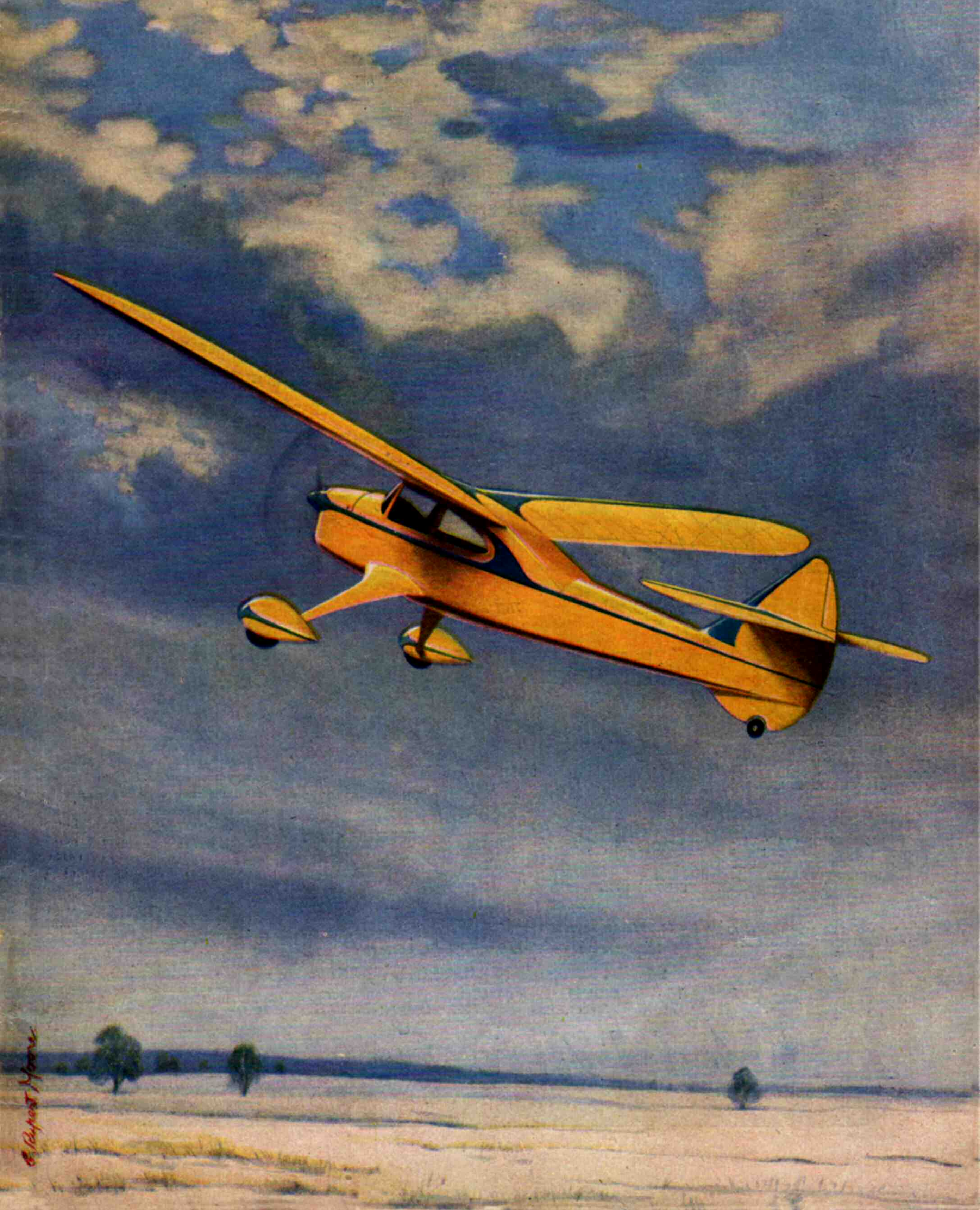
JAN. 1948

# AEROMODELLER

1/3



# LEARN to EARN

Leave the overcrowded ranks of the poorly paid—let The Bennett College help you to the top where there is always plenty of room for the well-trained. Just choose your career or let us advise you. The Bennett College with its proud tradition of friendly *personal* tuition and its long record of triumphs, is the most progressive, most successful Correspondence College in the World. We teach nearly all the Trades and Professions by post all over the Globe.

**Distance makes no difference**

## EARNING POWER IS A SOUND INVESTMENT

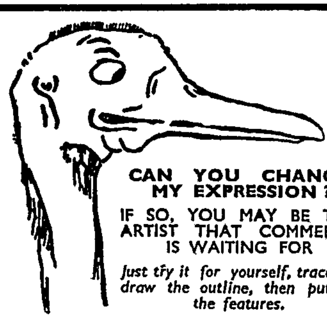
## JOURNALISM

**Short Story, Novel and Play Writing**

There is money and pleasure in Journalism and Story Writing. No apprenticeship, no pupilage, no examinations, no outfit necessary. Writing for newspapers, novels or pictures is not a gift; it is a science that can be acquired by diligent application and proper guidance. It is the most fascinating way of making pastime profitable. Trained ability only is required, we do the training by post. Let us tell you all about it.

LITERATURE. DEPT. 119

## STUDY AT HOME IN YOUR SPARE TIME



**CAN YOU CHANGE MY EXPRESSION ?**

IF SO, YOU MAY BE THE ARTIST THAT COMMERCE IS WAITING FOR

*Just try it for yourself, trace or draw the outline, then put in the features.*

There are hundreds of openings in connection with Humorous Papers, Advertisement Drawing, Posters, Calendars, Catalogues, Textile Designs, Book Illustrations, etc., etc. 60% of Commercial Art Work is done by "Free Lance" Artists who do their work at home and sell it to the highest bidders. Many Commercial Artists draw retaining fees from various sources; others prefer to work full-time employment or partnership arrangement. We teach you not only how to draw what is wanted, but how to make buyers want what you draw. Many of our students who originally took up Commercial Art as a hobby have since turned it into a full time paying profession with studio and staff of assistant artists—there is no limit to the possibilities. Let us send full particulars for a FREE TRIAL and details of our Course for your inspection. You will be under no obligation whatever.

*Jim Duck*

ART DEPT. 119

## CHOOSE YOUR CAREER AND WE WILL SEE YOU THROUGH

- Accountancy Exams.
- Advertising and Sales Management
- Agriculture
- A.M.I. Fire E. Exams.
- Applied Mechanics
- Auctioneers and Estate Agents
- Aviation (Engineering and Wireless)
- Banking
- Blue Prints
- Boilers
- Book-keeping, Accountancy and Modern Business Methods
- B.Sc. Eng.
- Builders' Quantities
- Building, Architecture and Clerk of Works
- Cambridge Senior School Certificate
- Carpentry and Joinery
- Chemistry
- Civil Engineering
- Civil Service
- All Commercial Subjects
- Commercial Art
- Common Prelim. E.J.E.B.
- Concrete and Structural Engineering
- Draughtsmanship. All Branches
- Engineering. All Branches, Subjects and Examinations
- General Education
- G.P.O. Eng. Dept.
- Heating and Ventilating
- Institute of Housing
- Journalism
- Languages
- Mathematics
- Matriculation
- Metallurgy
- Mining. All Subjects
- Mining. Electrical Engineering
- Motor Engineering
- Municipal and County Engineers
- Naval Architecture
- Novel Writing
- Plastics
- Play Writing
- Plumbing
- Police Special Course
- Preceptors, College of
- Press Tool Work
- Production Engineering
- Pumps and Pumping Machinery
- Quantity Surveying — Institute of Quantity Surveyors' Exams.
- Radio Service Engineering
- Radio (Short Wave)
- Road Making and Maintenance
- Salesmanship I.S.M.A.
- Sanitation
- School Attendance Officer
- Secretarial Examinations
- Sheet Metal Work
- Shipbuilding
- Shorthand (Pitman's)
- Short Story Writing
- Social Welfare
- Speaking in Public
- Structural Engineering
- Surveying
- Teachers of Handicrafts
- Telecommunications (City and Guilds)
- Television
- Transport Inst. Exams.
- Viewers, Gaugers, Inspectors
- Weights and Measures Inspectors
- Welding
- Wireless Telegraphy and Telephony
- Works Managers

*If you do not see your own requirements above, write to us on any subject. Full particulars free.*

**IF YOU ATTEND TO THIS NOW, IT MAY MAKE A WONDERFUL DIFFERENCE TO YOUR FUTURE**

**COUPON—CUT THIS OUT**

To Dept. 119, THE BENNETT COLLEGE LTD., SHEFFIELD

Please send me (Free of Charge)

Particulars of.................................................
Your private advice about..................................... (*Cross out line which does not apply.*)
...............................................................

PLEASE WRITE IN BLOCK CAPITALS

*NAME*.........................................................
*ADDRESS*......................................................
...............................................................

*The College with a ♡ as well as brains*

★ **help yourself**


★ ★ ★ ★

Joy-plane products, made by modellers for modellers, are now becoming available in increasing quantities, because larger supplies of the high quality materials used in their manufacture are being released.

CELLULOSE WING DOPES. ½ pint 4/6. Extra strong, for petrol models, ½ pint 5/6. CELLULOSE BANANA OIL, No. 1 Thick, No. 2 Thin, ½ pint, 4/6. PLASTIC WOOD FOR BALSA, ¼ lb. tins 1/6, tubes 9d. BALSA WOOD CEMENT, tubes 6d. and 1/-, display boxes of 3 doz. TISSUE PASTE, Bottles and tubes 9d. SILVER DOPE, 4 oz. bottle 2/9, ½ pint 5/-. MODEL DOPES (Cellulose), ½ pint 4/9. Colours: CAMOUFLAGE MATT—Brown, Green, Duck Egg Blue, Heinkel Blue, Light and Dark Grey, Black and White. CAMOUFLAGE GLOSSY—Brown and Green. GLOSSY—Yellow, Grey, Red, Light and Dark Blue, Light and Dark Green, Black, White, Cream, and Brown. GRAIN FILLER (White and Grey), ½ pint 4/9. RUBBER LUBRICANT 9d. Bottles. WATERPROOF FINISH (Goldbeater skin Effect) 9d. Bottles.

★ ★ *For export terms please apply for special leaflet.*

**Turnbridge Manufacturing & Supply Co., Ltd., 52a-62a Longley Rd., London, S.W. 17.**

★ planely the best—**joy-plane** products

---

IT'S THE NAME THAT COUNTS — **"PREMIER" KITS** — KNOWN THE WORLD OVER

**ARE YOU A "PREMIER" BUILDER? IF NOT, WHY NOT? WE HAVE A DESIGN THAT IS JUST THE THING FOR YOU! START 1948 IN THE "PREMIER" WAY**

*TWO COPLAND MASTERPIECES WHICH ARE STILL THE "TOPS" IN AEROMODELLING DESIGN*

**THE "NORTHERN STAR"**
37¾" Span

Complete Parcel of Selected Materials, Including Blue Print, Printed Ribs and Hand-carved Airscrew, but excluding Dope **19/4**

A World Record Holder. **THE G.B.3.**
45" Span

Complete Parcel of Selected Materials, including Printed Ribs, Blue Prints, Hand-carved Airscrew, but excluding Dope **£1 13s. 6d.**

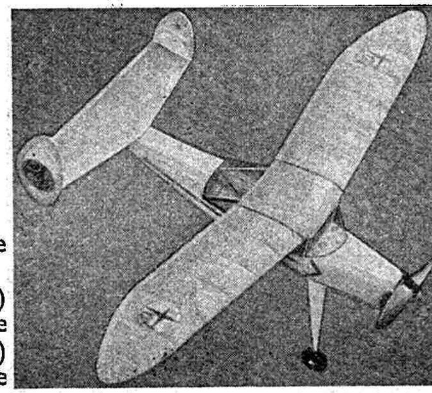
**PREMIER AEROMODEL SUPPLIES LTD**

**"HILL VIEW" WORKS, EAST END ROAD, FINCHLEY, N.2 - - - - - - Phone: Tudor 6104**

## A.M. CABIN DURATION RUBBER MODEL ILLUSTRATED HERE

Kit is complete with printed Balsa sheet, Plywood strip, Cement, A.M. Drawing, Rubber, etc.

Price .. .. .. **7/6** Post Free



### OTHER KITS IN OUR RANGE:—

"SON OF TRIKE," 30⅜" SPAN ... ... **12/6** Post Free
"LEANDER" SAILPLANE, 48" SPAN ... **16/6** „
"MICK FARTHING" GLIDER, 40" SPAN (Contest Winner) **15/-** Post Free
"ARNHEM" GLIDER, 30" SPAN (Machined Ribs, Tail, etc.) **14/6** Post Free
"DORLAND" RUBBER MODEL, 36" SPAN **25/-** „

### SPECIAL OFFER TO THE TRADE!!

**Balsa Reject Bundles,** attractively labelled, containing sheet, strip, etc. A ready selling Line. **6d.** per bundle
**Obeche Reject Bundles,** as above ... ... ... ... ... ... ... ... **6d.** per bundle
**O'MY DOPE** in all colours ... ... **7½d.** per ½ oz. bottle. **O'MY CEMENT** ... ... **5d.** per tube

*LIBERAL TRADE DISCOUNTS — TRADE ENQUIRIES INVITED.*

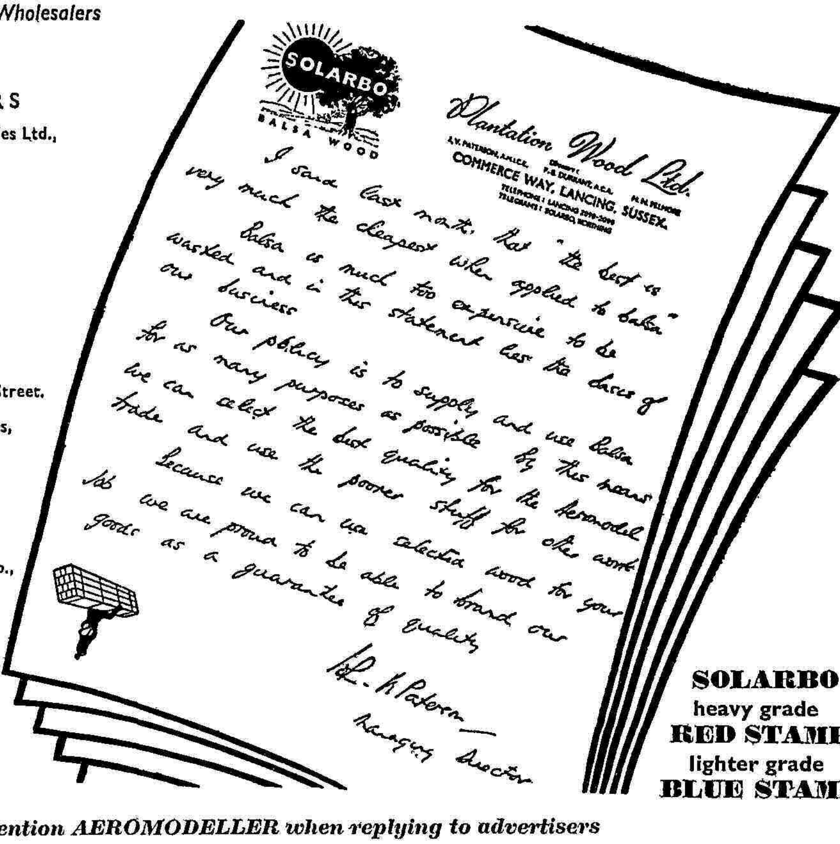
## E. LAW & SON (TIMBER) LTD. 272/4, High Street, Sutton, Surrey

Phone: VIGILANT 8291/2

*Supplied to Manufacturers or through Wholesalers only.*

LIST OF WHOLESALERS

| | |
|---|---|
| London. | Cartwrights Model Supplies Ltd., 19-21 Elystan Street, S.W.3. |
| | E. Keil & Co. Ltd., 195 Hackney Road, E.2. |
| | Henry J. Nicholls, 308 Holloway Road, N.7. |
| Halifax. | Model Aero Supplies, Green Mount Works. |
| Sheffield | Colin Tranfield, Norfolk Row. |
| Newcastle-on-Tyne. | Hamilton Model Supplies, 69-70 Handyside Arcade, Percy Street. |
| Bristol. | Bristol Model Aero Supplies, 22-23 Lower Park Row. |
| Great Yarmouth. | A. Darwood, 17 Market Row. |
| Sussex. | Solflux Products, 98 Albion Street, Southwick. |
| | The Planet Manufacturing Co., The Hornet, Chichester. |
| Scotland. | Allison & Montgomery, 273 High Street, Kirkcaldy. |
| N. Ireland. | Ato Model Crafts, 36 Wellington Place, Belfast. |
| Bruxelles. | Fernand Stockmans, 53 Rue des Chartreaux. |
| South Africa. | Rait (Pty.) Ltd., P.O. Box 293, Germiston. |




**SOLARBO**
heavy grade
**RED STAMP**
lighter grade
**BLUE STAMP**

THE MODEL AERONAUTICAL JOURNAL OF THE BRITISH EMPIRE
ESTABLISHED 1935

*Managing Editor:*
D · A · RUSSELL, M.I.Mech.E.

*Editor:*
C · S · RUSHBROOKE

*Assistant Editor:*
H · G · HUNDLEBY

*Public Relations Officer:*
D · J · LAIDLAW-DICKSON

Published monthly on the 25th of the month previous to date of issue by the Proprietors:
The Model Aeronautical Press, Ltd., Allen House, Newarke Street, Leicester.
Subscription Rate 18/6 per annum prepaid (including Christmas Double Number). $3·75 in U.S.A. direct from the Publishers.



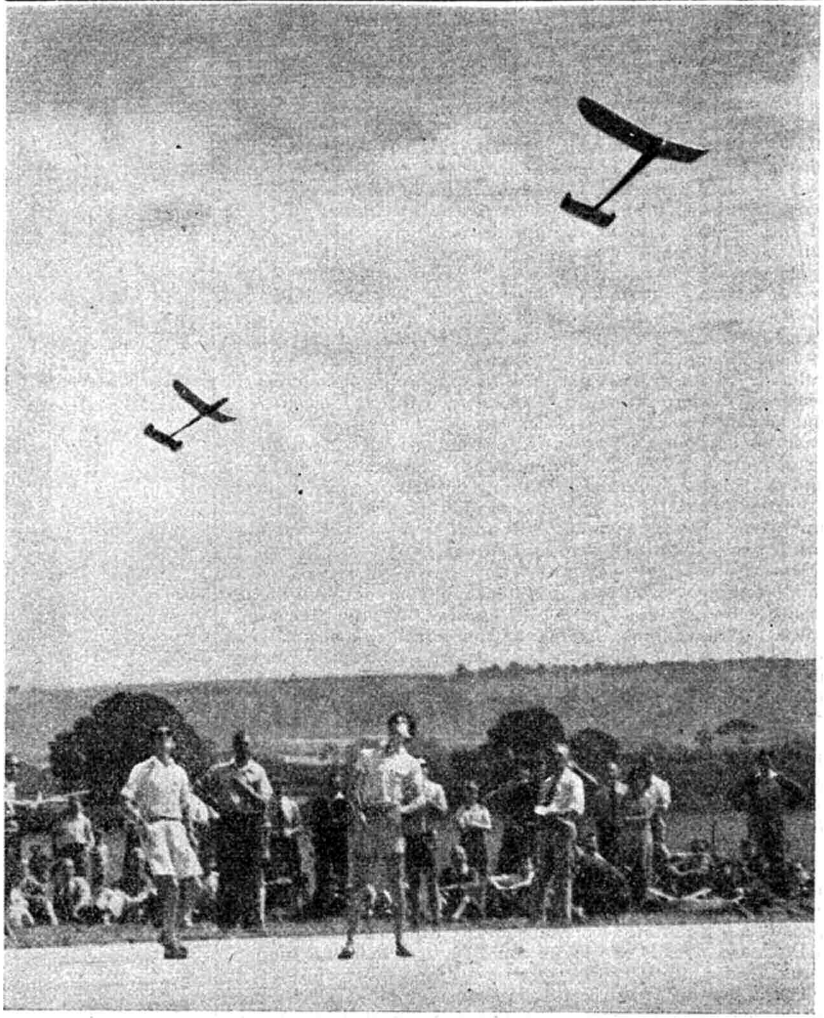
Advertisement Office:
THE AERODROME,
Billington Road, Stanbridge,
Nr. Leighton Buzzard, Beds.
*Telephone.* - - - - - - - - - *Eaton Bray 246*

Editorial Offices:
ALLEN HOUSE, NEWARKE STREET,
LEICESTER. Tel.: LEICESTER 65322

*Copies of all photographs appearing in "The Aeromodeller" which are marked "Aeromodeller Photograph" may be obtained from "The Studio," The Aerodrome, Billington Road, Stanbridge, Nr. Leighton Buzzard, Beds. (Cheques add P.O.'s to be made payable to the "Eaton Bray Studios".)*
*Price 2/– Post free, size 4 ins. × 6 ins.*
*Price 3/– Post free, size 6 ins. × 8 ins.*

# AEROMODELLER

INCORPORATING 'THE MODEL AEROPLANE CONSTRUCTOR'



*GLIDER AND TUG.—A very polished exhibition of aerial towing was given by Jacques Morisset at last year's International Week and this excellent photograph of the event was taken by B. Daw of Saffron Walden.*

# CONTENTS

VOL. XIII No. 144 JANUARY, 1948

# EDITORIAL

"A LINK IN THE CHAIN"

*" The Committee are strongly of the opinion that the respective activities of model making, gliding, and power flying should be co-ordinated on a national scale. These activities, starting with modelling by young people still at school, form a natural chain in the progress of aviation training "*

*" We have been much impressed by evidence from the Society of Model Aeronautical Engineers concerning the activities of the model aircraft movement. The movement has great scope and an abundance of enthusiasm, and is clearly of national importance ".*

So read paragraphs 23 and 61 of the Preliminary Report of the Special Advisory Committee on Private Flying submitted to the Minister of Civil Aviation in July 1947.

Before our youngest reader, deterred by the mention of reports and committees, turns the page or reaches rapidly for the cement to resume the construction of his latest model, let us hasten to point out the vital importance of this report to himself and all other aeromodellers. For years those of influence with the interests of the Aeromodelling Movement at heart have been striving for official recognition and support and although it cannot be said that it is here at last, it is at least encouraging to know that the Advisory Committee headed by Mr. Whitney Straight fully appreciate the significance of aeromodelling in promoting national air-mindedness.

Let us return to our youngest reader again and picture for him his aeromodelling career as it might be if the recommendations of the committee were carried out.

During his tender years at school, History, not always a popular subject, would be brightened by the inclusion of the deeds of the Wright Brothers, Bleriot, Cody and the many other famous names that make aeronautical history. He would hear lectures, see films, and read books from his school library, on all manner of aeronautical subjects. On the practical side his handicraft lessons would include instruction on the building of model aircraft and in his later school years educational visits to aircraft industries, aerodromes and flying clubs. In addition, free flights and air trips abroad as an incentive to good work would instill airmindedness in our young pupil, whilst if he showed sufficient aptitude, a scholarship might be granted enabling him to learn to fly at no cost.

On leaving school and joining a club, housed at one of the 100 Air Centres established throughout the country, he would enjoy social amenities such as a restaurant, sports centre and dormitory accommodation for weekends, all this apart from a special model-making workshop and clubroom, and the use of the airfield itself, where he could build and fly his models under ideal conditions.

The above is a rosy picture we must admit, and in these hard times one tends to pessimism when considering it; but there is no doubt that such a scheme is well within the bounds of possibility although its ultimate development may take some little time. Several recommendations of the Committee however, can be brought into almost immediate operation, in particular the inclusion of aeromodelling in the handicraft curriculum of all suitable schools and the making available of redundant aerodromes and other open spaces for the use of clubs at no cost.

There is no reference in the report to State financial aid for aeromodelling, although it is recommended in the case of the full size gliding and lightplane clubs. We trust that the model aeroplane movement will receive this necessary advantage in keeping with the full size bodies. May we hope that Lord Nathan, Minister of Civil Aviation, a welcome and interested visitor to one or two meetings this last season, will give this and the many other recommendations relating to the Model Aircraft Movement his earnest consideration ?

**S.M.A.E. President.**

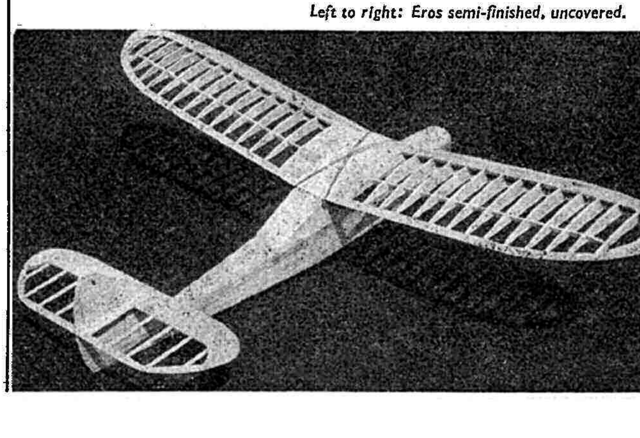
It is now 7 years since the S.M.A.E. has enjoyed the services of a president and it is therefore with particular pleasure that we hear of Lord Brabazon of Tara's acceptance of the presidency. Another public figure and keen aeromodeller, Sir Robert Bird, Bt., has become vice-president and we feel sure that all will benefit from the services of these two notable enthusiasts.

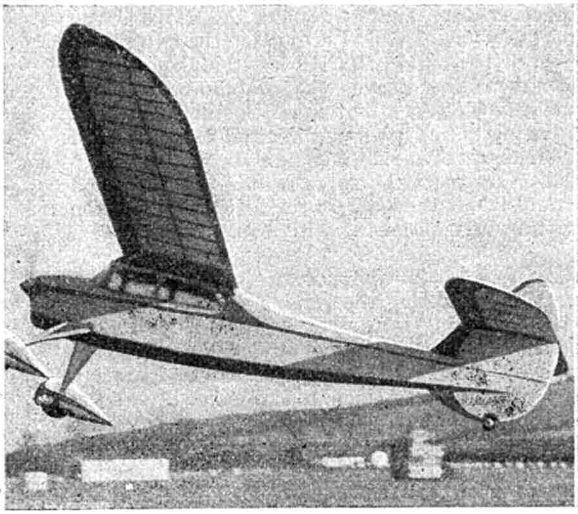
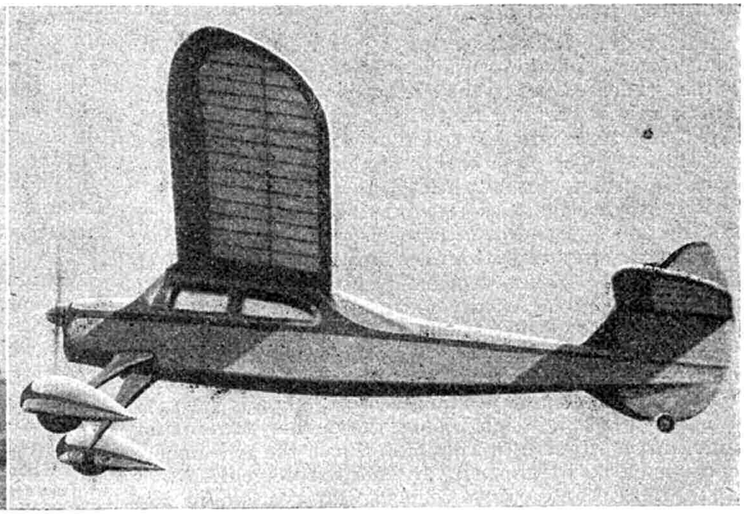

DESIGNED BY
JOHN · W · COASBY

THIS is a model which was built to a specification for a definite purpose and which has completely fulfilled the expectations of the designer. The design was made out to obtain a large power model for pleasure flying, consistent in performance, elegant in appearance, and rugged but simple in construction, which would look and fly like a full-size aircraft.

The fuselage construction is of balsa sheet over a former and longeron framework, which gives amazing strength with lightness. The all-up weight of this 7-ft. span model is only $3\frac{1}{2}$ lbs. ! The engine cowling is neat and effective, specially designed to make the engine fully accessible for starting. The model was primarily designed for the now famous Sparey 5 c.c. diesel, and this has proved an ideal combination, although the performance was no less sparkling with the alternative

*Left to right: Eros semi-finished, uncovered.*



*Eros and designer on left. Above, the model in full flight at Eaton Bray.*

Micron 5 c.c. installation. Consistent flying has also been obtained with a Kemp 4·4 c.c. The undercarriage is strong and springy and is responsible for one of the most astonishing characteristics of the machine—its unbreakable habit of making a faultless three-point landing on almost any surface, not to mention taking-off!

This feature of the undercarriage combines with the flat gliding angle, stout construction throughout and powerful anti-stall flat plate tailplane to provide as near a crashproof model as it is possible to make. On one occasion the machine inopportunely crossed the slipstream of a full-size aircraft taking off. The blast swung it right in a sideslip, although it did not spin, but the damage was confined to a broken prop, engine plate and centre section. As the engine plate is designed to give in a crash and the model went in under power, the damage was amazingly superficial.

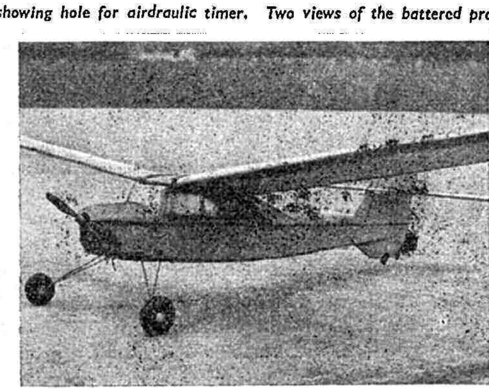
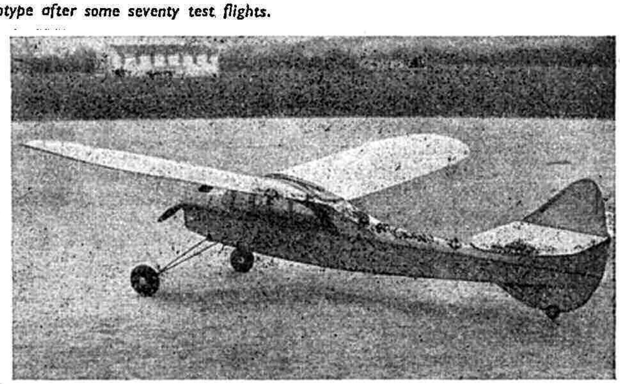
The design of most of the components is a sound correlation between practice and modern theory. The wing chord being 12 inches, the model was reckoned to fly at super-critical conditions, and therefore a normal aerofoil was used instead of a laminar flow section, the choice going to old favourite Clark Y. The tailplane is mounted at a medium-high position out of the downwash of the wing and in the best compromise between structural strength and anti-spin efficiency. Here it may be as well to point out that the model has never yet been persuaded to spin on any of the seventy or eighty flights it has made to date. The flat plate section was deliberately chosen in accord with up-to-date theoretical trends as the most effective anti-stall section. Fin area is on the generous size, which has resulted in a weathercock stability that kites the machine up on every available breath of wind—the model soars like a sailplane when on the glide.

Stability all round is excellent, and the very low dihedral fitted has always proved quite adequate for all conditions, despite the mutterings of the pundits. The general excellence of the flying characteristics of Eros have been amply proved in all weathers.

Constructionally, Eros is simple but sound. The wings follow normal sheet-covered practice, with solid ribs and capping strips. Their shear-pin and tongue and box attachment is worthy of note. This is the answer to all the loose tongue trouble that so many modellers wail about, and a fairly obvious answer, too. It makes an infallible fixing that has worked without fail in all the knocks that the machine has received.

For the newcomer to power modelling this model is as good as any—for the experienced model flier it is a delight. Care in building, as in any model, plays a considerable part in results obtained, but the machine is so docile that there is considerable latitude in adjustment without the fear that the first and last flight will be interesting to watch. Incidentally, the spats have confounded all the endless critics of these decorations. They have no effect on the landing or take-off, even in grass—part of the secret of this being the gap at the rear to prevent the grass blades entangling the wheel.

*The cowling, showing hole for airdraulic timer. Two views of the battered prototype after some seventy test flights.*

**Building Instructions.**

**Fuselage.** Select 2 lengths of ¼ sq. medium balsa for longerons and pin down to side view of fuselage. There is rather an acute bend on the bottom longeron at the nose, but if this is steamed first there will be no difficulty. Next, cement in uprights and allow to set. Repeat same procedure for the other side of fuselage. While fuselage sides are drying cut out all fuselage formers.

Remove fuselage sides from drawing, cement in formers F3, F4 and F4a and cement together longerons at rear. Cement in top and bottom decking formers starting at F5 and F11. Then cement in Former F1 and F2; rubber bands placed around fuselage sides will hold formers in place whilst drying.

Next cement in the two cross struts between F3 and F4 and the two semi-longerons at the top of the cabin. Plank the top sloping decking between F4a and F5 with ¼ in. by 1/16 in. strips. Make the engine bearers and glue into position with Durofix. Carve the two undercarriage blocks to shape and drill out to receive u/c tubes and rubber bands, then cement into position in the fuselage.

Stitch and glue in to position on the top longerons at the nose, the four female half press studs to take the removable top engine cowling and the four male half press studs at the nose to take the bottom half of the removable nose block. See sketch. Next cement in the ¼ in. sheeting at the nose.

Make the nose block, cut in two at the thrust line. Stitch and glue into position the four female half press studs to the bottom half of the nose block and press nose block into position on the fuselage. To the top half of the nose block and F1a glue two pieces of ¼ in. sq. hard balsa. Lay it into position on the nose of the fuselage, mark position of each press stud, stitch and glue into position the four male half press studs, then complete the removable engine cowling by planking with ½ in. by 1/16 in. balsa strips.

Cement to the top of the cabin the 1/8th in. sheet. See sketch. Cement in the two dowels to take the wing retaining bands, also the two uprights and the two diagonal pieces between the cabin window frames. Cement in a piece of block balsa between nose block and F1 and carve to shape of the fuselage, then completely plank the rest of the fuselage with 1/16 in. sheet and sand smooth. Cut out and cement in place the front and side cabin windows.

**Under Fin.** Cut to shape two pieces of ¼ in. sheet and laminate together Insert the rear wheel on to a length of 18 S.W.G. wire and bend to shape. Cut out a piece at the bottom of underfin and bind and cement in place the axle, then cement back the small piece. Sand smooth and cement underfin to fuselage.

**Top Fin.** The fin is made in two halves from ¼-in. sheet. Cut out and cement into the top half ribs R1 and R2. Glue in the paper tubes to take the ¼ in. and 3/16 in. dowels. Insert and cement in place the two wire hooks at leading and trailing edge. Attach the trim tab with two pieces of thin aluminium. Proceed in the same manner for the bottom half of fin. When completed, completely cover the whole of the fin with 1/32 in. sheet. Cut out the 1/16th ply tailplane seating, and cement to R3. Then cement the bottom half of fin to fuselage and fair off with plastic wood.

**Undercarriage.** Form to shape from 10 S.W.G wire, bind with fuse wire and solder the bottom of each two legs together, then bind and solder the hooks at the top of the legs. Glue and bind into place the two pieces of ⅛ in. sheet at top and bottom of legs Make and slip onto the legs the rubber sleeves which should be a stretch fit and cement to the ⅛ in. sheet with " Bostik ". Cut out the spat securing plates from tinplate and solder to legs. Fix the 3¼ in. airwheels, soldering the ends of the axles to retain them. Construct the spats from ¼ in. laminated balsa sheet. Cut out the slots on the inside and slip the spats over the wheels, securing with ½ in. wood screws.

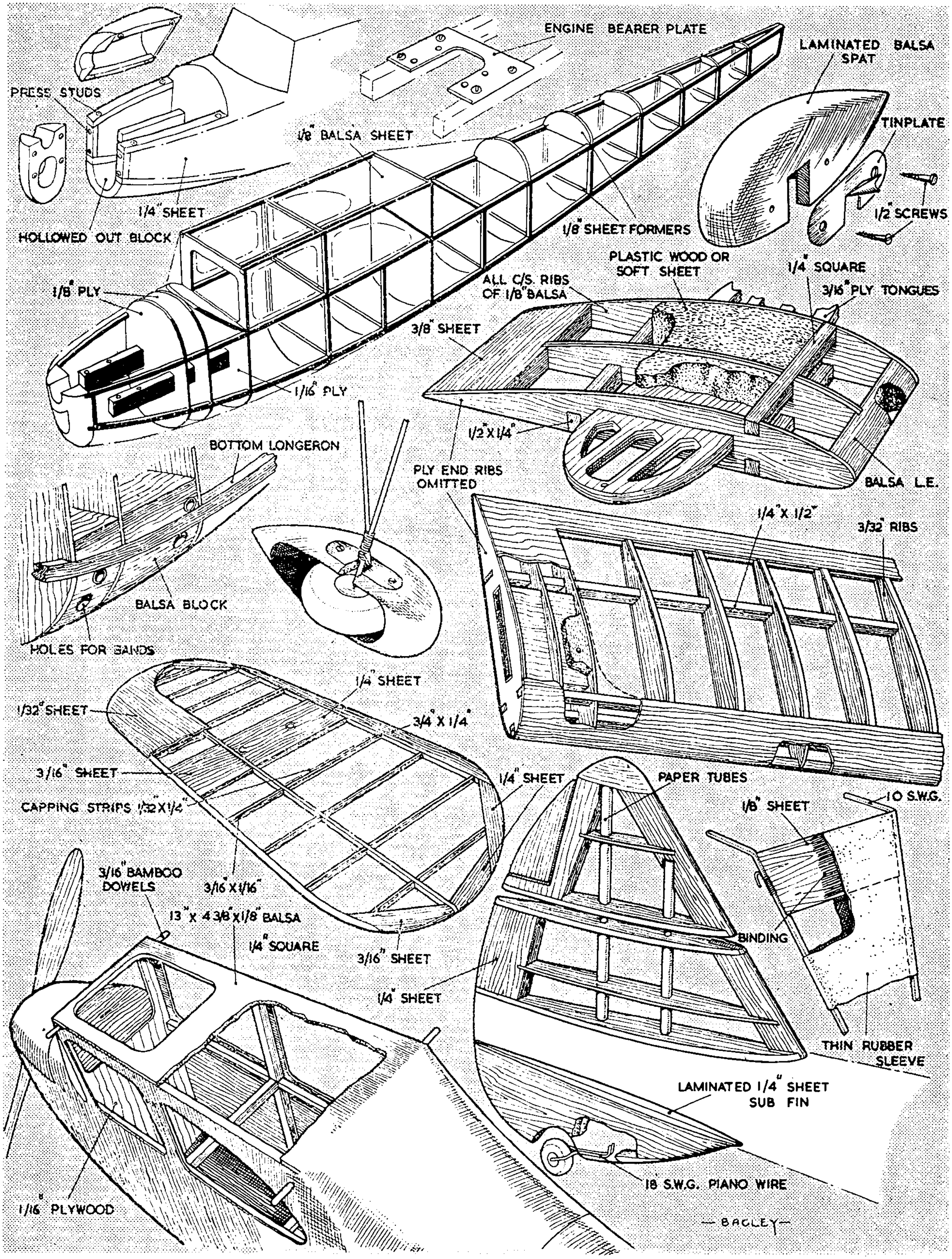
**Wings.** These are straightforward and need little comment. When sheeting the leading edge cement the sheet to the protruding L.E. strip first and leave to set. When set, the sheeting can be carefully steamed to shape over the ribs and glued. The wing tip is made separately for easy sheeting and then cemented to wing. Make the wing box from 3/16th sheet and strip. When box is cemented in wing fill the space on the top and bottom of box with plastic wood or block balsa. The centre section differs from wing in that it has a large solid L.E. and a solid T.E. When cementing in place the tongue, use the same procedure as for the wing filling above and below with plastic wood or block balsa. When completed assemble the wings and drill the ⅛ in. dia. holes right through wing, tongue and box to take the ⅛ in. sq. balsa shear pins.

**Tailplane.** This is a flat section of quite orthodox construction.

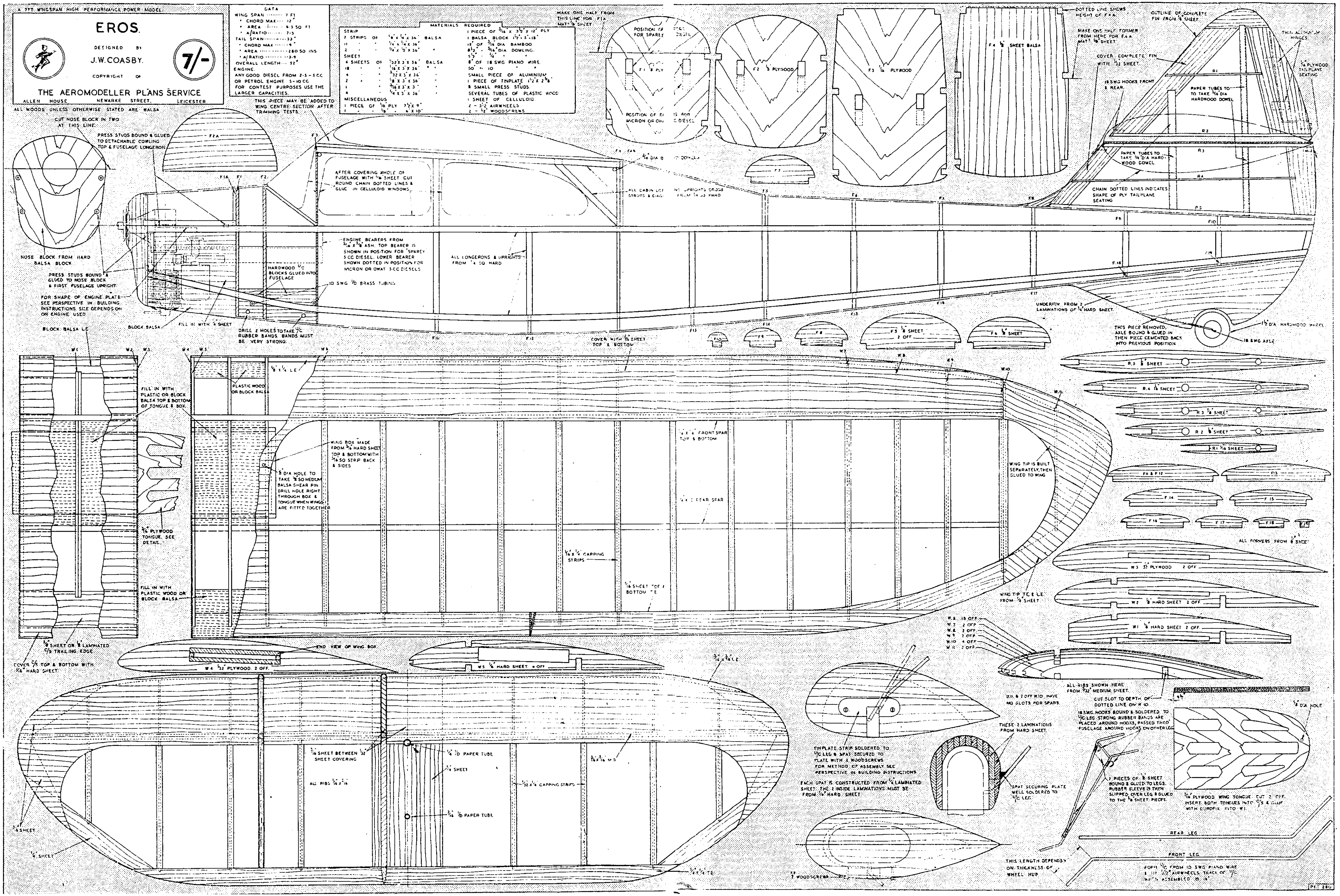
**Covering and Doping.** The wings and tailplane were originally covered with " Silkspan " paper, and the wings given three coats of full strength glider dope, the tail two. Colour scheme was as on cover. If Silkspan or silk are not obtainable double cover with rag tissue or similar tough material. The fuselage and fin are covered with rag tissue doped straight onto the sheeting with three coats of clear dope, followed with several coats of coloured dope, sanding in between each coat to give the required finish.

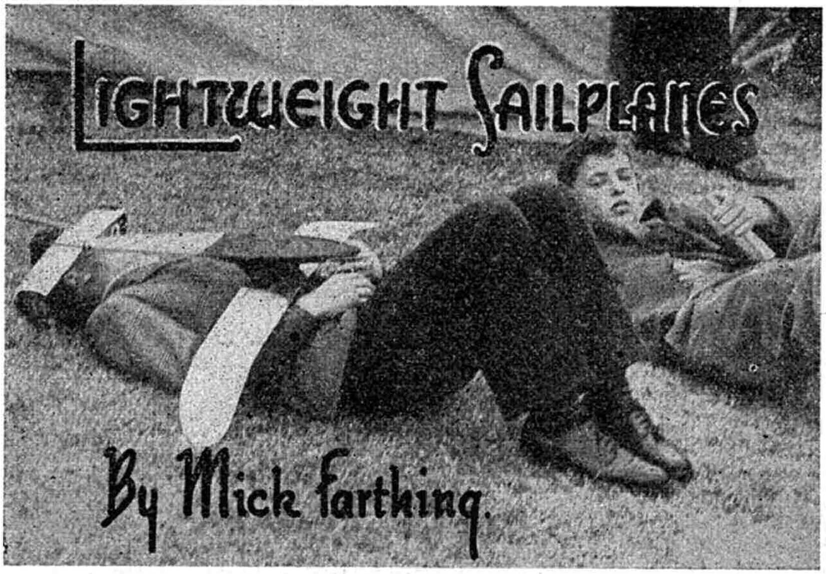
**Flying.** Install the engine with about three degrees right thrust and set the trim tab ½ in. to the left. When the model is assembled it should balance at the first upright of the cabin. The weight should only be around 3½ lbs. Point the model into wind and hand launch gently but firmly with nose slightly down. If model is balanced correctly it should glide for about forty feet before touching down. If model stalls move the wing back a little. If model dives move wing forward a little. Continue hand launching until model glides just below the stall. After satisfactorily adjusted fill up the tank, set timer for five seconds, start up, place model into wind, and let it take off under its own power. The model should just unstick and start to turn left before the engine cuts. Increase the engine run to 15 seconds. The model should take off and climb to the left in about 150 feet diameter circles If the model tends to stall during the power run give the engine a little down thrust. This should not, however, be necessary. Do not be afraid to give more left rudder as the original shows no tendency to spin. After all tests give 25–30 seconds and start running!

There you have Eros, and if you can find a better power model for 1948 we'll congratulate you! Full-size plans are, as usual, available from Aeromodeller Plans Service, Allen House, Newarke Street, Leicester, price 7/–, post free.



ENGINE BEARER PLATE
LAMINATED BALSA SPAT
PRESS STUDS
1/8" BALSA SHEET
TINPLATE
1/4" SHEET
1/2 SCREWS
HOLLOWED OUT BLOCK
1/8" SHEET FORMERS
PLASTIC WOOD OR SOFT SHEET
1/4" SQUARE
ALL C/S. RIBS OF 1/8" BALSA
3/16" PLY TONGUES
1/8" PLY
3/8" SHEET
1/16" PLY
1/2" X 1/4"
BOTTOM LONGERON
PLY END RIBS OMITTED
BALSA L.E.
1/4" X 1/2"
3/32" RIBS
BALSA BLOCK
HOLES FOR BANDS
1/4" SHEET
1/32" SHEET
3/4" X 1/4"
3/16" SHEET
CAPPING STRIPS 1/32"X1/4"
1/4" SHEET
PAPER TUBES
10 S.W.G.
1/8" SHEET
3/16" BAMBOO DOWELS
3/16" X 1/16"
13" X 4 3/8" X 1/8" BALSA
1/4" SQUARE
BINDING
3/16" SHEET
1/4" SHEET
THIN RUBBER SLEEVE
LAMINATED 1/4" SHEET SUB FIN
18 S.W.G. PIANO WIRE
1/16" PLYWOOD
— BAGLEY —


A 7FT. WINGSPAN HIGH PERFORMANCE POWER MODEL.
EROS.
DESIGNED BY
J.W. COASBY.
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
ALLEN HOUSE NEWARKE STREET, LEICESTER
7/-
DATA
WING SPAN ······ 7 FT
" CHORD MAX ···· 12"
" AREA ······ 6·5 SQ FT
" A/RATIO ······ 7·5
TAIL SPAN ········ 33"
" CHORD MAX ······ 9"
" AREA ··········· 280 SQ INS
" A/RATIO ········ 3·9
OVERALL LENGTH ··· 52"
ENGINE.
ANY GOOD DIESEL FROM 2·5 – 5 CC
OR PETROL ENGINE 5 – 10 CC
FOR CONTEST PURPOSES USE THE
LARGER CAPACITIES.
MATERIALS REQUIRED
STRIP
2 STRIPS OF 1/8" x 1/4" x 36" BALSA
11 " " 1/4" x 1/4" x 36" "
2 " " 1/4" x 1/2" x 36" "
SHEET
4 SHEETS OF 1/32" x 3" x 36" BALSA
18 " " 1/16" x 3" x 36" "
4 " " 3/32" x 3" x 36" "
2 " " 1/8" x 3" x 36" "
1 " " 3/16" x 3" x 3" "
4 " " 1/4" x 3" x 36" "
MISCELLANEOUS
1 PIECE OF 1/16" PLY 7 1/2" x 9"
1 " " 1/8" " 6" x 10"
1 PIECE OF 3/16" x 3 1/2" x 12" PLY
1 BALSA BLOCK 1 1/2" x 5" x 18"
12" OF 3/16" DIA BAMBOO
8 1/2" " 3/16" DIA DOWLING.
5 1/2" " 1/4" " "
8" OF 18 SWG PIANO WIRE.
50" " 10 " "
SMALL PIECE OF ALUMINIUM
1 PIECE OF TINPLATE 1 1/2" x 2 3/8"
8 SMALL PRESS STUDS.
SEVERAL TUBES OF PLASTIC WOOD
1 SHEET OF CELLULOID
2 – 3 1/2" AIRWHEELS
2 – 1/2" WOODSCREWS
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA
THIS PIECE MAY BE ADDED TO WING CENTRE SECTION AFTER TRIMMING TESTS.
CUT NOSE BLOCK IN TWO AT THIS LINE.
PRESS STUDS BOUND & GLUED TO DETACHABLE COWLING TOP & FUSELAGE LONGERON.
F2A
F3
AFTER COVERING WHOLE OF FUSELAGE WITH 1/16" SHEET CUT ROUND CHAIN DOTTED LINES & GLUE IN CELLULOID WINDOWS.
NOSE BLOCK FROM HARD BALSA BLOCK
PRESS STUDS BOUND & GLUED TO NOSE BLOCK & FIRST FUSELAGE UPRIGHT.
FOR SHAPE OF ENGINE PLATE SEE PERSPECTIVE IN BUILDING INSTRUCTIONS. SIZE DEPENDS ON ENGINE USED.
ENGINE BEARERS FROM 3/16" x 3/8" ASH. TOP BEARER IS SHOWN IN POSITION FOR "SPAREY" 5 CC DIESEL. LOWER BEARER SHOWN DOTTED IN POSITION FOR MICRON OR OWAT 5 CC DIESELS
HARDWOOD U/C BLOCKS GLUED INTO FUSELAGE
10 SWG I/D BRASS TUBING
ALL LONGERONS & UPRIGHTS FROM 1/4 SQ HARD
BLOCK BALSA
FILL IN WITH 1/4 SHEET
DRILL 2 HOLES TO TAKE U/C RUBBER BANDS. BANDS MUST BE VERY STRONG.
COVER WITH 1/16 SHEET TOP & BOTTOM
UNDERFIN FROM 2 LAMINATIONS OF 1/4 HARD SHEET.
THIS PIECE REMOVED, AXLE BOUND & GLUED IN THEN PIECE CEMENTED BACK INTO PREVIOUS POSITION
18 SWG AXLE
1 1/2" DIA HARDWOOD WHEEL
F1 1/8" PLY
F2 1/8" PLYWOOD
F3 1/4" PLYWOOD
F4 1/8" SHEET BALSA
DOTTED LINE SHOWS HEIGHT OF F4A
MAKE ONE HALF FORMER FROM HERE FOR F4A MAT. 1/8" SHEET.
OUTLINE OF COMPLETE FIN FROM 1/8" SHEET
COVER COMPLETE FIN WITH 1/32" SHEET.
18 SWG HOOKS FRONT & REAR.
PAPER TUBES TO TAKE 1/8" DIA HARDWOOD DOWEL
PAPER TUBES TO TAKE 1/4" DIA HARDWOOD DOWEL
CHAIN DOTTED LINES INDICATES SHAPE OF PLY TAILPLANE SEATING
THIN ALUMINIUM HINGES.
1/8" PLYWOOD TAILPLANE SEATING
R1
R2
R3
R4
R5
F5
F6
F7
F8
F9
F10
F12
F13
F14
F15
F16
F17
F18
F19
F3 1/8" SHEET 2 OFF
F4 1/8" SHEET
R5 1/8" SHEET
R4 1/8" SHEET
R3 1/8" SHEET
R2 1/8" SHEET
R1 1/16" SHEET
ALL FORMERS FROM 1/8" SHEET
FILL IN WITH PLASTIC OR BLOCK BALSA TOP & BOTTOM OF TONGUE & BOX.
PLASTIC WOOD OR BLOCK BALSA
1/8" x 1/4" L.E.
WING BOX MADE FROM 1/16 HARD SHEET TOP & BOTTOM WITH 3/16 SQ STRIP BACK & SIDES
1/8" DIA HOLE TO TAKE 1/8" SQ MEDIUM BALSA SHEAR PIN. DRILL HOLE RIGHT THROUGH BOX & TONGUE WHEN WINGS ARE FITTED TOGETHER
3/16" PLYWOOD TONGUE. SEE DETAIL.
FILL IN WITH PLASTIC WOOD OR BLOCK BALSA
1/4" x 1/4" FRONT SPAR TOP & BOTTOM
1/4" x 1/4" REAR SPAR
1/16" x 1/4" CAPPING STRIPS
1/16" SHEET TOP & BOTTOM T.E.
WING TIP IS BUILT SEPARATELY, THEN GLUED TO WING
WING TIP T.E. & L.E. FROM 1/4" SHEET
W3 1/32" PLYWOOD 2 OFF
W2 1/8" HARD SHEET 2 OFF
W1 1/8" HARD SHEET 2 OFF
W4 1/32" PLYWOOD. 2 OFF.
W5 1/8" HARD SHEET. 4 OFF
END VIEW OF WING BOX
1/4" SHEET OR 1/8" LAMINATED C/S TRAILING EDGE.
COVER C/S TOP & BOTTOM WITH 1/16" HARD SHEET.
ALL RIBS SHOWN HERE FROM 3/32" MEDIUM SHEET.
CUT SLOT TO DEPTH OF DOTTED LINE ON W10
W10 & W11 HAVE NO SLOTS FOR SPARS.
1/16 SHEET BETWEEN 1/32 SHEET COVERING
1/4 I/D PAPER TUBE
1/4" SHEET
ALL RIBS 1/16" x 1/16"
1/32" x 1/4" CAPPING STRIPS
3/16 I/D PAPER TUBE
1/4" SHEET
TINPLATE STRIP SOLDERED TO U/C LEG & SPAT SECURED TO PLATE WITH 2 WOODSCREWS. FOR METHOD OF ASSEMBLY SEE PERSPECTIVE IN BUILDING INSTRUCTIONS.
EACH SPAT IS CONSTRUCTED FROM 1/4 LAMINATED SHEET. THE 2 INSIDE LAMINATIONS MUST BE FROM 1/4" HARD SHEET.
THESE 2 LAMINATIONS FROM HARD SHEET.
SPAT SECURING PLATE WELL SOLDERED TO U/C LEG.
18 SWG HOOKS BOUND & SOLDERED TO U/C LEG. STRONG RUBBER BANDS ARE PLACED AROUND HOOKS, PASSED THRO' FUSELAGE AROUND HOOKS ON OTHER LEG
2 PIECES OF 1/8" SHEET BOUND & GLUED TO LEGS. RUBBER SLEEVE IS THEN SLIPPED OVER LEG & GLUED TO THE 1/8" SHEET PIECES.
3/16" PLYWOOD WING TONGUE. CUT 2 OFF. INSERT BOTH TONGUES INTO C/S & GLUE WITH DUROFIX INTO W1.
1/8" DIA HOLE
REAR LEG
FRONT LEG
THIS LENGTH DEPENDS ON THICKNESS OF WHEEL HUB
FORM U/C FROM 10 SWG PIANO WIRE. FIT 3 1/2" AIRWHEELS. TRACK OF U/C WHEN ASSEMBLED 18"
WOODSCREW
PT. 280




*Above shows a hitherto unpublished use for your lightweight, snapped at a national contest last year!*

DURING the past 5 years much experimental work has been carried out, in certain circles, on the subject of Lightweight Model Aircraft. As the interest in this particular branch of our hobby seems to have grown considerably of late, it was thought that it was high time an article was written on the subject.

Due to space limitations, it has been decided to limit this particular article to Lightweight Sailplanes and to discuss the other half of the branch, namely Lightweight rubber powered models, at some later date. It is also hoped later to discuss the power model question. Much has been written on the latter, and many plans have appeared in journals in this country. Nevertheless, statistics show that Great Britain is still very far behind the American and the Continentals - one might even say 10 years. However, more about that later, we're digressing from the point.

Back in 1942 experiments were carried out with extremely light sailplanes, incorporating single surfaced planes and no weight box! The wing was merely set far enough back for the nose of the model to obtain correct balance. The models were found to be unsuccessful—towline launching was almost an impossibility—and were blown about, in even a slight breeze, like so much chaff!

Heavier models were therefore constructed and at once proved more successful. Long fuselages—giving long moment arms—of small cross sectional area were found to be a definite advantage. Stability was greatly improved, as well as performance. Parasol mainplanes, giving a more undisturbed airflow over the wing section were another improvement. Naturally problems arose, one of the greatest being rigidity. No one will disagree when it is stated that nothing can upset the stability of the model more than flexibility of the lifting surfaces and rudder surfaces. The use of long and small cross-sectional area fuselages brings about flexibility and double cross-grained tissue covering was introduced as a remedy. Damp weather slackened the tissue, however, and we were back where we started from. At length much internal cross bracing was used and this brought the required result. Even uncovered fuselages were remarkably rigid, and the trouble was entirely eliminated when the covering was applied. Right is a sketch to give the general idea.

The next problem that arose was the debatable question over tail surfaces. Should the tail-plane be lifting, non-lifting or inverted lift? Should it be placed high or low on the fin? Should more than one fin be incorporated? In order to decide these points we must ask ourselves to what purpose are we designing and building the model? We are aiming to produce a consistent and high performance sailplane. Now if we place the tailplane high or low upon its fin, rigidity once more becomes the problem, also stability. It was found that no definite advantage was obtained by placing the tail high or low, added to the fact that it was more difficult to so do. Consequently to save ourselves much bother, we placed the tail on the fuselage.

Many people are loath to use non-lifting tail surfaces, in the belief that they are losing valuable lift. Lifting tailplanes were always found to be a source of trouble, especially when a full section was employed. Marvellous results were obtained in dead calm weather but dive-in after the model turned down wind, in a stiff breeze, caused too many broken models and too many lost contests! Non-lifting or very shallow lifting sections were found to be far more reliable, and so in these days of tissue and good balsa shortage, high lifting tailplanes were left severely alone.

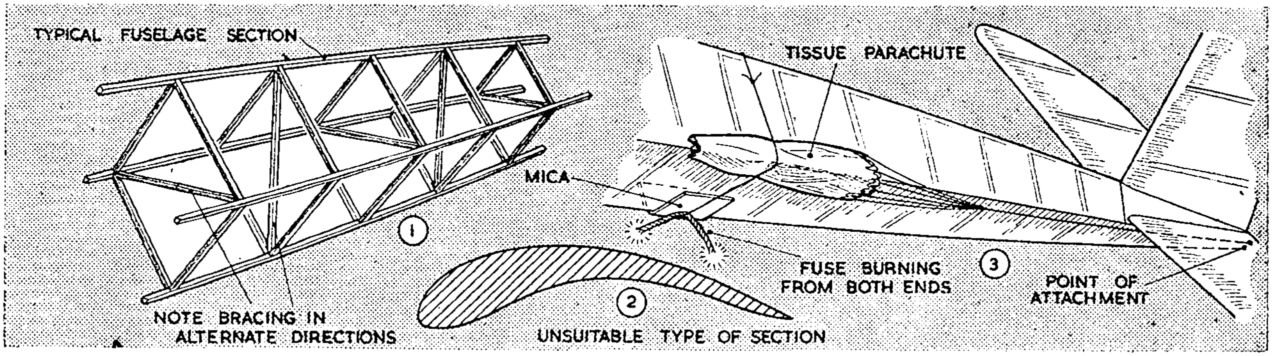
For the sake of simplicity, the old idea of using one fin was used. Use of two fins did not seem advantageous and once again difficulties in obtaining the necessary rigidity were encountered. The stability is perhaps better when two fins are used and so a compromise was introduced—namely the use of tip dihedral and polyhedral on the tailplane.

Various wing sections were used in an effort to discover the most suitable. The question we must ask ourselves here is do we wish speed too, or not? If we do wish for speed and not thermals then surely we'd build a heavy model. The lightweight sailplane is of little use for slope soaring as Mr. Temple will readily agree. We desire the model to fly slowly, and so benefit any thermal it may encounter. Undercambered wing sections produce slow flight and much experimenting was carried out with various types.

It was found that the deeper the undercamber the slower was the forward motion, but extremes brought about bad stability. Bad stability was also encountered using deeply undercambered and thick sections, as shown in the accompanying diagram (2).

In the section Marquardt S—2 was found exactly what was desired. Slow flight was obtained, high lift and good stability. Many other sections where suitably modified, also give excellent results and a few details will be given here regarding these. Because of shallowness in all these sections, spars which would cause weakness were eliminated and a thick leading and trailing edge employed. To cut down on weight soft stock is recommended. Due to the large section, strength is ample.

Covering of deeply cambered surfaces presents no difficulties, if one cements the tissue to all its ribs on the




undersurface and to the point of deepest camber first, cementing to leading and trailing edges finally. In order to achieve an accurate wing section, without using spars, it is desirable to use many more ribs than usual and so prevent the tissue sagging and giving a "scalloped" effect to the finished wing.

Constant chord wings were favoured for simplicity, as were slabsided fuselages, the improved results from streamlined models scarcely warranting the extra work entailed in their construction.

A sailplane should turn in quite small circles, if it is to take advantage of any available lift from thermals, and here difficulty arises in tow-launching. Offset tow hooks, however, cured the fault of turning on the line, the hooks being bound to the side of the fuselage to which the model would normally turn, i.e. if the model turns to the right, the tow hook should be on the right-hand side of the fuselage, so that the turn is counteracted whilst on the line.

Tow hooks were set well back, the rear one being right under the C.G. The rate of climb is thus terrific when the model is on the line and considerable strain is imposed upon the mainplane. Thus it was found that a running launch was favoured in place of winching. Under most conditions, it was found necessary after the model was launched to run *towards* the model in order to relieve the strain on the wings by the high rate of climb.

Finally, it was thought that one or two practical limits on construction would be welcome.

(*a*) If plenty of cement is used on all joints, the model will never rely upon its covering to hold it together.

(*b*) The best way to re-cover a model is to submerge it in a bathful of water around 60–70 degrees F. The tissue floats off and the model can be re-covered in entirely different colours with no trace of the former covering.

(*c*) Multi-coloured models keep in sight longer.

(*d*) Dethermalisers prove very useful in contests and are simple to construct. All that is necessary is a piece of tissue about 8 ins. diam. (for a 30 in. span model) with a 3/4 in. dia. hole in its centre. Four or 6 cotton strands are cemented at equal distances around the circumference and tied together about 6 ins. below the chute. A single piece of cotton is used to attach the ends of the strands to the very end of the fuselage, its length depending upon the length of the latter. The chute is folded and held to the fuselage by a piece of cotton (the shrouds should be taut.) On one corner of the fuselage a piece of mica is cemented, the cotton holding the chute to the fuselage side passing over this. Fuse is made by soaking string in a solution of potassium nitrate and allowing it to dry. Rate of combustion per inch is determined.

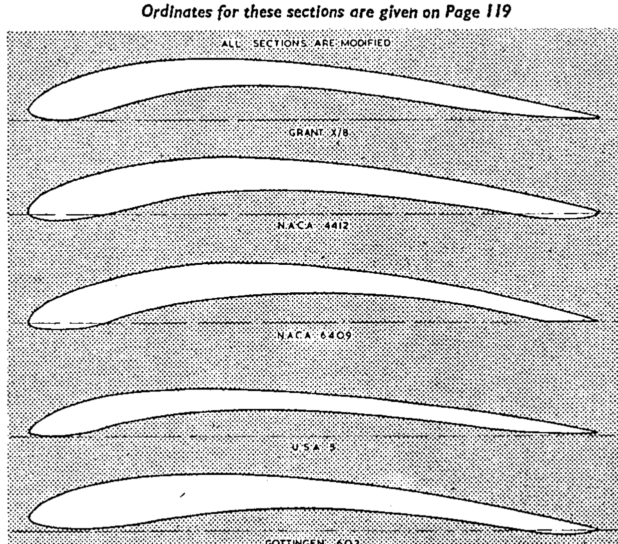
Before a competition flight, one estimates on the conditions of the day (wind, visibility, etc.) the maximum duration a model could do before passing from sight and the appropriate amount of fuse is cut; e.g. if fuse burns at rate of 1 inch min. and max. duration possible under weather conditions is 5 mins., 10 ins. of fuse should be used. This is placed under the cotton holding the chute to the fuselage and over the mica, so that 5 ins. of the fuse hangs either side of the cotton. *Both* ends of the fuse are set alight. By using this method, if one end of the fuse expires, there is still the other ! On reaching the mica the fuse burns through, the cotton releases the chute, which opens behind the model and brings the latter safely to terra firma. N.B.—Mica should be used in preference to other substances, as it does not absorb heat from the smouldering fuse and put it out before the cotton is burnt through.

The accompanying sketch shows the general arrangement.

The added weight is negligible and by its use a contest may be won and an otherwise lost model safely retrieved. As an example I might quote Mr. Warring's model in the 1946 Gamage Cup.

The sailplane design given overleaf incorporates most of the desired features mentioned above and has proved itself to be a reliable and consistent high duration performer. Full size plans are available, price 3/-, from our Leicester Offices.

*Ordinates for these sections are given on Page 119*



# 1947 LIGHTWEIGHT GLIDER.

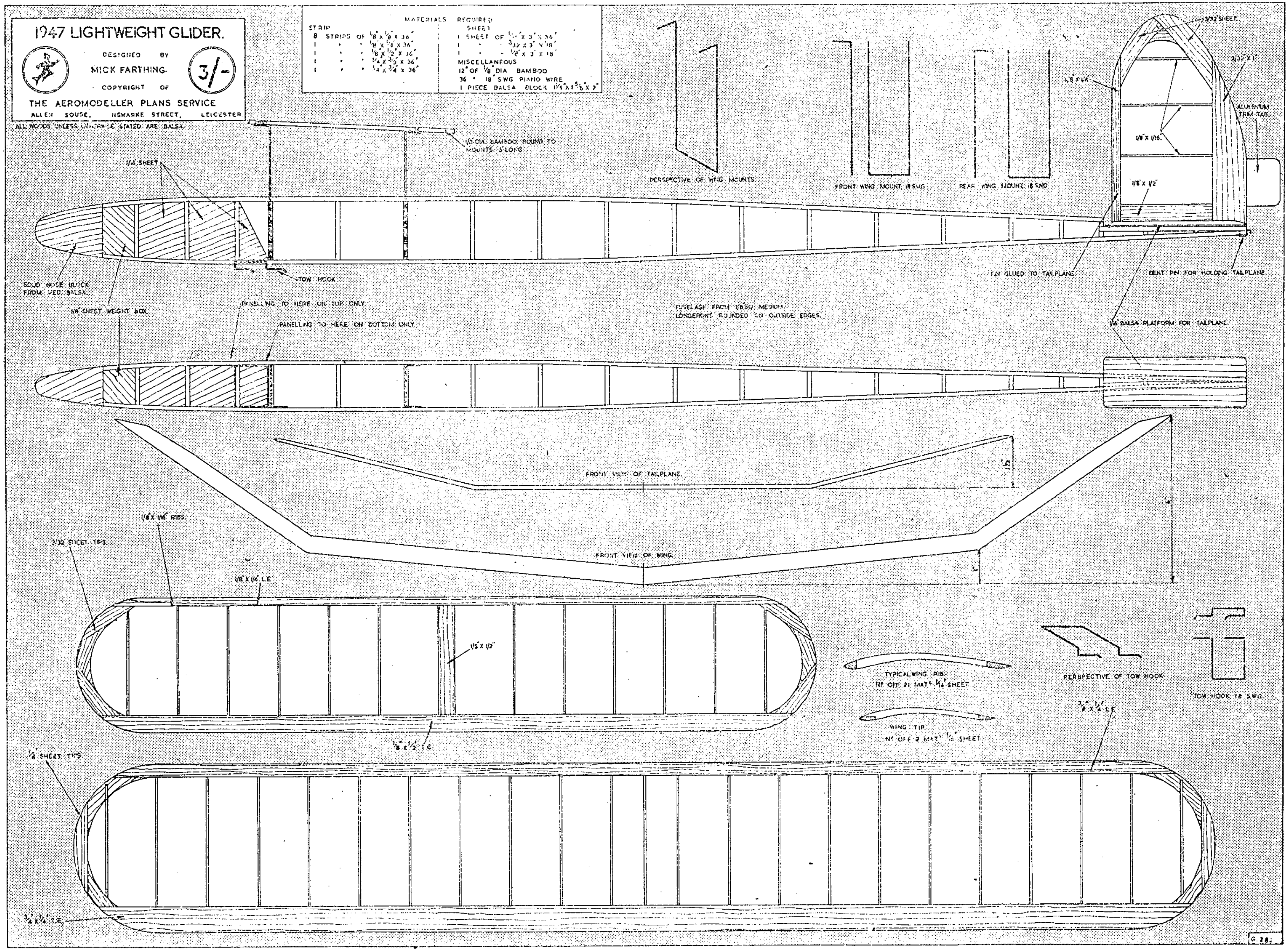
DESIGNED BY
MICK FARTHING.
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
ALLEN HOUSE, NEWARKE STREET, LEICESTER

3/-

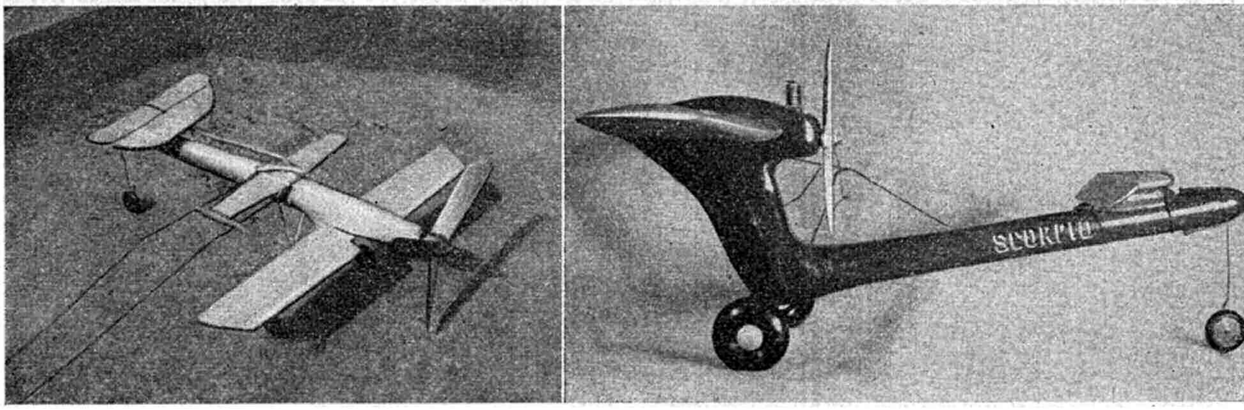
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA.

MATERIALS REQUIRED

| STRIP | SHEET |
|---|---|
| 8 STRIPS OF 1/8" x 1/8" x 36" | 1 SHEET OF 1/16" x 3" x 36" |
| 1 " " 1/8" x 1/4" x 36" | 1 " " 3/32" x 3" x 18" |
| 1 " " 1/8" x 1/2" x 36" | 1 " " 1/8" x 3" x 18" |
| 1 " " 1/4" x 3/8" x 36" | MISCELLANEOUS |
| 1 " " 1/4" x 3/4" x 36" | 12" OF 1/8" DIA BAMBOO |
| | 36" " 18 SWG PIANO WIRE |
| | 1 PIECE BALSA BLOCK 1¼" x 1⅝" x 2" |



# CONTROL LINE COMMENTARY By F. B. THOMAS



*Left, the author's original rubber driven Canard and right, its ultimate development the Mills powered "Scorpio."*

CONTROL-LINE flying is undoubtedly "catching-on" in this country, though it is still in its infancy here. The Americans started in on this type of modelling during the war years, and the movement has made enormous strides in the States. We in this country can learn by studying thier achievements, and in this article I am going to write about what I have learned of control-line models in the States from reading back numbers of *Model Airplane News* and *Air Trials Pictorial.*

American control-liners fall into four fairly distinct categories: (1) *Primary trainers* (often converted free flight models) which are referred to opprobriously as "Goats," (2) *True scale models,* (3) *Speed models* and (4) *Aerobatic models.* Between the speed and aerobatic categories there is a large group of average performance "sports" models. Constructional methods follow fairly orthodox lines, though wings and fuselages are often made from solid balsa, the fuselages being hollowed out with detachable lids to gain access to the control and ignition systems.

(1) "*Goats.*" Little need be said of this class of model. In one of my previous articles I described in some detail the conversion to U-control of a free flight model. Such models are slow and docile and are suitable for flying only in fairly calm conditions.

(2) *True scale models.* This type of model appears to have a fairly small following, though to me it seems to offer endless possibilities.

(3) *Speed models.* In this class of model the Americans have really let themselves go, and I believe the present speed record stands somewhere in the neighbourhood of 140 m.p.h. This is no mean achievement, and is the result of most painstaking research into streamlining, airscrew design and engine turning. Their speed models are highly specialised affairs and are "freaks" in appearance when judged in comparison with full sized aircraft. A small (20 ins.–24 ins) wing carries a large "Class C" (10 cc.) motor, which is "souped up" by using special fuels such as methanol with castor oil as the usual lubricant. Small steep pitch airscrews (10 ins. × 10 ins.) are used, and a small flywheel is often fitted in addition. Such models often dispense with an undercarriage and use instead a "dolly." This is a form of trolley which is used purely for take-off and is left behind on the ground when the model becomes airborne. At the end of the flight the model is landed on its belly.

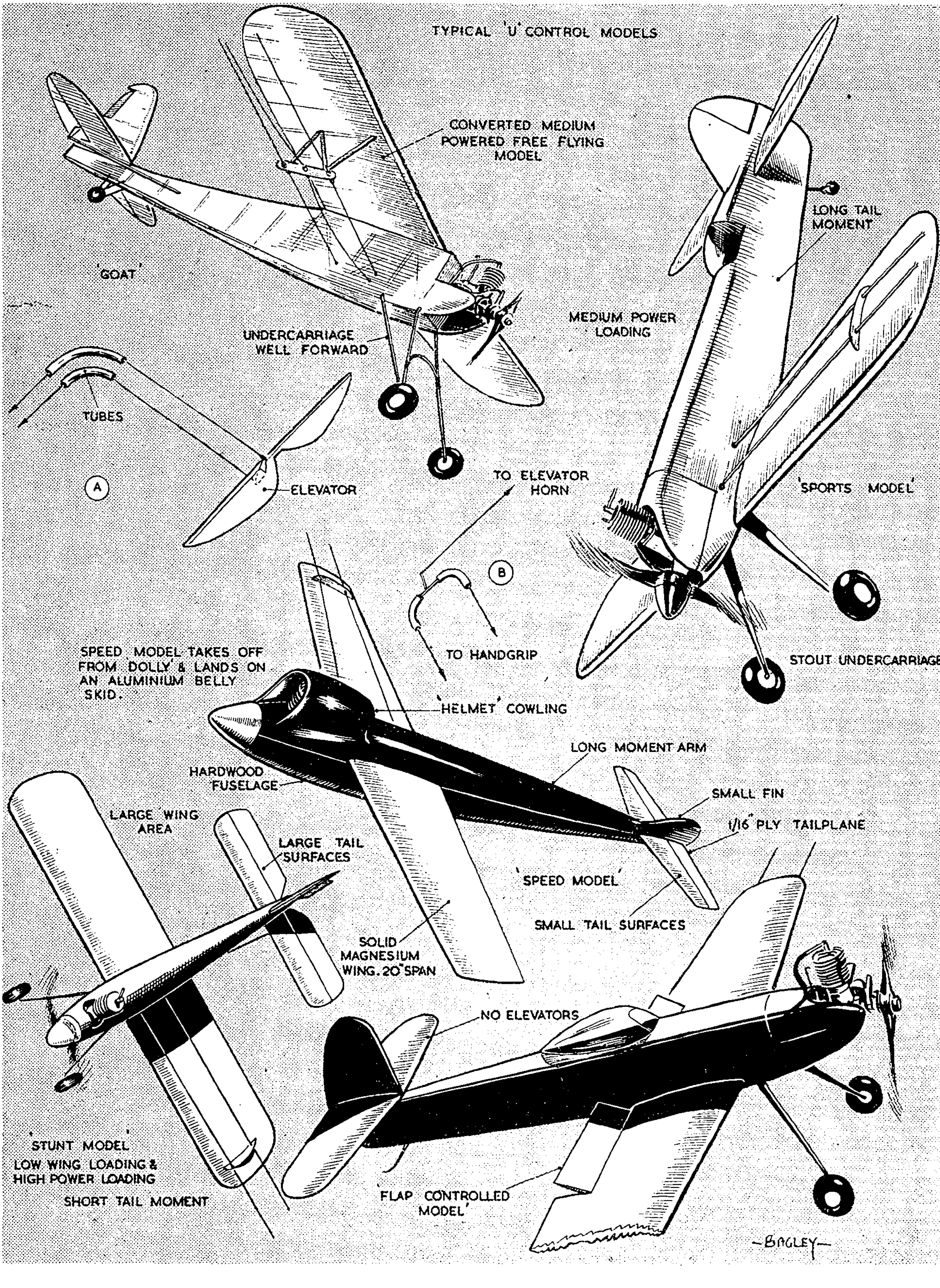
The speeds attained by these models are a striking achievement but, from the point of view of fun in flying, they must be dull owing to their very high wing loading. They are only suitable for straight and level flying and I gather that undue aerobatic liberties cannot be taken with them. Their repertoire would tend to be limited to dives, zooms and "wing-overs." A "wing-over" is a vertical climb up and over the pilot's head and down the other side, cutting the flight circle in half. To achieve this without any slackening of the lines, a very considerable speed range is called for, because centrifugal force must still be acting *upwards* when the model is vertically above the pilot.

(4) *Aerobatic models.* These models are as specialised in their own field as the speed models, and flying them must constitute the peak of "fun," calling for an extremely high degree of skill, judgment, quick thinking and agility on the part of the pilot. Their models usually carry a Class "B" (0·45 cu.) or Class "C" motor, and possess a fairly light wing loading and a low all-up weight. In the October AEROMODELLER Mr. R. H. Warring mentions that the wing loading of these models should be 8–10 ozs. per 100 cu. ins. of wing area. The wing is usually of fairly low aspect ratio, symmetrical section, no dihedral and zero incidence, so that inverted flight is possible with no need for an excessively nose up position when the model is flying on its back. A short tail moment is used to give sensitivity of response, and a very large elevator area is required to ensure that the control response is positive and powerful even at slow speeds.

The fuel tank must be so devised that a constant flow to the needle-valve is ensured whether the model is right way up or inverted, climbing or diving.

These aerobatic models have proved themselves capable of any manœuvre in the "looping plane"—that is, any manœuvre that a full-sized aircraft is capable of by use of the elevators alone. Loops, figure eights, inverted loops or "bunts," square loops and inverted flight have all been performed.

An interesting point arises in connection with inverted flight. When a full-sized aircraft is flying on its back the elevator contrives to move the aircraft in the looping plane in the same sense (as far as the pilot is concerned) as when it is flying right side up. In other words, pulling



TYPICAL 'U' CONTROL MODELS
CONVERTED MEDIUM POWERED FREE FLYING MODEL
'GOAT'
UNDERCARRIAGE WELL FORWARD
LONG TAIL MOMENT
MEDIUM POWER LOADING
TUBES
A
ELEVATOR
TO ELEVATOR HORN
B
TO HANDGRIP
'SPORTS' MODEL'
STOUT UNDERCARRIAGE
SPEED MODEL TAKES OFF FROM DOLLY & LANDS ON AN ALUMINIUM BELLY SKID.
'HELMET' COWLING
LONG MOMENT ARM
HARDWOOD FUSELAGE
SMALL FIN
1/16" PLY TAILPLANE
LARGE WING AREA
LARGE TAIL SURFACES
'SPEED MODEL'
SMALL TAIL SURFACES
SOLID MAGNESIUM WING. 20" SPAN
NO ELEVATORS
'STUNT MODEL'
LOW WING LOADING & HIGH POWER LOADING
SHORT TAIL MOMENT
'FLAP CONTROLLED MODEL'
-BAGLEY-

back on the stick still raises the nose of the aircraft in the direction of the pilot's head, though in relation to the horizon the nose will drop. When a control-liner is on its back the " pilot " is still on his feet and an upward movement of the control grip causes the model to dive. It seems that the human being finds it very hard to compensate for this reversal of the normal state of affairs, and " stunt pilots " have evolved a control-grip that can be rapidly rotated through 180 degrees so that when inverted, the model still climbs when the grip is eased upwards. In a straightforward loop this difficulty does not arise. Although the control lines will have a 360 degrees twist one on the other on completion of the loop, they still work " normally " once the model is flying straight and level. There will be slight friction between the crossed lines, but not sufficient to impair control.

" Sports models " do not call for any particular comment. They represent, as I have stated, a breed half-way between the pure speed and the pure stunt model, and are more numerous than any of the other classes, being suitable for the average modeller of average flying ability. They are capable of moderately high speeds, and most of them are probably capable of looping.

Regulations to ensure safety in flying control-liners are rigidly laid down in the States. As an example, here are the rules of the Aeromodellers Association of Northern California (*Air Trails*, May, '46). Models are divided into three classes according to engine capacity :

- Class A 0·001–0·25 cu. ins.
- Class B 0·25–0·45 cu. ins.
- Class C 0·451–0·65 cu. ins.

Control lines must be of steel 0·01 in. (ten thous.) minimum thickness. For each 3 ozs. weight of model 0·001 in. diam. must be added in wire thickness.

Minimum lengths of line are laid down for each class :

- Class A 35 ft.
- Class B 52·5 ft.
- Class C 70 ft.

During flight, the pilot must not move beyond the limits of a 6 ft. circle drawn on the ground.

Several methods are used to actuate the elevators. The standard control-plate-cum-push-rod was devised by Jim Walker in the States, and is the subject of a patent. The plate is usually entered at 40% chord with the C.G. at 25% chord, and the front control line leaves the model at the centre of gravity. Alternatives to the control-plate are indicated in Fig. A and Fig. B.

One type of model dispenses with a movable elevator, and has a movable trailing edge flap on the mainplane actuated by twin control lines. This variant is known as " Flicker Flap."

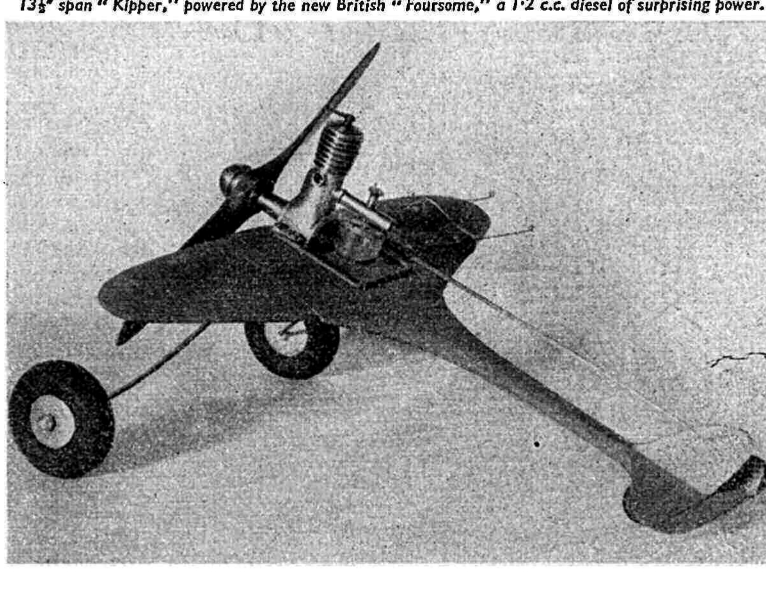
In an endeavour to reduce drag on speed models, " G-line " is sometimes used. A single steel control-line is employed which is fixed to the fuselage of the model just aft of the C.G. The wing tip fairlead is movable up and down, and the up and down movement of the fairlead moves the elevator. At the pilot's end, the " G-line " is attached to the end of the " G " pole, the other end of which is held by the pilot. Raising the pole causes the model to climb, lowering the pole makes it dive, but the control achieved by this method is much less precise than U-control using twin lines.

An ingenious method of controlling the engine speed on the ground and in flight is widely used, and is so popular that many engine manufacturing firms have modified their motors to incorporate " TU-SPEED." An additional contact-breaker is fitted to the motor in a position that gives a fairly slow running speed. The existing contact breaker is set at a high speed position. Both contact breaker arms are worked by the normal cam on the crankshaft. When the engine is running, either contact-breaker can be selected at will by means of a small electrical relay carried in the aircraft. Insulated control lines (wire) are used, and these convey current from a dry battery in the pilot's pocket to the relay in the model. A thumb switch on the control grip completes the set-up and by manipulating the switch, slow or fast running of the motor can be achieved without the complication or drag of a third slack line.

In competition flying, elaborate precautions are taken to make sure that the pilot merely holds the control grip, and does not swing it round in advance of the model. This swinging is known as " horsing " or " whipping " and can add many miles an hour to the speed of a model. If anyone finds this hard to visualise, let him try flying a small control liner on 20 ft. lines. When the engine stops it is quite possible to keep the model in the air by " whipping." I know because I have tried it ! In fact, I built a 10-inch span solid glider fitted with U-control, and used it for teaching beginners the rudiments, using 15-ft. lines. This model was hand-launched by an accomplice.

This is a very sketchy review of some aspects of American control-line activities, written by someone who has never been to America. I would be most interested to hear more about control-line achievements in this country. There must be many " lone hands " like myself who have been playing around with controllable models for years, and I'd like to know of their progress, and have some photographs to publish along with their accounts in future " Control Line Commentaries."

*Even our Editorial Offices have been bitten by the control-line bug ! Here is Assistant Editor H. G. Hundleby's 13½" span " Kipper," powered by the new British " Foursome," a 1·2 c.c. diesel of surprising power.*



# How to handle your Contest Rubber Motor

BY E · W · EVANS

*A correctly wound and tensioned motor should resemble the example above.*

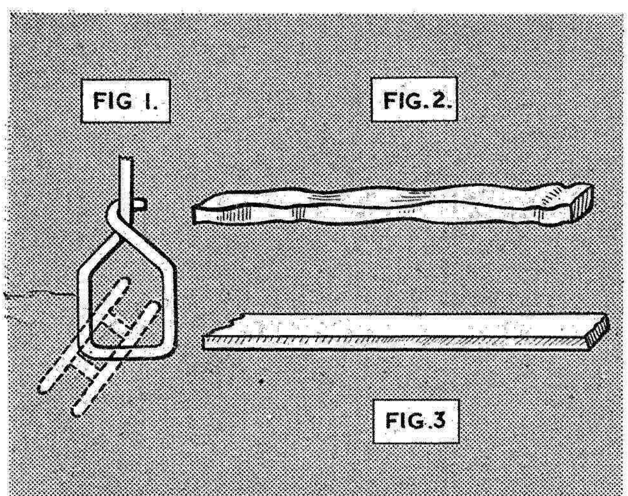
MANY articles have been written on rubber motors and much valuable technical knowledge has been brought to light. Very few, however, have gone further on the practical side than stating that your rubber should be stretched three times its normal length to obtain the maximum turn, etc., etc.

Since I have been wrestling with rubber for some 20 years and during that time used every available kind, I feel perhaps I can throw more light on how to get the best from it. How many times have you heard, "If only I had used more turns I could have won." However, more turns means more confidence and the memory of a broken motor doesn't help.

During my experience a lot of knowledge has come to light concerning why motors break (other than the usual reasons), how to prevent badly knotted rubber when using long motors (with full turns) and also, how to get even more turns on any motor.

It will be realised that all the above conditions will have to be satisfied during contest work. It is hoped, therefore, that this article will overcome these difficulties. In any case, we intend to have the "Wakefield Cup" back, so let's learn all we can. This is one of my reasons for writing this article.

Beginning with rubber. There are several reliable makes now available, but should you buy it loose, make sure your dealer stores it in an airtight, lightproof container—this precaution applies also to you. It is assumed that you understand how to tension a motor the "White" way, which in my opinion is better than any mechanical tensioner. This is explained very well in the A.B.C. of Model Aircraft. Bobbins I consider an advantage and facilitate the changing of motors rapidly. It is, however, recommended that the edges of bobbins are carefully rounded with fine sandpaper by spinning on a piece of dowel in a hand-brake chuck. As a safety precaution, it is better to wash the rubber before use, placing between some sheets of paper to dry—do not use a towel for this purpose. The motor is now made up, using clean hands on a suitable bench covered with clean paper. Having tried every way possible of joining rubber the following method will never let you down. Keep the rubber wet and tie a fairly loose reef knot, follow by a second reef knot slightly tighter, follow this by a very tight reef knot and cut off, leaving about a $\frac{1}{4}$ inch ends. A motor so joined, when lubricated, will allow the rubber of the first reef knot to move slightly and prevent breaking at this point. Having prepared the motor, tension and transfer to bobbins which should be an easy fit on the square shaped hook, without a tendency to creep up the side. If, when the hook is closed, you can force the bobbin up the side, it is useless (see Fig. 1). It may do so on that third flight (did I say third flight—never 'eard of it) which will probably allow the prop. to freewheel with disastrous results. A rubber band is used to bind the motor—not too tightly—at either end adjacent to the bobbin. This should be bound on anti-clockwise which will prevent the rubber band unwinding and forming a loose loop when the motor is wound. A loop so formed to cause the loss of a flight by becoming tangled with some stationary part of the model.




Assuming that the motor prepared is to be used for contest work, then comes the one time headache of how to get on the most turns without breakage. To achieve this, the motor must be "broken in" or wound until it leaves the rubber in a permanent partly stretched condition. To do this make sure that:—

(1) You have a floor space for winding at least $4\frac{1}{2}$ times the normal length of your motor.

(2) Your hand-brace is large enough to handle this work.

(3) Your winding hook is fitted with some safety device, should the hook slip from the hand-brace chuck.

(4) Your hooks at either end are as carefully made as your model.

(5) That the anchor hook on the wall is securely fixed.

No doubt you have read that motors should be lubricated 24 hours before use—I have found no advantage in actual practice. Now prepare yourself for at least one hour's hard work, and do not be upset if you have to rest occasionally.

Commence by stretching the motor $4\frac{1}{2}$ times its normal length and wind on 30 turns thus stretched, coming in gradually and adding a further 20, making a total of 50 turns. Continue in this manner increasing by stages of 50 turns (though this should be reduced to 40 on Wakefield motors 4 feet long), after half maximum turns have been installed, but ALWAYS stretching $4\frac{1}{2}$ times its normal length. The reader may have decided by now that all this is not unusual, but before deciding, read on. This procedure is carried out until maximum turns are installed. The difference between a motor "broken in" at $4\frac{1}{2}$ times normal length and $3\frac{1}{2}$ times is as follows:—

(1) Motor broken in at $3\frac{1}{2}$ times feels like Fig. 2 when a strand is drawn through the thumb and finger. Note thick unstretched parts.

(2) Motor $4\frac{1}{2}$ times normal length feels like Fig. 3.

It should be obvious that motor No. 1 cannot absorb as many turns as motor No. 2. In addition, when on the flying field, you may decide to give your motor that extra stretch before winding, which now means that you will be trying to stretch the thick parts as Fig. 2, which will almost certainly break down under the tension of your proposed full turns. This I have found to be one of the causes of motor failure. If you have any doubt about this statement, try both systems of stretching and pull the rubber through the thumb and finger.

It is recommended that to find maximum turns for your favourite rubber, you make up a motor $\frac{1}{4}$ length and keep a record of the turns obtained—winding procedure as advised. Do not be afraid to wind on those extra turns when you have decided you dare not put any more on (motor normal length). If it has been properly " broken in " it will not break.

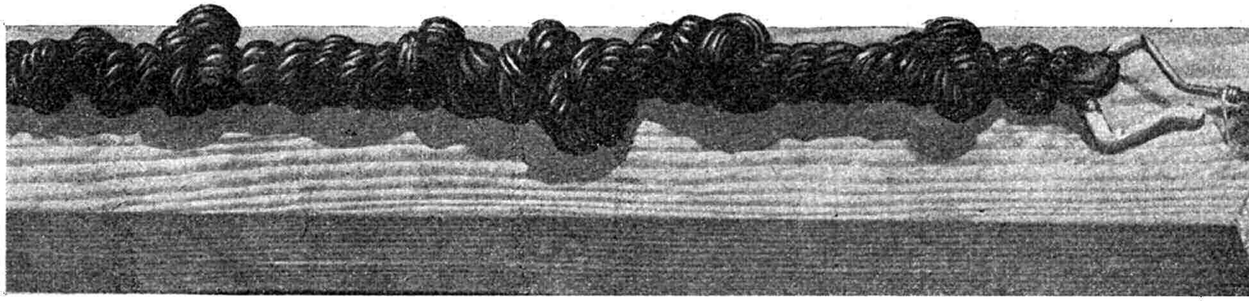
Having now " broken in " your contest motor, remove from bobbins and examine your rubber by pulling through the thumb and finger while holding it to the light. Any signs of fractures should be cut and rejoined as recommended. A bowl of water should be used to wash off the lubricant from the ends to be rejoined (the number should not exceed two or three). This precaution is necessary because I have yet to find a perfect rubber—manufacturers please note! Re-lubricate the rejoined ends. Your motor is now prepared for the contest. Re-tension, and install in the fuselage, which should be free from all sharp edges, spots of glue, etc.

Winding procedure for flying is different. Commence by stretching the motor not more than $3\frac{1}{2}$ times its normal length. Wind on not more than 55% of the desired number of turns and come in to complete the winding. Do not make the error of leaving it too late before coming in or your motor will appear as the example below. Also, the final 50 turns should be installed with the noseblock in place—then a few for luck. A properly wound motor will not occupy a space more than twice its normal thickness. Motors wound as in our bad example will cause :—bunching, burst covering and possibly structure, or prevent motor from turning, allowing prop to freewheel which, when the motor releases, may badly damage your fuselage and even put you out of a contest. Practise winding $\frac{1}{2}$-length motors until you understand the knack.

Summing up, it may be stated that (1) motors should be stretched $4\frac{1}{2}$ times during " breaking in " to process the rubber to an even and part-stretched condition. (2) Motors stretched to $4\frac{1}{2}$ times are likely to knot unevenly when fully wound—this is unimportant when " breaking in." (3) From (1) and (2) it should be obvious that motors cannot be " broken in " on the field. (4) The same maximum turns may be stored on a motor stretched $3\frac{1}{2}$ times, once it has received correct " breaking in " at $4\frac{1}{2}$ times.

My Wakefield motor, 14 strands $\frac{1}{4}$ by 1/24 by 48, takes 1,100 turns, not including tension turns. Your model will have to be carefully trimmed to handle this first burst, which should take the model up almost vertically—even a " Wakefield."

In general, if your motor breaks completely, it is usually your own fault. Master your motor—don't let it master you. " If at first you don't succeed . . . "



## Lightweight Sailplanes (*cont. from page* 113) by Mick Farthing

### ORDINATES FOR SUITABLE AEROFOILS

**1. GRANT X/8 (modified).**

| STATION ... | 0 | 1·25 | 2·5 | 5 | 7·5 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER SURFACE | 2·00 | 3·33 | 4·59 | 6·00 | 7·00 | 7·73 | 9·07 | 9·80 | 10·53 | 10·33 | 9·53 | 8·27 | 6·60 | 4·67 | 2·47 | — | ·05 |
| LOWER ... | 2·00 | 0·50 | 0·10 | 0·00 | 0·00 | 0·50 | 1·80 | 3·10 | 5·20 | 6·00 | 5·50 | 4·00 | 2·70 | 1·30 | —·40 | —1·00 | ·05 |

**2. N.A.C.A. 4412 (modified).**

| STATION ... | 0 | 1·25 | 2·5 | 5 | 7·5 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER SURFACE | 0 | 2·44 | 3·39 | 4·73 | 5·76 | 6·59 | 7·89 | 8·80 | 9·76 | 9·80 | 9·19 | 8·14 | 6·69 | 4·89 | 2·71 | 1·47 | 0 |
| LOWER ... | 0 | —·50 | —·90 | —1·00 | —·90 | —·50 | 0·10 | 1·30 | 3·33 | 4·00 | 3·95 | 3·10 | 2·00 | 0·80 | —1·00 | —1·00 | 0 |

**3. N.A.C.A. 6409 (modified).**

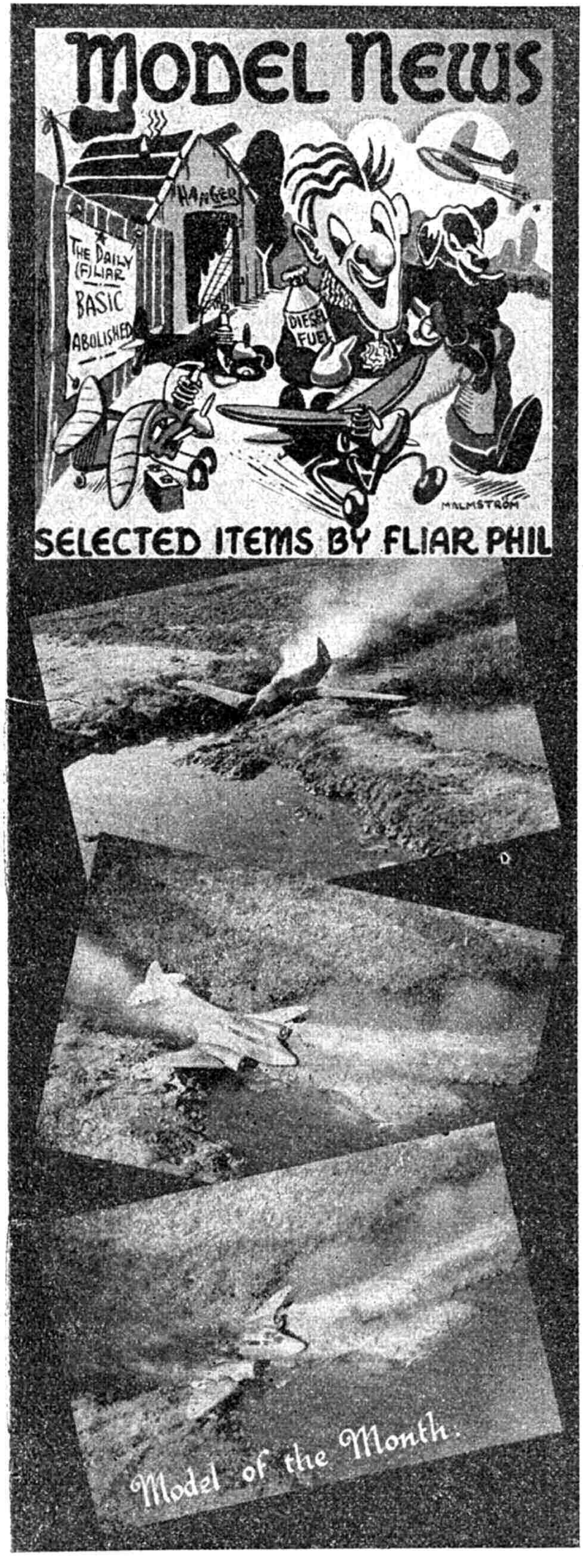
| STATION ... | 0 | 1·25 | 2·5 | 5 | 7·5 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER SURFACE | 0 | 2·06 | 2·96 | 4·30 | 5·42 | 6·31 | 7·78 | 8·88 | 10·13 | 10·35 | 9·81 | 8·78 | 7·28 | 5·34 | 2·95 | 1·57 | |
| LOWER ... | 0 | —·88 | —1·11 | —1·18 | —1·08 | —·88 | 0·36 | 2·00 | 3·80 | 4·80 | 5·30 | 4·80 | 4·00 | 2·50 | 0 | 0 | 0 |

**4. U.S.A. 5. (modified).**

| STATION ... | 0 | 1·25 | 2·5 | 5 | 7·5 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER SURFACE | ·73 | 2·10 | 3·04 | 4·42 | 5·41 | 6·22 | 7·20 | 7·94 | 8·38 | 8·17 | 7·66 | 6·76 | 5·62 | 4·20 | 4·48 | 1·50 | ·50 |
| LOWER ... | ·73 | ·17 | ·03 | ·03 | ·62 | 0·60 | 2·00 | 3·00 | 4·20 | 4·80 | 4·20 | 3·70 | 2·50 | 1·30 | ·40 | ·20 | ·50 |

**5. GOTTINGEN 602. (modified).**

| STATION ... | 0 | 1·25 | 2·5 | 5 | 7·5 | 10 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UPPER SURFACE | 2·50 | 4·00 | 4·85 | 6·20 | 7·05 | 7·75 | 8·80 | 9·45 | 10·00 | 9·80 | 9·10 | 8·00 | 6·55 | 4·75 | 2·55 | 1·35 | 0 |
| LOWER ... | 2·50 | 1·48 | 1·15 | ·75 | ·50 | ·40 | ·80 | 1·40 | 3·00 | 3·80 | 4·00 | 3·40 | 2·30 | 1·00 | —·85 | —·50 | 0 |




FLIAR PHIL has a confession to make! He did not like pylons and under the urgings of the addicts he built himself one just to prove that they didn't work—succeeding remarkably well . . . And now, after his unkind remarks about control-line flying he was persuaded to build a model, in the happy belief that he would prove that these didn't work either! Unfortunately something has gone wrong. Fliar Phil not only finds control-line flying fascinating, but finds his own model flies very well, which is quite inexplicable. So he advises all the others with a down on the circulating business to try it and change their minds— and what's more they will find that their models do not perform like " bricks on a piece of string," you can feel them *flying*!

And so, to the Model of the Month, which is a combined effort from A/C. Hebden and friends with the R.A.F. at Mauripur, India Command. The model is, of course, our old Plans Service design the Airspeed Envoy—which after a varied life as a rubber model and later as a glider ended its days with the glorious prang illustrated in the very clever photographs, where it is seen in the midst of the Sird desert being given a Viking's funeral by the members of the Mauripur Modelling Club. The conflagration was initiated by means of a rocket in the fuselage, the result as you can see for yourselves being very realistic indeed. Congratulations to the various photographers, un-named in A/C Hebdens letter, for a very fine effort.

Solid portrait this month (top left on opposite page) comes from J. Parkinson, also with the R.A.F. in India Command, this time near Delhi.. The model is rather big stuff, being a 1/24th scale replica of the Kawanishi Kyofu " Rex." The fully-detailed cockpit features all working controls operating from the correct places, even down to differential ailerons. The model is built-up throughout, and even the engine is completely detailed. Finished in standard Japanese Naval colours it took the constructor six months to build but would certainly appear a credit to him now. It is a pity that the photo was not rather better to do the model greater justice.

Once again Fliar Phil is very pleased to hand out congratulations for a really excellent flying shot of a model, and this time it is to G. M. Curmi, a reader in Malta. The model was not actually built by him, but by the captain of a B.O.A.C. Dakota who apparently made use of his occupation to get in a little " International " flying in his spare moments. The machine appears to be powered by a Dyno. Take heed, readers o' mine, and go thou and do likewise—or better if you can!

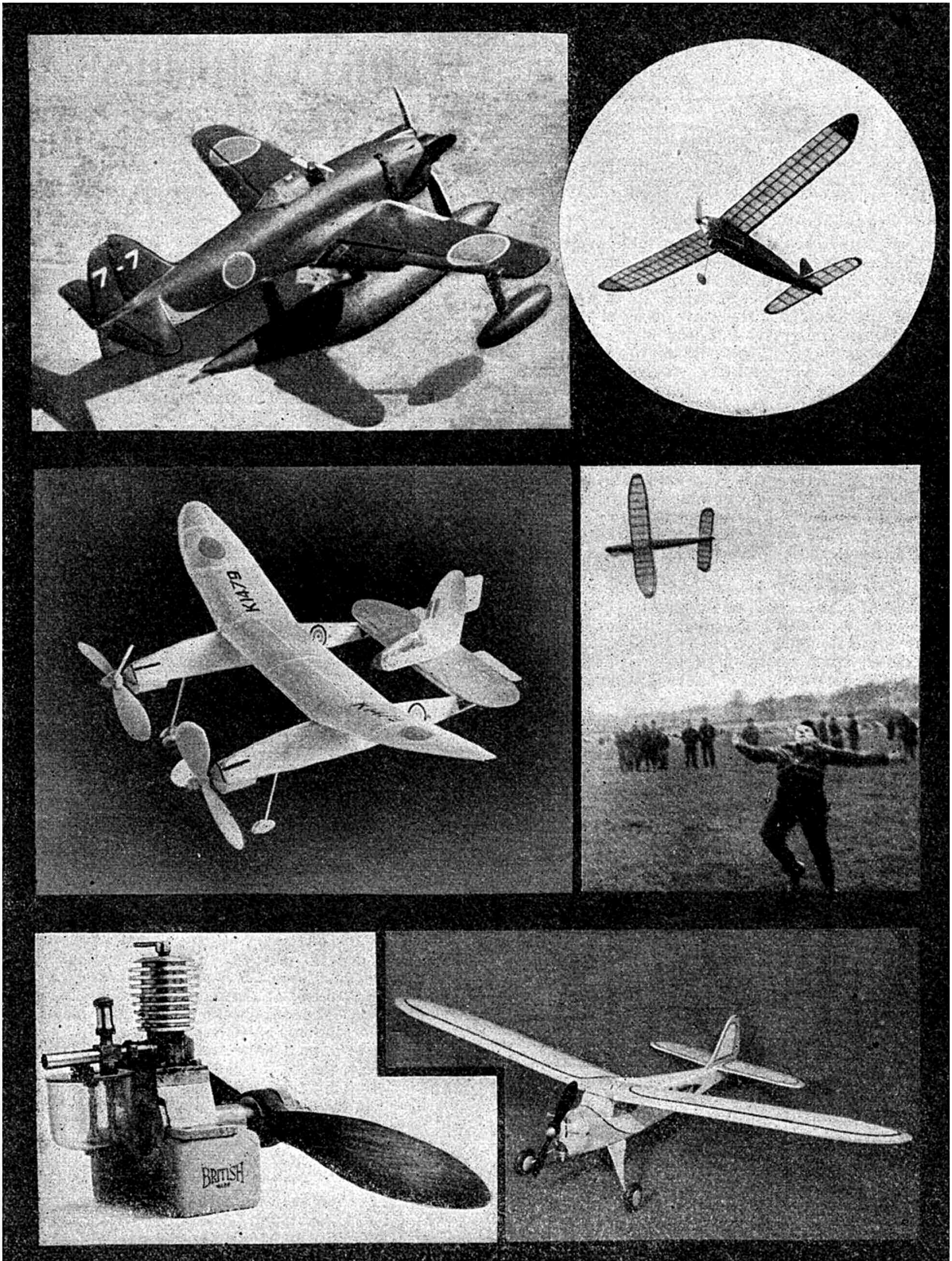
Fliar Phil's other—and maybe better—half is, of course, our old friend of semi-scale fame Raymond Malmstrom who designed and made the model centre left. This follows his usual practice of a model built to his own conception of a type of full-size aircraft, witness various other designs of his featured in our pages. It is known as the Demon—whether its flying characteristics gave it its name is a secret of the Old Firm! Fliar Phil may even publish one of his own models one day—please don't all write in with the obvious comment . . .

How to launch your glider in a gale—demonstrated by a competitor in the competitions at Eaton Bray early last year which were on this occasion not blessed by the weather clerk. Whether this method can be recommended as standard procedure is rather doubtful—for proficiency it may be necessary to take a course in Yoga first!

Quite a number of people these days are making their own diesels, and H. Thornber of Pasturegate, Burnley, designed and built the 1½ c.c. diesel illustrated on the opposite page, basing it upon the famous 5 c.c. Aeromodeller design by L. H. Sparey. Using only a rather old 3½ inch lathe a very creditable job he seems to have made of it, as it throws a 10 inch prop at 6,500 revs. The weight is a little on the heavy side at 6½ ozs., but this is going to be considerably reduced by careful lightening.

Lastly we have a most elegant Frog " 45 " built by R. J. Smith of Chelmsford, with motor tucked away in a sleek cowling. An excellent example of a first-class replica of a commercial design.

The first flakes of snow leave Fliar Phil expectantly converting his control-liner to skis with the joyful hope of breaking a few less props in the days to come . . . the best of New Years to you all!


7-7
K1479
BRITISH

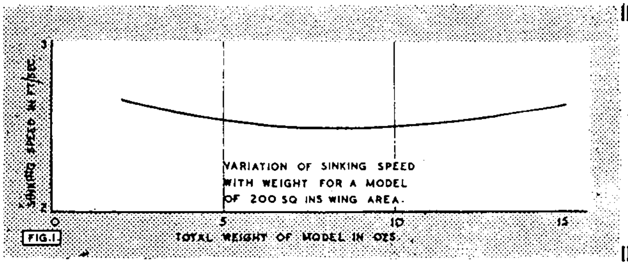


FIG. 1

# AERODYNAMIC DESIGN

PART XIV BY JOHN HALIFAX

### The Paradoxical Weight.

Weight is perhaps the most formidable weapon in the hands of the " rule of thumb designer," and since he has maintained pre-eminence until very recently it is not surprising that nearly all modellers adopt unthinkingly the old and seemingly irrefutable ideas of the subject: are we not all conservative at heart ?

A reduction in weight, we are told, will reduce a model's sinking speed. For ordinary models this is almost always correct, as is the elaboration which states that the rate of climb of a power model will also be improved by a reduction, provided the airscrew thrust remains constant.

The collapse of this theory started with the introduction of the simplified " Optimum Aspect Ratio " theory by Payne early this year, when it became obvious that increasing the weight of a model would result in an increased optimum A.R. and hence greater efficiency.

We dealt briefly with this effect in Part 10, where the use of the A.R. theory was discussed in full, and saw that for a typical glider *the sinking speed was increased by only* 3·5% *when the weight was doubled.* The Aspect Ratio was altered to allow for the increased weight in accordance with the theory, of course. In hard figures this result means doubling the model's weight and using a re-designed wing results in a loss of one second in duration when the model is released a hundred feet up in still air.

This problem can—and has been reduced to mathematics,* and several very interesting points have been discovered. But first a digression on the phrase " reduced to mathematics." It is not generally realised by modellers that in research work more information can be obtained about some problems by a few days' work on paper than could be collected in several years of flight testing. Moreover, it is only possible to speculate from flight tests alone, whereas properly handled, mathematics will give a completely accurate answer. In such cases testing comes into its own *after* the paper work, to fulfil the very essential function of checking results.

To return to the subject in hand, it can be proved that if the Induced drag of a wing is greater than the rest of the drag (Profile drag) of the model, then an increase in weight will result in *decrease* in sinking speed provided the wing A.R. is altered in accordance with the Nomogram in Part 10 of this series.

Conversely, if the Profile drag is greater than the Induced, the sinking speed will increase with weight.

Finally, the lowest sinking speed will occur when the two forms of drag are equal to one another.

Now none of this information, except perhaps the last piece, is of very much use at the moment for practical design. But Fig. 1, based on the work from which they were derived, is. Notice that for a quite considerable range of weight the sinking speed varies so little that for practical purposes it can be regarded as constant. For practical design then, we may say that *although it is essential that the weight of a finished model shall be the same as the weight assumed for design purposes, the actual value of this is immaterial, within reasonable limits.*

* *L.S.A.R.A. Report No. 28 by P. R. Payne.*

### Optimum Weight.

Fig. 1. clearly shows that there is a certain weight for every design which will result in an absolutely minimum sinking speed. As mentioned above, this occurs when the Induced drag equals the Profile drag, and although it is chiefly of academic interest, it *is* possible to build a model which conforms to this. The procedure is as follows :—

1. Assume a wing loading of 6 ozs./sq. ft. and work out the design as usual.
2. Construct the model and subject it to a series of glide tests as laid down in the L.S.A.R.A. notes on standard procedure. From the results check wing $C_L$ and obtain the total drag coefficient.
3. Using the formula for the Induced drag coefficient, calculate the value for the model, and subtract this from the total drag coefficient. The remainder is the Profile drag coefficient.
4. Using the values thus obtained, calculate the optimum weight from the formula

$$W \text{ (ozs.)} = \cdot 006\ (VL)^2 \frac{C_L{}^3}{C_{DO}}$$

where $C_L$ = coefft. of lift. $C_{DO}$ = coefft. of Profile drag (obtained from the glide test). VL = critical VL of the section (see part 12 of this series).

5. Build a new wing for the model having the correct A.R. for the new weight.

In conclusion I would reiterate my statement that there is no need for all this in ordinary design.

### Tail Plane Area.

It must be obvious to all thinking aeromodellers that the current practice of selecting a tailplane area equal to approximately one third of the wing area is open to severe criticism. For one thing the optimum area varies inversely as the distance from the Centre of Gravity: moreover gliders do not need such a large tailplane as their powered counterparts. Thus unless a designer has a considerable amount of experience behind him, he may have to try several areas, checking each by means of the Static Stability formula given last month.

With this in mind I have evolved the formula given below: unless the model has an unusually unstable wing section it may be safely used without checking, but since this takes only a few moments it is better to play safe.

The tailplane area of a power model, as a percentage of the wing area, is given by the expression

$$\text{Tailplane area } (\%) = \frac{\text{wing mean chord}}{\text{moment arm}}$$

Where the moment arm is the distance between the Centre of Gravity and a point one quarter of the chord back from the tailplane leading edge.

For a sailplane, three quarters of the value obtained above should be taken. In both cases the formula gives good average stability, and for super stability the moment arm and/or the area should be increased slightly. Rules governing the C.G. position were given last month.

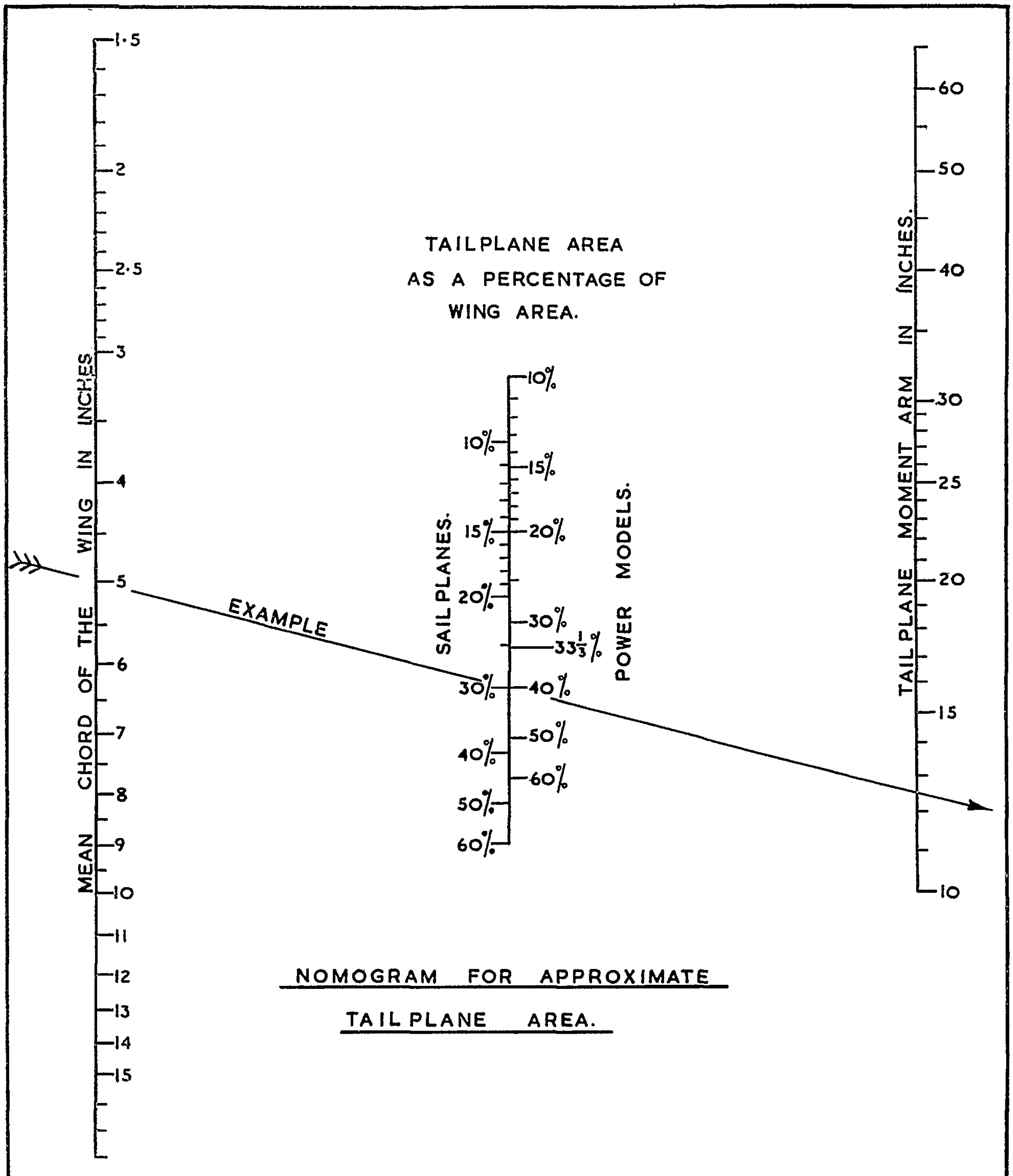
**Example.**

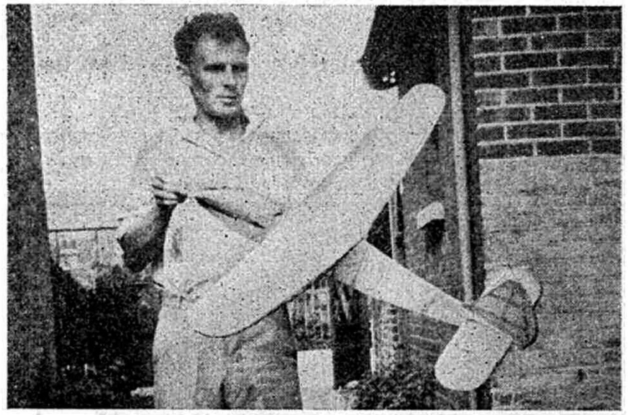
A rubber-powered model has a mean chord of 5 inches, and a moment arm of 15 inches (a fairly general proportion). Thus tailplane area $=\frac{5}{15}=\frac{1}{3}$ or 30% of wing area.

If the machine is a glider however, this must be reduced by a quarter, i.e.,

Area $=\frac{1}{3}\times\frac{3}{4}=\frac{1}{4}$ or just 25% of the wing area.

Alternatively the Nomogram may be used to obtain a quick solution, and if required, the tailplane area may be fixed and the moment arm obtained instead.





# Build the G·H·27b

## DUAL-PURPOSE MODEL BY G · W · W · HARRIS

THIS model was designed and built to test out several schemes and ideas both aerodynamical and practical before completing the designs of my latest Wakefield class models.

The model can be flown as a rubber-power driven machine and as a tow-line launched glider. When flown as a glider the original job G.H.27a flew o.s.s. after 7 minutes' flying and was lost.

The high aspect ratio airscrew gives the model a long, steady climb on low power. Such conditions are of course preferable to the more usual arrangement whereby the machine is whisked skywards at high speed, the airscrew stalling badly nearly all the way, and often the wings. This process of dragging models along at high speeds is anything but scientific, a large percentage of the motor's output being wasted on the increased drag. Admitted the scheme sometimes works when thermals are prevalent, but when they are not . . .

It seems that only by making single-bladed airscrews function at low speeds can they be successfully applied to streamlined model 'planes; my own experience tells me that in the past I have made my single-blade airscrews with too low an aspect ratio, too much undercamber and sometimes too great a pitch angle.

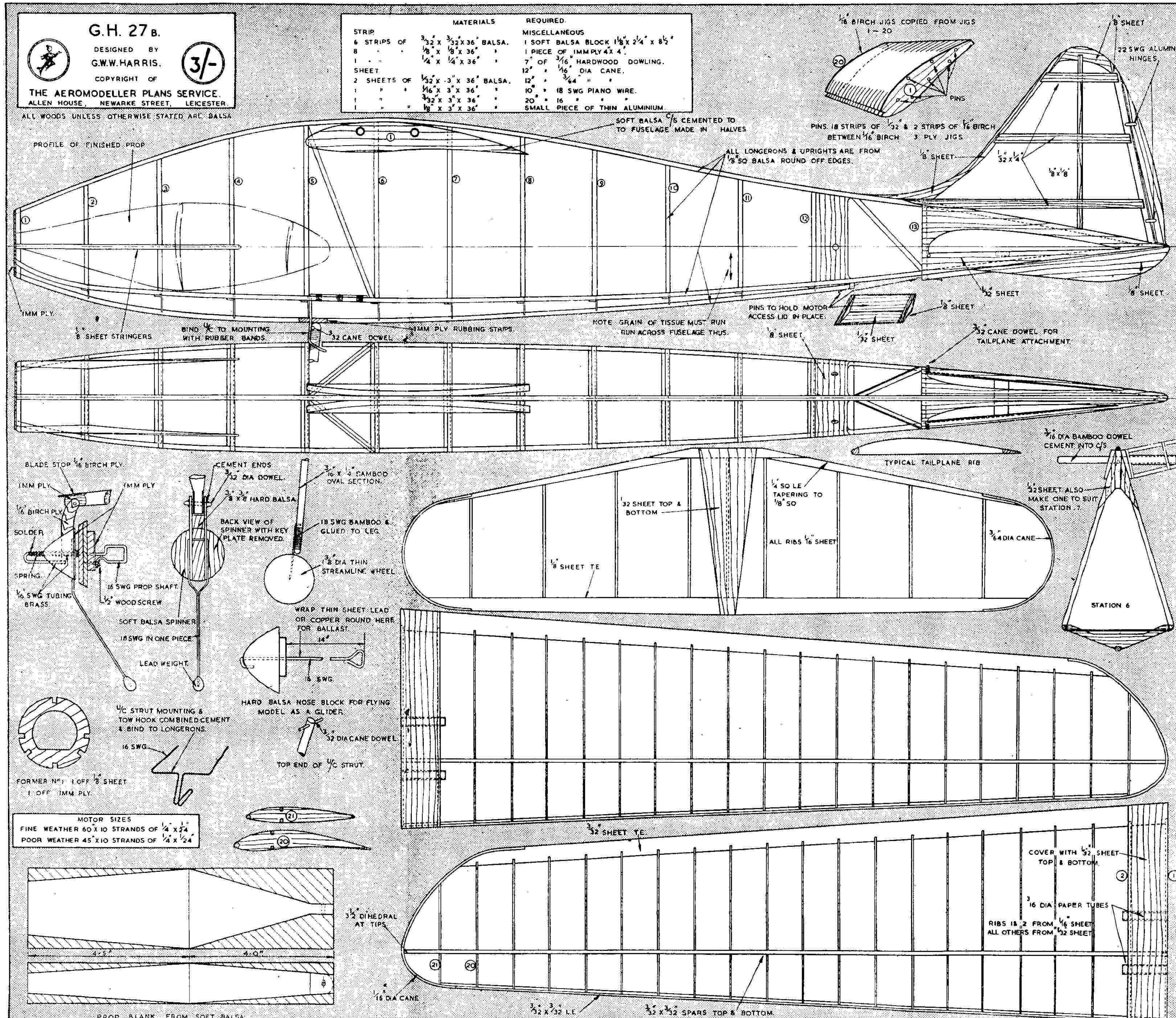
To get back to "G.H.27b." The method of fitting the mainplanes proved satisfactory, though on the Wakefield jobs that I built later I did not cement the dowels into the centre section but fitted paper tubes, the dowels used being birch or any other fairly brittle wood.

A two-legged undercart has been used for some of the test flights. This undercart was simply a single length of 16 s.w.g. wire bent to form a V, the apex was bound to the tow hook with rubber bands, the wheels were 1 in. diameter and the track 8 in. For purposes of collecting reliable data the model has been flown mainly in non-thermal weather conditions, nevertheless average flight durations for the different days were 2½ to 2¾ mts.

The 60-in. long motor was a bit of a handful at first but by fitting a fairly strong tensioner spring on the airscrew shaft and ample pre-winding of the motor no further difficulty was experienced.

The model has been flown successfully in rough weather.

Full size plans may be obtained for 3/–, post free, from Aeromodeller Plans Service, Allen House, Newarke St., Leicester.



# Classical or FUNCTIONAL?

By J. Van Hattum

IF Mr. Stanhope Kenny's contribution entitled "Purist's Plea", published in your issue of October, meets with the reward it deserves, he will be both the hero and the enemy of different groups of aeromodellers. His remarks will warm the heart of some, yet bring from others righteous indignation.

This being so, it is right to regard his article as the out-spoken sentiment of a very definite and by no means negligible group of aeromodellers all through the World. No doubt representatives of the other group will find their voice and denounce Mr. Stanhope Kenny with all the arguments on their side.

Before this is done, it would seem a sound plan to try and keep on the middle of the track and analyse the matter in a general way.

I will take the liberty to simplify the argument by dividing model aeroplane design into two schools: the classic and the functional. This method may have its weakness owing to over-simplification and in many cases the two will overlap. This intermediate school may be termed the semi-scale model or the functional good-looker.

In order to start with a clear statement, I would define the pure classic as a flying scale model, perfect in every detail, while the pure functional model I would define as the extreme design, produced solely for a specific performance.

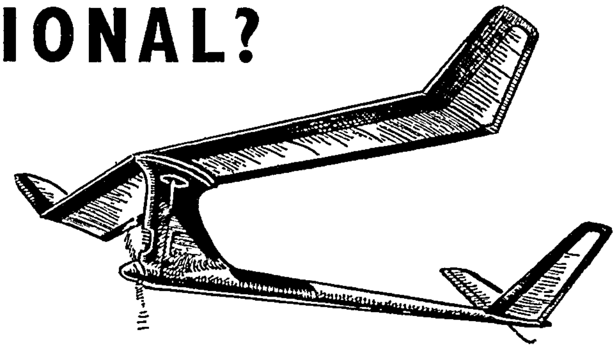
It is clear from the article that the author has in mind, not so much the pure classic as the semi-scale model. In his design he is prepared to make concessions to flying ability. We must see what this leads to and the best way is to compile a list of the major and minor differences between what I call the "functional good-looker" and the pure classic or copy of a real or possible full-size aeroplane.

Obvious departures—that is, noticeable to anyone familar with aeroplane design—are the following :—

1. Wing section. 2. Area of tail-unit, relative to wing area. 3. Dihedral and other aids to stability. 4. Placing of the wheels relative to the wing-chord. 5. Frequent use of constant-chord wings with a cantilever wing layout. 6. Entire construction and choice of materials. 7. Absence of movable control surfaces.

I do not think that anyone will argue the sound reasons for these departures from full-size practice.

1. Whatever performance is aimed at, the choice of a suitable aerofoil section, either of the concave turbulent flow type or the new LDC series, is indicated. These differ radically from the bi-convexed or symmetrical aerofoil sections used in full-size practice.
2. This will often be essential for the required automatic longitudinal stability. The horizontal tail plane may be larger while the fin may be smaller than common in full-size practice. The area forward and behind the c.g., or we may say the leading edge, may also be differently proportioned.
3. High-wing layouts generally show a much more pronounced dihedral than the equivalent prototype.



*"Bombardier." A suggested model of the authors which is purely functional of course, and incorporates some of the latest developments in this type of design.*

4. Position of the wheels is dictated by good R.O.G. characteristics and often serve to protect the engine *i.e.* they are placed farther forward.
5. Equal-chord wings are certainly uncommon on cantilever high-wing monoplanes. although they are used on some low-wing monoplanes.
6. This is an obvious departure, which no one will criticise, although the outsider might expect metal stressed-skin construction.
7. Needs no comment.

Now let us regard the less obvious departures between the "functional model" and the pure classic. Our model is meant for different work and therefore has to comply with different requirements. This will result in the following concessions :—

1. Engine installation, proportions and lengths of cowling are not copied from the real aeroplane.
2. The same applies to doors and windows.
3. Size and dimensions of cabin are not decided by the seating capacity for—imaginary—occupants.
4. Wing and tail plane fixing entirely different from those of the aeroplane.
5. Tail-wheel unit and shock absorbing mechanism of undercarriage are very different from the prototype.

We have already become so used to these concessions to the very nature of model flying, that we apply them almost automatically. What we have now considered is the semi-scale model and we also realise that the pure classic is a very rare bird indeed. I think I am not mis-representing Mr. Stanhope Kenny's views when I suggest that this type of model was before his eye when he wrote his article. In that case he will accept these departures from the prototype as reasonable. But we must realise that although they are not fundamental they are all functional and un-realistic.

As with everything else, tastes differ where semi-scale models are concerned. But most readers, even if they do not build them, will agree that the best representatives are easy on the eye and a real joy to behold in action. Also, their performance has been shown to be in the very front rank. In fact, there is not a bad word to be said against them.

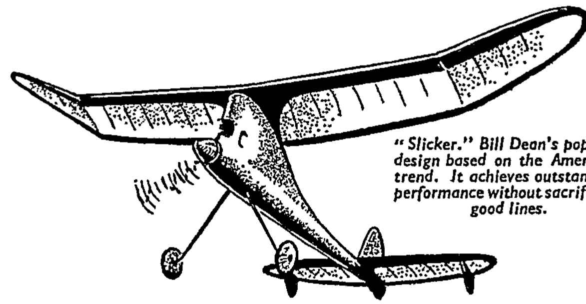
We must, however, be impartial and also consider the other group which I have termed the purely functional. Now, no one can ignore the very plain derisive note in the article and I fear that it is just this element which is the most damaging to Mr. Stanhope Kenny's own argument. He has found a victim and he treats him unjustly, for he has not succeeded in the most important thing, that is, to place himself at a sufficient distance from his subject. He has not taken sufficient trouble to find the how and wherefore in order to state his own and rightful preference. For instead of implying that the designer of the unrealistic high performance model produces the most startling fancy his mind can conceive, one should try to understand a little more of the basic principles of model aeroplane design.

The very basis is the fact that awards are given for duration of flight on a limited engine run. Whether this is sound or not or whether a different evaluating method should be applied, has no bearing on our discussion of trends in design. The designer does not always make the rules; he only tries to comply with them and from these factors all the rest follows.

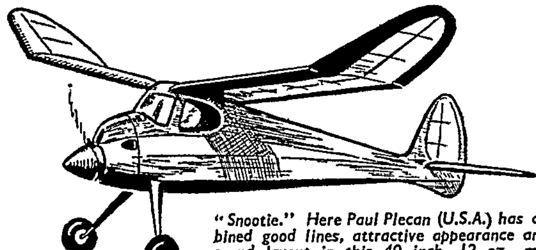
The designer will, therefore, aim at two things: the greatest possible rate of climb and the lowest possible rate of descent with "dead stick". He finds that he must design a highly powered glider, but essentially a soaring machine. When he lays out his model everything will be fitted to the "best" performance and to do so, he will have to rid his mind of all preconceived ideas, except the engine to be used, the normal fixed-wing-cum-tailplane set-up and the required take-off gear. Although he may base his layout on previous successful models, either his own or some other designer's, he will yet have to re-consider everything from basic principles and—please note!—make a final choice from various possibilities. It will be due entirely to his own feeling for grace of line if his model is endowed with "eye-ability" or not. Yet to judge good lines one must know where they help and where they mar performance, for the term "clean lines" is only too often used in the light of a very different full-size practice.

Without intending any criticism to the good-looking semi-scale model, I would like to call the above method "pure design", by which term I will undoubtedly be considered prejudiced! But consider the facts: everything must be analysed from the ground up, everything must be a compromise between the theoretical ideal and hard reality. A little thought will bring home the fact that it is just in this way that the fantastic and un-realistic (sic) models are produced. Let us not make the mistake of thinking that the very successful group of designers—naming no names are only out for the weird and unusual. They quite deliberately ignore the lines and layout of full-size aeroplanes for they are aiming at quite different results and they regard the model aeroplane as a very specialized object to obtain these results, in the same way as a designer of a high performance soarer uses data and methods which are of little value to the designer of high-speed aeroplanes. Layout of cabin, position of front windows, relative placing of wing and landing gear are none of them referred to the full-size aeroplane for the simple reason that these are not elements both have in common.

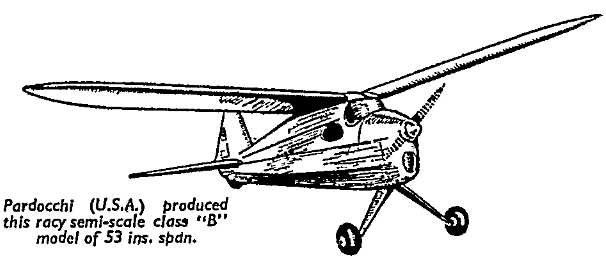
The wing is purely a lifting surface of maximum efficiency. Modern thin sections dictate a new and different type of construction. The fuselage serves principally as a rigid connection between wing and stabilizing surfaces. It may, or may not, take the engine at the front end. The take-off gear has to serve only to support the model unaided during the take-off run. The choice of two, one or no wheels at all, rigid, tandem, tricycle or retractable, is only made in the light of collective model aeroplane designers' experience.



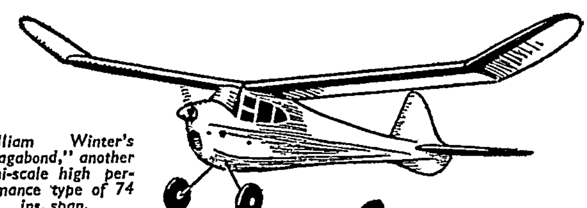
*"Slicker." Bill Dean's popular design based on the American trend. It achieves outstanding performance without sacrificing good lines.*



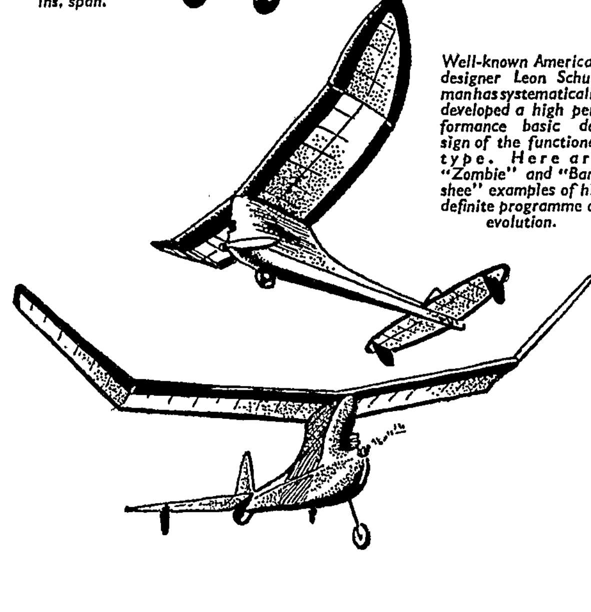
*"Snootie." Here Paul Plecan (U.S.A.) has combined good lines, attractive appearance and a sound layout in this 40 inch, 12 oz. model powered with a 1·6 c.c. Arden.*



*Pardocchi (U.S.A.) produced this racy semi-scale class "B" model of 53 ins. span.*



*William Winter's "Vagabond," another semi-scale high performance type of 74 ins. span.*



*Well-known American designer Leon Schulman has systematically developed a high performance basic design of the functional type. Here are "Zombie" and "Banshee" examples of his definite programme of evolution.*

A retractable undercarriage will make a most decided improvement in the ceiling as well as in the duration of glide. But a single wheel retractable undercarriage is not seen on full-size aeroplanes except on one side of the plane of symmetry. Yet, to make a twin wheel undercarriage retract into a fuselage may be an unnecessary complication. Folding propellers would be taboo, if I read the criticisms rightly, but these too are justified by the great improvement in the glide. A curious case is the V or butterfly tail. I wonder if this is now " as done " since the Bonanza started the fashion in the full-size field? But models have been using it for years before Mr. Beech took it over and so has the American Nomad sailplane.

Any advanced model aeroplane designer could take my place and continue my article from here. It can be shown why an extreme wing position using a very high pylon has advantages. It can also be shown that, since longitudinal stability benefits from placing the c.g. a small distance ahead of the neutral point, noses will be short and a very small fin will be the result. It can be shown that very highly powered models will only climb at their maximum rate when torque is neutralised by extreme dihedral. It can be shown that with the use of the modern low-speed sections high aspect-ratio can be applied with good results. And it can also be shown that the realistic or classic type will have proportions that will handicap them in these respects. But that would only elicit from their builders and designers the scathing remark: we do not design for that kind of performance! Alright, you don't and there is no reason why you should.

Every model aeroplane is a compromise between the various factors in the order the designer has placed them. The realistic design demands compromise between appearance, structural soundness (the functional comes into it here!) and a specific performance. The functional design only replaces the realistic element by the external form making peak performance possible.

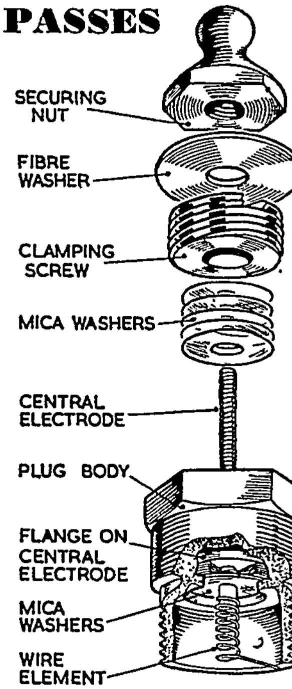
The above is my interpretation of " free-lance " design. I hope it will be clear to Mr. Stanhope Kenny and his group, that designing a model of the type he criticised is not easier, more slap dash on requires particularly aimless seeking after odd, configuration than that of his classic type. No good model aeroplane, whatever its shape, was yet designed that way.

As I write, new suggestions and possibilities present themselves. The pylon may go out one of these days; shoulder-wing models have shown as good a performance in the hands of the Belgians in Switzerland. The low-wing layout has certain drawbacks on the point of stability, but who knows? If we are going to have new forms, all the better, for standardisation means stagnation.

I have refrained from mentioning rubber-powered models and model sailplanes, which can be treated on the same lines. Maybe others will join the issue and state their ideas. But I do hope that the foregoing, rather too lengthy discussion, will make Mr. Stanhope Kenny realize that no good can come from an attitude which refuses to recognise the other man's point of view and failing to see in experiment the common cause we all have at heart. Aeromodellers are romantics when all is said and done: they strive after a dream and when the one dreams of realistic looks and behaviour while the other stumblingly seeks for super-performance, well, who will say which is right? There is no need. There is room for us all!

# AMERICA BY-PASSES THE DIESEL!

BY JIM NOONAN




In contrast to the tremendous popularity of the diesel motor in England and on the Continent, American modellers generally are not interested in diesels because of (*a*) a tremendous variety of excellent gas motors at low prices, (*b*) a myriad selection of ignition equipment, (*c*) the comparative low r.p.m. of the diesel—and now (*d*) the " Glow Plug " (see drawing).

The average young American wants a motor that will give him not less than 10,000 r.p.m., ear-shattering noise, and tremendous speed with U-control (speeds below 100 m.p.h. are rarely mentioned!), and a climb in free flight that compares only to an arrow shot straight up. He wants——and gets it too, refusing to buy older design motors lacking these requirements.

Take for example the Arden ·099 and the Arden ·199. Using plain white gasolene and oil, 10,000 r.p.m. can be obtained before running in. After ten minutes' running time 14,000 r.p.m. is attained. Hot fuel and a flywheel spinner increase r.p.m. by 10–30%.

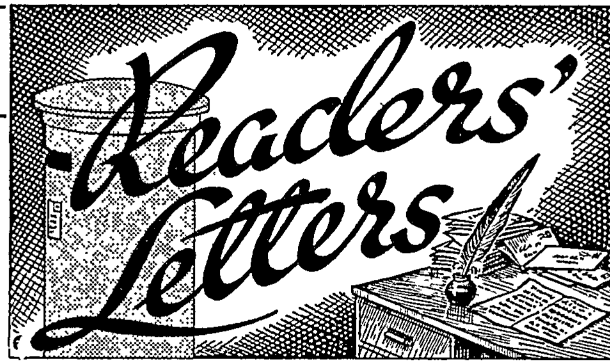
The McCoys—·24, ·49 and ·60—are definitely racing motors, and work only on alcohol fuels. The Dooling—sensation of the Nationals—features a tremendous bore and short stroke (literally a vibrator), and the usual massive appearance of a racing motor. A little tricky, but definitely the best, it holds top speed of something over 130 m.p.h., and clicks off 125 m.p.h. for the experts.

With motors of this calibre available at from $15 to $35 (dollar is about 5/- sterling) and ordinary good motors at $4 : 95 to $11 : 95, even the best American diesel (the Drone) is left in the background.

The popular opinion is that no one has too many motors! A 17-year-old has eight motors, all top stuff; his friend (who is only a newsboy) can afford only four, and another boy next door has three. I have had 50 different motors during the past ten years, and a friend who is a speed champion carries eight to ten motors always in his field kit.

But now the diesel is doomed. Despite a diesel head (for Arden motors only) which gives equal performance to ignition, the " Glow Plug " is cheaper, simpler, and in this land of super-service ready-mixed fuel in infinite variety can be bought in every neighbourhood.

First, an Arden diesel head costs $3 : 50, and requires an ether-kerosene-oil fuel that is expensive. It has all the characteristics of a diesel, except that it is loud and runs very fast. The " Glow Plug " costs $0 : 85 (about 4/3), fits in the regular spark plug hole, and requires only a 1½ volt battery to start a flow of current through the high-resistance filament. Flip the prop., and when the motor starts remove the battery. Fuel is a special blend, costing the same as the hot racing mixtures now sold.




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

DEAR SIR,

May I point out four things ?

1. That the printer defied my attempts to correct his impression of the stability criterion advanced in my " Aerodynamic Design " article in the Christmas issue. There should of course be a minus sign between the bracket and $F_T$, making the expression.

$$F_W S_W (K.c.+X) - F_T S_T y$$

Lest some bright spark should point out that tailplane efficiency has not been taken into account I would point out that an *average* figure has been allowed for Part 16 will contain a Nomogram giving this important factor for all conditions.

2. *Re* Mr. Annenberg's letter I would point out that the apparent inaccuracy involved in assuming a constant cœfficient of lift is not evident in practice. The criterion for engine horse power advanced in part 12 of my series (fig. 3) has been checked directly with my own models and indirectly with other people's and the agreement is excellent. The non-acceptance of this assumption would necessitate a very complicated mathematical treatment for each and every model, incidentally : impossible for most designers for whom the series is written.

3. With regard to Dr. Piattelli's article on airscrews I should like to make a point which he missed. This is simply that there is no necessity for a variable pitch airscrew on ordinary free flight models using I.C. engines. As an example I recently designed an airscrew for Electronic Developments Ltd., and found that the inflow (i.e. speed of the airflow entering the airscrew disc) averaged out at 25 ft./sec. for static conditions : actually it varied from zero near the centre to 40 ft./sec. near the tip, using a parellel chord blade. The angle of the relative airflow remained constant at 11° all along the blade.

Now considering the extreme case of the blade element at 0.4R if the airscrew were moved forward through the air at 30 ft./sec. the angle of relative airflow would still be only 29°. Thus a section with a stalling angle of 18° would give thrust efficiently throughout the flight range—and this is an extreme example.

4. Mr. Guilmant's notes on tailless models bear out my " Factualities " part 3 on the same subject—except for two points : it is impossible to accept the statement that " tip fins . . . . . . cause unnecessary disturbances and eddies ", because it has been known for quite a long time that their effect is quite the opposite. Secondly it is difficult to see how longitudinal stability can be gained " by a central fin ". It is of course absurd, but perhaps the printer . . . . . . . ?

Teddington, Middlesex. JOHN HALIFAX.

DEAR SIR,

We would thank you to bring to the attention of your readers the fact that due to thefts from these works a number of ETA " 5 " MINIATURE COMPRESSION IGNITION ENGINES may be offered to the public, ostensibly as new or test run only. Fortunately, however, the careful records kept enable us to specify the serial numbers of the missing units, these being as under :—

| | | | |
|---|---|---|---|
| 54747 | 64773 | 64774 | 64776 |
| 64798 | 74721 | 74738 | 74762 |
| 74789 | 8478 | 84738 | 84768 |
| | 84769 | 84777 | |

The name, address, or any details obtainable in respect of persons offering these engines for sale should be passed on to us immediately.

We trust that in the interest of your readers and the trade generally you will be able to publish these details.

Watford Bypass, Herts. ETA INSTRUMENTS LTD.

*We are, of course, glad to extend the help of our editorial columns to Messrs. Eta Instruments and add our own plea that readers will do their best to help bring the culprits to justice.*

DEAR SIR,

In the current (December) issue of the AEROMODELLER the subject of pylon type power models is discussed by no fewer than three well known writers: namely Messrs. Bowden, Halifax, and Warring.

Now, this type of model has been outstandingly successful in duration competitions, and it is obvious to the unbiased enthusiast that it must have " something " not found in orthodox models. I am, therefore, grieved to find that the above three gentlemen, although posing as authorities on the subject, apparently have no idea what the " something " really is.

The matter should be divided into two parts. Firstly the pylon itself, and secondly the wing mounted on top, in what is, in effect, a high parasol position.

A pylon, especially if of the hatchet type, does not supply side area where it may be beneficial to spiral stability. But to suggest that this is the main reason for the superiority of pylon models is sheer nonsense.

The really important part is that played by the parasol wing. The explanation of this is somewhat involved, and rather difficult to digest, but if the following steps are studied and understood one by one, I think the reasoning will become clear.

(1) The wing is a relatively heavy item. Therefore, if it is placed in a very high position it has the effect of raising the Centre of Gravity of the whole model a considerable distance **above** the Thrust line.

(2) The Thrust Line, lying somewhere **below** the C.G. supplies a positive pitching moment which " pulls the tail down " relative to the flight path.

(3) When the model is flying in this " tail down " attitude, the tail's lift is considerably more than normal. This increased Tail Lift, coupled with the Tail Moment Arm, gives a powerful negative pitching moment, which prevents the model stalling under power.

For this reason, pylon or parasol models can climb exceptionally fast and steepling **without stalling.** Therein lies the secret of their superiority over the more orthodox models for duration flying.

This conclusion may be summed up in an important theorem. A PARASOL WING TENDS, INDIRECTLY, TO PREVENT STALLING UNDER POWER.

There are other methods of preventing stalling under power, as the Belgians have demonstrated, but that is beside the point at present.

This theorem is equally applicable to rubber driven models, and it is interesting to note that those types in which a high power/weight ratio is the rule (e.g. Indoor free-flight models, and outdoor ultra lightweights) are almost invariably parasol monoplanes.

Bristol. J. H. MAXWELL.

*Once again we have no hesitation in publishing a controversial reader's letter on a debatable subject. To us there seem to be one or two flaws in Reader Maxwell's argument, but we will rest happy awaiting the usual deluge of opinions from the rest of our readers.*

# BOOK REVIEW

## BY . . . MUCH BINDING

**Performance and Longitudinal Stability of Jet Propelled Aircraft with Special Consideration of Flying Airplane Models** by P. Bielkowitz, A.F.R.Ae.S. (Alma Book Co. Ltd. 8/–).

THE growing interest in jet propelled model aircraft is such that even so frightening a title as the above will not deter the enthusiast. We assure the would-be reader, that the book is specially written for aeromodellers and at no time soars over the head of the man with a reasonable grounding in theory. To quote from the preface " the booklet may help readers who are . . . interested in the results of calculations or in the practical applications of the subject. . . A certain knowledge of basic facts and symbols is required and treatises on the subject such as ' The Design and Construction of Flying Model Aircraft ' by D. A. Russell or ' Simple Aerodynamics ' by A. H. Smith are recommended as textbooks." This establishes the degree of knowledge required to enjoy a book packed full of information that should suffice to turn many a drawing-board project into airborne reality.

We hesitate to assess just how much research and real hard work has gone into its preparation: within its eighty pages are packed a wealth of graphs, tables, and quoted examples to delight the serious aeromodeller. We strongly recommend it for the library of all those who passed beyond rule of thumb.

**Atom Minor Mk. III** by Edgar T. Westbury (Percival Marshall 3/–)

AEROMODELLERS as a class have proved difficult to wean from their natural fondness for working in wood to adventure in the unexplored realms of metal. Manufacturers have encouraged this conservative outlook by providing at increasingly tempting prices, engines of all shapes and sizes for the power enthusiast. Almost alone has the voice of Mr. Westbury been heard calling all and sundry to witness that the internal combustion engine is a creature of soul that should be made and developed by the amateur and not merely purchased like next week's rations. For over twenty years he has progressively refined internal combustion engines suitable for model aircraft, and for very much longer enjoyed a wide reputable for such miniature engines in the speed-boat world.

It is therefore of particular interest to find in Atom Minor Mk. III a little booklet devoted exclusively to the home construction of the latest in the long Atom series of i.c. engines. Almost cut for cut the comparative novice is taken through the production work, with step-by-step diagrams and photographs that leave nothing unexplained. To encourage the impecunious the author confesses that most of his own work has been done on a lathe costing less than £5 before the war. We feel it only right to interpolate that probably Yehudi Menuhin could fiddle a fair tune out of a busker's violin ! Nevertheless given a reasonable knowledge of the lathe there is no reason why any enthusiast should not make an entirely successful job of Atom III. The absolute novice is not advised to tackle it at any rate until he has digested the contents of some more general work on lathe operation—when he should find it an excellent " test piece " to prove his new skill.

**Model Sailplanes** by L. G. Temple (Harborough 5/–).

IT is impossible to avoid the inevitable cliche of the reviewer by remarking that a work from the pen of L. " George " Temple has long been eagerly awaited. It is given to few writers on aeromodelling subjects to enjoy so wide a *practical* reputation as George Temple. His style of sailplane has developed a new appreciation of pleasing lines, and no higher compliment can be paid to the original designer than to suggest it is rather like a Temple model ! Added to this flair for design is a rare degree of manual skill that has enabled him to turn into beautiful reality some of the most pleasing layouts of recent years. Now at last he describes in detail just how he builds his models.

With " Model Sailplanes " beside him the tyro can embark with confidence on any of the published Temple designs—Cracow, Sokol, Tribute, or Celestial Horseman—with the certain knowledge that all points of difficulty will be cleared up in the text as work progresses. For the more ambitious builder of advanced model sailplanes there is a constant friend and guide ready and able to offer the best practical solution to constructional problems of every sort.

The book is profusely illustrated both from the author's own collection of pictures and from the publishers' wide resources covering the best examples from all over Europe. Over sixty explanatory diagrams are the author's own work, and give an unequalled clarity to his essentially readable text. As a final inducement, reduced scale drawings of his published plans form an interesting appendix, together with constructional notes. In all honesty we can say this is one of the best book buys of the year at 5/–.

**Model Diesels** compiled by D. J. Laidlaw-Dickson (Harborough 7/6).

NO more astonishing phase of the ever-changing aeromodelling world can be recalled than the immense and instant popularity of the model diesel engine in this country when once manufacturers began quantity production. Almost overnight power modelling came to the fore leaving the rubber model very much an also ran, and leaping into the forefront of the news at every gala or friendly meeting.

Only one book has attempted to cater for the large and in many cases unversed numbers of newcomers to the hobby. In " Model Diesels " will be found just the information that the beginner needs. Advice on choosing an engine, how to look after it when selected, how to start and run it, how to stop it, and what to do when it proves balky. Useful Appendices give data on nearly every known engine, together with suggested fuel mixtures and lists of manufacturers. That the compiler could within the limited compass of such a book say all that is to be said on the model diesel engine can hardly be expected, but enough has been said to guide the aeromodeller along the right path and prevent him from those disappointments that so often attend the changeover to a new and unknown medium.

The first edition was snapped up in a matter of weeks, and this second edition, which includes a much wider selection of British engines will serve to satisfy an ever-widening public. To those who have not managed to buy or borrow a copy, we would say this is a thoroughly readable book that may well save its initial cost in preventing some of the early mistakes that so many dieselmen have found out the hard way.

# PHOTO NEWS

1. This Sopwith Pup (80 h.p. Le Rhone) belonging to the Shuttleworth Trust has been flying at several air displays during the past season.

2. An Avro York C.I. "Malmesbury" with starboard airscrew feathered, landing at the B.O.A.C. maintenance base at Hurn.

3. East Anglian Flying Services, Ltd. use this veteran Airspeed A.S.5A Courier (Lynx IV. C) for pleasure flying over Southend. It is the last remaining example of its type still in service.

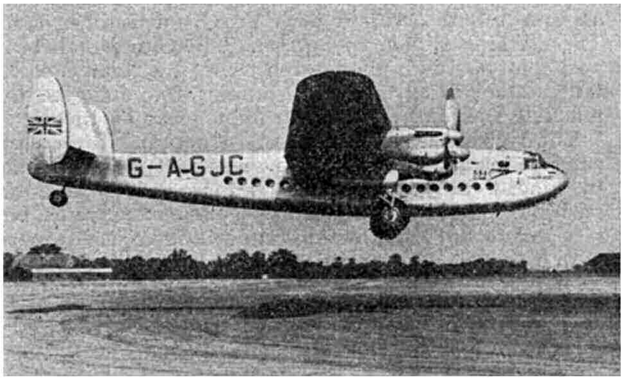
4. A feature of the Southend Air Display was the demonstration of formation aerobatics by four D.H. Vampires of Nos. 54 and 247 squadrons. Photo shows the Wing Commander's machine, VF.303.

5. This French owned H-P Halifax C.8. seen at Gatwick recently was previously G-AHVT on the British Register. It also bears its old R.A.F. serial number P.P.278.

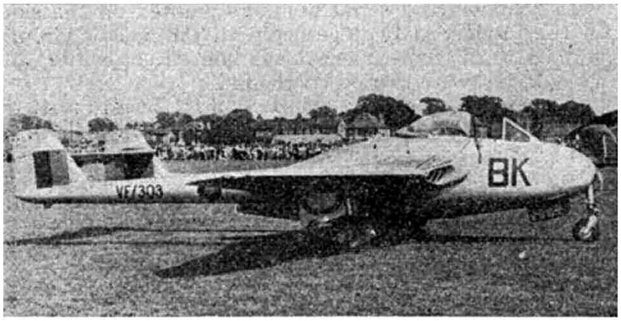
6. "Portsmouth," one of B.O.A.C.'s newly acquired Short S.25 Sandringham V flying boats moored out in Poole harbour.

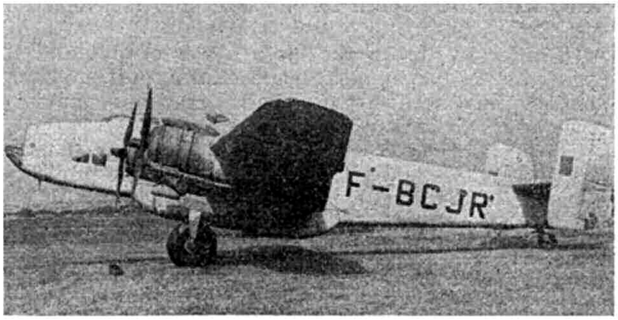
7. A low shoot-up by a L.A.M.S. H-P Halifax C.8. freighter at the Elstree Air Display on July 27th last.

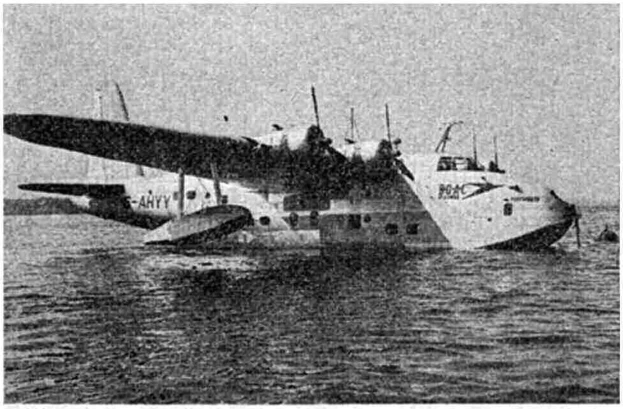
*Aeromodeller Photographs.*

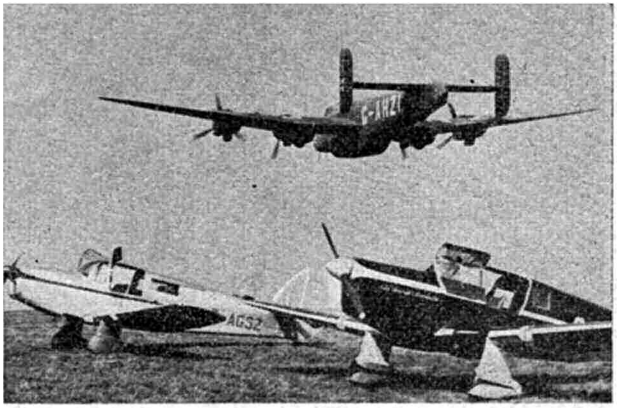








## AIRCRAFT DESCRIBED No. 3. BY E. J. RIDING

THE Wyvern is the first new machine to be produced at the Westland Aircraft Works since the Welkin of 1942. Classed as a carrier or land-based strike aircraft, it was built to Specification N.11/44 and is one of the largest single-seater aircraft to be built in this country. Although orthodox in outward appearance, the Wyvern incorporates several novel features, notable amongst which are the undercarriage shock absorbing gear, the annular shaped engine cowling, the retractable flaps and the abrupt downward slope of the nose, this latter feature giving the pilot an excellent forward and downward view.

With its colossal 3,500 h.p. Rolls-Royce Eagle 22 engine weighing nearly two tons, the machine is undoubtedly the last word in piston-driven fighters. Incidentally, the Eagle 22 is Britain's latest and largest piston engine, and is the first sleeve valve unit to be put into production by Rolls-Royce, Ltd. It has twenty-four cylinders arranged in the form of a flat " H," and is fitted with a two-speed supercharger and fuel injection system.

In order to absorb the large power output and to counteract torque, an eight-bladed Rotol contra-rotating airscrew has been fitted. Later machines may be powered by airscrew-turbine units.

The armament consists of four forward-firing 20 m.m. Hispano Mk. V cannon housed in the wing, and provision is made for the carriage of any type of weapon in the naval armoury from a 20 in. torpedo, 2,000 lb. bomb or eight 60 lb. rocket projectiles.

The machine shown in our photographs, TS.371, was the second prototype and was on view at the S.B.A.C. display at Radlett last September, but was destroyed in an unfortunate accident near Yeovil on October 15th. The machine piloted by Sq. Ld. P. J. Garner had been posing for air-to-air photography when the front airscrew failed, and during the forced landing that followed the machine was burned out, the pilot losing his life.

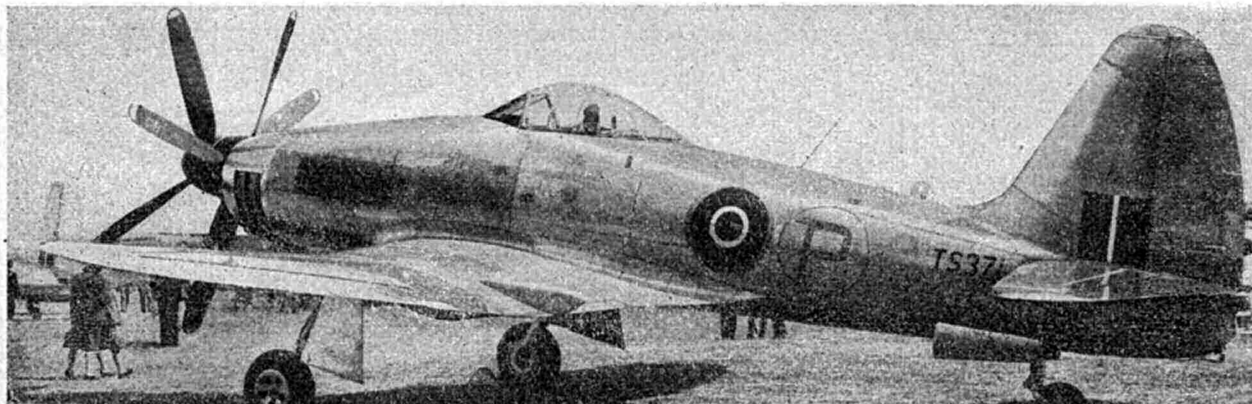
The Wyvern is of all-metal construction. The undercarriage retracts inwardly, the wheel wells being covered by hinged fairings when they are in the up or down position. The first two prototypes have fixed wings, but it is understood that the third aircraft has been equipped with mechanically operated wing folding gear, the wings folding upwards from the junction of the centre section and the outer wing panels and also at the extreme tips.

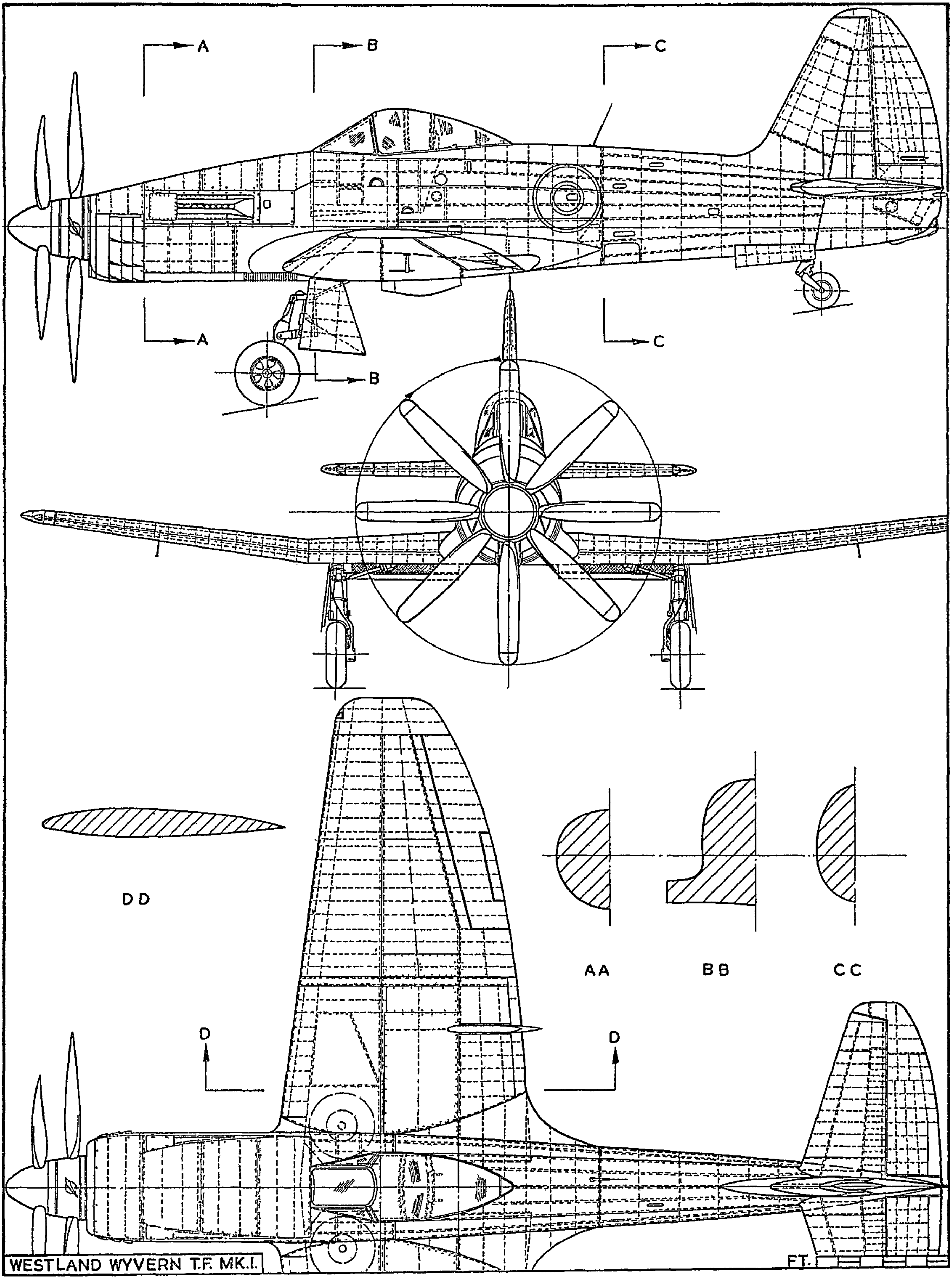
*Colour.*—The first prototype has been finished in normal naval grey-blue glossy camouflage, but the machine illustrated was left in the natural metallic state with roundels and serial numbers painted on the sides of the fuselage only, together with the yellow circumscribed " P " experimental symbol. Red, white and blue flashes were carried on the fin.

*Specification.*—Span : 44 ft. 0 in. ; Length : 42 ft. 3 ins. ; height : 15 ft. 9 ins. ; tare weight : 15,443 lbs. ; Gross weight : 21,879 lbs. ; maximum speed : 456 m.p.h. at 23,000 ft., or 365 m.p.h. at sea level ; cruising speed : 300 m.p.h. ; service ceiling : 32,100 ft. ; range with full tanks : 1,180 miles.

¼ in. to 1 ft. reproductions of the G.A. drawing are available from our Leicester Offices.

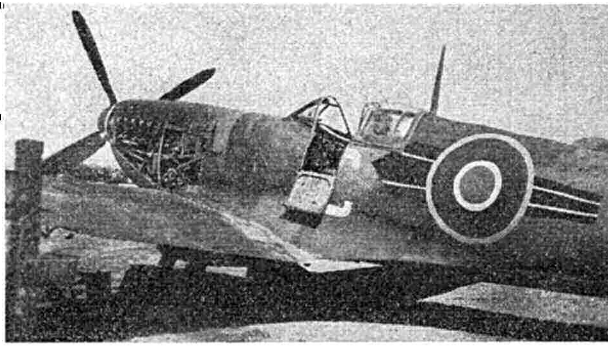
*Aeromodeller Photographs.*




A
B
C
A
C
B
DD
AA
BB
CC
D
D
WESTLAND WYVERN T.F. MK.I.
FT.

# MONTHLY MEMORANDA

BY O · G · THETFORD



**Wartime Heraldry.**

I am indebted to a reader, J. M. Taylor of the Corporal's Club, R.A.F. Station Sealand, Chester, for the photograph heading this month's article. The remarkable historical interest of this picture will be evident, when it is pointed out that this is the first ever published showing peacetime R.A.F. fighter squadron markings on an operational aircraft in active service during the recent war. The revival, of course, was unorthodox, as officially "code letters" replaced all other squadron devices during the war, but certain squadrons no doubt made their private interpretations of this ruling, especially when serving overseas, though this particular example is the first to come to the knowledge of the writer. As this subject is so full of interest for the scale model-maker, perhaps other ex-R.A.F. readers can oblige with further information and photographs having a bearing on the topic ?

The Spitfire IX in the picture belongs to No. 73 (Fighter) Squadron and the marking which it bears was first introduced on the unit's pre-war Gloster Gauntlets. No. 73 Squadron flew Sopwith Camels in the First World War and was afterwards disbanded, being re-formed under the R.A.F. Expansion Scheme in March, 1937. Equipped with Hurricanes at the outbreak of war, it served in the Battle of Britain and was afterwards sent overseas to serve in Malta and at the defence of Tobruk. The photograph was taken at Hal Far, Malta, in October, 1945, but the squadron markings were displayed as early as 1943 when the squadron had Spitfire V fighters in the N. African desert. Under wartime conditions, the squadron marking was painted in various colours according to the supplies of paint available ! It was usually night black with yellow trim lines, but sometimes the colouring was "identification blue" with white trim, as in the photograph. At one period, while No. 73 Squadron was commanded by a South African major, the marking was all yellow, with black trim. No squadron letters were used, and the individual aircraft letter was painted forward of the squadron marking, and also beneath the nose, below the spinner. After VJ-day, the spinners were painted Red for "A" Flight, Blue for "B" and Yellow for "C."

**New Vampire Squadron.**

A famous fighter squadron of the R.A.F. recently re-equipped with the De Havilland Vampire is No. 72 Squadron, based at R.A.F. Station Odiham, which is also the home of two other Vampire squadrons, Nos. 54 and 247. The Vampires of No. 72 Squadron are finished all-aluminium and bear the identification letters "TG" in black on the nacelle beneath the pilot's cockpit.

In the First World War No. 72 Squadron served in Mesopotamia and had a variety of equipment, including Martinsydes, the little-used Bristol Monoplanes, S. E. 5s and Spads. Disbanded at Baghdad in 1919, No. 72 Squadron re-formed with Gloster Gladiators at Tangmere, Sussex, in February, 1937, afterwards moving to Church Fenton in Yorkshire. During the Second World War, No. 72 Squadron was equipped with Spitfires, and took part in the Battle of Britain, afterwards serving in the Middle East.

**British Airline Equipment.**

British civil registration letters have now been allocated for the six Boeing Stratocruisers ordered from the U.S.A. for service on British Overseas Airways Corporation's North Atlantic route in 1948. The Strato, cruisers will be registered G-AKGH, G-AKGI, G-AKGJ-G-AKGK and G-AKGM.

British European Airways has recently taken delivery of two Sikorsky S. 51 helicopters for experimental services. These aircraft are all-silver, with the registration letters G-AJOR and G-AJOV in red. They are to be joined by two helicopters of the Bell 47B type.

The three latest Vickers Vikings in service with B.E.A.C. are G-AIVO "Villain", G-AJBN "Vindictive" and G-AJBP "Vinter".

**Bristol Helicopter.**

With the Service number VL 958, but carrying no roundels or other national markings, the prototype Bristol Type 171 Helicopter is now undergoing its flight trials at Filton. A three-seater, the Bristol 171 is powered temporarily by one 450 h.p. Pratt and Whitney Wasp Junior air-cooled radial motor, but is ultimately destined to be fitted with a 500 h.p. Alvis Leonides. The Bristol 171 is generally similar in configuration to the Sikorsky S. 51 and has a 47 ft. 5 ins. diameter three-blade main rotor, an auxiliary anti-torque steering rotor of 9 ft. 7 ins. diameter at the tail, a length of 45 ft. 6 ins. an overall height of 11 ft. 8 ins. and a track of 9 ft. Performance details are not yet available.

**Mambalanc.**

Post-war variants of the wartime Lancaster for flying test-bed purposes are now becoming increasingly numerous and the latest addition to the list is the "Mamba-Lancaster" which carries the serial number ND 748/G. The "G", incidentally, indicates that the aircraft is in the restricted category. This particular Lancaster mounts an Armstrong-Siddeley Mamba prop-jet unit in the nose, thus becoming a "five-engine" aircraft. This aircraft was originally used to air-test the Armstrong-Siddeley A.S.X. jet unit. Conversion of the "Mamba-Lancaster" was undertaken by Air Service Training Ltd., at Hamble. Another Lancaster has been similarly converted for test-bed purposes with the Rolls Royce Dart prop-jet unit.

---

(1) *First Avro Tudor IV of B.S.A.A.C.*

(2) *Red band encircling fuselage on this SNJ trainer is new marking indicative of U.S. Naval Reserve aircraft. (Peter Bowers.)*

(3) *The record-breaking Lockheed P-80R. (Peter Bowers.)*

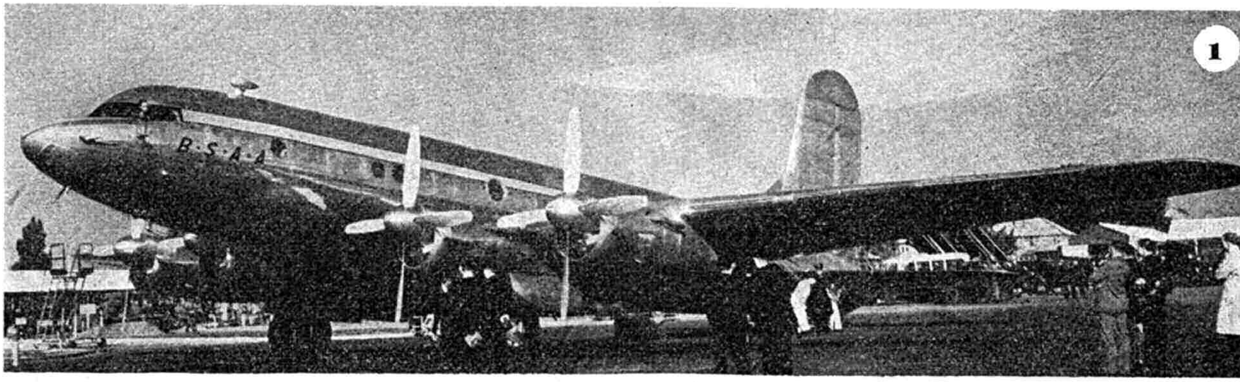
(4) *This Lockheed P-80A mounts a 3-inch rocket gun in the nose. (Peter Bowers.)*

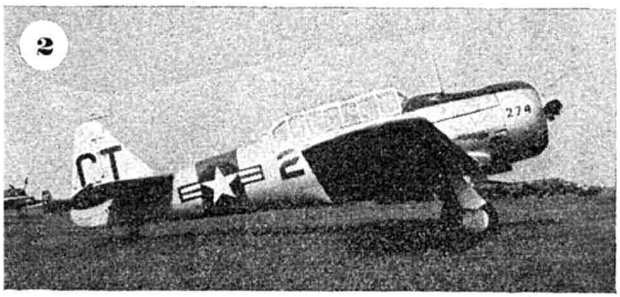
(5) *Latest production version of the Thunderjet with the U.S.A.A.F.—the P-84B. (Peter Bowers.)*

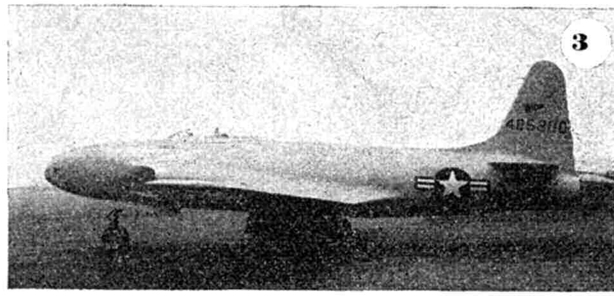
(6) *This P-47 is used as a flying signboard to warn aircraft without radio away from Wright Field while testing takes place. (Peter Bowers.)*

(7) *All-silver Seafire XV, serial number PR377, in service as a trainer at Lee-on-Solent.*

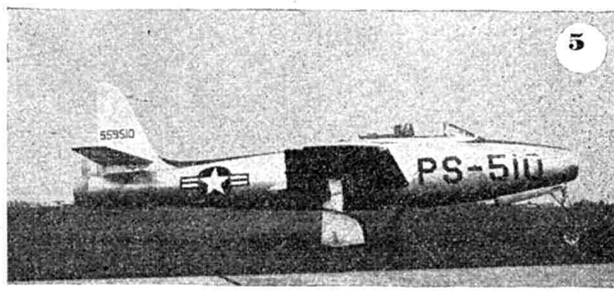
(8) *The prototype Saro jet-propelled fighter flying-boat taking off at Cowes. (Central Press.)*


1
B.S.A.A


2
CT
2

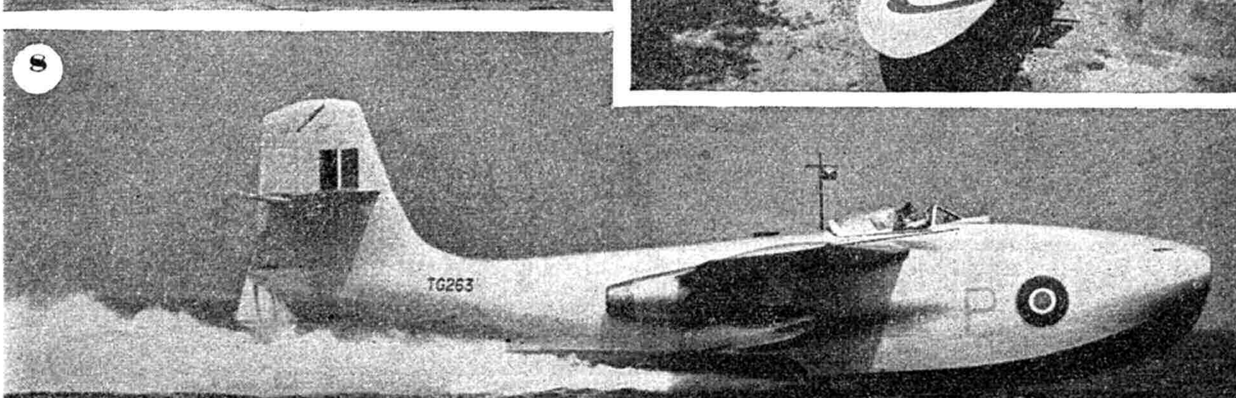

3

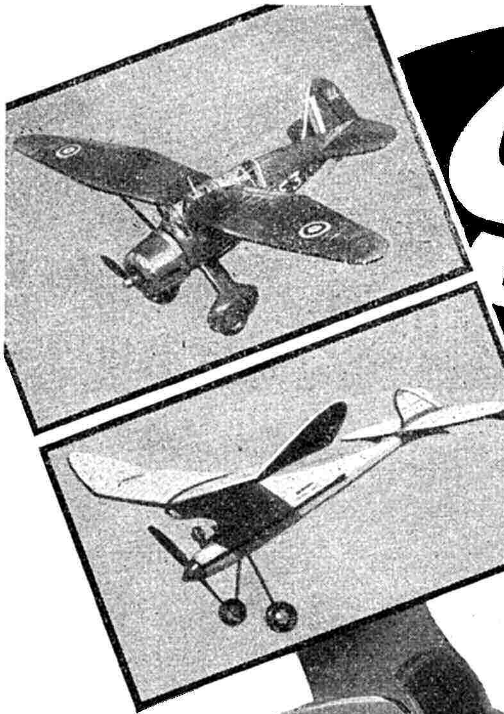

PN-116
4


5
PS-510

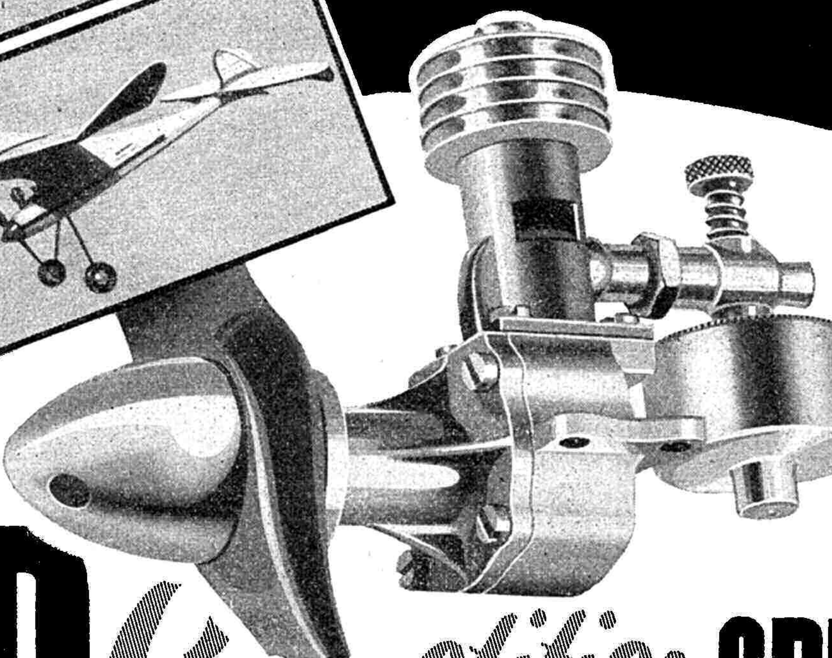

6
CLEAR


7
LP
772


8
TG263



# Sensational



# E.D Competition SPECIAL

FOLLOWING the outstanding success of the E.D. Mark II Diesel Engine, Electronic Developments proudly present the "Competition Special," a 2 c.c. Diesel Engine specially developed and thoroughly tested for competition work.
Remarkable results have been obtained by experienced Aeromodellers on the prototype models. The Aircraft shown above and owned by well-known enthusiasts, in particular Mr. Kapon of Richmond, Surrey, are powered by the E.D. 2 c.c. "Competition Special" their amazing performance causing immense interest when seen.
A speed of 65 m.p.h. has been obtained on control line flying.
For planes of 3 ft. 6 in. to 5 ft. 6 in. span. Suitable kits include Slicker 42 in., Scorpion 44 in., Frog 45 in., Tiger Moth 48 in., etc.
Runs inverted and in either direction. Very easy finger starting. Cubic capacity 2 c.c., r.p.m. 7,000, Weight 5½ ozs. Height 3 in., Width 1⅞ in., Length 4 in., Bore ½ in., Stroke ⅝ in. Hole centres for engine bearers $\frac{9}{16}$ in. × 1$\frac{9}{16}$ in. Depth of Crankcase from underside of bearer ⅝ in. clear. Developed thrust with an 11 in. dia. 5 in. pitch airscrew 21–23 ozs.

*EXPORT ENQUIRIES INVITED FROM ALL COUNTRIES.*

**Price £4/17/6**
Airscrew 11" 7/6
Flywheel 2" dia.
Weight 4½ ozs.
10/6
From your nearest Model Shop.
Complete Spare Parts Service.

**E.D.** KINGSTON ON THAMES
**ELECTRONIC DEVELOPMENTS (SURREY) LTD.**
DEVELOPMENT ENGINEERS
1223. 18, VILLIERS ROAD, KINGSTON-ON-THAMES, SURREY, ENGLAND.



S & U.

Members of the Coventry and District M.A.C. at a recent indoor meeting

# Club News . . . . . by Clubman

HAVING just returned from the S.M.A.E. Annual General Meeting, held at Londonderry House on what I fondly believe to be the coldest day to date, here goes for the latest up-to-date " gen " on matters that vitally affect our hobby for the coming season.

Taking the main items in the order they occurred at the meeting, it is interesting to note that just over 1,700 entries were received in National contests during the 1947 season, eighty competing clubs providing 458 individual fliers. (The Nationals totalled 451 entries.) Though these figures look imposing, they are still not good enough when one considers that at this date there are over 180 affiliated clubs—thus some 55% of clubs are still contest shy, or is it a National Contest inferiority complex ?

This is an important issue in my opinion, and as Comp. Sec. J. C. Smith stated : *"I appeal to all clubs to support the National events. It is no disgrace to be among the also rans—but it is a disgrace not to have tried at all."*

The question of adoption of the standard F.A.I. Merit Certificates came in for a lot of discussion (see last month's Club News), the meeting being indicative of the wide differences of opinion on this subject. The thing that worried most was the stipulation that qualifying flights have to be made in more than one category, and in this connection I proposed that the F.A.I. be approached to modify the requirements to one category only, still retaining the " one model on the same day " clause. (This would cut out obtaining such certificates by odd lucky flyaways during a season, which in my opinion proves just nothing.)

In all, four proposals were tabled, and in order to get as wide an opinion as possible, the matter goes to the clubs in the form of a postal ballot, which is of course the fairest way to get a decision on such a widespread ruling.

The 1948 Nationals came in for tremendous discussion, mainly on the question of venue. The matter was left finally in the hands of the Council, who will explore the possibilities of Sywell (near Northampton), Fairlop (Essex) York, and Sealand (near Chester) in that order. Voting at the meeting was heavily in favour of the Midland site (84, with 47 for Fairlop) and from what I know of approaches to date, good co-operation should be forthcoming from the authorities at Sywell.

One item that had caused quite a first rate flap (in the London Area particularly) was the requirement of an " A " Certificate as qualification for the Nationals. Many good arguments were put forward from both sides of the fence, and it was finally voted that no qualification would be imposed, but that pre-entry was essential. Entries must be received by the Organising Committee at least 14 days prior to the contest, and this alone should ease (or at any rate spread over) the work of the Competition Committee. It was also passed that in future centralised events, clubs should provide one official timekeeper to each five competing members, thus to some extent overcoming the bottleneck of the majority of meetings.

Much appreciation was expressed at the efficiency of the Competitions Committee, formed and in action on such short notice just prior to the 1947 Nationals, and the same Committee was unanimously voted in for 1948. More power to their elbows, whether it be writing or raising the traditional dark brown glass !

In view of the International aspect of the Bowden Trophy contest, a 'drome near to London was felt to be the best centre for this event, and Fairlop or other suitable ground will be used for both this and the Power Day competitions.

I have left until last the fact that the Society has at long last elected a President, and I am sure you will agree with me that no more suitable person could have been installed at the head of our governing body than Lord Brabazon of Tara. Holder of No. 1 pilot's certificate in this country, his record in aviation—both practical and political—is too well known for any further comment, and I congratulate the S.M.A.E. on securing the acceptance of such a keen aviation enthusiast. Supporting him will be Sir Robert Bird in the capacity of Vice-President, a most apt selection in view of the recent successful amalgamation of the S.M.A.E. and the A.B.A., of which Sir Robert was President.

I do not know the exact numbers who attended the meeting, but I would estimate this as the best supported A.G.M. yet held by the S.M.A.E., and, on the whole, the best behaved! No meeting is complete without the usual quota of good-humoured banter, and it was a pleasure to note that in no instance was there any of the acrimony found at some earlier meetings. We progress ! !

A few days prior to the above meeting it was my pleasure to attend the annual Dinner and Prize-giving of the **NORTHAMPTON M.A.C.**, a very well planned and organised event. Mr. A. F. Houlberg gave the folk present some information on the latest developments, and other speakers included the

Mayor and Education Officer, appreciation of the good work done by aeromodelling clubs for the youth of the city being expressed. A long list of achievements read by the Chairman, Mr. F. Mason, was followed by the prize-giving, the evening winding up with a film show which included the modelling film, " It's in the Air." A very enjoyable affair, and thanks, Northampton.

The original batch of **LONDON AREA** news-sheets having been lost, stolen or strayed, report of the L.A. Junior Championship is only just to hand. Jimmy Wingate held his 1947 supremacy to gain 35 points, J. Britten of Harrow, and I. Dowsett of Brentford & Chiswick tying for second place with 28 points. J. Ashford of Ilford came third with 23 points. Wingate placed first in the glider event with an aggregate of 4 : 54·6, and second in the rubber class with 4 : 04·7. D. Eastwell of St. Albans won the rubber event with a total of 5 : 30·8, and D. Cole cleaned up the power event.

The Keil Trophy Power Contest, another London Area event staged with teams of three, went to the Northern Heights M.F.C. with a total ratio of 63·9, North Kent and Luton being runners up. Best individual flight ratio was 11·8 by Ken Tansley.

Having acquired the use of Sealand Aerodrome for a flying ground, the **MERSEYSIDE M.A.S.** has now acquired ideal facilities, and the 1948 season looks like being the best ever. Experiments are being tried with "one make" contests, the idea being to find the best builder-cum-flier.

Control-line flying and all that it entails has been occupying the **ST. ALBANS M.A.C.** recently, and it is felt that bigger and hotter motors are required for really good results. (Hence a plea in " Air Trails " for a swap between some of our American friends and those famous lightweights Farthing and Buxton ! Sorry—the plea is for engines, not the bods) ! ! A goodly display of models was shown at the local Model Engineers' Exhibition, including a number of models left by Mr. Clarke, now on his way to Australia. These models are to be sold, the proceeds going to purchase a trophy in his honour.

The indoor flying season of the **LEICESTER M.A.C.** has commenced, and a considerable amount of free and r.t.p. flying has been witnessed. Permission has been obtained to use the Cattle Market—a vast expanse of level concrete—for control line flying during the winter, and this should prove ideal instead of ploughing through muddy fields after free-flight jobs.

The recently formed **ANGUS & DISTRICT OF M.A.C's.** extends an invitation to any clubs not already included to become affiliated to the league. Delegates are hoping that a suitable grouping of the North-East Scotland clubs will be intrumental in bringing some of the trophies away from their long West Coast sojourn. D. Ingles of 33, Stirling Street, Dundee, is the bloke to contact.

J. Wilson of the **ENFIELD & D.M.A.C.** has designed and built a very consistent freelance outdoor helicopter, which has a number of 45 second flights to its credit, both H.L. and R.O.G. Control line flying is the main interest in this club at present, several Mills powered " Phantoms " going the rounds on meeting days.

The **ILKESTON M.A.C.** commenced its winter activities with an exhibition in the local Town Hall. Unfortunately only two days were placed at their disposal, but good use was made of the time, and a very successful show resulted. Some 150 models were on view, representative of all types of model aircraft.

Following receipt of a goodly supply of engines to the local model shop, **FOLKESTONE & D.M.A.C.** are busily engaged on the production of a whole crop (or should it be rash?) of power jobs. One of the first off the mark was junior G. Taylor, who—anxious to try out his new Mills powered " Scorpion ", had the fright of his life when the model climbed almost out of sight for a flight of 4 : 30 from a 35 sec. engine run ! ! Another member, trying out control line flying for the first time, crashed the model through getting dizzy and sitting down before the model had landed ! (Incidentally, when doing this type of flying just try looking at your feet at the end of the flight—and tell me your sensations in consequence.)

Since the amalgamation of the Woodford and Walthamstow clubs into the **WEST ESSEX AEROMODELLERS,** the club has placed fairly high in many contests, particularly " rubber king " A. W. Green. This club will be staging a Rally devoted to controlliners next May, open to all London and other affiliated clubs. Speed, stunt and perhaps a scale event will be staged.

Favoured with the use of Rochford airfield, the newly formed **SOUTHEND SENIOR M.C.** seem in a good position, having also secured a small club room instead of smoke drying the Secs. front room.

The **GODALMING & D.M.A.C.** are making good progress for a new club, have now switched to a new hall suitable for indoor flying, and with a good flying field close at hand seen set for success. Three impromptu comps. held recently resulted as follows :—

| | | |
|---|---|---|
| **Open Duration :** | **C. S. West** | **2 : 05 agg.** |
| | **R. F. Bourne** | **2 : 04 „** |
| | **P. Bowden** | **1 : 38 „** |
| **Tail-less Glider** | **M. Pitcher** | **1 : 39 „** |
| | **G. White** | **1 : 27 „** |
| | **R. F. Bourne** | **1 : 05 „** |
| **Junior R.T.P.** | **C. Brading** | **3 : 06 „** |
| | **R. Smart** | **2 : 40 „** |
| | **J. Bourne** | **1 : 42 „** |

Pitcher holds the club tail-less record with a flight of 1 : 59·6.

The **LEEDS M.F.C.** is another club to obtain a more suitable room for indoor work, and the fun is waxing fast and furious. Control line models are being flown regularly at a convenient central site, and rumours that the speed bug is beginning to bite is borne out by the eagerness on the part of individuals to record their speeds. Best performance to date is 37 m.p.h. by Hempsall's Mills powered model. (An interesting diesel turned up recently that had to be started backwards to make it run forwards!)

Sunday February 22nd has been fixed as the date for the 1948 Indoor Rally to be staged by the **MANCHESTER & D. COUNCIL of M.A.C's.** in conjunction with the " Daily Dispatch ". Flying will again take place in Houldsworth Hall, Deansgate, and teams from all areas are invited to compete, in addition to any modeller who can attend.

Members of the **DONCASTER & D.M.F.C.** are busily engaged on building and flying indoor jobs in readiness for the Northern Area Indoor Contest, to be held on the 10th January. Teams will be selected from this meeting to represent the north at Manchester in February. One of the largest models yet to be built in this club is half finished, and is a 3½ in.—1 foot scale model of the " Kirby Kadet " glider, giving a finished span of 133 inches. It is proposed to instal radio control at a later date. The club r.t.p. record is still going up, and Mick Hetherington raised it recently by two seconds to the excellent time of 5 : 44.

Clubs in the Nottingham area have apparently got together on similar lines to the Manchester lads, and formed the **NOTTINGHAM AREA COUNCIL OF AEROMODELLERS,** combining the activities of a number of clubs operating in the district. An inaugural rally was held at Langar Aerodrome on Sept. 28th, by kind permission of A. V. Roe & Co. Ltd. and over 100 entries were made in the four contests held. Wind and rain spoilt an otherwise spot-on affair, and the one and only thermal encountered during the day took a " Sunnanvind " away for a flight of 6 minutes o.o.s.—unfortunately not during the comp. Full results were :—

| | | | |
|---|---|---|---|
| **Concours** | **K. Stothers** | **(Leicester)** | **1 : 37** |
| **Open Glider** | **R. Acraman** | **(Derby)** | **1 : 37** |
| | **K. Stothers** | **(Leicester)** | **1 : 34** |
| | **J. Barker** | **(Grantham)** | |
| **Open Power** | **K. Stothers** | **(Leicester)** | **1 : 15** |
| | **G. Brewhard** | **( „ )** | |
| | **G. Dunmore** | **( „ )** | |
| **Open Rubber** | **D. J. Ward** | **(S. Nottingham** | **2 : 02** |
| | **G. B. Hocken** | **( „ )** | **1 : 27** |
| | **R. Noble** | **( „ )** | **1 : 08** |

Following the success of junior member R. Carpenter, chaps in the **ALTON & D.M.A.C.** are keeping tight hold on their pranged models. At the receiving end of a smashed up " Farthing Duration ", he rebuilt the job as a glider and cleaned up three events since, his time when winning the event at Reading being 9 : 24·5 and 6 : 44 for a similar win at the West London Rally. P. Gregory's " Slicker " must surely hold the record for lost models. This job was missing for six weeks, and returned to its delighted owner none the worse for wear—in fact it's Movo engine started up immediately sundry earwigs had been removed from the cylinder ! ! Club records to date are :—

| | | | |
|---|---|---|---|
| Glider | E. Self | (Sunnanvind) | 5 : 52 |
| Power | P. Gregory | (Slicker) | 3 : 21 |
| Tailless | A. P. Cox | (Free lance) | : 51 |

With over eighty members on its books, the **SAFFRON WALDEN M.A.C.** has just come out with a very ambitious monthly news-sheet, printed in pukka style and giving plenty of local gen. (Seems strange though—out of eleven ads., not one is for a model shop ! Don't they exist round S.W. way ?) Of general interest is the result of a ratio system power contest held at the Autumn Rally, won by Peasgood and Daw. Their model, a " Hells Angels ", put up a ratio of 5·9, whilst next man in, T. Springham clocked 3·1. D. Ruse was third man with his " Little Vagabond " which ratiod 2·6.

During a very successful season, the **ASHTON & D.M.A.C.** has collected eleven firsts, six seconds, and three third prizes at various rallies in the area, plus the Lawton team prize and Championship of the N.W. Rally. A fine large clubroom has been obtained, some 65 by 30 ft., which should go a long way to keeping up interest during the winter season.

E. D. Wilson of the **BRENTFORD & CHISWICK M.F.C.** has cut himself a real slice of work in producing single handed a club magazine. Various facets gleaned from the pages show that J. Higgins averaged over 2 : 30 for 31 flights—W. D. Snow has put up 3 : 07·2 with his r.t.p. job—and Tony Young, whilst on leave, put up a flight of 55 · 33·2 with his Mills powered gas job. A normal type cabin job, with a 60 in. wing span, the model landed in Southall High Street, following an engine run of only 55 secs.

First rally to be organised by the **SEVENOAKS & D.M.A.C.** took place in September, and was supported by five visiting clubs. Weather was right off the beam, and spoilt what promised to be a fine day out. However, the lads got down to things, and Mr. Tilleray (Royal Park) took first place in the Glider event, putting up high time of the day when doing so. No times are given in the report (bad show Artis !) which makes comparisons difficult, but other winners were L. Jones (Junior Glider), J. Gardiner (Rubber senior) both of Springpark ; A. Hodgson of Royal Park who took honours in the Junior Rubber, and B. Simmonds of Ravensbourne who cleaned up the power classes.

New member J. Simmons took top place in a hand launched glider comp. held by the **CUMULUS CATCHERS**, his time being 30·2 secs. " Helicopteritis " has struck this club, and many weird (but not so wonderful) contraptions have been seen. After much hard work, records now stand as follows :—outdoor H. L. : 30 by H. Portnoy, outdoor r.o.g. : 17·4 by A. Gura, while the junior indoor top times of : 20·2 h.l. and : 20 r.o.g. are held by A. Ross.

Taking advantage of the remaining decent weather, the **WAKEFIELD** (Yorks.) **M.F.C.** held two contests during October, resulting as under :

| | | |
|---|---|---|
| Open Rubber | D. S. Lund | 4 : 18·8 |
| | E. Ramsden | 3 : 45·4 |
| | W. Denison | 3 : 39 |
| Open Glider | N. Taylor | 5 : 28·5 |
| | N. Clegg | 4 : 05·1 |
| | E. Ramsden | 3 : 51·8 |

Flying activities with the **SHEFFIELD M.A.S.** have been restricted owing to ground difficulties, but numerous successes have been gained in outside events at various rallies. C. E. Exley recently broke the club F.A.I. sailplane record with a flight of 5 : 12 o.o.s. the model being a 6 ft. span job very easy on the eye. The comp. sec. lost his Movo powered " Frog 45 " recently owing to timer trouble, but recovered after a ten day lapse. (Time some more reliable timers were appearing for these diesels. Haven't any of you any ideas on the subject to pass on to the anxious millions?

Run in conjunction with the Battersea Men's Institute, the **BATTERSEA AEROMODS** have plenty of facilities for club meetings and flying at their disposal, and are hoping to get more into the swing of inter club events during next season. What with a dry canteen, hall for indoor flying, and a playground for control line work, they seem on velvet. Club records at present go to the credit of M. Hackman (1 : 53·8 r.t.p.), E. Martin (2 : 10 rubber) and F. Harper (9 : 10 with a 15 sec. engine run in the power class.)

The 1948 flying season proved very successful with the **HAYES & D.M.A.C.** All the main club records have been substantially increased, and the club finally placed fourth in the Plugge Cup. Microfilm is now the order of the day, and junior members are in full agreement with Mr. Gaitskill that the use of a bath should be restricted to the manufacture of " mike ". Challenged by the Sudbury club, Hayes won their first r.t.p. competition by a handsome margin, collecting 994 points to the Sudburyites 224.

Enthusiasm has run very high in the **BLACKHEATH M.F.C.** since the club took residence at the Catford Youth Centre, and some threaten to lay down the razor blade in favour of a brush and give the new hosts a hand to redecorate the clubroom this winter. Not to be outdone by the indoor sections' strenuous organisation of a full winter programme, the hardy all-the-year-rounders had a last-of-the-season friendly with the North Kent lads at Gravesend which attracted good entries in spite of squally weather. Results of the three events were :

| | | | |
|---|---|---|---|
| Glider : | A. D. Hall | (N. Kent) | 4 : 49·3 |
| | J. B. Ball | (N. Kent) | 4 : 07 |
| | W. Smith | (B'heath) | 2 : 44·5 |
| Rubber : | H. J. Knight | (N. Kent) | 5 : 26·5 |
| | W. Bishop | (B'heath) | 4 : 52 |
| | P. J. Bell | (B'heath) | 4 : 10·5 |
| Power : | H. J. Knight | (N. Kent) | 24·52 points |
| | N. Oliver | (B'heath) | 10·31 " |
| | J. Cole | (N. Kent) | 6·85 " |

Suggestions centre round Ron Galbreath's canard sailplane for a proposed incursion into radio control work next year, and we look forward to progress with interest.

I finish up this month with two requests from abroad for pen pals—a very informative means of broadening your aeromodelling I can tell you. First is from Lewis Hale of Ngarua, Waiton R.M.D., North Island, New Zealand, who wants someone around his own age of fourteen to correspond on all matters modelling. A more ambitious request is from the " penfriend editor " of " Flyg ", the Swedish paper, who has pleasure in inviting readers to take up correspondence with people in Sweden, Norway, Denmark and Finland. Those interested should write to Karl Gunnar Knutsson, 27 B Lastmakaegatan, Stockholm, Sweden, stating name and address, age and sex, aviation interests, other interests and hobbies, in which countries penfriends are wanted, and the language/s to be used. Thirdly, Russell Johnson of Kimbolton, Via Failding, North Island, New Zealand, would like to correspond with a British modeller of about 18 years.

And so, here we are at the beginning of yet another New Year, and I for one only hope we can have as good a spell of weather as we had in 1947. Undoubtedly the movement has benefitted from such an unusual opportunity to indulge our hobby, and it is pleasant to record far fewer breakages than is usual in our contests, plus many enjoyable days when one could take the old crate out of the box without the encumbrances of macs, sweaters, gum boots and what have you! Let us be optimistic and look forward to as fine a time in 1948. All the best to you all, and may your records go up and up ad infinitum.

The CLUBMAN.

NEW CLUBS.

BEDFORD MODERN SCHOOL M.A.C.
F. A. Hart, 69, Beverley Crescent, Bedford.
SOUTHEND SENIOR M.C.
F. Cutting, 15, Avenue Road, Southend on Sea, Essex.
NORTH EAST DERBYSHIRE M.A.C.
R. J. Millward, Delph Cottage, Ashover, Nr. Chesterfield, Derbys.
AVRO (Langar) M.A.C.
J. L. Blore, A. V. Roe & Co., Ltd., Langar, Notts.
APSLEY M.F.C.
L. A. Willmore, 46, Oliver Road, Hemel Hempstead, Herts.
THOLTHORPE FORCES M.A.C.
Sgmn. P. Gardiner, Orderly Room, 5 Trng. Regt. R. Signals. c/o Alne Post Office, Nr. York.

SECRETARIAL CHANGES.

SOUTHGATE & D.M.F.C.
G. G. Moss, 45, Green Moor Link, London, N.21.
BLACKHEATH & HALESOWEN M.A.C.
D. C. Roberts, 34, Stennels Crescent, Quinton, Birmingham 32.
EASTLEIGH & D.M.C.
C. F. Townsend, 85, Passfield Avenue, Eastleigh, Hants.
WEST ESSEX AEROMODELLERS.
D. A. Gordon, 298, Markhouse Road, Leyton, E. 10, Essex.
SHEFFIELD M.A.S.
A. Naylor, 4, Arundel Street, Sheffield, 1.
ALTON & D.M.A.C.
J. Hunt, 75, High Street, Alton, Hants.
PETERBOROUGH M.A.C.
H. J. Wilson, 46, Elmfield Road, Peterborough.
SEVENOAKS & D.M.A.C.
C. W. Artis, 3, Jubilee Cottages, Weald, Sevenoaks, Kent.

## *Apologia ! . . .*

We regret an error in the Southern Counties Rally report in our November issue. It was stated that Admiral Sir Thomas Troubridge opened the contest and presented the prizes, with an illustration of the latter event.

In actual fact it should have been stated that it was Vice-Admiral Sir Thomas Troubridge who opened the contest, the prizes being presented by the Captain commanding H.M.S. " Siskin " who was shown in the photograph. We sincerely apologize for this inaccuracy and trust that this caused no inconvenience or embarrassment to the gentlemen concerned.

YOU CAN QUICKLY QUALIFY FOR ONE OF THESE

# WELL PAID CAREERS

SEND FOR FREE GUIDE

To-day's demand is for the TRAINED man with SPECIALISED KNOWLEDGE. The men who succeed are those possessing the necessary specialised knowledge to fill the higher paid and far more secure positions.

You can quickly qualify by interesting spare-time home study to fill a well-paid position in Industry or Commerce. Remember the higher you climb, the bigger your income and the greater your security. Post the coupon to-day for full details, free of cost or obligation.

POST THIS COUPON.

*Please send free details of your training in*..............................

..............................

*Name*..............................

*Address*..............................

*240B*..............................

## Here is a Career for You

The College provides examination or diploma Courses in the following subjects :—

**Accountancy (all exams.)**
**Secretaryship (all exams.)**
**Costing (I.C.W.A.).**
**Book-keeping.**
**Works Accountant.**
**Company Accountant.**
**Company Secretary.**
**Civil Service.**
**G.P.O. Exams..**
**Matriculation.**
**Met. Police.**
**L.C.C. Examinations.**
**Draughtsmanship.**
**Personnel Management.**
**Estimating.**
**Ratefixing.**
**Salesmanship.**
**Sales Management.**
**Export.**
**Metallurgy.**
**Inst. Factory Manager's Exams.**
**Inst. Prodn. Eng. Exams.**
**Time and Motion Study.**
**Prodn. Planning Control.**
**Foremanship.**
**Works Organisation.**
**Foundry Superintendent.**
**Machine Shop Superintendent.**
**Tool Room Superintendent.**
**Welding Shop Foreman.**
**Jig and Tool Design.**
**Press Tool Design.**
**Engineering Science.**
**Pattern Making.**
**Moulding.**
**Fuels.**
**Refractories.**
**Steel Making.**
**Electroplating.**

# WALLACE ATTWOOD COLLEGE, Ltd.

**Dept. 240B, ATTWOOD HOUSE, FINCHLEY ROAD, LONDON, N.W.3**

*or call : 8, Southampton Row, London, W.C.1*

# 'ÉLITE' MODELS

**"PHANTOM" FLYING WING**

32 ins. Wing Span. Kit contains: Balsa Sheet, Printed Ribs, Cement, Wheels, Tissue, Rubber, Wire, Sawcut Prop, etc.; also Full Size Plan. Postage 6d. PRICE **5/6**

**The "WANDERER" Sailplane**
56 in. wing span. PRICE, post free **11/1**

**The "Elf," "Pixie" and the "Bee" 20 in. Durations.** Kit price, post free **4/3**

**The "HERON" 30 in. Glider**
Also included in the 20 in. Postage 6d. PRICE **5/-**

40-inch Wing Span Flying Scale

**"Spitfire," "Auster" and "Typhoon"**

KITS PRICE **9/1** POST FREE.

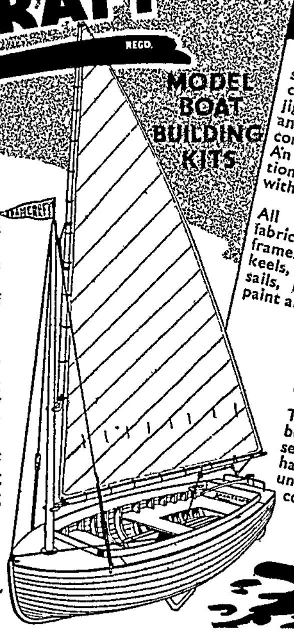
**The "Imp"** 37 in. span power model, plan only **3/6**

Distributors of **"MASCO"** kits

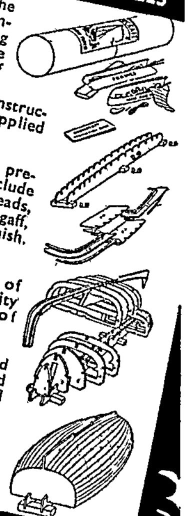
*Send 3d. for Catalogue. Fully Illustrated.* Accessories Stocked: including Balsa, etc., Cement, Dopes, Finished Props, etc., etc. Dopes in Bottles 8d. each.

## ELITE MODEL AIRPLANE SUPPLIES

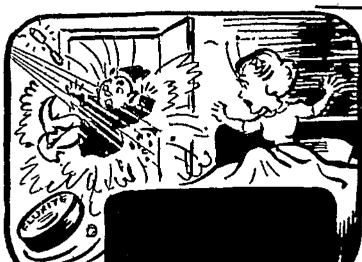
14, BURY NEW ROAD, MANCHESTER, 8 Phone: BLAckfriars 9484



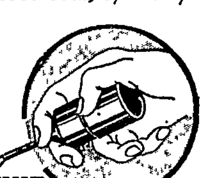




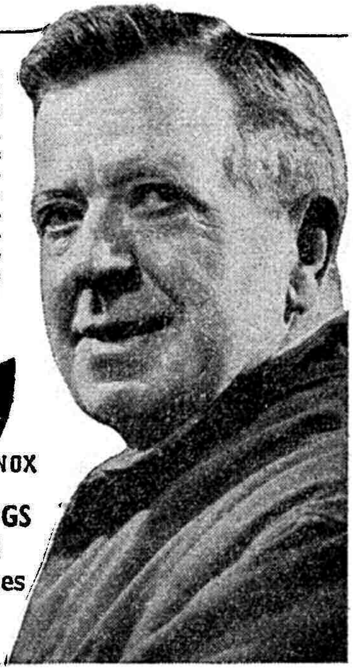








## "NOT A TOY—an Engineering Achievement" SAYS GEORGE



"Pacy" miniature Spark Plugs are specially designed and precision made for all types of model petrol engines. They possess the tremendous advantage of complete detachability and are fitted with the famous Pacy "ALUMINOX" high Dielectric Insulator. Available in the two standard sizes adopted by the makers of Model Petrol Engines.

PRICE 5/- EACH

**Pacy ALUMINOX SPARK PLUGS for Model Petrol Engines**

Model 25,S ¼" x 32 T.P.I. *Actual size.*

*Distributed by:* Wico-Pacy Sales Corp. Ltd., Denbigh Rd., Bletchley, Bucks

S.B.13A

## THE COLLEGE OF AERONAUTICAL AND AUTOMOBILE ENGINEERING
(of Chelsea)

Complete practical and Technical training for entry to Civil and Commercial Aviation or the Automobile Industry.

Entry from School-Leaving age.

*Syllabus from Careers Adviser.*

COLLEGE HOUSE,
PRINCES WAY, WIMBLEDON PARK,
S.W.19.

*Telephone : Putney 4197*

## BOOKS HIRE PURCHASE

No need to save up for that book you want—we will supply at once for a small deposit and the promise to pay the balance in small equal monthly instalments.

The scheme is simple—no references or guarantors required—you just choose up to £1 worth of books, send us 3/6 with your order and promise to pay balance in monthly instalments of 2/6. If you want, say, £2 worth of books, then first deposit is 7/- and instalment 5/- a month, and so on.

### ALL HARBOROUGH RANGE & OVER 500 AERO TITLES

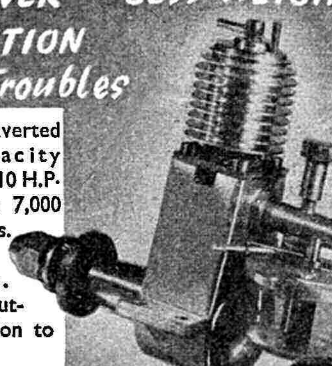
We can supply any model book published by Harborough, any Harborough full size aviation book, A.F.P., Japanese Aircraft, Miles, Bristol, Westland, etc.; also over 500 general aeronautical books on these hire purchase terms. Send 2½d. stamp for complete list and free copy of 1/- Magazine Catalogue.

*NO FEES : : NO INTEREST CHARGE : : NO REFERENCES : :*

**HUBERT CUNNINGHAM SERVICE** · 291, Gray's Inn Rd., E.C.1

## MILLS DIESEL

*More POWER — Less WEIGHT No IGNITION Troubles*



For upright or inverted running. Capacity 1.3 c.c. Power 1/10 H.P. Speed 6,000 to 7,000 r.p.m. with 9½ ins. airscrew. Weight 4½ ozs. Quick action Cut-out for connection to Flight-timer.

*Will power any plane up to 5 ft wingspan*

£5·5·6 INCLUDING AIRSCREW

**MILLS BROS · Model Engineers · LIMITED**
2 VICTORIA COLONNADE, SOUTHAMPTON ROW
HOLBORN 9630 LONDON W.C.1
and (Wholesale only) KEILKRAFT LONDON E.2

## Mr. MODEL RETAILER . . .

If you have not received our NEW CATALOGUE a postcard will bring it by return

THE WIDEST RANGE OF KITS, ACCESSORIES AND MATERIALS EVER OFFERED TO THE TRADE

Gt. Britain's leading wholesale model house

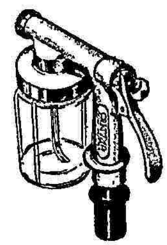
**Cartwrights** Props. CARTWRIGHTS MODEL SUPPLIES LTD.

19-21 Elystan Street, London, S.W.3 *Phone:* KEN 6092

---

## Tools YOU Should have

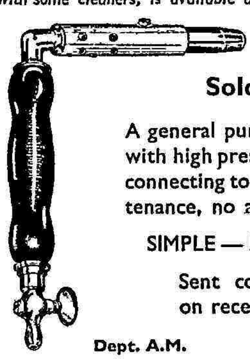
### The "CRYSTAL" Spray Gun



The ideal tool for all painting jobs from a model to a car. Also for house painting, distempering, etc. Connected to any standard vacuum cleaner it will produce professional results without mess, waste or effort.

*The "Crystal" Spray Gun will be forwarded by return, post free, on receipt of 75/- with order. N.B. Please state make and type of cleaner when ordering. A special connector, desirable with all and essential with some cleaners, is available at 3/6 extra.*

TRADE ENQUIRIES INVITED



### The "AEROMATIC" Soldering & Brazing Torch

A general purpose low pressure gas torch with high pressure performance. Only needs connecting to any ordinary gas tap. No maintenance, no adjustments, no lighting back.

SIMPLE — FOOLPROOF — EFFICIENT

Sent complete, as illustrated, on receipt of **37/6** with order.

Dept. A.M.

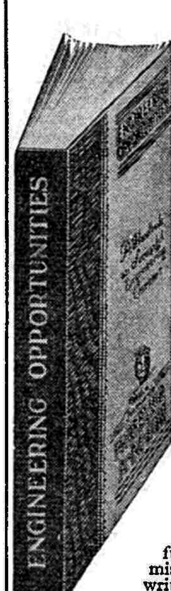
**DOMESTIC SUPPLY COMPANY**

341, REGENT'S PARK ROAD, LONDON, N.3

(Near Finchley Central Station) Tel.: FINchley 5190

---

## AMBITIOUS ENGINEERS




**HAVE YOU HAD YOUR COPY OF "ENGINEERING OPPORTUNITIES"?**

Whatever your age or experience you must read this highly informative guide to the best paid Engineering posts.

The Handbook contains among other intensely interesting matter, particulars of B.Sc., A.M.I.C.E., A.M.I.Mech.E., A.M.I.E.E., A.M.I.M.I., A.M.I.P.E., A.M.Brit.I.R.E., CITY AND GUILDS, CIVIL SERVICE and other important Engineering Examinations; outlines home-study courses in all branches of CIVIL, MECHANICAL, ELECTRICAL, AUTOMOBILE, RADIO, TELEVISION, AERONAUTICAL and PRODUCTION ENGINEERING, DRAUGHTSMANSHIP, GOVERNMENT EMPLOYMENT, BUILDING and PLASTICS (the great peace-time careers), MATRICULATION, etc., and explains the unique advantage of our Employment Department.

**WE DEFINITELY GUARANTEE "NO PASS—NO FEE"**

If you are earning less than £10 a week, you cannot afford to miss reading "ENGINEERING OPPORTUNITIES"; it tells you everything you want to know to secure your future and describes many chances you are now missing. In your own interests we advise you to write for your copy of this enlightening guide to well-paid posts NOW—FREE

**BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY**

901, Shakespeare House, 17, 18 & 19, Stratford Place, London, W.1

THE B.I.E.T. IS THE LEADING INSTITUTE OF ITS KIND IN THE WORLD

---

## 1948 *PROGRESS:*

One year ago the first Binnacle kit made its appearance. Its "Introduction" was an immediate success and since that date thousands of models have been built and admired, while a further three kits have been added to the range. We take this opportunity of thanking the innumerable modellers who have written us personally to wish them a very "Happy New Year," but remember when your retailer seems slow in supplying you it is not his fault, your overseas cousins are building Binnacle Models too.

No. 1 No. 2 No. 3. No. 4.

Scale 1/10" to 1 ft. Pat. No. 583353

| | | |
|---|---|---|
| No. 1. | 73' R.N. M.T.B. .. | .. 3/9 |
| No. 2. | 73' R.A.F. LAUNCH | .. 4/- |
| No. 3. | 68' CABIN CRUISER | .. 3/9 |
| No. 4. | 63' R.A.F. LAUNCH | .. 4/- |

*DIRECT POSTAL SERVICE ADD 3d.*

**BINNACLE PRODUCTS LTD.**

93, WALKERS HEATH ROAD, BIRMINGHAM, 30. Tel. KIN. 2889

## ACCESSORIES FOR THE DISCRIMINATING BUILDER

**EMDEE MOTOR MOUNTS.**
Just bolt on to front bulkhead and install motor. Easily replaceable and ultra light (¼ oz.). 1/9 per pair Post 3d.

**EMDEE SPRAYER.**
Now recognised by thousands of modellers as the easiest way of applying a fine finish. 3/6 Post 3d.

**SNIP TIMERS.**
In two sizes. Petrol, 9/6. Diesel with flange, 8/6. Post 3d.
*No Model Is Complete Without A Snip Timer.*

**ALTON VALVESPOUT.**
Fuel will always stay fresh in this filler. Fits flat in the pocket. 3/9 Post 3d.

*ALL THESE ITEMS ARE OBTAINABLE FROM YOUR DEALER.*

## ANNOUNCEMENT

*We are now Sole Distributors of "Precision Aircraft" Kits and Accessories. Full Trade Discount available on the following lines:—*

**WIZARD.** A modified kit of this easiest of all to fly control line trainer. New Price 15/– Post Free.

**STUNT TANK.** A compact and lightweight tank weighing ½ oz. approx. Constant feed in any position. 7/6 Post 3d.

**AIRFLO BABY.** Free Flight, 42" span. Very easy to build, good looking, and a fine performance with all popular size motors.

**HELL'S ANGEL.** The "DADDY" of British pylon type models, and a model to be reckoned with at any contest. 42" span. 15/– Post Free.

*COMING SHORTLY.*—**THE GOBLIN.** A streamlined control liner of 23" span, for any motor up to 5 c.c.

**SHAW'S MODEL AIRCRAFT SUPPLIES**
**10 WINDSOR ST., CHERTSEY, SURREY.**

## HENRY J. NICHOLLS LTD.

### WHOLESALE & EXPORT

*Accredited Distributors for*
**SOLARBO BALSA**
•
**DUNLOP**
•
**MERCURY ACCESSORIES**

Full trade discounts and prompt delivery are offered to bona fide dealers. We carry large stocks of finest selected solarbo balsa, and Dunlop strip, and are sole world-distributors of all Mercury Models, plans, and accessories,

**Full range • Good delivery**

*Enquiries to*
**HENRY J. NICHOLLS, LTD.** *Telephone :*
**308, Holloway Rd., London, N.7** *North 5161*

## ENGINES

NEW E.D. 2 cc. DIESEL (12" Prop Extra 6/0) £4-17-6
E.D. 2 cc. DIESEL (10½" Prop Extra 5/0) £4-4-0
MILLS DIESEL 1-3 cc. with Prop £5-5-6
KEILKRAFT 6 cc. Petrol Engine with Prop, Coil and Condenser £8-17-6

KITS SUITABLE FOR ABOVE ENGINES
SCORPION £2-7-6 • ROVER 19/6 • JUNIOR 60 £2-19-6.
PHANTOM 18/6 SLICKER £1-2-6
ALL MODEL SUNDRIES IN STOCK . LARGE SELECTION OF KITS, BALSA WOOD, ETC.
*POSTAGE EXTRA ALL ORDERS. ENQUIRIES STAMPED ADDRESSED ENVELOPE.*

**WHITEWOODS MODEL SUPPLIES**
**103, BRIGHTON ROAD, SURBITON; SURREY.**
MODEL AIRCRAFT SPECIALISTS SINCE 1938

*SERVICE FOR THE MODEL MAKER AT*
**WREFORD'S (J. S. WREFORD LTD.)**
25, NORTH STREET, ROMFORD, ESSEX.
*Telephone 5561*
MOTORS: AIRWHEELS: BALSA: SPRUCE: OBECHI: AEROSTRIP
DOPES: GEARS: PIANO WIRE.
KITS BY: KEIL KRAFT: VERONITE: DROME: ASTRAL: SKYLEADA
E. LAW & SON : AEROMODELS : CLAM : PARAMOUNT.

## PRECISE MODEL KRAFT

KITS, ACCESSORIES, BALSA, PLANS,
for constructing
**AIRCRAFT, GALLEONS, SHIPS, RACING CARS, SPEED BOATS.**
All leading makes in stock. Keil Kraft, Halfax, Frog, Drome, Veron, 1066 Products, etc.
Full range of Harborough Publications. Catalogue 3d.
**80, SOUTHAMPTON RD., EASTLEIGH, HANTS.**

## WILMSLOW MODEL CO.

**WATER LANE, WILMSLOW, CHESHIRE**
Your mail order by return of post.
We have a tip-top selection of model aircraft and railway kits and accessories, "O" and "OO" gauges. Tremo Model Ships, Wilson Lorries. The full range of model aeroplane accessories manufactured in metal by ROYDON DIECASTS in stock. Wheels, props, engines, cowls, undercarts, tail wheel units, bombs, pilots, airmen, machine guns, rockets, etc.
Send 3d. stamp for new comprehensive 8-page list.

## PRESTWICK MODEL SUPPLIES

*Scottish Aeromods !* Get your needs from the centre of Scottish Aviation ! MILLS and E.D. DIESELS and Spares in stock. We can service your engine for moderate charges. First class Post Order Service. 3d. stamp for list.
**D. W. MITCHELL**
**140 MAIN STREET, PRESTWICK**

**J. CHAPPELL THE MODEL SHOP**
**Solid 1/72nd Kits.** Skymaster, 11/2, Sunderland, 11/2, Catalina, 8/–, Curtiss, CW. 20, 8/–, Dakota, 8/–, Halifax III, 8/–, Dove, 4/9, Meteor, 4/9, Vampire, 3/4. *All post free.* **Duration & Gliders.** Lancer, 15/6, Fledgeling, 7/3, Achilles, 4/6, Vanda, 40" 10/3, Merlin, 42" 9/3, Soarer Baby, 36" 5/6. **Galleon Blue Prints.** H.M.S. Victory, 22" 3/9, H.M.S. Bounty, 4/9, Golden Hind, 22" 3/9, Santa Maria, 20" 3/9, Cutty Sark, 20" 3/9. **Power Boats.** Cabin Cruiser, 39" Plan 4/9, Steam Yacht 39" 4/9, Cross Channel Steamer, 39" Plan 4/6, Speed Boat, 24" 1/9, *post free.*
**393-5 ECCLES NEW ROAD, WEASTE, SALFORD 5**

**LIVERPOOL MODEL AIRCRAFT SHOP**
"JUNIOR GULL," 48"-span Sailplane, by R. F. L. Gosling. Easy to build. Excellent performance. Very stable, both on the line and in flight. Plan only, 3/3 post free.
**DIESEL ENGINES** :—AMCO £4 • 4 • 0; E.D. £4 • 4 • 0; ACE £4 • 10 • 0; MILLS £5 • 5 • 6; MAJESCO £5 • 12 • 6.
**PETROL ENGINES**:—FROG £3 • 19 • 6; MAJESCO £7 • 12 • 6; WHIRLWIND £7 • 16 • 9; KEIL £8 • 17 • 6. Post and packing 1/– extra.
**KITS** :—Halfax, Keilkraft and all other leading makes in stock. Postal enquiries please state requirements and send S.A.E.
**402, Park Road, Dingle, Liverpool, 8.** Trams Nos. 1, 3 and 20 pass the door.

## STOCKPORT'S AEROMODEL SHOP

Petrol Engines, Diesels, spares. Kits, balsa wood, wheels, & all aero accessories.
**Perspex in many thicknesses.**
*Write or call.*
**54, WELLINGTON RD. SOUTH, STOCKPORT.**

## "TIP-TOP" SERVICE FOR ALL

**KITS, PLANS, BOOKS and ACCESSORIES**
FOR EVERY CLASS OF MODELLER !
GOOD STOCK OF WOOD AND DOPES
**Call, Post or 'Phone your Orders**
**TO "TIP-TOP" MODEL AIRCRAFT STORES**
**10, Kingston Rd., PORTSMOUTH. Tel. 73105**

# Modelcraft's

## COASTAL MOTOR CRUISER KIT

We are very proud of this kit because of its extremely staunch yet simple construction. It is based on aeromodelling principles of building from balsa wood and is provided with a rubber drive motor, similar to most aeromodels. Anyone who has built flying models will find this a fascinating variation.

**17/6** Post 4d.

*Modelcraft* **MAGAZINE & LIST No. 4**

**1/-** Post Free

48 pages. Coloured card cover. Nearly 450 items listed, including plans, plan books, kits and accessories. Articles by leading model makers in every field. Direct or from your model shop.

**Modelcraft Ltd.** 77(B), Grosvenor Road, LONDON · · · S.W.1

---

PHONE SHE 5254

# K's

## LONDON'S "PUKKA" MODEL SHOP

N. & K. C. KEYSER

MODEL AIRCRAFT TRADE ASSOCIATION — DEALER

**HANOVER COURT**

**197 UXBRIDGE RD., LONDON, W.12**

*607, 12, 17 Buses pass the door*

**Order your NEW E.D. Competition Special now. £4 · 17 · 6; also your E.D. Boat Unit, £2 · 8 · 0 (with Flywheel).**

*Other engines in stock :—*

| | | | |
|---|---|---|---|
| MILLS 1·3 c.c. .. | £5 · 5 · 6 | KEMP 1 c.c. .. .. | £5 · 0 · 0 |
| H.P. 4 c.c. .. | £7 · 10 · 0 | ETA 5 c.c. .. .. | £8 · 16 · 8 |
| K.6. 6 c.c. Petrol .. | £8 · 17 · 6 | STENTOR .. .. | £8 · 14 · 6 |

---

## "STREAMLITE"

**Sponge Rubber Wheels.**

For Phantom, Slicker, Wizard, etc. Streamlined Section. Lightweight. (Under 1 oz. per. pr.). Dural Hubs drilled to take 12 S.W.G. Wire.

**2 inch dia. 5/6 per pair.**

Rubber Based Plastic Spinners to suit Phantom, Slicker etc. Ready in December, also Special Control Line Handles with Moulded Rubber Grip.

## "TRUPITCH"

**Power Propellers.**

Hand Carved and Polished. For Control Line or Freeflight.
Mills Control Line Design 4/3
E.D. " " " 4/9
4 Bladed Pusher Props. for E.D. Powered Hydro Planes. 9" Dia. 16/6.
For other sizes and prices send S.A.E.

**WOODCRAFT**

Leicester's Complete Model Shop
257, Charnwood Street, Leicester.
Trade Enquiries Invited

---

# Delivery from Stock !!

## E.D. 2 c.c. DIESEL ENGINE £4.4.0

*Prop. 7/6* *Flywheel 10/6* *Reg. Post 1/-*

**Suitable Kits for this Engine**

| | | | | | |
|---|---|---|---|---|---|
| ROVER | 40" | 19/6 | FROG | 45" | 42/6 |
| SLICKER | 42" | 22/6 | TIGER MOTH | 48" | 56/6 |
| SCORPION | 44" | 47/6 | JUDY | 48" | 32/6 |

## JONES BROS of CHISWICK

**56, Turnham Green Terrace, W.4**

*'Phone CHI 0858* *Price List 3d.*

---

**RETAILERS** Central 1731

Your
BINNACLE SHIP KITS: ASTRAL KITS: DOPES: CEMENTS: POLLOCK THEATRES: CANNONS: DEADEYES: PULLEYS: VERI-TRU PLANS—TUGBOAT KITS and "THISTLE" BRAND PLASTIC ENAMELS are obtainable from:—

## E. M. E. CRAFTS LIMITED

**101, DALE END, BIRMINGHAM, 4**

---

**Studiette Galleo Kits**
Golden Hind - - - £5 12 6
Santa Maria - - - - £4 10 0
La Bona Esperanza - - £3 4 4

**Watercraft Galleon Kits**
Golden Hind 60/-. La Bona Esperanza, 46/-. Santa Maria, 50/-. Half Moon, 69/6. H.M.S. Bounty, 20/9. Cutty Sark, "30", 79/6.

**Seacraft Ship Kits**
Cutty Sark, 16/8. H.M.S. Bounty, 18/8. H.M.S. Britannia, 22/8. Golden Hind, 23/2. H.M.S. Victory, 25/8. Great Harry, 26/2.

**Adamcraft Kit**
Scale Model Sailing Dinghy, 71/6.

**E.R.G. & L.M.C. Sto-kists**
Stewart-Reidpath, George E. Mellor, Rocket Precision Scale O

**Anorma** 4 m.m. Model building Kits.

**Grand Prix** Racing Car Kits 13/1

**Tugboat Kits 10/8 each.**

**Veri-Tru Plans**
Aero Ship & Railway Buildings.

**Binnacle Ship Kits**
No. 1 M.T.B. 4/-.
No. 2 73' R.A.F. Launch, 4/3.
No. 3 Cabin Cruiser, 4/-.
No. 4 63' R.A.F. Launch 4/3.

*PRICES POST FREE* *WRITE M.O. DEPT.*

**BIRMINGHAM MODEL SUPPLIES**

**101, Dale End** **Birmingham, 4**

---

# 'THE FOURSOME'

***A Sensational new Diesel Engine***

Capacity 1·2 c.c. Thrust 12 ozs. 8,000 R.P.M. with specially designed 11 inch prop. Weight with Fuel and Prop 5 ozs. Height 3½ inches.

***Price: Complete with prop £5 · 5 · 0***

**A guaranteed engine . . .**
**. . . with a guaranteed performance.**

*IMMEDIATE DELIVERY*

## FOURSOME PRODUCTS Ltd.

*HEAD OFFICE*
**16, Meeting House Lane, Brighton, SUSSEX.**

---

**MAKE THIS NEW YEAR RESOLUTION TODAY!**

*"I intend to get myself as fit as I possibly can, as quickly as I can and to keep myself physically above the average in 1948."*

***"HOW CAN I DO THIS?"***

IS CLEARLY ANSWERED in the 16 page illustrated book "THE SHORT ROAD" SENT FREE TO ALL WHO ASK

Send a 2½d. stamp today

Boris Dmitri

TO BORIS DMITRI, L.Sc., L.M.Sc.
STANBOROUGH,
WELWYN GARDEN CITY, HERTS.

Please send me your Book, without any obligation.

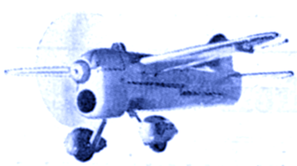
---

Made and printed in Great Britain by Alabaster, Passmore & Sons, Ltd., London and Maidstone, for the Proprietors and Publishers, The Model Aeronautical Press Ltd., Allen House, Newarke Street, Leicester. Trade Distributors: Horace Marshall & Son, Ltd., Temple House, Tallis Street, London, E.C.4—C1601. Sole Agent for Australasia: G. Mason, 4, Princes Walk, Melbourne. Registered at the G.P.O. for transmission by Canadian Magazine Post.
(S)

GET IN ON THE *Exciting* NEW TRENDS OF AEROMODELLING!

# KK LEADS THE WAY in Power Models

FOR CONTROL LINE AND FREE FLIGHT

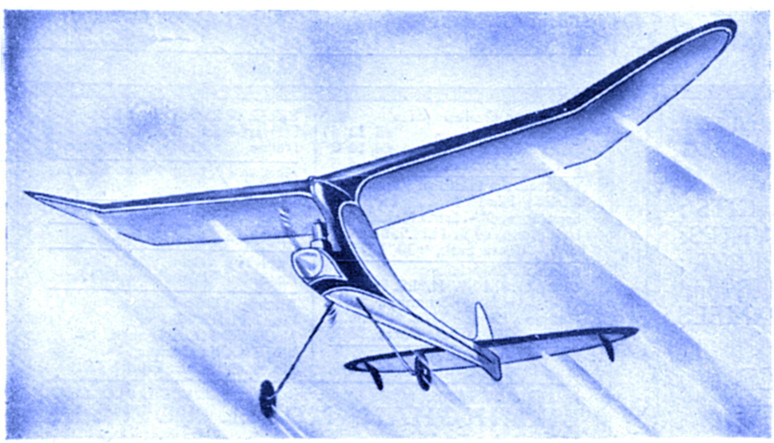


## The HORNET

CONTROL LINE MODEL for speed and precision flying. This plane is capable of speeds exceeding 90 m.p.h. when suitably powered. The kit is very complete, with ample 1st grade materials. **45/-**

## The PHANTOM

A Control Line Model for the BEGINNER. If you are building your first control line job, choose this one. You can fly the Phantom proficiently after only 10 minutes' practice. **18/6**



## The SLICKER

Most consistent and spectacular power model in Britain today. It features crutch fuselage construction and sheeted L.E. to the 42" polyhedral wing. Designed by Bill Dean to take the MILLS 1.3 c.c. or similar capacity engines, the Slicker Kit is exceptional value for money. The Slicker's record to date:—Two 2nds at 1947 Midland Area Rally, 3rd and 4th at the 1947 British Nationals and 3rd and 4th at the Irish Nationals.
Best Time—15 minutes on an 18 sec. motor run.

**22/6** COMPLETE KIT

POWER models are on their way in. Their popularity increases at an outstanding rate and tethered flight in particular will soon be all the rage among the clubs.
KEIL KRAFT—forseeing the trend of events, are marketing a really super range of Petrol and Diesel Models to meet the needs of progressive modellers.
Let KEIL KRAFT introduce you to the exciting, whirlwind, 100 m.p.h. game of modern power flying.

## Other models in the *KEIL KRAFT* Petrol and Diesel range

### ROVER

40" span duration model designed for petrol and diesel engines 1—1½ c.c. **19/6**

### SCORPION

44" span contest model. With wood wheels **47/6**
With 2½" air wheels 57/6

### JUNIOR 60

Well-known winner of numerous contests. 60" span. With wood wheels **59/6**
With 3½" air wheels 77/6

Sole distributors in the U.K. for the MILLS diesel

# KEIL KRAFT KITS

*Quality First!*

S. African distributors
S. Africa's Hobby Centre (Pty)
P.O. Box 2606, Durban

Wholesale only E. KEIL & CO., LTD., LONDON, E.2
Also distributors for Skyleada, Vernon, Watercraft, etc.