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JUNE 1961

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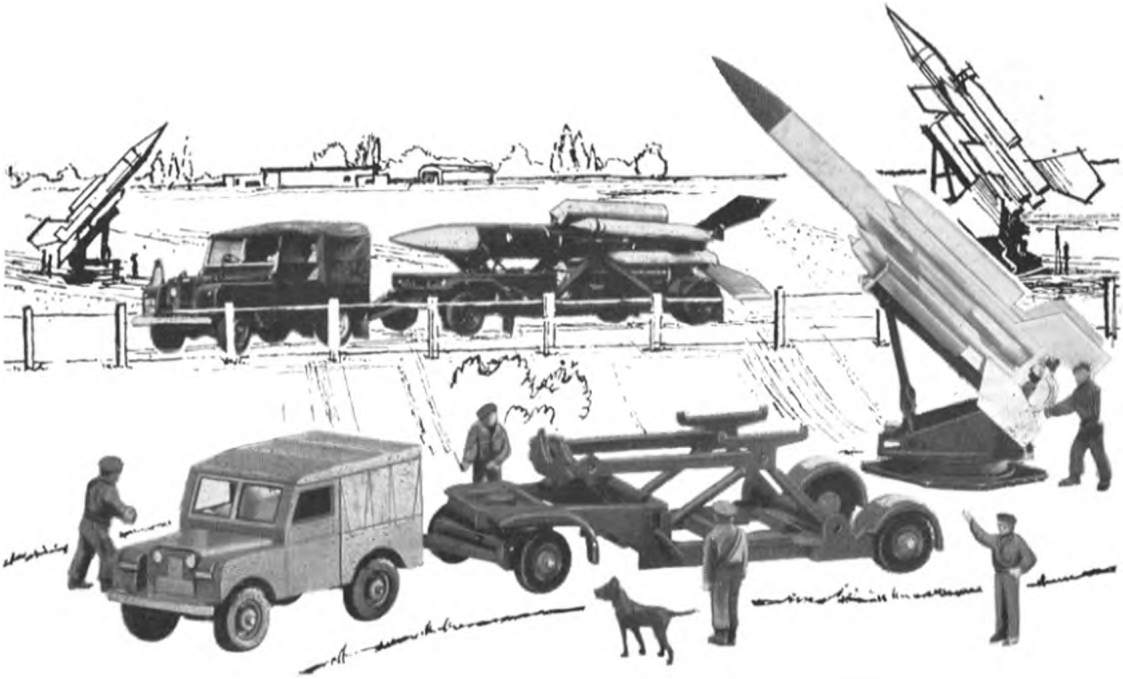

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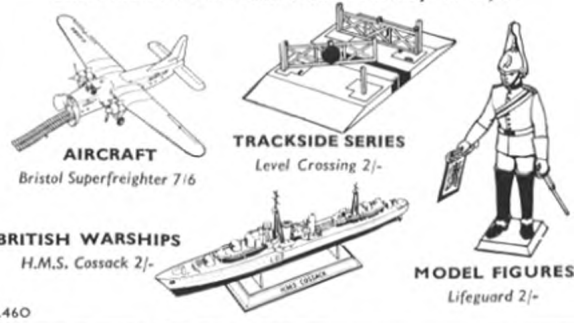

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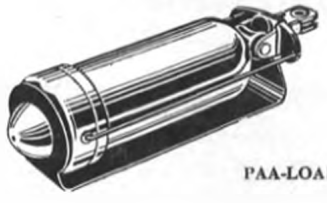

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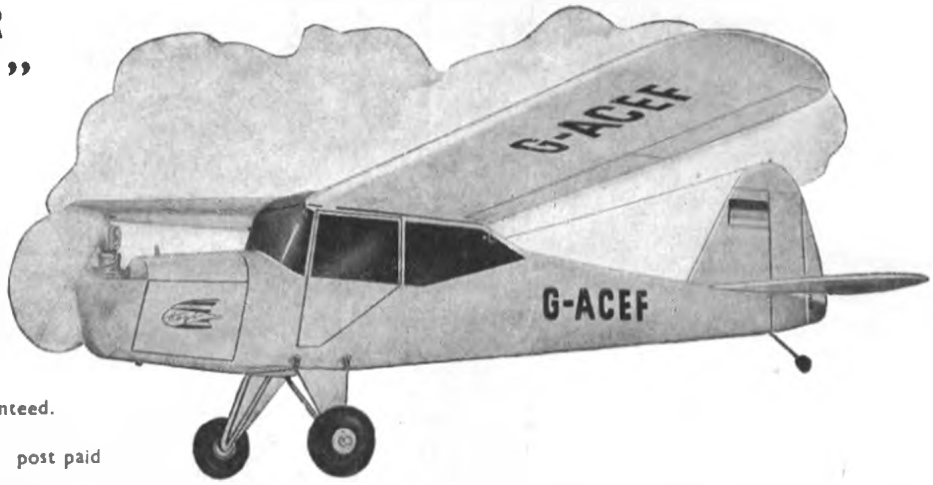

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MODEL aircraft

JUNE 1961

No. 240 VOLUME 20

The official Journal of the SOCIETY OF MODEL AERONAUTICAL ENGINEERS

IN THIS ISSUE

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Here and There

IN our February, 1960, issue we offered a prize of £10 for the most efficient silencer submitted to us. We have indeed, received numerous examples, most of which are suitably effective as regards muffling, but none adequately fill the main requirements we laid down.

Briefly what is required is a silencer which is simple, light, compact and readily adaptable to different motors. Of the examples we have received most are certainly simple and light, but, in our opinion, all are lacking in compactness and adaptability.

Having, since our offer was first made, had ample opportunity to discuss this matter with engine manufacturers and modellers, we have come to realise that the most important aspect of the problem is compactness and not one of the designs submitted has shown the least originality in this score.

To persuade modellers to use a silencer it must be inconspicuous, the question of loss of power being not really so critical. The use of a well designed silencer does not incur much power loss, but a great metal tube protruding alongside a sleek model—ugh!

That £10 is still waiting, so what about some originality? A silencer that fits transversely across the fuselage behind the motor, or vertically downwards alongside the motor, are but two ideas that spring to mind, but remember we are only interested in a finished sample—not theoretical designs.

A Prediction

We do not like making predictions of future happenings, but it might help to stimulate thought on this noise problem if we state that, in our opinion, unless modellers *voluntarily* make an effort to reduce the noise level of their motors, then the use of silencers will probably become *compulsory*.

Of all the reports of the banning of model flying the main reason advanced for such a ban is noise. Anyone would have thought that in the vast area of Richmond Park the problem would not exist—yet it does. The persistent noise from R/C and C/L models (more especially the former in this case, we feel, due to the larger area they cover in a flight), has led to restrictions being placed upon model flying—and this is but one example of the many instances happening throughout the country.

That the problem is really serious, is shown by the fact that one well-known engine manufacturer has stated that if modellers would use silencers, then he would scrap existing designs and willingly re-design all his motors with an integral silencer. It may well come to this—and shortly too—but at the moment it is stalemate. Manufacturers will not pro-

duce silenced motors as they feel modellers will not buy them, and modellers do not use silencers as, to the best of our knowledge, only one is commercially obtainable, and none of the most popular (and noisy) motors have any provision for fitting them.

We know modellers love to make a noise so how about setting up a clamour for silencers that will reach the ears of *all* manufacturers?

International Aspects

Assuming the use of a silencer were made obligatory how would this affect contest fliers? For "home" events not at all, as everyone would be under the same handicap (?), but World Championship class models must compete equally with other countries.

The answer to this is equally simple. Let models in these classes fly unsilenced, *provided they are only flown on places authorised by the S.M.A.E. where no nuisance will be caused.*

Scale Appeal

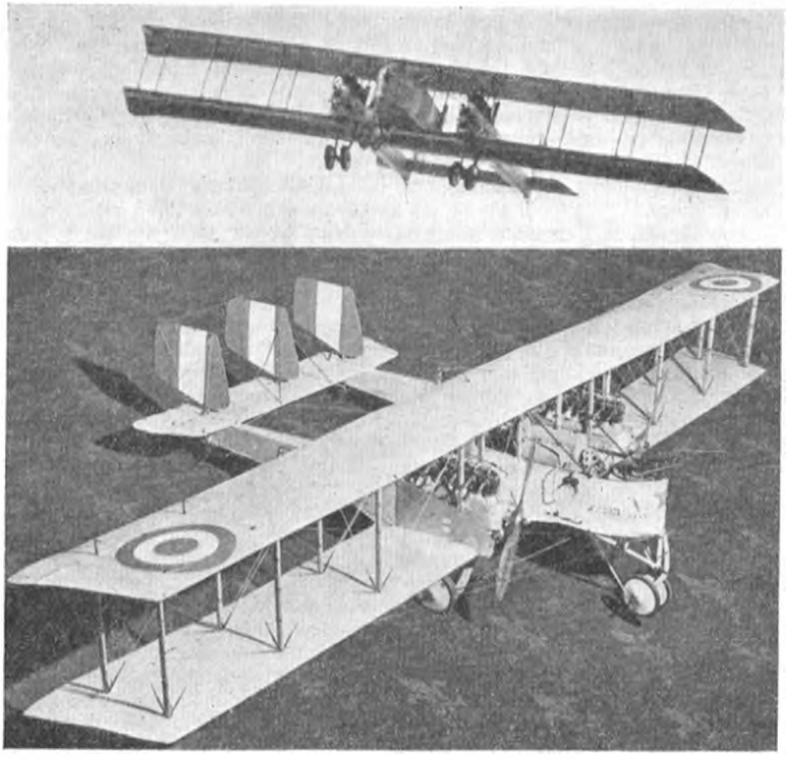
PETER WHELDON'S magnificent Aichi D3A2 Type 99 *Val*, Navy carrier bomber, which is featured in this issue, and also forms the subject of our cover photo, is only one of the many models which scale addicts have, for months, been preparing for this year's Nationals scale events.

Each year, immediately the contests are decided, discussions are in hand to choose next year's prototype and F/F or C/L, the choices are certainly varied. Peter's *Val* is certainly a happy choice for anyone who wishes to build a replica from his plan, as the construction is quite straightforward, even including the working bomb dropping mechanism, and well within the capabilities of the average modeller. However, more than average patience will be required to equal the finish on Peter's original.

At the other end of the scale (sorry no pun intended) another entry for the Nationals is Cesare Milani's splendid 1/12th scale Caproni Type 36. Powered by two Merco 35's this 73 in. span model certainly does fly, but being a little tricky to handle, Cesare is not too happy with it. He is, therefore, completing a new Ansaldo S.V.A. in time for the Nats. but we hope he will fly the Caproni—the sight of this "monster" flying could well be the highlight of the meeting.

Revised rules

All scale modellers will be pleased to hear that a completely new set of rules for judging scale events have been drawn up by C/L expert Cesare Milani and F/F expert J. D. McHard under the impartial chairmanship of R. G. Moulton. These regularise many of the anomalies that exist at present and should ensure a far more equitable future distribution of awards. It was hoped that the new rules would be used by the judges at this year's events, but apparently there was insufficient time. Why this should be so is beyond us as, at the moment, very few competitors know how the models are judged, so the substitution of one set of rules for another, which in no way affects the models, only the system of judging them, would be beneficial to all concerned—particularly the competitors.



Spanning over 6 ft., Cesare Milani's magnificent Caproni type 36 roars into the air on it's maiden flight, which we were recently privileged to observe. You can see the model at the Model Engineer Exhibition in August.

Club Histories

CLAIM to be the oldest still functioning club, which we ascribed to the Northern Heights M.F.C. in the history of this club which we published in our April issue, is disputed by the Bournemouth M.A.S. In a recent letter from H. F. Weller, Secretary of the B.M.A.S., we are reminded that this club was founded on October 11th, 1930, which thus makes it a few months older than the Northern Heights.

It is possible, of course, that there are even older clubs still in existence, even though at the moment we are unaware of them, but we wonder how many have such precise records that they can give not only the year, but the day, they were founded?

Anyway, old or young, we want to hear from you. The next few "Histories" are booked up, but there are literally hundreds of other clubs, some of them very famous, from whom we have not heard. There is no need to hide your light under a bushel, members, just prod the P.R.O. into activity!

Just one final point. Please write clearly, with plenty of space between the lines, make the story with as general an interest as possible and write it on a separate sheet—not tagged on the end of a club report. Thank you!

TOPICAL TWISTS

by pylonius

Gadget Corner

It's amazing how inventive we modellers are as a race. What we can do with cigar tubes, ball point pens and other dustbin impedimenta, is nobody's business. We can't guarantee to make a silk purse out of a sow's ear, but give us a couple of shampoo sachets, half a dozen milk bottle tops and a plastic bottle, and that radio controlled jet is half way built.

I say " we," but this is just a bit of bravado. In fact, the nearest I ever came to being hailed as an inventive genius was in making a fuel tank out of a mustard tin. Now I know many inventors who have soared to the dizzy heights, making needle valves out of old stiletto heels and winning tool chests by the dozen, have started in this humble, mustard tin way, but the trouble is I have never got beyond this stage. This doesn't mean to say I am not optimistic that one day I will get a mad flash of inspiration, and do something crafty with the cupboard-ful of bits and pieces I have hoarded over the years.

Gadgeteering is a very personal thing. You might admire the other chap's bright idea, but you wouldn't dream of using it. If you did you would empty that junk cupboard in no time. You see all sorts of smart ideas which you feel you should have thought of first, and would possibly have used had it not been for your fierce and stubborn pride. Then, of course, these gadgety gimmicks crop up at the most unpropitious times. You just haven't a left-handed door knob anywhere in the house, and by the time you get one you can't imagine what you could have wanted it for, anyway.

Sometimes you are so proud of your gadget—it might even work—you send it in for publication. In doing so you take the risk of somebody putting it to the test. A slight risk, no doubt, but you could come up against the O.D. factor (which initials do not stand for own design, as you might imagine in this context, but O'Donnell of contest fame). And the usual indulgence which is shown to such quaint ideas, as winding up rubber models on a wire fence, goes by the board, and, like the model, you are likely to get a nasty turn.

Vintage Year

I see that we are in for another spot of vintage nostalgia. Not the usual W.W.I hysteria this time, but real, tail first, model aeroplaning, of the old school. We don't know yet what startling revelations are in store for us, but we have had some-thing of a foretaste in at least two tit bits of information which should do something to correct our faulty notions of what went on in the pre-balsa age.

For one thing I had always thought that the pre-1914 modeller's most important tool was a hammer. Surprisingly enough it turns out to be a pair of scales. Not the sort of scales that fall from your starry eyes when that first, world beating model, takes a vicious nose-dive into the deck, but the avoirdupois variety for measuring the poundage of iron-mongery. This recalls Joe Bloggs' famous pioneering words, as they loaded his lightweight onto the weighbridge, " The future of modelling is in the balance."

The other bit of enlightenment is to learn that vintage flying was not restricted to Wimbledon Common as we fondly supposed. The tolerance of our forebears in allowing Hyde Park to be used for such frivolities is unbelievable to our modern minds. If you were to do anything so socially agreeable as flying a model plane on that select pasturage in these days the whole lot would turn out against you: the Police, Special Branch, Fire Brigade and the American Air Force. But, it's only fair to admit that it didn't take long for the London Citizenry to rise up against this violation of their courting arena, and the protest meetings at Hyde Park Corner are continued as a tradition to this day.

And one last eye-opener. In their less gadgety way, the flyers of yesteryear could Peter Chinn it with the best of our modern back room boys. The stuff that sent the bamboo and wire archetypes whizzing into the Hyde Park treetops was neither rifled from Aunty's boudoir nor pinched from some urchin's catapult, but was the pukka Para article, analysed down to the last per cent. of carbon and ash. In fact, our modern rubber expert, Mr. North, might well learn something from vintage connoisseur, Mr. Pole. Perhaps the two should get together sometime. At least I should be able to make a joke out of it. Seems to ring a bell, North . . . Pole . . .

Decorated for Valour

It's not very often a modeller has the honesty to admit that his super design won't fly. Usually he maintains a grim silence on his failures, and the only signal of his despair is a mournful little bonfire in the corner of the airfield. But, as every modeller below the top 10 knows, models are perverse creatures, subject to fits of caprice quite outside the rational say so of the handbook. Mixing the metaphor, you might say that you cook up the thing according to all the best recipes, with all the ingredients laid out in the best theoretical order, and you finish up with a lame duck. Ain't life hard ?

Anyway, a modeller has at last had the courage to admit that his super sports model flies like a brick. So much like a brick, in fact, he has decorated the fuselage with wallpaper. Could humility go further ?

On the face of it this is all very commendable, but I still stick to the old traditions. A stiff upper lip and a box of matches is the best way of getting the thing out of your system. And, if metallised wallpaper won't burn, try a boot.

Further Afield

I always imagined the West Bromwich area to be a mass of smoking chimneys and wet rooftops, with model flying limited to the cooler expanses of the slag heaps. But, it seems that while the atmosphere is sufficiently murky to produce " Black Ghosts " the flying areas are more extensive than you would suppose. In fact, so much acreage is at the disposal of the local club that they had to decide at their A.G.M., which field should be appointed as the official one.

This is encouraging news. Most clubs of my acquaintance have only one flying field, which they usually share with half a dozen other flying clubs, and is so unofficial that operations are suspended when the park-keeper or landowner hoves in view.

Square and a Circle

Being the original square from Cubesville I'm just not hep to the latest teenage jargon. For instance, what is rat-racing ? All I know is that it has some destructive connections with Combat, and it won't be long before a club springs into being called the " Rodent Rotarians."

Another C/L baffler. How does a wire-bound model, flying in a single, up and down dimension execute a spin ? Anyway, this term is used to describe the landing technique of a combat type, who pit stops his model by the gentle process of impaling the wing into the deck. No doubt this manoeuvre is known as a wing under, and, in Combat circles, is the cool thing to do—if you can dig it.

Yet another report describes the antics of C/L modeller doing the book on a bike. Unfortunately, the report doesn't go into technicalities, so we are not told how centipedal force and pedal force were harmoniously maintained. Did the flyer pedal round in small circles in the best performing chimp style, or did he hare down the High Street waving his arm like a lady scooterist ? Either way it seems a bizarre thing to do, and I can only suggest that the chap in question sees a trick cyclist.

This month's tests—the FROG VIPER and FOX COMBAT SPECIAL

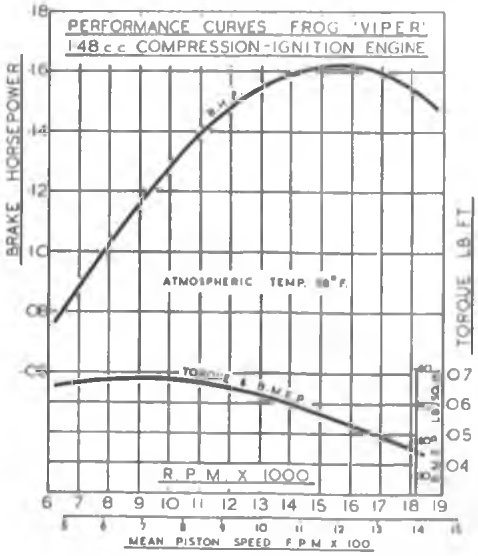
The FROG VIPER

1.48 c.c. Diesel motor

"In practically all respects our test motor could not be faulted."

DURING the last year or two, several new British 1.5 c.c. contest diesels have appeared that have given the U.K. a commanding lead in the production of diesels of this size and the latest of these is the Frog "Viper," made, of course, by International Model Aircraft Ltd., a subsidiary of the Lines Bros. organisation.

I.M.A. are not new to the 1.5 c.c. class, having previously produced the Frog "150," first marketed some 10 years ago and subsequently followed by a Mk. II development, then the rear induction 149 model and, still later, the 150R contest model. The Viper, however, is an entirely new engine and about the only thing it has in common with the earlier designs is their 0.500 × 0.460 in. bore and stroke. The new model was under development for a considerable period and we were able to inspect prototypes and see them running at the I.M.A. engine department in February last year.



The design of the Viper is quite complex for a motor of this size. The main casting, which embraces crankcase, main bearing housing and lower cylinder casing, also embodies three transfer passages, an exhaust collector, with angled stub outlets, and deep finning on the crankcase bottom, in addition to the usual beam mount lugs and tapped lugs for cylinder and backplate attachment.

An out-of-the-rut appearance is imparted to the engine by the finned crankcase and rearward angled exhaust outlets, already mentioned, and by a tapered, rectangular section, inclined intake and rotary valve housing which are integral with the backplate.

The Viper features a twin ball-bearing crankshaft and a rotary drum type rear induction valve. The ball-bearings are of German Muller manufacture, very free running and are of a precision type approved by the manufacturers for speeds of up to 30,000 r.p.m. The front bearing is recessed slightly into the nose of the bearing housing and the periphery of the taper-fitted dural prop. driver is relieved at the rear. When drawn up on the shaft, the rear of the prop driver thus enters the housing to provide protection against the entry of dirt into the front race. Prop retention is by means of a 3 B.A. hexagon head steel bolt and a thin blued steel washer, to reduce risk of shaft or bearing damage in a crash. There are sufficient threads on the bolt to deal with all prop sizes.

The drum valve consists of a $\frac{1}{16}$ in. dia. cylindrical section, $\frac{1}{4}$ in. long and integral with a $\frac{1}{2}$ in. dia. flange or disc which is appropriately slotted to pick up the end of the crankpin for the required induction timing. Timing is approximately 40 deg. ABDC to 30 deg. ATDC. The valve port is rectangular and registers with a rectangular aperture in the valve housing. The valve housing, complete with square sectioned carburettor intake, is a rigid diecasting which fits into the rear of the main casting and is secured with three Phillips head screws.

The radially ported cylinder liner features three exhaust ports of fairly large area and three inclined drilled transfer ports between them, which register with the transfer passages in the casting. Exhaust timing is generous, the ports remaining open for approximately 170 deg. of crank angle. The transfer ports open approximately 10 deg. later and close 10 deg. earlier. The

cylinder has a wall thickness, above the ports, of 0.086 in. and is flanged above and below the exhaust ports. The lower flange locates the cylinder liner within the main casting by means of an annular seating in the latter. The liner is locked in position by the finned outer barrel and head unit which seats on the upper flange and clamps the whole assembly to the crankcase by three long Phillips screws. The head is interesting in that it uses an Armstrong "Heli-coil" high tensile steel thread lock for the compression screw to eliminate thread wear.

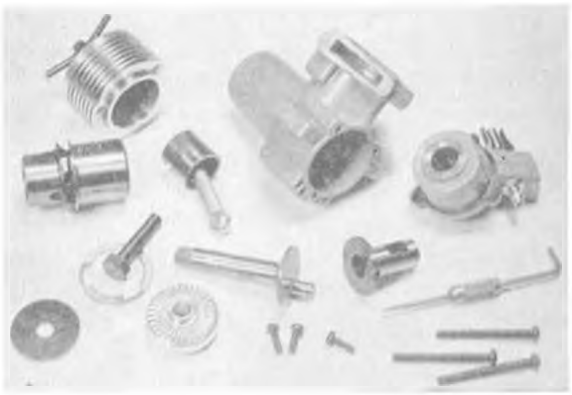
One feature which will be of interest to contest enthusiasts who like to experiment with tuning modifications, is that the cylinder and drum valve, after hardening, are tempered back to a point where they can be reworked with Swiss files. Such work will, of course, invalidate the guarantee and a much less drastic intermediate measure which, we understand, can yield worthwhile results, is to file a couple of flats on the spraybar to increase carburettor choke area. As supplied, the Viper spraybar is of quite large diameter, and this measure is approved where maximum fuel suction and flexibility is not of paramount importance.

The engine, as a whole, is a refreshing departure from usual practice and its design is matched by good workmanship and an attractive appearance. All castings are vapour blasted to a smooth matt grey finish, making a pleasing contrast with the bright machined finish of the dural cylinder head and drive hub.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compression ignition. Rear rotary drum valve induction. No sub-piston air induction.

The component parts of the Frog Viper. Complexity is greater than usual for motors of this size.



Bore: 0.500 in. Stroke: 0.460 in.
Swept Volume: 0.0903 cu. in. = 1.480 c.c.
Stroke/Bore Ratio: 0.92 : 1.
Weight: 4.1 oz.

General Structural Data

Pressure diecast LAC.112A aluminium alloy crankcase/main-bearing unit with detachable p.d.c. LAC.112A backplate unit embodying rotary-valve housing and carburettor. Non-counterbalanced, disc-web crankshaft of case-hardening carbon steel with ¼ in. dia. shaft and 5/32 in. dia. crankpin and drilled and tapped for 3 B.A. prop retaining bolt. Meehanite c.i. flat crown piston coupled to forged dural conrod with pressed-in gudgeon-pin. Cylinder liner of carbon steel, hardened and tempered and secured to main casting at exhaust flange via head unit with three long screws. Head unit machined from duralumin with Armstrong Heli-coil thread insert for compression screw. Carbon steel rotary drum valve running direct in housing material. Duralumin prop hub, taper fitted direct to crankshaft. Brass spraybar assembly with double spring ratchet for needle adjustment. Beam mounting lugs.

Test Engine Data

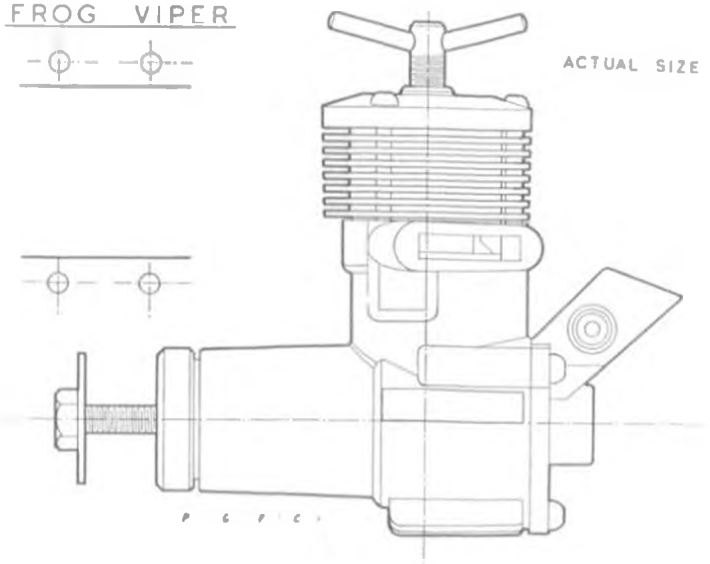
Running time prior to test: 3 hours.
Fuel used: Frog Powa-Mix (castor base, 3 per cent. nitrate).

Performance

In the short time that the Frog Viper has been on the market, it has become recognised as an "easy starter." Therefore, it was bad luck that our particular example should be the apparently rare exception that proved a little below standard in this respect. This is not to say that the engine was in the least difficult to start: it merely lacked those non-critical instant starting qualities that other examples of the same engine have exhibited.

In practically all other respects, our test model could not be faulted. The needle-valve was extremely non-critical: the engine would run on a wide variety of settings and the best compression setting for any particular load could be found quickly and positively. Under very light loads, however, particularly where r.p.m. could exceed 15,000, it was found that extra careful attention to the control adjustments after the engine had warmed up to its normal settings, could result in a gain of anything up to 500 r.p.m. Under heavy loads, limiting speed to less than 10,000, there was the usual slight power loss as the engine warmed up from cold.

The Viper was tested over a range of speeds extending from 6,000 to 18,000 r.p.m. Running characteristics were exceptionally good over the entire range. No serious vibration period could be detected and firing was at all times very even with no tendency towards detonation or high-speed miss. At the higher speeds, some difficulty was experienced, with our test engine, in holding compression settings, a rather easy fitting contra-piston tending to cause the compression screw to run back, and, to facilitate testing, our motor was therefore fitted with a compression locking lever. The needle-valve, on the other hand, held its settings firmly and its convenient position at the back of the

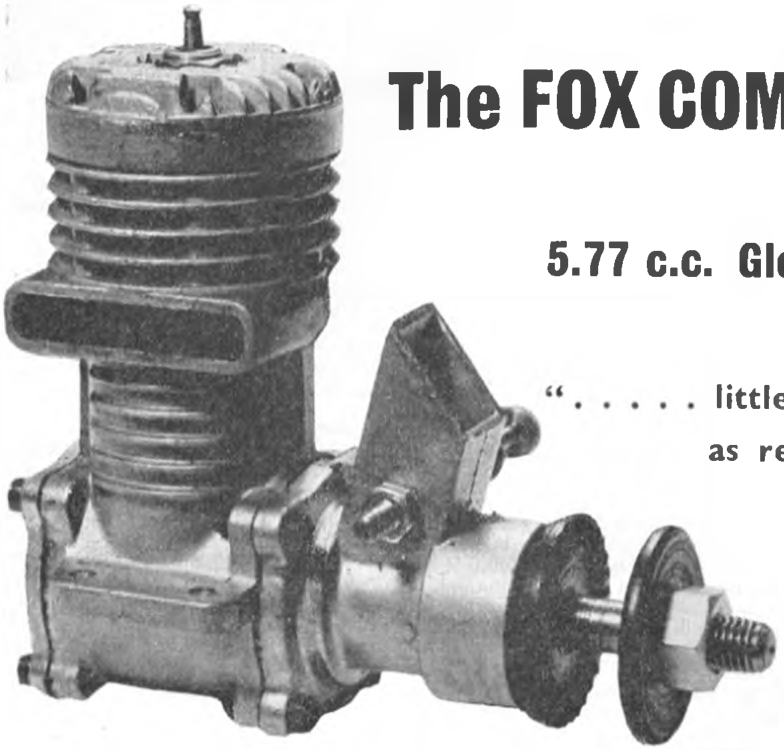


engine made adjustment quite safe.

Maximum torque reached by the Viper was just over 13 oz. in. (0.068 lb. ft.) at between 9,000 and 10,000 r.p.m. The torque curve declined evenly and gave rise to a maximum horsepower of 0.162 b.h.p. at between 15,500 and 16,000 r.p.m. This, needless to say, is exceptionally good for a 1.5 c.c. motor. Prop speeds included 9,200 on a KK nylon 9 × 4, 10,950 on a KK nylon 8 × 4, 12,000 on a Top-Flite 8 × 3½, 14,100 on a 7 × 4 Power Prop and 17,900 on a Frog 6 × 4.

Power/Weight Ratio (as tested): 0.63 b.h.p./lb.

Specific Output (as tested): 109.5 b.h.p./litre.



The FOX COMBAT SPECIAL

5.77 c.c. Glo-plug motor

". . . . . little short of phenomenal as regards power output."

IN the U.K., C/L combat models are limited to engines of 3.5 c.c. maximum and the usual choice is a 2.5 or 3.5 c.c. diesel, for which peak outputs range between 0.28 and 0.40 b.h.p. In contrast, American rules permit 0.35 cu. in. (5.8 c.c.) motors and the popularity of combat events has led to the development of special "combat" versions of 0.35 stunt glowplug engines in which power outputs on suitable "hot" fuels have been raised to the 0.65-0.75 b.h.p. bracket.

In general, the main differences between the "stunt" and "combat" 35's, are to be found in the latter's opened up intake system. Carburettor venturi inserts are enlarged or discarded entirely, valve apertures and crank shaft ports are enlarged and/or altered in shape and the gas passage through the shaft is usually enlarged also. To compensate for the loss of fuel suction resulting from large carburettor choke areas, it is usual to employ a pressurised fuel system. The most common solution here is to utilise the positive pressure differential within the crankcase by means of a small nipple in the backplate, conducting the low pressure so obtained to a sealed fuel tank via fuel tubing.

The Fox Manufacturing Company Inc., of Fort Smith, Arkansas, have, of course, been well known for their 0.35 class stunt engines for many years and they were among the first to introduce a combat version with their original black-head Combat 35. More recently, however, they have designed and put into production a completely new engine designated the Fox "Combat Special" which moves further away from the basic 35 stunt layout retained by all previous combat engines and, in so doing, presents an entirely new standard of 0.35 cu. in. performance.

The Combat Special, the subject of this test report, is, in fact, little short of phenomenal as regards power output. Our test sample, which we ran in from new and which was absolutely standard in all respects, reached 0.87 b.h.p. on 30 per cent. nitromethane. This, equal to a specific output of over 150 b.h.p./litre, is comparable with the highest levels yet reached with model i.c. engines, irrespective of type.

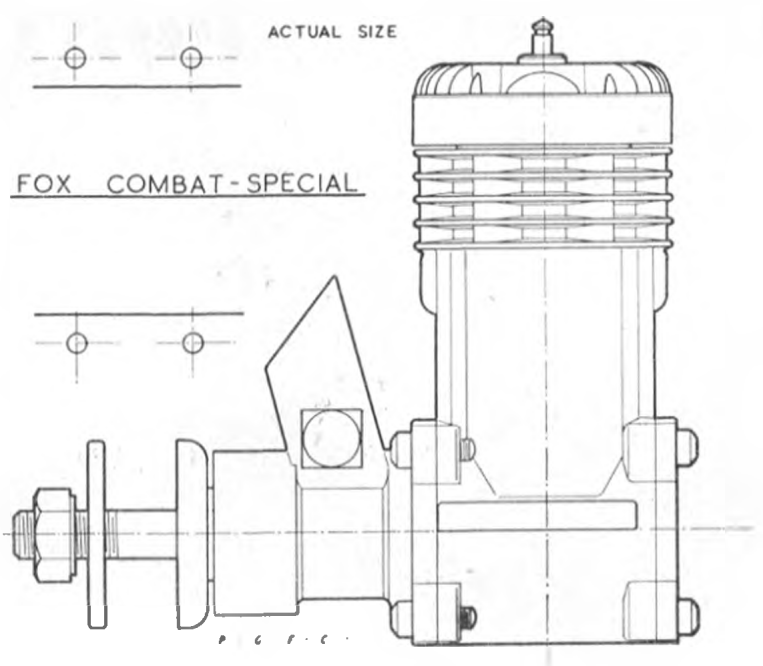
The most original and interesting feature of the Combat Special is its use of needle bearings to support the crankshaft. Unlike previous Fox 35's, the main bearing housing is not an integral part of the main casting. The main casting, comprising crankcase and cylinder block only, is basically the same as that used for the black-head Combat 35 and the cheaper red-head Rocket 35 models, but is modified with four-point lug and flange mounting for the new bearing housing. Each bearing consists of 27 needle rollers in a steel race, the needles running in contact with each other and with the shaft journal which is surface hardened to Rockwell C-62 for satisfactory operation with these bearings.

As one would expect, porting is generous and in accordance with the latest developments. The square-sectioned carburettor has internal dimensions of ⅜ in. × ⅜ in. and opens into a rectangular valve aperture which registers with a rectangular valve port in the shaft. This gives rapid opening and closing of the rotary valve to make full use of the 180 deg. induction period and large bore (⅜ in.) gas passage. The exhaust port occupies 180 deg. of the cylinder circumference and is $\frac{3}{16}$ in. deep. The very deep transfer port ($\frac{5}{16}$ in.) overlaps approximately five-sixths of the exhaust port depth to give very advanced transfer opening.

The cylinder liner is of leaded steel and, in contrast to a trend in European diesel design, wall thickness is quite modest—only 0.037 in. It is an easy

push fit in the main casting, being located at the top by a flange which also makes the head joint, via a 10 thou. aluminium gasket recessed into the diecast and machined cylinder head. Internal head shape has been modified by comparison with previous Fox 35's. Compression ratio is high at 12 : 1. The piston, with 5/32 in. dia. tubular gudgeon pin, is notably light in weight.

In accordance with usual Fox practice, a Desaxé cylinder arrangement is used—i.e. the cylinder is offset to the exhaust side relative to the crankshaft.



Specification

Type: Single-cylinder, air-cooled, loop scavenged two-stroke cycle, glow-plug ignition. Crankshaft rotary valve induction. Baffle piston. Central ignition plug.

Bore: 0.800 in. Stroke: 0.700 in.

Swept Volume: 0.3519 cu. in. = 5.767 c.c.

Stroke/Bore Ratio: 0.875 : 1.

Compression Ratio: 12 : 1.

Weight: 7.5 oz.

General Structural Data

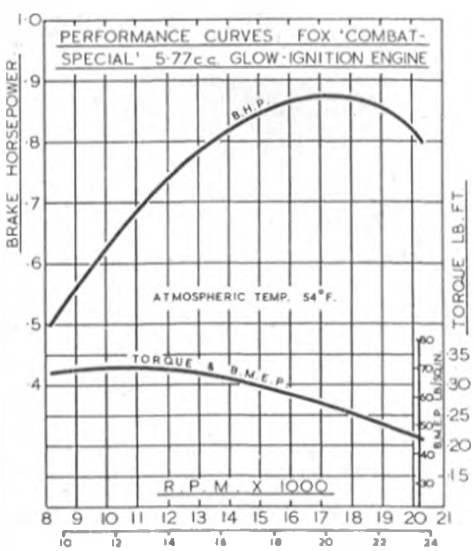
Pressure diecast, silicon aluminium alloy crankcase and cylinder unit with leaded steel cylinder liner. P.d.c. silicon aluminium alloy front bearing housing containing two ½ in. i.d. needle-bearings and attached to main casting with four Phillips screws. Counter-balanced ½ in. journal alloy steel crankshaft with 7/32 in. dia. hollow crankpin and case hardened to Rock-well C-62. Lightweight Mechanite piston with fully-floating tubular 5/32 in. dia. gudgeon-pin, case hardened and fitted with brass eyelet end pads. Connecting rod of 24ST alloy with plain unbushed eyes. P.d.c. silicon aluminium alloy finned cylinder head with recessed 0.010 in. soft aluminium gasket and secured to cylinder with six Phillips screws. Pressure diecast silicon aluminium alloy crankcase backplate with central brass nipple for fuel tank pressurisation and attached with four Phillips screws. Steel drive washer splined to crankshaft. Brass spraybar with one-piece steel needle and double spring ratchet device. Beam mounting lugs.

Test Engine Data

Running time prior to test: 4 hours.

Fuel used: KK Record Super-Nitrex (30 per cent. nitromethane).

Ignition plug used: Maker's 1.5 volt as supplied.



Performance

One of the most pleasing characteristics of the Combat Special is its remarkably easy handling qualities. Starting was as straightforward and trouble-free as anything yet encountered in the .35 class. When starting from cold, an exhaust prime invariably gave a quick start and, with the engine hot, two or three flicks were usually the only preliminary to a rapid restart. With pressure feed, intake choking is, of course, ineffective, and the preliminary flicks serve to pump the fuel through from tank to carburettor. If the engine is stopped with a partly filled tank, however, it is necessary to remember that residual pressure in the tank may tend to flood the carburettor unless the needle valve is closed. The best way to stop the engine and, at the same time, avoid this risk is to release the tank pressure.

The ultimate performance that can be realised with the Combat Special is largely dependent on the fuel used. For normal use, Fox recommend a blend containing 20 per cent. nitromethane but state that the engine's construction is such that there is practically no limit to the amount of nitromethane that it will take under suitable conditions and when really well run in. In other words, given ideal climatic conditions, one might use 50 or 60 per cent. nitro to gain absolute maximum power output. For our tests, a 30 per cent. nitro-methane mixture was chosen.

Under these conditions, the Combat Special developed a maximum torque of 0.33 lb. ft. at 11,000 r.p.m. which, equivalent to a brake mean effective pressure of just over 70 lb./sq. in., is unsurpassed by any engine yet tested in this series and gives a clear indication of the very high power available even at speeds well below the peak. Actual maximum horsepower reached was, as already mentioned, some 0.87 b.h.p., this occurring at between 17,000 and 18,000 r.p.m.

The ability of the Combat Special to run happily at speeds well in excess of this already high peaking speed is quite remarkable. We had our test motor up to 20,000 r.p.m. At this speed it was smooth and absolutely steady. As a matter of interest, the Combat Special turned a PAW 9 × 4 prop at 16,900 r.p.m., a 9 × 6 at 13,300 and a 10 × 6 at 12,500.

Power/Weight Ratio (as tested): 1.86 b.h.p./lb.

Specific Output (as tested): 151 b.h.p./litre.

ROVING REPORT

brings you up to date on the latest world model news

Above: well-known Australian modeller Keith Hearn with his large O.S. Multispeed 35 powered model prior to making a successful four-mile sea crossing.

RECENTLY sponsored by a Victoria (Australia) newspaper, was a four-mile bay crossing event for radio-controlled models, using a helicopter as an escort craft. The event was won by the well-known Australian modeller, Keith Hearn, flying a large high-wing cabin model powered by an O.S. multispeed 35 engine. Radio equipment was O.S. eight-channel operating American Bonner and Japanese Kato servos.

* * *

On March 21st, the O.S. concern held a special invitation contest at Nishinomiya, near Osaka and Kobe for O.S. owners. The contest was organised in commemoration of the 25th anniversary of the company which Shigeo Ogawa started single-handed, with a lathe and drill press in the corner of a warehouse in Osaka in 1936.

Despite limitation of the event to models powered by O.S. engines, about 150 enthusiasts attended the meeting with approximately 200 models. Due to restricted space, flying was limited to C/L events: stunt, scale, speed, jet-speed, combat and balloon bursting.

Some very remarkable models were seen at the meeting, among them a radio-controlled twin-motor Douglas attack bomber equipped with O.S. 10-channel radio gear and two Max 35 multispeed engines. Masahiro Kato, one of Japan's leading R/C modellers attended with his two latest efforts, a Kazmirski *Orion* with 10-channel O.S. and Max 35 motor and a scale Fokker D.7 similarly equipped. Kato demonstrated the latter model at this all C/L meeting by "tethering" it to a helper while flying it under radio control.

Another impressive entry was a large, scale Bell X-5 powered by a totally enclosed O.S. Type 2 pulse-jet. There were also several other large and powerful C/L scale models, including the inevitable four-motor *Superfortress* and a couple of twin motor Lockheed *Neptunes*.

* * *

The big German Schuco company, who first entered the model trade five years ago with C/L kits and subsequently moved into the R/C field when another famous concern, the Metz radio and electronics firm, began production of model radio control equipment, have lately announced several new products.

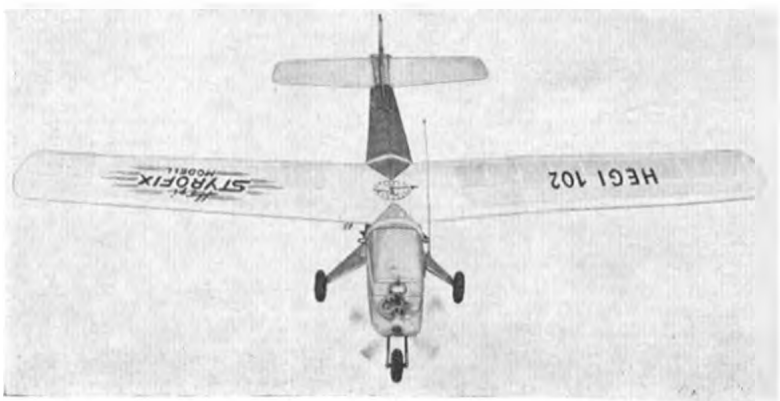
Among these is a new R/C model kit, designed by Wolfgang Soergel, called *Styrofix*, which features unusual construction methods. Wing and tail are conventional balsa structures but the fuselage consists of a core of moulded expanded polystyrene, over which a shell of balsa block and sheet is laid. The system, which, we believe we are right in saying, was first used by George Moir in the U.S. for C/L model construction, results in an almost indestructible component. The model is a tricycle U/C, shoulder-wing design of 47.2 in. span and sells for approximately £3 in Germany. It is intended primarily as a trainer, using single or three-channel equipment and an engine of between 1 and 2.5 c.c.

A few of the 200 models at O.S. Anniversary contest in Japan: Fokker D.7 with 10-channel O.S. equipment; pulse-jet powered Bell X-5, four-motor C/L "Superfortress"; a bevy of team racers and a 10-channel Douglas twin-motor attack bomber.

* * *

For many years we have heard suggestions that engine manufacturers should standardise propshaft sizes. Obviously it is impractical to use a common diameter for all sizes of engines but we have to admit that the present situation is not a very satisfactory one. This was brought home to us rather forcibly recently when, at the request of a prop manufacturer, we checked up on diameters for nearly 50 British engines in common use and found that they numbered no less than 20 different sizes.

Below: the new Schuco "Styrofix" R/C trainer. For up to 2.5 c.c. and three-channels, model features a virtually crashproof fuselage of expanded polystyrene filled construction.



AIRBORNE at last!

OUR recent feature "Radio Installation" (April issue) was enthusiastically acclaimed by M.A. readers; but, due to an unfortunate spell of wet and windy weather, we were unable, last month, to give our promised flying report on the Merco 35 powered Keilkraft *Super* 60, fitted with Mini-Reptone radio equipment. This month the weather has been kinder and we are now able to give our account of our first R/C outing, which we made in company with George Fletcher and Eric Walpole, of International Model Aircraft, so that we could also assess the flying of their new *Jackdaw* R/C design. We had a very enjoyable afternoon and evening's flying, even though our own efforts, as you will discover, did not meet with unqualified success.

BEFORE setting out, we made the following list of essential pre-flight checks which are vital, and must be carried out religiously before flying any new R/C model.

Radio Checks

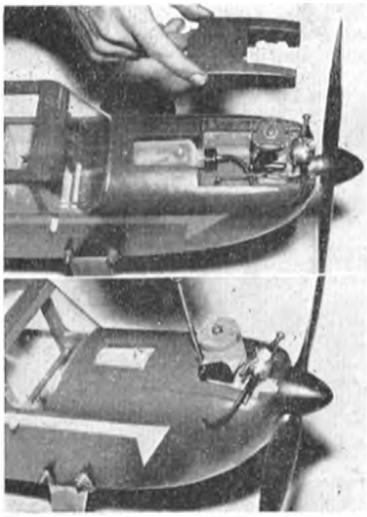
1. Check correct operation of radio equipment without engine running.
2. Carry out range test up to at least 300 yd. from transmitter with engine "on" and "off."
3. Start engine and re-check equipment operation.
4. Adjust engine throttle settings and make certain radio operates at all engine speeds.

Model Checks

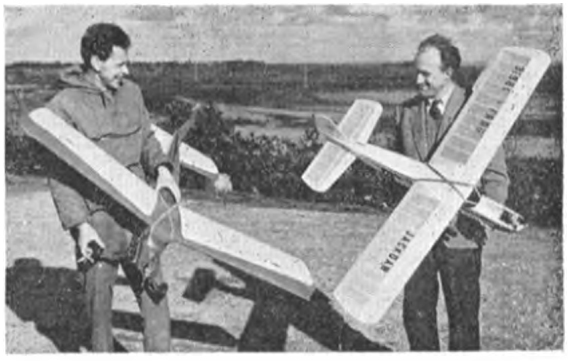
1. Check correct C.G. position as shown on plan.
2. Make certain that all rubber retaining bands are sound and holding the surfaces securely.
3. Be sure there are no warps in wing or tail and that everything is "square."
4. Glide test the model, preferably from the top of a slight incline, over soft ground. Glide path must be dead straight with no stalling tendency.

Upon arrival at Chobham—which is not, incidentally, an ideal site for R/C flying, but *is* spacious, with vast expanses of soft heather, two points which we later found most useful—we proceeded to put our good advice into practice, starting with the radio check.

Checks 1 and 2 were carried out without difficulty, the only point we



These two photos show the slightly modified "Super 60" engine bay described in this article. Note the retaining bolt which in the lower photo is being screwed home. Note also the Keilkraft Truflex prop which we employed for the test flights to moderate the thrust from the powerful Merco engine.



In the heading photo we are all set for that first launch. After spinning a penny, Doug McHard had the honour of "pushing the button." Note how Norman Butcher is holding the model level, with the tail firmly grasped to provide the necessary launching push.

Right — your Editor, holding the "Super 60," shares a joke with the "Jackdaw" designer Eric Walpole.

A pre-flight range check of the radio with engine running. Hand signals should be agreed before testing in order to avoid confusion.

found to watch with the range test, being to hold the model at least 4 ft. from the ground and to pulse the receiver button regularly every second, so that the person with the model is immediately aware when the range limit has been reached. In point of fact the ground limit is really the *minimum* range as once the model is airborne the range is greatly increased. Hand signals for correct equipment operation should be agreed in advance—(left and right rudder, engine speed control, etc.).

It was when we came to check 3 that we hit trouble, for, having started the motor,* the equipment was doing everything except answer the transmitted signal. The rudder was waggling from left to right without pause, while the motor control jumped continually from open to closed. This proved that the Merco would continue to operate under the most adverse circumstances, but at this time we were more interested in getting an even run at slow speed.

After a little thought we decided that there might be some interaction between the motor and rudder actuators, but disconnecting the former effected only a slight improvement. Further thought showed that the trouble was really due to the rudder actuator "skipping," so we tightened the armature return spring with an immediate 100 per cent. improvement. After re-connecting the motor actuator we again had trouble, so decided to test fly with this control disconnected and the throttle set at about half speed.

*We must mention that the Merco is a real dream to handle, the first start was achieved in some 10 flicks and having found the settings and amount of prime necessary, it was away first flick every time: if ever a motor deserves to be called tractable and easy to handle, throttled down or opened up, this is it.

Being satisfied that we had done as much as we were able on the radio side, we now carried out preliminary glide tests and it is opportune, at this juncture, briefly to describe the model.

The K.K. *Super* 60 is a very different aeroplane to the 15-year-old "60," being not merely a re-hash to adapt an existing model to R/C, but a completely new design. It has a new wing section, modern dural undercarriage and a new symmetrical section elevator, which is mounted below the fuselage to allow a rigid fin and rudder and eliminate wing turbulence trouble over the elevator. The nose, as you can see is very shapely, longer than the old nose, and incorporating a "clunk" tank.

We modified the engine bay slightly, cutting away the top blocks over the Paxolin engine mounting plate, to enable this item to be replaced in the event of damage being sustained and also making possible the fitting of alternative plates to accept different engines, which we intend to test in the model. To improve the appearance of the now large open space around the engine, we devised a removable hatch, held in place with a 4 B.A. bolt passing through a tapped hole in the Paxolin plate just behind the engine, as shown in our photos.

The engine could, of course, be inverted quite easily which would improve the appearance still further, but this would probably make for less simple operation and increase the risk of crash damage to the then vulnerable cylinder.

Instead of external rubber bands to hold the polythene tank in place, we undercut the side blocks, so that the distance between their top edges is less than the tank diameter. Thus the tank must be squeezed and forced down into the tank bay, where it is securely clipped in place, but may be instantly removed when required.

So much for the model, now on to the glide tests and it is interesting to note that absolutely no additional incidence packing or balancing was required to achieve a first class glide. This had never happened to us before in all our combined 47 years of model building and was, we hoped, a good omen.

With the engine turning over smoothly at about half throttle and the fuel tank one-third full, we again checked correct radio operation and all appeared to be working well. A good steady level hand launch was followed by a very safe looking climb away, with a very slight left turn. We made a mental note that, before the next flight, we would have to trim this out in order to achieve a perfectly straight "signal off" flight path. The turn was very safe, and so we left the transmitter alone, allowing the model to gain some altitude.

When it was at about 100 ft. and had completed one wide circuit we applied right rudder. The model slowly came out of its left turn, straightened up without undue pitching and, with right rudder held on, commenced a barely perceptible right turn. We released the button and allowed the *Super* 60 to resume its natural left turn until it was overhead, when we again signalled right and turned it upwind. So far, so good, the fuel was by now fairly low and the engine, after leaning out slightly, cut, when the model assumed a nice flat

The engine speed control worked perfectly—until Norman started the engine! Doug has the transmitter aerial extended here just before our first flight, but for close range testing it is often desirable to retract the aerial.

Anxious expressions as, with engine running, we experience actuator troubles. Note the retracted transmitter aerial.

The extremely colourful I.M.A. Service Van which will become a familiar sight at model meetings during the coming season. Facilities will be provided free to modellers and we ourselves found their efficient soldering equipment very useful. Eric Walpole and George Fletcher are seen here preparing the new Frog "Jackdaw" for flight tests.

glide to the left. This confirmed that the left turn after launch, had been due to some aerodynamic cause and not to engine thrust-line error. Giving right rudder again brought the model round very slowly, but upon releasing the button there was no response from the model and despite frantic signals it continued in an increasingly tight right turn until it struck the ground. We were able to see the rudder position during this turn and there was no doubt that it had stuck on "right."

So ended our first radio flight and we were not altogether displeased, since the model was undamaged, and, after replacing the batteries which had been thrown out of their clips when the model came in, the radio worked again quite efficiently.

After checking everything thoroughly we discovered a slight wash-in had crept into the starboard wing and this was obviously the cause of our left turn. We added a small trim tab to the starboard wing and bent it up to counter the warp. This worked perfectly and on our second flight the model climbed dead straight, responding well to both left and right rudder, although the actuator skipped occasionally. Eventually, towards the end of the engine run, the actuator stuck on left rudder and the *Super* 60 spiralled in.

Again no damage was apparent, except for a small crack in the fin which was easily fixed. These two heavy landings amply proved the ruggedness of the model and the invulnerability of the receiver, which worked perfectly after both flights.

After the unsatisfactory ending of these two flights, we decided that the actuator—which was definitely the cause of the trouble, as the Mini-Reptone transmitter and receiver worked perfectly throughout—should be thoroughly checked before we wrecked the model. We therefore suspended R/C operations, but once the equipment has been checked we will present a further report.

As it was a beautiful evening and the light was still good, we persuaded the Frog team of engine designer George Fletcher and model designer Eric Walpole, that the time had arrived to give their prototype *Jackdaw* an airing. Although, as can be seen from the photographs, this model is virtually the same size as the *Super* 60, as it has a fuselage of lesser cross section, it looks, in the flesh, to be altogether smaller. Not dissimilar in general appearance to the *Super* 60, it features totally different methods of construction and the entire machine has, in fact, undergone considerable development, following lessons learnt from extensive test flying, since the project was put in hand. We will be reporting more fully on this as soon as we receive a production kit which is due on the market shortly.

Powered with a Frog 3.49 diesel which, although it runs smoothly, has a certain vibration characteristic which is in "sympathy" with the model and produces a most distinctive "buzzing" in flight, this *Jackdaw* is fitted with a Mini-Reptone operating a Bonner Varicomp actuator (without the engine control coupled at the moment), and this set-up works perfectly.

Trimmed to maximum penetration, it certainly flies fast—somewhere around 50 m.p.h. Turns, executed by pulsing the rudder, are level and smooth in either direction, while held on rudder immediately produces the expected reaction! This is certainly a nice aeroplane to handle, while its durability has been amply demonstrated several times, including a complete "burial" of the nose back to the cabin, on one occasion when the trim was taken a little too near neutral.

We are sure that this kit will prove very popular and amply repay the many months of design and development that have gone into its production.

Tailpiece

Having had a good "dose" of R/C we decided there was just enough light left to assess the F/F-only performance of the *Super* 60, so we switched off the radio, put a little (as we thought) fuel in the tank, set the motor at half speed, and launched.

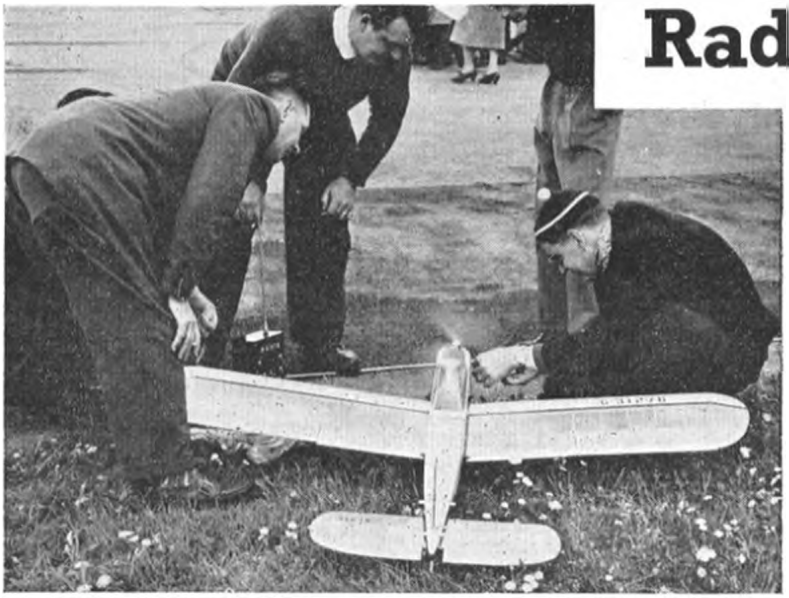
The model climbed in a wide left hand circle, beautifully stable, and looking very realistic against an evening sky. We became a little perturbed by the continuing engine run which took the model up to several hundred feet before leaning out and cutting. Despite the calm conditions, the very flat right hand glide which followed took our *Super* 60 for about 1½ miles over some of the most uninviting parts of Chobham Common.

After negotiating several hazards including a railway line we discovered our model firmly lodged in the upper branches of a rather difficult silver birch. The inevitable small boy was already there, of course, throwing missiles at our masterpiece. He vanished precipitately when we appeared.

If you look carefully at the photo you may be able to pick out Doug McHard on his way up the tree to retrieve the model (top left). Despite the impact, the *Super* 60 survived well, the only damage being a dented leading edge. Even this would have been avoided had the underside of the wing been covered back to the spar with ¼ in. sheet and we recommend this modification to *Super* 60 builders. The crash resistance and, incidentally, warp resistance of the wing will be immensely improved at the expense of very little weight.

If we had followed our own oft repeated advice of *ensuring* that the length of motor run on sports models, suits the size of flying field and performance of the model, this little episode would never have happened. However, and not for the first time, we were reminded the hard way!

Radio Control a
TR



THERE were only nine entrants for the R/C Trials, which were flown over two days at R.A.F. Benson in Oxfordshire. The first day, Saturday, was extremely wet and blustery, but the conditions failed to deter, and some good flying was seen. Sunday, although windy, was dry and sunny until after lunch, and the general increase in the standard of flying over last year was very evident. The low wing has definitely arrived, Chris Olsen's *Uproar* being the only high winger on the field.

Most consistent performer was again Van den Bergh, still with the same model that he flew last year in Switzerland, which now begins to show signs of age, not so much damage, but good, honest, fair wear and tear—unusual for R/C, where " life " expectancy is often short.

Ed Johnson placed second, with a series of three demonstrations of his reliable equipment, and D. G. Walker came third. There is some dispute over this entry since although entered under Walker's name, he did not actually fly the model, and the validity of the flight is still in question as we go to press.

D. Rogers was placed fourth and H. Brooks of Southern Radio Control, using the only home-built equipment on the field, was unlucky to take only fifth place following a premature engine cut during his third flight. But for this he would undoubtedly have been in the top three, as his flying was excellent.

Chris Olsen, in sixth place, had troubles, but was very happy about the performance of his new tricycle U/C *Uproar*, and now confesses to being a complete " trike " convert.

P. T. Waters, in eighth position, lost his *Orion* for two hours on Saturday evening and, after finding it with a shattered wing, completely rebuilt this component overnight, to fly again on the following day !

The only unhappy point we must make about this meeting concerns some thoughtless R/C modellers (who were not even trials entrants), who insisted on flying at 6.30 on the Sunday morning. After gamely putting up with the noise of big motors for two days it is a bit much to expect the local villagers to accept this sort of thing, and we come out in full support of organiser Stewart Uwins, who annoyed some non-competitors by stopping all flying after the trials were completed.

Top—Frank Van den Bergh makes some minor adjustments to his well used " Sky Duster."

Ed Johnson with his " Orion," which he flew into second place. The weather was unkind, but flying standards were high.

D. G. Walker's " Orion " just before the third round. The validity of this entry is still in doubt.

nd Control-Line ALS

THE Trials to select the British teams for this year's Criterium d'Europe were held at R.A.F. Debden in rather cold, slightly breezy conditions although, in contrast to the R/C event some 60 miles away, the rain which threatened from time to time held off. Entries in Speed and Stunt were disappointingly low with only 14 and five competitors respectively, but, as was expected, Team Race was better supported with 30 entries of these 10 flew in Speed, 27 in Team Race and all five in Stunt.

Lack of design originality with team racers was most noticeable, a general similarity of outline, even to fin shape, making it very difficult to differentiate one from another in the air. The standard of flying was good, although this being the first meeting of the year, a slight "rustiness" of technique was apparent compared with the best of last season's races. However, the final times were good and with such seasoned fliers as Dick Edmunds (4.53), the Long/Davy team (4.41) and Mike Bassett (5.21) the team should give a good account of themselves.

As was not unexpected, Ray Brown again topped the stunt results (2,176 points) flying this year a Mercury *Crusader*. Perhaps rather better in the A.M.A. than the F.A.I. schedule, his performance had the polish of long practice and was more "shaped" to please the judges than his flying in Hungary last year.

Second man, with 2,076 points, was Frank Warburton, flying his U-2, a most pleasing design, based on this notorious aircraft, and, considering its adaptation to stunt flying, remarkably like the original, even to a monowheel undercarriage with wing mounted outrigger wheels. Frank flies with his motor tuned to a faster two-stroke than is normal for stunt work so, with a correspondingly higher airspeed, it is not surprising that in his case the F.A.I. schedule was better than the A.M.A.

With 1,978 points, third man was Dave Platt flying the *Crusader* which was the subject of the kit review in our April issue. Dave is no newcomer to international events having flown in the Criterium before, so once again we have an extremely strong team, all incidentally using British made Merco engines.

In spite of the fuel restriction for glo-motors, there were only two diesels flown in the speed class, in spite of the fact that team racers can currently equal most speed models for m.p.h. However, it is probable that the potentialities of glo-motors for tuning will rapidly re-establish their supremacy.

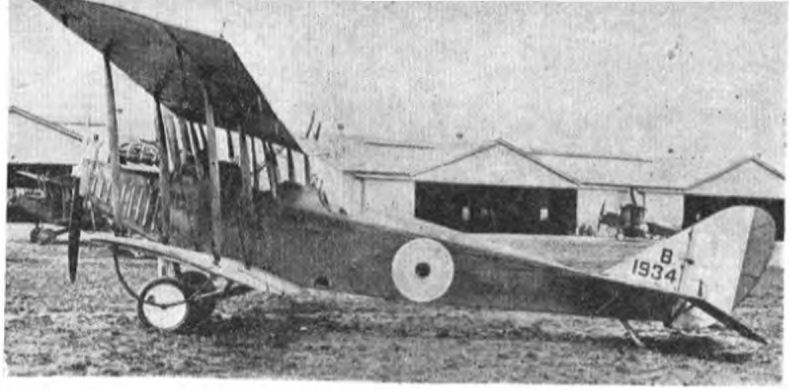
First flight of the event also produced the top time—108 m.p.h. by Pete Wright with his C.C.S. (a motor built by Fred Carter) powered half pan model. This was the only time Pete recorded as, on his other two flights, the motor slowed down after an early burst at nearer 112 m.p.h. It was suspected that the lubricant in the fuel was at fault, as several motors reacted similarly and second man, Ray Gibbs, seized his glo-motor, so used a standard Eta 15 diesel in his *Nipper* 2 (M.A. plan 291) to record a time of 101.7 m.p.h. He had, when practising

Continued on page 190

The photos reading from top to bottom show—the team race team—Ken Long, Dick Edmunds and Mike Bassett—the stunt team—Frank Warburton, Dave Platt and Ray Brown—Ray Gibbs (right) assisting Pete Drewell who placed 4th with a C.C.S. motor on its first outing, right is Norman Butcher and far right Pete Wright, both with their C.C.S. powered speed models.

Plane of the month

The Curtiss JENNY



ONLY four types of aeroplane were built in large numbers in the United States during the first world war. One was the British-designed DH-4 day bomber; the others were the Curtiss JN-4, Standard SJ-1 and Thomas-Morse S-4 trainers. Of these, the most widely-produced by far was the JN-4 which, with such a designation, inevitably became the "Jenny" to all who flew it.

It was America's counterpart to the Avro 504. Both types entered production in 1914, became their country's standard basic trainer and remained in service long after the war ended. Both were tandem two-seat biplanes of fabric-covered wooden construction, with two-bay wings. And both became the favourite mounts of barn-stormers and air circus pilots of the 1920s, when large numbers of ex-military *Jennies* and 504s were dumped on the market at knock-down prices.

The *Jenny* was a good aeroplane for its time and deserves little of the unfavourable reputation with which it is sometimes saddled in retrospect. Frequent accidents at U.S. training schools were caused by the inexperience of pupil pilots and the lack of a man like Robert Smith-Barry, who taught R.F.C. and R.A.F. pilots how to survive difficult situations in the air rather than how to avoid them.

At British training schools, it was found that the *Jenny* could be aerobatted only by skilled pilots and had a little party trick of shedding its wing fabric at the top of a loop. But when it was designed no military pilot was expected to perform aerobatics, which were regarded simply as hazardous stunts to attract crowds to flying meetings. The fact that *Jennies* were later looped quite happily by barn-stormers, often with wing-walkers balanced on their centre-section, showed that they were far from frail or dangerous to fly.

It is not possible in so little space to give full details of all the variants of the *Jenny*, which even included eight twin-engined "Twin JN" reconnaissance aircraft. However, development can be said to have started with the Curtiss J of 1914, which had a 90 h.p. Curtiss OXX eight-cylinder Vee engine and a span of 40 ft. 2 in. Two were built, followed by a single Type N with interplane ailerons instead of the top-wing ailerons of the J and a 90 h.p. OX engine. The next development, in 1915, was the modified J with ailerons on top and bottom wings. Ten were built and later designated JN-2. From there it was only a short step to the JN-4, with span increased to 43 ft. 7 in. and a 90 h.p. OX-2 engine.

Ninety-three JN-4s were procured before America entered the war in 1917, followed by a further 603 with 98 h.p. OX-5 engines. The one-off JN-4A had a tilted engine and revised wings; the five JN-4Bs reverted to an OX-2 engine; and two experimental JN-4Cs were built with RAF-6 wing section and a 90 h.p. OXX-3 engine.

Production got under way in 1917 with the JN-4D, which had a cutaway centre-section trailing-edge and OX-5 engine. A total of 3,394 were procured from eight companies, including 680 by Canadian Aero of Toronto, plus 101 JN-4D-2s with revised controls.

A major change in the JN-4H of 1918 was the switch to a 150 h.p. Hispano engine, and 929 Hs were built before further production of the *Jenny* was cancelled with the signing of the Armistice in November, 1918. They included 100 JN-4HB day bombardment trainers and 427 JN-4HG gunnery trainers.

Jennies found their way to Europe as early as 1915, and 161 served at various times with the R.F.C. and R.A.F., including four with the Middle East Brigade in 1916.

If, in retrospect, the *Jenny* appears to fall short of the Avro 504, this reflects not so much its own limited capabilities as the fact that the 504 was one of the most inspired and inspiring designs in flying history.

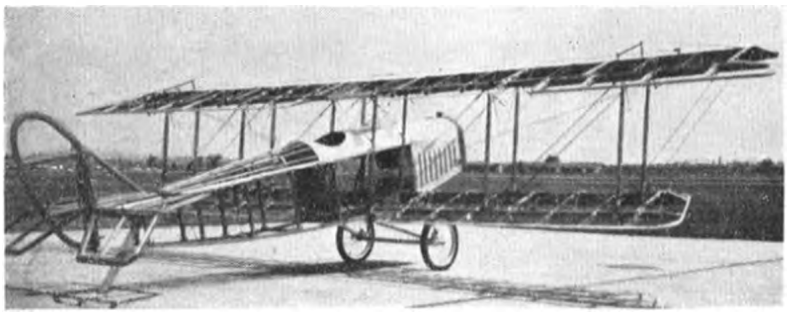
Data (JN-4D): Span 43 ft. 7 in.; length 27 ft. 4 in.; height 9 ft. 10 in.; weight loaded 1,920 lb.; max. speed 80 m.p.h.; climb to 3,000 ft. in 10 min.; endurance four hours.

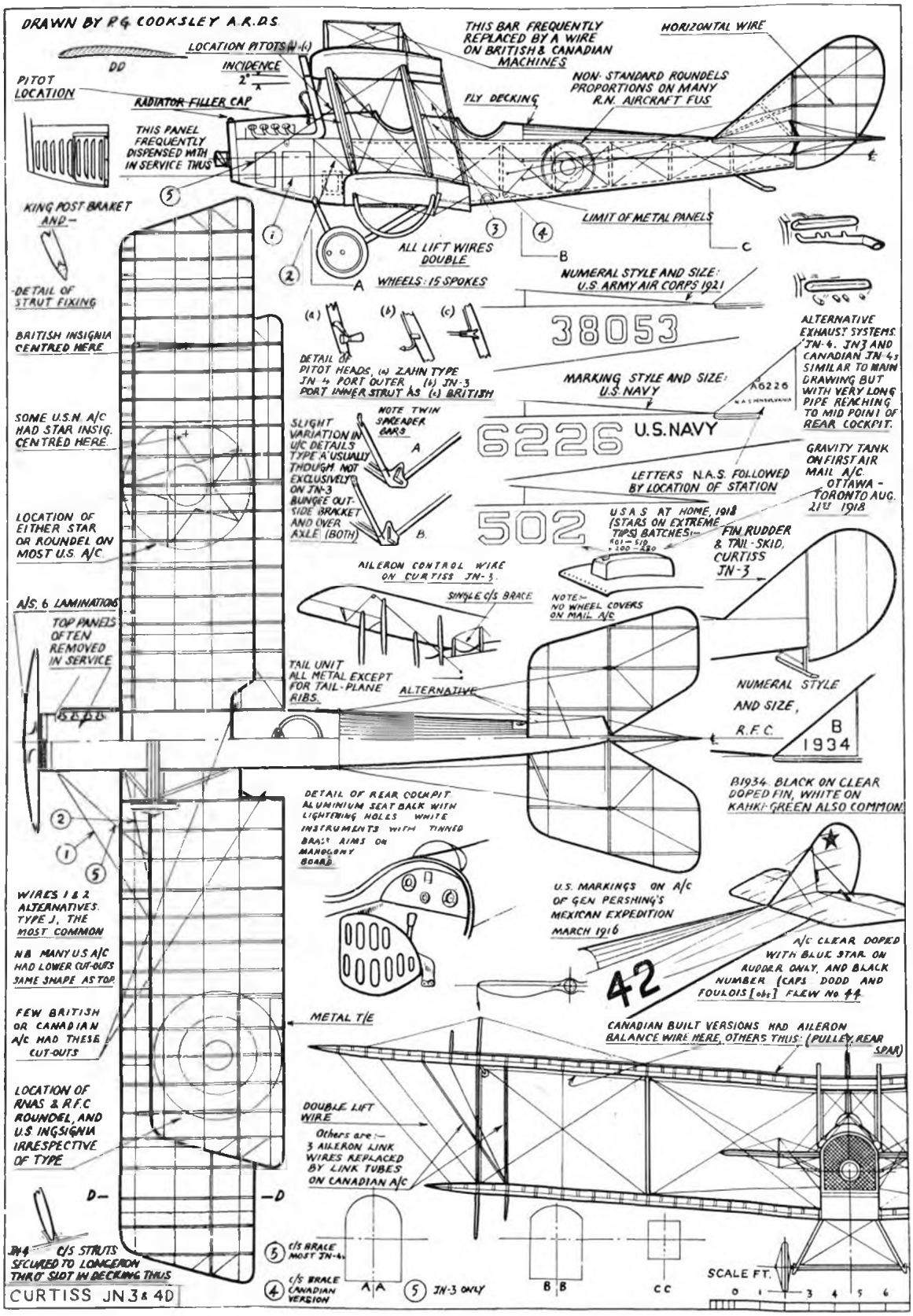
Colour scheme: Standard finish was nitrate dope with two coats of clear varnish, giving a colour which varied from pale yellow to buff. All but early machines had very large roundels (red outer ring, then blue, with white centre) above and below their wings, with red-white-blue rudder stripes (blue at rear).

Heading photo shows a "Jenny" supplied to the Royal Flying Corps.

Left: Jack Hardwick flies a 1916 built JN-D modified to employ a radial engine (Howard Levy photo).

Below: A half scale replica of the JN-4D-2 which uses a 50 h.p. modified Model A Ford engine.





A super scale control-line model for 2.5 c.c. to 5 c.c. motors. Complete list of materials included with each plan.

THE Aichi Navy 99 *Val* was first seen in action during the attack on Pearl Harbour on December 7th, 1941, and was thereafter used in large numbers by the Imperial Japanese Navy in most of the great battles of the Pacific including the Battle of Midway, *Val* was the Japanese counterpart of the *Dauntless* dive bomber which, at that time, was in use by the United States Navy. Aichi 99 *Val* 2s were powered by a Kinsei 44 14-cylinder motor of 1,060 h.p. and carried one 1,050 lb. bomb slung on a retractable crutch beneath the wing centre section. Two 7.7 mm. machine guns were mounted in the engine cowling and either one or two manually operated guns in the rear cockpit were operated by the second crew member.

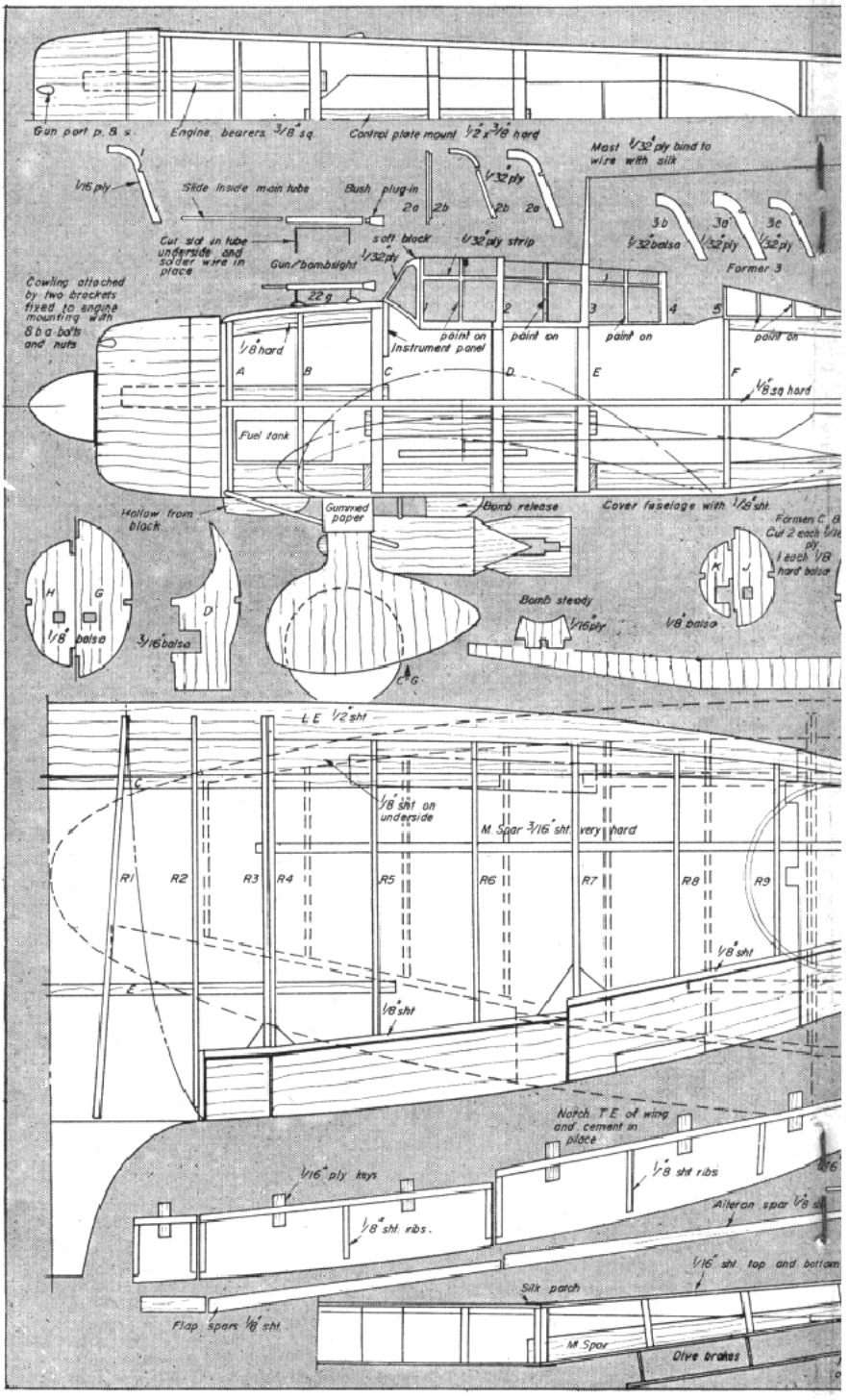
The Aichi 99 makes up into a very nice model, the fixed spatted undercarriage on a World War II warplane being a welcome change from the more usual stalky "retractable" legs. The elliptical flying surfaces and long—typically Japanese—cockpit canopy, together with the authentic bomb release, make a model to be proud of. *For the experienced* the addition of motor control will enable realistic take-offs and landings to be accomplished.

Construction

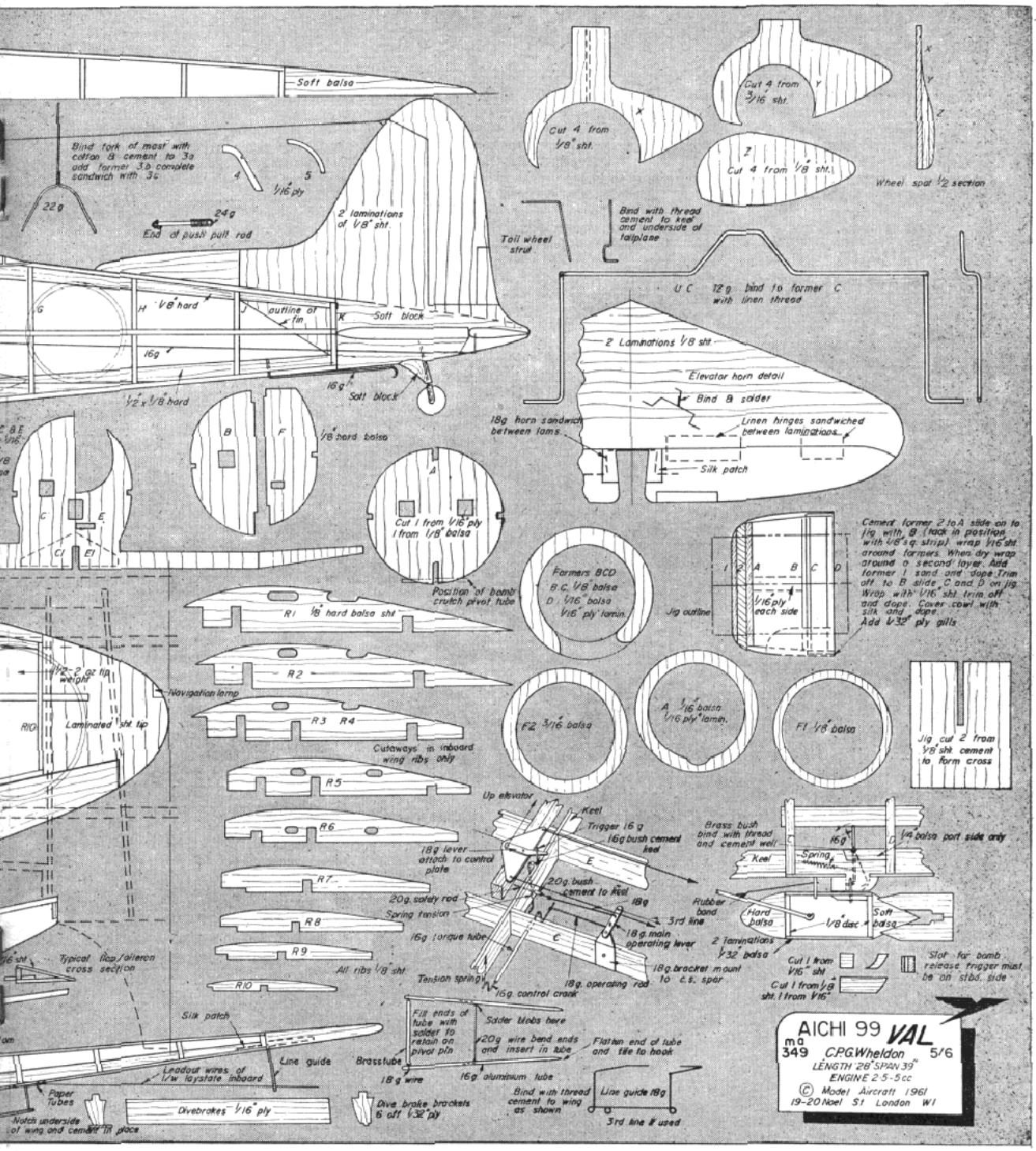
The basic construction of the model is quite straightforward and, generally, follows normal practice. The motor control, however, and the bomb release gear, require a bit of "fiddling" with, and patience is needed to ensure successful operation. The construction falls into three main stages: (1) the completion of the fuselage, wing centre section, and tail unit; (2) the wing outer panels, and (3) the finish and final details. The notes that follow only cover general procedure and emphasise points that are considered to be of particular importance, it being assumed that the builder has previous experience.

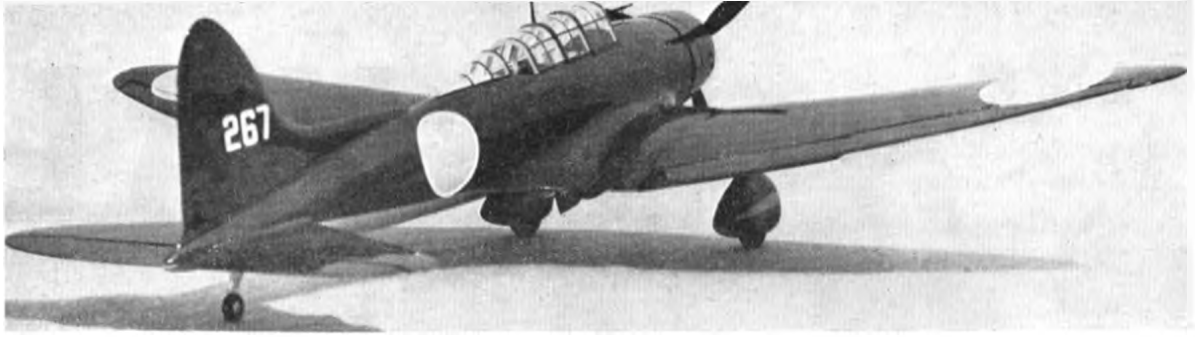
Stage 1. Commence construction by cutting out the parts for formers (A), (C), (D), and (E) and bond together using "Bondfast" or similar adhesive. Set aside to dry and, meanwhile, cut out remaining formers, keel parts, engine bearers, etc. Pin lower keel to

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 5s. 6d., POST FREE.



ELDON'S AICHI 99 VAL





plan and cement parts together. Mark position of formers on lower keel, and cut two "jigs" from scrap sheet to slot over wing centre section spars. Bend undercarriage wire to shape and bind to former (C) and wing centre section spars (linen thread was used here).

Assemble all parts "dry," slipping jigs over centre section spars to hold formers (C) and (D) in correct alignment. If satisfied that everything "fits," assembly may be commenced. Cement formers (C) and (D) in position on keel, followed by (B). Cement engine bearers and control plate in place. Add former (E) and hold in position with the two jig pieces. Slip fuel tank in place and cement former (A). Set aside to dry.

(*At this stage the motor control and/or bomb release mechanism, the construction of which is described later, should be fitted together with control plate, push-pull rod, and lead out wires. Detail drawings on plan show motor control and bomb release gear which should be built up by trial and error. The drawings show the layout adopted on the prototype but individual requirements will vary.*)

Cement remaining formers in place followed by the $\frac{1}{4}$ in. sq. hard side longerons. Fabricate tailplane and elevator and cement to keel. Hook up push-pull rod. Laminate fin from two pieces of $\frac{1}{4}$ in. sheet and cement in position. The model may now be planked with $\frac{1}{4}$ in. medium sheet. [Note: *do not* plank bottom of fuselage between (C) and (E)—this is covered in $\frac{1}{16}$ in. sheet when sheeting bottom of wing centre section.] Bend tailwheel fork to shape, bind with thread, and cement in position. Roughly carve the tail fairing blocks to shape and cement in place.

The fuselage should now be given a thorough sanding and all cracks and bumps filled with a mixture of cement and balsa dust or talcum powder and dope "putty." Fillet fin/fuselage, tailplane/fuselage joints with silk patches using plenty of cement. Ensure that the patches also cover the block tail fairing/fuselage joints. Give the whole assembly one coat of dope and set aside to dry.

Cut out wing ribs (R1), (R2), and (R3), cement in place on the centre section spars and thread lead out wires through the three port ribs. It is most important at this stage to check that the elevator control linkage and motor control/bomb release mechanism work quite freely as this is the last time they will be seen. A drop of oil on all pivots, etc., will help.

Cut the wing centre section leading edges and cement in place—butt jointing to fuselage sides. Carve and sand leading edge to follow top contour of ribs (bottom surface should be perfectly flat at this point). Cover bottom of both port and starboard panels with $\frac{1}{16}$ in. sheet. These panels meet between formers (C) and (E) on the fuselage centre line. Now cover top surface of wing centre section. The leading edges (top and bottom) are carved to section and all wing/fuselage joints are covered with silk patches well cemented on.

The wing fillets can now be fitted—forward of former (C) they are carved from very soft block, and aft of this point are built up from 1/32 in. sheet. After cutting to shape the sheet is silked on the outside surface and both surfaces well soaked with cement. While all cement is still wet and sticky, fillet is firmly pressed into position.

At this point the fuselage, tail unit and most of the wing centre section can be covered in lightweight Modelspan and given one further coat of clear dope. This helps to harden the structure and prevents—or minimises—accidental damage during the remainder of the construction.

Stage 2. Cut out all wing ribs (R4) to (R10) from $\frac{1}{8}$ in. sheet, the bottom leading edge ($\frac{1}{8}$ in. sheet), and the leading edge itself ($\frac{1}{4}$ in. sheet). Also at this time cut out flap and aileron spars and mainspar—the latter from $\frac{3}{16}$ in. *hard* sheet. Assemble "dry" holding here and there with pins, and mate up with wing centre section. If all "fits," assembly may be commenced by cementing (R4), (R5), and (R6) to centre section spars. When dry, cement mainspar in place. Cement bottom leading edge sheet ($\frac{1}{8}$ in.) to (R4), (R5), and (R6) followed by the flap spars. Allow to dry, and then cement remaining ribs in place followed by aileron spars and leading edge ($\frac{1}{8}$ in.). Sheet undersurface of wing with $\frac{1}{16}$ in. sheet.

Add lead ballast to the starboard tip and the line guide to the port tip. Cement paper tubes through under-

Below: the bomb is in the retracted position while, right, it has swung forward to release.

sheeting for lead out wires to pass through. Carve leading edge to conform with top contours of ribs, cover top surface of wing with $\frac{1}{16}$ in. sheet and add sheet wing tips. Carve leading edge to shape and sand completed wing thoroughly. Reinforce wing centre section/wing outer panel joints (top and bottom) with silk. Give completed wing one coat of clear dope, fill up any cracks, etc., as for fuselage, and cover in lightweight Modelspan.

Stage 3. Cut out all cockpit canopy formers and laminate as necessary. Special attention should be paid to (3) which incorporates the radio mast. Notch fuselage at appropriate points (slots about $\frac{1}{8}$ in. deep) and cement formers in position. Complete canopy framework with ply and soft block as indicated on plan. Paint interior of cockpits and canopy formers pale matt grey. Carefully cover with acetate sheet in sections—remember that the canopy is a distinctive feature of this model and, as such, no pains should be spared to ensure a perfect job. Canopy framework is simulated by doping on thin strips of writing paper. Be careful here as a slip with the brush could ruin the job.

Construct the cowling on its jig. Use P.V.A. adhesive throughout—and plenty of it. Cut out lower portion to suit motor. Cover in silk. Note that the 1/32 in. ply "gills" should not be fitted until cowling is finished. The cowling is held in position on the model by means of two small brass brackets. These are fitted under the engine mounting bolts and the cowling is fastened to them by means of two 8 B.A. nuts and bolts—one on each side.

Construct wing flaps and ailerons. Cut slots in wing flap and aileron spars to take the $\frac{1}{16}$ in. ply keys. Check for fit and then remove until model is completely finished. Cover in lightweight Modelspan.

Build up dive brakes and slot undersurface of wing to take the small keys on the dive brake support brackets. Check for fit and then remove until model is finished.

Motor Control and Bomb Release Mechanism

The original model was powered by a Veco 19 which incorporated a simple rotary exhaust throttle, operated by means of an aluminium lever at the rear of the motor. The lever was split down its length to enable a crank to engage. The following system was designed with the view of simulating an authentic "operational" flight—taxi, a scale type take-off at *slightly* below full throttle, cruising (to the "target"), full throttle (combat boost) for the "attack" coming in from a shallow(?) wing over, full up-elevator over target—releasing bomb, and back to "base" for a controlled landing. A "safety" device is incorporated which prevents the bomb being released during "taxiing," and at low throttle openings.

The brass lever, safety lock, and main control operating lever must be "tailored" to permit correct operation. The tension of the two return springs must also be arrived at by trial and error.

Sequence of operation. Spring tension holds motor throttle in the fully closed position (slow running). Spring tension holds bomb release catch fully forward against a small hardwood stop, and in this position "safety bar" passes behind catch thus preventing it opening.

Assuming motor is "slow running," power is increased by pulling third line which, through the linkage, will rotate crank, thus opening exhaust throttle. At the same time "safety bar" is pulled slowly clear of bomb release trigger until, at full throttle, trigger is free to be pushed forward by brass lever on full "up" being applied. As tension on third line is released, spring will pull motor control crank vertically so closing throttle. Safety bar will then be pushed back behind bomb release trigger.

Two points require to be noted: (a) motor "slow runs" with *slack* third line, and (b) it is important that the length of the "safety bar" be adjusted so that at full throttle it *only just* clears "trigger."

Finishing

The model is finished in the following colour scheme. Upper surfaces and spats—dark forest green. All undersurfaces pale blue/grey. The national insignia is, of course, red surrounded by a thin white line. Flashes on spats are red. The identification number on the fin is in white. The surface of the model, cowling, flaps, spats, etc., may be prepared by any of the well-known methods (talcum powder/dope filler was used on original), and when satisfied with basic finish (and not before) the whole model is painted with a "priming" coat of medium grey dope. This should be worked at until a good finish is obtained. When satisfied, final colour may be applied—upwards of four THIN coats being necessary. Rub down each coat with very fine wet or dry paper until a perfect finish is obtained, while the final coat should be "brought up" with metal polish. A bit of patience and hard work here is well rewarded in the end.

The flaps, ailerons, and dive brakes may now be cemented in position. The spats—*which should not have received any colour dope yet*—should be "split" and the halves cemented together round the wire undercarriage legs. The joints should be well smoothed down and "filled" before colour is applied. Here again, make a good job of these spats as they are a distinctive feature of the model.

The national insignia should now be applied (note that the red discs on the undersides of the wings are NOT outlined in white). A small tool was made up and used to cut rings from "Contact" for use as masks. The red discs are painted first and the mask removed. When *perfectly dry* (overnight) mask off with a "Contact" disc (centre of ring used to mask off red disc) and the mask for the white line is pressed into place. When dope is dry remove both masks.

Check over all paintwork for "faults" and details. If satisfied, fuel proof model, paying particular attention to the inside of the engine cowling and the areas around the motor.

Mount motor and check balance point of model. It should be near to that shown on the plan. Remember that the further aft the balance point is, the more sensitive the model is. Fly over a *smooth* surface on 40-50 ft. lines, and the best of luck. (Don't fly from the local pasture—the model isn't designed for it!)

Aircraft Modeller Was the First Man in Space!

YURI GAGARIN is an old aircraft modeller. It was through his boyhood interest in this great hobby of the twentieth century, that he developed an interest in the problems of flight and ultimately in the possibilities of human space travel. He happened to be young when the Russian people, like the American, were thinking seriously of voyages into the beyond. In common with many thousands of other boys and youths he read the stories of Jules Verne, who, in 1864, wrote *From the Earth to the Moon*, when the only means of leaving the earth's surface was by balloon or glider.

It is interesting that the first great imaginative stimulus to space flight—we can ignore the wildly impossible fantasies of earlier times—was created by a novelist who lived long before aeroplanes. The second thrust came from H. G. Wells. When Wells wrote *The War of the Worlds* in 1898 (or *The First Men in the Moon* in 1901) no-one had yet flown in a proper aircraft. Both prophets, the Frenchman and the genius from Bromley, looked beyond the aeronaut to the cosmonaut.

Wells was inspired always by a vision of what science could do for the whole of human society, once men could be persuaded to sink their differences. If Yuri Gagarin spoke only of Jules Verne, the reason can, perhaps, be traced to the extremely frank comments which the English author made to Joseph Stalin in Moscow. The Marxist State did not exist in the time of Verne and therefore, of course, could not be criticised.

Anyway, young Yuri Gagarin was an aircraft modeller who read *From the Earth to the Moon*. He was also an enthusiast for gliders. After his venture into the void, some commentators suggested that he used a glider, or the glider principle, to make his return. One theory was that the spaceship sprouted wings, as it were, to become a glider in the final stages.

We were all left eager to know more. It may be that the young people of the USSR will be told, in their own magazines, of the aircraft models which Yuri used to build. There is great enthusiasm for modelling in the Soviet, as is shown by the superb models which Russian teams have flown, not without considerable success, in numerous International events. Aware of what can be gained from models and modelling, the Soviet authorities give the craft their official encouragement (other authorities please note). It may already have brought them a rich return; it has at least helped to produce Yuri Gagarin, in whose life aircraft modelling has been important enough for him to speak of it during the first wildly thrilling hours of his return to Earth.

None of you who read these words can ever be the first man in space. But who knows what adventures will await some of you in the future which science—partly in spite of national differences and partly because of them—is unrolling before our awed eyes?

At least, some of you are certain to shine as modellers! Many readers of this issue will be attending the Nationals; I await the time when one of the winning contestants tells us that he began as a member of the Wings Club. Which one of you will he be? Someone must be first in every kind of endeavour, and the first Old Wingman to enter the Nationals may—though modesty makes you doubt it—be the chap you see in the mirror every morning. Why not? You have made an excellent beginning.

ALAN WINTERTON.

Dear Alan Winterton—I am between 10 and 16 years of age and would like to become a member of the Model Aircraft Wings Club. With this coupon I enclose a postal order (overseas readers should send an International Money Order as local postal orders cannot be cashed in England) for 1/- to help cover the cost of the badge, transfers and membership book. *All membership applications must be on this form.*

Name in full.....
(Underline christian name normally used)

Address.....

.....

..... Year of birth.....

School or College.....

Name of other club or clubs to which I belong (if any).....

.....

Send to—MODEL AIRCRAFT WINGS CLUB, 19-20 NOEL STREET, LONDON, W.1.

Pen-Pals Wanted

Eric Ashmore, 86, Laughton Road, Donnington, Nr. Sheffield, would like to correspond with someone in America or France.

Christopher Bracewell, Barnard Castle School, Barnard Castle, Co. Durham, wants to exchange magazines and news with someone of his own age (14), mainly interested in C/L.

On the Wings Club Workbench—

PAINTING & LINING

HAVING dealt last month with the subject of fabric covering and clear doping, the obvious next step is colour doping and decoration. In this month's "Workbench" we point out the principal rules and give some useful hints on this most important subject.

Colour dope may be applied either by brush or, ideally, through a spray gun, but the important thing to remember, if you use a brush with cellulose dope, is that unlike other paints, each coat softens the earlier coats. There is a certain technique (soon acquired) of "flooding" the dope over the surface without working it to and for with the brush, and, at the same time, avoiding excessive quantities of dope which cause unsightly "runs." The faster the dope can be applied, bearing the above points in mind, the more successful you will be.

This technique also avoids, to a large extent, those ghastly brush marks which destroy the appearance of an otherwise well built model, but it is essential to have the dope at the correct consistency. Thick dope invariably produces a poor finish and dope thinners should be added until the liquid flows evenly without being watery. Add a little thinners at a time and keep testing the mixture on a piece of smooth card, until you are satisfied that the consistency is right. Remember, never try to attain a complete finish in one coat; you will be unsuccessful, despite what the manufacturers say! Give several thin coats, allowing each coat to dry *completely* before applying the next one—this is vital.

The spray gun is, of course the easiest method of getting a good cellulose

finish, but again there are points to watch. Generally, the dope will have to be rather thinner than for a brushed finish—about the consistency of creamy milk. If the dope is too thick, an "orange peel" effect will be produced. It will again be necessary to apply several coats, usually even more than when using a brush. An efficient "gun" and a constant air supply are essential; those rubber scent spray type bulbs for hand use are useless for dope spraying.

The cheapest way to get a constant supply of high pressure air is to use a tyre foot-pump to an air reservoir (old car inner-tube, etc.), or to fit a pressure equaliser in the air line between pump and gun. These latter are simply double ended rubber bulbs, one end of which is fitted with a non-return valve. The equaliser stores the excess air from each stroke of the foot-pump and this is fed to the gun during the return stroke of the pump, thus delivering to the gun a smooth, uninterrupted high pressure air supply.

A spray gun will not, of course, produce a sharp paint line, and adhesive masking tape is used where such a line is required (Photos 4 & 5). Due to the "spread" of the spray gun it is also essential to cover all areas not to be sprayed (cockpit windows, wheels, etc.). Newspaper can be used for this purpose stuck down at the edges with adhesive tape (Photos 1 & 2). The clear cellulose type of adhesive tape has tremendous sticking power and if used over an already doped surface, great care must be exercised when removing, or the tape will bring the dope away with it. Some of the excess "tackiness" of the tape can be removed by running it lightly through the fingers before use (Photo 3). When removing, never pull it quickly upwards away from the model, but peel slowly, doubling it back on itself (Photo 4).

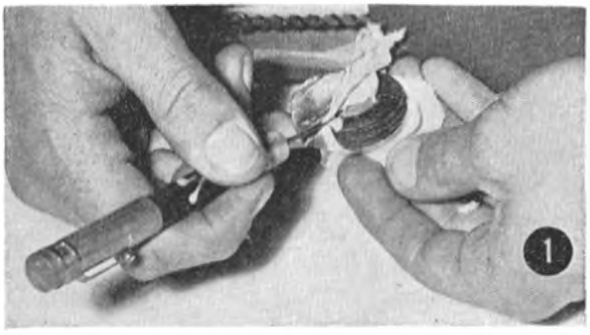
The opaque masking or drafting tape is less adhesive, and, therefore, safer to use over dope; however, some types are not smooth, but textured, and allow the newly applied dope to creep under the tape, thus destroying the clean edge. These tapes are safer to use with a sprayed finish, where the dope is less likely to run, than when applied by brush. They are generally more expensive than clear tape, and since considerable quantities are used on large models, this may be an important consideration.

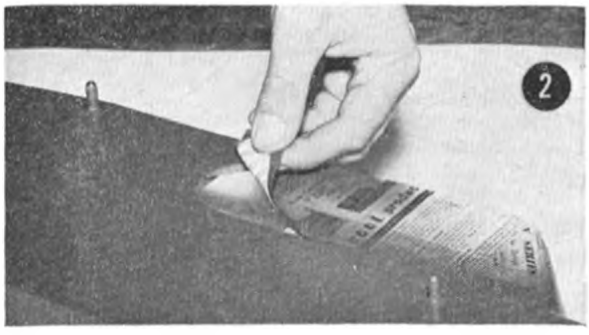
Trim stripes, and all manner of decorative detail work are made immeasurably simpler and neater by the use of masking tape (Photo 5). When narrow areas such as this are painted, the dope can be quite thick and many modellers prefer to remove the masking tape almost immediately after painting before the dope is dry. This gives a smoother edge to the trim, but is a technique which needs care and practice, so if in doubt—don't!

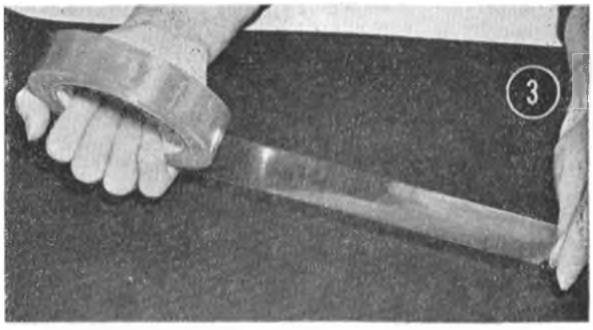
Butyrate and fuel-proof dopes have less adhesion than the ordinary cellulose variety and need considerably more care when removing tape from them, since they will "lift" from the model very easily.

To protect cellulose dopes against the ravages of glow-fuel and castor based diesel fuel the model must be given a coat of clear fuel proofer. There are several brands on the market, but one of the most effective is Marjonos. This is usually too thick to apply direct from the bottle, but cellulose thinners or pure methylated spirit can be used to dilute it, and it may then be sprayed or brushed on quite easily.

Butyrate dopes need no proofer and they are likely to become increasingly popular on this account, although the slightly greater care needed to apply these finishes, and the generally higher price, at present discourage many modellers from adopting them.







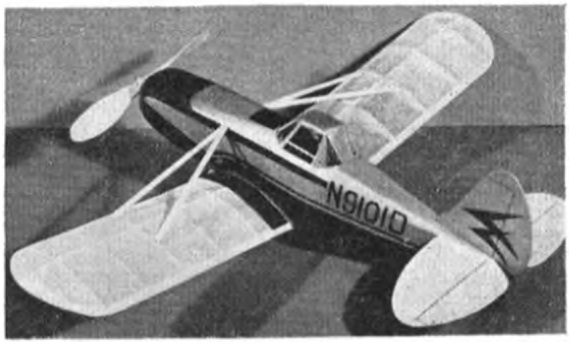
A model designed especially for wingmen————*RAY MALMSTROM'S*

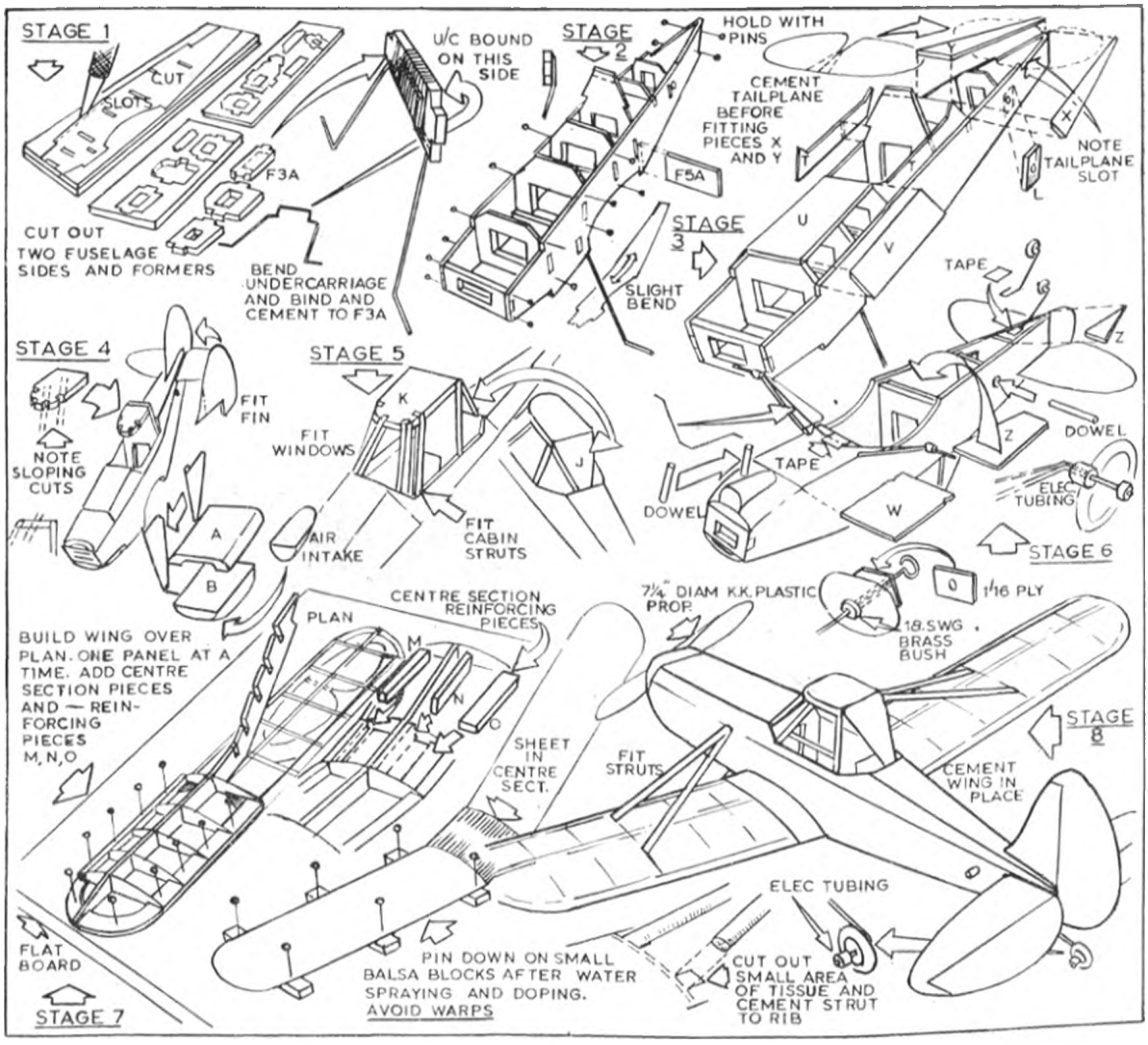
Piper PAWNEE

A 25 in. WINGSPAN RUBBER MODEL

WHEN we asked Ray to design a good looking *flying* model suitable for any wingman to build, the problem was how to present the plan so that success could practically be guaranteed. The result is a drawing where, in addition to all the parts being drawn out full size, a complete set of constructional sketches is included on the 30 × 22 in. plan. These sketches are reproduced below and wingmen can obtain the full size plan (M.A. 348) for only 2s. 6d. by completing the form on page 189, to non club members the price is 3s. 6d.

The **Pawnee** features an easy to build sheet fuselage with built up wings, a combination that speeds construction and ensures a *real* flying model. Despite the low-wing layout (and low wings are a bit trickier to trim than high wing models) the **Pawnee** is a consistent performer and its rugged construction ensures that it can take more than its ordinary share of knocks, without suffering damage. Take time *and* care over the building, decorating and trimming of your **Pawnee** and you will have a *real* flying model to be proud of.





IMPROVE YOUR MODELLING

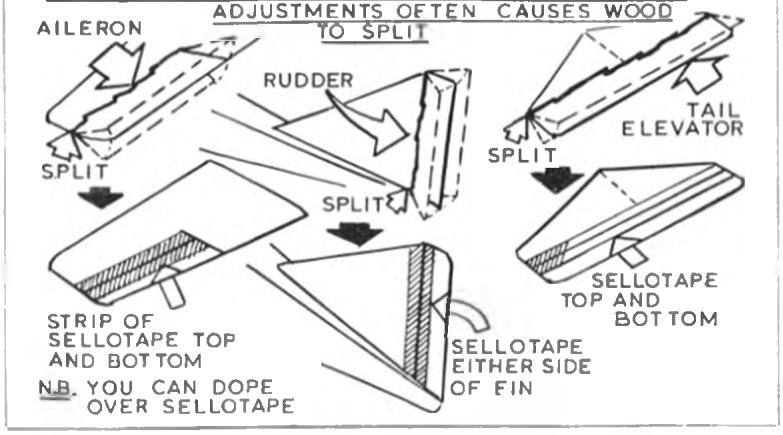
with this months

BY

RAY MALMSTROM

Trimming without Tragedy

"BEND trailing edge of tailplane slightly up"—so goes the familiar instruction. Unfortunately, sheet balsa being what it is, the trailing edge is very often bent *off* and not *up*!—for the wood splits along the grain—and out comes the tube of cement once more. Actually there is no need for this tragedy to happen. Adhesive tapes of the Sellotape variety have ended the hazardous business of warping a sheet control surface up or down. Strips of Sellotape on either side of a control surface (elevator, rudder, aileron) stops splitting almost completely. The strips can be covered with coloured dope and are practically invisible.



WINGMAN'S FINE MODEL

This ambitious project — a Mercury Aeronca "Sedan"— was successfully completed by 14-year-old Martyn Allen, of Bury. It took six months to build, but as you can see from Martyn's photograph on the left, his patience is well rewarded. The "Sedan" is powered by an E.D. Racer.

SPECIAL PLANS OFFER TO WINGMEN

As the design "Pawnee" which is featured on page 198 of this issue, was designed especially for Wingmen to construct, we have arranged for the full size plan of the model to be available to all Wings Club Members at a special price. The usual price for the plan is 3s. 6d. but Wingmen need only pay 2s. 6d. for a copy.

This offer only applies to Wings Club Members, orders must be on this form, and you must give your membership number.

Please send me the plans of *Pawnee*. I enclose herewith postal order value 2s. 6d.

Name in full.....

Address.....

.....

Wings Club Membership No.....

AVIATION BOOKSHELF

It is amazing how much new information continues to come to light concerning the highly original productions of the German aircraft industry. In the past, most important books on the subject have come from Great Britain and Japan—very little has appeared from Germany itself. It was, therefore, with considerable interest that we learned of a new 800-page treatise by the noted German author and aviation historian H. J. Nowarra who, together with Karlheinz Kens, has produced "Die Deutschen Flugzeuge 1933-1945" (**German Aircraft 1933-1945**).

The text is entirely German, with an English/German translated glossary of the most important German aeronautical terms. This will assist the reader to interpret the many interesting specifications which accompany the aircraft silhouettes, histories and tables which occupy the first 600 pages. The last 150 pages are devoted to 462 photographs, some of them quite unique, covering every major type produced between 1933 and 1945.

The photographs are well reproduced on high quality paper, but we were disappointed to find that many of the originals had been rather crudely retouched or copied, and we have seen many better photos of some of the aircraft. Despite this fact, the book is a valuable reference and source of inspiration to the experimentally inclined modeller, since much space is devoted to the many bizarre aerodynamic shapes dreamed up during the war and only now being exploited.

The book is beautifully produced, very attractively bound in light blue grained plastic, and costs £6 0s. from W. E. Hersant, 228, Archway Road, London, N.6.

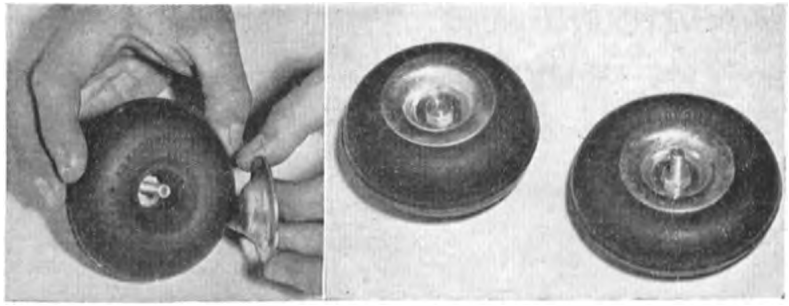
• • •

The second volume of William Green's "**Fighters**" series, covering British and French machines, is now on the bookstalls and it is fully up to the high standard set by Vol. 1 which was published earlier this year.

Originally expected to be a three-volume set, the series is now planned as four volumes, Japan having been moved from Vol. 2 to Vol. 3. Yugoslavia and U.S.A. are to be taken out of Vol. 3 and will have the new Vol. 4 to themselves.

Dennis Punnett produced the three-views which accompany the aircraft descriptions and, once more, many of the photographs appear in print for the first time. The quality of the photo reproduction is excellent, and the handy size of these little stiff backed books (approximately 5 × 5¼ in.) will go a long way to popularising them with model builders and plastic collectors. Macdonald 9s. 6d.

OVER the COUNTER



The Drome airwheels can be readily dismembled for the replacement of parts—all of which can be bought separately—while the different "shape" obtained by loosening or tightening the bush can be seen.

CREDIT for the cheapest airwheels on the market without doubt goes to **Drome** (Model Aerodrome Ltd.). Three sizes are available, 2, 2½ and 3½ in. dia., price 12s. 3d., 14s. 0d. and 17s. 6d. per pair respectively, and all are of excellent quality.

As can be seen from our photographs the "tyre" is in effect a completely sealed annular tube, with two aluminium side plates, joined by an aluminium bush, to form the hub. The degree to which the bush is tightened affects the diameter of the wheel quite appreciably, the two wheels in the photograph being a 3½ in. pair—one with the bush tightened, and the other with it slackened to its fullest extent.

An added attraction is that all the parts of these airwheels can be bought separately.

* * *

We recently received a sample of **Devcon** 2-ton Epoxy glue. As can be seen from the illustration, this is claimed to stick virtually anything and the tests we made would seem to bear this out.

With plywood to plywood, plywood to balsa and balsa to aluminium joints, in all cases the wood fibres parted before the joint broke. However, the Editor must have been mighty tough when he tested the aluminium to aluminium bond, as this joint parted without tearing the 0.008 in. foil test piece. In all fairness, however, the bond was quite the equal for strength to that produced by any other glue we have tried.

As is usual with this type of glue two tubes are supplied—resin and hardener—and when mixed they have a working life of some two hours at normal room temperature. Price is 8s. 6d.

* * *

One of the oldest names in the model trade, **Le Pages** have recently introduced a new, small size tube of their well-known balsa cement to sell at 6d.

Designed for modellers who only require a small amount of cement to complete a job, or to carry for field repairs, this is ideal. It is extremely quick drying and having an acetate base it will stick celluloid cockpits in place—the nitrate base cements will not "touch" celluloid—in fact we used our sample for "glazing" our *Super* 60.

* * *

The many uses to which aluminium and similar alloys can be put in models has, in the past, been severely limited by jointing problems, but this no longer applies. We recently received some samples of Eutectic Low Temperature Welding Alloys from the **Eutectic Welding Co.**, North Feltham Trading Estate, Faggs Road, Feltham, Middx., which enabled us to join aluminium with almost as much ease as one normally solders brass. The "solder" flowed easily over the work filling the crack of a bad join, and resulting in a "fillet" of equal strength to the original material.

Eutectic manufacture a vast range of solders, welding rod, fluxes, etc., for joining all types of alloy including magnesium. They also have products which will join ferrous to non-ferrous metals.

Full details can be obtained from Eutectic at the foregoing address.

Left—Devcon's 2-Ton glue on display card.

Below—counter display carton of the Le Pages balsa cement.

C/L TRIALS

Continued from page 179

with this model, been timed at 105 m.p.h. and this should prove that, at the moment, the F.A.I.'s object of putting the speed class within the reach of anyone by specifying a standard glow fuel has succeeded. Unfortunately, however, speed differences of up to 5 m.p.h. have been noted with different grades of methanol and oil, which does not allow a true diesel/glo comparison, while the danger of top grade engines being ruined by organisers supplying fuel with an inferior lubricant also cannot be discounted.

Third man, exactly 0.5 m.p.h. slower than Gibbs, was Norman Butcher also using a C.C.S. His was a full pan model with detachable plywood wings formed over a magnesium spar and again his first flight of 101.2 m.p.h. was his best, the remaining two, with different propellers, being several m.p.h. slower.

None of the fliers were very happy with the special handle and pylon, which, incidentally, certainly does not prevent whipping, although it does make it easier to detect—as if that were necessary!

As, when the standard fuel was adopted, it had been predicted that anyone would be lucky to better 100 m.p.h. these results are not too disappointing, so with the members of all teams being very experienced modellers, Great Britain's chance of winning the overall Criterium d'Europe prize should be very good.

Radio Topics

NEWS AND VIEWS FROM THE WORLD OF RADIO CONTROL

LATEST addition to what we would term the precision engineered motorised servos is the Graupner " Duomatic " (see photo) which incorporates a clock-type gear train, driven by an electric motor via a simple but most effective clutch. Torque multiplication is considerable through the 206 : 1 reduction gearing to the control arm, with immediate engagement of the clutch as the motor runs up to speed. The clutch consists of two small moulded nylon bob weights on cantilever spring arms, which are thrown outwards by centrifugal force to engage the shallow cylindrical clutch plate on the start of the gear train. When the control arm reaches the limit of its travel the clutch slips, allowing the motor to continue running at substantially the same speed as before. Thus, with the control " held " at full displacement, the motor draws only similar current to when driving. This current is of the order of only 100 milliamps on 3 volts, or 200 milliamps on 6 volts—far less than the holding current of the average escapement.

Return to neutral position (self-centring action) is provided by a fairly heavy coil spring operating in torsion. There is an appreciable over-run when self-centring, but this is rapidly damped by the gearing. Operating time, from neutral to full control position, is 1 sec. on 3 volts and approximately ½ sec. on 6 volts. Total weight of the unit is 2¼ oz.

Mentioned by some authorities as seriously rivalling the " Duramite " in performance, we feel the " Duomatic " has several limitations. The electrical side is much simplified since there are only two connections to be made directly to the motor terminals. Thus two channels are demanded for switching—see Fig. 1—or a double pole changeover relay on single channel. Essentially,

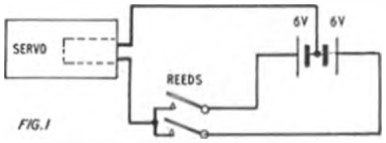


FIG. 1

however, we regard the " Duomatic " as a multi-channel servo.

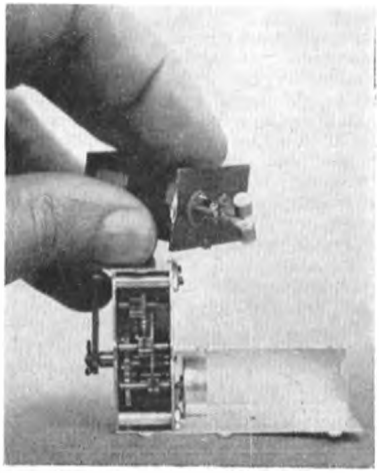
An immediate limitation from the simplicity of the circuit is that it cannot be adapted for " progressive " or inched controls, and thus loses in value as a motor speed servo or elevator trim servo. It is also specified as a 6 volt unit, which means two 6 volt batteries are required for the servo circuit. Actually, however, it will operate reliably down to 3 volts and still give ample force output—the snag being the increased time for complete movement with decreasing voltage.

The flap backwards and forwards (once each way) over neutral under spring return action is also not very desirable—and being a spring return there is nothing that can be done about it. In straightforward motor drives it is possible to provide regenerative braking and eliminate hunting about neutral with a resistor across the motor terminals of low enough value to act as an effective " short circuit " shunt when the motor is being driven by inertia (and thus acting as a dynamo), and, at the same time, having a high enough value, compared with the motor resistance, not to starve it of current for normal running.

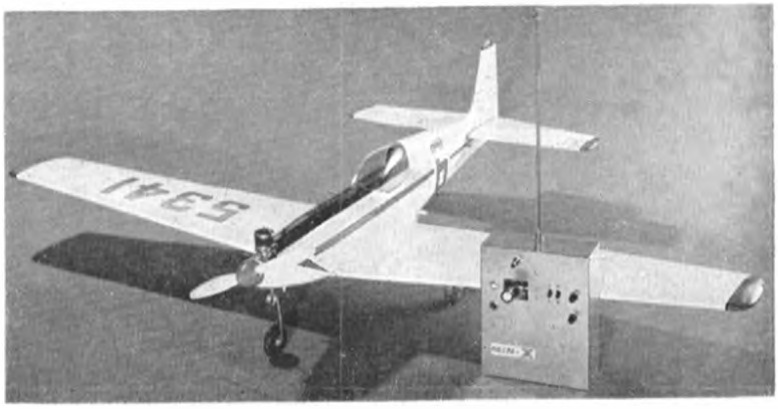
* * *

Original low wing design, with most pleasing lines, by Bill Bertrand (U.S.A.) is shown in photo below. Span is 65 in. for a wing area of 675 sq. in. Powered by a K & B " 45," controls include rudder, elevator, ailerons and motor for full aerobatic performance. Wing section, incidentally, is semi-symmetrical and only 9.5 per cent. thick.

This model was actually built as a test vehicle for the new Min-X pro-



Left: Graupner " Duomatic " motor-driven servo employs simple but effective clutch coupling motor to gear train. Designed for 6 volts, will operate down to 3 volts, drawing 100 milliamps. In the " holding " control position the clutch slips allowing the motor to continue running still drawing the same current. Control arm movement time—neutral to full movement—is 1 sec. on 3 volts, 0.5 sec. on 6 volts. Self-centring by spring action.



Below: " Valkeria " 65 in. span R/C model by Bill Bertrand has fully proportional rudder, elevator and ailerons and trimmable motor control, using new Min-X equipment under development. Model design features a tricycle undercarriage and—at last!—a tailplane mounted in the right position for a low wing, not underslung! Plans are available.

portional system—hence the Min-X transmitter in the foreground! If it appeals as a design, Bill Bertrand offers to supply blueprints direct against a remittance of $2.50. The address is Bill Bertrand, 14803, Englewood, Allen Park, Michigan, U.S.A. Ask for his *Valkerie* model plan—and don't forget the International Money Order!

* * *

Simple solution to motor control operation via electric motor and single switching circuit, is advanced by R. B. Palmer, Luton, utilising a microswitch wired in parallel with the switching contact—e.g. the third escapement position. The motor output terminates in a suitable cam with two flats, 180 deg. apart. Mechanical drive (push-pull) is taken from a crankpin. The microswitch is mounted by the cam, normally held closed by contact from the cam surface, but released by rotation of the cam to the position of the flats—see Fig. 2. It does not even have to be a

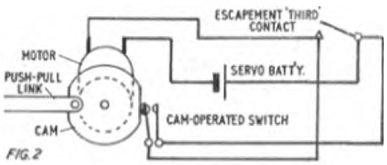


FIG. 2

microswitch. Using a paxolin cam, simple contact springs could be used to give the same action.

With escapement switching position and switch wired in parallel, holding the switching position completes the motor circuit and starts the motor running. After a few degrees of rotation, the cam has closed the switch contacts in circuit, when the motor will continue to drive, on release of signal, until the switch contacts are opened again after complete 180 deg. rotation of the cam.

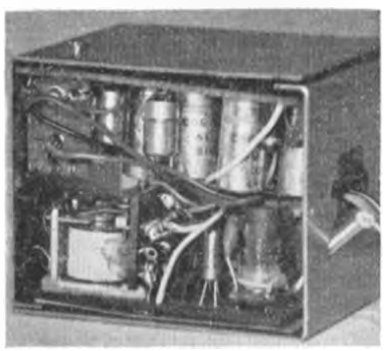
Next signal triggers the motor circuit via the escapement switching contact again, when the built-in switch takes over for a further 180 deg. rotation and stop.

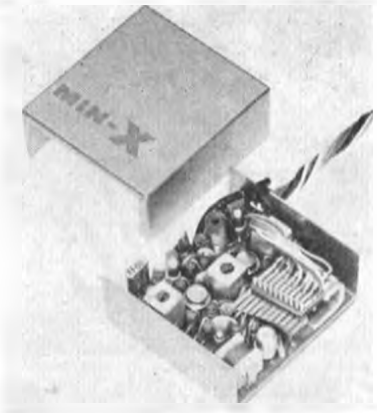
Note that the escapement contact only has to be held closed long enough to "trigger" the circuit for the cam to rotate a sufficient amount to operate the built-in switch, after which the complete "push" or "pull" action follows automatically. Thank you, Mr. Palmer. We like this solution—and it works.

* * *

Letter from a youthful reader wonders why the MODEL AIRCRAFT test vehicle—the new K.K. *Super* 60—is being fitted with rudder and engine controls only. He is building a Veron *Viscount*, wants elevator and rudder control, and asks for our recommendations using REP equipment. Well, we suggest REP 6-channel transmitter and 4-channel receiver as we would not recommend elevator operation via single channel systems. The 6-channel transmitter costs very little more than the 4-channel version—and having worked with rudder and elevator the virtue of a third con-

Left: new Min-X proportional control system with "joystick" control and positive irreversible servo movements to eliminate flutter. How the Graupner "Bellamatic" servo got into the picture we are not sure—presumably incorporated as the motor servo. This equipment is due to undergo at least a full year's development before being finalised for production. The receiver is shown "open" below.





Above: the new Min-X superhet receiver, available both for single channel, left, and 4-, 6-, 8-, 10- or 12-channel, right—relayless or with relays (relay pack in separate case). Battery requirements nominally 6 volts and quite suitable for working off existing DEAC or similar servo batteries. See circuit diagram opposite.

trol—motor speed—will soon be very obvious.

For a *four-channel* system, undoubtedly the *best* set-up is rudder and motor control (the latter preferably progressive). With flight practice you can probably do more with this than rudder-elevators. Three channels will give the same, but with sequence switching only for motor control, which is rather more limited in scope. Of course, you can get the same with single channel, using a compound escapement and save a lot of cash outlay, but this needs considerably more flying ability and practical "know how" to get comparable results.

* * *

Min-X in the news again, this time with a new 5 to 6 volt super-regenerative multi-channel receiver (circuit diagram, Fig. 3) to supersede their present 8, 10 and 12 channel models. Owners can have existing equipment altered to the new standard. Changes include modification to the reed bank and complete rebuilding of the set on a new circuit board. New reed bank gives much improved drive characteristics and tone separation has also been improved, particularly on 10 and 12 channel. Main advantage, however, is probably that the new receiver can be operated direct from DEAC or similar cells—the same ones as used for servo batteries!

Existing receivers for conversion *must* be returned direct to Min-X, with the necessary remittance (15 dollars charge). If owners would prefer to pay the bill in this country, this can be done with a remittance of £5 7s. 6d. to Ed. Johnson—but *still* send the set direct to Min-X, mention payment made to Johnson—and leave Ed to sort out the paper work!

Incidentally, Ed. has now been appointed main European agent for Min-X and, with John Singleton, will be giving "two at a time" formation aerobatic displays with models equipped

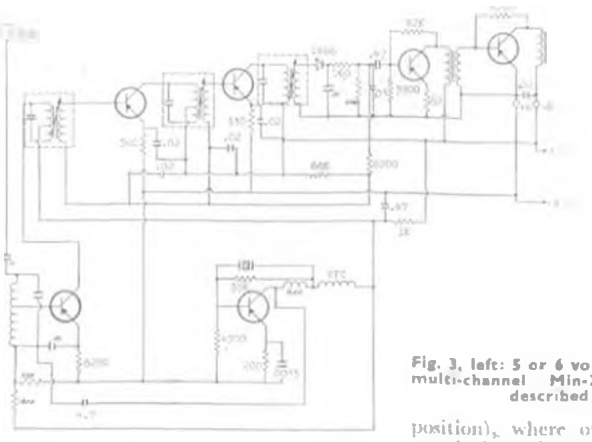


Fig. 3, left: 5 or 6 volt Superhet single- and multi-channel Min-X receiver circuit described in the text.

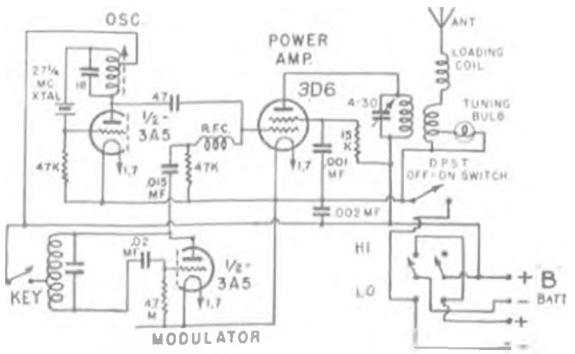


Fig. 4 above: Circuit diagram of the Min-X Powermaster single-channel transmitter.

with the Relayless Superhet 10 equipment, at rallies this year.

* * *

Circuit details of the new Min-X "Powermaster" single channel tone transmitter are shown in Fig. 4, utilising transformer modulation 100 per cent. at 700 cycles and 3D6 valve in final stage. Unique feature is a "Hi-Lo" switch which gives either maximum output ("Hi" position), claimed to exceed the output of other comparable transmitters by two to five times; or maximum battery economy ("Lo" position), where output is claimed to equal that of most competitors. The "Lo" position gives a battery life of 100 hours, as compared with 25 hours nominal for "Hi" operation.

* * *

Here's a question we are not sure we *can* answer. "Why," asks reader D. Bloor, "does radio, or equipment, failure on multi-control systems *always* result in locked on down elevator?"

It does not *always* happen that way, of course. But this type of fault certainly does appear to occur more frequently than the simple laws of chance would give. Perhaps it is just because the *effect* is more dramatic! There is another contributory effect in that, of all the controls, the elevator is probably the most critical and if anything does go wrong with it, that can be "curtains" for the model – especially on the modern "zeroed out" model, which tends to remain in the attitude into which it is put. What we would like to emphasise is that well over 90 per cent. of all equipment failures are *avoidable* – simply by making sure that everything is correctly adjusted and working properly and efficiently *before* attempting to fly. Most "bad luck" stories are really the result of bad management.

CONTEST CALENDAR

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.	
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.	
,, 10/11th	†P.A.A. Festival, West of Scotland, Abbotsinch.	
,, 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.	
June 11th (Cont.)	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	
,, 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.	
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.	
,, 19th	ST. ALBANS GALA. Chobham Common. R/G/P/, "½-A" Power, Slope Soaring, R/C single spot landing.	
,, 20th	**SCOTTISH GALA.** U.K.-CHALLENGE MATCH. Abbotsinch. KLM TROPHY. U/R Power. CMA TROPHY. U/R Rubber.	
Aug. 20th	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.	

*Plugge Cup events.

SMAE events in capitals.

†SMAE sanctioned contests.

PETER CHINN'S

LATEST ENGINE NEWS

Great Britain

Elsewhere in this issue, will be found a test report on the new Frog Viper 1.5 diesel. As is generally known, I.M.A. are also offering a glow version of this motor, known as the Venom. With the Venom, the emphasis is on exceptionally easy starting and a low purchase price. The engine is a good deal less powerful than the Viper but costs only £2 18s. 0d. inclusive of purchase tax, as against £4 0s. 3d. for the Viper.

Apart from the more obvious features, such as the glowplug (incidentally, a heavy duty 2 volt type) in place of compression screw, and lower cylinder height, the Venom is externally distinguished from the Viper by a tumbled finish on the castings and by its starter spring. Simplified by the exclusion of ball-bearings, the Venom departs from orthodox practice by using a plain sleeve cast in as an integral part of the case but separated from the outer wall of the bearing housing by three longitudinal webs. All other bottom end components are identical with those of the Viper.

Worth more than a passing mention is the starter spring which, unlike some others, is a really sensibly proportioned item, having nearly eight complete coils of 17 s.w.g. spring steel wire and will therefore store sufficient energy to spin the motor over smartly without being strained to the point where it might distort. This feature, the safe, easy to adjust rearward location of the needle control and the inherent easy-to-handle characteristics of the Venom, should find favour with newcomers to the hobby who need a moderately priced serviceable engine that will give them more power than the under 1 c.c. beginners' motors.

* * *

A special cut-out unit is now being made by Olivers for the Tiger Mk. III, so widely used in F.A.I. contest flying. Intended to provide the positive instantaneous "cease fire" now doubly necessary in F.A.I. F/F power in order to make maximum use of the new 10 sec. motor run limit, the new cut-out is a self contained unit, complete with its own crankcase back cover, that screws in place of the existing backplate.

The cut-out operates on the principle of destroying crankcase compression. The body of the unit is machined from hexagonal alloy bar and contains a brass spring-loaded plunger. In its forward position, the plunger covers three large holes in the hexagonal section, effectively sealing the crankcase. Semi-rotational movement of the actuating arm in its channel allows the plunger to spring back and uncover these holes. The general idea will be easily understood from study of our photograph.

Price is 27s. complete, or 21s. 6d. fitted to existing backplates or radial mounts, both prices post paid from J. A. Oliver, Ringwood Road, Ferndown, Dorset.

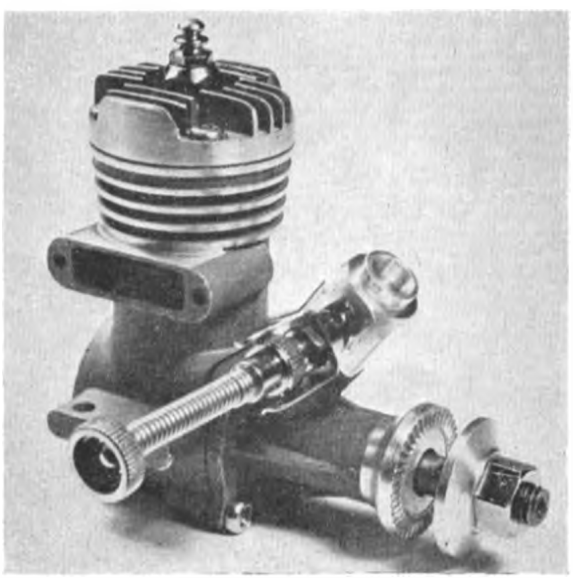
Japan

Production of the 8 c.c. O.S. 49 R/C engine should be under way by the time these words are in print. The engine has been still further developed from the prototype unit illustrated in our February issue. Our photos now show a sandcast pilot model of this latest engine, which, we understand, the production version will closely resemble.

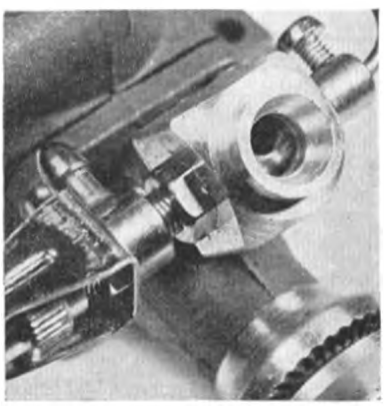
As can be seen, the needle-valve and coupled throttle system has been still further modified. The needle-valve, metering the fuel supply, is now separately mounted at the rear of the engine and is coupled to the carburettor with fuel tubing. The jet, with right-angle connection, is neatly mounted in the rear of the carburettor body and there is an idling adjustment. The throttle arm for connection to a push-pull linkage is on the left, the coupling to the new butterfly type exhaust restrictor being on the opposite side.

* * *

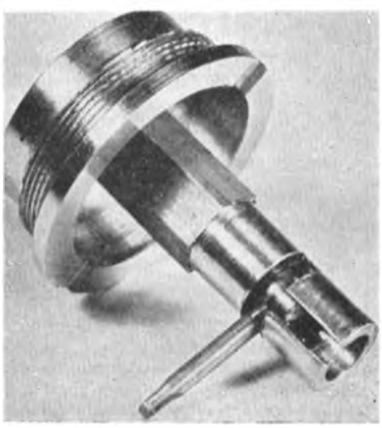
Another new R/C glowplug engine from Japan, this time for smaller and simpler models, is the 2.47 c.c. Enya 15-2TV. This is identical with the 15-2 described in our April column, except for the substitution of a barrel throttle carburettor unit. This unit is also



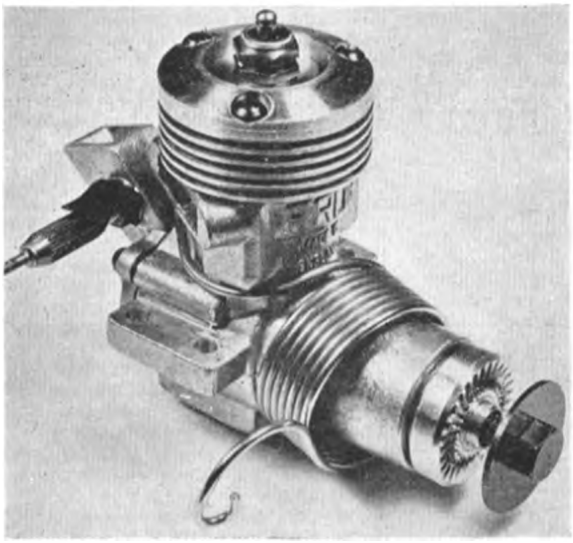
Left: the Enya 15-2TV, a moderately priced, well-built 2.5 c.c. R/C engine with barrel throttle.

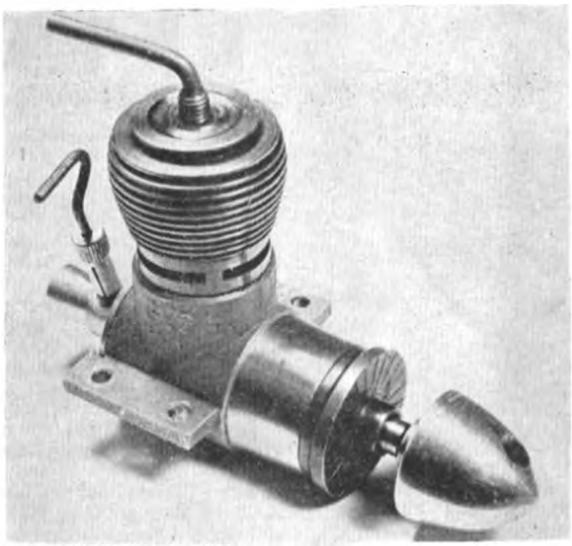


Upper right: carburettor assembly of the Enya 15-2TV. Carburettor is easily fitted to convert the standard 15-2 to throttle control.



Lower right: the new Oliver backplate cut-out unit designed to permit split-second engine run timing with the Oliver Tiger Mk.III.

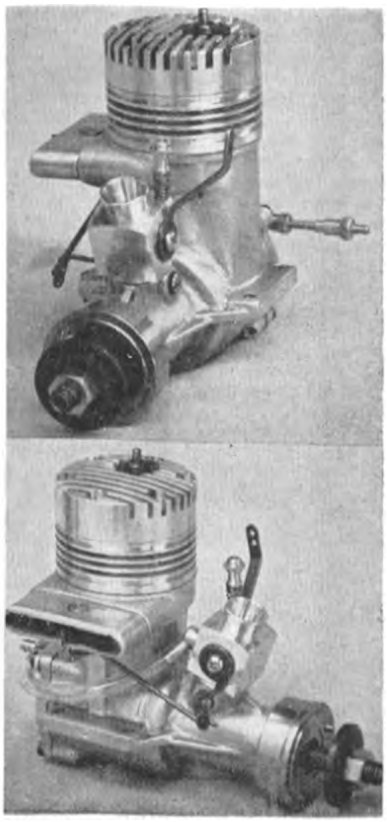




Above left: the Frog Venom, a glow version of the 1.48 c.c. Viper, which offers easy handling and distinctive design at a very moderate price.

Above right: the Polish Jaskolka-II engine. One of a series of Gorski-designed Jaskolka engines, this one features ball-bearing shaft and reed-valve induction.

Below: two views of the latest prototype O.S. 49 R/C engine. Note new position of the needle-valve at rear and revised intake throttle.



available separately and standard 15-2 engines can be converted to the 2TV type easily and without special tools or the tapping of threads. One simply discards the existing needle-valve assembly and venturi restrictor and inserts the new carburettor into the intake. Two screws are provided which are inserted through the old spraybar holes and screwed into the carburettor to lock it in position. The throttle is of the barrel type, consisting of a brass barrel rotating in an alloy body independently of the needle-valve. The needle-valve unit, with fuel line connector on the same side as the control stem, is threaded into one side of the carburettor body and held firm with a locknut. Choke area can be varied by adjusting the position of the jet in the barrel and the whole assembly can be arranged for left- or right-handed control.

The complete engine, with throttle type carburettor, weighs 5 oz.

Poland

We have recently had the opportunity of examining one of the Mk. 2 reed-valve model Jaskolka S.G. 2.5 diesels from Poland. The Jaskolka ("Swallow") designed by Stanislaw Gorski, has been made in several models, both rotary-valve and reed-valve, with and without ball-bearings.

General layout is orthodox, with circumferential exhaust porting and multiple deep internal transfer flutes spaced at 60 deg. intervals below the exhausts. This arrangement, attention to which was first drawn by its use in the Webra Mach-1 in 1953, is popular with East European designers and can also be seen in the East German Schlosser 2.5 and Hungarian Record 2.5 diesels. The cylinder, which is hardened, screws into the crankcase and is topped by a screwed-on alloy cooling barrel, anodised red. The crankshaft, supported in two ball-bearings, is of the plain, non-counterbalanced disc web type. A substantial turned alloy connecting-rod couples a conical crown piston to the shaft by means of a small diameter fully-floating gudgeon-pin. There is a substantial degree of sub-piston supplementary air induction at the top of the stroke.

The reed-valve and carburettor unit is a little different from usual practice. The screwed-in backplate has a 17/32 in. dia. opening in its front wall, forming an annular seating for the rim of the valve reed. The reed is of 0.005 in. spring steel. The carburettor has a venturi section and is turned in one piece with a flange, of similar diameter to the reed, at the front end. A collar, threaded on its periphery to screw into an internal thread in the backplate, secures the carburettor and the reed is thereby clamped between the annular seating in the backplate and the flange of the carburettor. The arrangement allows the carburettor to be rotated a full 360 deg. to bring the needle-valve to any convenient position.

Performance of the Jaskolka is not up to the high levels now being reached with 2.5 contest diesels, but it appears to be a sound design, well produced. The complete motor weighs 4¾ oz.

U.S.A.

Talking of throttles for R/C engines, we are reminded that the new Johnson "Automix" carburettor, standard equipment on the ball-bearing Johnson JRC .36 engine, is also available as a separate item for adaption to other engines of similar size and type. The Automix is claimed to give full throttle control without the addition of coupled exhaust restrictors. Unlike other throttle equipped carburettors, the Automix features automatic mixture strength compensation as the amount of air admitted is varied.

Dynamic Models Inc., makers of

Continued on page 197

LETTERS
to the Editor

Open letter to Pylonius

DEAR SIR,—Firstly, let me congratulate you on your "Twists" for May, 1961. Items 1, 2, 3, 5, and 6 went down beautifully with my boiled egg and char this evening, but Item 4 nearly brought it all back again!

You were, alas, just a little brighter than I. You managed to get your "caustic comment" into print before there was any chance of the contest results proving you wrong; and now, although it's all in fun (I hope), I feel compelled to raise a crossed nib in my defence, and in defence of all other females who squeeze their own cement tubes.

I can assure you that all entries in the Women's Cup, at Debden at least, were built by *women*, and towed by *women*. Regrettably some were also pranged by women. As for the weather side of things, perhaps I was fanciful to imagine that summer will follow spring this year, but I do think that a few more weeks' towing practice would have helped some of the entries I saw; for although one could actually stand upright this time, conditions were a bit too unpredictable for decent results.

Finally, a brief résumé of *me* (not a "particularly modest soul" either) just in case you've never met up with a female aeromodeller. I started modelling when I was 12 (a fair stretch back for my memory), have progressed slowly through Keilkraft efforts, fantastic "own-designs," plans and now back to sounder O.D.'s. Though I've not yet reached a fly-off, I had three lots of double max's last year (in the Shelley, South Midland open power, and Area team contests), losing the third max. through sheer nerves.

I'm sure you will agree that that is quite enough swank for now, so I'll just hop off and stick a fus' side on the *John* Shelley winner 1961.

Yours faithfully,
SUSAN ALLSOP.
Leader of a lost cause.

Lineless "Twist"

DEAR SIR,—Pylonius' description of a certain amphibious Mr. Bloggs who trod on a crab, reminded me of when I was flying my first stunter. I put her into a climb and at the top my "up" line broke. The model completed two beautiful outside loops before coming to rest on terra-firma, upside-down but in one piece.

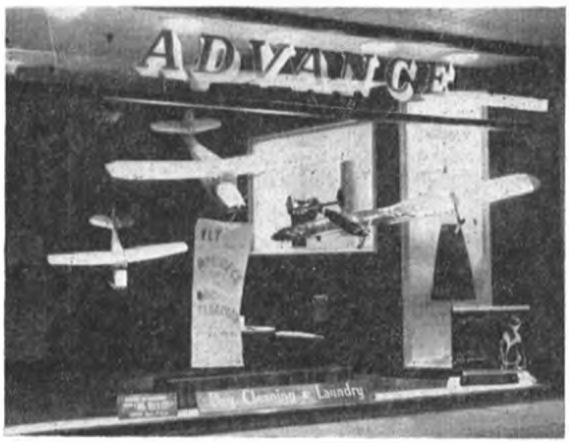
My friend (and launcher) who was standing by, nodded his head approvingly and complimented me on some pretty slick flying. It was a shame to disillusion him!

Yours faithfully,
DUNCAN WALTERS.

Kilburnie,
Ayrshire.

Clean Club!

DEAR SIR,—After seeing your photograph of the display of model aeroplanes in conjunction with a building society (January, 1961, issue), I thought the photo left might be of interest.



The local dry cleaners provided a suitable window, and as a result of this display, plus a photograph in the local paper, we (Girling A.C.) have gained several new members.

It will also be seen that the name of the club on the photo is Cwmbran. This is due to the fact that the Girling club is organised by the local engineering works and most of our members are now outsiders, so we will be changing our club name in the near future.

Yours faithfully,
B. YOUNG.

Cwmbran,
Mon.

T/R at the Nats.

DEAR SIR,—The F.A.I. Team Race event at the Nationals is being run by the Hayes M.A.C., and we would like intending competitors to note the following points

The contest will be 100 per cent. F.A.I. (1961 rules and models) so remember: 0.3 mm. (0.0118 in.) minimum line diameter, 2.5 cm. (approximately 1 in.) minimum wheel diameter, 39 sq. cm. (6.045 sq. in.) minimum fuselage cross-sectional area.

Two circles will be in operation continually from 10 a.m. onwards. Heats will be run every 12 min. and will have four models in each. Each entrant will fly two heats, the fastest of these deciding who goes into the three-model final.

A clock, maintained at G.M.T., will be in front of the control-tent; heat times will be based on this and will be rigidly adhered to. Entrants will be supplied with their heat times (rounds 1 and 2) as soon as possible, they must report to the control tent 5 min. before their heat is due to start.

If entries do not exceed 110, the final will take place at 4 p.m. It will be impossible to completely check 100 plus models, but all models will be liable to spot checks.

No whipping, high flying or other misconduct will be tolerated, but the emphasis will be on prior warnings rather than disqualifications.

The time-keeper and lapmeter will be alongside the segment the entrant starts from, so the mechanic will be able to check his laps if he wishes.

A complete set of the 1961 F.A.I. rules will be posted outside the control tent.

Yours faithfully,
K. LINDSEY.
P.R.O., Hayes M.A.C.

Camping at the Nats.

DEAR SIR,—At the Nationals this year my club will be organising the camping site and I would like prospective campers to note the following points.

It is probable that there will be some limitation on the number of camping permits sold, to avoid the gross overcrowding that occurred last year, so it will, therefore, be advisable to return the application forms to the S.M.A.E. early. There will be a strict control to ensure that entry to the site is by permit only, so do not turn up without one and expect to get in! Also, steps will be taken to discourage unauthorised camp-

ing on road margins, etc.—you have been warned.

Permits will be issued per head, not per tent, at 5s. each, there will be adequate receptacles for rubbish, but campers should make every effort to take away anything they bring with them; this is very important to ensure camping sites in the future.

We will have the co-operation of the R.A.F. police and anybody creating a disturbance will find themselves ejected from the site. After which fearsome list of threats it only remains to say that we expect to provide adequate toilet accommodation this year.

Yours faithfully,
C. J. PERCIVAL.
Hon. Sec., Springpark M.A.C.

S.M.A.E. Membership

DEAR SIR,—Whilst it is perhaps a little premature to draw too hasty conclusions from your Editorial remarks concerning S.M.A.E. membership (M.A., April, 1961), it is as well to remember—at this early stage—that neither the Royal Aero Club nor the S.M.A.E. has any *legal* jurisdiction over persons flying model aircraft in this country, despite the fact that their authority to govern the sport has, over the years, been generally accepted by all concerned, without question.

Should the S.M.A.E. eventually become a "closed shop" for the individual S.M.A.E. contest flyer only, then I do not hesitate to predict the early formation of an alternative national organisation to cater for the needs of the more normal addict to the cult of model flying—the average ordinary club member—the flyer of all types of model, but slave to none.

Relieved of the very heavy financial burden imposed by the sponsoring of national and international contest events—for the few—the newly formed body would be free to concentrate its efforts on the more informal, happy-go-lucky flying so many enjoy at rallies and on their own club flying grounds, provide third party insurance cover and also, possibly, regain the confidence of local model traders, who provided many valuable and attractive prizes for club members many moons ago!

Personally, I do not share your view that the suggested S.M.A.E. move would undermine the entire club movement of this country, except of course, only in-so-far as the S.M.A.E. itself is concerned. An alternative organisation might possibly offer a more attractive "menu" to the rank and file at a much reduced cost. Ten shillings "per bite" for an associate member at a competition, is after all, a bit steep, even though it may be considered an indirect contribution to the upholding of our national prestige in world contests, by a handful of competitors!

Segregation and discrimination is bad and distasteful in most things, and

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.

particularly so in sport and I, personally, feel it would be a very sad day for the S.M.A.E., and its splendid past record of democratic service to the aero-modeller of this country, if it succumbed to the wishes of a self-interested minority.

Yours faithfully,
H. F. WELLER.
Bournemouth,
Hants.

Breaking strains

DEAR SIR,—I would like to draw your attention to an error in the May issue which, as it concerns safety, I am sure you will agree needs correcting.

I refer to the table of "breaking strains" included in the article "Control Line Wire Strength," as well as part of the substance of the article.

The points are as follows:

(a) Modellers are not concerned with breaking strain, which is defined as the load to break in the first instance; i.e. new wire.

(b) The figure required by modellers is the safe working load; usually in the region of 50 per cent. of the breaking strain. It is this figure which is the maximum strain a wire can stand repeatedly without suffering damage—that is important.

(c) Various manufacturers, the standards institutes and associations publish figures for the safe working limit for spring steel and piano wire and these are at variance with your published table, where the difference between 0.010 and 0.0124 is quite out of proportion. The industrially accepted figures are tabulated below, and I would point out that the S.M.A.E. C/L Sub-committee has been at some pains to check with experts on this matter as it is one concerning safety and therefore of great importance.

Diameter	S.W.G.	Maximum (Safe) Load (Single Wire)
0.0076	36	12 lb.
0.010	33	20 lb.
0.0124	30	28 lb.
0.01366	29	33 lb.
0.0148	28	38 lb.
0.0164	27	48 lb.
0.018	26	58 lb.
0.020	25	74 lb.

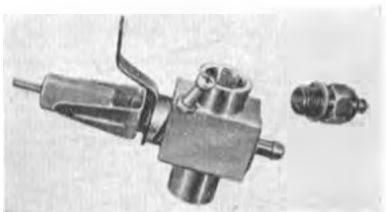
Yours faithfully,
R. L. S. TAYLOR.
Hon. Records Officer, S.M.A.E.

Hardly an error, as in his article Mr. Lindsey stated the wire was tested for ultimate breaking strain, but a slight "ripple" could cause a 20 per cent. decrease in his figures. However, in case the figures were read as being safe breaking strains, it is as well that the foregoing table is drawn to all C/L flyers' attention.—Ed.

LATEST ENGINE NEWS

Continued from page 195

Johnson and Holland products, also have a new shielded element glow-plug for throttle-equipped motors. Unlike most U.S. plugs, this is intended for operation on up to 2 volts instead of the usual 1.5 volts.



The new Johnson Automix carburettor and shielded element glow-plug.

Germany

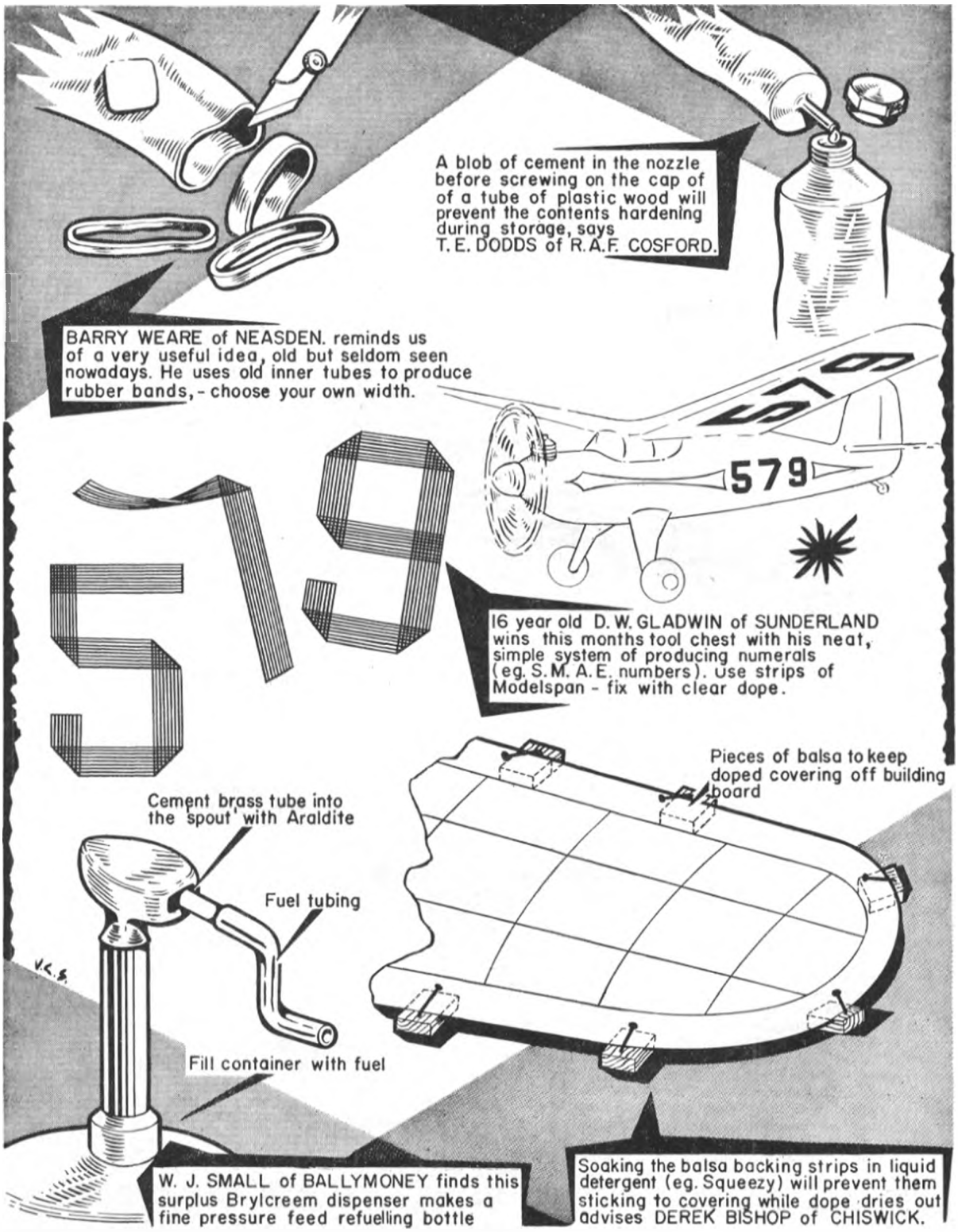
A new Webra engine has been announced by the manufacturers: Bragenitz and Eberth of Berlin. This is a 5 c.c. job to be known as "Big Ben 5."

Big Ben 5 is a shaft-valve, plain bearing glow engine and will be available with or without throttle. The throttle is of the coupled intake and exhaust type. Bore and stroke of this new Webra are 19 × 17 mm. giving a swept volume of 4.82 c.c. Claimed output is 0.63 b.h.p.—a slightly optimistic figure, we would say. The engine is stated to weigh 180 gr. (6.35 oz.).

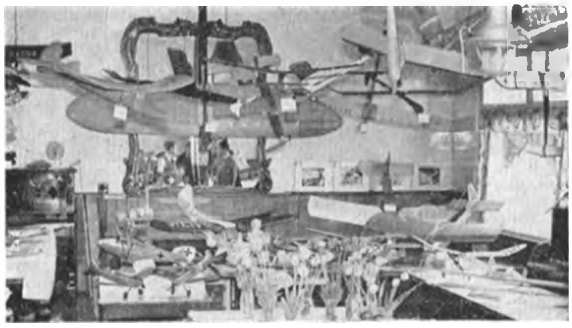
Webra have also introduced new versions of the Winner 2.5 c.c. and Bully 3.5 c.c. engines. The shaft-valve Winner which, in its original form, was the very first Webra engine built (1951) now appears as the Winner-II, with a somewhat changed external appearance, but still retaining the essential features of the older models, including their 14 × 16 mm. bore and stroke measurements. It is also available with an intake throttle.

The Bully-II diesel is now available in a ball-bearing equipped glowplug version. This radially ported disc-induction model has a bore and stroke of 16.5 × 16 mm. and a weight of approximately 5¼ oz. Like all current Webra motors of 2.5 c.c. and larger, it is also made in a throttle version. Claimed output is 0.34 b.h.p. at unspecified r.p.m.

READERS' HINTS and TIPS . . . .



CLUB NEWS



The Medway M.F.C. recently put on a most successful exhibition in conjunction with the local Horticultural Society—hence the tulips. Over 60 models were on show, from R/C to indoor jobs.

RICHMOND & D.M.A.C.

For their exhibition, held at the Wigan Hall, East Sheen, club members assembled a very impressive array of over 60 model aircraft of every type. Unfortunately attendance by the public was poor, due to lack of advance publicity, but we managed to break even.

Winners in the Concours, judged by J. D. McHard of MODEL AIRCRAFT and "Bill" Davies of Sheen Models, were: *C/L*—John Perry, O.D. "35" powered stunter; *F/F*—Mike Spires, O.D. ¼A *Spaceman*; *Junior*—Pat Langley, modified *Mosquito* for two 1.5s.

The Easter F/F Comp., held at Chobham Common, was won by John Dumble flying a *Dixielander* with two max's in four flights. Runner-up was Mike Spires' *Spaceman* and third was Paul Price with another *Dixielander*.

At Dagenham, John Perry came fifth in Stunt, but the boys' efforts in "B" Combat seemed to be quite worrying to F.A.S.T.E. members. These are new fields to us.

The club now meets at the Wigan Hall, East Sheen on Friday evenings and, of course, new members are very welcome.

HAYES & D.M.A.C.

The C/L boys turned up in force at the Dagenham meet, but brought no prizes home. Club keeness though is reflected in such incidenst as John Brailsford flying in class A comsat with his broken leg in plaster. He was knocked out (just) in the second round. "Hercules" Balch must have been glad in a way, since 13 st. John flew from his shoulders.

Dick McGladdery has reached 131.5 m.p.h. with his ETA 29 Mk. 6 Speedster, and his collaborator, John Taylor has done 94 with a Holland Hornet on 35 ft. lines with a 5 × 6 nylon prop.

In F/F it seems that F.A.I. Power and Rubber have almost lost our interest and support, but A/2 is more popular than ever, the best of our entries in the second S.M.A.E. eliminator being R. Sleight, who missed top place in the Area by a few seconds.

SOUTH EASTERN AREA

The R.A.F.A. Shield Competition has been enlarged this year to include seven clubs in the northern part of the area and the first round was held at West Malling by kind permission of U.S. Navy.

Team Results: Tunbridge Wells 60 points, Medway, Crawley and East Grinstead, 20 points each.

Individual Results: *Glider*—M. Smith, East Grinstead, 7.49; R. Wykes, Horsham, 7.16; R. Harding, Medway, 6.48. *Rubber*—A. Paige, Tunbridge Wells, 6.24; F. Puttock, Tunbridge Wells, 6.23; J. Whitaker, Tunbridge Wells, 3.20. *Power*—P. Cameron, Crawley, 6.52; A. Child, Tunbridge Wells, 6.15; Lovett, Medway, 4.07.

NORTHWOOD M.A.C.

Our usual F/F meeting on Good Friday was extremely well attended. Brian Jones won the scramble with 12 out of 30 min., Dick Pratt the precision, missing the mark by 3 sec., and Ron Green won the chuck glider with five consecutive flights of about 40 sec.

We put up a very disappointing performance in combat at the Dagenham rally, Bruce East being the only one to reach the semi-finals. Our congratulations go to Gus Johnson on his great effort in winning both classes, and also to the organisers for a well run contest.

YORK M.A.S.

Interest in A/2s is increasing with Junior P. Kayer coming second in the Northern Area, flying in the K.M.A.A. Cup.

Juniors have been encouraged by combat and T/R competitions. The winner of the T/R, I. Lingard, had to complete the final in the dusk, although neither he or the judges could see the model, landings being indicated by a shower of sparks! The prize was a 3.5 c.c. diesel.

LEICESTER M.A.C.

A party of 24 members and friends journeyed to Peterborough to fly a Combat competition with the Peterborough & Whittlesey M.A.C.'s.

We won the first event, a club against club comp., and were very surprised and honoured to find that Peterborough were presenting a cup for the winners—a really nice sporting gesture on their part, and very much appreciated. Thank you Peterborough.

Next was a knockout comp., which was won by Mike Fountain of Peterborough with Robert Chadwick of Peterborough second, and "Lofty" Robinson of Leicester third. A very enjoyable time was had by all, and we are looking forward to the return match at Leicester.

We would just like to mention an eager member Gregory Bates, and friend Chris Foster who cycled all the way to Peterborough to attend the comp., 41 miles—phew!

SUTTON COLDFIELD R/C M.A.C.

Club champion and this year's winner of the George Hales Trophy is Stan Robinson with Ian Cooke runner-up. Stan received his cup at the annual dinner/dance which was held at a restaurant situated, appropriately enough, just inside Sutton Park near to the grassy uplands where the club was born two years ago.

SUNDERLAND M.A.C.

The regular Friday night meetings at the East End Community Centre are very popular. Juniors are predominant at the moment, for although there are a large number of senior modellers in Sunderland, there seems to be a general shyness which prevents them from associating with clubs. A very warm welcome is extended to prospective members, especially seniors.

MONTROSE M.A.C.

We succeeded in consolidating a sudden increase in numbers which took place when the "bulge" started building model aircraft this time last year. Counting the juniors of our old "hard core" who grew into seniors, this means we have half a dozen seniors building and flying F/F and as many juniors doing the same. Three of the juniors are well past the beginner stage and building A1 and A2 gliders.

Member I. R. Wheeler, who is an R.A.F. boy entrant, on his Easter leave, thought one morning it was too calm to bother with a D.T., so his *Topscore* A2 broke all local records by doing a trip lasting 49 min., during which it was twice out over the sea and once up among the clouds. A landward drifting layer of air returned the model and it landed only a mile from where it was towed up. Another converted to "fuse-a-flight."

WALLASEY M.A.C.

John Hannay has started a new A2 trend in the club. The idea is to produce a high performance model, similar to the Continental designs, but capable of being flown in British weather. Thin, high aspect ratio wings mounted on a pylon on a thin fuselage are now in common usage. These models, even in rough weather, are putting up better performances than the old "rough weather" models. "Len" Hutton's latest A2 has a wing so thin that the dural tongue just slots into the wing ribs, and the roots are reinforced with fibreglass. Like John Done he is using a clockwork d/t timer, but John Hanney still prefers the fuse.

BAILDON M.F.C.

Those hoping for better weather for the second glider eliminators were sadly disillusioned as once again we had strong winds, with steady rain later in the day, which really cut down flight times. Gerry Tideswell topped our results for the S.M.A.E. Cup with 11.29, a junior, Mike Proctor managed a creditable 9.03, after recovering his model from a factory with a very fragile asbestos roof, and Malcolm Gilbert, a new member with his fourth ever model, made nice flights to total 6.41 in conditions which deterred even the experts.

Henry Tubbs shook everyone by placing high on the Northern Area results for the Astral Trophy with his F.A.I. scaled down *Creep* powered by a vintage Elfin 1.49 doing some fantastic revs. Many people were seen to scratch their heads at a rubber modeller doing 9.22 in F.A.I. power!

For the Pilcher, Gamage and White Cups, members arrived at Clifton Aerodrome to find flat, calm conditions but visibility only about 30 yd. Not until lunch time did conditions improve, and Gerry Tideswell's 12.00 min. plus 6.15 fly-off time was some achievement in view of the low visibility. Tom Stoker topped our Pilcher results with 7.25, whilst C. Westerby, a

RECENT RESULTS

PILCHER CUP

Unrestricted Glider

1.	Jackson, R.	Littleover	9.00 + 4.20
2.	Crisp, A.	Abingdon	9.00 + 3.55
3.	Laxton, D.	C.M.	9.00 + 2.50
4.	Aitkenhead, C.	Glevum	9.00 + 2.20
5.	Young, F.	Birmingham	9.00 + 2.15
6.	Richards, C.	Hayes	9.00 + 1.15
7.	Simpkin, A.	Market Harboro'	9.00 + 0.56
8.	Tootell, W.	R.A.F.	9.00
9.	Ilsley, D.	Birmingham	8.57
10.	Lavender, B.	Brentwood	8.55
11.	Flaherty, R.	Cardiff	8.42
12.	Birks, J.	Chorlton	8.41

163 *entries*, 9 *returned no score*.

WHITE CUP

Unrestricted Power

1.	Petty, C.	Walsall	12.00 + 12.50
2.	Monks, R.	Birmingham	12.00 + 6.48
3.	Simeons	St. Albans	12.00 + 6.46
4.	Thorpe, E.	Derby	12.00 + 5.17
5.	Miller, D.	Camoridge	12.00 + 5.02
6.	West, J.	Brighton	12.00 + 4.25
7.	Draper, R.	Coventry	12.00 + 4.05
8.	Ambrose, N.	Ipswich	12.00 + 3.57
9.	Pemberton, P.	Abingdon	12.00 + 3.35
10.	Spurr, A.	Teeside	12.00 + 3.35
11.	Posner, D.	Surbiton	12.00 + 3.16
12.	Savini, S.	Liverpool	12.00

120 *entries*, 12 *returned no score*.

GAMAGE CUP

Unrestricted Rubber

1.	Wharrie, A.	Norwich	12.00 + 9.03
2.	Tideswell, G.	Baildon	12.00 + 6.15
3.	Lennox, R.	Birmingham	12.00 + 5.59
4.	Poole, D.	Birmingham	12.00 + 5.13
5.	Thurbon, B.	St. Albans	12.00 + 5.02
6.	North, J.	Croydon	12.00 + 3.38
7.	Thorpe, E.	Derby	12.00 + 2.51
8.	Leppard, R.	Croydon	12.00 + 2.39
9.	Greaves, D.	Leamington	12.00 + 2.39
10.	Barnes, J.	Liverpool	11.47
11.	Amor, R.	Essex	11.46
12.	O'Donnell, J.	Whitefield	11.31

78 *entries*, 2 *returned no score*.

new member, turned in 9.57 in the White Cup.

Conditions for the K.M.A.A. and Gutteridge were the exact opposite—excellent visibility, but with very strong winds. Much consternation was caused by the 11.2 lb. weight for ascertaining stretch on towlines, when 22 lb. breaking strain lines were breaking before even raising the weight—"Thinks." Despite all this Pete Lawson coped well with the wind to record 9.32 in the K.M.A.A., with new member G. Illingworth second with 7.04. Henry Tubbs was way ahead with 10.15 in the Gutteridge—and with two intact models at the end of the day—some achievement.

WHARFEDALE M.A.C.

A cordial invitation is extended to all C/L enthusiasts to attend our C/L rally on Sunday, June 4th, at R.A.F. Rufforth, near York (Wetherby-York road B1224). Events will include ½A, F.A.I. and B T/R, Combat and Stunt—all events being run strictly to S.M.A.E. rules and pre-entry is requested—see Contest Calendar for details.

The Stunt event will be judged by Australian international team member Brian Horrocks, S.M.A.E. Technical Sec. B. A. (Sam) Messom and MODEL AIRCRAFT Editor Norman Butcher. The contests will start at 1 p.m. and all competitors are requested to notify "Main Control" immediately on arrival, in order to receive their list of heat times and other information. With the exception of the class B Stunt events, entries may have to be limited, so in order to avoid disappointment—let us have your entries as soon as possible.

It is hoped that every individual modeller will respect the litter problem—any complaints after the rally could have disastrous results.

The Woodford rally is a very sore point within the club, with only one T/R event planned for this year, in spite of repeated attempts, by willing organisers in the North Western Area, to include more of the popular C/L events. It appears that even willingness to take responsibility is not sufficient to reduce an all F/F committee to its correct size.

We hear that the Northern Gala this year will definitely have C/L Stunt and Speed events added to the already impressive array of T/R competitions. Thanks to the S.M.A.E. council and a very understanding Northern Area Committee.

HALIFAX M.A.C.

The various club contests are now beginning to get under way with Combat and Rat-Racing the most popular, although scale models have quite a following. Two new models have just appeared on the flying field, a Curtiss *Kittyhawk* P-40N decorated in A.V.G. colours, and a pure scale Fokker *Triplane* looking very realistic with a Merco 35 up front.

WELLINGBOROUGH M.A.C.

Only 18 paid-up members, seems so few for such big flying fields, so why not join us? The P.R.O. is R. ABBOTT, 29, Abbey Road, Wellingborough, Northants, who would also like to hear from any clubs interested in an inter-club contest.

WALSALL M.A.C.

Cliff Petty, club Treasurer, came first in the White Trophy, flying a *Hustler* powered by a tuned Holland Hornet "borrowed" from his engine collection of some 87 different motors.

HORNCHURCH M.A.C.

We recently took part in a hobbies exhibition arranged by the Hornchurch Rotary Club, held in a local primary school, which had an adjacent large football pitch suitable for flying displays.

The static exhibition featured all types of model from the main competition classes, plus one or two unorthodox models. There was also a demonstration stand at which members were building models and answering any questions.

On the Thursday and Friday evenings, and all day on the Saturday, flying displays were held. Demonstrations of Stunt and Combat flying were given by Messrs. Binks, Warner and Debremaeker, and a ½A team race was held, between Messrs. Wells and Hughes.

Over the three days more than 4,000 people visited the exhibition.

During last season one of the club members, Mr. Parsons, made a film record of all the rallies visited and showed it to the members at the A.G.M. He plans to do the same thing this year and has already started taking material.

GLEVUM M.A.C.

Several members have made a good start to the contest season, particularly in the glider field. Charles Aitkenhead placed fourth in the Pilcher for the second year in succession and also managed second place in the Open Glider at the first Western Area Rally, with Stan Perry and Dereck Harper third and fourth respectively. Charles also placed first in Open Power with Dereck Harper second, at the same meeting.

At the second Area Rally we managed to take the first three places in Open Glider, Derek Harper beating Stan Perry in the fly-off—with Charles Aitkenhead in third place. The latter also took second place in Open Power.

The first stage of the "One Model" contest saw nine brand new *La Mouette's* lined up for judging, five of these being Junior entries. On the whole the models were to a very good standard, the junior entries being particularly creditable. Top junior was Brian Perry, second Dave Perry, third Dave Green whilst top senior was Elton Drew with Dennis Rattle second and Stan Perry third.

The Duration and Scramble sections of the contest will be held at a later date, but meanwhile, test flights by some members have shown great promise. One model achieved 7 min. odd till a trimming flight (no D.T.!), and general satisfaction with the design has been expressed.

This "one-model" contest has been run principally to encourage the juniors and we have been most fortunate in receiving a handsome Junior Trophy, to be competed for annually. We are indebted to Mr. D. Whitehead, of Fletcher's Model Department for donating this.

WOLVES M.A.C.

At the first Midland Area meeting, the club started the season off smartly with a first and second in Stunt (Brian Horrocks and Dave Day respectively) and a first in ½A T/R from S. Skitt and J. Hardcastle. At the second meeting we followed this up with a third in ½A (same team) and a second in Combat from D. Williams.

Why no Stunt placings this time? Well, Brian Horrocks was judging at the meeting and Dave Day was whiling away his time at Dagenham getting a third in stunt.

ST. ALBANS M.A.C.

Latest piece of equipment is a portable litter box, made by one of the members. It is based on the lines of a woman's shopping basket, with wheels and towing handle, and its dimensions allow it to be stowed in the back of a car. The front face is suitably decorated with the club name and a model silhouette. It is felt that if this idea were generally adopted by clubs to take away fuel cans, streamers, etc., it would be a step towards retaining hard fought for flying grounds.

Our F/F Gala will be held on August 13th at Chobham with events for Rubber, Power, Glider, ½A Power, S/C Radio Spot and Slope Soaring. Most modellers will remember the perfect weather we had last year, except for one slight shower in late afternoon, so come early to make your winning flights.

The club room is open most nights of the week, the official club night being Thursdays at 7.30. Any modeller or prospective modeller in the district can be sure of a warm welcome at 96a, Victoria Street, St. Albans, nearest bus stop Betty's Dress Shop just 30 yd. away, or if the weather is fine try Nomansland, Wheathampstead.

CHANGE OF SECRETARY

LINCOLN A.C. M. E. Elmer, 599, Newark Road, Lincoln.

NEW CLUBS

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

ARDS & D.M.A.C. W. A. McGilton, 54, Tramagh Drive, Scrabo Estate, Newtownards, Co. Down, Northern Ireland.

CLUB HISTORIES No. 4 . . . .

FOUNDED in 1933 by some employees at the late Fairey Aviation Co. Ltd., flying commenced with rubber models on a local field, but activities were soon transferred to the Fairey Company's private aerodrome at Heathrow (now the centre of London Airport) and "outside" members enrolled.

As the S.M.A.E. also made increasing use of this venue for all their centralised and international comps., Hayes members soon found themselves acting as stewards, directing cars, erecting rope barriers, carting take-off boards, picking up mountains of litter, trying to pacify adjacent farmers and, on occasion accommodating and escorting foreign competitors. With the attractive site and with founder member G. Lambert as secretary, the membership rose to over 100 by 1938, and included names like T. Ives, H. York, G. Gunter, F. Guest, Fleming Williams, R. Bullock, N. Taylor and R. Trevithick.

With our chairman W. E. Evans' guidance (holder British HL Glider record for many years and also responsible for starting up the S.M.A.E. Journal, forerunner of MODEL AIRCRAFT*), early support was given to gliding, and the club were amongst the first to adopt the continental trend of 6-12 ft. span F.A.I. gliders, when 45 in. was the customary British size.*

A. Minton became a member of the first ever British glider team in the 1939 King Peter Cup, while A. Wilson was in the first Great Britain glider team after the war.

During 1939 Hayes members won every S.M.A.E. Power comp., and many galas too, a prominent winner being G. Coxall's 10 ft. span low wing model!

By 1943 the club had shrunk in size and lost its flying ground for ever, but it still managed to win most of the S.M.A.E. Glider events. Links were forged with the A.T.C. and the Air Scouts during the war, and aeromodelling instruction given, followed by popular exhibitions. Inter-club RTP activities were also developed, with many wins recorded.

There is little point in listing all the awards won, if that were even possible. Most of the older S.M.A.E. trophies have been to us for a clean, the Bowden, Lady Shelley, Thurston, L.D.I.C.C.C. and All-Britain Rally Champion ship three times each.

There has always been an unusual interest taken in tail-less types stemming from a rubber example by F. Finch, in 1937, and in the hands of J. Marshall, A. Wilson, D. Burton and P. Hedgman they have won the Bowden and Lady Shelley Cups, British and World Records, and the 1948 and 1949 Isle of Man Rallies as well as representing Britain twice at Internationals in Holland.

The club hung together in difficult years around stalwarts J. Marshall, F. Brench and J. Wassell. All still active modellers, together from early days at Heathrow, they have seen nearly 500 aeromodellers pass through the club since it was founded. Present membership exceeds 50, newcomers have always received plenty of encouragement and several have become National Junior Champions.

Very few members have specialised, but the keenest, such as A. Wilson, W. Callender, L. Barr and J. Baguley, have become good all-rounders, with wins in many categories. They are all prolific builders of potential comp. winners.

When C/L was introduced it was quickly adopted as a normal part of the activities, many displays were given and contests entered, but the fantastic run of successes did not start until more recently. The C/L fliers have become the keenest half of the club and also the first real specialists, recording successes in Combat, team race A and ½A, and speed classes. The 1960 T/R combination of D. Balch, M. Smith, and G. Rivers being almost unbeatable in the F.A.I. class.

The Hayes club has made several promising moves towards obtaining a permanent surfaced area of its own, through the local council.

Secretary: J. Marshall, 43, Keith Road, Hayes, Middlesex.

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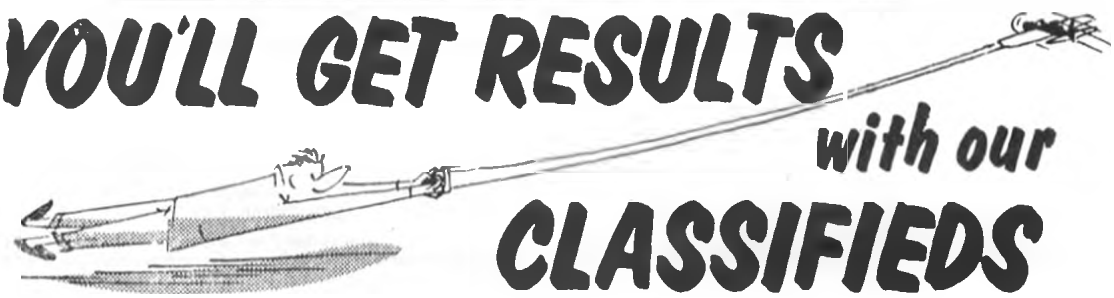

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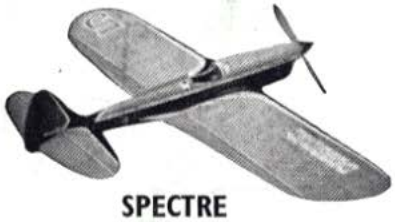

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