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1/6

JULY 1958



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If my letters sometimes get serious it is a reflection of my feeling of responsibility for the livelihood of about 100 people.


If I don't plan this business well someone may be hurt and, above all things, I hate hurting anyone. The trouble is that to plan you need to be something like a fortune-teller looking into a crystal ball to know what Government is going to do what in the years ahead. Every time I get fairly settled some fresh economic crisis looms up or we have a Suez crisis or a labour crisis. Always a crisis! How I hate the word!

With all the material advantages of the modern world we don't seem to be any happier than people in less developed places. Perhaps it is that they seem to live mostly in the sun and, perhaps, in the sun it is more difficult to get worked up about things.


With leisure in the sun one can drowse - and food comes more easily. Perhaps with leisure in colder climes man gets bored and looks for trouble. As all our thinking seems to be towards less work and more leisure, perhaps it's as well we now have television as a soporific for our leisure hours? I prefer work!

You see what a really funny letter I can write if I try! It's a gift, that's what it is!

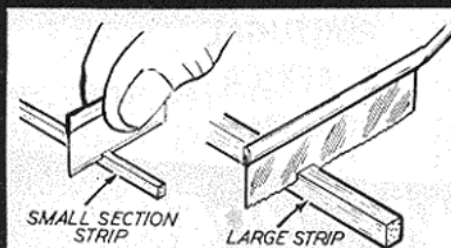
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Cutting spacers to exact length for box fuselages must be done carefully to get "square" joints. Balsa—especially the softer grade—is easily crushed with a blunt knife instead of cutting to a clean face. A razor blade is about the best tool for cutting small section strip to short lengths. If you use a modelling knife, fit a new blade or carefully hone the edge razor sharp with an oilstone first. Large section strip you will find easiest to cut true with a razor saw.

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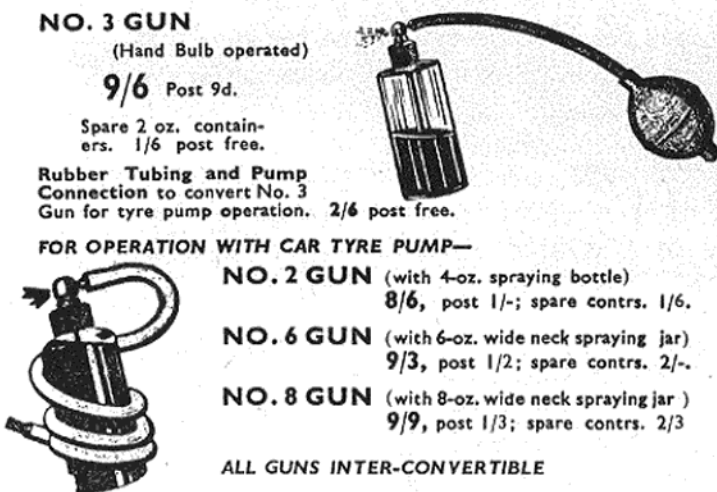
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"VON RICHTHOFEN AND THE 'FLYING CIRCUS'"

This is a book about the "Ace of Aces" of the First World War and of the famous unit he commanded. A biography of Manfred Freiherr von Richthofen, colloquially known as the "Red Knight of Germany," and a history of Jagdgeschwader Nr. 1, better known as the "Flying Circus."

This enthralling life story of Manfred Freiherr von Richthofen is copiously illustrated with over 200 photographs, many not previously published. Richthofen is portrayed, both in word and picture, throughout his momentous life; his youth at cadet school; in action against the Russians; with a secret experimental bombing unit; as a pupil of the redoubtable Boelcke—in addition to his better-known role of Staffel and later Geschwader Commander, when he became not just an Ace, but the "Ace of Aces."

This is, in fact, the only fully documented account of von Richthofen and his "Circus" ever to appear. Its preparation has taken over two years of research work extending all over the world!



Top: Von Richthofen standing behind General von Falkenhayn, talking to A. G. H. Fokker seated in the cockpit of the first production Fokker Triplane. Middle: Von Richthofen after his 62nd victory. Bottom: Von Richthofen about to test out a new Pfalz Triplane.

There are two-page 1/72 scale 6-view engineer's drawings; together with two pages of photographs, specifications, performance figures, etc., of each of the following fourteen aircraft flown by von Richthofen and/or the Richthofen Jagdgeschwader: Albatros CI, Albatros CIII, Albatros DII, Albatros DIII, Albatros DV and DVa, Fokker EIII, Fokker DIII, Fokker Dr.I, Fokker DVII, Fokker DVIII, Halberstadt DII and DIII, and Pfalz DIII.

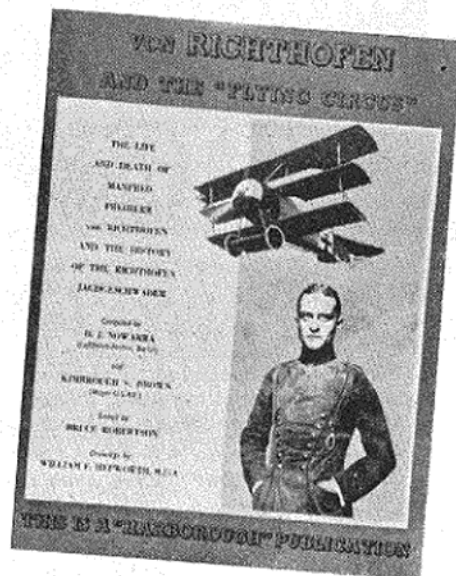
Also a complete list of pilots of the Richthofen Jagdgeschwader showing victory scores, etc., and a review of all Manfred von Richthofen's victory claims, with a fuselage profile showing insignia/squadron markings of each of the 84 aircraft concerned.

Who *DID* kill von Richthofen? Was it a bullet from a machine gun of Captain Roy Brown's aircraft—or from a machine gun fired from the ground by an Australian gunner? This, one of the most controversial questions arising from the air-fighting in World War I, is thoroughly examined. New evidence is presented to the reader. Did "the Baron" have a girl friend? Did he smoke? Where was he killed and buried? Where now is his tomb? The answers to these, and many other questions of absorbing interest, are given in this tremendous book.

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This book contains 208 pages, size 8½ × 11½ in., all printed on high quality white art paper. Binding is in stiff boards, cloth covered and gilt blocked. Weight is nearly 2½ lb. Over 200 photographs, 12 1/72 scale 6-view drawings of German aircraft flown by von Richthofen and/or members of his unit; also nearly 100 line illustrations of other aircraft, and text containing over 100,000 words!



An early photo of von Richthofen just after landing after a combat flight in his early Fokker E.II aircraft, the tail of which is shown in the background. This, and the three photographs opposite, are only four out of over 200 which illustrate this amazing book!

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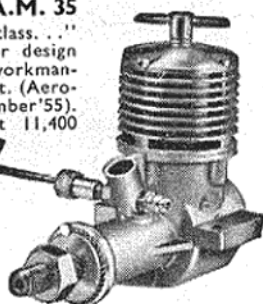
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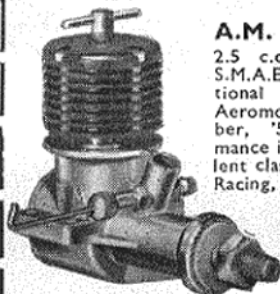
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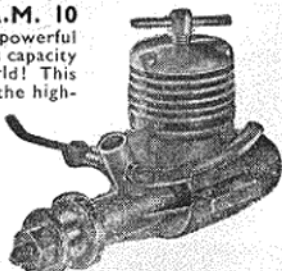
A.M. 25

2.5 c.c. Eligible for S.M.A.E. and International contests, says Aeromodeller (October, '54). "Performance is in the excellent class." For Team Racing, Stunt, Combat, F/F and R/C.



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★
JULY 1958

Vol. 17 No. 205

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SOCIETY OF MODEL
AERONAUTICAL
ENGINEERS

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Successful 1958 British Nationals

THIS year's Nationals were a success—of that there can be little doubt. The experiment in making the organisation of individual contests the responsibility of area delegates and Council members resulted in an improvement over last year, and although it is a little early yet to form a balanced opinion, there is no reason to believe that the adoption of the same system in the future will not result in the Nationals finally running "like clockwork."

There were some small points that could be criticised, but no doubt these will receive the attention of the Council in due course.

This is the fifth Nationals that have been held at Waterbeach and the weather average shows that in spite of the showery weather which we have had for the last two years there would be little point, in view of the justly famous English summer, in, as has been suggested, seeking an alternative date in the hope of finding a perfect week-end. This is akin to the search for the philosopher's stone.

Modellers owe a debt of gratitude to the Commanding Officer of Waterbeach for again allowing the "drome" to be used for this important event. However, we were rather perturbed at the amount of litter lying around the aerodrome when we departed and it is to be hoped that some attempt was made by those responsible to clear up the field before they left for home.

Cage for C/L flying at M.A. Exhibition

LATEST feature booked for the MODEL AIRCRAFT EXHIBITION is a flying cage—we would, of course, hasten to point out

that it's not the cage that flies, it's the models within! Although the cage has appeared at previous Model Engineer Exhibitions, for the M.A. Exhibition it is hoped to present something a little different in addition to the usual round-the-pole flying.

At the moment we are experimenting with equipment to enable the pilot of a C/L model to sit outside the circle, and it is hoped to give further details in a future issue. The basic principles of this type of C/L flying are simple enough but the suitability of certain types of models has to be decided more or less by trial and error.

In the competitive sections there will be some very fine models—we know, we've seen some of them! Incidentally, closing date for entries in these sections is July 14th, so there is still time (but not too much) to enter your model. The Exhibition will be held at the New Horticultural Hall, Westminster, S.W.1, and further details will be found on page xii in the advertisement section of this issue.



The best selling Bristol "Beaufighter" (M.A. plan 275) designed for 2.5 c.c. engines.

Single or Twin?

WHILE scale models have always had a majority appeal, with the accent on single engined types of the second world war, we were surprised to find that the twin engined Bristol *Beaufighter* published in our March issue is among the top sellers of the plans published this year. In our experience C/L modellers (and others!) have never been overburdened with cash and consequently able to afford the comparative luxury of two

engines "tied up" with one model, but there it is. Perhaps the appeal of the *Beaufighter* outweighs all other considerations and certainly it looks really effective in flight, plus the fact that it can take plenty of hard knocks.

While the twin is not likely to supersede the single as top favourite, M.A. will, however, continue to cater for both classes. In this issue, for instance, we've got a sleek twin-engined C/L job in Alan Kingswood's *Aero Commander 560*, and for F/F

Engine Exceptions

WHENEVER a foreign product receives a mention in MODEL AIRCRAFT, or a foreign motor is reviewed in Engine Tests, the result is a stream of inquiries. In most cases, unfortunately, we have to disappoint prospective purchasers in the U.K. owing to the sometimes complicated import restrictions, so immediately the question arises—why publish such information when the goods are not obtainable over here?

Well, the reasons are numerous. It must be remembered that many overseas readers are in the fortunate position of being able to buy almost any foreign engine and, just like us over here, like to read an independent test report. Then again, it is always interesting to compare the performance of one of your own engines with its foreign equivalent. There's always the chance, too, that if a "hot" motor appears abroad, it will act as a spur to our own engine manufacturers, to produce something as good, if not better.

Occasionally, too, token imports of foreign engines can be arranged, the Cox Pee Wee, the Alag and

Webra motors for instance have been, or are, on sale, and thus a test report is a useful guide.

As a final note, we would add that if a foreign product is available in this country, then this fact is mentioned in M.A. If such information is not given then we regret we are unable to help.

Lost

... Mr. D. R. Hughes. If Mr. Hughes would forward us his new address then we will be pleased to send on to him a cheque for a recent contribution to M.A.

and Found

... a Junior 60 by a member of the Flying Druids club. The model was found on Salisbury Plain near West Lavington, and it is estimated that it had been laying about for some six to nine months judging by the state of the balsa and tissue. However, the engine still runs and if the owner writes to the Hon. Sec. of the club, G. A. Griffiths, 17, Coronation Road, Duddington, Nr. Salisbury, Wilts, he can claim his model providing he gives the usual details.

enthusiasts a neat little model of the Aeronca C-3 by P. M. H. Lewis, that looks really impressive both in the air and on the ground.

From MODEL AIRCRAFT plans sales we have found that scale types are certainly top favourites, and in view of this it was surprising to find so few entries in the Knokke Trophy and Super Scale Trophy events at the Nats. this year. Could it be that scale modellers just are not contest-minded?

Glossary

A RECENT 'phone call from a reader spotlighted a problem that confronts all technical journals—the use of abbreviations. In MODEL AIRCRAFT we try to avoid these as far as possible, but so as not to be repetitious we do, at times, use initials such as R/C, C/L, etc.

To regular readers and experienced modellers such terms need no explanation, but new readers may well be at a loss as to what these mean, also reference to organisations (F.A.I., etc.) or specialist models (i.e. Wakefield) can cause confusion.

For the benefit of newcomers, therefore, the following brief glossary of common abbreviation is given—

- A.2 A glider to the international formula laid down by the F.A.I.
- c.g. Centre of gravity.
- C/L Control line.
- F.A.I. Federation Aeronautique Internationale—the body governing international model flying.
- F/F Free flight.
- P.A.A. A contest for models carrying a payload—devised by Pan American Airways.
- Load
- R/C Radio control.
- r.o.g. Rise off ground.
- r.t.p. Round the pole (usually indoor models).
- S.M.A.E. Society of Model Aeronautical Engineers—the body controlling model flying in Great Britain.
- T/R Team racing or team racer or team race.
- Wakefield A rubber driven model to the international formula laid down by the F.A.I., also the cup donated by Lord Wakefield for international competition with rubber models to this formula.

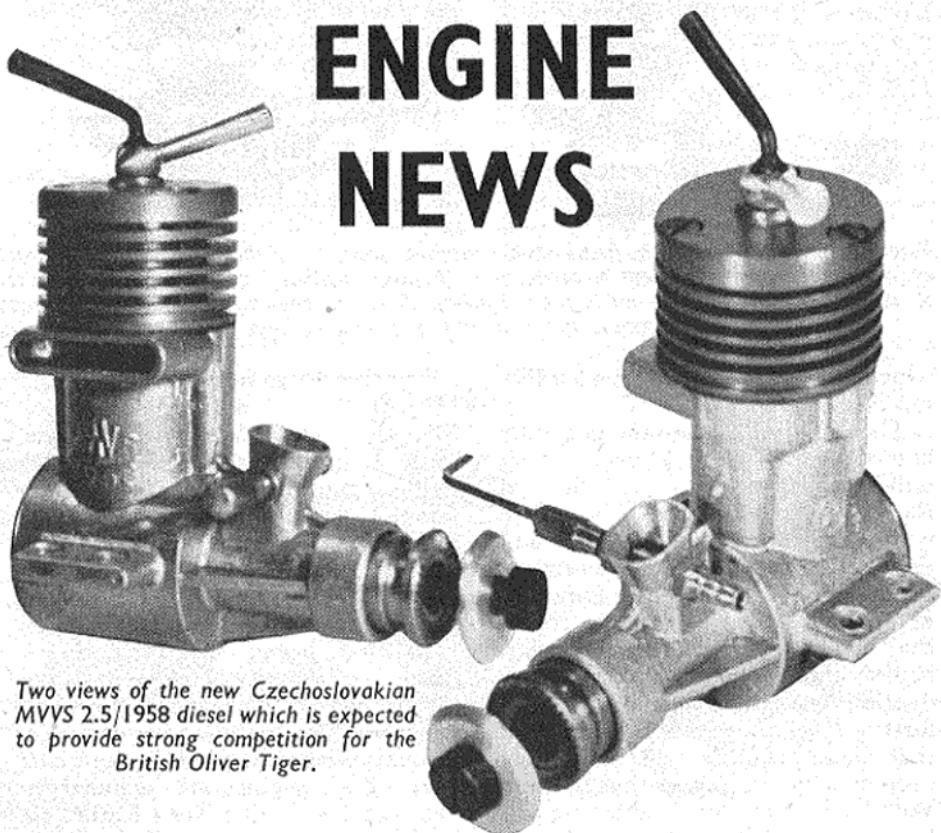
Peter Chinn gives the **LATEST ENGINE NEWS**

EYES will be on the Czech team at Cranfield and, in particular, on the new 2.5 c.c. MVVS competition diesel specially produced by the State centre at Brno for this and other international events.

As previously reported in this column, the engine is a twin ball bearing crankshaft induction unit, allegedly comparable in performance with the Oliver Tiger and, unlike previous MVVS models, which have been built in very small numbers only, the engine is being made on a small-scale production basis.

The production model, known as the MVVS Type 2.5/1958, differs somewhat from the prototype units which we described and illustrated in the March issue. The engine is markedly different from any equivalent West European diesel, but now bears some resemblance to the Japanese Enya 15-D. Until we are given the opportunity of examining the inside of the engine it will be difficult to comment on the more significant aspects of the design, but it would appear that the transition from reverse-flow to loop scavenging, suggested in the design of the earlier model, has been taken a stage further. The porting layout now seems to resemble the Enya in that the transfer ports appear to have been brought closer together to oppose the single wide exhaust port, while the complete set-up has been rotated through 90 deg. to bring the exhaust duct to the side instead of the rear of the cylinder.

Like the Enya Diesel, the main casting now consists of the crankcase,



Two views of the new Czechoslovakian MVVS 2.5/1958 diesel which is expected to provide strong competition for the British Oliver Tiger.

including transfer and exhaust, and front bearing housing (instead of crankcase and cylinder barrel with detachable front bearing housing as previously used) with separate finned barrel and head attached with long screws (three) into the case casting. Other features of the design include a long crankshaft port similar to that found on the PAW-Special (probably supplemented by a bearing aperture of similar shape to give rapid opening and closing) and a locking lever for the compression screw.

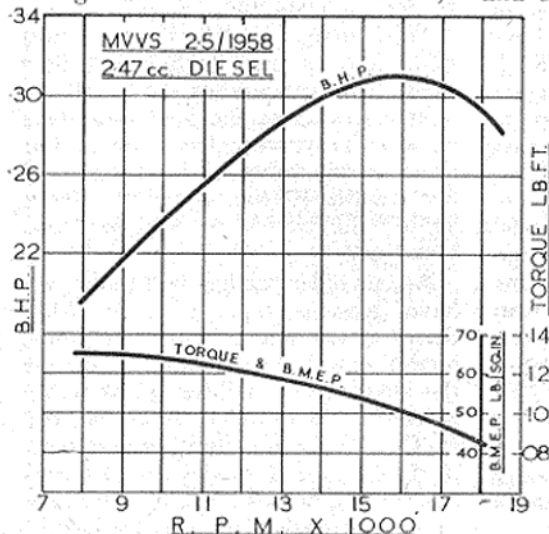
The MVVS 2.5/1958 uses the popular 15 x 14 mm. bore and stroke combination and weighs 5 oz. Claimed output is 0.314 *force de cheval*—equivalent to 0.310 b.h.p.—at 15,800 r.p.m.

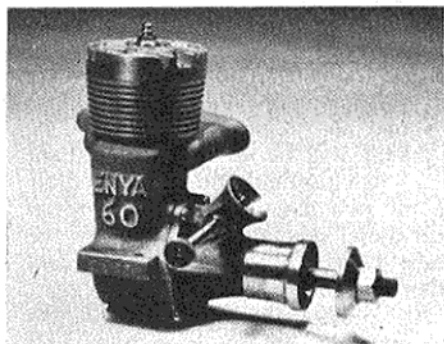
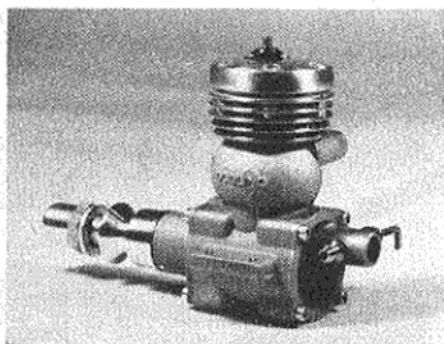
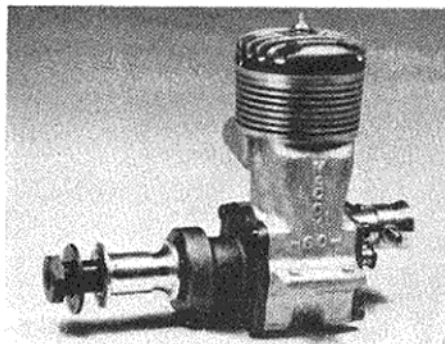
We have heard a good deal of opinion lately to the effect that British manufacturers are lagging behind nowadays. By which is generally meant that not enough entirely new engines are being introduced. We have dealt with these complaints before and the

answer is still the same. Our manufacturers are today producing the type of engine that most modellers demand. It is all very well for the Keen Type to say: "Why can't our people forget about 1.5 and 2.5 diesels for a bit and make some stunt glow engines, R/C motors, speed engines and the like?" The fact is that the manufacturer has to make engines that will sell in relatively large quantities, and the number of chaps who really want stunt and R/C engines, and will pay seven or eight pounds or more for them, is not sufficient, apparently, to encourage any manufacturer to take the risk.

Not, let us hasten to add, that we do not sympathise with Keen Type. On the contrary, since he is our most faithful reader and keeps us busy with enquiries of how to get hold of a Snarler-29 from the U.S. or a Snorter-35 from Japan, we know exactly how he feels.

However, if Keen Type will forgive us, it is now our duty to remark, for the benefit of those interested in the less exotic type of machinery, that E.D., Frog and Allen-Mercury have new offerings in the small diesel class





Three "glo jobs." Left—the first example received in Britain of the revived McCoy 60 racing engine. This is the most powerful model engine in the world at present in production. Centre—another American classic of which production has been renewed after a lapse of some years: the superbly made 5 c.c. Dooling 29 racing engine. This example belongs to C. A. Petty of Birmingham. Right—an extremely robust and well-built large engine from Japan: the current version of the 10 c.c. Enya 60.

which should be quite favourably received.

The E.D. job, as is now generally known, is the 1½ c.c. Fury, a twin ball-bearing engine on the lines of the now immortal 2.46 Racer, but with reed-valve induction. We had the task of torque-testing the original prototype of this engine some 18 months ago, when we had to report that the engine handled nicely but lacked top-end performance. Production was then delayed pending further development and it is expected that these troubles will have been overcome in the production version. We have had favourable reports from two modellers who are already using these engines in small R/C models. The Fury will be dealt with in the Engine Tests shortly.

Frog have two new ones, the 1 c.c. Mk. II "100" and the 1.48 c.c. Mk. II "150." We have had one of the latter in our possession for the past six months and it is markedly superior in power output to the earlier "150" and also to the "Vibramatic" induction Frog 149 model. The "100" (Mk. II to distinguish it from the old "100" of 1946 that began the Frog diesel range) is basically a sleeved down "150" with a novel porting system and is expected to show a performance comparable with the best in the 1 c.c. class. Both engines are included in this month's Engine Tests feature so further comment is superfluous here.

The AM-15 (1.5 c.c. of course) is another engine that has been in the offing for some time, having been originally designed at the same time as the quite phenomenal AM-10 that set new standards of 1 c.c. engine performance. At this writing we have not yet handled the AM-15, but this, too, will be given the full treatment in a subsequent issue.

* * *

Some people think that most of the world's greatest engineers have been artists and if you look at R. J. Mitchell's aeroplanes or Ettore Bugatti's motorcars, it is hard to disagree. Artistry may not be easy to associate with model i.c. engines, yet we believe it is recognisable in the two finest examples of model internal-combustion engine design and execution of the present day: the British Oliver and the American Dooling. Have you ever looked at a sparkling new Oliver or Dooling and (Pylonius will love this) regretted that its crisp mechanical beauty has

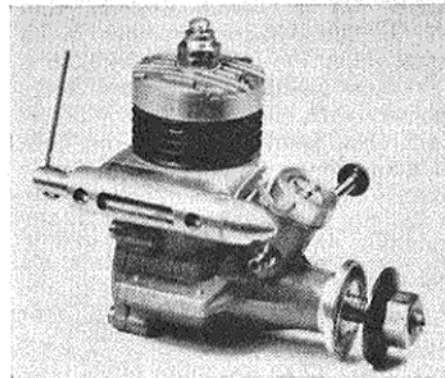
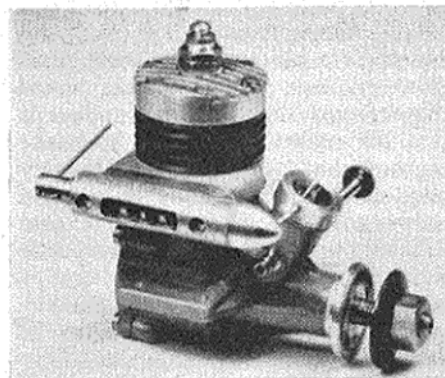
to be sullied by smelly, messy fuel? If so, you will know what we mean.

As the Oliver is in a class of its own among diesels, so is the Dooling among glowplug engines. The original Dooling, the 10 c.c. Model 61, was first put on the market in 1947. At that time it was unquestionably the most highly developed, the most superbly engineered and the most powerful engine ever built. Today, more than ten years later and many years after the last 61 was made, this description still applies. In the hard school of model car racing, the Dooling still reigns supreme and its secondhand value is higher than its original list price.

The Dooling brothers produced only two types. Two years after the 61, the 29 was introduced and soon achieved a reputation second only to that of its bigger brother. For nearly four years from the beginning of 1953, the 29 was out of production, then, last year, it made a welcome return, essentially unchanged, but with its beautiful finish enhanced by a highly polished head and fin edges and with a new spring tensioned rotary-valve spindle.

How many model engines could make a come-back eight years after their first appearance and still be acknowledged as the leader of their class? Very, very few indeed, but there is one other and, as reported last month, it, too, is being offered again: the Series 20 McCoy Red-Head 60.

As our older readers will know, we have always regarded the Mac Series 20 as one of the very finest model engines ever built. Just as the Dooling 61 has been unassailable in 10 c.c. class model car racing, the McCoy has been equally pre-eminent in 10 c.c. speed model aircraft and neither engine has been able to make much impression on the leadership



The coupled exhaust restrictor and intake throttle on the Max-II 15 R/C engine, shown in the open and closed positions.

of the other in their respective fields.

We have just received one of the current Mac 60s from Nils Testor, president of the Testor Corporation (of which the Duro-Matic Products Company, makers of McCoy engines, are a division) and will be dealing with this engine in an early issue.

Another big job scheduled for future attention is the Enya 60, made by the Enya Metal Products Company of Tokyo, whose 15-D diesel and 29-3 glowplug engines have established this Japanese firm as one of the major contributors to compe-

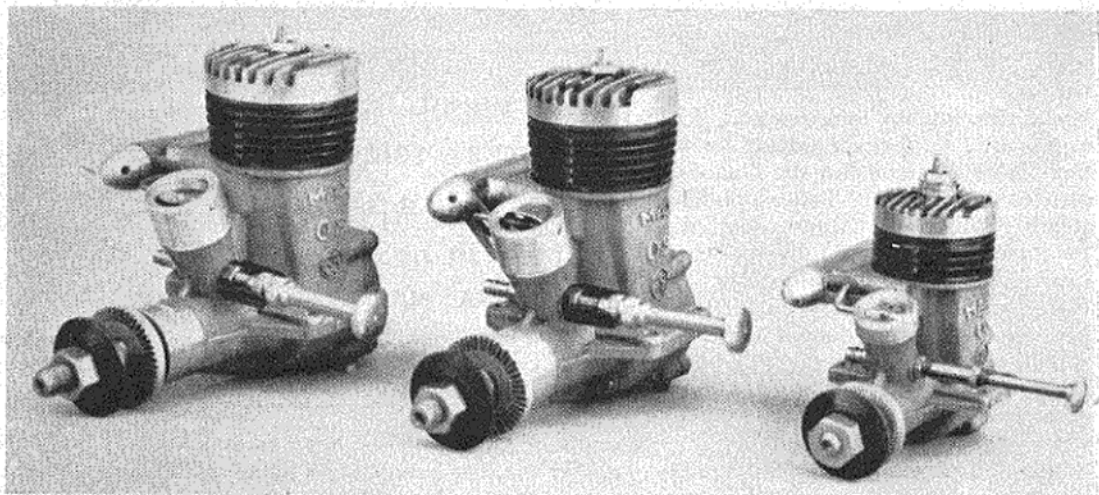
by such motors as the Atwood Glo-Devil. The claim to long life is obviously well merited. The engine is of outstandingly robust construction with accurately fitted and well finished components and, in contrast to the 30, 60 or 90 day warranty given with other engines, the Enya 60 is fully guaranteed for 12 months.

* * *

As predicted in our May issue, the throttle-equipped O.S. Max 35 engine is now available. The production type speed-control unit is essentially

35, 29 and 15. Like the new type 15, the latest standard type 29 and 35 are now officially designated O.S. Max-II and the speed control units can be fitted to these existing models quite easily. The only conversion work entailed is the drilling and tapping of the two special lugs, hidden in the exhaust duct, to take two screws attaching the exhaust unit. The intake component merely requires the removal of the spraybar assembly and the substitution of the new venturi unit with butterfly, in place of the existing choke inserts.

Proof that the variable speed R/C versions of the O.S. Max engines are being produced was obtained when examples of the throttle-equipped 35 and 15 were received by air from Japan.



tion engine design at the present time. The 60 is not a racing engine like the McCoy and the makers content themselves with the suggestion that it is a medium power engine of long life. In fact, the performance is very good and fills the gap left by the disappearance from the market of high-powered non-racing type large engines formerly exemplified

the same as the prototype fitting illustrated in our issue of October last year and consists of a semi-rotary type exhaust restrictor valve coupled to a butterfly throttle on the carburettor.

The throttle equipped Max, mainly intended for R/C but also applicable to C/L installations, is now being made in all three capacity groups:

The R/C engines are also readily convertible back to the standard type, two choke inserts for normal use being supplied with each engine.

We have examples of both the Max-II 15 and Max-II 35 R/C engines and we imagine that they will be eagerly sought by R/C enthusiasts. The 15 weighs 4.1 oz. complete and the 35 version 8.4 oz.

THERE are two simple ways of finding the area of an awkward shape, like a curved fin. The first is to trace the outline on to squared paper. Count all the complete squares enclosed within this outline and make a note of the number. Then count up either all the more than half portion squares and ignore those less than half or estimate how many full squares the remaining part squares add up to. Add to the first number and you have a close approximation of the true total area.

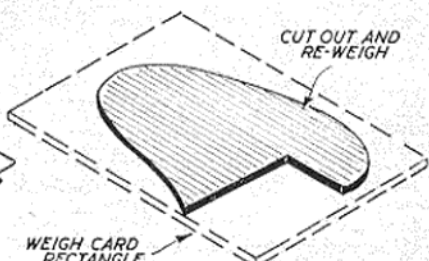
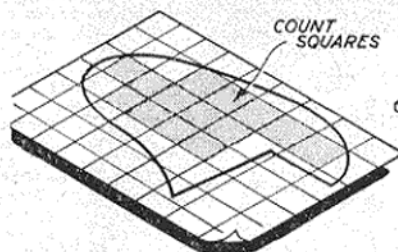
The second method can give very accurate results. Cut a square of thick card to some convenient size larger than the shape to be measured. By convenient we mean whole number dimensions, such as 5 x 6 in., so that the area of the card rectangle

AREA ANSWERS

can easily be calculated (e.g., 30 sq. in.). Place on your scales and make a note of the weight.

Now trace the outline of the shape to be measured on to the card

and cut out accurately. Weigh this. Multiply the area of the original rectangle by the ratio of the two weights and you have the exact area of the pattern shape.



The 1958 NATIONALS

at R.A.F. Waterbeach

A RATHER wet and dry weekend, fortunately more dry than wet, fairly sums up the weather at this year's Nationals, and, of course, it affected the flying, though not as much as might have been expected. Sunday's events came off best, for although it was dull in the morning with a stiffish breeze, this lightened throughout the day and the sun broke through for long periods, with an evening perfect for testing for the next day's events. But the next day, oh dear, oh dear! It was pouring steadily when the contests were due to start and the rain didn't abate until about 1 p.m. However, the class "B" team racing got off to a punctual but very damp start, and just to prove that one can F/F in the rain, John O'Donnell had already returned two max's in the Shelley before the last drop had fallen.

Main attraction all day Sunday was the multi R/C event which, we are pleased to be able to say, at long last produced some very worthwhile flying—winner Chris Olson performing loops, bunts, etc., very creditably.

With the interest aroused by the new stunt schedule the Gold Trophy was well worth watching—in fact the area was packed three or four deep all round, by an audience that was quick to show its appreciation of a good flight with a hearty round of

A detailed report and a large selection of photographs will appear in next month's issue of MODEL AIRCRAFT on sale 20th July

applause. The actual flying was to a far higher standard than we anticipated and the finish, as can be seen from the results, was the closest ever.

Monday's rain greatly delayed every event except team racing, but, even so, most competitors were able

to finish their flights before closing time, by when incidentally, weather conditions were perfect. Pity the contests couldn't have gone on for another two hours, but this was impossible and the results, even combat, were soon in, ready for the prizegiving. This year for the first time the actual trophies that were being competed for were on view, and aroused great interest among the many modellers who had never before seen them.

The prizegiving itself was commendably brief, there being just a few words from W/Cdr. Owen Jones, representing the C.O. of Waterbeach, who welcomed modellers to the 'drome and hoped they had enjoyed themselves—which they had! Mrs. Jones then presented the lucky winners with their awards, badges, and diplomas which, by clamorous demand, were being given out immediately after the meeting—pity there weren't more winners present to collect them!

That then, is briefly what happened at this year's Nats.; in the rush to give our readers a few of the highlights we have been unable to mention all the interesting things we saw—but watch out for the full report in next month's issue.

RESULTS

GOLD TROPHY				SUPER SCALE TROPHY			
1. P. Ridgway ...	...	Macclesfield ...	418 pts.	1. C. Crawley ...	...	Mill Hill ...	72 pts.
2. W. Morley ...	...	West Essex ...	415 "	2. E. Coates ...	...	Blackburn Welfare ...	70 "
3. T. Jolley ...	...	Whitefield ...	412 "	3. D. McHard ...	...	Wayfarers ...	67 "
SHORT CUP				KNOCKE TROPHY			
1. J. O'Donnell ...	...	Whitefield ...	8 : 40	1. C. Milani ...	...	C.M. ...	87 pts.
2. R. Monks ...	...	Birmingham ...	5 : 38	2. Corp. P. N. Godfrey ...	...	R.A.F. M.A.A. ...	72 "
3. K. Glynn ...	...	Surbiton ...	5 : 26	3. M. Kendrick ...	...	West Bromwich ...	64 "
DAVIES TROPHY "A"				MODEL AIRCRAFT TROPHY			
1. G. Yeldham ...	...	Balfairs ...	7 : 26	1. F. A. Boxall ...	...	Brighton ...	12 : 00 + 7 : 28
2. R. Edmonds ...	...	High Wycombe ...	8 : 18	2. E. A. Barnacle ...	...	Leamington ...	12 : 00 + 7 : 02
3. G. Sanger ...	...	Wanstead ...	9 : 22	3. U. A. Wannop ...	...	Edinburgh ...	12 : 00 + 5 : 45
S.M.A.E. RADIO CONTROL TROPHY				SIR JOHN SHELLEY			
1. C. H. Olsen ...	...	A.R.C.C. ...	87 pts.	1. J. O'Donnell ...	...	Whitefield ...	9 : 00 & 4 : 32
2. R. Askew ...	...	Kersal ...	66 "	2. H. Smith ...	...	English Electric ...	9 : 00 & 3 : 10
3. S. E. Unwins ...	...	A.R.C.C. ...	46.5 "	3. J. Bickerstaffe ...	...	Rugby ...	9 : 00 & 2 : 36
THURSTON CUP				RIPMAX SHIELD			
1. Miss M. Pepper ...	...	Southampton ...	9 : 0 + 5 : 40	1. W. Nield ...	...	Cheadle ...	34.5
2. D. Morley ...	...	Lincoln ...	9 : 00 + 2 : 41	2. H. Boys ...	...	Northampton ...	34.0
3. J. Taylor ...	...	Wayfarers ...	9 : 00 + 2 : 20	3. K. W. Lockwood ...	...	North Kent Nomads ...	33.5
COMBAT				C/L SPEED			
1. M. Kendrick ...	...	West Bromwich ...		Class II R. Gibbs ...	...	East London ...	
2. P. Tribe ...	...	Northwood ...		Class III P. Drewell ...	...	Lomac ...	
DAVIES TROPHY "B"				DAVIES TROPHY "B"			
1. D. C. Walker/R. J. Tuthill ...	...	Enfield ...	7 : 9.2	1. D. C. Walker/R. J. Tuthill ...	...	Enfield ...	7 : 9.2
2. J. K. McNess ...	...	West Essex ...	7 : 18.8	2. J. K. McNess ...	...	West Essex ...	7 : 18.8
3. P. F. Hartwell ...	...	Enfield ...	8 : 23.6	3. P. F. Hartwell ...	...	Enfield ...	8 : 23.6

TOTAL ENTRIES 1,705 FROM 803 INDIVIDUALS AND 137 CLUBS



1. The editorial "brolly" was put to good use again this year shielding our photographer from the downpour during the early rounds of the Class "B" team race, where this shot of Scotsmen Ron Irving and E. Perry pitting W. MacFarlane's model was taken.

2. The standard of multi R/C flying was very good, but Marsh of A.R.C.C. stopped a few hearts when his model skimmed low over the crowd, just after this photo was taken.

3. Roger Reffell and Maurice Blundell of Godalming await their turn to fly in the Gold Trophy. The latter's Eta 29 powered "Thunderbird" is obviously much admired by the two small boys and flew well; in fact, with more contest experience to combat contest nerves Blundell should become a real threat to the top fliers.

4. An unusual sight for these days was to see a speed model hand launched. This diesel powered design belonged to Ian Crighton and is held by Brian Lawrence both of the Tulworth M.A.C.

5. Mavis Pepper, who the day before had beaten all the boys with a fine fly off time of 5:40 in the Thurston Cup, here gives J. Cox of Worthing a hand with his rubber model.

6. The scale events were poorly supported but with entries of a high standard and this one obviously had a feature which amused judges, Alex Houlberg and Ken Brookes, while, "M.A." Editor, Roy Wesson (far left) would also appear to be in on the joke.



The aero- nautical touch



There were thrills and spills in plenty when members of the Solent Heights M.F.C. (Isle of Wight) were given the use of a pond for C/L flying. D. K. JENKINS relates some of the snags and how they were overcome for the benefit of any M.A. readers who would also like to leave dry land for the pleasures of rising off water.

WHEN we were first offered the use of a pond for waterborne flying by the Isle of Wight Model Engineering Society, no one in the club had remotely considered the possibility of this type of activity. This meant that everything had to be done by trial and error methods, but after a season's flying we have evolved a quick and efficient method of launching, flying and recovery.

The pond itself is in the grounds of St. Mary's Hospital, Newport, and thanks to the kindness of the Matron there are no complaints about noise, oil on the water, etc. Unfortunately, the pond is almost completely surrounded by trees and is only 40-45 ft. in radius. During early flights unsteady pilots were inclined to try and chop off overhanging branches with their models, resulting in kinked lines and damaged models, but at a later stage stunt models were actually looped round the branches under full control.

The water is from 2-3 ft. deep on a 4 ft. layer of mud so that some sort of boat is essential, and here the model engineers came to our aid. They allow us to borrow their

12 ft. x 4 ft. flat bottomed punt which is the perfect solution, since it is very stable and has a large area in the centre to move around in during flying.

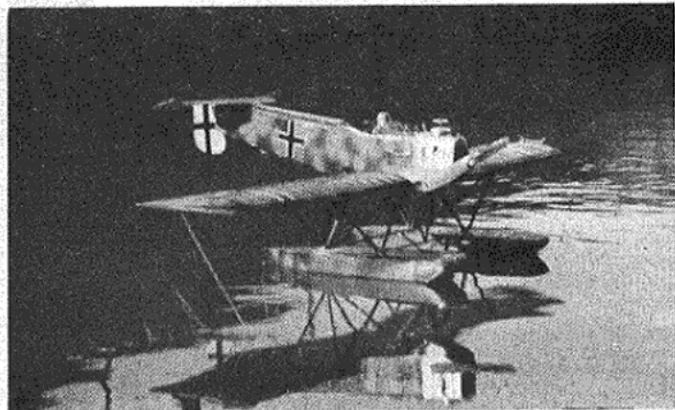
First flights showed that if the punt was moored at one end only, the pull of the aircraft swung the punt round in circles which meant that the distance from the pilot to the shore was continually varying, and caused one member to fly into a tree.

The obvious answer was to moor the punt at both ends and this was done by means of two poles driven

into the mud until only about 1 ft. of their length was clear of the water. The half dozen ducks on the pond proved to be a nuisance. One was caught in the lines during a take off, one was hit by a landing model, and several times they have paddled or flown into stationary lines. Our biggest fright came when a large angry swan appeared and flapped straight at the crew in the punt, but luckily it was soon scared away when flying commenced.

A typical flight proceeds in the following manner: the lines and model are laid out on the bank, the pilot climbs into the punt, and takes the handle. As the punt is rowed out, the lines are paid out from the shore until the punt is moored in the centre of the pond—the model being

Heading picture shows Ken Humber about to launch J. Hitchman's "Seagull" during flotation trials under power. Right: A very nice Brandenburg floatplane built by Ken and powered by an Oliver Tiger.





The SOLENT HEIGHTS boys in action as seen by ALI

on the edge of the shore. The engine is started and the model placed on the water. The pilot steps back to the centre of the punt (giving about 4 ft. model clearance from the shore) and flies-off the model. If the flight is successful the model is landed smoothly back on the water and recovered by helpers. Those who have not had experience of this procedure will see only the beautiful simplicity of this arrangement so let me outline a few snags.

If the model fails to keep tight lines at take-off all is lost, and similarly if it is blown by the wind. Only those who have stepped back 6 ft. in a 4 ft. wide punt will fully appreciate this! Other accidents may also beset the take-off. Badly designed floats will "dig" under the water, or the prop may tip the water and stop, while a prolonged take-off at high speed may cause the model to pitch and roll on the surface.

Landing is comparatively easy, the model either settling down

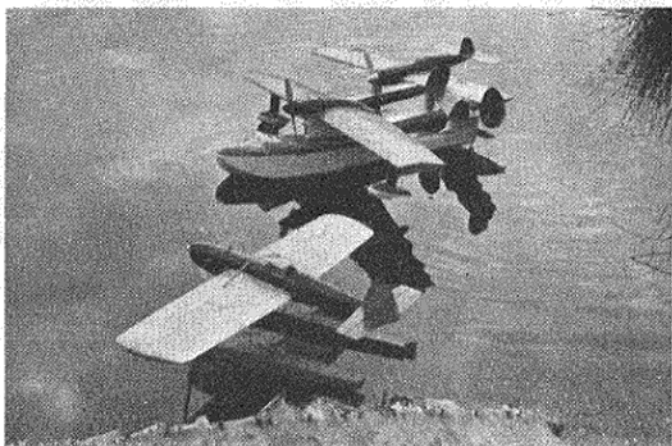
gently, or diving straight down and disappearing in a sheet of water! But recovery was, initially, a real problem. It was found that whenever the model came down it was always just too far away to be reached from the bank and this meant unmooring the punt and coming back to the shore, which apart from the time wasted also tended to tangle the lines on the bottom of the pond.

This whole problem was solved when the club obtained an R.A.F.-type rubber dinghy. It was pumped up hard and the author, being the lightest member of the party, made the first cruise. Unfor-

tunately, the dinghy was not airtight, and it only just returned to the shore before it collapsed completely. After repairs and experiments with paddles, however, the dinghy became a very successful recovery vessel, although even then it was a familiar sight to see the person in it furiously pumping away in the centre of the pond while waiting for the end of a long flight.

Over the past two years we have flown a wide variety of models. Most of the initial flying was done with stunt models like the *Ambassador*, *Monitor* and other 2.5 powered models of similar type which were quickly converted to float planes by the addition of a pair of fairly large floats built onto the wings. These models were stable both on the water and in the air and have been looped bunted, and "eighted" with ease.

The first model really designed for the job of waterborne flying was a Supermarine *Seagull*, by J. Hitchman and powered by an AM 3.5 which was very stable in every way. It could be held down on the water for a whole lap and flew at 50 m.p.h. This was



Above: Two modified K.K. "Ambassadors" in the "mooring basin" with the "Seagull," which was modified from M.A. plan No. 83.

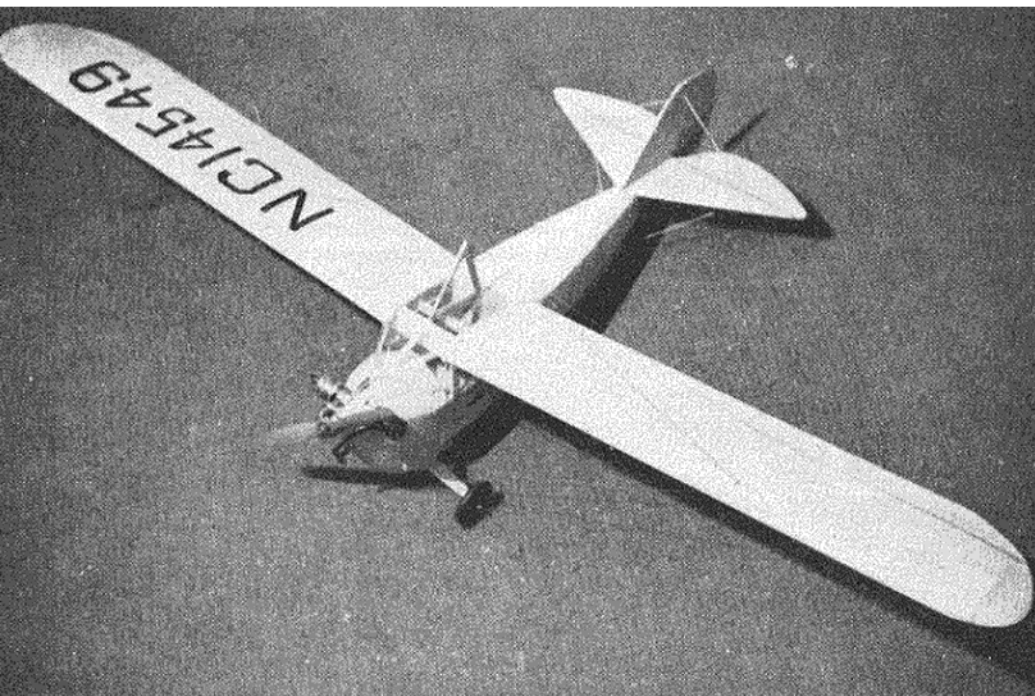
On the left, author D. Jenkins returns to shore in the recovery dinghy after dredging operations for an Elfin 1.49—accomplished with a garden rake!

followed by a semi-scale seaplane by P. Casely with an Oliver Tiger, which was extremely fast but could not be held on the water without pitching.

A further advance was K. Humber's twin ED 2.46 stunt model which was no more trouble than a normal twin landplane. Our latest, and possibly most unusual, model was E. Ginger's autogiro on floats. After troublesome starts in which the model stalled in on slack lines, the bugs were ironed out and some impressive flights were witnessed.

What new ideas will evolve this year we have yet to see (rumours are already abroad of R/C models), but whatever happens it will be unusually exciting and good fun.





a dandy little F/F model—

P. M. H. LEWIS'S

AERONCA C-3

CHEAP and safe flying for all has long been the aim of the enthusiast, and one of the most successful approaches towards this ideal was the little "Razor-back" Aeronca of the 1930s. Yearly improvements to the original design culminated in the Master C-3 of 1935 which forms this flying-scale model. The refinements of formers and stringers added to comprise the cabin on this final version of the two-seater resulted in the elimination of the sharp edge of the fuselage decking from which the machine earned its nickname.

Side mounting of a 0.5 to 0.8 c.c. engine, together with a dummy cylinder, makes an excellent substitute for the full-size power plant, and the aircraft's unusual lines and light-plane proportions contribute towards an eye-catching model with a fine, stable performance.

Fuselage

Two $\frac{3}{16} \times \frac{1}{8}$ in. hard strips of balsa are pinned down on to the plan to form the upper and lower longerons, the latter one having the 20 G. wire tailskid bound and glued to it before being placed in position on the board. Formers F2 to F5 are cut from $\frac{3}{32}$ in. sheet and their left halves are cemented in place, together

with the rudder post at the rear end.

Sheet, $\frac{1}{16}$ in. thick, forms the sides of the fuselage and these are cemented in separate pieces across the edges of the formers to give the poly-sided effect to the structure. The lower sides are continued just forward of F1's position, for trimming to length when this former is added later. The top and bottom of the fuselage are left open and the left half is now removed from the plan, ready to receive the right-hand sections of F2 to F5. When these are firm, the remaining sides are added. Former F1 is made from $\frac{1}{8}$ in. sheet and acts as the mount for the 16 G. wire undercarriage which is sewn and glued to it. F1 then takes its place on the lower longeron and the sides are bent in and cemented to it. The fuselage top and bottom follow and the platform for the tailplane on each side of the upper longeron completes the rear end.

Hardwood engine bearers are glued firmly into F1 and may need to have their spacing adjusted according to the engine used. Rigid support on the centre line is provided by $\frac{1}{4}$ in. sheet filling to the outline of the cowl and the latter is built up on each side with either block or sheet laminations. Space for the cylinder and tank is left on the right side and

the whole nose is carved to shape. The centre-section platform, upon which the wing rests, is cut from $\frac{3}{32}$ in. sheet, and the edges of the cabin sheet sides are strengthened by strips of $\frac{1}{8} \times \frac{1}{8}$ in. The platform front supports are of $\frac{1}{4} \times \frac{3}{32}$ in. and the rest of the window framing is made from $\frac{1}{8} \times \frac{3}{32}$ in.

Wings

These are quite simply built up direct on the plan by pinning down $\frac{3}{16} \times \frac{3}{16}$ in. leading and $\frac{1}{2} \times \frac{1}{8}$ in. trailing edges together with the $\frac{1}{4} \times \frac{1}{8}$ in. main spar. Ribs R2 to R9 are cut from $\frac{1}{16}$ in. sheet while $\frac{1}{8}$ in. sheet is used for R1; $\frac{3}{32}$ in. sheet forms the wingtips. When all is set, crack on each side of the centre-section and raise the tips to $1\frac{1}{2}$ in. for dihedral, which is retained by $\frac{1}{16}$ in. sheet filling-in between R1 and R2; $\frac{1}{4}$ in. sheet between R5 and R6 provides support for the bracing.

The tail unit is cut to shape from $\frac{1}{8}$ in. sheet and sanded to section. Cement the tailplane firmly onto its platform and then add the fin, to which the rudder is attached with an aluminium hinge.

Covering

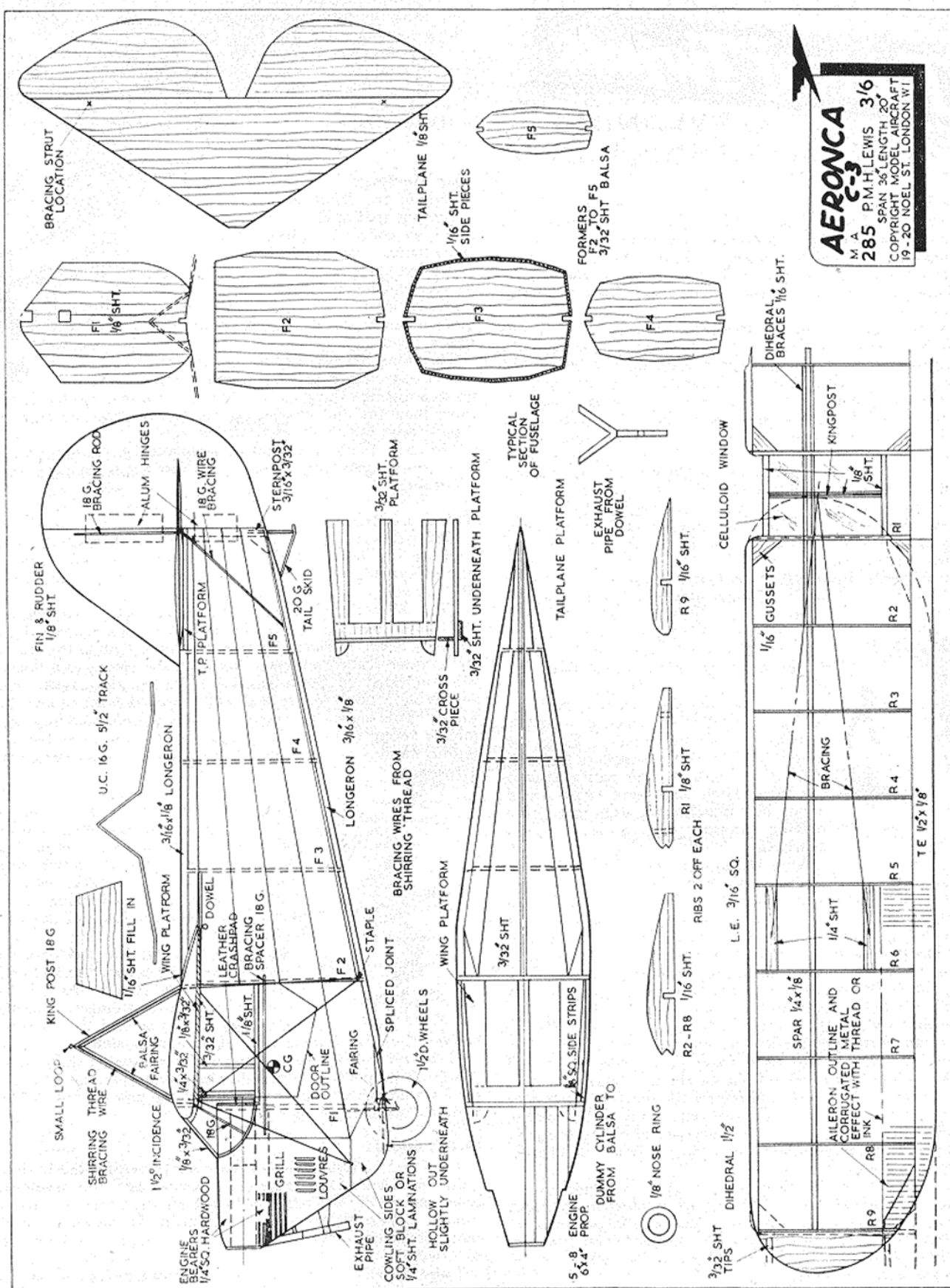
The whole model is now given a covering of tissue and the wings are water sprayed to tauten. Two coats of clear dope are followed by another two of colour. The original NC14549 was yellow overall with a pair of tapering black lines on each side of the fuselage and with black lettering on upper starboard and lower port wings and on each side of the rudder.

Detail

The undercarriage leg fairings are cemented and bound to the wire, and the $1\frac{1}{2}$ in. wheels are retained by washers soldered on. The dummy engine cylinder and the exhaust are made up from scrap balsa and hardwood dowelling. The latter wood is used also for anchoring the wings' retaining rubber bands; 18 G. wire, faired with balsa, forms the bracing kingpost above the wings and the wires are simulated by rubber shirring thread, connected to the fuselage with thin wire staples. Celluloid covers the cabin and the centre-section of the wings.

Flying

Add weight as necessary to the nose or tail until the glide is satisfactory, then trim under power with sidethrust and the rudder so that the model performs as required.



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, 3s. 6d POST FREE

Topical Twists

by PYLONIUS

Pretty Poly

Let's face it. I can't think offhand what it is we should face, but it's a jolly dramatic way to start a column.

If, however, we modellers have anything to face, apart from the telly, it's the desperate need for a new synthetic poly something or other to take the place of old fashioned balsa wood and tissue.

Take the plight of young Johnny, for example. Grown into full pimply stature in this jet propelled space age he looks expectantly around for a super space age model to heave into the space age air. But what does he find? A rocket powered supersonic craft, ready to fly, in washable, unbreakable plastic? Not on your telly. The only hope he has of getting space-borne is from an antiquated concoction of balsa and tissue.

This infuriates him no end, especially as Grandpa takes such a keen interest in the assembly of the kit, informing space age Johnny how ancient grandpa flew an almost identical model when he was a boy. Quite a new thing then, balsawood, grandpa would say. And, perhaps, in spite of a defiant deafness on Johnny's part, would go on to tell the story of how balsa was discovered.

From what the balsa adverts tell us the stuff is to be found in the swampy jungles of South America, where, at one time, its main function was to give the alligators something to sharpen their teeth on. Which is why, I suppose, alligators have teeth like balsa knives.

But came one day when a party of intrepid explorers trudged gamely through the sploshy jungle. From the hinterland had come reports of fantastic feats of strength by the native swamp dwellers. Huge logs were being tossed about like matchsticks, and trees were moving around like a scene from Macbeth.

Most of the explorers were of the firm belief that the natives were glutting themselves on some wonder breakfast food, and were after making a fortune out of the recipe. But one wily explorer was on the lookout for a new modelling material. Tired of bending bits of bamboo around the lodging room candle, and blunting his razor blade so much that he had a good facial start into the jungle business, anyway, he dived off into the darkest interior armed only with a blunt razor blade and a pair of scales.

Since that time balsa has been a household word. Or, at least, certain forthright housewives have a word for it. The ideal model material had been found, and everyone should have lived happily ever after—but for the poly age.

Now we are all anxiously waiting for the much boosted poly age to get airborne with a wailing out, ready to fly, plastic model, but, apart from a few limping control liners, the poly models remain firmly grounded upon the sideboard in all their rubbery splendour.

Still, we must not be dismayed. Progress is being made. Nothing very spectacular, but things are moving in the right direction. Already a new substitute has been found for oiled silk. You can buy the poly material by the yard from a famous store. Now all we need is a poly substitute for bamboo to be well on the way to success.

Anyone with inflated ideas about new modelling materials might be interested in a pneumatic, full-size job now floating around our skies. The plane, which can be carried around

in the family holdall, can be blown up, rubber duck fashion, and, after the pilot has recovered his breath, the contraption which has taken the air, so to speak, takes the air.

If you are ingenious enough, to scale down this blown up idea to model size would solve most of his model problems at one blow. That blankety-blank, anti-social model box could go on the scrap heap for a start. Crack-ups would be a thing of the past, and d/t-ing made easy by the use of a time operated pin.

Our Heritage

One of my rather faded jokes was the suggestion that model engines are bought more as collector's pieces than model propellants. But such gentle sarcasm is wasted on the fanatical engine collector, who has now come out into the open, at least in America, where ironmongery museums are springing up like piston heads.

The thing that worries me is that this sort of collecting mania has not yet been given a distinguishing name. Stamp, coin and moth collectors have their ists and ologists, and it seems unfair to leave the engine boys out in the polysyllabic cold.

Offhand, I can only think of Crankologist. A name with a nice ironmongery ring about it and just about the right shade of meaning.

Taken as Read

The "full-size" readers seem to be pretty cocksure about winning the battle of the model mags. Already they are fighting among themselves over the spoils of our once model filled pages.

The two factions, vintage and modern, are squabbling over the type of reading suitable for non-modelling readers during the telly advert periods. A recent letter, pleading the case for the vintage reader, suggests that only the young and flippant are interested in Sputniks and the like; the adult reader preferring a more sedate and well seasoned form of armchair flight. This suggests we could produce a junior model journal for the young in heart, while leaving an adult book for those serious minded people who wish to learn how many wings had a triplane.

Keeping It Up

In the noble tradition of pole squatting and dance marathons comes C/L endurance. The present record stands around the two day mark, which I thought was pretty good going on the part of the round and round the clock bod who did it.

But I was a bit let down to learn that it took not one but a dozen or so handle wavers to set up the record. I had visions of a gaunt, unshaven character staggering around in the last stages of collapse but still waving his gallant handle aloft.

If this type of endurance demands model rather than human stamina why not just attach the thing to a pole and go all out for a round the pole instead of an up the pole record? Or is it much the same thing?

Tail Twists

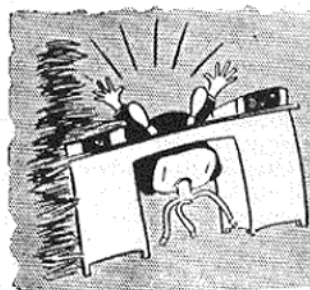
I like that bit about a lady prize giver presenting her husband with the Knock Out Trophy. I suspect he came home just about as late as the Littleover boys from their very wet annual dinner. There is, however, no truth in the rumour that the name of the club was changed next morning to a different sort of "over."

I also like that bit from a reader's letter which says "despite my apparent prejudice in favour of stunt flying, I have been a keen modeller for many years. . ."

SKETCHES BY

ALI





LETTERS

Value for money

DEAR SIR,—Your correspondent, Mr. Williamson complains (May, MODEL AIRCRAFT) about the "sea of trashy, so-called beginners kits, plastic models and toy engines and also of misleading advertisements."

May I deal with these criticisms in order:—

1. Beginners' kits.—Of the five main British manufacturers there are certainly over a dozen kits that are designed especially for the person who has little or no experience. They are all small "toy-sized" gliders, mainly because the youngster does not want to pay out more than 5s. for his first attempt at the hobby. These kits are simple to construct and will show some performance no matter how badly they are built.

2. Plastic models.—These go to the type of builder who would have spent all his time and money on trains or miniature cars a few years back. The constructor often requires something more after he has built a few static models and so turns to the flying type.

3. It is difficult to see quite what is meant by "toy engines." I would not class any diesel or glow-plug motor as a toy—if anything, there are many British designs that are still a little too difficult for the youngster to operate efficiently.

We are accused of a "get-rich-quick" attitude, and of misleading advertising. In a trade that is a highly competitive one, any person hoping to make a pile quickly is in for a shock, and all the British manufacturers give first rate value in their kits. In what other trade can one get such value as, for example, a completely prefabricated 36 in. glider with cement, plan, etc., for only 5s.? It must not be forgotten that 3s. 3d. in every £1 paid by the purchaser goes to the State in purchase tax.

In closing, I would say that it is the model dealer backed up by serious modellers (like Mr. Williamson) who should do their best to see that the youngsters in their district start on the hobby in the best way. If Mr. William-

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

son is still not convinced we shall be pleased to send him a few kits so that he can see that we give a first-rate article at a very reasonable price.

Yours faithfully,

M. A. KING,

P.R.O., Federation of Model Aeronautical Manufacturers and Wholesalers.

What would you do ?

DEAR SIR,—I was interested to read the various opinions expressed in the readers' letters recently about the contents of MODEL AIRCRAFT; the question which I always ask myself is "could I do a better job if I was editor?" I doubt it, because to be a successful editor one must cater for the tastes of the majority, and naturally that includes R/C and full size aviation, both of which leave me pretty cold!

I think I would try to recapture the spirit of the very early issues of MODEL AIRCRAFT when modelling was jap tissue, $\frac{1}{16}$ sq., and banana oil—"apply hand turns and test fly over long grass." Also the thrill of Vince Bentley's articles on the *Cloudcopter* and the numerous pylon tales that came out in 1947.

I feel that every issue of M.A. should include an article of the "Designing for Duration" type which gets down to the personal touch, and to my mind is aeromodelling with a capital "A."

Please continue the club reports in the present form, they are first class; Pylonius for a spot of light humour and Peter Chinn for the technical stuff.

Yours faithfully,

Cheadle, Cheshire. B. FAULKNER.

Real—or a replica ?

DEAR SIR,—I read with great interest the remarks made in the May, 1958, "Letters" column of MODEL AIRCRAFT, and I should like to take the opportunity of adding one or two remarks of my own.

In the first place the MODEL AIRCRAFT magazine seems to be slightly misnamed. Surely a more appropriate name would be "The Model and Full-Size Aircraft Magazine"?

I can remember the time when MODEL AIRCRAFT used to boast a cover photograph taken on the model flying field. The last cover of this sort, I believe, was worn by the March, 1955, edition of your magazine. Without exception, all subsequent editions have sported the latest jet or modernised World War II aircraft as a cover, but none of them as models.

My second criticism is the amount of

space which is taken up by the plastic aircraft features.

I do not believe, however far one can stretch the title "An Aeromodeller," that the makers of plastic "kits" can be included under it. After all, these "plastics" may look nice, but how many true aeromodellers—those who take a pride in their work—would take them seriously. They are rather hypocritical when considered under the name of aeromodelling, as we know it.

May I suggest that these toys had some right to be mentioned when they first appeared on the market, as toys, but that they should be treated with a little contempt by the aeromodelling fraternity.

I hope that the above remarks will not be misunderstood by Noel Street, but will be received in as good a humour as is the MODEL AIRCRAFT magazine.

Yours faithfully,

London, S.W.3. B. A. H. HARPER.

Full of full-size ?

DEAR SIR,—In the January issue of MODEL AIRCRAFT, Mrs. Fisher stated that there should be less or no full-size aircraft information in your magazine, and that the space should be used for model "stuff." Then, two months later, in the March issue, M. Lowman said that it is necessary to have them for solids, or scale flying models.

I do not disagree entirely with either of these people but I agree more with Mrs. Fisher. There should be less full-size aircraft pictures. And as this is a model magazine I suggest that the picture on the cover should be a picture of a model and not a full-size plane as it is now.

Yours faithfully,

London, E.13. D. MERRITT.

The answer to both readers is that experience proves "full-size" cover photos are preferred by the majority of readers.—Ed.

A Junior Gold Trophy ?

DEAR SIR,—May I first congratulate you on the articles on stunt models in recent issues of MODEL AIRCRAFT. As a modeller who is turning now to stunt flying after four or five years of trying practically everything else, I was more than glad to have some up-to-date gen. on the subject.

But to the point: I was frankly frightened when I studied the new Stunt Schedule as I, in common with most of my fellow control liner fliers in our club, have yet to perform an overhead eight!

Surely, to introduce such a schedule is all right for the experts but what of those of us who want to enter a stunt contest without practising diligently for 10 years or so?

Pete Russell came nearest to the truth (in Stunt Schedule Comments) and I wholeheartedly agree with his

comments on square corners. Would it not be possible to inaugurate a "Junior Gold Cup" with the accent on smoothness and (dare I say it?) beauty of flight, rather than the precision positioning of square corners? Manoeuvres could include loops, inside and outside, horizontal eights and, perhaps, some inverted eights?

Vertical eights look too hurried and dangerous to be pleasing to the eye, but long sweeping manoeuvres like wing overs and reverse wing overs look much better.

Another suggestion is leaving the modeller three manoeuvres of his own invention to be drawn and described to the judge beforehand; this would give the pilot a chance to work on his own favourite type of manoeuvre and it would encourage the younger generation (like myself), especially if models were limited to 3.5 c.c. or 5 c.c. and 60-ft. lines.

At risk of making the whole thing too complicated couldn't a set of specifications be set down for such models? Say, wing area 400 sq. in. max. and 30 oz. max. weight with special bonus points for models with less than 2.5 c.c. motors and 250 sq. in. area. Line length, of course, would be optional. This would further encourage boys who cannot afford a high performance American Glo-motor and a 4-ft. span model, but would willingly have a go with a 1.5 c.c. model of, say, 30 in. span.

What about the poor old judge? The American card system where the judge fills in a card according to whether he thinks a manoeuvre is good, fair or bad, seems to be the quickest and simplest way of scoring. It would also enable the pilot to leave the least possible time between manoeuvres without confusing the judge. The two or three laps between each manoeuvre completely break the continuity of pattern of the new schedule, although the two laps inverted between loops and bunts is a good idea.

Realism and flight pattern points could be awarded but please not design detail points; we can't all be Bob Palmers!

So there it is. Another stunt competition, open to anyone who has never come higher than sixth in any previous national competition, to give the fellows a chance who like stunting for the fun and satisfaction obtained from making a plane do something worth watching.

I place my ideas "on the table" and hope someone will retain them and perhaps do something about giving us young 'uns a chance.

Yours faithfully,

Lancing,
Sussex. D. HARPER.

Note: The card system of scoring is used.—Ed.

Leaving for lolly!

DEAR SIR,—May I take issue with Pylonius over his contention that motor-cycling is the main occupation of model

aero clubs? Certain other activities are occasionally encountered.

A certain club in this district was, I understand, most active in both building and flying. But about the time Tommy Steele hit the headlines, one of the members thought he would use his skill in woodworking to build a guitar. That was the end. The idea caught on, and within months the model aero club had formed itself into a skiffle group. They are now, I understand, touring the local dance halls, and making money hand-over-fist.

Yours faithfully,

Morayshire, D. LONGMAN.
Scotland. (Pilot Officer, R.A.F.)

Anyone got a secondhand guitar, cheap?—Ed.

Miscellany

DEAR SIR,—Your correspondent, Mr. Higgins, complains in the May issue of MODEL AIRCRAFT about the lack of racing 3.5 diesels. Personally, I would prefer a well-mannered 5 c.c. motor with slightly more power than a 3.5 c.c. racing engine. It would probably be less snappy, and without the complications of either rear induction or ball races. Anyway, an AM 35 is at least as powerful as any of his special engines. If he wants, he can get about 800 revs just by angling his transfer ports with a file. This modification also improves starting and smoothness of running. (Before readers start "hacking" their motors about, they should remember that any guarantee will be cancelled.—Ed.)

I think that it would be a good idea to make the max. capacity for "A" team racing 0.099 cu. in., partly to allow glowplug competition, and also to forestall arguments as to whether so and so's engine is 1.490 or 1.501 c.c.

Also, what about under 1.5 c.c. stunt to the old S.M.A.E. schedule with marks for realism, and over 25 ft. lines. I suggest this as a cheap alternative to the new schedule for the experts. It should also give a chance to those who have not yet learned to become expert at the big stuff.

The plan of *Acrobator* in the May issue convinces me that I am not the only person who finds 1.5 c.c. stunt very relaxing and interesting.

I hope that I can hear of other suggestions, as I believe that there is a need for a less complicated pattern to give newcomers to stunt some competitions to fly in.

Yours faithfully,

Blackburn. J. R. HOWARTH.

Plastics

DEAR SIR,—As one who has been aeromodelling for over 12 years I must applaud Mr. Williams' letter in the May issue of MODEL AIRCRAFT. Would any adult with any intelligence claim that sticking together plastic toy aeroplanes was his hobby?

In your "Plastics in Perspective"

article it is hinted that flying enthusiasts dismiss all solids under the same heading. This, of course, is not so, for while there may be a few around who, like Mr. Fearnley, childishly deny everything except their own particular interests, the majority of contest flyers (of whom I am one) have nothing but praise for a well-built flying scale, solid or serious experimental model. But by solid I mean something worthwhile, like some of the excellent solids I remember seeing at the old Dorland Hall exhibitions, of which we see all too few nowadays. As for the Sputniks, etc. (including catapult jobs), one has only to take a look at the usually noisy, ignorant types who fling these things around our flying fields.

Yours faithfully,

West Wickham, D. L. MANDER.
Kent.

More Plastics

DEAR SIR,—Thank you for the interesting article on plastic model aircraft that commenced in the May issue.

As a plastic modeller since before the 1939-45 war, I feel that the disgust of C/L, F/F and "solid" modellers for plastic enthusiasts is based on ignorance of the real reasons that many people take up making models in plastics, i.e.: time of making, space for keeping, the perfect reproduction and the most important reason, I feel, the historical interest of the aircraft.

I admit that the amount of skill required in making these models is not as great as that employed in making F/F, C/L or balsa solids, but as a family man, I for one, can only afford to spend an hour or so for the pleasure of model making, but now I have nearly 50 models representing aircraft from the 1914-18 war to date.

The great drawback at the present time is the fact that there are so many different scales in plastics, 1/48, 1/72, 1/96, 1/100, and 1/175, just to mention a few. It seems a pity to me that manufacturers cannot come to an agreement to use two scales only, say 1/72 and 1/48, thus giving modellers the chance to collect models that are in proportion. In this respect I feel model aircraft magazines could help by including a short mention each month listing the month's release of plastic kits and their scale.

Who knows, perhaps one day we plastics modellers will be allowed to encroach on the preserves of "real" aircraft modellers.

Yours faithfully,

Epping, F. W. GILLSON.
Essex.

And yet more Plastics

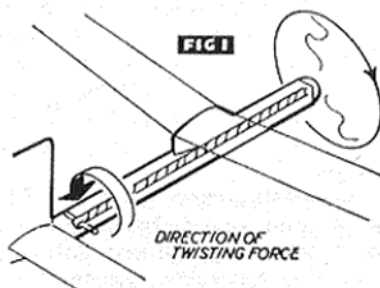
DEAR SIR,—Firstly, let me congratulate you on your article "Plastics in Perspective" in your May edition of MODEL AIRCRAFT. Secondly, I should

Continued on page 243.

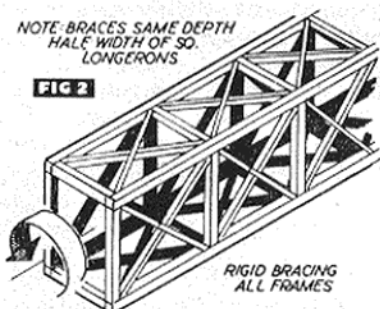
The practical approach to a *Rigid Fuselage*

The problem of building a rubber model fuselage to withstand the torque of a powerful motor is easily solved by following the practical tips contained in this article—and proved successful by many experts

A COMMON fault with rubber model fuselages is that they are prone to twist under the torque of a wound rubber motor and this can appreciably affect the trim. A conventional rubber model propeller revolves in an anti-clockwise direction (viewed from the front) so that the



motor is in a state of strain with stored energy tending to twist the fuselage, as indicated in Fig. 1. The reaction at the rear end can be visualised as that end of the rubber motor tending to rotate the rear fixing in the opposite direction to



the propeller. This it cannot do, but unless the fuselage structure is completely rigid, the whole rear fuselage will be twisted in that direction.

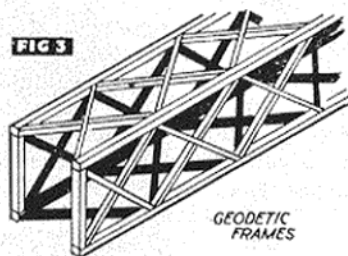
A basic box fuselage has little resistance against such a twisting action. Fortunately, however, doped tissue covering provides an easy means of stiffening, when it is taut,

but if it slackens off then it will "give" with the strain and that characteristic fuselage twist is readily seen.

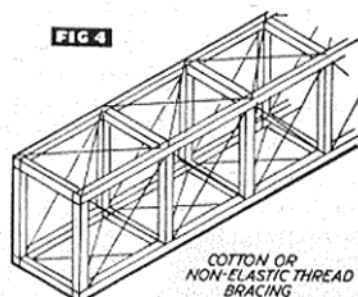
Since the tail unit is nearly always mounted directly on the rear fuselage, this means that both the tailplane and fin will be twisted out of line. Now it is a well-known fact that one way of trimming a model for turn is to tilt the tailplane, when the model will tend to turn in the direction of the highest tip. In this case, this means that a twisted fuselage will tend to steepen any turn to the right. And since the normal rubber model trim is a turn to the right under power, this tightening of the turn could lead to the model spiralling in.

The answer is to design the fuselage to absorb the twisting load of the wound motor without deflecting, so putting far less importance on the tissue remaining taut for the fuselage to remain true. You then have a model which you can wind right up with confidence, even with slack covering.

There are several ways in which this can be done, some of which add very little extra weight. The most obvious way of making an ordinary "box" framework quite rigid is to cross brace each bay, as in Fig. 2, when you will have a completely rigid structure. Any twist applied to the end of a bay is now resisted by four struts in compression and since balsa is strongly resistant to compression, the frame just will not "give."

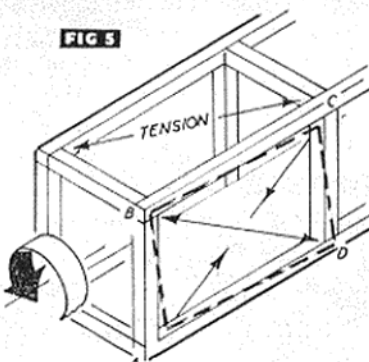


The vertical and horizontal spacers, in fact, now serve little purpose and can be eliminated. This gives the so-called geodetic form of bracing—Fig. 3—which is just as rigid as the above with the weight of the vertical and horizontal spacers saved. It is not, however, an easy type of fuselage



to build. But such a fuselage will not need any covering at all to absorb the twist of a fully wound motor without twisting.

A somewhat easier solution is to revert to the fully braced type of

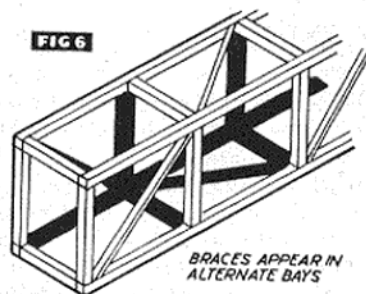


construction of Fig. 2 but to use cotton or thread cross bracing instead of balsa struts. This gives a lighter assembly and one which is easy to build. Just make a conventional fuselage and add the bracing—Fig. 4.

This type of construction strengthens the fuselage against twisting by the strength of the thread bracing in tension. Obviously, to load a thread

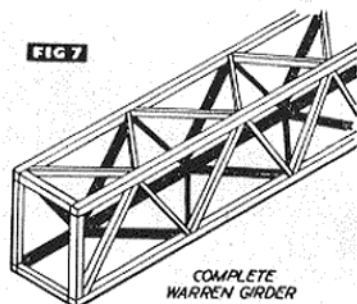
in compression, it will just buckle and have no strength. But cotton or thread is very strong in *tension*, so strong, in fact, that thin cotton is quite good enough for the job.

Solid bracing (e.g., balsa strip) can be used to produce a rigid fuselage, arranging the position of the braces (Fig. 6), so that each is in *compression* (i.e., AC direction, Fig. 5) when a twisting load is applied to the



end of the fuselage. Such a braced fuselage structure is extremely rigid and need not be very much heavier than an unbraced or cotton-braced fuselage since the bracing need only appear in alternate bays. It was used a lot, and very successfully, on the old high-power Wakefields where a 1 oz. fuselage had often to accommodate the combined torque of two 16-strand motors wound to capacity.

The other type of "box" fuselage construction which is strongly resistant to twisting is the Warren girder frame—Fig. 7, staggered with respect to each pair of sides. In other words, both the top and bottom spacers are arranged in "W" fashion—not straight across. The latter method,



although simpler, destroys most of the value of the Warren girder sides. The only way to bring such a fuselage up to full "twisting" strength would be to add diagonal compression struts in the rectangular top and bottom bays. Where minimum weight is not the main aim, this does enable fuselage assembly to be much simplified.

Getting it on the Card

The following practical advice to would-be contest winners was sent in by a well-known contest flier who, for obvious reasons, wishes to remain anonymous!

I HAVE read with interest the recent articles on "Designing for Duration," and although Mr. Christie's was described as being easily understandable, I did not understand a single word of it. I feel that a more practical approach might be welcomed by those readers who, like myself, cannot do sums to calculate what a model will average. Such an approach might even be of interest to those who are mathematically inclined, but wonder why their model never realises the calculated time in a contest.

The model does not have to have a better performance than its rivals, but has to be more consistent, designed to catch lift and fight down draughts. It should be trimmed in such a way that minor trim changes will not drastically affect performance. This means that you can take it out of the box and make a contest flight in really windy weather, whilst everyone else waits for the wind to drop to enable a trimming flight to be made. That way you have more time to retrieve yours.

The power model should have a motor which starts with a few flicks, and can then be forgotten about. The timer should be the best available (no expense spared) so that a 14 sec. run is assured every time. This must be checked on the ground with the motor running. Don't try for a longer run, as the timer is more exact than the timekeeper.

The glider should have a single auto rudder which just can't jam, and of a type which will enable the club idiot to launch for you without your having to run down the line to see if it is correctly set.

The d/t is as important as performance. What is the use of 6 min. every time if the model catches a "bump" on the first flight and doesn't come down? Fuse will win or lose a contest, so spend some time preparing it: check its burning time by waving it about at estimated model speed, then check again.

Don't forget it will burn faster if pointing forward. Test the operation of the d/t on the ground and have some mark on the fuselage to indicate 3 or 4 min. When you fly, make sure that more than that amount is left before you launch, and, in fact, aim for 30 sec. more in windy weather, and a minute if it is calm.

The flight. Wait until there is lift about; you are not in the contest to prove still air duration. Select your timekeepers. If they have just timed a max that you couldn't see, then they are your boys, but don't take a chance, still leave a friend with them to see that they watch your model all the time.

Don't hurry, select your launching position and make the timekeepers move if necessary. If you don't like the weather for a few minutes, fiddle with the d/t. Launch when you are ready, put your own watch on the model, see that your friend has done likewise, and remember, even S.M.A.E. watches stop if they haven't been wound.

Retrieving. Just as important as everything else. Energy, concentration and common sense are all that is required from the competitor, who should be equipped with a compass and some form of optical aid.

The procedure is to run until you either drop, reach high ground, or the model d/t's. Never run whilst the model is coming down on the d/t. Watch the model very carefully and use your optical aid if it is difficult to see. Watch the model to the ground, and without taking your eyes off it survey the point for any landmarks. When you are really satisfied you can find the point again, take out your compass, and get a bearing on to the model from a landmark in the distance or behind you.

Now you can walk to the model. It won't be where you think it is because you can't estimate the distance accurately, so search in front and behind your point until you find

Continued on page 243

OVER THE COUNTER



As the manufacturers of the only jet engine on the market it was inevitable that **Jetex** should "get into orbit" with a space rocket design. Named the **Jetnik**, it is a model of a two stage orbited satellite rocket, and is launched by means of a simple catapult, after which the powered nose section separates from the main body and continues up under the power of a "50" motor.

Construction follows the usual **Jetex** "Tailored" system, all parts being die cut and the "fuselage" shells pressed to shape from two laminations of balsa. The kit, which is very complete, sells at 12s. 3d. which includes the motor, but no fuel, and although it is not a flying model in the strictest sense of the word, it does make an interesting variation from the usual run of designs. The kit is also obtainable without the motor, when it costs 7s. 11d.

* * *

Two new designs have just been released by **Performance Kits** of Coventry—a 20 in. span scale model of the D.H.87b **Hornet Moth**, and a 33 in. tow-line glider. Both kits

feature a very clear plan and separate instruction leaflet, good quality strip and sheet, and coloured tissue, while the ribs and formers are printed on sheet and thus require cutting out. The **Hornet Moth** also includes rubber, plastic propeller and wheels, and sells at 7s. 6d. while the glider—named **Cosmic Cloud**—costs 6s. 6d.

* * *

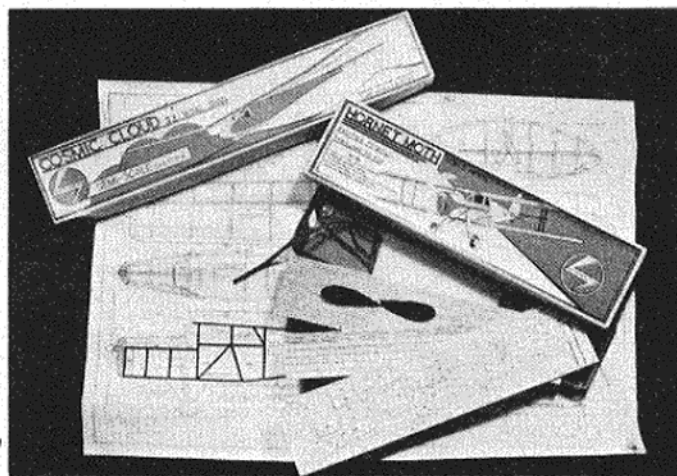
Aurora is a name that is well known among plastic enthusiasts, although until recently only token imports of their range of kits have reached this country. Now, however, an initial selection of eleven aircraft are being produced from the original American

moulds by Playcraft Toys Ltd., of Swansea. Kits so far available range from modern jet prototypes to such popular W.W.II designs as the **Spitfire**, F.W.190, and **Lockheed Lightning**, while the prices vary from 2s. 6d. to 9s. 11d. We have received samples, in made up and kit form, of the **Lockheed Starfighter** and **Convair Dart**, both of which are in the 2s. 6d. price bracket, and well up to the standard that is now expected, though not always reached, of all plastic kits. The pressings were very good, requiring the minimum of cleaning up, while the diagrammatic instruction sheet made assembly quite straightforward. We were also impressed with the sales appeal of the strikingly coloured boxes.

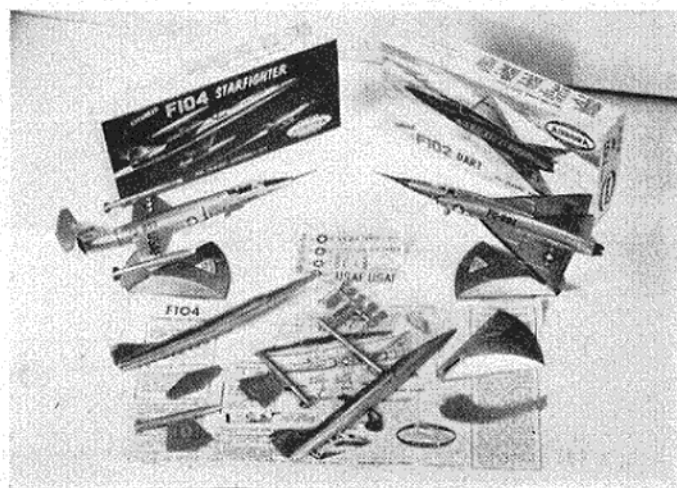
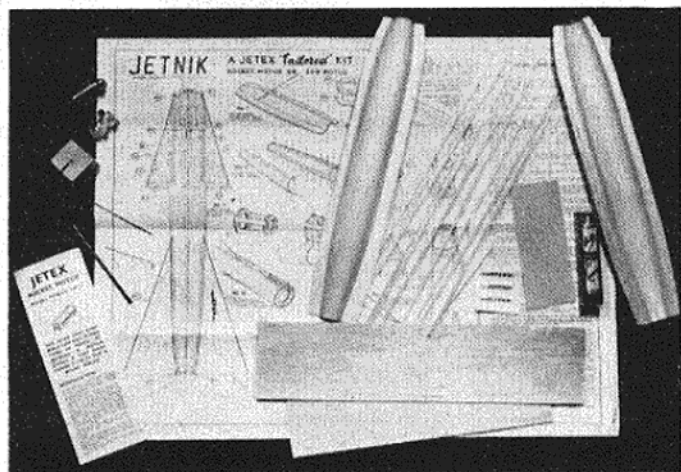
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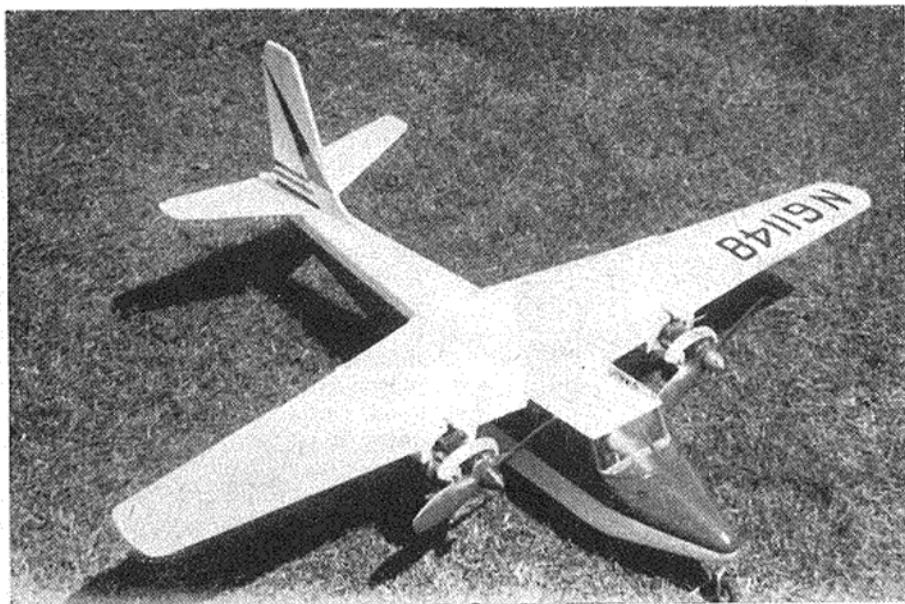
The British Model Aircraft Manufacturing Company Limited, better known as **Skyleada**, have introduced a new diesel fuel called "Spitfire." We have tested this on several popular British engines and with entirely satisfactory results. Experience has shown that no startling increase in performance can be

Continued on page 242.



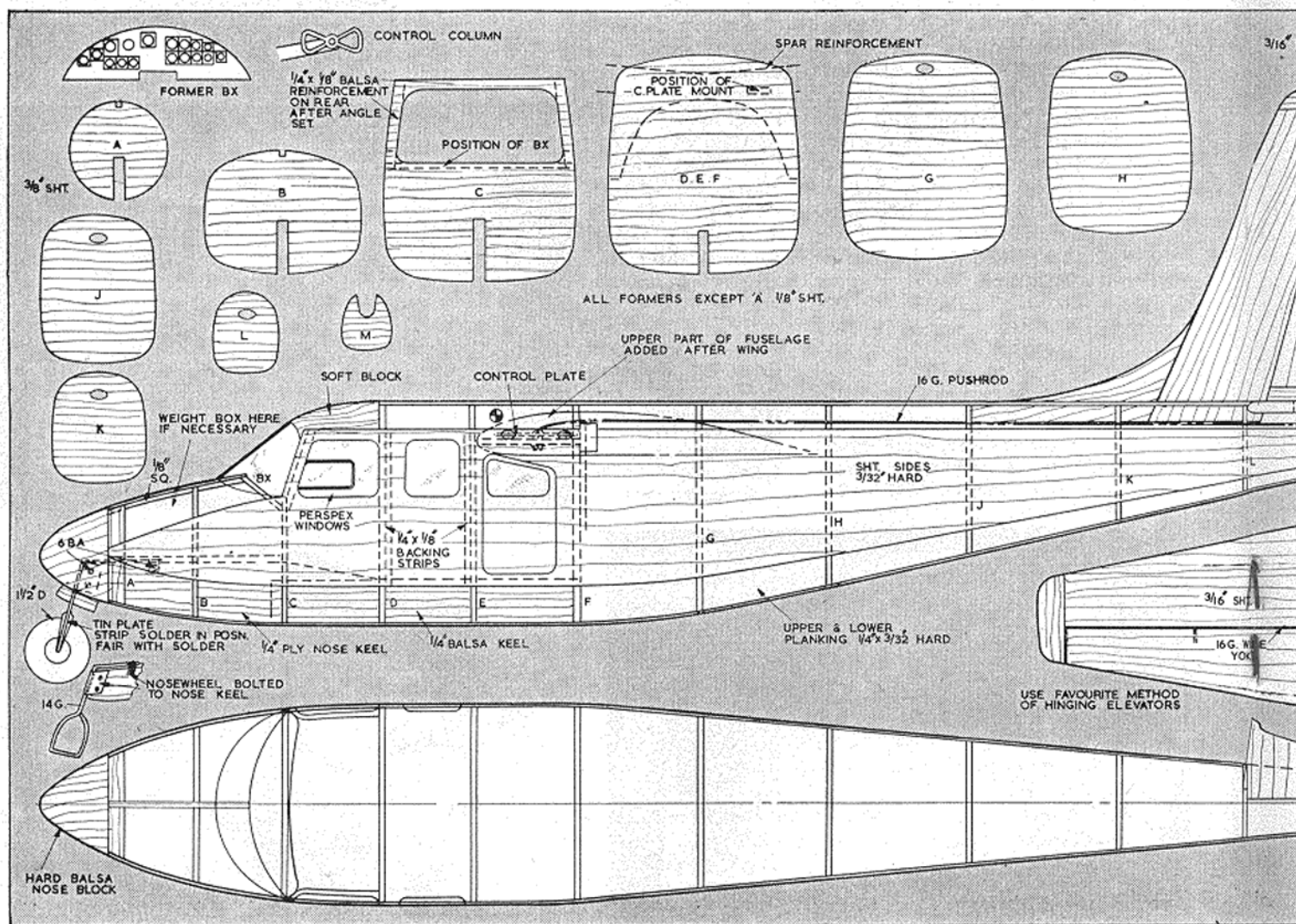
Below, left: The **Jetex Jetnik** kit. Right: The two new models from performance kits, and lower right: the **Starfighter** and **Dart** of the **Aurora** range.





another terrific
a C/L scale
of the
Aero
COMMANDER
designed for 2.5

The author's "Aero Commander" 560. This photo shows just how important is attention to detail in a scale model—the N61148 should be on the starboard, not port, wing!



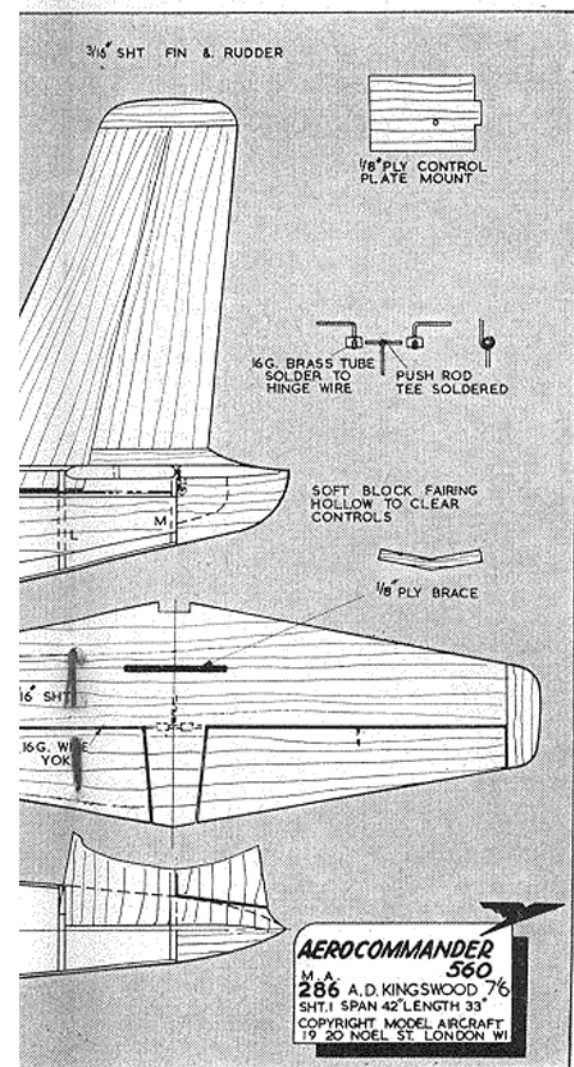
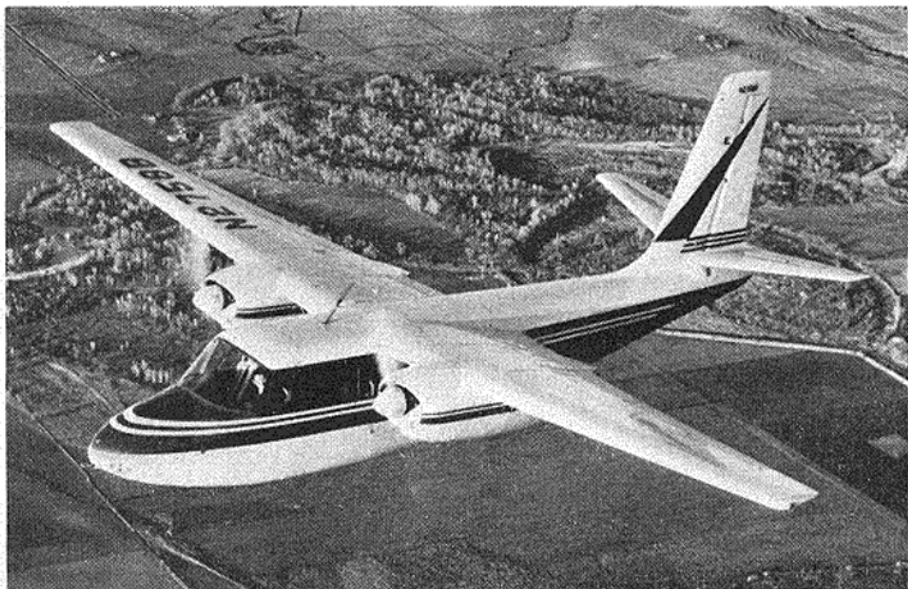
rrific 'twin'!

le version

f the

DER 560

2.5 c.c. motors by Alan D. KINGSWOOD



ONE of the few light "twins" on the American market with a high-wing, the Aero Commander is produced in 560 and 680 super versions, by the Aero Design and Engineering Co. of Bethany, Oklahoma. A good-looking five to seven seater, it is powered by two horizontally-opposed Lycoming engines and its only detractor from the conventional is its swept fin and rudder.

The machine is in use in many parts of the world. Performance capabilities have been shown by a non-stop trans-U.S.A. flight by a 680 super and a non-stop single-engine flight from Oklahoma City to Washington, D.C., by a model 560.

The Aero Commander 560-A serves in the U.S.A.F. as the L-26B V.I.P. transport and the 680 with the U.S. Army as the L-26c. One is also used by President Eisenhower.

The model was produced from factory drawings supplied by Aero Design and Engineering. It was originally powered by Mach-1 engines in an effort to find the minimum size model for two 2.5s and was overpowered as a result. Consequently, a pair of good 1.5 c.c. engines should do the job well, or even maybe two A-M 10s if the construction is kept light.

Fuselage

Commence construction by cutting and assembling the nose keel from $\frac{1}{4}$ in. ply and balsa. Form the nose-wheel leg from piano wire and, not forgetting the brass or tinplate reinforcement soldered in position, securely bolt it in place on the keel (the wheel should be inserted during bending).

Cut all the formers from the wood specified on the plan, and cement A, B, C, D, E, and F to the keel in their respective positions. Cut the fuselage sides from hard $\frac{3}{32}$ in. balsa sheet and cement into position, taking care that the tail end comes together properly. Cement the rest of the formers between the sides, making sure the fuselage is true about the fore-and-aft centre line.

Add the backing strips around the inside of the cabin, and also former B/X, then lay aside to dry thoroughly.

Wing

Cut the wing spar joiner from $\frac{1}{4}$ in. plywood, cut the spars from $\frac{1}{4}$ in. hard sheet balsa and, using pre-cementing technique, carefully bond the spars to the ply joiner. It is worth while to bind the spar-roots with silk and cement.

Fix the starboard spar in position over the plan and cement the wing-ribs in place. Ensure that ribs 3 and 4 are spaced correctly for the nacelle formers. Repeat with the other wing, then add the tips, auxiliary spars and leading edges, using a scarf joint at the leading edge join. Sheet the underside of wings from R1 to the tips (leaving a space for the addition of the nacelle formers from leading edge to N3).

Nacelles

Assemble the engine bearers and nacelle formers using a good glue that is impervious to fuel and oil, not balsa cement.

Form the main undercarriage members from 12 S.W.G. piano wire and bind and cement in position as per plan. The bearer holes and spacing shown suit the

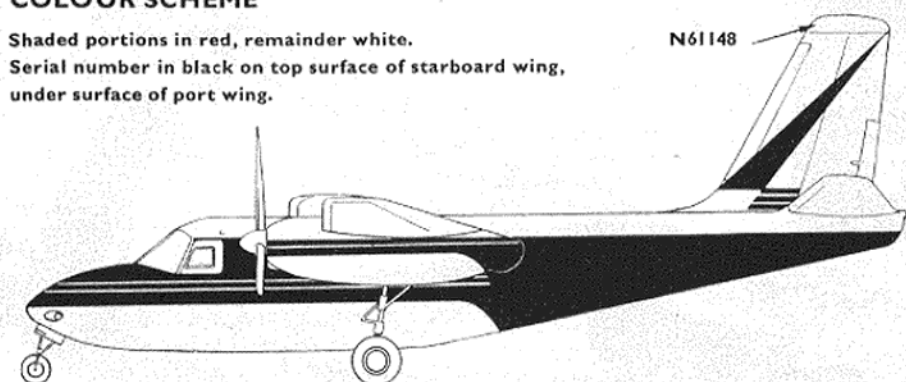
FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1, 7s. 6d., (TWO SHEETS) POST FREE



COLOUR SCHEME

Shaded portions in red, remainder white.

Serial number in black on top surface of starboard wing, under surface of port wing.



Webra Mach-1. It is advisable to bolt the engine to the bearers while assembling the nacelles to ensure the correct alignment. Cut any necessary holes in NF1 to clear air intakes on rear induction engines before assembly. When all is correct leave overnight to thoroughly set.

Offer up the nacelles to the wing and glue and screw them into position on the leading edge and spar; the bearers must be horizontal and the undercarriage vertical. Check the alignment before the glue sets.

Make the tanks from brass shim or thin tin plate and install them in the nacelles, making sure there will be no kinks in the fuel lines to the engines. Extend the vents to the upper surface of the wing. The original tanks were made similar to those used for team racing.

Tail Assembly

Construct the tailplane and fin from wood as specified. Hinge the elevators by your favourite method after connecting them with the two wire yokes. Fix the tailplane into position on the fuselage at 0 deg. incidence. (The top of the fuselage sides should be parallel to the datum line.) Add the fin, vertically, on the rear fuselage with the rudder cemented for a slight turn to starboard. Fit the rear fairing block and carve to shape.

General Assembly

Join the wing to the fuselage, again pre-cementing the joints. Check the alignment carefully. Use plastic wood for wing filleting internally to strengthen. Install bell-crank and mount in the port wing root—see plan. The mount is slotted into former F and is cemented to the top of the wing leading edge. Thread the leadout wires through the wing and fix securely to the bellcrank. (Note:—a leadout pulling out while flying makes a mess of the model—I know!) Use metal tubes at the wing tips.

Fix the 16 S.W.G. push rod between bell-crank and tail horn. The rod should be a close sliding fit through the small holes in each former to prevent it bowing. Solder the pivot nut on and do not leave flux around moving joints. Now check the controls for free movement.

Using $\frac{1}{4} \times \frac{1}{8}$ in. balsa, plank the top

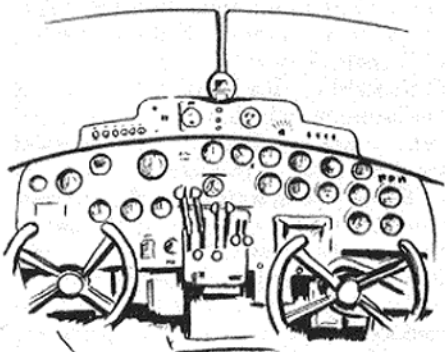
of the fuselage and nose and add the fairing block at the front of the cabin. Plank the sides of the nacelles and fair-in the rear with soft sheet as indicated on the plan. Leave a hole in the underside for the undercarriage well. At this time check the following: undercarriage, controls, tanks, then add cabin details if required, and tip weight to starboard wing. Use plastic wood for the wing and tail fillets, fill in the underside of the fuselage and the nacelles, chamfer the trailing edge of the lower wing sheet and sheet cover the upper surface with $\frac{1}{16}$ in. balsa. The original ailerons were cemented in position to induce a turn to starboard, but were found undesirable as they produced a lateral rocking when engines ran rough. The overpowered condition also contributed to this no doubt.

Cement the hard balsa nose block in place then carve and sand it to shape. Cut holes for the landing lights and add the nose-wheel doors. Construct the cowlings from laminated sheet (as plan) and cut away to clear the engines, then add exhausts to nacelles. The cowlings are held in position by wood screws passing through the ply front into the ends of the bearers.



Above: Alan Kingswood with his original Aero Commander 560. Alas! the model is no longer with us. Alan took off in the dusk with the handle upside down—need we say more!

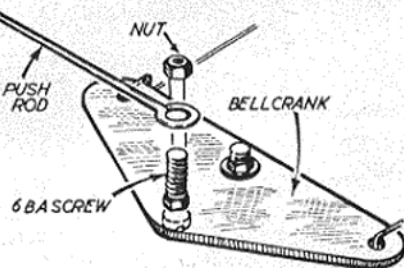
Below: Sketch of the controls and instruments of the 560.



a quick tip on PUSH RODS

A BETTER "engineering" way of mounting the push rod on the bellcrank is to make off the end of the push rod in the form of a circular eye to fit a screw in the bellcrank hole.

A suitable screw size is 6 B.A. If necessary, open up the bellcrank hole to take the screw, which is then rigidly secured with a nut. The push rod wire is usually 16 S.W.G. A matching eye diameter can be formed in the end by wrapping the 16 S.W.G. wire round a short length of 12 S.W.G. wire held in a vice. Form the loop close on the 12 S.W.G. wire, cut off the surplus with wire



cutters or a hacksaw, and close the loop flat. A 6 B.A. washer can be fitted above and below the bellcrank eye, and if you want to do the job properly use a Simmonds nut for securing.

ROVING REPORT



Brings you up to date on the latest world model news

THE latest American R/C manufacturer to market multi-channel simultaneous-control R/C equipment (others include Orbit, C.G., and Raytrol) is the well-known Citizen-Ship Radio Corporation of Indianapolis who have just introduced their new MSR-8 and MST-8 receiver and transmitter.

The equipment gives eight-channel control on 27.25 Mc/s with simultaneous operation of any two controls. The transistorised receiver requires but one 30 volt hearing-aid battery and one pen cell and weighs 9 oz., complete with eight relays and in its aluminium case. There is one simple tuning adjustment which is accessible through the top of the case. The hand-held transmitter features stabilisation of the audio

This very fine multi-channel Piper PA.20 Pacer was built by T. Kato, one of Japan's leading R/C modellers

tones through special tone generators of the type used for electronic organs. It has a single stick control for rudder and elevator with aileron coupling and push buttons for engine speed control. Both units sell for \$99.95 each—i.e. £35 14s. apiece.

Offhand, we can't think of any British pre-war model aircraft kits that are in production today (KK's early wartime *Achilles* rubber-model must be about the oldest) but, rather surprisingly, some American pre-war kits have had astonishingly long runs: Berkeley's 7-ft. *Buccaneer* and 9-ft. *Cavalier* (1935-36) were available for nearly 20 years, for example. Now another old-timer has been revived: Modelcraft of Los Angeles, a leading West Coast model stores of the 'thirties, have re-introduced the

46 in. *Miss Tiny* kit they were making in 1938. Then designed for the 3.8 c.c. Ohlsson 0.23 and other similar "small" petrol engines, *Miss Tiny* is now intended for anything from a "hot" 0.049 up to 0.09 cu. in. (1.6 c.c.) for R/C, an interesting sidelight on the tremendous increase in power-per-c.c. that the modern engine shows by comparison with its pre-war counterpart.

Expected shortly from the Fox Manufacturing Company is an International class (2.5 c.c.) glowplug motor to be known as the Fox 15. Performance is said to be top grade. This is welcome news because, apart from Herkimer's Cub 0.14 and K & B's Torpedo-15, the International class size has been somewhat neglected by American engine firms.

Some nice prizes were given at the recent South African Nationals held at Capetown, including an American Bramco transmitter and receiver for the winner of the A2 glider event. Total entries this year were rather less than in previous years, which was a pity because, prizes apart, the organisation was good and weather excellent. British model designs and engines fared well in many events, including first and second places in FAI power (Oliver Cub powered *Calypso* and Tiger powered *Dream Weaver* respectively) by Brian Partidge and Pete Visser.

Multi-channel radio, on the American pattern, is now firmly established in the Union and the winner of this event had the classic set-up of an *Astro-Hog* with Orbit equipment and Veco 35 motor. Obviously, too, the disciples of Bob Palmer have multiplied since his



The Palmer influence and superb execution combine to make one of the most attractive stunts yet seen: an O.S. Max-35 powered model by H. Takahara.

visit to S.A. last year. Nearly everyone flew a Palmer *Thunderbird* and they won first places in both the senior and junior stunt categories.

* * *

It is always interesting to see how news of foreign developments and achievements is treated in the model journals of other lands. Quite a lot of news has, for example, been published in the American magazines about Russian modelling, just lately, and always with a friendly treatment. The Czechs, while their available sources of information naturally result in the bulk of their material being from the Soviet sphere, do not fail to report significant achievements from Western countries.

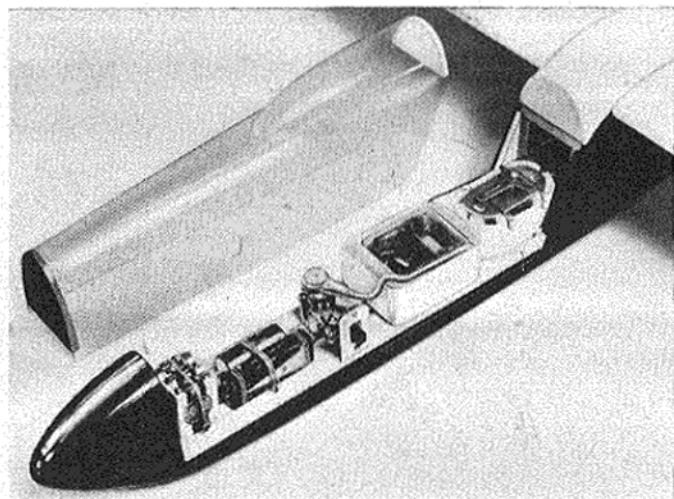
Recently, *Letecky Modelar* reprinted *MODEL AIRCRAFT's* 100th Engine Test, featuring the American Fox 29R and the Czech Vltavan-5, a



From Jan David-Anderson comes this picture of a Norwegian R/C seaplane. Norwegian fiords offer excellent facilities for flying-boats and seaplanes.

report which showed the American engine to be substantially more powerful than its Czech counterpart. Many foreign model publications obtain a good deal of their technical data from M.A.'s pages, which is not objected to when due acknowledgement is made. Unfortunately, this was not the case with one European magazine which made a series of bare-faced swipes of our Engine Tests

Neat radio installation in Graupner's new Trabant 7-ft. glider designed by Fred Militky. Installation shows the new Graupner-Mikroton audio-tone receiver and Telematic-Alpha rudder actuator.



complete with drawings, photos and graphs—and purporting to be their own tests!

In most foreign model journals, politics, happily, seldom obtrude, but a few exceptions can be found, the worst example being an East German publication, which has more anti-West cartoons, Soviet war stories and other propaganda than useful model articles.

One thing is clear from any survey of the world's modelling publications: British, American and other English speaking countries are the world's luckiest as regards interesting and informative model magazines.

* * *

The German OMU R/C firm are bringing out a new type of multi-channel outfit that offers a considerable saving in cost when one wishes to graduate from three to, say, five or eight channel control. Manufactured in two basic types having three and five channels, one can expand the scope of the equipment as required by adding extra plug-in units. The receiver is made as a

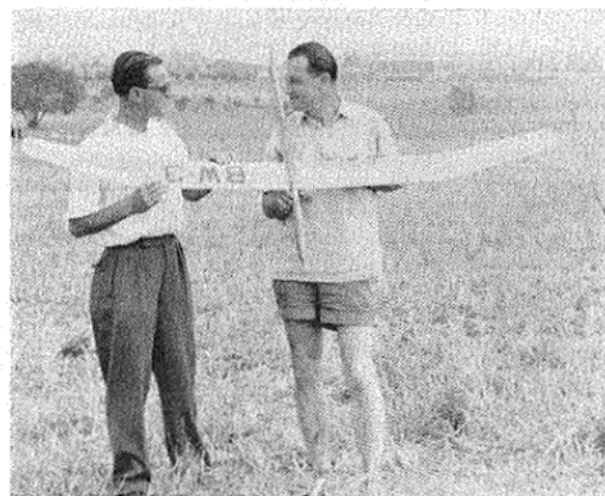
unit separate from the reeds and relays and the transmitter has provision for adding extra modulation units.

The Webra firm have an interesting new scale Cessna 180 kit. Designed for R/C, it spans 59 in. and is intended for 2.5 and 3.5 c.c. engines. The Ruppert Twin 7.6 c.c. Diesel, made famous by the Stegmaier brothers with their vacuum servo equipped R/C models and which Webra is to manufacture in quantity, is now announced as the Webra "Boxer" engine. It is to be available with or without vacuum pump and is priced at DM.215 and DM.185 accordingly (approximately £18 6s. and £15 15s.).

* * *

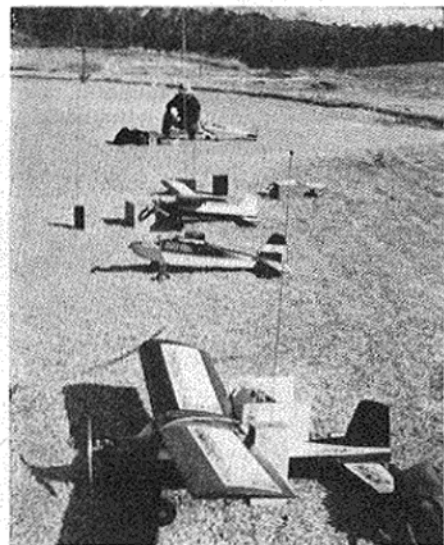
Modellers throughout the world will be sorry to hear that Jim Walker, inventor of U-control and president of the American Junior Aircraft Company, has died. Only a few weeks before, Jim, the only man to fly three C/L models at once (all with

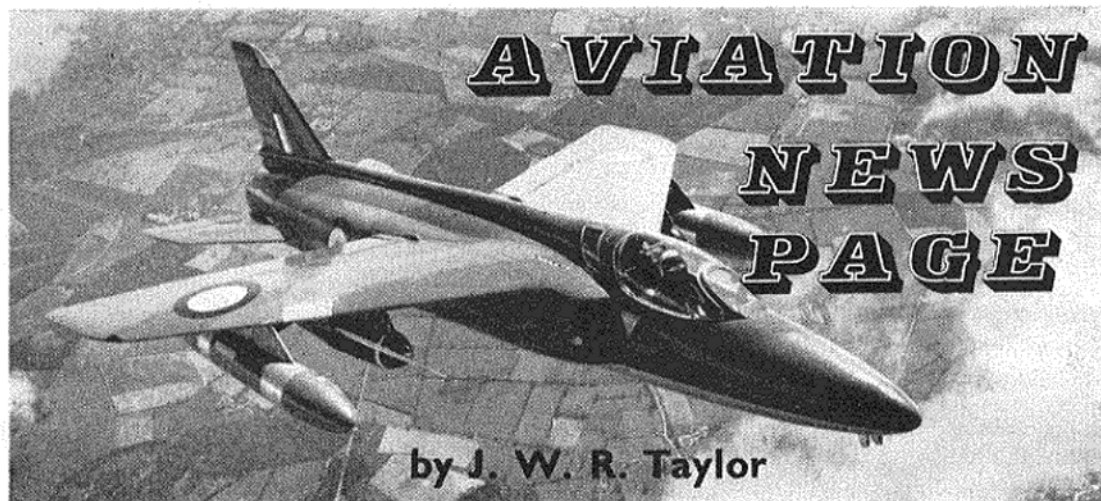
Continued on page 243



Left: two of Germany's leading designers, Rudolf Lindner (twice World Champion) and Karl-Heinz Denzin (twice German Champion) discuss the latter's A2 "Edith III." Model uses a Benedek aerofoil section and has an honest still air performance of 2 : 50.

Right: R/C has become very popular in Japan. Here is a typical club line-up of multi-channel models.





The "Gnat" is back—back in the news with the possibility of it being a replacement for the ground attack "Venom" at overseas bases of the R.A.F.

MOST SURPRISING NEWS to come out of the Air Ministry's "Conference Prospect" in May was not that the R.A.F. wants another generation or two of piloted interceptors and bombers—the need for them has been clear for months—but that the little Folland *Gnat* is being evaluated as a replacement for ground-attack *Venoms* at overseas bases.

After years of apathy, except in India and Finland, it seems that the potentialities of this pint-size prize-fighter are at last being appreciated. With P.1's costing around £300,000 each and tied to extensive ground facilities, the cheap, sturdy, more versatile *Gnat* would certainly fill a gap. As shown above, it can carry two 500 lb. bombs or an equivalent weight of rockets, as well as its two fixed 30 mm. Aden guns, plus 66-gallon underwing tanks to extend its endurance to around two hours.

A final decision has yet to be made; but with 14 *Gnat* two-seat trainers already ordered to give R.A.F. pupil pilots economical practice in transonic flying, Folland have good cause for optimism.

GNATS OF A DIFFERENT KIND, and pests in general, are likely to become u/s in considerable

quantities when the Hollandair H.A.-001 *Libel* (below) gets on their trail. First product of its Dutch makers, this agricultural single-seater has a small fabric-covered steel-tube fuselage slung under wooden wings that span no less than 49 ft. 2½ in. With a 135 h.p. Lycoming engine, loaded weight of around a ton and lift to spare, it can spray at speeds down to 56 m.p.h. and stalls at only 38 m.p.h. Take-off and landing runs

The new Hollandair "Libel" has already appeared in this country—in scale model form at the Nationals. Smart work by Arthur Evans of Bromley.



of about 100 yards are normal.

Spray-tanks carried under the wings have a total capacity of 66 gallons and are connected to multiple-nozzle spray-bars. Alternatively, dust can be carried in a hopper behind the cabin, which has no doors to hamper the pilot's exit in an emergency.

FIRST GOOD AIR-TO-AIR SHOTS of the Avro *Arrow* Mk. 1 arrived from Canada simultaneously with the news that this huge two-seat

all-weather interceptor hit 1,000 m.p.h. during its seventh test flight on April 25th. Pilot was that old maestro of cartwheel aerobatics at Farnborough, Jan Zurakowski.

Few official details of the *Arrow* have yet been released, except that the initial version has two Pratt & Whitney J75 turbojets with reheat, whereas the later Mk. 2 will have a pair of Canada's own tremendously-powerful Iroquois engines. It is a

massive beast, spanning 50 ft., with a length of 77 ft. 9½ in. and an all-up weight of around 30 tons. Designed to fit into the joint U.S.-Canadian semi-automatic air defence system, it has extremely advanced fire-control radar and will be armed primarily with Sparrow 2 homing missiles carried internally in a 10 ft. wide weapons bay. Ultimate performance is likely to be 1,500 m.p.h. at altitudes up to 70,000 ft.

JUST FOR THE RECORD, the officially-observed attempts on the world air speed and aeroplane height records by F-104 *Starfighters* of the U.S.A.F. Air Defense Command in May produced the remarkable new figures of 1,404.19 m.p.h. and 91,249 ft. On each occasion, the record-breaking aircraft carried its normal operational equipment and was powered by its standard General Electric J79 turbojet with reheat.

Jan Zurakowski, famous aerobatic pilot, puts the Avro "Arrow" through its paces.



The Avions Fairey

TIPSY NIPPER

SINCE about 1953 there have been persistent rumours that Ernest Tips, Managing Director of Avions Fairey in Belgium, was working on something particularly interesting in the way of ultra-light single-seaters. It was, we heard, "a modern Bleriot monoplane," with a one-piece wing that could be removed to make possible towing of the aircraft behind a car.

There were reports of a strange vehicle that charged periodically over the company's airfield at Gosselies, near Charleroi, mounted on the tricycle undercarriage of the new lightplane, to prove its strength. When questioned, Ernest Tips usually shook his head sadly and pointed out that his factory was far too full of *Meteor* and *Hunter* assembly lines to permit production of the little single and two-seat sporting aircraft for which he has been famous for well over 20 years.

Now, at last, he has been able not merely to release details of his new design, the *Nipper*, but to announce that it is already in production in the form of complete aircraft and kits of parts for amateur construction. There is little doubt that it will prove popular, for the *Nipper* not only looks right but is being offered at the right kind of price.

Its construction is so simple that a lengthy description would be a waste of space. The fuselage is a steel-tube structure, with plastic cowlings and underfairings and fabric-covering aft. Wings, tailplane and elevators are of wood, also fabric-covered, and there is

Every man his own pilot—well almost! At £375 for a kit, the "Nipper" is just the job for a group effort.

a one-piece all-moving metal rudder. Transverse rubber bands supply all the shock-absorption needed by the main legs of the neat tricycle undercarriage. The fuel tank shell forms the skin of the fuselage between the 30 h.p. modified-Volkswagen engine and the cockpit. Access to the cockpit is via a footrest built into a metal fold-down flap which forms the port wing-root trailing-edge in flight. And that's about the lot!

Cost of a factory-built *Nipper* will be under £1,000. Kits will cost about £375, to which must be added £175-275 for engine, propeller, cowling, instruments, fabric, dope and paint. Assembly is simplified by the fact that the fuselage is supplied complete, ready for covering, while the main span is of straightforward constant-width rectangular section.

Despite its small size, there is nothing fragile about the *Nipper*, which meets A.R.B. regulations for the semi-aerobatic

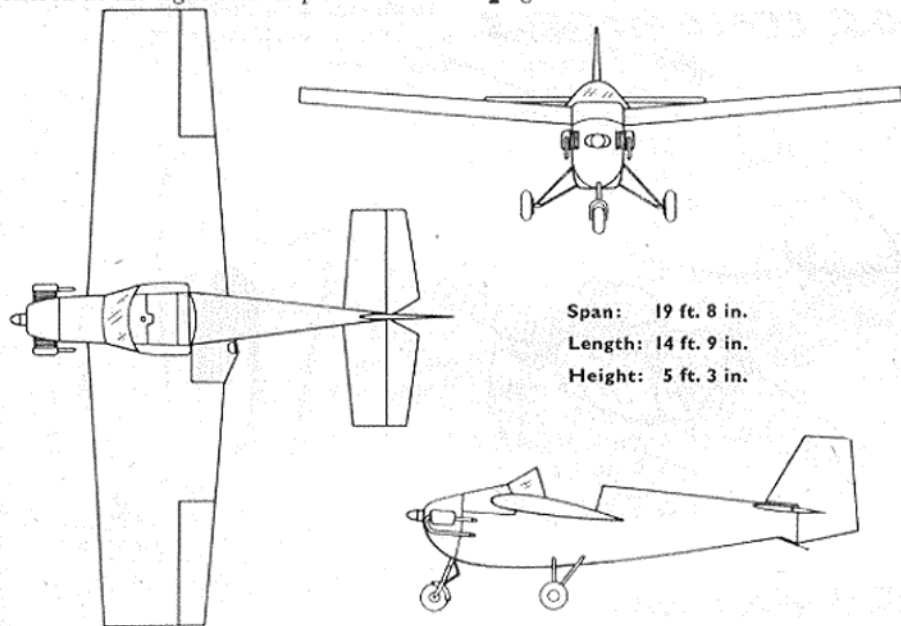


category. In fact, it looks about the best thing that has happened to the private flying movement for years.

MAIN DETAILS

Span: 19 ft. 8 in. Length: 14 ft. 9 in. Height: 5 ft. 3 in. Wing area: 80.5 sq. ft. Weights: empty 364 lb., loaded 660 lb. Max. speed: 75 m.p.h. Cruising speed: 65 m.p.h. Take-off and landing speed: 38 m.p.h. Take-off run: 450 ft. Landing run: 300 ft.

The recessed step in the wing trailing edge, which is raised when the pilot is seated in the cockpit.



Span: 19 ft. 8 in.
Length: 14 ft. 9 in.
Height: 5 ft. 3 in.



CIGAR TUBES

HAVE you ever come across some odd piece of junk and thought, "now that looks as if it would be useful"? That's exactly what happened last Christmas when one of father's presents was a box of cigars, each cigar being housed in a featherweight extruded aluminium container with a screw-on cap.

The ideas flooded through my mind until I could almost picture a model built entirely of cigar containers! The possible uses of these handy, hitherto scrapped, containers must be unending but here are just a few to set you going:

1. Obviously they make extremely handy containers for pins, rubber bands, D/T fuses, drills, etc.
2. For Jetex fans the problems of fire-proof ducts and tailpipes is solved. Jet-pipes can be made as long as required by joining with part of the cap. (Fig. 1.) Intake ducts can be made to provide clean airflow to cool the motors. Incidentally, the standard diameter containers provide excellent push-in mountings for the Jetex 50.
3. For scale and semi-scale power models where cowed engines are used, cooling and exhaust ducts make for efficient running and help to keep exhaust "slime" from attacking the wood. (Fig. 2.)
4. Both for the coming $\frac{1}{4}$ A team racers and the smaller scale models attractive fairings can be fashioned which fit snugly round the 0.5 c.c. baby engines. (Fig. 3.)
5. Each case when opened up and flattened out yields a paper-thin sheet of aluminium $\frac{1}{4}$ in. by $2\frac{1}{8}$ in. which comes in very useful—a small piece stuck to the fuselage beneath the D/T fuse makes a good insulation preventing smouldering woodwork!

As regards fixing of the metal, I have found small pins and cement quite strong enough, but if you wish to be really fussy try "Bostik" adhesive. Tailpipes are best made tight push fits into ply formers as they are then easily withdrawn for cleaning.

Those are a sprinkling of suggestions—no doubt you will have plenty more, but don't spend too many sleepless nights over it!

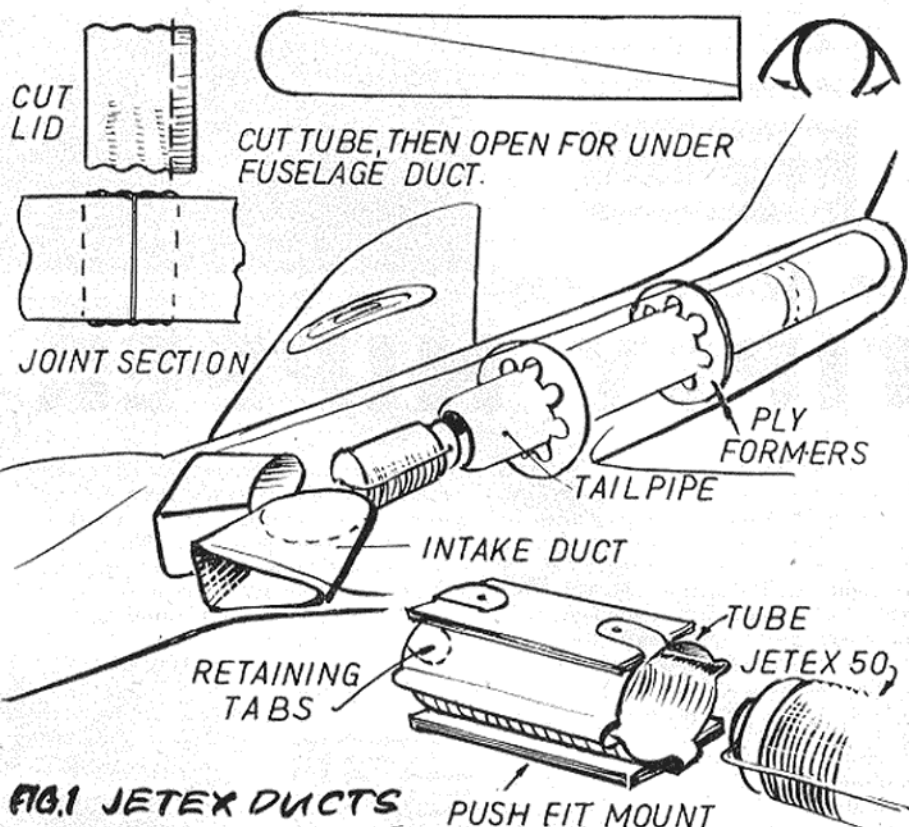


FIG.1 JETEX DUCTS

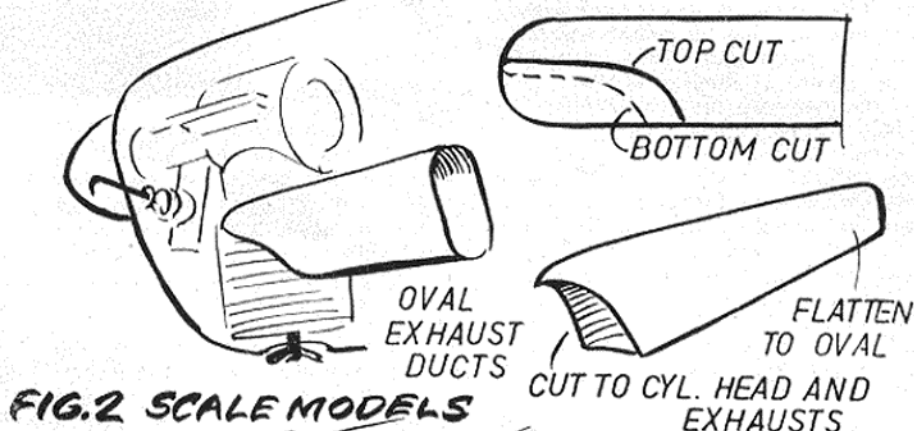


FIG.2 SCALE MODELS

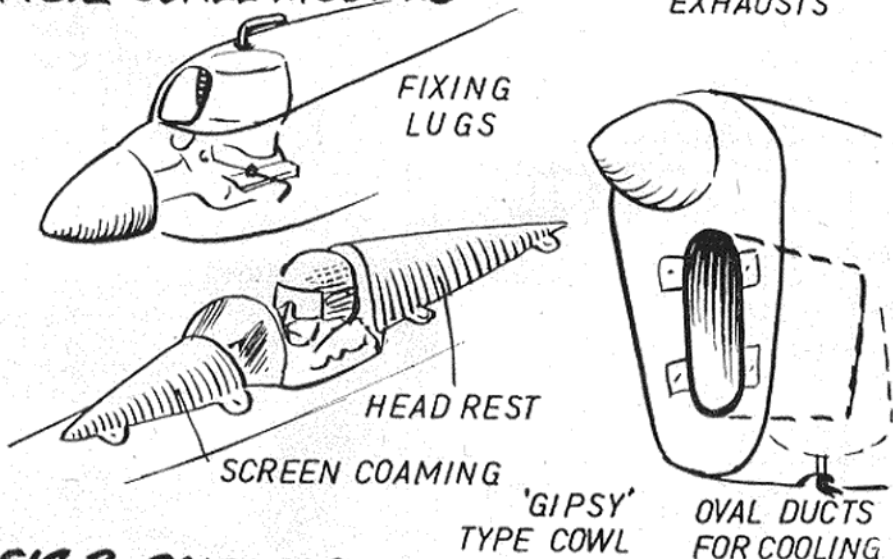


FIG.3 FAIRINGS

A special double test of two new Frog motors the

100 Mk. II & 150 Mk. II R

IN announcing their new Type "R" version of the well-known Frog 150, International Model Aircraft Ltd. advertise that it has an output of "over 100 b.h.p./litre." Our test report reveals a maximum output of 0.152 b.h.p., a specific output of nearly 103 b.h.p./litre, so this claim would appear to be well justified.

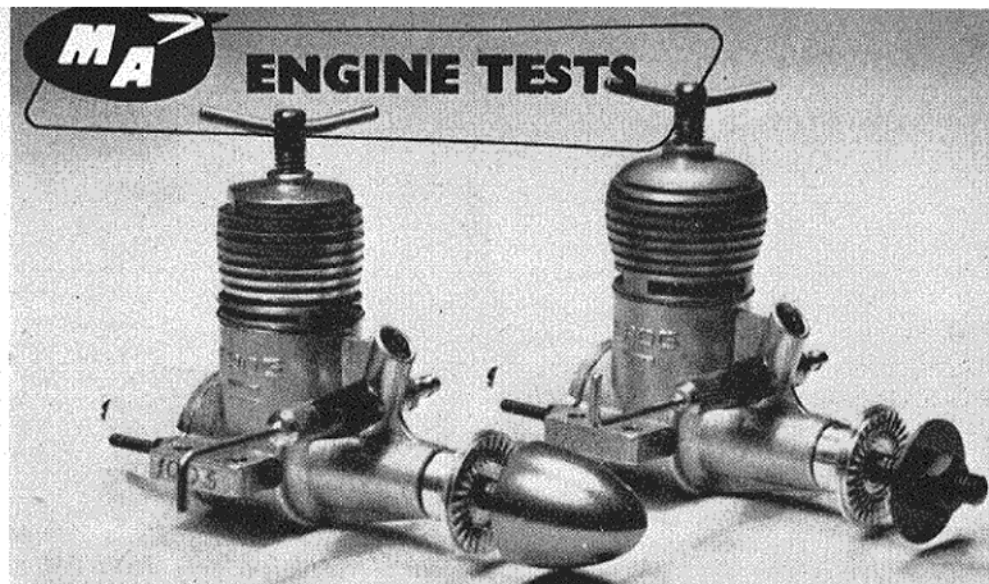
The new Frog 100 Mk. II, which appears on the market simultaneously with the 150R, is another unit of above average performance in its capacity group. The test of this model resulted in a maximum exceeding 0.11 b.h.p. at the exceptionally high peaking speed of 16,000 r.p.m.

Our dynamometer tests were on single examples only; obtained slightly in advance of release date in order that this report could be prepared to coincide with the engines' appearance in the model shops. Past experience has shown, however, that Frog motors are relatively consistent as regards developed output and it seems reasonable to assume that average production examples will, in fact, follow the performance characteristics of our test samples fairly closely.

Both these new Frogs are a development of the Frog 150 Mk. II engine which followed the original 150-D introduced in 1951 and from which, too, the 149 "Vibramatic" model stemmed a little over two years ago. The 150R and 100 Mk. II retain the 150's shaft type induction system and both are superior in specific output to the 149.

Frog "100" Mark II

The original 1 c.c. Frog "100"



"... rate these two new British engines highly in the 1-1½ c.c. group on a performance-quality-price basis"

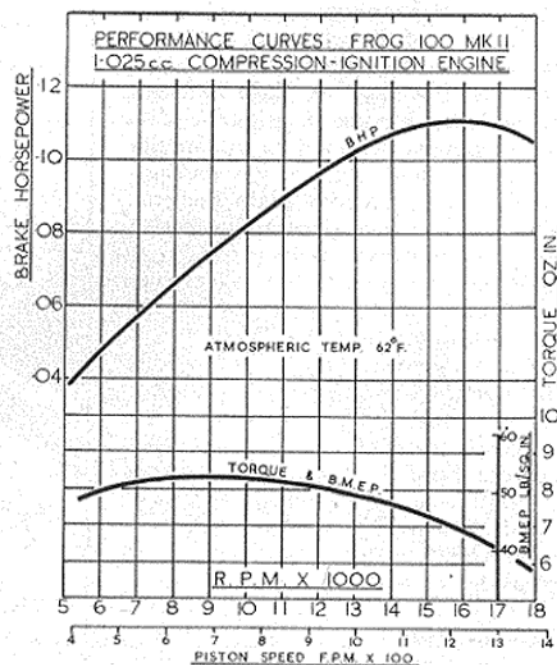
was one of the very earliest British mass-produced model diesels and first appeared in 1946-7, a simple design based, essentially, on the Frog 175 petrol engine which was I.M.A.'s first model internal combustion motor. Later, in the summer of 1948, it appeared in a "Series II" version, with modified cylinder design. Only in name is the new Frog 100 similar to the old model, however.

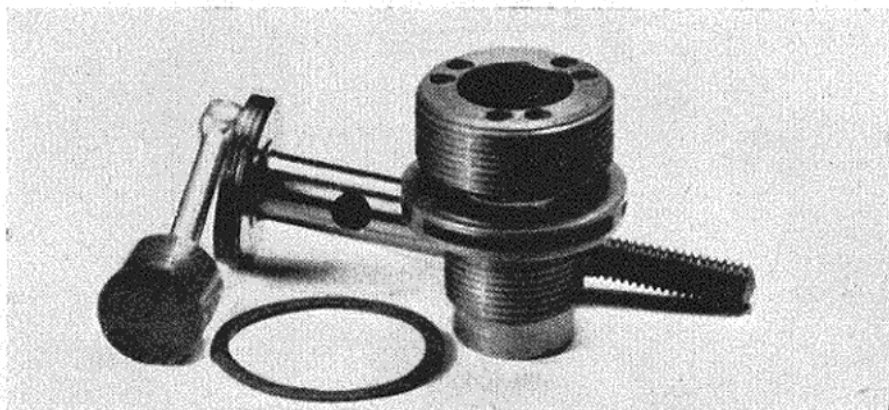
As we have said, the 100 Mk. II is based on components of the 150. To reduce the swept volume, by nearly 50 per cent., to its present figure, while leaving the existing crankcase and crankshaft intact, required reducing the bore by 0.084 in. thus increasing the minimum thickness of the lower part of the cylinder wall from approximately 1/10 in. to approximately 9/64 in. As a consequence of this very thick wall, the opportunity was taken to try a new and unusual type of multiple transfer passage.

In this, the transfer passages do not take the form, usual with screw-in cylinders, of internal or external grooves or flutes. Instead, the passages are actually drilled vertically through the wall, parallel to the cylinder axis, between the inner bore surface and the

outer, threaded surface. These passages, 3/32 in. dia. and of which there are six, arranged in pairs at 120 degree intervals, discharge into a wide, annular chamber, gas being admitted to the cylinder via three wide radial ports.

Although the external cylinder dimensions are much the same as for the 149 and 150, no attempt has been made to utilise a thick cylinder wall at the upper and hottest part of the cylinder, the external diameter of the liner being substantially





The novel transfer porting of the "100" is clearly shown in this photo.

reduced to provide a minimum wall thickness, above and below the threads, of less than $1/32$ in. One therefore assumes that experiments in this connection revealed no advantage in using a thick cylinder on the 100 Mk. II.

A word of advice concerning the cylinder liner may be appropriate here. It is probably best to avoid dismantling the liner from the crankcase, but, if this must be done, the utmost care should be exercised in removal, subsequent handling and replacement, as the top part of the cylinder, from the flange upwards, is connected to the heavy, lower, threaded portion by only three very thin vertical bars between the transfer ports. The tensile strength of these is no doubt quite sufficient to cope with the normal loads imposed by combustion, or even with careless operational handling, but it would seem desirable to avoid any action that may load these in shear, such as excessive tightening.

The rest of the engine is much the same as the 150 model and, in some respects, the 149. A plain disc-web crankshaft, having a $9/32$ in. diameter journal, with a $5/32$ in. circular valve port and $5/32$ in. gas passage, runs in a Vandervell plain bearing. The rotary valve gives an induction period of approximately 155 degrees, opening 40 degrees after b.d.c., and is supplemented by a substantial sub-piston air induction period.

Externally, the engine is readily distinguished by a new gold-anodised alloy cylinder barrel and a blue anodised spinner nut. Like other current Frog diesels, it is well made of hard wearing materials and is of neatly finished appearance with well-produced castings, tumbled to a pleasing satin finish.

Specification

Type: Single-cylinder, air-cooled,

reverse-flow scavenged two-stroke cycle, compression ignition. Crankshaft type rotary valve induction with supplementary sub-piston air induction. Radial exhaust and transfer porting with flat top piston.

Bore: 0.416 in. Stroke: 0.460 in. Stroke/Bore Ratio: 1.106/1.

Swept Volume: 0.0625 cu. in. (1.025 c.c.).

Weight: 3.3 oz. including tank.

General Structural Data

Pressure diecast LAC.112A aluminium alloy crankcase and main bearing unit with detachable rear cover. One piece non-counter-balanced hardened crankshaft with $9/32$ in. dia., $15/16$ in. long journal and $5/32$ in. dia. crankpin, and running in Vandervell steel-backed sintered-bronze main bearing. Brico centrifugal cast iron piston with $1/8$ in.

dia. full-floating gudgeon-pin and drop-forged RR.56 alloy connecting-rod. Cylinder liner of case-hardened mild-steel, screwed into crankcase, flanged and seating on fibre gasket. Machined and anodised finned cylinder barrel screwed on to cylinder liner. Alloy prop driver, taper fitted to crankshaft. Solid alloy spinner nut. Spraybar type needle-valve with double spring ratchet device. Detachable, rear-mounted nylon tank, attached with single screw to crankcase rear cover. Beam mounting lugs, plus provision for two-point radial mounting.

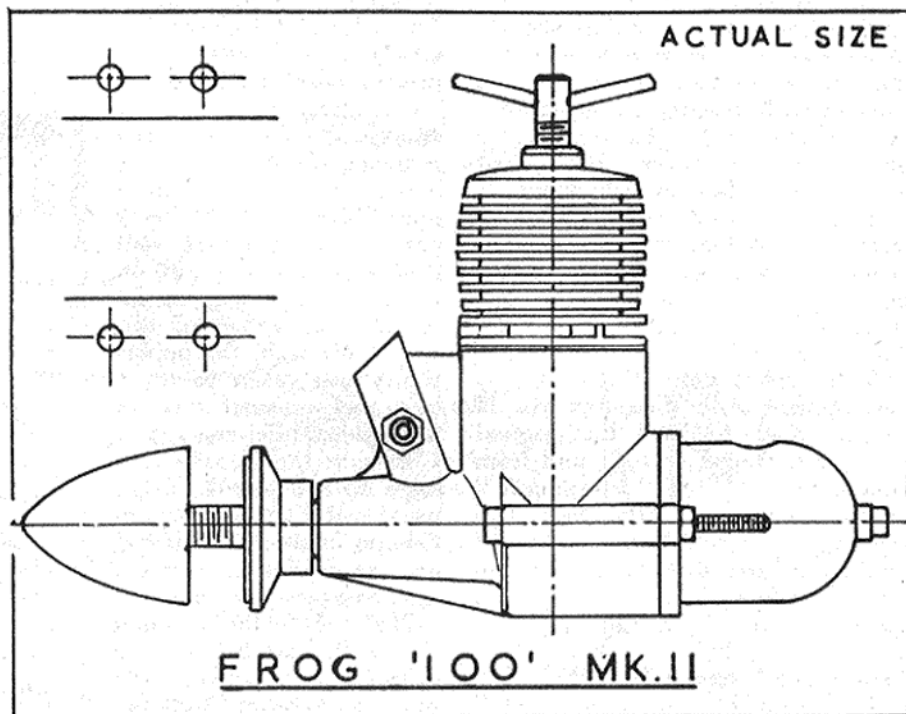
Test Engine Data

Running time prior to test: 2 hours.

Fuel used: Shell "Powa-Mix" (nitrated, with castor-oil lubricant).

Performance

Our "100" liked to be fairly wet for starting, both cold and hot. Priming through the ports helps to loosen up the engine when cold, but it is possible at all times to start the motor with choking only. During tests we started the engine by opening the needle-valve a half-turn beyond the normal running setting and choking the intake for three or four turns of the prop after the fuel had reached the needle-valve. The 100 starts quite easily and under a wide variety of loads. It is only necessary to remember that, if the engine fails to start readily, under, rather than over-choking, is likely to be the cause.



Both controls are easy to operate and are responsive without being critical. The engine will run with the needle-valve open a full half-turn either side of the best setting. Unlike many diesels, the 100 is not happy if persuaded to run on a very weak setting, however. About one half turn open from the minimum setting at which the engine will run without cutting out, seems to be best. The compression setting is easy to find and the contra-piston moves smoothly without any tendency to stick when the engine is hot. There was, however, a slight tendency for the compression adjustment to run back, on our test engine, at speeds above 16,000 r.p.m. Such a tendency would not, however, bother the average modeller, since these very high speeds will seldom be used.

The 100 has a healthy crack to its exhaust note which reminds one slightly of the Arden 099 of fond memory. It also has a remarkable speed range, with the maximum horsepower developed at exceptionally high r.p.m. At the lower end of the r.p.m. scale, there is little to indicate the high potential output of the engine and the latter becomes evident only as one decreases the load and discovers that torque is remarkably well maintained. The result of this is that the engine reaches 0.10 b.h.p. at 12,500 r.p.m. and goes on to exceed 0.11 b.h.p. at a peak of 16,000 r.p.m., a performance which places the Mk. II 100 well above average performance in its class and renders it comparable with the best yet seen in the 1 c.c. group.

Power/Weight Ratio (as tested): 0.715 b.h.p./lb.

Specific Output (as tested): 102.7 b.h.p./litre.

Frog "150" Type R

Having achieved an output with the 100 Mk. II, which closely approached that of the existing 1.48 c.c. "150" model, Frog designer George Fletcher was prompted to investigate the possibility of bringing the latter engine up to similar standards of specific output.

The main modification adopted was a new short-skirt piston and this has been responsible for a quite remarkable increase in performance, due to the very considerable degree of sub-piston air induction (amounting to some 80 degrees of crank angle) now obtained. It is conceivable that a small part of this gain is due, also, to the reduced drag of the short piston length and to the

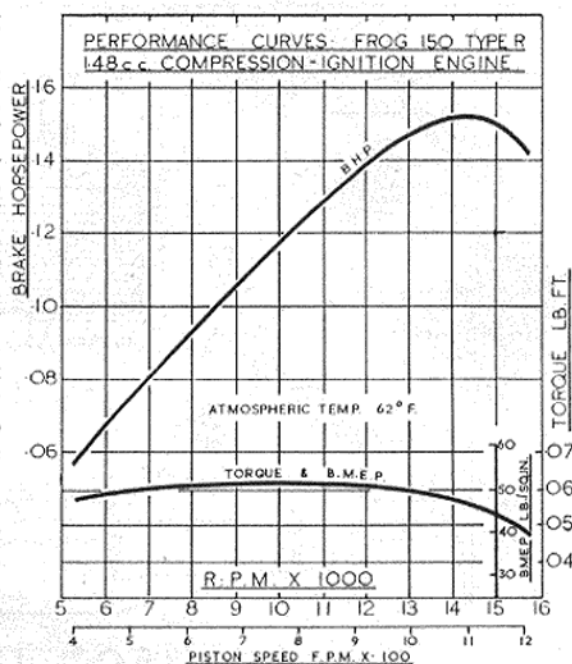
reduction in reciprocating weight.

The actual power increase that has been obtained is, according to our tests, rather more than 20 per cent., a remarkable enough figure, yet one which, if one may judge by the makers' quoted prop/r.p.m. figures for the two types, is no exception and has been substantially exceeded in their own tests. It is interesting to note that these modifications bring the power of the 150-R up to well above that of the 149 "Vibramatic" model, which has the same cylinder as the 150. A similarly modified piston was also tried on the 149, incidentally, but with less useful results, there being considerable blow-back through the automatic induction valve and the 149 will therefore remain unchanged for the present. The 149 continues to retain the advantage of lower fuel consumption.

In practically all other respects, the 150-R is the same as the Mk. II 150 that has been in production for several years. It has the same heavy, radially ported cylinder, in which three external flutes and inclined circular ports are used to transfer the charge. (This is a modification from the original 150 design of 1951 which had internal transfer grooves.) The Type R is distinguished externally from the standard 150 Marks I and II by a blue anodised cylinder barrel.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compressed ignition. Crank-



shaft type rotary valve induction with supplementary sub-piston air induction. Radial exhaust and transfer porting with flat top piston.

Swept Volume: 0.0903 cu. in. (1.480 c.c.).

Bore: 0.500 in. Stroke: 0.460 in.

Stroke/Bore Ratio: 0.92/1.

Weight: 3.4 oz. including tank.

General Structural Data

As for 100 Mk. II model.

Test Engine Data

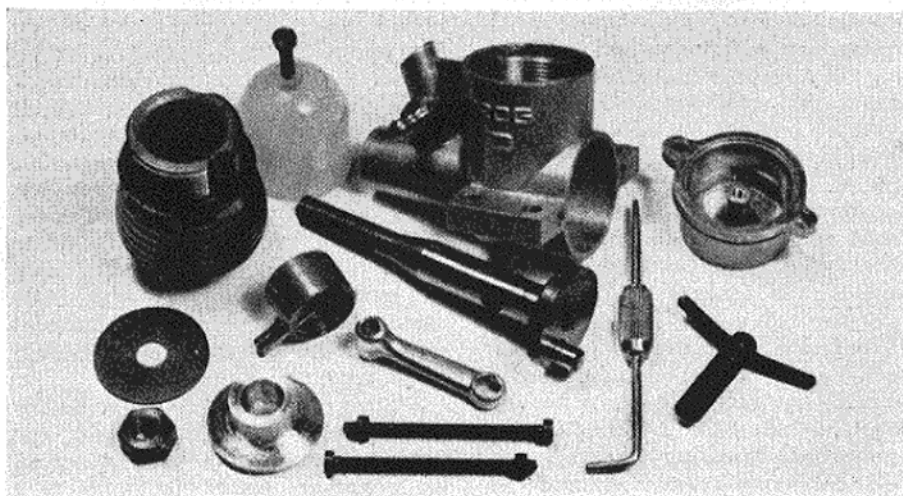
Running time prior to test: 2 hours.

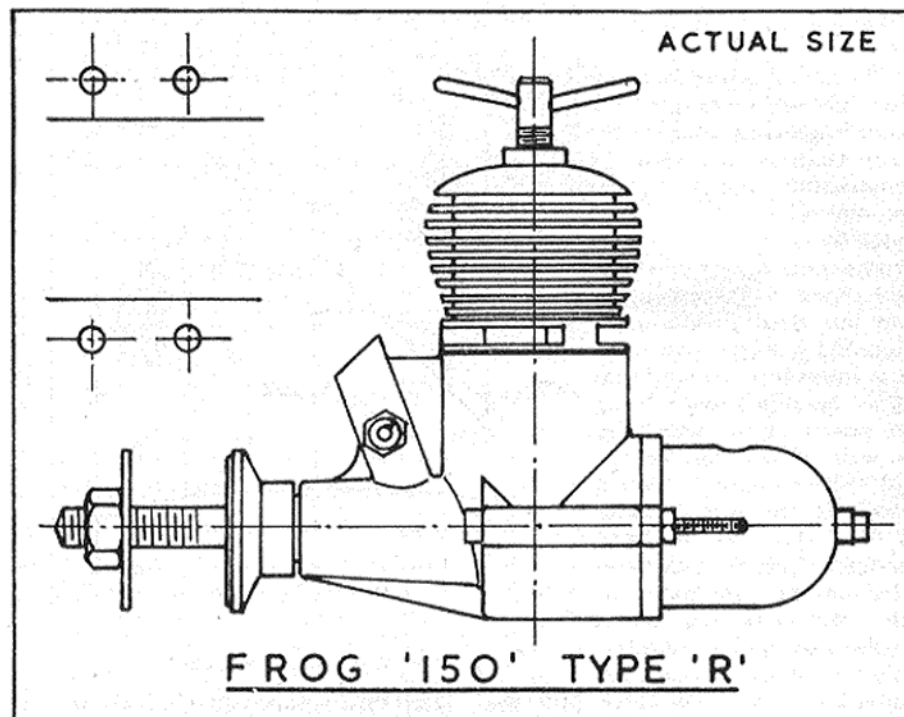
Fuel used: Shell Powa-Mix.

Performance

Our first experience of the Type 150-R (at that time unnamed) was gained some six months ago when a prototype unit was tried out. We ran the engine for a total of some

The component parts of the '150' R





20 hours, and it is worth noting that there was a negligible variation in the performance of the engine during this time. In other words, the Frog is not an engine that has to be run-in for hours before it is ready to settle down to work; normally, one hour of running-in will be adequate, after which one can expect a long period of consistent service.

The second engine, obtained for this report, closely matched the performance of the first, but had one minor fault not revealed by the earlier engine or by the 100 Mk. II: namely a tendency for the contra-piston to

stick in the bore when hot. This is not, of course, an uncommon characteristic of diesels and may not trouble the average user unduly. It is only necessary in such cases, to start the motor on a low compression setting and to approach the required setting gradually and after the engine has warmed up. It does tend, however, to complicate test procedure where it is necessary to obtain accurately the optimum setting under various loads, since one cannot persuade the contra-piston to return to a lower setting when the compression screw is slackened off, while running.

Starting characteristics of the 150-R were excellent and required less priming than the 100 Mk. II. One choked flick of the prop was the only preliminary required to secure a warm restart. Apart from the extra tight compression adjustment mentioned, the controls were positive in operation and non-critical.

The 150-R ran fairly hot and there was the tendency, usual with this type of layout having a crankcase mounted tank, for fuel to boil in the tank after a run of a minute or two. Running characteristics, however, were quite pleasant, there being no excessive vibration and no undue loss of power on warming up, provided the engine was propped for speeds in excess of 11,000 r.p.m. static.

As with the Mk. II 100, there is no real indication of the true capabilities of the engine until r.p.m. are allowed to rise well into five figures and it is discovered that the torque curve is much flatter than normal. As a consequence, the peaking speed of the 150-R is over 2,000 r.p.m. above that of the earlier 150 model and the maximum output realised on our test of 0.152 b.h.p. at approximately 14,500 r.p.m., is certainly one of the best performances yet recorded with a 1.5 c.c. diesel irrespective of type, price and nationality.

Power/Weight Ratio (as tested): 55.5 b.h.p./lb.

Specific Output (as tested): 107.3 b.h.p./litre.

In brief, we would rate these two new British engines highly in the 1-1½ c.c. group on a performance-quality-price basis.

OVER THE COUNTER

Continued from page 229

expected of any new diesel fuel formulated in accordance with present-day knowledge and, while it may be possible to achieve small advantages with certain specialised types of engines by modifying the percentages of the constituents, the task of the commercial fuel manufacturer is to evolve a blend that will produce good results in a wide variety of engines, both old and new. In this, the makers of "Spitfire" have succeeded.

Analysing "Spitfire" by sight, smell and engine reaction, one detects that this is a kerosene and castor-oil base mixture, thus having favourable lubricating characteristics, with an amyl-nitrite additive for

smoother combustion. It needs a little more compression than an equivalent mixture containing amyl-nitrate, but substantially less than a plain untreated blend. We experienced no trouble with coagulation or separation during a three-month storage test in temperatures ranging from 35 to 70 deg. F. and only detected a very slight soft white precipitate after this period. Such a precipitate is normal with most castor base fuels; is not at all harmful to the engine and is quickly dispersed on shaking the container.

"Spitfire" is sold in 8 oz. bottles costing 3s. 3d. and, despite the popularity of tins in some quarters, we personally prefer the bottle as a

means of showing the customer what he is getting and that the fuel is clear and free of foreign matter.



LETTERS

Continued from page 226

like to comment on the two anti-plastic kit letters on page 170 of the same issue.

Generally, I must agree to their arguments as "builders of miniature flying machines," but, from my own standpoint, definitely not.

I am, unfortunately, one of those people who has no gift when it comes to the construction of "flying machines." I nearly always depend upon a good paint finish to make up for poor workmanship (rather a confession), but being a perfectionist I soon gave this up as being totally unsatisfactory.

With the advent of the plastic kit, however, I have come into my own and now spend many happy hours with them. One must appreciate that not everyone is an expert and, therefore, allowances must be made because of this.

There are, of course, many plastic kits of varying merit on the market and I suggest that a few of the semi-professional enthusiasts take a look at the American Monogram series before they label them toys.

Do not let us judge the plastic invasion hastily; I am quite sure that the serious enthusiast will still carry on as before.

I have been to many model exhibitions in my time and often gaze with envy at the work of the true aeromodellers, knowing that I can never achieve their high standard but now I can look at my most recent model quite satisfied at the final result and surely that is all that matters?

Yours faithfully,

V. C. MILES.

Bath,
Somerset.GETTING IT
ON THE CARD

Continued from page 228

the model or until there is only enough time for you to complete your remaining flights with a reserve. Don't forget also that the model may have been returned to control.

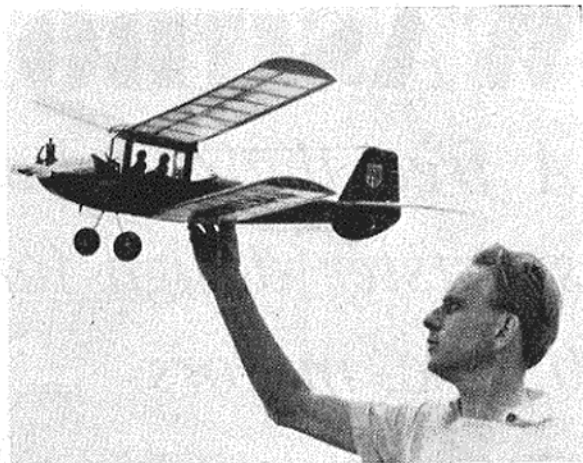
Never give up hope throughout a contest; complete all your flights, as others may make their mistake later. Fly in every contest, whatever the weather; in fact the worse it is, the more class will tell. By this method you must win a contest eventually and it won't matter in the least if your model's performance in still air is 3 or 6 min., for it will have been proved the best on that day, as, according to the maxim, "It's the time which goes down on the card that counts."

ROVING
REPORT

Continued from page 235

throttle control!) was reported to have added a fourth model to his one-man circus.

Jim Walker began in a modest way back in the nineteen-twenties, making tethered rubber-driven models and demonstrating them in department stores. Later, when petrol-engined models became established, he started experimenting with tethered power models, eventually evolving the U-Control system just about the time of the outbreak of the Second World War. At first, U-Control was received with little but derision by American model builders. Jim then made many trips to various parts of the country demonstrating his famous *Fireball*, eventually succeeding in starting the spark of interest that was



Gottfried Brunnkant of Heppenheim, Germany, with his *Kapitan* R/C bi-plane built from a Johannes Graupner kit designed by Karl-Heinz Denzin.

the beginning of the tremendous wave of enthusiasm for C/L flying which swept the world in the immediate post-war years.

Jim will be long remembered, not only for having put C/L flying on the map, but for his prowess in advanced R/C, for his many novelty inventions (including his famous radio-controlled lawn mower) and for his services to the modelling movement in general.



CONTEST CALENDAR

June 21/22nd Scottish P.A.A. Festival.
R.N.A.S. Abbotsinch.

.. 22nd Clwyd Slope Soaring.

.. 29th Northern Heights Gala. Halton.

July 5/6th POWER & RUBBER WORLD
CHAMPIONSHIP CLASSES.
(Second Trials.) Centralised.

.. 13th Enfield C/L Rally. T/R "A" and
"B." Handicap Speed, Combat.

.. 20th AREA CHAMPIONSHIPS. Cran-
field.
INTERNATIONAL CLASS R/C
TRIALS. Cranfield.
INTERNATIONAL CLASS C/L
TRIALS. T/R. Speed, and
Aerobatic. Cranfield.

Aug. 3/5th WORLD CHAMPIONSHIPS
POWER & RUBBER.

.. 17th Devon Rally. Woodbury Com-
mon, F/F, R/C, Combat.

.. 23rd U.K. CHALLENGE MATCH.

.. 24th SCOTTISH GALA
CATON TROPHY, U/R RUBBER,
U/R GLIDER,
U/R POWER.
TAPLIN TROPHY. R/C Rudder
Control, Stunt. (Simplified
schedule.)
TEAM RACING. "A" and "B"

.. 24th South Midland Area Rally. Cran-
field.

Sept. 7th NORTHERN GALA

U/R RUBBER.

U/R GLIDER.

U/R POWER.

AEROMODELLER R/C TROPHY.

R/C Multi-Control. (Full R/C
schedule, course and aerobatic
flying.)

TEAM RACING. "A" and "B."
P.A.A. LOAD. (International
Class.)

.. 14th Croydon Gala. Chobham Com-
mon, F/F all classes.

.. 21st GUTTERIDGE TROPHY. Wake-
field. Area.

*MODEL ENGINEER CUP. Team
Glider. Area.

HALIFAX TROPHY. U/R Power.
Area.

.. 28th TEAM RACING. "A," "A,"
and "B" Area.

.. 28th C. H. ROBERTS CUP. (flying boats)
Danson Park, Bexleyheath, Kent.

Oct. 5th Bill White Cup. Chobham.

.. 12th *FARROW SHIELD. Team Rubber.
S.M.A.E. CUP. A/2 Glider. Area.

.. 19th South Coast Gala. Ashdown
Forest.

.. 26th HAMLEY TROPHY. U/R Power.
De-centralised.

FROG JUNIOR CUP. U/R
Rubber, Glider, De-centralised.

Nov. 2nd St. Albans Slope Soaring Rally.
Ivinghoe Beacon.

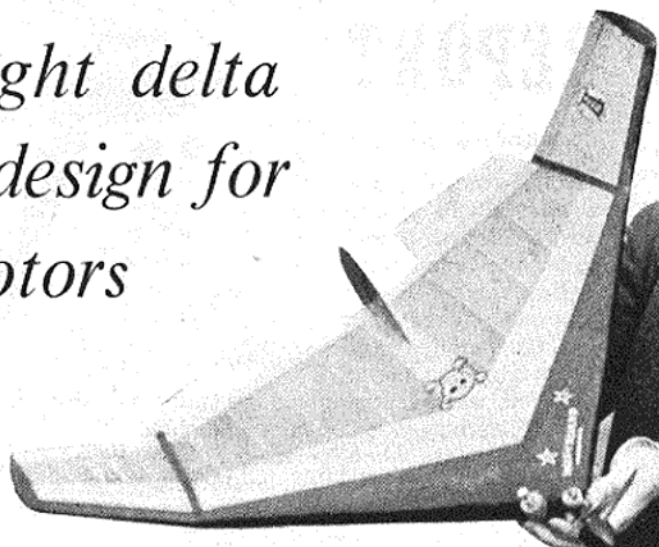
*Plugs Cup events.

All S.M.A.E. competitions in capitals.

WASHBOARD

A free flight delta sportster design for 0.5 c.c. motors

by
**COLIN
READ**



Designer Read proudly displays his original model—also shown in the two views below.

THIS model was designed early in 1955 after a series of delta wing models had been built to develop a design capable of stable flights even in rough weather conditions. To make *Washboard* stable, sharply upswept wing tips are used, together with a staggered dihedral break to provide the necessary wash-out; the airfoil section is a normal flat bottom one, but using an inverted trailing edge to give a reflex section.

Construction is commenced by

laying flat on the building board the $\frac{1}{4}$ in. sheet leading edge, $\frac{3}{16}$ in. main-spar and trailing edge (note the reverse section) then cementing the ribs in place firmly (double cementing is advised throughout). When dry, remove from the building board and add the upper $\frac{1}{8}$ in. sq. spar, then separate the wing tips where shown and cut to fit the main wing, raising

the tips 5 in. When both tips are firmly in place cement the dihedral bracing gussets in position as detailed on the drawing.

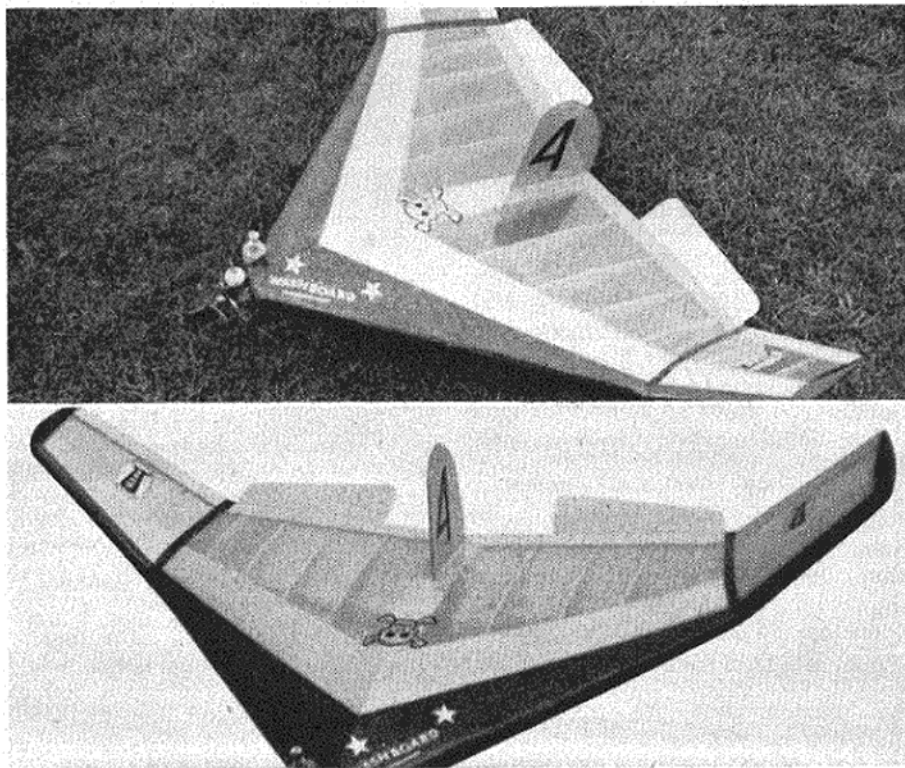
Formers 1 and 1A are now added, the whole of the leading edge and front formers then being sanded to shape (before covering with $\frac{1}{16}$ in. sheet), to provide smooth contours as shown. Lastly, the centre section is covered, top and bottom, and the $\frac{1}{2}$ in. sq. wing tips added, after which the whole framework is sanded to a smooth finish.

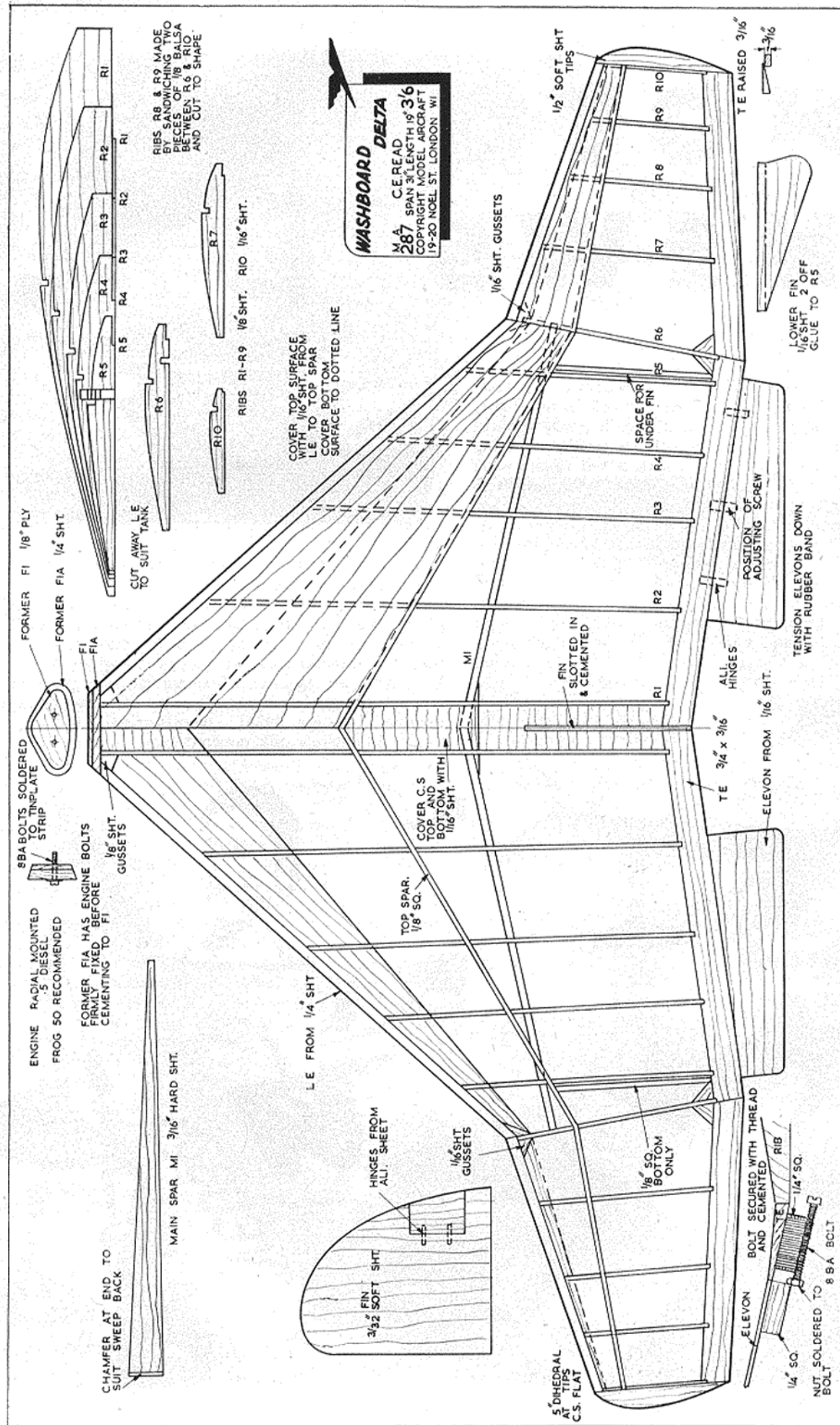
The elevons, upper and lower fins, cut from $\frac{1}{16}$ in. and $\frac{3}{32}$ in. medium sheet respectively, are covered with tissue (doped on) and cemented in place after the model is covered and doped.

The elevons are fixed in place with pieces of aluminium, and spring loaded with a small rubber band onto the stops which are cemented underneath the wing and elevons.

The engine used on the original was a Frog 50, radial mounted, but any power unit of 0.5 c.c. will provide sufficient power, but an increase in downthrust will be necessary if a more powerful engine is used.

It may be of interest that the original *Washboard*, recovered and redecorated, gained second place in the Unorthodox Section Concours d'Elegance at the 1957 All-Britain Rally; the qualifying flight was 53 seconds.



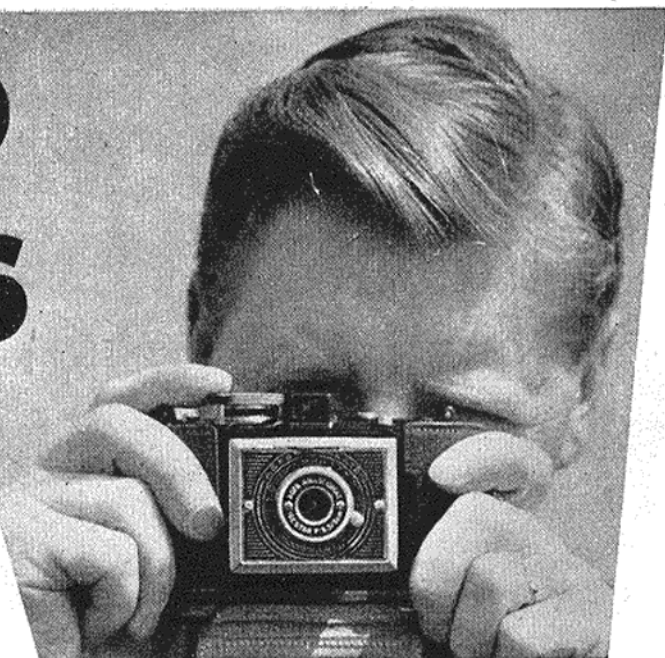


FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT
 19-20, NOEL STREET, LONDON, W.1, 3s. 6d., POST FREE

PHOTO NEWS

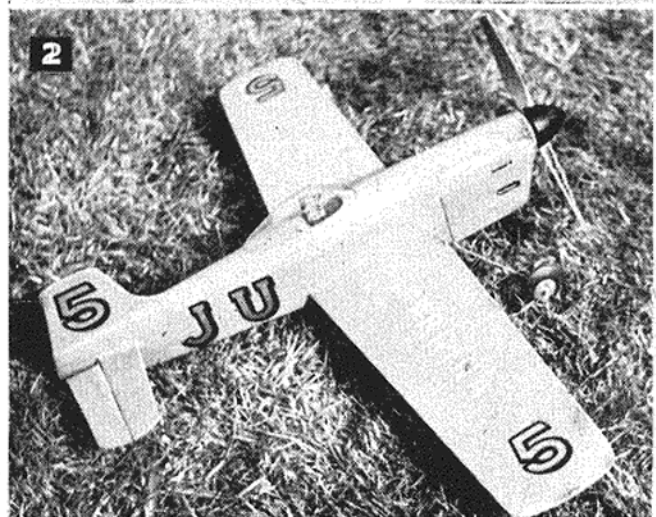
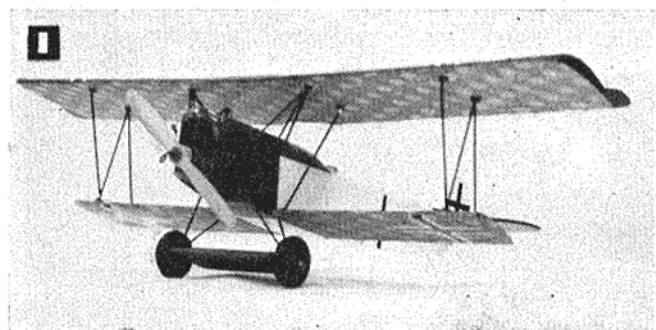
VINTAGE fans should be pleased with our first photo this month—Brian Smithies' version of M.A. Plan 260, a F/F Fokker D.7 which was featured in our July "Vintage" issue last year, and of which many replicas have been built. The finish is suitably vivid, consisting of lozenge fabric on the wings, with a red upper wing surface and nose, and white fuselage and tailplane. The model is powered with an Allbon Dart driving a 6 × 4 in. nylon prop.

The class "B" team racer featured in photo No. 2 is the work of G. Montiero and has an impressive performance. Powered by a K & B Torpedo 29R, it consistently does 96 m.p.h. over 52 laps, with a 30 c.c. tank and 7½ × 10 in. prop on "straight" fuel. The design originally incorporated an American type tank and cut out, but these being unnecessary for T/R flying in England, they have since been dispensed with. It was put out of the running in the only race it has so far flown in by a burnt fuel tube—but better luck next time Mr. Montiero. Incidentally, for the benefit of photographic-



ally minded readers the photo was taken at 3½ ft. using 1/60 sec. exposure at F.11.

To add a Continental flavour to the page the next photo (No. 3) that we have selected comes from France. It was sent in by J. M. Mauttet and shows his wife holding his radio controlled 45 in. wingspan Cessna 180. Built from an American Sterling kit, it is powered with an inverted Webra Sport Glo 1.72 c.c., and has a single channel German OMU transistorised receiver. The model is entirely silk covered, and is finished in silver





with black lettering and trim—all up weight is 30 oz.

Incidentally, Mr. Mautett tells us that his wife is a good modeller and helps him a lot with covering—lucky man.

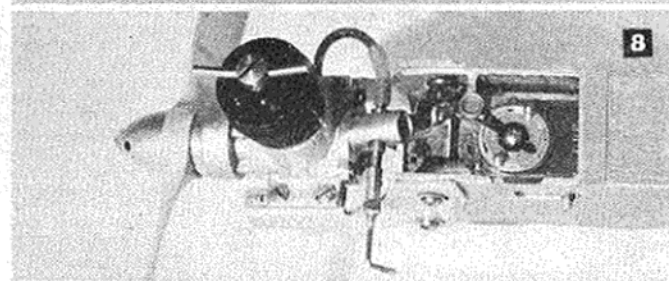
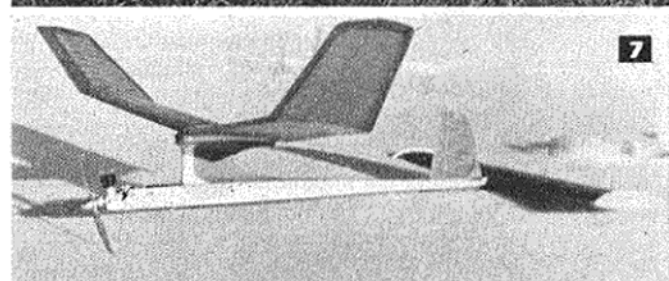
The outsize in gliders shown in photo **No. 4** hails from "auld Oireland." Built by Howard Stephenson of the Belfast M.F.C., it has a wingspan of 12 ft., is 6 ft. long, and weighs 92 oz. Norman Osbourne, who sent the photo, tells us that so far only test glides have been made, as it is quite a problem to transport such a monster to a suitably spacious flying field.

In case anyone looking at photo **No. 5** is wondering where the Bay of Quinte Aeromodellers hail from, we'll tell you—Canada. The photo features Bob Chesher with his R/C Livewire *Rebel*, which has a wingspan of 48 in. and is powered by a Japanese O.S. 0.09 glo-motor. The radio is a Babcock 465 multi-channel operating rudder and elevator through two Babcock compound escapements, and the model is covered in yellow silk with black trim. Chesher's fellow club member, B. Neal, took the photo.

The attractive Ju 87 in our next photo (**No. 6**) is rubber powered and was built from a Keil Kraft kit, by a 12-year-old, John McKenzie of Southampton. It has a camouflaged finish of light and dark sand on the upper surfaces and light blue underneath, while it has an excellent performance, flying as well as it looks. Congratulations, John, a worthwhile effort.

Polish modeller Wiestaw Schier, who designed the ingenious *Tramp* featured in October '57 M.A., does not restrict his ingenuity to C/L designs, as our next two photos show. **No. 7** is a general view of his 200 gm. rule, F.A.I. design, which has an impressive contest record including a 1st in the Polish Championships and a 1st at the Poland v. E. Germany contest. With the exception of the long nose moment, proportions are normal and the sections used are Davis on the wing and N.A.C.A. 6402 on the tail. The close-up of the nose (photo **No. 8**) reveals a clever method of engine mounting with easily adjustable downthrust and an interesting clockwork timer—the motor, of course, is a Zeiss Aktivist IV.

Our last photo this month (**No. 9**) comes from Czechoslovakia, and shows a 1958 rule F.A.I. team racer built by Milan Vydra. It has an all-up weight of 22 oz. and a top speed of 75 m.p.h. with a 2.5 c.c. P.A.W. special diesel; finish is in red and black. We have yet to see a new rule team racer flying over here, but the above performance is very close to what has been calculated and provides a yardstick to which our boys can work.





Club News

FARNBOROUGH M.A.C.

The F/F saucer craze is catching on and J. Harris's gaudy Mills 0.75 version has been causing chaos amongst spectators with low-speed daisy-cutting flight patterns.

An enjoyable time was had at the Surbiton gala, but our members were rather concerned at the outbreak of fires downwind. In all modesty we would like to say that d/t snufflers are compulsory in our club, and we believe that this practice should be adopted by other clubs, and certain well-known contest types.

LEATHERHEAD & D.M.F.C.

The membership is on the increase and meetings are well attended, recent ones being taken up with R.T.P. activities and several talks. The first club contest was a C/L event; briefly, the rules were to fly straight and level then give a climb and dive, burst a balloon, then make a spot landing—by no means a very easy task. There were six entries and first prize went to G. Chilvers.

SIDCUP M.S.

So many of our members have been building radio controlled model boats and racing cars lately that we have had to change our name to "Sidcup Model Society."

With the expansion of the scope of the club came firmer rules, as quite a few subscriptions had not yet been paid. It was decided that subs would now be 10s. per year plus a 10s. entry fee for new members. Any member whose subscriptions became more than two months overdue was automatically crossed off the books and would have to pay again the entry fee. This caused quite an uproar of protest in the club but it was generally felt that this was the answer to the subs problem.

We have held two combat contests, one for the club and one a challenge against the Cosmo club. In the club contest, Mike and John Templeman came first and second respectively, and the challenge match was won again by Mike with P. Thornton second. We had good weather for our "A" team races, the first one being won by L. Ashdown with J. Williams second and the second by Tony Houlding with E. Chiesman second.

SOUTH BRISTOL M.A.C.

The club turned out a team for the Kiel Trophy, but the venue was so exposed and the wind so strong, that trimming flights were either fatal or of such a short duration as to make entering the event worthless.

At the last club contest day the A1 and chuck glider events were flown and although the final times were rather low (the wind taking models o.o.s. in about 1½ min.), there was quite a battle for first place in each event. R. Stone won the A1 with a total of 190 sec., and D. Wilson won the chuck glider with 101 sec.

The club has been placed on the City register of social services, and we are hoping that this may be helpful in our constant search for larger premises and better flying facilities.

Our "Professor Dumenil" was recently seen to venture from his boffin shop with a strange

all swept twin-engined F/F job (judiciously painted red as should all misguided missiles be), having a "Space Bug" pushing and an E.D. Baby pulling; the whole project was, we believe, duly swept (up) on receipt of a hard smack from an unyielding misplaced mass of cobblestones.

WEST BROMWICH M.A.C.

Mac Grimmett, this year is concentrating a little more on team race, flying his *Dimpled Dumpling*, which is a genuine 90 m.p.h. "A" model, and only a prop change robbed him of first place at Woodford. We must say that the combat event at this meeting was run a little on the strange side, but it obviously succeeded in the object of cutting down the time which this event usually takes. Words have been said in the club about grouping the rallies and aeromodelling meetings together all in a few weeks, surely a little consideration could be shown to the poor modellers?

BAILDON M.F.C.

First, an apology to our comrades in the N. Area; Arthur Collinson was NOT top in glider on April 6th—he was 4th!!

Our "A" team, comprising Messrs. Collinson (captain), Pannett and Miller, defeated Sheffield S.A.M. in the first round of the Knock-Out at the second Area meet, but the shocking wind put paid to our chances of a high aggregate in the Keil Trophy—although four of us have qualified for a place in the area championships team for Cranfield in July.

But only a sad tale can be told of the Midland Area and Stockport Express rallies, held on the two subsequent weekends. At the former, after starting with first-round max's in power, Silvio and J. A. B. Pannett saw their models fall out of the sky on their remaining flights—though Silvio fluked a second max by catching a "riser" low down. Henry Tubbs, however, did have the satisfaction of finishing third in rubber. Our only achievement worthy of mention at Woodford was C. P. Miller's double max in rubber. In the fly-off, though, he was unfortunate with the weather, went o.o.s. at 2:28 and lost his model!

ENGLISH ELECTRIC M.A.C.

Eleven members with wives, children, etc., attended the *Stockport Express Rally* at Woodford.

This was once again one of those annual outings enjoyed by all and capped by the success of T. W. Smith, who finished senior rally champion.

This was also initiation day for Tom's son, Brian, who was graduated from chuck gliders (and retrieving) to rubber duration. He obviously responded to the gentle guidance, persuasion, and threats of his pater to bring off second place in the Junior Rubber event. We look forward to the day he can safely be trusted to start and tune a Dooling. Mrs. Smith was not to be outdone and flew rubber and power.

HAYES M.A.C.

In the Lady Shelley Cup our tailless expert J. Marshall's model flew just too well—o.o.s.,

n fact, and it has never been seen since. (Perhaps this was a result of reading his own article on the subject.) The reserve model was not so good and the cup has now found some other home.

The Keil Trophy, K.M.A.A. Cup and High Wycombe Rally, all on the same day, were remarkable only for the number of models written off. J. Baguley broke countless pairs of wings, the team-race boys worked through two Olivers, and as for combat, well...

WEST MIDDLESEX M.F.C.

Modellers from the Ealing, Greenford, Northolt areas, are cordially invited to join the above club, which now incorporates the Hanwell Eagles M.F.C. We meet on alternative Thursday evenings from 8-10 o'clock at the Residents' Association Hall, Queens Avenue, Greenford.

All classes of flyers are welcome—particularly juniors, and full details can be obtained from the secretary (see under Change of Secretary).

KENTON M.A.C.

Several members of the club took part in the highly successful demonstration of combat flying at the Schoolboys' International Football Match at Wembley Stadium. We were well represented at the High Wycombe rally—out of five Kenton entries in combat, three got to the semi-finals and two won through to the final, which was eventually won by L. Burbridge, with D. Wilson second.

It is interesting to note that all the finalists flew Kenton style flying wings powered by Oliver Tigers and that D. Wilson got six cuts off an opponent's streamer in the semi-finals.

CROYDON & D.M.A.C.

Our gala will be held on September 14th at Chobham Common. As usual there will be open rubber, glider and power contests as well as slope soaring from the Chobham Alps; in addition the gala champion will receive the Thurston Trophy.

Entry on the field is 1s. 6d. per contest, 1s. for juniors, and Croydon members will not be flying, as they'll be fully occupied helping to keep things running smoothly. This doesn't mean we wouldn't be glad of assistance with timekeeping, though...

Needless to say, the gala is well known as one of the best organised and gripe-free "do's" of the year, so we'll be glad to see all your happy smiling faces again.

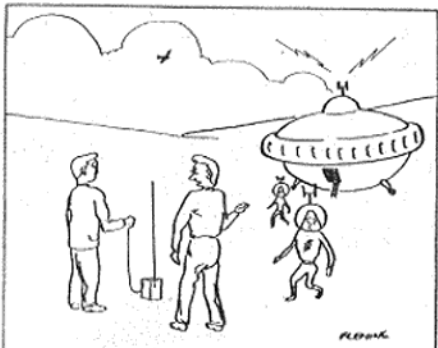
We're also always glad to see new faces at club meetings, which are held every Tuesday evening from 8 to 10, at Woodside School, Croydon (on the 197 'bus route).

PECKHAM M.A.C.

This club has recently reorganised itself, and it is hoped that this will lead to better understanding between the members and the committee. Meetings are held every Monday and Thursday at the Ryedale Road School, Peckham, S.E.15. Any lone modellers in the area who would like to join are welcome.

WHARFEDALE M.F.C.

The Stockport Express Rally (Woodford) was well attended by the Wharfedale Club. J. Horton won the class "A" team-race with F. Baxter taking 3rd place. In the class "B" one of the club's best racers was eliminated but B. Ruckworth took 2nd place with a performance of 106 m.p.h. for 25 laps; he is hoping to improve this to about 35 laps using a more efficient fuel tank. The club seems to be concentrating on class "B" racers this year; already we have



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about half-a-dozen models capable of over 105 m.p.h. Richard Place took top honours in the combat event with a total of 12 cuts.

At the club chuck glider comp., Richard Place managed first place with an average of about 55 sec. per flight. B. Ruckworth scraped into 2nd place (by 2 sec.) leaving F. Baxter and R. Edwards 3rd equal. (Seems that these C/L men aren't so narrow minded after all; hope they don't take F/F seriously!)

LITTLEOVER M.A.C.

We attended the Midland Area rally and also the Woodford rally. At the former event, B. G. Kirkman obtained 3rd place in combat and at Woodford, M. Keeling and Ed Spence both managed to get into the quarter-finals. After flying at these two rallies, it seems that our models were not outclassed but that we need more combat experience. This will be remedied by forming teams of three and practising the art of cutting a little piece of streamer every time whilst the other flier does mild manoeuvres.

SURBITON M.A.C.

The club ran their gala on April 20th in very good weather, although the wind was in a bad direction. Fliers came from as far afield as Bristol and Southampton and with over 300 competitors in the events we feel proud of ourselves, as not one competitor had to wait for a timekeeper, even though there were four flights per comp. The power was won by Crisp of Oxford, who just made his last flight in time after having retrieved his model which was lost in the tank factory all day.

In rubber, Crossley of Blackheath made four max's flying an old rule Wakefield while glider was won by Wiggins in a fly-off with Billings, both flying off over a raging bush fire.

We would like to thank all competitors for coming and hope to see you again next year.

Full results were as follows:—

Power			
Crisp ..	Oxford Meteors	..	11:35
Straker ..	Spring Park	..	11:26
Baguley ..	Hayes	..	10:23
Rubber			
Crossley ..	Blackheath	..	12:00
Barnacle ..	Leamington	..	11:45
Latter ..	Men of Kent	..	10:15
Glider			
Wiggins ..	Leamington	12:00 + 5:09	
Billings ..	Leamington	12:00 + 1:09	
Crawshaw ..	St. Albans	..	10:31
Team glider			
Leamington ..	Gala champ.	..	32:14
Latter ..	Men of Kent	..	20:33

SOUTHAMPTON M.A.C.

Several members turned up at Stoney Cross for the Gamage and C.M.A. cups, but owing to the gale force winds, most models were kept in their boxes, P. Giggie being the only one that flew.

Better luck was had at Lark Hill where a coach load of bods arrived for the Pilcher Cup, Women's Cup, Jetex, and Tailless cups. Four members entered the Pilcher and P. Giggie returned three max's and a 2:20 fly-off time at the cost of one A/2. N. Worley topped the area results in the Jetex, with 7:11—a ratio of 29:35, but he also lost his model. Miss M. Pepper totalled 7:31 in the Women's Cup with her A/2, and P. Giggie made 3:20 in the Tailless Cup with his A/2 sized glider.

At the club annual general meeting there were many cups on show, including the Gutteridge Trophy and the Thurston Cup (won by P. Giggie last year) and the Women's Cup which was won by Miss M. Pepper. To enliven proceedings there were spot landing chuck glider, and quiz contests, both being won by P. Rolt.

CLEETHORPES & D.M.A.C.

The club had a field day at the first Area Meeting at R.A.F. Hemswell, taking 1st and 3rd places in open power, 1st, 3rd and 4th places in open rubber, and 2nd place in glider. If the boys can keep this form up throughout the season, we should manage to hang on to the Butlin Trophy for another year.

The junior members of the club were given a verbal quiz just recently, with questions compiled from the S.M.A.E. Rule Book, and they surprised everybody by scoring 65 per cent. of the total marks.

CHELTHENHAM M.A.C.

The club's annual team races, held at Brockworth, were a little disappointing as far as entries

were concerned, and in fact the "A" race was postponed until a later date. The class "A" was won by M. Chaplin with T. Allen flying a Frog "500"—powered Thunderbird taking the class "B" honours.

Several members attended the Western Area rally at Wroughton, Swindon, where Stan Perry won the open glider class for the "Bath Trophy." For the future, several important exhibitions and demonstrations have been arranged which could do much to increase local interest in aeromodelling.

PORTSMOUTH M.A.C.

Members arrived at the Surbiton Gala with a batch of well-trimmed models with the seemingly inevitable result! Len Larrimore lost his Amco BB job o.o.s. in spite of a fully operational d/t; D. Cummins was mortified to see his model climb downwards at a high velocity, while the remainder of the club designed *Airscrews* developed stubborn stalls!

Not daunted by this fiasco a strong power contingent is planned for the Nationals including two *Heatwaves* powered by Oliver and P.A.W., and no less than five *Airscrews* ranging in power from 2.5 c.c. to 5 c.c., together with a solitary *Tequila*, Webra powered.

Dave Johnson's rubber model is showing promise—40 in. span, 6 oz., with a toothpick double-blade folder, it has clocked 3:15 on half turns.

Bill Tinker continues building rubber-powered flying-boats, the latest featuring a lighter construction and a higher aspect ratio wing, and retaining the concave planing surface of last year's model. Even so, the British record still remains elusive.

While still on rubber jobs, Nick Jones' indoor flying wing went o.o.s. over a neighbouring chimney during a spot of outdoor night flying!

The stunt C/L boys are practising hard for the Nationals and the club has great hopes of Will Brown swiping the gold!! Meanwhile, Cummins is contemplating entering the Thurston after a recent visit to Beaulieu, when he recovered his sailplane—lost seven months before!

NORTH KENT NOMADS

The club has continued to make steady progress both memberwise and modelwise. As far as senior members are concerned, R/C is very popular and we are looking forward to some consistent performances during the flying season. The only drawback to R/C is that it takes up a lot of one's modelling time, probably at the expense of the other and equally important branches of the hobby.

We are holding our open C. H. Roberts Cup competition for flying-boats on Sunday, September 28th, at Danson Park, Bexleyheath. We extend a hearty invitation to all modellers to challenge the faithful few regular competitors. For further details of timings and model specifications for this contest, please send a s.a.c. to our Competition Secretary: R. BARREAN, 742, Rochester Way, Sidcup, Kent, who will gladly forward all details.

SPRINGPARK M.A.C.

We have now been in existence since 1952 and including the four original members still in the club the present membership stands at 51. This consists of approximately one-third senior members and two-thirds junior members, and interest includes gliders, contest, sport, R.T.P., scale, and C/L flying.

Our contest-minded members have met with considerable success and a few problems this year. Notably, A. J. Straker has been third at Beaulieu and second at Surbiton. At both these events Mr. Straker has been flying a modified *Creep* with a works tuned Oliver Tiger up front. C. J. Percival has been experimenting with an ETA 29 Mk. V and a Fox 29 in the front of his own models and has recently found that the vibration that set in between the wings and the pylon has caused the two surfaces to burn. Have any other modellers experienced this and if so how do they prevent it?

Where gliders are concerned we have members who have been designing their own models. One member who has been designing gliders on a different theme is D. A. Williamson, who has been experimenting with aluminium fuselages. At present he has made two models and both of them perform very well indeed.

As for R.T.P. flying, we have many members who indulge in general flying but at the moment there is only one member who is interested in speed flying. The person in question is S. Sayers who has achieved a speed of 29 m.p.h. +

with a rubber-powered speed model of his own design.

As far as rallies are concerned we cater for all our members by running coaches to most of the major rallies and a "Dormobile" to lesser events for the "contest types." We also have a set of cups and trophies of our own which are flown for under S.M.A.E. rules and are open to both junior and senior members.

For the members who wish to design their own models the club library, which is open to all members, is stocked with a complete set of airfoil sections, and there are approximately 130 aeromodelling magazines and 33 aeromodelling books. The books and magazines in the library tell us how to design models and to obtain the best results in our modelling, but some members think that a demonstration can convey much more than a lot of words and pictures. Talks and demonstrations have included "Wing Ribs by the Template Method" and "Finish" by C. J. Percival, and "How My Latest A/2 Developed" by D. L. Mander.

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NORTHWOOD, M.A.C. R. Stevens, 113, Hallowell Road, Northwood, Middx.

NORTHERN HEIGHTS M.F.C. Ken Tansley, 36 Falkland Avenue, New Southgate, N.11.

WEST MIDDLESEX M.F.C. A. J. Starkey, 2, Princes Avenue, Greenford, Middlesex.

PECKHAM M.A.C. J. Barnes, 4, Copleston Road, Peckham, S.E.15.

NEW CLUBS

GOSFORTH SAINTS M.A.C. Alan Tweddle, 23, Eshott Close, Fawdon, Newcastle upon Tyne.

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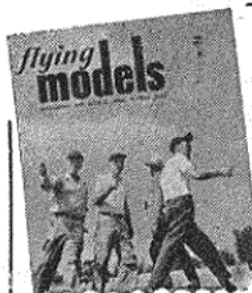
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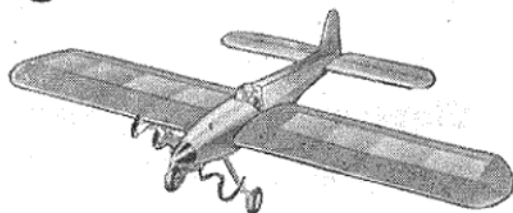
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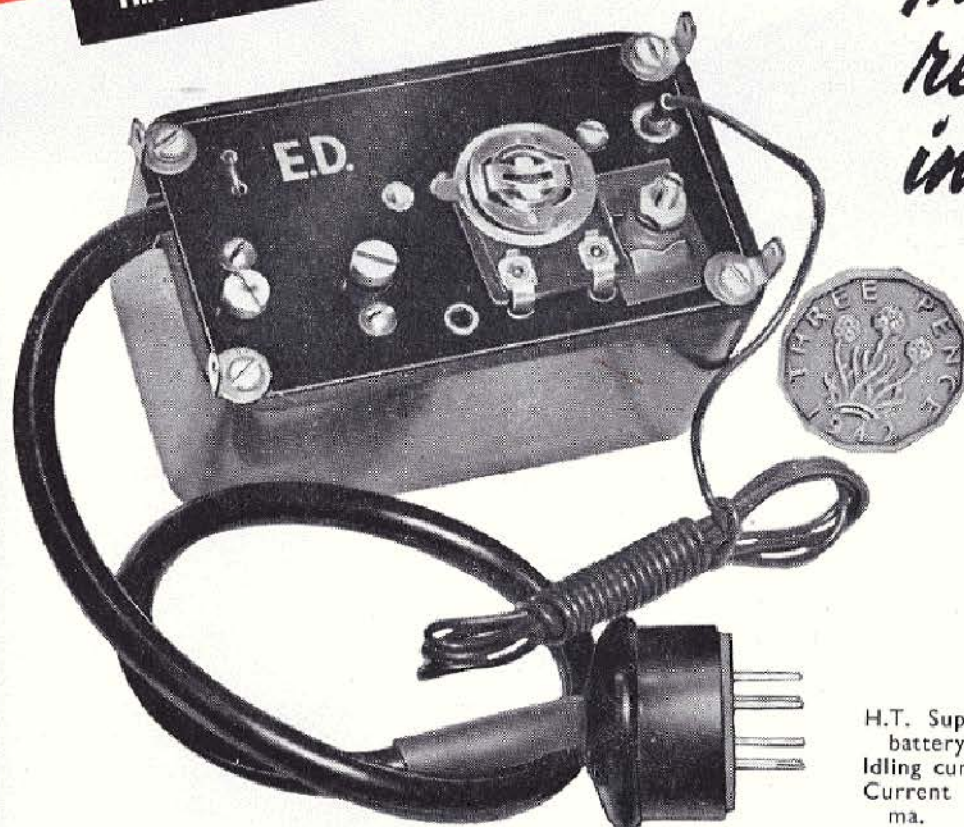
JULY
1958

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ED "AIRTROL"

HARD VALVE RECEIVER

The smallest receiver in the World!



Size $2\frac{1}{2}" \times 1\frac{1}{2}" \times 1\frac{1}{2}"$ and weighs only $2\frac{1}{2}$ oz. The "AIRTROL" is the latest addition to the E.D. range of Remote Control Receivers and has been specially developed to meet the great demand for a transistor hard valve receiver with a specification producing the ultimate in Radio Control.

H.T. Supply— $22\frac{1}{2}$ volt
battery.
Idling current—0.6 ma.
Current change — 0.6
ma.
L.T. consumption —
25 ma.

Hard Valve—no quench
coils.
Simple tuning.
Two transistors for out-
put and economy.
Valve life—4,000 hours.

Price (inc. P. Tax) **£7.5.0**

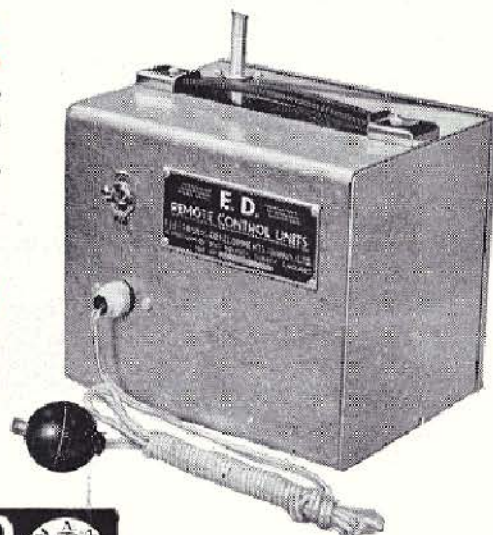
E.D. "PC.1" TRANSMITTER

A high powered, super-compact, lightweight, portable Radio Control Transmitter suitable for the operation of all carrier receivers. Designed on entirely new lines and using a DCC 90 in push pull for maximum power and formed into a printed circuit for absolute frequency stability unaffected by temperature changes. Engineered in every respect for maximum reliability. Finished in attractive hammered grey stove enamelled cabinet. Size $6\frac{1}{2}" \times 5" \times 5\frac{1}{2}"$. Weight with batteries 8 lb. Supplied complete with a four section collapsible aerial and keying lead.

PRICE (inc. P. Tax) LESS BATTERIES **£5.19.10**

● Write for NEW illustrated list giving full technical details of all E.D. ENGINES, RADIO CONTROLS, MECHANISMS, SPARE PARTS, ACCESSORIES, ETC.

Order from your Model Shop.



E.D. ELECTRONIC DEVELOPMENTS (SURREY) LTD
DEVELOPMENT ENGINEERS
ISLAND FARM RD. WEST MOLESEY. (SURREY) ENGLAND.

GRAMS:
"BOBE"
EAST MOLESEY

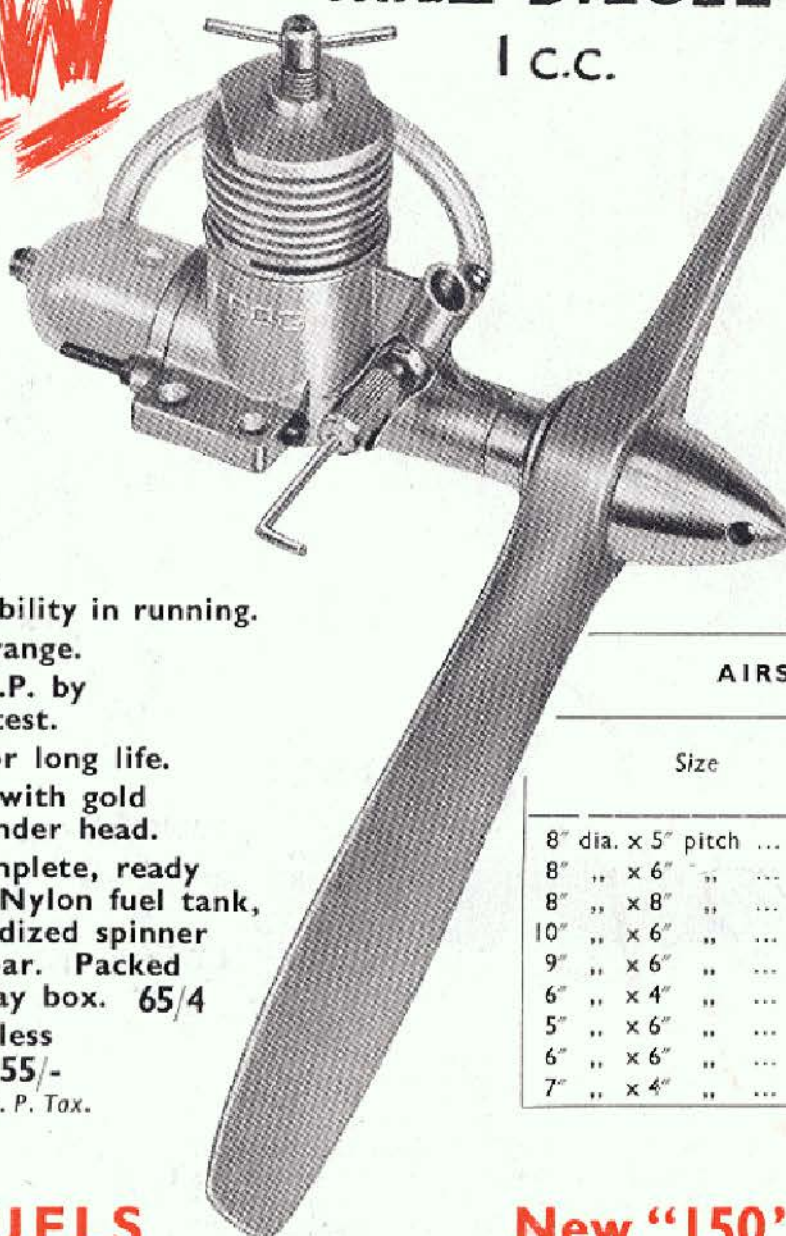


**TWO
NEW**

FROG "100"

Mk.II DIESEL

1 c.c.



- Exceptionally easy starting.
 - Extreme flexibility in running.
 - Wide speed range.
 - Over .10 B.H.P. by independent test.
 - Engineered for long life.
 - Super finish, with gold anodized cylinder head.
 - Available complete, ready to run, with Nylon fuel tank, airscrew, anodized spinner and tommy bar. Packed in rigid display box. 65/4
- Bare engine, less accessories. 55/-

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AIRSCREWS

Size		High-Impact Styrene	Nylon
8" dia. x 5" pitch	...	1/3	3/-
8" " x 6" "	...	1/3	3/-
8" " x 8" "	...	1/6	3/6
10" " x 6" "	...	1/6	3/9
9" " x 6" "	...	1/6	3/6
6" " x 4" "	...	9d.	1/6
5" " x 6" "	...	9d.	1/3
6" " x 6" "	...	1/-	1/6
7" " x 4" "	...	1/-	2/-

FROG FUELS

Specially blended fuels suitable for these motors have been prepared by Shell-Mex and B.P. Ltd.
"Red Glow" for Glow-plug ignition motors and "Power-Mix" for Frog diesels.

Made in England by

New "150" type "R"

¹/₂ A Contest Engine. Revised timing, exceptional power. Output over 100 b.h.p./litre.

Price 55/- inc. Nylon Tank

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