bonner units is the Graupner "Bellamatic" motorised servo built around the "Micr max" motor—ideal for smaller models. New Graupner "Unimatic" offers a further improvement in performance. Below—the "$19.95 part" of the "Transimite"—a very clever design utilising a printed circuit to fit inside the standard "Duramite" case. In photo (left) all the gearing has been removed.

impressed by the Graupner "Bellamatic"—and the "Unimatic" appears even better by specification—it looks like a most useful unit indeed. What we particularly liked about the "Bella matic" was the small size and low weight. The "Unimatic" is larger, but still small and light compared with the "Duramite," which makes six channel "multi" a much easier proposition in a small model. Current demand, too, is very moderate, the "Unimatic" only drawing current whilst actually moving between the neutral and end positions at the rate of approximately 1/10th amp. (100 milliamps).

* * *

Several reader-queries asking can we publish a table of transistor equivalents—even to optimistically asking for a list of all current American types and British equivalents. We shudder at the thought—and even more so at the effect of possible results. One such table, we saw published in a recent radio book is is so hopelessly misleading as to frighten anyone off the task.

The best we can say is, if you want equivalents of a particular type, we will do our best to supply the answer. We may even get round to an abridged list of "typical" equivalents in time. Apart from the fact that there are literally thousands of different types to analyse—which has to be done on a study of characteristics—different manufacturers often use different methods of measuring or evaluating performance, and so direct comparison is often impossible.

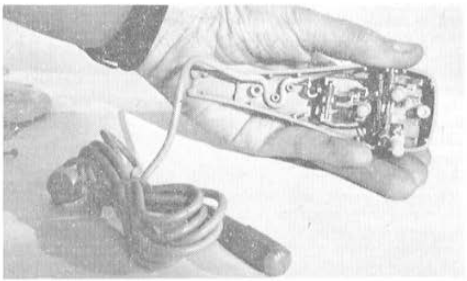
* * *

New British R/C kit which should be ready shortly is the Frog *Jackdaw*—5 ft. span for single or multi control (actually a little low on wing area for "full" multi, but just about the right size for single channel on 3.5 c.c. or .19 glo power). The prototype has been extensively flown on single channel (rudder only) with the Frog 3.5 c.c. diesel.

A very pretty looking high wing cabin monoplane with slender fuselage lines, the *Jackdaw* is also ruggedly constructed without being unduly heavy. The kit looks like being a masterpiece of accurate pre-fabrication and completeness and will include dural undercarriage and "Veco" airwheels, tank and necessary hardware. About the only thing that cannot be included is nylon chiffon for covering—virtually a standard requirement for a radio model of this size. Include nylon in the kit, however, and it becomes subject to purchase tax. A ridiculous state of affairs which applies to other items as well—cement, for instance. As a nation we must be pretty browbeaten to put up with all the anomalies of legislation that we do.

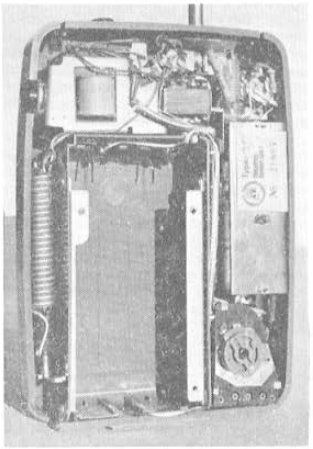
* * *

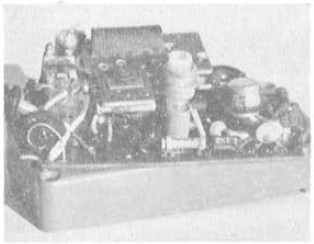
A previous comment where we took the view that the answer to vibration was an engine which did not vibrate—and we were taken to task by Stillings with his design for a vibration proof mount—leads to another story. Saddled with a large diesel which did vibrate badly, one group did a real "engineering" job of mounting the engine on rubber. The result? An engine which was impossible to adjust—you just could *not* get hold of the compression screw. Apart from the fact that you could only see its "average" position as the engine buzzed happily on its flexible mount, it was just plain impossible to get a firm enough grasp on the tommy bar to turn the screw. That seems to put this problem right back where it really belongs—with the engine designer. Please, engines for R/C models should *not* vibrate badly. We have enough trouble with other things as it is.

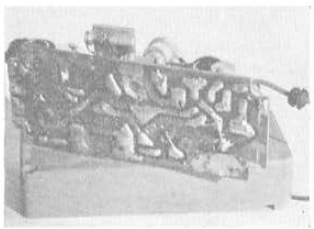


Right—Metz three-channel "transmitter converter"—three (tone) control switching provided by separate press-buttons. A very attractive feature of all the Metz equipment is the neat styling and exterior finish.

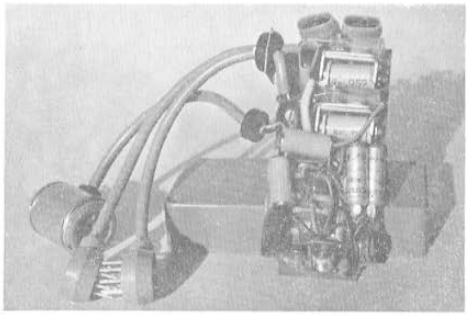
Below—Metz tone transmitter, providing single- or three-tone output, as required. An extensively tooled production and most attractive in appearance. Neat and easy to handle, too, with a neck strap for support, if required. Component assembly is compact and, with a complicated circuit, could be a headache to service. The only really weak point, however, is the quality of the control switch (for single-channel operation) which, whilst probably quite adequate, is a little out of keeping with the general "precision quality" of the rest.







Left—Metz receiver assembly (component side and printed circuit side). This is quite a complex circuit packaged in a relatively small area and fully enclosed within a neat plastic case.



Right—Metz 'tone' unit for plugging into standard receiver to give multiple operation. See March Radio Topics for complete description.

OVER the COUNTER

THE eagerly awaited **Veron** *Viscount* R/C kit is now available, and it was with considerable excitement that we unpacked our review specimen. We were not disappointed with what we found inside—the immediately outstanding feature being the very extensive prefabrication of the many block balsa parts, a practice we are now beginning to accept as "standard" from Verons. Another striking feature of the kit is the vast quantity of material the box holds; it is one of those Chinese puzzle type packing feats which defies you to replace the bits once you have taken them out! Not that you will wish to return the wood to the box, for we guarantee that you will want to get down to the assembly straightaway, and this operation is by no means puzzling, for a very comprehensive instruction sheet removes any chance of failure, while the completed model's racy lines make the *Viscount* one of the most attractive designs you can buy today.

Some further points worth mentioning are the inclusion in the kit of a pair of sorbo wheels and a really substantial, ready formed, dural undercarriage. An aluminium spinner and a tough cockpit moulding are also enclosed.

There are various suggested radio linkages, with Cobb-Hobby and Reptone receivers shown, but we would prefer to fit the new Mini-Reptone as described in last month's article, "Radio Installation," rather than the Reptone, which tends to react rather too slowly in fast models. A "flip-up" elevator linkage is also suggested and, in fact, an experienced modeller will delight in fitting his *Viscount* with full multi control, which is quite practical if lightweight equipment is chosen.

The *Viscount* is, incidentally, completely stable, and makes a very successful F/F model for those who cannot resist building it, but as yet have no radio equipment. At £5 12s. 6d. this model may seem expensive, but the price is justified by the extensive prefabrication and completeness of the kit.

* * *

We were quite surprised to see another plastic kit for the Fairey *Rotodyne* so long after the first two appeared on the market, although this kit is of the latest version and differs in some respects from its earlier competitors. We were even more surprised when we took a look at the manufacturer—**Revell,** who in the past have devoted the bulk of their production to American prototypes. One of the first firms in the plastics field, Revell have always maintained their early reputation for good design and crisp accurate mouldings.

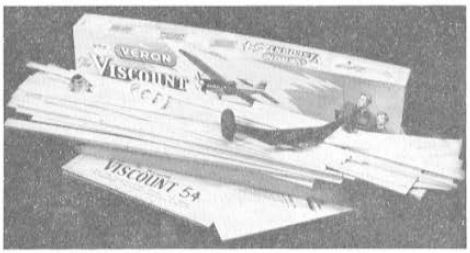
The intricacy and number of parts contained in this *Rotodyne* kit is quite staggering as you can see from our photograph. This apparent complexity is accounted for by the fact that full interior detail is provided, not just seats but passengers, compartment divisions, and freight, in fact virtually every reproducible detail has been modelled. One side of the fuselage can be removed to reveal the interior detail as also can one of the sides of the rotor pylon revealing the simulated airframe construction.

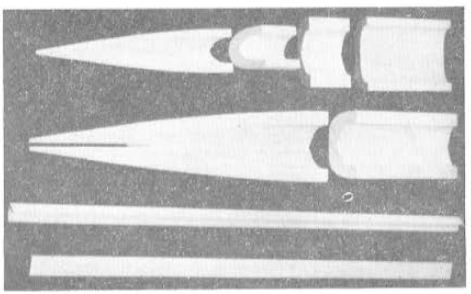
Our only criticisms concern first of all the moulding of the fuselage top and bottom surfaces, which are well below the standard set by the rest of the kit. This is the more unfortunate, because the fuselage top is naturally conspicuous. It could however, be much improved by rubbing down with No. 400 wet or dry abrasive paper. A curious feature is the unusual method of rivet simulation. These are represented by tiny depressions; the system is nevertheless very effective.

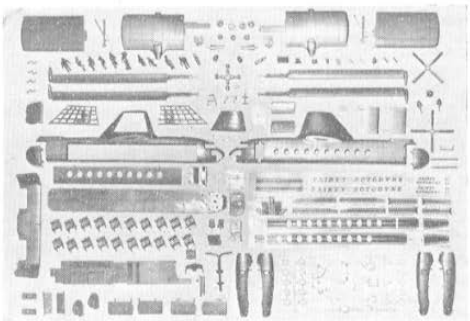
The peculiar scale (1/86th) is an unfortunate choice, since it makes the model too large to match the accepted 1/96th big aircraft and too small to go with a 1/72nd series. We believe,

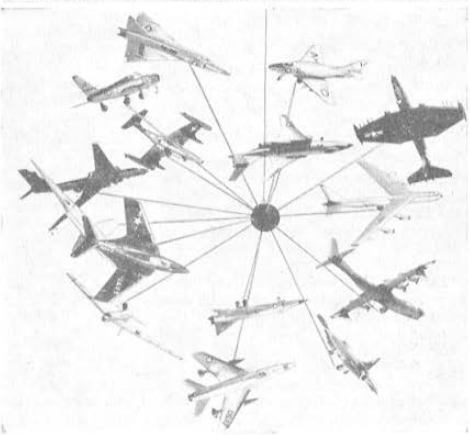
Continued on page 147

In the photos we show, left—the parts of the Veron "Viscount" with a close-up of the finely spindled balsa block parts, right—contents of the Revell "Rotodyne" kit, and below Revell's "Mobile."









LETTERS
to the Editor

Litter trouble again

DEAR SIR,—After the Northern Area Winter Rally, I received from the Royal Air Force authorities a strongly-worded letter concerning the amount of litter left on Rufforth airfield. As a result of this the Northern Area were unable to use the airfield for the two area meetings on March 19th and April 9th.

I would like to draw the attention of all aeromodellers to this litter problem. Litter left on airfields is a distraction and danger to pilots of high speed aircraft and unless *all* aeromodellers become litter conscious, the next time application for use of an airfield is made, the Commanding Officer will, quite rightly, just refuse permission.

Those of us who have been modelling for a number of years will recall the loss of Sealand airfield (Cheshire) about 1950 because of litter. Is Rufforth going to be the airfield lost in 1961? Perhaps next time it will be *your* area's flying ground that is lost because someone didn't take a little care over tidying up after an enjoyable day's flying.

Suitable airfields for model flying are difficult enough to find and it is up to all who attend these meetings to make sure that the aerodromes are left clean and tidy at the end of the day.

Yours faithfully,

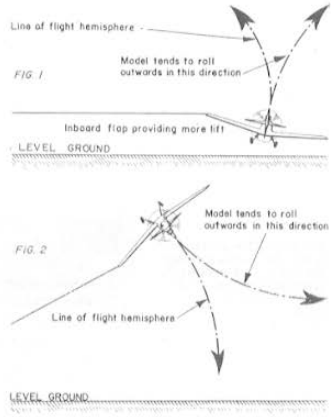
Hon. Sec., RON FIRTH.
Northern Area Committee,
S.M.A.E.

More on flaps . . .

DEAR SIR,—I am a firm believer in Palmer's differential flap system for aerobatic C/L models, and thus I feel that I should not let Dr. Hawkins' incorrect thinking on this point go unnoticed. A moment's thought will reveal this.

The model is commencing an inside loop from normal level flight. The nose begins to rise and the differential flap system will slightly raise the inboard wing, thus banking the model away from the flyer. *Bien!* The model gets halfway round the manoeuvre and is now inverted at 45 deg. elevation. But a moment's thought will show that the system is making the inboard wing drop. But does Dr. Hawkins' model go "loose"? Not on your nellie! The line tension is still as before and this can best be shown diagrammatically.

In Fig. (1) the model is commencing an inside loop (diagram exagerated). It can be seen that the model is trying to turn away and outwards from the normal flight hemisphere, and, as would be expected, the line tension is increased. Now consider the second case (Fig. 2). There again the model is



trying to turn out of the flight hemisphere and thus once more the lines are kept tight.

Consider Dr. Hawkins' instance. The model is rising vertically, and full down elevator is applied. The model whips its nose around in a downward direction, but as it does so the inboard wing drops. This tends to turn the model *out* of the flight hemisphere and the line tension is thus not only held, but is probably *increased*, just when it is most needed.

This sort of situation can be considered true for any position in the flight hemisphere, and a moments thought will indicate that, so long as the model is turning, then the line tension must *always* be increased and a very beneficial result obtained.

Yours faithfully,

Horsham, N. H. BUCKENHAM.
Sussex.

. . . and design . . .

DEAR SIR,—I have read with great concern the many letters dealing with the vast subject of the stunt C/L model. I have been flying this type of aircraft for nearly five years now and have been able to form a good perspective of what is required.

Firstly, there is the popular belief that all stunt models are nearly the same in appearance—of course they are, but this is because they are designed to fit a particular requirement, i.e. to fly the S.M.A.E. stunt schedule, and nothing else. All types of aircraft fall into categories as do our models. There are airliners, fighters, dive-bombers, etc., and within each group they are very similar in size and shape. Therefore, it is reasonable to expect the *miniature* aircraft that we fly to follow similar "grouping" tendencies. The so-called small differences so often talked about are each designers' particular pet features that suit his style of flying best, and it is these refinements that make the great difference between apparently similar models.

However, it is the internal design of stunt models that requires the designers most painstaking work. The vast amount of work that goes into airframe stressing, control systems, fuel systems and undercarriages is seldom appreciated by the average modeller who builds from kits or published plans. For him it is already "cut and dried," but when the day comes when he realises that there is no model available to suit his particular needs and he first puts pencil to paper, that's when the fun starts.

A field of design that can, and must, be developed, is that of silencing. It affects the stunt flyer more than anybody because the ".35" glowplug motor is a noisy brute and the model has to be flown at comparatively high altitudes (compared with, say, team racing). I have successfully made a silencer from brass which weighs 4 oz., but most important, cuts the noise of my Torpedo .35 by 80 per cent.

To sum up, too much is being said about what the model *looks* like and not enough about what the designer has put into his model to best accentuate his own flying capabilities.

Yours faithfully,

Wimbledon, J. F. PERRY.
S.W.19.

. . . and the last word

DEAR SIR,—May I add my little word to the present discussion on stunt design, "experts-barred" contests, etc.

I agree almost entirely with Noel Falconer's first letter, except for his remark about realism points stifling originality, but I disagree with Stan Robinson's letter on most points, particularly comments on the big 35 size

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

models. I feel that despite what he says, there is a definite advantage to be gained by flying a large model.

If some engine manufacturer brought out a 60 of similar power/weight ratio and handling characteristics to the present 35, I am sure that 60's would rapidly become the most popular stunt motor size.

I was once a die-hard diesel man myself, but I think that they are useless for stunt now. The thing that diesel models immediately fall down on is the square manoeuvres. In order to do these manoeuvres, you need a terrific amount of power, and with a diesel model, this means a level flight speed of anything up to 80-90 m.p.h. I remember that my old *Ambassador* would do square horizontal eights, but I was the only person who knew that that was what they were supposed to be!

With respect to Stan's remarks on flaps, I would say that their effect of producing high drag in the squares is just what *is* wanted. Only by stalling the wing as quickly as possible and producing the maximum amount of drag, is it possible to bring the model to a complete stop, turn it round, and continue in a different direction. Let's not kid ourselves, there's nothing aerodynamic about squares. As a matter of interest, a 5 ft. radius turn at 65 m.p.h., pulls about 60 g., and I can't imagine a stunt model weighing an effective 180 lb. doing a 5 ft. radius turn!

Having come up the hard way myself (10 years and still trying), I am very much in favour of a beginner stunt class, but I think that the real top-notch stunt flyer does not need such encouragement (an example?—Frank Warburton).

I like the idea of a fly-off when less than 10 points separate the top flyers, if only because of English weather! Again, I agree almost entirely with Noel's second letter, except for his comments on flaps (see my previous remarks).

In Dr. Hawkins' letter, I agree with points (a), (b), (d), (e), (f) and (g), but must confess that I don't quite see the point of (c).

Differential flaps do not work in *theory*, and I have tended to decry them in the past for this reason. I might have gone on doing so if I had not seen Bob Palmer in action in Hungary and if Brian Horrocks had not pointed out to me that the whole point of differential flaps is to *balance out the inertia of the lines*. Think about that one for a bit and you will see that it makes sense.

I must confess that I consider retracting undercarriages on stunt models to be quite pointless. They do not get you any extra points and can foul up an otherwise perfectly good landing if they do not detract. Dr. Hawkins' idea of a hinged leading edge is very interesting indeed (now why didn't I think of that).

I hope that the above comments can be of use to somebody, even though the only thing they prove is that stunt design is largely a matter of opinion anyway. In closing, I quote a fellow Wolves M.A.C. member (anonymously) who recently said "The *top* stunt men don't write letters, they *practice*." I guess that lets me out.

Yours faithfully,
DAVE DAY.

Birmingham 6.

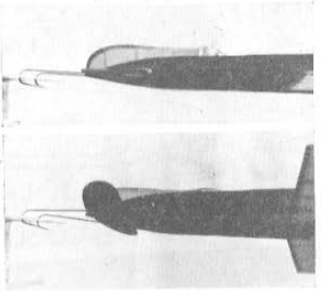
In order to allow more time for practising this correspondence is now closed—Ed.

Winding Gadget Test

DEAR SIR,—From the March, 1961, copy of MODEL AIRCRAFT it appears that W. A. Morrison has objected to my criticism of his winding aid.

I have done as he requested, and made a further test on a gadget made *exactly* as depicted on page 323 of the November, 1960, MODEL AIRCRAFT. A single length of 14 g. piano wire was bent so as to give two arms about 6 in. long and about 2 in. apart. This was attached to a length of Dexion angle clamped to a bench. A test was made using a small Indoor R.T.P. Team Racer fitted with an eight-strand motor of $\frac{1}{4} \times \frac{1}{2}$ in. Pirelli.

The two photographs below clearly



illustrate the effect of applying a mere 40 %. of max. turns. The gadget had deflected sufficiently to be bearing against one side of the model's tailplane and twisting it out of shape. This can be seen in the photo as the black chordwise bands on the undersurface of the tail are no longer parallel. The angle of bank assumed by the model is so obvious as to hardly require comment.

This, I consider, is adequate justification of my original remarks about this gadget, and confirms that my original test was sufficiently representative.

I am quite willing to send both the gadget tested and the motor used to anyone who wishes to check my results.

Yours faithfully,
JOHN O'DONNELL.

Salford 6.

The designer replies

DEAR SIR,—I have read with interest Mr. O'Donnell's letter on his test of the winding aid. I conducted a similar test to that described by Mr. O'Donnell in your January issue (but not, alas, with Pirelli) and found that while a certain amount of twist took place it was nothing like 45 deg., and certainly not sufficient to damage the tailplane—which, incidentally, was in the usual position on top of the fuselage. My own version of the gadget has $4\frac{1}{2}$ in. "legs," is of fencing wire, and adequately meets my requirements when I can't get a "holder on"!

Perhaps I'll build a *Borderline* one day, but if I don't win all the comps. with it I certainly won't condemn the designer, and the magazine which published it, out of hand, nor will I have the temerity to try to prove that it never could fly well!

Point taken?

Yours faithfully,
W. MORRISON.

Elderslie.

This correspondence is also now closed—Ed.

Over the Counter

Continued from page 145

however, that the *Rotodyne* is sufficiently unique by virtue of its extensive detail to make it a popular model in its own right. The kit costs 12s. 6d. and provides tremendous scope for the modeller who likes to take his time in assembling and painting his model and it will well reward all his efforts in this direction.

* * *

How to display your plastics is always a problem, but Revell have solved it in a very novel manner, as you can see in our photo on p. 145. The display stand, or "Mobile," consists of 15 steel arms of varying lengths sprouting from a 2 in. wooden ball. On the end of each arm is a small rubber cup which fits over the plastic ball moulded into the underside of most Revell models (the *Rotodyne* has no mounting ball).

The Mobile, which costs 9s. 11d., will stand on a table, three of the arms acting as a tripod, or it may be suspended by a line from the ceiling, thus making an attractive display.

* * *

The popular **Britfix** balsa cement is now appearing in the shops in a new guise as Britfix 66. The cement formula and price remain the same as before, and the new presentation is merely to bring it into line with other Britfix adhesives: P.V.A. white adhesive—Britfix 55; Polystyrene Cement—Britfix 77; and Tissue Paste—Britfix 44.

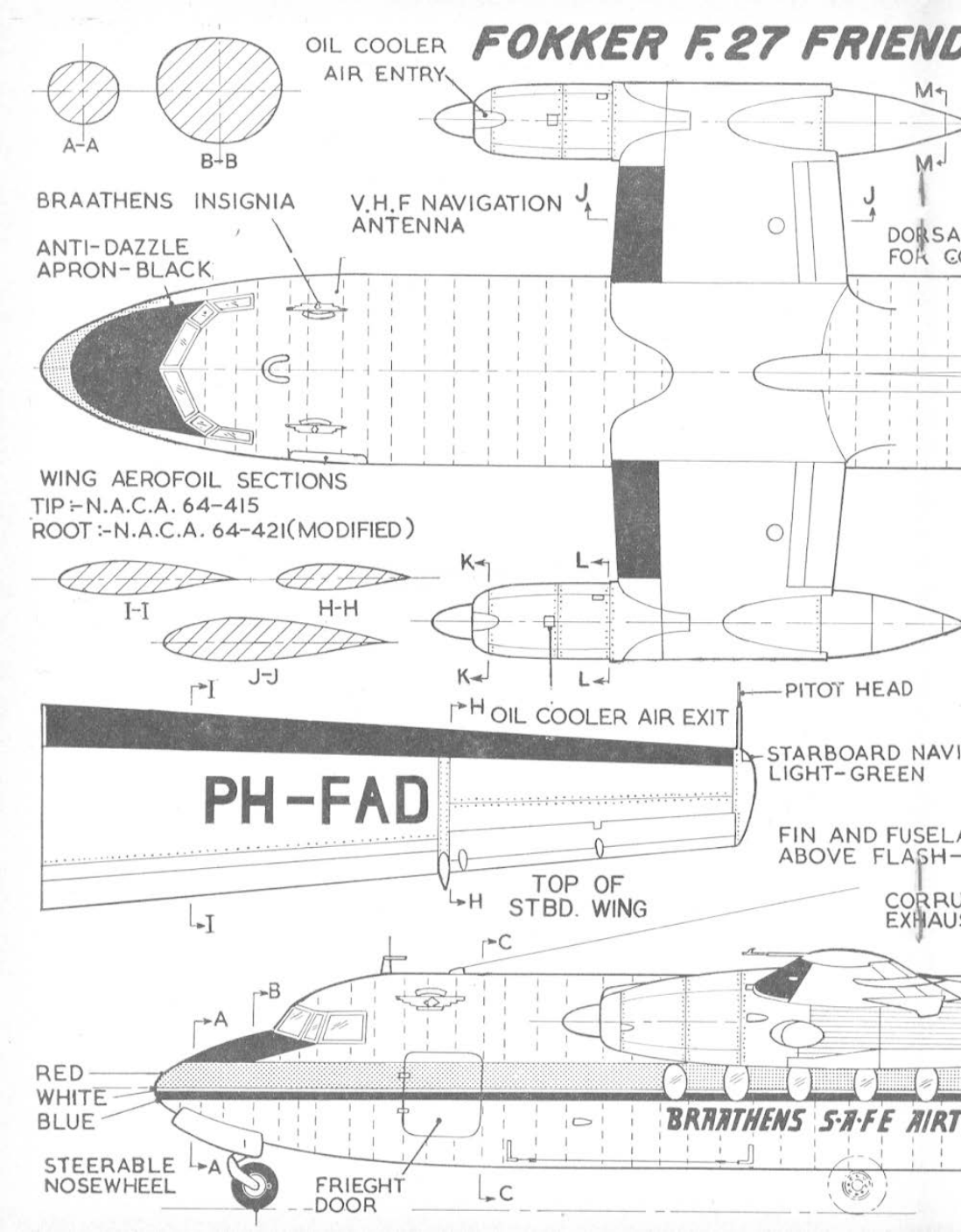
* * *

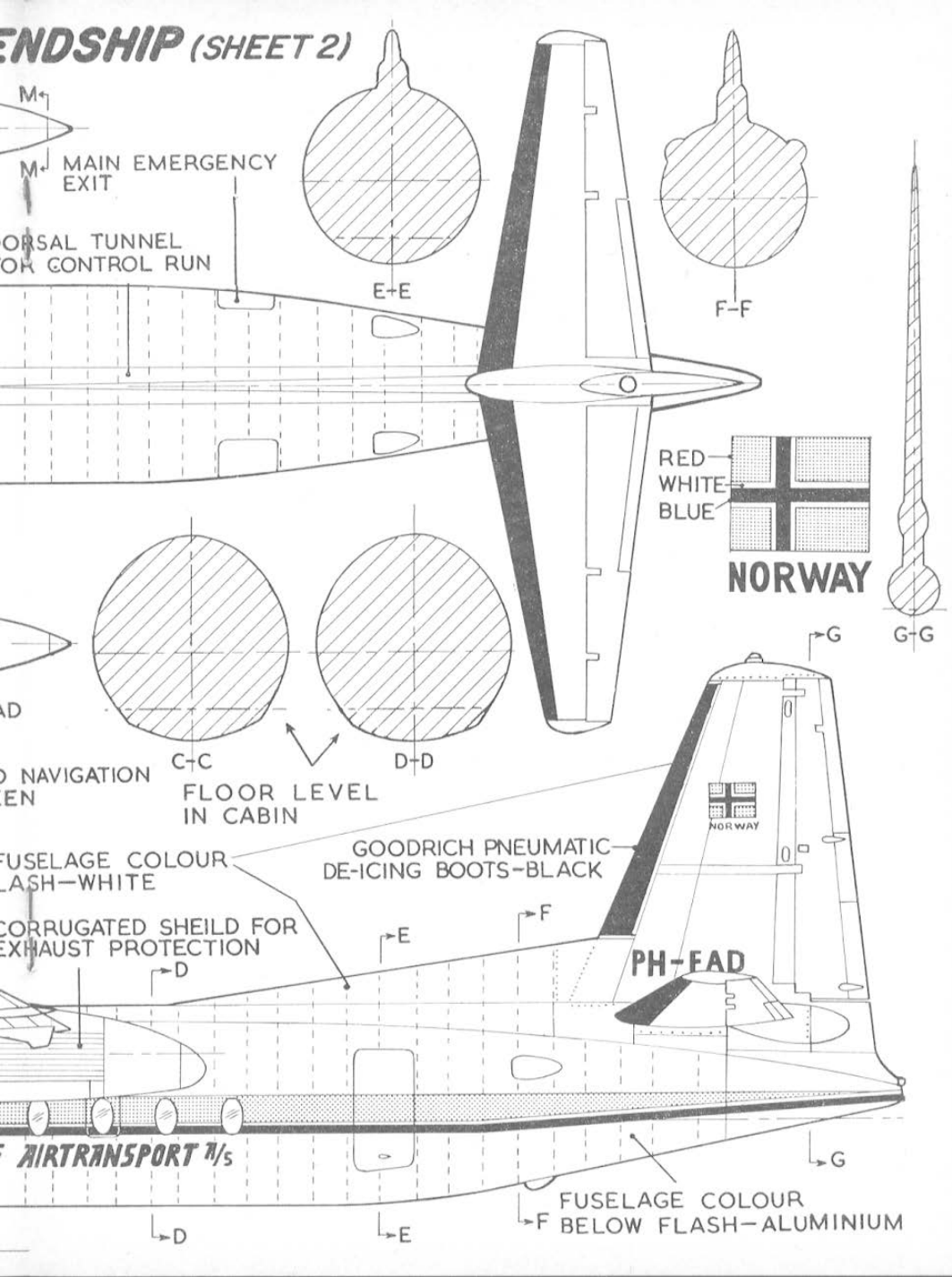
Incidentally, the price of Humbrol Plastic Enamel is 9d. per tin, not 8d., as stated in their advertisement last month.

* * *

New from **Jetex** is the *Theron*, a $22\frac{1}{2}$ in. span model that can be flown either as a glider, or with the PAA-Loader motor. The kit features an all plastic fuselage, printed on pre-cut balsa parts and a tissue covered wing and tail. Price is 16s. 9d.

FOKKER F.27 FRIEND

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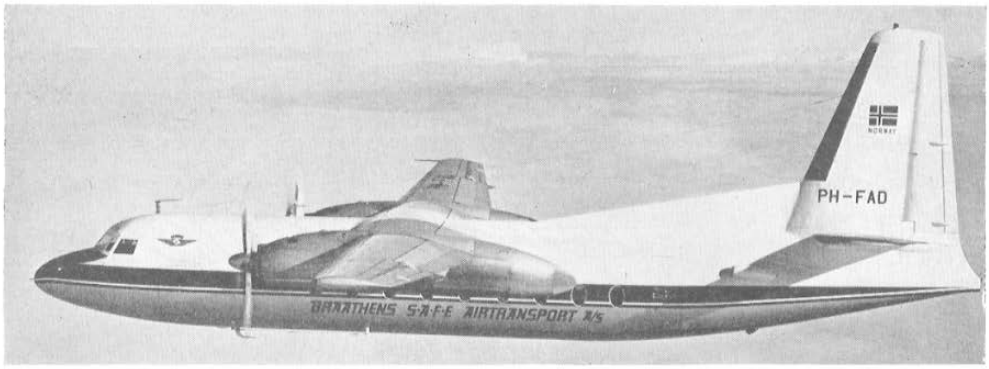


THE FOKKER F.27 FRIENDSHIP

SINCE we featured the Fokker F.27 *Friendship* as our "Plane of the Month" in February, we have received drawings of a *Friendship* in the insignia of Braathens S.A.F.E. Airtransport of Oslo. They are so good, and the aircraft itself is so popular with modellers, that we make no apologies for devoting further space to it.

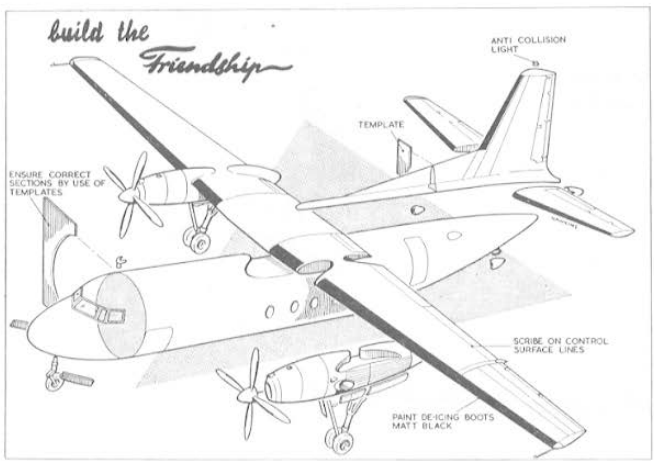
Braathens is one of the least well-known of *Friendship* operators, except in Norway, where its aircraft operate such regular local services that they are referred to as *luftbussen*, or air buses. More than 100,000 people travel a total of over 20 million passenger-miles on these services each year, to which must be added a fair number of international charter flights.

The emphasis on domestic routes might seem strange in view of the company's full title of Braathens South American and Far East Airtransport. For an explanation we must go back to the early post-war years, when it was granted a five-year licence by the Norwegian Government to operate scheduled services between Norway and Hong Kong, using DC-4s. The name of Braathens soon became well-known in South-East Asia, and it was a bitter blow when the home Government refused to renew the licence in 1953.

A less enterprising company might well have given up the struggle or tried to survive on charter work; but Braathens had already laid the foundations for its future network of domestic routes. In 1952 it had bought two de Havilland *Heron* 1s for use on a twice-daily service between Oslo and Stavanger. By 1954 the *Herons* were calling also at Trondhjem, third largest town in Norway. Within two more years, a pair of *Heron* 2s had been added to the fleet to cope with additional services along the coast from Oslo, through Tonsberg, Kristiansand and Farsund, to Stavanger.

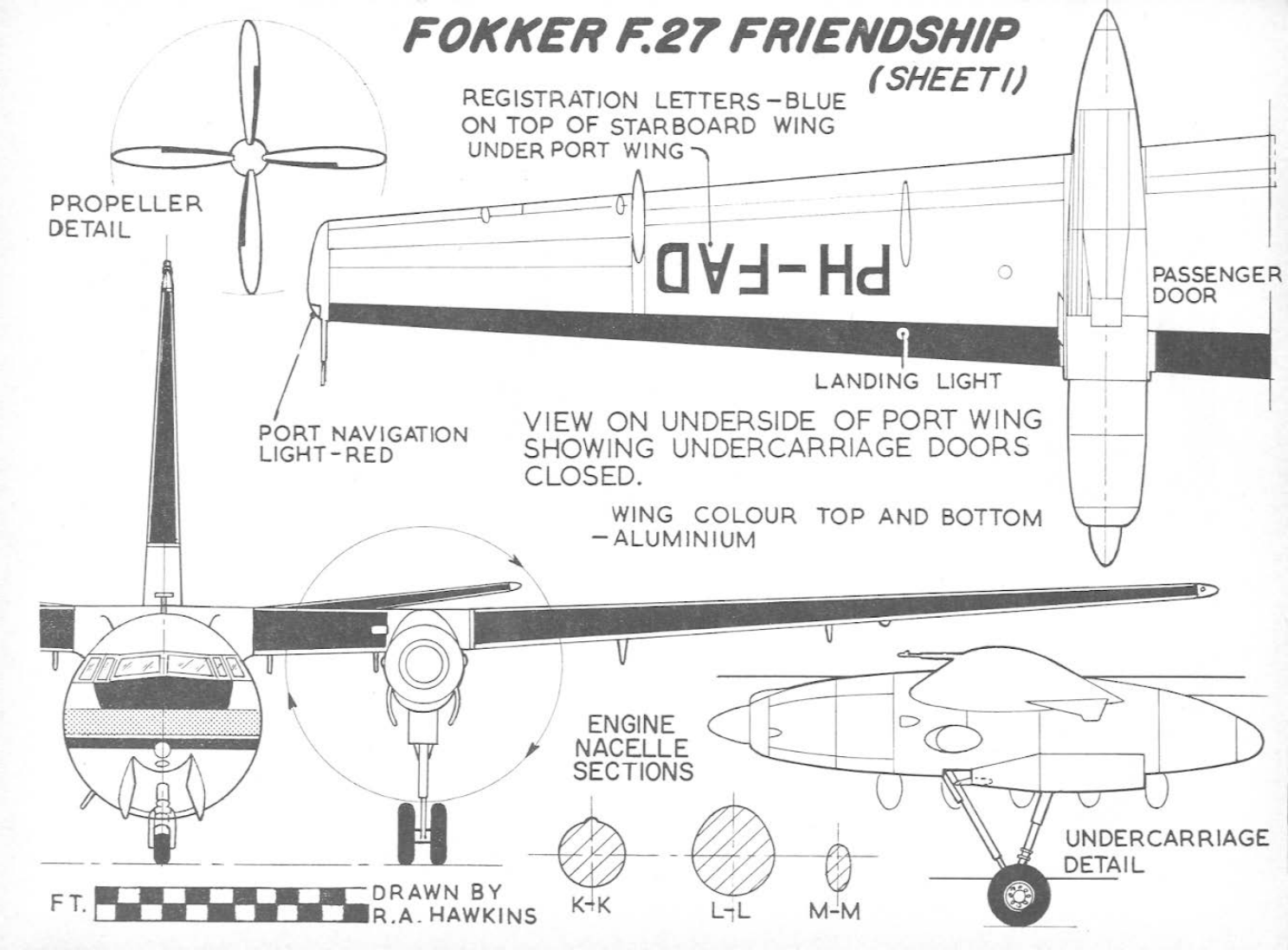
The stage lengths—varying from a mere 50 miles to 250 miles—were very different from the long haul to the Far East; but they were not easy for the little *Herons*. Headwinds of up to 80 knots were encountered and every flight had to be made on instruments at 9,000-10,000 ft. over country with mountains up to 8,000 ft. high. Even with extra cabin heating and double windows, passengers did not find it easy to keep warm in the winter months. Yet such was the reliability of the *Herons* that the initials SAFE in the company's name began to take on a new meaning. What is more, all the routes were flown without Government subsidy.

Today, the *Herons* have gone, and Braathens' fleet consists of two DC-4s, two DC-3s and three *Friendships* which offer a very much higher standard of comfort in all weathers. The job done with these aircraft lacks the glamour of "prestige" international services; but few of the people who are able to cover in less than 90 min. a route that would require an uncomfortable 1½-hour journey by rail would exchange their *luftbussen* for the fastest, shiniest, super-jet.



FOKKER F.27 FRIENDSHIP

(SHEET 1)



His Memorial Points to the Sky

IT was May, 1903, and at Farnborough in Hampshire Colonel Cody was ready to take off. As soon as he had fitted the propellers, he tethered his strange machine to a tree near the balloon sheds, using a rope to which a spring balance was attached. He then climbed into the seat and opened the engine to full throttle, so that the balance would measure in pounds the thrust developed by the propellers as they pulled on the rope.

You can still see that tree at Farnborough. A plaque there used to bear the inscription: "Col. S. F. Cody picketed his aeroplane to this tree and from near this spot on 16th May, 1908, made the first successful officially recorded flight in Great Britain."

These words have now been altered to read: "S. F. Cody measured the thrust of his first aeroplane in 1908-9 by tying it to this tree. Nearby he made his first tests with his powered aeroplane on 16th May, 1908, and his flight of 1,390 feet on 16th October, 1908, was the first powered and sustained flight in Great Britain."

The change did not please G. A. Bromfield, Cody's friend and biographer; he has claimed that on May 16th Cody made five take-offs, and that his longest airborne distance of 150 ft. on that date should be regarded as his first proper flight. It may seem strange that a date in this century should be the subject of controversy when we know the day and the exact hour of innumerable events which occurred centuries ago. The explanation, of course, is that the aeroplane was developed by lone wolves in a way which seems to us positively casual. Cody happened to fly one day and that, for him, was that. . .

So promising were his first flights that the War Office succumbed to the alarm which always overtakes the bureaucratic and military mind when it is confronted by something new. The American cowboy's aeroplane had been an amusing distraction, but every right-minded chap in Whitehall knew that wars were fought by the cavalry and not by intrepid inventors in flying machines. Haldane himself went down to Farnborough to tell Cody that he was to be "released" from further service. He could take away his last aeroplane when he left, so long as he first removed the engine.

It took more than red-tape to keep Samuel Cody on the ground. He assumed British citizenship, took part in the pioneer Doncaster meeting of 1909, and completed the course—despite radiator trouble, a leaking petrol tank and a collision with a wall—in the *Daily Mail* £10,000 Round-Britain contest of 1911. Everyone marvelled at Cody's *Cathedral*—a name given this first big biplane through a picturesque confusion with "katedral," the angle at which the wings were braced downwards at their extremities.

Cody's biplane with a 120 h.p. Austro-Daimler motor was one of the 32 machines, including several famous French makes, which competed in the War Office trials on Salisbury Plain in 1912. It was a happy moment in the flying cowboy's crowded life when the War Office, which had sacked him at Farnborough, handed him the premier international prize of £4,000 and another £1,000 as the best British competitor.

In August of the following year—the August before Europe was engulfed in war—Leon and Frank Cody watched their father take off with W. H. B. Evans, a well-known cricketer, in a new machine which he intended to fit with floats so that it could operate from the surface of water. After the aircraft had climbed to 500 ft. something went wrong with it over Ball Hill, near Cove Common, in the Farnborough area. Parts seemed to be breaking away; and then the machine hurtled towards the ground, throwing out its two occupants on the way.

Cody was 52. The Army buried him—a civilian—with full military honours in Aldershot cemetery. But we can feel closer to him at Farnborough. The old tree was cut into pieces, impregnated with a special resin, and put together again, so that it should stand there, with its branches pointing to the sky, as a lasting memorial to the man from the Wild West who became one of the greatest and bravest of Britain's pioneer airmen.

ALAN WINTERTON

Wingmen write . . . .

I am writing to tell you of some of my model aeroplanes. The first was a Frog "Slip-together" glider called the *Aero Scout*, and this was when I was about five years of age. Then Dad built me a K.K. Auster *Arrow*, which we coated with about four coats of colour dope, so, needless to say, it did not fly! I then built about five "Ee-ze-Bilt" *Sedans* which are very stable fliers, and I also built three K.K. *Sportsters*, a *Rapier*, and a *Nomad*.

We took the *Nomad* to Epsom Downs, after numerous test glides in the garden, and put it on the tow line. After two glides to get the hang of the tow line, it went up nice and straight. The line fell away, and it (the *Nomad*) flew sideways down-wind (the wind must have been about 30 m.p.h.) and Dad went off in pursuit.

For our school's annual hobbies exhibition I entered an *Achilles*, which, when it was completed, turned out to be quite a good flier. I did not make any more aircraft until this year, when I entered a Hollandair *Libel*, built from MODEL AIRCRAFT plans, and won a Highly Commended.

Yours faithfully,
Gt. Bookham, GEOFFREY CLARKE.
Surrey.

* * *

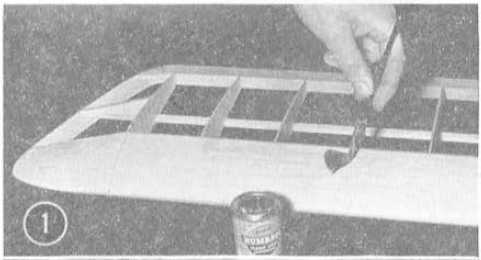
I am writing to tell you about my *Wee Snifter*, which was featured in the January MODEL AIRCRAFT and which has, so far, been eminently successful.

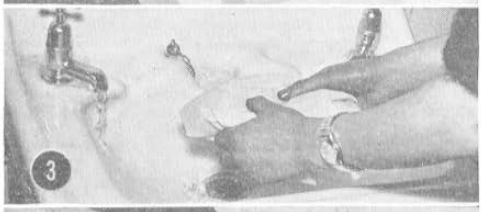
It took me four evenings to build, and I am flying it on an E.D. Baby with a 7 × 4 prop. I finished it in red and black, and wherever I fly it people remark on its design and appearance!

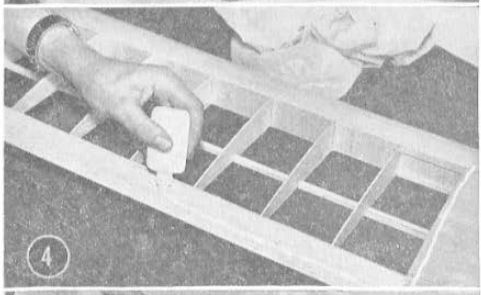
Yours faithfully,
Wallington, KEITH KENNEDY.
Surrey.

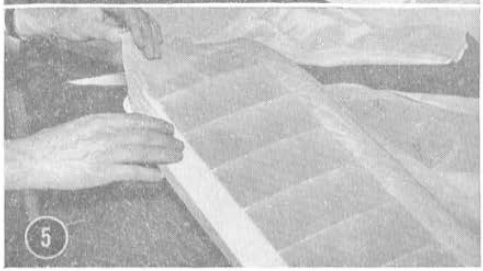
ON THE WINGS CLUB WORKBENCH—

FABRIC COVERING







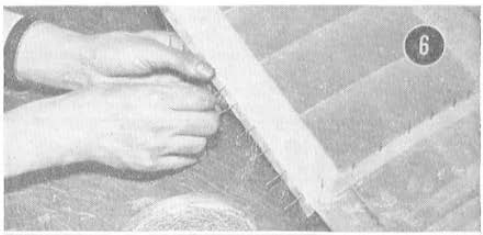


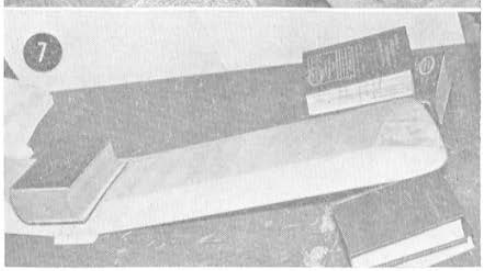
IT is quite surprising how many modellers continue to cover large models with tissue, when by using silk or nylon they could not only eliminate the inevitable minor tears, but also add considerable strength to the airframe. Most of the difficulties of fabric covering are imagined ones, and in fact, as you can see from our photos, the process is quite straightforward.

Before you decide to use silk or nylon be certain that your framework is strong enough to withstand the considerable shrinkage of the doped fabric, and that the additional weight of the fabric will not upset the model's performance. As a general rule, any soundly built model of over 4 ft. span will benefit by fabric covering.

In these photos we are seen covering our Keilkraft *Super* 60 wing with nylon chiffon which we bought from Sheen Models of 263, Upper Richmond Road, East Sheen, London, S.E.14, at 5s. 0d. per yd. (54 in. wide)—2⅛ yds. being sufficient for this 5 ft. 3 in. span model. Incidentally, this material is only available in either pink or blue.

Preparation of the framework is most important. This





means doping the entire structure where it comes into contact with the covering (Photo 1) then, when dry, sanding smooth.

Cut the fabric ½ in. oversize, and double the wing chord (Photo 2). Soak the nylon in water, and gently squeeze out any excess (Photo 3). Spread a liberal quantity of P.V.A. white adhesive over the outer framework (but not the ribs)—Photo 4. Lay the moist nylon on the top of the wing leaving ½ in. overhanging the trailing edge (Photo 5). Press and smooth down the nylon all round the frame, drawing the fabric smooth, but do not stretch it too tightly—pin the edges (Photo 6).

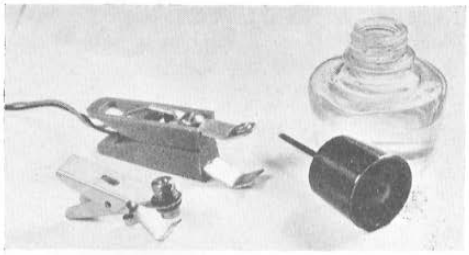
Pull down the nylon at the tip, it is not necessary to use a separate piece here, since wet nylon will accommodate the dual curvature quite easily. Turn under and stick the ½ in. strip at the trailing edge and wing tip then turn the wing over and attach the remaining fabric to the wing underside. If it has dried out, slightly re-moisten using a plastic sponge.

When the covering has dried it will be almost, if not quite, wrinkle free. Now, starting on the underside, give it a coat of *full strength* clear shrinking dope (sometimes called Glider Dope). If you intend to use a butyrate finish as we have done, you must use butyrate clear shrinking dope (heading photo). You will need about a pint of dope for two coats on a 5 ft. span wing. When we doped our wing, butyrate was only available in the small tins shown in our photos, but it is now available in a more economical half-pint size.

By the time the top of the wing is doped, the underside will be surface dry, although the shrinking process will continue for several hours. To prevent warps, the wing must therefore be pinned or weighted down (Photo 7), preferably overnight, until completely dry.

Before giving the second coat of dope, rub down any rough spots on the covering with flour paper, or No. 400 carborundum paper. Following the second clear coat, the wing is ready for colour doping.

Peter Chinn's ENGINE TIP



A SOUND investment for those who are using glowplug engines, is a good glowplug clip connector. Don't waste time and batteries by trying to economise. Two excellent British-made connectors are now on the market. They will fit a variety of engines and will last indefinitely. In the foreground, at the left of our picture, is the Keilkraft all-metal glowplug clip costing 3s. 2d. The larger clip is the Davies-Charlton Quicklip of red nylon, which will fit all sizes of engines from the smallest to the largest and costs 5s. 5d. complete with battery lead and plug. The Quicklip is available without leads and plug at 3s. 2d.

Many glow engines respond best, when started from cold, if first "primed" through the ports with a few drops of fuel and an excellent storage bottle and dispenser is shown on the right. This is an empty 1 oz. "Pelikan" drawing ink bottle. These bottles are fitted with a special cap having a thin tube and a rubber bulb top. With it, one can inject exactly the amount of fuel found best for priming any particular type of engine, in a series of drops. This is much better than squirting fuel into the cylinder from a fuel can and trusting to luck.

Wings Club Queries

Are the plans of the *Mighty Mouse* (16 in. span stunt model), still available and if so, how much do they cost?—Paul Taylor.

▲ *These plans are still available and if you send a postal order for 2s. 6d. to* MODEL AIRCRAFT, *Plans Department, 19/20, Noel Street, London, W.1, we will be pleased to forward a copy to you. Incidentally, the plan number is M.A.151, and it will help if you specify this when you send in your order. Details of all our plans are in the* MODEL AIRCRAFT *Plans Catalogue which can be obtained from the above address price 10d. post free.*

* * *

I am thinking of buying a F/F aircraft suitable for an E.D. Bee Series II and I would be glad if you could recommend some. This will only be the second time I have attempted a diesel powered plane so I would be glad if you could suggest some easy ones.—Paul Alabaster.

▲ *There are, of course, numerous kit designs suitable for this motor, so many in fact, that it is not possible to list them all here. I would, therefore, suggest that you have a look at those available in your local model shop and ask to examine the kit contents and plan. In this way, you will be able to judge whether the construction is within your capabilities and whether the design is pleasing to yourself. It will probably be this latter point which will be the deciding factor as most kit models for this engine are simple enough for beginners to build.*

Lost Model

John Broughton, Belchers Farm, Stadhampton, Oxon., has lost his modified *Slicker Mite*, and offers £1 reward for its return. It has a glossy black and white fuselage, no wheels, red fins and plastic 10 c.c. tank glued to the outside of the fuselage. The model was not fitted with a dethermaliser, so John, like so many before him, has found out the hard way that sooner or later a D/T-less model will fly out of sight.

(I recommend that every model be fitted with a D/T which is used for every flight and as several Wings Club members have written asking how these devices work, I will devote a "Wings Club Workbench" to the more popular types shortly.—A.W.)

Pen-Pal Wanted

Philip Hall, 32, Berkeley Street, Havehills, Leeds 8, is interested in C/L models, particularly team racers.

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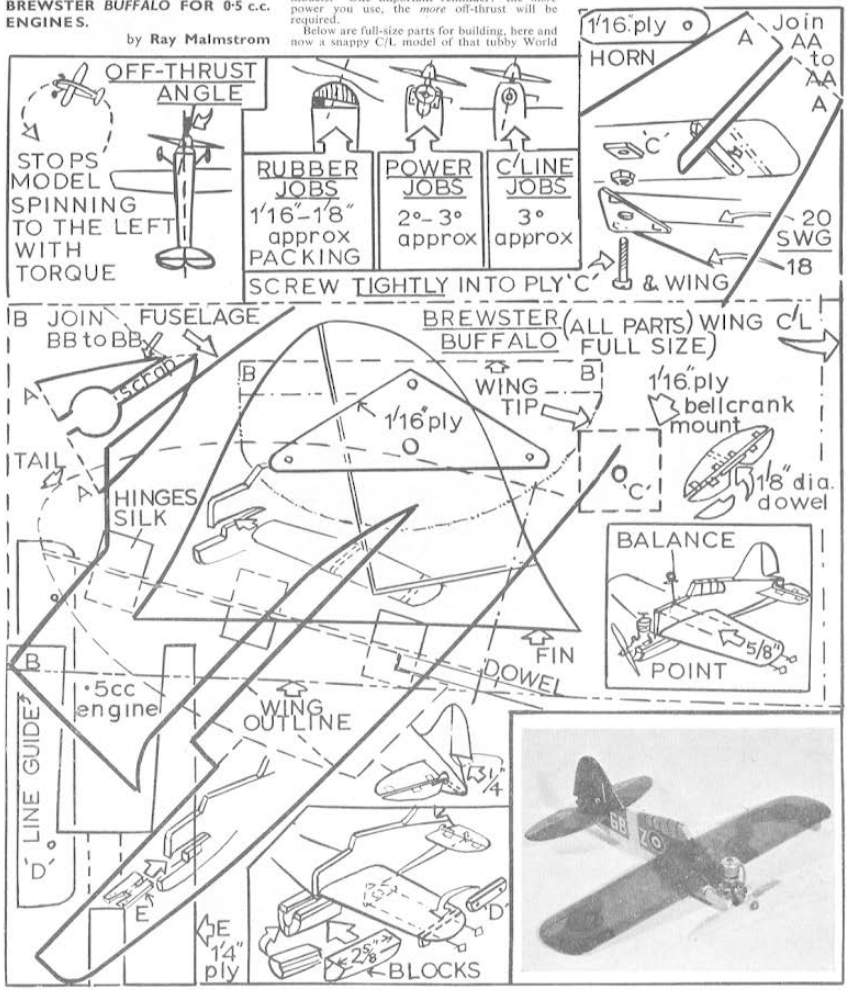
Model 'n Tip

A special instructional feature for wingmen on the off-thrust angle, with FULL-SIZE plans to build a flying model **BREWSTER *BUFFALO* FOR 0·5 c.c. ENGINES.**

by **Ray Malmstrom**

ONCE the propeller is revolving under power, any model aircraft becomes subject to the demon of the piece—*torque*. This is a twisting action that often causes the model to bank so steeply to the left, that it ends up with its nose buried lovingly in Mother Earth! The cure is simple—point the propeller driving shaft to the *right*. The angle the prop shaft now makes with the centre or datum line of the model is called the *off-thrust angle*. The amount the shaft must be pointed to the right must be found by test, and depends on the power being used, but below will be found useful amounts and degrees of off-thrust for rubber driven and power models. One important reminder: the *more* power you use, the *more* off-thrust will be required.

Below are full-size parts for building, here and now a snappy C/L model of that tubby World War II fighter—the Brewster *Buffalo*. The entire model is made from ¼ in. sheet, except where noted. Tailplane and elevator of ⅛ in. sheet and the lower blocks are from laminated ¼ in. sheet. You will notice the off-thrust angle has already been incorporated in the engine mount. Build it accurately, finish in colour dopes, adding transfers and a coat of fuel-proofer. Balance as on the plan and fly on 18-22 ft. lines. Use any 0.5 c.c. motor (E.D. .46, D.C. Dart, Frog 50). This little *Buffalo* (15 in. span) has "pep and performance plus," and really can be flown in the back garden! A larger tank can be fitted if desired. Happy landings.



ROVING REPORT

INTERESTING product news from the United States is that Dynamic Models Inc., of Van Nuys, California, are producing an automatic variable pitch propeller. To be known as the "Autopitch" prop, the single size, at present available, is intended primarily for radio-controlled models using engines of 5 c.c. and larger.

The advantage of the Autopitch is that, at speeds below 6,000 r.p.m., the angle of attack of the blades is reduced to zero, or slightly negative, to produce no thrust. It therefore no longer becomes necessary to throttle the engine down to 2,000 or less, to obtain sufficiently low thrust for rapid descents and quick landings. Even the best throttle equipped glow engines are a trifle tricky to adjust for reliable operation when called upon to cover a speed range in the region of 5 : 1. With the Autopitch, as the throttle is opened for speeds above 6,000 r.p.m., the blades automatically assume full pitch. It is probable that full pitch is obtained immediately—i.e. that pitch is not constantly increasing as speed gradually exceeds the nominal 6,000 r.p.m., although we hear that some U.S. experts are asking for just such a feature.

The Autopitch prop operates through the centrifugal force acting on the blades. At rest and at low speeds, a strong compression spring surrounding the sleeved root of each blade, holds it retracted and in zero pitch. As r.p.m. is increased to the point where centrifugal force exceeds the pressure of the spring, the blades move outwards but, in so doing, are forced to rotate by means of sloping shoulders riding on stops inserted through the outer casing of the hub. Pitch combination can also be adjusted by means of shim washers supplied with each prop. The hub of the prop is machined alloy and is equipped with a spinner nut bored and tapped to fit the standard ¼ in. thread used for most U.S. (and some Japanese) engines of the 29-35 group. Blades are of wood.

An interesting point is that the late Fred Borders, originator of the flexible plastic airscrew, invented a similar a.v.p. prop some 11 years ago. Fred gave us one of these props at the time and it was reported upon in the November, 1950, issue of MODEL AIRCRAFT. Intended for engines in the spark-ignition 10 c.c. class available at that time, the Borders prop had a working diameter of 15 in. and was arranged to retract into zero pitch at speeds below 2,500 r.p.m.—a speed at which these engines could be reliably run using two-speed contact breaker assemblies.

The Autopitch prop costs $10.95 in the U.S.A., or approximately £3 18s.

* * *

In our March issue, commenting on Keith Storey's McCoy 19 powered *Gold Rush III* R/C pylon racer, we estimated a level flight speed of nearly double its 43 m.p.h. race average. We now learn that, in fact, the model has done just on 80 m.p.h. "on the straight." Doug Spreng, 1960 U.S. Nationals "multi" winner, has clocked 86.3 m.p.h. with his pylon racer (Veco 19) which did the 10 U-turn course at 48.6 average, while Don Mathes has bettered 92 m.p.h. (Veco 19 again).

Bob Dunham's 123.62 m.p.h. record with a 10 c.c. McCoy powered radio-controlled speedster, is made more impressive by the news that, apart from borrowing the unnecessarily large wing from one of his aerobatic jobs, the model's McCoy 60 was using only 10 per cent. nitromethane.

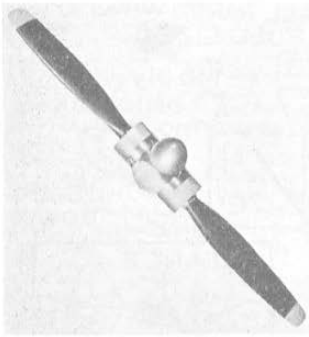
* * *

For the benefit of those who, after seeing the Cox advert promising *five* new products, have read of only four new engines in M.A., we are moved to mention that the fifth item is (or so our spies tell us) a ready-to-run scale Mercedes grand prix car with special motor strictly for use in the car.

* * *

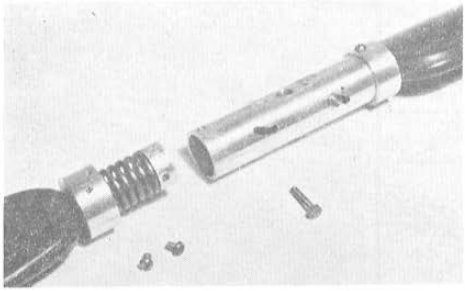
We learn that there is a good chance of O.S. R/C equipment becoming available in the U.K. soon. O.S. now have a very large range of tone receivers, both valve/transistor and all-transistor sets, covering practically every requirement from a lightweight all-transistor single channel operating on 3 volts to eight, ten and twelve channel stuff. From Australia, Tony Farnan reports he is flying an O.S. eight-channel in a *Pegasus*, which was tuned once on installation and has been entirely trouble-free. Farnan says that there are ten other eight and ten O.S. multi outfits in the Melbourne area.

Nice action shot from Radoslav Cizek, Czechoslovakia, of J. Harapat's new A2. Model has 440 sq. in. wing, 19 per cent. tailplane and span 70 in.

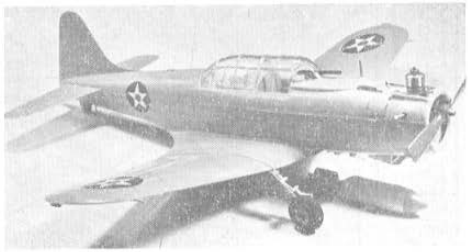


Above—the new Autopitch R/C prop made by Dynamic Models, U.S.A. Prop has zero thrust at speeds below 6,000 r.p.m.

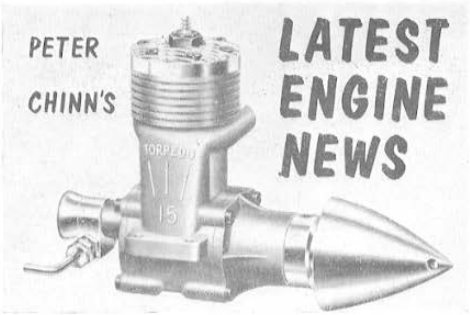
Below—anticipating the Autopitch airscrew by more than 10 years, was this v.p. prop made by the late Fred Borders, of Brixton, in 1950.



Wen-Mac 22 in. *Dauntless* weighs 13 oz., but 100 sq. in. area gives better flight characteristics than most ready-mades. Power Wen-Mac Mk.III



PETER CHINN'S LATEST ENGINE NEWS



The Torpedo 15R Series 61 2.5 c.c. racing engine. This is the production development of Bill Wisniewski's prototype that performed so impressively at last year's World Speed Championships.

First reports of the latest engines to reach the model market

Great Britain

TO supplement their 1.49 and 2.49 Mk. III diesels, both of which are in the top performance bracket of their respective capacity groups, Progress Aero Works are now making a "19-D Combat Special" model of 0.1944 cu. in. or 3.186 c.c. swept volume.

The design and construction of this new engine closely follows that of the 2.49 featured in last month's Engine Test report. The same crankcase unit is used but is fitted with a Hoffmann high-speed eight-ball race in place of the Ransome and Marles seven-ball bearing of the 2.49. Comparing the two engines, the bearing intake aperture is also slightly wider, giving a small increase in the induction period. The crank throw is also increased, extending the piston stroke from 0.538 in. to 0.590 in.

Cylinder bore has been increased from 0.597 in. to 0.640 in. and stroke/bore ratio has therefore gone up from 0.901 to 0.922. In keeping with this, deeper exhaust ports are used but the same general port design, with its special internal transfer flutes, is retained. The piston skirt length and conrod length are unaltered but a heavier gudgeon-pin is used and the conrod has a very wide little end reducing the unsupported section of the gudgeon-pin to the minimum.

The 19-D is about 3/32 in. taller than the 2.49 but mounting dimensions are identical and as the new engine is only about ¼ oz. heavier than the 2.49, existing models can easily be fitted with this new unit with little or no modification.

We shall be reporting on the 19-D's performance in a later article.

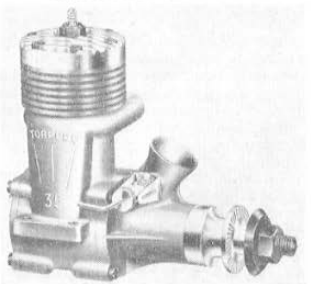
U.S.A.

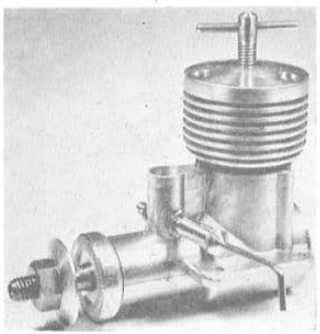
With two of America's major model engine producers, Cox and K & B, bringing out completely new ranges, and with new models from other factories, 1961 will be a highly interesting one so far as American engines are concerned. Many of these new models are competition motors and it is clear that the Americans are now making a determined effort to regain the leadership in certain classes of model engines which they have, over the past few years, been in danger of losing—to Japan and Italy in particular and, to a lesser extent, to the U.K. As examples of this renewed effort, we are thinking, in particular, of such products as the needle-bearing Fox Combat Special, the Cox Tee-Dee 15 and the new Series 61 K & B Torpedo engines. In the smallest classes, especially "Half-A," the U.S. has, of course, held a commanding lead, for some time, with engines such as the Holland Hornet and Cox Hopper series.

The big news of the moment is the K & B "Series 61," the official announcement of which is being made this month in the U.S. This comprises three entirely new models, the .15R, .29R and .35. Some months ago, in this column, we mentioned that K & B were tooling for a production version of Bill Wisniewski's racing 2.5 that set up so many outstanding performances last year. The Torpedo 15R is the result and, with the .29R, marks the return, to quantity production, of the classic American racing engine—twin ball bearings, loop-scavenging, unit crankcase and cylinder, with detachable front and rear components and disc induction. Only the ringed alloy piston is missing. Instead, these engines have an "Electrolised" hard plated piston surface, claimed to reduce drag and greatly extend life.

Both the .15R and .29R are fitted with a spinner assembly as standard

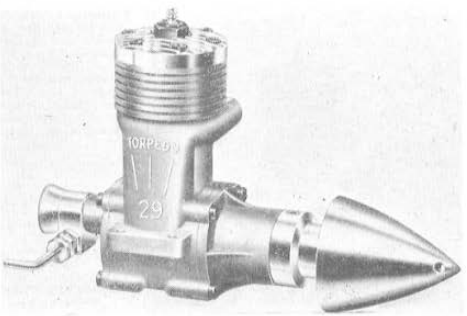
Of similar construction to the 15R and 29R, the Series 61 Torpedo 35 features ball-bearing shaft but shaft valve intake.

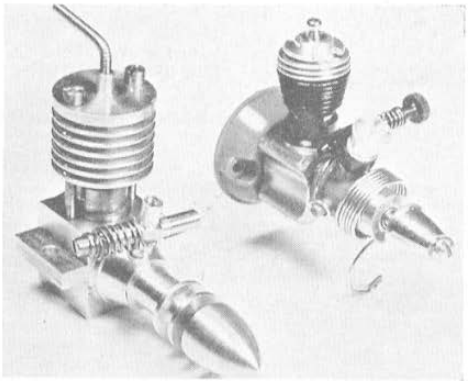




Left—new P.A.W. 19-D Combat Special of 3.2 c.c. is a development of 2.49 Mk. 3 and uses same crankcase casting. Engine has both bore and stroke increased.

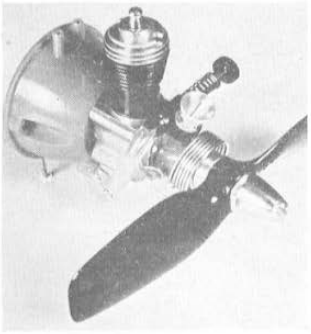
Right—the new K & B Torpedo 29R Series 61 5 c.c. racing engine. Like the 15R, it features rear disc induction, twin ball-bearing shaft and an integral spinner assembly.





Right — undisputedly, the world's smallest production engine, Cox's new .16 c.c. Tee-Dee .010 with 3 in. prop as supplied, which our test model turned at 28,000 r.p.m.

Left—small overall size of the Cox .010 is evident from this photo of engine with British hand-built Dragonfly of similar capacity. Cox weighs just over $\frac{1}{2}$ oz.



equipment, the spinner backplate forming an integral part of the drive hub. Both engines are also equipped for installing a high-pressure, forced-feed fuel system via a pressure take-off nipple in the backplate. Specifications include special balancing, a new high tensile steel crankshaft, a forged alloy connecting-rod, heavy duty stainless steel valve needle and a new type needle-valve assembly with rearwards-facing fuel inlet nipple. This latter, incidentally, takes the form of the angled feed formerly seen on the O.S. engines: a smooth bend instead of an abrupt right-angle.

The .35 Series 61 is of similar construction to the two racing models, including the use of a ball-bearing crankshaft but employs the front rotary-valve induction system generally favoured for engines of this class. It is equipped for a low-pressure fuel pressurisation system and appears to be primarily intended for combat and "rat racing" events.

No actual performance data on the Series 61 engine has been released by the manufacturers at the time of writing, but we expect to be able to give this and some first-hand data very shortly.

* * *

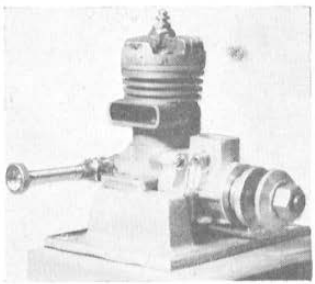
In last month's issue, we described the new Cox Tee-Dee 15 F.A.I. class contest engine. Tests on this engine have been made and a full M.A. Engine Test report will follow in due course. Meanwhile, to satisfy the curiosity of those who are wondering whether this motor has anything to offer over the best current 2.5 diesels for F/F, we would remark that we obtained 15,500 r.p.m. on a stock 8 × 4 Tornado nylon prop and 17,100 r.p.m. on a Top-Flite 8 × $3\frac{1}{8}$ wood prop when using 30 per cent. nitromethane fuel (Record Super-Nitrex). Incidentally, on straight methanol and castor, as now required for F.A.I. speed, r.p.m. dropped by 1,700 revs. on the 8 × $3\frac{1}{2}$ to 15,400, so a high nitromethane content fuel is an obvious necessity for top performance with this engine. This prompts us to add the suggestion that contest enthusiasts would do well to conserve their stocks of such fuels, as with the continuing embargo on the shipment of nitromethane from the United States, supplies are now virtually non-existent in the U.K.

* * *

The second of the new Cox Tee-Dee line, the tiny .010 model (0.16 c.c.) has now reached us. The maker's claim for this engine is that it will exceed 27,000 r.p.m. with the prop supplied with it. Ours, on Super-Nitrex, has recorded just on 28,000—which is the fastest we have ever had any model engine turning with the prop still on. . . .

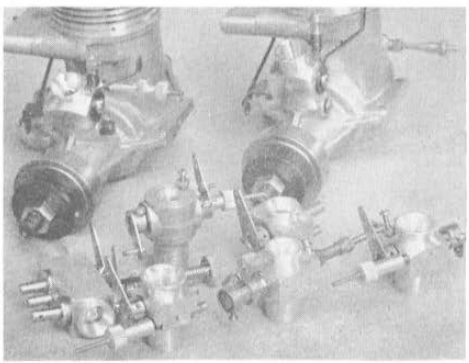
This engine is a staggering bit of work. We have seen sub-miniature model engines before but none with such perfect miniaturisation as this. The Cox .010 really is tiny and is not just a small engine with an extra small bore. It is virtually a scaled down Tee-Dee 15, with every part faithfully reduced. It even has the bigger engine's triple jet carburettor and provision for fuel pressurisation. The only "big" part of the engine is its moulded tank-cum-radial-mount, which is just over an inch in diameter. It is so small that its crankshaft can easily be hidden inside the .15's shaft. Alternatively, all its component parts, with the exception of tank, can be packed inside the .15's crankcase unit.

The .010's crankcase and main bearing is $\frac{3}{16}$ in. long and houses a 0.162 in. dia. crankshaft which is complete with crescent counterbalance, generous rectangular valve port and $\frac{1}{16}$ in. dia. crankpin. The shaft is hardened, is relieved for a short distance ahead of the valve port, has a splined section for the anodised alloy prop driver and is tapped



Left—Enya 15-I Special. Five of these engines were built for speed work by Akira Fujimuro, an employee at the Enya works and a former speed champion. Based on Enya 15-IB, Special has twin ball-bearing, special shaft with highly developed induction, rear needle-valve and pressure feed.

Right—just a few of the many types of carburettors made by the O.S. experimental department in the course of developing their new .49 R/C engine which is now nearing the production stage.

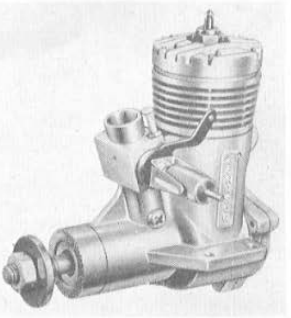


for a 2-56 prop retaining screw. The crankcase unit, like the larger Tee-Dee models, has part of its bearing section milled flat at the top to expose the required valve aperture width and is then fitted with an outer housing, a special high-strength moulding, carrying the screw-in carburettor.

The machined and blued cylinder, typically Cox, has two opposed exhaust ports with internal transfer flutes between and is topped by a screw-in glow head. The piston, with hardened skirt surface and flat crown, is coupled to a tiny hardened conrod via a ball and socket joint.

The .010 is provided with alternative backplate mounting units, either of which plugs into the rear of the crankcase and is secured with four screws. The smaller of the two simply provides a two-point bulkhead mount for the bare engine. The larger is fitted with a recessed cover and forms the fuel tank, complete with outlet, filler and vent pipes.

The standard prop supplied with the Cox .010 is a wide blade 3 × 1¼ (!).



New Johnson .36 R/C engine has ball-bearing shaft and Johnson " Automix " carburettor. Sells at £10 14s. in the U.S. and therefore likely to be expensive in the U.K.

The engine is fitted with a spring starter, as standard equipment, this being considered virtually essential to impart the rapid rotation desirable for a quick start. One rather expects engines of such small size to be a bit touchy as regards starting. The Cox .010, however, turned out to be remarkably co-operative. It is all too easy to overprime a tiny cylinder like this, but once the prime technique is established, the engine starts easily. Warm restarts are practically instantaneous.

It is a moot point just how small a model could be built around this engine. The Cox .010 weighs only a little over ½ oz. but it is certainly no sluggard and we shall be surprised if someone doesn't turn out an R/C job for one. . . .

In Brief

Dynamic Models Inc., makers of Holland and Johnson motors, have a new 0.36 cu. in. ball-bearing engine. It is available in a special R/C version, equipped with the new Johnson " Automix " carburettor with barrel throttle and automatic mixture control.

Engine news from Czechoslovakia is that MVVS are working on a new twin ball-bearing diesel 2.5 for international F/F and T/R.

CONTEST CALENDAR

Apr. 22-23 R/C TRIALS. R.A.F. Benson, Oxon.
,, 23rd C/L TRIALS. R.A.F. Debden.
,, ,, East Lancs Open Contest. Walton Spire, Nelson, Lancs. Open R/G/P.
,, 30th *WESTON CUP. FAI Rubber Elim. Area.
,, ,, HALFAX TROPHY. FAI Power Elim. Area.
,, ,, †High Wycombe C/L Rally, R.A.F. Booker. " A " and " B " T/R, Combat, Stunt. Pre-entry (2s. 6d.) to J. Elphick, 102, Suffield Road, High Wycombe, Bucks., by April 22nd, 1961, with S.A.E. please.
May 6-7th RAFMAA Championships. R.A.F. Debden.
,, 7th †Sutton Coldfield R/C Meeting. R.A.F. Wellesbourne. Single, Multi and Scale. Entry forms and full details—R. Masters, 30, Western Road, Wylde Green, Sutton Coldfield, Warwickshire.
,, ,, †Stockport Advertiser Rally, Woodford Aerodrome, Cheshire. R/G/P, R/C single and multi, T/R, " A," Combat, Flying Scale for E. J. Riding Memorial Trophy.
,, ,, †Surbton Gala, Chobham, R/G/P, ½A Power.
,, 14th Cambridge Slope Soaring Rally. Ivinghoe Beacon. R/C single and multi (fee 2s.), open glider (6d. per flight). R/C pre-entry by May 7th to C. King, Red Roof Garage, Waterbeach, Cambridge.
May 21-22nd **BRITISH NATIONAL CHAMPIONSHIPS** R.A.F. Barkston Heath.
THURSTON CUP. U/R Glider.
SMAE CUP. R/C FAI Multi.
LADY SHELLEY CUP. Tailless.
KNOKKE TROPHY. C/L Scale.
,, 21st GOLD TROPHY. C/L Aerobatics.
DAVIES A TROPHY. FAI Team Racing.
COMBAT. Preliminary Heats.
SPEED.
SIR JOHN SHELLEY CUP. U/R Power.

*Plugge Cup events.

May 21st MODEL AIRCRAFT TROPHY. U/R Rubber.
SHORT CUP. PAA-Load 2.5 c.c.
SUPER SCALE TROPHY. F/F Scale.
,, 22nd SMAE CUP. R/C FAI Multi.
TEAM RACING. Class ½A.
DAVIES B TROPHY. Class B T/R.
COMBAT. Final Rounds.
SPEED.
May 28th East Lancs Open Contest, Walton Spire, Nelson, Lancs. Open R/G/P.
June 4th †Wharfedale C/L Rally, R.A.F. Rufforth, near York. " ½-A," " A " and " B " T/R, Combat, Stunt. Pre-entry (2s. 6d.) to L. Davy, " Sunnyside," Burley-in-Wharfedale, near Ilkley, Yorks.
,, 11th †Midland Area Rally, R.A.F. Wellesbourne, near Stratford-on-Avon F/F all classes, " ½-A," " A " and " B " T/R, Stunt, Combat, R/C Single and multi, Concours, Chuck Glider. Pre-entry (2s. 6d. double on field) to S. Wade, 10, Storer Road, Loughborough, Leics., by May 28th, 1961, limited to first 50 in R/C, 64 in Combat, 72 in T/R.
,, 18th *MODEL ENGINEER CUP. U/R Team Glider. Area.
,, ,, FLIGHT CUP. U/R Rubber. Area.
,, ,, †Godalming C/L Rally.
,, ,, C/L Rally, Old Park Barracks, Dover. Combat, Stunt and Speed. Organised by Junior Leaders' Regiment, R.E.
,, 24-25th F/F TRIALS. FAI Rubber/Glider/Power. Centralised.
July 2nd †Northern Heights Gala, Halton.
,, 8/9th †P.A.A. Festival, West of Scotland, Abbotsinch.
,, 9th C/L SPEED. Centralised.
,, 15-16th F/F TRIALS. FAI Rubber/Glider/Power. Centralised.
,, 23rd †Ashford C/L Rally, Victoria Park, Ashford, Kent. Combat and FAI. T/R.

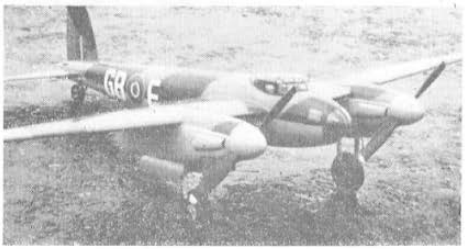
SMAE events in capitals.

Aug. 7th **INDOOR WORLD CHAMPIONSHIPS.** R.A.F. Cardington.
,, 13th SPEED. Centralised.
,, ,, †Novocastria M.A.S. Rush Trophy Gala. Open R/G/P, " ½-A " Power, Combat.
,, 20th **SCOTTISH GALA.** U.K. CHALLENGE MATCH. Abbotsinch.
KLM TROPHY. U/R Power.
CMA TROPHY. U/R Rubber.
GLIDER. U/R Glider.
TAPLIN TROPHY. R/C Rudder only.
TEAM RACING. Class " A " and " B."
,, ,, †C. H. ROBERTS CUP for Flying Boats. Dartford Heath. Full details from I. Bittle, 3, Spring Vale, Bexleyheath, Kent.
,, ,, †Devon Rally, Woodbury Common Open R/G/P, " ½A " Power, Combat.
,, 27th I.R.C.M.S. Annual R/C Contest, Wellesbourne. Single, Multi and Scale.
Sept. 1-3rd **WORLD CHAMPIONSHIPS, F/F.** Germany.
,, 10th **NORTHERN GALA.** GLIDER. U/R Glider.
HAMLEY TROPHY. U/R Power.
CATON TROPHY. U/R Rubber.
RIPMAX TROPHY. R/C Rudder only.
TEAM RACING. Class " ½-A," " A " and " B."
,, 24th *KEIL TROPHY (PLUGGE). U/R Team Power. Area.
,, ,, FROG JUNIOR TROPHY. U/R Rubber/Glider. Area.
,, ,, SPEED. Centralised.
Oct. 1st †South Coast Gala. Venue to be announced.
,, 8th " ½-A " Power.
,, ,, *FARROW SHIELD. U/R Team Rubber. Area.
,, ,, TEAM RACING. Class " ½-A " " A " and " B."
,, 15th **AREA CHAMPIONSHIPS**
,, 22nd FROG SENIOR CUP. U/R Power. Decentralised.
,, ,, CMA CUP. U/R Glider. Decentralised.

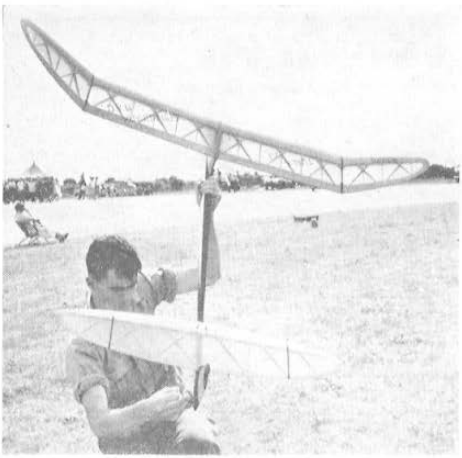
†SMAE sanctioned contests.

PHOTONEWS— *brings you a selection of readers' photographs*

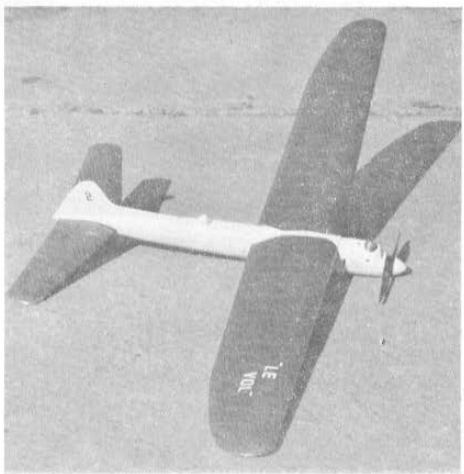
This photo from Keith Hoover, of Illinois, U.S.A., shows rather odd hi-thrust model by Milton Burley of Chicago. It is powered by a Forster .35 from above, and an Arden .09 below—made quite a spectacular showing from V.T.O.!



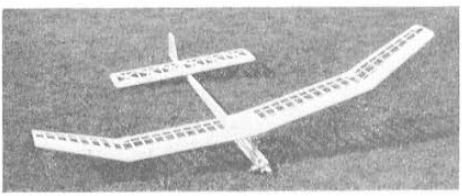
This beautiful model of a D.H. Mosquito *Mk. IV bomber (105 Squadron), was built by R. E. Butler of East Ham, London. It has a 41 in. wingspan and is powered by two A.M.25's which give speeds of around 50-55 m.p.h. Mr. Butler has been commended by John Cunningham and Peter Bugge (D.H. test pilots), who saw him flying the model continually one afternoon.*



This photo, taken just before a flight in the 1960 "Shelley," is of G. J. Percival of West Wickham, Kent, with his Ivala Mk. XII. *Powered by an Eta 29, it has 512 sq. in. of wing area and weighs 23 oz.*



E. J. A. Edwards sent us this photo of his 48 in. span sports model powered by a Mills 1.3. A $\frac{1}{16}$ in. sheet covered L/E and 3/32 in. planked fuselage covered with nylon ensure ruggedness, which was essential as the trim had never been satisfactory—after a vicious spin the model came in like a brick! It was recently re-covered with metallised wallpaper, and now flies like two *bricks.*



Interesting F.A.I. power model built by J. Marshall of Hayes, Middx., from a design of Vic Jays. Powered by a Rivers Silver Streak 2.5 it can turn in an average max. of $3\frac{1}{2}$ min.

TOPICAL TWISTS

by PYLONIUS

Dis-Membered

I can't claim to be a particularly modest soul, but at least I've never had the gall to regard myself as a Model Aeronautical Engineer. Of course, I've got me little badge to prove that I am one if anyone likes to cut up nasty about it, but I can't help feeling that Model Aeronauts went out with crinolines and self-propelled kites. Somehow the slightly archaic jargon evokes a picture of earnest young Edwardians (1910 Wimbledon Common vintage rather than 1961 Clapham Common) pioneering it up with their bamboo and wire contraptions. In a modern sense, the M.A.E. could be one of those gadget-bound, radio types, full of technical knowhow and aerobatic terminology, but you could hardly apply such an august term to the Simple Simon who does his engineering with a razor blade and his elementary aeronauting on the Chobham Reservation. Perhaps when the learned society gets cracking on its threatened sort out it might give a thought for the lower species of flyer, and consider whittling down its ponderous nameplate to ordinary bod-with-a-mod dimensions.

Much fuel has passed through the needle valve since modelling was the special preserve of the well-to-do young gentry. It's now just about as exclusive as rock and roll, and twice as noisy. Anyone with the price of a kit and membership fee can engineer and aeronaut with the best of them. Or, if he likes to stake his claim in the world of aviation without the hardship and expense of building a model, he can join a club.

This brings us to the crux of the Society's problem. At present the country is simply stiff with model clubs—and are some of those model clubs stiff! Matter of fact, if you were to take a census of same you would probably find that they outnumber the modellers by about two to one. You might say that club founding has become a hobby in itself, providing the main activity on club night.

Take, for example, a typical meeting. The members are in rebellious mood, and even the 50 per cent. non-members are spoiling for trouble, including the two coffee bar cowboys who mistook the occasion for the start of a motor bike burn up. In no time at all the dissident groups have arranged themselves into four separate clubs, and the rest of the evening's programme consists of devising raffish names for the progeny. Before the week is out each of the new clubs will have had four changes of Secretary, and by the end of the month the generative process will have brought into the club crowded world 16 new "Balsa Choppers," "Cement Nozzlers," etc., and the number of Hon. Sec. changes would read like the electoral roll.

With all this going on you can just imagine the state of the Society's "In" file. By the time the paper-bound officials have lined up the international teams and sorted out the badges and certificate issue for 1958 they are just about whacked. Who can blame them for mulling over the tempting idea of junking the model clubs in favour of a direct Society-to-modeller system? To cut down the paper work still further they could ditch the contest programme as well as the clubs. After all, it's a foregone conclusion that the same dozen experts will wipe up all the events as they normally do, and all that will be required of the Society is to dish out the aeroplane tickets and visas to the said experts, and save us all a lot of trouble.

Down in the Dumps

At the time of going to press a size 12 boot is doing yeoman service for the Sunday napping residents of snooty and suburban Esher. But perhaps the booting procedure has become just a trifle overzealous, for it seems to have stirred up quite a hornets' nest of controversy. Indeed the clamour of the public meetings is causing more annoyance to the comatose commuters and tired businessmen than the persistent buzzing from the local rubbish dump. And it's not the flies on the corporation tip which are causing the trouble but the fliers, for, as a last resort, the hounded modellers had taken up residence among the tin cans and garbage, where it was hoped the big boot would be too fastidious to venture.

Unfortunately, the peace-loving residents have had a taste of blood and are now intent on making the kill. You might have thought it triumph enough to have banished the wretched modellers to the ignominy of the rubbish dump, but the householder of today is a frustrated being with a lot of spleen to work off. Impotent in the face of bureaucratic planning, he can only sit tight and seethe when a pylon goes up in his back garden or a concrete lamp standard is planted on his doorstep. But he still has some freedom of action, and if he can't do something to stop a lot of hooligan kids kicking up a shindy with their noisy toys then life is hardly worth living. The local rubbish dump might not be one of the town's most attractive amenities but he's not going to stand by and see it despoiled.

What should have been a simple case of the offended citizen exercising one of his inalienable rights has developed into a national issue. Even the telly cameras have been snooping around among the rust and rubble in search of some new dustbin drama, and the drowsy residents have been roused from their afternoon slumbers to answer all sorts of wearisome questions. What the good people can't understand is why the young people have to enjoy themselves in such an anti-social manner. Why can't they just break milk bottles and cosh old ladies, and leave them to enjoy their Sunday nap in peace and quiet?

Poor Lookout

At one time our country was divided into two classes: the rich and the poor. In these more egalitarian times there is no such broad distinction; there is just the radio modeller and the rest.

I came to this conclusion after reading the budget make-up of what is considered the poor man's approach to radio flying: the parsimony of rudder-only control. The full extent of the financial setback for a spot of rudder waggling is in the region of thirty-three quid. And this without all those little extras which make life worth living: cement, dope etc.

What sort of outlay is required for going the whole multi hog is a matter of high finance. Something that well might be the subject of a government estimate, and it might not be long before someone publishes statistics to show that R/C is costing each man, woman and child in the country 2d. per head per annum.

Fair Deal

Seemingly, our Ladies Contest wouldn't be such a farce if the event were to be held in our beautiful summer instead of our boisterous spring. That, at least, is the fanciful view of a lady correspondent, who argues that all the girls would be rarin' to go once the weather had warmed up to garden party comfort.

There might well be something in this, but we shouldn't lose sight of the fact that the reason for the hectic spate of spring contests is that by mid-year most people have exhausted their winter stocks of models. Whether there would be a few bits of left over wreckage which could be patched up for the wife or girl friend is another matter, but at least by midsummer the feminine prodigy would just about have got the hang of which way to point the model when launching.

Shop Tactics

The other month I mentioned something about the changing nature of our model shops. Obviously I hadn't appreciated just how revolutionary the change had been. In my innocence I had imagined that even the greenest newcomer could spot the model shop by the tell tale signs: the plastic model soaring among the teddy bears, or a glimpse of a kit behind a curtain of fishing rods. But not so. Without some sort of directory the novice is lost. In a world of model plenty he would starve of balsa famine, and probably finish up buying pop records.

Quick Quiz

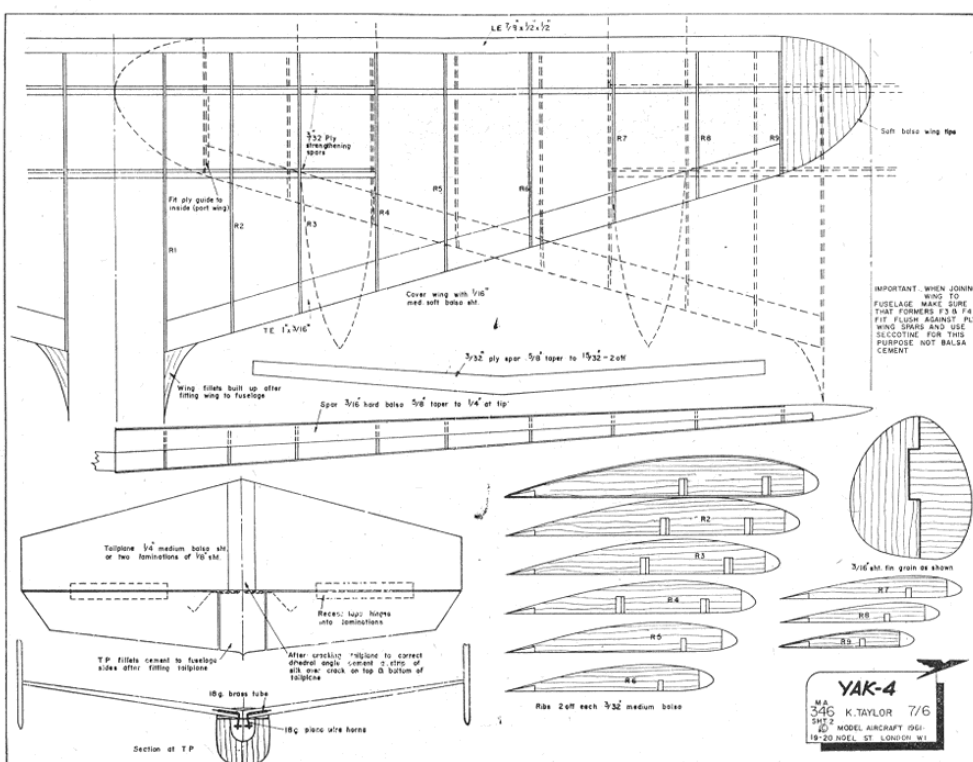
What about this for a question in "Round Britain Quiz"? "Where did a Coy Maiden meet Calamity Jane, and why did their hourglass figures bring them disaster?"

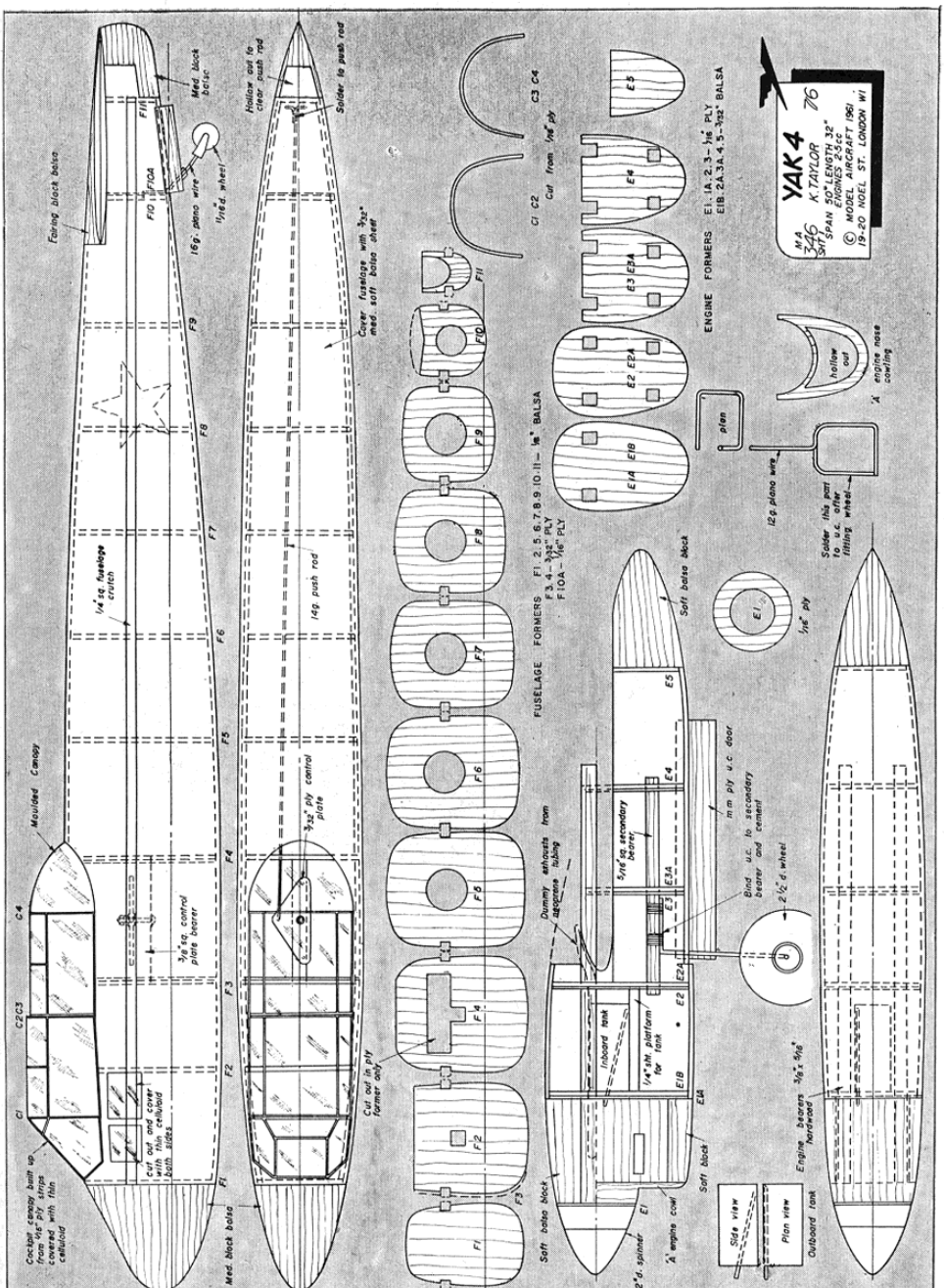
The answer of course is a Stunt Competition, with a slightly too advanced schedule.

Keith Taylor's

YAK 4

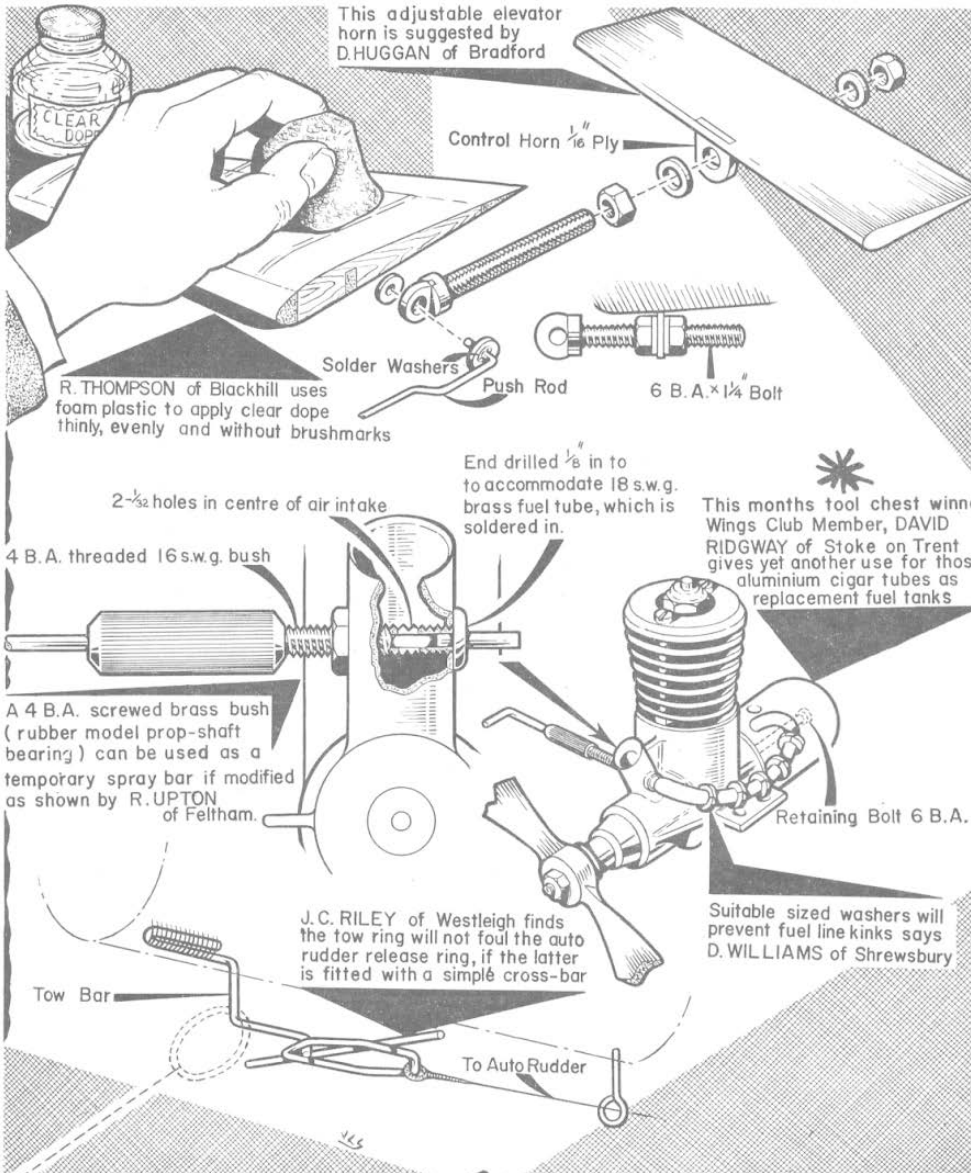
If you think you have reached the ultimate in control-line then why not try a twin? This stable replica of a famous Russian intruder for two 2.5—3.5 c.c. motors, with its ability to remain airborne on one engine, makes an excellent introduction to 'multis.' Models of this type are not recommended for beginners, but the two-sheet plans can be easily followed by anyone with some practical experience of building control-liners.

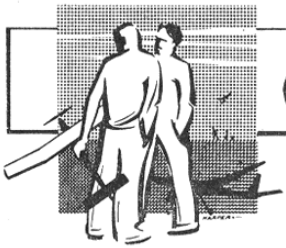




FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1. PRICE 7s. 6d. (TWO SHEETS), POST FREE

Readers hints and tips . . .





CLUB NEWS

BRIGHTON D.M.A.C.

The opening meeting of the new flying season saw one of the largest club turnouts ever. The club competition for the Mullett Glider Cup was run jointly with the Pilcher Cup and the results were: Dennis Latter, 7.20; John West, 6.19; Fred Boxall, 6.10.

In the White Cup John West achieved his eighth fly-off with his *Dixielander* to win with 12.00 + 4.25. Second was Alan Mussell with 8.32 and third Peter Brown with 5.22.

HALIFAX M.A.C.

Most of the new models built during the winter are now beginning to appear on the flying field. Combat and Rat-Racing are proving very popular at the moment, and members are beginning to mount up a nice collection of spectacular prangs. One Frog 500 Class "B" Racer described a most graceful arc from the top of the circle towards the earth, which would not have disgraced a five ton H.E. bomb. The result was also similar !

SOUTH BRISTOL M.A.C.

Interest has been dwindling of late due mainly to the lack of a good flying field. Two fields are used at the moment but they are not suitable for any serious contest flying. However, the C/L bods do plenty of roving to visit rallies during the season, and are also able to do a lot of practice at R.A.F. Locking.

CAMBRIDGE M.A.C.

Our keenest team-race flyer is turning to F.A.I. speed following the new fuel ruling, a similar ruling would turn him to Class "B" racing too—only the cost of hot fuel keeps him (and how many more ?) away.

The annual sausage supper and prize-giving included a raffle for a can of Pli dope won by Ray Malmström whose club lent us their club-room for the event. A film show followed, some of the films having been made in the past season by club members.

Keilkraft's designer, Neville Willis, gave an interesting talk on his approach to modelling recently. The meeting was open to the public and was very well attended with the result that we now have several new members.

We are running a training scheme for beginners with a Bantam in a small C/L model to teach them to fly, followed by individual assistance where it is needed during the building of early models.

WHARFEDALE M.A.C.

We would like to extend a cordial invitation to all C/L enthusiasts in the U.K. to our C/L rally on June 4th, at R.A.F. Rufforth, near York. Events will include ½A, A and B team racing. Stunt and Combat. Pre-entry is requested (2s. 6d. per entry) to: L. Davy, "Sunnyside" Burley-in-Wharfedale, near Ilkley, Yorks. Enquiries welcomed. From the interest which has been shown in the Northern Area alone we can promise plenty of competition.

The "Wharfedale Trophy" is to be presented to the S.M.A.E. as an award for the Class "A" T/R event at the Northern Gala. We hope that in this small way interest in International class T/R may be stimulated still further.

New date for the Northern Gala is September 10th, 1961—for Stunt and Speed fans, this year's Northern Gala will include these two events.

From the Northern Area committee comes an interesting idea for training C/L Stunt and R/C judges via a special training course. As proposed by B. A. Messom (Northern Area chairman and S.M.A.E. Tech. sec.), the course would include special demonstrations by leading exponents (and any other interested parties)—who would provide the initial experience for the trainee judges. The idea received the full support of the Wharfedale club.

At a recent club meeting many members expressed *dissatisfaction* at the new ½A team racer cross-sectional area rule of 6 sq. in. We understand it is to apply for the 1962 season. While we can see a reason for a rule of this type, we do not think that the excessive proportions which are dictated by *this* rule will do much to enhance the appeal of class ½A to the "would be" T/R enthusiast.

EAST LANCS M.A.C.

Two open contests will be run at Walton Spire, Nelson, Lancs., on April 23rd and May 28th. Open Power, Rubber and Glider will be flown and the rules are—Power: 3 × 3 min. maximums 12 sec. motor run. Rubber and Glider: 3 × 3 min. maximums.

In all three classes the fly-off will commence at 4 min. and increase by 1 min. steps until a decision is reached, the competitor making his fly-off at his own discretion after he has completed three flights.

Entry will cost 1s. 6d. (1s. juniors); there being no pre-entry and all the fees being returned as prize money.

No great degree of organisation will be undertaken by East Lancs.—other than providing flight cards etc.—it being hoped that flyers will be prepared to do timekeeping on a reciprocal basis.

NORTH KENT NOMADS

Our open competition for the C. H. Roberts Cup for flying boats will be held this year on August 20th on Dartford Heath. Flying commences at 10 a.m. We are arranging for an artificial tank to be built in the form of an equilateral triangle with 8 ft. sides for r.o.w. purposes. Further information as to the specifications of models for this competition can be obtained from: Ivor Bittle, 3, Spring Vale, Bexleyheath, Kent.

NUNEATON AEROMODELLERS

R/C models are in abundance and, at times, the conversations in the clubroom become very technical, although this should not deter any keen aeromodeller in the vicinity who might wish to join. Meetings are now held at the Hollybush Hotel on Friday evenings and anyone interested is very welcome.

NORTH DUBLIN A.C.

Formerly the Drimnagh Aeromodellers, the club has been reorganised lately and hopes are high for the coming season. As membership is low new members would be welcome. Contact the Secretary: P. Brennan, 39a, Castle Avenue, Clontarf, Dublin, or see us flying every Sunday morning at Newgrove House, Raheny.

CITY OF NEWCASTLE AEROMODELLERS

Norman Bell has flown his radio model successfully. In these days of radio models flying so well all over the country, this may not seem to be news, but Norman is only 14 years old. He built model, transmitter and receiver himself, without help from any senior in the club. Congratulations, Norman ! Congratulations also to Jeff Calver on having the highest number of points in last season's Area Comps. Jeff is also 14 years old and was competing against senior modellers.

We are holding a series of lectures in our clubroom every Tuesday in which we try to help novice modellers over the "tricky bits." At

CLUB HISTORIES No. 3 . . . . .

FOUNDED in 1946 by the amalgamation of the Woodford (Essex) and Walthamstow Clubs, both of long standing, the West Essex became pioneers in every new phase of model aviation.

A strong contingent of C/L converts, inspired by Ron Moulton and Fred Deudney, enabled the club to be foremost in all C/L contests and development. Bill "Funf" Taylor, his brother Charlie, Den Allen, Sid Sutherland, Ken Marsh, Bill Morley, and of course, "Stoo" Steward, all placing in early stunt events. Class "B" team racing has always been a West Essex speciality, Ken Muscutt being the first to use a McCoy 29 for class "B" and beat the long range E.D. 3.46s of the time.

The Davies Trophy was won by Ken Marsh for the first time in 1951, after 13 London Area eliminating events to select the team from the area, then three heats, semi-finals and finals. "Mac" McNess has also won the cup several times since.

In the palmy days of Fairlop, there were many F/F devotees, including Mick King, who was in the Wakefield team to the U.S.A. in the first post war Wakefield, Cyril Mayes, now in Canada, a very young Lefty Lefever, Len Ranson and others.

Pursuing the pioneering spirit, West Essex tackled the art of R/C with some success. Spurred on by Bill Taylor, tragically to die in 1951 in a motoring accident, considerable success was had with S/C models, using soft valve Rx and home-made escapements, until today there are seven multi models in the club. These range from a scale Cessna 172 to a De Bolt Pursuit on 10 channels. The standard of R/C flying was, until recently, held back due to radio interefrence, but is now definitely on the up-grade.

West Essex gala days at Fairlop will be well remembered by those who attended, the prizes being first class; while at the last event, over 200 entries were accepted.

Lacking until recently in social activity, the club has, for the past two years, held an Annual Dinner and Dance both of which have been unqualified successes.

Finally, the club as a whole has been held together by the undying devotion of the very honourable secretary Doug Gordon, without whose efforts West Essex would not be one of London's leading clubs.

These three happy trophy winners were photographed at the recent annual A.R.C.C. Dinner and Prizegiving, held, appropriately enough, at Cesare Milani's Glendower Hotel. Henry Nicholls operated the projector during a film show of R/C models in action, and everyone enjoyed a pleasantly informal evening. Charles Riall (left) won the Pylon trophy, Paul Rodgers the Multi, and George White (right) the Single channel.

present we are concentrating upon Combat models as this was decided on by most of our juniors a couple of weeks ago. Any unattached modellers are invited to come to meetings on Tuesdays, 7.30 p.m., Craft Room, Cowgate School, Cypress Avenue, Newcastle. We would be pleased to meet any "Wings Club" members who care to come along.

WHITEFIELD M.A.C.

Seventeen of us went to Chetwynd, got lots of fresh air, ran out of petrol, dug a Dormobile out of an affectionate airfield, got lost, vowed we'd never do it again, now we're busily preparing for the next "do," typical, ain't it ?

However, we did not return empty handed, J. O'D. did his stuff in Rubber, while J. Jones and J. Minshull placed second and third in Combat—their first contest.

LEICESTER M.A.C.

Twenty-one members journeyed to Loughborough, to fly a Combat Competition with Loughborough Grammar School M.A.C. and Loughborough Wombats jointly, making nine fliers on each side, club against club in the morning and a knockout competition in the afternoon. We won the club competition and two members, Mick Tiernan and Gregory Bates, tied for final place in the knockout comp. Hectic building and repairs are envisaged, as the return comp. with Loughborough is in only three weeks time. The weather was glorious which added to our enjoyment—many thanks to Loughborough for a well-run contest, and a really enjoyable day.

EASTBOURNE M.F.C.

We have held two Combat Comps. with the Bexhill Club recently, a good time being had by all. Club meetings are held at 7.30 p.m. Fridays, Kings Drive Tennis Club Rooms, Eastbourne, anyone and everyone welcome.

ISLE OF THANET M.A.C.

If an application for permission to use Manston Aerodrome is successful, it will once again be possible for us to fly F/F models and, as a result, gain a considerable increase in club membership.

Peter Barnard, who reached the semi-finals in the F.A.I. team race at the South Coast Gala last season, has now left us and together with his family, are to make their home in Auckland, New Zealand.

NORTHWOOD M.A.C.

To our surprise our club Combat Comp. attracted 15 entries, all of whom flew. The eventual winner was Pete Tribe with Dick Pratt second. Dick introduced his new pitting technique, whereby he spins the model in, digging the wing-tip firmly in the ground with the engine still running, leaving the pit-crew to just fill the tank and launch again. He is quite confident that this method will revolutionise the pitting methods used in combat at the moment and is prepared to divulge his secret to anyone writing to him and enclosing a pound note.

Brian Jones, our comp. sec., won the scramble event in rather trying conditions. Runner-up (literally) was Chic Thomas whose model unfortunately disappeared into the distance, but was eventually retrieved about three hours after the contest finished.

To his amazement, Pete Tribe raised the club speed record to 126 m.p.h. on the test flight of his new 29 model. The engine comprised old bits and pieces from Mk. 4, 5 and 6 ETA's which had been discarded by club members over the years, and it had about 15 deg. big-end play.

WELLINGBOROUGH M.A.C.

We had a bit of "bad" luck this winter—no floods for the float-plane comp., we so have built our own "puddle"—a bit of wood, some sheet polythene, a borrowed water pump, and the result is a very usable 10 × 4 ft. tank.

The club store is well under way, and is proving to be very handy, hence more building in our spacious clubroom at 28, Winstanley Road, on Monday and Friday nights.

NORWICH M.F.C.

Gamage day dawned calm, bright and clear with plenty of thermals for the rubber and power fliers, but the 164 ft. glider tow-line was just not long enough to put them among the lift. This year we have more F/F "all rounders" and this should help the club to make a better effort in the Plugge Cup, as well as stopping Essex M.F.C. getting all their own way in East Anglian events.

CROYDON & D.M.A.C.

This year's gala will revert to being a single affair; events will be Open Rubber, Glider and Power, ½A Power and Slope Soaring. Venue will be Chobham Common, and the date September 17th. The Gala Championship for the Thurston Trophy will be decided on the results of the three open events.

The A.G.M. has produced a re-shuffle of committee members; so far the only concrete result is that Pete Fraser, the new treasurer, has bought a Jaguar. . . !

SUTTON COLDFIELD R/C M.A.C.

Committee members have been burning midnight oil in recent weeks planning for the club's first R/C Rally for May 7th at R.A.F. Wellesbourne, Warwickshire, and Comp. Sec. Ron Masters hasn't seen his models for months. Our special interest in R/C scale is evidenced by recent appearances of a D.H. *Beaver* by George Hales, a Bristol *Bullet* by Ian Cooke, and a Sopwith 1½ *Strutter* by Dennis Thumpston.

LIVERPOOL D.M.A.S.

Gamage day was kind to us weatherwise, though our times could have been better. Joe Barnes made 11 min. 47 sec. and M. Duce 10.37.

In the White Cup S. Savini made 12.00 + 0.00 due to auto rudder failure on the fly-off. Geoff Lowe made 11 min. 35 sec.

A recruiting drive is now in progress through the kind auspices of the local model shop proprietor who will provide anyone interested with details of club meetings.

MILL HILL & D.M.A.C.

Three competitions have already taken place this year, the first being a scramble, the second for plastic models and the third a competition for *Ebenezers* only. All three had an above average number of entries, a large percentage of which were juniors.

Any modellers in the district wishing to join the club will be welcome any Tuesday at 8 p.m. at Pursley Road Junior School, Mill Hill, N.W.7.

GLEVUM M.A.C.

Recently there has been a welcome increase in the number of junior club members and efforts are being made to encourage them and foster their interest. With this in mind we are running a "one-off" contest, principally for the juniors, but with the seniors endeavouring to show them how it's done. The subject of the contest is the A.1 *La Mouette* and to utilise the design to its fullest extent the contest will be held in three parts—concours, duration and scramble. A new Junior Trophy will be awarded to the junior with the highest aggregate and this trophy will then be competed for annually, with the juniors themselves nominating the contest.

Five members entered the various S.M.A.E. contests on March 5th and quite a hectic day ensued. Charles Aitkenhead was particularly busy spending the morning trimming his new *Dixielander*—his first contest power job. He then proceeded to dispatch it o.o.s. on an overrun. He drove off in the general direction taken by the model and found it sitting in the middle of a field. Next flight it D.T.'d on to an adjoining factory roof from where the factory police helped him retrieve it. On the following flight it came to rest halfway up a very tall tree—where it remained while Charles went home to lunch. In the afternoon Charles flew his A.2 in the Pilcher and managed three max's and a 2.20 fly-off time whilst two agile juniors were recovering his *Dixielander*. He then completed his White Cup flights and achieved our best time in this comp.

ST. ALBANS M.A.C.

Members were given a surprise by Brian Thurbon who has only just joined the club. He flew in the Gamage Cup, reached the fly-off and turned in top time for the club with the first model aircraft he has ever built.

At a recent club flying meet we were treated to a spectacular C/L display by Don Edwards. During a flight time of approx. 3 min. he performed many known and unknown stunt manoeuvres with a *Peacemaker* whilst riding a bicycle !

WEST BROMWICH M.A.C.

After the inactivity of the winter months the main interest is again in Combat, with the boys using the tuned-Oliver *Black Ghost* combination which has scored innumerable successes in this sphere of C/L contest for the club over the past five years.

At the A.G.M. recently it was decided that Perry Hall Park, Perry Barr, Birmingham, should be the official club flying field, and new members will be welcomed there any Sunday morning.

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NORTH LINCS. M.A.S. E. Cartwright, Oakwell, Poplar Road, Healing, Grimsby.

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WREXHAM & D.M.A.C. D. J. Roberts, 76, Newtown, Gresford, Near Wrexham, Denbigh.

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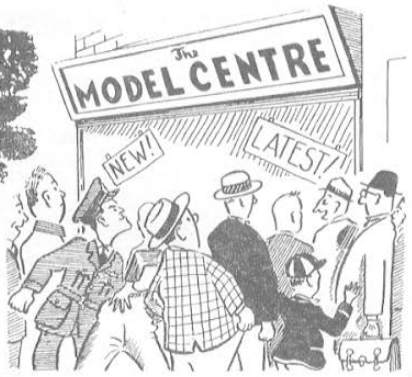

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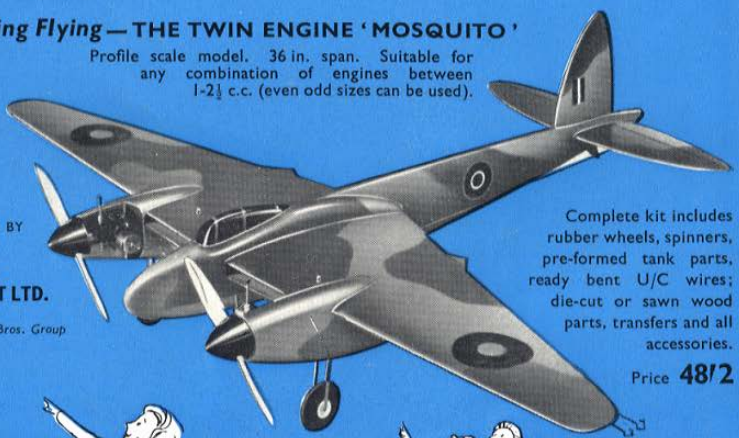

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