AERO MODELLER

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NINEPENCE

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http://www.hippocketaeronautics.com/hpa_plans/index.php

Diligence Work by Hlsat.

AIRCRAFT RECOGNITION . . .

Photo. A. E. Peers.

Above is shown the aircraft recognition room of the 98th (St. Marylebone) Squadron A.T.C. The landscape and sky have been painted in, and coloured muslin covers the ceiling, from which are suspended 1/72 solid scale models built by cadets of the squadron. Silhouettes, with keys, are affixed to the walls.

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The AERO MODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

SEPTEMBER, 1941
Vol. VI. - No. 70

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C. S. Rushbrooke

Editorial

RECENTLY we have received quite a number of letters from aero-modellers deploring the shortage of balsa wood in this country. Some of our correspondents go so far as to suggest that supplies are entirely unobtainable. *This is not the case*, but certainly supplies are very limited. Naturally, the Services have first call, and, as is well known, balsa wood is not home-grown but is imported from the Americas. Consequently, supplies are controlled and the model aircraft industry receives only such stocks as may be released after all Service requirements have been met.

That small but regular supplies of balsa wood *have* been released to the trade is a fact within our own knowledge, since the Model Aircraft Trade Association has for some while co-operated with the Timber Control in regard to its allocation. Such supplies as are available are naturally being used to the best advantage, and in view of the requirements of solid scale model aircraft for aircraft recognition purposes, the major part has been going into kits of this type of model and has *not* been run out in strip form for the building of Wakefield models!

To deal with the situation, quite an amount of research work has been undertaken by prominent designers, and aircraft are now appearing which are built almost entirely of wood other than balsa. Those aero-modellers who are prepared to spend a little time thinking things out, and use a lighter-sectioned but stronger type of wood, will be able to build their models down to a weight little in excess of that which would result were they built entirely of balsa. As certain types of wood, such as bass wood, satinwood and obeechi, are now becoming available, we gauge the position to be slightly improving, rather than becoming worse. For the rest, we feel sure that aero-modellers will not let the present situation get the better of them, but will adapt themselves to the changed conditions and produce yet further intriguing designs. After all, duration is not the only thing we seek. There would be considerable merit in building all-hitch Wakefield models that could consistently clock three or four minutes without the aid of a thermal!

"Simple Aerodynamics"

The back outside cover of this issue is occupied by a display of the attractive covers (which, actually, are in full colours) with which the Harborough range of books are adorned, and in the centre will be noted a new one. This further publication will undoubtedly meet a long-felt want amongst the younger aero-modellers, and particularly within the ranks of the A.T.C. Written by Mr. A. H. Smith, author of the series of articles on "Simple Aerodynamics" published in our early issues this year, this book runs to 128 pages. Mr. Smith, who, incidentally, now draws out most of the plans appearing in THE AERO-MODELLER, and also many for THE AERO-MODELLER Plans Service, has himself illustrated the book with a number of sketches, whilst it is further enhanced by the addition of some hitherto unpublished photographs of various types of model aircraft. Copies of the book may be obtained direct from our Leicester offices, or from any one of W. H. Smith and Son's bookstalls or from any model shop.

"The Aero-Modeller" Plans Service

A four-page leaflet describing the full range of plans now available in the Service may be obtained free from the offices of THE AERO-MODELLER, by those readers who send in a stamped addressed envelope (size, approximately, 6 in. by 9 in.).

Also available, free, is a large poster, on one side of which are printed the names and addresses of all the model aircraft clubs in the country, whilst on the other side are given the names and addresses of some 300 model shops, from which any of the Harborough range of model aircraft books may be obtained.

The "Aircraft Identification" Competition

We are pleased to record that we have not had a single claim in regard to the awards in the Aircraft Identification Competition, the results of which were published in our last issue but-one.

This appears to indicate that our scrutiny of the several thousand entries was correctly carried out, a matter upon which we congratulate ourselves . . . and heave no small sigh of relief!

Oh, yes! we had a letter from a correspondent who was quite certain that we had given *one* incorrect result, and that was in regard to aircraft No. 78. The correct answer was Grumman G.36, despite our correspondent's insistence that it was a Percival Q.6

Cadet R. Rose with THE AERO-MODELLER *solid silver trophy he won, together with £5 cash, with his solid model of a Short "Sunderland."*

This correspondent was not alone in this mistake, as we found a considerable number of entrants also reckoned that the aircraft illustrated was a Percival Q.6.

However, whilst it was admittedly one of the most difficult items in the Competition, the spinner seen in the section is actually in the *centre* of the radial cowling and not at the top of a Gipsy cowling. The bulge below the fuselage of the Grumman, where the undercarriage legs are contained when retracted, is apparent in the picture; whilst, when the wheels of the Percival are retracted, the doors close flush with the bottom of the nacelle, and there is no bulge as in the Grumman.

This Competition appears to have been very popular with readers, and we hope to organise a further one when Vol. II of "Aircraft of the Fighting Powers" (descriptive of the aircraft used by the Fighting Powers during 1941) is published in December next.

Twin Tail Design

During the past two years the vogue of the twin tail unit has developed very considerably in the model aircraft world, and appears generally to have met with favour.

In the range of full-size aircraft it appears that twin tails have definitely come to stay, judging by the large number of aircraft now equipped with them.

A very interesting article has just been published in *Flight*, over the signature of Bruce Foster, B.C.E., D.I.C., A.F.R.Ae.S., in which a new formula is given for the calculation of the fin area.

In introducing this formula, proposed by Mr. F. L. Thompson at the 1940 S.A.E. aeronautical meeting, Dr. Foster says: "In past years, fin and rudder areas were fixed to a large extent by considering the wing area, but wing loading has now increased so much that the wing area has decreased greatly. But the instability of the fuselage remains and a new criterion for the fin area has been proposed. This takes account only of the fuselage diameter (D), length (L), and length of tail (l).

Thompson considers that adequate fin area is given by the relation: Fin area $= \frac{0{\cdot}4\ D^2L}{l}$.

No doubt some of the more enterprising aero-modellers will try out this new formula and see how it works when applied to model aeronautics . . . and we hope to have a letter or two describing the results in due course.

One point which is rather interesting in Dr. Foster's article is his question as to why the circular shape for fin and rudder should be adopted . . . when it has an aspect ratio of only one?

"Aerodynamic efficiency is just as important for stability and control surfaces as for wing surfaces. With greater efficiency the surface can be smaller, and therefore lighter. The fin and rudder of the Sunderland are beautifully designed, with about as high an aspect ratio as is ever used, and that of the Wellington is very similar."

Another point of interest from this article is the opinion expressed that twin fins at the extremities of the tail-plane are much more efficient than those set somewhat "inboard."

Contributions to "Gadget Review"

Our new series under this heading, conducted by Mr. M. R. Knight, and illustrated by Mr. C. R. Moore, has undoubtedly met with approval, and will continue monthly.

As we now receive a considerable number of entries, we ask the indulgence of those contributors whose ideas are not suitable for publication in regard to our not returning them. Readers may rest assured that careful consideration is given by Mr. Knight to every gadget sent in, but it is only possible to publish each month a selection from those received.

Mr. Knight, who is well known for his support of the low-wing model, recently designed a really attractive-looking model suitable for the beginner, and general arrangement drawings, with a full set of instructions, are published in this issue. Further sketches showing the construction of details, and a second instalment of instructions, will be published in our next issue. Full-size plans of this model are also available per THE AERO-MODELLER Plans Service, together with full building instructions, price 1/6 post free.

A Brainwave

On page 500 we publish, in novel form, building instructions for an unusual type of model. We invite photographs of successful flyers, and shall be interested to hear what "duration" can be achieved!

We should like to hear also from those readers who constructed the Hydroplane, plans of which are published on page 509.

You Have Been Warned!

A number of readers this month wrote to our Leicester offices for THE AERO-MODELLER, saying that they could not get a copy from their local newsagent. That was because they had not placed an order for regular delivery. The demand exceeds the supply since paper is rationed, and the only way readers can be sure of a copy is to place a definite order for reservation or delivery each month.

D. A. R.

KNIGHT'S AERO-MODELLER LOW-WING ELEMENTARY TRAINER

★

A 31 in. Span Twin-Rudder "Beginner's Trainer"

Designed especially for "The Aero-Modeller"

By M. R. KNIGHT

COMMENT respecting the writer's recent discourses upon low-wing models has been curiously diverse! It has ranged from the lofty eminence of enthusiastic approval—"Well, if this fails to induce those high-wing devotees to build low-wing models, nothing will"—down to what must surely constitute the finest example extant of damning with faint praise—"That was a jolly good photograph of you, old man."

Several queries have also come to hand, respecting which one can only observe that a more careful reading of the original articles would reveal the answers to be contained therein! Scarcely a tribute to one's explanatory powers! However, the Editor must take a more favourable view, for he has afforded the opportunity to continue these low-wing dissertations, this time in the form of descriptions of certain low-wing designs. One trusts that they will prove helpful as examples of low-wing technique.

Here is the first of the series, the subject being the "Kamlet," a simple design for beginners. Given sound design, a low-wing model is particularly suited to this use, since it is less susceptible than any other type to troubles arising from imperfect construction, unskilful adjustment, and unpractised launching. It will not, of course, be at its best under such handicaps, but a flight of some sort can usually be coaxed from even the least prepossessing specimen.

As this description has not only to serve the would-be constructor, but also to illustrate design technique, one is in the somewhat awkward position of having to compromise with conflicting requirements.

The beginner will need a degree of detailed instruction that his more experienced co-enthusiast, blissfully forgetful of his own one-time lack of comprehension, is prone to regard as redundant. One must, therefore, claim the indulgence of the latter, since it constantly transpires that the things which are regarded by many as so obvious as to be unworthy of mention, are nevertheless misinterpreted by many newcomers to our hobby. To the beginner, then, the ensuing detailed explanations are particularly directed, and the more experienced reader need not feel insulted.

Foundation Facts.

Much in the articles already referred to may have had little meaning for the beginner. But one trusts that he will have gleaned therefrom one fact of fundamental importance, namely, that no model will fly unless the main-plane, tail-plane, propeller, and point of balance (termed the centre of gravity, or C.G.) are brought into suitable relationship. This is usually secured by appropriate shaping of the fuselage, to achieve which it is customary to build the left and right sides of the fuselage, one on top of the other, on a full-size drawing, which in turn is fastened to a building-board. The sides are then removed from the board, and joined by means of a bulkhead and sundry cross-struts.

The first essential, therefore, is to prepare a full-size drawing of the side of the fuselage. In the case of the "Kamlet," a sheet containing this and all other necessary drawings in the form of a blue print can be purchased from the offices of this journal, and the inexperienced reader will be well advised to avail himself of this facility in preference to preparing his own drawings. One is not suggesting that he cannot draw, but certain important details are small enough to be overlooked, and one has seen many faulty efforts which their perpetrators fondly imagined were true copies of the original.

The second essential is the building-board referred to, an item which many would-be modellers endeavour to dispense with, since it entails the trouble of a visit to a timber merchant, and the selection of a suitable length of deal. Such optimists (the writer has himself been so described for expecting timber to be available in war time!) proceed to steam lengths of balsa wood, bend them to the shape stipulated, and lay them on the full-size drawing in the trustful expectation that they will remain in position. One has yet to see emerge from the process a model sufficiently free from distortion to be capable of flight. It is a waste of time and energy to attempt to build in this manner, also a waste of material, which in war time is a misdemeanour! So obtain that building-board right away.

Any odd piece of timber will not do. Beech or oak or other exceptionally hard wood will be inconvenient and unnecessarily expensive, while plywood is apt to blister and become distorted when damped. Deal, or other whitewood is the best material. Above all, the board must be entirely free from any twist, or any structure built upon it will inherit the same fault, to the detriment of the model's behaviour in the air. It had better be not less than $\frac{3}{4}$ in. in thickness, in order to reduce the risk of subsequent warping. A length of 3 ft. 6 in., and a width of 8 in., will enable it to be used for the construction of the largest model that you are likely to require—at any rate in war-time!

Other requirements include some small drawing-pins (not brass-headed tacks masquerading as drawing-pins!), several 1 in. paper clips of the spring type, a hammer, two small pairs of pliers, one round-nosed and one flat, several packets of ordinary pins, and some safety razor blades of the thin double-edge variety.

Do not attempt to carve a propeller for your first model. Where both model and propeller are unknown factors, any lack of success may be due to either or both, and will therefore less easily be traced and remedied. By purchasing a propeller of standard type one is enabled to secure the performance of which the model is capable, which a "home-made" version might not achieve. Further, should it fracture through hitting something hard, another of identical type can be substituted, thus avoiding any alteration in the trim or flying characteristics of the model. On the original "Kamlet" the writer used a commercial type known as the "Paulownia," which was strong, efficient, and inexpensive. Unfortunately, it is now somewhat difficult to obtain, and something approximating to it will have to suffice.

Constructing the Fuselage.

Coming now to the construction of the "Kamlet," we will follow the usual practice of dealing first with the fuselage. Cut from the blue print the side view of the fuselage, lay it flat on your building-board, and drive in pins along the outer edge of the top and bottom longerons, as indicated by the dots on the drawing. Commence at the front of the model, and smooth out the drawing as you proceed, so that there is no distortion. Hit the pins hard enough to ensure that they will stay put, otherwise you may find that some will tumble out and allow the fuselage to change shape. See also that the pins are upright, or there will be a variation in size between the two sides. When you have attended to these matters, cut from one of the lengths of $\frac{1}{8}$ in. by $\frac{1}{8}$ in. balsa a piece 21 in. long. This is to form one of the top longerons, so place it on the drawing beneath and tight up against the upper line of pins. Drive in other pins tight against its lower edge to hold it firmly in place. Not *through* the wood, but as indicated by dots on the drawing.

Another 21 in. piece of $\frac{1}{8}$ in. by $\frac{1}{8}$ in. is required for the bottom longeron. As it has to be bent to a fairly pronounced curve, it would be helpful to steam it thoroughly. This can be done by placing one end well into the spout of a boiling kettle, leaving it there for one minute, and then reversing it for another minute. It can then be fastened to the drawing above and tight against the bottom line of pins. Coax it gently into the desired position, and secure with a second line of pins, as in the case of the top longeron. Balsa wood is somewhat brittle, and a quick or awkward movement may cause a fracture.

Now drive in pins along the front edge of each upright cross-strut indication, taking particular care in the case of No. 1, as upon the accuracy of this depends the achieving of the correct angle of the propeller shaft. At this point study Fig. 1, which depicts the front part of the fuselage side in the making. The cross-struts, which are lettered from A to L, may be cut from the odd pieces of $\frac{1}{8}$ in. by $\frac{1}{8}$ in balsa remaining after cutting the longerons. Lay them across the longerons, and try to judge the required size of each, scoring it with a razor-blade. Then remove to a more convenient position, and cut at the point indicated, with a slicing movement. Each strut should be a loose fit, with the upper end square-cut, and the lower end corresponding, as well as you are able to contrive, to the curvature of the lower longeron. Test them in position, and do not hesitate to scrap any that prove faulty. When you are satisfied, use them as patterns to form a second set for the opposite side of the fuselage, and with a sharp pencil mark each with the number corresponding to its position, so that you will know where each belongs.

Balsa wood is very open-grained, and it is essential, therefore, if joints are to hold firmly, to use two coats of cement. Apply a little to both ends of each strut, and lay them aside to dry. Then, with the aid of a small piece of $\frac{1}{8}$ in by $\frac{1}{8}$ in. balsa, shaped as in Fig. 2, apply a little to the longerons where the struts are to touch. In a few minutes you can fit them into place with a second application of cement. You will find that the first application has lengthened them, and they should now be a firm fit. Until you are more experienced you are likely to find that some will now be too tight a fit. They must be shortened, and the double application of cement repeated. Two pins against the right-hand edge of each strut will prevent it moving out of place. This is particularly important in the case of No. 1, for the reason already mentioned.

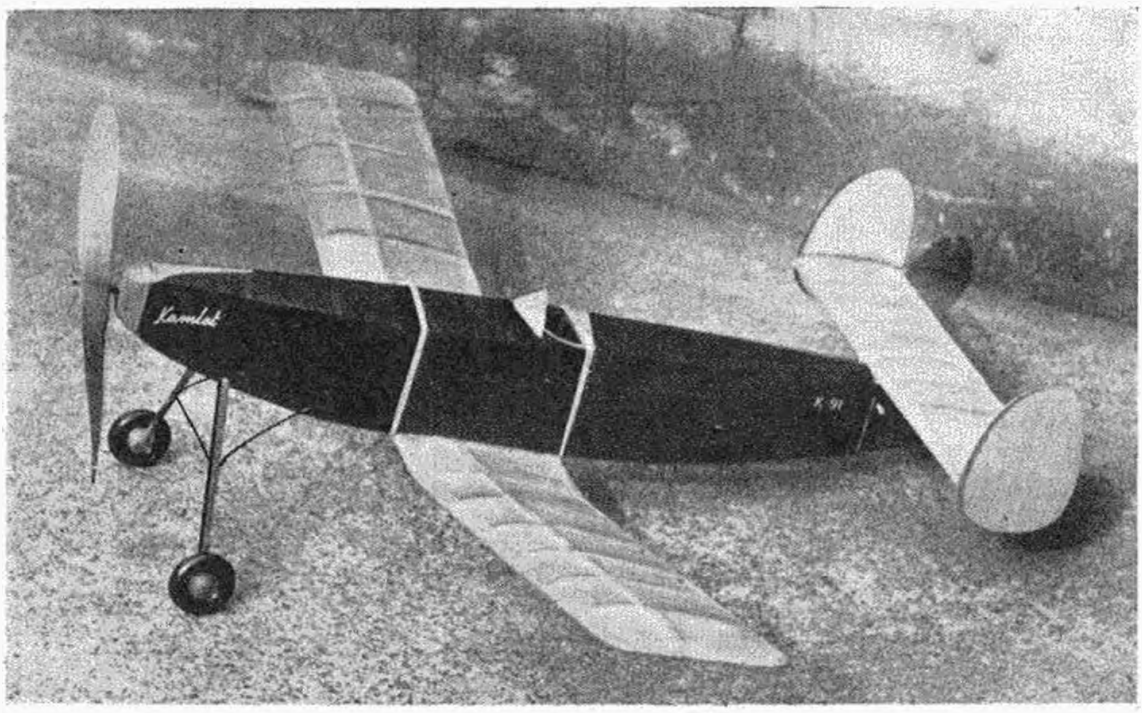
Now cut and cement into position the diagonal struts between upright struts B and C, C and D, H and J, and K and L. Note the correct shape of their ends.

The space enclosed by uprights A and B, and the top and bottom longerons, has to be filled in with $\frac{1}{16}$ in balsa sheet. The required shape can be found by removing pins that are in the way, lifting the front of the fuselage side about $\frac{1}{4}$ in., slipping the sheet beneath, and marking with a sharp pencil. Having obtained the required outline, withdraw the sheet, replace the fuselage side flat on the drawing, and replace the pins. Cut a second piece of sheet, using the first as a pattern. Then cement the first piece into place with a double application of cement. It should lie flat on the drawing.

The space between uprights J and K must be similarly

LIST OF MATERIALS REQUIRED FOR THE "KAMLET"

7 lengths, 3 ft. by $\frac{1}{8}$ in. by $\frac{1}{8}$ in. balsa (longerons, cross-struts, stringer, and centre spar of main plane).
3 length 3 ft. by $\frac{3}{16}$ in. by $\frac{1}{8}$ in. balsa (main-plane and tail-plane spars).
1 length 3 ft. by $\frac{3}{16}$ in. by $\frac{3}{16}$ in. balsa (central wing ribs, A and B).
1 length 3 ft. by 2 in. by $\frac{1}{16}$ in. balsa (wing and tail ribs, fins and stringer supports).
1 piece 12 in. by 2 in. by $\frac{3}{32}$ in. balsa (assembly jigs).
2 bamboo splits, about 12 in. by $\frac{1}{4}$ in. by $\frac{1}{16}$ in. (undercarriage struts).
1 piece plywood, 1 millimetre in thickness, 6 in. by 2 in., will be sufficient (dihedral reinforcers, bulkhead and adapter).
1 block of whitewood, $1\frac{3}{4}$ in. by 1 in. by $\frac{1}{2}$ in. (nose-piece).
1 birch dowel, $\frac{1}{8}$ in. diameter (rear motor-peg).
1 tube balsa cement.
1 tube Durofix or vegetable glue.
1 length steel wire, 18 gauge (propeller-shaft).
1 length steel wire, 20 gauge (tail-plane saddles, undercarriage fittings, tail-skid).
1 length brass tube, 20 gauge (undercarriage attachment).
1 brass bush, 18 gauge. 1 small tin white paste.
1 large tin banana oil (thin). 1 dope brush.
2 sheets Japanese tissue (covering wing, tail-plane and fuselage).
1 pair wheels, celluloid, plastic or wood, $1\frac{1}{2}$ in diameter.
3 in. of valve tubing (to cover propeller-shaft hook).
Several large cup washers.
1 reel of cotton.
6 yards rubber strip, $\frac{1}{4}$ in. by 1/24 in.
1 tin, tube or bottle of rubber lubricant.
Rubber bands, 1 in. 2 in. and 4 in.
1 propeller (whitewood), 10 in. diameter, about $12\frac{1}{2}$ in. pitch.



Span of the "Kamlet" is 31 inches, length is 20¼ inches. The constant chord of the wing and tail unit simplify construction, yet do not detract from the generally pleasing "lines" of the model.

filled with sheet. Note the position of the hole, which should be just large enough to accommodate a piece of birch dowel, ⅛ in. in diameter. Reinforce the hole on one side with a small circle of plywood.

One now proceeds to construct the opposite side of the fuselage, on top of the first. This time we want the balsa sheet which reinforces the front of the fuselage, also the piece between uprights J and K, to be flush with the upper surface of the structure. To secure this it is necessary to place beneath it and on top of the first piece of sheet a certain amount of packing. Two thicknesses of $\frac{1}{16}$ in. sheet, consisting of odd pieces, and not cemented, of course, should suffice. Variations in the thickness of the sheet may, however, call for additional packing in the form of paper or thin card.

Fuselage Assembly.

Allow the sides to remain fastened to the building-board for some hours, in fact, it is best to leave them until you have time to spare to complete the process of assembly. This calls for accuracy and care, and should not be hurried.

Having removed the structure and the drawing, scrape from the building-board any blobs of cement that may have adhered to it. Near its centre draw a straight line slightly longer than the length of the fuselage. It is marked A in Fig. 3, which should now be consulted. At one end draw a line crossing the first at right angles, and marked B. Then, 6 in. from B, draw a similar line C, and 4¼ in. from that a third line D. From line A, measure 1⅛ in. to left and right along lines C and D, and mark these points. The distance of 2¼ in. between the points on C and on D represents the maximum width of the fuselage.

We next prepare from $\frac{3}{32}$ in. sheet ($\frac{1}{16}$ in. will serve, but is less satisfactory) 4 assembly jigs, the purpose of which is to hold the fuselage structure square while you are working upon it. They should be about 3 in. long and 1½ in. wide, with one short edge and one long edge square with one another. Mark the tested edges in some way (see Fig. 4), and cement the tested *short* edge of one jig to the building-board along line C, with the tested *long* edge outside and touching the point representing the outside edge of the fuselage. Reference to Figs. 3 and 4, and to the blue print should make the process intelligible.

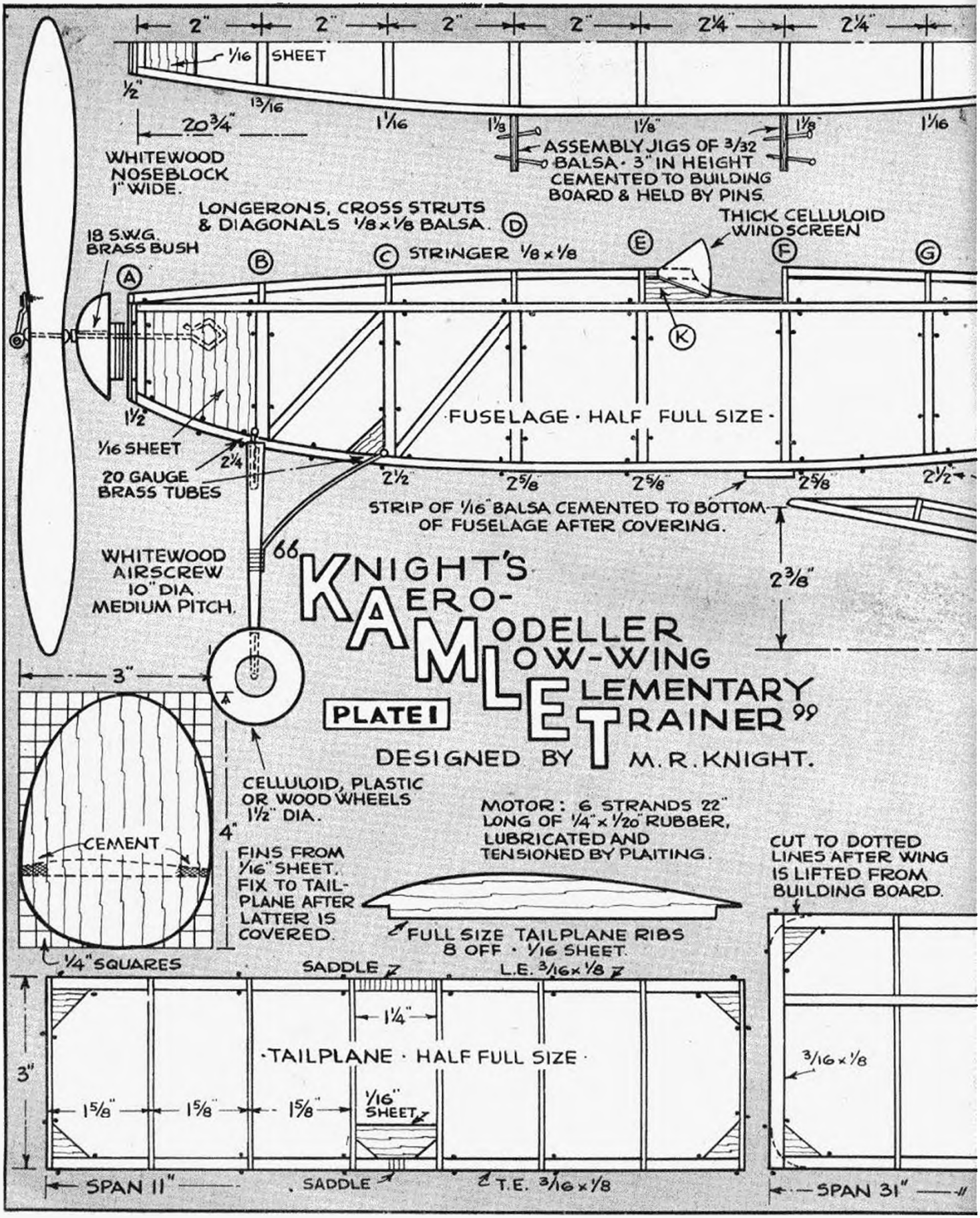
Another jig should be cemented to the opposite end of line C, and the 2 remaining jigs in similar positions on line D. Hold them in place for a few moments until the cement begins to grip, and then secure them with pins, as shown. They must then be left to dry, as they will certainly fail to hold the fuselage square if they are able to move during the process of assembly.

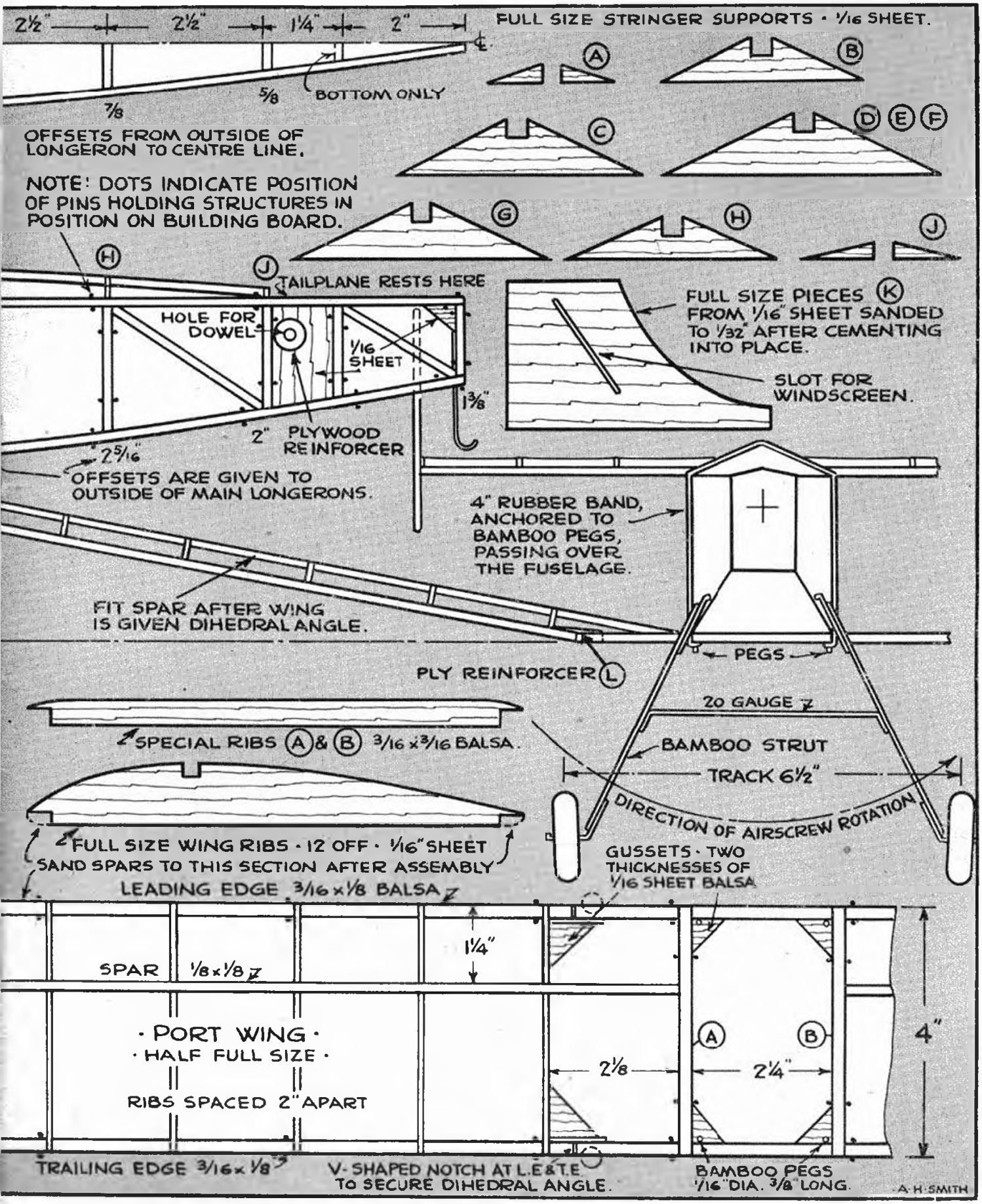
Meanwhile, the front bulkhead can be constructed, the first item needed being a piece of plywood 1 in. by 1½ in., and perfectly rectangular. Cut away the centre, leaving a margin ¼ in. wide, and put the centre-piece aside for the time being. The other part should now be affixed with Durofix or glue to a piece of $\frac{1}{16}$ in. balsa sheet. Balsa cement is unsuitable for this purpose, as it is not reliable in conjunction with hardwood. When dry, cut the balsa sheet to correspond with the plywood part.

The fuselage sides can now be separated by careful use of a razor-blade, and any protruding blobs of cement cut away. Trim the ends of the longerons flush with uprights 1 and 11. Place one of the sides, *curved edge uppermost*, on the building-board, resting against two jigs as in Fig. 4, and with the front edge of No. 1 upright touching line B. Uprights 4 and 6 should now be touching the jigs, to which they can be secured temporarily with a touch of cement. The top longeron, which is the one resting on the building-board, should be held down with a drawing-pin close to each jig. Remember that the balsa sheet reinforcing the front bay of the fuselage should be flush with the outer face, that is, the one nearest the edge of the building-board. Deal in the same way with the opposite side of the fuselage.

NEXT MONTH—

Two more pages of Sketches and a further instalment of Building Instructions


2" 2" 2" 2" 2¼" 2¼"
1/16 SHEET
½"
13/16
20¾"
1 1/16
1⅓
1⅛"
1⅛"
1 1/16
WHITEWOOD NOSEBLOCK 1" WIDE.
ASSEMBLY JIGS OF 3/32 BALSA · 3" IN HEIGHT CEMENTED TO BUILDING BOARD & HELD BY PINS.
LONGERONS, CROSS STRUTS & DIAGONALS 1/8 x 1/8 BALSA.
THICK CELLULOID WINDSCREEN
18 S.W.G. BRASS BUSH
STRINGER 1/8 x 1/8
A
B
C
D
E
F
G
K
1½
1/16 SHEET
2¼
20 GAUGE BRASS TUBES
FUSELAGE · HALF FULL SIZE ·
2½
2⅝"
2⅝"
2⅝"
2½
STRIP OF 1/16" BALSA CEMENTED TO BOTTOM OF FUSELAGE AFTER COVERING.
2⅜"
WHITEWOOD AIRSCREW 10" DIA. MEDIUM PITCH.
66 KNIGHT'S AERO-MODELLER LOW-WING MONOPLANE ELEMENTARY TRAINER 99
PLATE I
DESIGNED BY M. R. KNIGHT.
3"
4"
CELLULOID, PLASTIC OR WOOD WHEELS 1½" DIA.
CEMENT
FINS FROM 1/16" SHEET. FIX TO TAIL-PLANE AFTER LATTER IS COVERED.
¼" SQUARES
MOTOR: 6 STRANDS 22" LONG OF ¼" x 1/20" RUBBER, LUBRICATED AND TENSIONED BY PLAITING.
FULL SIZE TAILPLANE RIBS 8 OFF · 1/16 SHEET.
CUT TO DOTTED LINES AFTER WING IS LIFTED FROM BUILDING BOARD.
SADDLE
L.E. 3/16 x 1/8
1¼"
·TAILPLANE · HALF FULL SIZE ·
3"
1⅝"
1⅝"
1⅝"
1/16" SHEET
3/16 x 1/8
SPAN 11"
SADDLE
T.E. 3/16 x 1/8
SPAN 31"


2½"
2½"
1¼"
2"
℄
7/8
5/8
BOTTOM ONLY
FULL SIZE STRINGER SUPPORTS · 1/16 SHEET.
A
B
C
D E F
G
H
J
OFFSETS FROM OUTSIDE OF LONGERON TO CENTRE LINE.
NOTE: DOTS INDICATE POSITION OF PINS HOLDING STRUCTURES IN POSITION ON BUILDING BOARD.
H
J
TAILPLANE RESTS HERE
HOLE FOR DOWEL
1/16 SHEET
1⅜"
2" PLYWOOD REINFORCER
2 5/16"
OFFSETS ARE GIVEN TO OUTSIDE OF MAIN LONGERONS.
FULL SIZE PIECES K FROM 1/16" SHEET SANDED TO 1/32" AFTER CEMENTING INTO PLACE.
SLOT FOR WINDSCREEN.
4" RUBBER BAND, ANCHORED TO BAMBOO PEGS, PASSING OVER THE FUSELAGE.
FIT SPAR AFTER WING IS GIVEN DIHEDRAL ANGLE.
PLY REINFORCER L
PEGS
20 GAUGE
BAMBOO STRUT
TRACK 6½"
DIRECTION OF AIRSCREW ROTATION
SPECIAL RIBS A & B 3/16 x 3/16 BALSA.
FULL SIZE WING RIBS · 12 OFF · 1/16" SHEET
SAND SPARS TO THIS SECTION AFTER ASSEMBLY
LEADING EDGE 3/16 x 1/8 BALSA
GUSSETS · TWO THICKNESSES OF 1/16 SHEET BALSA
1¼"
SPAR 1/8 x 1/8
· PORT WING ·
· HALF FULL SIZE ·
RIBS SPACED 2" APART
2⅛
A
B
2¼"
4"
TRAILING EDGE 3/16 x 1/8
V-SHAPED NOTCH AT L.E & T.E. TO SECURE DIHEDRAL ANGLE.
BAMBOO PEGS 1/16" DIA. 3/8" LONG.
A·H·SMITH

A BRAINWAVE

By H. G. BILBROUGH

THE other day I met Gibson in the street.

"Hullo!" I said amiably.

"Same to you!" he replied, swiping me heartily on the back. Then he announced, "Do you know, I've made a model aeroplane!"

"That's nothing. Why, I've made dozens," I said, haughtily.

"Yes, but mine flies."

"Really! How do you know? Have you tried it?" I was surprised and sceptical.

"I wound up the elastic and threw it out of my bedroom window," he answered.

"Well?"

"It flew thirty feet."

"How high is your bedroom window?"

"Thirty feet."

Well, after that I said "Good morning!" and passed on my way.

I thought of Gibson and his model aeroplane. "Ass!" I thought. Then, struck by a sudden idea, I fell into a deep coma. "Gibson's plane went straight downwards. An ideal plane for a duration contest would go straight upwards. Hmmm . . ." Thus ran my thoughts as I meditated on the problem.

"Got it!" I exclaimed, suddenly, slapping my thigh. At least I meant to slap mine, but actually I slapped that of an old gentleman who had been sitting beside me. He instantly seated himself elsewhere, muttering unpleasant things about last straws and empty lunatic asylums.

However, I certainly had "got it"—the idea that was going to revolutionise aero-modelling, just as balsa wood did in the early days of model flying. The nucleus of the inspiration was this, "If, on an ordinary aeroplane, the propeller pulled the aircraft along, why not put the propeller on the top of the aeroplane and pull the aircraft upwards?"

By the time I reached the office I had almost got it perfected. At once I set to work to sketch the complete masterpiece as I saw it in my imagination. The result of much wasted paper and blunted pencils is the "Skyscraper," which may be seen in the accompanying drawing.

As it will be observed, two propellers are used, giving the advantage of a climb which is twice as fast as it would be with one. Only one rubber motor is required for both propellers and, although I say it myself, I think that this is a marvellous idea, what with war-time economy and all that.

The undercarriage, too, is particularly interesting. It consists of four struts with wheels attached, which revolve with the lower propeller spinner. By this means the model may be flown r.o.g. if desired.

Well, when at last the time came for me to depart from my place of work, I had a complete set of plans prepared ready for me to commence building the model when I arrived at "Chez Nous." It's a pity, but "Smith and Brown Limited" have simply no facilities at all for model building in their offices.

Of course, I wanted to get home as quickly as possible, so instead of catching a bus I decided to walk.

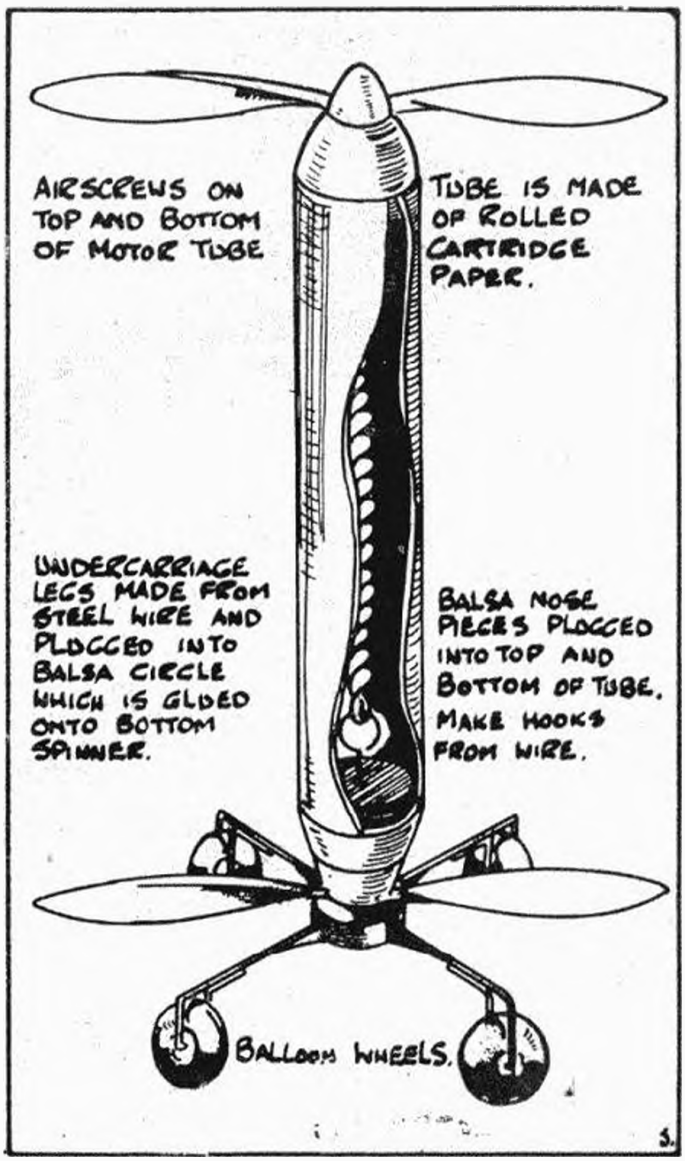
I was in high spirits, for I felt that there was money to be had from my invention. At the back of my mind there was a mental image of a full-size "Skyscraper" which would prove of valuable use to the R.A.F. for parachute jumping practice. There would be a sort of platform around the fuselage on which the men would be carried up.

When I was only about six miles from home I had the misfortune to encounter Gibson again.

"Hullo!" he said, cheerfully. "Did I tell you about my model aeroplane?"

"Yes!" I answered, wearily. "But listen to this. I have invented a model which flies straight upwards!"

"Garn!" ejaculated Gibson, incredulously.



I immediately pulled the drawings from my pocket and began to explain the technicalities to my friend while an interested populace looked on.

When I had finished he seemed rather awe-struck. He came to after a moment though, and said, "Yes, but what happens when the motor runs out?"

[*Readers will find out by constructing the model . . . it's good fun.*—ED.]

YES! BE PREPARED

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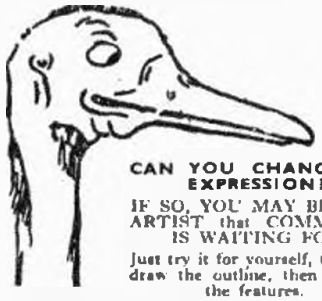

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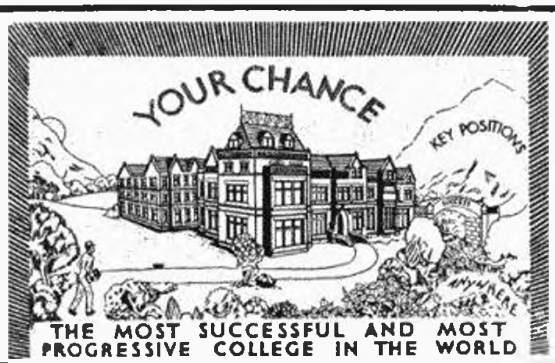

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A Composite Model

By F. SPIEGL

Mayo and Maia—the inspiration of many attempts at model composite combinations. Surely one of the finest achievements in the world of flying.

AFTER reading Mr. Pemberton Billing's book on "The Defence Against the Night-Bomber," especially the chapter on the "slip-wing" fighter, I wondered whether any aero-modellers would attempt to use this, or a similar device, on two models.

Briefly, the idea is this: the upper component, which is a power-glider with the lowest practicable wing loading, carries the lower on patrol until an enemy 'plane is sighted. The lower component, a small single-seater, is then released, having the advantage of a warm engine, height, and a full fuel supply. The two components take off and fly as one biplane until the moment of release.

If use is made of this idea in aero-modelling, it can be made to act automatically, I think, in this way: The upper component is of the single-engined pusher type with tricycle undercarriage (see plan). A short piece of aluminium curtain rod is fixed to the pusher, while the rollers (as supplied with the curtain rail) are fastened to the fighter. (Any 'plane, if its size is suitable, can be converted.)

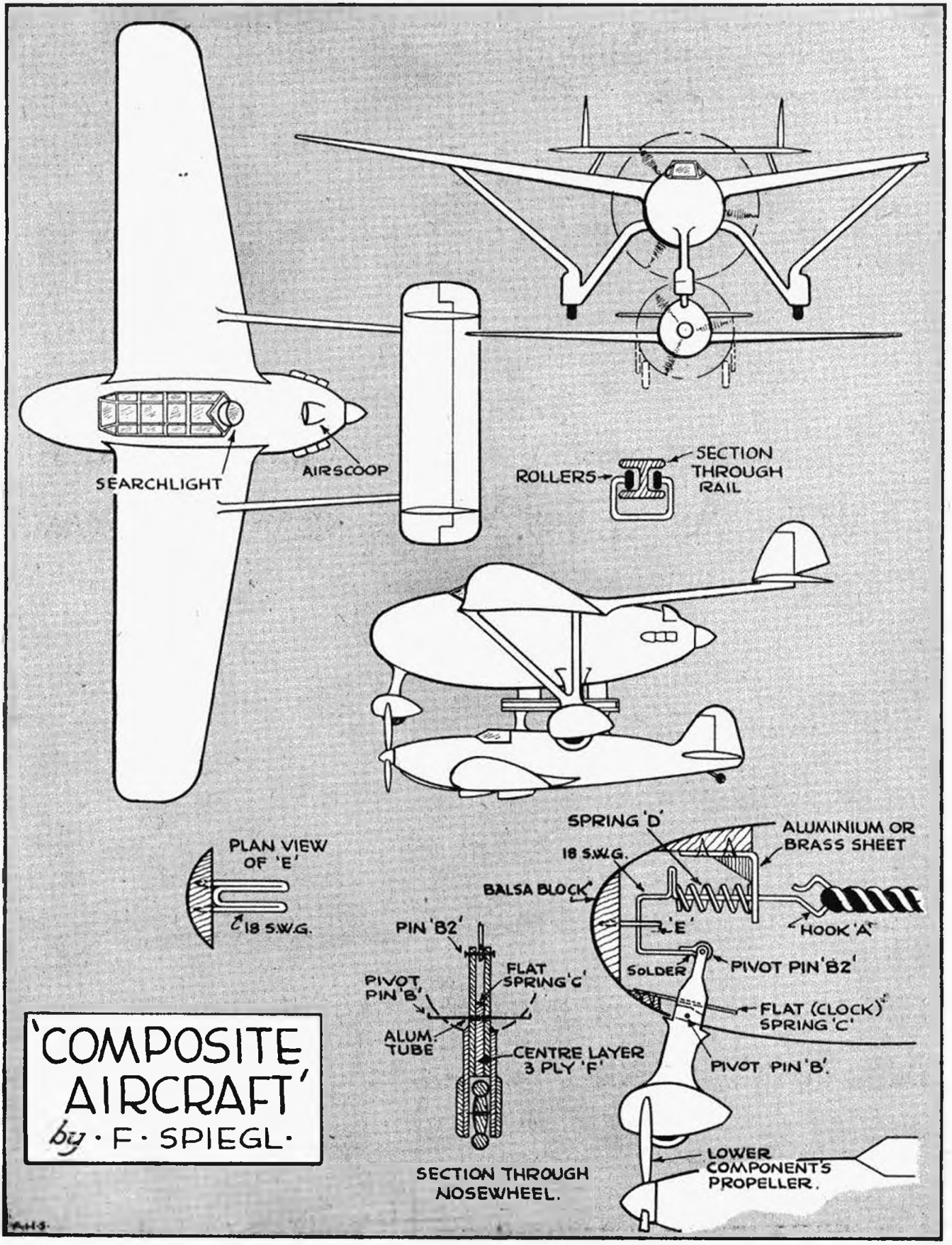
Both planes are fully wound up. When the pusher is wound up the spring D on the anchorage hook is compressed and swings the nose wheel forward (see sketch). Spring D should have about 25 per cent of the power of the motor, that is to say, it should not extend until 75 per cent of the power is exhausted. This can be regulated by varying the amount of rubber or cutting coils off the spring D.

Then the two components are fitted together so that the airscrew of the fighter is prevented from revolving by the spat of the nose wheel.

When nearly all the power of the pusher is expended, the spring D expands, pushing the nose-wheel backward, thereby disengaging the fighter's airscrew, which starts revolving in the ordinary way. The rollers slide off the rail, partly because they are pulled off by the forward motion of the fighter, and partly because the pusher should by then have commenced to glide, e.g. the rollers will "roll downhill."

N.B.—The flat spring C acts similarly to the spring in a penknife, namely, it allows the wheel to have only two fixed positions.

Part F, the centre part of the "nose-wheel-leg," is best made of three-ply or hard balsa, as it would be quickly worn away by the flat spring if of soft balsa. E (18 s.w.g. piano wire bent to shape as shown) allows spring D to slide fore and aft, but prevents anchorage from twisting.


SEARCHLIGHT
AIRSCOOP
ROLLERS
SECTION THROUGH RAIL
PLAN VIEW OF 'E'
18 S.W.G.
SPRING 'D'
18 S.W.G.
ALUMINIUM OR BRASS SHEET
BALSA BLOCK
'E'
HOOK 'A'
PIN 'B2'
PIVOT PIN 'B'
FLAT SPRING 'C'
SOLDER
PIVOT PIN 'B2'
FLAT (CLOCK) SPRING 'C'
ALUM. TUBE
CENTRE LAYER 3 PLY 'F'
PIVOT PIN 'B'.
LOWER COMPONENT'S PROPELLER.
SECTION THROUGH NOSEWHEEL.
'COMPOSITE AIRCRAFT'
by · F · SPIEGL ·
A.H.S.

WHAT IT'S LIKE IN THE A.T.C.

By William Dean

Feeling that there must be many readers of THE AERO-MODELLER *who have only a vague idea as to what goes on in the A.T.C., Cadet William Dean, of the 125th (Cheltenham) Squadron, has written the following article, which he describes as "a rough outline of the A.T.C. and its functions" for the "uninitiated."*

LIKE many others between the ages of 16 and 18, I rushed to join the A.T.C. soon after hearing about the new scheme on February 1st, which, as Mr. C. A. Rippon so aptly put it, "will long be remembered as a red-letter day for the youth of Great Britain."

On finding out the address of the local squadron I made my way there, where, together with several other eager recruits, I was interviewed by the Commanding Officer. Details of my age, etc., were taken down, and I was then asked as what I ultimately hoped to be in the R.A.F.? "Pilot, sir," was my reply, of course, just like 99 per cent of the other "hopefuls." "Very well," came the answer, "Air Crew Section then." "Look sharp, and you can just make the met. class in Room 2." I just did make it. The lecturer was taking "Conditions of the Atmosphere," in which (much to my delight) thermal up-currents figured prominently!

Lectures of this kind usually last an hour. Cadets taking notes and making rough sketches, after which the entire squadron is assembled and the roll taken. Sports Fund (1d.) is collected and any notices or orders are read out. The squadron is about 125 strong. About 35 per cent of it is composed of new recruits who have joined since February 1st, the remainder being members of the old Air Cadet Corps.

After being dismissed I followed the general rush for the canteen, where I soon managed to smell out someone who, like myself, was afflicted with the "balsa bug." To my delight he was able to inform me that quite a large number of the chaps were keen on aero-modelling, a class being held once a week dealing with design and construction.

Morse, navigation, meteorology and mathematics are the main subjects taught, for which exams. are going to be set from time to time. The results of these, together with regular attendance, will figure largely in the recommendation a Cadet will get when he finally becomes eligible for service at eighteen. Training occupies quite a large part of one's spare time, as will be seen from our time-table below:

Tuesday: 7 to 9, aero-modelling class.
Wednesday: 7 to 8, drill; 8 to 9, lecture.
Thursday: 7 to 9, mathematics.
Friday: 7 to 8, drill; 8 to 9, lecture.

The aero-modelling and mathematics classes are optional, but practically everybody attends the latter. As our master puts it: "Good maths. are an essential part of the foundation upon which your R.A.F. training will be built."

The C.O. always emphasises the importance of attending the classes regularly and taking the work seriously. To a new recruit he usually says, "The A.T.C. cannot be taken lightly—either join with the firm intention of working or keep out."

The aero-modelling class designed several models which were entered for THE AERO-MODELLER Trophy Competition. Nearly all the members of the class have had some experience with models, mostly rubber-powered, with just a few "gas jobs," so some interesting ideas resulted. As well as the competition there is the added attraction of an award for the best model made by a member of the squadron (to be judged on flying characteristics, duration and general finish). The models are going to be made at the local Art School, one of the masters having kindly offered us the use of the school's paint spraying plant when the doping stage is reached.

Anyone who has had anything to do with models at all has, in my opinion, got a definite advantage over the average recruit when it comes to understanding the theory of flight, etc. I think Mr. C. A. Rippon will agree with me that if anyone is a good modeller he should get on all right in the A.T.C.

As is only natural with a comparatively new organisation, some people are inclined to think of the A.T.C. as a glorified Scout Movement. (Having been a member of the latter for several years I am inclined to look upon this as a compliment, but that's not the way they mean it!) In other words, they belong to the same tribe as those who call aero-modelling "playing with toys." That this view is not shared by the R.A.F. was proved recently to us of the 125th Cheltenham Squadron when an officer from a nearby station paid us a visit. He told us that we were taken very seriously by the R.A.F., so it was therefore up to us to take ourselves seriously as well. He also told us that we would get the chance very shortly of visiting S—— Aerodrome with a view to gaining practical instruction in connection with the theoretical instruction we had already done and were doing. Then he let loose the tit-bit of the evening. "This will include actual flying," he concluded.

After this "hot" piece of news the chaps who had already "been up" became the centre of attraction, questions being flung at them right and left. "How long for?" "Was it an Anson?" "What did it feel like coming down . . .?"

I could not finish off without mentioning one thing which was impressed upon me as a newcomer right from the start. That is the keenness generally which is shown by everybody in the Squadron, including the instructors. Our instructors really are the "best," and I think we all realise just how lucky we are to have them come along after a hard day's work and devote their further time to the A.T.C.

In my opinion the A.T.C. has "come to stay." This time there just can't be only a half-hearted effort to keep things moving, as was with the case with the Civil Air Guard and the Air Defence Cadet Corps. I wonder how many of the old members of the former remember only too well the big send off the C.A.G. was given, only to be quashed in its infancy?

In conclusion, I should like to join with M. de Bunsen, who urges in the April issue of *Aeronautics* that gliding should be resumed with a view to giving the A.T.C. primary training and a general outlet for enthusiasm. That the Germans realise the value of this type of training can be judged by their extensive activities in this direction already.

GADGET REVIEW

CONDUCTED BY M·R·KNIGHT · ILLUSTRATED BY C·RUPERT·MOORE.

HARD upon the acceptance of the Chair of Practical Gadgetry in THE AERO-MODELLER Seminary has come an impressive pile of brain-waves, which is rapidly being added to as a result of the Editor's recent invitation to readers. It would seem, therefore, that the " tearer-orf of buttons " and the " bunger-up of rat-'oles " are not the only folk who have found a job for life!

Many of the ideas submitted are of considerable interest, and in some cases well worth adopting. Others exemplify the truth of the adage that there is nothing new under the sun, for they are already in use, or have been used and forgotten, to be reinvented now. A few suggestions, to be quite frank, represent merely a *different* way of doing something, usually rather *less* satisfactorily than by accepted methods. Occasionally, a contributor will reveal that he is a newcomer to our hobby by suggesting some idea already incorporated in designs described in this journal.

Not every contribution can be used, therefore, but send them along, and they can soon be sorted out. It would be helpful, though, if the senders would indicate whether or not they had tried their idea, and with what success. A few do, but more frequently there is nothing to indicate whether snags were encountered, and how they were overcome, whether the idea worked without trouble, or whether it is just an inspiration that came in the " wee sma' hours," and is awaiting an attempt at application. One does form an opinion on this subject, but a grain of information would be preferable to a pound of speculation, and would enhance the usefulness of this section.

This month we will begin with a few undercarriages. Fig. 1 shows a type which, like that of the Brewster Buffalo, retracts into the sides of the fuselage. It is submitted by Mr. O. R. Maddock, of Sutton, Surrey, and has the merit of avoiding any change in the longitudinal trim of the model. On the other hand, it involves fairly considerable depth in the fore part of the fuselage, so have a care with your fin area. A careful study of the sketch should render this brief description understandable.

Each undercarriage strut is in two parts, the lower being sprung and hinged to the upper, so that it tends to fold. This is prevented while the model is on the ground by the weight of the machine bringing an arm at the top of the lower strut hard against the upper strut. Further, a thread is taken from the arm to a pin X which is embedded in a streamlined block of rubber beneath the fuselage. On the model becoming air-borne, a rubber cord Y anchored within the fuselage pulls the strut upwards, thereby withdrawing the pin from the rubber-block.

Careful fitting is obviously needed to secure that each wheel shall fit snugly within the " well " provided in the side of the fuselage. The well is constructed by wrapping $\frac{1}{32}$ in. balsa strip around a waxed cylinder of suitable diameter, such as a broom handle, damping the outside of the strip, cementing the inner side, and securing the ends with a pin until the cement dries. Stringers will have to be cut away to accommodate each well. Suitable shaping of the outer face of each wheel will enable the constructor to dispense with the complication of wheel cover plates.

Fig. 2 depicts an undercarriage which retracts and " comes down again " when the motor is unwound. It is devised by Mr. L. Townsend, of Halifax, and is applicable to a light-weight scale or " near scale " fighter.

The vertical strut which carries each wheel works within a sleeve, which is hinged at the top to allow it to fold outwards into the wing. When the model is on the ground its weight upon the wheels causes each strut to project slightly from the top of the sleeve against the pull of a rubber band X, and in so doing it slips into a recess in a horizontal member cemented to the rib F, thus locking the strut in the extended position. From the top of the sleeve a thread passes out to rib G, around a wire loop, and then inwards through guides in the ribs to the fuselage interior, where it joins the corresponding thread from the opposite wing. It then passes down the fuselage, through a hole in bulkhead B, to an anchorage in a sliding bulkhead C. The rear rubber-hook also passes through B, and is anchored to C, while C is secured to the sternpost by a short length of stout rubber cord.

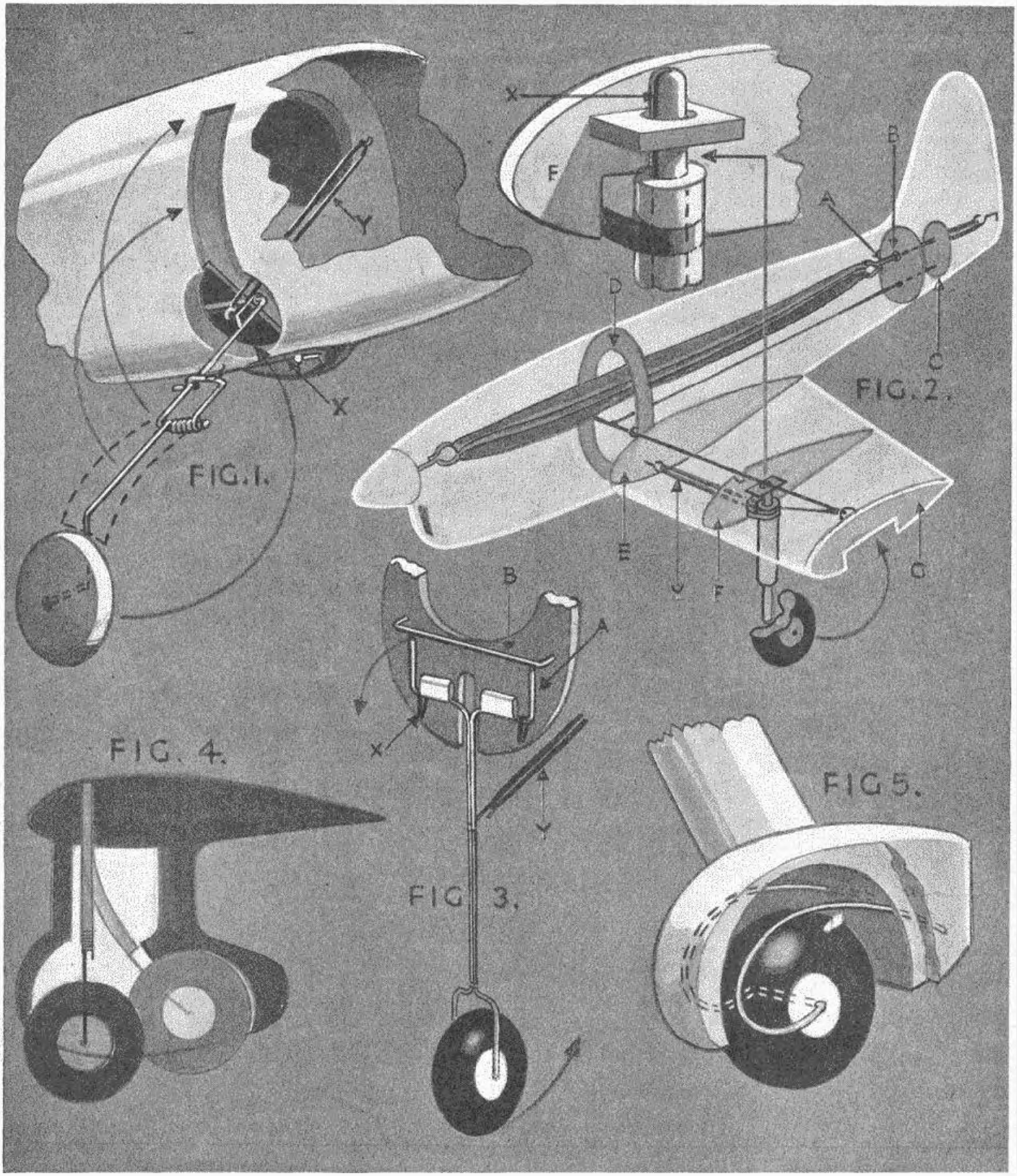
Retraction is effected in the following manner: The tension of the motor pulls bulkhead C forward, thereby slackening the threads. Directly the model leaves the ground the vertical wheel-carrying strut slips out of the recess through the action of the rubber band X already referred to, and another rubber band Y connecting the top of the sleeve with rib E rotates the sleeve until it is horizontal, and the wheel inside the wing.

Conversely, the slackening of the motor allows the short rubber cord to pull bulkhead C rearwards, thus tightening the threads, which pull the undercarriage down against the lesser tension of the band Y, which retracted it. As the wheels take the weight, the strut is pushed up into the recess, and so locked in the down position.

A simple means of retracting a single-wheel undercarriage, devised by Mr. D. H. Ashworth, of Edgeley, Stockport, is shown in Fig. 3. It would serve for the front leg of a tricycle, and be applied to the conventional two-wheel type.

At the top of the leg is a bridge-piece, which is free to move up and down within two flattened aluminium tubes, against the tension of a rubber band X. The weight of the model, taken by the wheel, lifts the bridge to the top of the tubes, and brings the right-angled ends A behind the wire catch B, so that the strut is held in the extended position. As the model takes off the band pulls the bridge to the bottom of the tubes, and the ends A, dropping clear of the catch, allow the strut to be retracted by a rubber band Y anchored within the fuselage.

A method of incorporating a reasonable degree of springing with the spatted undercarriage employed on such types as the Miles Magister, is suggested by Mr. G. T. Tollett, of Sittingbourne, and is shown in Fig. 4 It makes use of


X
Y
X
FIG. 1.
X
F
B
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D
C
E
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G
FIG. 2.
B
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X
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FIG. 3.
FIG. 4.
FIG 5.

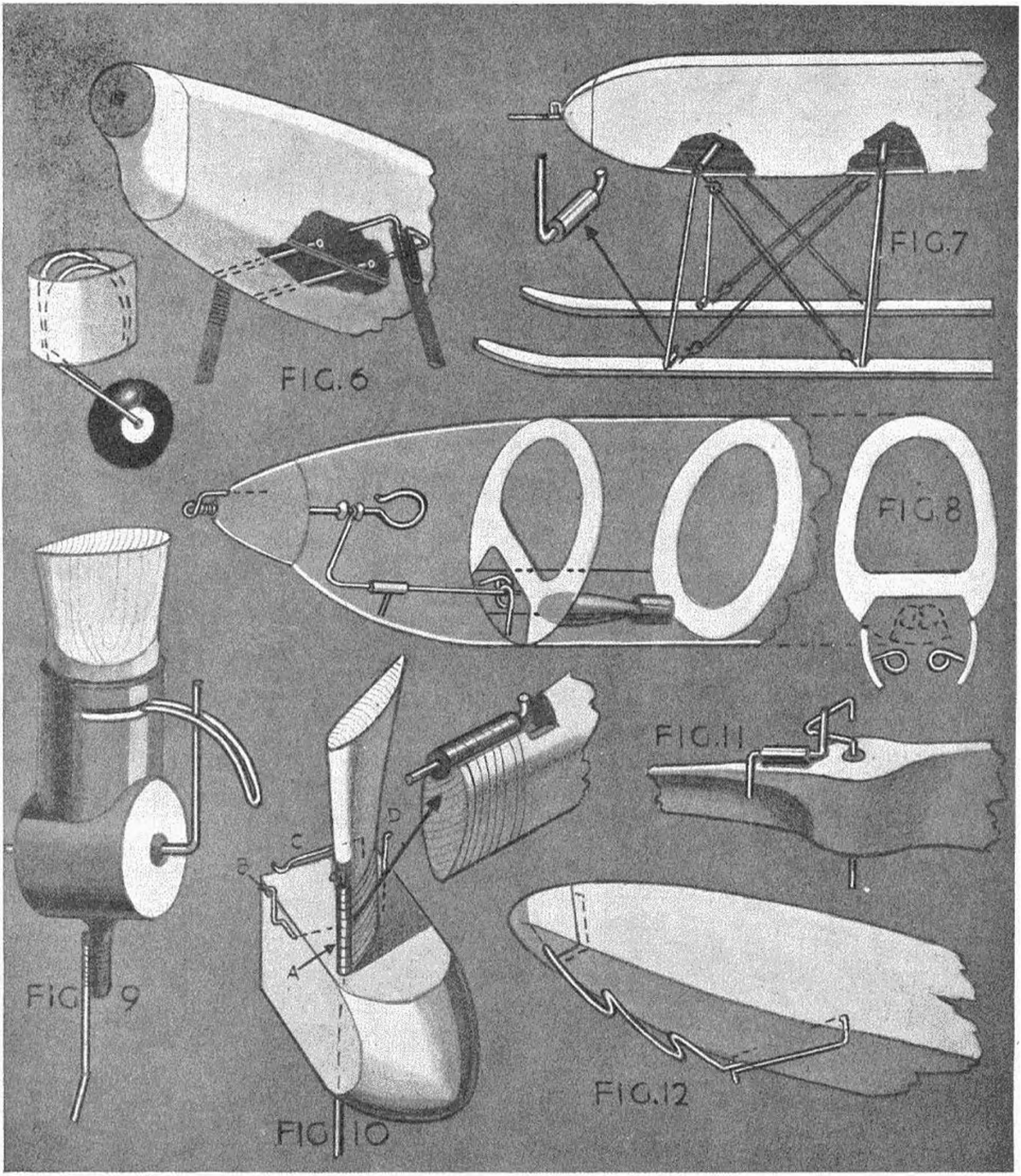


FIG.6
FIG.7
FIG.8
FIG.9
FIG.10
FIG.11
FIG.12
A
B
C
D

a resilient bamboo strut, with the wheel attached by a simple wire bracket. An alternative arrangement, more suited to such a type as the Lysander, which has rigid undercarriage struts, is to hand from Mr. P. Niblett, of Sidcup (Fig. 5). One would suggest that the " knee " type of wheel carrier employed by Mr. Niblett could profitably be used in conjunction with the bamboo strut proposed for the Magister.

Details of a very satisfactory form of unretracting single-strut undercarriage, particularly suited to " scale-ish " free lance models, are to hand from Mr. J. R. Vanderbeek, of Victoria, S.W.1 (Fig. 6). The wire fitting which plugs into two brass tubes within the fuselage must be very securely lashed to the bamboo strut. For models weighing not more than 4 oz. 18 gauge wire should suffice, while models weighing not more than 8 or 9 oz. would need 16 gauge. A realistic appearance can be secured by attaching to the strut a fairing of balsa. From the same correspondent comes a simple idea (shown inset in Fig. 6) for a sprung tail-wheel which plugs into a paper tube.

A means of imparting the exceptional degree of movement desirable with a ski undercarriage is depicted in Fig. 7, and is suggested by Mr. A. O. Sutcliffe, of Hucknall. The reviewer suggests that the vertical struts should be connected by horizontal struts to hold the skis the correct distance apart, and that the hooks to which the rubber bands are attached should be soldered to the vertical struts instead of piercing the skis and the lower longerons.

How refreshingly widespread is the offensive spirit is evidenced by the number of suggestions for releasing bombs or parachutes from models. Fig. 8 illustrates the bomb-dropping arrangement favoured by Mr. D. Thomas, of Buckfast. When the motor is wound, the bomb doors beneath the fuselage, which are of balsa sheet, and hinged by tissue to the longerons, are pulled open from outside, the bombs inserted, and the doors closed. One end of a right-angled wire, the upper end of which " floats " on the airscrew-shaft between two fixed washers, is slipped through two wire catches on the inside of the doors, thus holding them shut. The release of the motor tension allows the spring in front of the airscrew to pull the shaft forward, and this draws the wire out of the door-catches, thus allowing the weight of the bombs to force the doors open.

It might be better to reserve such operations as bomb and parachute dropping for after-the-war displays, for bombs which do not " go off with a bang " would scarcely be noticed, while those which do might, in common with model parachutes, induce such an individual as the one who recently castigated the reviewer for the crime of " sending up toy gliders " in war-time to turn out the local Home Guard !

Considerable interest is being taken in " feathering " airscrews, the blades of which, when the power runs out, automatically take up a position in which they offer minimum resistance, and so improve the glide of the model. They offer one advantage over the alternative arrangement of folding airscrew blades, namely, that they leave unaffected the longitudinal trim of the model.

Mr. V. M. Brownbridge, of Thorne, near Doncaster, sends details of the single-blade feathering airscrew shown in Fig. 9. Attached to the boss will be noticed a sleeve, of material not specified, in which the blade root is free to turn. Embedded in the root is a curved wire guide, which can move along a slot in the sleeve. The front of the airscrew-shaft is bent to a right-angle (one would suggest the incorporation of a winding loop), and slipped into the guide. Actuated by the tension of the rubber motor the shaft-end forces the guide along the slot in the sleeve until the airscrew blade reaches the desired pitch angle. When the motor is unwound the trip on the rear of the airscrew-shaft stops the shaft rotation, the pressure on the wire guide ceases, and the airscrew blade is free to assume the angle of minimum drag.

Feathering airscrews, in common with many other gadgets, have their tricks, and one would like to hear further from Mr. Brownbridge as to any difficulties encountered. On this subject, as a matter of fact, an informative letter is to hand from Mr. Vanderbeek, whose single-strut undercarriage has already been described. He reports that until he used blade stops his particular type of feathering airscrews fluttered badly, and when the power ceased " did a spot of flutter, feathering, and free-wheeling backwards and forwards, which made the model's glide path about 1 in 2 " ! The introduction of a 30 gauge wire spring, and two stops (see Fig. 10), in conjunction with the time-honoured spring motor-trip, cured the trouble, air pressure sufficing to push the blade over the spring. To guard against broken blade hinges caused by the model occasionally touching down before the motor was fully unwound, he slipped the 18 gauge hinge wire through a brass tube resting in a recess in the leading-edge of the blade, and securely lashed and cemented to the blade. In conclusion, this correspondent disclaims credit for the basic principle of this type of airscrew, pointing out that he based his experiments upon an article in the 1937 edition of *Zaic's Year-Book*.

For those who prefer something simpler than feathering or folding airscrews, there are available sundry devices for enabling the airscrew to free-wheel when the power ceases. Quite a neat and convenient form is submitted by Master K. Gibson, of Bispham, Blackpool. It is shown in Fig. 11. Secured to the leading edge of one airscrew blade is a brass tube, in which a wire with each end bent to a right-angle is free to turn. The tension of the motor brings the bent-over front end of the airscrew-shaft against one end of the angled wire, turning it until its opposite end is pressing against the airscrew blade. Thus the airscrew is taken round as the shaft rotates. On the removal of the motor tension when the rubber skein is unwound, the angled wire simply " idles " in its tube, and the airscrew is free to rotate.

Our final description this month relates to a means of transforming a rubber-powered model into a glider, and is suggested by Mr. E. Hays, of Heckmondwike. As an economy measure it has possibilities—especially if modelling materials come to be sold by coupon !—though, of course, such a dual purpose model can scarcely be expected to achieve an outstanding performance in both guises.

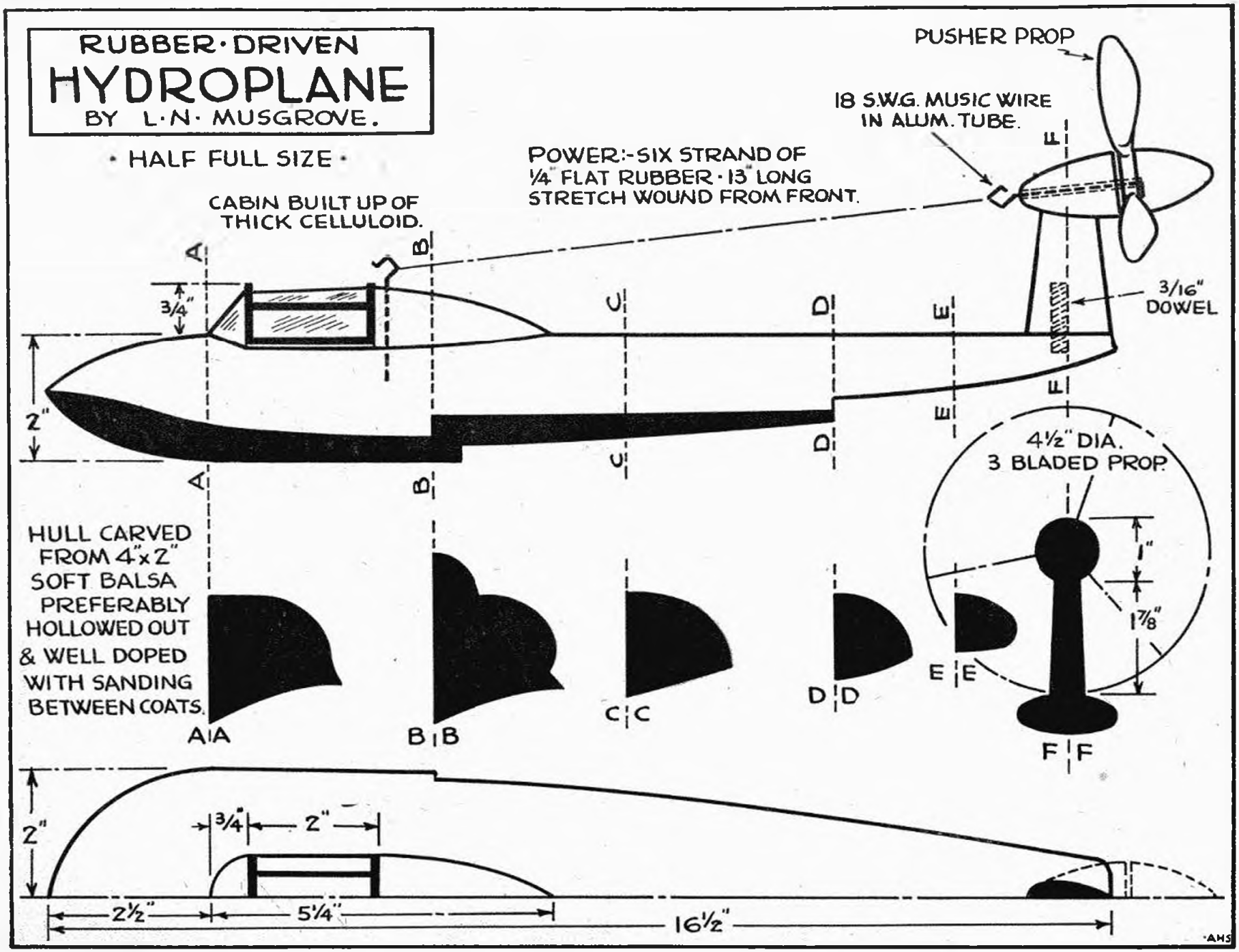
The conversion calls for a brass tube crossing the lower longerons in the region of the model's centre of gravity, and a special nose-block, weighted to compensate for the absence of the airscrew, into which has been forced the front end of a special fitting of 18 gauge wire, incorporating two tow-line hooks (Fig. 12). Undercarriage, motor, airscrew and usual nose-block having been removed, the weighted nose is strapped into position, and the rear ends of the wire fitting plugged into the aforementioned brass tube. The altered model must, of course, be retrimmed, and usually it will be found helpful slightly to reduce the angle between the wing and the tail-plane.

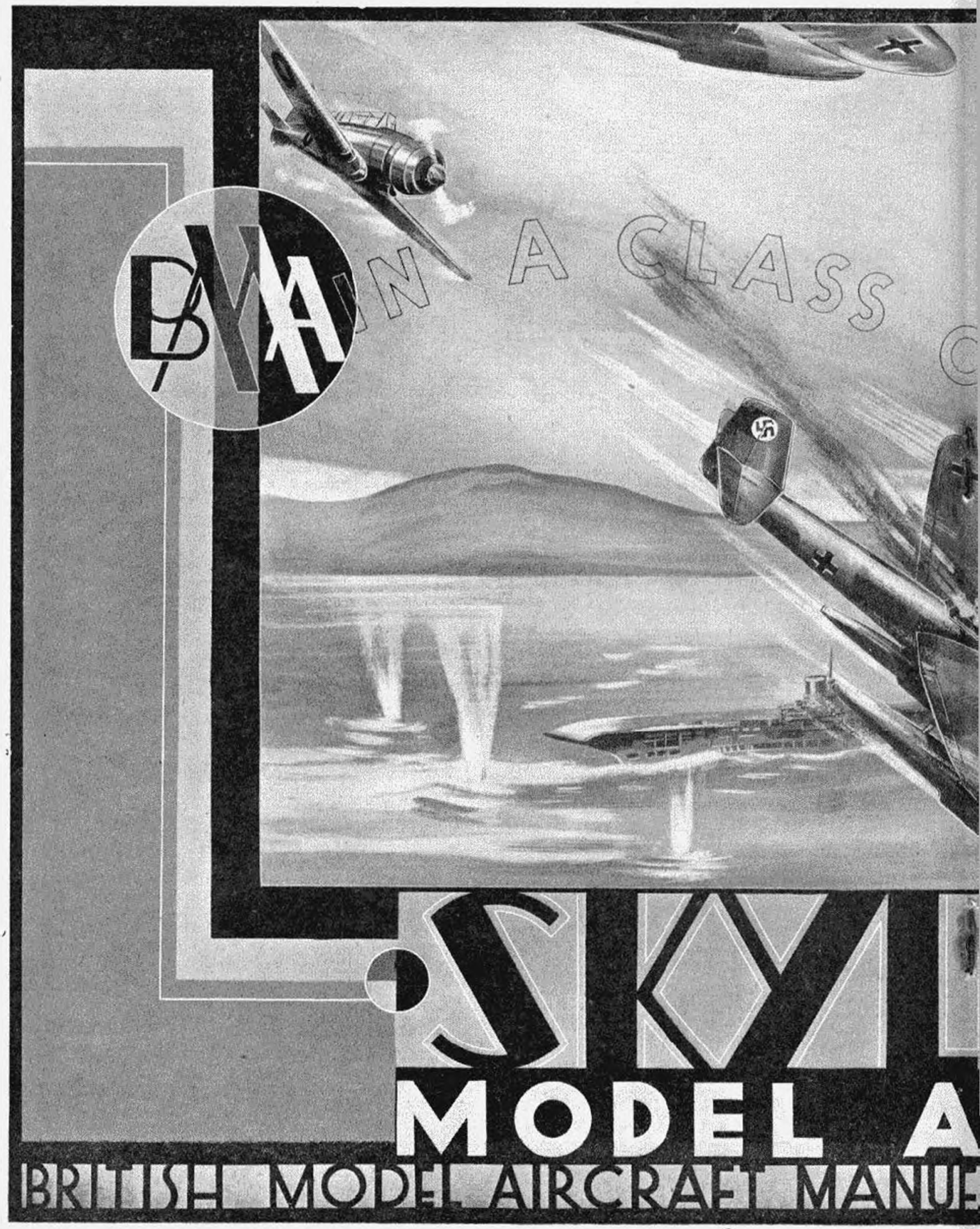
One would suggest that the wire fitting be bent to move the hooks slightly to the right of the centre-line of the fuselage, as seen from the rear, so that a straight launch could be secured while enabling the glider to be trimmed for circling flights.

RUBBER·DRIVEN HYDROPLANE

BY L·N· MUSGROVE.

· HALF FULL SIZE ·




BMA
IN A CLASS
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MODEL A
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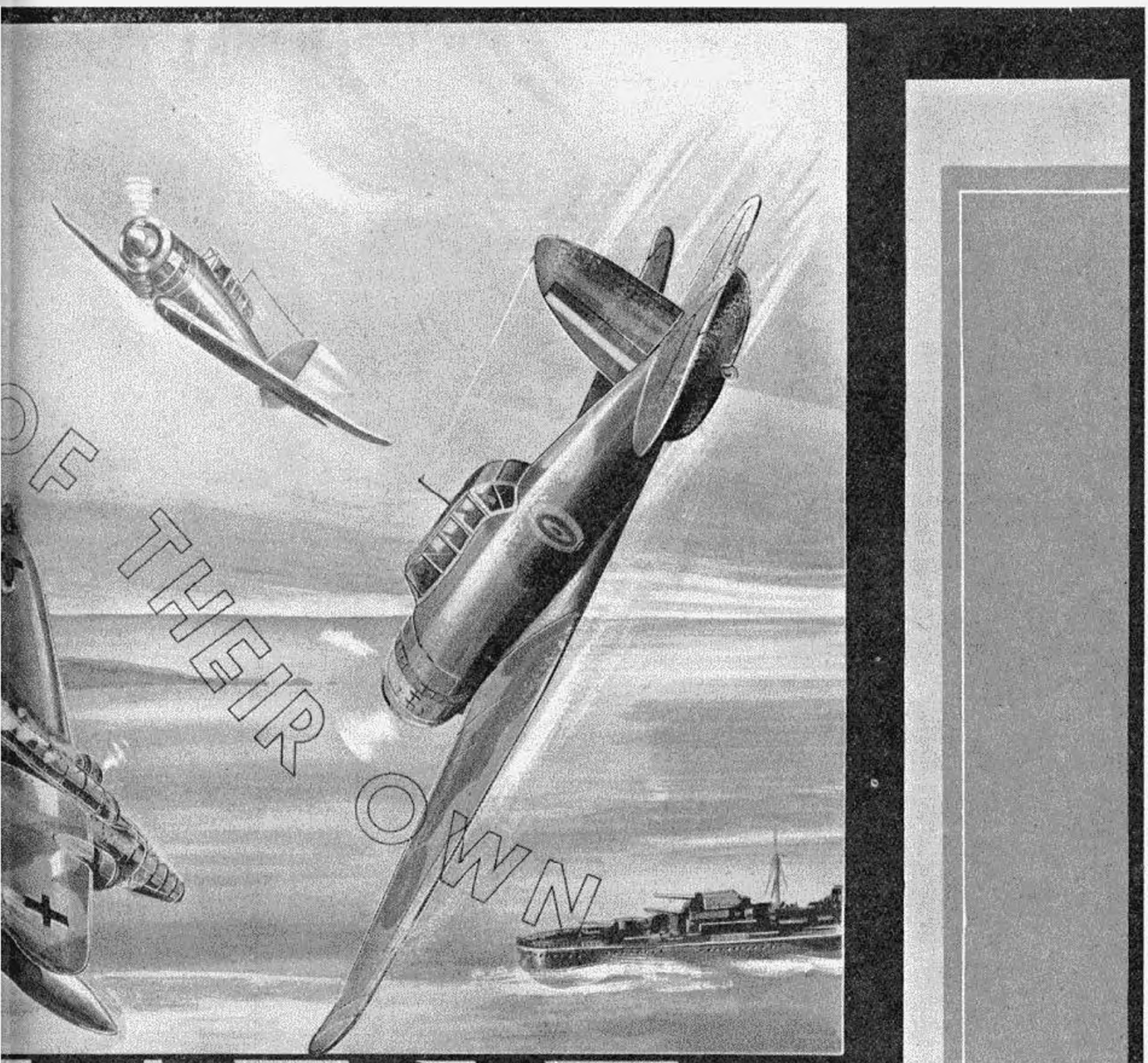
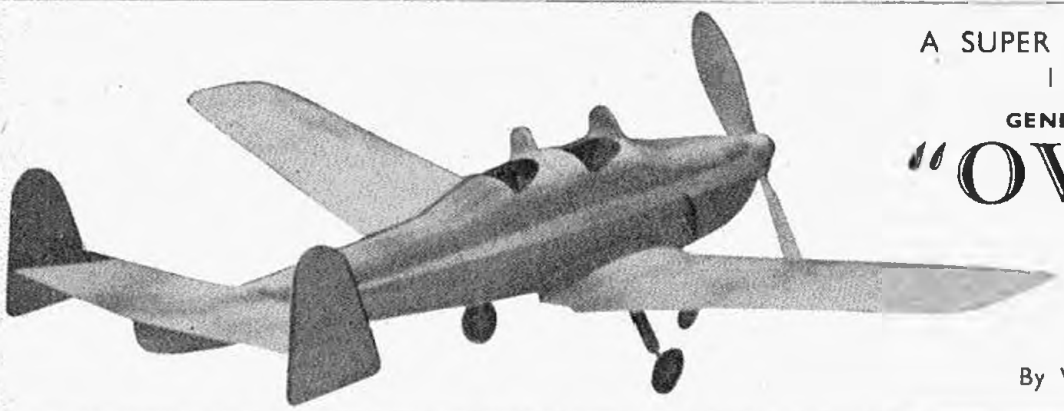


EADA

IRCRAFT

-ACTURING CO MITCHAM SURREY



A SUPER DETAILED SCALE
1 inch—1 foot

GENERAL-AIRCRAFT

"OWLET"

A new departure in scale model technique, in which the fuselage is built in two halves, simplifying transport.

By W. R. JONES

THE plans of this latest training machine are drawn to 1 in. scale and the constructional features are simplified as much as possible. The only flying done up to the present has been pole flying. In this the "Owlet" has shown exceptional flying abilities, and it is hoped to have further details at an early date. The model was designed for twin motors and gears but, using the rubber stated in a single motor, the performance was quite satisfactory. If "super" flying is required gears *should* be used together with a hardwood nose-block.

Fuselage (Fore End).

Make complete drawings of the formers and transfer on to wood. Mark the two top longerons with the positions of formers and attach formers No. 1 and No. 8. When glue has dried the remaining formers may be fitted (glue former No. 5 in first) and make sure that everything is square. Add bottom longeron and top centre stringer.

Fuselage (Aft End), Tail-plane and Rudder.

Mark main longerons as above and leave enough forward of former No. 9 to plug into boxes, which are built up as shown on plan. Cut out piece "H" from $\frac{1}{8}$ in. sheet and glue in place. Formers 12 and 13 should be cut at dotted lines and top portion glued on to tail-plane to form the saddle. Build up tail-plane as shown and use $\frac{1}{32}$ in. by $\frac{1}{8}$ in. balsa for upper and lower surfaces of ribs. "Fill in" end ribs with $\frac{1}{32}$ in. sheet to form gluing surface for rudder attachment.

The entire fuselage is covered with $\frac{1}{32}$ in. balsa and the tail-plane (complete with saddle) is glued on as shown. When covering has been completed "fair in" the tail-plane with bamboo paper on underside. NOTE: The "aft fuselage" longerons must be bound with silk from end of "overhang" to former No. 10 to prevent breaking when the longerons are pushed into the boxes. Build up two rudders as shown and cover with *tissue* before glueing on to tail-plane.

Wings and Centre Section and Undercarriage.

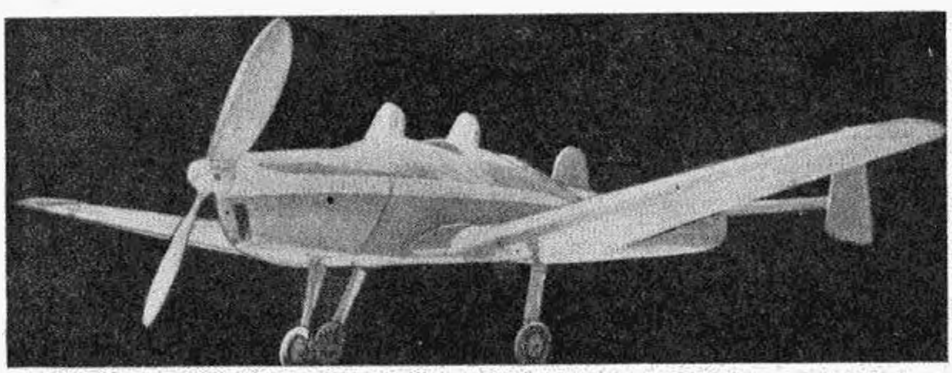
Build up these components as shown on the plan. NOTE: Centre section must be built "into" the fuselage by glueing the spars on to the formers shown, and then glue the ribs in place. Do not forget the aluminium tubes for the undercarriage which is built up as shown from wire and balsa fairings. NOTE: Use a hardwood wheel on the front leg and bushed celluloid wheels on the rear legs. Glue the box shown on to No. 3 former and reinforce former with piece of hard balsa glued on to rear of same. Build up wings as shown, using the wood stated. Cover the centre section with wood ($\frac{1}{32}$ in. sheet) on top and bottom surfaces. Piece "M" is glued on to top of bottom fuselage longerons.

Covering.

Wings and tail-plane are covered with "superfine" bamboo paper when these components have been glued into position. Give complete 'plane two coats of dope (fuselage should be polished to give a good finish) and then add two coats of banana oil. If the "Owlet" is adopted by the R.A.F. it will be coloured green and brown with yellow undersides, but at present the colour scheme may (I think) be left to individual tastes.

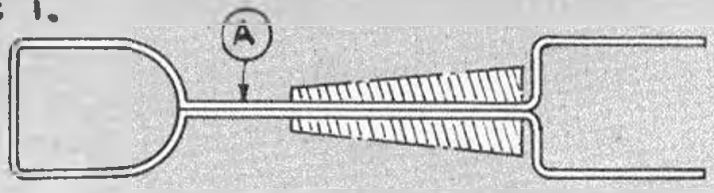
Flying.

Use a 9 in. dia. Paulownia propeller and five loops of $\frac{3}{16}$ in. by 1/30 in. brown rubber 12 in. long, well lubricated. Gliding tests should be carried out before power flights are attempted. Suitably trimmed, good results may be obtained, and the model is capable of standing a great deal of rough usage and may be flown under any weather conditions owing to the methods employed in the building and also to its very stable qualities. 35 sec. flights r.t.p. are the "order of the day."



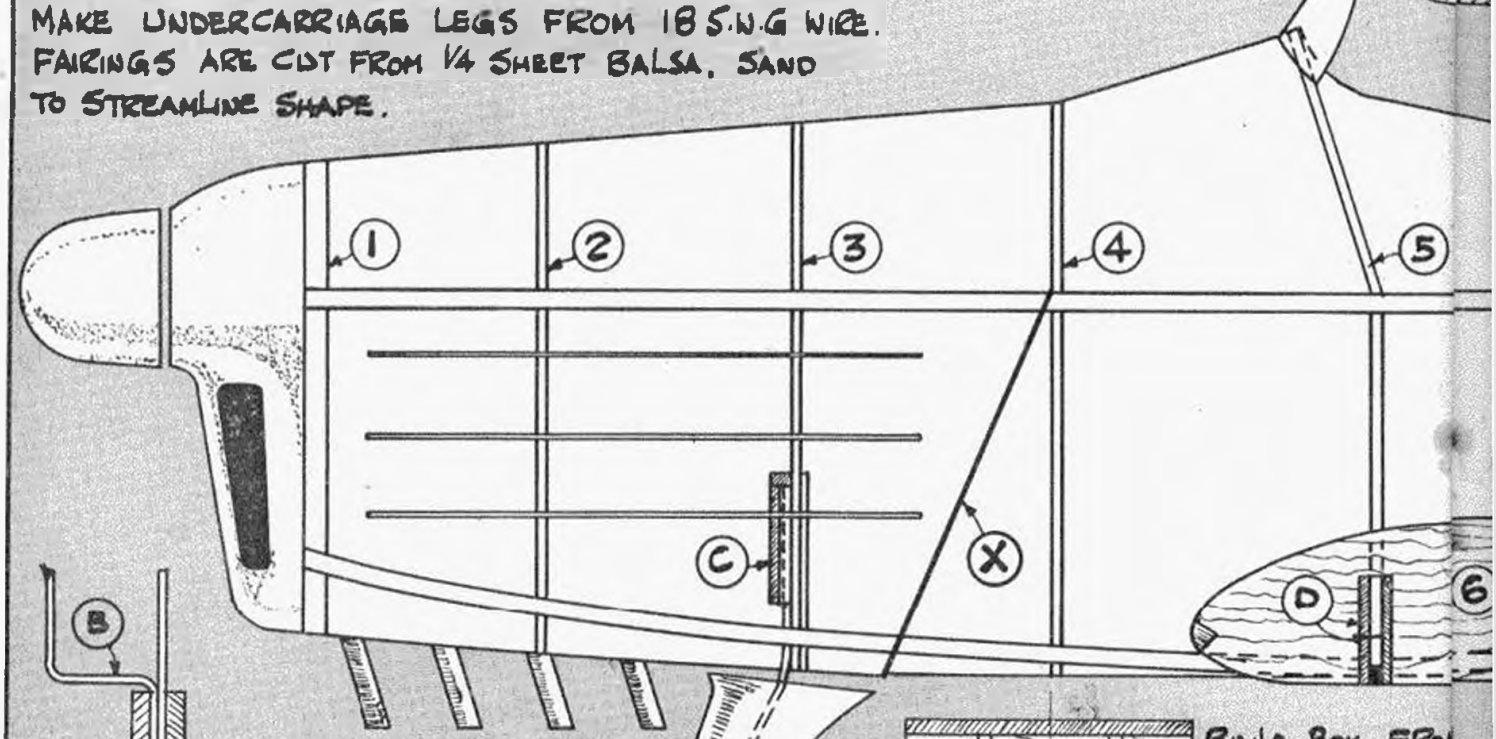
This head-on view of the model shows its clean lines and finish, and conveys a good idea of the effective tricycle undercarriage.

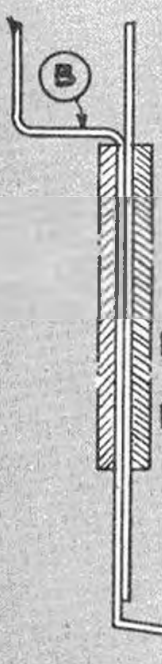
PLATE 1.



COVER ENTIRE FUSELAGE & CENTRE SECTION WITH 1/32 SHEET BALSA. [SEE INSTRUCTIONS].

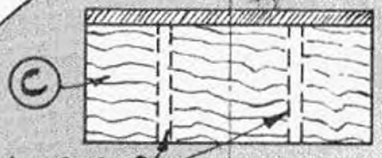
MAKE UNDERCARRIAGE LEGS FROM 18 S.W.G WIRE. FAIRINGS ARE CUT FROM 1/4 SHEET BALSA. SAND TO STREAMLINE SHAPE.





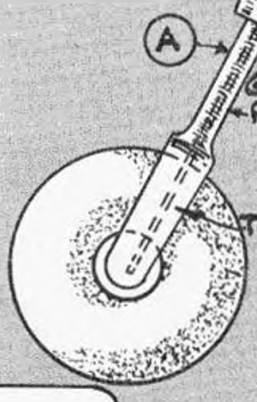
EXHAUST PIPES MADE FROM 1/8 ROUND CANE.

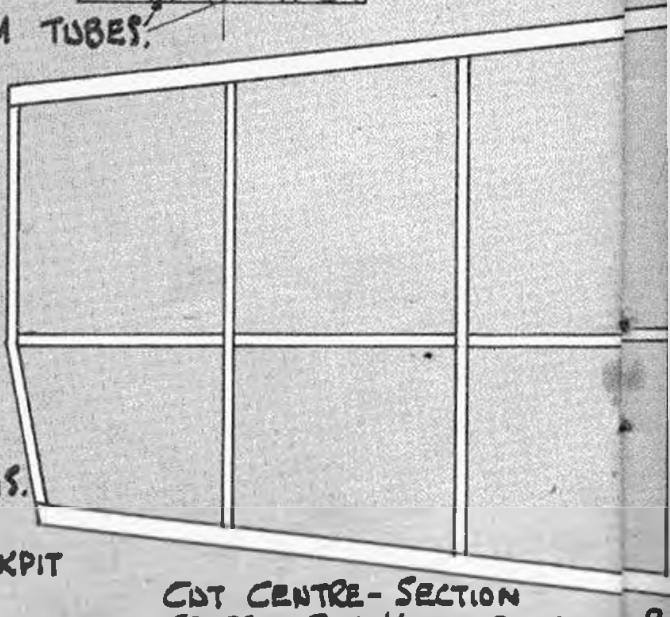
FRONT WHEEL 1¼ DIAM. REAR WHEELS 1½ DIAM.

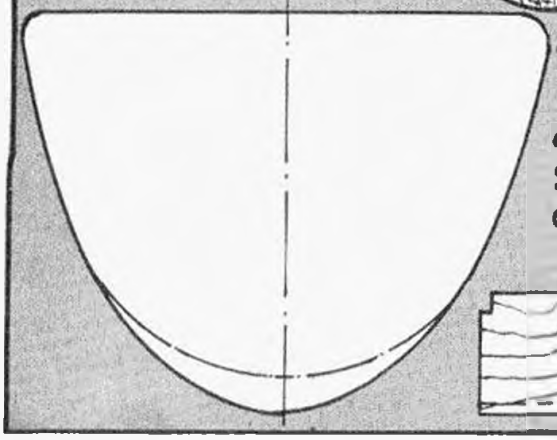


BUILD BOX FROM 1/16 SHEET & INSERT ALUM TUBES.

ALUM TUBES.

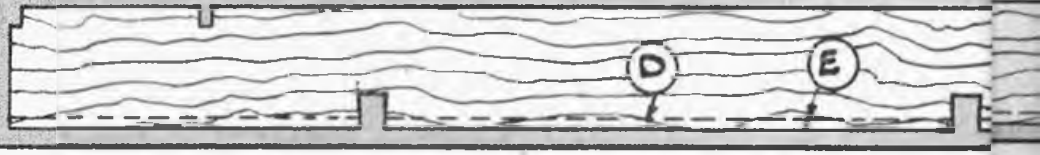


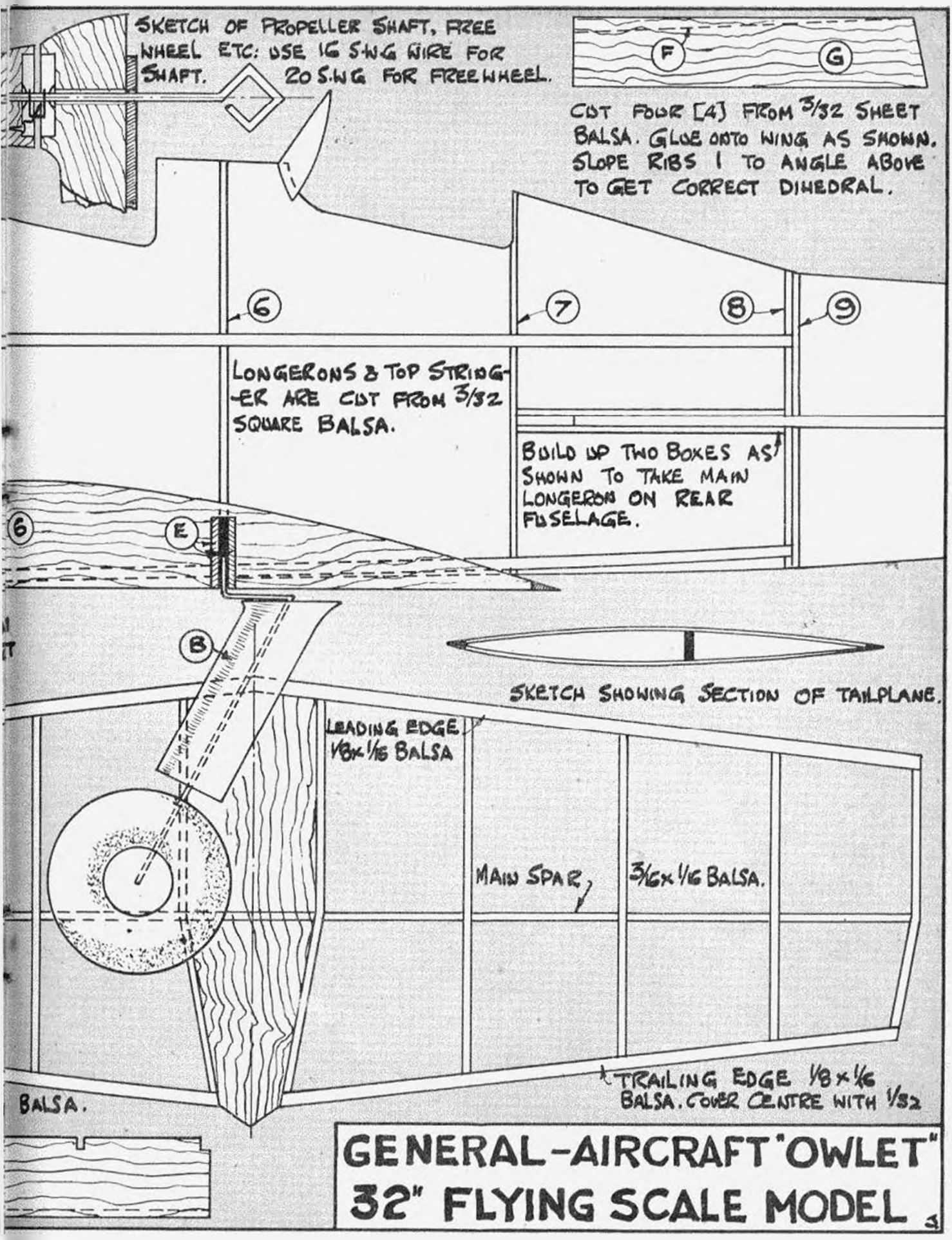




TEMPLATES FOR COCKPIT OPENINGS. CHAIN-DOT LINES SHOW REAR COCKPIT OPENING.

CUT CENTRE-SECTION SPARS FROM 1/16 HARD SHEET B





GENERAL-AIRCRAFT "OWLET"
32" FLYING SCALE MODEL

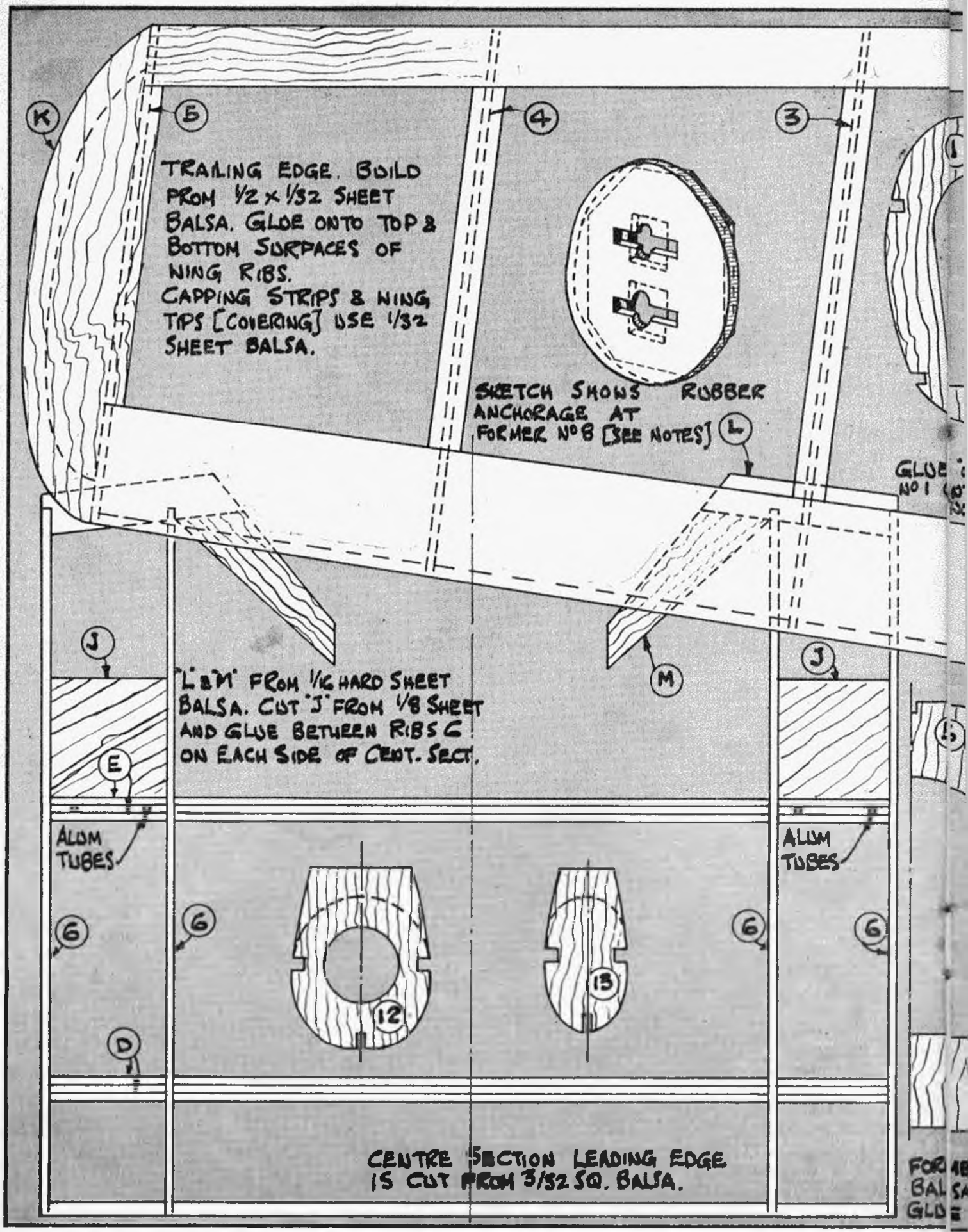

K
5
4
3
TRAILING EDGE. BUILD FROM 1/2 x 1/32 SHEET BALSA. GLUE ONTO TOP & BOTTOM SURFACES OF WING RIBS. CAPPING STRIPS & WING TIPS [COVERING] USE 1/32 SHEET BALSA.
SKETCH SHOWS RUBBER ANCHORAGE AT FORMER No 8 [SEE NOTES]
L
M
J
J
'L' & 'M' FROM 1/16 HARD SHEET BALSA. CUT 'J' FROM 1/8 SHEET AND GLUE BETWEEN RIBS C ON EACH SIDE OF CENT. SECT.
E
ALUM TUBES
ALUM TUBES
6
6
6
6
12
13
D
CENTRE SECTION LEADING EDGE IS CUT FROM 3/32 SQ. BALSA.

PLATE 3.

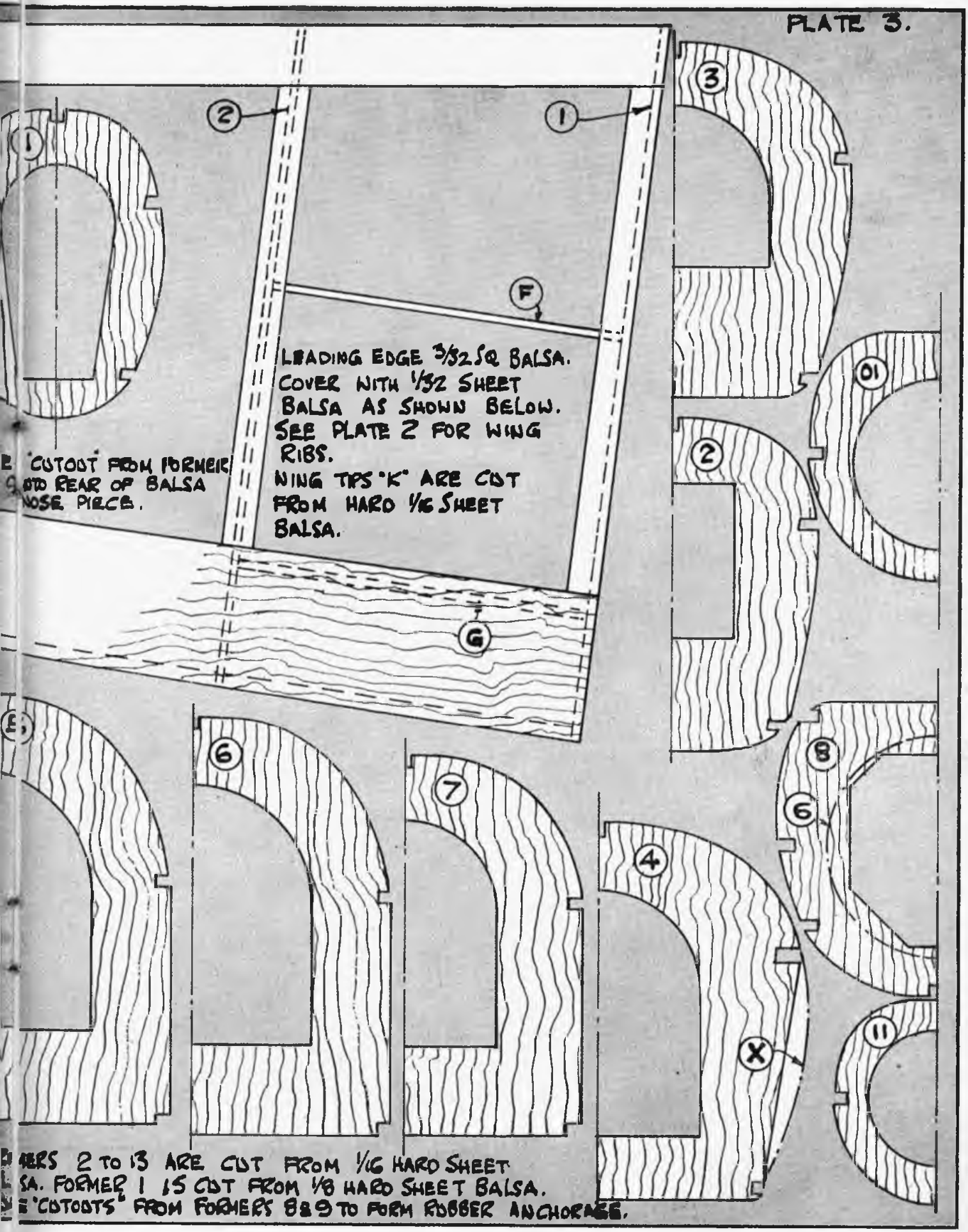
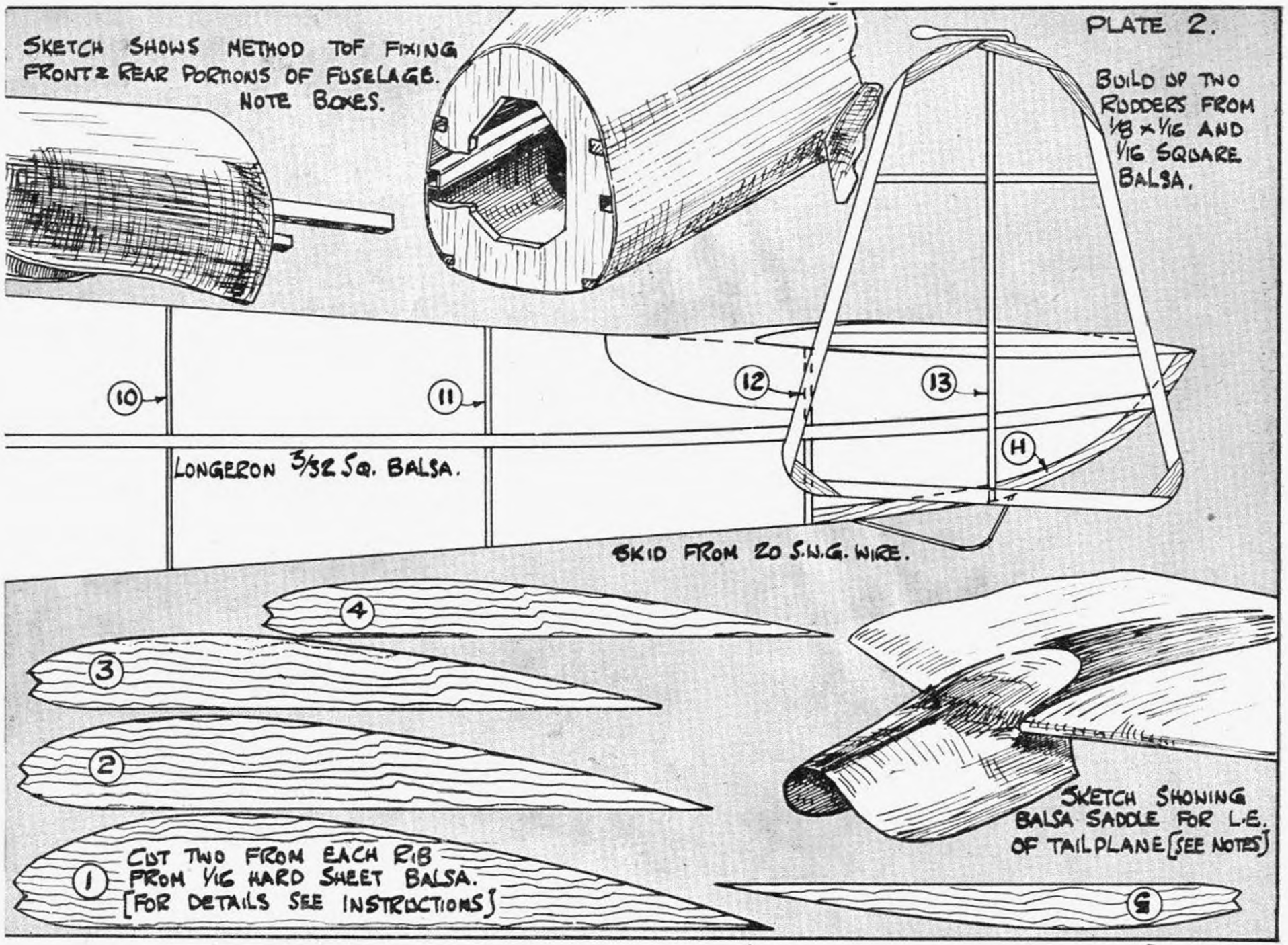

LEADING EDGE 3/32 SQ BALSA.
COVER WITH 1/32 SHEET BALSA AS SHOWN BELOW.
SEE PLATE 2 FOR WING RIBS.
WING TIPS "K" ARE CUT FROM HARD 1/16 SHEET BALSA.
'CUTOUT FROM FORMER
STO REAR OF BALSA
NOSE PIECE.
FORMERS 2 TO 13 ARE CUT FROM 1/16 HARD SHEET
SA. FORMER 1 IS CUT FROM 1/8 HARD SHEET BALSA.
E 'CUTOUTS' FROM FORMERS 8 & 9 TO FORM RUBBER ANCHORAGE.

PLATE 2.


SKETCH SHOWS METHOD TOF FIXING FRONT & REAR PORTIONS OF FUSELAGE. NOTE BOXES.
BUILD UP TWO RUDDERS FROM 1/8 x 1/16 AND 1/16 SQUARE BALSA.
10
11
12
13
H
LONGERON 3/32 Sq. BALSA.
SKID FROM 20 S.W.G. WIRE.
4
3
2
1
CUT TWO FROM EACH RIB FROM 1/16 HARD SHEET BALSA. [FOR DETAILS SEE INSTRUCTIONS]
SKETCH SHOWING BALSA SADDLE FOR L.E. OF TAILPLANE [SEE NOTES]
G

"GET OUT OF THAT GROOVE!"

By "LOW WING"

I WAS so interested in the article, "Wing Underneath," by M. R. Knight, in the April issue of THE AERO-MODELLER, that I am tempted to write of my own experiences with this particular type of model. I notice the author is contributing further articles on the subject, and I feel that I should let you have my version before these later articles appear in print. For this reason. It is woefully easy, as soon as one has read an article, to exclaim, "There you are, what did I say? Just what my own experiments have led me to believe!" That's all very fine in its way, but its gets us nowhere. What we need—and I mean the whole modelling movement—is a bone of contention to get the movement out of that "high wing groove" that M. R. K. so deplores, and the only way that can be brought about is by a comparison of views, backed, if possible, by experimental facts and data. Now I, personally, am situated in a rather out-of-the-way district, a goodly number of miles from any organised model flying club, so that my only link with the outside world—so to speak—of modelling, is my very good friend, THE AERO MODELLER. Still, that doesn't damp my enthusiasm, not in the least. So you see how I'm fixed. If I build a model to my own design and it doesn't behave as it should do, I just have to consult with myself and find out, by trial and error, not so much why it doesn't go right, but what makes it go wrong. Perhaps you'll think this a crazy line of reasoning, but I've found that once you've mastered the theory of why an aeroplane flies, then, and only then, can you begin to figure why a model *doesn't* fly. And believe me, I've had some rare fun with my experimental models; also some anxious moments. I have so far managed to avoid that "high wing complex," that M. R. K. mentions, and have concentrated on the more or less despised and neglected low-wing type. Not because I find any fault with the high wing, far from it, unless it be that there us such a wealth of data available on the subject that there is very little in it for the serious experimenter.

The very first model I made up was a half-guinea high-wing kit set of well-known make. The collection of parts was a splendid example of what a kit should be, and the very comprehensive plan and book of instructions supplied with it made the job of assembly almost child's play. At the same time it didn't explain why this was done and why that was done. You see my point—it was using somebody else's brains all the time. If the model was assembled correctly and trimmed according to instructions one didn't even have to think. The model just flew, as I had been led to expect, and that was that. But after all, flying the child of some one else's imagination isn't very satisfying, is it? There's no thrill in taking out a model that flies consistently well, unless, of course, one goes in for "pot-hunting." And then the owner is in very much the same position as the man who enters, say a Spitfire against a Leopard Moth and sundry similar machines in an open speed event. If he's prepared to pay the price for a first-class machine, well and good. Barring accidents, he should be assured of some measure of success. But his satisfaction on winning is in no way comparable with the fellow who finished lower down, perhaps last, on a machine he built with his own hands to his own design. And the same applies to models.

If the owner of the purchased model finds that his machine puts up an indifferent performance, how will he start to remedy the defect? Is it in the assembly, in the actual trimming, or a fault in the design itself? How will he know? In a good number of cases it will be put down to the latter, a slur will be cast on the good name of the firm manufacturing the article, and the movement will lose a prospective member. Because why? Simply because he failed to get a grasp of the fundamental principles of aero-modelling. I can hear many howls of protest when I say that the hobby is too often looked upon as a means of decorating the family sideboard. I take off my hat to the owner-designer, but I wonder how big a percentage there is in the movement of these, who genuinely have the prime object of aero-modelling at heart?

There is no greater thrill than to see the result of one's experiments take the air and fly, if only for a short distance. It gives one the incentive to try, try, try again. Once get it into the air and your fun begins.

Learn the why and wherefore, and then it's up to you to perfect the machine of your heart. I've done it.

I've always had a weakness for the low-wing model, partly perhaps because they are a little difficult to design and fly successfully, and partly because I reasoned that if the R.A.F. could make such successful low-wing machines there must be something in it, and so I determined to try and find out what it was. The fuselage hasn't proved a great factor, providing the elementary principles are kept well in mind. I'm afraid I am unable to express myself in mathematical terms as some of your contributors manage to do, which I will admit rather muddle me.

They are rather like legal documents to me; when I've finished reading them I'm not sure whether they refer to a writ of Habeas Corpus or an increase in the cheese ration! However, one thing I have learned. It seems better to use a wing of tapering chord with the wing tips kept as light as possible. I find reed as good as anything for this purpose.

In all my experiments I have used a fuselage with a very short centre-section, just a trifle wider than the fuselage itself. By using this method, one is enabled to try various types of wing shapes and sections, with the additional advantage that the wings can be of the "knock-off" type, so that a great deal of damage is avoided should the model crash. This system also makes for greater ease of transport, as up to a dozen wing halves can be carried in a light-weight case, measuring half the wing span of the model. Another great help is a completely detachable tail-unit. By this means any type can be tried, from the simple elevator and fin to the tail plane with fins at the extremities. By using each tail unit in conjunction with each different wing section no small task—I have been able to build a low-wing model that has all the soaring capacities of the hing-wing coupled with the really docile steady flight that only a well-designed low-wing can give. One of the greatest adverse tendencies of the low-wing, the tendency to roll somewhat in a side wind, can be avoided by giving the model generous dihedral, not less than 12° in any case, and as I've said before, by keeping the wing-tips light. An upturned wing-tip, upturned from the last, or next to last, rib, is also a great help in this direction. I am now experimenting with an adjustable dihedral device, for I feel sure that just as there is a correct incidence angle for maximum results, the same applies to dihedral. More interesting times ahead!

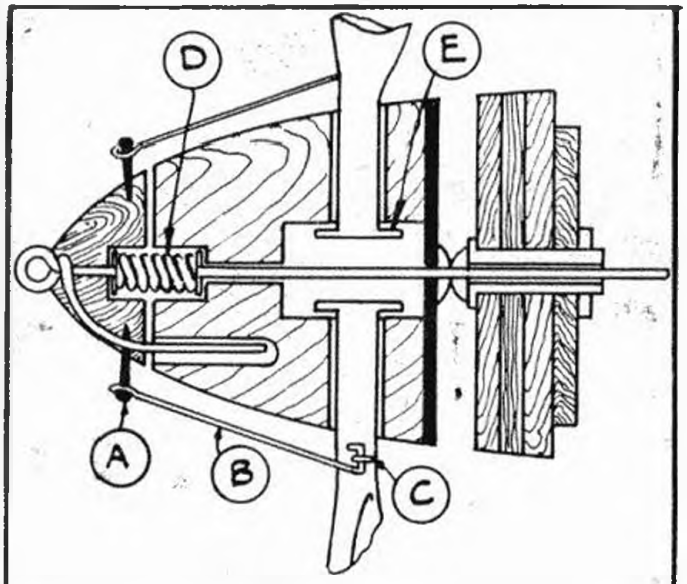
A COUNTER BALANCE FOR SINGLE-BLADED PROPELLER

By A. R. SKEGGS

THE single-bladed propeller is, even in these days, quite uncommon, although its efficiency is outstanding. For the beginner a propeller is an expensive item, but by buying an ordinary propeller one can make two of the latest designs from it, whereas the experienced can use broken propellers.

For the beginner, the counter-balance is a tricky job, but by making a lead weight, drilling a hole through the centre of it and in either side of the spinner pushing a piece of wire through each of these holes, bending the ends over and glueing them to the spinner, one can make a simple and efficient job (see diagram). As the propeller revolves the centrifugal force keeps the weight at the end of the wire.

* * *



* * *

HERE is an idea, a "fully feathering" model airscrew, for use on competition models. It has many advantages over the ordinary free-wheeling mechanism, and the increase in weight is negligible.

The advantages are:

(1) More efficient use of the available power.

(2) Longer glide at the end of power output.

It is constructed in the following way. Two holes are drilled in the hub to take the rounded blade roots, which are fitted with retaining flanges, so that the blades can turn freely but cannot come out. The front end of the hub and the rear end of the spinner are then drilled to take the small coil spring, which is the most important part. Two small wire arms are fixed to the spinner with little nails or pins, and the other ends of the arms fix into eyes in the airscrew blades. (See sketch). When the elastic is fully wound, the spring is compressed and the blades assume their normal pitch angle. As the motor runs down and the tension slackens, the spring expands, and the blade pitch coarsens until, when the motor is fully run out, the blades are "head on" to the line of flight. This reduces head resistance, and consequently lengthens the glide.

A FULLY FEATHERING AIRSCREW——By H. A. GORDON

FIGHTING AIRCRAFT OF THE PRESENT WAR—VIII

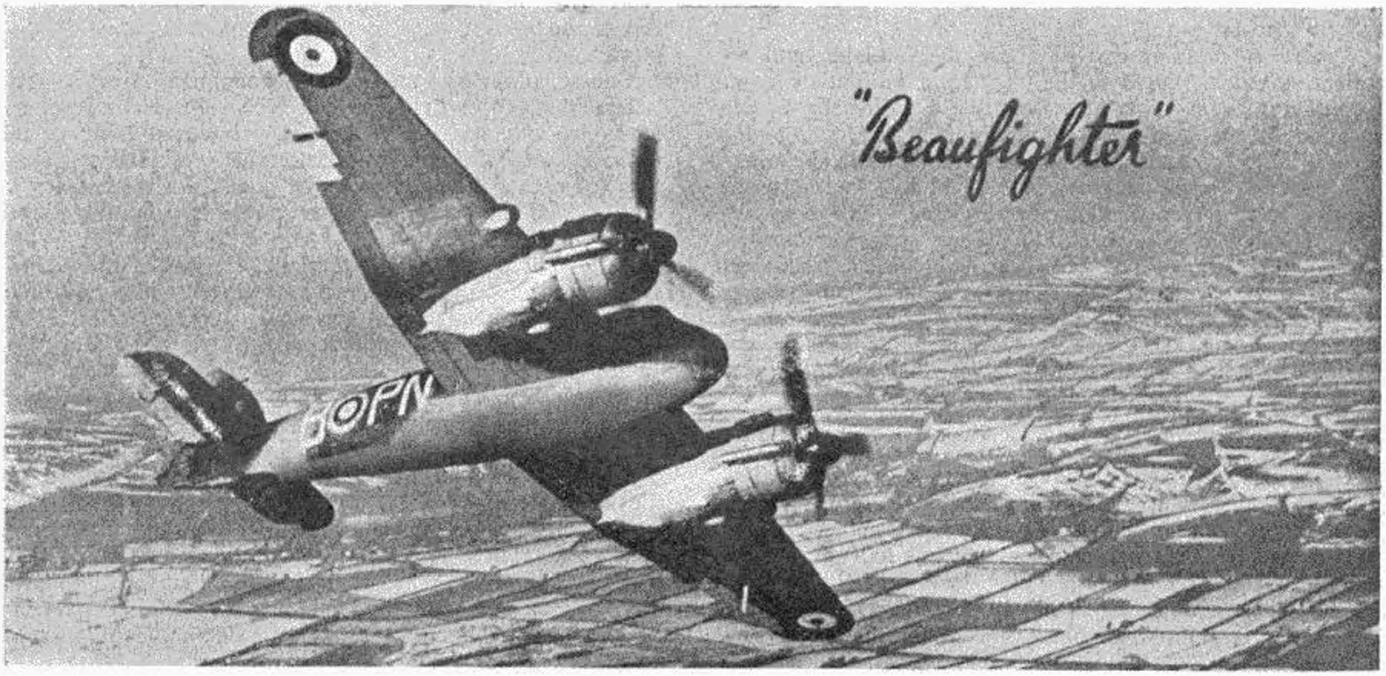


Photo by courtesy of the Air Ministry.

By H. J. COOPER

A FEW weeks ago the Air Ministry decided that as the Bristol Beaufighter had become familiar to the British public, and no doubt to many unfortunate night-raiders as well, it was time that photographs of this new day-and-night fighter should be made available for publication.

Photographs were duly splashed in our aeronautical and daily Presses, but for some reason, best known to the Ministry, general arrangement drawings and recognition silhouettes were not released. The reason for this is not clear, as reasonably accurate g.a. drawings can easily be made from photographs by anyone who wants them.

However, a general arrangement drawing is available now, and although officially no dimensions have been released, it has been stated that the wing of the Beaufighter is identical to that of the Beaufort, or as near as makes no odds. The wing span is, then, around 58 ft., and in the accompanying 1/72 scale drawing this figure has been accepted as correct. The overall length works out at 41 ft.

The Beaufighter is classed as a multi-seat fighter for operation by day or night, and is a twin-engined low-mid-winged monoplane. It has now been in service for some months, and has already proved a worthy descendant of the long line of Bristol military aeroplanes, from the F2b Fighter of 1917, the Bulldog of 1929, and the Blenheims and Beauforts still in service with four Commands of the Royal Air Force. In the heavy raid on London on the night of May 10/11th, 1941, Beaufighters shared (with Havocs and Hurricanes, Spitfires and Defiants) the distinction of destroying twenty-nine of the thirty-three raiders brought down.

That the Beaufighter, (glorious name!), is developed from the Beaufort is evident from its appearance. In fact, when approaching, distinction between the two is extremely difficult and well-nigh impossible. In this view it is only the short nose, affording an excellent outlook for the pilot, which enables an observer to accurately identify the Beaufighter, and this cannot be seen until the plane begins to pass overhead.

The Beaufighter is of metal construction with stressed metal covering. The control surfaces appear to be fabric-covered, as on the Blenheims. Many of the Beaufort's component parts are evidently incorporated in the new fighter. Split trailing edge flaps are fitted to the wings between the balanced ailerons and the fuselage. Trimming tabs are fitted to all control surfaces.

The undercarriage consists of two hydraulically-operated legs, which retract backwards and upwards into the motor nacelles. When retracted they are enclosed by doors which close smooth with the bottoms of the nacelles except for some small bulges for the wheels and operating gear. The tail-wheel retracts forwards.

The motors of the Beaufighter appear to be Hercules 14-cylinder sleeve-valve air-cooled radials, but no official information has been given regarding the power-units. They are closed in long-chord cowlings with leading edge exhaust collector rings and are fitted with controllable gills for cooling. Three bladed airscrews are fitted. Air intakes are mounted above the cowlings. Oil cooling inlets are situated in the leading edge of the wing, one outboard of each motor.

The crew (there must be more than two for the type to be called a multi-seater) is accommodated in the fuselage, the pilot in the nose, and one gunner in a raised transparent-covered cockpit on the deck level with the trailing edge wing fillets. Presumably, as in the case of some new German two-seat fighters, the other member of the crew acts purely as wireless operator and ammunition loader. Details of armament have only just been released, but those who heard the Beaufighters in action over London on May 10th (as distinguised by the characteristic resonating

snuffle of their Bristol motors) knew that, *canon* (which have a slower rate of fire than machine-guns) were carried. It has been officially stated that the armament is four *canon* and six machine-guns.

A wireless mast is carried above the fuselage, and an antenna extends from it to the fin. Inset navigation lights are fitted to each wing tip, and twin landing lights are installed in the leading edge of the port wing. A pitot head is situated just beyond the latter, underneath the wing.

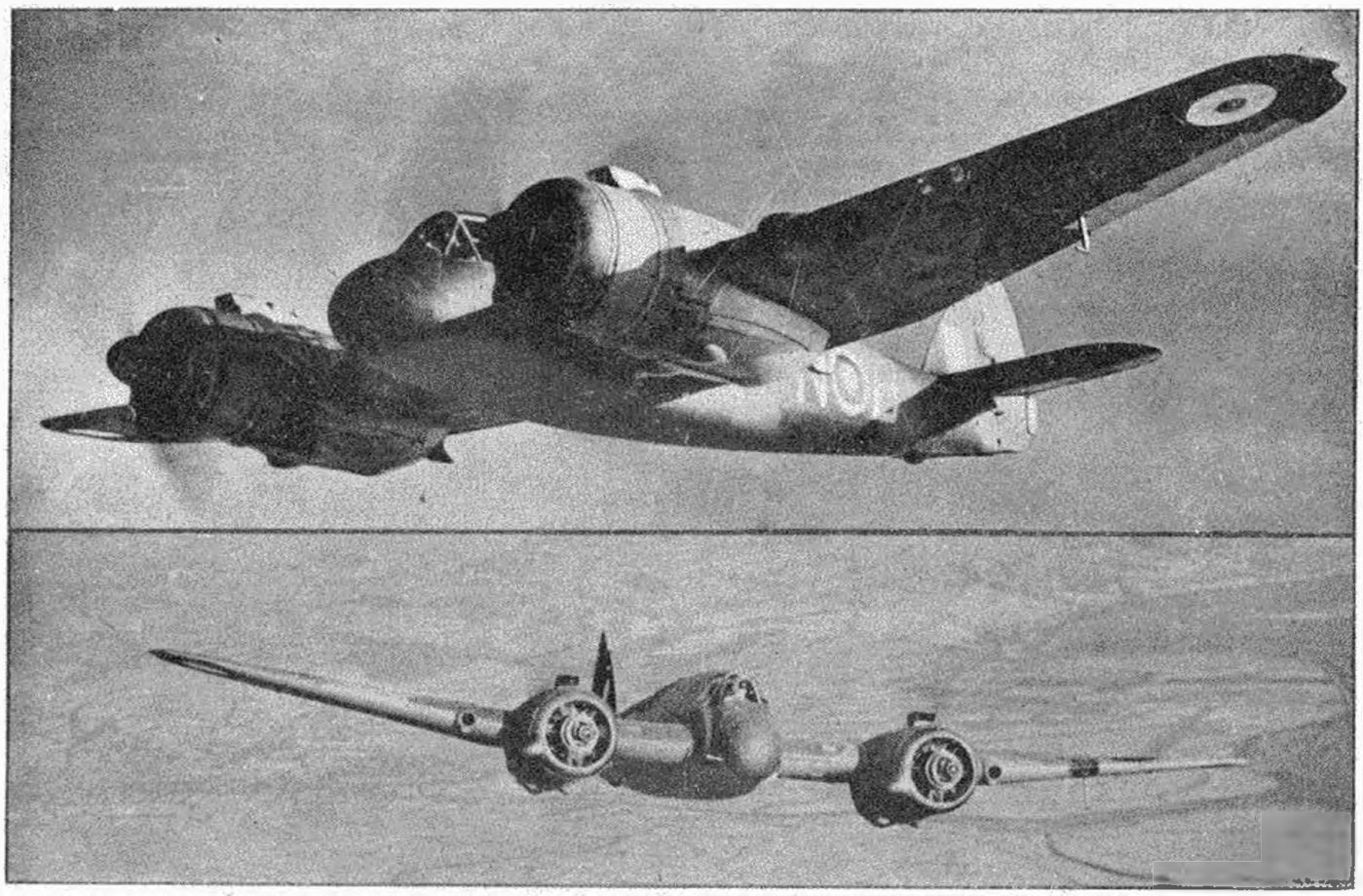
As already mentioned, the Beaufighter is not easy to identify, except from underneath or above. The nose terminates just level with the leading edges of the motor cowlings, and this point is sufficient to distinguish it from even a short-nosed Blenheim. The wings of the Blenheim are, of course, rather more sharply tapered at the tips, and the tail-plane is not straight at the leading edge, as is the Beaufighter's. The short nose gives the Beaufighter a rather more bulky appearance than the Blenheim.

Beaufighters now in squadron service are mostly camouflaged with the usual green and brown plan, and are light blue-grey or "duck-egg" blue underneath. (N.B.—It has been suggested that aero-modellers should register for *duck's* eggs, so that they can obtain the exact colour for their models!) This lighter colour extends halfway up the motor cowlings to the wing, and a fraction of the way up the fuselage. When used purely for night fighting the Beaufighter is painted all black, except for the upper surface of the wing and tail plane, the fin and rudder, and a small area extending from the fin along the top of the fuselage to the pilot's cockpit, which are camouflaged. The top of the leading edge of the wing and tail plane are also black.

One squadron equipped with Beaufighters bears the code letters "PN" in light grey on each side of the fuselage. In both cases the combination is painted in front of the cockade, with the individual letter aft. This is a departure from standard practice, as it is usual for the two letters to be aft of the cockade on the starboard side, and before it on the other side.

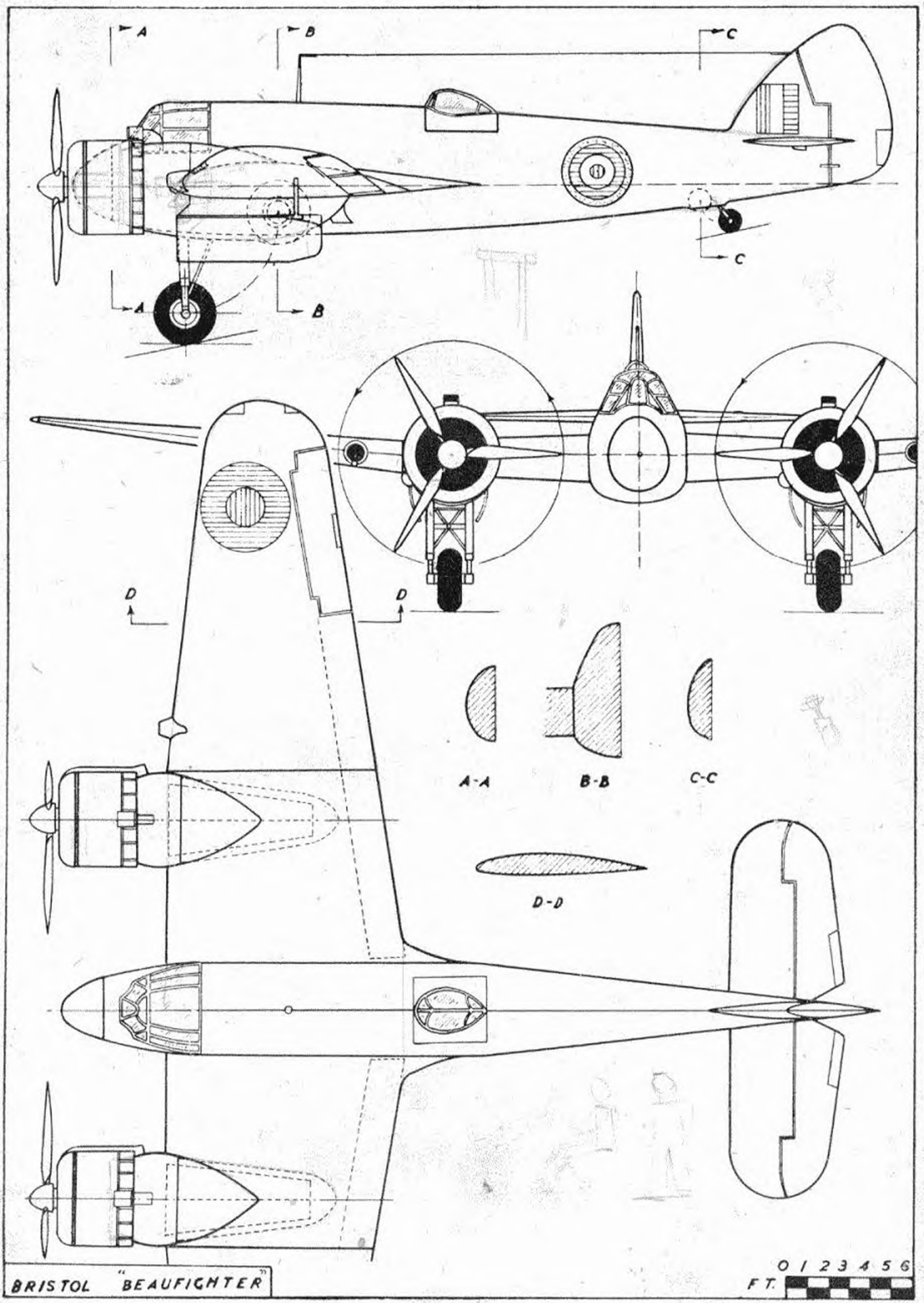
Cockades on wings and fuselage are now standardised. On the sides of the fuselage they are red, white and blue, with the additional yellow surround; above the wings they are red and blue, and underneath are red, white and blue. In no case do markings overlap the control surfaces. The fin markings are also standardised, the red, white and blue vertical stripes being painted in the form of a rectangle about 2 ft. wide and 2 ft. 6 in. high. When the fin area of an aeroplane is insufficient for this, the colours take up all the available area.

No performance figures of the Bristol Beaufighter have been released for publication, but readers may draw their own conclusions from the foregoing remarks and the splendid lines of the aeroplane as shown in the accompanying illustrations.



Photos by courtesy of the Air Ministry

NEXT MONTH:—The Messerschmitt Me 109F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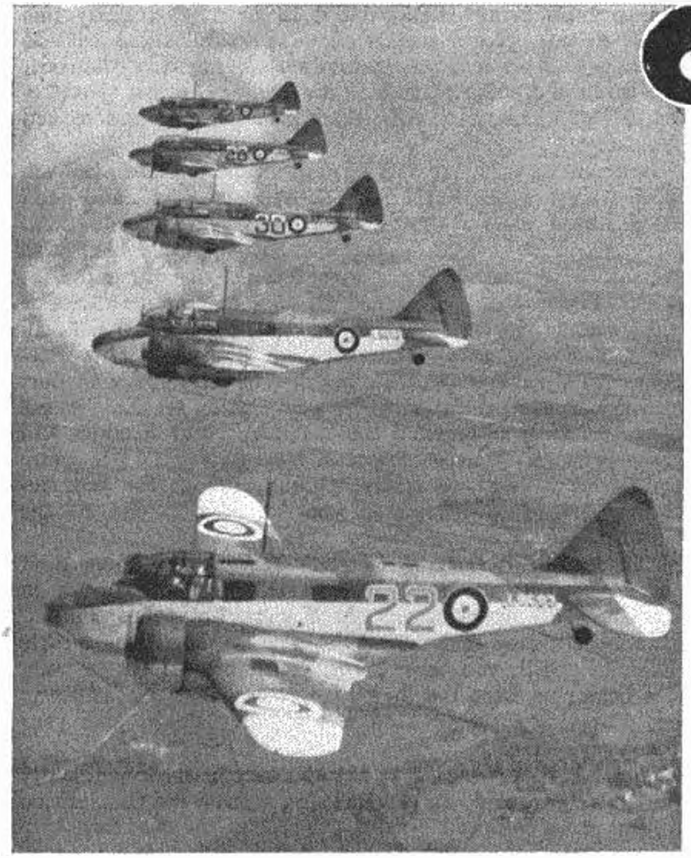


CLUB NEWS

By "The Clubman"

WELL, what did I tell you! Some months ago, when a notice appeared requesting particulars of all the the clubs carrying on with their activities, I guessed that some groups would not come up to scratch—and would have a bit of a grouse in consequence. I was right, as, since the new Club List has been distributed, a number of "old-established" clubs have written in complaining bitterly that their name was not included.

There is only one answer to them—it is entirely their own fault. We are not clairvoyant, and it was emphasised that non receipt of a proper notification by the date stipulated would be taken as indicating that those clubs had discontinued activities. Trouble is, it all boils down to the old story—too much trouble to deal with small details, and a heck of a grouse when said omission rebounds. However, the satisfaction rests with all the clubs who *did* see to things properly, and there the matter must rest. In order to clear up these matters, and to obtain, if possible, a *complete* list for the accommodation of prospective newcomers, WILL ALL CLUBS NOT LISTED IN THE OFFICIAL LIST (including clubs formed since the list was compiled), PLEASE SEND IN COMPLETE DETAILS OF TITLE AND SECRETARY'S NAME AND ADDRESS TO REACH "THE AERO-MODELLER" OFFICES *NOT LATER THAN AUGUST 20th*. These particulars will then be published for use in conjunction with the current list.

Now then, you grousers, this is your last chance, and the whole matter rests in your hands. Non-notification by the date stated will be construed as indication of the demise of said clubs, and no further listing will be contemplated.

It is gratifying to note the way our readers appreciate the way we are managing to continue in spite of war difficulties, and among the most enthusiastic are our overseas readers. Just read this letter, received from L. B. Krummeck, of South Africa.

"And still they come! That is the thought that flashes through my brain each time THE AERO-MODELLER *turns up, and each time I wonder whether there will be a next time. The proof of my faith that they will continue to roll up is the fact that I have just renewed my annual sub. Congrats, old Editor and henchmen, for keeping the A-M going, and not only 'going' but on the up-and-up! We can assure you that we are holding thumbs for you all, and that your efforts are doubly appreciated in these troublous times.*

"As one of the lucky ones who can still fly at random, I have just written a few lines to Dr. Forster for his edification (joke?). Anyhow, I want you chaps to know that we are still mopping up the A-M. That and the M.A. News *is the sole connection I have with the model world, so you can well imagine what they both mean to me."*

Another ardent reader is Tan Tek Hok, of 54 Plaboeanweg, Soekaboemi, Java, Dutch East Indies, whose quaint letter I quote here in full.

Dear Sir,

Herewith I take the confidence to write you about building of model airplanes. As I am only a novice in fact of building model airplane that will realy fly, I am very glad to received your latest book—The Design and Construction of Flying Model Aorcraft—since I have waiting for six months. But it is worthly to wait. I did build for two years and have several rubber models and one gas job of own design that still waiting for flying, since the war makes it impossible to do a step on the aerodrome and there is no other suitable field in the neighboorhood. The plane has a span of 6 ft., is Brouwn D powered, and weight approx. 3 1/2 pound, removable tail unit and wing. Enclosed you will find a photo of it. The second photo is of the Air Cadet in full flight. It is a successfull model and did make several flights of over 2 minutes. The average flight is aprox 100 seconds. The plan is from THE AERO-MODELLER, *since I am a faithfully reader of it. The latest photo is of the take off of the championship airplane on the latest meeting December, 1939 !). It was held by the only one Model Airplane Club in the whole tropics, the Bataviasche-Jeugdluchtvaartclub, Batavia. In my neighboorhood there is no other model-anthousiast. So I like very much to have one or two correspondent in England and I hope you will help me herewith. They can write me first if they wish, but if you can't find somebody, I hope you will notice it in your Club News column of teh* AEROMODELLER. *Then I hope you will explain me about the "Air Defence Cadet Corps." Is it only for model-builders in England, or can anyone join it? If the latest is the true, I hope you will enroll me, and tell me what the duty is for the member.*

Dear Sir, I am very glad if I can receive a photo of you and before hand my very much thanks for your help and kind.

With Model-builders greating,
Yours truly,
Tan Tek Hok.

Our Javanese friend, Tan Tek Hok.

We have informed this enthusiast that, of course, the A.D.C.C. is only open to youths in Great Britain, but I trust that some of you will open up a correspondence with this chappie, as I am sure such interesting contacts are well worth cultivating.

The report of this year's competition for the Clyde Model Dockyard Trophy makes sad reading indeed, for, although Scottish summer weather does not usually consist of bright sunshine and gentle zephyrs, and although Scottish modellers are sometimes accused of building over-strong models, no Wakefield ever built could stand up to the weather conditions prevailing over mid-Scotland on July 6th.

The competition was divided into four sections, run by the Dundee, Edinburgh, Fife and Glasgow Clubs in their respective districts, and careful organising by the officials of these clubs was rewarded by a record entry. Actually, 69 entries were received, representing 11 Scottish clubs, as well as several unattached flyers. The Glasgow section, with 36, made up rather more than half the total entry, while the other half were distributed more or less evenly over the three Eastern sections.

Of the Edinburgh, Fife and Glasgow competitions little can be said, except that a gale of wind and driving rain made flying absolutely impossible. Some of the braver spirits did try, with disastrous results, and out of these three sections the only flight recorded was one short one by R. C. Bishop, of Dunfermline M.A.C., at the Fife section.

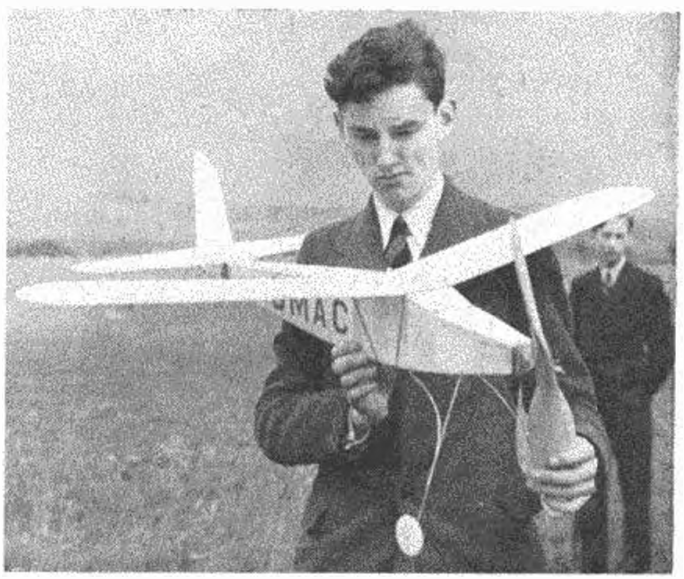
The Dundee section had plenty of wind but no rain, and managed to make a few flights. R. G. Bannerman, Dundee, with an aggregate of 147 sec., and D. L. Robertson, Dundee, with 107 sec., actually completed their three flights, and so the trophy again travels east to Dundee. Although Bob Bannerman's times are very low, under the circumstances it was a remarkably good performance, and it is reported that his model was the only one which went home whole from the Dundee competition.

The extreme conditions showed up the weak points in decentralised arrangement, but it is hoped to remedy this defect in next year's event. Meanwhile, all those who so willingly helped in the organisation are heartily thanked, and it is the opinion that better and better Scottish "Wakefields" will arise from the wreckage of battered and soaked models!

Better news from Ireland this month, as the ban has been lifted from the DUBLIN M.F.C. flying grounds, and good use has been made of the resulting facilities. Our old friend Dr. Charles has been putting in some good work, also Messrs. Flanagan, Brazier, Fesemayer, Archbold and Pollard. The "Doc" averaged 1 : 49·6 to win the Class B (h.l.) event, and also collared the Wakefield Class with an average time of 1 : 23·3. This club is awarding its Perpetual Challenge Cup to the member of any club who puts up the best total duration in the competition season. These chaps certainly appreciate the "A.M.," and Freddie and yours truly come in for a spot of back-patting! I'm going to ask for a rise! Anyway, Dublin, thanks for your remarks, and I will forward your "tonic" idea to the Editor.

The members of the OXFORD M.F.C. are doing their best to keep up the good work started by Mr. Courtney in the Gamage event, but as most of them are young and inexperienced, they find the decentralised competitions a little difficult! Still, you never know, you know. I've seen quite raw beginners wipe the floor with veterans. I remember in the year. . . . (Now then, cut it out. You'll give your age away.—Ed.)

The ASHTON AND D.M.A.C. are doing exceptionally well this year, and, as you will notice from the competition results, have followed up their success in the National Cup with a win in the "Flight Cup," and, although I have no official figures for the Plugge Cup progress, I should think this club is well on top, considering their showing in the Gamage, Weston and Flight events. (Incidentally, I, and I am sure the rest of you, would appreciate a word from the S.M.A.E. on the current position of both the Club and Individual Championships.) The Ashton Rally looks like being a good stunt, and the Mayor and Corporation are giving their official support, so look out for good doings on September 14th.



The Winnah! R. Bannerman and model.

R. R. B. Smee, of the EPPING M.A.C., put up the best time of 1 : 27 in a recent competition, but lost to C. E. Eles on average, the latter fellow setting up 1 : 50 against Smee's 1 : 42. The Theydon Club has now amalgamated with the Epping lads, to their mutual benefit.

The ILKLEY M.A.C. have been losing a number of models in the high winds prevailing there recently, this latter bugbear accounting for non-participation in the Flight Cup competition. Naturally, these chaps are bucked with their second place in the S.M.A.E. pole flying events, and compare their membership of ten with the winners' 250-odd! Still, big acorns from little oak trees grow, or summat like that. J. Townsend won a recent "Wakefield" event with 3 : 20·6, while R. Crowe pulled off the small class with 2 : 31·2.

The BRIGHTON D.M.A.C. are still going ahead, and held an interesting inter-club event recently with the Southwick Club. Brighton won the Spot Landing and Gliding events, while Southwick carried off the r.o.g. duration, h.l. duration and Concours classes. F. S. Thomson (Brighton) clocked 4 : 53·8 in the gliding event, while F. H. Boxall (Southwick) put up 2 : 05·1 and 5 : 03·9 averages in the r.o.g. and h.l. classes. Weather in this area has not been of the best, especially on S.M.A.E. dates. However, the presentation of five handsome prizes by Mr. Baker has done something to cheer them up!

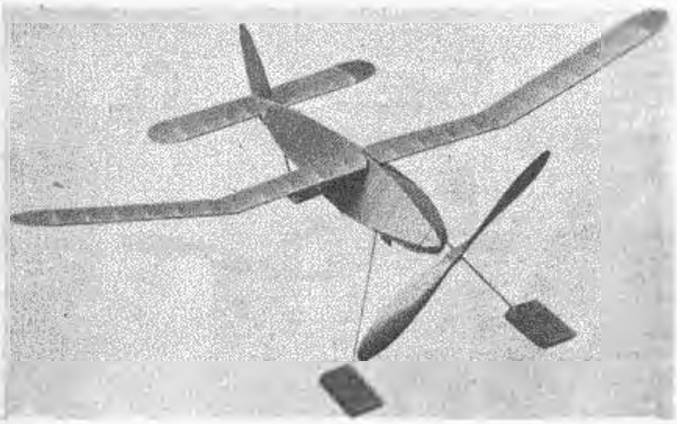
Mr. Guest, junr., won the silver cup for youngsters in the WALTON AND D.M.F.C., with a time of 3 : 27 for two flights, with Mr. Forsey just on his heels. A "Spotters" section is causing great excitement in this club, and many heated arguments are to be heard at times!

"Two aircraft did not return" from Woking's local affair in the Weston Cup Competition, but fortunately they have since received news that one of them is safe at Petworth, Sussex. This "Winston," flown by A. McGee, must have covered something approaching twenty-five miles. M. Webb, not Wood, as reported last month, also lost his "Victrace," but it is strongly suspected that it did not hop quite so far away. These unrehearsed departures let in friend Gunner again as winner of Woking's Weston. Interest is still strong in Surrey, although some promising experiments in Wakefields are held up by shortage of balsa. Kits, however, are in great demand, and McGee's effort should stimulate flying hereabouts.

The NEWARK AND D.M.A.C. record has been raised to 5 : 05 with an o.o.s. flight by the treasurer, Mr. Storar. A visit by the Cranwell College Club was an enjoyable occasion, and the dose is to be repeated as soon as possible. The Newark chaps have collected £18 to date for the local Spitfire Fund.

In spite of balsa shortage, the TORQUAY AND D.M.A.C. is carrying on, and J. P. Finch succeeded in winning the "Club Trophy" with an aggregate of 4 : 04·5. In a later event he lost his 'plane on a test flight after 7 : 00,

THE TERRIBLE RESULT OF FIXING THE TAIL SKID THE WRONG WAY ROUND



A fine replica of the "Diasphere," built by G. Bamforth, of Oldham, which wins for him the prize of 10/6 offered in the July issue.

the eventual winner being R. Perrett, who clocked 4 : 20 aggregate. Contest winners now get a certificate of flight, counting three points for a win, two for second, etc., the highest total at the end of the season qualifying for a special trophy presented by the chairman.

The MOUNTAIN ASH M.A.C. have succeeded in securing some balsa (without coupons, too!), so building has started again in a small way. W. Horseman won three out of six events recently staged, while D. Fidler took two and K. Rentmoor the remaining item. Horseman's best time was 1 : 35, and his winning average 1 : 10·7.

In spite of a howling gale, J. Beanlands won the gliding cup of the BRADFORD M.A.C. with an average of 20 sec. Good weather has been spoilt by an abundance of wind, but this does not deter the real enthusiasts.

Four members of the LEICESTER M.A.C. flew in the Weston Cup event, when E. Claypole aggregated 5 : 31·2 for one flight, losing his model and setting up a new club record at the same time. Unfortunately, his model, a finely finished "Rocket," has not turned up yet, and any information will be appreciated. The inter-club meeting arranged for June 13th brought unlucky weather to meet the date, a terrific storm developing and soaking models and flyers. In consequence the meeting has been postponed to August 17th.

The LUTON AND D.M.A.S. are having some interesting social gatherings lately, and the late competition secretary, Mr. A. G. Jones, was recently presented with a silver salver in appreciation of his services to the club. Recent cup winners are R. Hinks ("Brown Trophy"), A. Poulton ("Holton Cup"), and R. Jones ("Novices' Trophy").

B. Halliwell, of the LANCASTER M.A.S., has been doing very well lately, having won the Biplane Competition with 2 : 05·2, the Junior Challenge Cup with 3 : 27·1, and the Light weight Challenge Cup with 4 : 01·2—all these times being the aggregate of three flights. C. C. Horner won the heavy-weight class with an aggregate of 3 : 57·6. This chap has put up the club scale record to 42 sec., while J. H. Harvey raised the glider record to 1 : 39·5.

A large number of modellers turned up to the Rally staged by the BUSHEY PARK M.A.C., and several models were unfortunately lost on test flights, etc., including that of Mr. Marshall (Hayes), who set up the longest flight of the day. Mr. Piggott, of Blackheath, won the Open Duration event with an aggregate of 7 : 35, with Mr. Harris (Portsmouth) runner-up with 6 : 23. Mr. Spratley (Hayes) won the gliding event with one flight of 4 : 58·5, Mr. Wilson, also of Hayes, placing second with 3 : 33·2. Bushey Park won the team contest with a total of 684 points, Walton following up with 501.

B. Crawford, of the ULSTER M.A.C., averaged 2 : 03·4 to win a recent open competition, J. Parker 1 : 06·9, and T. H. Daulman 1 : 06·2, bringing up the rear. N. Osborne walked away with the biplane event, clocking 1 : 19·3. Record breaking flights have resulted in lost models, one being returned from twelve miles away, the current figure standing at 7 min. o.o.s.

The CROYDON AND D.M.A.C. are the latest club to commence a house magazine, and the membership is increasing nicely. Mick Farthing (bet you they call him "Robin") has at last lost his "three minutes every time" model, being timed 12 min. o.o.s. Mr. Hills won the heavy-weight class with a flight of 4 min. At the Northern Heights meeting every team member's 'plane cracked up because, I am told, "some silly ass will stand and wind-up in front of the take-off board." Well, well, where were the contest officials? But what do you think of "Skyhooks" Burton, who made about half a pint of rubber lube and put it in his box without the lid on! Really, I ask you!

L. Austin has raised the r.o.g. record for the STRATFORD ON AVON M.A.C. to 2 : 45, but weather conditions have prevented much ordinary flying. Several good-looking models are on the way, and one member, nicknamed "Gearbox," has turned out some weird and wonderful devices. Notable is a gearbox located in the fuselage, driving a metal propeller through an extension shaft, *a la* Airacobra . . . the average duration being about 2 sec.!

The SCUNTHORPE M.A.C. raised £30 for the local hospital and Red Cross with an exhibition of models, and continual r.t.p. competitions caused a great deal of interest. W. Sharmon, the secretary, won the club's "Sherman" Trophy with three very consistent flights, aggregating 4 : 58.

The BLACKHEATH M.F.C. "propaganda merchants" have been busy, with the result that twelve new members have joined the ranks. To give these lads an encouraging start, two special "Novices' Competitions" were arranged, one being held at Epsom and the other on Blackheath. Entries were up to expectations, and resulted in wins for Thomas (3 : 23·11) and Bell (3 : 39·2).

Fun and games up Huddersfield way.

Mr. Baines is making an excellent job of a 5 ft. span "Leopard Moth" scaled from AERO-MODELLER plans. I trust we shall be favoured with photos of this model, as I am sure other readers will be interested in it.

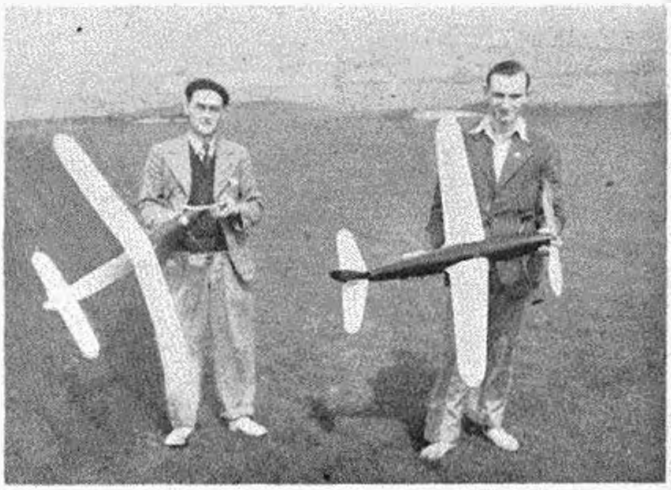
J. Howie, of the GLASGOW M.A.C., now holds the club record with a time of 6 : 45 r.o.g., his model disappearing from sight and not heard of since. High winds have spoilt most of the flying with this club but it is doubtful if many clubs could compete with these chaps for cross-country running! It looks as though indoor flying will flourish with this club next winter, J. Maxwell already having put up a flight of 4 : 03 r.o.g.

I am pleased to hear that the SHORTS M.A.C. is staging something in the nature of a come-back, and wish them all success. Many new members have enrolled, and the possession of a fine field and club room is a big advantage. A Gala Day is due for Bank Holiday Sunday (too late for publicity here, Mr. R.), and here's wishing them a good time.

The biplane record for the ANDOVER M.A.C. has gone to Mr. Rumbold with a time of 1 : 40, other records being 2 min. for the duration figure by K. Gilroy and 1 : 43 by J. Baker for the r.t.p. class.

Although little has been heard from the HAYES AND D.M.A.C. for some time past, it is still keeping its head above water, despite the prevailing times. As it has not been possible to arrange regular indoor meetings, a small group meet on Chobham Common (the nearest open space usable, 16 miles from Hayes, unfortunately) for flying on Sundays. Members are still getting much enjoyment and success from large gliders. (It may be remembered that Hayes flyers came first, third and fifth in last year's "Thurston" Cup). An exhibition of models during Hayes War Weapons Week assisted in raising £800.

I am asked to state that the CARDIFF M.A.C. is definitely still in operation, the rumour having got around that they had packed up. All Cardiffians please note. C. Stockland (a junior member) has raised the club biplane record to 1 : 05 with a model of his own design, while W. Cope, with a fine model of the Art Chester Racer, has smashed the club scale record. Unfortunately no times are given.



I. G. Bell and Bob Copland on their visit to the Halifax Club. Find it cold up there, boys?

The FARNBOROUGH M.A.C. has recommenced activities, and although membership has been depleted by the call for national service, the young 'uns and old 'uns are carrying on, having "found" a new flying ground to replace the one "lent" to the R.A.F. for the duration! The first competition was won by G. W. Harris with a time of 3 : 30·8, with F. M. Harris runner up with 3 : 05. A meeting has been arranged with the Aldershot Club.

The CHINGFORD M.F.C. were unlucky at the Northern Heights "Open Day," when a member lost his model on its first flight after 4 : 07 o.o.s., thus losing his remaining two flights. However, fifth, eighth and tenth places and a second in the team event were some compensation—and I understand that many members will remember a somewhat hectic journey! When was this—coming or going?

The ROWDITCH (Derby) M.A.C. has amalgamated with the DERBY SHORT WAVE M.F.C., and all correspondence should in future be addressed to the latter group.

A new club is being formed in Loughborough as a section of the Holy Trinity Boys' Club, and an inaugural meeting is to be held on August 25th at 7.30 p.m., at Trinity Schoolroom, when all

A flying-scale "Cessna," built by D. Hodgson, of the Chingford M.A.C., and the "Ericon Cup," he won. Nicely detailed "Hawker Fury" constructed by L. Scott, of Morpeth.