WHY NOT BUILD A BIPLANE? By L. I SPARE

The AERO MODELLER

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THE NATIONAL JOURNAL OF MODEL AERONAUTICS

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NATIONAL JOURNAL OF MODEL AERONAUTICS

NEW YEAR GREETINGS

IT is a pleasure to send my greetings and good wishes to such an enterprising journal as THE AERO-MODELLER and its multitudinous readers who have a common interest in the fascinating hobby of model aeronautics.

As one who has benefited much in the past by the model aeroplane, I feel sure it will still serve a great purpose, both as a fascinating hobby and highly instructive pastime, and will always be the most interesting way of acquiring knowledge of aeronautical science.

C. R. FAIREY.

AMONG the many New Year greetings we have received none has given us more pleasure than the one we have included in this month's editorial. Aero-modellers all over the country are indebted to C. R. Fairey for his many kindnesses throughout the year and the generous support which he is always pleased to give the movement.

With the beginning of each New Year we start off on a fresh cycle of life's journey, resolved to do all sorts of things for which we have been unable to find the time in the past.

It often happens that these New Year resolutions are broken almost as soon as they are made, but THE AERO-MODELLER, *having formed its own resolution some little while ago, is going to stick to it.*

During the coming year it will be our policy to give the readers of this magazine an even better paper than they had before, and if any reader feels that this is not being done he is invited to send along any suggestions he may have in mind for the improvement of the paper; they will always receive careful consideration.

It has been a really great flying year, and when we look back and review the many records and outstanding performances that have taken place, we cannot but feel very satisfied, if not proud, of the progress of model aviation in this country.

A big future is predicted for the petrol model, and while the prospect of smaller aero engines being placed on the market within a short period brings this possibility nearer, we must watch our step.

One local authority has already refused to allow a club to fly their machines on a certain common because of the danger to other users of the open space. In this connection it is interesting to note that the officials of one of the clubs have taken preliminary measures to secure third-party insurance for petrol-driven models.

Indoor flying meetings at the Royal Albert Hall have proved to be very popular, and the attendances grow larger with every meeting. Our thanks are due to the individuals who secured this splendid venue for the winter sport. Many provincial readers envy us this excellent indoor flying centre, and we urge all aero-modellers who can, to make use of their opportunity. Indoor flying is great fun. Go to the Albert Hall and see some!

THE EDITOR.

CONTENTS

On Trial, No. 4

THE PILOT

Considerable interest has been aroused by this series of articles which are being specially written for* THE AERO-MODELLER *by a Test Pilot. Read his description below of another excellent model for the beginner

EVERY aero-modeller should have a copy of the New Model Aeroplane Manual, which is accepted as the standard work on model aviation.

It was after reading a chapter about the "Pilot" in this very useful book describing it as a machine for beginners, that I decided to send for one of the constructional kits obtainable from Messrs. Premier Aeromodel Supplies of 2a Hornsey Rise, London, N.19.

The kit of materials arrived packed in a strong carton, and immediately after opening it I checked the contents with the complete list published in the Manual, which devotes thirteen pages to the construction of this particular model.

Points about the Pilot

Everything was in order and nothing omitted, and I found myself in a position to commence operations with perfect confidence that everything was to hand. This I consider is a very wise step, since it gives the builder a definite grasp of what the various parts are for, and a rough idea where they are to go.

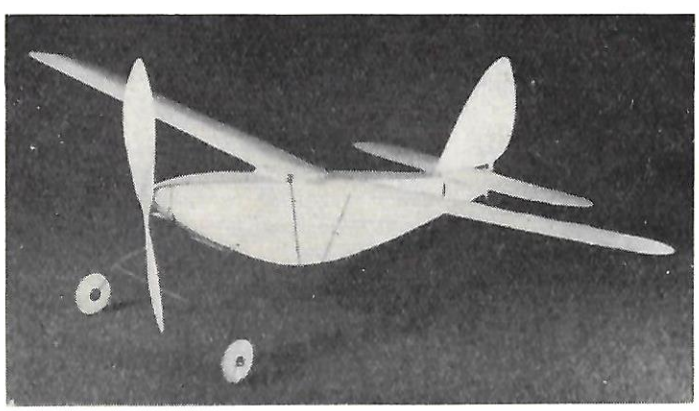
The "Pilot" has no pretensions to full size practice either in its construction or finished appearance, but is definitely a plane with which to gain flying experience, and to introduce the maker to the modern trend in balsa construction. The results of my tests prove that these claims are well founded.

Simple to Build

Each kit is provided with a blue print, and I found it a simple matter to make a tracing of any part I wanted to operate on, thus saving the blue print from becoming spoiled in any way.

If the designer's instructions and sequence are followed to the letter, the building of this machine becomes a simple matter, and there is a decided fascination in watching the progress of the model through the various stages. I found that I wanted to hurry ahead and get the job done, but as I have said before, always put the brake on when you feel like this. The extra time spent will more than repay you.

The whole construction proved very robust, though this has not been attained at the expense of weight, since the "all-up" weight of the "Pilot" is only five ounces, and this includes a coat of coloured dope on the fuselage.



Here is the Pilot high-wing monoplane, designed by C. A. Rippon, which our Test Pilot declares is a very fine job.

DATA FOR THE BUYER

THE PILOT

Designed by C. A. Rippon.

Wing-span ..... 42 ins.
Motor ..... Rubber
Propeller ..... 12 in. dia.
,, ... 12 in. pitch
Price of Kit ..... 12/6 or 13/6 post paid

Supplied by Premier Aero Model Supplies
2a Hornsey Rise, London, N.19

In one or two instances where I found myself in some small difficulty, a reference to the chapter describing this model in the Manual soon put matters right.

The wing assembly is of very sound design, and even after being out in the damp showed no sign of distortion, which I think everyone will agree is exceptional, and speaks volumes for the designer of this machine. The method of fixing the dihedral angle between the two halves of the wings is simple and trustworthy in practice.

A Good Flyer

A special fitment for the tail and fin which locates them firmly at the end of the fuselage, is reliable and easy to adjust. Even after a rough landing this keeps its trim.

The fuselage of the "Pilot" is of the slab-sided type, with the sides reinforced with $\frac{1}{16}$ in. balsa. When completed it is sufficiently strong for any beginner to handle or mishandle! A finished 12 in. diameter 12 in. pitch airscrew is provided and only requires enamelling to the taste of the owner.

The trials which had to be made in weather which at this time of the year is not ideally suited for model flying, were very interesting, and showed the "Pilot" to have a good gliding angle. When once the trim had been determined I felt it safe to increase the number of turns.

At this point I discovered that it was a decided advantage to pack the nosepiece towards the right to counteract the increased torque; having done this, the model soon began to show the stuff it was made of, executing a series of gently climbing turns until a good ceiling was reached.

When we get some real flying weather I am sure the "Pilot" will give me many hours of useful and instructive fun; this model is the ideal machine for the beginner.

Why Not

Build a Biplane?

By LAWRENCE H. SPAREY

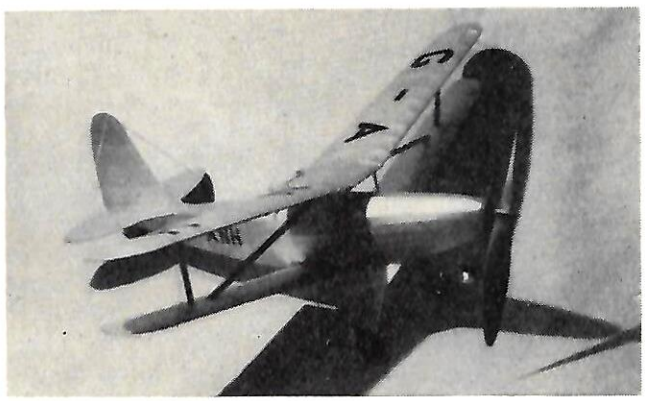
In this informative article, the author explains how some of the difficulties usually associated with the construction of model biplanes may be overcome.

FOR some unaccountable reason, the successful building and flying of model biplanes is considered by the majority of aero-modellers to be bristling with snags and difficulties. The biplane has always had a peculiar fascination for the writer, and an experience of these machines, extending over a period of some years, has convinced him that while difficulties do exist, they have assumed terrors out of all proportion to their actual magnitude.

Before we start, it may be asked: Why the biplane? What are the peculiar benefits which we may expect in return for the extra complications and difficulties? The effectiveness of the answer to this question depends upon one's outlook on model aeronautics. Should you interest lie solely in the making and flying of the lightest and simplest of " slab-sided " duration models, then I have no adequate answer for you. If, however, you are one of those constructors that find as much pleasure at the workbench as in the flying field, one of those that delight in making novel " out-of-the-rut " machines, and, above all, one that likes the finished model to look something like the real thing, then the biplane is its own justification.

The chief advantage of the twin-plane machine is that a reasonably complicated model may be constructed without excessive span, yet retaining a light wing-loading. This enables a fairly elaborate aeroplane to be built, with good expectations of flight and glide. In fact, this latter quality seems to be particularly in evidence, the glide of biplane machines being remarkable for the length and flatness. The flying stability is also exceptionally good, having a quality and " firmness " comparable to full-sized aircraft, while the landing is invariably slow and graceful.

Owing to these qualities the biplane lends itself very readily to the construction of a class of model of a very interesting type. This is the purely flying model which, though not built to any specified prototype, incorporates sufficient full-scale features to render it a good representation of a scale model. The biplane illustrated is a case in point. This machine was



A purely flying model, this biplane incorporates sufficient full-scale features to look something like the real thing.

constructed with the characteristics and " line-up " of the ordinary duration model aeroplane, incorporating good dihedral in the main planes, large tail and rudder, large propeller and light wing-loading. Nevertheless, the addition of a cockpit, fared-in tail and rudder planes, scale type undercarriage and oval fuselage, renders it a very pleasing and realistic machine. It has a 36 in. wing span and weighs nine ounces, yet it has a wing-loading of only four ounces per sq. foot of wing surface. It will normally fly for a minute, and glide for another 20 seconds; it is of robust construction, and heavy enough to fly in fairly high winds. Nothing but a biplane could present these features and results.

The snags associated with biplanes are chiefly constructional, and centre around the fixing of the main planes to the fuselage without undue weight and complication. The simplest fixing does, in fact, present no more difficulty than the usual method adopted on ordinary high or low-wing models, namely, that of securing the wing with rubber bands. In the case of biplanes, the rubber bands, instead of being passed over or under the fuselage, are simply stretched between hooks situated on the upper and lower wings (Fig. 1). This method consists, in fact, of building two planes, one as for a high-wing machine, and one as for a low-wing, the fuselage being suitably deepened to provide sufficient gap between the planes.

This system may be further improved by the addition of inter-plane struts, which not only add realism, but contribute greatly to the rigidity of trim when when the machine is assembled. These struts may take various forms, and two suggestions are shown in Fig. 2. The drawing marked (A) shows a simple bamboo strut, to the ends of which pieces of piano wire, bent at a right-angle, are bound and cemented. The projecting wire " spikes " are located in small pieces of fine brass tubing, which are bound to the leading and trailing edges of the wings.

The illustration (B) shows what is probably the better method. Wire hooks are bound to the main spars of the upper and lower wings, and a rubber band is stretched between these hooks through a stiff paper tube. In the drawing the tube has been represented with the ends cut away to show

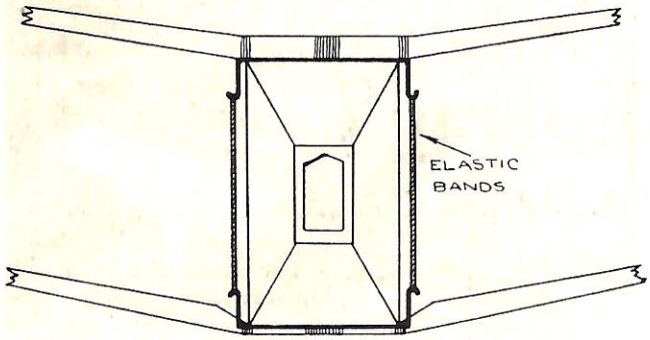


Fig. 1. Shows the planes secured to the fuselage with rubber bands.

the wire hooks and the rubber band. The contraction of the rubber band clamps the wings together, and provides a firm yet resilient assembly.

A very successful method of wing fixing may be achieved in the following way. A stiff upper wing is constructed in exactly the same manner as for a high-wing monoplane, and may be fixed to the fuselage with the usual rubber bands. The lower wing is not made in one piece, but each " half-wing " is constructed separately. At the roots of each " half-wing " short pieces of piano wire are bound to the leading and trailing edges, so that a short piece of the wire is left to protrude to form spikes. These locate into pieces of fine brass tubing, which are bound and cemented across the lower fuselage longerons at the appropriate points. Hollow paper interplane struts, as illustrated in Fig. 2, are now affixed, so that the lower wings depend from the top wings, which have been made exceptionally stiff to withstand this. Fig. 3 will convey the idea. A feature of this method is that the dihedral angle of the lower planes may be readily altered by lengthening or shortening the inter-plane struts.

An extension of this idea may be followed in another method, which was used in the biplane illustrated. Here all the wings are made in "halves," and wire spikes are bound on to both top and bottom planes in a similar manner to that detailed for the lower wings in the previous method. It is necessary to construct a separate centre section for the top plane, and this section may be mounted above the fuselage upon four birch uprights. Pieces of brass tubing are now bound to the leading and trailing edges of the centre section, and also across the bottom of the fuselage, to form sockets into which the wing spikes are pushed. When mounted in this way the assembly will lack rigidity in an upward and downward direction, and this may be obtained by the use of struts, as shown in Fig. 4. These may take the form of thin bamboo struts, or the paper tubes and rubber bands may again be used. In the case of the strut marked (A), which serves to maintain the dihedral, the rubber band is secured between a small hook affixed to the edge of the top centre section, and a similar hook bound to the main spar of the lower wing. The short strut (B) supports the top wing.

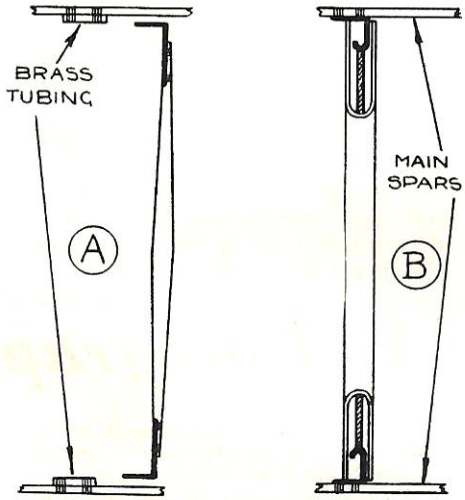


Fig. 1. Two methods of making inter-plane struts which add to the rigidity of trim.

The use of hollow paper struts and rubber bands is to be commended, as they form an almost ideal method. The tubes are easily made from strips of gummed-paper parcel tape, which are wetted and wrapped around a suitable former. A knitting needle of gauge 10 or 11, is highly suitable as a former, but it must be remembered that the former must be immediately withdrawn when the tubes are wrapped, otherwise it will become stuck. The tubes must not be used until they are thoroughly dry and stiff.

The foregoing constructional methods will suffice to indicate how the problem may be tackled, and the ingenious constructor may be left to improve upon these or devise new systems of his own.

The " line-up " of biplanes presents no difficulties, and the writer has found that the ordinary " line-up " of high-wing monoplanes, using a non-lifting tail, is quite satisfactory. Fig. 5 shows that the top plane is placed parallel to the datum-line, and a negative incidence of three or four degrees is given to the tail plane. The thrust-line forms a continuation of the line of the tail plane, although necessarily placed lower than this to accommodate the rubber motor. Slight down-thrust may be given to the propeller with advantage.

So far, we have formed a sort of parasol aeroplane, and it now remains only to add the lower wing. The incidence of this may be the same as that of the top wing, but better stability is obtained by placing the lower wing at a negative angle of incidence to the top wing. The actual angle may be the same as that of the thrust line, or a degree less, as may be found most suitable for the machine in hand.

The tail plane may be placed at a height roughly corresponding to a point midway between the two main planes, and may be, with advantage, made slightly larger than would be necessary for a monoplane of the same

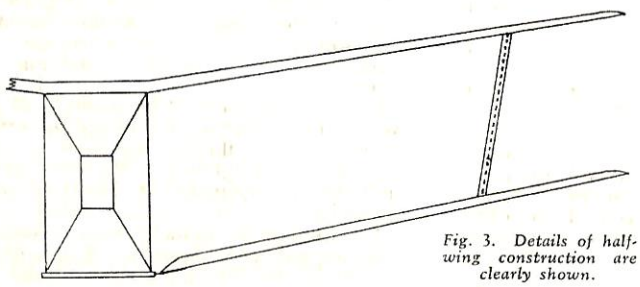


Fig. 3. Details of half-wing construction are clearly shown.

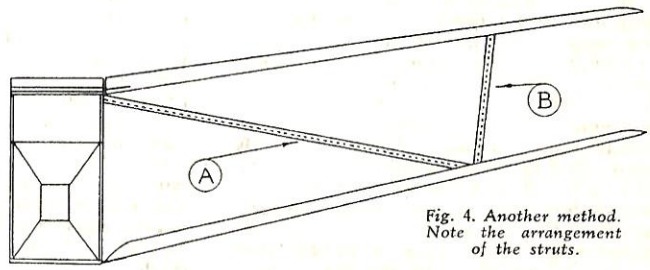
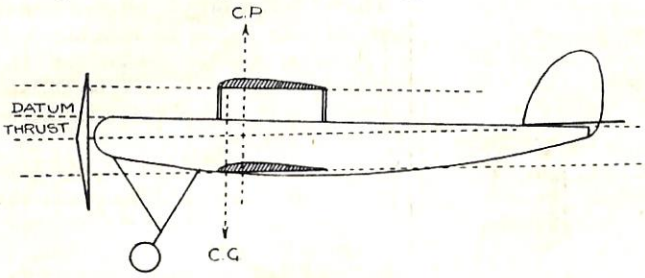


Fig. 4. Another method. Note the arrangement of the struts.

span. About half the area of the top wing seems a suitable figure.

As the tail plane must correct the behaviour of *two* main wings, the fuselage should be rather longer than that of a similar single-plane model, and a fuselage length equal to the span is to be recommended. This enables the tail plane to exert its influence through a longer lever than is usual, and its efficiency is thereby increased.

No perceptible flying advantage seems to be gained by staggering the main planes, although the lower wing



may be set nearer to the tail than the top wing as a means of bringing the centre of pressure of the planes farther backwards. The centre of pressure of similar wings, when staggered, is at a point midway between the centres of pressure of each wing, and flying trim may be obtained, therefore, by moving only one wing along the fuselage. In full-sized practice, the bottom plane often lies nearer to the tail than the top wing, but this is done chiefly to afford the pilot an unobstructed view of the ground.

The picture on the right shows the wing detached. Note the inter-plane struts and centre top-wing section.

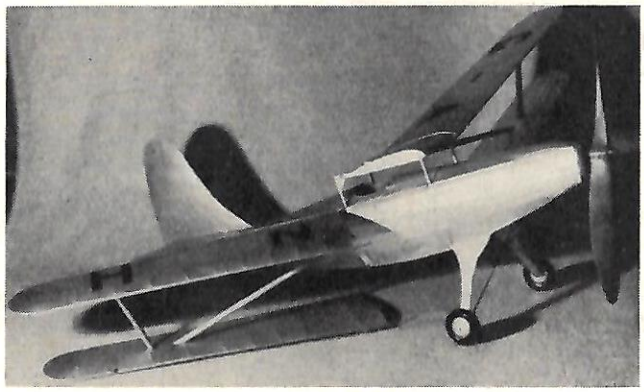


Fig. 5. The top plane is placed parallel to the datum line, and the tailplane has a negative incidence.

The vertical distance between the planes, or the " gap," as it is called, should not be too small—certainly not less than the chord of the wings. About a " chord and a quarter " seems to be a satisfactory amount of gap for model biplanes.

This constitutes a summary of the " snags " of model biplane construction, and it will be seen that the difficulties are, indeed, of a very slight nature. May we hope that sufficient interest and activity will be aroused to give the biplane the popularity it so assuredly deserves?

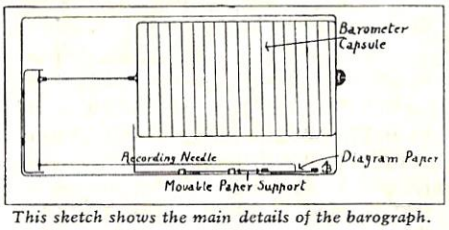
A Barograph for Model Aeroplanes

We are able to publish this report owing to the extreme kindness of Prof. Georgii, of Darmstadt, and of the Deutsches Forschungsinstitut fuer Segelflug e.V. Instrumentenabteilung, Darmstadt Aerodrome.

THE F.A.I. has recently drawn up rules regulating record flights for reduced model aeroplanes. For altitude records temperature readings are now required. In accordance with this ruling the German Institute of Research for Sailing Machines has introduced a baro-thermograph which registers automatically pressure and temperature. The approximate dimensions of this instrument are 130×90×310 mm. On account of its exposure to free air-currents the device is sectioned so as to offer the least possible resistance thereto. It is suspended at a single point by means of a splice-bar, and the instrument can even be attached to a wing-rib. The device used for the suspension also serves as a shock-absorber. Shock-absorption is made so gentle that it ensures the instrument's being suspended practically without vibration, even in petrol models.

In the design of the baro-thermograph care has been taken to facilitate the taking of the readings by the recording of results in a straight line. The recording-needle moves along a line parallel to the axis of the recording-drum. Thus the temperature and pressure curves lie within a fixed distance of 16 mm. of each other, and are consequently quite easy to calculate. This is effected by means of a transparent strip 16 mm. wide, arranged so that the point of a curve on the upper edge of the strip is co-ordinated to that of the curve on the lower edge.

The instrument is constructed so that no sensitive or movable part is left unprotected. It is impossible to get to any vital part without unscrewing certain parts of the case. Consequently damage caused through carelessness represents only a small danger. By using a transparent cover it is possible to keep a constant check without removing it.



This sketch shows the main details of the barograph.

The sphere of measurement can be fixed, on request, for 3,000 or 5,000 metres. The movement used is an ordinary clock-movement with a drum 100 mm. deep. The period of rotation can be regulated in two separate scales, usually for one or three hours. These latter can be fixed, however, for any length of time required. The drum has been modified so as to do away with a support-arm for the smoked strip. The diagram-sheet is fixed into a slit. This modification presents the advantage of making it possible to effect several rotations of the drum without the risk of parts of the curves not being recorded.

The following details of a specially adapted barograph for model aeroplanes are also of great interest.

The instrument is enclosed in an aluminium case, 37×21×17 mm. This case contains a Vidi barometric capsule 15 mm. in diameter, which transmits its elongation to the recording-needle, simultaneously displacing the recording-sheet. This method prevents distortion of readings by landing-shocks, which in the ordinary way would have a tendency to make the needle deviate, since the recording made by a shock would appear on another part of the sheet.

The diagram sheet being displaced only by the elongation of the capsule (ascension-upwards), it is necessary to adjust it each time before the instrument is used.

The diagram-sheet itself is made of a transparent material. Its recording area is 8×17 mm. Before insertion, it is smoked with lampblack. No other preliminary is necessary in inserting or removing it.

The capsule is covered with a plexiglass top and may be sealed. A magnifying-lens is used for taking the readings.

Important Factors in

Aircraft Design

By D. A. RUSSELL, A.I.Mech.E., A.M.Assoc.Min.E.E.

AS one or two good folk have expressed surprise that my machine, weighing 14 pounds, should be successfully flown by an engine of only 18 cc., I am giving in this article some calculations to show that this is no great achievement—in fact, it would seem that an even better performance might be possible.

Consider the following :—

(1) The power required to fly an aircraft may be calculated from the formula :—

$$\text{H.P.} = \frac{DV}{375}$$

where D = drag of the aircraft, in pounds, and V = the speed of the aircraft in m.p..h

(2) Now a well-tuned 18 cc. "Comet" engine will develop a good ·5 h.p. So, rewriting the formula in the form

$$D = \frac{375 \text{ H.P.}}{V}$$

and taking a value for V of 25 m.p.h.

$$D = \frac{375 \times \cdot 5}{25}$$

$$= 7 \cdot 5 \text{ pounds.}$$

i.e. at a speed of 25 m.p.h. ·5 h.p. will fly an aircraft whose total drag does not exceed 7·5 pounds.

(3) My bench tests have shown that a metal airscrew 17½ ins. dia. × 12 ins. pitch running at 3,800 r.p.m., will develop a static thrust of 6·2 pounds, which means that under correct flying conditions, the effective propulsive thrust will be approximately 5·1 pounds.

(4) The difference between the figure of 7·5 pounds drag (as that which—theoretically—could be dealt with by ·5 h.p.), and that of 5·1 pounds (as the effective propulsive thrust available) represents, of course, the sum total of the engine and airscrew losses,

$$\text{i.e. } \frac{5 \cdot 1}{7 \cdot 5} = 68\% \text{ efficiency.}$$

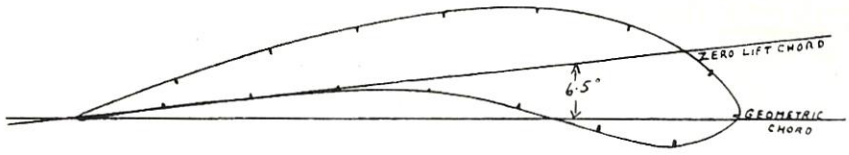
(5) Assuming a figure of 65 per cent for the efficiency, the forward flying speed is calculated to be ·65 × 63·3 (revs. per sec.) × 1 (foot pitch) = 28·2 m.p.h.

Thus, *theoretically*, it is shown that a speed of over 25 m.p.h. could be obtained by an aircraft powered with a ·5 h.p. engine, provided the total drag did not exceed 5 pounds.

Space does not allow of my giving full details of the drag calculations involved in the designing of GA—DAR. But the values for the two main items, fuselage and main wings are given, since they plainly show that the total drag is under 2½ pounds.

(6) The value of K for a totally enclosed fuselage of the type used is about ·0004 ; and the maximum cross sectional area of the fuselage = ·66 sq. ft. Thus, at a speed of 25 m.p.h. the drag is found (from the formula $D = KAV^2$) to be $\cdot 0004 \times \cdot 66 \times 25^2$.

$$= \cdot 165 \text{ pounds.}$$



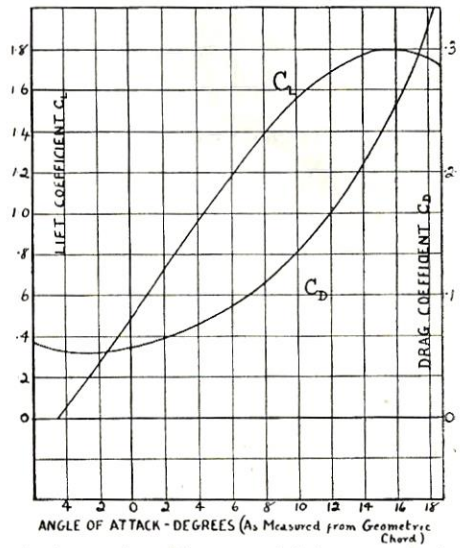
(7) The wing section used is shown in Fig. 1. The main characteristics are the thick nose, the deep under camber at the trailing edge, and the fairly fine angle of taper between the upper and lower surfaces at the rear half of the wing.

The considerable under camber was introduced to give the wing section a "slow flying" characteristic, in effect similar to that produced by a "flap."

The thin section towards the rear results from the requirement that "breakaway" of the air-stream from the upper surfaces of the trailing edge shall occur at as high an angle of attack as possible ; and as the type of wing section is essentially one meant to operate at a fairly large angle of attack, it is necessary to keep the upper surface as *nearly parallel* to the lower surface as is reasonably possible.

This does not weaken the section really, as due to the under camber, the nose drops, and thus it is still possible to obtain a fairly thick section near the leading edge.

(8) Fig. 2 shows lift and drag curves for this section ; they represent the averages of a number of tests made at different angles of attack, and



tests made with a model in my wind tunnel. I cannot guarantee the dead accuracy of these latter, as I am unable to correctly assess the appropriate correction factor to allow for scale effect. However, a number of flight tests have been made with different wing settings, and I think that these two curves may be taken as reasonably accurate.

(9) The aircraft was originally planned to have a wing area of 10 sq. ft. and a weight of 13·5 pounds.

Rewriting the formula

$$L = C_L \frac{\rho}{2} SV^2$$

in the form

$$C_L = \frac{L}{\frac{\rho}{2} SV^2}$$

and taking a value of 25 m.p.h. for V

$$C_L = \frac{13 \cdot 5}{\cdot 001189 \times 10 \times 36^2}$$

(Note in this formula V is in feet per second).

Therefore $C_L = \cdot 875$

(10) Reading from the chart, Fig. 2, the value of C_D (when $C_L = \cdot 875$) is found to be ·07.

(11) The drag of the wings is then found from the formula

$$D = \frac{C_D \; P \; SV^2}{2}$$

Inserting the appropriate figures

$$D = \cdot 07 \times \cdot 001189 \times 10 \times 36^2$$
$$= 1 \cdot 08 \text{ pounds.}$$

(12) With a total drag of 1·2 pounds for the fuselage and main wings it is obvious that the drag of the rest of the aircraft would not increase this figure to much beyond 2 pounds; and since a maximum of 5 pounds was permissible it followed that the proposed power unit should be sufficient to fly the aircraft.

(13 As a point of interest 18 cc. for a weight of 13 pounds gives a power/weight ratio of 1·38 cc./pound weight. (Capt. Bowden, some two years ago, published a description of his low wing monoplane, "The Drone," which weighed 7½ pounds, and was successfully flown with a 10 cc. "Brown Junior" engine; and a few months ago he described in THE AERO-MODELLER how he had fitted a 6 cc. "Baby Cyclone" engine to a 5 ft. span biplane, weighing 4½ pounds. In each case the power/-weight ratio = 1·33 cc./pound weight.)

As I have already said, since a propulsive thrust of some 5 pounds is available, it follows that a *smaller* engine, provided it developed say 3½ pounds thrust (effective) should fly this machine—that it might not do so is also possible, since an airscrew must not only develop a certain thrust, but must do so at the correct forward speed, and under certain conditions the proper combination of these two features is not possible.

In a later article I will deal with this aspect in greater detail; for the moment attention is drawn to the fact that a power/weight ratio of 1·33 cc./pound weight is definitely possible; and it is hoped that this figure will be of some assistance to those aero-modellists who are contemplating designs incorporating one or other of the very small petrol engines now being put on the market.

(14) The original designs for aircraft GA—DAR were got out on the basis of a flying speed of 23 m.p.h.; When $C_L = 1 \cdot 03$ and the wing setting was 4·5 degrees angle of attack measured from the geometric chord.

(15) During trials it was found—due to the margin of thrust power in hand—that the angle of attack could be increased to 12 degrees, which increased the C_L to 1·68 and reduced the speed to approximately 18 m.p.h.

To keep to scale as much as possible the size of the fin had been kept to a minimum, and at the lower speed of 18 m.p.h. there was a tendency to "yaw." This was cured by increasing the fin area by about 30 per cent; the new fin being as shown in Fig. 3.

(16) Since a test flight with extra load was found possible, wheels of hardwood, instead of balsa, have recently been fitted, with the object of slightly lowering the centre of gravity, which incidentally is some 2 inches below the thrust line; also certain strengthening members have been added to the landing chassis anchorages. Finally, a heavier coil has been installed, bringing the total weight up to 14 pounds; this gives a power/weight ratio of 1·29 cc./pound weight.

Showing our contributor's aircraft, GA-DAR, fitted with its new fin.

(17) Referring to the sketch of the airfoil sections it may be explained that when an airfoil is set at an "angle of attack of zero lift," i.e. when the zero lift chord is parallel to the line of flight, no lift is generated.

The geometric chord of an airfoil is really an arbitratory dimension, and is specified by the designer. Broadly speaking, it may be defined as the greatest distance between the leading and trailing edges, measured as between two perpendiculars. Thus, in any airfoil of curved section, it would be at a *negative* angle when the airfoil is set at the angle of zero lift.

In the case of the airfoil here described, the angle between the two chords is approximately 6·5 degrees.

It is very important that this feature of airfoil nomenclature should be understood, as otherwise confusion may result when considering various wing settings.

A description to the effect that "The wing is set at an angle of incidence (or of attack) of 5 degrees," is not of much use if no indication is given as to whether this is measured from the zero lift chord or geometric chord.

It is the *usual* practice to measure the angle of incidence as from the geometric chord. Thus, the actual effective angle is increased by the amount of negative setting of the geometric chord below the zero lift chord.

That is to say, when the angle between the 2 chords is 6·5 degrees (as in the case of the section here described) and the angle of incidence is given as 7 degrees, the effective operating angle is $6 \cdot 5 + 7 = 13 \cdot 5$ degrees.

Flying-Scale Construction Hints

By H. E. TAYLOR

BEFORE tackling the job of building a flying scale model is is advisable to give a certain amount of careful thought to the choice of a suitable prototype. This is particularly necessary when the builder has to work to some given scale in order to conform to the requirements of competition regulations.

Most modellers have to work either from the drawings and details of full-sized aircraft appearing in the flying periodicals, or from those supplied by the makers of constructional kits.

Small Scale Problems

The difficulty in the case of the former plan is that the drawings available are usually on a very small scale, lack necessary dimensions, and so lead to inaccuracies in scaling off.

The writer, who is at the present time constructing a 1 inch to 1 foot scale model of the Heston Phœnix, decided to work from drawings which appeared in the *Aeroplane* of October 23rd, 1935, and began by preparing his own $\frac{1}{2}$ inch to 1 foot general arrangement drawings. The advantage of this is obvious when, for example, it is noticed how the fuselage of the Phœnix merges from the rectangular section of the cabin portion to an elliptical section at the point of attachment of the tailplane.

Chiefly Balsa Built

The varying sections at points along the centre line were plotted by scaling off from the plan and side elevation.

The model is constructed chiefly of balsa, the front portion of the fuselage being built by the usual method of pinning each side down to an outline drawing. The rear portion is of monocoque form in principle only, not being covered with wood as in the prototype.

The rear formers are built up as in sketch (1) by glueing paper templates, previously prepared, to $\frac{1}{16}$ in. balsa in four separate pieces for each former.

The rear portion is built on to the finished cabin section by lining up on a baseboard, the central horizontal stringers acting as a datum line. This central stringer or longeron runs right through the fuselage and fits in slots DD on all the rear formers.

The engine cowling, which is reinforced with silk and doped, is of $\frac{1}{32}$ in. sheet balsa cemented on two transverse frames of $\frac{1}{16}$ in. 3-ply, the front one of which carries the solid balsa nose. A loose gear assembly fits into this solid nosepiece.

The motor drives a 10-in. propeller, and is of the 3-skein type, but 2 skeins driving a geared-up propeller will also be tried.

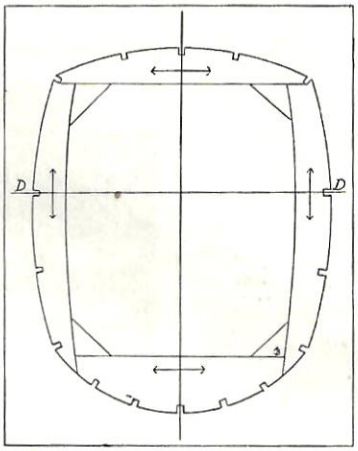


Fig. 1. A template for all rear formers.

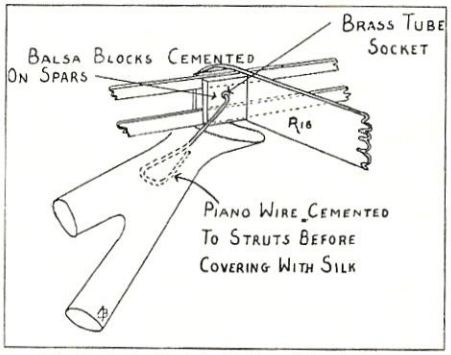
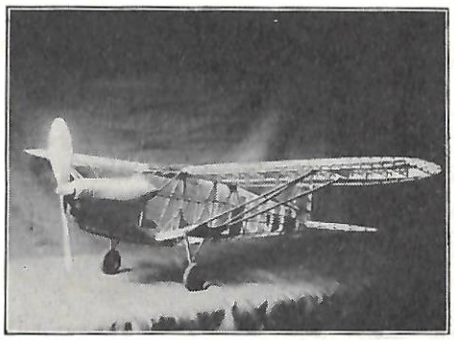


Fig. 2. A detail of the N-shaped bracing strut.

The wings, fin and tailplane are built up in much the same way as in non-scale models, except that ailerons, elevators, and rudder are represented; the balanced portions being formed by cutting V-shaped notches in the ribs along which $\frac{1}{32}$ in. balsa strips are cemented.

The fin and tailplane are built into the fuselage as in the prototype, and two removable panels in front of the tailplane give easy access to the rear motor hooks.



The partly completed Heston Phœnix described in this article.

Retractable Undercarriage

The undercart, which can be retracted by hand, is of piano wire construction, the struts being made to look like steel tubes with rubber covering taken from electric lighting wire. As the undercart is very "short-legged," the weight of the rubber is negligible, and has the advantage of allowing the piano wire to spring a little when the machine makes a landing.

The N-shaped wing bracing struts are built up from $\frac{1}{8}$ in. balsa covered with silk and doped. They are held in place on the wing stubs by small elastic bands, and have wire ends which spring into tubular sockets built into the wing spars. (See Fig. 2).

The model is to scale in all dimensions except those of the tail unit and propeller, which are proportionately larger, this concession being usual in competitions for flying scale models.

The weight complete but uncovered is $9\frac{1}{2}$ ozs. approximately, and the centre of gravity appears to be about right for flying without the addition of any ballast at the nose.

The writer will be glad to pass on any information to the assistance of any reader of THE AERO-MODELLER.

Air Mail Stamps

By A. L. E. BARRON

Here is an idea which should appeal to club members for the winter evenings. Why not start an Air Mail Stamp Section in your club?

THAT we live in a world of speed is a saying which has become a commonplace, but perhaps this is nowhere quite so much in evidence as in the carrying of mails.

From the earliest times messages have had to be sent from place to place, and it is interesting and sometimes amusing to compare the methods of yesterday with those of to-day.

When Penny Post Came

In 1840 a milestone in the history of the world was reached when Rowland Hill inaugurated the penny post in this country. This system of a *uniform* payment for the conveyance of mails based upon the *weight* carried, irrespective of distance and run under Government control, was the first of its kind.

In those days weather conditions were factors practically governing the speed with which mails could be dealt, but the development of the railway, followed by the establishment of fast steamships and motor-cars, soon altered all this.

Took a Back Seat

These methods of transport had to take a back seat when the aeroplane came along, for where it had previously taken as long as five months to send a letter to Australia, the Air Mail could reach the same destination in twelve to fourteen days.

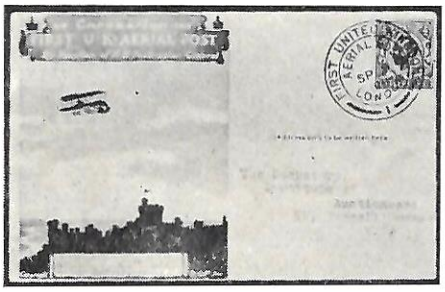
Postcards were often carried on the pioneer balloon flights, and later on the occasions of the early cross-country aeroplane flights. These, however, were not officially authorised, and the covers were only of interest as souvenirs. Of particular historical interest was the occasion when mail was flown out of Paris by balloon during the siege of 1870.

First English Air Mail

The first authorised air mail in this country was the Windsor-London flight (Sept. 9th, 1911), on the occasion of the Coronation of His Late Majesty King George V.

To Italy belongs the distinction of being the first country to issue a special stamp for air-borne mail. In 1917 two express stamps were over-printed for use on the experimental flights, Rome—Turin and Naples—Palermo.

Air-mail collectors can either treat each air-stamp issuing country on its own, or form a collection illustrating the evolution and progress of aviation



The first air mail flown in this country, September 9th, 1911.

generally and air mail in particular. In the writer's opinion the latter is by far the most interesting way of tackling the subject, and the reader who adopts this method will find both interest and instruction in looking up all the great events in aviation, and then finding the appropriate stamps to illustrate each. Mention of a few will indicate the tremendous scope of the subject. The following are chosen at random :—

Sir Charles Kingford-Smith (Australia).
Map of Transatlantic Flights (Newfoundland).
N.Z. Air Terminal at Bell Block (N.Z.).
Santos Dumont's Airship (Brazil).
North Pole Flight (Norway).
First Transatlantic Flights (Newfoundland.)
Graf Zeppelin (Liechtenstein).
First Transatlantic Air Mail (Newfoundland).
International Aviation Congress, Cairo (Egypt).
DO—X West-East Atlantic Crossing (Newfoundland).

Points Worth Watching

A most reliable and well-nigh indispensable book to possess is Stanley Gibbons' Air Mail Catalogue.

Covers carried on inaugural flights form a very valuable adjunct to air stamp collections, giving as they do the commencing date, and very often exact route, with postmarks of places of call (see first flight S.W. African covers); on no account should stamps be removed from such covers. Some readers may not be aware that Messrs. Stanley Gibbons sell special albums, consisting of strong transparent envelopes hinged in a binder,

Here is a cover which was carried on the first Trans-Tasmania flight in 1934.

in order that both sides of the cover may be examined without any trouble.

Progress of the Petrol Model

By CAPTAIN BOWDEN

The Author, who is a recognised authority on the Petrol Movement, gives his views on the growth of the power model in the past year

The Power Competition

ALTHOUGH 1936 has not produced anything very startling as regards the petrol model aeroplane, it has been noteworthy for the great increase in popularity of this type of model and for the general cleaning up in details of design.

In America, the petrol fan is everywhere, and literally hundreds of " gas " models attend a national meeting.

In this country the number of competitors for the Annual Power Competition is still not large, although considerable interest is always shown by the spectators.

The weather conditions on the day fixed for the 1936 Sir John Shelley Power Competition were so bad that it was decided to postpone the event until a later date, but nevertheless a few machines took the very difficult air before proceedings were cancelled, and it was noteworthy how stable were the two low-aspect ratio (large chord and small span) models of Mr. Brooks and Mr. Wilson.

This rather emphasises the fact that low-aspect ratio is suitable for windy weather, providing the wing-loading is kept light. I have noticed this before; the small span rights itself quicker, and the large chord helps towards good longitudinal stability and damps out any engine torque not dealt with by offset thrust-line.

The Other Side of the Picture

The actual competition, flown off a fortnight later, was won by E. Ross. The weather at this second meeting was also bad, and the high-aspect ratio small chord large span type of model won. Thus the other side of the picture was presented, and the beautiful slow gliding ability of the high aspect ratio was demonstrated.

That, however, is not my business in this article, and I leave the subject with the observation that the 1936 competition offers food for thought on this point, and that it can form an interesting subject of debate for one of the club winter evenings. But if you are one of the more normal high-aspect ratio fiends, do not be led away and condemn the low-aspect ratio for petrol model work out of hand, or you may have to eat your own words later.

There is one other point that I should like to mention in connection with the 1936 power competition. Once a date has been chosen, I consider it should be adhered to; owing to the power competition being centralised in the London district, competitors must arrange their affairs ahead. They come from all parts of England, and, as happened this year, many were unable to fit in the second date. The result of this is that the attendance is really not representative of the country as a whole. If a model is worthy of winning the premier power competition it should be able to compete in any weather barring a gale; the conditions are the same for all.

Before I leave the subject of competitions in 1936 the Americans are reported to be considering coming over here in force next year to compete with the British petrol fans. The Society of Model Aeronautical Engineers has, therefore, decided to accept my offer to present an International Power Trophy. Let us hope that this may produce entries from at least France and Germany as well, for the petrol movement is now steadily gaining way on the Continent.

Increase in Private Building

However, it is not really the competitions that form the backbone of model petrol activity. This year is particularly noteworthy for the vastly increased number of people who have either built or are now building petrol models. Others are feeling their way on the subject before launching out into the adventure of making the first model, and there seem to be two main difficulties in the minds of most.

One is the possible cost of the model, and the other the damage it may suffer, with the resulting financial loss. Well, let me say that the cost can be fairly easily computed now that there are so many excellent and well-tried commercial engines on the market, complete with propeller, tank, coil and condenser.

With regard to the damage problem I feel that reasonable luck and skill should overcome this if the constructor will only incorporate certain safety features, such as have been discussed in this journal; these are detachable engine mountings, detachable cantilever wings, and tail-planes all held on by elastic or springs; also suitable undercarriages. The model should be either a copy of a well-known successful design or the new constructor must understand the correct principles of stability.

To copy a full-sized machine, hoping for success, will merely spell failure.

On the other side of the picture I have seen quite a number of very successful new petrol models during this past year; these have required hardly any modifications and are giving their owners a great deal of fun.

The beauty of the petrol model is the vast scope for further experiment. This acts as a tonic, and once a successful model has been produced the constructor becomes very intrigued with the possibilities afforded by the petrol model.

Many people have begun building a petrol model at the local club, and are now seized with private ambition, whilst other members who have watched the efforts feel that they must have a try, with the net result that during 1936 the petrol idea has become firmly embedded.

Seasoned Model Constructors Busy

Another interesting aspect of this petrol business in 1936 is the increasing number of really experienced and seasoned old model hands that have turned their efforts to the construction of a model. For years many of these individuals have either quietly looked on with varying interest, or in a few cases have actually crabbed the whole affair. But it has been getting them in 1936!

Make This Flying Model

● Full Instructions ● are Given ● Below

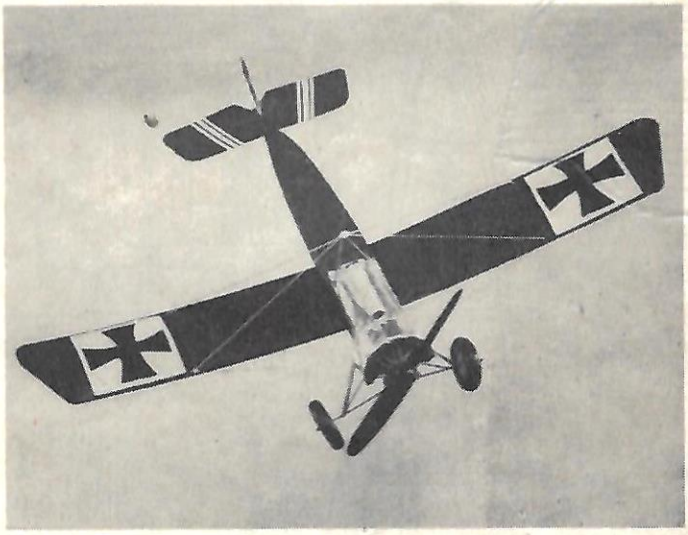


Photo *By courtesy of Assoc. Scottish Newspapers Ltd.*

Immelmann's Fokker D.1

By WILLIAM CLARKE HALL Jnr.

BEGIN the construction of the fuselage by placing waxed paper over the drawing to protect it. Place the top and bottom longerons on plan, using straight pins to keep in place. We advise you to build two sides together, one on top of the other for exactness.

When fuselage sides are dry lift off plan and wind thread lightly round the tail.

Commence putting in top and bottom fuselage cross pieces, winding thread round fuselage at each section until cement is set.

You can now cut out B, C and D, and cement in place covering where indicated with smooth paper. The rearhook should be shaped from 20 s.w. gauge wire. Proceed to cover whole fuselage with black tissue, with the exception of the panel under the rearhook and cockpit. Attach cross insignia.

Build engine as shown in plans carefully and fit nose button. The whole unit should be painted a dull black and cemented to bulkhead B. Cut out two pieces of A from $\frac{1}{16}$ in. sheet balsa to form a two-ply cowl front. Cement a band of stiff paper round the cowl and round forward end with fine sandpaper to a finish. Now dope and lacquer white or yellow.

The machine gun is carefully shaped from a piece of soft balsa and attached to fuselage with bamboo pins. Dope and lacquer black and white. Attach windscreen and build kingpost and tailskid from $\frac{1}{32}$ in. square bamboo. *Note:* Small hook on top of kingpost for bracing wires.

The undercarriage should be built from $\frac{1}{32}$ in. square bamboo. The ends joining the fuselage must be carefully pointed and embedded into longerons. The wheels can now be made up and attached to undercarriage. Dope and lacquer undercarriage yellow and black.

The tailplane and rudder can now be traced, and cut from a sheet of soft $\frac{1}{64}$ in. balsa sheet. Cover rudder on each side with white tissue and add insignia. The tailplane should be covered on topside only with black tissue. Cement both units to fuselage where indicated.

The Fokker D.1 was one of the first really effective machines to appear in the Great War. It was used by the great German Ace—Immelmann, after whom the well-known stunt turn is known, and was one of the first machines to be fitted with a synchronised gun firing through the propeller.

The model, if constructed carefully, will give an exceedingly good performance. One of the test models was fitted with an imitation revolving engine, but we advise the builder to make a fixed engine, as the flywheel motion of the other engine is harmful to the flying performance.

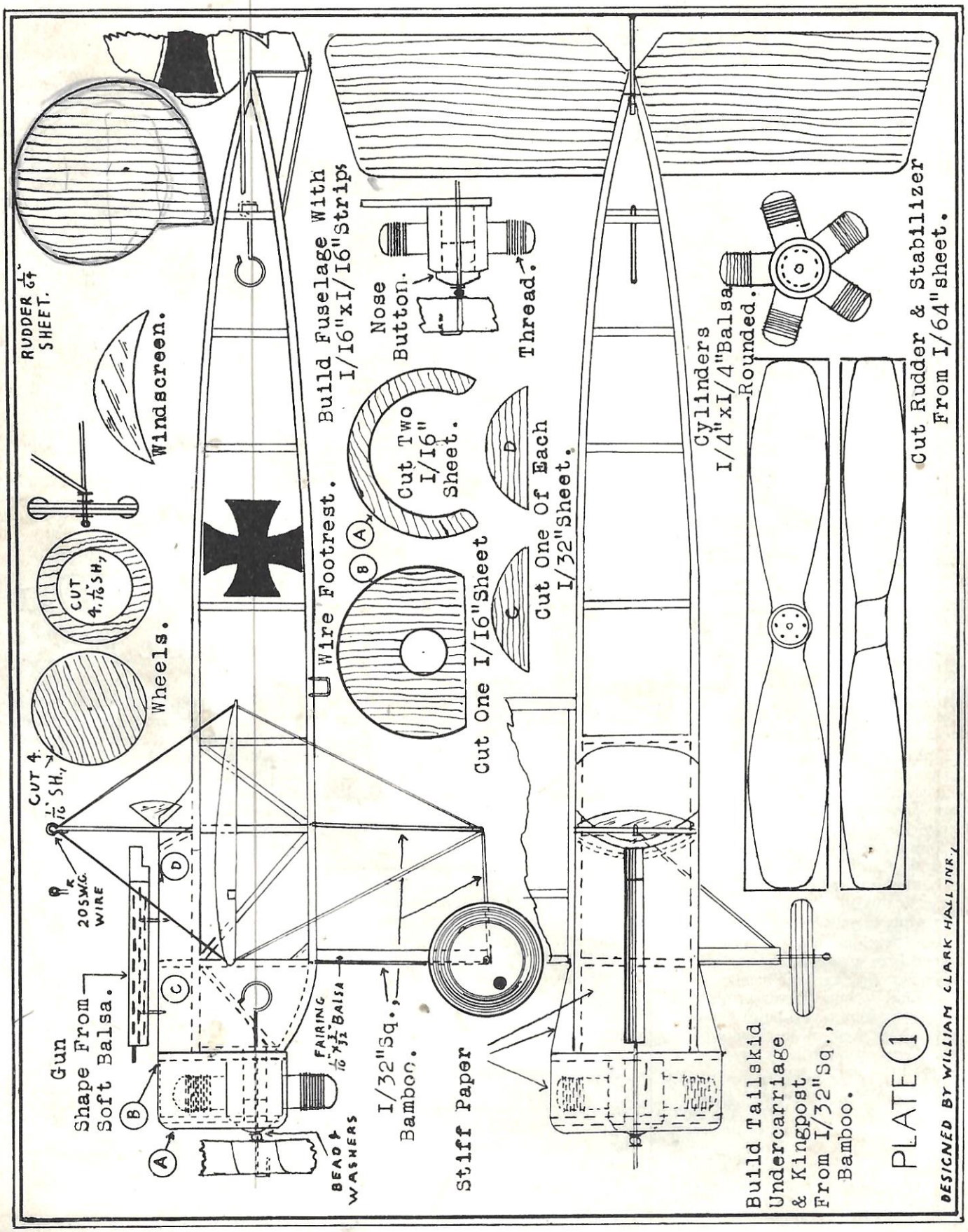
The construction of the wings is quite straightforward. The mainspars and tips should be pinned in place and the ribs traced and cut from $\frac{1}{32}$ in. balsa, with the exception of the root ribs, which are cut from $\frac{1}{16}$ in. sheet balsa. Cover with black tissue all but the panels where insignia is placed, as these panels are covered with white tissue.

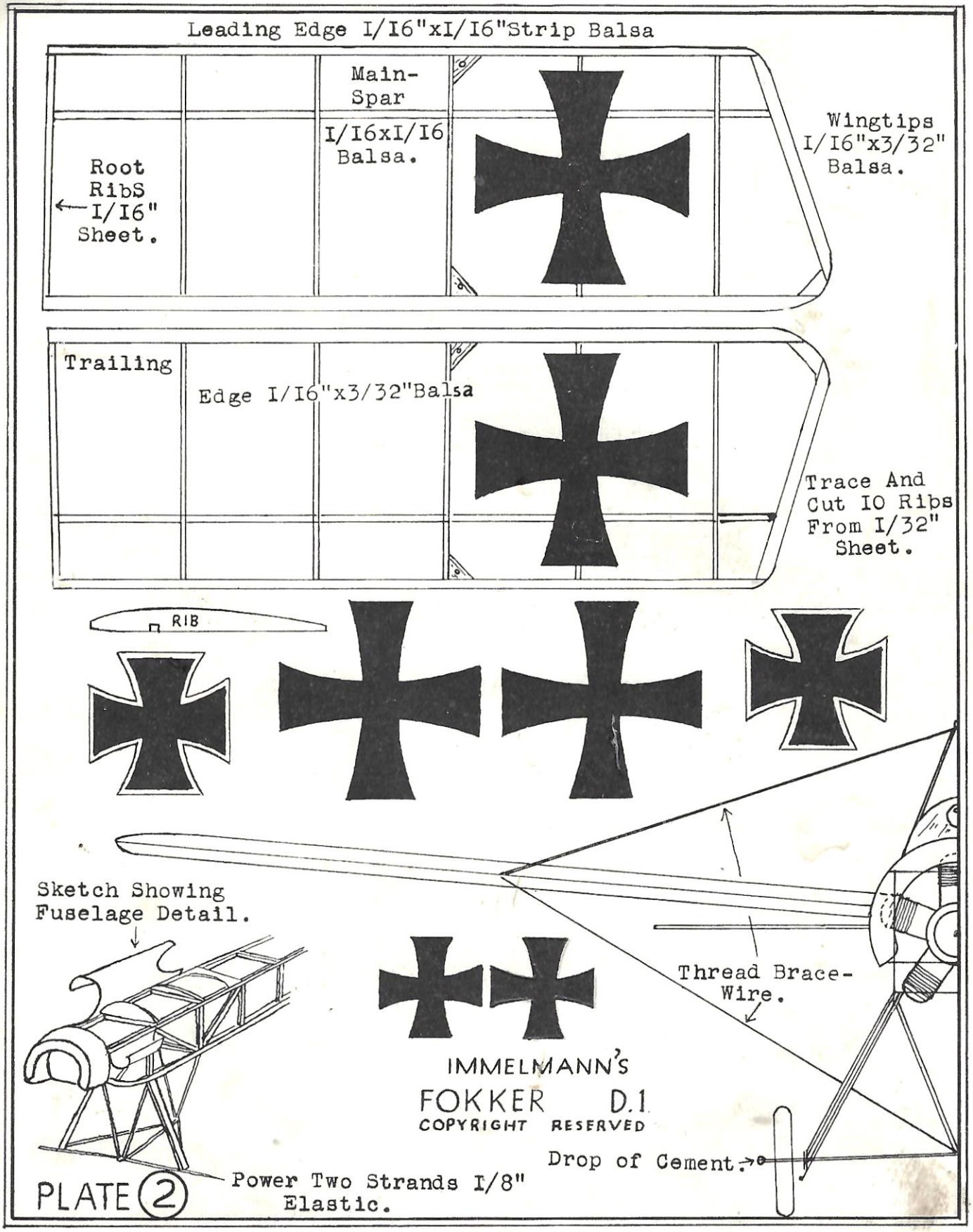
Wings must be carefully cemented to fuselage, and the bracing wires threaded and cemented through.

Carve the propeller from a medium piece of balsa, and sand, stain and dope to a mahogany finish. Attach hook and nose button. Note to use two small washers and bead which act as bearings. Make a loop of $\frac{1}{8}$ in. elastic and thread through fuselage to rear hook.

Glide model, and if it dives bend up elevator slightly. However, if the model stalls bend down slightly, or add a small weight to the nose.

When the machine glides evenly put a touch of oil in the propeller bearings and give 100 turns.


RUDDER 1/64" SHEET.
Windscreen.
CUT 4. 1/16 SH.
Wheels.
CUT 4. 1/16 SH.
20 SWG. WIRE
Gun Shape From Soft Balsa.
BEAD & WASHERS
FAIRING 1/16"x1"x1/32" Balsa
I/32"Sq. Bamboo.
Stiff Paper
Wire Footrest.
Build Fuselage With I/16"xI/16"Strips
Nose Button.
Thread.
Cut Two I/16" Sheet.
Cut One I/16"Sheet
Cut One Of Each I/32"Sheet.
Cylinders I/4"xI/4"Balsa Rounded.
Cut Rudder & Stabilizer From I/64"sheet.
Build Tailskid Undercarriage & Kingpost From I/32"Sq., Bamboo.
PLATE 1
DESIGNED BY WILLIAM CLARK HALL JNR.


Leading Edge I/I6"xI/I6"Strip Balsa
Main-
Spar
I/I6xI/I6
Balsa.
Root
RibS
←I/I6"
Sheet.
Wingtips
I/I6"x3/32"
Balsa.
Trailing
Edge I/I6"x3/32"Balsa
Trace And
Cut IO Ribs
From I/32"
Sheet.
RIB
Sketch Showing
Fuselage Detail.
Thread Brace-
Wire.
IMMELMANN'S
FOKKER D.1
COPYRIGHT RESERVED
Drop of Cement.
Power Two Strands I/8"
Elastic.
PLATE (2)

Air Personalities of To-day

No. 2— Amy Johnson

In his Second Article, William Courtenay gives us a little pen picture of England's Pioneer Airwoman.

AMY Johnson, C.B.E., B.A., stands in a class by herself as the world's greatest airwoman. Other women who have followed her have performed no less gallant feats, but none have quite the same romantic and heroic background, and, at the least, all of them are imitators.

In 1928 there were few women learning to fly, and none who dared believe a girl could fly alone to Australia, or take a navigator's ticket, or even a ground engineer's license, much less than a navigator's ticket, on the same terms as a man.

Amy believed all these things were possible, and proved it by achievement.

When she first learned to fly at the London Aeroplane Club at the old Stag Lane Aerodrome, in 1928, she was without the means which have made it possible for so many other women to take up aviation.

A city secretary, she had to put by from her pay envelope, but such was her enthusiasm and belief in herself that she used to rise at 5.0 a.m. for an hour's flying before being at her office at 9 a.m. In the evenings in the summer she was either back at the aerodrome or studying engines.

In order to prove that a girl could do what men had done, she set out on her lone flight to Australia on May 5th, 1930, and 19 days later, on Empire Day, the world was thrilled at the story of her success. Although many put this flight down to a combination of luck and pluck, she proved in the following year that she had knowledge and a flair for flying, by completing a perilous journey from London to Tokio and back.

In 1932 she set up two records for solo flights to the Cape and back; these she held for four years, until Flight-Lieut. Tommy Rose beat her, when she at once flew to the Cape and back again, re-winning those precious, hard-earned achievements, which she still holds.

She has also flown the Atlantic with her husband, Jim Mollison, and is at home on all types of machines, even the fastest. She took part in the King's Cup Air Race this year in a B.A. "Eagle," and has flown all over England in one, and has been very charmed with the comfort and speed of this machine.

In the six years of her flying career, Amy has garnered some 3,000 hours on her log book, and, as pilot, navigator and engineer, she can claim to be the equal of any of our best pilots.

Only those few who have flown for thousands of miles alone, and who have had to take decisions, know the courage required to sustain them, and the great experience which these flights provide.

Amy has plans for the Atlantic Air Race next May, and no entrant will prepare their plans so carefully in every detail as England's pioneer airwoman.

Amy Johnson caught by the camera when examining her B.A. Eagle.

Readers' Views

Best Paper

SIR,

I expect you get many letters from readers telling you what a good paper THE AERO-MODELLER is, and so mine won't contain anything new for you as far as this opinion is concerned!

But I would like to say that yours is the most scientific paper apart from those which deal with full-sized aircraft, and although I read these every week, I always look forward to THE AERO-MODELLER, because when all is said and done, it is the best paper for modellers. Carry on!

(*Signed*) A. WEBSYETER.

SIR,

Please give your readers another issue like the last. I think it was magnificent, and as long as I can still buy THE AERO-MODELLER there will be no other paper for me.

(*Signed*) S. E. WHITE.

SIR,

I feel that I must write and thank you for such an excellent paper as THE AERO-MODELLER. I was shown a copy by one of my friends and have since placed a regular order with my newsagent.

I am very keen to read the "On Trial" articles, and look forward to them each month.

(*Signed*) R. GRANT.

SIR,—In replying to Mr. Hugh V. W. Elwell's query in the December issue of THE AERO-MODELLER, may I first point out that I did not say there was a *constant* airflow, but a *tendency* to flow?

I think that Mr. Elwell has perhaps missed the significance of some later words in the same paragraph which he quotes from *The Aeroplane*, where it is stated that the inward or outward flow (depending on the wing shape) was observed by Irving and Gray to be *near the trailing edges*.

I was describing a "first principle" which applies to airfoils in general. But obviously at the wing roots there cannot be oblique airflow due to the presence of the fuselage.

Suppose the leading edge to be swept backwards. The centre of the wing is in effect "meeting the air first," and thus there is a tendency for the whole mass of air to flow outwards to the tips. This *helps* the airflow under the wing (*already* with a tendency to flow outwards) and counteracts the airflow above the wing, which is tending to flow inwards. The result is a *greater* tendency to flow outwards, at the trailing edges, where the trailing vortices are forming.

I was referring to two separate airflows across the whole chord of the wing, whereas Messrs. Irving and Gray, as stated in the report, were referring to the (resultant) airflow near the trailing edge, and commenting on how its direction could be influenced by the plan form of the wing.

(*Signed*) D. A. RUSSELL.

Round the Trade

Messrs. Comet Aero Supplies, of Barwell, Leicester, who are the sole concessionaires for the blue prints of the A.M. Cyclonic petrol-driven model aeroplane, which was fully described in the December issue of this magazine, have informed us that orders for these blue prints are being dealt with in strict rotation, and have asked us to make this known to our readers.

Messrs. Lines Bros. Ltd. have now gone into the solid scale-model market, and some very beautiful examples of their miniature machines, which are all reproduced from the full-size drawings of the actual machines on a scale of six feet to the inch, are to be seen at *Messrs. Hamleys'* store in Regent Street.

The parts for making these most realistic models are supplied in kit sets, and are cast in Bakelite. The actual castings are of such excellence that the most minute detail can be clearly seen, even to a rivet head.

A general arrangement drawing and full instructions for making, together with all the necessary transfers, paints, squadron markings, cement, etc., is supplied with every kit. Exhaust pipes, tailwheels, machine guns (swivelling), engine-cowlings, bombs, etc., are also included.

Known as the Frog Penguin Series, these solid scale kits are undoubtedly very fine value for the money. The first three kits to be issued are the Hawker "Fury," Gloster "Gladiator," and the Blackburn "Shark." The first two are priced at 3s., and the third at 5s. Ready-built models can also be supplied.

Model Aircraft Stores have recently placed on the market their new airwheels, retailing at 4s. 6d. per pair.

We have tested a pair of these wheels and find that they are really excellent value for the money, the weight of the 4½ in. diameter variety being only 5 ozs. This is much less than any other wheel of similar size on the market.

The hub bores can be supplied in two sizes, ⅛ or $\frac{3}{16}$ in., and in the event of anyone requiring an ultra light weight, the hub can be made in hard balsa and bushed with aluminium. In the standard job, the hub is of beechwood, and requires no bushing, just a spot of oil.

In the event of the tyre being damaged or cut, a new cover can be fitted at a cost of two shillings. A full range of these B.B. Airwheels can be obtained from the manufacturers, Messrs. Model Aircraft Stores, in sizes ranging from 1½ to 4½ ins.

Messrs. Hamleys have an excellent display of model aeroplanes on view at their Regent Street store.

Among the many constructional kits, covering all types of machine, we noticed a new glider outfit with the various parts ready for assembly.

Messrs. Hamleys, who have tested this machine out, find that it flies remarkably well, and predict a strong sale for this particular line.

Books for Modellers

On another page, our Test Pilot pays a compliment to the *New Model Aeroplane Manual* (Percival Marshall and Co. Ltd.), declaring that every aero-modeller should have a copy of this very useful work.

The *Manual*, which has been entirely revised by Messrs. L. H. Sparey and C. A. Rippon, contains 284 pages packed with invaluable information, with more than 200 drawings and illustrations, besides full particulars of six model aeroplanes. The *New Model Aeroplane Manual* can be obtained from the Barron Dean Publishing Co. Ltd., 24-6 Dean Street, Fetter Lane, E.C.4. Price 3s. 4d. post free.

Model Aeroplanes and Airships (Messrs. George Newnes Ltd.), is a new book by F. J. Camm, which contains special chapters on gliders, helicopters, wing-flapping models, kites and full size gliding, as well as a host of hints and tips on making many accessories, such as the construction of wheels, airscrews, gears, apparatus for winding elastic, dopes, etc., etc.

Another interesting chapter is one that gives full instructions on flying a model aeroplane.

The Model Aircraft Book (Messrs. George Newnes Ltd.), is also another text book, by F. J. Camm, and is described by the author as a second course in advanced model aircraft instruction.

This book contains a deal of information which will make instant appeal to the petrol enthusiast, one chapter being devoted to power units for model aircraft.

Capt. Bowden's petrol-driven biplane, the Bowden Mouse, also has a chapter to itself, and is fully described and illustrated.

A third book by the same author, entitled *Power Driven Aircraft Model* (Messrs. George Newnes Ltd.), deals extensively with the various forms of power suitable for model aeroplanes.

Rubber motors are not entirely neglected, but Mr. Camm points very clearly their many disadvantages, before dealing with other forms of propulsion.

In other chapters compressed air models are reviewed, though, as the author shows us, this type of machine has the same disadvantage as the rubber-driven model in that the torque is greatest at the moment of launching. At the same time they lend themselves to a better design of model, something better in fact that the freak fuselage models designed according to the ridiculous fuselage formulæ.

19 BERKELEY STREET
LONDON : W.1

PRESIDENT:
HIS GRACE THE DUKE OF SUTHERLAND, K.T.

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TELEPHONE:
MAYFAIR 4032

AIR LEAGUE OF THE BRITISH EMPIRE

(FOUNDED 1909)

(JUNIOR SECTION)

MY DEAR LEAGUERS,

Quite recently there has been a lot of excitement in the newspapers about Lord Nuffield's difficulties with the Air Ministry, and although I do not want to go into the merits of that discussion it does remind me that Lord Nuffield's career is something which must be of some interest to every young member.

We have here the case of a young man who was a mechanic in a small cycle shop, but decided after comparatively short experience that he must branch off on his own, and so, with a capital of Five Pounds, which he had saved out of his very small wages, he started a little cycle shop all of his own. By hard work and continued saving he got some more money together and started off with motor-cycles, and then comes the great idea that motor-cars need not be the great big clumsy things as they were before the war, but could be small, light, and comparatively cheap.

Motor Car Methods for Aero Engines

You can imagine how difficult it was for Mr. Morris to collect enough money to start making a few motor-cars, and how pleased he was to find that they were selling in greater numbers than he could produce. All seemed set for a prosperous career when along comes the war, and all ideas of making and selling motor-cars had to be abandoned.

After four years of war he starts all over again, undismayed by his experiences. You must not think that he was a magician who could see the future, because quite the opposite was the case. He had the pluck to put in hand a number of cars which would give him a sale of, I think, two hundred in the year, and he was startled to find that the demand was as high as five thousand. From that effort grew his great business and the great fortune which he has distributed so liberally.

It is rather strange to find a man of Lord Nuffield's abilities in the motor-car world not making a success of aero engines. Why he ever embarked on the manufacture of aero engines is a little obscure, but there is little doubt that he thought that, by using motor-car production methods, he could make an aero engine which was light and good and much cheaper than aero engines which were then being produced. But he does not seem to have quite understood that the market for small aero engines was rather limited. When I had the pleasure of visiting him, perhaps four years or more ago, he asked me how many engines I thought he could sell in a year, and when he pressed me to reply I said I thought he would be lucky if, in three years time he found he was selling five hundred a year, because there were not a great number of light aeroplanes being produced, and many of the manufacturers, like De Havillands and Siddeleys, have their own engines for their own aeroplanes. He was quite horrified at this remark of mine, and said that ten a week is what he called a tool-room job; it was not production at all. But, in fact, of course, he did not sell nearly so many.

Shoemaker Must Stick to His Last

From this we can learn one other lesson, that although it is quite right for people, when they are young, without many responsibilities, to change their trade in favour of something more promising, just as Lord Nuffield changed from bicycles to motor-cycles, so later on there comes a time when, in the words of the old proverb, "the shoemaker must stick to his last." Whether Lord Nuffield's factory is used in the making of aero engines or not is beside the point, because if the emergency had not arisen it is fairly clear that the factory would not for some years have had a very large output.

When We All Start Flying

We are a long way at present from the days of "popular" aviation; that is, getting the ordinary man into the air to fly his own machine. There are many reasons for this, but they all come back to the difficulty of "flying," because flying takes too long to learn, and after one has learned one requires a great deal of experience before it is safe to take other people about. Supposing that one of you wanted to buy a motor-car and found that you had to spend perhaps fifteen hours spread over a couple of months driving round and round a motor track, and then realized that you could not go travelling out with your friends as passengers across country until you had put in another 10,000 miles of driving to gain experience. If this was the case we should not sell many motor-cars. But that is the position to-day in the air. Once we get an aeroplane which can be learned in a week-end, and which is so simple to fly that the pilot is unlikely to kill himself or his passengers after he has had a few hours' experience on it, then we shall arrive at the stage when a lot of people will want to fly for business or pleasure, just like they use motor-cars. Then when a lot of people want to learn to fly, the prices of aeroplanes will come down enormously, because the only thing which keeps the prices of aeroplanes so high at the moment is the fact that very few are built. If only five hundred Austin Seven cars were built in a year, they might certainly cost one thousand pounds each

at least; there is, in fact, much more mechanism in an Austin Seven car than there is in an aeroplane.

If this great encouragement to aviation gathers way, that is to say, the cheap and easy to fly aeroplanes appear, so the flying grounds all over the country will increase in numbers, and we shall have the ground organization for flying just as we have the roads developing as motor traffic increaess. I do not think that these amateur pilots will fly in clouds and navigate when they cannot see the ground. It would be terribly dangerous at present, at least, if the clouds were crowded with small machines. At first flying will be carried out in reasonable weather, and we can expect our private-owner aeroplane to fly quite slowly as well as quite fast, so that in moderately fine weather the pilot can fly along without overheating his engine, and under full control at, perhaps, 35 m.p.h., and be reasonably safe—as safe as he is on the roads—while flying low.

Making Navigation Safe and Simple

We shall want aerial sign-posts at that stage, because just as motorists require signposts on the roads, so the airman must have signs to guide him and not leave him entirely to navigate from a map. Some people suggest that the names of towns should be painted on the roofs of railway stations and on the tops of gasometers, and this, of course, is a step in the right direction, but when the airman is far afield it is not really good enough to merely paint the names of the towns, because he travels quickly in the air, and he has got to find the town upon his map to make certain where he is. I can see this country marked out into squares, rather like the squares on the football field that the B.B.C. uses when broadcasting the results of matches, so that all the towns in square one were numbered " 1," and so on. Under these conditions directly an airman saw that he was in square " 2 " (or it may be " B2," if we used both letters and numbers), he would know perfectly well where he was within twenty miles or so, and he would know that if he wanted to go west he might have to go to, say, " D7." If the country was marked out like this it would be quite easy to find one's way, and even if the pilot had got lost in the clouds for some time, when he came out he would know exactly where he was in a minimum of time.

Aviation Training in the Schools

Well, we have not yet got the aeroplanes we want and we have not got the aerial signposts, but we shall get on towards them gradually. When I was over at the Paris Aero Show the other day I was very interested to see how many light aeroplanes were being built with 40—50 h.p. engines. The reason for this, I am sure, is not that there are many more people in France than England who want to buy these machines, but because the Government there is starting a very big scheme to train young people in the schools in aviation. Between the ages of nine and fourteen they are to make models in school hours; from fourteen to seventeen they are to glide; and from seventeen onwards they are to have very cheap flying, more or less at Government's expense, on these very light aeroplanes, automatically going on to ordinary Moth types and further. I am afraid we cannot do quite all this at home, because wholesale training like this appeals more to countries with conscript armies than it does to our people, but I do hope that some day the Air League will be able to persuade the Government to assist us to train great numbers of young people on these light aeroplanes, so that we can have an immense band of people without much money who have all been bitten with the spirit of flying. They will help us to become air-minded as a country, and it will also give us a valuable reserve of people who have got over at least the first hurdle in case there should come an emergency like war. If a scheme of this kind does come I hope it will be run through and by the Air League, and the stronger we are and the more members we have, the more likely it is that such a scheme can be put through. Therefore, once more I ask you to try to see whether you cannot increase our membership.

Yours truly,
J. A. CHAMIER,
Air-Commodore, Secretary-General.

Verses by Leonard Taylor

TO LAND NO MORE

Is this the end: the sudden stall,
The crumpled wings . . . and still?
Must be, the irrepressible
Lie grounded on that hill?

No more to climb the trackless way
With swift vibrating motion,
Or roam the restless hills that sway
Across the unseen ocean?

Or land again? To land no more . . .
The Life that left those ashes
On tranquil wings will live and soar
Though all creation crashes.

EVERY INCONVENIENCE

The country there
Was wild and bare;
Now thousands call the place their home.
Red villas bloom
And chimneys loom,
Since someone built an aerodrome.

STATESMEN AND AIRMEN

Vomited after reading a politician's memoirs.

Both sat in high places
And fought like the blazes
The knaves and the aces; but likeness there ends.
The aces while fighting
Had less time for writing,
And fought with their foes and not with their friends.

AIR LEAGUER NOTES

Air Leaguer Flight and Squadron News.

No. 1 (*Clare, Suffolk*) *Air Leaguer Flight.*—Air Leaguer I. F. H. French (J.613) has succeeded Air Leaguer M. Kinchin Smith (J.1863), now Squadron Leader of No. 3 (East Anglia) Air Leaguer Squadron, as Flight Leader of this Flight, which is attached to No. 3 Squadron.

No. 2 (*Mickleover, Derby*) *Air Leaguer Flight.*—Air Leaguer I. W. Moore (J. 1799), the Flight Leader of this Flight, is the Honorary Secretary and Treasurer of the Derby Technical College Model Aero and Gliding Club, and an exhibition, at which it is hoped to be able to make use of the lantern slides available for loan to Air Leaguers, is to be held in January in an effort to obtain more members. A stand will be given over ta No. 2 Flight.

No. 3 (*Hull, Yorks.*) *Air Leaguer Flight.*—Air Leaguer J. W. Downie (J. 2012) has been added to the list of Flight Members, and this Flight, under the Flight Leadership of Air Leaguer R. H. Glenwright (J. 1814), recently held a very successful exhibition which lasted for three days. They are now attempting to convert their club-room into a gas-proof chamber. The Flight Leader has decorated the walls of the wards of a Hull Hospital for Christmas, with the help of literature given by the Air League.

No. 6 (*Leamington College*) *Air Leaguer Flight.*—Associate Air Leaguer R. J. Spriggs has been registered as a Flight Member, and the total strength of this Flight is now 23. A model aeroplane competition has been held, and prizes were presented by the Head to Associate Air Leaguer W. A. Gilmore, for models of the Gloster "Gladiator," and D. H. "Comet," and to Associate Air Leaguer E. N. Wright, for a model of the Hawker "Hart." A Skybird Club has been formed in the school, and will work in co-operation with the Air Leaguer Flight. The Flight Leader of this Flight, Air Leaguer R. A. Butler (J. 1835), is in touch with Nos. 5 (Erdington, Birmingham) and 16 (Birmingham) Air Leaguer Flights, and these two flights will in future co-operate with No. 6 Flight, and news concerning them will be published in "Flight Ahead," the magazine of No. 6 Flight. The Flight Leader has given a lantern lecture on "Civil Aviation," with the help of lantern slides borrowed from the Air League, and the December, 1936, issue of "Flight Ahead" has been prepared and published.

No. 7 (*S.E. London*) *Air Leaguer Flight.*—Air Leaguer D. Morris (J. 2444) has been added to the list of Flight Members, and the members of this Flight, under the Flight Leadership of Air Leaguer D. Terry (J. 1379) are preparing a flight magazine. A student at a school attended by one of the members of this Flight is an officer in the Royal Air Force Reserve, and consequently the airmindedness of the boys attending this particular school is increasing rapidly.

No. 12 (*Rochdale, Lancs.*) *Air Leaguer Flight.* — Air Leaguer G. C. Howarth, the Flight Leader of this Flight, is also the Secretary of the Rochdale Model Aero Club, which has amalgamated with the Rochdale Gliding Club, and now has the use of their flying fields, sheds and headquarters, and a two-week display in a Rochdale sports house has advanced their cause in the town. The Flight Leader is building a flying scale model of Birkett Air Services' Miles "Merlin," which he saw at Plymouth Airport, where he took a free flight which he won in an Air Leaguer Photographic Competition whilst on holiday last summer, when, apart from Plymouth Airport, he also visited Filton (Bristol) Aerodrome, Haldon (Teignmouth) Aerodrome, Mount Batten (Plymouth) Seaplane Station, and Weston-super-Mare Airport.

1. This photograph, taken by Air Leaguer H. Hurst (J. 1384), of Retford, Notts., of the Memorial to Captain Albert Ball, V.C., wins for him a free flight, which will be given him by the Sheffield Aero Club, at Nether Thorpe Aerodrome.

2. This flies! Which sounds absurd, because the photograph is of the Percival "Mew Gull" piloted by Captain S. S. Halse in the recent Portsmouth—Johannesburg Air Race. The photograph was taken by Air Leaguer E. J. Bennett (J. 2134), of Southampton, Hants., for whom it wins a free flight, which will be given him by the Hampshire Aeroplane Club at Southampton Airport.

No. 16 (*Birmingham*) *Air Leaguer Flight.*—This flight, under the Flight Leadership of Air Leaguer G. H. Eaton (J. 1840), has added Associate Air Leaguer P. Wright to its list of Flight Members.

No. 24 (*Middlesex*) *Air Leaguer Flight.*—The Flight Leader of this Flight, Air Leaguer W. R. Essex (J. 2246) informs us that this Flight has decided to name themselves "The Falcons."

No. 31 (*Clare, Suffolk*) *Air Leaguer Flight.*—This flight will function, under the Flight Leadership of Air Leaguer Miss L. Kinchin Smith (J. 2583), during holiday time only. Associate Air Leaguer Miss F. Waskett has been added to the list of flight members of this Flight.

No. 39 (*All Hallows School, Norfolk*) *Air Leaguer Flight.*—This Flight has been formed by Air Leaguer Miss L. Kinchin Smith (J. 2583), Flight Leader of No. 31 (Clare, Suffolk) Air Leaguer Flight, and will be operated by her during term time. Associate Air Leaguer Miss M. Crozier, also of No. 31 (Clare, Suffolk) Air Leaguer Flight, is a Flight Member of this Flight.

The Air Leaguer Photographic Competition.

The last day for receiving entries for this competition is December 31st, 1936. After the competition has closed a special prize of a trial flying lesson will be awarded to the entrant of the best photograph received during the time the competition has been open.

The 1937 Skybird League Rally

The rally in conection with the 1937 Skybird League Competitions will be held in the Jehangir Hall, Imperial Institute, London, S.W.7, on April 2nd, 1937. It is hoped that important aviation personages will judge the models and attend the rally, at which the prizes in the competition for the Air League Challenge Shield, run in connection with these competitions, will be awarded.

Change of Address.

The address of the Model Transport Co. Ltd. has been changed to 83 Sunbeam Road, Park Royal, London, N.W.10.

Aeronautical Engineering.

The following organisations offer

courses of training in aeronautical engineering :—

Air Service Training Ltd., Hamble, Hants., and Ansty, Walsgrave-on-Sowe, Warwickshire.

Blackburn's Flying School, Brough, East Yorks.

Surrey Flying Services Ltd., Airport of London, Croydon, Surrey.

Airworthiness Ltd., Gravesend Airport, Gravesend, Kent.

The College of Aeronautical Engineering, Chelsea, London, S.W.3.

The De Havilland Aircraft Co., Aeronautical Technical School, Hatfield Aerodrome, Hatfield, Herts.

Loughborough College, Leicestershire.

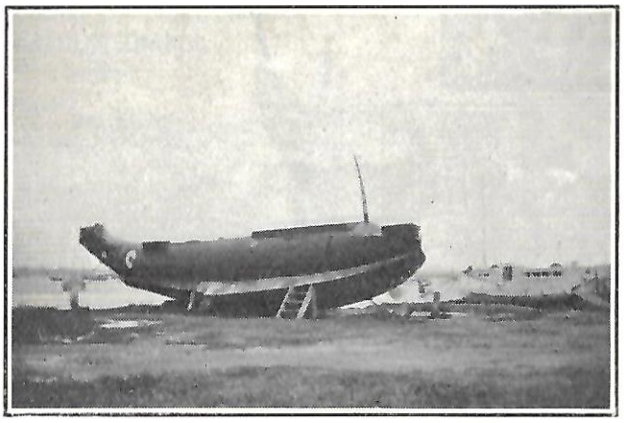
In addition the following offer correspondence courses on the subject :—

The Technological Institute of Great Britain (Department of Aeronautics), 37 Temple Bar House, Fleet Street, London, E.C.4.

The British Institute of Engineering Technology, 308 Shakespeare House, 17-19 Stratford Place, London, W.1.

International Correspondence Schools Ltd., Dept. 182, International Building, Kingsway, London, W.C.2.

Enquiry from Air Leaguer R. Dunlop (J. 602), Glasgow.



3. And this, aided and abetted by wings, tail-plane and engines, used to fly, and probably was the pride of a flying boat squadron. Now it has been converted into a small house and adorns the East Coast near Felixstowe. The entrant, Air Leaguer W. Hawkes (J. 2791), of Stevenage, Herts., wins a free flight, which he will take at Hatfield Aerodrome.

News from Bangor.

A very interesting letter has been received from Air Leaguer A. J. Greene (J. 2408), of Bangor, N. Wales. He starts off by saying some very flattering things concerning THE AERO-MODELLER and the Air League generally, and then goes on to say that he is particularly interested in the Air Leaguer Photographic Competition, and that he would like to have a shot at it, but he is so far away from an aerodrome that if he happened to win a flight he wouldn't know what to do with it. Also, he says, being so far away from an aerodrome prevents him from seeing anything of interest on Empire Air Day. However, he did manage to see both C. W. A. Scott's and the late T. Campbell Black's air circuses when they gave displays within ten miles of his home, and he has also had his first flight in an old Avro 504K from the sands at Rhyl. Accompanying him on this trip was his father, who had not flown since the War.

Airmindedness at a Discount.

" In our district," writes Air Leaguer G. Allwright (J. 2719) of Highbury, London, N.5, " Aeronautics are not studied and even partly despised, but I fully realise that to foster airmindedness in this small area lies entirely in my power, so I will do my best." G.A. asks us to recommend to other Air Leaguers George E. Rochester's book, " The Flying Spy," and he also wishes to know how the height was registered on Squadron Leader Swain's recent height record-breaking attempt. On an attempt of this sort a sealed barograph would be carried, which registers the height by marking a fine line on either a smoked surface or on aluminium, and after the attempt had been made this barograph would be left untouched for twenty-four hours, and the reading on it would then be interpreted by calibration of the instrument under an air pump, and the actual height attained would be determined by the barometric pressure.

The Airman's Badge.

Details of the tests which it is necessary for members of the Boy Scouts Association to pass in order to obtain the Airman's Badge of that Association, have been sent to us by Air Leaguer H. W. F. Russell (J. 1380). of Peckham, London, S.E.15, and as they should be a good test of the aeronautical knowledge of all airminded people of both sexes, they are reproduced herewith :

1. Know how to be of practical help to a pilot by being able to indicate wind direction for landing, and assist in taxying and tethering an aeroplane.

   Use chocks and improvise them. Understand the importance of keeping people away from an aeroplane when stationary or moving.

   Show what constitutes a reasonable landing ground, and name three possible landing grounds in the neighbourhood. Also know the compass direction and names of principal aerodromes within 50 miles of troop headquarters.
2. From observation have recorded the passing of a number of aeroplanes, stating time seen, direction in which flying, whether service or civil, number of engines, monoplane or biplane, and, in the case of civil machines, rough lettering.
3. Have a knowledge of the theory of flight and aero engines.
4. Make a working model of either an aeroplane which will fly at least twenty-five yards, a kite which will fly for at least one hour; or a glider weighing not less than 1 lb., which will glide at least 100 yards.

Agony Column.

Air Leaguer R. W. Elliott (J. 1862) of 18 Nesta Road, Woodford Green, Essex, would be grateful to any person who would inform him where he could obtain plans of the Gloster " Gamecock."

Air Leaguer R. H. Glenwright (J. 1814) of 11a Woodhouse Street, Hedon Road, Hull, Yorks , is anxious to exchange the following articles for scale model aeroplanes, preferably Skybirds : A thirty shilling chemistry set; a cinematograph with films; and a miscellaneous selection of balsa, birch, tissue, cement, rubber, wheels and aeroplane photographs. Further details can be had on application to Air Leaguer Glenwright.

Air Leaguer D. A. Harper (J. 1407) of 3 Charlecote Grove, Upper Sydenham, S.E.26, the Flight Leader of No. 30 (Sydenham, S.E. London) Air Leaguer Flight, would like to hear from unattached Air Leaguers in his district with a view to increasing the strength of his flight.

The Air Leaguer Scrapbook Competition.

A list of the prizewinners in this competition will appear in the next issue of THE AERO-MODELLER, and the many Leaguers who entered should make sure of their copy in order to see if they were the winners of a free flight.

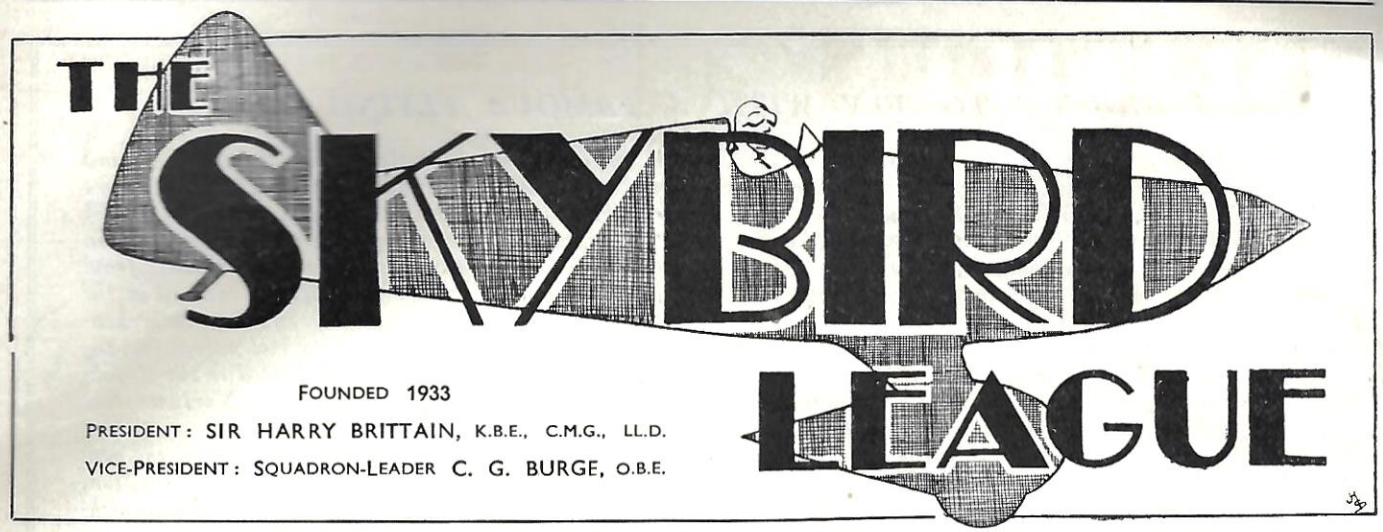
The Air League Pocket Diary for 1937.

The Air League Diary would make an excellent Christmas box to your airminded friend, and if you send your order in early one will be despatched to reach you before Christmas. The price is 1s. 8d., or for a much better quality cover, 2s. 6d. each, post free. Cash should be sent with order to the Junior Section, Air League of the British Empire, 19 Berkeley Street, London, W.1.

Types of Aircraft.

Handley Page 52.—Mid-wing day-and-night bomber monoplane. Two Bristol " Pegasus " nine-cylinder radial air-cooled engines driving variable pitch airscrews. Crew of four. The Handley Page 52 is of metal construction, and has specially tapered Handley Page slotted wings and a retractable undercarriage. No particulars of dimensions, weights or performance are available for publication. Enquiries from Air Leaguers F. K. Bescoby (J. 1405), Retford, Notts., P. P. Kerrigan (J. 1925), Southampton, Hants., and R. D. Reedie (J. 2083), Retford, Notts.

Bellanca " Flash."—Two-seat low-wing racing monoplane. One 700 h.p. Pratt and Witney " Twin Wasp Junior," two-row fourteen-cylinder supercharged radial air-cooled engine driving a two-position Hamilton airscrew. Retractable undercarriage. Maximum speed about 260 m.p.h. Range over 3,000 miles. No further details available. Enquiries from Air Leaguers R. Wood (J. 1937), Sutton Coldfield, Warwickshire; and M. Dimant (J. 2488), Finchley, London, N.3.



Headquarters: 3 ALDERMANBURY AVENUE, LONDON, E.C.2

Overseas: Stuttaford & Co. Ltd., Johannesburg, SOUTH AFRICA
Central Aircraft Co., Melbourne, AUSTRALIA

Gossip from Headquarters

More About the Rally

In our December notes we were able to make a preliminary announcement to the effect that the 1937 Rally has been definitely fixed for the afternoon of April 2nd, the rendezvous again being the Jehangir Hall at the Imperial Institute, South Kensington.

All Skyleaguers are hereby once again cordially welcomed to this event, and there will be no charge for admission. Club and Associate Membership badges should, of course, be worn.

Last year, as many will remember, no less than 42 awards were presented to members, including silver cups, shields, autographed books, free flights and cash prizes. This early notification should give all Skyleaguers ample time in which to enter a model in one of the many competitions, and a record entry is confidently expected this year.

Preliminary details of the models eligible for entry were given in the November issue, and this information is repeated elsewhere in this issue for the benefit of intending competitors.

An Innovation

A new development which will, we know, please all Skybird modellers, is to be introduced in connection with all new Skybird models, commencing with the Vega "Gull," which will be the first Coronation Year addition to our series. In all future sets, a full-size scale drawing, giving front and side elevation and plan will be included. Many Skyleaguers have suggested it, and we are pleased to be able to conform to their wishes.

The Skybird League Prize Fund

Yet another firm has come forward with a contribution to the Skybird League Prize Fund. Airports Ltd., proprietors of Gatwick Airport, have very kindly presented two complete models, value 65s. each, of the Skybird Gatwick Airport, to be competed for in next year's Annual Rally.

The models include the Martello Tower, ground sheet, station complete, including the bridge and the large hangar. In making this award, Messrs. Airports Ltd. write :—

> "This is a small gesture of our appreciation of the trouble you have taken in the preparation of the models, and offered with every good wish for the continued success of the Skybird League."

A Secret "Gang"—and Its Discovery!

In a very amusing letter a clergyman near Keighley describes how he overheard a Patrol of his Scouts talking quietly among themselves about "Skybirds." "One said, 'We swear to belong to the Skybird gang.' I at once concluded that my boys were going wayward! Was I producing a gang of hooligans? After a search through various papers I found my fears dispelled, for the innocents were actually pretending to form what you had already built up, e.g. a league of air-minded people. I write, therefore, for information with a view to encouraging this 'gang' of secret airmen! The Patrol Leader is aeroplane-mad I know, for I have already seen two of his models." "Gangsters" of this kind are worth encouraging, and we should like to see the entire Patrol swarming into the League!

THE SKYBIRD LEAGUE PRIZE FUND

We are pleased to acknowledge the following donations from:

Squadron-Leader WARNE-BROWNE ..	**£2 2s. 0d.**
J.S.C.	**£1 1s. 0d.**

A CHANCE TO FLY WITH A FAMOUS FLYING CLUB

Captain Duncan Davis, managing director of the Brooklands School of Flying, has written to District Commodore R. B. Borra, of Weybridge, wishing him luck in connection with the ambitious local Skybird competition he is organising, and offering three free flights as additional awards (two ten shilling flights and one five shilling flight).

We congratulate District Commodore Borra on his initiative, and, at the same time, take this opportunity of putting on record our keen appreciation of the generous practical encouragement given by Captain Duncan Davis to the Skybird League.

Practically every young Skyleaguer wants to "go up," and no prize is appreciated so highly as a flying award. But Captain Davis has gone further, and has invited the competitors to make up a party and visit Brooklands.

Here is an example other flying clubs would do well to follow. The young flying enthusiast of to-day is the pupil of to-morrow.

Brooklands was one of the cradles of private flying in this country. The Brooklands School of Flying and the Brooklands Flying Club, both of which are run by Brooklands Aviation Ltd., constitute one of the largest and best equipped civil flying schools in Great Britain. Every stage of instruction, from elementary dual up to blind flying is covered in the air, and the ground courses are equally comprehensive, embracing all phases up to instruction for the difficult navigator's licences. Affiliated to the Brooklands Flying Club are the clubs at Northampton, Lympne and Shoreham.

Brooklands Aviation Ltd. also run one of the new R.A.F. civil flying schools at Sywell, Northampton. The various Brooklands "Moths" are distinguishable by their red and black fuselages and silver wings and tail.

District Commodore Borra is aiming at a hundred entrants, and is expecting bumper entries from the clubs at Leatherhead, Epsom, Sutton, Kingston and Twickenham—so what about writing now for that form, if you haven't already done so?

NEWS FROM DISTRICT COMMODORES

Cambridge.

District Commodore D. E. S. Charles tells us that he has been flying with the University R.A.F. Squadron at Duxford on "Tutors," though, apparently, there are often other types of machine on the tarmac. "A 'Shark' turned up the other day," writes D.C. "This has anodically treated metal cowlings, resulting in a highly polished grey appearance, quite different from any silver colour. The long chord motor cowling was also grey. While flying, an 'Anson' went over us about 300 ft. farther up and appeared to be painted light blue on top as far as I could see. . . . The Cambridge Aero Club is already formed, but the registration forms will not be completed for a fortnight or so, as we are negotiating for a club room. Since my arrival here standards of modelling have gone up! Most people are now trying ribbing after my own method, but I haven't seen any results yet. Incidentally, the C.U.A.S. 'Tutors' are silver or orange-yellow, with a broad light blue stripe down the fabric-covered portion of the fuselage, with a dark blue and a red line down the centre of this; the whole is broken in two places: (1) for the R.A.F. cockades and (2) for the Cambridge coat of arms, a red shield with white cross which comes underneath the rear cockpit. Most of the machines retain the tail stripes and have tail wheels; the bottom of the 'Tutor's' fuselage is rounded. I am fitting a retracting undercart to my 'Battle' and an electric motor to my Skybird scale Empire 'Short.'" D.C. is yet another Commodore to congratulate us on the "Heinkel."

Birmingham and District.

As mentioned in the December issue of THE AERO-MODELLER, District Commodore G. H. Eaton, in co-operation with the local Skybird agent, has been busy arranging a display which he now reports has been a great success. The display included some forty models, with a Gatwick Airport and plenty of accessories. As a result of this display District Commodore Eaton has at least two new members in prospect. District Commodore Eaton's area now takes in Coventry, Warwick, Walsall, Stafford, Kenilworth and Leamington, and modellers in these districts are advised to get into touch with him. We have since heard from G.H.E. that both Skyleaguer Butler, leader of the Kenilworth Club, and Skyleaguer Baker, of Club No. 416, have promised their full support in all future local activities.

Norway.

* * *

Norway's exceedingly able and enthusiastic District Commodore, F. C. Moldenhauer, Junior, reports great activity in readiness for the fourth annual Skybird rally, from which we gather that the enthusiasts of Club No. 155 will put up another jolly good show next April! D. C. Moldenhauer tells us that he managed to arrange a visit to H.M.S. "Frobisher," where he and his fellow enthusiasts spent a very interesting day, being shown the engines, guns, navigation instruments and "everything we wanted to see." He adds that they also had a good look at the Avro "Seatutor" K. 2389, which is used for training cadets. We feel that the many Skybird enthusiasts of Norway are fortunate in their District Commodore.

eston.

We hear from District Commodore Barnwell, of Alveston, that he is still trying to wake up his district and now intends starting on Associate Members. He is finding it pretty sticky, and we hope that for his next competition (particulars of which will be given in a later issue) he will get more support. If we may be permitted to remind Skyleaguers, our District Commodores are a jolly hard-working lot of chaps, who are all out for the League, and it is up to all League members in their districts, whether Club or Associate, to rally round them and support any competitions or other events they may organise. By the way, District Commodore Barnwell is one of the many to write and congratulate us on the "Heinkel," and he thinks that while monoplanes present just as much scope for the experienced modeller, they are far more encouraging to the novice. Of course, the modern trend is all in the direction of monoplanes—mostly of the low-winged type—and we try to keep our productions well abreast of the times, though we quite realise that the older types of machine make a very strong appeal to quite a large section of our modellers.

(*Continued on page* 65).

THE SKYBIRD LEAGUE PRIZE FUND

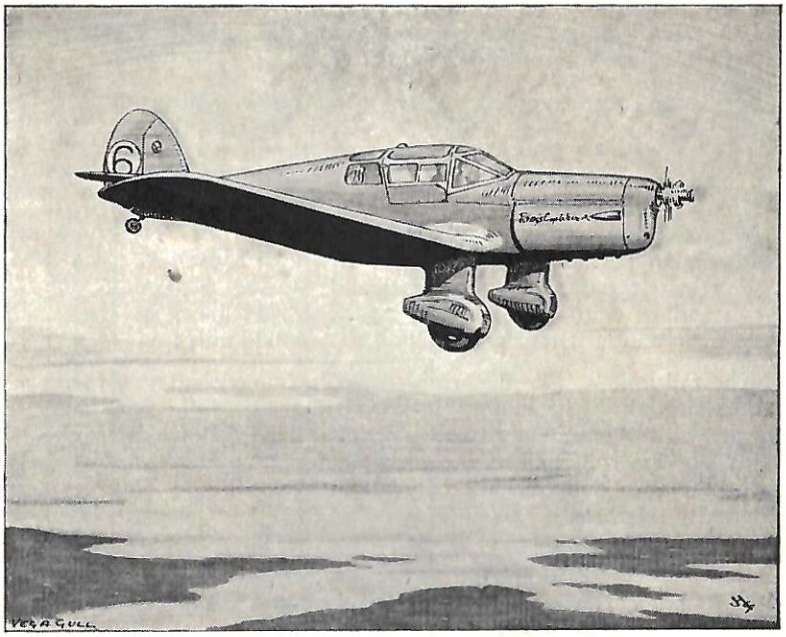
We are pleased to acknowledge the following donation:

J. F. FELLS, Esq., £2 2s. 0d.

THE PERCIVAL "VEGA GULL"

By

JAMES HAY STEVENS



PROBABLY the most popular light aeroplane of the moment, the "Vega Gull," is the youngest member of that attractive family—the "Gulls" of Luton. Since her coming-out party at Gravesend in the last few days of 1935 she has made a name for herself amongst the faster set by winning the King's Cup and the Schlesinger Trophy.

The ordinary "Gull" has been very popular for some years now, and it was only to be expected that the "Vega," with an extra seat, would prove attractive to the wealthier private owner, but, both on its basic merits and by its racing successes, the type has proved more of a best-seller than was expected. Undoubtedly, for those who can afford the first cost and the slightly heavier running costs of the 200 h.p. motor, the "Vega Gull" is an ideal proposition, giving great comfort, speed and reliability.

In design and construction the new machine is very like the "Gull." It is slightly larger, the wing area has been increased, the cabin is wider and the track is two feet greater. A pure cantilever undercarriage leg has been evolved—this, incidentally, is incorporated in the 1936 "Gull." All the latest ideas are embodied, such as landing flaps and a glass-like finish to the paintwork, to reduce skin friction.

Fabric Covered Wings

The wing structure is according to Percival formula. Two built-up box spars are placed fairly close together, and braced to each other by wooden slats for the torsion and drag loads. The ribs are of normal spruce construction. The whole wing is fabric-covered and doped with Titanine "Satin Finish." Mr. Edgar Percival has evolved a type of split trailing-edge flap of his own design. These flaps extend between the ailerons but do not pass beneath the fuselage. They are manually operated from a lever in the cabin; this lever is spring balanced so that a pull of only ten pounds is needed to open them, even at 90 m.p.h. The ailerons are of a high aspect-ratio and are inset from the wing-tips. In order to allow the wings to fold, the portions of the trailing-edge between the ailerons and the centre-section hinge upwards. The outer sections of the wing fold round the rear spar. Special interlocking pins secure the fittings on the front spar; these pins are so arranged that the top one cannot be pushed home until the lower one is fast. As an added precaution, the fairing strip over the joint cannot be replaced until the top pin is locked. Two twenty-gallon petrol tanks are fitted between the spars in the wing, just outside the centre-section. A three-gallon oil tank is mounted inside the port leading-edge of the centre-section, with an air space round it for cooling purposes.

The fuselage, like that of the majority of light aeroplanes, is a plywood box. Light spruce longerons and formers are used for stiffening the structure—there is no cross bracing to encumber the cabin space. The cabin is roomy and very comfortably fitted up. The front seats are of the bucket type, the rear one being of the single variety, with arm-rests. The pilot's seat is normally on the port side, but provision is made for the installation of dual controls if desired. The instrument board is unusually well arranged, and is "eyeable" as well as practical. All windows are splinterless, and they are well arranged to afford the occupants a good view. A door is provided on each side, which, with the aid of foot-holes in the wing, allows for very easy access to the cabin.

A 200-h.p. Motor

The standard power unit is a 200 h.p. de Havilland "Gipsy Six." The motor is fixed to a welded steel tube mounting and is cowled with standard detachable aluminium panels. A Fairey metal airscrew is standard, but the Ratier or D.H.-Hamilton C.P. airscrew may be used. In the Johannesburg Race Scott and Guthrie's "Vega Gull" had a D.H. airscrew, while Hughesden and Llewellyn's had a Ratier. The winning aeroplane was fitted with the new Series II "Gipsy Six." This is a development of the standard motor, arranged to use C.P. airscrews. With the aid of a high compression ratio and high octane fuel, it is possible to maintain greater power up to considerable heights; here the C.P. airscrew comes into operation and maintains, by means of its coarse pitch, the revs. within the maximum permissible limit. By the proper combination of these features the machine is able to cruise at top speed (170 m.p.h.) when flying at 7,000 ft. The figures for the Series II "Gipsy Six" are as follow:

Rated output: 205 b.h.p. at 2,400 r.p.m.
Fuel consumption: 11½ gals./hr. at 2,100 r.p.m.
16 ,, 2,400 ,,

The standard "Vega Gull," with the ordinary "Gipsy Six" and a Fairey airscrew, has the following performance figures and weights:

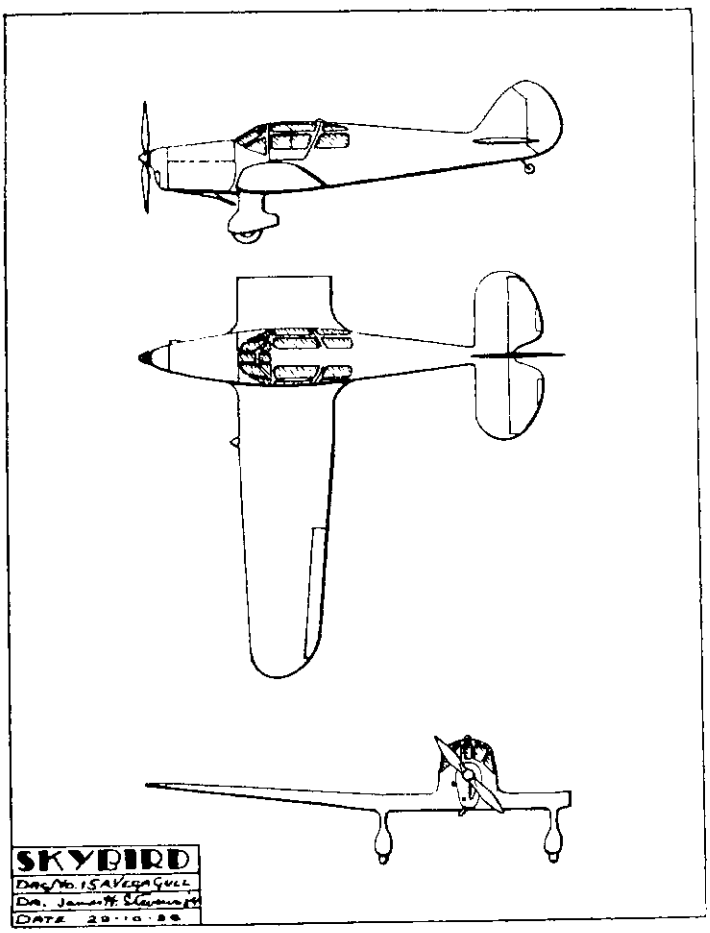
Maximum speed (sea level)	170 m.p.h.
Cruising speed	150 m.p.h.
Landing speed	44 m.p.h.
Landing run (full load)	125 yards
Take-off run (full load)	225 yards
Tare weight	1,660 lbs.
Maximum permissible weight ...	2,875 lbs.
Pay load (apart from pilot, fuel and standard equipment)	717 lbs.
Range (standard tanks, 40 gals.) ...	630 miles

The tail unit is, like the wings, wooden-framed and fabric-covered. The rudder is horn-balanced, while the elevator is unbalanced the latter has inset tips. Tabs are incorporated in the elevator for trimming. As is the case with the ailerons, all the controls are internally operated.

A Cantilever Compression Leg

The undercarriage units are of Percival design and construction. The wheel is carried in a fork, whose upper end incorporates a splined shaft. This shaft runs up and down in a tube attached to the front spar. The landing loads are absorbed by three steel springs inside this tube. An oil damper (the cylinder attached to the compression tube, the piston to the shaft) is mounted in front of the shock-absorber unit, to damp the recoil of the springs. The fittings attaching the compression leg to the spar are arranged to take side loads, while a strut to the rear spar takes drag loads. Dunlop low-pressure tyre is used in conjunction with Bendix brake. The wheel and struts are covered with a very neat light metal fairing. A Dunlop pneumatic tail wheel is fitted in a Percival-designed fork, with steel spring shock-absorbing. The wheel is fully castoring but incorporates a self-centring device, so that it will be in streamline when in the air.

The scale drawing shows the standard "Vega Gull." The sketch depicts the King's Cup and Jo'burg winner (G-AEKE), with its stub exhausts and D.H. airscrew.



Half scale (full size scale blue print supplied with each set).

The Ratier airscrew has a spinner but the de Havilland type has not. Mrs. Markham's trans-Atlantic machine had a Ratier airscrew. The standard "Vega Gull" is supplied with full equipment and Fairey airscrew for £1,550. The standard colour scheme is a turquoise blue fuselage and silver wings, with the registration in reversed colours.

FOURTH ANNUAL RALLY OF THE SKYBIRD LEAGUE

All models must be forwarded in the special container obtainable from headquarters. Applicants for containers must state full name, address, age, club or Associate Membership number, and should clearly indicate the section in which the model is entered.

There will be a charge of one shilling to cover the cost of sending each container to applicants, and postal order or stamps to this value should be forwarded, together with the box lid from the Skybird kit of parts used to construct the model, when applying for the container.

The following models are eligible for entry in all competitions:—

B.A. Eagle.	Fairey Battle.
Fairey Hendon.	Bristol Fighter.
Blackburn Shark.	
Henkel H.E. 70A.	Vega Gull.

and any subsequent model issued.

"Skybird League" Club Competition.

This competition is for the Challenge Cup and a cup for the runner-up, competed for annually.

Conditions: One model to be submitted by each club. The model may be made by any single member, or by the united efforts of several members of the club.

"Skybird League" Open Competition.

Section A.

This competition is open to every individual member of the League, Club or Associate, who has not previously won an award in any Skybird competition.

Section B.

This competition is open only to those members of the League who have previously won an award in any Skybird competition.

In both of these sections there will be two classes -Under 14 years and 14 years and over.

Competition for Lady Modellers.

Open to any lady who is either a Club or Associate Member of the Skybird League. There is no age limit.

The Air League Shield.
(Junior Section).

Presented by the Air League of the British Empire.

This trophy may be competed for by all members of the Skybird League under the age of 16, who are also members of the Air League of the British Empire (Junior Section).

"The Aero-Modeller" Shield.

Presented by the publishers of The Aero-Modeller.

Open to all nunebers of either sex of the age of 16 or over.

We hope to give particulars of the various awards in the above sections in our next issue.

NEWS FROM DISTRICT COMMODORES

(*Continued from page* 62).

Forest Row.

From our old friend, District Commodore Bruce Stack, who is as untiring as ever in his work for Skybirds, comes an interesting report of a display of "Skybirds" he held at the Women's Institute Handicraft Exhibition, which was a great success. One of the results was an enquiry from one aeroplane enthusiast, who called on B.S., explaining that he would like to join the Skybird League. B.S. took him out to see his workshop and models and let him have the B.A. "Eagle" set to begin on straight away. The new recruit went home in triumph, hugging the B.A. "Eagle," and we are now expecting to be able to register a sixth member for B.S.'s club at any moment! But to get back to the display. "I was given quite a good position," he writes, "just by the entrance on the right-hand side; there was plenty of room for my floor, which took up about 15 square feet. The arrangement of the aerodrome was as follows:—Looking from the front and starting from the left, first came a large Heston hangar, then there was a gap in which was placed the anti-aircraft gun and crew; next came my own construction of a small inn, then the radio station, and after this another gap (filled with a searchlight) before the entrance gates. Now came the Customs office, while next door to this was my own construction of a workshop hangar. Out near the middle of the aerodrome and opposite the inn and in front of the workshop hangar was the Gatwick Tower. . . . Three machines — the 'Electra,' 'Rapide' and Bolton Paul mail plane P.64 were drawn up by the Gatwick Tower, next to their respective gangways, being loaded with passengers and mails, etc. Other 'planes were scattered around the 'drome, the service type being by the Heston hangar and the civil by the workshop hangar. Of course, petrol pumps were near a hangar, while three mobile refuelling units, the six-wheeler, the four-wheeler lorry and the little three-wheeler tender were busy attending to different aircraft. Visitors were having tea either outside the inn or on the tea balcony of the Gatwick Tower. . . . From the start the Skybird 'drome had continual admirers. Incidentally, at the corner of the lay-out was a pile of specmen copies of THE AERO-MODELLER—about thirty altogether—and when the time came to clear up there were only three left." This must have been a splendid show, and we congratulate B.S. very heartily on his effort. By the way, our readers will join with us in wishing him a speedy return to health—unfortunately he has had to go into Guy's again, but we hope only for a short time. In the meanwhile "A" Flight-Leader Hugh Workman will take charge of Club No. 453. (Since writing the above we hear that the prospective member returned with his completed model of the B.A. Eagle, having made a very good job of it, and we have now duly registered him in the League as the sixth member of B.S.'s Club No. 453).

East Anglia.

District Commodore M. Kinchin Smith reports good progress in the preparations for his big model competition to be held in January, and District Commodores Grocott, Allies, Saunders and Charles have been helping in the good work by distributing entry forms, etc. "The actual rally," writes M.K.S., "will probably take place in Ipswich on January 13th. We hope to persuade the local agent to show winning models in his window a week beforehand, and the rally should prove an admirable way of getting in touch with people and forming a club. Meanwhile Great Yarmouth, Norwich and Cambridge are all well on the way to having clubs formed. . . . H. T. Weller Poley, leader of Club No. 325, reports that Major-General the Rt. Hon. Sir Frederick Sykes, a name well enough known to need no introduction, has consented to become their patron. Moreover, he has presented two handsome silver challenge cups for competition. A great capture! And we congratulate very heartily all who were responsible for bringing it off!

Since writing the foregoing M.K.S. has visited us at headquarters, when he outlined his ambitious plans for the New Year, and we, on our part, were able to gauge the extent of his enthusiasm at first hand. He informs us that he hopes to visit Ipswich, Clare and Cambridge on January 12th, 15th and 19th respectively to show films dealing with aeronautical subjects to the clubs there. He adds that he will be very glad to lecture (with or without slides) to any London clubs on Saturday nights during term time. He does not wish to make any charge for these lectures, but, naturally, would expect the clubs concerned to defray his out-of-pocket expenses for fares.

M.K.S. has just sent in his third monthly report as District Commodore for East Anglia, and the amount of work he has done is prodigious. The report is packed with interesting information, from which we must mention the following: -V. W. Jones, of Norwich hopes to form a Skybird club there very shortly. He has also arranged for an exhibition of his models at Stevenon's, of Swann Lane, which, as M.K.S. points out, should prove a great stimulus in getting his club going. M.K.S.'s own club (the Clare and District M.A.C.) is, as was to be expected, making great progress.

Mr. Charles Guthrie, winner, with Mr. C. W. A. Scott, of the South African Air Race, has become a member, and the club's Christmas programme is already out and includes, among other events, a cinema show of aeronautical films. We learn that the Skybird model, presented quarterly to the club in East Anglia making the most progress, has been awarded to Club No. 325 for the period October -December, 1936. The club, it is announced, has presented this model to the organisers of the East Anglian competition—a very worthy gesture.

South Woodford.

Further details are now to hand from District Commodore E. M. Allies, of South Woodford, about the big Skybird competition and exhibition he has been busily organising. "The competition is to be divided into three sections. Section A is open to any modeller who has *not* obtained a Certificate of Merit, and Section B is open to those who have. In the competition I held in the summer I had three sections for modellers of different ages; this, however, did not separate the very good and moderately good modellers, but by the new method the fairly good modellers will all have a chance of winning a prize. Moreover, there will be no walk-over for the very good modellers, and these will have to fight among themselves for the awards in their section. Section C is for models made with unshaped materials. In the last competition I got over thirty entries, and since I have got in touch with more clubs since then I think there is a good chance of getting fifty. . . . I have now got into touch with twenty clubs . . . and with the aid of D. C. Saunders and any other Commodores you may appoint I hope to get in touch with eleven more. . . . For some time I have been dreaming of getting all these clubs to combine in an inter-club competition, and R. H. Jacobs (secretary of the Woodford Model Aero Club) has now helped me by agreeing to arrange the details of the competition and to hold it at the W.M.A.C. club room." The first of these inter-club competitions was held at the end of October and was evidently a great success, the first prize (a cup presented by Mr. H. W. Gibbons) going to the W.M.A.C. and the second prize of a painting set to Club No. 22, while Club No. 313 carried off the third prize—a Swan sailplane. The models were judged by Mr. Collinson, of T.M.A.C., and the L.D.M.A.C., who gave a short talk on flying models. Club No. 313 have agreed to hold the second inter-club competition at Christmas, and we should like to urge all Skyleaguers in this district to support such a very excellent idea -inter-club meetings and competitions are among the very finest ways of arousing and keeping alive enthusiasm, and such opportunities of "getting together" are helpful to every body alike, whether a novice or an experienced modeller. So let's hear that entries for the next competition have beaten all records!

HAPPY ENDINGS

"Yours till a D.H. 'Hound' catches a Fairey 'Fox' or a Blackburn 'Beagle' kills a Vickers 'Vixen.'"

—R. A. BUTLER, Club No. 469.

"Yours till the 'Shark' bites the 'Hart' out of a 'Seagull' in its 'Fury.'"

J. G. REEVES, of Teddington.

SKYBIRD LEAGUE NEWS

NEW CLUBS

Since the last issue of THE AERO-MODELLER, the following new clubs have been registered in the Skybird League :—

Acton, W.3	...	476	Roundhay, Leeds 8	...	474
Hampstead	...	473	Wigton, Cumberland	...	475
Kingsbury, N.W.9	...	477	Whitley Bay	...	472

Owing to the necessity of preparing this list for the printer some time in advance, the latest registrations are not shown.

Another Club Magazine.

Yet another Skybird club now runs its own magazine—this time it is *Flight Ahead*, the monthly magazine of Club No. 469 (leader, R. A. Butler), some of whose activities we refer to elsewhere in this issue under the heading "Getting things moving." *Flight Ahead* is a very attractively produced little magazine, and contains some interesting notes and "News in Brief," in addition to an article on "Empire" flying boats. Congratulations, Mr. Editor. We hope your circulation figures are encouraging!

Change of Leadership at Shrivenham.

We hear from D. Spratt that he has taken over the leadership of Club No. 432 from D. Willmott, who is suffering from "school examinations" and consequent lack of spare time! The club, which has not been in being very long, seems to be making good progress, and M. Smith, a new member with 35 Skybirds to his credit, recently held a display at the local agents and thereby succeeded in roping in another new member. They hope to stage another display at Christmas, as they possess, between them, over a hundred machines.

From Military to Civil.

Skyleaguer H. G. Inchbold, of Bromley, reports a complete change-over from R.A.F. 'planes to civil. "My R.A.F. aerodrome, equipment and 'planes," he writes, have been dissolved; I have kept the large workshop hangar, and together with the few club buildings I have had for ages, I have again started on "civil." H.G.I. promises us a photograph of his new lay-out later on, and if space permits we hope to be able to reproduce it in THE AERO-MODELLER—it sounds a good piece of work from his description.

Successful Scarborough Competition.

The Skybird competition organised by Club 399 (Scarborough)—leader, P. Alderson—was a great success. The first prize, a Fairey "Battle," was presented by P.A.'s father for competition between flights and members, and the result was :—

1st. Binns.
2nd. Nicholds.
3rd. Dunford.

As is so often the case when the workmanship has reached a high standard, Mr. Alderson found judging quite a difficult business, especially as between second and third places. No. 399 is doing splendidly—they mustered seventeen entries for the competition and have to report two new members. Good old Yorkshire!

Carrying on the Good Work in Jersey.

Our very good friend and staunch supporter, M. Cabeldu, of Club No. 287 (Jersey), is still working hard to bring in recruits to the League, and he now reports that his cousin, R. G. Day, and a friend (who, between them, have made seven Skybirds) are on the list of "probables"! It seems to us that M.C. is the M.K.S. of the Channel Islands!

Here, There, and Everywhere.

Another Skyleaguer who has been getting about and seeing interesting things is Associate Member P. Clift, of Edgware, and he tells us that during his holidays he visited the North Devon aerodrome, near Barnstaple, several times. From this 'drome a "Scion" operates a service to Lundy, carrying passengers and mail, and "it issues its own quaint air-mail stamps," adds P.C. Having painful recollections of trying to plunge ashore at Lundy from a small boat, we should imagine that the air service is extremely popular. P.C. has also been seeing the sights at Croydon, Reading, Heston, Hanworth and Broxbourne, and he writes: "At this last I was wandering round behind one of the hangars, when I suddenly pulled up short and stared. No, it was not a mirage, but a Bristol "Fighter"! Having recovered from the shock, I strolled over to it. It bore civil markings, and as far as I could see it was in good condition, except for one rather crumpled wing-tip. I gave the airscrew a turn and heard the hiss of air in the cylinders. Having examined it more closely, I found wet oil stains near the radiator. Evidently the machine had been used quite recently, so much elated at the discovery, I photographed it." (P.C. enclosed an excellent snap of the machine with his letter). "Last hols." he goes on, "I went over Croydon Airport and saw a lot of interesting stuff—Junkers 52, Beechcraft, Heracles, Wessex S.M. 72, Wibault, Dragonfly," etc. During the tour a deep hush settled over the party when the guide requested a bearded foreigner not to smoke, "as we are standing over heaven-knows-how many gallons of petrol! . . . Yours to the last strut," concludes P.C. cheerily.

Opportunity for Hull Modellers.

If there are any "lone" modellers in Hull who would be glad of the chance of joining a Skybird club they can have the address of G. Rymer from headquarters. G.R. has just registered his club No. 467 and between them they muster 56 'planes.

Silent But Strong.

Club No. 430 (leader, L. N. Woods), of Rochester, though it has kept silence for some little time, has been working strenuously behind the scenes to build up its defences, evidently adhering to the opinion that deeds speak louder than words! "When the club first formed in May this year," writes L.N.W., "we had fifteen 'planes and no ground defences. Now we have 52 'planes, seven anti-air craft, ten machine guns on tripods and various other accessories. We have over eighty men altogether." (Evidently recruits have been rolling up down Rochester way!) The club is planning to hold an exhibition on December 18th and 19th at the Royal Crown Hotel, Rochester, and judging by the list of 'planes they are showing (not counting some on the secret list which have not been divulged!) the show should be a jolly fine one.

"Getting Things Moving."

We are very pleased to hear from R. A. Butler, leader of the recently-formed Club No. 469 (Kenilworth), that they are, to use his own words, "getting things moving." After several efforts R.A.B. succeeded in forming a club at his school, and all the members are also members of No. 6 Flight A.L.B.E. "We are making the school very enthusiastic about aviation," remarks R.A.B., "and running the two clubs together should do well. No. 6 Flight has 22 members, and so we might soon get some more for the club." No. 469 are hoping to co-operate with the local Skybird agents by giving a window display in January if the head will give his permission and they are considering sending along some models to the competition which District Commodore G. H. Eaton is busy organising. Last month R.A.B. gave a lecture to the School Scientific Society on "The Development of Civil Aviation," using slides from the Air League to illustrate his talk. Incidentally, in a model competition recently arranged by No. 6 Flight all the winning models were "Skybirds," and the head, who judged, said that the standard of work was very good; so good, in fact, that he gave a special prize. We congratulate No. 469 on the headway they have made—there is obviously no lack of energy and ideas in the club!

Earsdon Club's Exhibition.

They seem to be going strong "up North." Here's another North country club telling us of the successful exhibition they have held—No. 461, of Earsdon, Northumberland, this time. Their leader, Geo. Whitfield, writes: "The modern scene was on our airport, which measures 5 ft. by 4 ft. Two 'Harts' and a 'Gauntlet' were having a fight just above the 'drome; a few machines were scattered about the ground and two 'Furies' were just taking off. The war-time models were arranged on a board, and by each model, on a slip of paper, was the name of the machine and its maker. With the money we made we have now bought paint brushes, paint, glue and full lighting equipment for the airport." Stout effort, 461!

Skybird League NEWS (continued)

Club No. 343's New Leader.

We hear from David Campbell that he has now taken over the leadership of Club No. 343 from J. Clayden and is expecting to enrol some new members in the very near future. "I have both the Supermarine Seagull V and the Fairey 'Battle,'" writes D.C., "and think the 'Battle' is the best model at present in production. My 'Battle' has transparent landing lights, a pilot tube, retractable undercart and a pitot in the cockpit." Best of luck to No. 343 and its new leader.

Two Ways of Saying It!

"Were I an American my letter would probably start: 'Say, youse guys, eef you don't soon perdooce the good old Sopwith 'Snipe' and the 'Spad,' there sure will be some bumpings off round Aldermanbury Avenue to see to it. However, as I am English, I just ask you to give your consideration to the two 'planes mentioned." So writes Skyleaguer R. P. Trebell, of Brockley, leaving us to take our choice of the two ways of putting it!

Another Model Wanted.

If any modeller has a Lockheed "Vega," either assembled or unassembled, which he is willing to dispose of D. H. Walshaw, of Worksop, would be glad to hear about it. "I have a complete squadron of Skybird models," writes D.H.W., "with the exception of the Lockheed 'Vega.' . . . I have 46 'planes in all, and a good selection of hangars and Brooklands airport. I am hoping that someone will realise that I need a model of Gatwick and will give me one for Christmas! I and my club friends are getting an exhibition together for Christmas, although we shall have to work quickly with being away at school. . . . My school appears to be a recognised landmark for all 'planes, and very rarely a day passes without one passing over. Every Thursday a flight of six 'Heyfords' pass over and very conveniently interrupt our algebra period"! So don't forget, if anybody can put D.H.W. on the track of a "Vega," let us know and we'll pass the news on to him.

Another Phoenix!

Associate Member R. W. Sampson, of Bristol, is hopeful of resurrecting Club No. 197, which had to be disbanded some time ago. He has been getting into touch with one or two of the "survivors," and now has four people with whom to reform the club, and we wish them all the best of luck. "Since I last wrote," explains R.W.S., "I have added to my miniature Air Force a Wallace, a Gauntlet, a Fury and a Dewoitine, all of which make very good models and are well worth the price. I have also added a hangar to my 'drome. The 'drome is now grandly decked out—I have four planks 5 ft. by 7 ins. resting on a trestle and a wooden arrangement, made by my father and me. Over this is laid an old green curtain—this is the landing ground on which reposes a club building, a control tower, two large hangars, etc. . . . overhead, strung from a network of wires, fly some of my 'planes, below a miniature inspection is going on. I have no background, but I stuck up one of your display cards, a picture and an Imperial Airways poster showing some of their 'planes and the 'Markings of all Nations,' which you very kindly sent me." We hope to hear good news of the progress of No. 197 now that it has risen from the ruins!

A happy snapshot of Skyleaguer H. Maley, of Hadleigh, Essex. H.M. takes Skybird modelling seriously, as the 'planes prove . . . but not too seriously, as the smile shows!

News of Club 462.

In a long and interesting letter giving news of his club's activities, Mr. A. E. Cook, leader of No. 462 (Fareham, Hants), announces four new members. Owing to the varying ages of members he has decided to rearrange the previous lists of flights, thus enabling the senior boys (who are more experienced modellers) to assist the younger ones in their flight. "Thanks to the gift of a workshop from the headmaster," writes Mr. Cook, "we have a permanent headquarters. I have arranged to give small lectures on technical points once a week (time or work won't permit us any more). In addition, we have arranged a progressive programme to carry us through the year. This will include, I hope, the installation of a small working model with stick and rudder bar from a full-size machine. I am hoping, too, to get hold of a portion of a full-sized machine fuselage for us to work in. . . . Summer activities will carry us to flying models, as we spend all our spare time in the field. Service activities in the district are becoming interesting. The old IIIF is giving place to 'Sharks' (in plenty) and 'Swordfishes,' and we are often visited by sundry 'Bulldogs,' 'Ansons,' 'Hendons' and 'Heyfords.' On the sea side we get 'Walruses,' 'Lindons' and 'Clouds.' The Hawker family is always complete. With so much material anyway for observation before us we ought to be on the 'top line.'" One thing we *are* sure of—it won't be Mr. Cook's fault if they're not!

What a Day!

If our own feelings are anything to go by, most Skyleaguers will be green with envy after reading the account of a super-day spent at Calshot by Stewart Reynolds, of Highcliffe-on-Sea. His school were invited to Calshot, where, on arrival, they were met by an officer, who described the different buildings and took them to a large metal hangar housing a number of flying boats and amphibians, including the "Saro London" flying boat. But we'll let S.R. tell you the story in his own words. "The officer told us how it worked, what engines it had, what it weighed and what its performance was; then he told us to get into fives and get into it and do anything we liked! We went into all the cockpits, worked the controls and climbed into the nose. Afterwards a 'Saro Cloud' was taken up for us to see it in the air—it was a grand afternoon and the planes looked lovely. We were then told how a parachute worked and how the harness was put on. We were taken to another hangar where aero engines were overhauled and cleaned, and were shown a Fairey 'Seal' with all the fabric taken off its fuselage—it was being cleaned. Lastly, we saw where the engines were tested, and after that we returned home after a jolly good afternoon. It was all free and done by the Government to encourage air-mindedness." Well, all we can say is that Skyleaguers can do with plenty of that sort of encouragement! S.R. has 43 "Skybirds" to his credit, all of which he has made himself, and he has also made a "Pterodactyl," a "Pander" (Dutch), a "Flying Flea" and a model of a German glider—all to 1/72nd scale. By the way, S.R.'s home town is Tiverton, Devon, and if any enthusiastic Devonians down that way would join up with him he is very keen to start a club.

Whetting His Appetite!

"Last Monday my father bought me a 'Gordon,' and I vote it one of your best 'planes, which is praising it highly. I had a pal in to help me make it—we made it in one afternoon. This fellow has been interested in cars, but I am edging him over gradually to Skybirds, and I hope to get him enrolled one day." So writes R. Davies, of Croydon, and we quite agree that to let anyone who is "hovering on the brink" actually lend a hand in the assembling of a model is one of the surest ways of clinching the matter! We have discovered it ourselves many times.

Enlivening O.T.C.!

J. Scrope, an enthusiastic Skyleaguer of Windsor, writes to tell us that the other day "while doing O.T.C. we received an unauthorised visit from a Hawker 'Fury.' We were allowed to watch it for a bit while it proceeded to shoot us up. Soon, however, we were made to deploy and, needless to say, our formations were not as good as usual! Also, not so very long ago, on two occasions, I saw a Fairey 'Battle' at about 2/3,000 feet and another time a 'Hendon.' The Fairey aerodrome is not very far away from us here." Little incidents of this kind certainly do much to brighten the "daily round"!

Skybird League NEWS (continued)

Brevities.

A Skybird enthusiast, K. Tremain, works "in aviation" and tells us that he has got quite a number of men at work interested in Skybird model 'planes. The accuracy of our scale models does certainly make a special appeal to the men who actually know all about aeroplanes from the inside, so to speak—we get some of our handsomest "bouquets" from the men who do the job.

We now hear from K.T. that one of his friends at work has joined the League as an Associate Member, and the two of them are hoping to get a club going one of these days.

* * *

We hear from John Clayden, West Wimbledon, that he is relinquishing the leadership of Club No. 343, having nominated David Campbell in his stead, and proposes to combine Clubs 283 and 402 (whose ranks have been somewhat depleted) into a new club under his leadership. We wish everybody concerned good modelling under the new conditions.

* * *

Club No. 374, of Liverpool (leader, L. H. Grace), now boast a total of 110 models and are "expecting plenty more at Christmas," as L.H.G. remarks optimistically! If there are any clubless enthusiasts in the Moseley Hill district, Liverpool (or Wavertree), they will get a hearty welcome from No. 374. Address from League headquarters.

* * *

Club No. 265 (leader, E. V. Williams), of Westcliff-on-Sea, reports two new members and satisfactory progress generally. They have appointed a special correspondence secretary, who will be responsible, in future, for giving us news of club activities.

* * *

C. E. Jackson, who works at Doncaster Airport, is a very keen Skybird modeller and is joining the League as an Associate Member. Is specially congratulatory about the Heinkel and Caudron.

* * *

Michael Coombs reports a new recruit for his club—No. 426, of Hove—and the acquisition of a room at their school for weekly club meetings.

* * *

Club No. 36, one of the early pioneers, has taken on a new lease of life, and, with twelve members, is all set for a renewal of the good work. Good luck, 36!

* * *

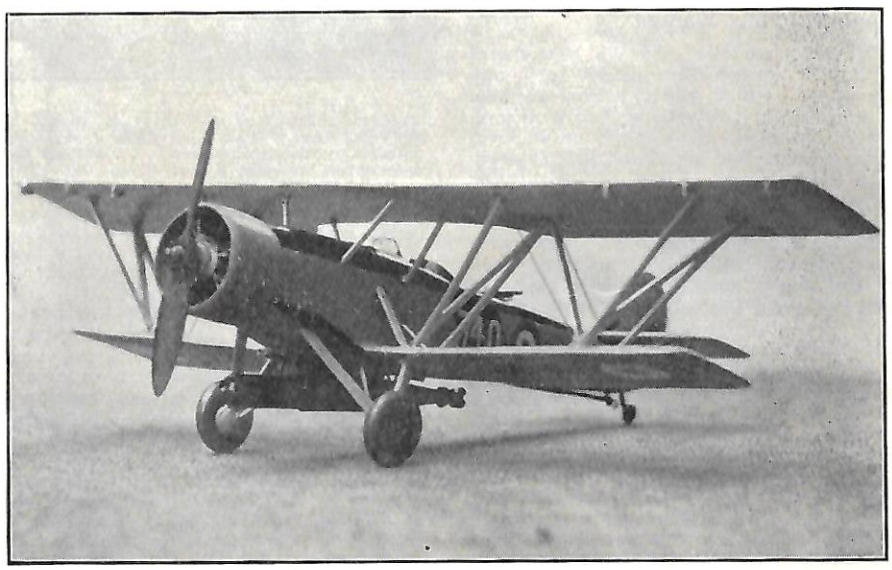
A band of modelling enthusiasts at Queen Elizabeth's Grammar School, Ashbourne, want full particulars of the Skybird League—they are anxious to get busy forming some clubs.

You Have Been Warned.

Skybird collectors are hereby notified that the next machine to go out of production will be the Dewoitine D.500.

Stirring Up Enthusiasm in Yorkshire.

Busily making contact with other Skyleaguers and trying to get more clubs started in the districts near Hull and Beverley is R. H. Glenwright, of Club No. 377 (Hull). He has met a fellow enthusiast of Beverley, Mr. J. Elwell, and they have been putting their heads together in an effort to get a club going there to be under Mr. Elwell's leadership. If there are any modellers in this area who are interested, please apply to League Headquarters for further particulars. R.H.G. is also helping a nurse at a hospital in Hull to decorate her ward for Christmas with aircraft models, posters, etc., and is getting other Skyleaguers in the district to co-operate by lending some of their models. R.H.G. sent us in a splendid photograph of one of his latest models—the "Shark," and we were so much impressed at headquarters that we have decided to award him a Skybird Certificate of Merit. Below we reproduce the photograph, and readers will be able to judge for themselves what a very high standard of workmanship R.H.G. has achieved. There's no mistake about it, once Yorkshire gets down to a job, it takes a bit of beating!



ALONE HE DID IT! Skyleaguer R. H. Glenwright, to whom we are indebted for this photograph, can well be proud of his handicraft. This is one of the best pictures we have received from our modellers; it is good both as a photograph and as an example of what a good workman can do with Skybirds.

The Things They Say.

"On purchasing THE AERO-MODELLER from a local store I was so impressed by the photographs of 'Skybirds' and the good name they seemed to have earned that I have decided to write to you for full particulars about the Skybird League."

—R. BUTLER, of Southampton.

* * *

"THE AERO-MODELLER was recommended to me by many people, so I decided to try it. Now I have no intention of stopping it—I only wish it came out daily."

L. H. GRACE, Liverpool.

HERE AND THERE

A Good Effort.

As mentioned under the heading "Enthusiasm at Bedford" in our Christmas number, Rushmoor School, Bedford, is planning a large-scale bazaar, with Skybirds as one of the chief attractions. Mr. E. V. Richardson, the Headmaster, now tells us that he has prepared about 25 "super-detail" demonstration models, including Hawker "Harts," "Ospreys," "Demons" and "Furies," Fairey "Hendon" and "Gordon," D.H. "Comet," "Heinkel," etc. "We are also showing a harbour and docks, containing the s.s. 'Isle of Jersey,' a 'Q' ship, a Navy 'M.L.' and a Navy 'C.M.B.', all built to Skybird scale. We ade also showing a tug and the Calshot Spit Lightship to the same scale." We look forward to hearing the results of this exceedingly carefully planned exhibition.

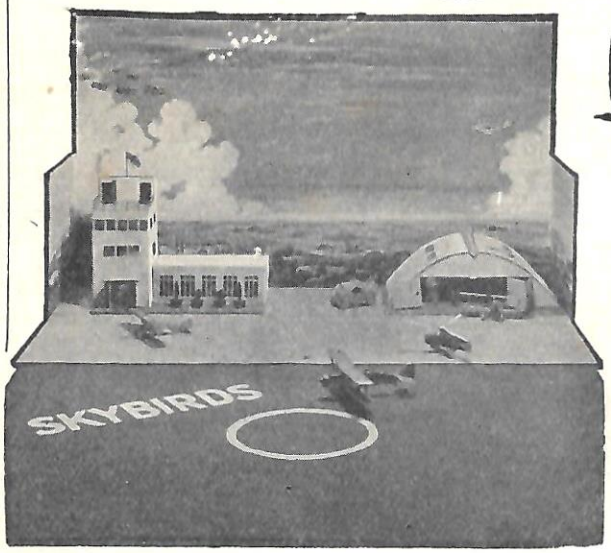
We have now heard that the bazaar was a great success and sales of Skybirds amounted to some £12.

An Ardent Collector!

J. G. Reeves, an enthusiastic Skyleaguer, of Teddington, aims at possessing a flight of "Heyfords," and after reading his letter we came to the conclusion that he is a regular Autolycus!

He certainly has the collector's flair well developed, for he haunts curio shops in his neighbourhood, and has already picked up an old Artillery sword, which he has polished up and hung on the walls of his den, with its scabbard, and he hopes to acquire a bayonet from a French rifle in the very near future! Last Christmas he bought a Bristol "Bulldog" prop for a shilling! It seems safe to predict that he'll get those "Heyfords"!

SKYBIRDS



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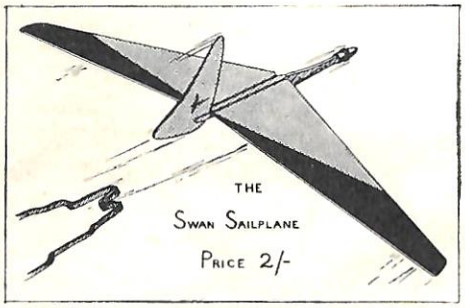

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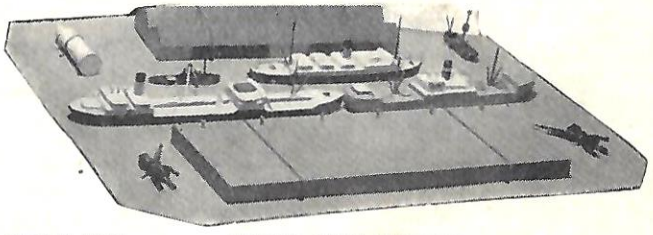

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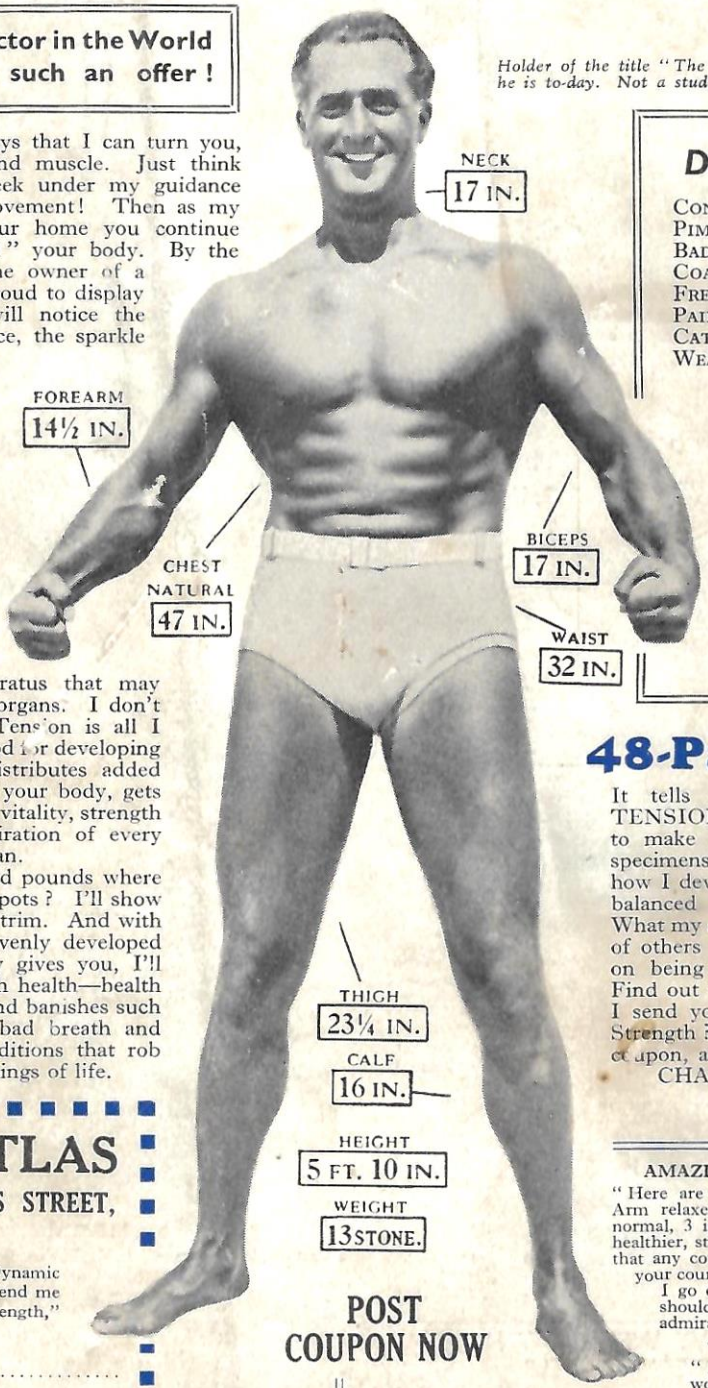

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