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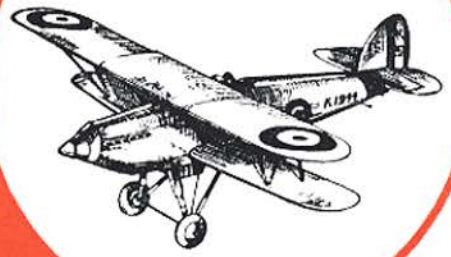

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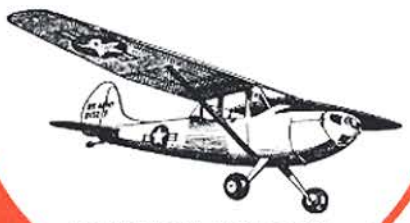
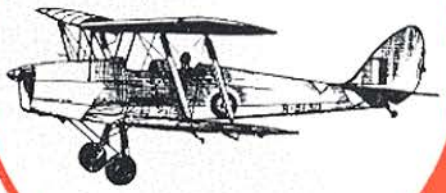
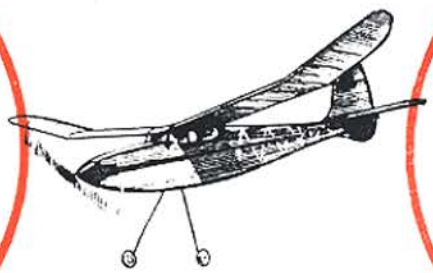


24" CESSNA BIRD DOG



20" TIGER MOTH

24" SHORT SEAMEW



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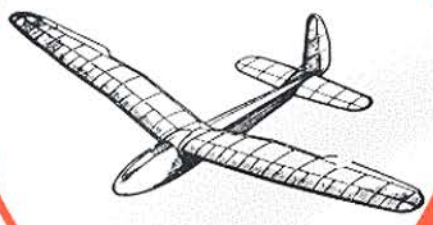

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SEPTEMBER 1957 Vol. 16
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The official Journal of the
SOCIETY OF MODEL AERONAUTICAL ENGINEERS

★

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WAKEFIELD CUP

THE S.M.A.E. Council has reaffirmed its decision to inform the F.A.I. Model Commission that one of the conditions imposed by the late Lord Wakefield of Hythe when he presented the Wakefield Trophy to the Society was that it must be competed for annually. As the allocation of this trophy to the World Rubber Championships which are now to be held bi-annually does not conform with this condition, the Society feels that it has no alternative but to request the return of the Trophy.

As the Power and Rubber Championships will be held at Cranfield in 1958 it is unlikely that the Wakefield Trophy Contest will become an international event separate from the championships until 1959. When this happens it is quite possible that the model specification will be based on a more popular formulae than the present one.

TEAM MEMBERS SUSPENDED

FOR the second time in a year the S.M.A.E. has taken the drastic step of suspending international team members from taking part in future national and international contests.

Certain members of the recent Criterium d'Europe Team failed to provide themselves with models for contests in which they had undertaken to enter, this undertaking having resulted in them being selected in preference to other intending competitors. They also arrived at one of the events some hours after they should have been ready to fly. As the result of these actions the S.M.A.E. Council decided to suspend them for two years.

This episode has undoubtedly caused the Society to adopt a more serious attitude towards sanctioning entries in certain international events. Despite the fact that these fliers pay their own expenses, they still have a responsibility to conduct themselves in a manner befitting British team members. Also they must be capable of putting up a performance of international standard. In this connection the Council have now decided that next year intending contestants must take part in an eliminating trial held for the purpose of selecting the teams. No longer will the ability to pay one's own expenses be the only qualification required for entry in these contests.

Cashing in—Out ?

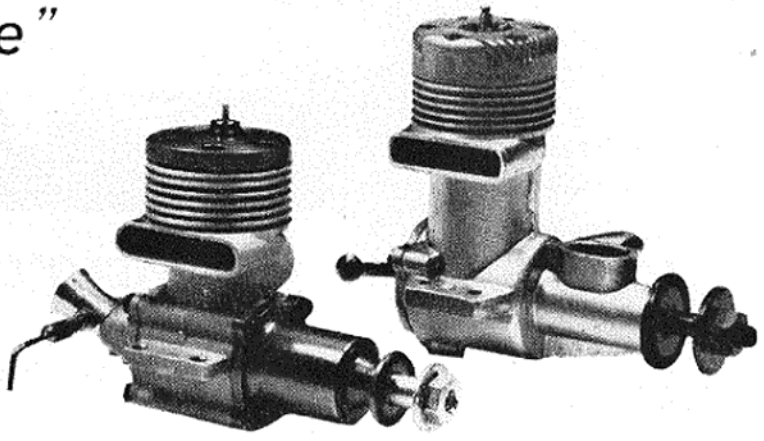
THE complaints of certain model fliers regarding the amounts received as cash prizes in recent S.M.A.E. events may well result in the award of these being dropped altogether in future. Many members of the S.M.A.E. Council have always felt that the giving of cash prizes might result in an undesirable attitude towards contest flying by certain elements. It would seem that their fears were well founded—certainly the recent grousing, admittedly by a small minority, has made a number of Council members who were previously in favour of cash prizes change their views.

On Our Cover

AMERICAN Howard Levy took the really crisp photograph of the Omega BS-12 Twin helicopter featured on our cover. First flight was in December last year, since when it has been undergoing a rigorous test programme.

M.A. ENGINE TESTS — 100 up!

A special "Double" to celebrate our 'Test Century'



The best of East & West racing engines

Vltavan-5 and Fox 29R

WITH this issue we reach M.A. Engine Test No. 100 and, to mark the occasion, we have chosen for test two specialised model engines which are representative of the highest levels of racing engine performance currently available, respectively, to modellers in the East and West, namely: the Czechoslovakian Vltavan-5 and the American Fox 29R.

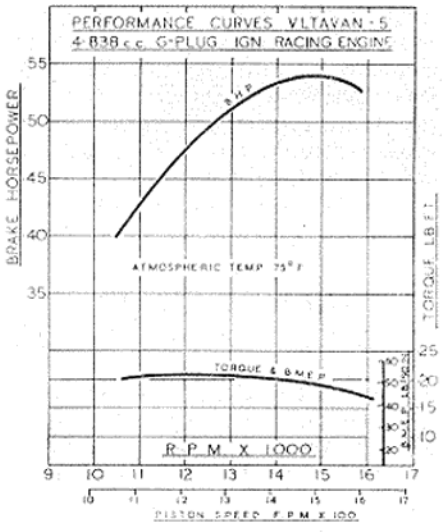
The Vltavan-5 is a production version of the 5 c.c. MVVS 5/1954-D motor designed at the Model Research Centre at Brno (the home of the 2.5 c.c. MVVS engines which proved so successful at the last two World Speed Championship meetings) and there can be little doubt that it has a higher potential performance than any other racing motor at present on sale to enthusiasts in the Communist countries.

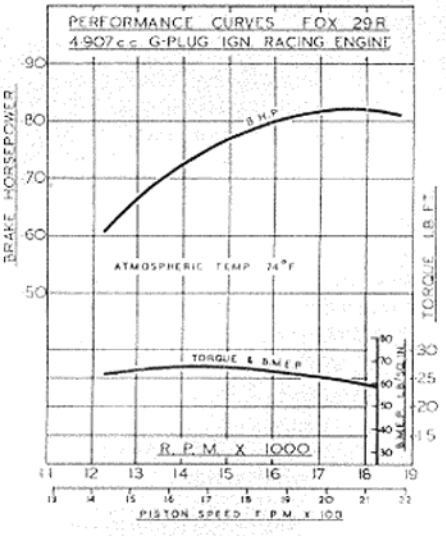
The Fox 29R, introduced just a year ago, is advertised as the world's most powerful 0.29 cu. in. engine and this claim would certainly appear to be confirmed by both bench tests and model performances —the latter including the present American 0.30 cu. in. record at 148.09 m.p.h.

One should avoid the temptation to assess the worth of these two engines merely by their respective test performance curves. Apart from the fact that the ultimate effective performance of any engine when fitted in a speed model is far less closely related to bench performance, than is the case with standard applications, the main point of interest in comparing the Vltavan and the Fox is the manner in which their designers have approached the common aim of producing an engine that will propel a 5 c.c. class model at winning speeds.

Paradoxically, the Vltavan is far more 'American' in conception than the Fox. It follows the classical model racing two-stroke layout and is clearly based on the Dooling 29, with one or two features of the Dooling 61 thrown in. While the stock factory unit may not suggest anything very startling in the way of b.h.p. output (Czechoslovakian experts claim that these are as much as 40 per cent. down on the performance of the MVVS original) there is no doubt as to the overall efficiency of the layout.

The Fox, on the other hand, reveals an entirely different approach.

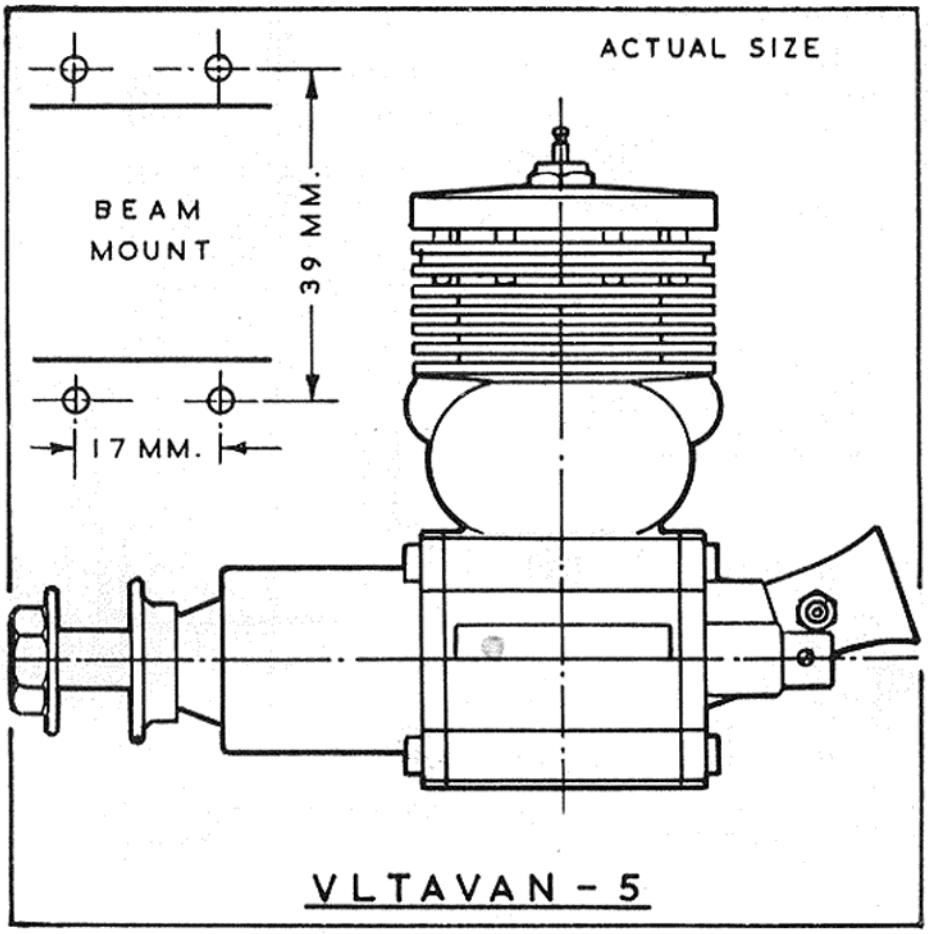


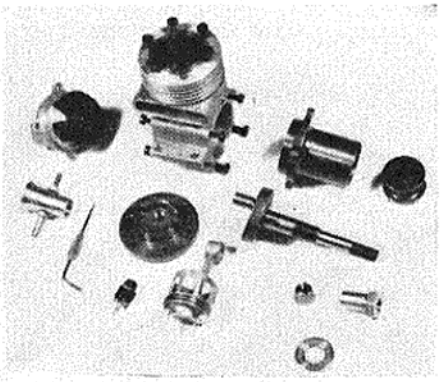


In contrast to the squat and potent Dooling-ish appearance of the Vltavan, the Fox is big and tough and looks more like a 0.49 than a 0.29. If the designer had started off with a 0.49 and endeavoured to preserve its performance while reducing the swept volume by 40 per cent., we are sure that the result would, in fact, have looked very much like the Fox 29R.

The power of any engine, first and foremost, depends on the amount of combustible gas that can be burned in the cylinder within a given time and, basically therefore, the bigger the cylinder, the greater the output. If we are restricted to a given cylinder volume, however, there are two ways in which we can raise output. We can endeavour to get a greater volume of gas into the restricted cylinder space (such as is achieved by a supercharger in full scale engines) or we can use a more potent fuel which, in the case of oxygen-liberating fuels, amounts to the same thing.

The Fox uses both methods. Firstly, gas passages are made as large as possible to avoid restricting gas flow. One of the features that limit top end performance in high speed engines is the carburettor, which, in order to provide sufficient suction to draw fuel from the jet, has a restricted choke area to raise the velocity of the intake airflow. The various types of fuel injection systems, used in place of carburettors, on some full-size high-performance engines, have been adopted partially because of this objection and, for the same reason, the Fox uses a simple pressurised fuel system which has allowed the air intake to be opened out to immense proportions—$\frac{5}{8}$ in. long and 23/64 in. wide. This is matched to a crankshaft induction port of similar dimensions and a $\frac{1}{2}$ in. dia. shaft allows a 23/64 in. dia. induction passage that ensures no bottleneck between carburettor and crankcase. From the crankcase, the charge is directed through a clean entry into a large section transfer passage and thence through a rectangular port into the cylinder.



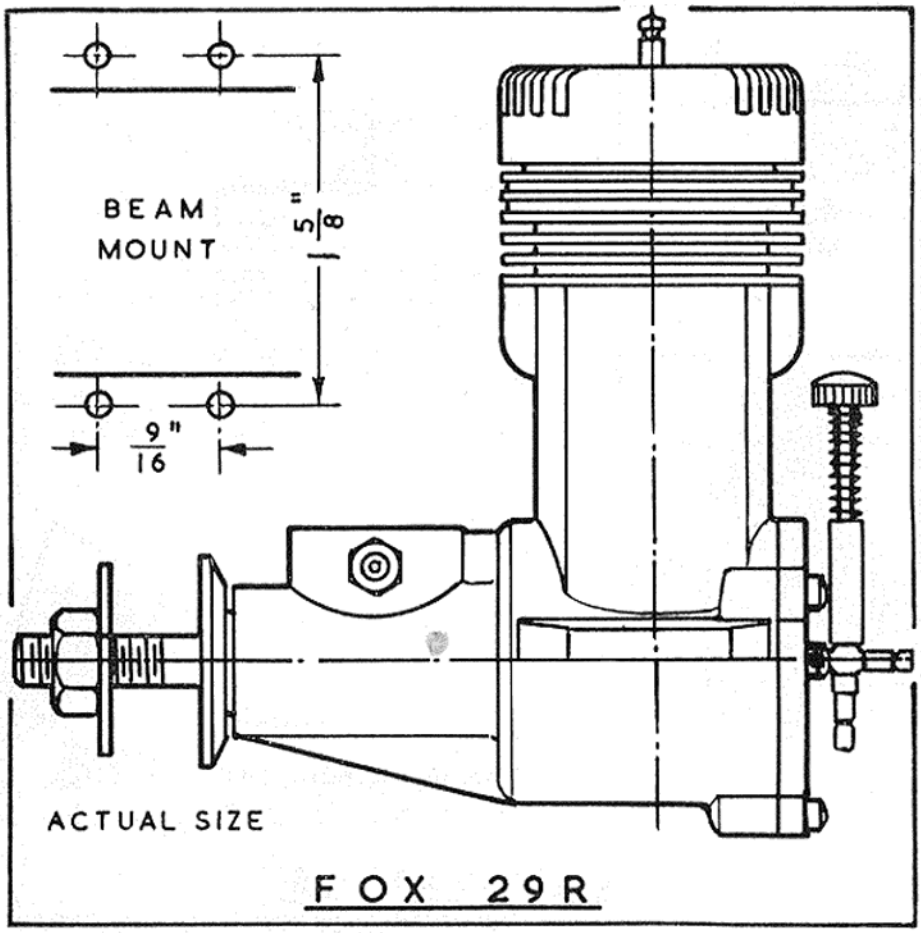


An "exploded" view showing the various components of the Vltavan-5. Compare the many interesting features with the similar view of the Fox overleaf.

All these features add up to greater volumetric efficiency, but no matter how well an engine is designed, there is, as the operating cycle is speeded up, an ever increasing discrepancy between the capacity of a cylinder and the actual volume of air inducted. To make up for this loss, the Fox is designed to make the greatest possible use of oxygen-bearing fuels, notably nitromethane, in far larger quantities than has hitherto been employed. It appears that the only factors limiting the percentage of nitromethane that can be employed in the fuel are its immiscibility with castor-oil lubricant (requiring the addition of a blending agent) and the volume taken up by the lubricant itself. Up to 70 per cent. nitromethane can be used in the presence of a small percentage of nitrobenzene to act as stabiliser.

Here we see another reason for the increased bulk and weight of the 29R. A nitro content of 40-50 per cent. is considered the maximum that can be used in the average racing motor without overheating and possible distortion, causing (if not immediately apparent damage) a rapid falling off of performance and a contest life of, perhaps, no more than half-a-dozen flights. The Fox, on the other hand, is openly stated to be intended for 50-70 per cent. nitromethane and is claimed to be able to withstand sustained operation at racing speeds approaching 20,000 r.p.m.

The structural design and geometry of the engine has obviously been directed with this end in view. The penalty is a 25 per cent. weight increase over normal racing 0.29 weights and an increase in frontal area due to the long connecting-rod and Desaxé cylinder arrangement. Fox engines incidentally are the only quantity-built model aircraft engines in current production which feature the Desaxé (or offset) cylinder. This, and the relatively long connecting-rod of the 29R, combining as they do to reduce the side loading on the piston during the power stroke, may well contribute some-



thing to the performance and stamina of the design.

Our tests on the Fox 29R were carried out with the engine in stock condition as is our habit with products featured in this series. Purchasers of 29R are, however, encouraged to indulge in a little internal polishing and minor tuning in search of extra performance and a list of suggested modifications is included in the manufacturers' instruction leaflet. This, it must be understood, is very definitely an engine for serious and expert speed enthusiasts only and is not to be recommended to the inexperienced.

Returning to the Vltavan, one must confess that, in some respects, this engine has carried detailed refinement of the classic layout to a stage of development beyond that pursued by its originators in the West. The engine is a strange mixture of highly intelligent design with good and indifferent execution.

On the credit side are the bearing fits, the excellent design and construction of the rear disc induction valve, and the quite remarkable ultra-lightweight alloy piston with its narrow section compression rings giving unusually good seal and weighing (complete with excellent forged rod and faultlessly fitted 5 mm. tubular gudgeon-pin) a mere 0.31 oz.

Less pleasing is the rather roughly finished main casting (which requires the lugs filing flat if the engine is to sit squarely on its bearers) and the slightly irregular edges of the exhaust ports and transfer ports in both liner and piston. The crankshaft too, which is built up in three parts—shaft, web and crankpin—and has the somewhat untidy addition of a lead counterbalance, is not calculated to please the eye of the precision engineer.

The layout of the engine is, to all intents and purposes, identical with that of the Dooling 29. The main casting comprises crankcase and cylinder barrel with a tightly fitted liner (probably shrunk-in) having six exhaust ports in 180-deg. formation, five transfer ports and three very large skirt transfer ports which register with similar ports in the piston skirt. As in the Dooling, the entire transfer is effected via skirt ports, and a hemispherically shaped transfer passage in the left-hand wall of the casting.

The rotary valve is especially worthy of mention. The valve rotor itself is a plastic moulding, smoothly finished and nicely rounded, lightened on the rear face opposite the intake segment and mounted on a 4 mm. pin, which rotates in a long bearing in the backplate. The intake port gives a smoothly expanding entry from the very large (approximately 21/64 in.) bore inclined carburettor.

From reports reaching us of speed events in Czechoslovakia and Eastern Europe, models powered by the original MVVS engines have never quite reached the speeds attained by Dooling 29 powered aircraft and having regard to claims that the Brno prototypes were superior to the present production Vltavan, we would not expect the latter to offer any immediate threat in the 5 c.c. speed class. This would appear to be in some measures confirmed by our present test, although we have no doubt that our test figures can be improved upon by matching fuels, plugs and, possibly, compression ratios to given climatic conditions.

THE VLTAVAN-5

Specification

Type: Single cylinder air-cooled, loop-scavenged two-cycle, glowplug ignition. Induction by rear mounted rotary disc valve. Baffle type piston. Offset ignition plug.

Swept Volume: 4.838 c.c. (0.2952 c.c.).

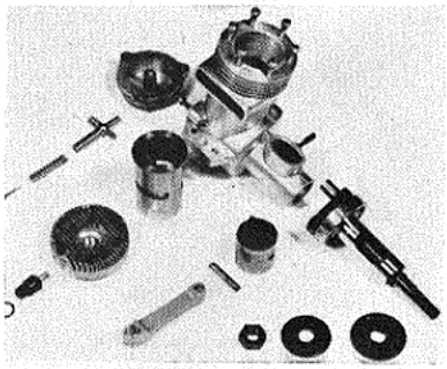
Bore: 20 mm. (0.7874 in.). Stroke: 15.4 mm. (0.6063 in.).

Stroke/Bore Ratio: 0.77 : 1.

Weight: 7.3 oz.

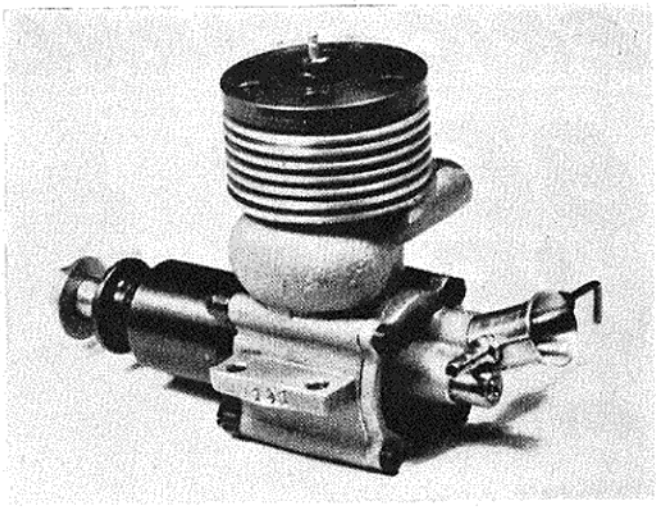
General Structural Data

Unit crankcase and cylinder barrel casting in aluminium alloy with inserted liner. Machined and colour-anodised front bearing housing containing one 8 mm. inner, and one 6 mm. outer, ball journal bearings supporting built up counterbalanced



The sturdy construction of the Fox components is evident in this photo.

crankshaft. Propeller drive hub fitted on tapered split collet. Die-cast and machined aluminium alloy piston with two compression rings and full-floating tubular gudgeon-pin with end pads. Drop-forged alloy connecting-rod. Diecast, machined and colour anodised cylinder head secured with six screws. No gasket. Detachable backplate carrying moulded plastic valve rotor and machined alloy carburettor. Latter provided with brass spraybar type needle-valve. Beam mounting lugs.



This view of the Vltavan-5 emphasises its external similarity to the Dooling 29.

Test Engine Data

Running time prior to test: 1 hour (estimated).

Fuel used: 45 per cent. methanol, 25 per cent. nitromethane, 30 per cent. castor-oil.

Ignition plug used: Maker's plug as fitted.

Performance

The initial impressions of the Vltavan on the bench were favourable on account of its surprisingly easy starting. It is, we would say, noticeably better in this respect than earlier American and British ringed-piston disc-valve racing engines. Running qualities were quite good and our misgivings in regard to the weight of the crankshaft counterbalance (which balances all the rotating mass plus all the connecting-rod and part of the piston weight) proved groundless, the motor running with commendable smoothness.

The precise amount of running that the Vltavan had received prior to being loaned to us for test was not known and after some preliminary running on straight methanol/castor fuel, a switch was made, for the dynamometer test, to the maker's recommended mixture containing 35 per cent. nitromethane. It was evident, however, that the engine was not entirely happy on this—due, probably to a combination of weather conditions at the time and insufficient running, and in deference to the Vltavan's owner, we reduced the nitro to 25 per cent., increasing the lubricant to 30 per cent.

Under these conditions, the curves shown were obtained, indicating a maximum b.m.e.p. of approximately 54 lb./sq. in. at 12,000 r.p.m. and a peak b.h.p. of 0.54 at approximately 15,000 r.p.m.

Power/Weight Ratio (as tested): 1.18 b.h.p./lb.

Specific Output (as tested): 112 b.h.p./litre.

THE FOX 29R
Specification

Type: Single-cylinder, air-cooled, loop-scavenged two-cycle, glowplug ignition. Shaft type rotary valve induction. No sub-piston supplementary induction. Baffle type piston. Central ignition plug.

Swept Volume: 0.2994 cu. in. (4.907 c.c.).

Bore: 0.738 in. Stroke: 0.700 in. Stroke/Bore Ratio: 0.949 : :1.

Weight: 8.8 oz.

General Structural Data

One-piece gravity-diecast aluminium alloy crankcase/cylinder-barrel/main-bearing housing with drop-in leaded steel cylinder liner. Case-hardened counterbalanced crankshaft running in one $\frac{1}{2} \times 1\frac{1}{8}$ in. Fafnir ball-journal bearing, supplemented by plain outer bearing. Machined heat-treated aluminium alloy connecting-rod. Meehanite lapped piston with 5/32-in. dia. tubular full-floating gudgeon-pin having brass end-pads. Deeply finned cylinder head with recessed "blow-out proof" metallic gasket and secured with six Phillips head screws. Detachable backplate with central lug for needle-valve mounting. Beam mounting lugs.

Test Engine Data

Running time prior to test: 1 hour.

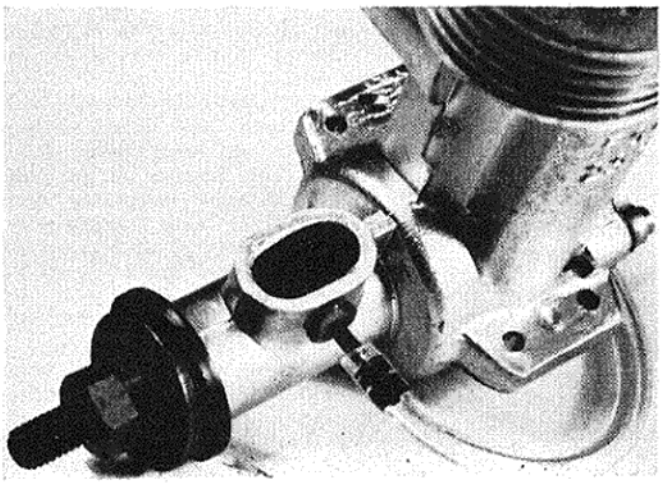
Fuel used: 55 per cent. nitromethane, 10 per cent. methanol, $7\frac{1}{2}$ per cent. nitrobenzene, $27\frac{1}{2}$ per cent. castor oil.

Ignition plug used: Herkimer-O.K. long-reach as fitted.

Performance

The pressurised fuel supply essntial to the working of the Fox 29R is obtained by means of the pen-bladder type tank now familiar to speed enthusiasts. Instead of being connected direct to the intake, however (as with conventional model racing motors where bladder tanks are used solely as a means of ensuring an even fuel flow), the tank is coupled to the special needle-valve unit mounted on the backplate. Here the fuel is

Continued on page 301

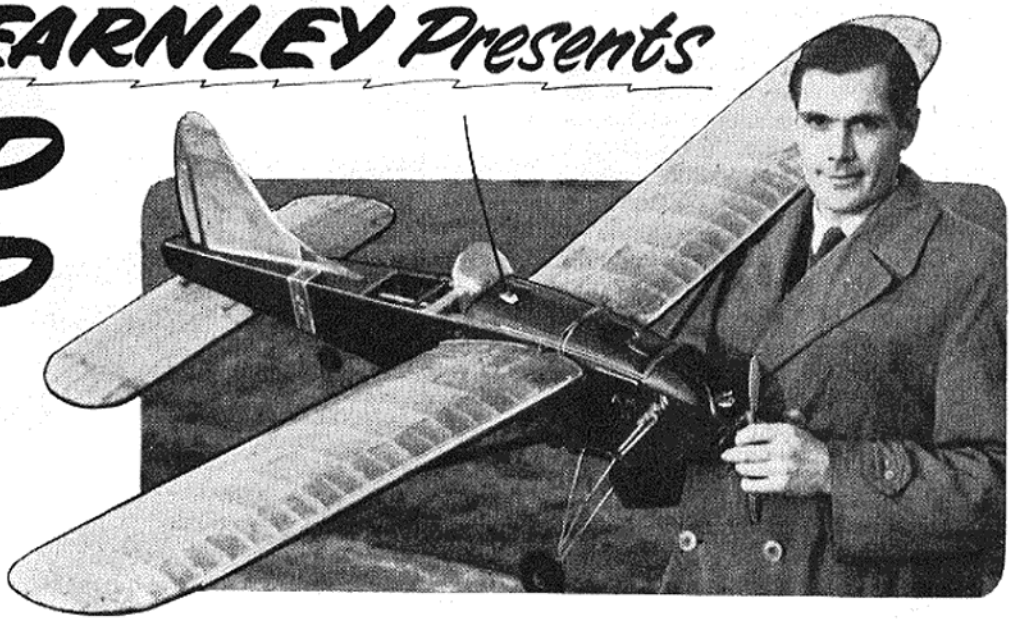


No—not the funnel of the Queen Elizabeth; just a close up of the intake of the Fox 29R.

ERIC FEARNLEY Presents

BEEP JEEP

A FLIGHT PROVEN R/C DESIGN



Designer Fearnley with the open cockpit version of Beep Jeep after it had made many successful flights.

AFTER three or four scale radio models, with results varying from very good to moderate, I decided to leave scale radio until the transistor sets were proved, and in the meantime build a semi-scale job to a rigid specification.

My minimum requirements were—simple construction, easy trimming, stable, viceless flight on neutral, with lively response on signal, rapid recovery after signal, ability to carry excess batteries for foolproof radio, light wing loading for good glide, but fast flying speed and ability to fly up wind with ease and not forgetting the most important—ease of repair after a crash. Add to this instant accessibility to the "works" and we have a tall order.

The strength of a radio job depends on the building as much as the design. A model of this size will eat up three large Britfix cement tubes if you are going to go over every joint twice, and make them "for keeps." Just to show how tough the model is I record one of many incidents in it's life.

At the end of a 3-min. power run, I decided to start to gain height for a good glide and approach to the landing run. The model had reached about 300 ft., climbing nicely when I noticed a flash in the evening sun at the tail end. The unbelievable had happened; of all the gremlins' extra special tricks, I got a lulu—the whole of the top rudder pin had come out, and the rudder was fluttering at the rear in the slipstream! The pin which engages the loop at the back I had just replaced by a glass headed pin, if it had been a normal type, the rudder would have blown off altogether. As it was, it just spun round.

I put away the transmitter, which seemed a little useless in the circumstances, and prayed for the motor to cut. Never has an Allen Mercury run so lustily! Just when I thought I was going to get away with it, the rudder spun for the last time, and jammed against the tail. The model kept on its course for a few seconds, and then peeled off like a *Flying Fort.* that had bought it, going into a right spiral, with the engine full out.

It hit the ground, fortunately about a yard off the runway, almost vertically. When we arrived at the spot, expecting to find a write-off, we were amazed to find the model almost undamaged. The hole in the ground was 6 in. deep, the model had bounded backwards about 3 ft. and settled in the grass, with a sod of earth about a foot square stuck round the engine. The engine was found to be 10 deg. right thrust (I had the side mounted version on), the flying struts were torn out of one wing, and the dowels were broken. The radio worked perfectly after a h.t. wire was connected up. I could have flown the model again that night if my nerves had held out!

Construction

The basic fuselage is of hard $\frac{1}{4}$ in. sq. There are no bends in the design, only the one spliced joint so no difficulty should be experienced. The sides are joined together with F2 and F3, and drawn together at rear, then the rest of the spacers are added. Use plenty of cement when fixing the hardwood undercarriage/wing strut mounting, also the $\frac{1}{2}$ in. sq. strengtheners at the wing trailing edge position. Strips of $\frac{3}{8} \times \frac{1}{4}$ in. are cemented to the longerons to strengthen the access hatch at the top of the fuselage.

When the radio gear is installed and functioning smoothly, the entire fuselage is covered with medium $\frac{1}{16}$ in. sheet, with the exception of the front bottom half, which is covered with $\frac{1}{16}$ in. ply.

Copy the wing incidence exactly and ensure that both wing dowels are true—there is a lot of wing area and it is important that no error exists here.

Cut out the wing ribs from $\frac{1}{8}$ in. sheet and assemble the wings on the hard $\frac{1}{4}$ in. sq. spars. The tips are made from $\frac{1}{8}$ in. dowel steamed to shape and backed with balsa. Do not forget that the end ribs are of $\frac{3}{16}$ in. ply drilled to take the $\frac{5}{16}$ in. wing dowels.

The fin and tailplane are quite straightforward and no difficulties should arise here. Cement the fin in place dead straight.

Form the rear undercarriage legs from 10 and the front from 12 S.W.G. wire. Bind the brass tube to the front legs and the legs themselves together, with 20 g. tinned copper wire, then solder very thoroughly using a big iron with plenty of heat. The fixing strip is formed from 18 g. copper sheet; drill a series of holes in this then bind and solder the undercarriage tube in position. The strip should fit the bottom of the fuselage snugly and it shares the flying strut retaining bolts; it can thus be removed or replaced at will.

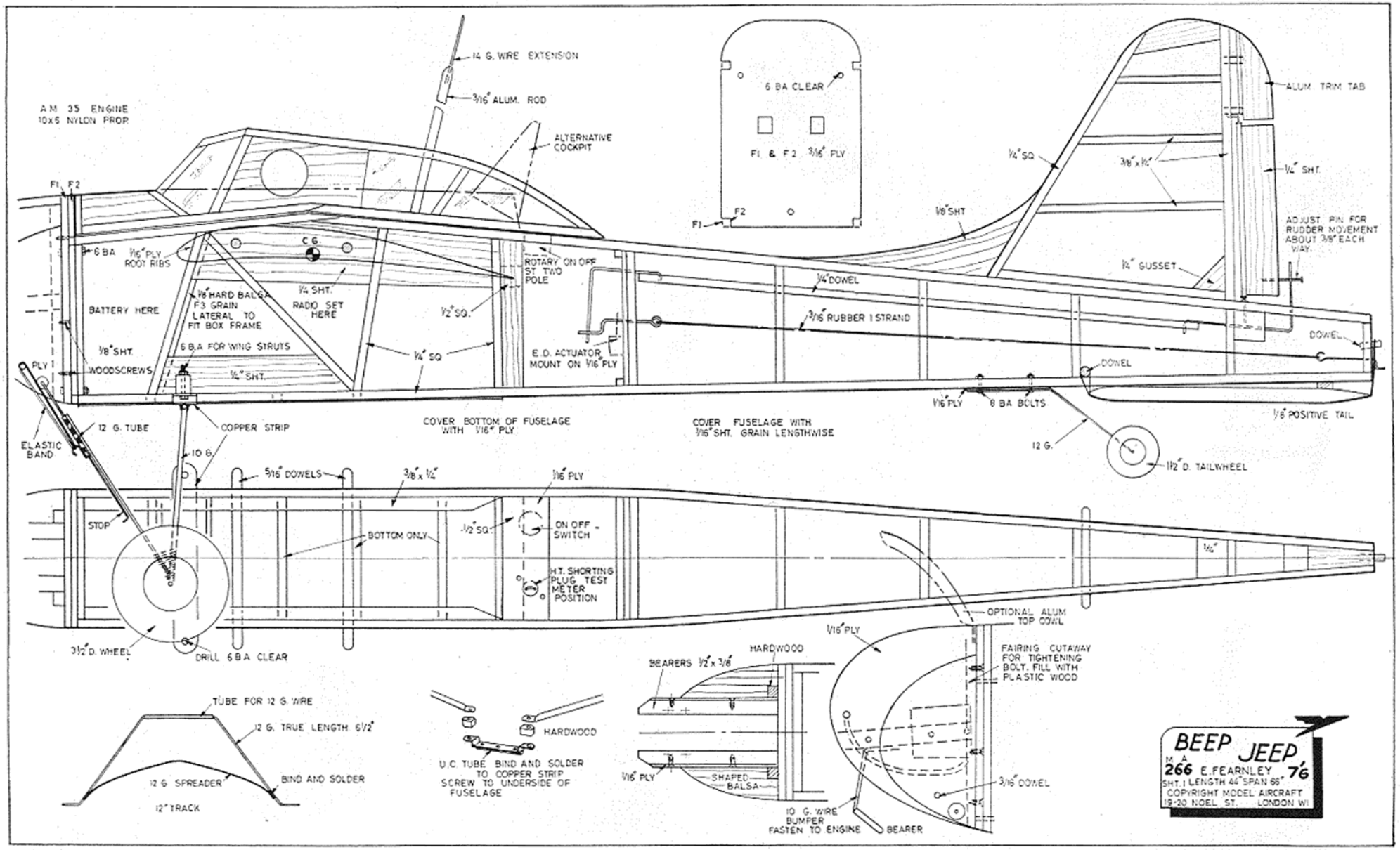
When making the tank (it is as well to get all the soldering jobs done at once) bear in mind that a powerful $3\frac{1}{2}$ will devour an ounce or two of fuel in a few minutes, so it is best to err on the large side.

The entire model is covered with heavy Modelspan, and doped with a mixture of 50 per cent. glider dope, and 50 per cent. Banana oil, as over-tightening will bring warps, or even buckle the tail or wing trailing edge, even with so strong a structure. At the same time the finish must be weatherproof.

Assembly and Flying

Assemble the model, and check wing incidence, tail ditto, and c.g., shifting the batteries until the latter is right. I use a B.119 large type h.t., D.18

Continued on page 309



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, 7s. 6d., (TWO SHEETS) POST FREE

Tiger Tales

In our March issue we asked readers for humorous anecdotes concerning the ubiquitous Tiger Moth, in connection with our "Tiggie" feature in that issue. Frankly, the response surprised us, and it is only now that we are able to present here a selection of the many stories received.

IN 1951 I was the Chief Flying Instructor of the Singapore (Fighter) Squadron, Malayan Auxiliary Air Force. One Saturday afternoon I had arranged beforehand to carry out a dual *Tiger Moth* aerobatic trip with a pupil immediately after landing in one of the Squadron's *Spitfire* 24 aircraft. I must explain that the light aircraft strip was approximately half-a-mile from the hangar and to avoid excessive wear to the *Tiger Moth* tailskids, we used to place the tailskid on a "dolly" while taxying out to the airstrip.

I had arranged for the pupil to start-up and taxi the aircraft out to the strip and I was to meet him at the take-off position. While I was strapping myself in I asked him to carry out the pre-take-off vital actions and after waving away the airmen on the wing tips, we took off and commenced a long climb in tropical conditions to 3,000 ft.

On reaching altitude I asked the pupil to carry out a loop and he coped very well; he then did a second one. After this I asked him to try a slow-roll and this was not so well done. While hanging in our straps inverted I heard a loud "thud." I took over control and did several more rolls to investigate these "thuds" which occurred every time that we resumed straight and level flight after being inverted. This noise appeared to come from the lower wing roots behind my (front) seat. I lowered the cockpit doors and much to my surprise and horror, I noticed that there was a large wheel-chock resting on each wing-root and these were tied loosely onto the bracing wires.

Every time that we became inverted these chocks hung from their ropes, and on resuming straight and level flight they thudded back onto the wing walks. As you might imagine, my face was quite red and I tried to land quietly back at base, hoping that no one had noticed us take off with these things attached. However, this was not so, as the whole squadron was awaiting us on landing. It cost me quite a lot of drinks that evening! The moral to this is quite obvious. If I had not been in such a rush, I may have noticed that the chocks had not been removed. However, we would have all missed a very good laugh, at *my* expense!

—E.C.

"I think the C.O.'s sentence was a bit stiff —28 days in chocks and chains!"

CAMBRIDGE railway station platform is reputed to be one of the longest in the country, and even during the wartime "black-out" it was lit by a long line of gas lamps.

I well remember taking off at night in a *Tiger* with a pupil from No. 22 E.F.T.S. Aerodrome at Cambridge, who, as frequently happened, promptly "lost the aerodrome." He stooged around all over the place for some time and then spotted the railway station platform lights.

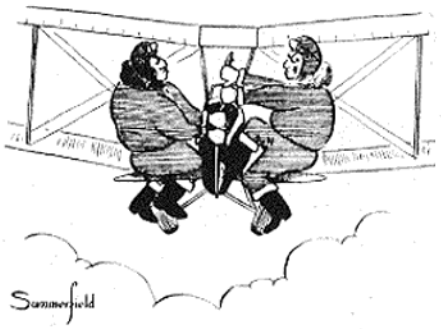
In response to my enquiry he said that he knew where he was and proceeded to make a normal approach—on the railway station! He turned a deaf ear to my hints that the lights ahead might not be what he thought they were and pressed on regardless. Of course, there is a limit to even an instructor's endurance and so at 90 ft. I had to take over, otherwise we should have made history by being the first aircraft to "arrive" at Platform 1. As MODEL AIRCRAFT is a respectable journal I will not repeat my remarks to the pupil concerned!

—M.A.T.

AT a certain E.F.T.S. in the Midlands early in 1942, there was a rather well known instructor whose ample figure filled the front seat of his *Tiger Moth* to capacity.

He had at one time as one of his pupils an ex-policeman who rivalled his instructor in physical proportions—and with both heavyweights aboard the poor old *Tiger* took about twice the normal take-off run.

Up one day practising medium turns, the policeman misunderstood a request to turn right and attempted to go left—with plenty of excess rudder! He was determined to turn left whilst his instructor—equally determined he would *not*—planted his full weight on the rudder bar in the front seat. Checkmate! Something had to go, and of the three objects involved, the rudder gave up first!



—L.P.

A VISITING aircraft flown by a group captain dropped into an East Anglian E.F.T.S. one day in 1941 and was parked in the approved fashion outside the Duty Pilot's office. Having had lunch, the Gp./Capt. prepared to depart, but the civilian prop. swingers were hiding in their hut having their lunch break. The Groupie shouted and stormed but all to no avail and at last, thoroughly exasperated, he proceeded to start up without using chocks. As soon as the engine started he made a wild dash to get round the wing to the cockpit in order to throttle back, but before he had reached the wing tip the aircraft started to move forward at a fairly smart pace and all he could do was to hang on to the wing tip like grim death to stop the "Tiggie" careering across the aerodrome.

The aircraft proceeded to spin round and round at an ever-increasing speed with the Groupie hanging on to the wing tip bellowing away like blue murder. I was one of a number of instructors who watched this performance with great glee from the safe distance of the Duty Pilot's office and after what

Continued on page 301

The 1957 A.2 TEAM TRIALS

Held at R.A.F. Station Hemswell

AT Hemswell Aerodrome, Lincs, on June 30th, 101 finalists competed in almost perfect glider weather for one of the four top places in the "A2" Eliminator which would gain for them a coveted trip to Czechoslovakia as members of the British World Glider Championships team.

The pace was hot from the start with no less than 27 contestants turning in "maximums" in the first round. At the end of the second round 14 had obtained double "max's" and there were eight at the close of the 3rd round. Two of the eight were ladies, Mrs. Pat King and Miss M. Pepper, and the team manager, Eddie Cosh, looked a rather worried man—or was he putting on an act?

As the fourth round ended the "possibles" emerged and the ladies, we are sorry to report, were not among them, both having "boobed" on their fourth flights. E. E. Wiggins (Leamington), E. Scoles (North Lincs), D. Morley (Lincoln) and J. Hannay (Wallasey) topped the score sheet with four "max's," but anything could still happen as B. I. Tyrrell (Leicester), C. R. Wareham (Bournemouth), R. A. Burgess (Doncaster) and G. French (Laindon) were close behind with totals of 11 min. plus. In addition, the weather conditions appeared to be deteriorating but the threatened thunderstorm held off and no less than 32 "max's" were recorded in the last round. Scoles (1 : 30) and Morley (1 : 39) dropped out of the running and were replaced by Tyrrell and Burgess, who scored "max's" with their last flights. Towards the end of the round the rain started and so the Final Glider Elimination Trials—which had been very well organised throughout—ended with everyone dashing for shelter.

So the four lucky chaps who will constitute the British Team in the World Championships at Mlada Boleslav are:—J. Hannay (Wallasey) 15.00, E. Wiggins (Leamington) 15.00, R. A. Burgess (Doncaster) 14.22, and B. I. Tyrrell (Leicester) 14.19. May good luck be with them in Czechoslovakia.

HOW THEY PLACED

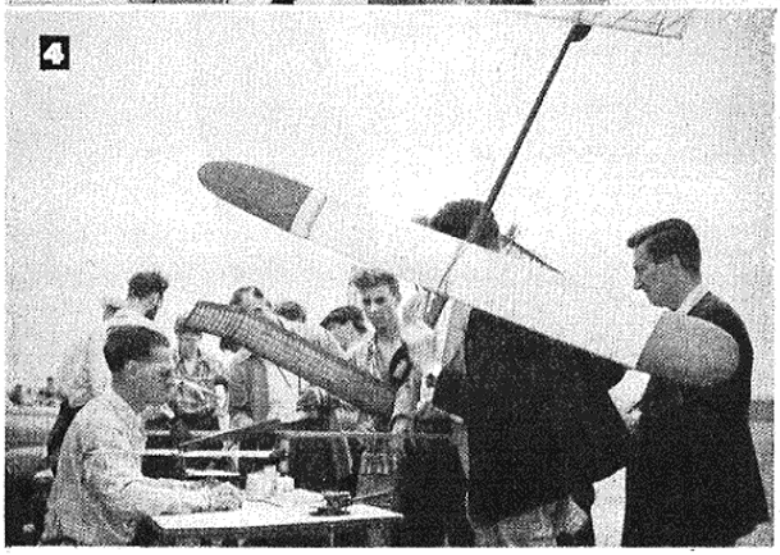
1.	**Hannay, J.**	**Wallasey**	**15.00**	
	Wiggins, E. E.	**Leamington**	**15.00**	
3.	**Burgess, R. A.**	**Doncaster**	**14.22**	
4.	**Tyrrell, B. I.**	**Leicester**	**14.19**	
5.	Wareham, C. R.	Bournemouth	14.10	
6.	French, G.	Laindon	14.01	
7.	Wade, S.	Lough. Coll.	13.53	
8.	Morley, D.	Lincoln	13.39	
9.	Scoles, E.	N. Lincs.	13.30	
10.	Ward, C.	De Hav.	13.29	
11.	Miss M. Pepper	Southampton	13.14	
12.	Hobbs, J.	Doncaster	13.09	
13.	Stokoe, P.	Wakefield	13.08	
	Cripps, S. P.	Apsley	13.08	
15.	Mrs. P. King	Thameside	13.07	
16.	Remington, W.	Lough. Coll.	13.05	
17.	Stoker, T.	Tynemouth	12.55	
18.	Hartley, J.	Wolves.	12.43	
19.	Amor, R.	South Essex	12.40	
20.	Crawshaw, I.	St. Albans	12.37	
21.	Burwood, R.	Surbiton	12.29	
22.	Moss, G.	Luton	12.25	
23.	Mrs. B. C. Moulton	Wayfarers	12.14	
24.	Hinds, S.	Wallasey	12.09	
25.	Winder, G.	De Hav.	12.08	
26.	Taylor, J. S.	Wayfarers	11.58	
27.	Greygoose, R.	Anglia	11.57	
28.	North, J.	Croydon	11.55	
29.	Hutton, G.	Wallasey	11.54	
30.	Wisher, A.	Croydon	11.53	
31.	Faulkner, B. T.	Cheadle	11.45	
32.	Hull, D.	Lough. Coll.	11.42	
33.	Watson, M.	Whitefield	11.41	
34.	Palmer, J.	Croydon	11.31	
	Helliwell, E.	Sharston	11.31	
36.	Neild, W.	Cheadle	11.24	
37.	Glynn, K.	Surbiton	11.23	
38.	Hardman, R.	Bolton	11.22	
39.	Willis, N.	Anglia	11.17	
40.	Woodward, D.	Thameside	11.13	
41.	Oliver, K.	Foresters	11.06	
42.	Greaves, D.	Leamington	11.04	
43.	Topham, D. R.	Lough. Coll.	10.59	
44.	Abbotts, W.	Five Towns	10.57	

Mrs. Hannay (Wallasey) about to release for R. Hardman, of Bolton. (More photos overleaf.)

THE TEAM

Hannay
Burgess

Wiggins
Tyrrell



1. *How sweet is patience ! . . . Competitors wait their turn for timekeepers, to time their first round flights.*

2. *P. Beresford of Lincoln checks that the auto rudder is O.K. before launching D. Hull's (Loughborough College) model.*

3. *E. Scholes of North Lincs seemed a cert. for the team with four 4's, but, like one or two others, boobed on his last flight.*

4. *Technical Secretary Henry J. Nicholls puts the Society's scales to good use as he checks the weights between rounds.*

Letters TO THE EDITOR

'Vintage' Vindicated

DEAR SIR,—Many thanks for the excellent articles on vintage aircraft contained in your July edition. Many who are vintage enthusiasts like myself experience difficulty in obtaining details of these aircraft, and articles such as these provide great interest and satisfaction. While appreciating the tremendous amount of hard work which must go into research for data, I look forward to further vintage articles in the near future.

Yours faithfully,
Chelsea, T. T. WATKINS.
London, S.W.3.

DEAR SIR,—Looking through back issues of the model magazines it would appear that the solid scale modeller with a preference for modern aircraft is getting a poor deal. Why? Who wants to look at a lot of slow, ugly vintage 'planes? These are all right in small doses, but I personally think that speed record 'planes such as the Fairey F.D.11, Supermarine S.6B and the Skyrocket are much more interesting.

Let's have a few more modern aircraft in future.

Yours faithfully,
Consett, R. THOMPSON.
Co. Durham.

In complete contrast to "slow, ugly vintage 'planes" is the Lockheed Starfighter featured on page 310.—Ed.

DEAR SIR,—With regard to the article "German Ace Markings" on page 230 of the July issue, your contributor is in error with regard to the marking of the Udet Albatros (Fig. 3). Certainly the Imperial War Museum caption a photograph of this aircraft as belonging to Udet, but this is not so.

This Albatros D.III belonged to the Austrian Flying Corps and was built under licence by the Oeffag firm (Austrian Government Factory); it was flown by Oblt. August Selinger, who was subsequently killed in combat. His brother still corresponds with a friend of mine from whom I obtained the photograph and details.

Yours faithfully,
Luton, Beds. P. L. GRAY.

See photo below—Ed.

DEAR SIR,—I have been building and flying model aircraft for over 20 years now, and your vintage issue was a great pleasure to read, as I intend to build a vintage model for R/C. I am enclosing some photos of vintage aircraft but I know nothing about the particular machines shown. T-DODF is about to leave Copenhagen for Hamburg with the first air mail between Denmark and Germany in the year 1920. The gentleman in uniform is the Danish Postmaster-General and on his right is Prince Axel of Denmark.

Perhaps your readers can dig up something of interest concerning these photos?

Yours faithfully,
Leigh-on-Mendip, W. V. BURTON.
Nr. Bath.

DEAR SIR,—I thought that I would have to write at once to congratulate you on the July edition of MODEL AIRCRAFT. I was particularly struck by the article on the Bristol Scouts. The data, and the wealth of information, all too necessary for a decent model, are far too much neglected these days.

I express the hope that your subsequent editions will be as interesting and "data packed" as this fine issue.

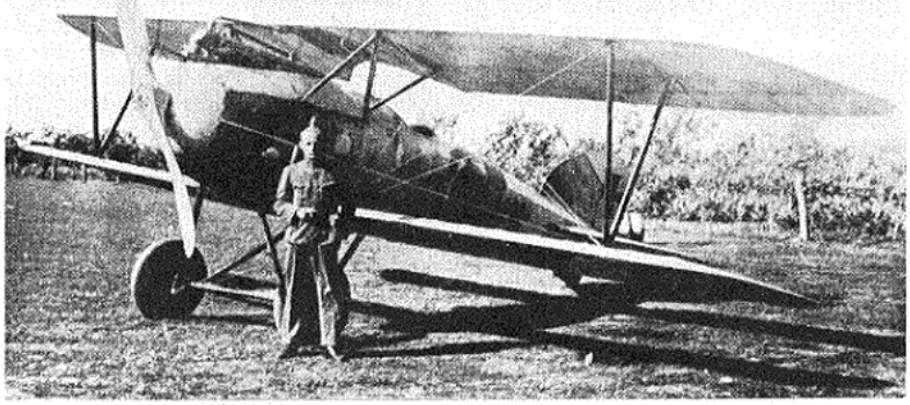
Yours faithfully,
Chelsea, S.W.3. B. A. H. HARPER.

The historic photo referred to by W. V. Burton in his letter. Aircraft is a D.H.9 and the full registration, T-DODF. The letter T was also carried on the rudder.

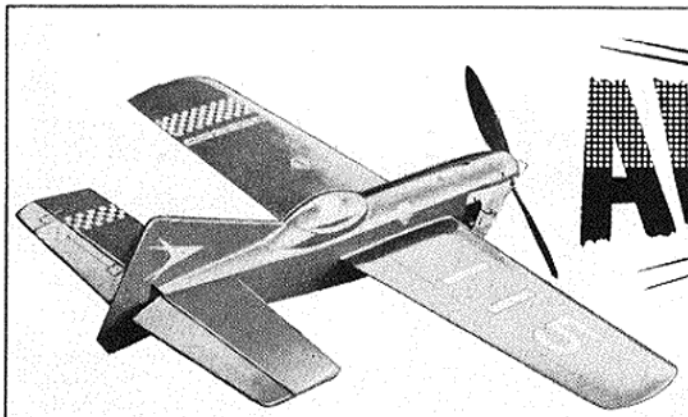
Baffling Beaver

Well, our mystery Beaver photo in the August "Aviation Newspage" really had you guessing (and us too, for that matter!) de Havilland's say: "The device mounted on top of the 'Beaver' fuselage is a tail boom for a helicopter which had an accident; the 'Beaver' is preparing to fly in the replacement part." Simple, isn't it? But only one correct answer was received—that of J. Arnold of 5, Rushdale Road, Coldean, Brighton, who receives a guinea. Space precludes us from reproducing all the letters we received, but we include three that were typical of the many ingenious answers thought up by the writers:—

Continued on page 308



The "Albatros" photo sent by P. L. Gray



ALL ABROAD!

with Peter Chinn

THE new Super-Tigre G.30 2.5 c.c. diesel, which we first described last month, has now made its contest debut and with notable success. Flying in the team-racing event at the *Coppa Supertigre* meeting at Bologna, Fermi and Bergamaschi took first place with the G.30 powered model illustrated above. We do not know whether any of the opposition had Oliver Tigers (Olivers are, of course, well known in Italy) but, in any case, the performance quoted for the model: 140 km./hr. (87 m.p.h.) for an average of 40 laps (F.A.I. 10 c.c. tank, remember) should be enough to make the Tiger Types sit up and wonder whether F.A.I. team-racing will now witness Tiger *v.* Tigre, instead of just Tiger *v.* Tiger.

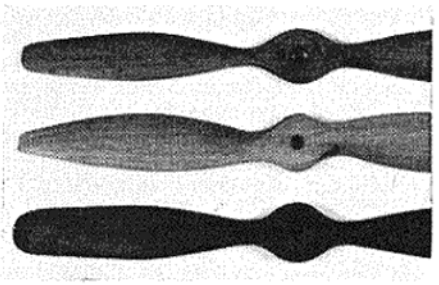
The Tigers have deservedly had things very much their own way during the past few seasons and, personally, we do not foresee their being unseated in the near future, but there is no doubt that much would be contributed to the interest and excitement of international team-racing by the addition of a worthy Continental challenger and the G.30 seems the most likely engine to fill that role.

By the time these words are read, the World Speed Championships of 1957 will be over. Looking at the line-up from a month ahead, it looks like being another tussle between the Italians and the Czechs for team honours and (barring accidents and non-starters) a three-cornered fight between Gibbs, Prati and Sladky (or one of his protégés) for the individual championship. The unexpected, however, is all part and parcel of the delights of model contests, while predicting individual performances on form is just about as hazardous in the model game as in horse racing, so we confidently expect to be proved wrong.

The Czechs and the Italians are obvious favourites for the team championship: the Czechs because they not only have the engines (specials produced for the event) and are flying under conditions well known to them, but because they have a lot of official support and will have put in weeks of practice beforehand.

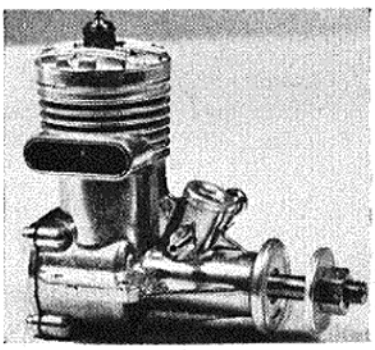
The Italians, however, if the showing of their top men in the *Coppa Supertigre* speed event is an indication of their team strength, should offer a strong bid. In this latter event, the top four all exceeded 120 m.p.h., Prati achieving exactly 200 km./hr. (124.3 m.p.h.) with one of the latest works G.20's, followed by Berselli, also with a G.20. Close behind were Cappi and Cellini each with glo plug Barbini B.40's.

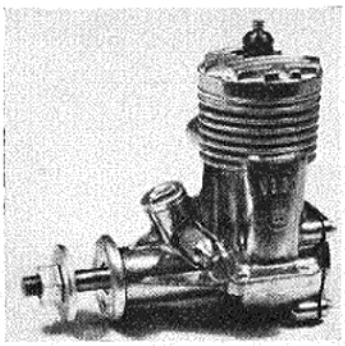
Prati's model, it is said, actually flew the opening laps a good deal faster than 200 km./hr., but, it appears lost revs during the last three, due, it is thought, to overheating in the close cowling and hot weather conditions. Prior to the official flights, he had recorded speeds of 206 and 209 km./hr. early in the morning and late in the evening and a fortnight after the contest he got the model up to 212 km./hr., or 131.73 m.p.h. (We assume this latter figure to have been achieved on the same lines and not on the thin lines permitted for F.A.I. record attempts.)



Czech 8 x 4 F/F prop (centre) compared with new type Trucut and Stant (with tips rounded off).

Stock wear in airscrews for 2.5 c.c. speed models these days is very definitely the American 6 × 9 Tornado. It has been endorsed by such noted exponents of the art as Gadget Gibbs and is also used by many of the Continentals. The Czechs have tended to use special props more in the toothpick tradition, but we recently had the opportunity of inspecting one of their machine-cut beech F/F 200 × 100 (8 × 4) props and this reverts to a blade shape very similar to the Tornado. This size is, of course, popular for international class F/F where high-revving engines are employed and it





New type Veco 29 and 35 from America follow the same layout as the "Series 100" Veco 19.

would be interesting to compare its performance with that of the more rectangular blade shape which had its beginnings in the L.S.A.R.A. designs of 1948 and was made popular, in modified form, in the Stant range. It will have been noted that the revised Trucut range features a swing away from parallel blades.

The new 4.9 c.c. and 5.7 c.c. Veco Series 100 engines are the latest additions to the popular American 0.29 and 0.35 classes and, as mentioned last month, Series 100 35's were the engines used by Howard Bonner and Bob Palmer for their R/C and C/L demonstrations in England in May.

The following description relates to the 0.35 cu. in. model, but the structural design of the 29 is identical and both models, of course, follow the same basic Series 100 layout as introduced in the Veco 19 model. The essential features of this were described in our July, 1956, article and February, 1957, Engine Test report.

When the Henry Engineering Company (now the Veco Products Corporation) of Burbank, California, first entered the model engine market several years ago, the Veco motors offered were somewhat on the lines of the K. & B. Torpedo engines then being produced. Later, the one-piece cylinder, with its integral cooling fins, was replaced by a new unit with a separate, finned, alloy, cooling barrel. With the present model, development has swung the design still further away from the earlier layout. The cylinder barrel is now an integral part of the crankcase casting and a drop-in liner is used.

The 29 and 35 differ from the 19 in one or two minor details. In place of the sintered iron main bearing, for example, one of bronze is now used and instead of the prop drive washer being keyed onto a flat on the shaft, mating tapers are employed, which, in our opinion, is an improvement since wear and risk of backlash developing is eliminated.

The crankshaft has a main journal of $\frac{7}{16}$ in. (0.440 in. measured) dia., 1 11/32 in. long and admits gas via a $\frac{5}{16}$ in. bore passage from an intake port 13/64 in. × $\frac{3}{8}$ in. The shaft has a crescent counterweight which balances all rotating mass, including approximately half the connecting-rod weight. The crankpin is of 7/32 in. dia. and coupling to the rod is via a 9/32 in. o.d. dural floating bush. The lapped piston is of light-weight design and the skirt is relieved for the lower third of its length. The gudgeon-pin is of moderate diameter (5/32 in.—the same as the 19) but a $\frac{3}{8}$ in. long conrod bearing assures adequate stiffness, while the total weight of the piston and rod assembly is held to a modest 0.54 oz.

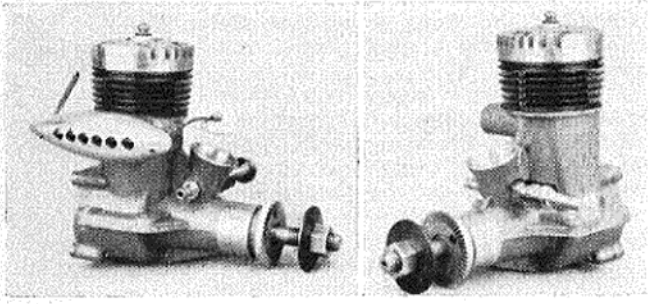
The cylinder liner has a wall thickness of 0.058 in. and is well supported by the casting. It is flanged at the top and fits into a circular channel in the cylinder head confining the head gasket. A long-reach Anderson-Veco plug is used.

The Veco 35 has a bore and stroke of 0.784 × 0.724 in., giving a swept volume of 0.3495 cu. in. or 5.728 c.c. and weighs 7.4 oz. In the 29 model, the bore is reduced to 0.725 in. All parts, with the exception of the crankcase, cylinder-liner, head and piston are common to both models.

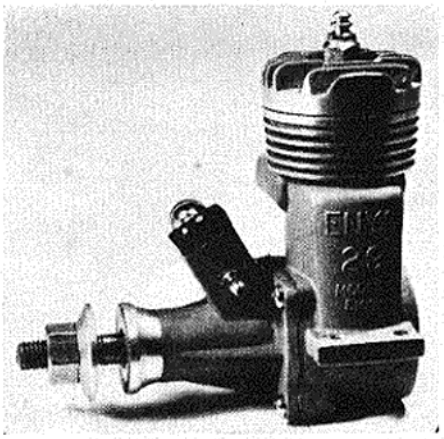
Scheduled for production this month is a slightly modified version of the well-known Japanese O.S. Max 35 engine. As our photographs show, this has an enlarged intake and a revised needle-valve design. Combined with this is a modified rotary valve design.

Another recent development applied to the Max 35 is a combination exhaust-restrictor and intake-flap unit for speed control with R/C installations. This has been rather neatly carried out and is enclosed in a streamlined machined alloy housing, as shown, that fits over the exhaust stack.

The O.S. 5 c.c. engines, incidentally, have obviously found a strong competitor in the Mk. III version



Latest version of the Max 35 has improved induction system. Example left is fitted with exhaust/intake speed control.



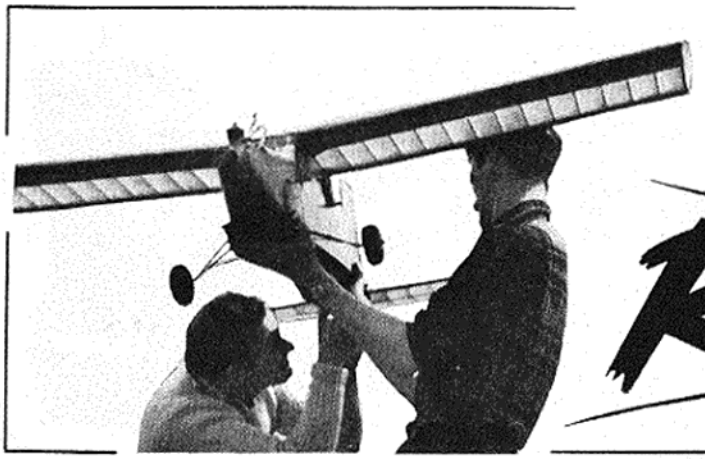
Preliminary tests on the Mk. III Enya 29 reveals performance equalling or bettering best American standards.

of the Enya 29 which we first described, briefly, in these columns a few months ago. We have been running some tests on one of these engines recently, and the performance is, quite frankly, little short of fantastic. Saburo Enya has equipped the 29-III with an 11.5 mm. (0.452 in.) shaft, allowing an 8.5 mm. (0.335 in.) gas passage and a rectangular valve port nearly $\frac{1}{2}$ in. long by $\frac{3}{8}$ in. wide, fed from a rectangular section intake.

The transfer layout and the rest of the engine is in keeping with this to provide what must be quite exceptionally high volumetric efficiency. Using the largest of the three venturi inserts provided and with a nitro content of 30-35 per cent., we actually recorded a maximum torque equivalent to a b.m.e.p. of 70 lb./sq. in. on test with this engine.

As followers of the Engine Test series will know, this is something quite phenomenal and has previously been approached only by the most highly developed racing engines, such as the Dooling 61. Converted into more familiar, if less precise, prop/r.p.m. figures, this means 13,000 on a 10 × 6 and 14,500 on a 9 × 6—better, in fact, than contemporary American equivalents—yet is achieved with excellent starting. We hope to include a full report on this outstanding motor in due course.

Incidentally, practically all capacity classes are represented in the Enya range, which includes, at the present time, the following models: 09, 15-1B, 15-D (diesel), 19-III, 29-III, 35 (replacing the previous 36 model) and 60 (replacing the previous 62).



Radio Control Notes on REEDS

THE simple single-channel transmitter (and receiver) can only be adapted to multiple control response through a sequence of mechanical switching. Whilst this is readily possible there are definite limitations to such schemes, and to the others relying on elementary forms of signal switching. The more practical alternative is to use a more complex transmitter capable of sending out separate control signals in the form of "tones" superimposed on the standing (carrier) signal. The receiver (also more complicated) is then designed to differentiate between these modulated signals so that it is capable of separate switching on several different control circuits.

The two alternatives at the receiver end are to sort out the respective "tone" signals electronically, or mechanically. The former method is both complicated and costly, but until recently has been the one most favoured in the United States. Britain, on the other hand, has largely pioneered the "mechanical" method of tone differentiation, using resonant reeds, and only this form of multi-channel receiver equipment is available commercially over here.

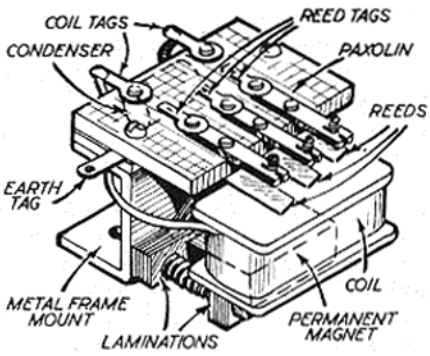
After many years of doubt—and admittedly far from infallible performances with reeds—reed banks are now coming into much wider favour. The main limitation is not, as was first suspected, the reeds themselves, but rather the transmitters used with them. A properly designed reed bank is largely unaffected by changes in temperature, humidity or atmospheric corrosion, etc. It is imperative for satisfactory and consistent operation, however, that a reed receiver be used with a very stable transmitter

Theoretically there is no limit to the number of separate "tones" which may be used to modulate the transmitter signal, but there is a practical limit to the number of modulated signals which can be used without the risk of individual reeds in the reed bank used to receive them being "triggered" by an adjacent signal. Also the majority of transmitter-reed receiver units so far produced can initiate only one selected control (reed) at a time. Simultaneous two-channel operation is possible with some of the latest commercial equipment (American).

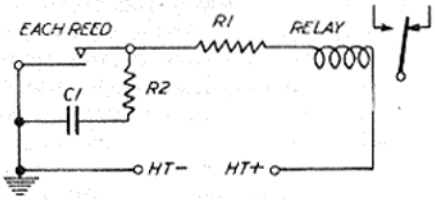
Three independent controls are virtually a minimum requirement to justify the extra expense and complication of multi-channel equipment. Five, six and eight-reed units are also produced commercially. British commercial equipment embraces the E-D three-reed and E-D six-reed units as the only standard reed equipment widely available; and six and eight-reed units by Radio and Electronic Products. All these units are to the design of G. Honnest-Redlich.

E-D Three-reed Unit

This is a sturdily constructed unit which is available in two types, distinguished by colour coding the coil wrapping. The red coil unit is designed for the higher range of frequencies and the green coil unit for the lower frequencies. The two can be used in series in the anode circuit of the (receiver) valve to provide up to six channel operation, i.e. using two three-reed banks instead of a single five or six-reed bank.



The reeds are mounted by solder on a metal base sandwiched between the top Paxolin plate and the metal frame. The permanent magnet is gripped between the inner and outer laminations, mounted on the frame with two 4 B.A. brass screws. The coil is wound on a rectangular plastic bobbin, coil connections being taken to solder tags at the rear of the Paxolin plate. A 0.03μF. condenser is fitted across the coil. Reed contact strips are riveted to the Paxolin plate and the contact gap is adjustable



by means of silver tipped grub screws in the ends of the contact strips, locking being by friction (split ends).

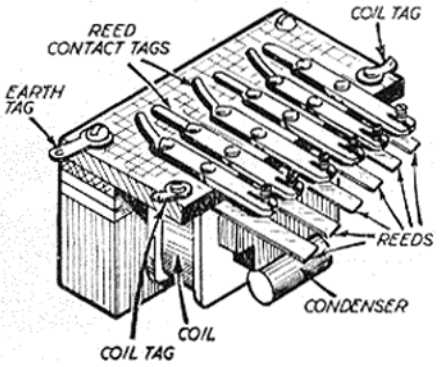
Data:

Weight 1¾ oz.
Reed frequencies 310 c.p.s.
350 c.p.s.
425 c.p.s.
Minimum starting voltage 2.5 volts R.M.S.

E-D Six-reed Unit

This is of somewhat different design to the three-reed unit. The reed comb is similar in construction but laminations are dispensed with in the magnetic circuit in favour of a solid pole piece and spacers. Reed contact strips are similarly mounted to the three-reed unit, but with solder connections made directly to the ends instead of tags. Mounting is by means of two 6 B.A. screws into two tapped holes in the aluminium body, spaced 1 in. apart.

Continued on page 308



Topical Twists

by PYLONIUS

Indoor flying

Nine-channel radio flying seems to be all the rage, but I can't say I find tele-modelling all that wonderfully exciting.

"Flick them there moths off the screen!" cried Granny.

"Moths," says Sonny, disgustedly, "They're model planes."

"That's quite enough of that, Sonny," says Mother, "If Granny says they're moths, they're moths."

Undismayed, Sonny, quite the model expert, proceeds to identify each type of moth as it appears on the screen:

"Radio job—power duration—stunt model—rubber job . . ."

"Hold on," says Father, "That's making a funny noise for a rubber model—its got an engine in it."

Sonny desperately tries to explain what nitwits the television people are, but the family, shocked at such heresy, pack him off to bed—and just let him try to make out he's a model expert again, that's all.

This England

Visitors to the Stately Homes of England believe in having their full half crown's worth. After dutifully inspecting the regal four poster where Good Queen Bess was reputed to have enjoyed a quiet snooze before a rally of arms, they demand a rally of models as a consolation. Choked with pride over the glories of old England, they retire to the Stately Lawn to witness a stunt display by a screaming slab of American model. Put through its stately manoeuvres over the corner of a foreign field, it flew square circles, sat up and begged, and did everything but talk—and even at that the wires had a decided Yankee twang.

To add further splendour to the historic English scene, the traditional blurp of another American engine rises above the tinkle of afternoon tea. Tiaras are wedged firmly over stately earholes as a monster radio job swoops up to perform a series of stately loops over the stately home. "Super-dooper!" gasp the proud descendants of Shakespeare. Solemnly they watch the model disappear over the soaring turrets as the enchanted music of a skiffle group floats on the summery English air.

Fly-past

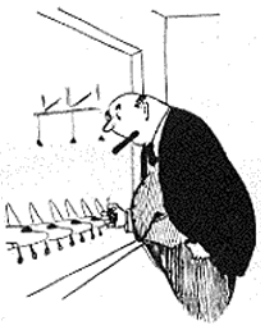
After reading last month's Vintage issue it seems that silly old me has got the wrong idea about this model flying business. Being a bit vintage minded myself, I still picture it in anti-quated terms of the young-in-heart and the short-in-pocket throwing weird flying machines into the air, and actively pursuing their pastime, as it were. Now I can see that the modern approach is more leisurely, consisting of nothing more than a gentle potter among museum relics for the inactive study of weird, non-flying machines.

Possibly I'm just old-fashioned, not quite so old-fashioned as the weird non-flying machines, but old enough in my one tooth to think of a model plane as a Wakefield or A/2 glider. However, things seem to have moved on (or is it back?) since my vintage days, and I can now understand the astonishment of the local natives as I make my solitary appearance on the flying field, clutching an archaic concoction of balsa and tissue. While I've been living in the flying past the hobby has evolved through the static era of the 3s. 6d. balsa kit, to the positively immobile state of the 2s. ready-built plastic model. The latter, of course, being solely for the benefit of those athletic enough to wield a paint brush. Others, with less vigorous inclinations, are content to meditate upon the colour of von Richthofen's socks, or to ponder upon the technique of hand launching a bomb out of a cockpit.

If I'm to keep up with the model flying hobby I need to revise a few of my quaint old notions, and find out something about these stringy looking biplanes which are cluttering up the model books and museums. Unfortunately, the only museums known to this old fossil are full of old fossils, with not a stringy biplane in sight. All I can do is to build a showcase for my defunct Wakefields and hope that, in future, someone might remember those funny flying models and run a vintage edition in their honour.

Success story

Nearly all important people in the world of aviation seem to have begun their illustrious careers with model planes and finished up in full-size aircraft—scaled up to success, as you might say. Looking patronisingly down upon us lowly hobby friends, they recall as how how they, too, as boys, played with models, and how it helped to foster ambition in the real thing.



As one of the boys for ever, I can always console myself with the thought that had I given up fiddling with toy planes I, too, might have become a captain of industry. Meanwhile I can, perhaps, ask one of the mighty captains to forget about that already obsolescent design which might go into production in 1980 if the order isn't cancelled, and come over to the flying field to find out what a thundering good time he's missing.

Ye Olde Village Pump

In keeping with the historic mood, we leave the museum boys to their First World War crates as we, of the Old Brigade, gather respectfully around the remnants of a real vintage job: a 1911 compressed air model.

What fun they must have had on the village green in those far off Edwardian days. You can imagine the excitement of the bewhiskered enthusiasts as the model triumphantly lands after doing 20 sec. on only half pumps. Discussion in the cowshed would reach fever point; would the magic half-minute mark be reached on full, 400 pumps? Calling all hands to the pumps they sally forth for an attack on the British Record. The rest is history.

But what has happened to the compressed air model? The idea of a model with a self-contained updraught appeals to me. It might not appeal so much to the F.A.I., who would be burdened with a new class of model—compression/non-ignition. A set of complicated rules, by which to ruin the model's capacity for flight, would probably be on the following lines:

"Cylinder(s) should not exceed a volumetric capacity of 2.5 c.c.'s. The atmospheric pressure will be limited to an equivalent of 50 grammes of rubber. Standard bicycle pumps only will be allowed, and only normal, breathing-type air permitted. In the event of a cylinder burst, a reserve pumper can be used."

SKETCHES BY—ALI

FULL SIZE PLANS

for an 18in. span rubber-powered model of the

Auster ALPINE

★ *Quick to build*

★ *Easy to fly*

★ *Scale appearance*

CHOSEN by the Automobile Association for aerial survey work to assist their road patrols, the Auster *Alpine* makes an attractive model for exhibition or flying. The A.A. colour scheme is detailed on the smaller drawing, finish being "A.A. yellow" and black. Plans given on the following two pages are full-size and show alternative wing construction. The port wing drawing shows scale rib and riblet positions which can be followed in making an exhibition model. This wing, however, works out on the heavy side for a flying model and so for the latter purpose the wings should be constructed on the more "open" framework detailed on the plan, using $\frac{1}{16}$ in. ribs.

Fuselage sides are cut from very light $\frac{1}{16}$ in. sheet to the outline shape. The position of the formers should be marked accurately and the sides assembled on formers 2a and 3 first, noting that they will have to be pinned in place to conform to the top and bottom taper. When set, the sides can be aligned and cemented together at the rear. Then insert formers 4 and 5, pinning the sides to former 4, if necessary. If the formers appear to be on the weak side, brace with 3/32 in. sq. strips cemented across.

Former 2 should now be tentatively positioned and the sides pulled in and joined with former 1. Hold with rubber bands, then position former 2 accurately and cement. Bend the 18 S.W.G. wire undercarriage legs to shape and bind and cement to the bottom of former 2a.

Cement the $\frac{1}{16}$ in. sheet bracing pieces inside the fuselage just in front of former 5 to act as reinforcements for the rear peg. Cut the centre top stringer and cement in place, together with the two short $\frac{1}{16}$ in. sq. stringers. The latter will bow to the correct curve after tissue covering and doping.

The upper cowling is formed from 1/32 in. sheet, using two pieces joined on former 2. It is best to cut these to shape by trial and error and then cement in place. The lower cowling (between formers 1 and 2) is also cut from 1/32 in. sheet. The whole of the fuselage bottom from former 2 back is covered with 1/32 in. sheet. At this stage the fuselage assembly can be smoothed with sandpaper, very lightly rounding the bottom edges.

Four $\frac{1}{16}$ in. sheet root ribs are cut. Cement two of these to the sides of the fuselage, as shown, and the others are used for the wing frames. Build up the cabin frames from $\frac{1}{16}$ in. sq. strips sanded down, trimmed to length and cemented in place.

The wing panels are built separately, flat over the plan. Pin down leading and trailing edges and cut and cement on the tip pieces. Then add the ribs and finally the mainspar, noting that the latter projects beyond the root rib. In the case of a scale wing frame a false spar must be used at the aileron position, the main ribs finishing at this spar. The aileron riblets are differently spaced. In all cases the ribs should be slotted into the trailing edge for additional strength.

The wings are best assembled on the fuselage before covering, if you want the neatest job. However, it is much easier to cover first, then cement to the fuselage before water-spraying and doping. In the latter case, make sure first that the wing panels fit snugly against the fuselage root ribs, with the projecting mainspar fitting the slot in the fuselage

side just behind former 2a. The correct dihedral—$\frac{5}{8}$ in. at each tip rib—should be given automatically by the slope of the sides. The mainspar ends are cemented to the back of former 2a for added strength.

Only the aft decking of the fuselage needs to be tissue covered. The wings are tissue covered on both surfaces. For a flying model, use black and yellow tissue for the wing covering. On an exhibition model, where weight is not important, the colour finish can be given with coloured dopes.

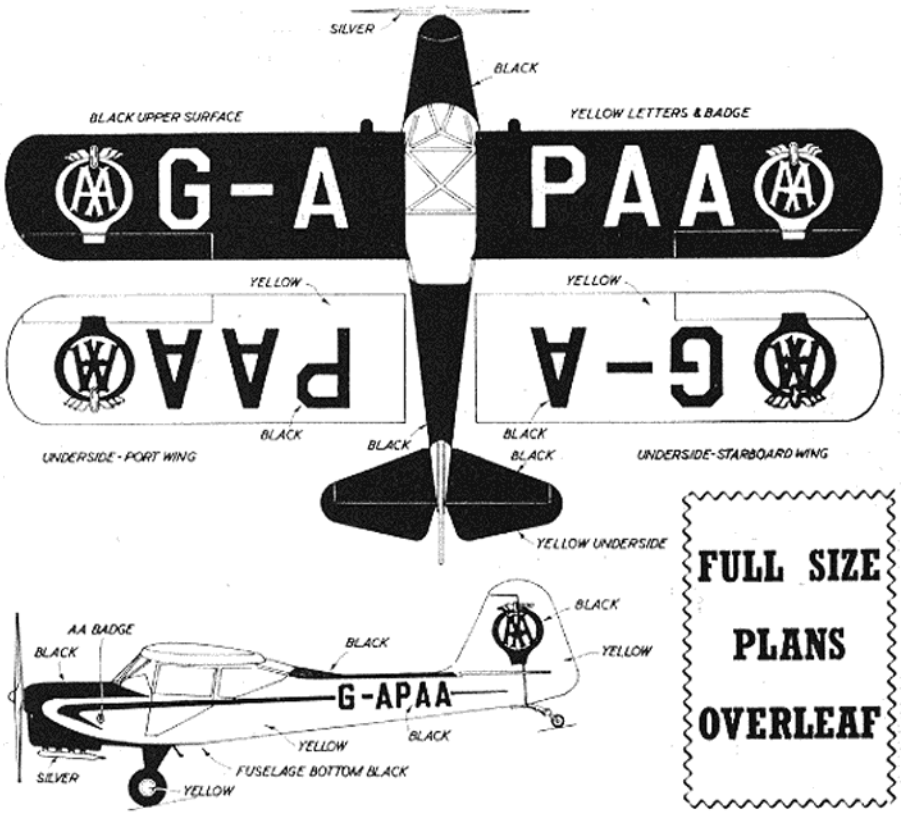
The fin and tailplane are cut from very light quarter-grain $\frac{1}{16}$ in. sheet, sanded down perfectly smooth and with the edges rounded before cementing in place. Check that they line up accurately with the wings.

The fuselage should be colour doped yellow with well thinned colour dope in the case of a flying model, preferably sprayed on. To get a better finish on an exhibition model, either use grain filler on the sheet sides first, or cover with tissue. Detail fittings are added after colouring. Cabin windows and door outline (both sides) are painted on or drawn on carefully with a ball point pen. The windshield, and the whole of the centre section, is covered with thin acetate sheet.

The undercarriage fairings are cut from sheet balsa and cement to the fuselage sides, joining the legs only at the stub axle position. They can be secured to the wire by sewing with cotton, or you can rely on the cement joint to the fuselage to keep them in position. On a flying model they can be omitted entirely, or formed from card of sheet plastic doubled round the wire.

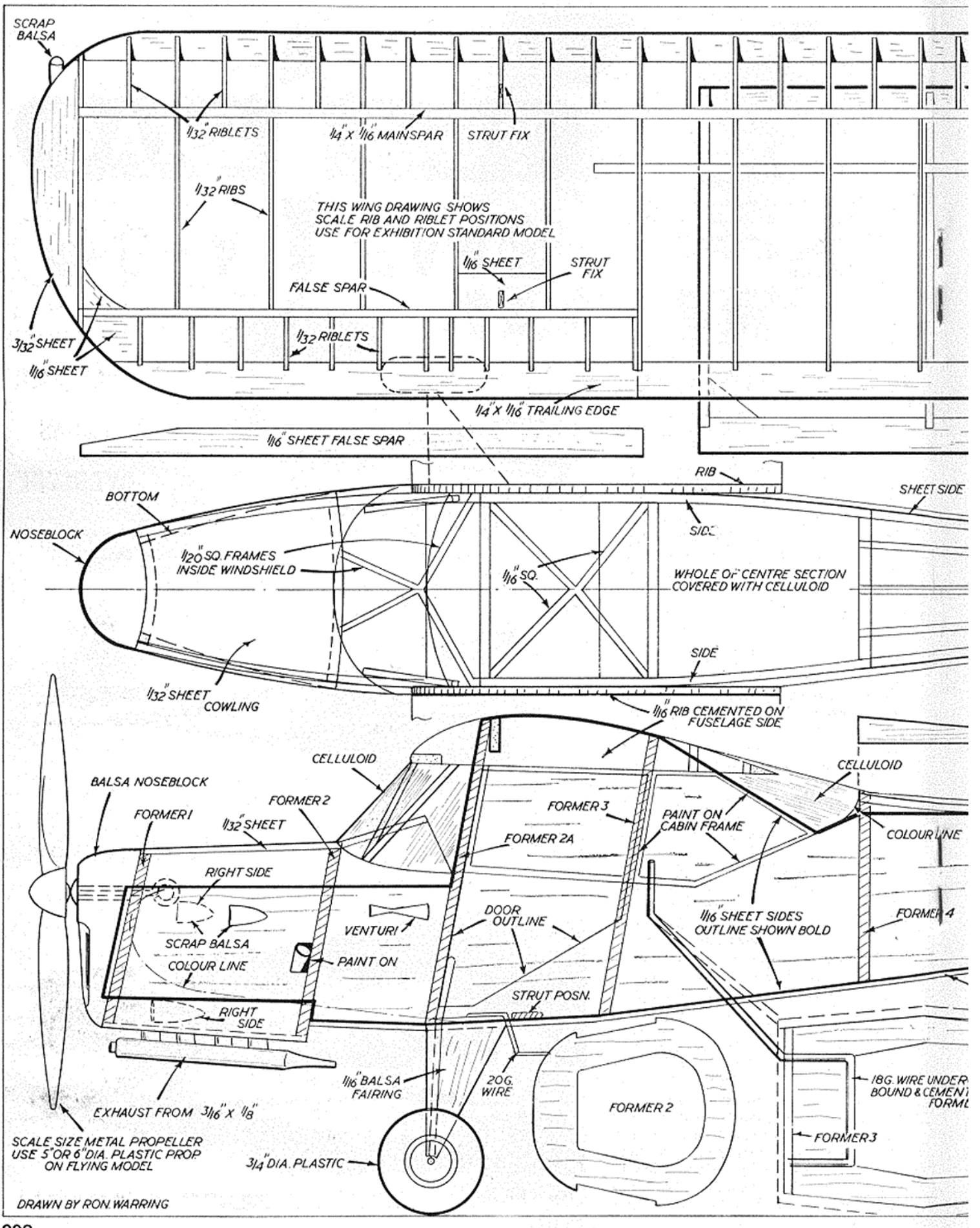
Wing struts should be cut to length from $\frac{1}{8} \times \frac{1}{16}$ in. strip, sanded to a streamlined section. These are cemented in place permanently, after first doping black. The jury struts can be sanded down from $\frac{1}{16}$ in. sq., or use small slivers of bamboo.

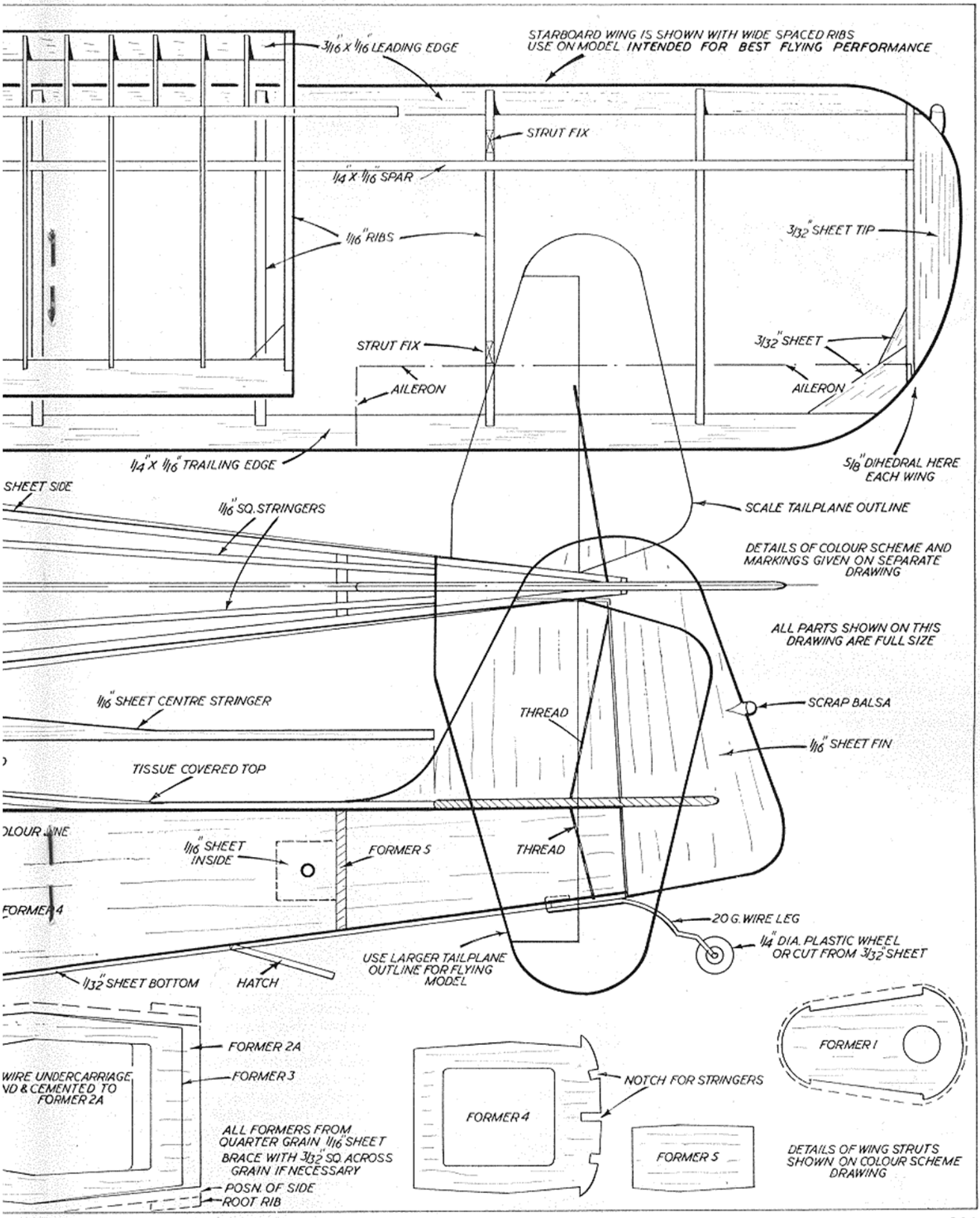
Yellow markings on a flying model can be cut from yellow paper or transfer sheets and fixed in place over black tissue. Similarly the undersurface markings can be cut from black paper, stuck over yellow tissue covering. Use colour dope for the black fuselage trim, but black tissue for covering the upper surface of the tailplane. The A.A. insignia is a little difficult to draw unless you are something of an artist, but you may be able to find badges of suitable size printed on A.A. literature which you can cut out and stick in place.



FULL SIZE PLANS OVERLEAF

Was it just coincidence that the registration letters G-APAA were due when the A.A. acquired their Alpine ?

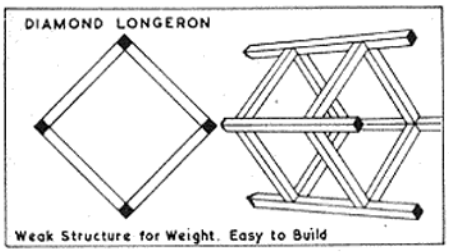

SCRAP BALSA
1/32" RIBLETS
1/4" X 1/16" MAINSPAR
STRUT FIX
1/32" RIBS
THIS WING DRAWING SHOWS SCALE RIB AND RIBLET POSITIONS USE FOR EXHIBITION STANDARD MODEL
1/16" SHEET
STRUT FIX
FALSE SPAR
3/32" SHEET
1/16" SHEET
1/32 RIBLETS
1/4" X 1/16" TRAILING EDGE
1/16" SHEET FALSE SPAR
RIB
BOTTOM
SHEET SIDE
NOSEBLOCK
SIDE
1/20" SQ. FRAMES INSIDE WINDSHIELD
1/16" SQ.
WHOLE OF CENTRE SECTION COVERED WITH CELLULOID
SIDE
1/32" SHEET COWLING
1/16" RIB CEMENTED ON FUSELAGE SIDE
CELLULOID
CELLULOID
BALSA NOSEBLOCK
FORMER 1
FORMER 2
1/32" SHEET
FORMER 3
PAINT ON CABIN FRAME
FORMER 2A
COLOUR LINE
RIGHT SIDE
VENTURI
DOOR OUTLINE
1/16" SHEET SIDES OUTLINE SHOWN BOLD
FORMER 4
SCRAP BALSA
PAINT ON
COLOUR LINE
STRUT POSN.
RIGHT SIDE
1/16" BALSA FAIRING
20G. WIRE
18G. WIRE UNDER
BOUND & CEMENT
FORMU
EXHAUST FROM 3/16" X 1/8"
FORMER 2
FORMER 3
SCALE SIZE METAL PROPELLER USE 5" OR 6" DIA. PLASTIC PROP ON FLYING MODEL
3/4" DIA. PLASTIC
DRAWN BY RON WARRING


STARBOARD WING IS SHOWN WITH WIDE SPACED RIBS USE ON MODEL INTENDED FOR BEST FLYING PERFORMANCE
3/16" X 1/16" LEADING EDGE
STRUT FIX
1/4" X 1/16" SPAR
1/16" RIBS
3/32" SHEET TIP
STRUT FIX
3/32" SHEET
AILERON
AILERON
1/4" X 1/16" TRAILING EDGE
5/8" DIHEDRAL HERE EACH WING
SHEET SIDE
1/16" SQ. STRINGERS
SCALE TAILPLANE OUTLINE
DETAILS OF COLOUR SCHEME AND MARKINGS GIVEN ON SEPARATE DRAWING
ALL PARTS SHOWN ON THIS DRAWING ARE FULL SIZE
1/16" SHEET CENTRE STRINGER
THREAD
SCRAP BALSA
1/16" SHEET FIN
TISSUE COVERED TOP
OLOUR LINE
1/16" SHEET INSIDE
FORMER 5
THREAD
FORMER 4
20 G. WIRE LEG
1/4" DIA. PLASTIC WHEEL OR CUT FROM 3/32" SHEET
USE LARGER TAILPLANE OUTLINE FOR FLYING MODEL
1/32" SHEET BOTTOM
HATCH
FORMER 2A
WIRE UNDERCARRIAGE ND & CEMENTED TO FORMER 2A
FORMER 3
ALL FORMERS FROM QUARTER GRAIN 1/16" SHEET
BRACE WITH 3/32" SQ. ACROSS GRAIN IF NECESSARY
POSN. OF SIDE
ROOT RIB
FORMER 4
NOTCH FOR STRINGERS
FORMER 5
FORMER 1
DETAILS OF WING STRUTS SHOWN ON COLOUR SCHEME DRAWING

Toughness Simplified

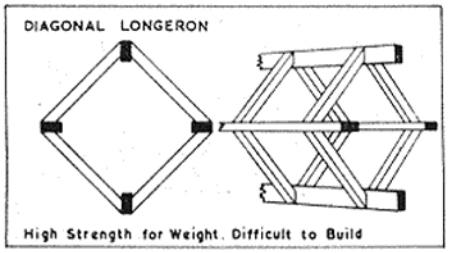
SOME years ago, the writer completed a very conventional kit glider—no names—and pranged it. This is no news for the particular type in question; it appears everyone prangs the type on the first day out. There were two complete fractures in the fuselage, one forward, one aft, and a week or so was allowed to elapse before a repair was attempted.

The repair required was virtually a rebuild of a conventional $\frac{1}{8}$ in. sq. frame, 2 in. wide, 2 in. pitch spacers. Some thought was given to what are termed "diagonal longerons" . . . that is, longerons having the greatest depth (sometimes known as maximum moment of inertia or I max.) parallel to an imaginary diagonal of the square cross-section. It was

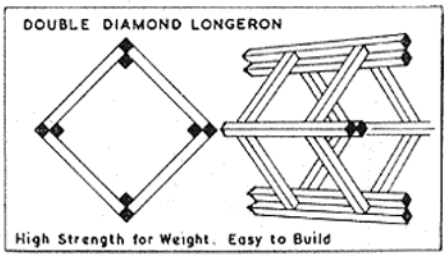


seen that this could be approximated to, structurally, by using an extra $\frac{1}{8}$ in. sq. longeron butting, on its corner, against the inner point of the original longeron, and butted between each pair of spacers.

The resulting member's cross-section can be described as "squared-off figure eight" or, better, "double diamond," It will be seen that the stressing of the fuselage can be made identical to the far-harder-to-build flat diagonal for only a small increase in weight. In the case of the model in question, the extra weight was useful, the model originally being below F.A.I. standards.



On a standard $\frac{1}{8}$ in. sq. frame, the approximate weight increase is less than 0.1 oz./ft. run of fuselage, and with cement gusseting laid on be-



tween the two mating longerons to improve rigidity, it is increased to about 0.12 oz.

Further advantages claimed are as follows:—

(a) Greater cement adhesion on the spacers. With some thought, it will be seen that the relative cemented areas and their disposition are:—
  (i) Square (conventional) structure, one unit. End only.
  (ii) Diagonal (flat) longerons. $\sqrt{2}$ (1.414) units. End only.
  (iii) Double diamond longerons, two units, one end, one side.
(b) Greater resistance to warping.
(c) Moderate strength for light weight, if for any reason the design calls for this requirement. An example is very slim Nordic tail-booms, with a short nose moment . . . of which, more later.

Anyway, the repair worked; the model must have made about 500 flights (all night and every night for five months) when the wings finally became worn out. The fuselage was retired in despair—it just wouldn't break.

The structure layout has been tried, since, on the following lay-outs:—

(i) New Rule Wakefield. Double-longeron slab fuselage 36 in. long, weighs only 1 oz. uncovered. Practically 100 per cent. crashproof. A similar fuselage has already withstood a full-turns motor breakage with only tissue damage.
(ii) Lightweight booms, especially for gliders. The centre of gravity of a new Nordic fuselage, 48 in. long, and with only $4\frac{1}{2}$ in. nose moment, balanced 9 in. from the nose. The rear fuselage is very slim and is positively resistant to warping and deflection.

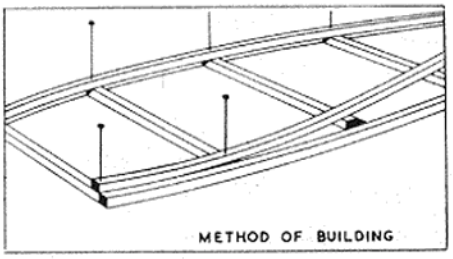
Lightweight Rubber

An extreme structure of double $\frac{1}{16}$ in. sq. is sufficient for a 36 in. long-run type lightweight. One such structure used last year placed in several events with a $3\frac{1}{2}$ min. average—though the structure was actually a modification of "conventional" diagonal longerons, with the longerons flat, and pre-formed (butt-jointed double 1/10 in. sq. flat).

This method of building is highly tedious and not recommended, although one or two Cheadle members (notably B. T. Faulkner) adopted it with success.

Building

Building is simplicity itself. . . . A conventional slab-side is built, and an extra longeron added, inboard of each main longeron. This side having been removed from the plan, another side is built, removed from plan and further longerons added on the reverse side to the first.



Jigging is simplicity itself—small prefabricated formers can be slotted into the double spacers, for example—and assembly is facilitated by the fact that the top and bottom spacers have only to be fitted "into the rails" rather than perched precariously until the cement dries, as is normal.

Repair, naturally, is (or rather would be—the writer has never had to do any) perfectly straightforward.

The 100th

Engine Test

Continued from page 285

metered and then passes through a delivery tube to the simple jet mounted in the left side of the intake. The tank, of course, must be filled with a syringe or pump under pressure. This is effected via the delivery tube, the needle-valve being closed to hold the pressure when the tank is full.

The engine is started by priming in the usual way and, when running, the needle-valve is then opened. Of course, it is not quite so simple as that. The Fox bursts into life with shattering suddenness and one has to be very quick to open up the needle-valve before the prime is exhausted. Added to which, with the fuel under pressure, the valve is quite sensitive and it is not too easy to find the critical setting at first. Helpful here would be a much larger knob on the needle-control and a locknut on the valve body to secure it more rigidly to the crankcase.

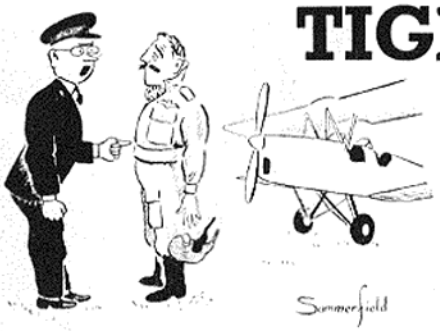
When warm, an alternative method of starting can be employed; letting fuel dribble from the jet while flicking the prop rapidly. The Fox is not, perhaps, an especially easy starting engine, even when you know how, but there can be no doubt as to its performance, as our test curves show.

Needless to say, these figures, which include a specific output of 167 b.h.p./litre at a speed approaching 18,000 r.p.m., are the highest ever reached in this series, the previous best being 153 b.h.p./litre for the McCoy Series 20. It is emphasised, however, that these curves were obtained with the engine in stock tune and without especial regard to climatic conditions and it is only fair to conclude by quoting the manufacturer, who writes: "Under laboratory tests our best performance has been obtained in hot weather with very low humidity, around 10 per cent., and with nitromethane around 70 per cent. Under these circumstances it appears that the motor will produce slightly over one horsepower."

Power/Weight Ratio (as tested): 1.49 b.h.p./lb.

Specific Ooutput (as tested): 167 b.h.p./litre.

TIGER TALES



"I'm from the R.S.P.C.A.—I understand you've been ill-treating a Tiger!"

Continued from page 288

seemed like hours one of us thought the Gp./Capt. had had enough and dashed out and slung a pair of heavy chocks in the vague direction of the undercart. These hit the wheels and brought the Tiggie to an abrupt halt—on its nose! The Gp./Capt. collapsed on the tarmac, "out" for the count and I must say that he did not seem to appreciate our rather belated efforts to help him onto his feet!

—H.F.L.

TIRED of being the slowest thing in the local skies we evolved a trick which we used to perform on the *Whitleys* from Wroughton who were sometimes to be seen trundling around with a large *Horsa* glider in tow.

The idea was to get about 2,000 ft. above the *Whitley*, heading in the opposite direction, then half-roll the *Tiger* and dive vertically onto the *Whitley*. By the time the *Tiger* had reached the *Whitley's* altitude, a speed of about 160 m.p.h. was reached. Levelling out, one could then overtake the *Whitley*—flying as close as one possibly could—with 20 or 30 m.p.h. in excess of the *Whitley's* speed! There was just time to cock a snook and enjoy the look of incredulity on the face of the *Whitley* pilot—and then a sharp peel-off before the illusion of speed was lost!

—A.J.A.

ON our day off we usually borrowed a *Tiger Moth* and flew down to Hatfield to catch the first possible train to London. On this occasion we went down at nought feet until we saw the radio masts at Brookmans Park then Norman in the front seat took over, hauled the *Tiger* up to 500 ft.—flew round the Hatfield circuit in the wrong direction—then proceeded to do the most colossal sideslip landing I've ever seen. With the strong wind helping, we skated down almost vertically and touched down in a minute gap between the parked aircraft. We picketed it just where it stopped then turned to report our arrival to flying control, only to find our way barred by a wing commander whose face and reputation were both known to us only too well. He glared at Norman:

"Did you bring that *Tiger* in?" he demanded.

"Yes sir," admitted Norman.

The wingco. scowled.

"It's not a bloody autogiro, you know!"

—F.M.

I AM fond of "Tiggies" beyond all redemption. Only a week or two ago I took a friend up after a lot of "big talk" of rolling *Tigers*. Both of us wanted to see if the other could do a slow roll.

At 6,000 ft. I handed over and said: "It's yours—now let's see this roll!"

At 1,000 ft. lower, I sarcastically asked what the manoeuvre was, and suggested my friend see how it should be done.

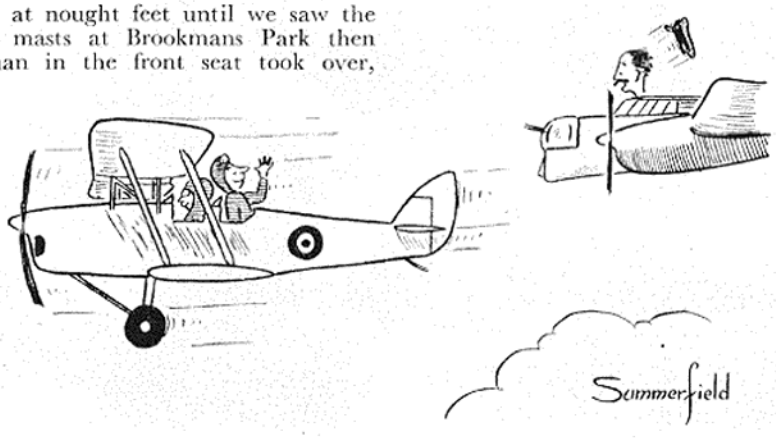
After losing control in exactly the same way, 1,000 ft. lower, I shamefacedly suggested we climb up and have another go.

We landed later at Rochester and went to the car. Too late, my friend found his pockets empty of every key on his ring as well as nearly £1 in silver.

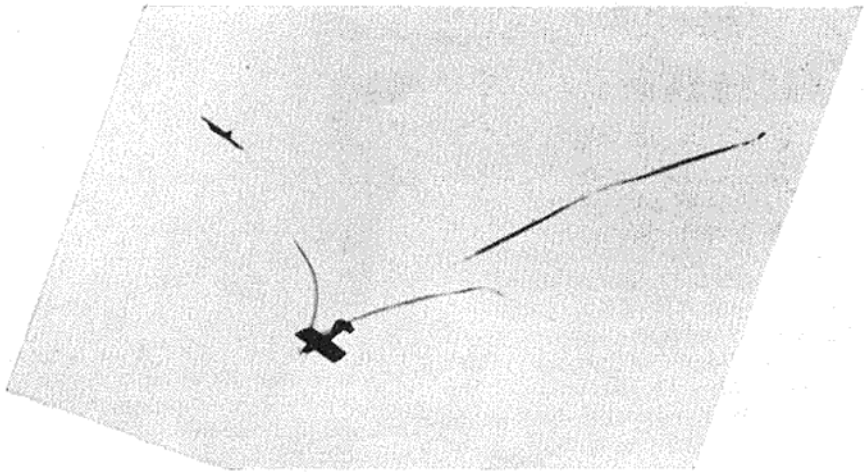
It was in the Channel—all of it—and it took us nearly an hour and a half to find the key number and get another key! Needless to say we were miles from home, and lost our lunch as a result.

In future—all zippers will be secured before any other aerobatic flights!

—G.A.



More about C/L



Our heading photo shows combat flying in progress. Diving model has just intercepted opponent's streamer, which was severed by prop a fraction of a second after this photo was taken.

The NEW M.A. BEGINNERS' COURSE PART XIX

YOUR first loops will probably look something like that shown in the sketch opposite—or worse. Keep practising them until you are confident and can open them up into something more like that shown in the next drawing. A perfect loop—i.e., one that will score top marks in a contest—should be circular and the recovery should be at the same height as the entry. You will, eventually, be able to make the model complete several consecutive loops, all following exactly the same path.

The next step is inverted flight. It should be attempted only after you have gained plenty of practice in loops and wingovers and have become accustomed to the feel of your model through these manoeuvres. The only difficult part about inverted flight is getting used to reversed controls. A good aerobatic model will fly just as well inverted as upright, but, as with full-size aircraft, the elevator control now gives the opposite response and "up" becomes, in effect, "down" and vice-versa.

By the time you are ready to try inverted flight it will be found that a more relaxed attitude has been adopted quite naturally. You will no longer be conscious of the necessity of keeping your arm absolutely stiff from the shoulder. Safe but more responsive control by means of forearm movement and even wrist movement is now possible and this will be valuable in inverted manoeuvres.

The inverted flight position is entered merely by doing a half loop and levelling out by giving "down" elevator at the top. Keep the model fairly high so that you have more altitude in which to recover if you involuntarily give the wrong control.

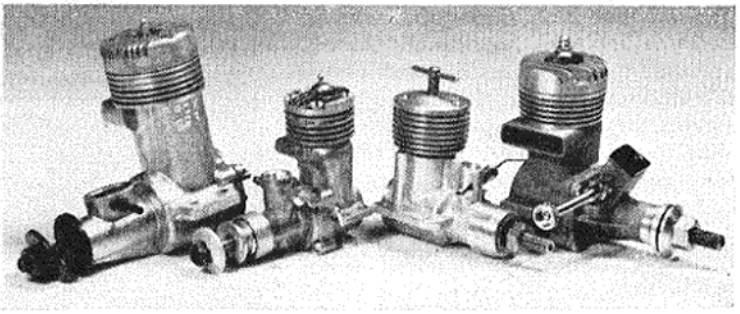
The model is, of course, now travelling in the opposite direction (i.e. clockwise) and this does serve as a reminder that "up is down" and "down is up," quite apart from the appearance of the model itself in profile. But you will have to concentrate hard at first, in order to avoid repeating the now-instinctive "natural" corrective movements when the model is losing height or, alternatively, climbing too much.

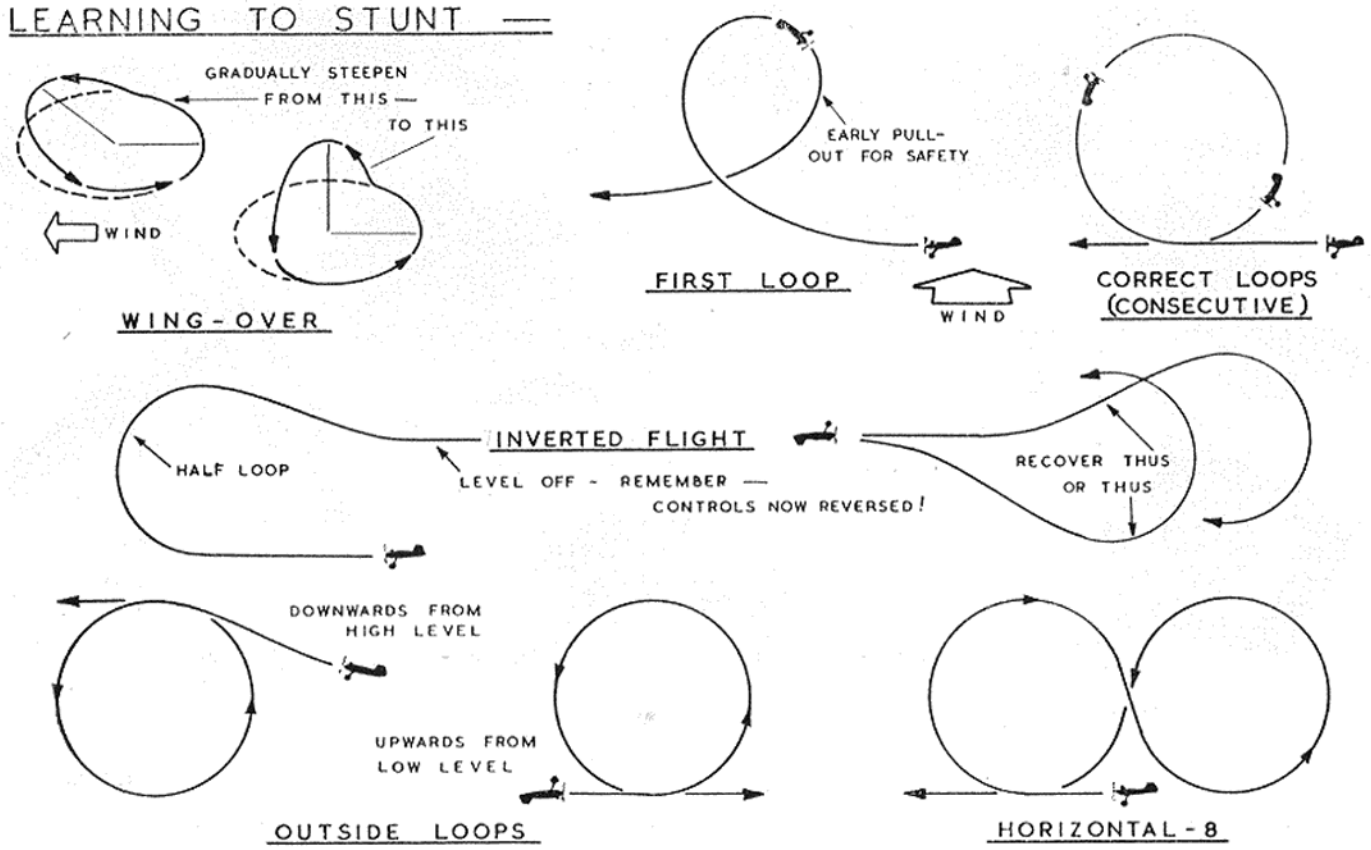
It is best to learn inverted flying on a day when there is no wind. It is then possible to safely make a quick recovery to level flight anywhere in the flight circle if you should get into difficulties. Recovery can be made by completing the remaining half of the inside loop with which you commenced the manoeuvre (making sure that you have sufficient altitude) or by giving full "down" elevator to bring the model up and over in an outside half-loop.

From here you can go on to the outside loop. This can be entered from a high level and commenced downwards, or alternatively, you can fly the model inverted and enter the outside loop upwards. Consecutive outside loops should cover the same path as inside loops.

The horizontal figure-of-eight is a combination of

A team race in progress. Upper model is just about to overtake lower one. Third model (not visible) is being refuelled while pilot kneels Right: a selection of engines for C/L competition: the American 5 c.c. Fox 29R racing engine, the Italian 2½ c.c. Super-Tigre G.20S racing engine, the British 2½ c.c. PAW-Spl. for team racing and stunt, and the Japanese 5 c.c. Enya 29-3, an all-round contest engine of excellent performance.





inside and outside loops, side by side, as shown in the sketch and is quite easy, once you have mastered the previous manoeuvres. Start off by practising your "eights" with the model well up and don't worry about their not being perfectly rounded at first. When you have a good pattern you can then bring it nearer to the ground and, after this, move it gradually higher until you have an "overhead eight."

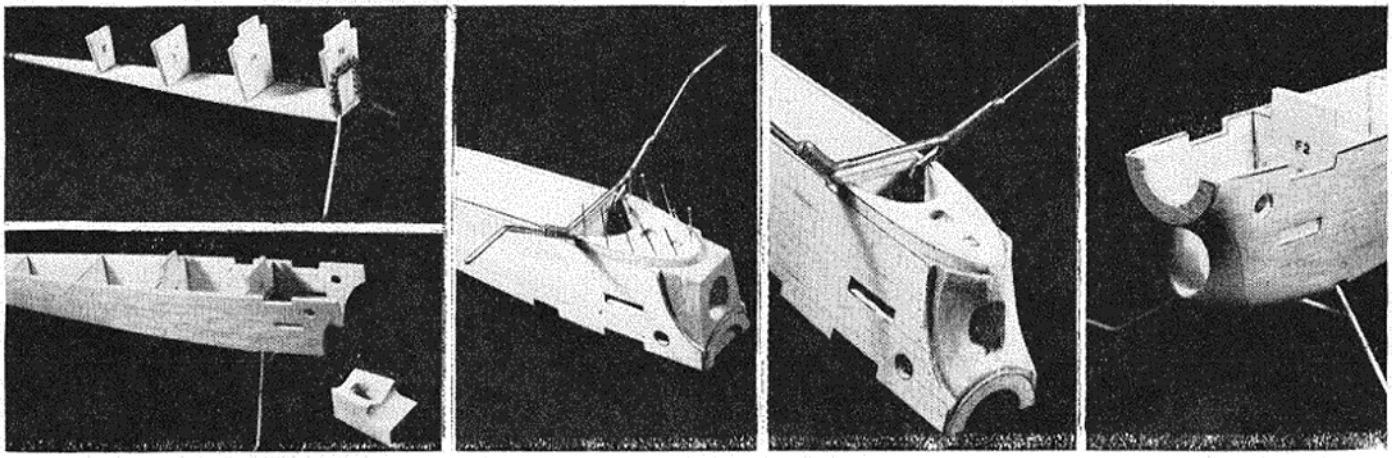
The vertical eight is rather more difficult since it consists of inside and outside loops one above the other. You must have a good model, capable of turning tightly, to perform the manoeuvre safely.

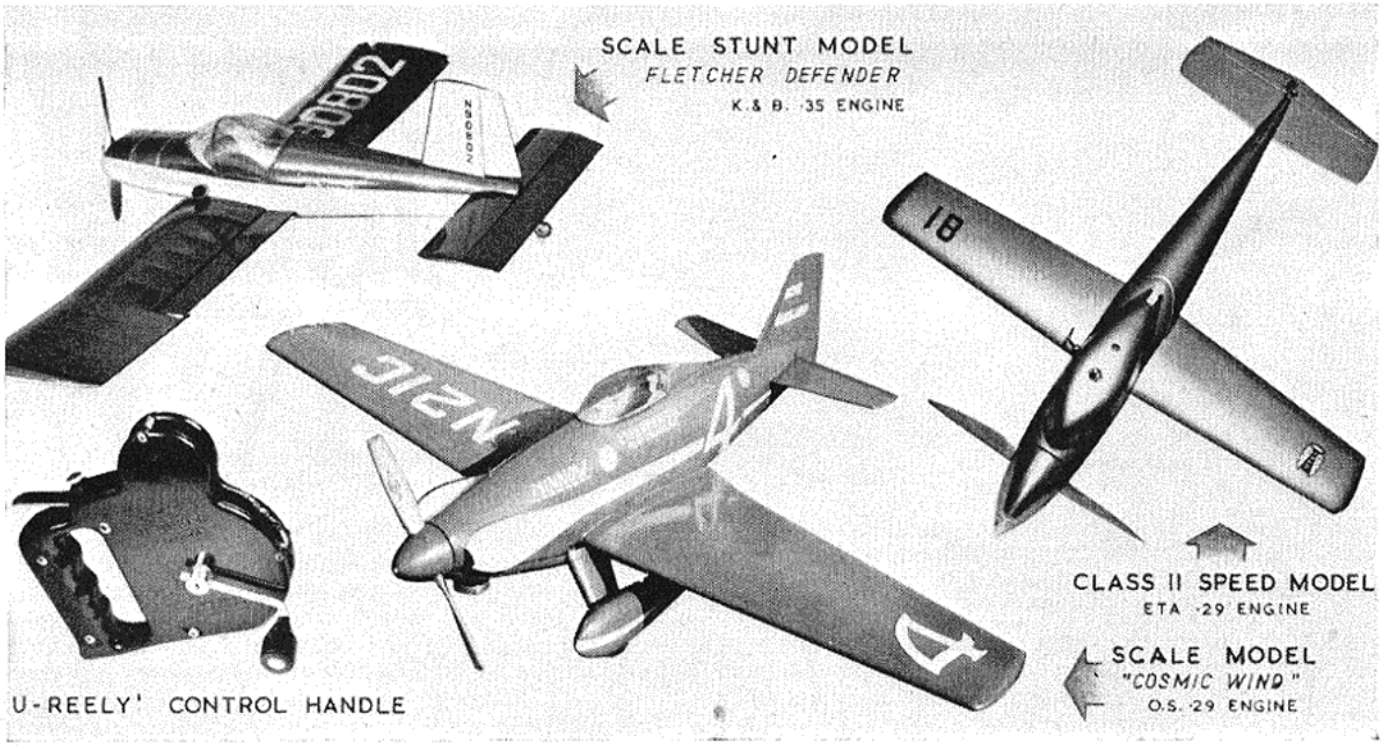
When contests for C/L models were first organised, they were divided into two types of event only. One was an aerobatic contest, the other a speed event and, from the early general purpose type C/L model, two widely differing types of model emerged. The stunt model is big with a very large wing area and may bear some resemblance to a full-size aircraft. The speed model, twice as fast for a given engine size, is tiny, beautifully streamlined but has little or nothing in common with the appearance of a full-size machine.

Speed models have one purpose only; to make a short flight of a given number of laps against a stop-watch. This can be very exciting for contestants, but for the spectators one speed run is very much like another and, some years ago, a group of speed enthusiasts in California got together to formulate rules for a new type of contest model: the team-racer.

Here, the object was for two, three or four models

Building the Mercury Mac team racer. 1—The fuselage floor with formers and undercarriage mounted. 2—The fuselage sides added, with noseblock partially shaped prior to fitting. 3—The noseblock in place and front former added. 4—The noseblock partially shaped. 5—Final shaping.





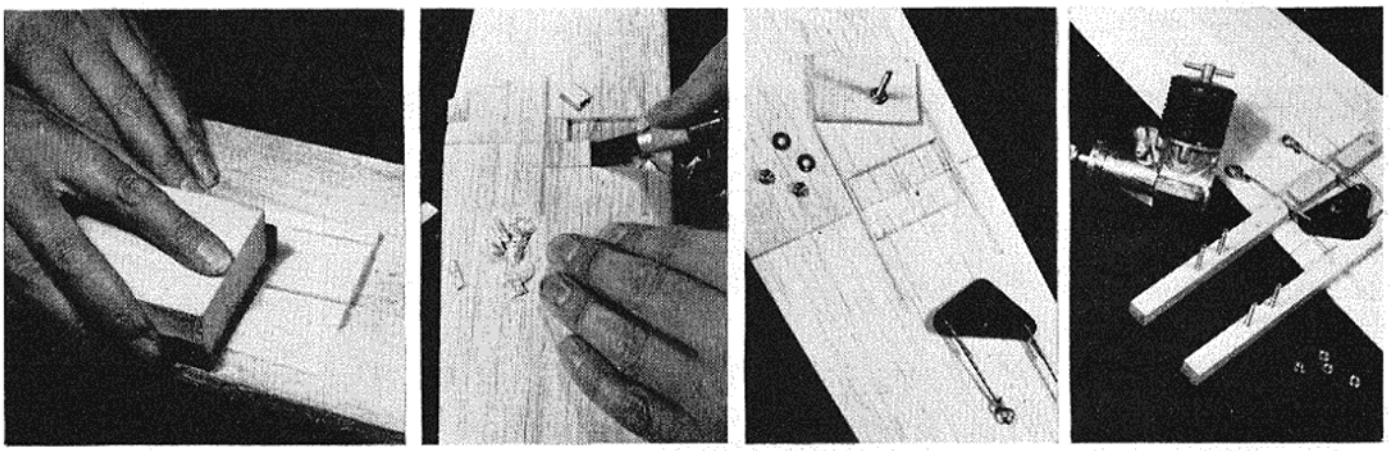
Various types of C/L models. Scale stunt model, designed by John Chinn, has 50-in. span and weighs 40-oz. In contrast, speed model, by the author, has 16-in. span weighs 17-oz. True-scale 36-in. model, centre was built by Shokichi Takagi of Nagoya Model Club, Japan. An elaboration of the usual C/L handle is the "U-Reely" with self-contained lines.

to be flown simultaneously (their pilots being grouped together in the centre of the circle) so that the contest would be a genuine race between the models. To add to the interest the races were over a distance of ten miles (140 laps using 60 ft. control-lines) and fuel-tank capacity was restricted to one fluid ounce, so that each model would have to make about three "pit-stops" to re-fuel. Each model was allowed two mechanics to re-fuel and re-start the model or to make any quick repairs or adjustments. In addition, the model itself was to be of semi-scale design, of a certain minimum wing-area and powered by an engine of under 0.30 cu. in. (4.9 c.c.).

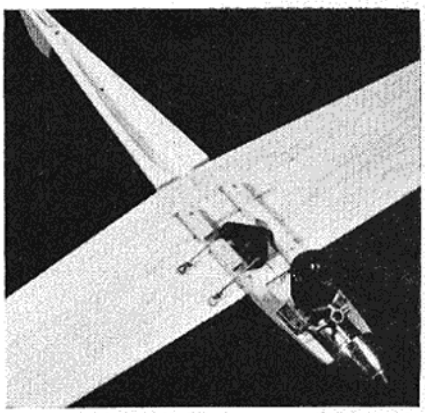
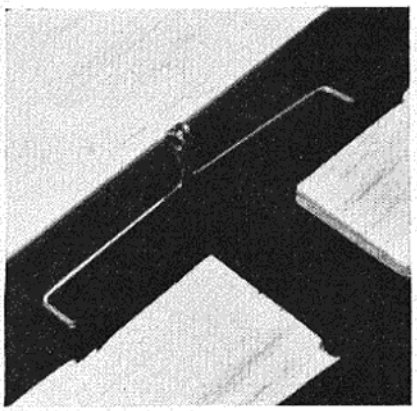
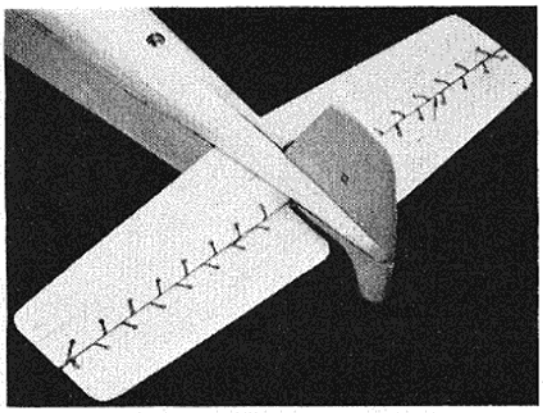
Team racing was an instant success and soon spread to Britain and other countries. Today, these team-racers are capable of 100 m.p.h. and a ten mile race has been completed in the remarkable time of 7 min. 9 sec., an average speed of nearly 84 m.p.h. including stops for re-fuelling. Team-racing is now far more popular than pure speed flying and there is also a class for smaller models with 2.5 c.c. (0.152 cu. in.) engines.

Team-racing demonstrated the practicability of flying more than one model in the same circuit and, from this highly successful offshoot of speed flying, stemmed the idea of "combat-flying," a two-in-the-circle event for aerobatic models.

In combat flying, each model trails a long paper streamer and the idea is to "attack" your opponent by cutting his streamer with your prop. There is a tremendous amount of fun in combat, but, not surprisingly, mid-air collisions and crashes are rather frequent and it is advisable to have a simple and robust (as well as fast and manoeuvrable) model for this sort of event.



6—Shaping the wing section by means of a sanding block and a piece of board. 7—Chiselling out the recess for the bellcrank mounting plate with an X-acto No. 18 knife. 8—The bellcrank and mounting plate assembly ready for fitting. 9—Engine bearers, pre-shaped, are dowelled and cemented to the bottom of the wing. (AM-25 engine shown).

10—Upper fuselage block is added to the wing and bearers. 11—The elevator horn is bent carefully to the shape shown. 12—Instead of tape hinges, the elevators are stitched with thread.

Some contestants now favour a " flying-wing " type model—i.e. one in which the fuselage is virtually non-existent, the engine being mounted at the front of a low-aspect ratio wing having an elevator attached direct on to the trailing-edge. This allows maximum strength to be built into the model for minimum weight and also gives a manoeuvrable model capable of tight turns.

One of the big advantages of C/L (as compared with F/F) is that true scale models of almost any type of aircraft can be successfully flown without the slightest alteration to wing and tail areas, sections or dihedral angles. Twin or multi-engined scale models, too, are far more practical as C/L models.

True scale C/L models are usually built purely for pleasure rather than contest work, although of course, there are *concours d'elegance* events for models of this type. However, with minor alterations, certain full size designs have served as a basis for some excellent aerobatic scale models. Preferred choice here is a single-engined mid-wing or low-wing aircraft having relatively large flying surfaces, such as the *Grumman Guardian* or *Fletcher Defender*.

Another type of contest open to scale models is the U.S. Navy Carrier event. This requires that the engine be fitted with a throttle control operated via the control system, or a third line, because the model is timed to make high-speed and low-speed runs and to land on a dummy aircraft-carrier deck using an arrester-hook.

Remember, when you are building your C/L model, especially if it is a stunter or combat model, that, one day you are pretty sure to pull out too late and make contact with terra firma somewhat abruptly. Whether you are then left with a heap of balsawood or a model that is only slightly damaged, depends not only on the structural design of the model, but on how well you have built it. Precementing of all the joints is of the utmost importance. A model that is poorly made with " dry " joints, can fall apart on impact even when the motor has stopped. Yet the same model, strongly and intelligently built, may withstand a power dive into soft ground with nothing more than a broken prop.

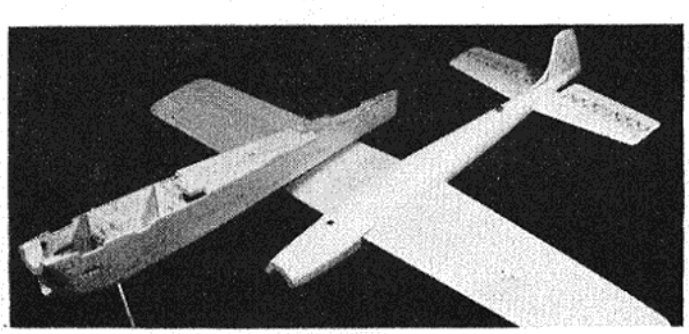
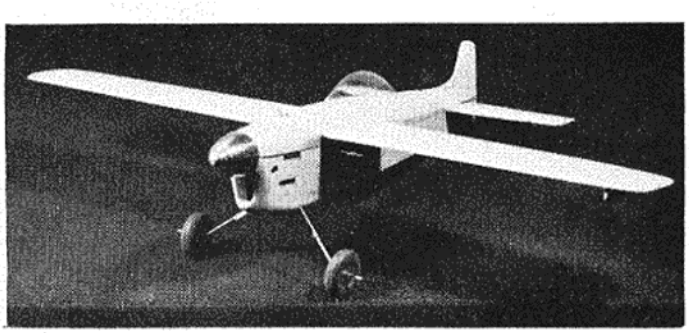
Don't forget when you are flying a stunt or combat model, that each loop twists the control lines together. When you are using steel lines it is possible to make up to a dozen loops without the lines binding together but do not forget to untwist them again after each flight.

Don't, in the excitement of the take-off, grasp your C/L handle the wrong way up ! Preferable here is a handle with a grip shaped for the fingers. Some handles, incidentally, such as the " U-Reely " illustrated, have built in line-reels that allow line length to be varied while the model is in flight.

Never forget that your model will remain under control only as long as the lines are taut. Be ready, always, to step back quickly if the lines go slack and, if the motor cuts in the middle of a manoeuvre, get ready to move rapidly. If the model is inverted, near the ground when the motor cuts don't attempt to half loop it into level flight: just let it glide around, holding off as long as possible to lose speed. If you are flying over long grass you will most likely be able to land intact.

For our photo-sequence we have chosen the Mercury *Mac* team racer. The *Mac* is for Class A team-racing—i.e. for engines up to 2½ c.c. and using a 15 c.c. capacity fuel tank. Fitted with the moderately priced but well-built AM-25 diesel of 2.35 c.c., the model is capable of 70-75 m.p.h. and is excellent training for anyone wishing to take up team racing. The model is of quite simple construction as can be seen from the photographs.

13—The Mac fuselage separates at the centre-line, the engine and control system being mounted in the upper section. 14—The completed model, ready for doping and finishing.

AVIATION NEWSPAGE

by J. W. R. Taylor

Rumours that the *Britannia* **CAN'T FLY THE ATLANTIC NON-STOP,** because its range has proved disappointing during flight trials, have been given a highly-satisfactory burial by the 5,100-mile non-stop flight of the *Britannia* 311 G-AOVA —prototype of the long-range 310 series—from London to Vancouver. Flying at its maximum all-up weight, with a 6½ ton payload, via the Polar Regions, it made the hop in 14 hr. 40 min. at an average speed of 350 m.p.h.

Latest contracts for two Series 310 *Britannias* for Compania Cubana de Aviacion and two Series 300 aircraft for Aeronaves de Mexico bring total orders to 70.

* * *

MORE GOOD NEWS is that the R.A.F.'s first squadron of Avro *Vulcan* delta-wing bombers—No. 83 from Waddington, Lincs. — has carried off the top award in Bomber Command's annual bombing competition. This is the Laurence Minot Trophy, which goes to the medium bomber squadron gaining highest marks for combined bombing and navigation.

In this year's competition, aircraft had to make five-hour cross-country flights from R.A.F. Marham in Norfolk, including simulated radar bombing attacks at heights varying from 40,000 to 50,000 ft. Serviceability, as well as operational efficiency, was superb; and no aircraft failed to complete its flight under active service conditions.

* * *

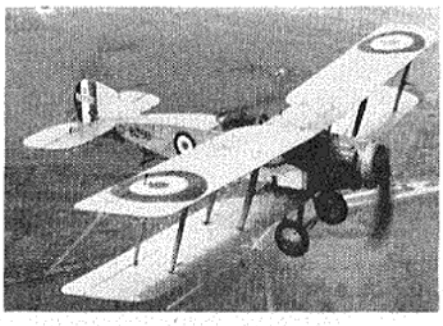
That **FLYING SAUCER SIGHTINGS** are no longer mere capitalist imperialist propaganda is now evident to thousands of good Muscovites who were startled in recent months by the appearance of a genuine saucer gliding noiselessly over their city. However, this one is not Martian in origin, but simply the *Diskoplan* research glider which is under test at Tushino. Span, or diameter, is 11 ft. 6 in. and wing area 108 sq. ft., which is said to give sufficient lift to carry a payload of 500 lb. The pilot sits under the "discus," which has a rudder and elevators above and astern. Exceptional manoeuvrability is claimed for the glider, which is intended to prove the possibilties of the design for powered aircraft.

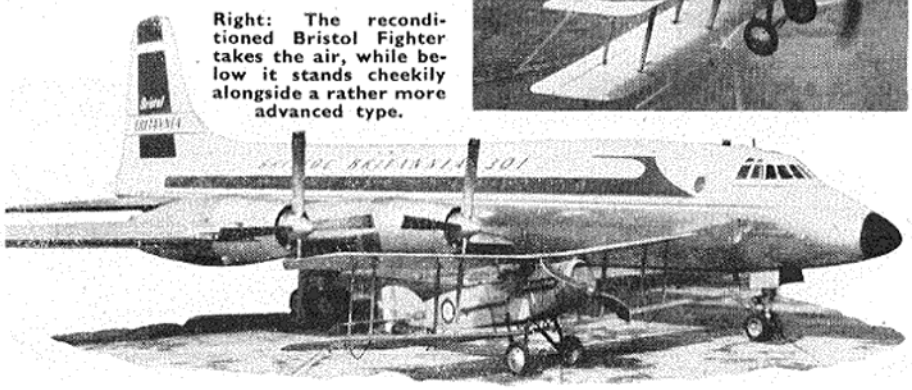
* * *

PERSONAL 'PLANE PIONEER William T. Piper celebrated the production of his 45,000th aircraft on August 17th with an open day on which all Piper owners were invited to drop in to his Lock Haven, Pennsylvania, plant for lunch and a look-see at his current products.

No other manufacturer in the world has built so many commercial-type aircraft, or done so much to make possible safe low-cost personal flying. Production is still centred largely on the traditional "Cub" type of simple single-engined high-wing monoplanes, like the four-seat *Tri-pacer*, two-seat PA-18 Super Cub and PA-18-A agricultural aircraft. But deliveries of the new all-metal four-seat low-wing *Comanche* are due to start soon and well over 1,000 twin-engined *Apaches* have been sold.

Pictured right, the 4/5-seat *Apache* cruises up to 1,200 miles at 170 m.p.h. on the power of two 150 h.p. Lycoming engines. Carrying a full range of radio and navigation aids, it is the ideal light executive type, able to unstick in 600 ft. and stalling with full load at only 52 m.p.h.





Right: The reconditioned Bristol Fighter takes the air, while below it stands cheekily alongside a rather more advanced type.

SOMETHING OLD, SOMETHING NEW are combined in the National NA-75 agricultural aircraft which is being produced in quantity by the National Aircraft Corp. of Burbank, California. It has the fuselage of an ex-military Stearman 75 (Boeing Kaydet), 4,664 of which were built in 1936-42, covered with metal panels and fitted with new fabric-covered metal wings of Gottingen 398 high-lift section and complete with end-plates.

The pilot's cockpit of the NA-75 is well-padded with rubber and all instruments have been moved to the trailing edge of the centre-section. A 31.7 cu. ft. hopper for dust or spray takes the place of the forward cockpit, with an aerofoil-type dust-spreader under the fuselage and spray-bars along the trailing edges of the lower wings. The result is a

Old fuselage, new wings, make up into the National NA-75 crop duster.

sturdy spray-plane with good performance; and operators can buy the wings, fuselage panels and dust-spray gear as kits to convert their own aircraft if they prefer.

* * *

A REALLY RARE BIRD nowadays is the Bristol *Beaufighter*, but the T.T.Mk.10 target tug (SR914) illustrated in our heading picture is far from being a museum piece. In fact, it is one of about half-a-dozen aircraft of this type which have been reconditioned and sent to the Middle East, where they are expected to remain in service at least until 1959.

* * *

EVEN OLDER OLD-TIMER that was airborne over the West Country recently for the benefit of photographers was the Bristol *Fighter* F.2B (D-8096). Restored by Bristol to all its former glory, this "Brisfit" is likely to be as popular at air displays as Shuttleworth's *Pup* and Avro 504. All we want to see now are an S.E.5 and Handley Page 0/400 to complete a first-class World War I air circus. Any offers?

* * *

Cessna have celebrated their **THIRTIETH BIRTHDAY** by rolling our their 30,000th aircraft, a single-engined four-seat *Model* 172 with Land-O-Matic tricycle undercarriage. One that they didn't build—at least in its present form—is the unique *Cessna* 170 N2512C (below) which belongs to the U.S.A.F.'s South Ruislip Flying Club and was photographed at Elstree.

Fitted with the 172's tricycle undercarriage, but without its extra fin and rudder area, it was owned originally by the Strategic Air Command H.Q. Flying Club at Offutt Air Force Base, Nebraska, and made the transatlantic hop non-stop—stowed inside a C-124 *Globemaster*.

Below left: The neat little Piper "Apache." Right: A unique Cessna 170.

FROM THE PAST . . . . . No. 16

Ford Tri-Motor

THIS FORD TRI-MOTOR, NX4542, is of particular interest now that International Geophysical Year research has taken so many aircraft to the Antarctic, because it was the first aeroplane ever to fly over the South Pole on November 29th, 1929. It was commanded by the late Rear-Admiral Richard Byrd, and was named *Floyd Bennett*, after the pilot who had flown Admiral Byrd on the first crossing of the North Pole three years earlier.

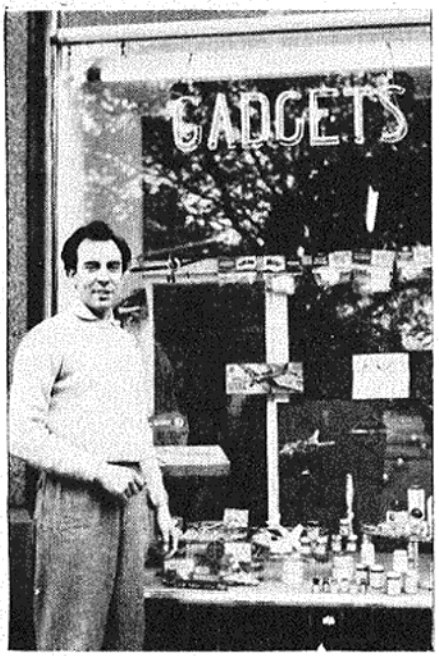
The story of the Ford's 18-hour South Pole flight is one of the epics of aviation history. Piloted by Bernt Balchen, it scraped through a pass in the mountains that ring the 9,000 ft. Antartic Plateau with only inches to spare under the skis with which it was fitted for its polar operations—and then only after the emergency rations had been dumped hastily overboard. It was powered by three 300 h.p. Wright Whirlwind J-6 engines; but tri-motors were available with a variety of other powerplants including the 300 h.p. Wasp Junior, 450 h.p. Wasp and 225 h.p. Packard Diesel.

A slightly modified version o the tri-motor is being put back in production by the Hayden Aircraft Corp. of Bellflower, California, more than 30 years after Bill Stout produced the original design.

Span, 74 ft. Length, 49 ft. 10 in. Height, 12 ft. 8 in. Wing area 785 sq. ft. Weight, empty, 6,500 lb. Weight, loaded, 10,130 lb. Max. speed, 134 m.p.h. Cruising speed 110 m.p.h. Landing speed 57 m.p.h. Normal range 570 miles.

OVER THE COUNTER

COUNTING up on our fingers, we were amazed to find that, in direct contrast to the situation 10 years ago, there are now very few model shops run by well-known contest fliers. Recently, however, there has been a famous newcomer to this select band, in Ray (Gadget) Gibbs, who needs no introduction to "M.A." readers. Ray has opened a 100 per cent. model shop



at 90, Aldersbrook Road, Wanstead Park, E.12, carrying a full range of goods. He is also offering an engine repair service that should satisfy the most discerning modellers. Prior to setting up by himself, Ray was a window dresser, which fact is reflected in the eye-catching way in which his goods are displayed—quite a refreshing change from the usual "muddle" shop!

* * *

LATEST addition to the Frog 1/72 scale plastics is the English Electric P.1, in silver-grey polystyrene. The prototype has very thin wings and thus the wings consist of only two panels instead of the usual four. The fuselage and tailplane have half shells, and extremely good fits can be obtained with these components. The undercarriage legs are quite sturdy and incorporate revolving wheels. Detail panels, etc., are formed in the mouldings, making a most realistic model of what is, an exceptionally fine aeroplane.

* * *

INGENIOUS is the new ready-to-fly rubber model by Sebel, utilising a vacuum-formed plastic fuselage, and integral fin. The size and performance of this model undoubtedly puts it in the "toy" category as regards sales appeal, where it should provide many youngsters—and fathers—with an idea of the possibilities of well-designed rubber-powered models. Noteworthy feature is the two-colour printing of the wings and tailplane—the ground colour being really "solid" and free from the speckle commonly associated with colour-printed balsa.

* * *

LATEST Lindberg plastic kit available in this country (manufactured under licence by Model Toys Ltd.) is the Boeing B-17G—a very large model comprising nearly 100 parts.

* * *

NEW range of 1/96 scale British plastic kits is being launched by Dorking Foundry Ltd., under the name Vulcan, and selling at 2s. 6d. each. First model is the *Spitfire* Mk. IX, to be followed by a whole range of World War II fighters and bombers.

* * *

DAVIES CHARLTON have added team racer tanks to their range of model engine accessories in 30 c.c. and 15 c.c. sizes. These are of standard rectangular design, in tinplate, with top vents.

* * *

EXPECT some really low-priced plastic scale kits from International Model Aircraft before long. Following the outstanding success of their 2s. 6d. Comet range—a production in limited numbers off American moulds, on loan—we cannot see their forsaking this market entirely.

Letters

Continued from page 291

The strange object is a portable hangar to cover the aircraft when landing in out of the way places. It is rolled into a tube and carried on top of the fuselage.
Barking. B. GRAY.

The gadget on the D. H. *Beaver* shown in Aviation Newspage is a tube for carrying a screen for film shows.
Walsall. D. C. NORBURY.

About that D.H. *Beaver*. Knowing how the Americans love cigars and the bigger the better, I've come to the conclusion that the pilot wanted special transport for a special King size or should we say Presidential size cigar for a leisure moment later on!!
Edinburgh, 3. E. V. GARRAD.

Radio Control Notes on *REEDS*

Continued from page 294

The efficiency of this unit, on test, was found to be lower than that of the three-reed unit, requiring appreciably more power to drive it.

Data:
Weight 2 oz.
Reed frequencies 262 c.p.s./271 c.p.s. 296 c.p.s./320 c.p.s./352 c.p.s./380 c.p.s.
Minimum signal level 40 milliwatts.
Response time < 0.5 sec.
Minimum starting voltage (all reeds) 20 volts R.M.S.

Circuit data: (see reed circuit diagram)
R1 6,800 ohms.
R2 47 ohms.
C1 5 mfd.

Bookshelf

WHEN it comes to reference books, the scale modeller is certainly well catered for—even more so now that **Aircraft of the Royal Air Force! 1918-57** by Owen Thetford has been published by Putnams (price 50s.). Over 520 glossy pages, size 5½ × 8½ in., cover every aircraft ever to have seen service with the R.A.F. in the period, plus certain other specialised machines that have borne R.A.F. roundels, such as the Schneider Cup Seaplanes. The notes on each type are certainly comprehensive and include many interesting and little known facts, together with numbers built, squadron allocations, etc. First class photographs ably supplement the text and include many not previously published. The three-view drawings, too, are generally of a high standard, but there are a few of somewhat doubtful outline. Ease of reference is assured by the adoption of alphabetical order by manufacturers, with the aircraft then in chronological order.

Despite this volume being essentially a work of reference, it is, oddly enough, very readable and will certainly please all readers who are old enough in the tooth to remember the days when the R.A.F. was exclusively a propeller-driven air force.

BEEP JEEP *Continued*

l.t., and three or four No. 8 batteries for the actuator.

The decision as to whether it is better to test with the radio in, and in theory at any rate have some control during the first flights, or whether it is better to shed all unnecessary weight for the first knock, I leave to you.

In case I have unnerved you, let me console you with the fact that *Beep Jeep* is a remarkable aircraft to trim. It seems to fly quite well with a number of different c.g. positions and tail angles, and it is quite happy with the minimum of side thrust, so do not get too worried about your test flight. I have stunted the model unmercifully, ending up with a power zoom straight up, to leave it hanging like a helicopter. Let the rudder neutralise and it will pull out losing only a few feet of height.

Modelling Made Easier

KEEPING a weather eye open for inexpensive tools of value to the modeller, we came across a couple of small screwdrivers, recently, that should be of interest.

First of these was the "Stead" electrician's screwdriver, which is fitted with a bright plastic insulated handle (available in various colours) and has a thin 2½-in. blade, ideal for reaching inaccessible engine mounting screws, or for making R/C adjustments. It is suitable for use with 6 to 8 B.A. screw heads and costs 5d. from Woolworth's.

The second item is also a Woolworth offering (this time aimed, obviously, at the luxury market since it costs no less than 1s. 4d. !) and is the very useful "Milmet" 3-in-1 screwdriver set. Any engine enthusiast who finds he needs several sizes of small screwdrivers to cope with the various screws used for cylinder-heads, crankcase backplates, etc., will rate this modestly priced and convenient tool a worthwhile buy.

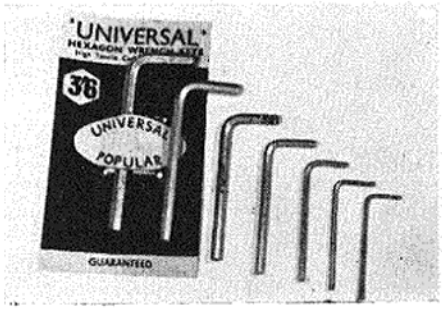
Constructed with machined brass barrels and hardened and tempered steel blades, the two smaller drivers are housed in the handle of the larger one. They can be used individually or slipped over the blade of the next larger size and used as extensions. The blade widths are 5/32 in., ⅛ in. and 1/16 in. The screwdriver is 4 in. long (making it suitable for the pocket) and 5¾ in. when fully extended.

Have you ever made a mistake when drilling engine mounting holes in wooden bearers, so that, when fitting the engine, you have found one hole an annoying 1/32 in. out of alignment? Every modeller has probably done this at least once. There usually follows a fruitless attempt to slot the hole by "drilling sideways."

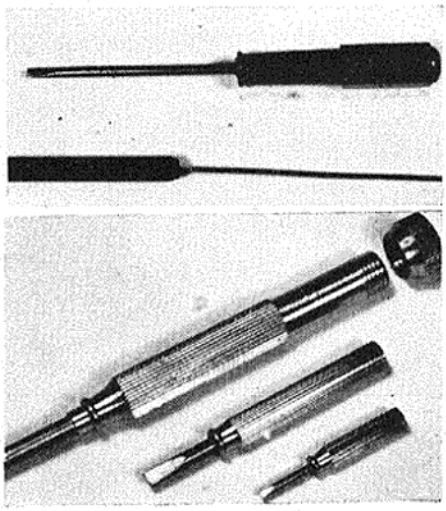
The best way of slotting a hole which is slightly off-centre is with a rat-tail or mouse-tail file. Even the smallest of the latter, however, is usually too large when dealing with bolt holes for 6 B.A. and smaller and an "Abrafile" will be found to be a very useful accessory here. Continuing our theme of ultra-cheap tools, the "Abrafile-Mousetail" shown cost a mere 4½d. (at the Model Engineer Exhibition two years ago and is still going strong) and consists of a short length of "Abrafile" saw-file blade fitted into a short wood dowel handle. "Abrafiles," in various sizes, are available from most tool dealers.

The use of Phillips head and Allen head screws in model engine construction has become more widespread in recent years. These may be used in place of normal slot-head screws for securing cylinder heads and crankcase components and Allen grubscrews are sometimes used to lock prop drive assemblies and rear venturi intakes on specialist engines. There is only one way to turn an Allen screw and that is with the correct size hexagon wrench key. *Don't* try using the tang of a three-square file.

Searching around, we found a moderately priced set of Allen keys in the "Universal" set available from branches of Messrs. Curry's. Priced at 3s. 6d., this set of seven keys covers all the sizes likely to be required by the modeller or model engineer, being also suitable for coping with electric motor pulleys, etc. The keys are of cadmium plated high-tensile steel.



Below: The Stead screwdriver, Abrafile and Milmet 3 in 1 screwdriver. Left: The Universal Allen keys.



John W. R. Taylor tells the inside story of

The Lockheed STARFIGHTER

ALTHOUGH the first prototype XF-104 *Starfighter* flew on February 7th, 1954, it was more than two years before the public were allowed to see it. When the big day came, newspapermen and other guests were shepherded into a vast hangar at Lockheed's Palmdale, California, factory, where they were confronted with a curtain labelled "Behind this drape is the hottest shape in the U.S. Air Force."

Today we know that "the hottest shape" was no understatement, because an F-104 has been dived at around 1,800 m.p.h., to the detriment of its engine compressor, and it is certainly not the easiest aircraft in the world to fly. It is, nevertheless, one of the greatest single advances in fighter design ever attempted.

Lockheed set themselves a fantastic task when they embarked on the F-104 programme. The aim was to produce not only a 50 per cent. jump in performance, but an airframe that would cost and weigh only half as much as other aircraft of its type—not by "stripping down" the structure but by simplifying it. The result had to be a fast-climbing link between conventional fighters and the guided missiles that would replace them one day—a "missile with a man in it" that could intercept a supersonic enemy at any height.

The fuselage was easy—just the slimmest needle-nosed cylinder that could be wrapped around a turbojet and a pressure-cabin for the pilot. The wings were to be the key to high performance and they ended up as tiny unswept "flippers," each spanning only 7½ ft. from fuselage to tip, downswept at 10 deg. to aid stability and with a thickness/chord ratio of only 4 per cent. The leading edge radius of 0.016 in. was reputedly so sharp that felt covers had to be fitted on the ground to protect maintenance crewmen. Tip tanks were fitted not merely for extra range but to increase the effective wing-span by end-plate effect.

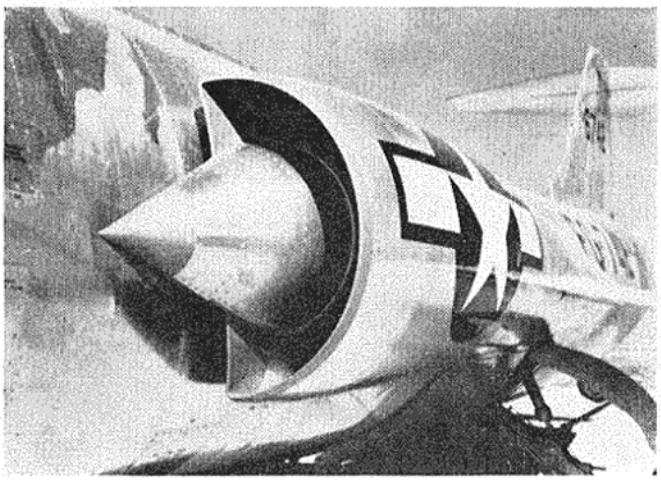
With such a wing, the undercarriage had to retract into the fuselage, and Lockheed achieved miracles in designing main legs that were hinged on oblique axes, so that the wheels lay flush within the fuselage skin when retracted.

Servicing was speeded by mounting most of the hydraulics inside the under-fuselage engine access door. Radio and radar installations were made up into quickly-removable packs that could be interchanged for different operational roles. A lightweight downward ejection seat was designed to avoid having to shoot the pilot over the T-tail in an emergency. And General Electric perfected for the F-104 the revolutionary "Vulcan" cannon, with a series of revolving barrels like the old Gatling gun, that would sling out 20 mm. shells at a rate of over 6,000 rounds per min.—because there might be time for only one quick pass at a supersonic target.

The prototypes flew with a Wright J65 (Armstrong Siddeley Sapphire) turbojet; but it was planned to fit General Electric's new J79 variable-stator turbojet into production *Starfighters*. To take full advantage of its unprecedented power of around 16,000 lb. thrust with reheat, a special double-shock air intake was developed, and this worked so well that it remained a closely-guarded secret long after the first pictures of the *Starfighter* were released to the Press.

Unfortunately, all has not gone smoothly during the development of the F-104. At least two prototypes and several production F-104A's have been lost, and the aircraft's entry into service has now been postponed for six months. Even worse, it does not appear on the latest U.S.A.F. procurement programme, although orders for the single-seat F.104A and two-seat F-104B dual-role tactical fighter-and-trainer will keep the production line going for about a year.

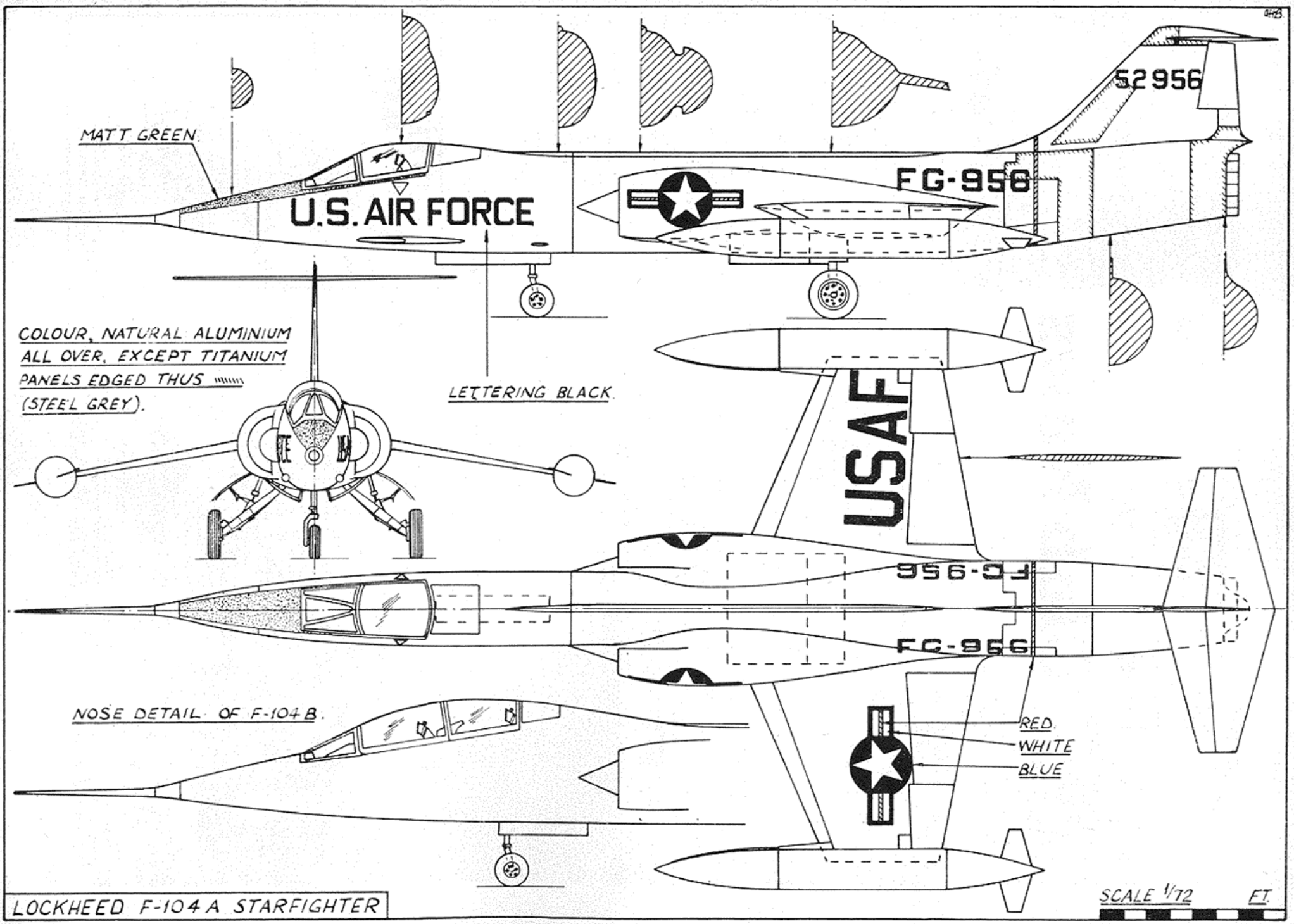
In that time, we may see some changes in the design. Already, a top-priority modification programme has fitted dual ignition to the J79 to overcome engine flame-out troubles. Now it is reported that two small trimmers, linked to the autopilot, may be added to the fuselage nose in an effort to overcome inherent fore-and-aft instability. Nobody will blame Lockheed because such problems have arisen. Like the setback to the *Comet*, they are the almost inevitable price of pioneering.



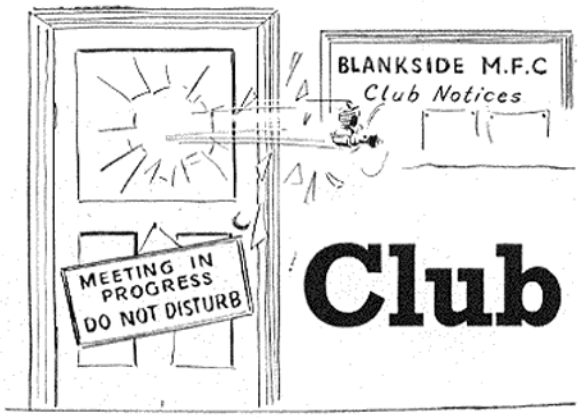
First official photograph of the F-104A's engine air intake. Each intake contains a variable by-pass flap which allows a proportion of the air entering through the ducts to flow around the engine. instead of through it. The result is the best possible matching of duct flow and engine requirements over the full range of flight speeds. By-passed air is routed not only to cool the engine but to blend with exhaust gases to increase thrust. Because of the compressor-ram air combination, the faster the aircraft flies, the more thrust the engine develops.

For the Record

Engine: *One General Electric J79-GE-3 turbojet. Weights*: *loaded*, 14,500 *lb.*, *max.*, 17,500 *lb. Armament*: *Six-barrel T-171* 20 *mm. cannon. Dimensions*: *span*, 21 *ft.* 11 *in.*; *length*, 54 *ft.* 9 *in.*; *height*, 13 *ft.* 6 *in. Max. speed*: *Mach* 2.5 *approx. Service ceiling*, 65,000-70,000 *ft.*



LOCKHEED F-104A STARFIGHTER



Club News

HYDE M.A.C.

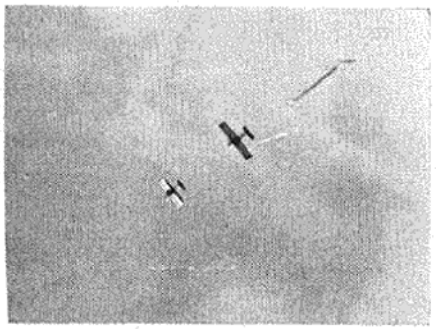
The 6th Annual Rally was swamped by high cold winds and rain. We lost our temporary flying field on the Saturday and had to find another in emergency. So for those who entered and had a bad day of it may enter free our Rally on September 15th or 22nd, 1957, and will also be given a voucher for free refreshments. This Rally will be on our "old" original field, to make up for the last shambles. Only combat went through the vile weather to a finals; the winners, N. Wilkinson, Wharfedale; D. Holmes, Littleover.

All entrants of the Rally on July 7th please send entries if desired for the above coming event; they will be allowed to enter any event free to have another go.

NOVOCASTRIA M.A.S.

Glorious weather seldom seen in the N.E. heralded the first James Rush Challenge Trophy Gala organised by us on the Newcastle upon Tyne Town Moor.

The trophy was for the Gala Champion, and was presented by S/Ldr. James Rush (King's Cup winner and president of the Novocastria Society) to Arthur Farrar of Wakefield M.F.C.



Quite the best action shot we have seen for a long time, is this one of two combat models in the middle of a joust at the Novocastria Rally. It was sent in by T. Hair who also took the lower photo, of a group of W.J.A.C. Cadets admiring a C/L Catalina at the same meeting.

and Huddersfield Flying Tigers, who also won Combat at the 1956 Nationals.

Fifty entries took part in the five events for which individual prizes were awarded, and the results are as follows:

Power Duration: 1. R. B. Gray, Wakefield. *Rubber Duration*: 1. B. Freeman, Novocastria. *Gliders*: 1. K. Harrison, Darlington. *Combat event*: 1. L. J. Holloway, Darlington. *Concours d'elegance*: 1. J. J. Miller, Novocastria.

Several hundred people turned out to watch this event, the biggest of its kind ever held in the North East.

ANGUS & DISTRICT AE. LEAGUE

The League held an A/2 and a Scale (F/F) competition at H.M.S. *Condor* recently. Members turned out in force for the A/2, but league chairman Whyte romped away with the first place.

Dundee is a club which has been getting very keen on scale F/F models and took the first three places in the league's annual event for that class. Marks are given for construction and finish while three qualifying flights of 30 sec. minimum have to be made to assess stability and realism for which marks are also awarded. Winner was W. N. Guild with a D.H. *Beaver*.

Using Montrose M.A.C. clubroom as a base league members went over to the aerodrome during the hours free from mist and rain and managed to scramble through the rounds of the sailplane marathon, namely, two separate events for A/2 and open glider. When we came back from the competition we found Mr. "Daffy" Dilly (late of the Croydon club and now stationed near here) busily building a power job, so, as anyone who knows Dilly would understand, a jolly good time was had.

Results: A/2: 1. K. B. Whyte, Montrose, 409s. Open Glider: 1. A. Frazer, Bucksburn, 393s. Team results to date: 1. Montrose, 8,023; 2. Bucksburn, 6,029; 3. Arbroath, 3.423; 4. Kirriemuir, 3.334; 5. Dundee, 1,505.

WIGAN M.A.C.

We attended the wet Nats. and the only bright spot was Dave Morgan flying his 5 c.c. speed job to a 98.9 second place grandly supported by his hand launching team mate, Dave Yates.

The club also attended the usual annual and well organised *Stockport Express* Woodford Rally. In blazing sunshine the club excelled themselves by having three members in the prizes. Junior Frank Anderton got a well-merited second place in power. The club secretary, Sam Wood, at last managed to find time to fly in a comp. and scraped into third place with his glider, and a prospective new member to the club from Urmston M.A.C. was Junior Hosker, who was junior champ.

The A/2 trials saw our two members dogged by bad luck. J. Aspinal spun his glider in off the line after getting 3 × 3 and being in the select six to have same. With only four min. left of the fourth round he rushed his mended model in for his fourth round flight but was scratched. His fifth round flight only saw him clock 1.47. T. Rhead put his model away in disgust after a disappointing second and third round flight

SOUTHERN AREA

The Radio events at the Spring Rally were run by the Amesbury Club (Flying Druids). Nine entries did not compete owing to the strong wind. Two models crashed, George Honnest Redlich hitting the ground and Eddie Johnson had the misfortune to hit a car which did not stop. Vic Breeze won the multi reed with Ted Hemsley 2nd. F. Johnson was 1st in the single reed.

A good crowd of modellers from the area went to the Nationals this year and were delighted to see P. Giggle of Southampton Club win the Thurston Cup after a fly-off.

The Area's Summer Rally will take place on Beaulieu Aerodrome near Southampton on September 29th. Rally events are for Open Glider, Power and Rubber, and Radio. These competitions are open to all clubs in or outside S. Area.

The S.M.A.E. team race events for S. Area ½A. A. and B. will be flown for on this day.

WALLASEY M.A.C.

Several members attended the Nationals travelling down by road. No successes were gained, perhaps due to an unfortunate breakdown 100 miles from Cambridge which resulted in a very late night.

The following week the club, again in force, went to Woodford but this meeting was also completely devoid of success for our members. At Clywd our luck began to return, J. Morris placing 1st in Tailless.

The next week brought forth the trials for which four of our members qualified. John Hannay flew extremely well to place 1st with five maximums. One of the best flights of the day was by S. Hinds whose model was down to 20 ft. after 1 min. and then proceeded to complete a flight of 3 min. 20 sec. from this height.

The club at the moment is rather short of keen members. Anyone interested please contact: G. M. HUTTON, 7, Sandringham Drive, New Brighton, Cheshire.

WANSTEAD M.A.C.

A section of the members have recently formed a combat team within the club, called "The Oddsox" to concentrate on combat flying. We are getting in plenty of practice and got off to a good start with Mick Thompson and Mike Reeves placing 1st and 2nd at the Enfield Rally.

We are organising a stunt and combat rally to take place on Wanstead Flats. The date of this event will be announced as soon as it is decided upon.

BRENTWOOD M.A.C.

During the past two months members have enjoyed outings to the area meeting at Martlesham, Nationals and Northern Heights Gala. We have also given a C/L display and taken part in the local handicraft exhibition.

Geoff King has undertaken to make a film strip of club activities during the season and this should make an interesting evening during the winter session.

Don Fox continues to show the way with his indoor models and is clocking creditable times.

After a period of increasing membership we

CONTEST CALENDAR

Aug.	25th	South Midland Area Rally, Cranfield.
Sept.	1st.	Huddersfield Rally, F/F and Combat.
,,		West Hants Rally, Beaulieu Aerodrome, near Southampton, F/F, T/R, ½A, "A" and "B" Stunt and Combat, R/C, Glider and Power.
,,	8th	Croydon Gala, Chobham Common, F/F.
,,	15th	HALFAX TROPHY, U/R Power. *MODEL ENGINEER CUP. Team Glider. Area.
,,	22nd	All Britain Rally, Radlett, Herts.
,,	29th	TEAM RACING. "½A," "A" and "B" Classes. Area.
,,		South Coast Gala Rally, Ashdown Forest, F/F all classes.
Oct.	13th	K.M.A.A. CUP. U/R Glider. *FARROW SHIELD. Team Rubber. Area.
,,	27th	HAMLEY TROPHY, U/R Power. FROG JUNIOR CUP. U/R Rubber/Glider. D/C.

*Plugge Cup events.

have steadied down and are very fortunate in that every member is active despite the fact that competition flying is not popular.

SOUTH ESSEX AEROMODELLERS

The club is enjoying its first season flying with the East Anglian Area. Most members have quite a journey to area meetings but after having flown at Chobham it's a joy to use first rate aerodromes like R.A.F. Debden.

In the Area A/2 eliminations Geoff Lefever and Bob Amor placed 1st and 3rd and Bill Pullen also qualified for the Trials meeting. The club was pleased with three qualifiers out of only four entries. Bob and Bill did very well at the Trials meeting but did not quite make team placings.

Interest will centre on the new formula Wakefields for next season and the club hopes to gain more contest minded members.

SOUTH EASTERN AREA

We wish to bring to the attention of all contest fliers that September 29th is the date fixed for the Area Rally, The South Coast Gala, to be held at Ashdown Forest, Sussex. The meeting is open to all comers, and this year is not restricted to S.E. Area members only. Comps will be Rubber, Power and Glider. Full details will be gladly supplied on receipt of a S.A.E. to N. F. COULING, 28, Milton Road, Dunton Green, Sevenoaks, Kent. Don't be put off by the name Ashdown Forest; trees are very few and far between. Come along and enjoy a day's flying away from the crowds !

CHEADLE M.A.S.

At Woodford Bob Lawther, one of our very promising young Power enthusiasts, took top junior place. A C/L rally is scheduled for September 8th, Combat being the main feature.

WEST BROMWICH M.A.C.

For the first time we visited the Northern Heights Gala this year. The weather was at its best for us except for the small whirlwind which crept up in the middle of the afternoon, nevertheless, the Black Ghost combat team really excelled themselves with "Chopper" Grimmett coming first and so bringing the Keil Trophy to the Midlands.

We may add that in our humble opinion, the way the Combat was run made it easily the best comp. we have attended.

Hard luck for Mike Kendrick who was only to be knocked out after a very hectic semi-finals with "Chopper" Grimmett.

Two clubs have been sharing our coach: Wolves M.A.C. and Halesowen Y.M.A.C. How's that for peaceful co-existence ? We travelled this way to the Midland Area Rally, which was, unfortunately, smitten with very bad weather, and after a very noisy and argumentative semi-finals, "Chopper" Grimmett and M. Bailey from Burton-on-Trent were eventually placed at equal first in Combat.

ST. ALBANS M.A.C.

For the first time in its history, the All-Britain Rally will be presenting a Wakefield Contest. It will be to the new rules, that is, hand launch and no more than 50 grammes of rubber.

There will still be the usual unrestricted rubber contest, of course, and the other attractions, as in former years, but note the following points: Combat will be pre-entry, as will Team Racing, and Clipper Cargo will permit engines up to 1.5 c.c., allowing 1.5 c.c. PAA-Load models to be used Combat to S.M.A.E. rules.

Concours—new class for Unorthodox models with qualifying flight of only 20 sec. (other classes 30 sec.). Prizes for Unorthodox will be £3 3s. 1st, £2 2s. 2nd.

ENFIELD & D.M.A.C.

Our C/L Rally, was once again very successful with the exception of the wind. The event certainly seems to be popular now, with a record entry of 90, some from as far as Glasgow and Derby.

Unfortunately the vast combat entry meant three in a circle flying, even when using two circles some of the time, but this did not appear to cause too much trouble.

The wind did make things very difficult, and all the results are notable for their slowness or lack of points, except speed.

Here Johnny Hall certainly "pulled all the stops out" on his 49, and clocked 150.0 m.p.h., a new British record, although the motor was remarkably quiet, and deceptive, the speed was confirmed by several sources. It is believed that this is the first time that 150 has been done in this country with a motor less than a "60."

Results: *Class A*: 1. Edmonds, High Wycombe, 8 : 50.1; 2. Wenz, Sidcup, 9 : 35.0; 3. Nayler, West Hants. *Class B*: 1. McNess, West Essex, 10 : 36.0; 2. Houlding, Sidcup, 12 : 9.9. *Combat*: 1. Thompson, Wanstead, 0 points; 2. Reeves, Wanstead,—15 points. *Speed*: 1. Hall, Chingford, "49," 150.0 m.p.h., 103.5 per cent.; 2. Yeldham, Belfaire, "60," 136.3 m.p.h., 90.9 per cent.

NORTH WESTERN AREA

At the A/2 trials on June 30th at Hemswell John Hannay of the Wallasey M.A.C. recorded maximum score, and by the "toss of a coin" won the trophy. This method, it seems, was resorted to rather than risk losing a valuable contest model which will be needed at the World championships in August. The committee of the North Western Area record their congratulations to John for a fine performance.

Everybody agreed that the 1957 trials was the best ever for organisation and smooth running, and this area has proposed a vote of thanks to Sam Measom and Co. for the very hard work which they carried out.

CAMBRIDGE M.A.C.

So many requests are being received this season from garden party organisers for C/L demonstrations that members are finding all their Saturday afternoons fully "booked."

News of the club's willingness to show the public what C/L flying is all about seems to have spread far afield as several requests for shows have come from villages many miles from the city.

AEROBODS OF NOTE

GEORGE UPSON

Well-known contest flier in F/F Power, George was a member of the British Teams at the 1953 and 1956 World Champs.

No charge is made for the demonstrations although the occasional "gift" to the club's finances is not frowned upon. Said one club member: "The shows give us a certain amount of publicity—and we usually get a good free tea !"

The more noise the club makes at garden parties the better the public appear to like it.

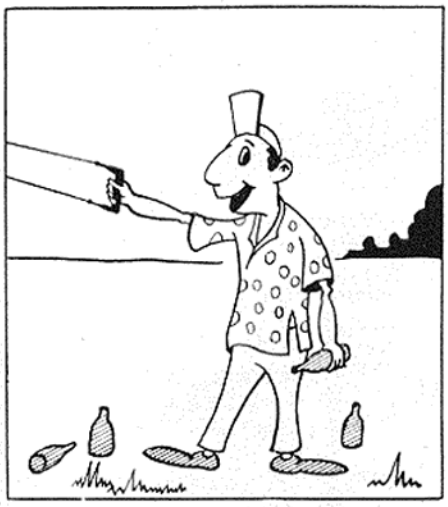
At their first show the club put on something really special for the locals—a five-in-the-circle combat event. One model finished the course and it is rumoured in the city that the other four combatants are still trying to untangle their lines !

BRISTOL & WEST M.A.C.

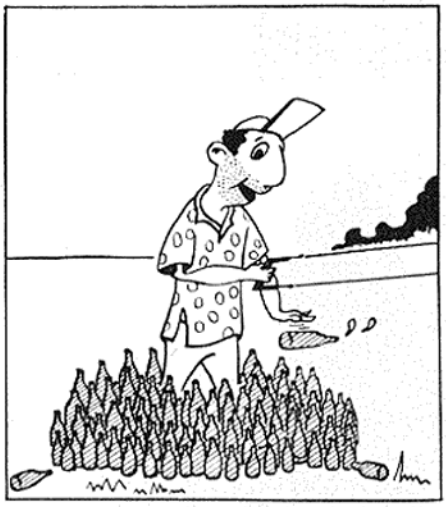
Club members have placed high in nearly all of the rallies entered so far this season. The Area Rally at Swindon was well supported. K. Horry won Open Rubber with R. Farr 1st in Chuck Glider whilst J. Symes was 2nd in A/2 and 3rd place in Power was taken by J. Berryman.

K. Horry journeyed north and won Open Rubber at the Stockport Express Rally.

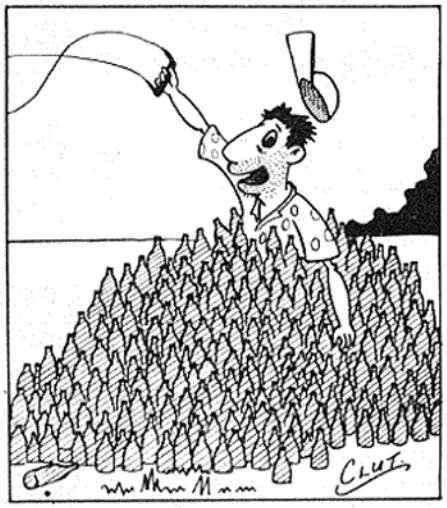
The second Area Rally at Keevil was poorly supported by the majority of clubs but despite



Endurance records . . .



— would be easy . . .



— if they didn't use so much fuel !

wind and rain we had quite a successful day out. K. Horry carried off yet another Rubber "pot" and P. Fuller took the Glider. J. Russell put in a last minute flight in Power and came 2nd but J. Berryman gave a very enjoyable display of F/F stunt flying.

To continue our run of good fortune permission has been given for the club to use R.A.F. Colerne for weekend flying.

STRATFORD-ON-AVON M.A.C.

Although formed last November, the club activities have been restricted up till now and we recently lost one of the main "sparks" of the club, Mick Bennett, who has moved to Shrewsbury, but we are very lucky in having permission to use Wellesbourne Aerodrome (only four miles from home) as our local flying field.

We are staging a publicity campaign and an exhibition in conjunction with the film "Spirit of St. Louis." which we hope will be successful.

Membership stands at just over 30 of which only a quarter are enthusiastic regular flyers. Now that the club has sprung into life again we hope to see the membership increase.

A cup for combat has been presented to the club by the (now disbanded) "Aerobats" combat team.

We still need more keen flyers, and unattached aeromodellers in the district should contact the Hon. Secretary, S. RICHARDSON, 61, Kendall Avenue, Stratford-on-Avon.

THORNABY PATHFINDERS M.F.C.

Still pressing on regardless of the British climate, the latest display should go down in the annals of model aeronautics, not so much for its flying capabilities (the show was well up to our normal standards) but more so, for the actual site of the exhibition:—at a welfare sports day of a well-known northern brewery ! !—Hic ! The combat had to be seen to be believed—needless to say it went down well with the spectators and our club members.

WESTERN AREA

The last date in our contest calendar is a C/L rally, which will be held at Bath City Football Ground, on September 29th. Contests will be Combat, Stunt, Team Race "A," and a Concours section. There will also be display flying, as an attraction for the public. A similar effort last year drew three to four thousand spectators, and we hope to increase that figure this time.

The contests will be open, and we invite everyone with interesting or spectacular models (e.g., scale multis) to come along and fly them.

Anyone requiring forther information can get it from the Comp. Secretary, B. HOPKINS, 25, Lawrence Hill, Bristol, 5.

NORTH LINCS M.A.C.

Every fine weekend we are on "location," shooting a 16 mm. film of the club outdoor activities which we hope to have ready for screening at the annual dinner in December.

John Nixon brought home the Henry J. Nicholls R/C Trophy for the second year in succession using the same model *Ab Initio*. John admits to the model being seven years old, and it certainly looks it. Current trend in the club is toward R/C and about 50 per cent. of the senior members are indulging in this branch of the hobby at the moment.

Membership continues to grow and should reach a century very soon, which is not bad considering that it is only four years since four stalwarts—still with the club—decided to form a club and call it the North Lincs M.A.S.

WEST OF SCOTLAND AREA

The Scottish contingent's visit to the Nationals this year was not blessed by success; one van with 14 class "A" team racers on board broke down and reached Waterbeach in time to hear the team race winner announcement. Even the weather was to the best Scottish standard but in the circumstances all enjoyed themselves. The Area's Gala Day was very poorly attended and winners were: Glider: Robson of Edinburgh; Rubber: Owston of G.M.A.C.; Power: Bathgate of Edinburgh.

A slightly larger attendance graced the Scottish Nationals at Abbotsinch . J. Ferguson of G.S.A. won the Scale trophy with a beautifully detailed model of the new E.P.9.

W. Meechan won the "Leask" glider trophy and D. Bathgate the "Edinburgh Cup" for power.

The Scottish U.K. team is younger this year than in the past and it will be interesting to see how it stands up to the opposition.

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CHANGE OF SECRETARY

BRIGHTON D.M.A.C. J. R. Watts, 11a, Lyndhurst Road, Hove, Sussex.

Top: No, this is not a scene at a club event, but the main control area of the Scottish Gala at the height of the contests.

Centre: Radio Winner R. Donahoe of Kersal warms up for his winning flight.

Lower: A not uncommon sight in a team race circle as helpers disentangle Larriemore and Jackson from the lines of Sleight.

SCOTTISH GALA

IT should be a matter of regret that the first Scottish Gala held at West Freugh Aerodrome, Stranraer, on July 14th, received such poor support from its countrymen, a mere 72 entries, of whom only 40 flew, did not give much encouragement to the organisers, nor will it help when next year's programme is being formulated.

No doubt there will be criticism of the venue: it must be admitted it was out of the way, but if some Sassenachs could travel 400 miles to collect prize money, surely a few more of the Scottish lads could have done the same ? Amenities were good, accommodation comfortable, and cheap meals were available; the organisers had done a good job there. In the event, a strong, but steady wind made F/F difficult, and competitors had to make judicious choice between a possible maximum and the depths of the bombing range, or even the sea ! The R/C types had their troubles too, it being quite difficult even to get their jobs off the ground; only the Team racers seemed to manage the conditions with any success.

For the future, two facts emerge, if this Scottish event is to become a regular part of the calendar, much greater support from the Scots is necessary, and if possible, a more central venue should be found.

RESULTS

U/R GLIDER (14 entries).

1. J. O'Donnell	Whitefield		4.37
2. G. R. Sleight	Prestwick		4.16
3. E. Black	Glasgow		2.28J
4. V. Jays	Surbiton		2.13
5. D. S. Posner	Surbiton		1.18
6. W. Meechan	Glasgow		0.53

U/R POWER (18 entries).

1. D. S. Posner	Surbiton	7.02
2. V. Jays	Surbiton	6.02
3. D. W. Jackson	Ashton	4.10
4. D. Bathgate	Edinburgh	3.18
5. F. Wooldridge	Surbiton	0.31

U/R RUBBER—CATON TROPHY—(4 entries).

1. J. Finalyson	Glasgow	4.57
2. J. O'Donnell	Whitefield	3.22

TAPLIN TROPHY—RADIO CONTROL—(9 entries).

1. R. Donahoe	Kersal	75 points.
2. R. D. Fraser	Kirkcaldy	62.5 ,,
3. V. G. Breeze	A.R.C.C.	30 ,,
4. H. Joyce	Kersal	—

CLASS A TEAM RACE (15 entries).

1. R. Cunningham	Prestwick	
2. J. Muir	Prestwick	

CLASS B TEAM RACE—(4 entries).

1. R. Irvine	Perth	

CLASS II SPEED.

1. R. Irvine	Perth	101.8 m.p.h.

CLASS III SPEED.

1. R. Irvine	Perth	130 m.p.h.

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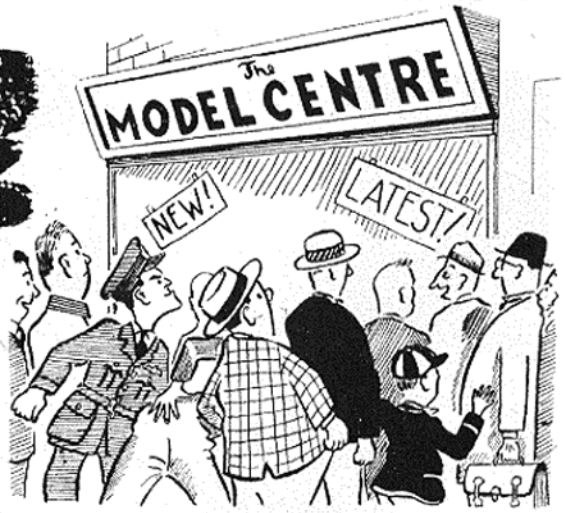

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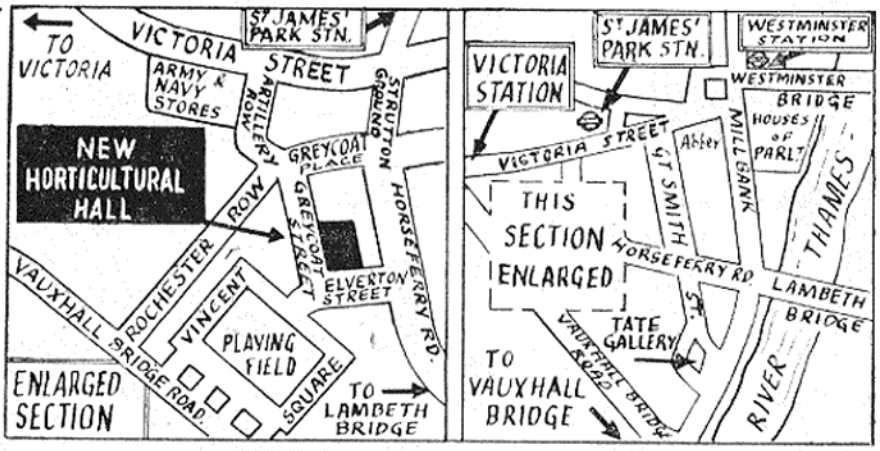

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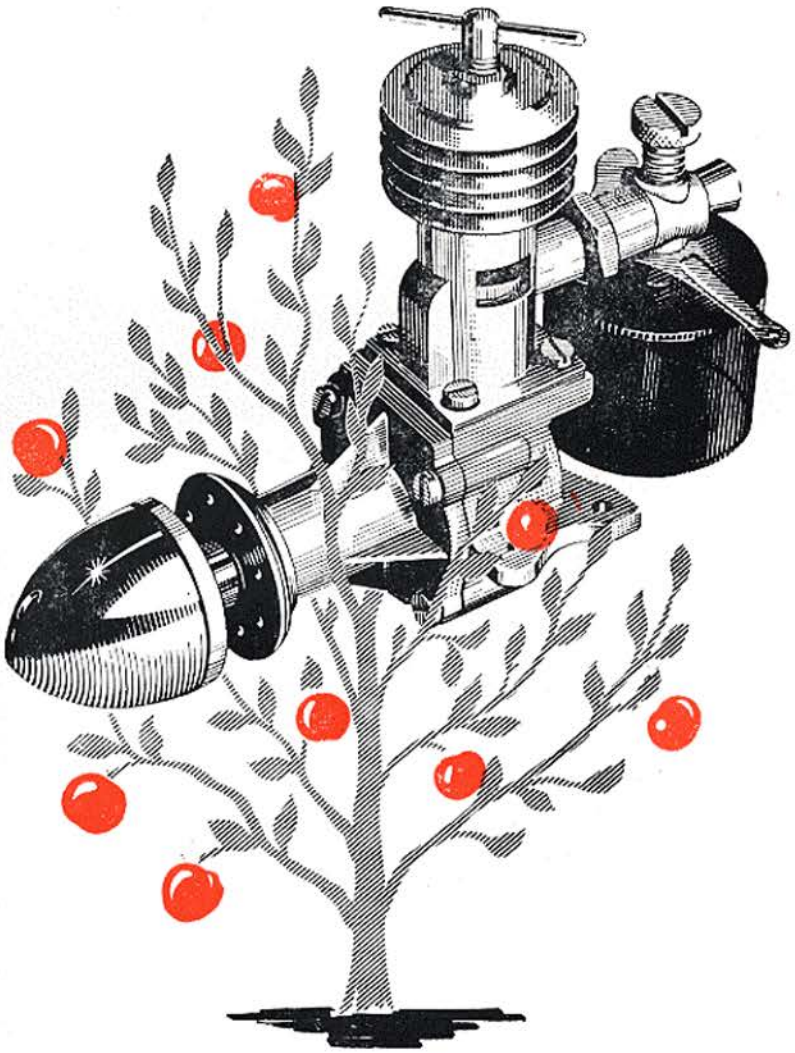

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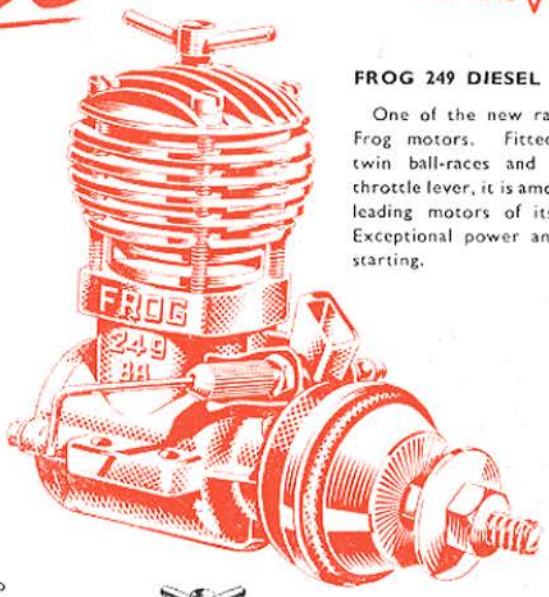

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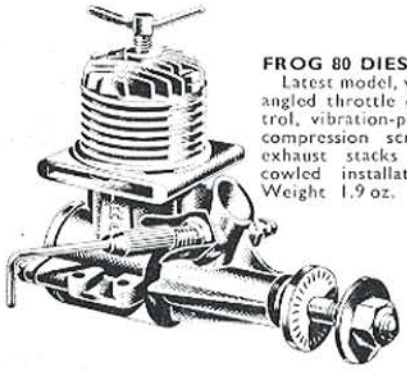

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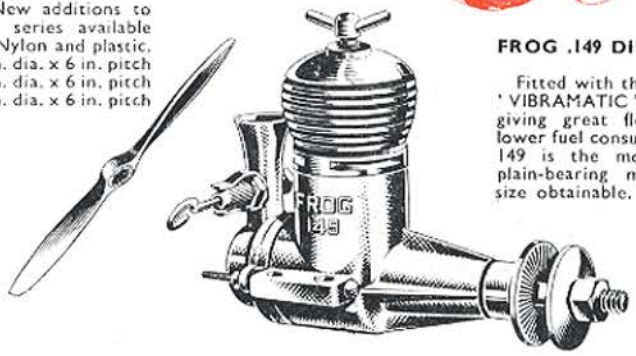

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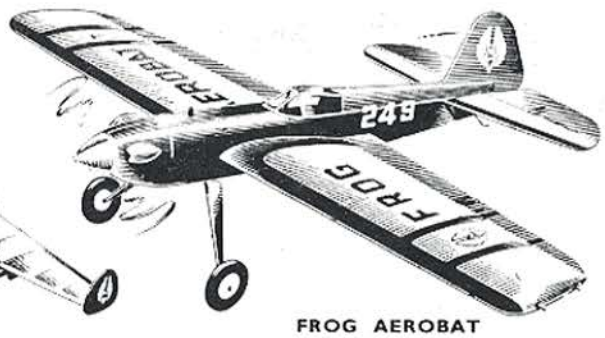

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