MODEL AIRCRAFT

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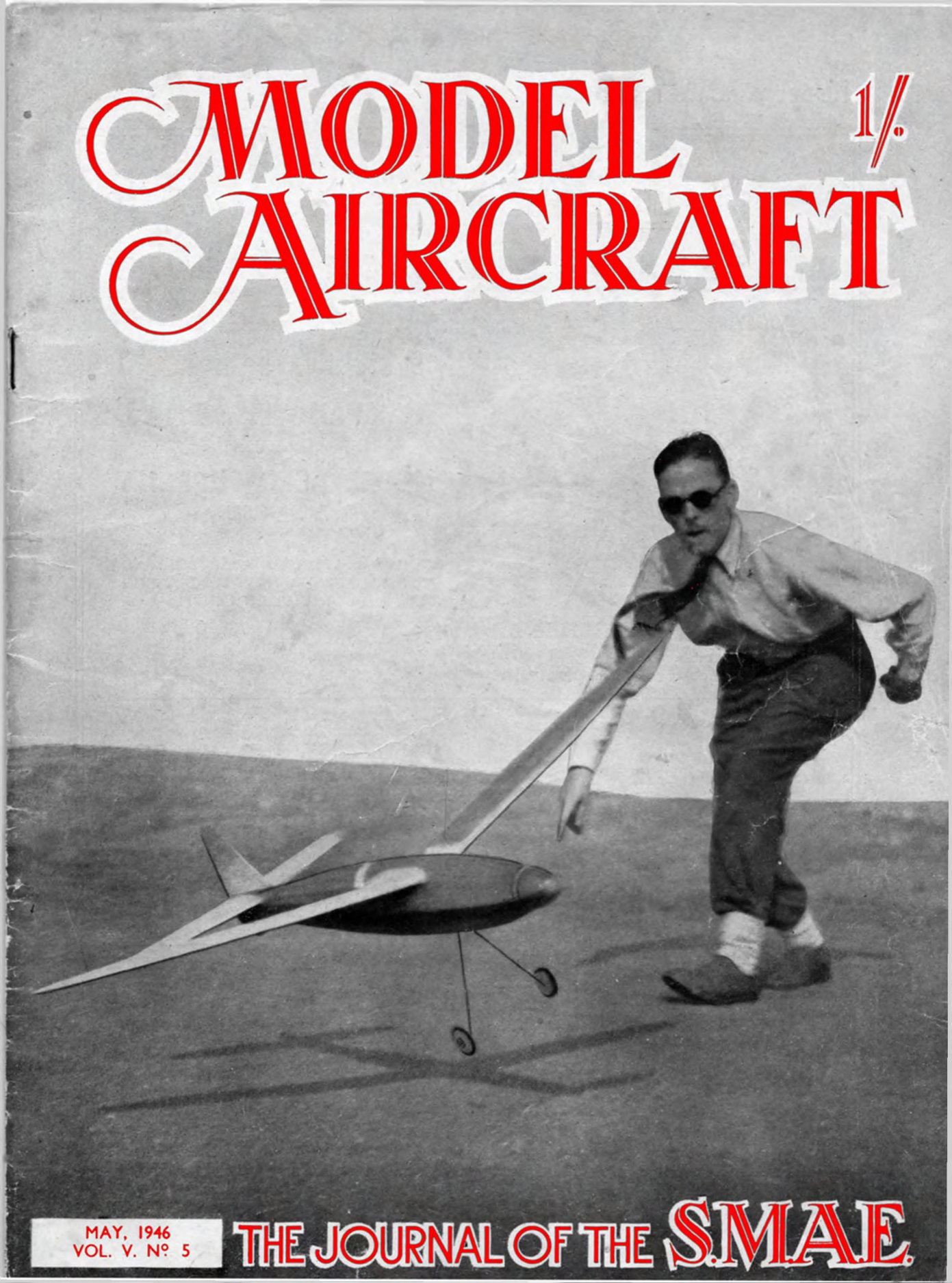

MAY, 1946
VOL. V. No. 5

THE JOURNAL OF THE S.M.A.E.

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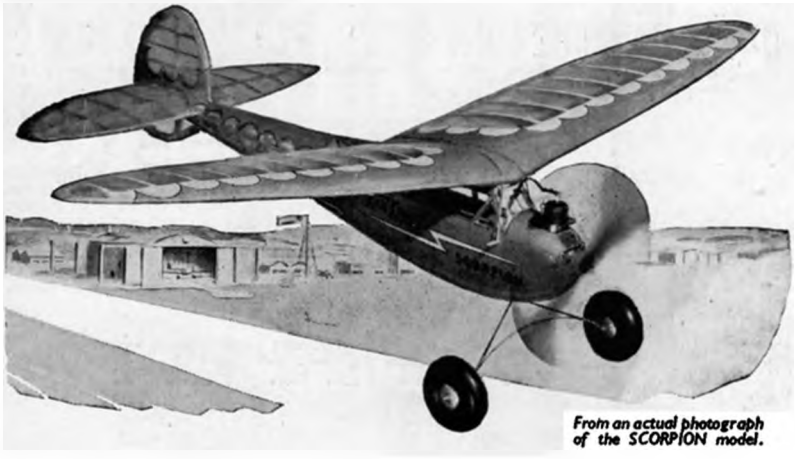

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MODEL AIRCRAFT

The Journal of the Society of Model Aeronautical Engineers

MAY 1946

Volume 5. No. 5

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Edited by
A. F. HOULBERG, A.F.R.Ae.S.

The Editor invites correspondence, which should be addressed to him at "Crossways," 102, Staunton Road, Headington, Oxford.

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The Editor presents

A PERCIVAL MARSHALL PUBLICATION

News from the USSR

by W. A. DEAN

Although Russian modellers claim thirteen of the world's records, few details of their activities have ever filtered through to the outside world. We can recollect seeing only half a dozen Russian model photographs to date—and those, in an American magazine. However, a corner of the veil was lifted the other day when we received three photographs from S. Kafaflan, of Brevan.

Picture No. 1 was taken at an aeromodelling class at the Palace of Pioneers in Lvov. The model in the foreground is quite British in appearance, except for the relatively long fuselage for the 42-in. wing span. Note the " Korda "-type dihedral, fixed tail surfaces and conventional wing attachment.

Picture No. 2 gives us a good idea of the constructional methods favoured. From the amount of lightening holes and the general thinness of the spars and longerons it seems apparent that hardwoods are used exclusively. The model on the nearest table is a large low-wing petrol design. Note the box-type attachment for the wings and their multi-spar construction. This photograph was taken at a school club in Brevan and Picture No. 3 shows a high performance glider being test flown in the school courtyard. (A model of the same design is being doped in the background of Picture No. 2.) This gull-wing pod and boom glider certainly has fine lines. It is to be expected that gliders are amongst the most popular types in a country which holds so many full-size glider records. The wide rib spacing again points to hardwood construction and the fuselage appears to be carved from block. It looks as though a fixed tailplane is featured as well. No tow-line hook is fitted, so perhaps hill soaring is the vogue.


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2


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News Review

Cover Story

Good action pictures of model aircraft subjects are difficult to obtain owing to the speed with which events take place and the short exposure entailed to catch these fleeting movements. Occasionally, however, the photographer is fortunate enough to secure exceptional results and our cover picture this month is a particularly good example taken by Mr. R. V. Bentley, of Blackpool, showing Mr. J. T. London, of Bradford, with his shoulder-wing Wakefield model at the moment of take-off. The scene of this action is Baildon Moor.

This model is a good example of the advanced type of Wakefield model of streamlined design, and possesses all the refinements used by the Bradford enthusiasts such as built-up leading edge, multi-spar wing, wound formers, etc. In view of the importance which the "Wakefield" model will assume in the near future, we are making arrangements for informative articles on their design to appear in subsequent issues.

S.M.A.E. Certificates

The opinion was expressed at a recent meeting of the Society that a more artistic and attractive certificate should be designed for distribution to contest winners. This suggestion met with general approval and the Chairman of the Society has offered a prize of £3 3s. for the best design submitted.

Here is an opportunity for aeromodellers with an artistic bent to direct their prowess to some useful purpose.

The ideal certificate design is one in which the written matter can be changed easily to cover the various purposes for which certificates are issued, namely: Membership of the S.M.A.E., records, prizes, etc., and this aspect will influence the final judging.

The closing date for the receipt of designs will be August 1st, and the winning design will be exhibited at *The Model Engineer* Exhibition.

Rubber Prospects

According to Mr. F. D. Ascoli, who has recently left this country to take up his duties as a director of Dunlop's rubber plantation in Malaya, the estimated world consumption of rubber for the years 1946 and 1947 is in the neighbourhood of 2,000,000 tons per year.

He has computed that the contribution to this figure which will be supplied from the plantations, occupied by the enemy during the war and now released, at 750,000 tons as a maximum and that a yield of 500,000 tons would be a more likely figure to achieve in the coming year.

On these estimates it would appear that 1,500,000 tons of synthetic rubber will have to be produced to balance the demand and that only a quarter of the estimated total demand can be filled by the natural product.

As there is still a wide gap between the "stretchability" of natural rubber and the synthetic variety, the model aeroplane enthusiast is more or less confined to the use of the natural base product, and on this basis the position does not look too bright.

On the other hand, the amount of rubber used by model aeroplane enthusiasts throughout the world is only a very small fraction of the total consumption and, viewed from this aspect, there is some prospect of the release of sufficient rubber to give a reasonable number of model makers enough to allow them to take part in the 1946 S.M.A.E. contests if great care is taken of it and its distribution is properly regulated.

British Records

In this issue we are publishing the list of Official British Records as it stands at the time of closing for press. An examination of it will reveal a lamentable number of blank spaces, indicating that the model movement in this country has a tendency to get into a rut and that there is insufficient interest in general experiment and the development of machines outside the limited range of the "popular" classes.

While we appreciate that concentration on one type is advisable to obtain maximum results, this can be carried to extremes and general development can be considerably stunted by too rigid an adherence to this policy.

It is hoped that the coming season will see records in the many empty spaces which at present exist in the list of records, and that modellers will explore with greater enthusiasm the broader field of Model Aeronautics.

Irish National Contests

An open invitation has been received from the Model Aeronautics Council of Ireland to members of the S.M.A.E. to compete in their "National" contest to be held on Sunday, June 23rd, on Collinstown Airport, Dublin.

The events at this contest consist of a Class "A" and petrol competitions.

The Class "A" event is open to any Wakefield design and the regulations follow those laid down for the Wakefield trophy.

The petrol contest is for any model powered by a petrol engine, and will be awarded for duration on a fixed motor run.

Will all those desirous of entering for either of these events please inform the Competition Secretary, J. C. Smith, 8, Popham Gardens, Lower Richmond Road, Richmond, Surrey.

Wireless Control

The position regarding the use of wireless transmitters is, at the present moment, not too clear, and as this will affect those who desire to experiment with the wireless control of model aircraft on the waveband recently approved by the Postmaster General for the purpose, its clarification is of importance.

Recent correspondence with the Post Office indicates that the amateur wireless licence issued before the war is not at present being issued and it is not clear just how far the amateur is being permitted to go in the absence of licences.

An attempt is being made to clarify the position of the model aircraft experimenter in wireless control and an announcement will be made on the subject as soon as possible.

In the meantime, model aeroplane enthusiasts with a leaning towards wireless control should proceed carefully and avoid any action which might prejudice future facilities.

A French Tailless Contest

The Rhône Aero-Club is organising, on Sunday, May 19th, its second model aircraft contest for tailless aircraft, at 9 a.m., which is open to all French and foreign competitors, on the Corbas ground, and a cordial invitation has been extended to British modellers to attend this.

The contest is being organised to encourage models of this type and to study the problems presented by them.

Will any members who desire to attend send in their entries and the necessary entry fees to the Hon. Competition Secretary immediately, so that it may be forwarded to the Rhône Aero Club in turn.

RULES

(1) A tailless machine for the purpose of this contest is one devoid of any horizontal empennage separate from the main wing.

(2) Three types of machines can take part: gliders, petrol driven machines, machines driven by reaction propulsion units.

(3) There is no restriction on the number or characteristics of machines entered by a competitor. In the case of petrol driven models the cubic capacity of the motor must not exceed 10 c.c. If propulsion is of the reaction type consisting of a rocket this must be made by a firm specialising in rocket manufacture and must not be a product of the entrant.

(4) The winner in each category will be the entrant making the longest flight. The maximum length of cable permitted for launching the gliders is 200 metres, but this figure may be reduced by the judges as a result of the weather conditions prevailing at the time of the contest.

(5) Each machine is entitled to three flights, all flights above 20 seconds' duration counting for scoring points.

(6) Only flights timed between 9 a.m. and 6 p.m. will count. These times may be modified at the discretion of the judges. If the flight of the model continues beyond the closing time of the contest the flight will be timed until the landing of the model or until it is lost to view.

(7) The judges will consist of three members of the Rhône Aero Club and one member from each club represented at the contest. The decisions of the judges, who can modify the rules as circumstances demand, will be final.

(8) Entry fees are 20 francs per machine; they can be received by letter addressed to the Rhône Aero-Club, 30 bis. Place Bellecourt, Lyon, until May 11th, the last day of entry.

(9) It is necessary for each competitor to give the Rhône Aero-Club an undertaking that he will accept these rules and all the clauses which they contain.

Visit to Flers

An invitation to members of the S.M.A.E. to visit Flers on the occasion of the post-war revival of their annual model flying meeting, has been received from Father Amiard on behalf of the Aero-Club de Basse-Normandie. The meeting is on June 2nd, and it is proposed to make the trip by air if this can be arranged. Will all those who are interested in making up a team to compete at this event make contact with the Editor immediately.

P. 80 "SHOOTING STAR"

LOCKHEED'S JET FIGHTER

BASED on the XP-80, the Lockheed P-80A "Shooting Star" single-seat photo reconnaissance plane and fighter was the second jet-propelled aircraft to go into service. Intended for the Pacific theatre, the collapse of Japan came before it could become fully operational.

The original XP-80 was powered by a De Havilland "Goblin" jet unit, but production models were fitted either with the General Electric Corporation type I-40-9 or I-40-11 gas turbine.

Protective armour surrounds the pilot, and the bubble-cockpit has the usual bullet-proof windshield. An interesting point is that the nose portion is interchangeable for either combat or P.R.U. and combat purposes. The armament and cameras carried can be varied accordingly. The fuel-tank is situated in the forebody in front of the jet unit and immediately behind the pilot.

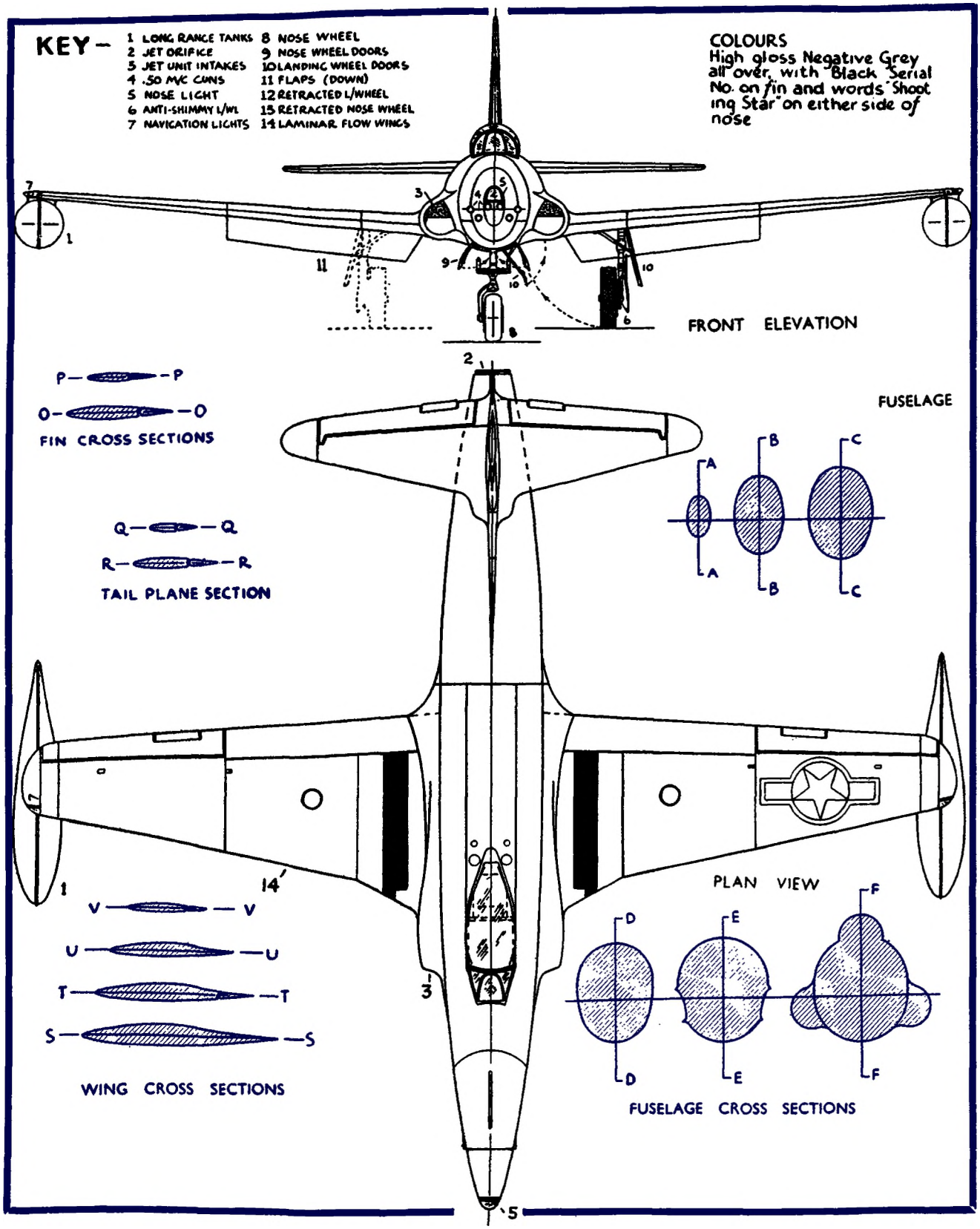
For ease of access to the gas turbine quickly-detachable panels are fitted to the mid and aft sections of the fuselage.

The main wheels retract inwards into the mid centre section and the nose-wheel retracts backwards and turns through 45 degrees.

The cabin is pressurised for high-altitude flying and to safeguard the pilot against explosive decompression in the event of the canopy being punctured in combat, the pressure is automatically reduced when he turns his gun-button switch to "fire." Air-conditioning, with temperature control, supplies air in proper quantity.

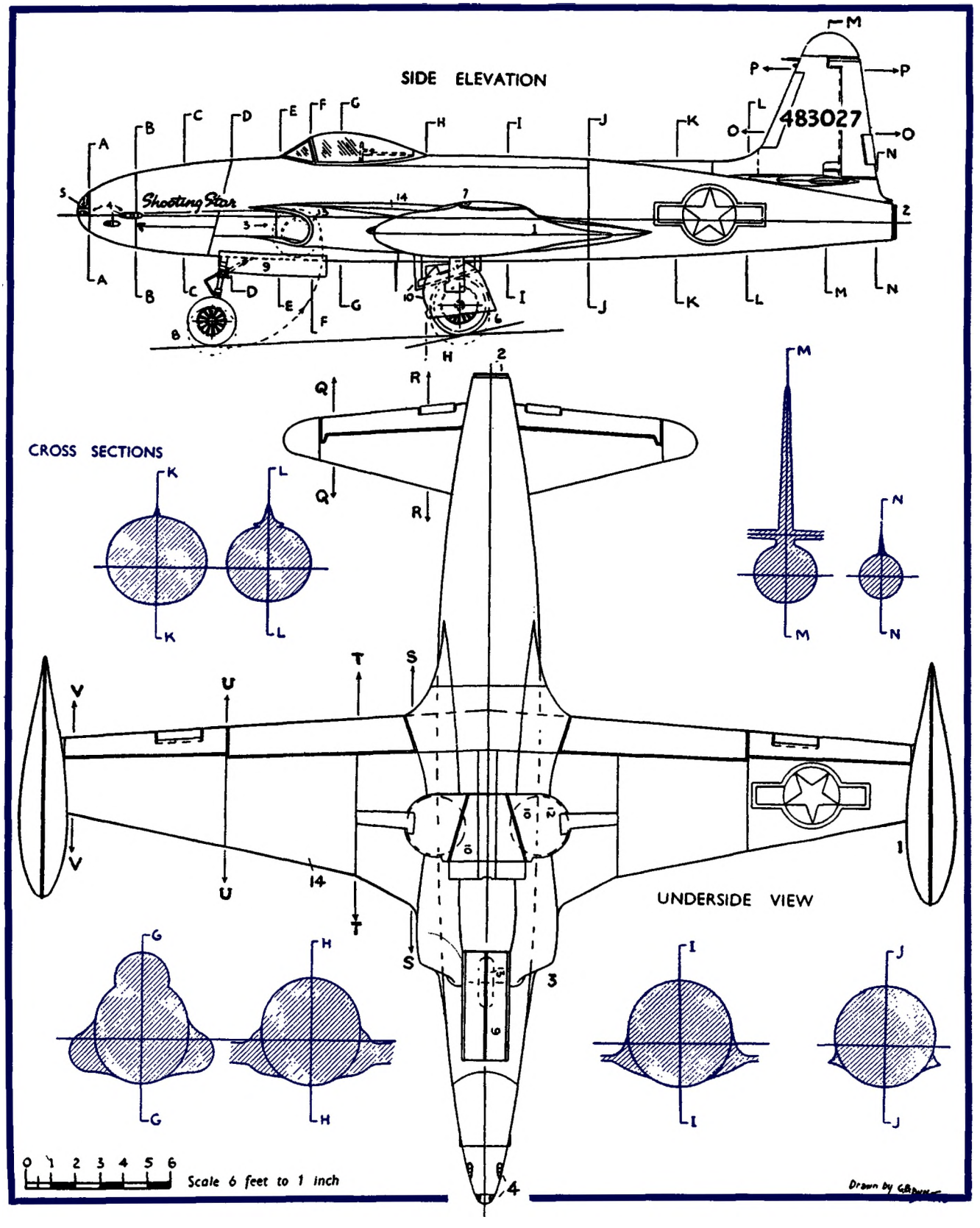
The service ceiling is given as more than 45,000 ft. and with the wing-tip drop-tanks the range is greatly extended. To relate a recent exploit—a P-80 piloted by Col. William H. Council flew from Long Beach, California, to La Guardia Airport, New York—2,470 miles—in 4 hours 13 minutes and 26 seconds non-stop, thereby cutting the existing record by nearly an hour. This was on January 26th, 1946, and was done by the assistance of a considerable tail-wind, as much as 100 m.p.h. at 20,000 ft. rising to 165 m.p.h. at 40,000 ft. quoted by Chanute Field weather station near Chicago. Even then for a jet-propelled machine the airborne duration is an outstanding performance.

THE LOCKHEED P-80A "SHOOTING STAR"

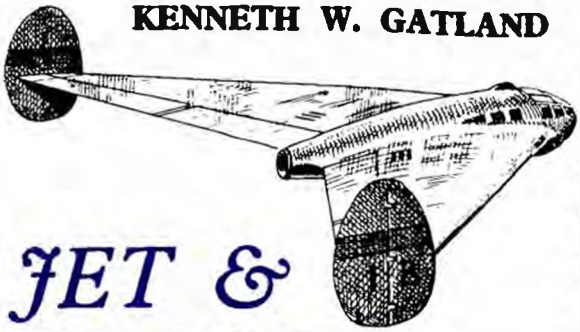


Span : **38 ft. 10½ in.** *Length :* **34 ft. 6 in.** *Powered by one* **General Electric 1-40-9** *or one* **Beach, California, to La Guardia Airport, New York, 2,470 miles, in 4 hr. 13 min. 26 sec.,**

JET-PROPELLED FIGHTER AIRCRAFT



I-40-11 gas turbine. Armament: Six 0.50-in. machine-guns. One of these craft flew from Long the average speed being 584.82 m.p.h. This plan is reproduced from a "Veri-Tru" drawing.



KENNETH W. GATLAND

JET & ROCKET PROPULSION

FOR MODEL AIRCRAFT

OUR last article mentioned the American experiments of Mr. Nathan Carver with models employing liquid oxygen with denatured alcohol. The models which used these motors were designed to carry a quantity of mail and the intention was to fly them from Greenwood Lake, New York, across the State-line into Hewitt, New Jersey. A New York philatelist financed the venture and two complete aircraft were developed and built at the Reaction Research Laboratories owned by Mr. Carver.

The Original "Concentric-Feed" motors

The motors were designed to have a minimum thrust of 35 lb., and a firing time of 30 sec.

A number of proving-stand tests were required before this specification was met, but eventually, a final motor was produced (Fig. 5) which surpassed the required performance. This was developed on firings of 5 sec., while different combustion-chamber lengths were interchanged until the desired reaction was registered. Finally, the best arrangement was tested over a period of 37 sec., during which time it functioned at an average thrust of 41 lb. Other details of the test were : feed pressure, 150 lb., impulse 1,517 lb./sec., average jet flow 28 lb./sec., average jet velocity 4,700 ft./sec., average fuel input 850,000 ft./lb. sec., and thermal efficiency 11 per cent. The motor's overall length was 15½ in. It had a monel nozzle 4 in. long, with a throat diameter of 0.50 in., expanding to 0.75 in. at the mouth. The unit complete weighed barely 2½ lb.

Having adequately fulfilled the requirements the final design was duplicated in two new motors which differed only in the substitution of brass for monel in the combustion-chamber portion. This section of the motor had shown no sign of burning-out during the original firings.

Above.—The tanks were placed on the c.g. so that balance would not be upset as the propellant was consumed. Illustration shows the charging of the 'plane with liquid oxygen.

Left.—The postal cargo being packed aboard.

The aircraft which these motors were intended to power had a high cantilever wing of 14½ ft. span and were 11 ft. long. They were designed by Willy Ley (one-time Vice-President of the free-German Verin für Faumschifahrt E.V.), with co-operation from F. W. Kessler.

The fuel and oxygen tanks were disposed about the machine's centre of gravity, feeding the rocket motor which was housed in the rear of the fuselage. A hinged nose-compartment provided accommodation for two small mail bags.

The fuselage was slabsided and had a covering of thin gauge aluminium. The wings, which were also covered in aluminium, had a constant chord with square-cut tips and were attached high on the fuselage almost half-way along its length. A tail-plane of similar design was mounted on the top of the fuselage at the rear and also a tall oblong fin.

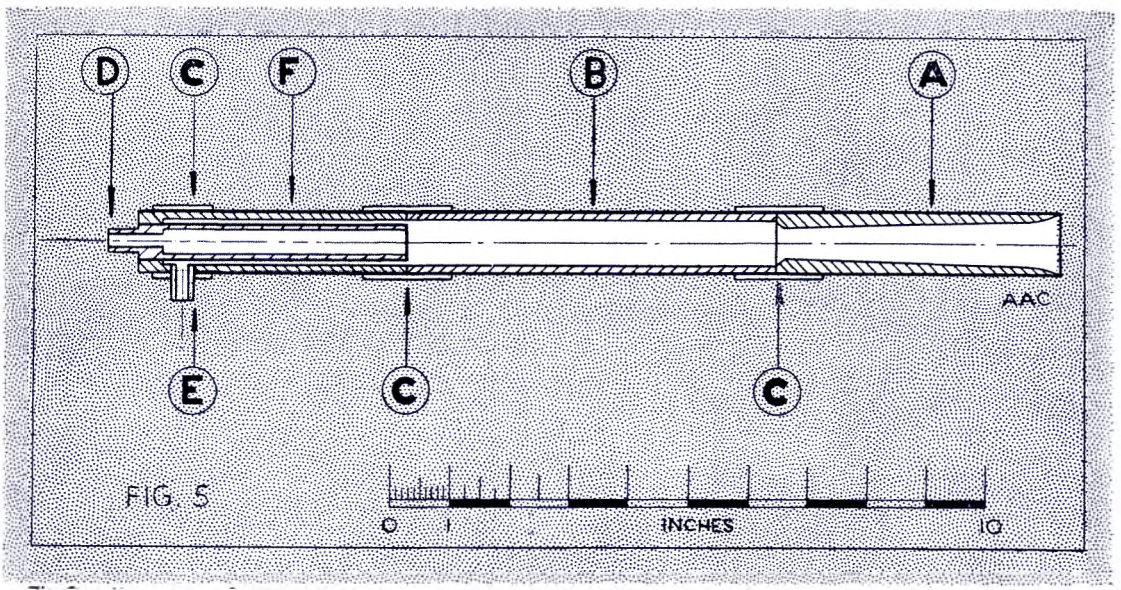
The initial free-flight was scheduled to take place on February 9th, 1936, and a special catapult installation had previously been assembled at Greenwood Lake for the launching. This took the form of a large inclined-track along which the rocket 'planes were intended to take off from a trolley, accelerated to the top by a hawser. A series of unforeseen difficulties, however, made it impossible for the test to take place as originally planned and resulted in a delay of two weeks.

On February 23rd, the necessary alterations having been carried out, the first model was ready to take the air. It rose successfully from the launching trolley and climbed away steeply, unfortunately so much so that it ultimately stalled and dived to the frozen lake surface. Although damaged, the motor still continued to function, driving the 'plane across the ice, whereupon it eventually took to the air a second time for a brief flight ended by the consumption of the propellant.

In view of the first disappointment, the second model was launched directly from the ice. It took off evenly and climbed swiftly, but it was soon clear to the watchers that the wings lacked rigidity; the port wing flexed alarmingly and finally broke off completely. The model spun to the lake with its motor still running and was propelled across the ice, ending up some distance over the state line. It was actually airborne for 17.8 sec.

Although these rocket aeroplane trials could hardly be said to have been successful, failure was entirely due to weaknesses in the structure of the aircraft and was in no way a reflection on the Carver motors which functioned perfectly at all times. It is unfortunate that adverse publicity, resulting from the ill-fated trials, held the entire project in disrepute and no further experiments were conducted. It is, nevertheless, true that the majority of successful reactors developed since then have used some type of concentric-feed in their construction.

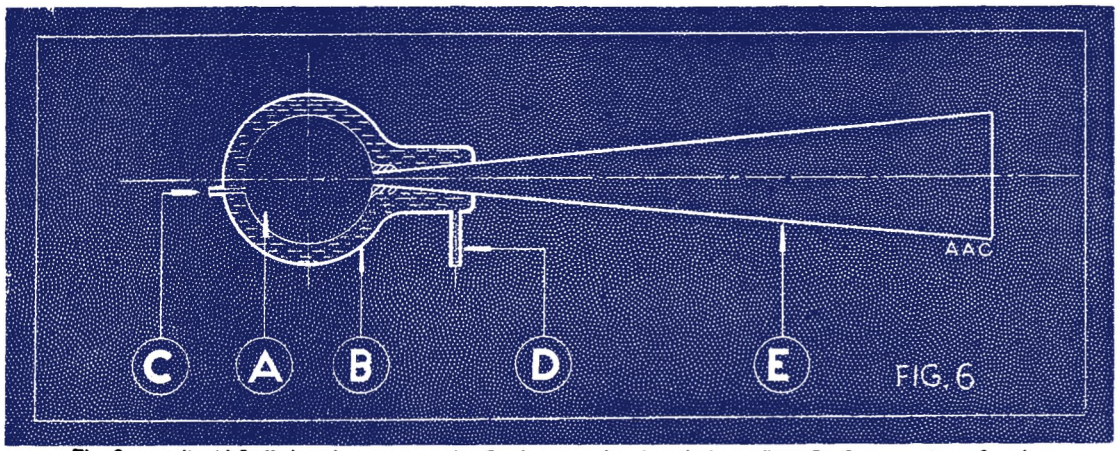
A more recent example of the "concentric-feed" principle is in the design of J. H. Wyld, a prominent member of the American Rocket Society Inc. In this motor the oxygen is injected from the centre of the head through a ring of fine holes. The fuel enters through radial



The first "concentric-feed" rocket motor. It was designed by Mr. Nathan Carver to power the Greenwood Lake mail-carrying aircraft. A, *Nozzle*; B, *Combustion-chamber portion*; C, *Connecting pieces*; D, *Oxygen inlet*; E, *Fuel inlet*; F, *Fuel-injector manifold.*

openings and intersects and encloses the oxydiser until both are adequately mixed. This arrangement overcomes the possibility of a burn-out without the need for elaborate coolant systems, although, in motors intended to operate for periods of more than 30 sec., fluid-cooling is invariably essential. In modern rocket practice this is most conveniently arranged by circulating the fuel through a jacket which encompasses the nozzle and combustion chamber. The heat absorbed serves a useful purpose in vaporising the fuel prior to its ignition.

In early experiments with liquid propellant, liquid oxygen was often used as the coolant medium. A few explosions arising from the rapid and vigorous expansion of the volatile fluid, however, soon discouraged this practice.



The Sanger liquid-fuelled rocket motor. A, Combustion chamber (spherical); B, Outer casing of coolant jacket; C, Oxygen inlet; D, Fuel inlet (after circulating through jacket, fuel enters chamber near oxygen inlet); E, Nozzle.

The Sänger Motor

The unique rocket motor developed in 1931 by the well-known German engineer, Dr. Eugen Sänger, is a splendid example of fuel-cooling. Simplicity was the keynote of this design and although there was no "concentric-feed" and the spherical combustion-chamber was only 2 in. in diameter, it was proven capable of operating for thirty minutes, often exceeding thrusts of 55 lb.

A diagram of the Sänger motor is shown in Fig. 6. It embodied a 10-in. nozzle, having a ½-in. throat diameter, enlarging to 2 in. at the mouth. The chamber and nozzle-throat were encased by a coolant-jacket, through which the fuel was first fed before its injection. The oxygen and fuel (Diesel oil) both entered at the motor head.

The fuel-feed, served by a Bosch type Diesel injector pump, operated at exceptionally high pressures ranging between 450 and 2,200lb./sq.in. The combustion-chamber thus received additional strength through the transmission of combustion stresses to the outer casing of the coolant-jacket via the high-pressure fluid, and, as a result, the chamber walls were quite thin.

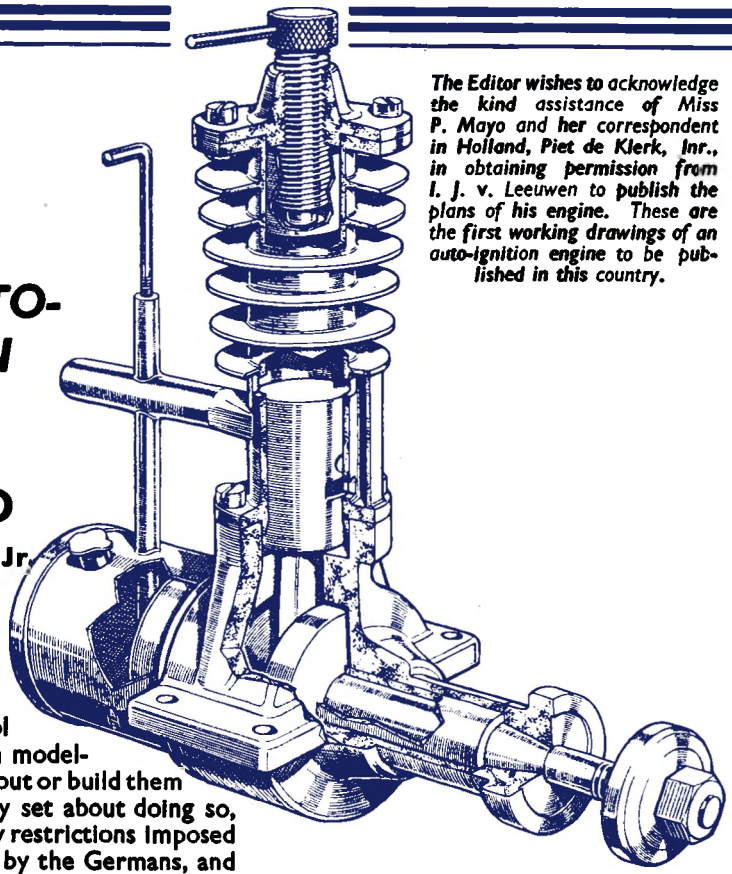
The motor was tested on a simple proving-stand, the thrust being indicated on a spring recording device. During periods of maximum thrust the exhaust velocity was estimated at 11,500 ft. per sec.

This brief résumé of liquid-propellant development will serve to convey the possibilities available to our American colleagues, although it is little consolation to the British model builder. There is, of course, no objection to using compressed air in lieu of liquid oxygen, but unless the experimenter is content to prove his motor in ground tests, he will find the suggestion has limited possibilities.

It is, however, only by the process of experiment that successful units are evolved and I do not wish to discourage those who desire to carry out tests.

I have, nevertheless, shown readers of MODEL AIRCRAFT that there is a very real need for exercise of the greatest possible caution and that experiments must only be carried out by persons with the requisite knowledge of chemistry and its relation to combustible mixtures.

While our laws may be a brake on the development of reaction-propelled aircraft, they must be accepted as a safety measure by the experimenter against over-enthusiasm on his part.



THE "NOVA 1" ENGINE

This sectional perspective drawing of the engine clearly shows its salient features.

The Editor wishes to acknowledge the kind assistance of Miss P. Mayo and her correspondent in Holland, Piet de Klerk, Inr., in obtaining permission from I. J. v. Leeuwen to publish the plans of his engine. These are the first working drawings of an auto-ignition engine to be published in this country.

THE AUTO-IGNITION ENGINE in HOLLAND

By Piet de Klerk, Jr.

WHEN war broke out we could no longer obtain American or English petrol engines and Dutch modellers had to do without or build them themselves, so they set about doing so, in spite of the heavy restrictions imposed by the occupation by the Germans, and achieved some measure of success.

About the summer of 1941 we first received news about the Swiss compression-ignition motor called the Dyno 1, and, of course, our aeromodellists became extremely interested in it, but it was not until 1943 that we heard anything more about it or were able to obtain any details of it.

Then, in December, 1943, I. J. v. Leeuwen, a Dutch model engine-building enthusiast, designed and constructed the Nova 1, plans of which are published in this issue of your journal.

Although this engine was very successful he did not rest content with it and in a subsequent issue of "Model Aircraft" I hope to be able to let you describe his latest compression-ignition engine, the "Nelri," of 5 c.c. capacity, but in the meantime British aeromodellers may be interested to experiment with engines based on the "Nova 1."

The fuel recommended for the "Nova 1" consists of a mixture of 24 parts of petrol, 24 parts of paraffin, 27 parts of turpentine, 15 parts of motor lubricating oil (S.A.E. 70 grade) and 13 parts of sulphuric-ether.

The engine starts very easily and it cannot refuse to start on account of a discharged battery or ignition trouble.

For the purpose of timing the length of flight a valve can be made in the fuel feed-pipe from the tank, or a clear tank can be employed to control the quantity of fuel. The former is to be preferred, as it is more accurate.

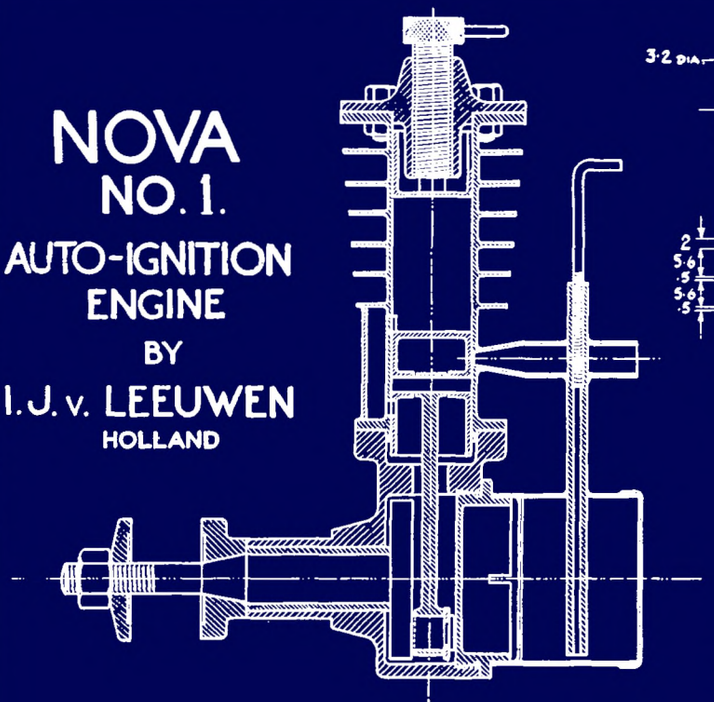
From this you will see that the Dutch modellers have not been idle during the war, but have indeed made some advances, and I hope to be able to tell you something more about them very soon.

NOVA
NO. 1.
AUTO-IGNITION ENGINE

BY

I. J. v. LEEUWEN

HOLLAND

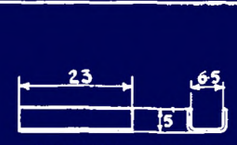


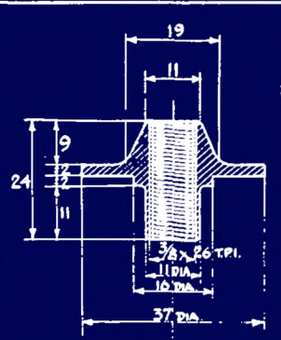
BORE ..... 16 M/M.

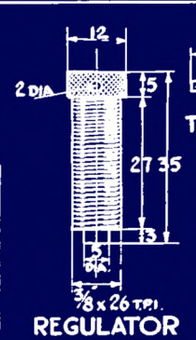
STROKE .... 22 M/M.

4·5 C.C.

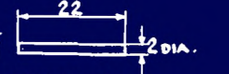
TRANSFER COVER
BRASS 24 S.W.G.





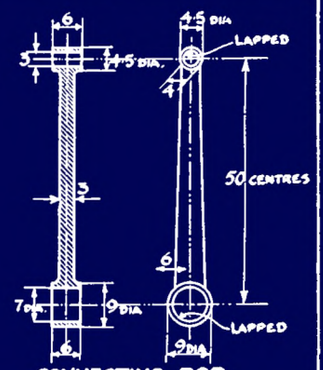


REGULATOR
MILD STEEL

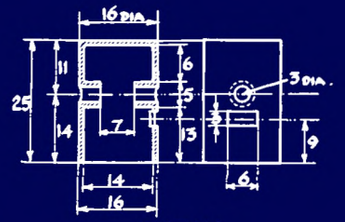


TOMMY BAR
STEEL

GUDGEON PIN
SILVER STEEL

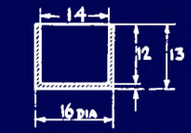


CONNECTING ROD
STEEL

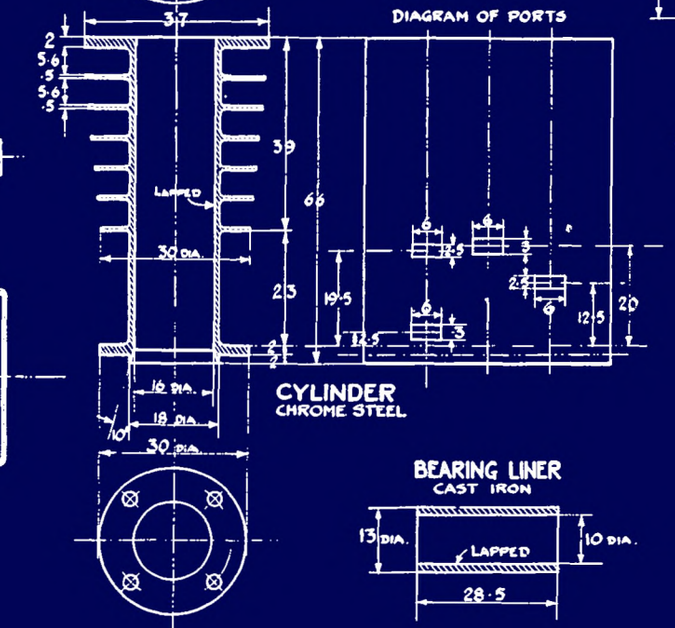


PISTON
CAST IRON

CYLINDER HEAD
ALUMINIUM



COMPRESSION PISTON
CAST IRON

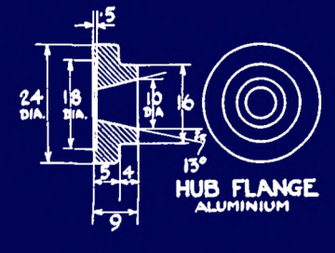


CYLINDER
CHROME STEEL

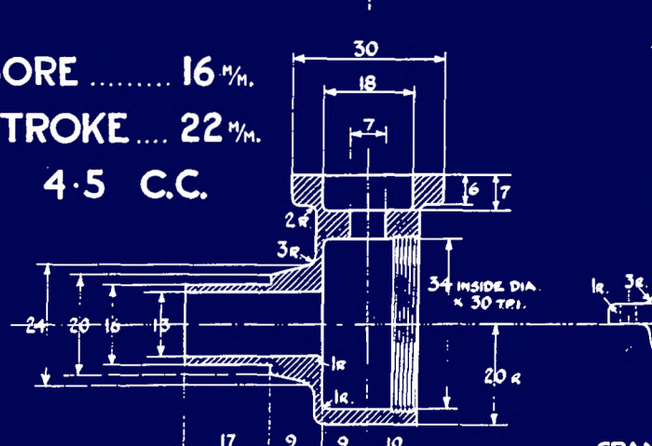
CIRCLIP
STEEL

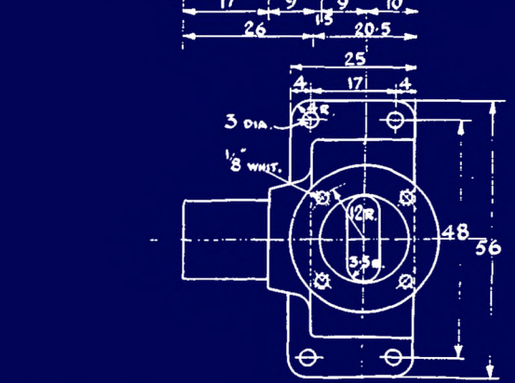
CRANKPIN
SILVER STEEL

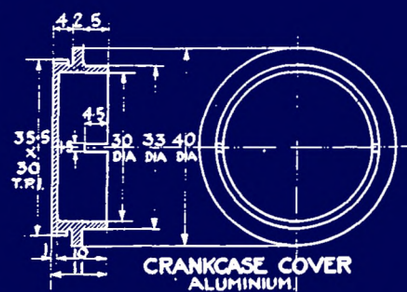
HUB WASHER
ALUMINIUM



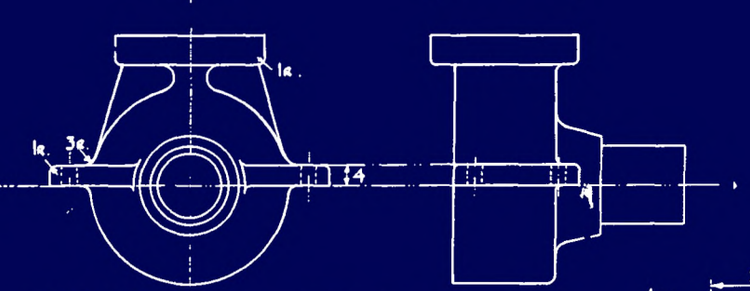
HUB FLANGE
ALUMINIUM



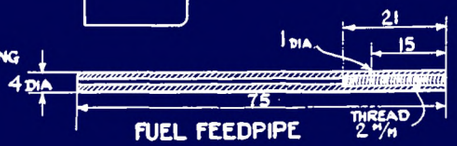




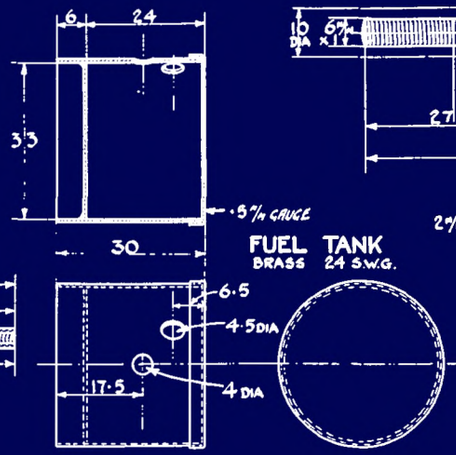
CRANKCASE COVER
ALUMINIUM



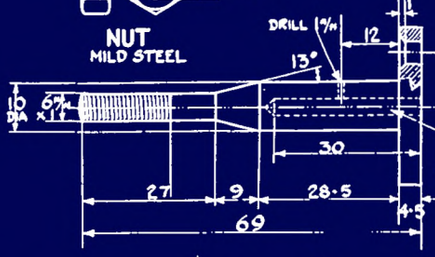
CRANKCASE ALUMINIUM CASTING



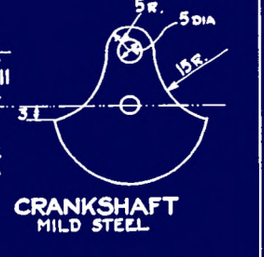
FUEL FEEDPIPE



FUEL TANK
BRASS 24 S.W.G.

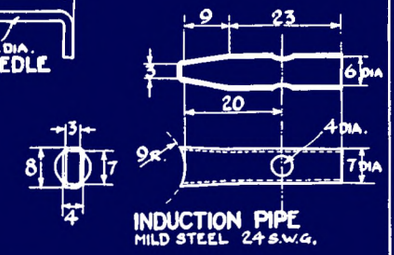


NUT
MILD STEEL

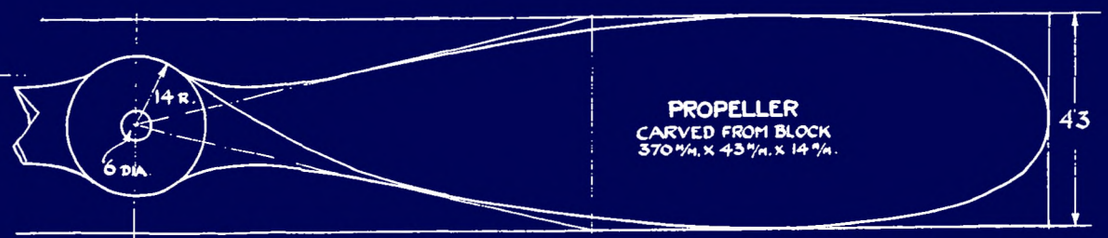


CRANKSHAFT
MILD STEEL

REGULATOR NEEDLE
SILVERSTEEL



INDUCTION PIPE
MILD STEEL 24 S.W.G.



PROPELLER
CARVED FROM BLOCK
370 M/M. x 43 M/M. x 14 M/M.

AN SMAE DRAWING

AF

Original Designing

IV. THE STREAMLINED FUSELAGE

by Gordon Allen

CONTINUING with the former positioning for the streamlined fuselage we are at the stage where the wing tongue or box is introduced on the drawing between the formers, in a suitable relation to the aerofoil section, allowing for ample strength in the wing root-rib after any necessary cutouts, dependent upon the wing tongue, have been made.

The position of wing-saddle uprights, for a parasol job, has been dealt with in an earlier article and applies here.

Another matter governing the location of a strengthened former or formers is the under-carriage location. This will have to be decided, the type of undercarriage agreed upon, and the formers positioned accordingly.

Fig 1 is an enlargement of the fuselage rear-end and should clarify the position regarding the shape of formers " Y " and " Z " (Stage 2).

" X " is a normal circular former with all the fuselage stringers passing over its rim and the two thick sectioned longerons recessed. The latter calls for two small slots in the former rim as indicated. This applies to all other formers.

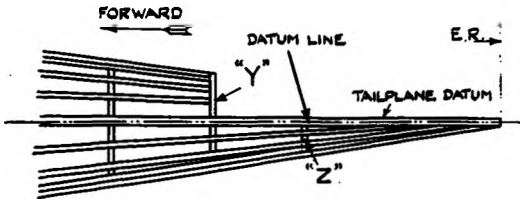
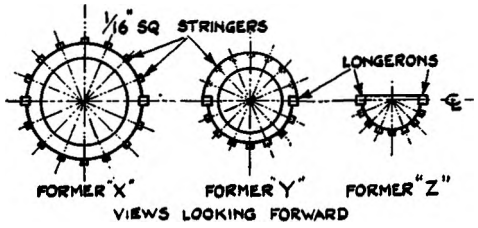


FIG.-1



VIEWS LOOKING FORWARD

Former " Y " (the rear former) is not completely circular. This is due to the fact that the stringers above its horizontal centre-line do not pass over its rim, as in the case of the lower stringers, but are terminated on the forward face of the former. To draw the shape of this former, the radius below the horizontal centre-line *as compared to the former radius above the centre-line* is decreased by the thickness of a stringer and is drawn to meet the longeron cut-outs. Both the radii can be taken from the side-view drawing. The compass point is placed on the datum line at the former position and setting the instrument to the appropriate radius for the upper part of the former, the compass point is transferred to a horizontal centre-line drawn on a separate sheet of paper or in a convenient position on the main drawing, and a faint semi-circle is drawn in. The longeron cut-out is then indicated as shown in Fig. 1 (drawn equidistant about the horizontal centre-line) and the lower former-radius drawn in to meet the cut-outs. The actual former shape is later lined-in with a sharp black line.

" Z " is a *part-former*, and is drawn about a horizontal centre-line. The radius is taken from the side-view drawing as before and is struck off about the centre-line. The longeron cut-outs are marked and the former completed by drawing a horizontal line at a position half the depth of a longeron above the centre-line (to line out with the upper faces of the longerons).

The *nose* former is completely circular, but it should be noted that if the *stringers* terminate on its rear face, as shown, its diameter will have to be greater than those immediately following it, the latter having their diameter (the *overall* diameter of the fuselage) decreased by twice the depth of the stringers to be employed.

Stringer Pitching

The spacing of stringers on circular-sectioned fuselages is quite straightforward.

Each former is divided into the same number of spaces by drawing equally-spaced radii. The point where each radius cuts the former-rim represents a stringer position. The distance between two such points on the largest former (where the stringers will be the greatest distance apart) must not be such as to allow too much sag of the final tissue covering placed over the stringers at these points.

To mark the stringer positions both a horizontal and a vertical centre-line are required on each former drawing. By placing the base-line of a protractor on the horizontal centre-line of a former drawing, with the centres of each coinciding, the upper half of the former can be equally divided by marking off the positions in degrees.

For the design in hand, dividing the upper part of the former into ten parts each of 18 deg. will prove suitable, but for larger machines this angle will have to be decreased to give a correspondingly smaller spacing on the former rim. To mark the whole former rim, a rule is placed so that its edge coincides with a point already plotted and the centre of the former. Where the edge of the rule intersects the former rim (in two places diagonally opposite) a firm pencil mark is made. This is done in all cases where the fuselage section is symmetrical about the centre-line. Where the fuselage section is not symmetrical about the centre-line the lower half will have to be spaced round with a pair of dividers to give equal spacing for the lower stringers.

In the case of a mid-wing machine a part-plan view of the fuselage is required in the region of wing fixing—see Fig. 2. This is necessary to show the widths of the extended formers which carry the wing-boxes. It will be clear that these boxes cannot be carried in the fuselage itself, as in the case of a shoulder-wing type, for they would foul the rubber motor running down the fuselage.

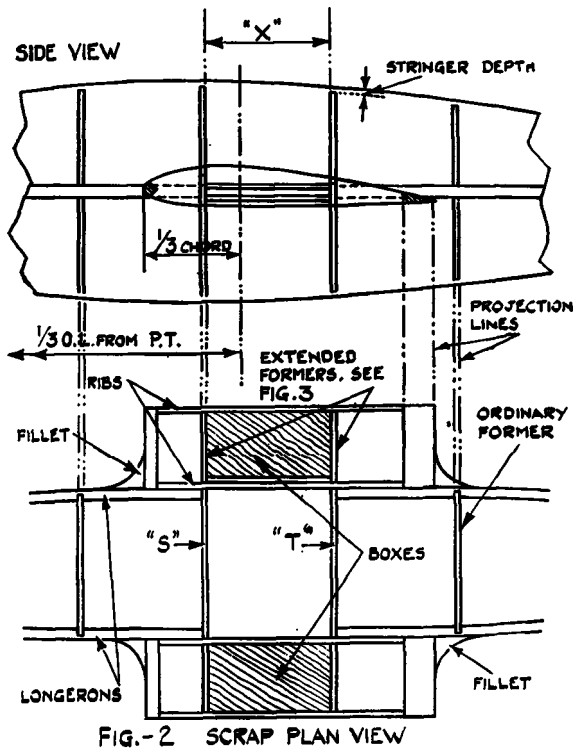


FIG.-2 SCRAP PLAN VIEW

First, the wing is shown in its correct position in side view (incorporating the correct incidence) with the wing-box in a suitable relation to it and between two formers. The width of the wing-box should be no less than half the wing-chord at its root. This will govern (as in the case of a shoulder-wing machine) the dimension marked "X" in Fig. 2.

Due to the extended portion of the main formers the longerons cannot run the full length of the fuselage, and are, therefore, butted against the former faces as shown. The leading and trailing edge sections are accurately shown in the side view, for these will be projected to the plan view (or part-plan view) which is now drawn beneath the side view.

The part-plan view (or scrap-plan view to give it its correct technical term) in Fig. 2 shows an elliptical fuselage.

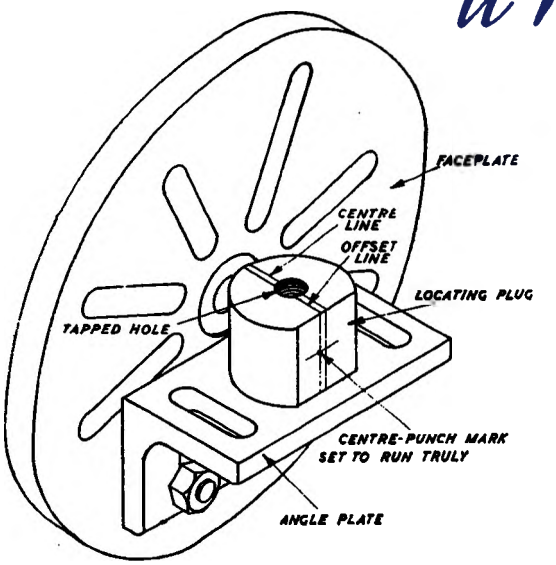
The best way to tackle this job is to draw a datum-line across the paper about 6 or 9 in. beneath the side-view layout, and to transfer a tracing of the actual side-view *outline* to this new datum-line. The datum-lines of the side view and plan view must, of course, coincide. With the aid of T-square and set-square the structure shown in side view is then projected to the plan view, using *faint* pencil lines as indicated.

THE "ATOM MINOR" MARK III

A New 6 c.c. Engine for MODEL AIRCRAFT

by

Edgar T. Westbury



Locating plug set up for ensuring correct setting of body casting to bore cylinder seating.

WHILE insisting on the need for accurate workmanship in the construction of any type of model petrol engines, I trust that readers will not be deterred, either by limitation of equipment, or lack of confidence in their own ability, from attempting this work. Accuracy in machining or fitting is mainly a matter of taking pains, not only in the actual work, but in practising to acquire delicacy of touch, and cultivating the habit of thinking in exact terms. The question of ways and means, although by no means unimportant, is really a secondary matter, and good work can be done with the simplest equipment ; this applies not only to machine tools and workshop appliances, as already discussed, but also to measuring-instruments. By all means avail yourself of the advantages of fine measuring-instruments if you can ; the use of a micrometer for outside dimensions is strongly recommended as a valuable aid to accuracy—but do not get the idea that a formidable array of expensive gauging equipment is essential before you can begin building an engine.

Setting-up Problems

In order to ensure that the vertical and horizontal bores of the body casting are truly at right-angles, the use of an angle-plate for mounting the casting on the lathe faceplate is recommended. Some constructors are rather scared at the task of setting up work in the lathe, especially when angle-plates or similar fixtures are involved ; but actually there is no simpler way of ensuring true squareness, which is most essential to the efficient working of any engine. The angle-plate used does not need to be an elaborate one—I have used one improvised from the side girder of an old bedstead, before now—but it is most essential that it should be true, which can easily be checked up when it is mounted on the faceplate, by means of a small engineer's try-square. This precaution should not be neglected, even when using a ready-made angle-plate, as these are not always above suspicion. In the case of a home-made angle-plate, some filing and scraping are usually necessary to true up the surfaces, and I do not propose to describe this process in detail, as it consists of elementary fitting work, some knowledge of which must be acquired by every constructor before attempting any serious work on engine building. It will also be necessary to drill some holes in both faces of the plate, in convenient positions, for the purposes of clamping.

Boring the Crankcase Casting

It is recommended that the horizontal bore of the crankcase should be machined first. There are at least two sound methods of setting the casting up in the lathe for this operation ; one is to hold it in the four-jaw chuck, and the other to mount it by the bearer-feet on packing-blocks mounted on an angle-plate, which in turn is clamped to the lathe faceplate. The former method sounds the less formidable, and will perhaps be favoured, but it involves risks of error unless due precautions are taken. It will be necessary to reverse one of the chuck-jaws to

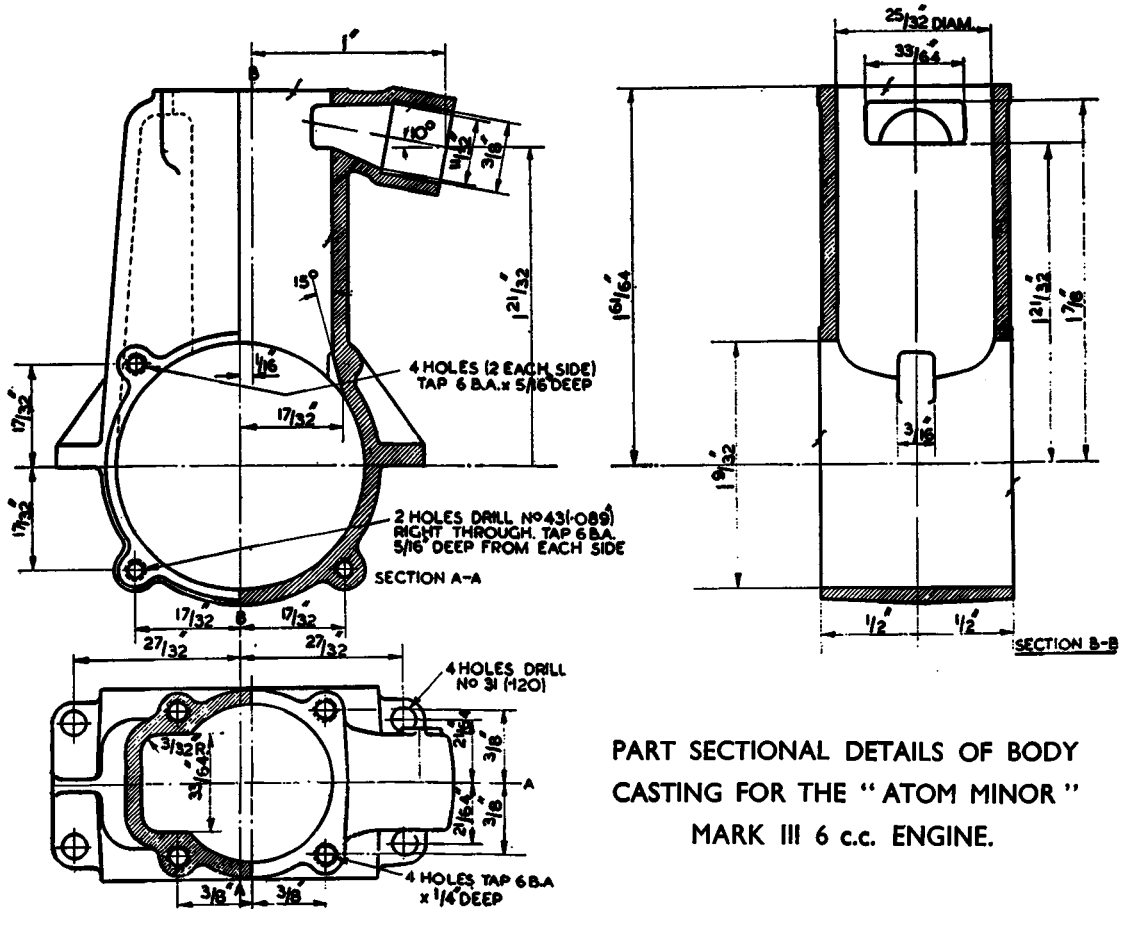
Continued from page 96 of April 1946 issue.

grip over the edge of the top flange, the opposite one bearing on the underside of the crankcase, and the other two over the edges of the bearers. The latter should do most of the holding, but it is unnecessary, and most undesirable, to use heavy pressure in chucking such a light casting, as it is very easily distorted out of shape, or even crushed, by the exercise of brute force on the chuck-key.

The front face of the casting should be set outwards ; but here the question arises—which *is* the front? It will be noted that the body casting is reversible, so that the exhaust port may be either on the right- or left-hand side; the object of this is that the engine can be arranged to run *with equal efficiency* in either an anti-clockwise or a clockwise direction. On account of its particular design, the " Atom Minor " is not capable of running *efficiently* in either direction without certain structural alterations, including the reversal (from front to back) of the main body. Nearly all model aircraft engines run in an anti-clockwise direction, looking from the airscrew end ; and if this procedure is to be adopted, the exhaust port should be on the left, when looking at the main bearing-housing face of the casting. It is, of course, practicable to reverse the casting after it has been machined, provided both faces of the crankcase barrel are machined parallel and square with the cylinder axis.

If the second method of setting up the casting is adopted, the underside surfaces of the bearers should be trued up (though not necessarily finished) by filing or otherwise, so as to be square with the vertical axis. This may be checked by laying the casting down on a flat plate, with a packing wedge under the top flange, so that it is truly horizontal, and applying a try-square to the undersides of the bearer-feet. If desired, the holes in the latter may be drilled to assist in attaching them to the packing-blocks, which may be of metal or hard-wood ; in either case, they should be of equal thickness and dead parallel.

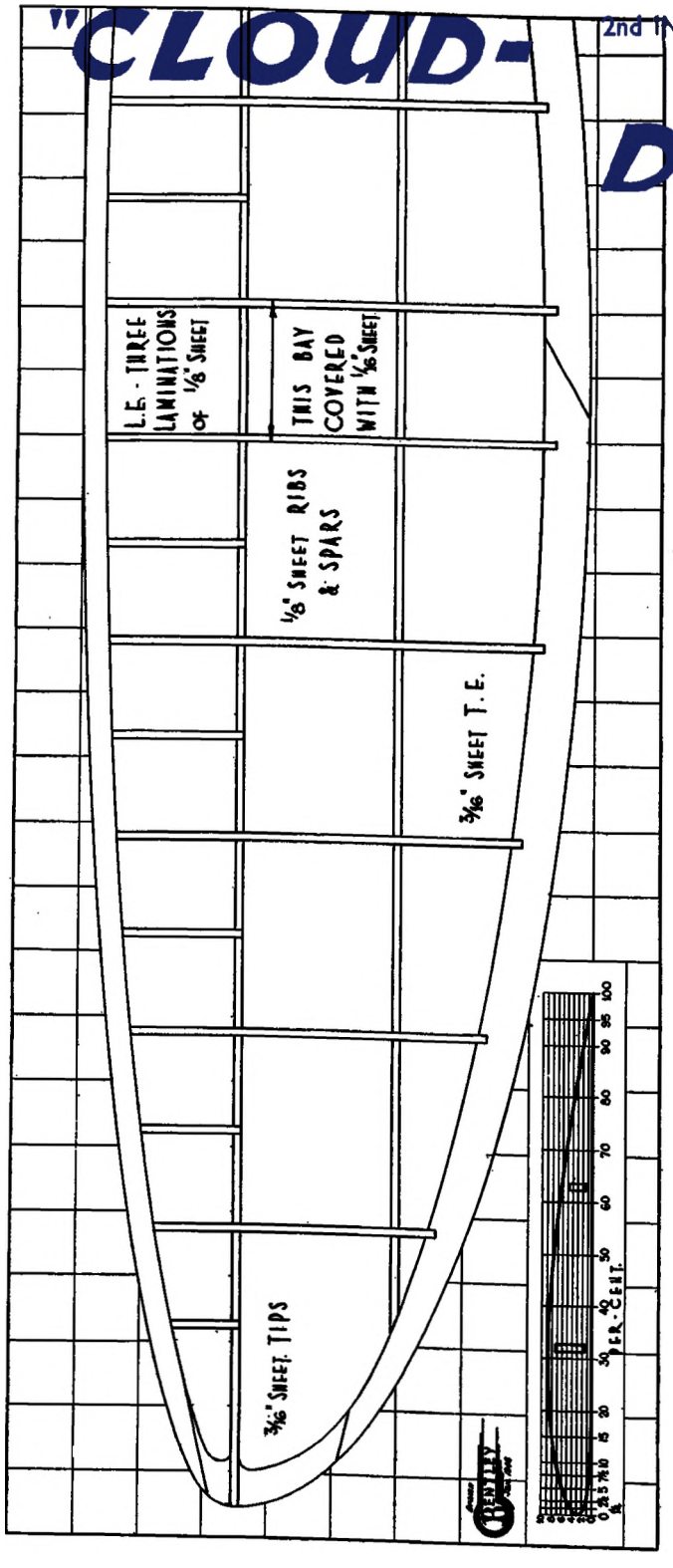
(*Continued on page 124*)



PART SECTIONAL DETAILS OF BODY CASTING FOR THE " ATOM MINOR " MARK III 6 c.c. ENGINE.

"CLOUD-DOZER"

2nd INSTALMENT OF MR. VINCE BENTLEY'S 72-in. SPAN PETROL MODEL



WE publish this month the tail-plane drawing, which was referred to in our April issue. This will enable you to proceed with its construction on the lines described, remembering that the rib section is a modified Clark "Y," having its vertical ordinates reduced to 75 per cent.

The fuselage shape merely follows accepted lines for efficient streamlining, and has the minimum permissible value of cross-sectional area. Its construction will be clear from the drawings which are being provided.

Topic of the Month

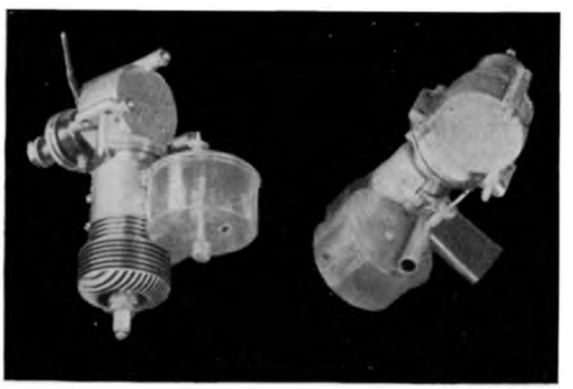
In the old workshop we have again got around to the old bone of contention—contest rules. Find yourself a vacant place on the bench—that's right, mind the razor-blades—and just listen to what Harry Austwick, of Halifax, sent me in the day's post. Harry, for the benefit of those who don't know him, can always be relied upon to have some very definite views on model aeronautical subjects, and if you are fortunate enough to get him to talk about them, you are lucky indeed, as he always talks clear, unpadded common sense and you will leave him with the feeling that you are a little wiser. Harry would be very sorry to have pure duration contests becoming popular in this country, saying that he doesn't think there are sufficient flying grounds here where power models could be released to make durations of three minutes or more and yet be either in sight of the time-keepers or over ground suitable for safe landing without damage to property. This safety of landing without causing damage, cannot be stressed too much, he thinks, as if care is not taken, the movement may

be faced with severe restrictions. He considers that power modelling should not develop into a battle of "auxiliary gliders," which is, in effect, what the pure duration contest boils down to, but should rather be directed towards judging the qualities of the model as a petrol-driven job. Harry puts forward the following suggestions on which to work in formulating national rulings for power models: —

1. 1 sq. ft. wing area minimum per 1 c.c. of motor capacity.
2. Minimum wing loading of 14 ozs. per sq. ft.
3. Models to be timed for motor run and glide.
4. Total flight to be regulated to 100 sec. with a motor run of 25 sec.
5. Motor runs *over* 25 sec. to disqualify the flight.
6. Any excess of glide time to lose 1 point for each sec. excess.
7. Points to be awarded for take-off as follows :—
   5 points for clean take off. 1st attempt.
   2 points for clean take-off. 2nd attempt.
   0 points for clean take-off. 3rd attempt.
   No fourth attempt allowed.

Well, there you have it! Those are Harry Austwick's ideas on new model power contest rules and whilst I agree with quite a number of his points, two outstanding factors still remain; one being that if we become faced with an International contest sponsored by U.S.A., it is a hundred to one that, like it or not, we shall have to fly duration types of the most competent standard. The other factor is that contests of the limited time type such as Harry suggests serve to strangle scientific aerodynamical advancement as far as efficiency is concerned. It is agreed that a model can be built to fulfil the conditions of the contest and that, in doing so, it will reflect the skill of the designer, builder, and flyer in no mean way, but . . . what further aim has the designer after he has once achieved that goal? Surely, all the glory will go to the flyer who can spend most time in practising the known conditions of the contest.

All this boils down to the question: By setting out the contest rules, what are we aiming to judge, the competence of the flyer or the cleverness of the designer? Looking at both sides of the question, I think we should accept both, but that we should differentiate between them. The average model enthusiast who flies for the joy of flying only can be counted on to favour matching his *competence* against his fellows, whilst the enthusiast who flies his models, and designs them to see exactly how much he can get out of them, aiming for ever-increasing design efficiency, will favour matching his *designing and trimming* skill against his fellows. Hence, this calls for two distinct types of contest. We must cater for all tastes, and the latter is the type we shall be most likely to meet in any international contest other than the Bowden, which, unfortunately, is not sufficiently international to tempt large entries.



The engine of "Cloud-Dozer" is a "Gold Seal." The photograph shows the plastic tank described in the February issue.

However, if more of you would follow Harry's example by writing to me about your views, we should have a far better idea of the general feeling, and therefore of what we should do to satisfy it. Think it over and let us have your views at our next bench gossip.

The whole matter is most interesting and well worthy of careful consideration by all petrol fans. It must not be allowed to rest until we are actually faced with the problem of entering such a contest.

Motor Unit

In designing the motor unit I have taken a leaf out of Harry Austwick's book, and used rolled paper-tube conduits wherever possible to carry the electrical wiring. Actually, I have taken it further than Harry, who has only adopted the idea of his detachable unit, leaving the fuselage wiring as usual. On the "Cloud-Dozer," whose motor unit is detachable (but not "knock-off-able"), I have used conduits as far as possible from terminal to terminal, and I think I shall be rewarded by a more foolproof electrical system. Incidentally, I have heard recently of *single*-strand wire being advised for petrol model ignition systems! Single-strand wire is not flexible enough and is too prone to fracture through vibration, so never use it; always use multi-strand flexible wire.

THE "ATOM MINOR" MARK III

(Continued)

The actual setting-up, whatever method of mounting is adopted, follows ordinary lathe work practice, and need not be described in detail. Readers who do not understand this work are advised to obtain some elementary instruction, or to study a good practical handbook, such as "The Beginner's Guide to the Lathe," or "Practical Lessons in Metal Turning" (both obtainable from the publishers of MODEL AIRCRAFT). It may, however, be desirable to point out that in setting up castings, which may not be perfectly accurate on all surfaces, reference should always be taken from the portions which are finally left unmachined—in this case, the *outside* surface of the crankcase. Unless this is done, the crankcase walls will not be of even thickness when the inside is bored.

Setting Up

Setting-up is always far more tedious than actual machining on these small castings, but should on no account be shirked, especially on this particular casting, as the entire success of the engine will depend upon its accuracy. Boring and facing are very simple operations, carried out at the same setting, the front face being cut back till the tool just skims the upper extension of the casting. It is not impracticable to face the rear side at the same setting if the chuck-jaw on the underside is packed out by a block of wood or metal so that the tool (a deep internal recessing or undercutting tool) will clear it when facing right to the edge of the bolting-lugs; but it is the usual practice to carry this out in a second operation with the casting mounted on a mandrel with the reverse side outwards. The mandrel may be made from any convenient piece of metal, or even hard wood, the only consideration being that it should fit the bore fairly tightly and run truly, either in the chuck or between centres.

Machining the Vertical Bore

It has already been stated that the essential requirement of locating the bore for the cylinder-skirt exactly at right-angles to the shaft axis can be assured by mounting the casting on an angle-plate clamped to the lathe faceplate. There is, however, another important requirement in setting up the casting for this operation; namely, the correct location of the bore in the side plane, relative to the shaft axis. Reference to the end view of the casting will show that the cylinder-axis is offset from the crank-axis by $\frac{1}{16}$ in.; this is perhaps a rather unusual feature in model two-stroke engines, but one which I have adopted on several of my engines for very sound reasons.

It would be rather difficult to ensure locating the casting on the angle-plate by the usual means, as the orthodox methods of marking-out are cumbersome and, in my experience, not very reliable when dealing with small castings. I have generally found it best to use some form of simple mounting-jig which locates the casting from a previously machined reference surface, for operations of this nature.

In the present case the jig consists of nothing more elaborate than a cylindrical plug turned to fit neatly in the crankcase-barrel, and slightly less in width than the distance between its joint faces—say about $\frac{15}{16}$ in. This has a tapped hole through the centre, and a flat cut on one side to produce a face about $\frac{7}{8}$ in. wide. A centre-line, square with this flat, is marked on the plug with a scribing-block, both on the end face and across the flat. Another line, $\frac{1}{16}$ in. to the side of the centre-line is then similarly marked.

Clamping

After clamping the angle-plate roughly in place on the lathe faceplate, the plug is secured to the angle-plate by a set-screw from the underside. It is desirable to place a paper washer, larger in diameter than the plug, underneath it, to improve the grip, and also to protect the machined face of the casting when it is clamped down. The set-screw used for securing the plug may be either a short one, extending not more than halfway through the plug, or a long one extending beyond the plug far enough to fit a nut for clamping down the casting. The essential thing is that the plug must be capable of being secured independently of the casting, so that it can be set up in its correct location before the latter is mounted.

Before finally tightening the set-screw, the plug should be set so that the parallel marks on its face are dead square with the faceplate, the flat face being at the front, and the offset line to the left of the centre-line. A line is then scribed across the flat face, parallel with the surface of the angle-plate and $\frac{1}{2}$ in. (that is, half the crankcase width) away from it. The point where this line intersects the offset line is then carefully marked with a centre-punch, as shown in the explanatory drawing.

(To be continued)

RETROSPECT . . . 1914–18

Some Historical Models

by **C. B. MAYCOCK**

These models were constructed as a hobby and intended to form an interesting comparison with equivalent models of present-day fighters. They are all to 1/72nd scale, and made from scraps of hardwood and "Perspex," with sundry wire fittings fabricated from odd lengths. The machine-guns were filed to shape from ordinary wire-nails and soldered where necessary. The fuselages were made in two halves and hollowed out to allow for a fully-detailed cockpit, and glued together longitudinally. The "Camel" and Fokker triplane have dummy rotary engines, which revolve with the airscrew. Wing-ribs were portrayed by using a ruling-pen charged with poster colour, and laid on over the undercoating. Final painting ensures just the right amount of relief for this scale. The above form part of some thirty models and are the work of one individual, his object being to cover every representative type from the 1903 Wright biplane to the Bristol "Brabazon."

BRITISH NATIONAL RECORDS (at 1-4-1946)

DURATION Record type					CLASS A Unrestricted	CLASS B Up to 144 sq. ins. 5 oz. min. weight.	CLASS C Up to 210 sq. ins. 8 oz. min. weight.
Rubber	Outdoor	Monoplane	Fuselage	R. O. G.	Copland, R. 27 m. 56 s.		Copland, R. 27 m. 56 s.
,,	,,	,,	,,	R. O. W. (Tank or Open)	McKenzie, R. W. 8 m. 16.3 s.		
,,	,,	,,	,,	Type 1-1-P-O. R. O. G. ...	Paveley, D. A. 1 m. 37.1 s.		
,,	,,	,,	,,	,, 1-1-P-O. R. O. W. (Tank or Open)			
,,	,,	,,	,,	,, 0-1-P-1. R. O. G. ...	Needham, C. W. 1 m. 6.2 s.		
,,	,,	,,	,,	,, 0-1-P-1 R. O. W. (Tank or Open)	Parham, R. J. 1 m. 3.3 s.		
,,	,,	,,	,,	,, P-1-1-P R. O. G. ...			
,,	,,	Biplane	,,	,, 0-P-2-1 R. O. G. ...	Minion, A. C. 4 m. 57 s.		
,,	,,	,,	,,	,, 0-P-2-1 R.O.W. (Tank or Open)	Needham, C. W. 7 m. 24.7 s.		
,,	,,	,,	,,	,, 0-2-P-1 R. O. G. ...	Bunce, F. A. 1 m. 16.5 s.		
,,	,,	,,	,,	,, 0-2-P-1 R. O. W. (Tank or Open)			
,,	,,	Tailless	,,	,, 0-1-P-0 or 0-P-1-0 R. O. G.	Boys, H. 1 m. 24.5 s.		
,,	,,	,,	,,	,, 0-1-P-0 or 0-P-1-0 R.O.W. (Tank or Open)			
,,	,,	Rotoplane	,,	R. O. G.			
,,	,,	Helicopter	,,	R. O. G.			
,,	,,	Ornithopter	,,	R. O. G.			
,,	,,	Scale	,,	R. O. G.	Crow, S. R. 1 m. 49.35 s.		
,,	,,	,,	,,	R. O. W. (Tank or Open) ...			
,,	,,	Flying Boat	,,	R. O. W. (Open Water Only)	Sayers, H. 0 m. 42.33s.		

DURATION Record Type				CLASS A Unrestricted. (Motor not over 2.5. c.c.)	CLASS B Unrestricted. (Motor 2.5 to 5 c.c.)	CLASS C Unrestricted. (Motor 5 to 10 c.c.)
Petrol	Monoplane	Fuselage	R. O. G.			Frazer, A. T. 16 m. 25 s.
,,	,,	,,	R. O. W. (Tank or Open)			
,,	Biplane	,,	R. O. G.			
,,	,,	,,	R. O. W. (Tank or Open)			
,,	Flying Boat	,,	R. O. W. (Open Water Only)			Bowden, C. E. 0 m. 30.4 s.
				70 to 150 cms. span	150 to 250 cms. span	250 to 350 cms. span
Glider	Hand-Launched F. A. I. Rules			Gosling, R. F. L. 5 m. 35.8 s.	Gosling, R. F. L. 5 m. 58 s.	
,,	Tow-line Launched F. A. I. Rules. Line 100 metres (328 ft.) (run not to exceed 75 meters)			Scrivener, D. A. 42 m. 3 s.	Minney, R. 43 m. 3 s.	
,,	Winch Launched F. A. I. Rules. Line 200 metres (655 ft.) ...					

Rubber	Indoor	Monoplane	Stick R. O. G.	McKenzie, R. W. M. 8 m. 48.2 s.	Rubber	Indoor	Monoplane Fuselage. R. O. G.	Gilbert, D. 4 m. 33 s.
,,	,,	Biplane	,, R. O. G. ...		,,	,,	Biplane Fuselage, R. O. G.	Rock, R. 1 m. 23s.
,,	,,	Rotoplane	R. O. G.	Mawby, L. B. 0 m. 32.2 s.	,,	,,	Helicopter R. O. G. ...	McKenzie, R. W. M. 1 m. 38 s.
,,	,,	Ornithopter	R. O. G.		,,	,,	Scale R. O. G.	
,,	,,	Round the Pole	R. O. G. Class A 1 oz. max.	Rock, R. 5 m. 17 s.	,,	,,	Round the Pole, R. O. G. Class B 2 oz. max. ...	Rock, R. 3 m. 38 s.

SPEED (any type) R. O. G. Unrestricted ... ... Farthing, M. 50 m.p.h.

NEWS from the S.M.A.E. and CLUBS

Photo by courtesy of the "West Lancashire Evening Gazette."

Officials of the S.M.A.E. who attended the series of meetings recently held at Blackpool.
Back Row (left to right) : S. W. Smith (Birmingham), J. T. London (Bradford), R. Calvert (Huddersfield), J. Owen (Blackpool), R. Copland (London), S. Lanfranchi (Bradford), R. Jeffreys (London), F. E. Wilson (London), R. Monks (Birmingham), G. W. W. Harris (Farnborough), Doughty (Birmingham). Front Row : R. V. Bentley (Blackpool), R. F. L. Gosling (Merseyside), A. F. Houlberg (Oxford), A. G. Bell (London), A. W. Cripps (Bradford).

LLANWERN, RISTON AND CHEPSTOW

Model Aircraft Competitions and Flying Contests (Ebbw Vale)

On August 17th, 1946

Entrance Fee : Single Aircraft and Gliders, 3d.

1—The Horace Palmer Challenge Cup, open to the whole of the British Isles, for the contest for team of four, which gives the best exhibition of flying. Entrance fee : team of four, 5s.
2—Best "Duration" Model, rubber driven (under 16).
3—Best "Duration" Model, rubber driven (over 16).
4—Best Flying Scale Model, rubber driven (under 16).
5—Best Flying Scale Model, rubber driven (over 16).
6—Best Glider Model, up to 30 in. wing span, open.
7—Best Glider Model, over 30 in. wing span, open.
8—Best Solid Model, 1/72 scale, for all under 16 years.
9—Best Solid Model, 1/72 scale, for all over 16 years.
10—Best petrol driven 'plane.
11—Silver Cup for best solid 'plane, presented by Councillor S. D. Cox.
12—Best solid Model Aircraft made by a boy not exceeding 13 years of age. Prize : Copy of "Saga," official Royal Australian Air Force Year Book.
13—Glider flying contest, 75-ft. tow line, rope and elastic, 10 sec. no flight. Silver cup presented by E. Thomas, Esq. Prizes—15s., 10s., 5s.

Competition to be run under S.M.A.E. Rules.

All particulars from A. W. R. Martin, 22, Alfred Street, Ebbw Vale, Mon.

SIR JOHN SHELLEY CUP CONTEST, May 5th

The contest this year will be held at Hockley Heath Aerodrome, near Birmingham, at 11.30 a.m. prompt.

Competitors travelling by rail should book to Birmingham, and should then take either the Stratford-on-Avon, Henley-in-Arden, or Hockley Heath buses from the Midland Red Bull Ring terminus.

Competitors travelling by road will find the 'drome situated on the main Birmingham to Stratford Road, about 10 miles from the City centre. Entrance should be made *via* the lane on Birmingham side of 'drome.

Competition entry forms have been prepared and early application for these should be made to Mr. S. W. Smith, 6, Hemlingford Road, Walmley, Sutton Coldfield, Birmingham, or Mr. R. V. Bentley, 8, Crompton Avenue, Hawes Side Lane, Blackpool.

CHINGFORD RALLY

On Sunday, May 5th, the Chingford, Loughton and Walthamstow Clubs are holding an open rally on Chingford Plains. 11 a.m.-1-30 p.m., open rubber ; 2 p.m.-5.30 p.m., open glider.

Team event to run concurrent with open events.

All clubs cordially invited.

CARDIFF MODEL AERO CLUB

On June 9th, the Cardiff M.A.C. will hold the "Tod Lewis Cup" competition for open rubber duration, at Ely Racecourse, Cardiff. All who are interested contact Mr. B. Morgan, 47, Richards Street, Cathays, Cardiff.

S.M.A.E. 1946 COMPETITION CALENDAR

	MAY	5th—SIR JOHN SHELLEY CUP (PETROL) MIDLAND AREA.
D	"	12th—"M.E." No. 1 CUP (GLIDER) (F.A.I.) (TEAM).
	"	26th—PILCHER CUP (GLIDER) (S.M.A.E. FORMULA) (PLUGGE POINTS).
	JUNE	9th—HAMLEY TROPHY (PETROL) NORTHERN AREA.
	"	16th—WESTON CUP (WAKEFIELD) (PLUGGE POINTS).
	"	23rd—NORTHERN AREA RALLY (1) IN MANCHESTER AREA.
D	"	30th—FROG JUNIOR CUP AND NATIONAL CUP (TEAM CONTEST).
	JULY	14th—THURSTON CUP (GLIDER) (F.A.I.) (PLUGGE POINTS).
	"	28th—NORTHERN AREA GLIDER MEETING (MERSEYSIDE) AT CLWYD.
	AUGUST	4th—BOWDEN TROPHY (PETROL) INTERNATIONAL LONDON AREA.
D	"	11th—FLIGHT CUP (RESTRICTED) WOMEN'S CHALLENGE CUP.
	"	11th—NORTHERN AREA RALLY (2) AT BAILDON, BRADFORD.
	"	18th—NORTHERN AREA "DAILY DESPATCH" GLIDER TROPHY.
	"	22nd—"MODEL ENGINEER" EXHIBITION.
D	"	25th—K. & M.A.A. CUP (BIPLANE) AND CIVIL SERVICE CUP (PAYLOAD.)

D = DECENTRALISED COMPETITIONS.

SPECIAL OVERSEAS EVENTS

INVITATION FROM AERO-CLUB DE BASSE-NORMANDIE FOR MEMBERS OF THE S.M.A.E. TO VISIT FLERS, NORMANDY, TO TAKE PART IN THEIR ANNUAL MODEL AIRCRAFT CONTESTS, ON SUNDAY, JUNE 2nd. (SEE NEWS REVIEW.)

INVITATION FROM THE RHÔNE AERO-CLUB, FRANCE, FOR BRITISH AEROMODELLERS TO TAKE PART IN THEIR TAILLESS MODEL AIRCRAFT CONTEST, ON SUNDAY, MAY 19th. (SEE NEWS REVIEW.)

COMPETITION RESULTS

London Area Council

The finals of the London Area R.T.P. indoor contests were held at the Brentford Club Hall, on Saturday, March 23rd, and resulted in a win for the Streatham Club, who beat the Northern Heights Club by the small margin of 31.6 sec. The following are the teams and the times they achieved :

Streatham : J. Wingate, 3 min. 41.9 sec. and 4 min. 0 sec. ; S. Mayo, 2 min. 29.9 sec. and 3 min. 6.1 sec. *Total* : 13 min. 17.9 sec.

Northern Heights : R. White, 2 min. 42.6 sec. and 2 min. 30.8 sec. ; R. Copland, 4 min. 7 sec. and 3 min. 25.9 sec. *Total* : 12 min. 46.3 sec.

SURBITON AND DISTRICT M.F.C.

The Surbiton and D.M.F.C. held their annual glider gala on Epsom Downs on March 24th. It proved to be a great success.

Twenty-three clubs were represented, and over 250 flights were timed in about three hours. There were about ten models continuously in the air together.

The Surbiton team were unable to complete all their flights owing to the fact that they were timekeeping.

Bushy Park won the contest for the second time.

RESULTS

Position	Club	Aggregate	Position	Club	Aggregate
1	Bushy Park	2496.3	13	Islington	1097.0
2	Croydon	2382.2	14	Park Model Aircraft	1054.2
3	Harrow	2231.4	15	Maidstone	1013.6
4	Kingsbury	1867.3	16	Hayes	975.6
5	Pharos	1751.6	17	406 Sqdn. A.T.C.	964.9
6	Northern Heights	1691.6	18	Willesden	940.7
7	Bromley	1638.5	19	Surbiton	846.0
8	Cheam	1418.4	20	Chingford	710.0
9	Zombies	1273.2	21	Streatham	620.8
10	Blackheath	1204.2	22	Miles Aero Tech.	139.3
11	Brentford and Chiswick	1175.4	23	Beckenham	35.7
12	Weybridge	1121.6			

Best individual aggregate : R. Dawkins (Bushy Park), 889.0.
Best individual flight : Edridge (Croydon), 438.0.

NORTHERN AREA INDOOR RALLY

First S.M.A.E. Northern Area indoor rally, held on Sunday, March 17th, 1946, at the Houldsworth Hall, Deansgate, Manchester. Sponsored by Messrs. Kemsley Newspapers Ltd., for the *Daily Dispatch*, inter-area R.T.P. cup.

Over 500 spectators, met for the above contest, which was controlled by the contest director, Mr. B. N. Holmes (Sale).

The high light of the competition was the London Area's micro-film covered models, particularly the masterly control and flying by R. Copland (Northern Heights), and the fine display given by thirteen years' old J. Wingate (Streatham), who gained the second best time.

Inter-Area Competition

London Area : 1—R. Copland (Northern Heights), total three flights, 748.4 sec. ; 2—J. Wingate (Streatham), total three flights, 584.0 sec. ; 3—R. Rock (Streatham), total three flights, 561.0 sec. ; 4—S. Mayo (Streatham), total three flights, 561.7 sec. *Total* : 2,410.1 sec.

Northern Area : 1—W. A. Hetherington (Doncaster), total three flights, 462 0 sec. ; 2—F. Gearing (Doncaster), total three flights, 446.0 sec. ; 3—B. T. Faulkner (Cheadle), total three flights, 252.0 sec. ; 4—W. Higginbotham (Ashton), total three flights, 177.0 sec. *Total* : 1,337.0 sec.

Midland Area : 1—Mr. Parham (Worcester), total three flights, 379.0 sec. ; 2—Mr. Parham (Worcester), total three flights, 69.5 sec. *Total* : 448.5 sec.

Time-Keepers : H. R. Turner (Northern Heights) ; D. Salloway (Rochdale).

Prizes were given for the best times as follows :— Class A : R. Copland (Northern Heights), 320.0 sec. ; Class B : G. M. Holden (Farnworth), 65.0 sec.

Speed contest (11 laps), D. Salloway (Rochdale), 11 m.p.h.

Good work was done behind the scenes by Mr. R. Lawton (Whitefield), chairman, and Mr. W. Titterington, B.Sc. (Ashton), secretary.

Results of the Midland Area Rally, held at Moseley, Institute, February 2nd, 1946

R.T.P., 1 and 2 oz.	First, sec.	Second, sec.	Total. sec.
1. K. Thomas, East Birmingham	165	144	309
2. P. H. Winter, East Birmingham	126.6	134.4	261
3. A. J. Barr, Coventry	91	123.8	214
R.T.P. SPEED, 10 laps	*m.p.h.*	*m.p.h.*	
1. G. F. Bradwell, Birmingham ...	27.2	22	
2. R. Parham, Worcester	23.16	20.32	
3. L. Watts, W. Coventry... ...	20.12	19	
OPEN FREE FLYING	*sec.*	*sec.*	
1. P. H. Winter, East Birmingham	174	98	272
2. R. Oliver, Kings Heath ...	107.6	156	263.6
3. R. Monks, Birmingham ...	132.8	104.7	237.5

LONDON AREA COUNCIL

Notes on a General Meeting held on March 2nd

The Competition Secretary presented to the Council for approval his proposals for the Rules governing the forthcoming competition for the Keil Trophy. This contest will be held on July 7th, the flying ground being provisionally fixed at Hounslow Heath.

This meeting was made the occasion for presenting the prizes to the winners of the 1945 competitions organised by the Area ; the Chairman of the S.M.A.E., Mr. A. F. Houlberg, officiated at the informal ceremony. A team from Northern Heights won the R.T.P. Duration Competition and Mr. R. Copland received the cash prize on their behalf. The winner of the R.T.P. Speed Competition was Mr. A. Young of Brentford and Chiswick M.F.C. Bushy Park M.F.C. were the winners of the London Inter-District Challenge Cup, and Mr. R. Dawkins received the Cup on behalf of the successful team.

NORTHERN CLUB NEWS. By "Northener"

I would like to congratulate the following Northern S.M.A.E. members on their appointment to the Council of the S.M.A.E. for the coming season. R. F. L. Gosling, of Merseyside (vice-chairman), R. V. Bentley, of Blackpool (records officer), Mr. J. T. London, of Bradford, and Mr. R. Lawton, of Whitefield (council members). I feel sure that all Northern members will give these four gentlemen their full support and I know that members' interests will be looked after, but at the same time I do hope that all parties will bear in mind that the S.M.A.E. is a *National Body*, and that it is the duty of the council to deal with *the movement as a whole*, and not just as if it were a Northern body, a Southern body, or a Midland body.

The Manchester and District Council of Model Aero Clubs R.T.P. day, took place on Saturday, February 23rd, at the headquarters of the Whitefield Club. The day's proceedings were centred round the team contest for the "Elite" Trophy. Ten clubs entered and the trophy was won by the Cheadle Club.

The *Hull and District Model Aero Club* has just been re-organised. The progressive Hull Education Committee have placed a schoolroom at the disposal of the club on three nights a week, and have also loaned benches and provide gas and electricity. The club claims this to be the finest clubroom in the North. "Other Education Committees please copy." The *Ormskirk and District*

Model Aircraft Club tell me that they have started off with one member on January 18th, but this has now increased to a total of 16 members. The *Cheadle and District Model Aeronautical Society*. The club record is 17 min. 0.0 sec., with a Mick Farthing lightweight glider built by A. S. Bailey. A room has recently been rented for indoor flying. The *Greenfield Model Aero Club* with a membership consisting mainly of juniors, still continues to be active. The *Whitefield Youth Movement Model Aircraft Club* indicates that several members have been seen carefully inspecting petrol model plans, and developments in this particular sphere are expected soon. One member is doing his best to cause a sensation with jet propulsion. R.T.P. work is reported by the *Cheadle Hulme Model Aircraft Club*. The *Oldham and District Model Aircraft Club* advise that they commenced their activities in September, 1945, and have concentrated mainly on sailplanes since formation. The *Salford Model Aircraft Club* which recently lost its clubroom has now been assisted by the Salford Youth Committee, and now has a meeting room and hall to carry out R.T.P. work, at the Tootal Road Schools. The *Tyldesley and District Model Aircraft Club* " shook me " with the opening remarks in their short report. Up to the present five jet units have been built and a certain amount of success attained, particularly with the latest unit. From the *Leeds Model Flying Club*, there are signs of a return to pre-war times, for at the last A.G.M., the previous secretary and treasurer were back after six years in the R.A.F., and they were re-elected to those offices. *East Liverpool Model Aircraft Club* report that they have secured the use of a ballroom for free and R.T.P. flying. The *Bury and District Model Aero Club* held an indoor flying and solids competition on February 18th. The free flying event was won by A. Bailey, with a time of 68 sec. F. Barton won the solids prize with a " Skymaster " made out of white pine, and which has taken three months to build. The judges stated that it had the best finish they had ever seen. The *Wallasey Model Aero Club* deserve congratulations to Mr. N. Harrison on winning the " Gosling Distance Trophy " ; with a " Judy."

BARNES AND DISTRICT M.A.S.

At the recent annual meeting, the above club definitely decided to reform the club.

A full programme is being arranged by the committee for the coming season. Secretary, Mr. W. Cumber, 41, Victoria Road, Mortlake, S.W.14.

BRENTFORD AND CHISWICK M.F.C.

Some very interesting lectures have been heard at the clubroom in recent weeks. Messrs. M. R. Knight and D. A. Pavely gave their reminiscences. Mr. R. Copland gave a very interesting talk on Wakefields, and Mr. K. Tansley lectured on petrol models.

T. Evans has made the best duration flight for the year, so far, flying his glider for 9 min. 12 sec. at Epsom.

SOUTH BIRMINGHAM M.F.C.

Our first flying meeting of 1946 took place on March 10th, when a dozen glider enthusiasts went along to the park at Cofton, to take advantage of the warm week-end. Several fly-aways were recorded. From March 31st, we shall be using the private ground at Cofton.

The aerodrome at Hockley Heath is now in use by both the Birmingham and South Birmingham clubs.

BLACKHEATH M.F.C.

Forty five members attended the 15th Annual General Meeting, on February 21st, which was somewhat reminiscent of pre-war days with the presence of Messrs. E. F. H. Cosh, L. J. Hawkins, H. York and S. R. Crow, to name a few of the notabilities who have returned.

BRISTOL AND WEST M.A.C.

The only flights of note in the past season came from D. Jones with his Aelous glider, with over 15 min. for one flight. The other from R. Moon, Jnr., in the Freshman's and Novice's Cup, with 409 sec. This time is the best so far for the Cup, and also served to place second in the Frog Junior Competition.

CHINGFORD M.F.C.

Despite the proverbial " mud to the eyebrows " and seasonal swamps to harass the aeromodeller on Chingford Plains at this season of the year, the hardy, adventurous few have already begun to launch the products of their spare winter time into the damp, heavy atmosphere.

THE COVENTRY M.A.C.

Only four of our members attended the last Midland Area Indoor Rally, on Saturday, February 2nd, two bringing away prizes. L. Watts ; who came third in the speed event with 20.17 m.p.h., A. J. Barr, coming third in the R.T.P. event with 91 sec., 123.8 sec. Agg., 214.8 sec.

The treasurer, L. Watts, has been successful in obtaining a flying ground about 4½ miles from the city centre.

CROYDON AND DISTRICT M.A.C.

On Friday, February 22nd, members went to the North Kent club to fly in an R.T.P. contest. It was well fought, and won mainly by the excellent performances of Mr. Marcus, a junior member, who broke our club's R.T.P. record with a flight of 204.5 sec. The result was a clear win for Croydon with a grand total of 483.5 sec., against North Kent's 300.5 sec. Our gala day has been fixed for July 28th.

GRANTHAM AERONAUTS

At the last open-air meeting of the club, R. Lee brought along a friend's model, which is a little difficult to describe, because it is neither a flying wing nor a rocket, but more like a flat plate with a large central fin at the rear. When it was put on the line it went up as straight as anything we have yet seen, and when released it possessed a lovely flat glide and remained aloft for quite a while.

HARROW M.A.C.

At the Annual General Meeting of the Club, held recently, attended by 35 members, the executive officials of the Club were re-elected. We had great pleasure in electing Mr. A. S. Hands, now returned home, to the office of President.

Mr. A. Morgan, retiring President, presented the Major Cup to A. T. Gow for the third time running, and the Pinora Cup for gliders to D. V. Spence.

The New Members' Cup was won by J. Spearing, and the Best Flight of the Year Cup, to D. Taylor who put up a flight of 645 sec. in the S.M.A.E. Cup Competition.

KINGSBURY M.F.C.

On Sunday, March 24th, we made our first appearance on the competition field, placing fourth in the Surbiton Glider Gala, at Epsom, with an aggregate of 1,865 sec. The team, which consisted of Messrs. Monk, Miles, Bowerman, and Haley, was composed largely of juniors.

NORTH KENT M.A.C.

Members turned up in good force on Sunday morning, February 24th, in spite of the cold wind to see A. D. Hall's, White Cup winning flying boat being filmed by a London film company.

Mr. H. Sayle's record-holding machine also got away to a good start but caught a bad down-draught and finished upside down in the centre of the lake.

MERSEYSIDE M.A.S.

The Society recently held two more indoor meetings in Liverpool. At the first, on January 26th, entries were made for the S.M.A.E. Winter R.T.P. Contest, and the Northern Area January R.T.P. Contest.

In the Northern Area Contest only the best flight from each entrant was counted, and their performances won second place for D. R. Hughes, and third equal place for W. A. Jackson and A. O. Sutcliffe.

THE NORTHERN HEIGHTS M.F.C.

A lecture on "Rocket Propelled Gliders," was given by Mr. J. R. Vanderbeck. As a member of the design staff of a well-known model aircraft firm, Mr. Vanderbeck was able to relate the full story of these machines.

On February 15th, Mr. "Bob" Copland was prevailed upon to tell us about Wakefields.

PHAROS M.F.C.

The A.G.M. was held on February 26th, and a new committee was elected, also a "Fellowship of the Club" was inaugurated. This to be awarded to those members who had done the most in the way of service, of one kind or another, for the club. The club's title was also changed.

A club competition, on the lines of the S.M.A.E. Cup, was held on March 31st, for new members and juniors. Fifteen entries were received. First place was taken by J. Heritage, with a score of 406 sec.

READING AND DISTRICT M.A.C.

A recent meeting opened by a discussion on a series of exhibitions we are hoping to run in the near future. About forty members were present, six new ones joining on the spot; a good sign. Pole flying followed, but the times were disappointing; same old story—rubber.

Members were delighted when the President announced that Councillor A. E. Smith, had presented to the club a handsome silver cup for R.T.P. flying.

SALE AERO CLUB

We have lately amalgamated with the Sale Spotters' Club, and now have our own clubroom. We have started a library and are holding regular discussions on model topics. All modellers in the district are invited to visit us at "Inglewood," Wardle Road, Sale, on Fridays, at 8 p.m.

On Friday, March 1st, an exhibition was held, and many new and interesting models were seen.

SCOTTISH AEROMODELLERS ASSOCIATION

The Scottish Aeromodellers Association held its first annual competition and exhibition in the Y.M.C.A. Grand Hall, Glasgow on March 21st, 22nd, and 23rd, when a most impressive display of models was shown, ranging from tiny solids to large petrol driven jobs. The exhibition proved most successful in bringing home to the general public that aeromodelling is most certainly not a child's game and that models are not mere toys—but works of real technical skill and ingenuity.

One of the finest exhibits was a sailplane, designed by J. Adam, of Glasgow. This 8 ft. 6 in. span machine of monocoque construction had a polyhedral shoulder wing, twin fins, and the finish of all surfaces left nothing to be desired. Also worthy of mention in this class, was a tailless job designed and built by S. Kingsman of Dundee.

In the flying scale class, the 1/12th scale Hawker Demon built by R. Burns, was extremely pleasing. The Comper Swift, also of 1/12th scale, entered and built by R. Mitchell was also of particular appeal because of its superb workmanship and finish.

The non-flying built-up scale models of a Tiger Moth and Empire flying boat by D. Hodinott of Ayr, and W. Wyllie of Wishaw, respectively, were really good examples of that particular class. The former being an exact replica of the full size machine, having all controls workable from the cockpits and mounting a dummy engine within its hinged cowl. Too much space would be required to give details of many of the other interesting exhibits. Features of the exhibition included demonstrations of petrol motors in action, R.T.P. flying, accessories, and models being constructed.

SHEFFIELD SOCIETY OF AERO-MODELLERS

The Annual General Meeting was held on Friday, February 1st, in the Junior Technical School Hall.

In his address the President appealed to the younger members to show a little more initiative and bring along their own models to the meetings, instead of being content to watch other people's efforts.

At the meeting held on February 15th, it seemed that the President's appeal had had some effect, for in addition to the usual orthodox R.T.P. models, we had a helicopter, a tail-first job, and one or two free flying models. This last group caused much amusement particularly the "Do-Dah." The best time of the night was put up by L. Wilson—95 sec, at the cost of three motors.

TORQUAY M.A.C.

We of the Torquay Model Aero Club think your journal the tops and wish it every success.

Just over a week ago, conditions existed that few of us have experienced since the Club was formed in 1937, just "thermals" heaps of 'em. Harry Wedden made the discovery, and lost his "Ivory Gull" into the blue after 12 min. 8 sec.

Four of our members, headed by C. H. Aggett, late of the R.A.F., are doing fine work for the movement. Under "Devon Education," they are visiting various youth centres in the country, with lecturer, indoor flying, complete exhibition of models, plans, materials, etc.

CHANGES OF ADDRESS AND NEW SECRETARYSHIPS

Cheam M.A.C. : Hon. Sec., L. K. Forster, 91, Browning Avenue, Worcester Park, Surrey.

Leeds Model Flying Club : Hon. Sec., E. P. Anderton, 656, Scott Hall Road, Chapel-Allerton, Leeds.

Exmouth and District Model Aero Club : Hon. Sec., John Thorn, "Brendene," Marpool Hill, Exmouth.

Edgware Model Aero Club : Hon. Sec., David F. Hale, 32, Montrose Avenue, Edgware, Middx.

The Bristol and West Model Aero Club : Hon. Sec., K. W. Moon, 42, North View, Bristol, 6.

NEW CLUBS

Hornchurch Model Engineering Club : Hon. Sec., P. R. Brister, 20, Walden Way, Hornchurch.

Gosport and District M.F.C. : Hon. Sec., C. Brazier, 118, Anns Hill Road, Gosport, Hants.

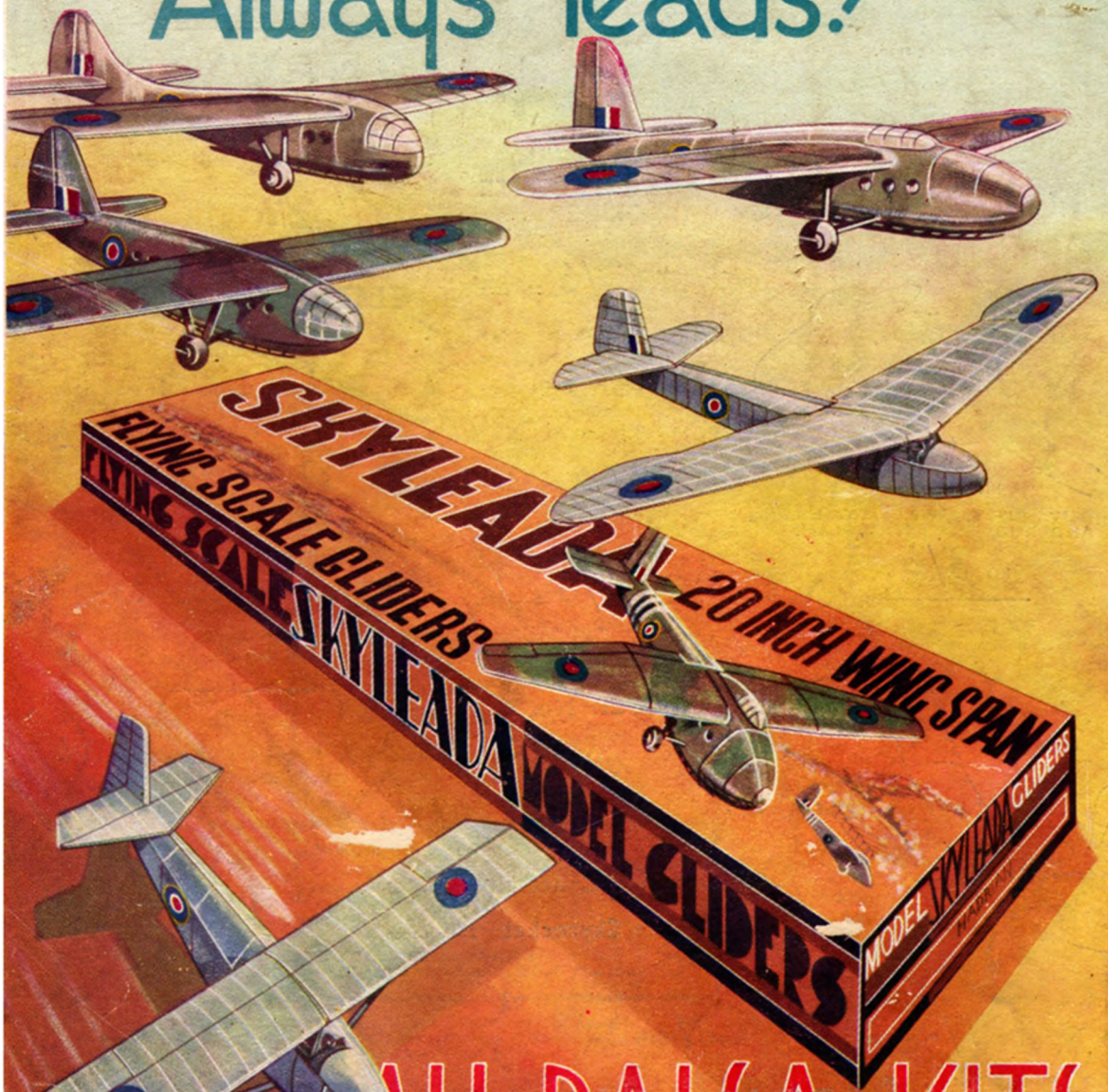
Fleet Vale M.F.C. : Hon. Sec., T. Andrews, 34, Grafton Road, London, N.W.5.

St. Albans M.A.C. : Hon. Sec., R. C. Seabrook, 40, Church Crescent, St. Albans, Herts.

Beckenham and District M.A.C. : Hon. Sec., Colin Andrews, 20, Church Avenue, Beckenham, Kent.

SKYLEADA

Always leads!



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