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1'6

APRIL 1958

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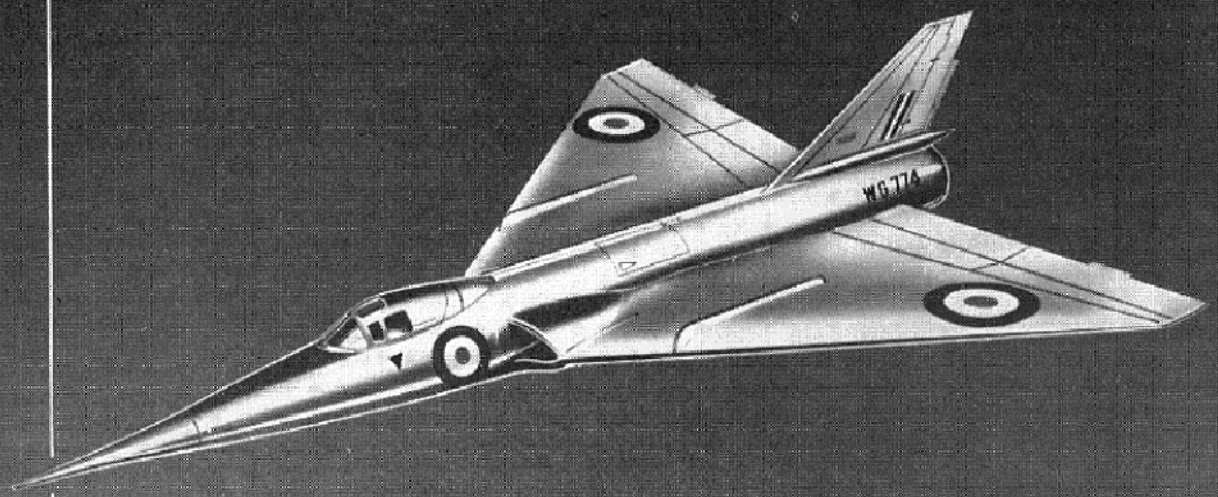

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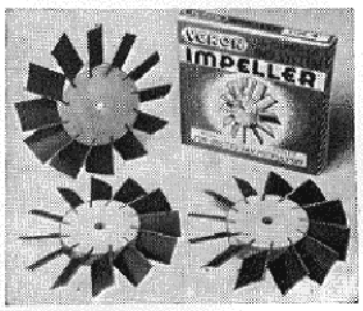

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MODEL AIRCRAFT BOOKS

CONTROL-LINE FLYING *by R. H. Warring.* Numerous photographs, diagrams and tables. The first of three companion books by a famous author. This is a general introduction to the subject and consideration is given to the following: How control-lining started; types of control systems; control-line model types; control handles, lines, equipment; operation and flying technique. Then follow chapters on the design characteristics of control-line models; considerations in airframe construction; types of motors; suitability for flying scale models; sport flying, etc. 6s., post 9d. (U.S.A. and Canada $1.50, post paid).

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THE "EAGLE" BOOK OF BALSA MODELS *by Bill Dean.* In quarto size and beautifully illustrated with photographs, drawings and plans, this book gives detailed instructions that anyone can understand for the building of 18 different models. Aeroplanes constitute over half of the designs, together with gliders, rubber-powered, Jetex, flying scale models and several unorthodox types. Each stage is carefully explained with the aid of photographs that "show how" and simple plans which can be traced off. Advice is given about tools and wood and the cost of equipment, and no hint or tip has been omitted which is likely to help the beginner. 7s. 6d., post 10d. (U.S.A. and Canada $2.00, post paid.)

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HOW TO MAKE MODEL AIRCRAFT *by P. G. F. Chinn.* An attractive book in magazine format which incorporates articles by the author reprinted from *Model Aircraft.* It is packed with information and contains nearly 200 explanatory photographs. Covers everything of importance in the building of model aircraft, from the choice of essential tools, through basic construction problems to the thrill of the first successful flight. The book provides a short cut, under expert guidance, to the more advanced stages in model aircraft building and flying. Over 40,000 copies have been sold at the time of writing. 3s., post 6d. (U.S.A. and Canada, $1.00, post paid).

RADIO CONTROL OF MODEL AIRCRAFT *by G. Sommerhoff.* In the third edition the use of transistorised equipment has been considered in detail and a description of a transistorised receiver has been included. Early chapters lead the reader through the functions of the various components and explain in non-technical language the basic essentials of radio with particular emphasis on R/C equipment. Subsequent chapters deal with the theory and construction of transmitters and receivers, including transistorised receivers. There are also notes on commercial receivers and on trimming and adjusting. Circuits for simple control systems are then described, and the author explains his own methods of control which were developed after a long period of practical work. Final chapters deal with the installation of the receiver, trouble-shooting, airframe design, cockpit drill and flying. There are numerous diagrams. 7s. 6d., post 6d. (U.S.A. and Canada $2.00 post paid).

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lists plans of over 350 models which have been described in *Model Aircraft.* Gives brief description, dimensions, name of modeller, etc., of 47 rubber-driven, 42 gliders, 80 control-line, 109 power-driven models. There are 278 illustrations. Also lists 78 1/72 scale plans for solid models. Price 6d., post 2d.

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★

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CONTENTS

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MODEL AIRCRAFT SPONSORS NEW SHOW

FOR the first time for many years there will be a national exhibition solely for model aircraft enthusiasts—THE MODEL AIRCRAFT EXHIBITION, to be held from August 20th to 30th, at the New Horticultural Hall, Westminster, S.W.1. Although run in conjunction with the Model Engineer Exhibition, MODEL AIRCRAFT's own exhibition will be an entirely separate show.

Three huge stands will be devoted to models and at least 100 of them will be in the competition section. Special displays will include the models of previous winners in the aircraft section of the Model Engineer Exhibition, and there will also be loaned models built by the foremost experts in this country. The competition is open to everyone and there are many prizes to be won, so if you would like to enter a model in any one of the nine sections, send now for an entry form and further details to the Exhibition Manager, 19-20, Noel Street, London, W.1.

A feature of special interest on the S.M.A.E. stand will be the collection of competition models, many of which will have been flown in the World Power Championships at Cranfield, and will naturally include some from countries other than Great Britain.

The model aircraft trade will be giving the the Exhibition its full support, and modellers will be able to see, examine and buy, the latest kits, engines and accessories.

Among the features which have been planned to attract the younger enthusiasts will be the complete cockpit of a *Vampire* jet fighter, and operational pilots will be on hand to explain the various controls to the youngsters as they sit in the cockpit.

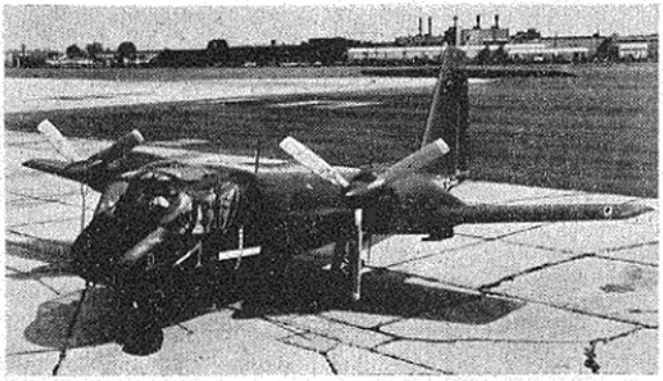
Obviously, being the first Exhibition sponsored by MODEL AIRCRAFT, this show is going to have tremendous appeal. Further attractions are being lined up and readers will be kept fully informed through these columns between now and the opening date.

On the Cover

LOCKHEED'S plant at Burbank, California (where it seems the sun always shines), is the scene shown on our cover. Twenty T-33 jet trainers prepare to take off on delivery flights to various bases in the U.S. and Canada. The T-33 is, of course, the trainer version of the *Shooting Star*.

Not what it seems!

WHEN is a model . . . ? The dividing line between models and the real thing seems to be pretty thin nowadays, because soon after publishing a picture of a 38 ft. span



B-36 in our March issue, we received this photo from Grumman Aircraft. What gives every impression of being the prototype of their OF-1 *Mohawk* observation aircraft is in fact only a mock-up—and what is a mock-up but a model?

In this case, it is full-size and must be just about the most detailed mock-up ever constructed, complete with landing lamp, sliding cabin-top, ejection seats, stencilled maintenance notes and even a pair of windscreen wipers. With two men in the cockpit in flying kit, it looks ready to take off at any moment, but there are no T53 turboprops inside those nacelles and it is definitely non-flyable.

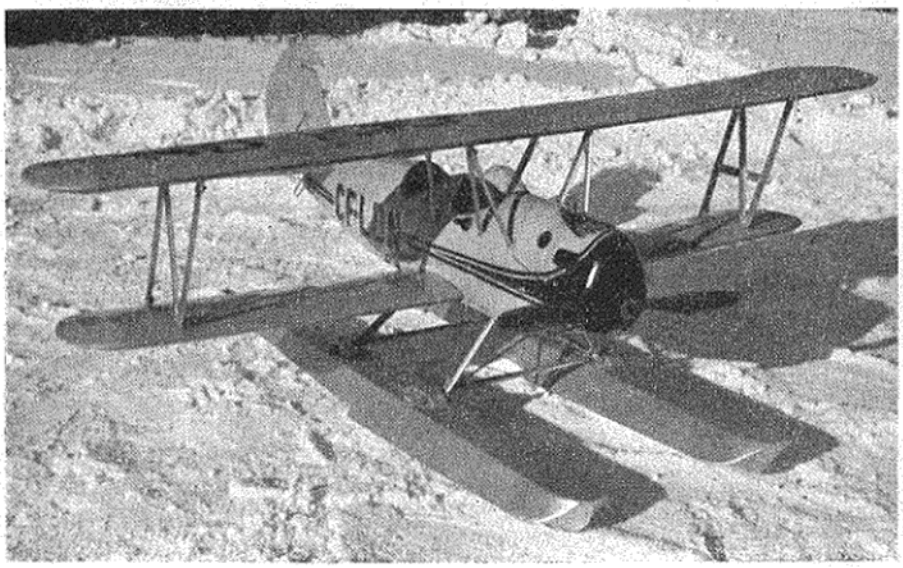
Ringing the Changes

WE particularly liked this photograph (reproduced below) which arrived from Canada recently, not only because it is a nice model, but also because it shows a little enterprise. This *Travelair* floatplane was built by Don Prentice of Belleville, Ontario, and it spans 50 in. and is powered with an Atwood 0.60; colour is yellow with black trim.

Now how many British modellers go in for the slightly "off beat" model? Very, very few; apart from duration type floatplanes, the last model of this type we remember seeing was A. W. Evans' Brandenburg Seaplane at the 1955 Nats. Flying boats, too, are just as rare, but we did once publish a picture in Photonews of a C/L Sunderland, but that was flying in Malta. Helicopters? Just the type for the chap who likes to experiment a bit. There is still much research necessary to perfect the flying model helicopter, but as far as we are aware, no one is tackling the job.

Curiously, amphibians lead the field. Of recent years there have been at least two—Eric Fearnley's Colonial *Skimmer* (M.A. plan 250) and Ted Norman's Republic *Seabee*. Admittedly the amphibian provides the opportunity to operate a seaplane from land, but why not adapt the models for water take-offs?

From the photographs and news items that arrive from abroad at the M.A. offices, it would seem that the Americans have the edge over us when it comes to modelling the unusual—the Convair B36 pictured in last month's issue is just one example—but if you can prove us wrong, we would be delighted to hear from you.



Glossy Glass Job

ALTHOUGH fibre glass as a modelling material is not widely used by amateur model aircraft builders, the professional builder has not been slow to appreciate its possibilities in his specialised field.

Believed to be the largest model of its kind built in fibre glass, the D.H. *Comet IV* shown in the photograph below, spans 12 ft. and is 11 ft. 3 in. long, the scale being to 1/10th. Built by Minavia Models Ltd., for the B.O.A.C. stand at the forthcoming Brussels Exhibition, the model features a one-piece wing and detachable tailplane for easy storage and packing. The whole model has a cellulose finish in B.O.A.C. colours and is also fitted with flashing

navigation lights operated by a unit mounted inside the fuselage. Total weight works out at less than 200 lb., and incidentally, it took two men just under three months to complete.

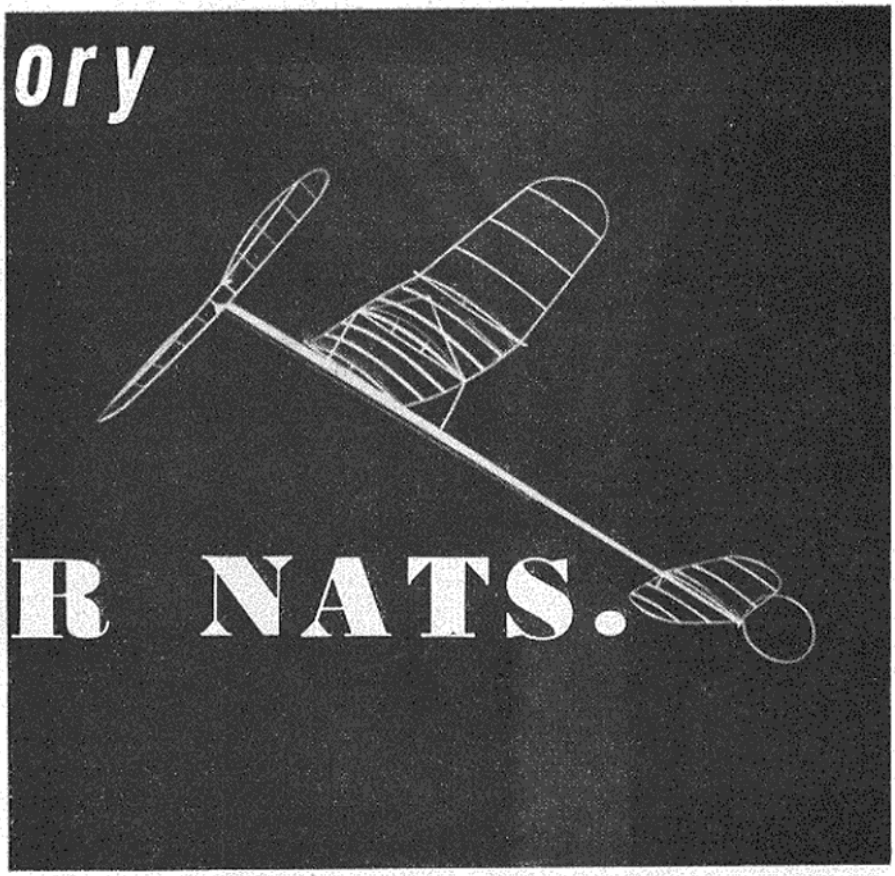
U.K. to U.S.A.

HOW many modellers reading the *Daily Mail* on Friday, January 31st, read the story of the "electric muscle" and its inventor, Mr. Norman K. Walker, and connected this scientist with N. K. Walker of the Low Speed Aerodynamic Research Association? They are, of course, one and the same person. Mr. Walker was head of the weapons design study group at Farnborough until he was posted to Washington to work on guided missiles, and in addition was Director of Research of the L.S.A.R.A.

When still working in this counry at Farnborough, Mr. Walker and other scientists used their spare time to experiment with electrical equipment in the belief that a limbless man could will his artificial hand or foot to move, operating through electric currents present in the stump muscles of the mutilated limb.

Mr. Walker has now resigned his Government post and made his home in America, where the invention was widely acclaimed.

'Inside' Story or the INDOOR NATS.

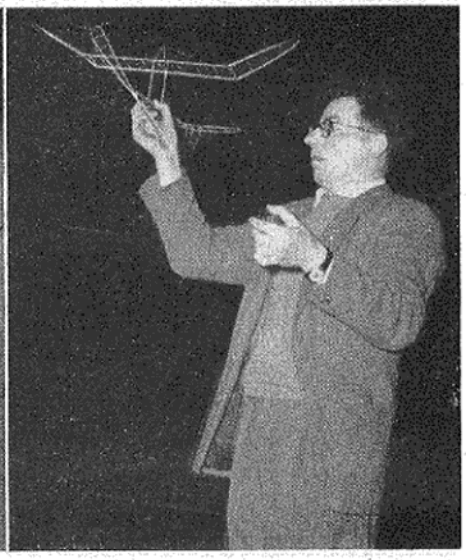


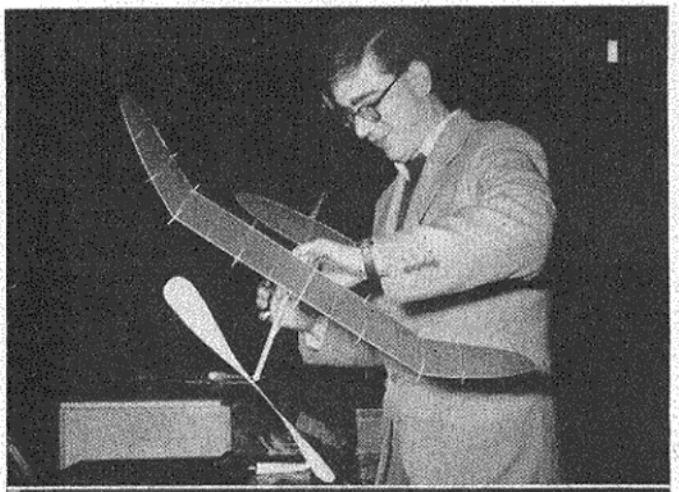
THE Corn Exchange, Manchester, was again the venue for the second indoor meeting organised by the North Western Area in co-operation with the S.M.A.E., and other areas, on the 22/23rd February. Called this year the Indoor Nationals, the meeting certainly attracted more attention than last year, and though the winning times were not as high—except in chuck glider—the general standard of flying was far higher, with all the microfilm entries returning a score, and the same with all the tissue entries with the exception of Monks, whose model was damaged by a chuck glider.

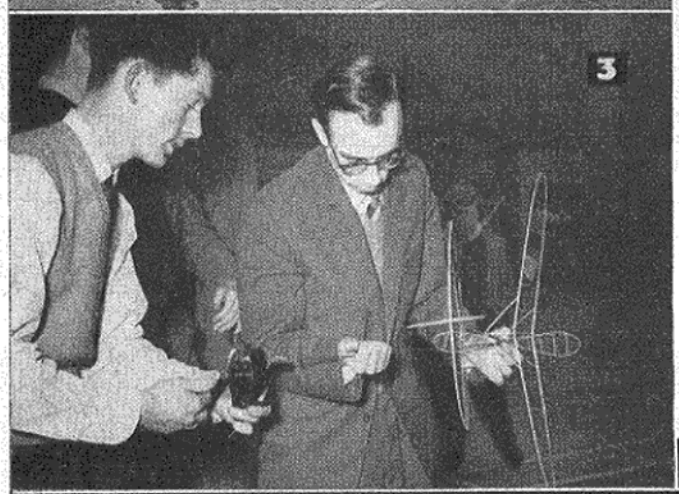
The weather conditions played a large part in determining the times. Outside it was cold, blowing and snowing, while inside it was the same except for the snow, as due to a misunderstanding the heating system was turned off, and the Corn Exchange is certainly not the most draught-free of halls. On the first day, which was put aside for test flying and record attempts, the drift in the hall was so great that it was not until late in the evening that serious testing could take place. Fortunately for the contest on the Sunday, the weather had improved, and although there was still some drift, it varied in direction at different levels and some reasonable times were soon put up.

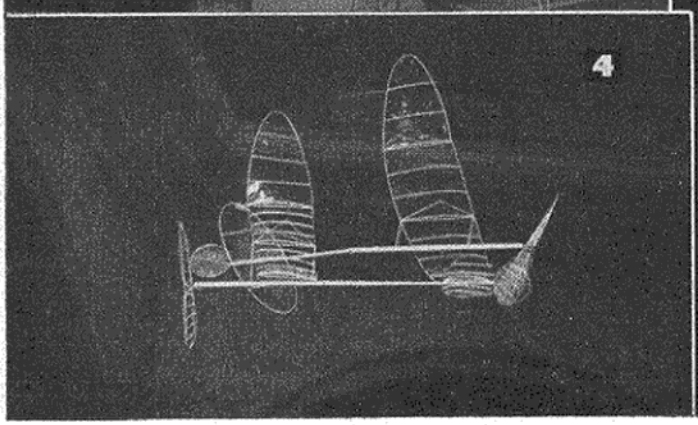
Quite early on John O'D. turned in a time of 8.05, but his chances of bettering this were spoilt when a model built from a flying scale kit collided in mid-air with his machine. This F/S model, and there were one or two other machines of a similar type at the meeting, was below the maximum weight of 2 oz., but even so, models of this type are outside the range of tissue covered machines visualised when the rules were devised. However, the performance of such machines is promising

Photos below, L. to R. World Power Champion, Ron Draper, looks rather surprised that his microfilm model flies at all. Reg Parham puts the turns on his class "A" model, which turned in a flight of 5 : 36—a new record for this class. John O'Donnell also looks startled but it couldn't have been at the performance of his model (or could it ?)—he was leading when this shot was taken.









and there may well be scope for a separate class for scale, or semi-scale, indoor F/F models.

At about 3 p.m. the sun broke through the overcast sky for a short period and it was then that the best times of the meeting were put up, but this period was very short and emphasised how much outside conditions can affect indoor flying.

Throughout both days, half-hour periods were set aside for chuck gliding (¾-oz. maximum weight model), and it is of interest to note that all the first four places exceeded last year's winning time. The winner was Hughie O'Donnell, who topped some very consistent times with a final flight of 37 sec., which will, if claimed, be a new British record. Between flights we saw Hughie vigorously polishing the wings of his model with Mansion Polish for optimum performance, and so impressive was this model, that we have obtained the plans, which will appear shortly in MODEL AIRCRAFT.

The only other record that was broken was the class "A" microfilm (under 30 sq. in.) one, where Reg Parham put up a flight of 5.36. Reg also made several attempts to better the ornithopter record, but although his model was clearly capable of attaining the necessary 2 min. odd, he had very bad luck by being "balconied" or "pilloried" on every attempt.

All in all this was a very successful meeting, and even if it continues to be held in the Corn Exchange, which is not the ideal venue, it should arouse increasing interest, but if, as is hoped, a larger hall can be found, then we are sure it will become one of the most interesting meetings in the contest calendar.

RESULTS

Microfilm

1. P. Read	Birmingham		11.23
2. R. Parham	Worcester		11.10
3. G. Walker	Birmingham		11.08
4. R. Monks	Birmingham		7.43

16 entries. All flew.

Tissue

1. J. O'Donnell	Whitefield		9.07
2. R. Parham	Worcester		7.18
3. P. Read	Birmingham		7.11
4. T. Spurr	Tees M.F.G.		6.16

11 entries. One returned no score.

Chuck Glider

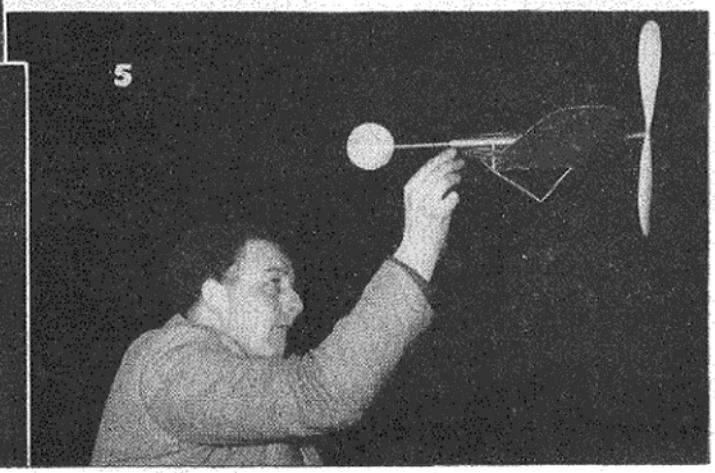
1. H. O'Donnell	Whitefield		37 sec.
2. D. Greaves	Leamington		34.7 sec.
3. J. O'Donnell	Whitefield		32.8 sec.
4. R. Monks	Birmingham		32.6 sec.

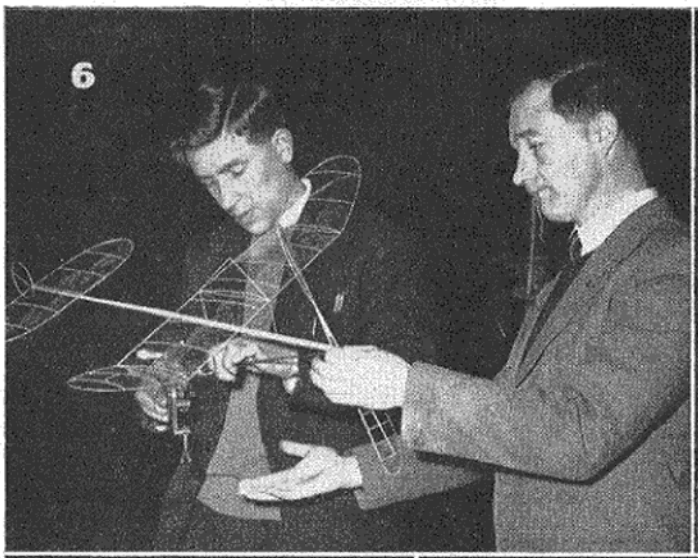
27 entries. Three returned no score.

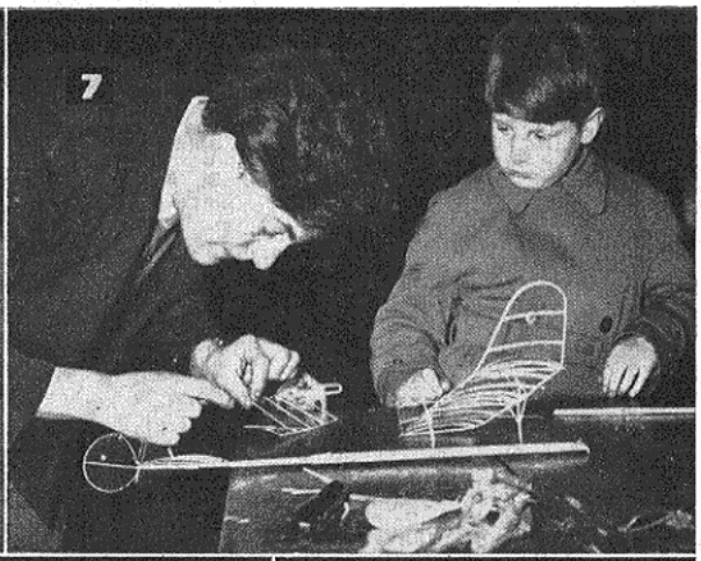
Note: As many flights as possible were allowed in all events: highest counted for results.

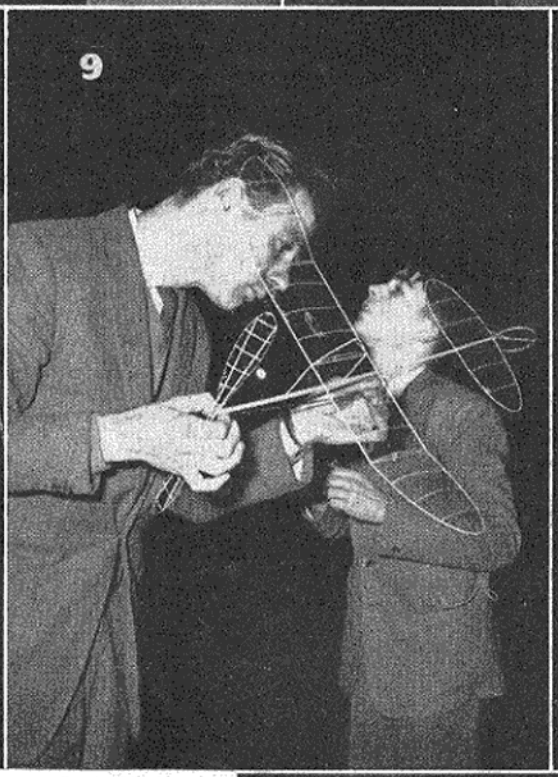
1. Phil Read, of Birmingham, has good reason to look pleased as he makes adjustments to his tissue entry, for he was third in this class, and first in microfilm.

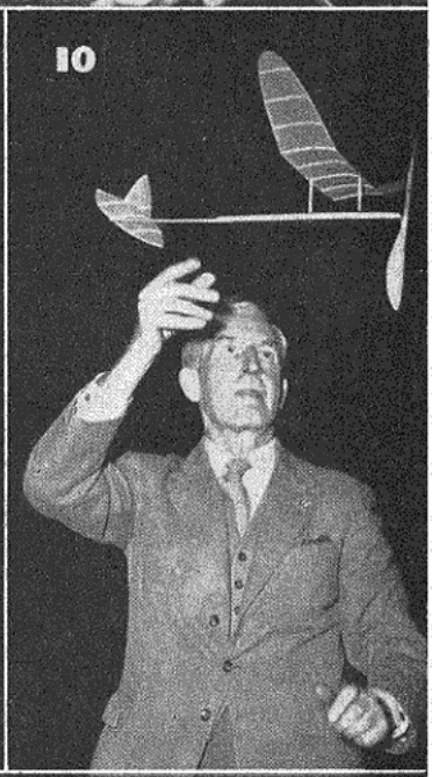
2. Members of the Wigan M.F.C. with their chuck gliders, all of which had the S.M.A.E. membership numbers prominently displayed.

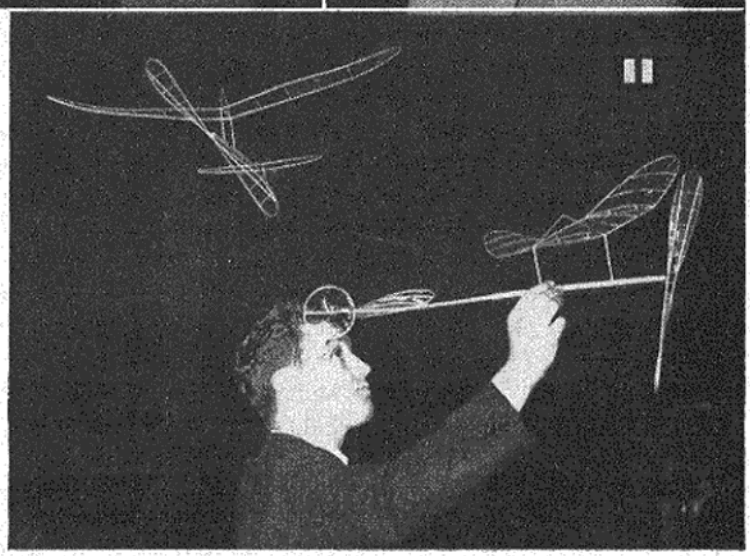








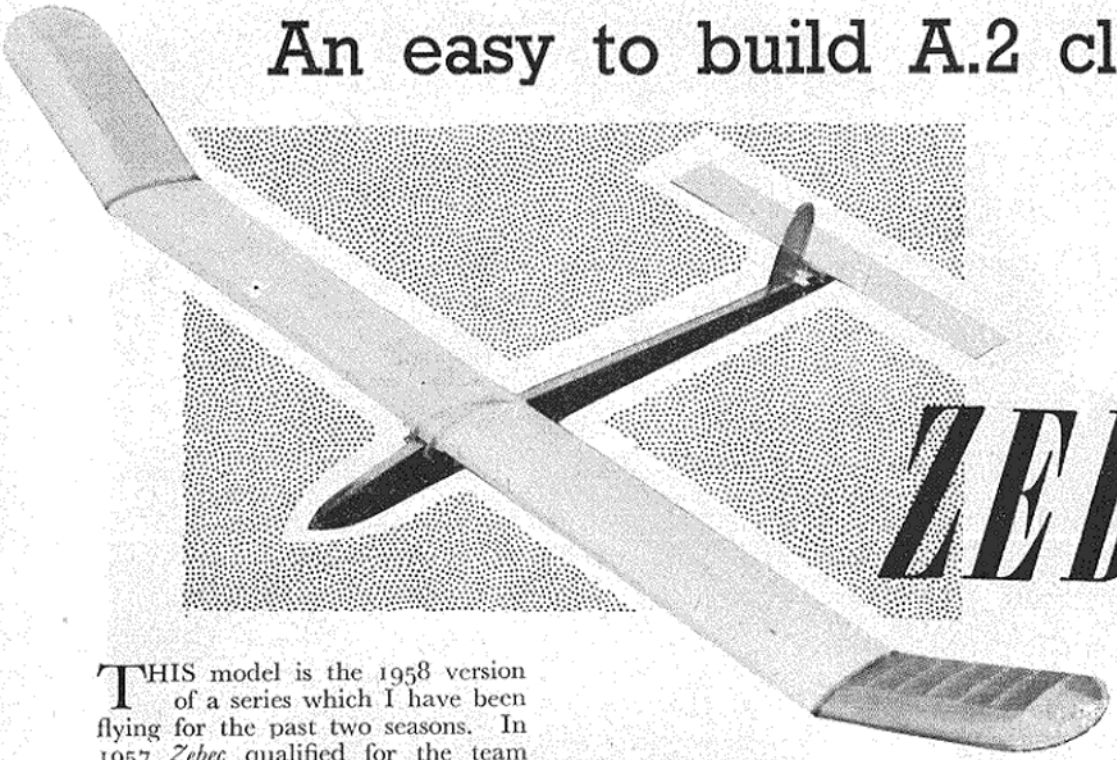




3. R. Lawther winds for Jimmy Wingate, of Cheadle, whose model was one of the most neatly constructed and covered at the meeting.
4. In spite of there sometimes being almost a dozen models in the air at the same time, collisions were rare, however our camera did catch these two microfilmies "locked in mortal embrace."
5. E. M. Robson of the Tees M.F.G., an amalgamation of the old Stockton, Darlington and Middlesbrough Clubs, flew this interesting "flying plank" tail-less design.
6. Ray Musgrove winds for Reg Parham. Reg had not got up hurriedly from a spaghetti lunch, they are spare motors!
7. A young spectator has grave doubts about the repair technique used by B. Dukes, of West Bromwich.
8. How to win Chuck Glider ! A behind the scenes shot of Hughie O'Donnell putting a "Mansion" shine on the wing of his model.
9. E. Barnacle, of Leamington, prepares for a flight while junior D. Greaves critically watches his own model.
10. Bob Gosling put up some creditable times with this 20-year-old model. Apart from a recovered tail and a new motor it was in its original form.
11. D. Poole, of Birmingham, prepares to launch, unaware of the model floating by, inches overhead.

An easy to build A.2 class glider

designed by
E. HELLIWELL



ZEBEC

THIS model is the 1958 version of a series which I have been flying for the past two seasons. In 1957 *Zebec* qualified for the team trials at Hemswell, where it returned a time of 11 : 31, a bad downdraught on the third flight spoiling what would otherwise have been a very good time. It has also shown itself to be a very good performer in club and other competitions.

Fuselage

This is commenced by building one frame from $\frac{1}{2} \times \frac{1}{8}$ in. balsa over the plan in the normal way, and then sheeting both sides with $\frac{1}{16}$ in. sheet. The only thing to watch here is that the frame does not twist while being sheeted. After this is completed, an access hole for the weight box is cut in the top, and the tow hook, wing and tail platforms, and dowels are added.

Wing

Commence by pinning down the trailing edge after slotting it to receive the ribs, remembering to pack up the front to allow for the rib undercamber. The lower spars are pinned down, packing up as required to conform to the wing section, then the ribs are cemented in position, and the leading edge is slotted in place, the top spar being added last. When dry remove from the plan and add the wing boxes, which must be well bound and cemented to prevent splitting under load.

After the dihedral has been added the leading edge is sheeted back to the top spar with $\frac{1}{16}$ in. sheet, care being taken to get a good joint with the leading edge. If any difficulty is experienced in winding the laminations for the tips, I have found the best way is to cut all the strips to length, smear them with cement, place together, and bend round a row of pins spaced at 1 in. intervals.

Tailplane

This is built in the normal way, care being taken to get good joints where the geodetic ribs cross between the spars ; 18 S.W.G. hooks are bound to the trailing edge and spar before covering.

The fin outline is of medium $\frac{1}{8}$ in. sheet with $\frac{1}{16} \times \frac{1}{8}$ in. crossbracing. Although this construction is light no trouble has been experienced with warping. The auto rudder is of $\frac{1}{8}$ in. sheet, sewn to the fin with cross-stitching, this being superior to the silk method for hinging. Add the auto rudder horn after covering.

The whole model is covered with light-weight Modelspan, and given three coats of 50/50 dope/thinners, except the fin which requires only one coat. The original had the fin and wing tips in bright red Aerolac for visibility, tail and wing centre section were yellow and the fuselage black. After covering and doping, the fin can be cemented into the slots in the fuselage, and the auto rudder is connected up with a length of C/L twine. A small ring is used as a slider over the tow hook and a piece of 18 S.W.G. wire is fitted in the line as an adjuster.

It may be found necessary to add ballast under the c.g. to bring the model to A/2 weight, as the three models that I have built have all come out at around $12\frac{1}{2}$ oz. For open competitions, of course, it may be flown as a lightweight, but I have found that the bit of extra weight seems to help in rough weather.

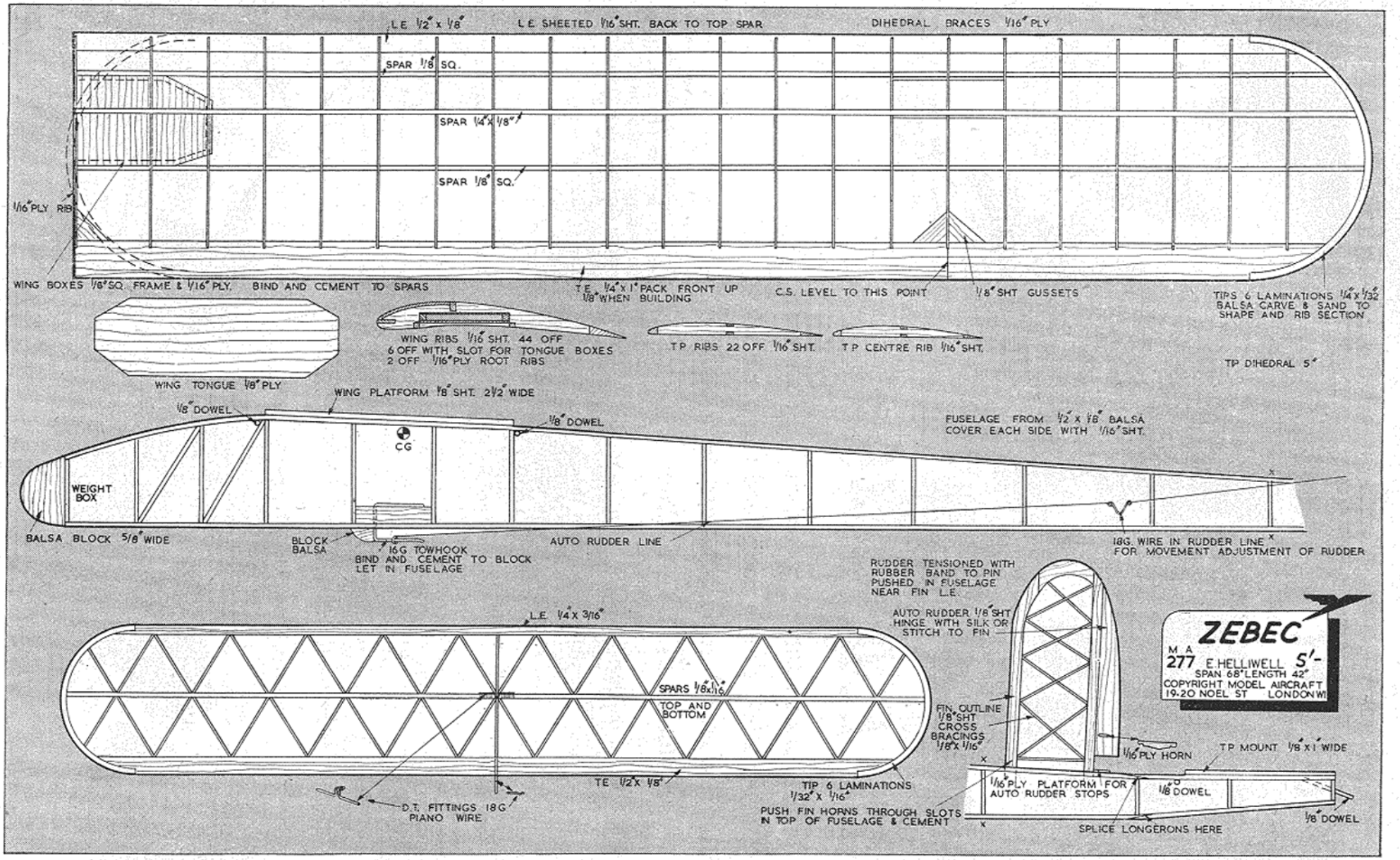
Flying

The originals have all been trimmed to fly to the right, so start by having the rudder offset to the right between $\frac{1}{16}$ in. and $\frac{1}{8}$ in., it having been found that only a small amount of movement is necessary.

Hand glide over long grass, adding packing to the tail until a long flat glide is obtained. Nothing more can be found from hand gliding, so check that the auto rudder pulls straight, with the line in position, and tow up on about 50 ft. of line. If the model pulls away, it can be cured by opening or closing the wire adjuster on the rudder line to vary the amount the rudder pulls over on tow ; if a pull away cannot be cured in this manner check for warps, and remove any that you find.

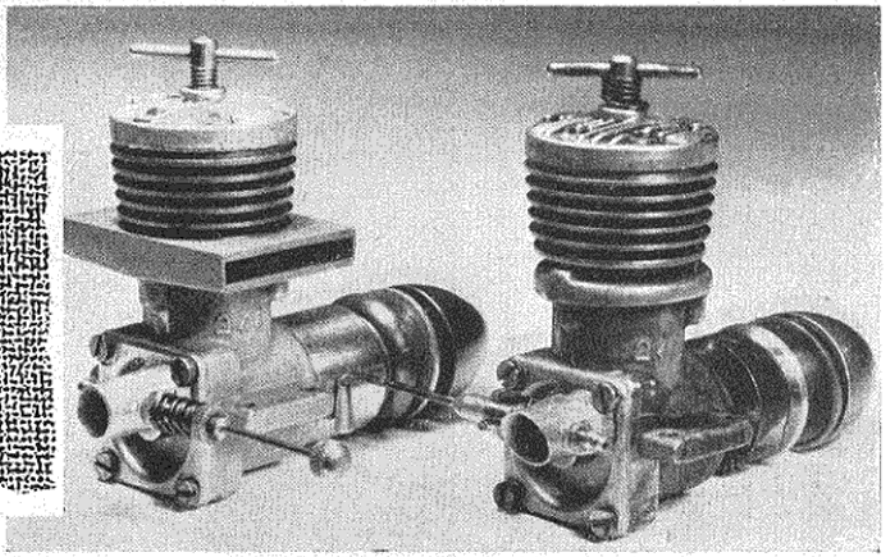
The glide circle is adjusted so that it is about 50 to 60 ft. diameter, and then a permanent stop is cemented to the platform under the rudder. To trim for optimum performance fly on a 50 ft. line, and time all flights, making small adjustments to the incidence of the wing and tail, until the best set-up is found. With the originals it was not necessary to alter the trim for rough weather.

Finally, don't forget the d/t if you want to keep this model.



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, 5s., POST FREE

how to get More Urge from your E.D. 2·46



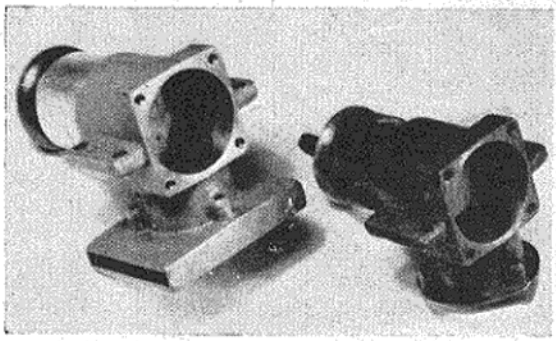
Our heading photo shows the current E.D. 2.46 with S. Robinson's " S.R. Special " version (right).

S. ROBINSON successfully " hotted-up " a standard E.D. 2.46 using a few simple tools, and the perfectly straightforward modifications are here described and evaluated by P. G. F. Chinn

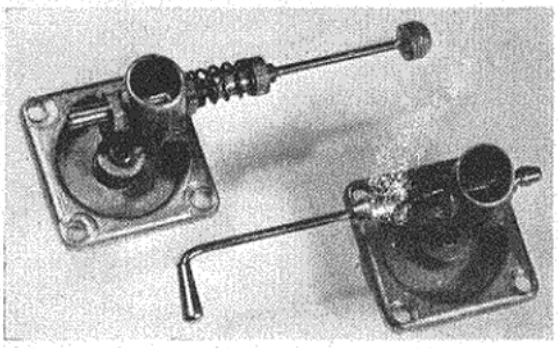
WHEN first put on the market in 1951, the E.D. 2.46 " Racer " was the most powerful 2½ c.c. engine available and, since that time, the 2.46 has enjoyed immense popularity for both competition and general purpose flying. Naturally, other manufacturers have not been idle during these seven years with the result that the 2.46 now has a number of rivals, some of which can offer the contest enthusiast a very worthwhile increase in performance. Nevertheless, there are, apparently, many modellers who retain a soft spot for the 2.46, and many more who are probably reluctant to discard a perfectly good engine even though they now need (with the 50 per cent. weight increase of F.A.I. F/F formula models) more power than a stock 2.46 will normally give. One answer to this is to attempt to increase the performance by simple modification and tuning.

Most " reworking " of standard engines, if it is to be successful, is a skilled, and often tedious, business and may well require the use of tools and equipment beyond the reach of the average modeller. This plus the fact that far more model engines are ruined by unskilled handling than by fair wear and tear leads manufacturers and model magazines alike to discourage " tuning " attempts. At this point, therefore, we would like to stress that this article is not to be taken as a signal for all and sundry owners of 2.46s to begin hacking them about. We do, however, suggest that some of the undermentioned modifications are not beyond the capabilities of the average careful modeller. We believe that any such modellers who wish to give their old 2.46 a new lease of life will welcome details of simple modifications that can be made to bring this about.

There have been a number of examples of tuned E.D.s in competition circles; perhaps the most well known being that of the noted F/F contestant Peter Buskell. In many cases, however, the modifications involved call for the use of machine tools which the modeller is unlikely to possess. We were particularly interested, therefore, to have the opportunity recently of inspecting



Left: Favourite modifications among amateurs are to remove the exhaust duct and smooth the inside of the crankcase.
Right: Standard and S.R.-Spl. carburettor assemblies. Latter has an enlarged choke, widened entry and a Davies Charlton spraybar unit.



and testing an E.D. in which all the modifications adopted can be carried out by hand.

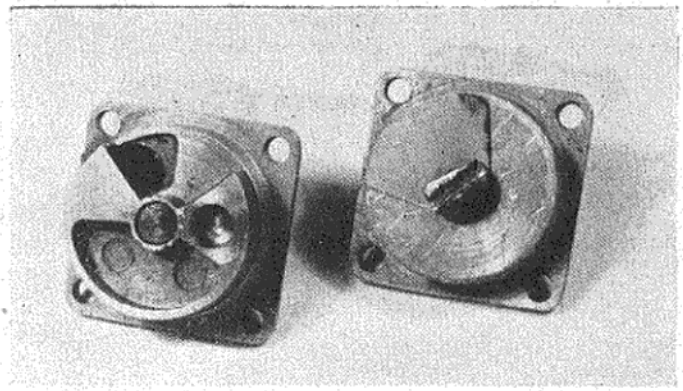
This, known as the " S.R. Special," is a version prepared by S. Robinson of Hextable, Kent. There are, apparently, upwards of a dozen of these engines currently in existence and the particular example tested was appreciably more powerful than the best stock example of a 2.46 we have yet encountered, the actual b.h.p. being of the order of 15 per cent. above average E.D. performance, and approaching quite closely to the standards of present " world class " 2.5 diesels.

The test example had evidently had a fair amount of running. The bearings were extremely free and piston/cylinder fit had been reduced to a point where starting had just begun to suffer. Under actual running conditions, there is, somewhere between a closely fitted piston, which causes undue friction, and a loosely fitted or worn piston, which causes compression loss, an ideal piston fit which liberates the maximum power. It is impossible to determine this highly critical clearance with a cold fit, since it varies widely according to the design of the piston and cylinder, the expansion coefficients of the materials used and, also, to outside causes.

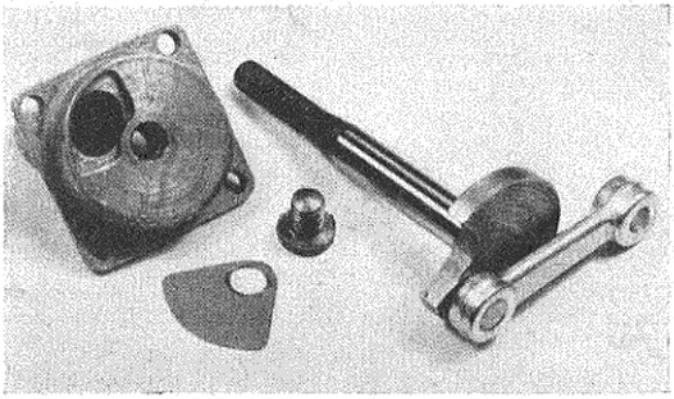
The point to be taken from all this, however, is that, at some time during its operational life (if it does not meet with a sticky end or be otherwise discarded), an engine must reach a point where the piston and cylinder are worn to the optimum fit—within the limits of their accuracy as originally manufactured. In the case of the Robinson-E.D. submitted, it is quite probable that at least a slight proportion of the overall performance increase is due to the natural improvement in mechanical efficiency of a well run-in engine. Nevertheless, there can be no doubt that the main contribution comes from the modifications carried out and we now follow with a brief explanation of these as given us by Mr. Robinson:

Crankcase

The exhaust duct is removed, using, as a guide line, the outside edge of the flange which contains the three tapped cylinder screw holes.



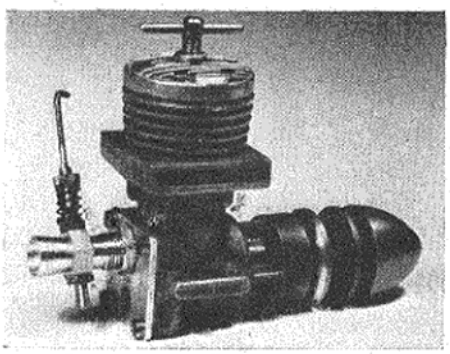
As an alternative to disc induction, S. Robinson fits a simple reed valve, using the original valve pin hole, suitably tapped, for the mounting screw.



The essentially simple Robinson-E.D. reed valve. While it is possible with this particular valve to retain the standard crankpin length, reed-valve conversion usually requires that the crankpin be shortened as illustrated.

Surplus metal can be sawn off, the new flange filed to shape and finished smooth with emery cloth. The outside edges of the flange can be rounded off and the top face polished, but it is essential to avoid touching the narrow, recessed seating, on the inside, where the metal-to-metal gas-tight joint with the cylinder-liner flange seals the transfer passage. The inside of the crankcase may also be cleaned up, using a small half-round scraper or file to remove the sharp edges.

Comment: The net result of these alterations is not likely to be discernible in a measurable increase in performance, the reasons for them being mainly theoretical (improved charging and scavenging) apart from a fractional reduction in weight. If the bearings are not extracted, it is best to avoid the use of emery, except on the outside. In any case, the bearings should be protected. Seal the outer housing with a wrapping of insulating-tape. Seal the inner bearing with wads of gauze or tissue dampened with paraffin, tightly packed into the crankcase. Late type 2.46s have three vertical lands to align the liner skirt and extra care will need to be taken when working on this type crankcase.

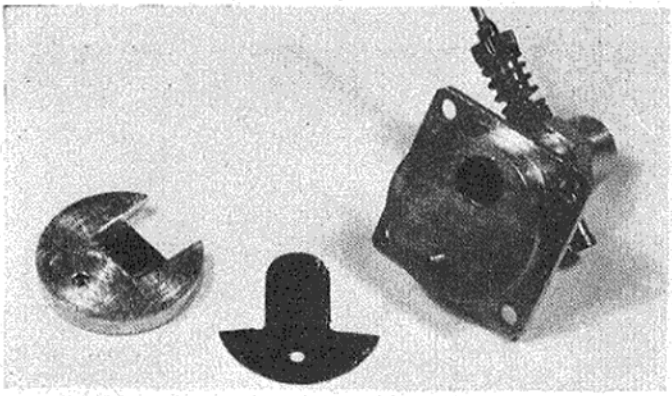


An experimental, factory-modified version of the 2.46 using a special backplate with reed-valve induction and E.D. 3.46 carburettor.

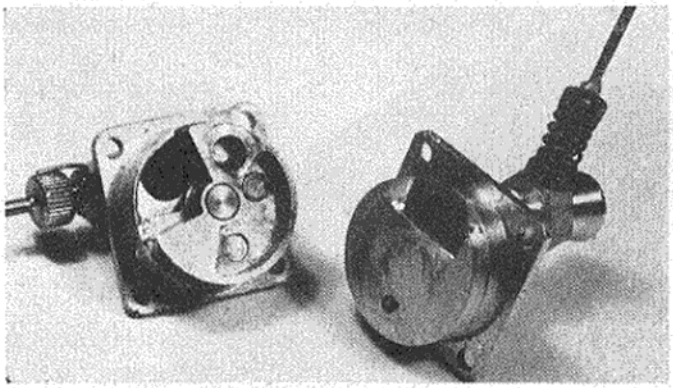
Backplate Assembly

The only modifications to the backplate assembly on the Robinson-E.D. are to the carburettor. The choke diameter is increased to $\frac{1}{4}$ in. and the venturi effect restored by filing the intake to an angle of approximately 65 deg. and then filing out to a bell-mouthed entry. The existing E.D. spraybar assembly, with its single large inwards-facing jet, is then replaced by a Davies Charlton or Oliver unit with the jet holes across the choke.

The disc-valve is not touched, except to check that the clearance between it and the backplate face is approximately $1\frac{1}{2}$ thou. If the clearance is over 0.002, the mounting pin can be gently tapped in. If the valve disc is obviously worn or wobbly on its mounting pin, a conversion to



Parts of the factory reed-valve. The 2.46 is notable for the way in which it responds to reed valve conversion.



Factory experimental reed-valve backplate assembly (right) has an alloy retaining plate which also helps to keep crankcase volume at a minimum.

reed valve is suggested, using the existing valve pin hole, tapped out 2 B.A., to retain a simple petal-shaped reed covering the intake segment.

Comment: As a replacement backplate unit can be obtained reasonably cheaply, a little experiment on the old unit is worth trying. Additional possibilities include chamfering the edges of the disc segment and opening out the forward end of the intake to smoothly merge into the intake segment. When adjusting the valve disc clearance, use a pair of 0.0015 feeler gauges or strips of shim under each side. Tap gently until the disc just grips the feeler. For reed material, berrylium - copper, spring brass or steel can be used of 0.004 to 0.005 in. thickness. Some experiment with different materials of this thickness may be worthwhile. It may be desirable, especially with the thinner valve materials, to grind off the extended portion of the crankpin to avoid this fouling the reed if the engine should start in the reverse direction.

Piston Assembly

Work on the piston consists of reducing the skirt and polishing the crown. The skirt is shortened quite drastically so that it is flush with the bottom of the gudgeon-pin bosses as shown in the photograph. Grip the piston between thick pieces of lead, or in a suitable wooden jig, in a vice, with just sufficient pressure to hold it steady. After removing the bulk of the material, work down to the bosses carefully, using a smooth file, finishing, preferably, with a carborundum slip.

The connecting-rod has a small slot at each end, cut rather less than half-way through each eye (see photo) to improve lubrication.

Comment: The result of shortening the piston skirt is (a) to give a very substantial sub-piston air induction period at the top of the stroke, amounting to some 90 deg. of crank angle, (b) to reduce reciprocating weight and (c) to slightly reduce piston drag. Great care should be taken to avoid distorting or damaging the piston sides. A fine hacksaw blade can be used for cutting the con-rod lubrication slots. These should be about 1/32 in. wide.

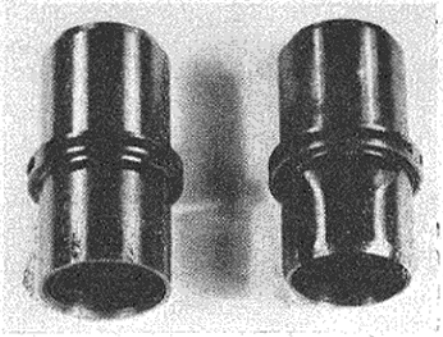
Cylinder Liner

Cylinder liner modifications are directed entirely at enlarging the transfer passages and smoothing the entry into the cylinder. A $\frac{1}{4}$ in. wide flat is filed on the outside of the liner below each of the three transfer ports after removing the hardened surface with a coarse carborundum slip or emery cloth. The flats are then very carefully blended into the transfer slits at the edges (see photo). The bottom outside edge of the liner may also be chamfered off as shown.

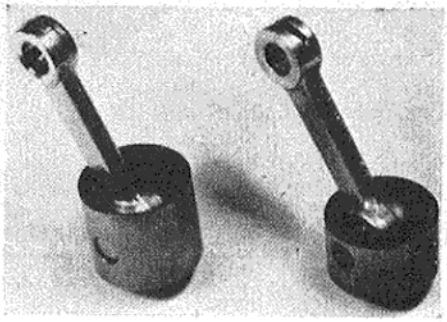
Comment: Great care must be exercised during this operation. Work very slowly and with moderate pressure. There appears to be a very slight variation in liner thickness (below the flange) between early and late model 2.46s. The wall thickness is not, however, less than 0.046 in. The wall should not be reduced to less than half this figure at the flats. Provided the width of the flats does not exceed the recommended $\frac{1}{4}$ in., the reduction in wall thickness will, in fact, be held to this limit and the risk of distortion minimised.

We would recommend the use of a hardwood jig to hold the liner in the vice for working. This can be a block, bored 11/32 in. to take the upper half of the liner, sawn through and positioned in the vice so that most pressure is exerted at the top end of the liner containing the contra-piston. It is difficult, when

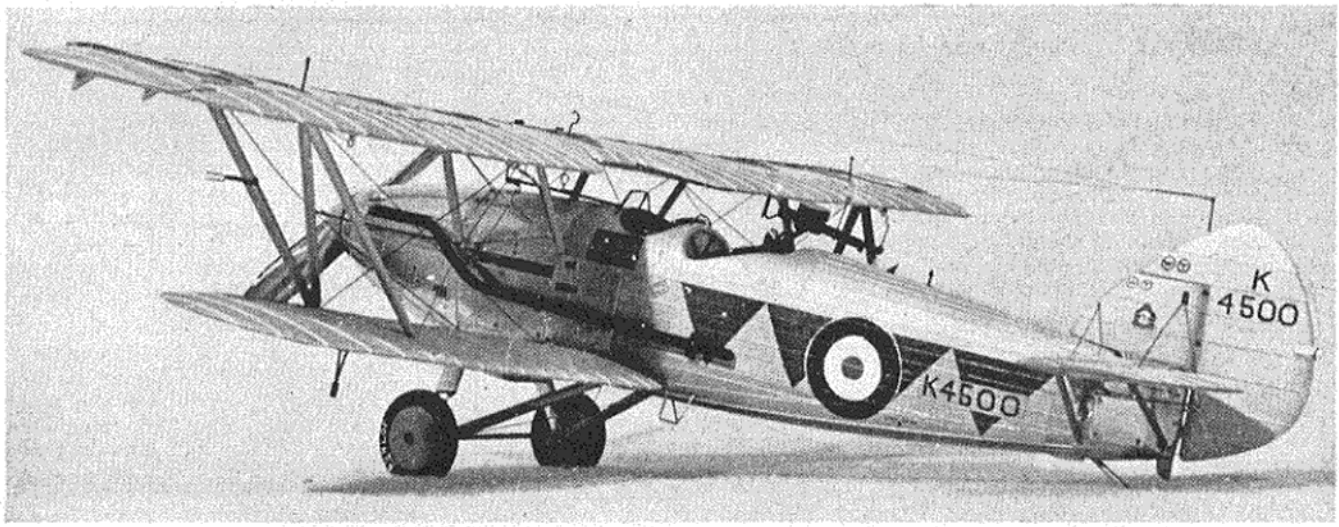
Continued on page 131



Main feature of the Robinson-E.D. is the reworked cylinder liner, providing larger transfer passages and a smooth entry through the ports.



Another Robinson modification is this drastic shortening of the piston skirt to produce 90 degrees of sub-piston induction and a reduction in reciprocating weight.



Achieve that LIFE-SIZE LOOK!

PART TWO of a feature by P. M. H. Lewis to help you build that super detail scale model

LAST month we dealt with the construction of a biplane such as the Gloster *Grebe*. Now for the detailing which makes the model a fine replica of its full size counterpart.

Cockpit Details

If this part of the work is left until assembly has taken place, the fitting of the various cockpit components can be rather difficult, so tackle it at this stage. Don't forget to paint the components *before* fitting!

For the 1/18th scale and smaller, the dashboard can be a piece of white card cut to fit the ply former already in place at that position. The instruments are drawn in with indian ink and the rest of the panel is blacked in. The card is then glued to the former, and handles or switches are represented with pins shaped and pressed in. A pair of tweezers is a useful asset in placing the equipment in the cockpit.

The next item is the rudder bar, bent from either soft or spring steel wire. The footrests are added either by soldering on metal plates or gluing on card cut to shape. The mounting bracket consists of a soft pin bent round the bar and soldered in place. The complete rudder bar is then pressed onto the cross-piece in the cockpit.

The control column is shaped from a length of wire, the base of which is soldered to a piece of brass tubing running lengthwise in the fuselage when installed. If a spade grip is fitted, the end of the wire is bent to shape after a piece of rubber sleeving has been pressed on to cover the upright part of the column. The handle is then closed and bound with linen thread to represent the grip. The gun firing button is the head of a pin cemented to the spade grip. The control column bar is fixed in place in the same way as the rudder bar.

The pilot's seat is of thin aluminium. The edges of the base are bent up to form the bucket type of seat to take the parachute pack, the back being bent at a right angle with a slight curve and slotted to take the shoulder straps. Thigh and shoulder straps consist of lengths of narrow white shoe laces to represent webbing, glued in place under the seat and behind the back. Buckles and adjusting clips are made from thin strips of aluminium bent and pressed into place on the straps.

The throttle and mixture controls are represented by glass-headed pins fitted to a quadrant cut from thin plywood or card, with wire control rods passing forward to the engine. The tail-trim may consist of either a wheel, in which case a drawing pin of correct size may be used, or a lever in a quadrant, represented in the same way as the throttle unit.

Other cockpit items include the compass, mapcase, switch panel and radio jack. The compass is a circular card base and ring to which is cemented a top disc of celluloid. The complete compass is then glued on a small bracket into its correct position, which in most cases is just below the centre of the instrument panel.

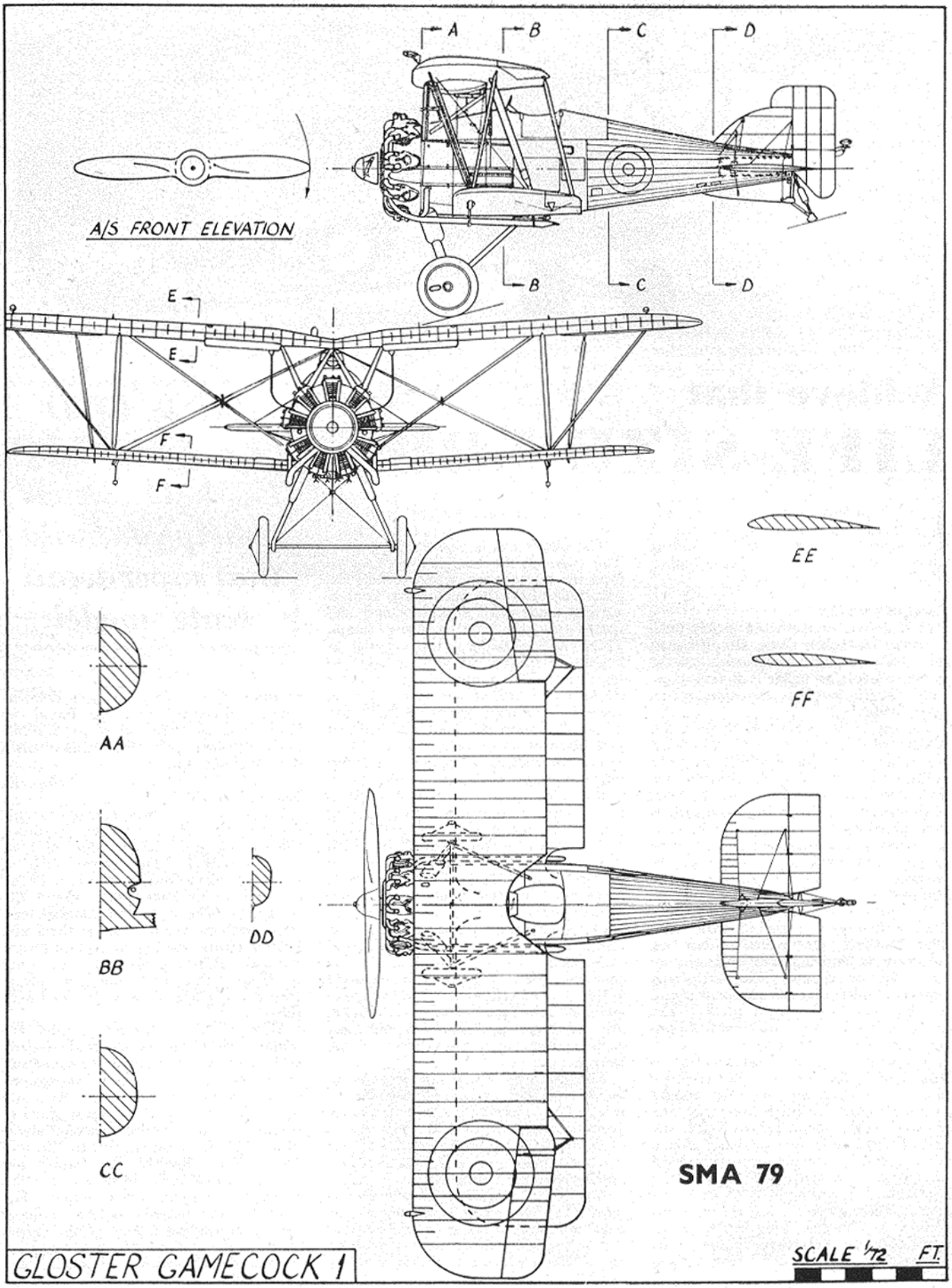
The mapcase is made from thin folded card with the sides glued and the top left open and is painted brown or green. It is glued in place on the side of the cockpit and, when the model is complete, imitation maps of thin folded paper are slipped into it.

Any other items may be made up and placed in the cockpit according to the particular aircraft being modelled. It is desirable to be able to make notes from the actual machine, but this is rarely possible. Quite often, however, detailed cockpit drawings will be found in journals at the time when the aircraft first appeared and was consequently described in them.

Fin and Rudder

The vertical tail components are built direct on the plan by first pinning down the leading and trailing edges of both fin and rudder. The trailing edge of the fin is taken down to the base of the fuselage, to be later glued against the sternpost. The section of material used must be chosen according to the scale, but for 1/18th scale $\frac{1}{16}$ in. square spruce is usual. Ribs are cut from 1 mm. ply or sheet balsa, and glued in place. Internal wire bracing is represented with thread.

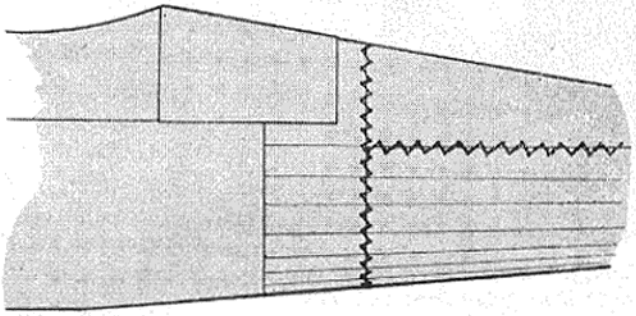
When dry, the fin and rudder are removed from the board and covered with either silk or tissue in the same way as the fuselage. They are pinned down to dry to prevent warping. Both are then clear-doped and the fin is glued in position on the fuselage, checking alignment. The trailing edge of the fin and the leading edge of the rudder are slotted with a razor blade to take the strips of aluminium used as hinges. The horn for the rudder control cables is made by inserting a strip of aluminium into the rib at the appropriate position in the rudder, with two small holes


A
B
C
D
A/S FRONT ELEVATION
E
F
EE
FF
AA
BB
CC
DD
SMA 79
GLOSTER GAMECOCK 1
SCALE 1/72 FT.

drilled at the extremities. The rudder is not fitted into place until the final assembly.

Tailplane and Elevators

The tailplane and elevators are built on the plan in the same manner as the fin and rudder and completed with the internal wire tie-bracing. When the items have been covered and doped, the tailplane is cemented in place. Where a plywood-covered under-fin is fitted to the aircraft, thin card is glued to the wooden frame.



Sketch shows fabric lacing common on most biplanes and best reproduced by marking in Indian ink as shown.

Small slots are cut in the fuselage sides at the tailplane to allow for the trimming of incidence. On some aircraft, e.g. the Hawker *Demon*, the fin is offset to counteract torque and this should also be noted in assembly.

Wings

The wing panels are built directly on the plan. The leading and trailing edges and the spars are pinned down and the ribs and riblets then cut and glued in place. The ailerons are made at the same time. Thread is again used to simulate the internal wire bracing. The upper wing is cracked for dihedral angle and glued with the tips at the correct height above the centre point.

After completion, the wings are covered with silk or tissue and doped after the covering is dry and taut. Underwing fuel tanks, such as those below the top wing of the *Grebe* and *Gamecock*, are made up from a folded sheet of card shaped with two sides and a curved base. The complete tank is glued into place.

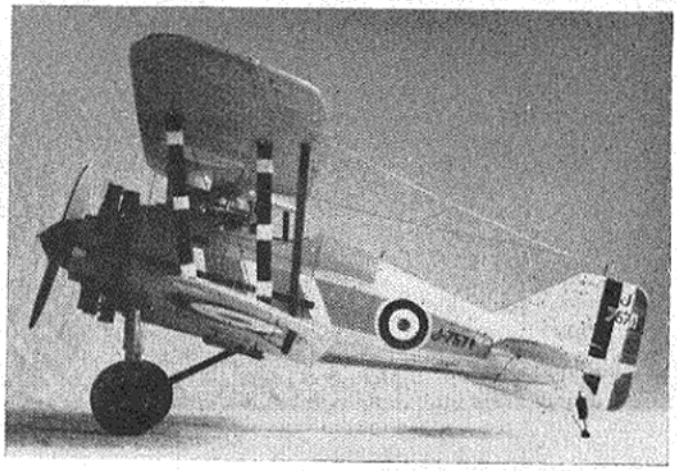
Wing and tail unit rib tapes are cut from a gummed paper strip. This is best tacked down at each end on the board and the tapes cut with a razor blade and ruler. When the width of the tape has been covered, a cut across each end will release the tapes. These are then dampened and pressed on to each rib, being trimmed at the trailing edge. Riblets are treated in the same way, as are any other edges which need taping on the aircraft.

When all taping has been carried out, a further coat of dope is applied to the entire structure.

Painting

The fuselage, complete with tail, and the separate wing panels are painted with good quality art enamels. The paint should be applied thinly and evenly with clean brushes of adequate size. The greatest care should be taken to see that neither hairs nor any other foreign matter is present on the surface. If silver is being used, it should particularly be kept well stirred to ensure a full, consistent colour. A very light rubbing down is advised between coats, first with flour paper and then with a soft duster. This will smooth the surface for the following coat of paint but care must be taken not to rub through the covering to the framework.

The roundels on wings and fuselage are now added and serial numbers are applied in black on the rear fuselage and on the rudder and below the lower wings, where they read inwards from each wing tip. The rudder stripes on R.A.F. aircraft were reversed after 1930 to have the red foremost and the blue aft. Where the figures overlapped the red and blue stripes, they were usually outlined in white. On squadron markings a silver rectangle was normally left to accommodate the number. The fin and tailplane and/or elevators were also coloured in many cases to denote the aircraft flown by the C.O. or the flight leaders.



The author's Gloster "Grebe"—a beautiful example of the type of construction described in his articles and built to 1/18th scale.

Engine

Before passing to the assembly of the model, the next step is to make and install the radial engine if that type is fitted to the aircraft. The engine is constructed as an integral unit and then mounted on the bulkhead. This is a better method than building directly on to the fuselage, unless a very small scale is being used.

The crankcase is turned to shape from wood. Cylinders may be represented in several ways. An effective method, and the simplest, is that of taking a piece of wooden dowelling of sufficient length and correct diameter and of winding and gluing heavy linen thread around it. "Cylinders" of the required length and number are cut from the dowelling, and pinned and glued in place at regular intervals on the crankcase to make either a single or a double row engine.

The exhaust collector pipes are cut from heavy copper wire or brass tubing and glued into holes drilled in the crankcase. The valve pushrods consist of wire shaped and soldered as necessary, with the valve-springs, if the scale allows, cut from a length of fine coiled spring. Sparking plugs are represented by clipped pins pressed into the cylinders. When complete, the engine is painted and, on being dry, is glued into place on its firewall. The exhaust pipes are constructed from copper tubing soldered to the circular collector ring where this is fitted to a radial engine. After painting, the exhaust system is secured to the firewall and to the fuselage with metal brackets.

The undercarriage legs are shaped from spruce. The thickened portion on the top halves of the front legs, to represent the compression section, is achieved by winding gummed paper strip round the leg to the required thickness, finishing with a fine silver foil outer cover. The front and rear legs of the undercarriage vees are glued and pinned to the fuselage and joined by a brass tubing axle of the necessary gauge. Joints are bound with wire and soldered, together with the landing-gear bracing wires.

The wheels may be turned from solid wood or built up with a rim and spokes. For most purposes, the former method is quite suitable. Tyres for the larger scales are simulated very realistically with circular-section, linen-covered, rubber rings of the type used on hot-water bottle stoppers. Rubber or bone curtain rings are useful for smaller sizes; the wheels are retained in place by soldering the ends of the axle, and the

Another of the author's models—the Hawker "Demon," also featured in our heading illustration. This is also to 1/18th scale and represents the aircraft flown by S./Ldr. C. P. Gabriel when serving with 604 Squadron (County of Middlesex).

fabric covers over the spokes may be shown with shallow paper cones glued in place.

The tailskid is formed from wire with short lengths of sleeving where necessary, and the shoe is a piece of metal soldered in place.

The centre-section struts are cut to length, shaped and glued into the top decking, following which the fuselage should be blocked into flying position on the board and held in place with rubber bands pinned down. The lower wings' root ribs are pre-glued for strength and, when dry, the wing panels are glued in place at the correct angles of dihedral and incidence. The upper wing follows onto the centre-section struts and the whole is allowed to become firm.

The interplane struts are shaped to section from spruce and cut to length. Linen binding strips are indicated with gummed paper strip wound round the struts. The struts are next fitted into their respective positions, together with any aileron-connecting push-rods.

Now that the main assembly is complete, the exterior details may be made and fitted. Guns are constructed from metal tubing fitted into wooden breech blocks, with wire handles and triggers. Telescopic sights are made from tubing, supported on wire mounts. The ring and bead type consists of bent wire with a fine wire crosspiece and with the bead mounted at the correct distance ahead on the decking.

The radiators used to cool in-line engines, as on the Hawker *Demon*, may be built up or made from a solid block, with a fine wire mesh inlet covering honeycomb. Shutter control rods are of wire. Aerial posts consist of clipped pins on the top wing, fuselage and fin or rudder. A fine tensioning spring is wound from 32 G. wire on a 24 G. wire former held in a drill and is usually required at the rudder aerial post. Filler caps for the tanks are small disks cut from wood dowelling and the tank vents may be represented by clipped pins bent to the necessary shape.

Navigation lights are formed from glass-headed pins, and where mounted on struts with streamlined cone fairings, the latter are formed from plastic wood.

Bracing wires are best installed at this stage and may consist of 24 G. spring steel wire cut to length and sprung into holes and then cemented in place. This method is suitable for 1/18th scale or larger. Otherwise, fine fusewire is employed, tensioned through small metal clips at the ends of the struts, or wound directly onto the base of the struts, according to the scale used. Where landing and flying wires cross, anti-vibration acorns or fore and aft spacer rods may be required. The windshield is of celluloid on wire supports.

Bomb racks, when part of the equipment, are formed from wire and installed below the wings or fuselage. Aileron control horns consist of small pieces of aluminium, drilled to take the wire push rods, which then pass into the wing. The rudder and elevator horns are connected up in the same way and small triangular paper shrouds, where fitted, are glued over the fuselage holes.

The radio aerials are installed with fusewire passing through the tensioning spring, the insulators being represented by beads.

The final item to be made is the airscrew. Where this is of the laminated wood type, and left in the polished finish, it is easily made up by gluing the required number of strips of wood together in a clamp and carving to shape. The propeller is then sand-papered and fitted with a brass tube through the boss. A circular back plate of plywood or metal is incorporated and a spinner fitted. This may be turned from metal or, if it is to be painted over in the flight colour, built up from plastic wood.

On completion, the airscrew is french-polished. If it is to be painted grey, it might just as well be carved from a solid block of wood. The leading edge usually has a protective metal strip. It now remains to mount the airscrews on the engine and to complete the small painted details.

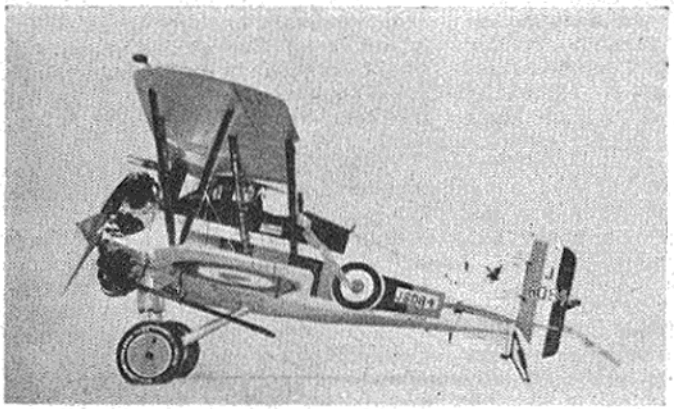
The tyres generally carry the maker's moulded inscriptions such as "Dunlop" or "Palmer Cord Aero Tyre" on their sides. "Lift Here," "Jack" and "Sling" notices appear on the fuselage sides towards the tail, and "W.T." in circular or square panels at the radio-bonding points.

Various other inscriptions appear on the aircraft and are best noted, if possible, from the actual aeroplane as they are rarely decipherable from photographs. The lines of fabric lacing appear very effectively if marked with small crosses in indian ink.

In connection with captions for the accompanying photos, it might be of interest to mention that, although the *Demon* and the *Bulldog* are of solid wood construction, hollowed out in the cockpit areas, the details given in the text for the rest of the parts, etc., apply to both types of construction.

Both the *Grebe* and the *Gamecock* feature entirely built-up structures of the original machines and are made mainly from the same materials, i.e. spruce and plywood.

Struts, guns, wheels, propellers, engines, cowlings, etc., are made in the same way for both "solid" and "built-up."



A Gloster "Gamecock" built to 1/18th scale. A 1/72nd plan is on page 118 and is suitable for scaling up.

Topical Twists

by PYLONIUS

Egg-Bound

Someone has written to this journal to point out that the curious gadget carried by World War I German planes was not an egg-timer, as we children might fondly believe, but a speed indicator.

All I can say is that it looks jolly like an egg-timer on my fag cards, and if it isn't an egg-timer it just shows what sinister subterfuges old Richthofen and his crowd got up to just to fool us vintage fans.

The tragedy is that I may have to revise my thesis on the development and application of the airborne omelletteonometer, which deals with the subject in a purely lay manner.

One theory was that the egg-timer indicated to the pilot where he was bound. Another was in connection with that curious injunction to pilots to drop their eggs on the target. Without the omelletteonometer the eggs might get hard boiled —and hurt someone.

As final proof of the existence of the omelletteonometer, I was going to ask why is it that, even to this day, fighter pilots are asked to scramble?

X = ?

A reader has reminded us modellers that we are not the little Einsteins we used to be. Gone from our journals are the masses of meaty maths, so much in evidence in those eggheaded days when modelling was thought to be a science rather than a sport. The slide rule has given way to the rule of thumb, and if you were to ask the modern modeller what a lift co-efficient is he'd probably say it was a couple of smart elevator girls.

In the heyday of the maths model it was infra dig to trot out a blatant copy of last year's Wakefield winner as your latest creation; you had to produce something absolutely dripping with original formula. Whether the plane flew or not was beside the point as long as it had its x in the right place. After fixing the c.g. position with mathematical precision, no clean living young scientist ever carried a lead weight to the flying field.

What always baffled me about the formula model was how to find the speed of a model which you hadn't yet built. This was always the first known factor in the first formula, and it was at this point I sent away for the plans for last year's Wakefield winner.

National Figures

I must confess to being mystified about all the hullabaloo over the organisation of the Nationals. For a model contest I've always thought the organisation maintained the highest traditions of the three ring circus—which is as it should be in these days when people journey from all over the world just to see the Great Radio Act: the aerial wonder of the age.

If I have one small criticism to make on the presentation side of the central attraction it is that the V.I.P.'s who are given the honour of judging it are not, perhaps, as V.I.P.-ish as they could be. While I admit that the big pots of the model world look impressive enough in dark glasses and crested blazers, I'm all for toning up the holiday atmosphere by raking in a few glamorous film stars.

Those of you who may be sceptical about the ability of the 40-22-38 idol to judge such a technical event might wish to overhear a typical briefing of a Radio V.I.P.:

V.I.P. Oh, I see. Those long spidery things aren't fishing rods at all then, but aerials. I do think it's so thoughtful of you to allow the children to watch their televisions when they get tired of playing with their toy aeroplanes.

P.R.O. Well, we won't go into that, but if you look at this score card you will find it contains a list of 20 entrants. Now, if the entrant cannot get his model to fly you put a dash against his name. Got that?

V.I.P. Sounds frightfully complicated, but I think I see what you mean.

P.R.O. Good. Now, if the model crashes, you place an X against the name.

V.I.P. What fun! Just like filling in the pools. But how will I know if the model crashes? I'm as blind as a bat without my glasses.

P.R.O. By the delighted cries of the spectators. With luck the dashes and crosses should account for at least 16 of the entries.

V.I.P. But what do I do about the other four?

P.R.O. That's easy. From these you select the winner by the greatest volume of applause.

V.I.P. Like a talent contest?

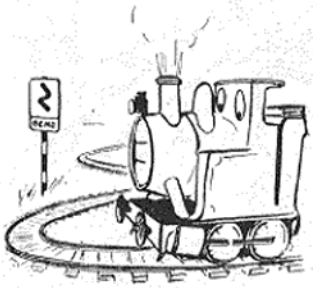
P.R.O. That's it. But be careful to distinguish between the applause for a good flight and that for a spectacular crash. The former is just polite hand clapping, while the second is wild, ecstatic cheering. At all costs we must avoid the sort of embarrassment caused at the last meeting, when the proprietor of a damaged ice cream kiosk insisted on sharing the first prize.

Though of negligible importance, it would be unwise to ignore the minor side shows. For instance, the organisers show unfailing good sense in siting the F/F events in some obscure corner of the airfield, where they give the least offence to the radio public. As far as the running of these events go, it would be unfair to expect the officials to waste time on such trifling details when they could be enjoying the radio fun. Thus, on humanitarian grounds, I can see nothing wrong with the customary practice of co-opting the odd wife or girl friend to take care of things between knitting intervals. After all, the job requires no special skill apart from spelling the winner's name correctly. And as they should know that there are two n's and two l's in O'Donnell, all should go smoothly.

It is perhaps vaguely possible to organise Team Racing and Combat, but the safest thing is to allow the belligerents to fight it out for themselves.

Off the Rails

I suppose it is permissible for model train fans to blow off steam now and again. After sending off the staid, 4-6-2 Puffing Billy on its 10,000th circuit of the parlour floor, life must become just that little bit tedious, and if the wilder type of train hobbyist decides to hot up the pace with a few jet pyrotechnics, who can blame him?



His troubles start, however, when his jet train, in quite human fashion, runs off the rails when meeting dangerous curves. What obviously perplexes him is the way in which the model aircraft jets remain so firmly grounded while his purely earth-type model achieves an undesired airborne state. Should he attach a pair of wires to his engine and call it a speed model, or try staying on the rails with a spot of adhesive downthrust?

SKYFARER

A *really* easy to build control-line Twin —— by RAY MALMSTROM

Full size plans on the next three pages

TWIN motor models have a fascination and a flying thrill all their own, but they are usually complicated jobs to build. Here, however, is a small model that, while possessing the attractive lines of a modern airliner like the Vickers *Viking*, is extremely simple to build. If you have made and flown a C/L profile sports model, and can carve a few simple blocks of balsa, you are only a few evenings' work away from the thrill of flying a "twin."

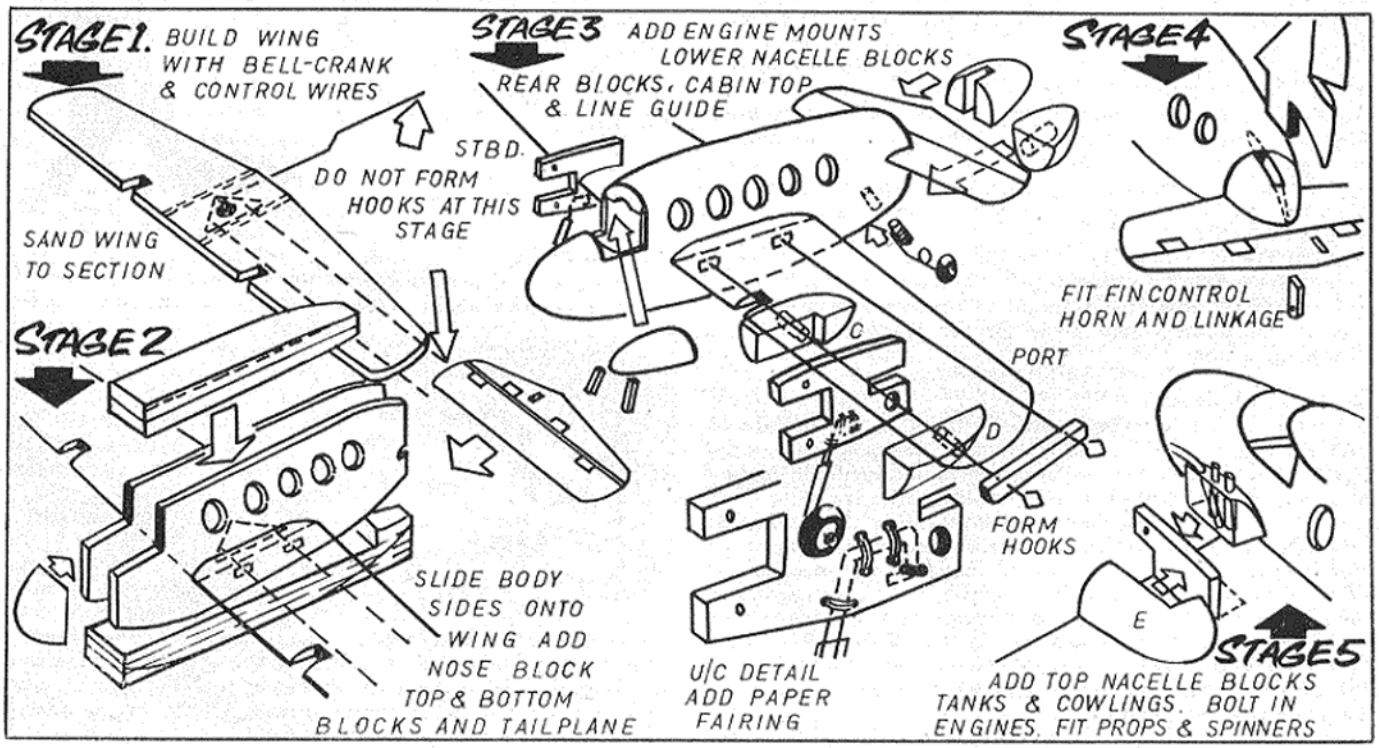
The plans and construction sketches supply all building information. Follow the building sequence carefully. Drill and carve the lower inner nacelle block (c) on the port side and thread it on to the front lead-out wire *before* assembling the port ¼ in. ply engine mount in position in the slot on the wing leading edge. Offset outwards the starboard engine by inserting a 1/32 in. ply packing piece under the FRONT of the engine lugs.

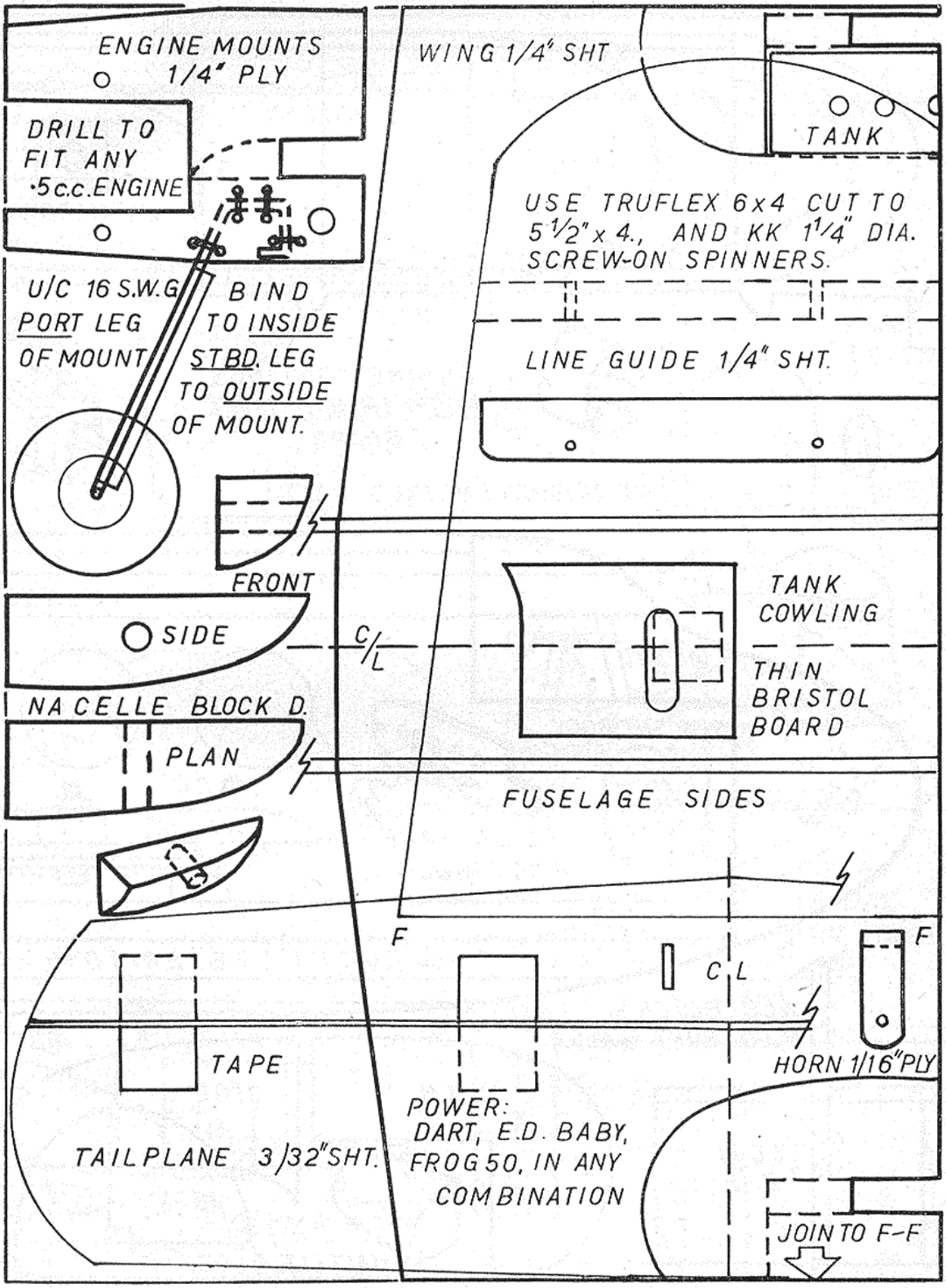
Give the entire model two coats of clear dope, sanding lightly before decorating. A near scale model of this type gives wide scope for some attractive decoration in the style of the airliners of B.E.A., Aer Lingus, Air France, etc. The original is silver with white cabin top and fin, and maroon lettering and trim.

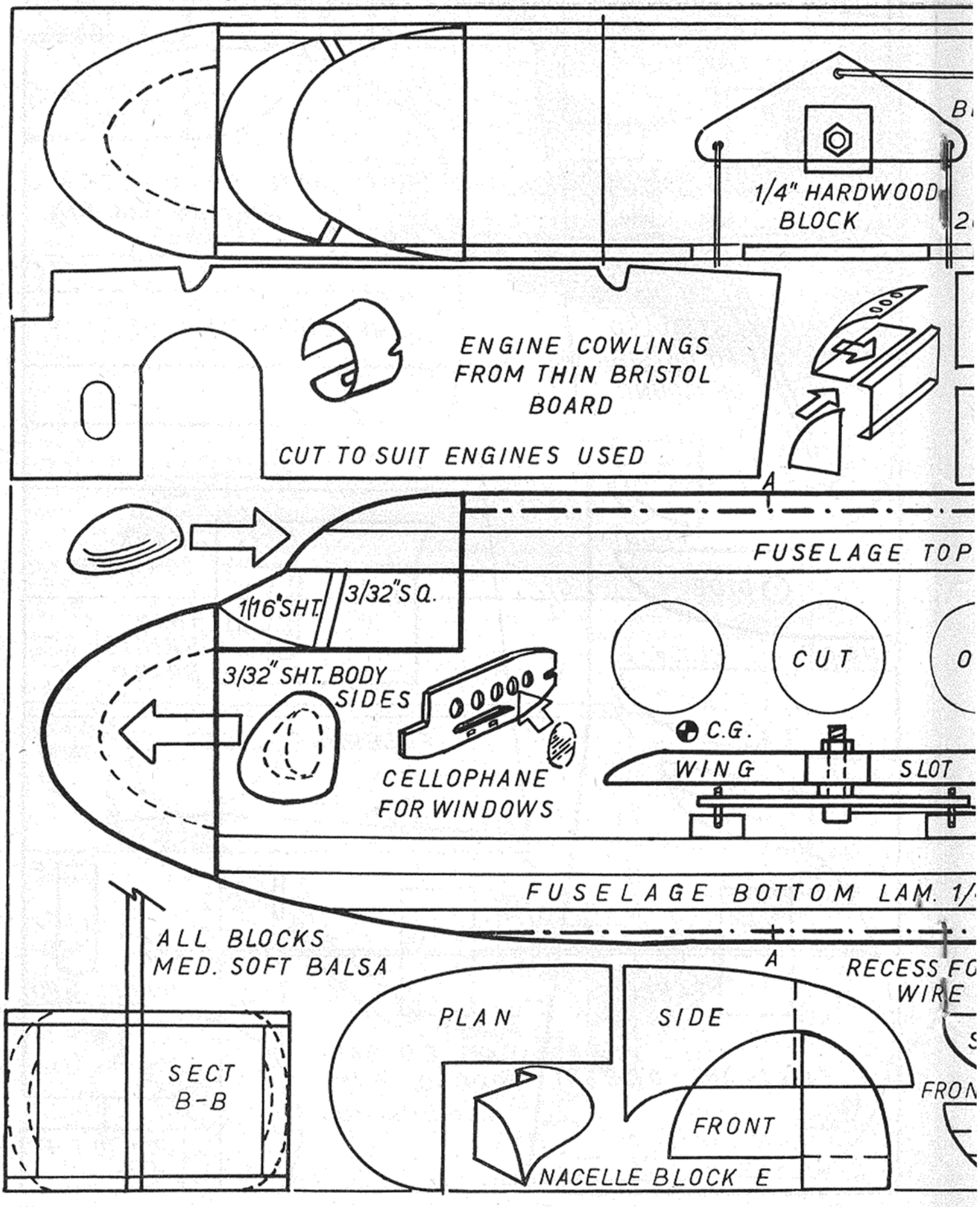
Flying Notes

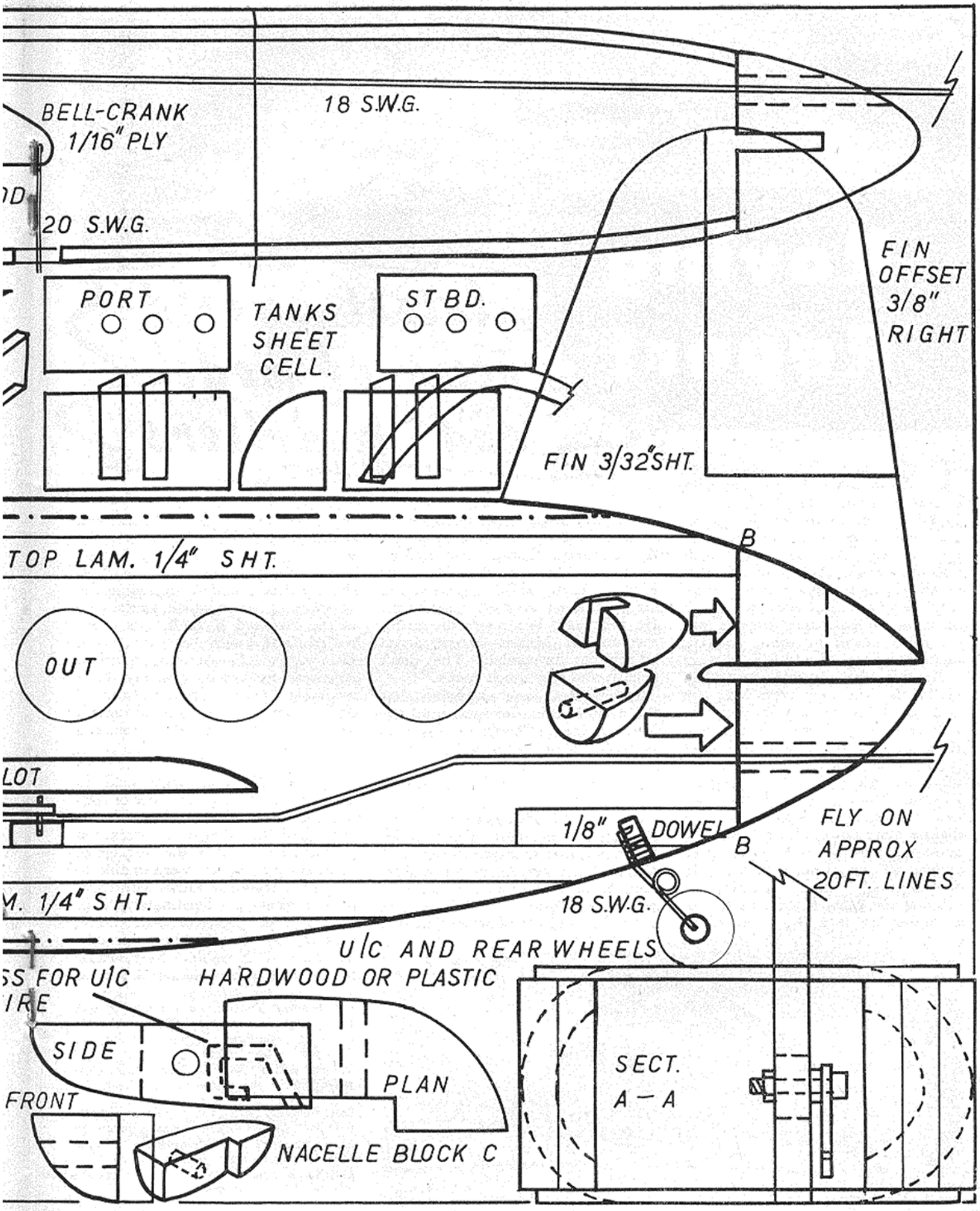
Two identical engines are not necessary, but mount the more powerful of your 0.5s on the inboard (port) side. The original *Skyfarer* flies with 5½ in. (cut from 6 in.) × 4 in. K.K. Truflex props, but similar size Frog nylon ones would also be O.K. Unequal size tanks ensure the starboard engine cutting first, but—most important—test the length of your engine runs before flying. Any small piece of tarmac is your airport as the model is designed to fly on 20 ft. thread lines. Hold the engine mounts when starting, while an assistant supports the model.

When the starboard engine cuts there is no change of trim, and *Skyfarer* maintains height on one engine. So full power for take off—and from then on you'll be really living!




ENGINE MOUNTS
1/4" PLY
DRILL TO FIT ANY .5 c.c. ENGINE
U/C 16 S.W.G PORT LEG OF MOUNT
BIND TO INSIDE STBD. LEG TO OUTSIDE OF MOUNT.
FRONT
SIDE
NACELLE BLOCK D.
PLAN
TAPE
TAILPLANE 3/32" SHT.
WING 1/4" SHT
TANK
USE TRUFLEX 6x4 CUT TO 5 1/2" x 4., AND KK 1 1/4" DIA. SCREW-ON SPINNERS.
LINE GUIDE 1/4" SHT.
TANK COWLING
THIN BRISTOL BOARD
C/L
FUSELAGE SIDES
F
F
C L
HORN 1/16" PLY
POWER: DART, E.D. BABY, FROG 50, IN ANY COMBINATION
JOIN TO F-F


1/4" HARDWOOD BLOCK
ENGINE COWLINGS FROM THIN BRISTOL BOARD
CUT TO SUIT ENGINES USED
A
FUSELAGE TOP
1/16" SHT.
3/32" SQ.
3/32" SHT. BODY SIDES
CELLOPHANE FOR WINDOWS
CUT
C.G.
WING
SLOT
FUSELAGE BOTTOM LAM. 1/
ALL BLOCKS MED. SOFT BALSA
A
RECESS FO WIRE
PLAN
SIDE
SECT B-B
FRONT
NACELLE BLOCK E


BELL-CRANK
1/16" PLY
18 S.W.G.
20 S.W.G.
PORT
TANKS
SHEET
CELL.
STBD.
FIN
OFFSET
3/8"
RIGHT
FIN 3/32" SHT.
TOP LAM. 1/4" SHT.
B
OUT
1/8" DOWEL
FLY ON
APPROX
20FT. LINES
18 S.W.G.
U/C AND REAR WHEELS
HARDWOOD OR PLASTIC
SIDE
PLAN
FRONT
NACELLE BLOCK C
SECT.
A – A

Roving Report

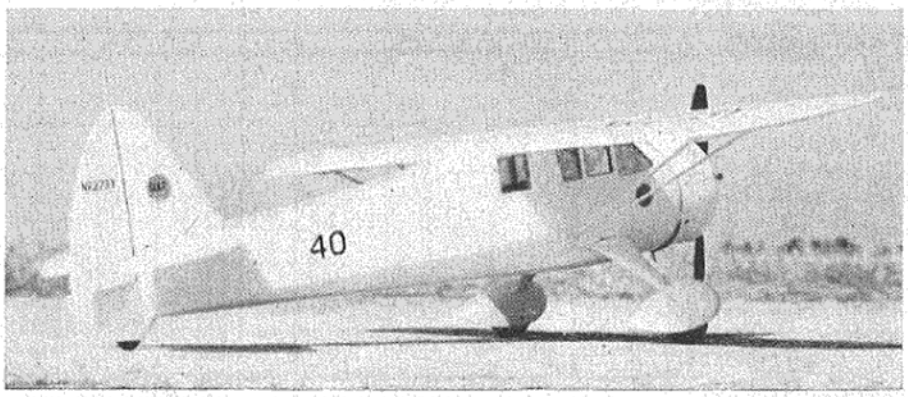
latest world news of models and modellers

TONY FARNAN, well-known Australian C/L modeller who is also Australian distributor of the Japanese O.S. engines and R/C gear, is feeling pleased with the results of the recent Australian National Championships. At least 80 per cent. of all places in power events were won with O.S. Max engines. These included 11 firsts, nine seconds and six third places in stunt, combat, team-racing, speed and F/F.

At this, the eleventh Australian Nationals, the new type Max 29s and 35s (the latter as featured in the February M.A. Engine Test), had their first contest tryouts and were immediately successful. "From five days at the Nationals," reports Farnan, "we discovered that the new Maxes, apart from being only slightly more powerful, are definitely more economical and start easier under all conditions than their predecessors." Barry Turner, in winning the Class B team race, was averaging 47 laps (60-ft. lines) at 90 m.p.h., using a chicken-hopper tank in the new Australian kit model, the *Accelerator*. Farnan also used an *Accelerator*, but with the older type Max 29, the model clocking 94 m.p.h. for 37 laps on 12 thou. 60-ft. lines. He tells us "We never use nitromethane in Maxes, except about 10 per cent. for combat. They don't need it and stay much cooler."

Having read our suggestion that the overwhelming acceptance of the Max engine in Australia was presumably partly accounted for by a shortage of favoured American contest types, our correspondent hastens to enlighten us: "For the past two years, the enthusiast has been able to purchase, from most of the major hobby retailers in capital cities, any of the following American makes: Fox, K & B Torpedo, Veco, etc., also Super-Tigre . . . O.S. motors entered a country where enthusiasts, myself included, were 'American motor mad.' They have, over the years, against all competition, won completely on their merit and in doing so have had to overcome the above competition which, in the case of the Fox and K & B, was deep-rooted and with excellent past history. . . . For your information, American motors have always been available here through 'token' dollar licences. Quantities are small, but regular, and meet the specialised need perfectly."

Incidentally, the Australian Nationals this year were held in Tasmania. A large number of contestants travelled by chartered aircraft and threatened to create a problem in regard to the carriage of fuels, since modellers were unable to take their favourite brews with them in the aircraft. Fortunately, E.P. Keogh Pty. Ltd., of Melbourne, makers of the highly successful Australian "Keogh's" fuels, came to the rescue by making a special



Our heading photo shows a line-up of C/L scale models at a South African contest: Dyna-Jet Vampire, Tipsy, Tomahawk, Typhoon, Tiger Moth and N-A T.28. Winner was K. Roberts' Tiger Moth, seen taking-off in the photo on opposite page.

Left: Ben Howard's 1935 Thompson Trophy winner "Mr. Mulligan" was a favourite prototype with pre-war flying-scale builders. This modern C/L version, beautifully finished, was built by Sid Smith of Victoria, Australia.

shipment of fuels to the contest site at Campbell Town. Adequate supplies were guaranteed by the provision of postal reservation forms. To assist those wishing to use special mixtures Keogh's also disclosed the exact formulae of the three types of fuel offered, and made available supplies of standard constituents to enable modellers to modify the stock fuels as required.

* * *

Don Adams, of Childers, in Queensland, R/C enthusiast and a former winner of the Australian R/C Championship, is now in the aerial agricultural business. Photo (right) shows Don with his partner and two of the *Tiger Moths* which their firm, Queensland Airplanters Pty. Ltd., operate. They also expect delivery of a *Super-Cub* shortly. Much of their work last year was the aerial seeding of grasses into country that is being cleared for cattle. They were able to complete about 1,000 acres per day with a *Tiger*—an area that would normally take about two months using men on horses.

Don still finds time for a spot of R/C of the fly-for-fun type and mostly scale. Current favourite is a 6 ft. Berkeley *Cub J.3*. It has an AM-35 which, Don reports, runs well and hasn't had the needle or compression settings altered for months. A Gil Miles-made Hill receiver is used with an O.S. compound escapement, both of which have proved trouble-free.

* * *

Giuseppe Tortora, of Rome, has what must be almost a record number of controls for a single-channel outfit. A single rubber driven electro-magnetic rotating switch is used to operate rudder, elevator, engine and wheel brakes circuits.

The model, of 67 in. span, with a wing area of 620 sq. in., is fitted with a tricycle undercarriage and a Super-Tigre G.27 3.2 c.c. diesel, driving a 10 × 6 nylon prop. The method of controlling engine speed is unusual. A Mighty-Midget electric motor, geared down in two stages and reversible, rotates the needle valve via a worm drive. Wheelbrakes are electro-magnetic, operating on the hubs of the wheels. A stick type control box is used, with buttons for the engine control. A single-valve transistorised receiver is employed.

* * *

Ossi Czepa, popular Austrian glider expert and former world champion, who returned a few months ago from a year's stay in the United States, has now moved and enlarged his model shop in Vienna. There is little model manufacturing in Austria and Ossi is importing equipment from several countries, mostly Great Britain, Germany and Japan. During his stay in America, Ossi flew with the Chicago Aeronuts and was elected an honorary member. He is now Austria's delegate to the F.A.I. Models Commission.

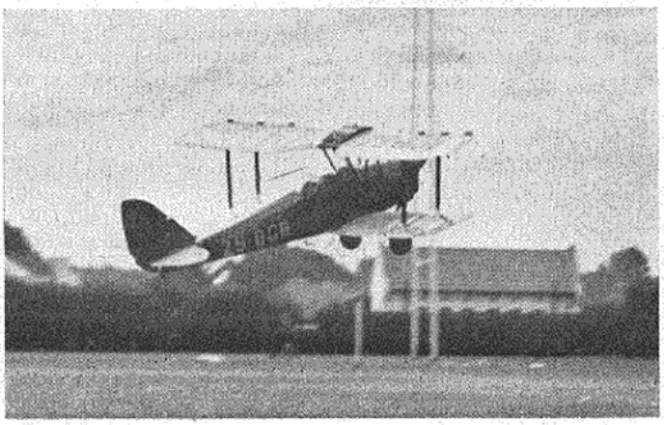
* * *

A little over a year ago, following a description of a Japanese built camera model, our correspondence columns carried some suggestions regarding the possibilities of aerial photography for models. The idea isn't new, of course: a well-known pre-war American modeller, Elbert J. Weathers, took photos from an 8-ft. span Brown Junior-powered model back in 1937, but most of these efforts have been centred around the use of small, lightweight snapshot cameras having the simple meniscus type lens and a slow shutter speed. The actual photographs thus obtained are generally of poor definition and of little interest except as novelties.

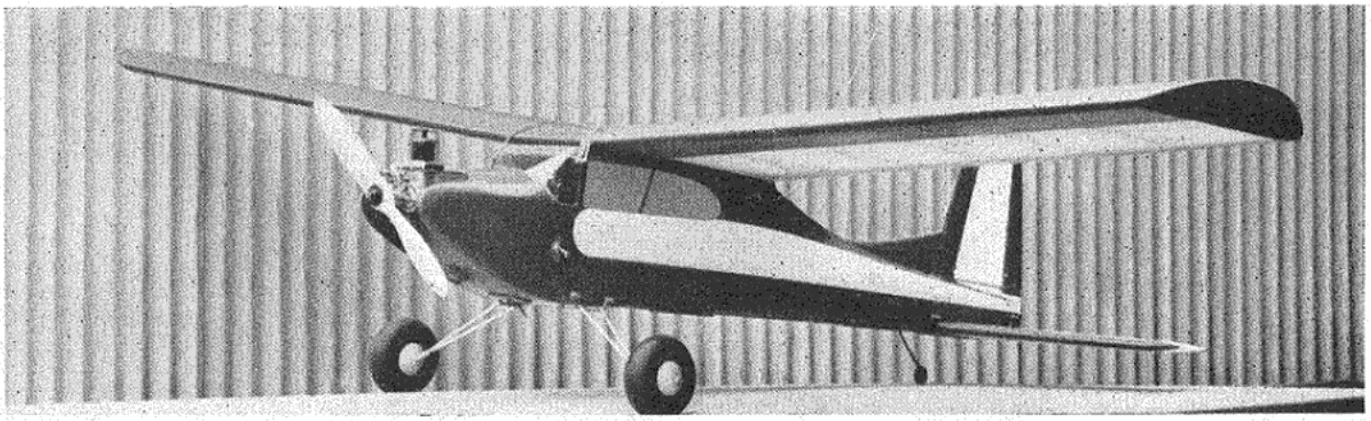
On the other hand, cameras having adequate lens and shutter equipment, even small 35 mm. types, are both heavy and costly, since they invariably embody a great deal of added complication which is quite superfluous to our needs. Obviously, the thing to do is to make your own aerial camera. The essentials of a successful model aerial camera can, in fact, be reduced to a lens and shutter unit and a simple light-proof box. The lens must be a good quality anastigmat of three or four glass construction and the shutter should be of the Compur, Protor or, better still, Compur-Rapid type. The rest of the camera need comprise only a light-proof box with provision for holding cut film in the focal plane. No provision for focusing is necessary, as all photos will, in order to obtain an acceptable degree of sharpness, with even the highest shutter speeds, have to be taken at altitudes equivalent to the " infinity " distance.

Just such a practical approach to model aerial photography was seen recently in some pictures published by our U.S. contemporary *Model Airplane News*, showing a radio-controlled camera model built by a reader, Harrison Morgan.

The model chosen was an increased span version of Bill Winter's R/C *Gramps*, equipped with a Lorenz



K. Roberts' Tiger Moth taking off. (See opposite page)



A typical Japanese radio-controlled model. It has O.S. equipment giving rudder and engine control. A resemblance to the usual American layout will be noted.

receiver, Bonner Vari-Comp escapement and powered by a K & B Torpedo-19, the all-up weight being some 8¾ lb. The camera was specially made for the model, using a Voigtlander Skopar f. 4.5 lens in a Compur 1/300 sec. shutter with a focal length of 83 mm. The camera body consisted of a balsa box, nylon covered, with the back adapted to take 3¼ × 2¼ in. flat pack type film. The camera, fitted to a slide-in plate, was arranged to shoot vertically downwards through an aperture in the bottom of the cabin.

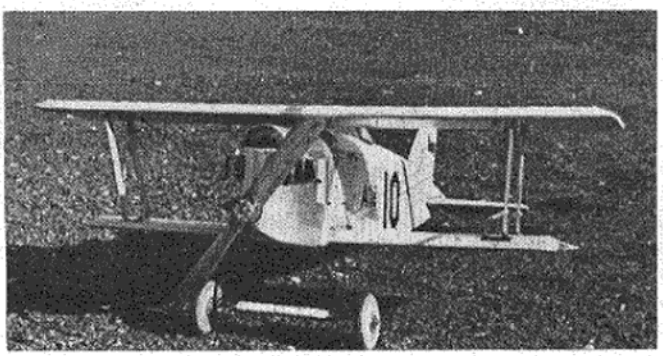
Incidentally, one picture taken at 700 ft. above the airfield at the New England R/C Championships (and showing 50 cars and a Piper *Cub* below) served to emphasise the value of a late afternoon sun to provide long shadows and lend depth to an otherwise very flat subject.

* * *

We recently received a copy of the Czechoslovak National record list and noted some impressive performances.

Among the older records still standing are Zdenek Husicka's absolute speed record of 245.05 km./hr. (152.3 m.p.h.) set up with a Letmo jet in July, 1952. The absolute duration record is 2 hr. 2 min., set in 1950 with a glider by Karel Streit, while the absolute height record was also made in 1950, a height of 1,996 m. (6,548 ft.) being achieved by Ladislav Galeta's power driven model.

Other and more recent notable performances include Vladislav Spulak's 1955 distance record (glider and absolute) of 75 km. (46.6 miles) and, of course, the outstandingly fast time of Sladky's and Studeny's speed models: namely Sladky's 2.5 c.c. world record of 236.18 km./hr. (146.7 m.p.h.) and Studeny's 244.226 (151.8 m.p.h.) in the 5 c.c. class. Both these latter have been established during the past six months.



A most unusual C/L scale model from Czechoslovakia, an Aero 18b of 1923 vintage, powered by a 23 c.c. engine. The model spans 47 in. and weighs nearly 10 lb. and was built by Jiri Baitler of Prague.

For 1958, the Czech competition calendar lists a large number of official events, C/L heading the list with 15 contests, followed by glider (12), rubber (6) and F/F power (5). There will also be three R/C events.

* * *

Who know's, there may yet be a World Championship for microfilm models! Hungary has suggested to the F.A.I. that such models should be officially recognised for international competitions and records, and to this end technical details and rules are being sought from all countries, particularly the U.S.A., where such models are very popular.

Taking the matter a step further, Hungary have announced that they will run an international microfilm contest in May, 1959, so this will be a good opportunity to assess the potential interest for an F.A.I. Championship.

An unusual subject for a C/L scale model: a SAAB "Scandia" twin-engined airliner of Scandinavian Airlines, built by a Japanese enthusiast and powered by two Max engines driving 4-bladed props.

Messerschmitt Me 109e

The Luftwaffe's famous fighter as a control line scale model

designed by P. M. H. LEWIS

TOGETHER with the FW190, the Me109 formed the major part of the Luftwaffe's single-seater fighter strength during the war. From its long line of variants, the 109e of the Battle of Britain has been chosen for this 1½ c.c.-powered model. The full-size original used a 1,150 h.p. Daimler-Benz DB601A inverted-Vee motor, which produced a top speed of 354 m.p.h. Armament installed comprised two 7.7 mm. machine-guns in the upper cowling and two 20 mm. cannon in the wings.

Proven construction methods result in an easily-built and a very rugged miniature of this famous German fighter.

Fuselage

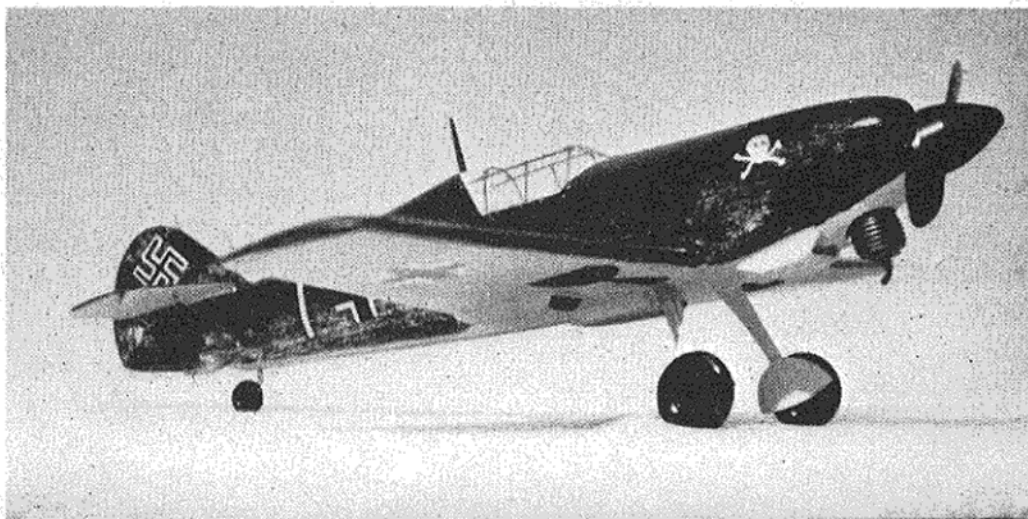
A piece of hard ⅛ in. sheet for the crutch provides the starting point. The slots for the push-rod and for the engine-bearers are cut out; those for the latter may need some slight adjustment in spacing according to the engine to be fitted. A piece of 14G. wire is cut to length, bent to shape to form the undercarriage and sewn and cemented to the crutch. At the same time, the ½ in. tailwheel is fitted to its 22G. wire axle, and also sewn and cemented in place.

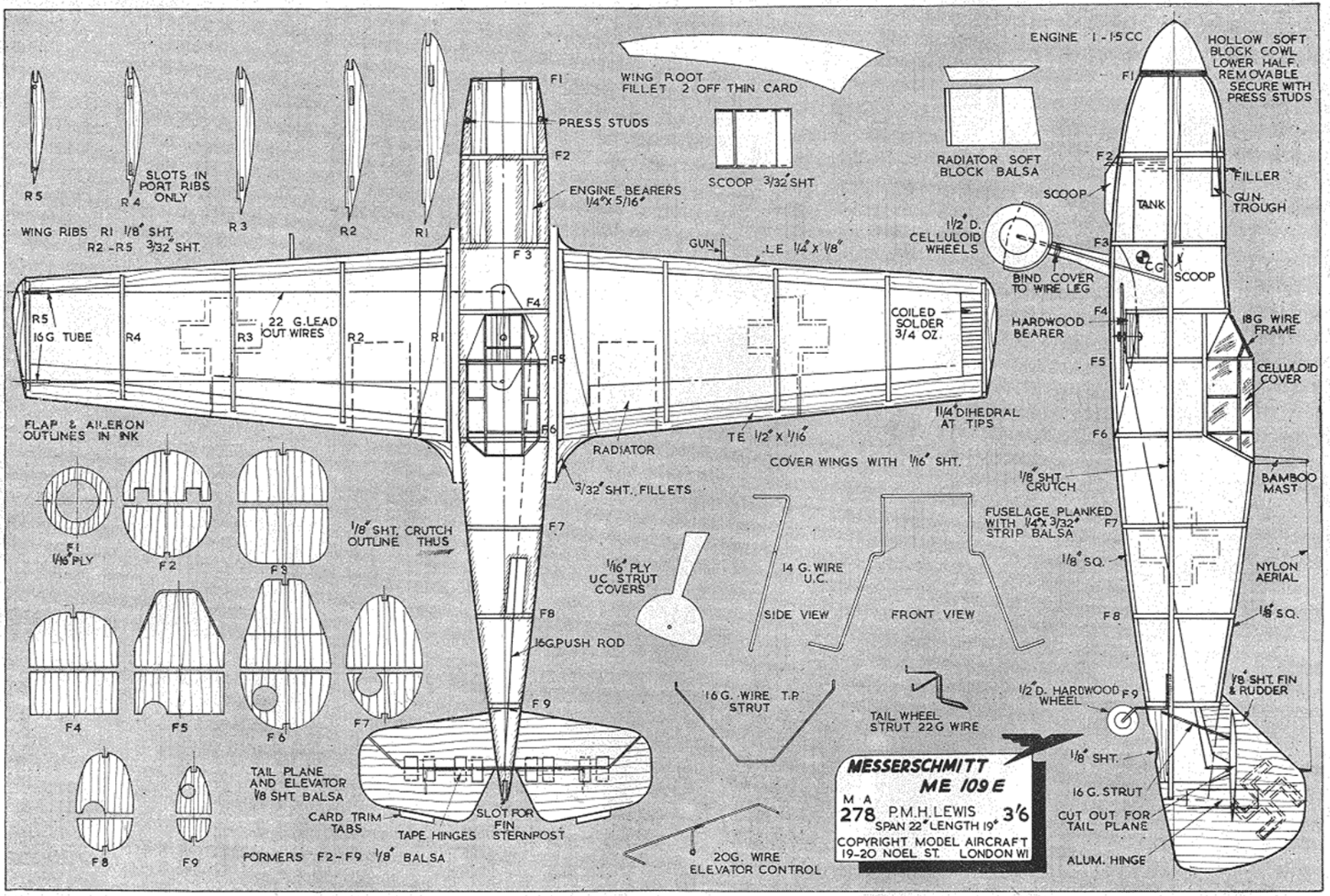
The next step is to cut the ⅛ in. sheet formers F2-F9 to shape and to add them at their stations above and below the crutch. The tank then goes in, followed by the control-plate and the accompanying hardwood ¼ × ¼ in. bearer. A 6 B.A. nut and bolt form the pivot, while 16G. wire is used for the push-rod. After adding the ⅛ in. sheet fin and ⅛ × ⅛ in. keel strips and cockpit edges, the fuselage is ready for sheeting. This consists of ¼ × 3/32 in. strips, kept in place with pins until the cement has set. The underside, between formers F3 and F6 is filled with a piece of ⅛ in. sheet, added after the 22G. lead-out wires have been installed on the control-plate.

Pin and glue the 1/16 in. plywood front ring (F1) to the bearers and, after the engine mounting bolts have been inserted, fill in to F2 with hollowed-out soft block. The lower half of the cowling is removable and is kept in position with press-fasteners. The fuselage is given a smooth finish by sandpapering and is then laid on one side while the tail unit and the wings are made.

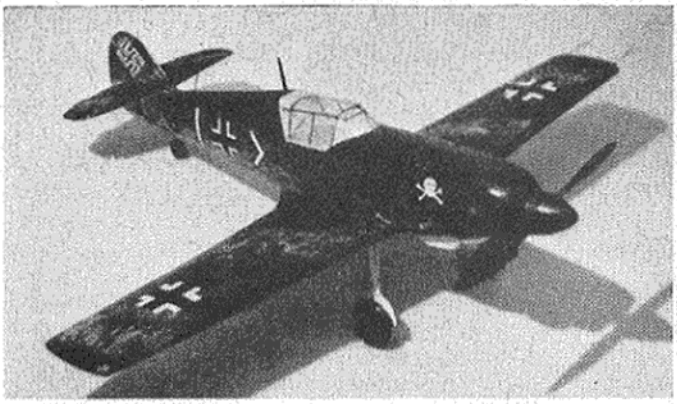
Tailplane and Elevators

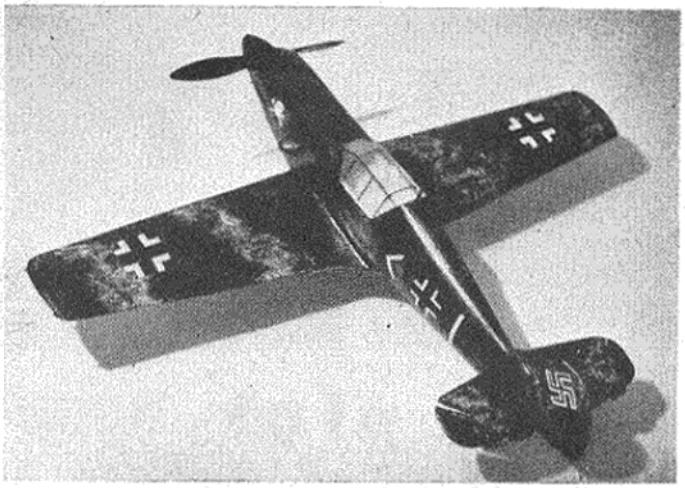
These are cut from ⅛ in. sheet and sanded to section. The tailplane is slotted into the fin and the elevators are fitted to the 20G. wire control horn, the arm of which is looped over the end of the 16G. push-rod. Tape hinges complete the installation, and





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





Comparatively simple in construction, P. M. H. Lewis's Me 109e is nevertheless robust and, like its full-size counterpart, will take plenty of punishment.

a thin aluminium hinge joins the $\frac{1}{8}$ in. sheet rudder to the fin.

Wings

These are built direct on the plan, the $\frac{1}{8} \times \frac{1}{4}$ in. leading edges and the $\frac{1}{2} \times \frac{1}{16}$ in. trailing edges being the first pieces to be pinned down. The root ribs R1 are cut from $\frac{1}{8}$ in. sheet, while the remainder are from 3/32 in. thick balsa. The port set must embody cut-outs for the lead-out wires; and the starboard wing is fitted with a lead or coiled solder balance weight.

Laminated $\frac{1}{8}$ in. sheet tips complete the wing frames, with the lead-out wires passing through 16G. brass tubing. Both wings are covered with $\frac{1}{16}$ in. sheet and after they have been sanded to a clean finish, they are cemented firmly to the fuselage, any gaps being filled in with scrap sheet.

The root fillets are cut from card and the wheel wells may either be cut out of the lower surfaces or painted on later. It now only remains to add the $\frac{1}{16}$ in. plywood wheel covers which are bound and glued to the legs, the wheels being retained with soldered stops. Note the characteristic splayed-out wheel angle owing to the upturned axles.

Finishing

The model is now ready for sealing and sanding, and when it is smooth enough, the tissue covering is doped on. Further doping and rubbing down prepare it for the required number of coloured coats of camouflage in mottled dark blue and grey above and pale blue below.

Insignia are added together with the final details: the 18G. wire cockpit frame, followed by its celluloid covering, aerial masts, intake scoops and radiators.

MORE URGE

from your E.D. 2.46

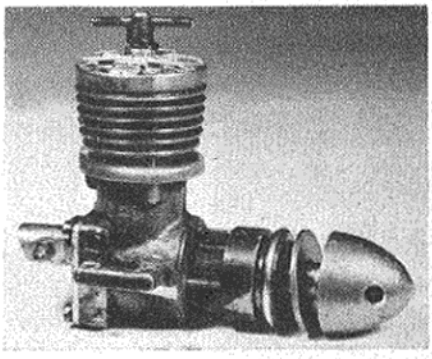
Continued from page 116

working on the transfer ports, to avoid occasional contact with the liner flange and there is, accordingly, a grave risk of spoiling the surface and destroying the gas seal. To eliminate this possibility, it is advisable to make a protective washer of shim brass or thin tinplate.

Reassembly

Inspect everything closely. Ease away any sharp edges or burrs carefully and wipe off all parts. Wash all components in petrol, paying particular attention to those which have been worked with carborundum or emery. Rinse twice more, using clean petrol each time. Lay out parts to dry, then lubricate bearing and working surfaces with light machine oil.

You will, of course, have marked, as you dismantled the engine, all appropriate parts (cylinder, piston, rod, etc.) so that they could be reassembled exactly as removed. Pay particular attention to the



Another view of the Robinson-E.D. On test a power increase of approximately 15 per cent. over stock 2.46 performance was obtained.

cylinder assembly and the holding down screws securing it to the crankcase. The last few degrees on each screw may cause the piston to bind if the cylinder has not been pulled down evenly.

Recommended fuel for the "S.R. Spl." consists of 20 per cent. Castrol "R," 45 per cent. Esso Blue and 35 per cent. ether, with $2\frac{1}{2}$ per cent. amyl-nitrate added.

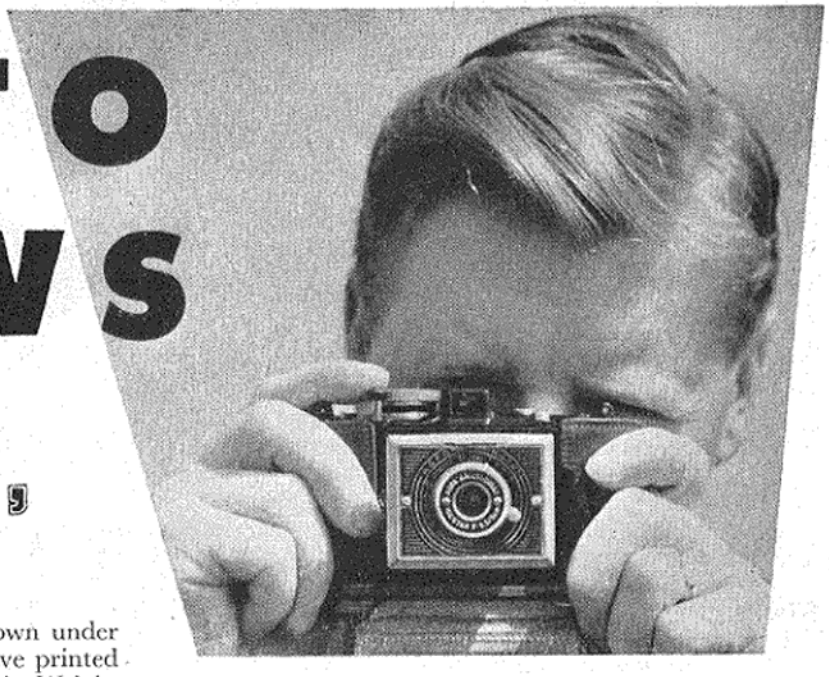
On test, we found that the engine submitted did not respond to a choked flick start and seemed to like an exhaust prime for starting, both hot and cold. Once started, however, it was easy to adjust and ran smoothly and consistently.

Compared with the curves obtained for various standard E.D. 2.46s, the "S.R. Spl." showed a useful improvement in torque, especially at the higher speeds, resulting in a b.h.p. peaking speed close to 15,000 r.p.m. Progress of the power curve was as follows:

0.195	b.h.p.	at	9,000	r.p.m.
0.220	,,	,,	10,000	,,
0.242	,,	,,	11,000	,,
0.260	,,	,,	12,000	,,
0.276	,,	,,	13,000	,,
0.285	,,	,,	14,000	,,
0.286	,,	,,	15,000	,,
0.280	,,	,,	15,500	,,

PHOTO NEWS

'The pick of the pics'

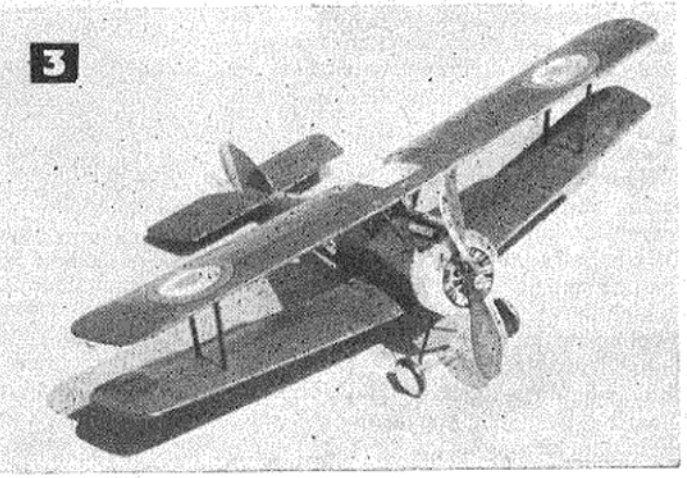


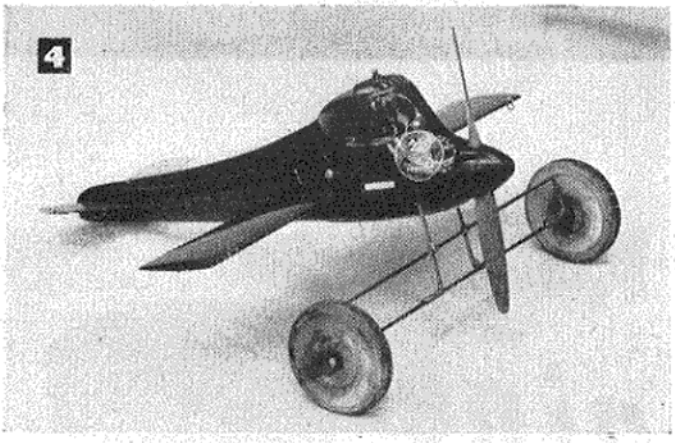
OUR first photo this month comes from down under (which doesn't mean that we should have printed it upside down) and was sent in by Cpl. A. A. Wright of the New Zealand Regiment stationed at Waiouru, New Zealand. We particularly liked this photo, for not only is the model realistically posed, but it proves that unlike so many so-called amphibious models, this one will actually remain afloat. It is a semi-scale design built from plans that appeared in our American contemporary *Model Airplane News*, and is of 32 in. wingspan, weighs 8 oz., and is powered by a glow-plug O.K. Cub 0.049. All the markings are hand painted, and when the photo was taken the model had already earned the title amphibian by making several successful water/land flights.

The pre-war German F.W.56 *Stosser*, with its parasol mounted wing and generous flying surfaces, is a F/F scale natural, and photo **No. 2** shows an excellent example built by K. V. Foster of Leeds. To a scale of $1\frac{1}{8}$ in. = 1 ft., it has a span of $38\frac{3}{4}$ in. and is powered with an Elfin 0.5 c.c.

The Sopwith *Camel* is still one of the most popular W.W.I prototypes among modellers, though why this should be is difficult to understand, as like its full-size counterpart it is an extremely tricky machine to fly. Nevertheless, many successful models have been made, but that shown in photo **No. 3** is different to the usual "run of the mill" replicas in that it is rubber powered. Built by Brian Passey of Gloucester, it incorporates quite a lot of detail and is used for indoor flying scale competitions. A. Dowdeswell took the photo.

D. Wilson Laing sent in photo **No. 4** which shows the speed model that holds the Scottish class VI record, with a speed of 144 m.p.h. It was built by W. McFarlane of the Glasgow Barnstormers in conjunction with A. W. Barclay and R. Irvine of the Perth M.A.C.—quite a combined effort. Power is supplied by a Barclay McCoy





—a species of motor of which much has been heard lately !

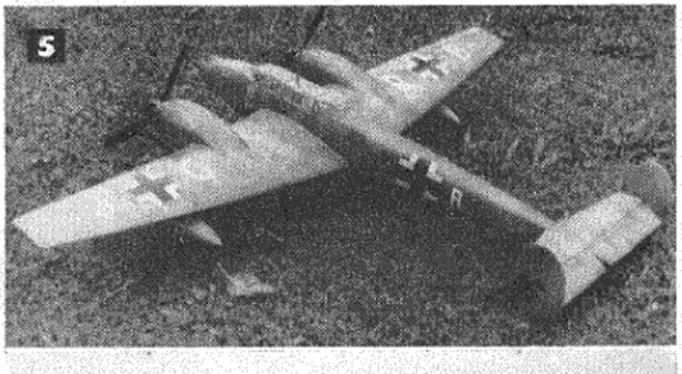
A guaranteed crowd-drawer at any rally is a multi-engined control-liner, and when it is of such an attractive prototype as the Me. 110 then success is doubly certain. The fine model shown in photo **No. 5** (taken by D. Jenkins) was built by K. Humber of the Solent Heights M.F.C. It is powered by two E.D. 2.46 engines, driving three-bladed airscrews, which, with an all up weight of 30 oz., gives it an airspeed of 55 m.p.h. Although it only took Mr. Humber three weeks to complete this model, it features a fully detailed cockpit and sprung undercarriage.

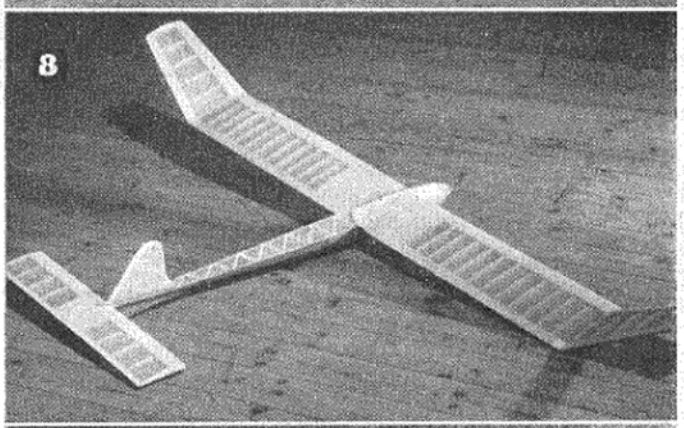
Our next photo (**No. 6**) shows a type of model that ruled the contest field before " pylons " came in, and is now increasingly popular for sport and R/C flying. It is a Mercury Mk. IV built by C. Read of the Newport Pagnell M.F.C. and is of 8 ft. wingspan, 6 lb. weight, for which size and bulk the Miles 5 c.c. Special provides ample power. When the photo was taken the model had completed 47 successful flights.

Racing aircraft that were flown in the pre-war Bendix and Thompson Trophy races provided the inspiration for the original Team Racing rules. Just to what extent current team racers have deviated from their original concept is shown in photo **No. 7** which is a scale model of the *Pesco Special* Racer, the original of which won the '38 and '39 Thompson Races. E. Edwards of the Crittall (Braintree) M.A.C. sent us this photo, the model being built by 17 year old fellow club member D. Joyce. It is built to 1 in. = 1 ft. scale which gives a wingspan of 25 in., and power comes from an E.D. 2.46. The entire model is sheet covered, and details include cockpit instruments, pilot and sprung undercarriage. Finish is as per the original: silver-grey, with black lettering and red trim.

The very effectively posed photo **No. 8** was taken by D. L. Mander, and shows a B.G. 44, A2 sailplane built by Springpark M.A.C. member, D. A. Williamson. The photo was taken in their clubroom on H.P.3 film with the aid of a single No. 1 photoflood, and clearly shows the excellent construction of the model.

Our last photo this month (**No. 9**) was sent in by D. Martin of Bognor Regis, and shows his wife, Bette posing with his R.6.B (or should it be R.6.B posing with wife Bette ?). The model, which is powered by a Frog 250, has E.C.C. equipment to look after the control side of things, and is Valspar finished in Royal Mail red and Atlantic green. Just to encourage readers who would like to send us photos, but who think their photographic equipment is too modest, this one was taken with, in the words of Mr. Martin, " . . . . an aged and beat-up box type Brownie."

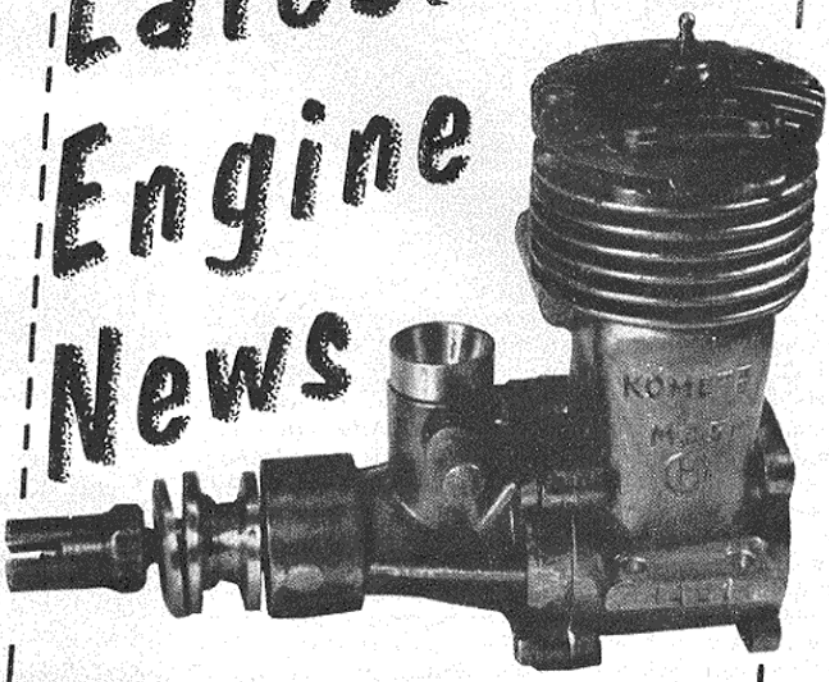




PETER CHINN'S

MODEL AIRCRAFT

Latest Engine News



THERE is quite a spate of new British 1-1½ c.c. diesels in the offing. Unfortunately, we are not allowed to say anything about them at present as the three manufacturers concerned wish to build up stocks before releasing these new models, but at least two of them should be available about Easter time. One will be a ball-bearing 1.5.

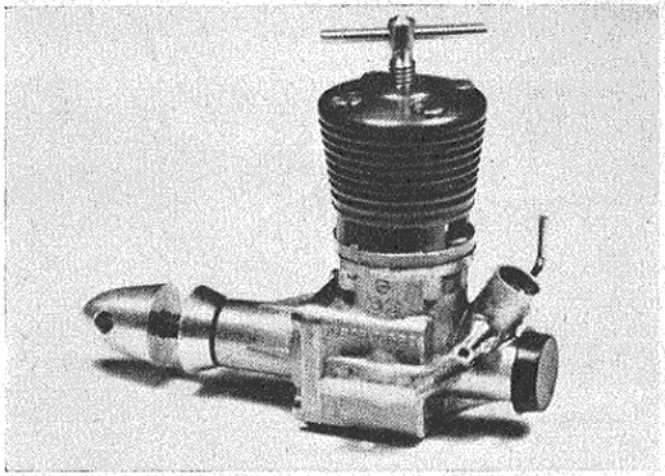
* * *

Super-Tigre's new 1 c.c. model, the G.32 diesel, which we first mentioned last month, is a delightful little job. This engine has been introduced to replace the 0.8 c.c. G.29, now withdrawn from production. It has been noted that Italian modellers seem to prefer the 1 c.c. size and that, as seems to be the case elsewhere in Europe, attempts to switch interest to a 0.8 c.c. class—i.e. the equivalent of the American " Half-A " 0.049 cu. in. category—have not met with the success that was expected.

At a time when so many manufacturers, especially in Britain and the U.S., are endeavouring to simplify the design of their engines in order to ease production costs, the G.32 is particularly interesting for its reversion to a relatively complicated structural design, with an attendant multiplicity of parts and much above average consumption of labour in machine work and assembly time.

The G.32 follows the current trend of Super-Tigre diesel design, established with the 2.5 c.c. G.30 and 1.5 c.c. G.31 models, and featuring rear induction via a separate shaft or drum valve. Apart from the fact that it has one inner ball bearing and a bushed outer bearing, instead of two ball journals, it is, in fact, virtually a scaled-down G.30. It has the same cylinder design as the G.30 with its efficient, inclined transfer ports and separate alloy barrel and head securing the entire assembly to the crankcase casting with four long screws. Like the G.30, the rear bearing is bronze-bushed and the piston has small deflector faces on the edge of the crown to register with the transfer ports.

The G.32 weighs a trifle under 3 oz. which compares quite favourably with other, less complicated, 1 c.c. units. We shall be reporting on its performance in a future issue.

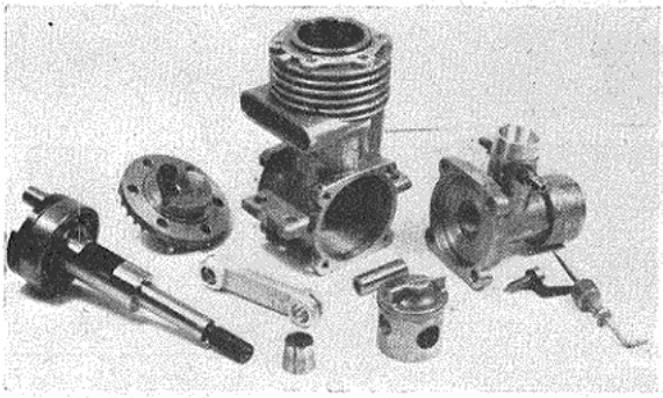


The new Super-Tigre G.32 diesel. Although only 1 c.c., this new Garofali design has a ball-bearing mounted crankshaft, bronze-bushed rear intake valve and is virtually a scaled-down version of the 2.5 c.c. G.30.

* * *

Mention of Super-Tigres leads us to an interesting piece of work that has appeared in Russia. This engine, which we illustrate in two of the photographs, is known as the Kometa MD-5. In fact, it is clearly a straight copy of the ringed-piston version of the 5 c.c. Super-Tigre G.21. The Kometa is, therefore, a shaft-valve, loop-scavenged, twin ball-bearing unit, having racing engine features and is, presumably, intended primarily for speed work.

As can be seen from the photographs showing the dismantled engine, the component parts of the Kometa are practically identical with those of the G.21. Even the needle-valve and its tensioning spring



Parts of the Russian Kometa MD-5 glow-plug engine of 5 c.c. capacity. A strong resemblance to the Italian Super-Tigre G.21 will be noted. The MD-5 is shown assembled in the heading illustration on the opposite page.

attached by one of the front flange screws are the same.

According to a report which reached us from Eastern Europe concerning this engine, its performance is not as good as that of the Czech Vltavan 5 c.c. and, therefore, we would not expect it to be so good as the current G.21 Super-Tigres which, in Italy and elsewhere, have often closely challenged Dooling 29's in speed events.

* * *

When the Czech speed flier, Bohumil Studeny, set his 5 c.c. record of 151.8 m.p.h. he used a sleeved-down version of an MVVS glowplug engine of a new type, the MVVS 5.6/1957.

This latest design is a 5.6 c.c. motor (20 × 18 mm. bore and stroke) and was designed primarily for stunt work in the popular 0.35 class (the actual cu. in. displacement is 0.345) and for R/C. Instead of following the typical stunt 35 layout of shaft intake, lapped piston and plain, bushed main bearing, however, the MVVS continued, with some modifications, the racing engine features seen in the earlier 5 c.c. MVVS speed engine of 1954, which had been inspired, via the earlier Letmo design, by the Dooling 29. It has rear disc induction, featuring a moulded plastic valve rotor, a light-weight alloy piston with two compression rings and has the crankshaft supported in twin ball-bearings.

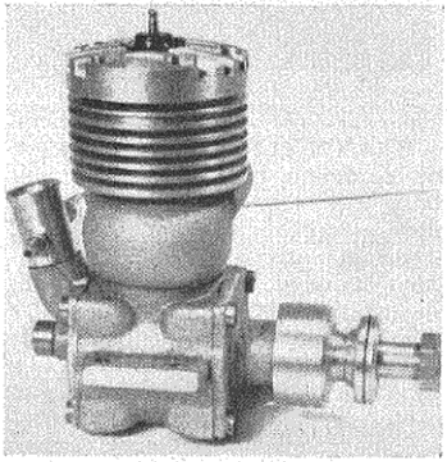
* * *

The only real departures from MVVS racing glow engine practice are seen in the attempts to reduce length and overhang by the use of an almost vertically inclined intake and a somewhat shortened crankshaft. Also, the engine is stated to have been designed primarily to operate on a plain methanol/castor fuel due to the shortage of nitromethane in Czechoslovakia and it would appear that a smaller bore carburettor is used.

Twenty of these engines have been made at Brno and distributed to Czech model clubs. There seems to be little doubt that their performance is very high and a figure of 0.75 b.h.p. at 15,000 r.p.m. has been claimed. This, equal to a specific output of 134 b.h.p./litre and a power/weight ratio of 1.6 b.h.p./lb., is exceptional if it refers to the performance on the straight 3/1 methanol/castor fuel.

* * *

Due to the heavy demand for the three Max contest engines, it is nearly three years since the Japanese O.S. company introduced an entirely new model. During this time, they have been without a small engine in the beginner class, but this will now be rectified with the introduction of the new O.S. Pet model of



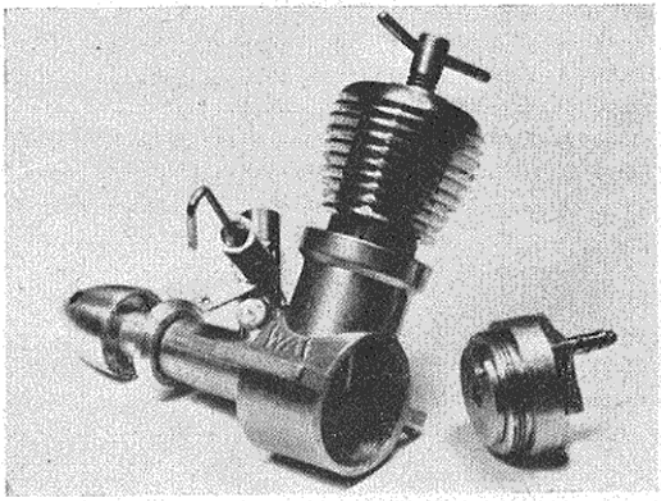
Record breaker. The Czech MVVS 5.6/1957 engine. With this engine, modified to 5 c.c., Bohumil Studeny achieved a speed of nearly 152 m.p.h. claimed as a new world record.

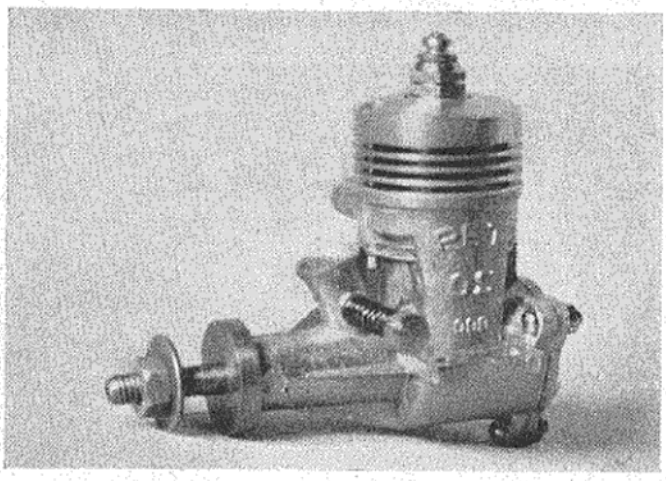
1.62 c.c. (0.099 cu. in.) capacity. This engine is now entering production and we have just received, by airmail direct from the makers, one of the first off.

The Pet will replace an earlier small O.S. engine, the 0.099, which, readers may remember, we featured in an Engine Test report about four years ago. This older model was a

Continued on page 142

Left; The WAF.1 for R/C. Below: The O.S. 1.6 c.c. Pet.





AVIATION NEWSPAGE

by J. W. R. Taylor

RYAN'S VERTIPLANE may not be handsome, but if it works it will bring true everyone's dream of a safe, slow aeroplane able to land on a sixpence, without all the complications of rotors, tilting wings or tail-sitting.

Purely experimental, it aims at achieving vertical take-off and landing by slipstream-deflection, and is a prototype for future liaison, reconnaissance, anti-submarine and civilian light transport aircraft. The short-span wings are fitted with huge double flaps, which curve down almost to the ground when extended, to deflect the slipstream from two large-diameter propellers. Downward-bent wing-tips act as flap guides and help to confine the slipstream to the flap area.

Both propellers are shaft-driven by a single 865 h.p. Lycoming T53 turboprop mounted in the fuselage, and the jet orifice is gimbal-mounted to provide directional control during slow-speed flight. Normal cruising controls consist of spoilers mounted forward of the flaps, a rudder and elevator, with a variable-incidence tailplane to prevent nose-down pitching whilst hovering. The pilot is intended to make his approach with the flaps partially down, and then to extend the flaps fully and increase power, so that he parachutes in almost vertically.

Span of the *Vertiplane* is 23 ft. 5 in., length 27 ft. 8 in., height 10 ft. 8 in.

* * *

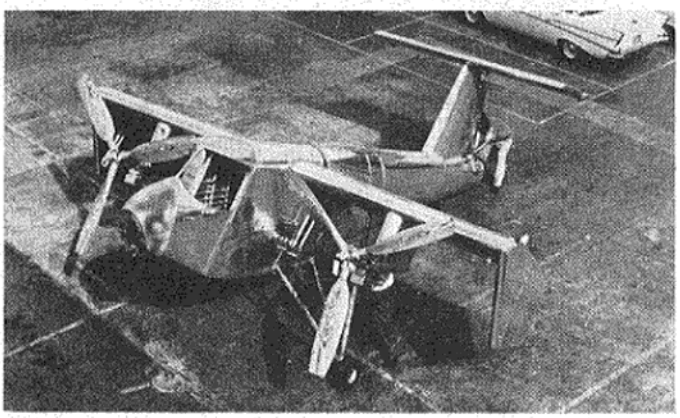
EQUALLY UNIQUE, if only in colour scheme, are the two *Viscount* V.805's of Eagle Aviation. Registered G-APDW and X, they have the "Eagle red" top that was tried out experimentally last summer on one or two of the company's *Vikings*. This is a brownish-red shade, and underneath on each side of the fuselage there is a pale grey flash edged with white, in line with the windows. All lettering is in white, with the British Civil Aviation ensign on the fin.

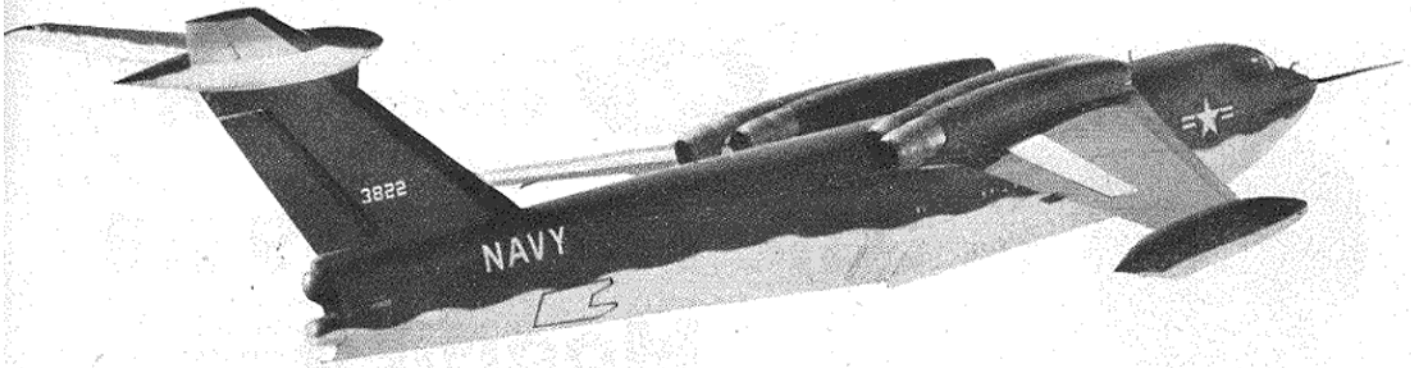
Eagle's preference for individuality rather than the alleged cooling characteristics of a white top is surprising in view of the fact that these aircraft are to be used on the New York-Bermuda route. The cabins will, presumably, be kept cool by air-conditioning units on the ground and normal temperature control systems in flight.

* * *

GOOD NEWS FOR LOCKHEED is that the U.S.A.F. has at last accepted the F-104A *Starfighter*. Delivery of the first three was made on January 26th to Hamilton Air Force Base, California, H.Q. of the Western Air Defense Force, where the F-104A was scheduled to become operational within about a month. In addition to their fixed armament of one 20 mm. Vulcan six-barrel rapid-fire cannon, production machines can carry *Sidewinder* infra-red homing missiles on their wing-tips, plus a pair of 200-gallon underwing fuel tanks. Recently, one of these aircraft flew continuously at supersonic speed for over an hour.

Below left: Looking angular in the extreme, is Ryan's Vertiplane. Right: A line-up of F-104A Starfighters.





AVIATION NEWSPAGE
Plane of the month

The SEAMASTER

WHATEVER we in Britain may think about the future of flying-boats, the U.S. Navy believes they are essential in an atomic age, because they can operate from natural runways on some 70 per cent. of earth's surface which cannot be destroyed by bombing. The *SeaMaster* should go a long way towards justifying that faith, for it combines to a remarkable degree the performance of a land-plane with the versatility of a flying-boat.

By utilising the latest ideas on hull design, Martin have produced an aircraft with a fuselage almost as clean and streamlined as that of a large land-plane. Use of turbojet power has enabled the *SeaMaster's* designers to forget the usual water-clearance problems; and the combination of wing sweepback and anhedral brings the tips so close to the water that the floats can be fixed to the tips, avoiding the structural weaknesses of strutted floats. The result is a sturdy, high-performance 'boat with a top speed of well over 600 m.p.h.

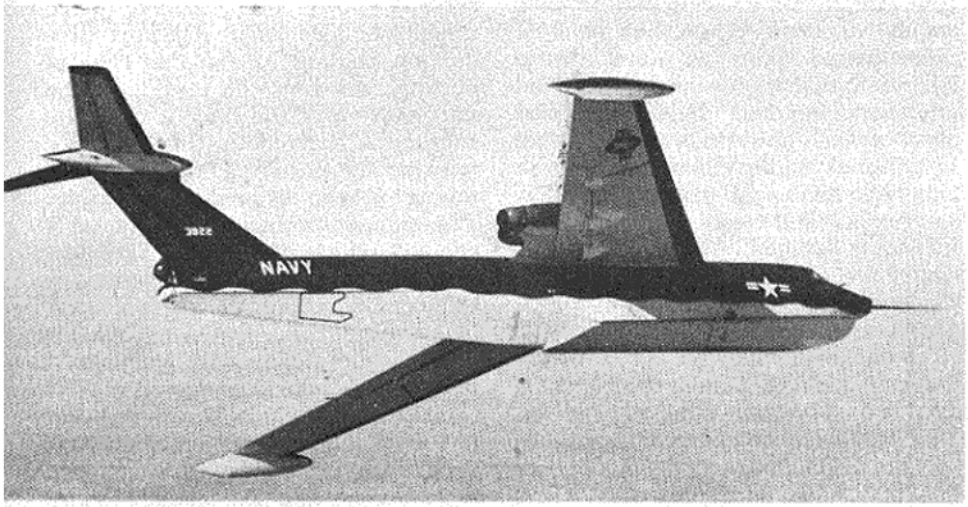
Development of the *SeaMaster* began with two XP6M-1 prototypes, which flew on July 14th, 1955, and May 18th, 1956, respectively. Both were lost in accidents attributed to faults in their tailplane-actuating gear, and the new YP6M-1 has a revised hydraulic flying control system. Other changes include a modified tail fin fairing and redesigned engine air intakes to improve delivery to the compressors. In addition, the paired nacelles are now splayed outward to carry the hot exhaust gases away from the rear fuselage.

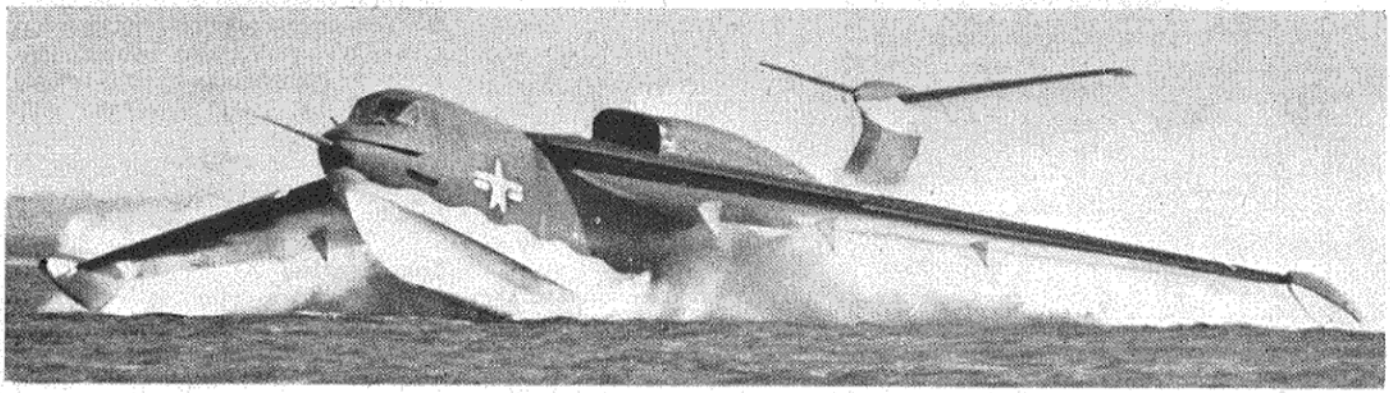
There will be six "evaluation" YP6-M1s, each powered by four 13,000 lb. thrust Allison J71 turbojets with short afterburners. They will be followed by 18 production P6M-2 *SeaMasters*, with four Pratt & Whitney J75 turbojets.

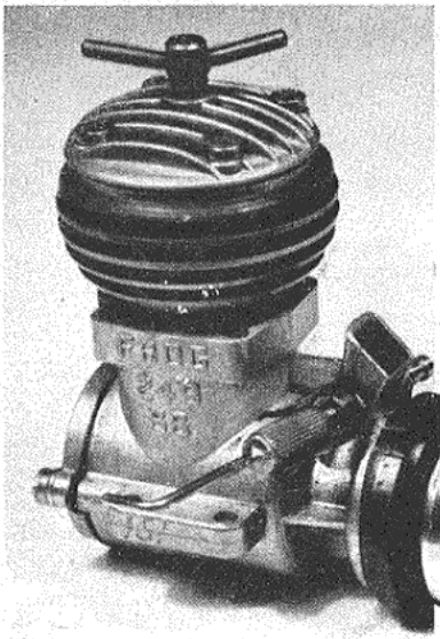
Intended originally for high-speed reconnaissance and mine-laying, the *SeaMaster* would make an effective nuclear bomber, with a 30,000 lb. payload. Its weapons or cameras are carried on a water-tight rotary bomb-door in the bottom of the hull, and there is a large hatch in the top skin through which weapons can be lowered into the roomy loading compartment.

A crew of four is normally carried, consisting of pilot, co-pilot, navigator/minelayer and radio and armament defence operator, all in ejection seats.

Span: 100 ft. Length: 134 ft. Height: 31 ft. Wing area: 1,900 sq. ft.







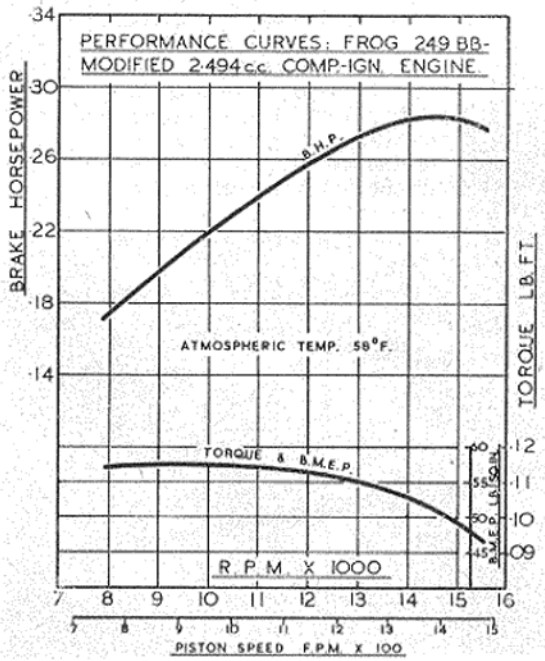
ENGINE TESTS

The FROG 249 BB Modified

" . . . the most powerful quantity built 2.5 c.c. diesel made in Great Britain at the present time."

THE Frog 249BB-Modified model, which we first described in the June, 1957, issue of MODEL AIRCRAFT, just before it became available on the home market, is the most powerful quantity-built 2.5 c.c. diesel made in Great Britain at the present time. It is, in fact, a most important addition to the home market, because it brings to the ordinary modeller, a standard of performance that is otherwise obtainable only in foreign or specialist-built engines, generally costing considerably more.

The original model Frog 249BB was dealt with in the Engine Test series upon its introduction in December, 1955. Some months later a few "Modified" models were built especially for the American market and two of them were handed over to MODEL AIRCRAFT for test and evaluation. It was immediately apparent that this version offered at least 10 per cent. more power than the already very useful performance of the standard engine, but nearly a year passed before we were able to mention this engine as available on the home market. During the past two years, however, a few small additional improvements have been made to the 249BB and it is felt that a further full test report is now justified.



Externally, there is little to identify the 249BB-Modified from the original model, other than the colour of the finned cylinder barrel which is colour-anodised red instead of natural aluminium. There are, however, one or two subtle changes which distinguish the new 249 from the earlier models. Crankshafts, for example, are now an easy sliding fit in the ball-races—a practice which is becoming increasingly widely used as a means of reducing the risk of damage to the bearings in a crash. To limit rearward movement of the shaft (which might cause damage to the crankcase backplate and a strained con-rod) the front bearing seal is now provided with a small brass bushing which acts as a distance piece between the drive hub and front bearing.

The principal difference between the 249BB-Modified and the standard model is, as previously related in MODEL AIRCRAFT, found in the cylinder porting. A new liner is used in which the inclined circular transfer ports, as originally designed, are replaced by circumferential slits of the same shape and area as the exhaust ports immediately above them. Unlike other standard production engines having this type of porting, however, the outside of the skirt portion of the liner is carefully contoured to smooth the gas flow towards the ports. The actual port timing is also altered appreciably. The exhaust ports are lowered, as a result of which the very long exhaust period of the original engine is reduced by about 15 degrees, thus lengthening the effective expansion stroke while also increasing the sub-piston air induction period. The transfer period is drastically reduced but since the transfer port shape has been entirely altered, this has less significance than the actual timing diagram suggests and it is necessary to plot transfer port area against crankshaft travel to obtain an accurate comparison. The rotary-valve timing remains substantially unchanged and the engine is noteworthy for the quite modest size of the crankshaft port and intake passage.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compression ignition. Rotary-valve induction via crankshaft journal,

with sub-piston supplementary air induction.

Swept Volume: 0.152 cu. in. (2.494 c.c.).

Bore: 0.581 in. Stroke: 0.574 in.

Stroke/Bore Ratio: 0.988 : 1.

Weight: 6.15 oz.

General Structural Data

Pressure diecast LAC.112A aluminium alloy crankcase with integral main bearing housing, mounting lugs and carburettor intake. Semi-counterbalanced crankshaft of 3 per cent. nickel-steel, hardened and ground, with 13/64 in. dia. crankpin and running in two 3/8 in. ball journal bearings. Front bearing protected by synthetic rubber cap acting as dust cover and oil seal. Cylinder of close grained mild steel, hardened, ground and bored. Piston of Brico cast iron with 5/32 in. dia. full-floating silver steel gudgeon pin. Drop-forged RR.56 aluminium alloy connecting rod. Contra-piston of mild steel. Diecast aluminium-alloy cylinder-head and machined aluminium alloy cylinder barrel, sliding fit over liner, clamping entire cylinder assembly to crankcase at liner flange by four long screws. Alloy prop driver pressed on to splined section of crankshaft. Beam mounting lugs. Spraybar type assembly.

Test Engine Data

Running time prior to test: 2 hours.

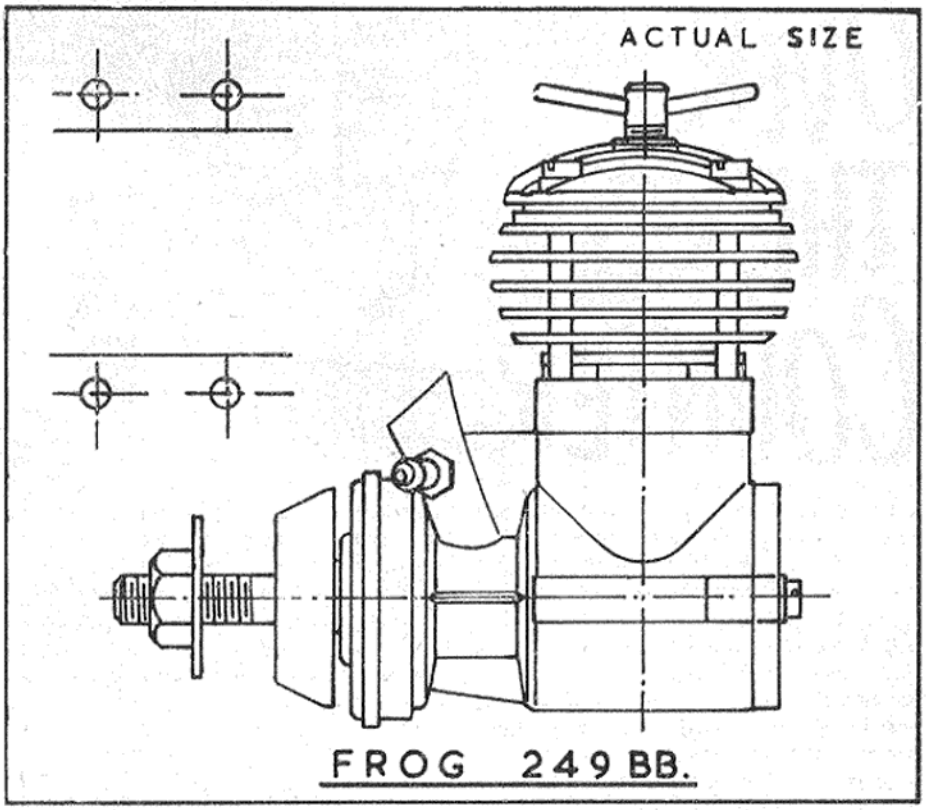
Fuel used: 40 per cent. technical ether BSS.579, 30 per cent. "pink" paraffin, 30 per cent. Castrol "R," plus 5 per cent. amyl-nitrate.

Performance

Writing of the original Frog 249BB in the January, 1956, issue of MODEL AIRCRAFT, we said: "The Frog is quite the most well-mannered diesel that we have encountered for a long time. Starting is exceptional. Without actually making a time check, we had the engine started within a matter of seconds. This required no priming: we merely choked the intake for three or four flicks and, after two or three more flicks to get the feel of the required compression setting, we had the engine running steadily."

These comments just as accurately describe our findings on the 249BB-Modified model, which is all the more remarkable having regard to the increased performance of the newer model.

The 249BB has shown a liking for a heavily nitrated fuel when running at anywhere near its peaking speed. Such a fuel is not obtainable in any currently available commercial blend (these latter being intended for general use and in other engines that would overheat with too much nitrate) and, after running-in, our test engine was fuelled with a mixture containing 5 per cent. amyl-nitrate.

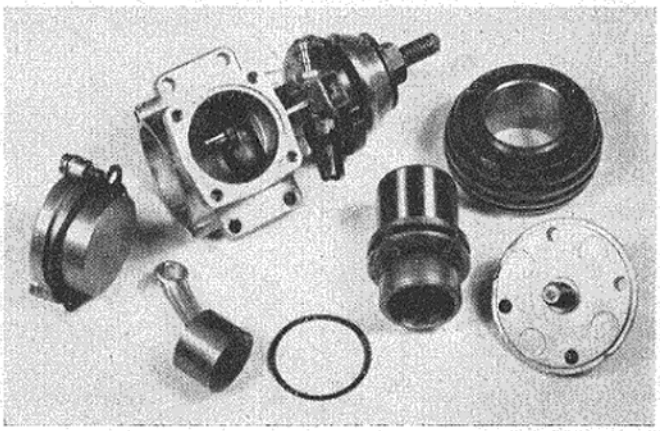


Compared with the test of the earlier model, the torque curve obtained with the 249BB-Modified was of a slightly different pattern. At around 8,000 r.p.m., for example, torque was up about 6 per cent., but at 13,000 r.p.m. it had risen by 11 per cent. Thereafter the curve began to drop off more rapidly so that the b.h.p. peaking speed remained substantially unaltered at around the 14,500 mark. This, of course, is exactly what is wanted and means that the biggest increases in propeller speeds over the standard model will be realised on the size props popularly used for the F/F competition work. The actual maximum output achieved in test was some 0.285 b.h.p.

We find it very difficult to fault the Modified 249BB. Some people may criticise its slightly above-average weight or its mounting lugs, which do not provide centre-line mounting. If such objections should be voiced, however, they are surely of little account when placed against the exceptionally good performance, easy starting and modest price of this welcome addition to the 2.5 c.c. class.

Power/Weight Ratio (as tested): 0.74 b.h.p./lb.

Specific Output (as tested): 114 b.h.p./litre.



This photo of the Frog's components, clearly shows the modified transfer porting which largely accounts for the increase in performance.

OVER THE COUNTER

Power modellers, particularly those who use glowplug engines and highly nitrated fuel, should be pleased with the latest **Mercury** product. This is a fuel proofer that is absolutely proof against all known methanol and nitro-fuel mixtures. Of course, to obtain this immunity for one's concours finish will require rather more care in the mixing of the ingredients than is demanded by the average proofer; also it cannot be a last-minute job as the varnish does not chemically harden for seven days. However, provided the instructions are followed explicitly, no trouble will be experienced and the resultant finish is well worth the trouble. The cost is 7s. 6d. for a box containing a jar each of varnish, catalyst and thinner, and this is sufficient to proof the equivalent of six class " B" team racers.

* * *

For several years now, Messrs. **Dees Model Shop,** of Wallington, Surrey, have run an exhibition of models with considerable success. Any type of model is eligible; there are junior, intermediate, and senior classes, and the only condition of entry is that the kit, plan, or materials from which models are made should be purchased from their shop. This is an excellent way of fostering interest among customers, particularly the younger ones, and is a scheme that could beneficially be copied by other retailers.

* * *

The model aircraft section at the **Tri-ang Trade Fair** held in London recently presented the usual galaxy of models and accessories, although the number of new additions to the Frog range was less than in previous years. However, we were able to examine the new Frog 100 Mk. II diesel which should be in the shops any day now.

We also spotted a new 3s. range of plastic solids which included such types as the B-26 *Invader* and the D.H. *Beaver*. In the larger 1/72nd range, a *Vulcan* and a *Valiant* will shortly be available.

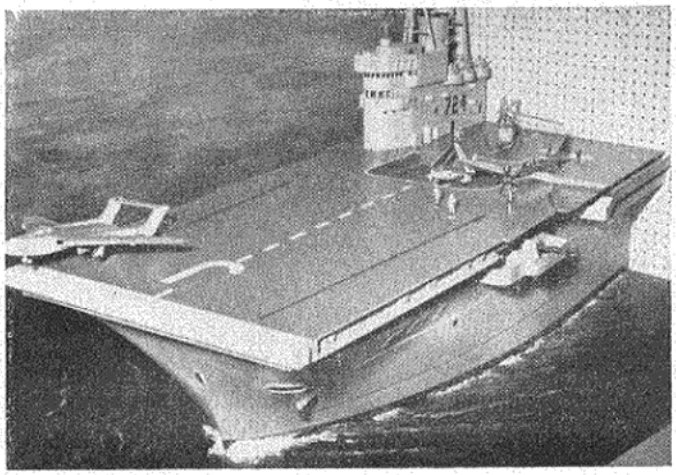
A novel touch was the presentation of the plastics—a Sikorsky helicopter stood on the deck of a large model aircraft carrier, its rotor arms revolving slowly, while a *Gannet's* engine revved up—the realistic scene is shown in the accompanying photo. Motive power was provided by 12 volt electric motors of the type used in model locomotives, and operated through an ordinary train controller.

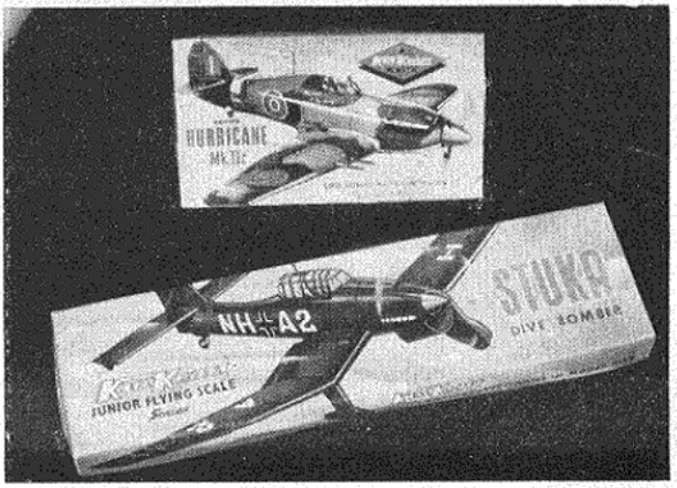
* * *

The first of the long awaited range of **Keilkraft** plastic kits is now available. It is a 1/72nd scale version of the famous Hawker *Hurricane* IIc " The Last of the Many," and incorporates many interesting features, including a retracting undercarriage. Unlike so many plastics, the rib and stringer " lines " are to exact scale, and the assembly is arranged so that as far as possible joints, which are always difficult to completely hide, are in those places where they would be seen on the original aircraft. The actual pressings are very " clean " and the kit, which includes a pleasing, artistic stand, is complete except for paints. At a retail price of 4s. 9d. it compares more than favourably with similar products, and for those who insist on authenticity we would add that the full co-operation of Hawker Aircraft was obtained during the preparation of this kit.

Latest addition to the K.K. Flying Scale range is the Ju 87B *Stuka*. This kit is well up to the standard we have come to expect from this manufacturer, and although the price, because of the size and extra parts required for this rather complex design, is, at 4s. 2d., slightly higher than usual, the model itself is so attractive that it could well be a best seller in this series.

Left: The aircraft carrier which was a feature of the Tri-ang Toy Fair. The propellers on the helicopter and " Gannet" revolve, but were stopped by our camera. Right: the two latest Keilkraft kits.





Club News

WOLVES M.A.C.

The club has lain dormant for the past two or three months as we have not had a hall to meet in, due to a misunderstanding with the education authorities, also we have lost several of our senior members to National Service, motor cycles and the fair sex.

The club is being helped a great deal by the proprietor of a new model shop in Wolverhampton, Mr. W. Daniels, and if any potential members read this, he will give you full details of the club, so roll up you would-be balsa butchers and join; it will be well worth your while.

DAGENHAM M.A.C.

The club activities during the past year have been varied but perhaps not so competitive as we would have liked.

However, D. Chislett carried off a successful first at the Sidcup stunt rally for the second year running, plus his second placing in the gold trophy at the Nats.

Meetings are held on Thursdays in Hut 3, The Old Dagenham Fire Station, Rush Green, Dagenham—anyone in the area welcome.

60F. (TEIGNMOUTH) A.T.C. SQDN. M.A.C.

This club finished up its year with a grand party for the squadron, and the presentation of the two aeromodelling cups. The cup for the best all round modeller of the year was won by Derek Bladon for his outstanding progress made in building and flying, and Alan Cox won the cup for the best workmanship in building and finishing. We now number a dozen and have a wide range of models. We are hoping to form a team for the A.T.C. competitions this year.

NORTH LINCS M.A.S.

As the annual exhibition will take place from April 15th to 19th, inclusive at St. Andrew's Hall, the members are all busy making a 15-ft. [illegible] that half the hall will be filled with radio jobs ! Roland Craggs is in charge of this section and has some dark secrets about demonstration gear !

The club room snack bar is now doing quick business in hot dogs—the latest craze. Club chef is Byron Featherstone.

On the flying field about a dozen or so are preparing to go over to R/C, while the veterans are putting up plenty of flying, rain, snow or blow. George Colebeck has about six *Smog Hogs* ready, and national champ John Nixon is reeding one on channel six ! Glowplugs are getting popular with McCoys, Fox 29's and *Spitfires*, while Ted Cartwright has converted his *Hunter* and E. Fearnley's A.M.25 to glowplug with startling results. The latter is flying a scale radio Aeronca. Len Patterson, a woodworker, built a *Skyscooter* for radio. Should weigh 15 oz., but Len's, thanks to his hard wood, and too much advice, has turned out 2½ lb. WITHOUT the radio. The Vibromatic 1.49 is working very hard to fly it ! Although we are basically a fly for fun club there are signs that a new brood of comp. types is growing up for the coming season. Leading them is Ted Scoles, the secretary, with mysterious newies in the A/2 world.

KENTON M.A.C.

We recently organised a combat rally against Northwood M.A.C. The rally was highly organised and Kenton had a narrow escape but eventually won, for after losing the first three heats we recovered well and won the next five.

The club is now re-equipping with Oliver Tigers and clack valved E.D. Racers, and our combat model is an 85 m.p.h. club designed, flying wing.

We would like to hear from any other clubs in the Middlesex area who will have a combat competition with us, if you are interested get in touch with: D. Wilson, 166A, Kenton Road, Kenton, Harrow, Middx.

EXMOUTH & D.M.A.C.

A welcome flow of new members has again started. Club strength had gone down owing to a weeding out process to clear out the deadwood. The club now has a hard core of keen bods and plenty of building has been going on. Interest varies from combat jobs to new rule Wakefields, not forgetting F/F scale.

At two recent club nights an aircraft recognition contest and a quiz on aeromodelling were held; both events were won by junior Alan Scott. [illegible] Devon Rally," the venue as last year is to be Woodbury Common.

F/F events will be open rubber power and glider, R/C and combat. Cash prizes will be given in all events and the rally is open to all comers.

COLNE & D.M.A.C.

We would like to thank all of the *ninety-seven* entrants who helped to make our second annual winter rally so enjoyable.

As will be seen from the results, competition was very keen, particularly in rubber, where J. O'Donnell reversed the Woodford decision on Keith Horry (Bristol & West) in a sunset fly-off.

Ron Donahue (Kersal) won radio, flying a very nippy Torp. 15 powered model and using one of the most original " pulse-boxes " ever—his right thumb !

Baildon M.F.C. took first, second and third in power in the form of Messrs. Collinson, Silvio and Eggleston.

The combat final had to be abandoned due to a marked lack of moonlight and the two finalists shared the prize money.

Results

Power

1. A. Collinson	.. Baildon	.. 11 : 37
2. S. Lanfranchi	.. Baildon	.. 10 : 50
3. B. Eggleston	.. Baildon	.. 10 : 04

Glider

1. Watson ..	.. Whitefield	.. 10 : 00
2. Moreton	.. Chorlton	.. 8 : 49
3. L. Hutton	.. Wallasey	.. 8 : 33

Rubber

1. J. O'Donnell	Whitefield	12 : 00 + 5 : 12
2. K. Horry	Bristol & West	12 : 00 + 4 : 28
3. J. Trainor	Whitefield	11 : 21

Combat

R. Boardman R. Edwards	Leigh Wharfedale	} equal first

Radio Control

1. R. Donahue	.. Kersal	.. 80 points
2. G. Parkinson	.. Kendal	.. 79 ,,
3. W. Nield ..	.. —	.. 65 ,,

NOVOCASTRIA M.A.S.

The club held its annual social and prize giving in its new premises at the R.A.F. Association Club. We have full use of these headquarters which include a bar and concert room, the club also has a room of its own, which able senior members are busy decorating. This room is to

CONTEST CALENDAR

April 13th St. Albans M.A.C. Slope Soaring Rally Ivinghoe Beacon. F/F and R/C.
,, 6th PILCHER CUP. U/R Glider. Area.
LADY SHELLEY CUP. Tailless Rubber, Glider, Power. Area.
WOMEN'S CUP. U/R. Rubber, Glider. Area.
JETEX CUP.
,, 20th Surbiton Gala. U/R Rubber, Glider, Power. Chobham Common.
,, 27th*KEIL TROPHY. Team Power. Area.
K.M.A.A. Cup. U/R. Glider. Area.
May 11th Woodford Rally.
,, 25 **BRITISH NATIONALS**
,, 26th THURSTON CUP. U/R Glider.
SHORT CUP. 2.5 c.c. PAA-Load.
GOLD TROPHY. C/L Stunt.
,, 25th S.M.A.E. TROPHY. R/C Multi-Control. (Full R/C schedule, course and aerobatic flying.)
DAVIES TROPHY. T/R Class "A."
SPEED. Classes 1, 2, and 3.
SIR JOHN SHELLEY CUP. U/R Power.
COMBAT. (1st Round.)
MODEL AIRCRAFT TROPHY. U/R Rubber.
,, 26th SUPER SCALE TROPHY. F/F Scale.
KNOCKE TROPHY. C/L Scale.
DAVIES TROPHY- T/R Class "B."
RIPMAX TROPHY. R/C. Rudder Control. (Course flying manoeuvres 1-6 inclusive and No. 20.)
SPEED. Classes 1, 2, and 3.
COMBAT. (2nd Round and Final.)
June 7/8th POWER & RUBBER WORLD CHAMPIONSHIP CLASSES (First Trials). Centralised.
,, 15th Godalming M.A.C. Rally. Team Racing. "A" and "B." Combat.
,, 22nd INTERNATIONAL CLASS C/L TRIALS. T/R. Speed, and Aerobatic. (All to F.A.I. Specifications.) Centralised.
,, 29th Scottish P.A.A. Festival. R.N.A.S. Abbotsinch.
,, 29th Northern Heights Gala. Halton.
July 5/6th POWER & RUBBER WORLD CHAMPIONSHIP CLASSES. (Second Trials.) Centralised.
,, 20th AREA CHAMPIONSHIPS. Cranfield.
INTERNATIONAL CLASS R/C TRIALS. Cranfield.
Aug. 3/5th WORLD CHAMPIONSHIPS POWER & RUBBER. Cranfield.
,, 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. Cranfield.
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.)
,, 21st GUTTERIDGE TROPHY. Wakefield. Area.
*MODEL ENGINEER CUP. Team Glider. Area.
HALFAX TROPHY. U/R Power. Area.
,, 28th TEAM RACING. "½A," "A," and "B" Area.
Oct. 12th*FARROW SHIELD. Team Rubber. Area.
S.M.A.E. CUP. A/2 Glider. Area.
,, 26th HAMLEY TROPHY. U/R Power. De-centralised.
FROG JUNIOR CUP. U/R Rubber, Glider, De-centralised.

*Plugge Cup events.

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

be used as a meeting room and a building room for junior members of the club.

The club has a flourishing junior section meeting every Tuesday evening under the supervision of a senior member. These juniors are showing great promise and are very keen; they build models one Tuesday and fly them the following Sunday, so the seniors had better watch their step.

MONTROSE M.A.C.

Flight Lieutenant Noel Falconer, a popular member of Montrose M.A.C. escaped unhurt when a *Varsity*, up from Thorney Island on a navigation training flight, crashed on landing at Manston with three fatalities. Only the two pupils—Falconer and one other—managed to leave the wreck as it took fire instantly.

ANGUS & D. AERO L.

We are pleased to welcome a new club to the fold. It has been formed at Leuchars Aerodrome and has a score of adherents who intend to take part in the league's competitions this year.

WIGAN M.A.C.

The hard work put into our recent exhibition seems to have borne fruit as new members are turning up at the club room every week. The club now has a membership of 50 fully affiliated members and we will probably have to run two coaches to most of the comps. this season.

At the winter rally, team race boys, D. Morgan, E. Tomlinson and first year senior F. Anderton, reached the finals. As it was too dark to fly off, the result was decided by the toss of a coin. B. Talbot was fourth in power and Mike Hosker carried off top junior prizes with rubber and glider.

READING & DISTRICT M.A.C.

Our winter programme is in full swing, the contest this year is for rubber driven r.t.p. scale models with a maximum wingspan of 26 in.

The number of club members indulging is surprisingly high, considering this old fashioned motive power is being used! Perhaps it's the look of pained surprise on the face of the model holder as a breaking motor catches his fingers on its way to churn the tissue at the back of the model which attracts them. It is always a source of endless amusement and cruel cackles. In spite of this though, the times are creeping up towards the minute mark which is no mean feat with a small scale model.

EPSOM & DISTRICT M.F.C.

The club was reorganised under a new constitution recently and though membership is down to 15, enthusiasm is high for almost all forms of model flying. Club meetings are held at 7.30 p.m. every Tuesday at the "Depot," Ewell Road, Epsom, and recent activities have included a quiz and a "knock-out" engine-starting contest, as well as the usual "skull sessions." All active local modellers are invited to attend.

SOUTHPORT M.A.C.

Twenty members of the club made the journey to the North Western Area Rally at Stretton. Several of the club members made good flights both in power and glider, but only Jimmy Peet achieved anything worth mention. Flying a glider of his own design (*Scribe* Mk. 3) he was finally placed sixth.

ENGLISH ELECTRIC M.A.C.

Three members attended the North Western Area Winter Rally where I. Ellison was placed 3rd in the open glider with his new 1,265 sq. in. light-weight.

All members wish to congratulate the area committee on obtaining Stretton aerodrome for area contests. We feel that it is an ideal place for area contests, and showed this to be so in the good attendance at the winter rally.

The only complaint was that life and limb were constantly at stake, due to a number of motor-cyclists using the main runway as a racing track.

STRATFORD-UPON-AVON M.A.C.

The newly-elected but extremely enthusiastic committee decided, as part of the re-organisation programme, to begin a drive for new KEEN members.

A short article advertising the advantages of the club recently appeared in the two local newspapers. The latter, together with the proposed exhibitions, rallies, and competitions, is hoped to create an interest in the hobby, thus providing more members for the club.

WEST BROMWICH M.A.C.

The success of the club's winter season was the "one-off" design comp. The Mercury *Gnome* was chosen as an ideal model; easy enough for juniors, yet having a good performance, the result was surprising, only two juniors failing to turn up with a model!! In fact, a junior, H. James, won beating several "experienced" competition fliers.

The new A.M.A. stunt rules have aroused a great deal of interest in our predominant C/L section. A stunt model whose decor is to be seen to be believed is based on the "Smoothie"; it rejoices in the name of *Red Man*. Incidentally, a diesel fan has been eager to disprove the theory that only glo-motors can manage the schedule. He failed only on the clover leaf, blaming himself not the model—an *Ambassador*, power, old P.B. Elfin 2.49!

CHANGE OF SECRETARY

EASTBOURNE M.F.C. W. Coomber, 9, Bodiam Crescent, Hampden Park, Eastbourne, Sussex.

CAMBRIDGE M.A.C. C. King, Red Roofs Service Station, Cambridge Road, Waterbeach, Cambs.

LAPWORTH & DISTRICT M.F.C. B. Connolly, Arden Hill Cottage, Lapworth Street, Lapworth, Solihull, Warwickshire.

NORTHWICK PARK M.A.C. G. H. Upson, 101, Kingsley Road, South Harrow, Middlesex.

SPRINGPARK M.A.C. D. A. Williamson, 60, Links Way, Eden Park, Beckenham, Kent.

NEW CLUBS

GOATSHEAD KNIGHTS (GATESHEAD) M.F.C. A. Dempsey, 88, Claremont Street, Gateshead, 8, Co. Durham.

LATEST ENGINE NEWS

Continued from page 135

pleasant handling little motor and it is expected that the new engine will be found equally good in this respect, but will offer extra power.

Whereas the earlier 0.099 was a radially ported reverse-flow scavenged motor, the new Pet 0.099 is a loop-scavenged layout. It is a short stroke design (0.530 × 0.450 in.) and has generous ports and gas passages. A separate liner is now used in conjunction with a turned alloy head and barrel unit that is secured to the main casting with two long screws. The liner is flanged at port level. This flange is positioned above the transfer port but below the exhaust port and to maintain an effective transfer period a stepped deflector crown piston is used.

The Pet weighs 2.7 oz. and has both beam and radial mounting lugs.

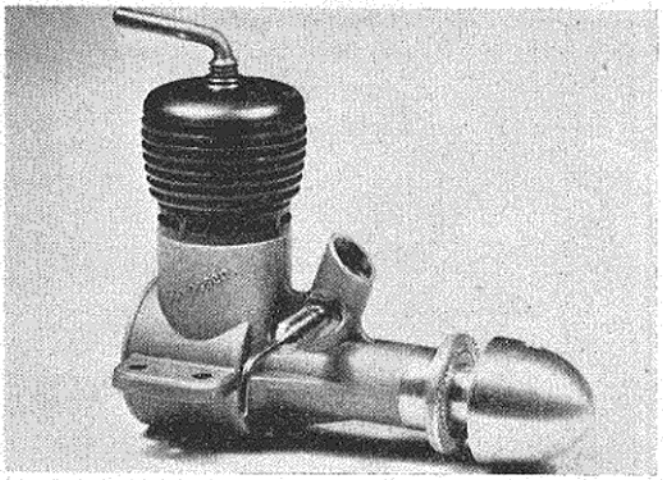
* * *

We hear, from one of our U.S.A.F. correspondents stationed in Germany, that the Allen-Mercury 10 is gaining an increasing number of friends in that country. West Germany has a F/F class (Class L) which is specifically for 1 c.c. engined models and the superior power of the British AM-10 is apparently showing to good effect in the popular contest class.

Two of the most popular 1 c.c. engines in, respectively, West and East Germany, are the WAF and Schlosser. Both are excellently made units of superior finish and good performance. Some readers may recall that the WAF, which takes its name from the initials of its Berlin maker, Walter A. Fritsch, was featured in M.A. Engine Test Series shortly after its introduction in 1953 and earned a good report.

Recently we made the acquaintance of a new version of the WAF which has been produced experimentally for small R/C models. It has a pump unit built into the crankcase backplate for vacuum type control actuators and a barrel type throttle on the carburettor for speed control.

We received the Schlosser at the same time as the new WAF. The design of this East German engine is essentially the same as that of its larger brother the Schlosser 2.5. It has radial cylinder porting with circumferential exhaust slits and internal groove type transfer passages. The Schlosser is much more squat and compact than most 1 c.c. motors and is also notable for its extremely light weight of only 2.1 oz.



The new 1 c.c. Schlosser engine.

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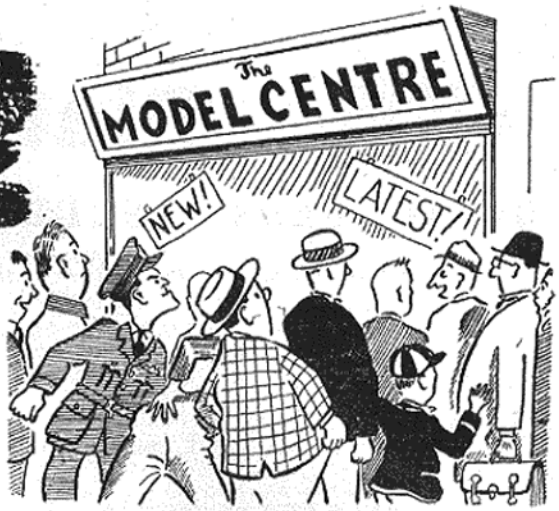

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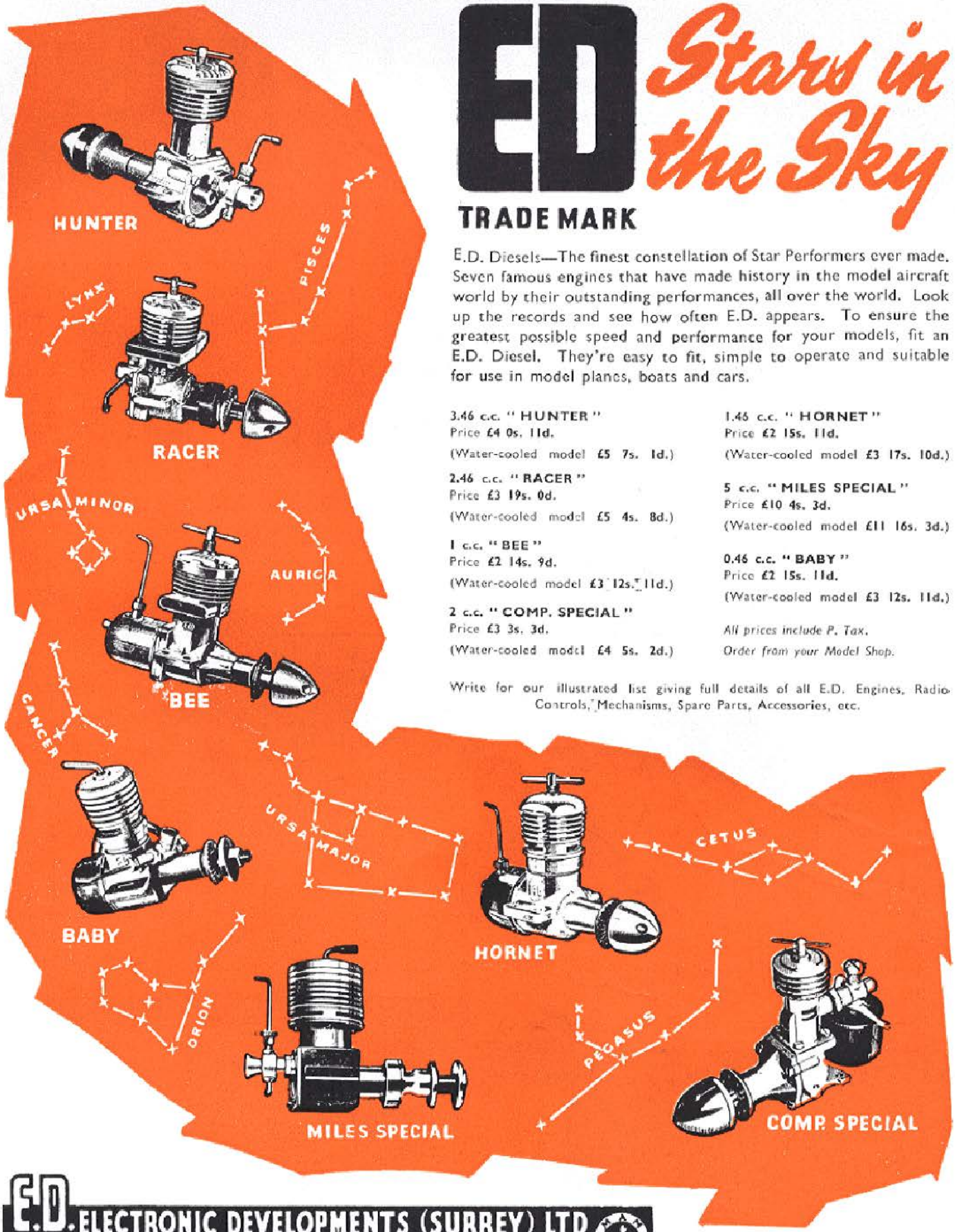

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