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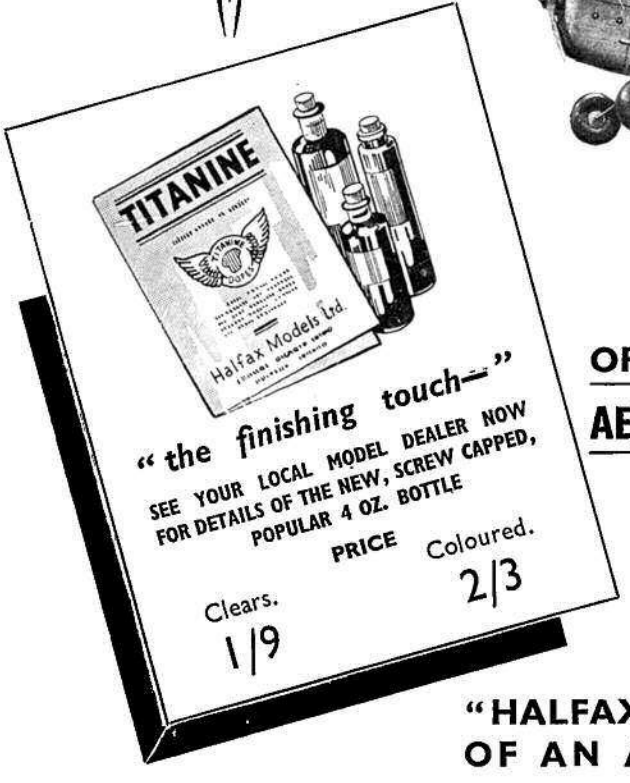

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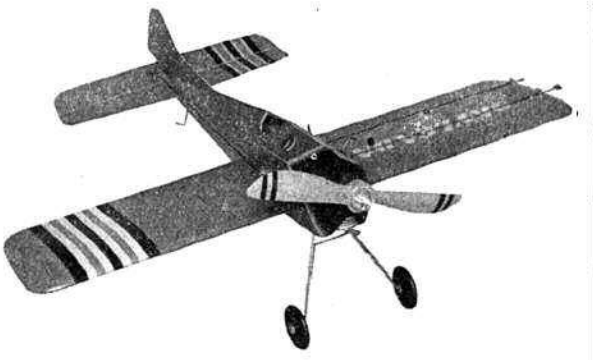

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GLIDER

Halfax Tern 10/–, Halfax Albatross 25/–, Keilkraft Invader 6/6, Keilkraft Soarer Baby 5/–, Keilkraft Soarer Minor 8/6, Keilkraft Soarer Major 11/6, S.J.A. Southern Sloper 6/6, Frog Vanda 9/6, Frog Fairey 7/6, Frog Prince 25/–, Sunnanvind, 10/6.

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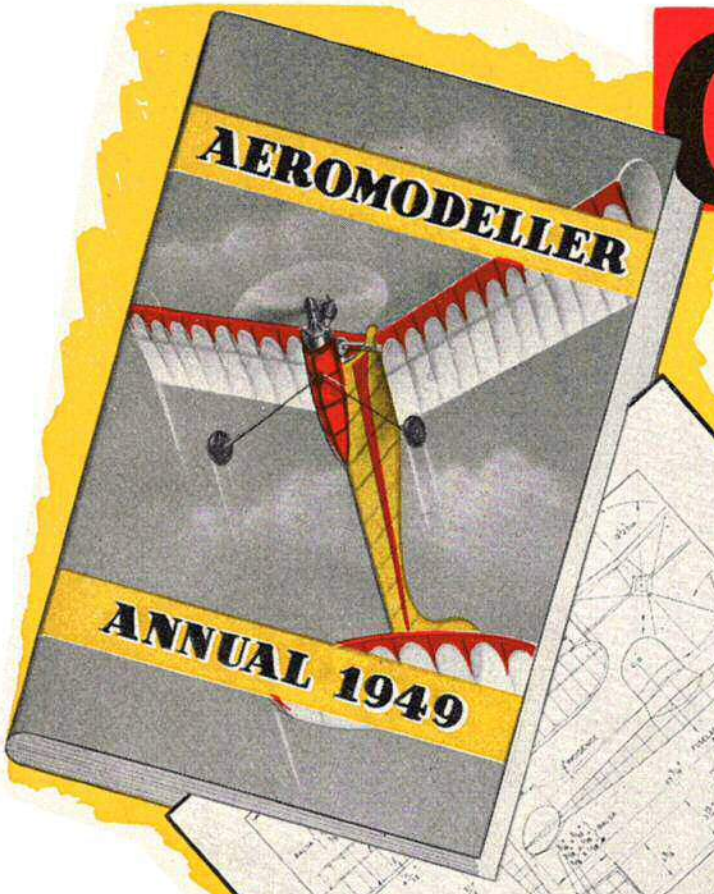

CONTENTS This year's enlarged Aeromodeller Annual is brimful of items for everybody—here is a brief selection.

Ron Warring's amazing design analysis charts that enable anyone to build from data previously only gained in years of experience—and all completely non-technical. Aerofoils of the year, including latest Hungarian world beaters, flying wing sections, German model research types. Simple modifications to improve your radio control equipment. Summary of *Aeromodeller* Engine Analysis. The latest on solid model construction.

Best of the world's models described and illustrated—fifteen of most popular also available as full-size plans through *Aeromodeller Plans Service*. Designs from behind the Iron Curtain, Denmark, France, Holland, Hungary, Spain, America, Switzerland, Italy, Gt. Britain, etc., etc. Several specially commissioned. Over forty plans of interesting curious or successful models, sailplanes, rubber, power, control-line, jet, radio-control.

Contest Results for 1949, including principal club and area rallies. World and national records. National governing bodies. Wakefield results analysed. If you liked the first Annual then you will be more than pleased with—AEROMODELLER ANNUAL 1949.

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Carries on where our first Annual left off, with all the hard to get "gen" on the year's models throughout the world. Nearly every model described has been actually seen in flight by staff members in course of covering contests all over Europe, backed by our wide coverage by expert correspondents in all countries where aeromodelling is known. Over forty plans are given in full detail, with many illustrations, in both half-tone and line, totalling nearly 200 in all. Dust cover in four colours showing Annenberg's remarkable "Scalded Kitten" power model—fully described in text and pictures. 192 pages (32 more than last year!), size 8¼ × 5½ ins. Bound in cloth and faced card in our standard style with gold blocked title on spine and face. From model shops and booksellers everywhere or direct from the publishers, price 8/3 post free. Ample supplies now ready—"by return" service if you cannot secure locally.

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AEROMODELLER
INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

Contents

VOL. XIV. No. 167. December, 1949

FROM the photograph taken at the Taplin Trophy Contest which illustrated last month's editorial, to the photograph which illustrates this month's editorial, is from one extreme to another! These two photographs illustrate not only the range of our weather, but the versatility of the British aeromodeller, and his ability to adapt himself to these changing conditions. Further, the present photograph provides a suitable "lead-in" to the usual expression of Christmas goodwill which we extend to our many tens of thousands of readers throughout the world. May they have many hours of good flying in 1950!

Looking back over the current year's activities, it may be said that 1949 has qualified in no uncertain manner as a year in which real progress has been made.

The radio control of power-driven model aircraft, though still relatively in its infancy, has nevertheless established itself as a sphere of model aeronautics in which forecast there will be big developments in the coming years.

Despite the Americans having a start over us of some years, it would seem that the gap in technical advancement between the two countries has been reduced. Inevitably, radio control enthusiasts in this country have had to learn the "hard way", but already a sound foundation has been laid both by several thousand enthusiasts and the manufacturing firms, which we hope will bear fruit in next and the following years.

In the field of control-line flying, we feel that it may be fairly claimed that this year we have achieved parity with the Americans. After seeing a demonstration by Jim Walker at the Wakefield Contest in Ohio last year, we felt that control-liners here in this country had a good deal yet to learn; but after seeing some of the demonstrations put on this year in England, we feel that the relative positions have been levelled up.

The outstanding event of this year, has been, of course, the Wakefield Contest supported by entries from no less than 19 countries, and won by a "lone hand" from Finland. Let us hope that this deservedly popular win will encourage even more European countries to partake next year, and that this "blue ribbon" Contest will be even more widely supported in 1950.

Christmas Pie

Once again we present to our readers their usual Christmas Double Number and trust that the variety of contents with their colourful display will meet with approval.

A design which will undoubtedly prove popular with our readers is R. Booth's flying-scale model of the Avro 504–K. This model took first prize at the Rally, organized at Avro's in the summer of this year. Fully detailed plans are of course available through the Aeromodeller Plans Service.

Next we introduce a very popular Wakefield model: "Merlu", designed and flown into second place in the 1949 Wakefield Contest by Edgardo Sadorin. This model, despite the very windy conditions was one of the most consistent flyers at the Contest, and we recommend it to those many modellers who require an "International" type of model from which consistently high performance can be obtained.

Another leading feature of this issue is the first of a series of articles which we have specially commissioned from the pen of that well-known modeller, Howard Boys. Mr. Boys has been a regular contributor to the AEROMODELLER since its very early days, and has gathered a wide following of readers; not only because of what he says, but because of the way he says it! Mr. Boys' first article deals generally with lightweight radio control, but, following this present article, there will appear regularly each month a contribution from him which will deal generally with radio control problems. Mr. Boys has undertaken to deal with readers' queries. We, therefore, invite questions, the replies to which can be instructive to radio-control enthusiasts. We feel that, by inviting queries and arranging for Mr. Boys to answer them, we shall provide a more useful service to readers than by commissioning Mr. Boys to write a series of articles "off his own bat!"

Another regular feature which will be appearing in the coming months will be that from the pen of the Rev. F. Callon, another writer who has that precious gift of being able to write for the "not-so-great", or even he who has no greatness at all! "Especially for the beginner" explains the very first principles of aeromodel building, and has been specially written for the steadily increasing body of new readers we have been "gathering to the aeromodelling fold." Here again, our contributor is prepared to answer individual enquiries received from readers, and we hope that beginners will avail themselves of this valuable service.

The TvT8 "Strijkplank" by T. van Teunnenbroek is yet another addition to the class of unorthodox models. It has been called a "Flying plank tailless glider". It has a good reputation and is claimed to be free from any vicious characteristics and capable of a good performance.

Then we have what is described as a "humorous" article by a lady aeromodeller. To give the lady her due, we should mention she lives in the U.S.A., but from enquiries made in this country, it would seem that she is not alone in her sufferings! That there is much truth in what she says, no one will deny, but that she and her English aeromodelling contemporaries derive a considerable stimulus from the aeromodelling activities of their men folk is also not to be denied!

Lastly we introduce yet another "new" contributor in Auntie Agatha. Whether *this* contributor will become a "regular" we do not know! We leave it to our readers to advise us, in their usual forthright manner!

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ESTABLISHED 1935

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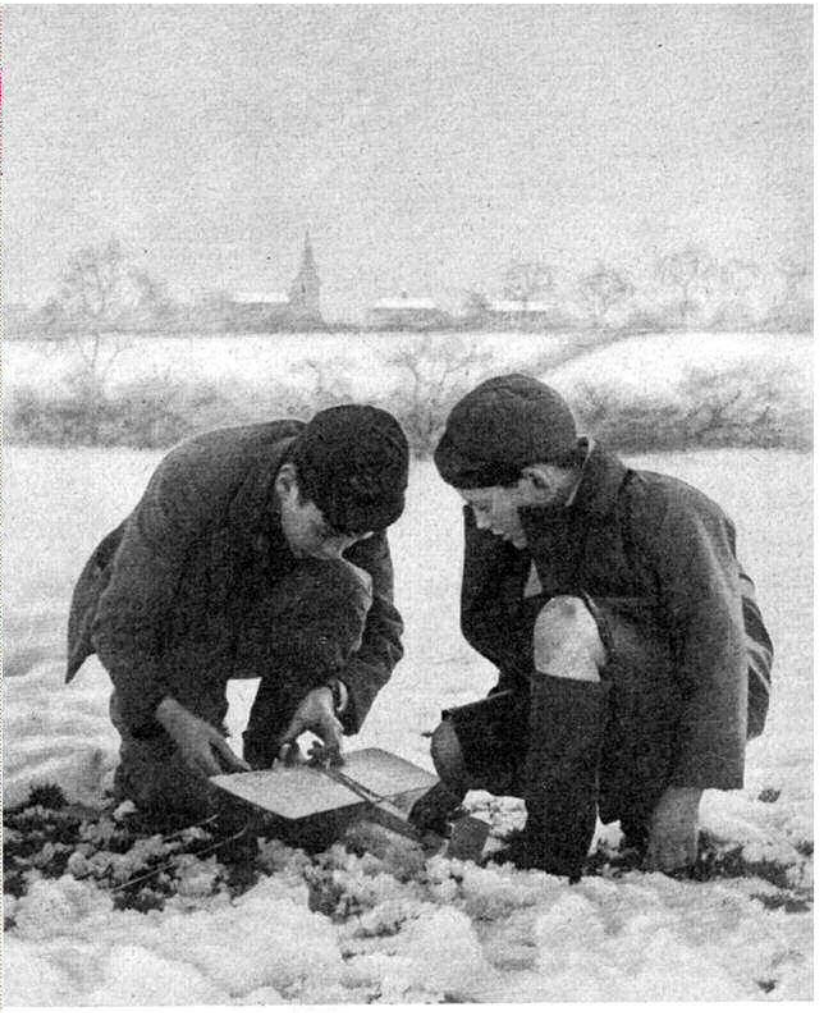
". . . . . gathering Winter Fuel."



Aeromodeller 1949 Annual

Last year we were in trouble with a number of our readers on account of belated delivery. As we explained at the time, despite our confidence that this book would be a "winner", we had under-estimated just how large the demand would be. The first print of 10,000 copies was sold out in a few weeks, and, despite intensive efforts to rush through a reprint, it was only possible to satisfy all our customers by the end of December. This year we are anticipating an even larger demand on account of the increased number of pages in the book (but with no price increase) and we have run an increased print and got it away to the printers in good time. Ample supplies will be available on the publication date—November 25th.

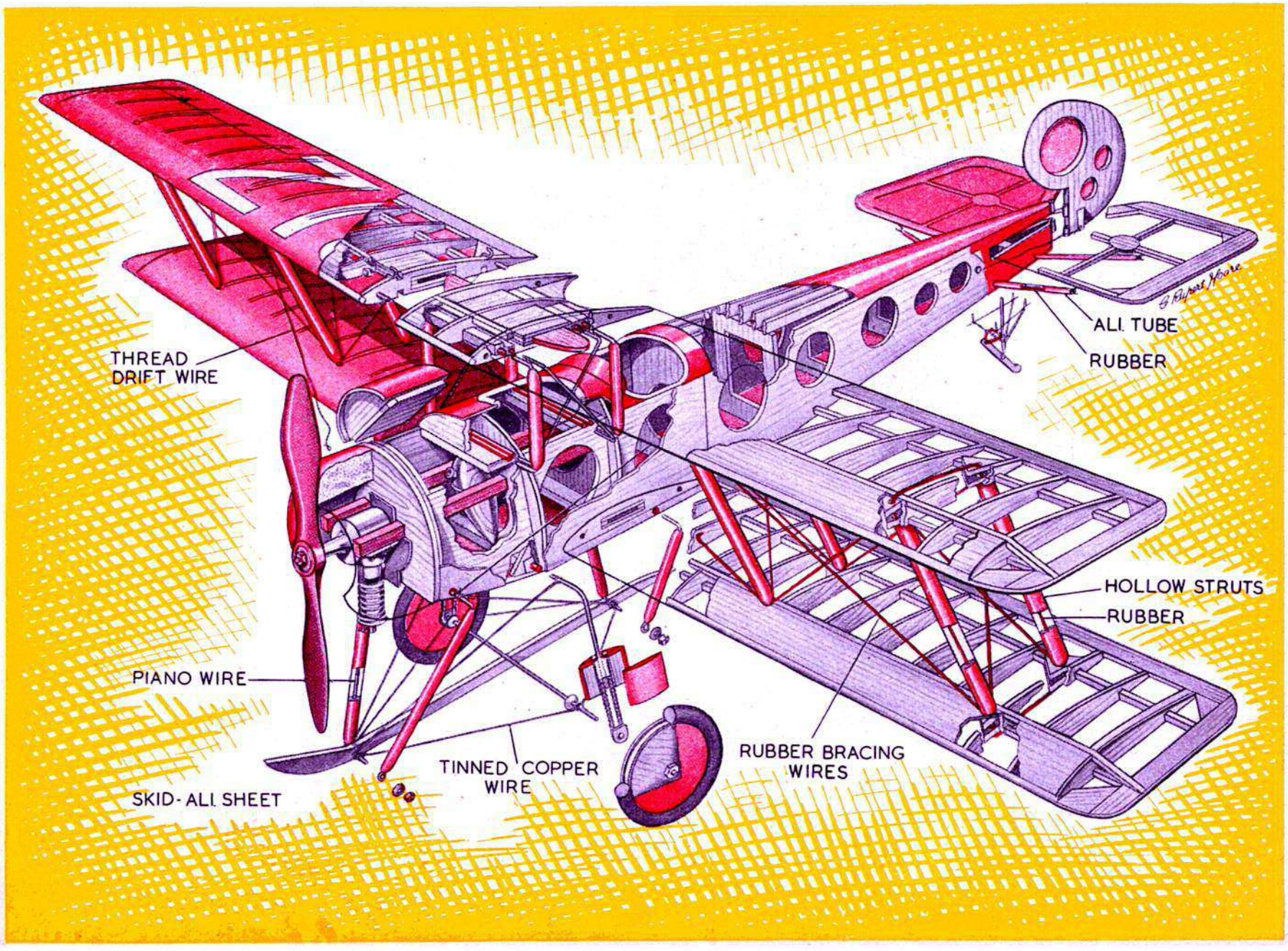
Any reader who is unable to obtain a copy from his local Model Shop or Newsagent-Bookseller, is asked to notify us by postcard, and we will look into the matter immediately. It should be emphasised that the whole of the contents of the 1949 Annual are new, and in no way replace the 1948 issue, a limited number of copies of which are still available.

Found—A Caption !

In the October editorial was published a photograph showing a lady and gentleman photographed at the All Herts Rally. A considerable and varied number of entries were received and quite the most subtle and appropriate caption was that received from Mr. L. W. Norton, of Streatham, London, which read, " Model Lovers ? "

Special in our next issue

"Rudder Bug", designed by Dr. Walter A. Good of the American Academy of Model Aeronautics, has been widely acknowledged in America as a first-class radio control design. Dr. Good's practical experience dates back to pre-war days, and his models have always been prominent in U.S. radio control events. The Doctors' efforts have done much to interest the U.S. Naval Authorities in radio control models, and, indeed, in all types of modelling, to the extent that their active co-operation has helped to make possible the phenomenal success of the last two Nationals at Olathe. " Rudder Bug ", designed just too late to participate in the 1948 National Radio Control Contest in America, proved a popular winner of the 1949 event. Bill Winter, our American correspondent, describes it as the most popular and successful design in the States. It is the first really successful break-away from the pre-war " Giants ", and illustrates the new trend to simplicity in design, control and operation. " Rudder Bug " is one of the few proven designs that will perform every evolution on rudder control only. Equally it may be readily adapted to " rudevator " or similar systems of control. We are pleased to introduce this model to our readers, and acknowledge the co-operation of the proprietors of " Model Airplane News " in granting us the sole reproduction rights beyond America. " Rudder Bug " will be fully described in our next issue, and fully detailed plans of the model, built and test-flown by the Aeromodeller Research Department, will be available through the Aeromodeller Plans Service.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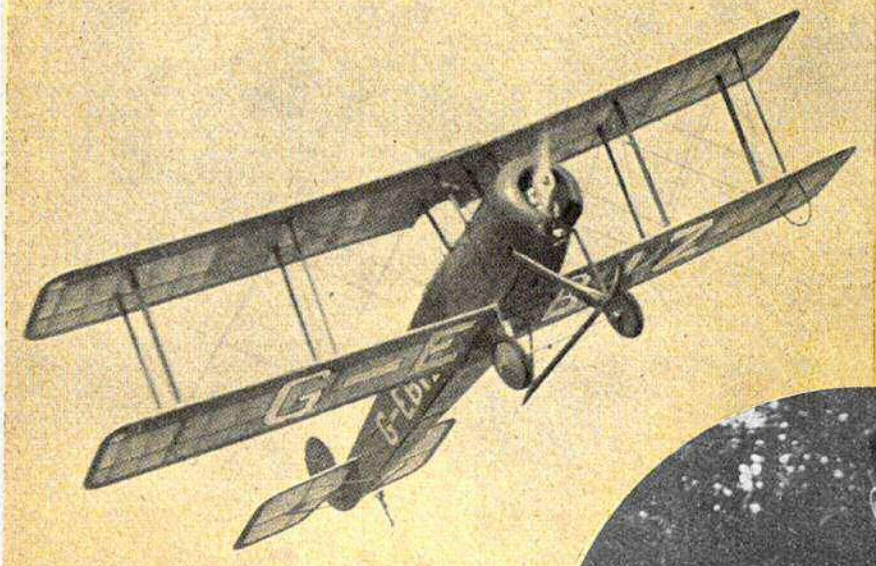


DESIGNED BY RAY BOOTH

Ray Booth . . . 30 years of age . . . married . . . one daughter . . . member of the Design Office A. V. Roe & Co., Ltd. . . . ardent aeromodeller 19½ years . . . holder of British Indoor Tailless Record (H.L.) . . . interested in tailless power and flying scale, and parasol types . . . served in Royal Signals in France, Belgium, Algeria, Tunisia and Italy. Member of Manchester M.A.C. & "AVRO" M.A.S.

AVRO 504K

SURELY no other type of aircraft was so much responsible for the development of "airmindedness" in this country as the AVRO 504 K. Originally produced in 1915 to train pilots for the R.F.C. the 504 appeared in several versions, the "K" type being the most well-known. From 1932 to 1938 dozens of these "Old Avro's"—as they were affectionately known—toured the country giving joyrides at 5/- a flight. Probably more people had their first experience of flying in the 504 K than in any other type of aeroplane up to the end of 1938, at which time these grand old machines were no less than 23 years of age. Our cover painting depicts a typical example formating with other machines of Alan Chobham's famous circus.

It is said that the stability characteristics were of such high order that in the event of difficulties in flight it was only necessary for the pilot to remove his hands and feet from the controls, and the machine would automatically return to straight and level flight. What better machine then could one choose as the subject for a flying scale model?

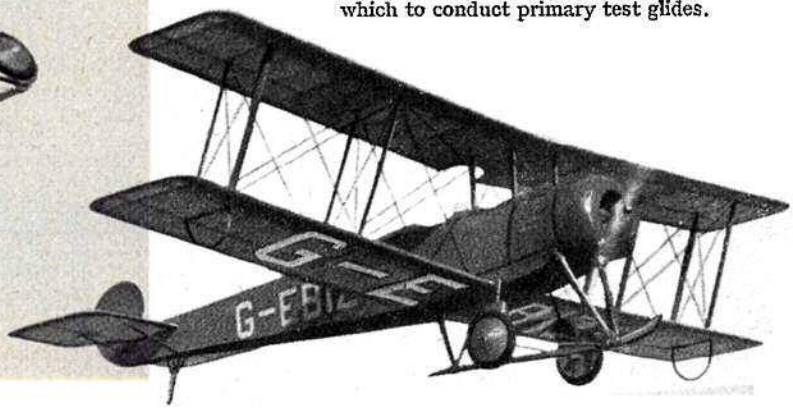
The performance of the model has far exceeded my most conservative estimates, and although it has only been entered in three competitions, this model has so far collected the Aeromodeller Champion of the Exhibition Trophy (Northern Models Exhibition, Manchester), 1st Prize in the Flying Scale Section at the same exhibition; 2nd Prize in the Model Air

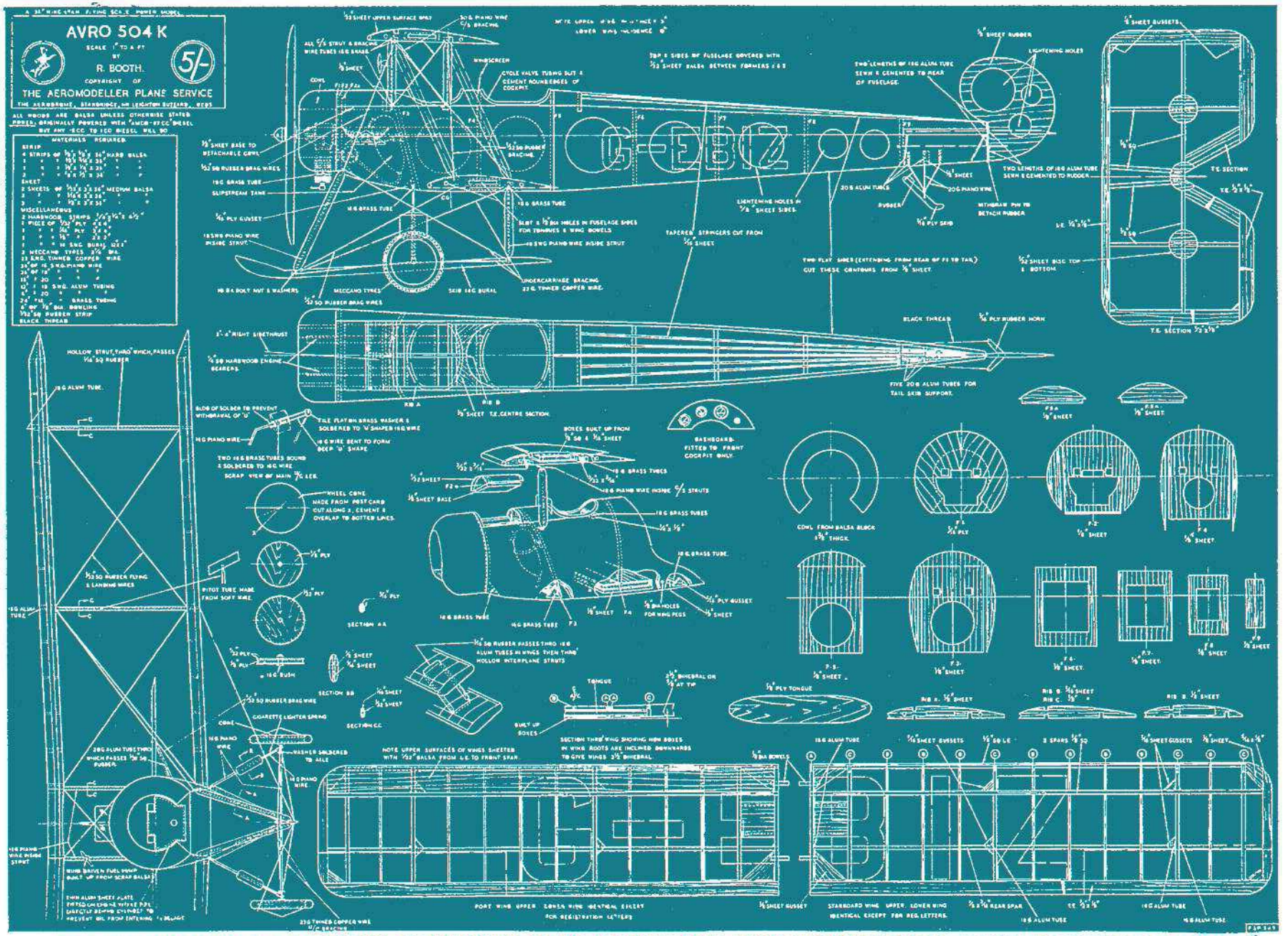
craft Section at the Manchester and Districts Society of Model and Experimental Engineers' Exhibition, and finally the beautiful Silver Trophy and Replica presented by the Directors of Messrs. A. V. Roe & Co., Ltd., for the best flying scale model of any Avro aeroplane built by a member of the staff. For this latter competition the machine had to be flown, points being awarded for take-off, stability in flight and landing. The official report on this occasion stated that the model 504 K "was a perfection of both appearance and flying ability". To date the model has about 20 minutes flying to its credit, including two flights of over 4 minutes.

Although the prototype has always been flown with an "Amco" ·78 c.c. Mk. I, any motor of similar power and weight should be satisfactory. Throughout the design my aim has been strength and durability, and consequently at first glance it may seem rather heavy. Let me hasten to assure readers, however, that the flying and gliding speeds are probably only about half that of normal power duration models of similar span, due to its relatively large wing area. The wings are arranged to knock-off in the event of a crash, all bracing "wires" being 1/32 in. square rubber. The interplane struts are attached to the wings by passing 1/16 in. square rubber through the 18 G. alum. tubes in the wings, then through the hollow built-up struts. The main undercarriage is fully sprung with two shortened cigarette lighter springs on each side of the aircraft. The tail skid is also shock absorbing.

Flying. Extreme caution should be taken until experience has been gained with the model, and under no circumstances should the initial tests be carried out in anything but absolute calm conditions. Check that the complete model balances on its correct C.G. point (shown on the plan) then test glide over long grass if at all possible. If long grass cannot be found, glide as near as possible to the ground. Should the model stall, pack up the leading edge of the tailplane with a strip of 1/32nd sheet balsa; if it dives pack up the trailing edge of the tailplane similarly. Continue in this way until a fairly flat glide is obtained, bearing in mind, of course, that biplanes will *NOT* glide with the flat angle of a conventional duration monoplane, due to the extra drag of wing struts, bracing wires, etc. Fill the fuel tank sufficiently full to ensure about 30 secs. motor run, and throttle the engine right back—even at the expense of uneven running! Let the machine attempt to R.O.G. at these settings. It will, in all probability, only taxi slowly along the ground, so gradually increase the revs of the motor until, after a long run (about 7 to 10 yards) the model just becomes airborne. Observe the turn under power, which, with the rudder set straight and the correct amount of side thrust, should be gently to the right. When the motor cuts out the nose should drop slightly and the machine go into a gentle right hand turn on the glide. Although *NO DOWN THRUST* was ever used on the prototype, should the model glide well but fly tail down under power, pack the engine with washers to give very slight downthrust. Once a good glide has been obtained, *DO NOT* attempt to change the power flight characteristics by changing the flying surfaces. Whilst appreciating the urge to fly a model once completed, I cannot over-emphasize the necessity for extreme patience during the initial trial flights, and strongly recommend that a thorough search be made for LONG grass over which to conduct primary test glides.

These views of the model in full flight will warm the hearts of all those who remember the elegant 504 K, and the occasional misfire of the engine will only add a further touch of realism!





THIS IS A 1/5th SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE WITH DETAILED BUILDING INSTRUCTIONS PRICE 5/- FROM THE AEROMODELLER PLANS SERVICE

Merlu

A WAKEFIELD DESIGN BY EDGARDO SADORIN

DESIGNED and flown by Edgardo Sadorin (extreme left in team photo), age 38, married, with two small daughters, draughtsman in the colour processing of fabrics.

The original "Merlu" is the canine hero of an Italian newspaper strip.

The model, which is the result of considerable study, combines high aerodynamic efficiency with aesthetic lines.

The average flight of the model on 720 turns is 3½ minutes; the third flight at the Wakefield, on 724 turns, was 3 : 28.4 o.o.s.

Without thermal assistance, 1 : 15 can be expected on 320 turns, 3 : 30 on 700 turns and 4 minutes plus on 800 turns.

These flights are with a motor of 14 strands of rubber, ¼ by $\frac{1}{24}$ in., about 48 ins. long. Pirelli rubber was used in the Wakefield, but similar results can be expected with Dunlop.

Trimmed as shown on the plan, the model will climb and glide in fairly large circles to the right, the diameter of which can be altered by adjustment of the upper fin.

The lightest available tissue should be used for covering in order to keep the weight to the minimum.

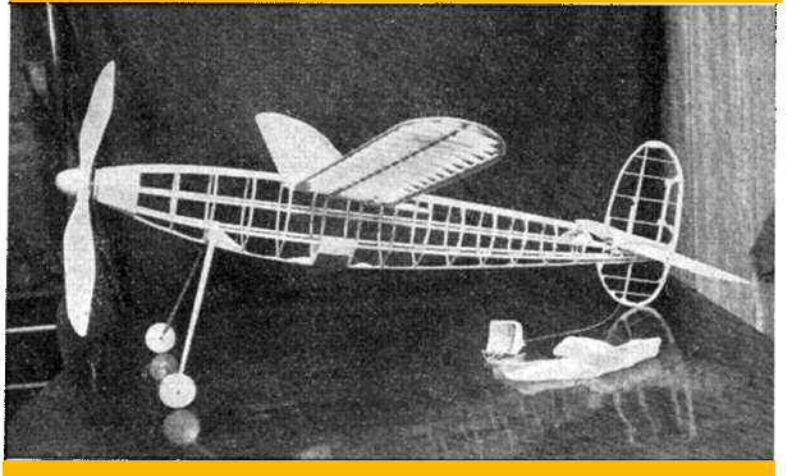
The designer guarantees the performance of this model, which, even in the high winds at this year's Wakefield flew into second place, despite its being out of trim for one flight. Those contemplating building "Merlu" will be interested in the following.

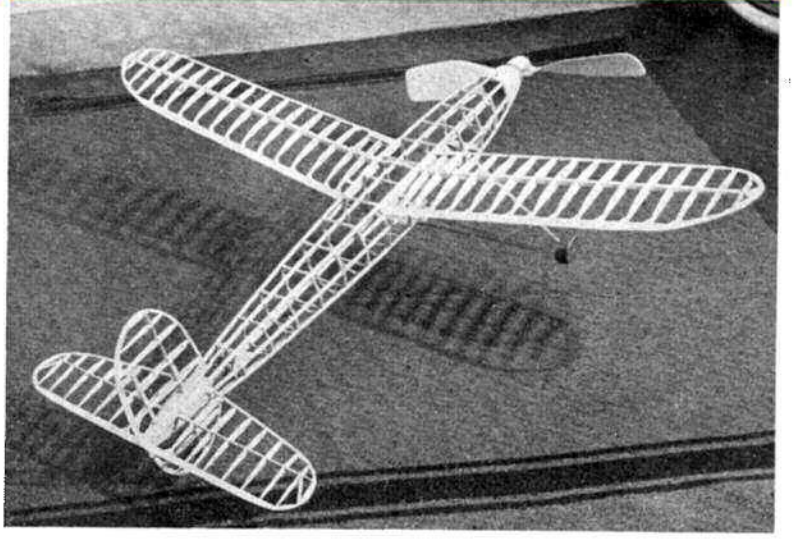
The motor should be made up to retain about 100 turns in an anti-clockwise direction. Lubricated, it can be given a safe 850 turns.

The tensioner must be regulated to stop the prop. in such a position that the blades lie along the fuselage sides.

Initial flights should be on 250 turns; with 700 turns, the model will climb into wind at 45° for about thirty seconds. This will be followed by a right turn for some seven seconds, after which the model will glide in right-hand circles.

The designer recommends that no modification be made to this model, which, if built accurately, will give great satisfaction.





A 44" WINGSPAN WAKEFIELD MODEL. 2ND PLACE 1949 WAKEFIELD CUP

MERLU

DESIGNED BY
E. SADORIN.

3/6

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

PROP BLANK FROM HARD BALSA

1/16" DIA ALUM" RIVET

1/32" PLY

BAMBOO U/C LEG 2 OFF.

1/16" PLY CENTRE

18 SWG AXLE BOUND TO LEG.

BRASS BUSH

1/8 BALSA SIDES

MAIN FIN FRONT SPAR 1/16" SHEET

MAIN FIN REAR SPAR 1/16" SHEET

LOWER FIN SPAR 1/16" SHEET.

1 PANEL OF DETHERMALISER PARACHUTE. 6 OFF MAKE FROM LIGHTEST MATERIAL POSSIBLE.

1/16" SHEET T.E

R.1.

1/16" SHEET GUSSETS

R.2.

1/8" SQ L.E.

ALUM HINGE

R.3.

FIN RIBS 1/32" SHEET

3/32" DIA DOWELS & PAPER TUBES

R.4.

FAIR TAILPLANE INTO FUSELAGE WITH 1/32" SHEET

1/16" SHEET FORMER

1/32" SHEET

R.5 & R.6.

R.7.

R.8.

1/16" SHEET

TAILPLANE SPAR 1/16" HARD SHEET.

T.8. T.7. T.6. T.5. T.4. T.3. T.2. T.1.

1/16" PLY

WASHER SOLDERED TO PROP SHAFT

16 SWG 1/D BRASS BUSH

BALL RACE

WOODSCREW WITH HEAD REMOVED

HARDWOOD GLUED BETWEEN PLY PLATES

F1. F2. F3. F4. F5. F6. F7. F8. F9. F10. F11. F12. F13. F14. F15. F16.

16 SWG PROP SHAFT

DOUBLE COVER FUSELAGE FROM F2 - F4 & F7 - F9.

1/16" SHEET LET IN WHERE GRADED

3/16" x 1/16" STRINGER

SPACE FOR WING TONGUE

SPACE FOR WING DOWELS

45°

NOSE PLUG FROM 1/32" PLY SIDES, FACE TOP & BOTTOM, 1/8" BALSA INSIDE.

1/16" SHEET

1/8" SHEET LAMINATED SPINNER

SPRING

WASHER

1/32" PLY

16 SWG 1/D BRASS TUBE

SMALL SPRING IN NOSEBLOCK

NOSE BLOCK FROM 2 OUTER LAMINATIONS OF 1/32" PLY & ONE INNER 1/8" BALSA

1/16" SHEET GUSSET

1/16" SHEET FORMER

PAPER TUBES FOR U/C LEGS.

POWER.
14 STRANDS OF 1/4" x 1/24" x 47" LONG

1/8" SQ STRINGERS

1/8" SHEET GUSSET

1/16" SHEET GUSSET BACKED WITH 1/16" PLY.

1/8" DOWEL

1/8" SQ

1/16" SHEET

INDIVIDUAL & TOTAL WEIGHTS	OZS
FUSELAGE	1·75
WINGS	1·25
T/PLANE & M/FIN	·438
PARACHUTE ETC	·125
WHEELS	·312
NOSE ASSEMBLY	1·125
SPINNER DURAL & BOBBINS	·125
ELASTIC MOTOR	3·5
TOTAL WEIGHT	8·5

SHEET IN FIRST BAY WITH 1/16" SHEET.

1/8" SQ L.E.

ALL TAILPLANE RIBS EXCEPT T1. FROM 1/32" SHEET. T1 FROM 1/16" SHEET BALSA

F.9. F.8. F.4. F.5. F.6. F.7. F.1. F.11. F.13. F.16. F.10. F.3. F.15. F.2. F.12. F.14.

ALL 1/8" x 1/16" STRIP ON FORMERS TO BE VERY HARD

POSITION OF U/C TUBES CEMENT 1/16" SHEET SCRAP FORMERS FRONT & REAR OF TUBES.

WING TONGUE 4 LAMINATIONS OF 1/32" PLY DO NOT GLUE TOGETHER ENDS PROTRUDING FROM FUSELAGE.

CUT OUT FOR NOSE BLOCK PLUG

ALL FORMERS EXCEPT F.1 MADE FROM 1/8" x 1/16" STRIP. GUSSET ALL CORNERS WITH 1/16" SHEET F.1 FROM 1/32" PLY

DO NOT CEMENT TISSUE COVERING TO FORMERS, ONLY CEMENT TO STRINGERS

3/16" SQ L.E.

WING TONGUE BOX FROM 1/32" PLY

1/16" SHEET GUSSETS

1/16" SHEET TIPS

WING SPAR

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

4° DIHEDRAL AT TIP

WINGS RIBS 1 FROM 3/32" SHEET 2 & 3 FROM 1/16" SHEET 4-17 FROM 1/32" SHEET. TO CONSTRUCT RIBS 4-12 SANDWICH REQUIRED No OF STRIPS BETWEEN TEMPLATES 4-13. SAND TO SHAPE

D 3/48

THIS IS A 1/3 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3/6 POST FREE FROM THE AEROMODELLER PLANS SERVICE

A 50" WINGSPAN PRECISION POWER MODEL

FRANKENSTEIN

DESIGNED BY
M.W. THOMPSON

3/-

THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

ALL WOODS ARE BALSA, UNLESS OTHERWISE STATED

POWER

MODEL DESIGNED FOR MILLS 1·300 MK 2
SHOWN ON DRAWING WITH SUITABLE ADJUSTMENTS ANY 1·2 TO 2CC DIESEL WILL POWER MODEL.

MATERIALS REQUIRED

BALSA STRIP
9 STRIPS OF 1/16" x 1/16" x 36" MED
8 " " 3/16" x 3/16" x 36" "
6 " " 1/4" x 1/4" x 36" "

BALSA SHEET
1 SHEET OF 1/16" x 3" x 36" MED
1 " " 3/16" x 3" x 36" "
2 " " 1/16" x 3" x 36" "

MISCELLANEOUS
2½" x 3" OF 1/16" PLY
6" x 6½" OF 1/16" "
16" x 3/4" x 3/4" HARDWOOD
2½" OF 14 SWG BRASS TUBE
40" OF 16 SWG STEEL WIRE
½" x 2½" THIN ALUM SHEET
3 SMALL SCREW EYES

F1A 1/16" BALSA

F2 1/16" PLY

3/16" MED SHEET

RUDDER 3/16" SHEET

14 SWG BRASS TUBE

3/16" x 3/16"

1/16 HARD SHEET

WING REST

CRACK & CEMENT

DIHEDRAL BRACES 1/16" PLY
2 OFF 1/16" DEEP 2 OFF 3/16" DEEP

CUTOUT FOR ENGINE BEARERS F1 - 1/16" PLY

NOTE DOWN THRUST - 3°

F1A
F1

F2

LONGERONS SPACERS & BRACES 1/4" x 1/4" MEDIUM BALSA

1/16" DOWEL

SHEET TAIL REST

LINEN OR SILK PATCH

20 SWG WIRE SKID

2 ELASTIC BANDS ONE TO EACH SCREW EYE

3/16" x 3/16"

1/16" SHEET FILLETS

ALL WING RIBS 1/16" SHEET

RIB 3 2 OFF

RIB 1 4 OFF

RIB 2 14 OFF

BLOCK

MILLS MK II

3/16" SHEET SIDES

UC3
UC2
UC1

ALUM ANGLE BRACKET

SCREW EYES

ENGINE BEARERS 3/16" x 3/16" HARDWOOD

14 SWG BRASS TUBE

WING RESTS BUILT UP FROM MED SHEET

UC1 2 OFF

UC2 2 OFF

ALL UNDERCARRIAGE PARTS OF 14 SWG WIRE BOUND WITH FUSE WIRE & SOLDERED

UC3 2 OFF

1/16" SHEET ON TOP

TR 1

1/8" MED SHEET

R1

R2

R3

3" AIRWHEEL RETAINED ON UC1 BETWEEN SOLDERED WASHERS

1/16" PLY DIHEDRAL BRACES

1/8" MED SHEET

TR 1

TR 2

3/16" x 3/16"

TR 3

1/8" x 1/4" MED

TR 3

WING TIPS 1/8" MED SHEET

ALL RIBS OF 1/16" SHEET

TR 4

3/16" x 3/16" MED

SET THIS RIB 5° OUT WARD FOR DIHEDRAL

TR 4

1/8" x 3/8" MED

1/4" x 1/4" HARD

1/8" MED SHEET

SKETCH SHOWING F2 & METHOD OF ATTACHING ALUM ANGLE BRACKET & BRASS TUBE INTO WHICH UC IS FIT. FUSE WIRE ROUND TUBE IS THREADED THRO' FORMER & BRACKET

PET 344

THIS IS A 1/4 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3/- POST FREE FROM THE AEROMODELLER PLANS SERVICE

FRANKENSTEIN

A STRONG, easy to build, pleasing looking "sport" free-flight model. Designed for the Mills 1·3 and motors of similar capacity, it is very simple to trim and puts up consistently steady flights of three mins. on a 40 sec. motor run. Due to the light wing loading, the model is partial to thermals and resultant excitement has been experienced. It is crash free to date, save for one spin, which did no damage. No contests have been entered as the designer's district has a dearth of clubs, and, in any case, Frankenstein is a "sport" model rather than a contest design.

Fuselage.

The nucleus of the fuselage is the part consisting of the two ply formers and the engine bearers and it is essential that this should be strongly made and perfectly true. The first thing to make is the former which carries the undercart fixing. Having cut out the wooden part bend a strip of dural to the shape shown on the plan, place it in position on the former, then drill two parallel straight lines of small holes through both the metal and the wood. Cut a piece of 14G brass tube to the width of the former and place it in between the lines of holes on the opposite side to the dural plate. Now sew the whole thing together with wire and drill holes in the dural opposite the ends of brass tube. The front formers and engine bearers are then made and the "nucleus" is assembled carefully with good glue. Next build the fuselage sides on the plan from balsa strip and cement them on to the formers. The cross members are inserted and construction finished off by adding gussets, celluloid, side cowling of sheet of balsa, tailskid and sheeting, etc. Cover with Burmese tissue.

Wings.

Build up the two wings one at a time on the plan commencing with two main-spars, then leading and trailing edges and finally the subsidiary spars. The two wings are now fitted together with gussets and 5 ply dihedral braces, two on each side of the top and bottom main spars and one at the trailing edge spar.

Tailplane.

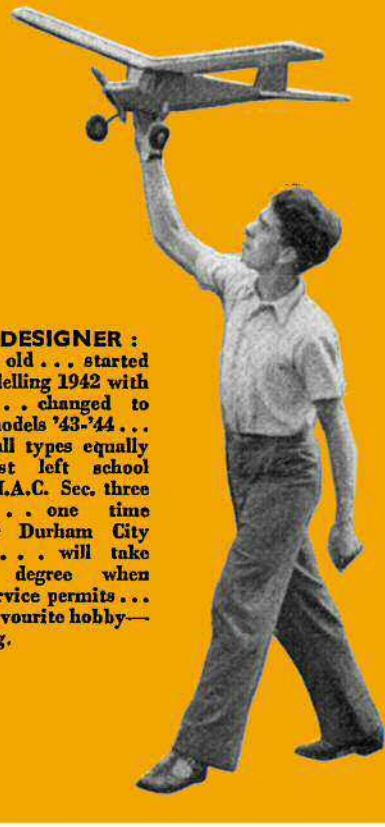
It is easier to prefabricate the two halves of the trailing edge before cementing them on. It is advisable to gusset the tailplane well as it is this which often gets the hard knocks in a bad landing on rocks or rough ground.

Trimming and Flying.

Balance model on the mainspar of the wing. Glide over long grass and if necessary adjust until a flat glide is obtained. Add slight left rudder so that it glides to the left in large circles. Then with slight right side thrust launch the model with the engine "popping". Under this trim the model should climb to the right and glide to the left. One last reminder, never let the engine run flat out until you have got the model well trimmed for a particular set of manœuvres.

A 50-INCH SPAN PRECISION POWER MODEL. FOR ENGINES FROM 1 TO 1½ c.c. CAPACITY.

Designed by M. W. THOMPSON



THE DESIGNER: 18 yrs. old . . . started aeromodelling 1942 with solids . . . changed to flying models '43-'44 . . . enjoys all types equally . . . just left school where M.A.C. Sec. three years . . . one time member Durham City M.F.C. . . . will take science degree when Nat. Service permits . . . other favourite hobby—yachting.

A 60" WING SPAN DUTCH FLYING WING

T.v.T.8. STRIJK PLANK

LITERAL TRANS. IRONING BOARD

DESIGNED BY T. VAN TEUNENBROEK.

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THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

3/-

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

ADDITIONAL BALLAST BOX INDICATED BY BROKEN LINES

F1 1/8" PLY

F2

F3 & F4

1MM PLY FORMERS

F5

F6

DIHEDRAL 3/4" AT TIPS

MATERIALS REQUIRED

HARDWOOD	BALSA
7 LENGTHS OF 1/8" x 1/8" x 36" SPRUCE	2 LENGTHS OF 1/8" x 1/8" x 36" HARD
2 " " 3/16" x 3/16" x 36" "	1 LENGTH " 1/8" x 1/4" x 36" MEDIUM
1/4" x 43 1/2" OF 1/8" PLYWOOD	2 SHEETS " 1/16" x 3" x 36" HARD OR MED
1/8" x 14" " 1MM "	2 " " 1/16" x 3" x 36" MED
1 BLOCK 1 3/8" x 1 1/2"	

THIS RIB INCLINED OUTWARD TO GIVE 7° DIHEDRAL

PERSPECTIVE SHOWING HOW FINS SLIDE INTO SLOT IN WINGS THEY MUST FIT TIGHT ENOUGH NOT TO BE LOST DURING FLIGHT BUT SHOULD NOT BE CEMENTED

FORWARD FIN HAS TWO PINS WHICH SLIDE INTO HOLES IN TOP STRINGER OF FUSELAGE

F5

F4

TOWHOOK 20 S.W.G. STEEL WIRE BIND & CEMENT TO BOTTOM STRINGER

1/8" PLY RIB

T.E. SECTION

ALL FILLETS OF 1/8" MED BALSA SHEET

INCLINE OUTWARD TO GIVE 7° DIHEDRAL

MEDIUM 1/8" BALSA SHEET

1/8" x 1/4" HARD BALSA

1/8" x 1/8" TOP & BOTTOM SPARS OF SPRUCE

1/8" x 1/4" HARD BALSA

WINGTIPS 1/8" MED BALSA CUT TO RIB OUTLINE & SAND TO CURVED SECTION

COVER WHOLE SPAN WITH 1/16" SHEET FROM L.E. TO SPAR ON TOP SURFACE ONLY

L.E. 1/8" x 1/8" SPRUCE

THE NOTCHES IN THESE TWO RIBS ENLARGED TO TAKE 1MM PLY KEEPERS ON EITHER SIDE OF SPAR

THESE RIBS 1/8" PLY

ALL STRINGERS 1/8" x 1/8" SPRUCE

1/8" PLY RIB

FRONT FIN 1/8" MED BALSA

20 S.W.G. PINS PUSHED INTO FIN

ADDITIONAL BALLAST BOX

THESE STRINGERS BUTT AGAINST UPPER 1/8" x 1/8" SPAR

THIS SPAR ENDS HERE.

DIHEDRAL KEEPERS 'B' 1MM PLY. 2 OFF.

DIHEDRAL KEEPERS 'A' 1MM PLY 2 OFF.

HOLES IN TOP STRINGER TO TAKE 20 S.W.G. WIRE PEGS ON FRONT FIN. SEE ALSO SIDE VIEW.

ADDITIONAL BALLAST BOX TOP & SIDES 1/16" BALSA SHEET FITTED BETWEEN & FLUSH WITH STRINGERS BOTTOM OF 1MM PLY

BROKEN LINE INDICATES 1/16" SHEET COVERING

HARDWOOD NOSE BLOCK HOLLOW OUT & FILL WITH LEAD

1/8" PLY 1MM PLY F2 - F6 OF 1MM PLY

TOW HOOK 20 S.W.G. STEEL WIRE BIND & CEMENT STRONGLY TO BOTTOM STRINGER (SEE SKETCH)

OUTLINE OF FINS WHEN SLOTTED IN WING (SEE SKETCH)

WING FINS OF 1/8" MED BALSA 2 OFF

THIS NOTCH IN 1/16" RIBS ONLY.

WING RIBS 1/8" BALSA HARD OR MED 23 OFF. 1/8" PLY — 6 OFF.

U 345

THIS IS A 1/4 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3/- POST FREE FROM THE AEROMODELLER PLANS SERVICE

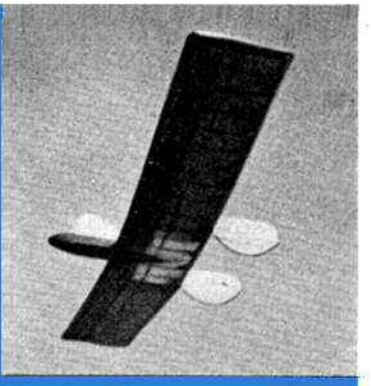
A 60 INCH SPAN TAILLESS GLIDER

Designed by

T. VAN TEUNENBROEK

Secretary of the Utrecht Model Club.

Literal Translation of Title "IRONING BOARD"



Strijkplank

TO the wide range of different types of model aeroplanes, a new addition has been made, namely, the flying plank tailless glider. This is interesting for its extreme simplicity and for the fact that it does not look like an orthodox tailless.

In order to compensate for the wing having neither wash-out at the tips nor sweepback, it is necessary to use an airfoil section with reflex trailing edge to obtain stability. The Stamm section used is Swiss and has proved its efficiency.

To obtain maximum efficiency with this section, an aspect ratio of between 5 and 8 must be used, although good results are obtained by the Swiss, using 9 : 1.

The C.G. position is well forward, at 15% to 17% chord from the leading edge, this being necessary to obtain a long enough recovery moment to prevent stalling.

Very little dihedral is necessary in a plank design, 1 : 8 giving good results. Generally, the fins should be not too tall, but long and low, the greater vertical area being behind the C.G. By making the fuselage of a rather high narrow section, it can serve the double purpose of ballast carrier and extra fin area.

The successful tow launching of a plank tailless depends mainly on the correct fin area having been found. However, once this is discovered, it will be as steady on the line as any well trimmed orthodox design. It is very important to allow the plank to fly itself off the line, as a jerk will cause it to stall and a lot of height will be lost in recovery.

To date, Swiss modellers have been almost alone in the building and flying of this type of glider, which, considering its simplicity and efficiency, is quite surprising. There would seem to be many possibilities for both rubber and power enthusiasts to experiment with the tailless plank. Who will be the first to have a diesel-powered "Strijkplank" airborne?

Building Instructions.

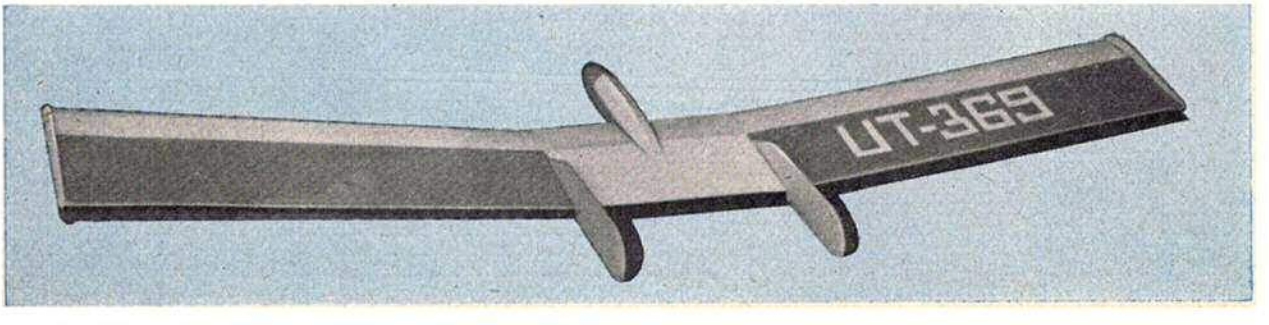
Before commencing construction, study the wing section, from which it will be seen that both the under-surface spars are above the level of the building board. It will be necessary, therefore, to pack up the front spar 1/8th in. and the rear spar 1/32nd in. Cover the plan with greaseproof paper, then pin down the front spar, with an extra piece of 1/8th by 1/8th in. balsa under it. The 1/8th by ¼ in. rear spar is similarly fixed in position, on top of a strip of 1/32nd in. sheet.

The ribs can now be notched onto these spars, checking each one carefully with regard to its fore and aft and upright positions. When the cement has set, add the 1/8th by 1/8th in. top spar, followed by the leading edge. The angle at which the trailing edge sits makes it necessary to pin it to each rib as it is attached. Note that it tapers on the lower surface only, and should be sanded to this shape first.

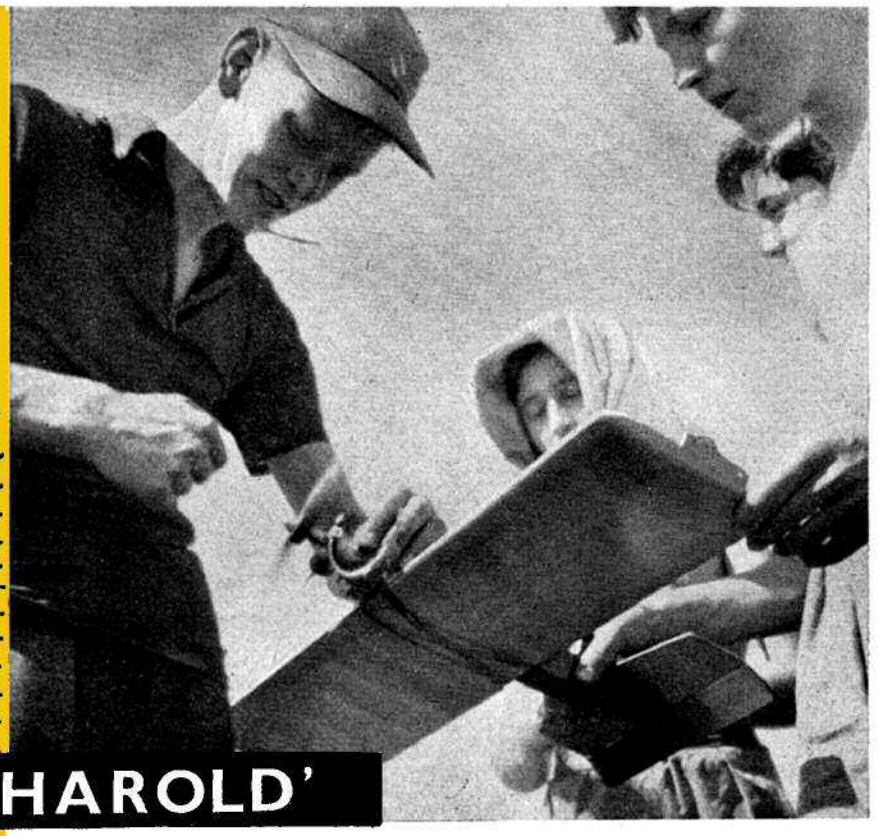
The tip, cut to rough outline, can now be cemented to the tip rib. After addition of the 1/8th in. balsa fillets, the panel can be removed from the board. Now add 1/16th in. sheet covering and finish wingtip.

Repeat with other outer panel; the centre-section is built in the same way, the front under-surface spar of 1/8th in. by ¼ in. also being packed up 1/32nd. in. With the centre section flat on the board, the outer wing-panels are cemented strongly in position, the tips being raised 2¾ ins. The 1 m.m. ply dihedral keepers complete the joint and should be pre-cemented for extra strength.

Before the 1/16th in. sheet is added, the fuselage pod is built into the centre section, commencing by cementing F.5 and F.6 to the centre-section spars (see side elevation). Next, notch the four side stringers into F.1, 2, 3, and 4, and when these have set, slide them into place in F.5 and 6. The two upper side stringers make a butt joint with the top 1/8th by 1/8th in. spar. Add the bottom stringer, attaching it to the trailing edge at the rear, after which the top stringer and the lower side stringers can be joined to it. The addition of the hollow, lead-filled noseblock, the sheet ballast box (leaving off one top panel of this for insertion of additional weight) and the tow hook, completes the construction.



A 30 INCH SPAN SUPER STUNT MODEL
for Engines from 1½ to 3½ c.c. designed by
N. J. BUTCHER
M. GLYNNE
S. D. BOWLES
of the Hastings Club



'HAPPY HAROLD'

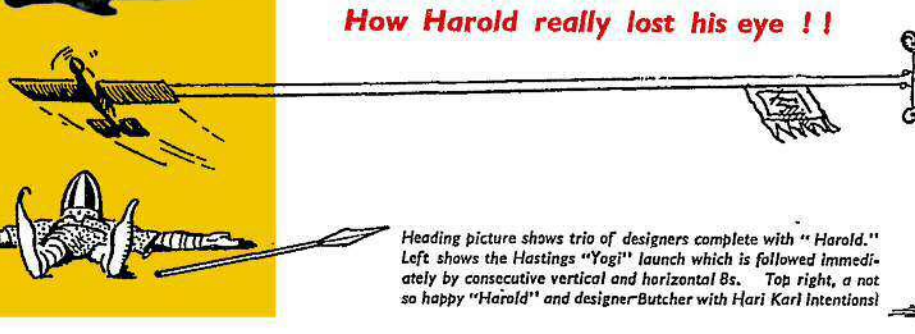
IS a match for any stunt pilot in the country—but not by chance—it has taken us 8 months and 10 models to develop the present design, which will not only do every known stunt manœuvre, including consecutive vertical 8s and square loops, but will also figure 8, loop and recover from inverted—on the glide.

We have tried to combine good looks with practical design and believe we have succeeded—the removable wing is practically crashproof and makes for ease of transport, while the knock-off engine mount has saved dozens of torn out front bulkheads. For those who object to the engine stuck out in the open it would be a simple matter to form a cowl from thin aluminium and screw it to the motor mount, we have never done this as we have always been too busy planning improvements on the next model before the previous one was finished.

In spite of what certain experts say the 33% elevator is more than ample, and whatever else you modify, please do not put in a more sensitive control system, or you will have a pile of wreckage on your hands before the first lap is completed.

While designed primarily for the Elfin 1.8 c.c. the performance is even better with the 2.49 c.c. or Amco 3.5 versions. The general prevailing fallacy that only an ultra-light model will stunt properly, we have disproved time and time again, and our models average between 12–15 ozs. less fuel. Very good results have been obtained with an 8×8 Tru-Flex prop. and the slight increase in performance using a wooden one is not worth the extra expense of breakages.

How Harold really lost his eye !!



Heading picture shows trio of designers complete with "Harold." Left shows the Hastings "Yogi" launch which is followed immediately by consecutive vertical and horizontal 8s. Top right, a not so happy "Harold" and designer Butcher with Hari Kari intentions!

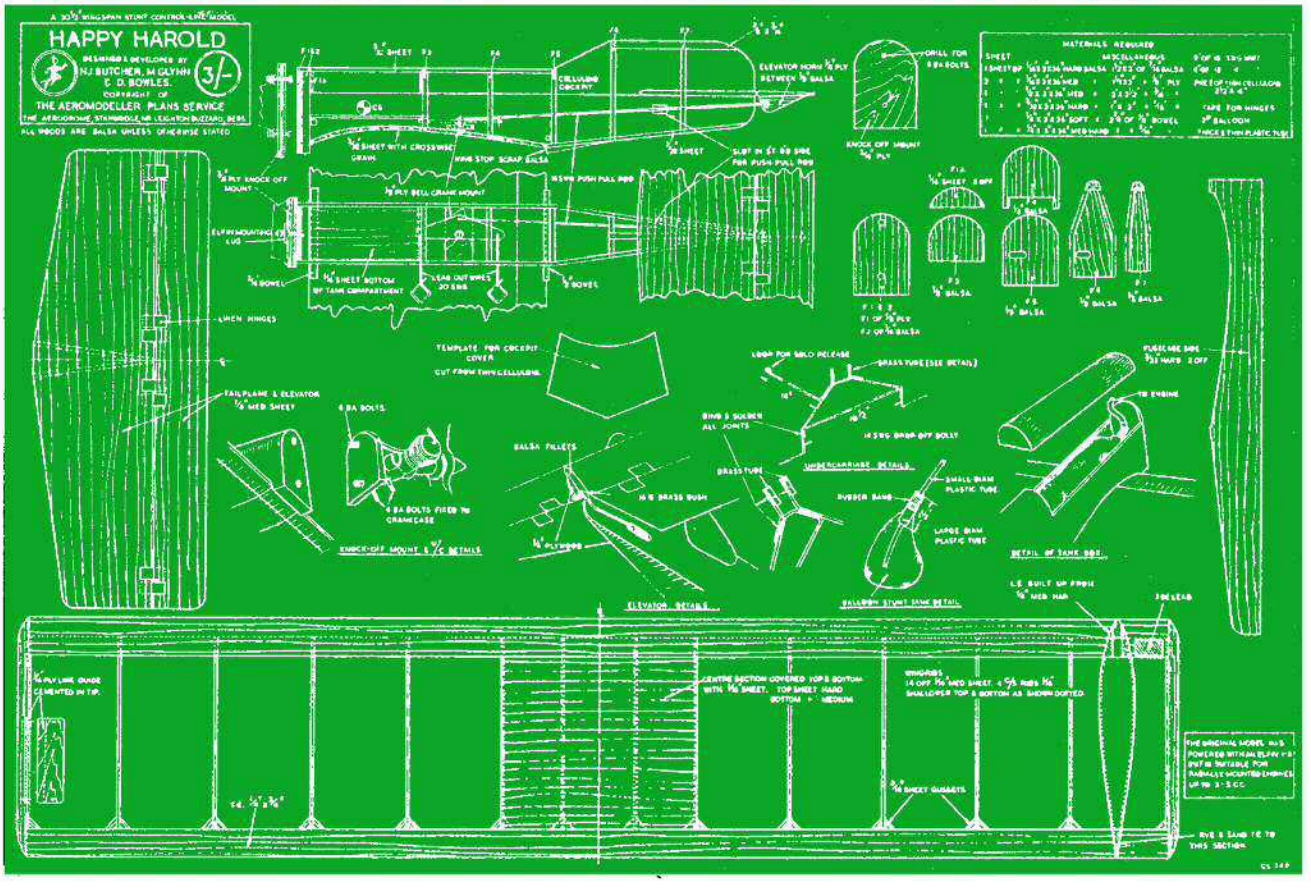
Firstly, build the wing-leading edge. Select a good medium hard piece of $\frac{1}{4}$ in. sheet, cut off 2 strips 1 in. × 30 ins. long and 1 strip $\frac{1}{2}$ in. × 30 ins. long, cement these together with the narrow piece in the middle, leaving a slot $\frac{1}{4}$ in. deep along one edge (see plan), pin to a flat board and allow 24 hours to dry.

Cut out the fuselage formers, cement the ply and balsa together. Cut the fuselage sides, cement the formers in place on one and when dry add other side. Cement the $\frac{1}{16}$ in. sheet bottom to tank box, and add control gate, cutting slots in formers as necessary to obtain smooth movement. Sheet cover top of fuselage, when dry carefully remove portion over tank box, add 2 half formers to this to form detachable lid to box. Now cut slot at rear to take tailplane, add dowels and sheet bottom of fuselage, not forgetting that the grain must run from side to side *only* where the wing locates. Cut tailplane from $\frac{1}{8}$ in. sheet, hinge elevator on, and cement to fuselage.

Cut out the 14 wing ribs, pin them together and sand to uniform section, before separating cut the $\frac{1}{4}$ in. × $\frac{1}{4}$ in. to torque which locates in the leading edge. Remove leading edge from board and carve to rough section, mark in pencil rib positions and cement the two tip ribs in place. Allow 5 minutes to dry then pin trailing edge in place. Working from each end cement ribs in position until wing is complete, do not forget that the four centre ribs must be $\frac{1}{16}$ in. smaller on both edges to allow sheeting, which should now be added, to seat flush, check there are no warps add wing tips and sandpaper smooth. Before covering add $\frac{3}{4}$ oz. lead to outer wing tip and plywood guide to inner wing tip, cover with rag tissue and apply 2 coats of clear and 4 coats of coloured dope, add 50% thinner to the coloured.

Dope rag tissue over the entire fuselage and tail, cement cockpit canopy in place and finish in desired colour, don't forget to fuelproof inside of tank box with several coats of coloured dope.

THIS IS A 1 5 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3 - FROM THE AEROMODELLER PLANS SERVICE.



FLASHBACK

By F. A. Lowe

F. A. Lowe . . aged 51. Served World Wars I & II. Modeller since 1910, ex-member Liverpool Aero Research Club (pre 1915) Liverpool M.A.C. (1920) etc., present member Nottingham & D.M.A.C. Prefers free flight, flying scale, seaplanes & experimental types.

Pride and joy! Heavyweight rubber driven flying scale version of Hawker Fury fighter by the author. All-up weight 2 lbs.

REFLECTIONS on the past in any sphere are always interesting, but I think past efforts applied to both full size and model aircraft make unusually interesting reading sufficient to whet the appetite of anyone who has keenness for craftsmanship in any hobby or direction. However, I do not pretend to be writing a history of the model aircraft movement since the early days, but rather to give the reader an interesting outline of my own activities, and one or two highlights as it were of model and full size construction.

One may well guess it is not possible to be model making more or less continuously since 1910 without meeting many interesting people from all walks of life. To me they are all level—either model makers or interested in gliding or full size construction, and knowing these people is, I consider, my greatest pleasure and privilege. I cannot dwell as much as I would like on the personal aspect but rather on their creation. Here No. 1 difficulty crops up, as prior to 1914 roll film and handy cameras were not in much use, consequently there is a dearth of photographs of this early period. However, I supplement with the aid of sketches.

My interest in aeronautics was aroused one day by someone showing me a print of the Wright Bros. glider skimming tree tops in their early experiments, and this really did the trick as far as I was concerned. A friend of mine also had a near-scale model of a Wright machine which, strangely enough, had the only inertia motor I have seen applied to a model—a lead coated three-bladed airscrew mounted between double bearings, and a small flywheel. This was rotated rapidly by string (humming top fashion) when the model would more or less fly for three or four yards or so, finally pancaking to earth. This model was made of light wire covered with a fine cambric and was I believe of French manufacture.

I made one or two models on the lines of the Wright Biplane, also the Voison. These were made in stiff paper, reinforced with thin strips of wood after the paper construction had been set up. Rubber was the motive power—unlubricated—driving bent sheet wood props, and with these I had great success, often achieving a distance of about ten yards. Success in those days was usually reckoned in feet, and was considered good if the model remained in the air long enough to indicate that it was indeed flying under its own power—and not the result of a throw, or assisting gust of wind!

Then followed a large model on the lines of the Bleriot Monoplane with wooden fuselage construction, piano wire and bamboo wings covered with a thin, shiny packing paper, a ball-bearing bracket (these were on the market as long ago as 1909), sheet wood airscrew with the pitch steamed in, wheels cut from cigar-box wood, and a bamboo and wire undercarriage completed this large job. It was about 4 ft. 6 ins. span and weighed quite a lot—best performance—a few yards.

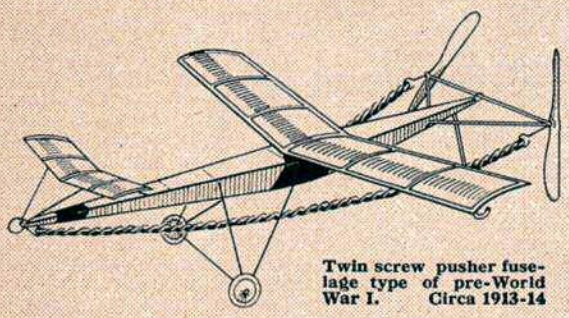
A model on the lines of the then famous Ding-Sayers twin pusher followed. This was going modern! It had a T-shaped frame, twin bent-wood props, and was unique on account of the planes, which could be rolled up and put into a pocket. They were held in position on the model by a bamboo splint, spragged out from a central king-post, the ends fitting into small linen pockets, producing and fixing the camber and incidence at the same time.

My model was not a howling success, as the central spar was made from a building lath, and twisted badly on winding one side motor (twin skein winders were not then in general use). However, this particular model gave me some good glides with the motors removed, and from this I probably learned more about wing and tail settings than on any previous model. Most successful models about this time were of the loaded elevator—or canard—type.

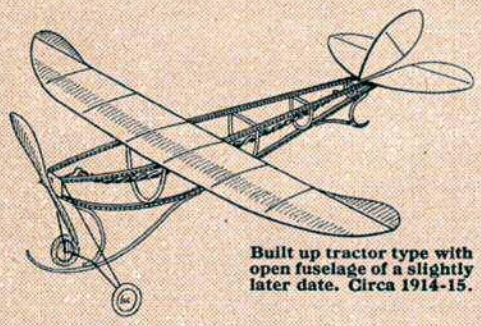
Simple helicopters next occupied my attention for a time. These were two or four-bladed, and cut from tinned sheet iron. They were launched from the ground with a bobbin from which projected two headless nails, these engaging in two holes in the centre disc of the helicopter. Motive power was by a string wound round the bobbin and pulled sharply. Heights up to 80 feet could be obtained by this method, the helicopter then simply falling to the ground as an unbalanced body. (I wish to warn any modeller who may be tempted to try this stunt—this type is dangerous to both the launcher and anyone who may be looking on, severe cuts about the hands and face being the penalty for any maladjustment!)

After this my attention turned to Montgolfier or " hot air " balloons. Mine were simply spheres of tissue paper with a ring and cross of light florist's wire at the aperture, with a large tuft of wadding in the centre soaked in methylated spirit. Of about 4 to 5 foot in diameter, they would soar to great heights, and were invariably lost.

This went on until one day a balloon descended into a stable yard in the Ardwick area of Manchester, all but starting a serious fire! A visit from the police ensued, and that put paid to the "Hot air programme."

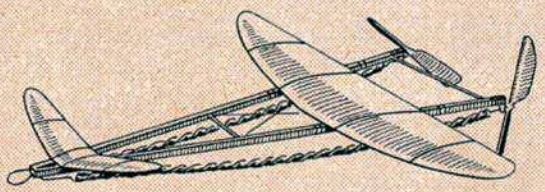


Twin screw pusher fuselage type of pre-World War I. Circa 1913-14



Built up tractor type with open fuselage of a slightly later date. Circa 1914-15.

Mann & Grimmer H. L. Monoplane similar to recent A.P.S. "Old Timer." Circa 1912.



I bought one or two commercial models, mostly from the pioneer firm of T. W. K. Clarke & Co., of Hampton Wick, that were quite good, in particular the well known Clarke Flyers, and the Tractor monoplane. With these models I used rubber lubricant for the first time, getting much better performances.

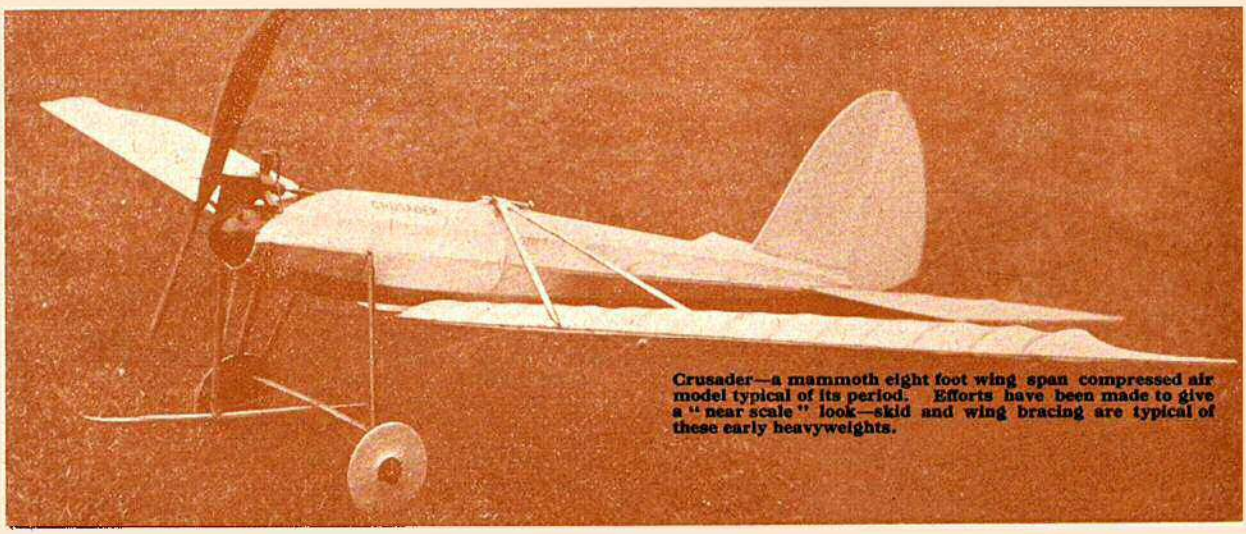
One of these bought models—a single screw pusher monoplane—had sheet wood wings of cedar veneer, wrapped and reinforced with paper strips. The most extraordinary part about this model was the camber, which was a reversal of the usual method, and also increased considerably towards the tips. Yet this little affair was an excellent flier even in fairly strong winds, and was full value for money, costing about 3/6 complete with wooden crate and carriage. The makers were a firm in the Fishponds district of Bristol, long since defunct.

During this period I had the good luck to see some full size flying at close quarters. Gustave Hamel, the popular airman, gave one of his splendid exhibitions at Hazelgrove, and I travelled miles to see this show—as most people did. Later I saw the London to Manchester air race at Trafford Park, and such pilots as Pierre Verrier, Lord Carberry, Louis Noel and others. All this of course increased my keenness, if indeed that were necessary.

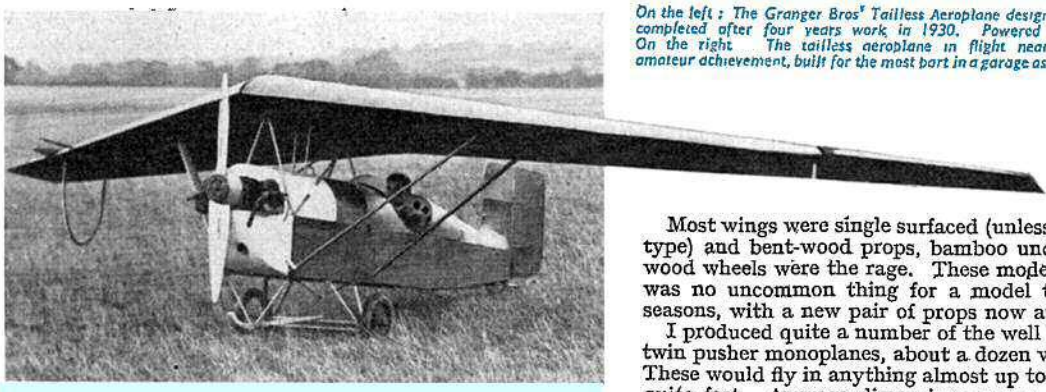
Moving to Liverpool about this time (1912–1913) where I knew a model club existed, I lost no time in finding this active little club, and from then onwards my activities really commenced at both model construction and flying. This was the then well known " Liverpool Aero Research Club ", and the name really did indicate to a great extent the activities of some of the members. All sorts of experiments were undertaken with airscrews, wing sections and plan shapes, back swept wings in particular being a feature of the club models. The secretary, Mr. G. H. Kilshaw, won a " Flight " Diploma of Merit for his paper on a series of experiments with numerous paper gliders of all kinds. (He was the only person to win one of these Diplomas throughout the country.) The results of these and other experiments were invariably incorporated in the club models when practicable.

On joining the club I commenced work on a fairly large A frame type model, about 3 ft. 6 ins. long and approx. 50 ins. span, with backswept wings of parallel chord, single surfaced and silk covered, and bent-wood props. With this I entered my first contest, and won with an average duration of about 28 seconds for three flights.

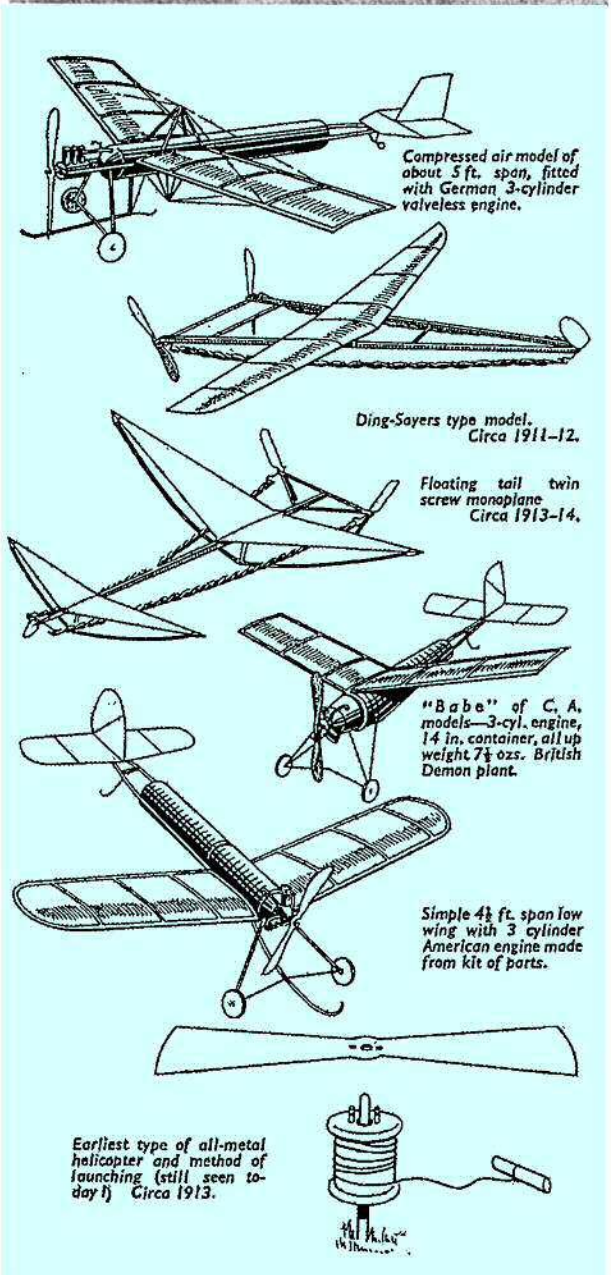
It was about this time (1913) when duration in seconds became the objective, rather than distance of feet or yards, as performances had improved and measuring fairly long distances was not easy. Construction at this time, so far as Liverpool was concerned, generally resolved itself into either bamboo or piano wire wings, silk covered and doped with various home-made mixtures such as diluted oak varnish, amyl acetate and celluloid, or ground starch and glue size.



Crusader—a mammoth eight foot wing span compressed air model typical of its period. Efforts have been made to give a " near scale " look—skid and wing bracing are typical of these early heavyweights.



On the left : The Granger Bros' Tailless Aeroplane designed and built by them and completed after four years work in 1930. Powered by 30 h.p. Bristol Cherub. On the right The tailless aeroplane in flight near Tollerton An amazing amateur achievement, built for the most part in a garage assisted by sundry modelboys.



Most wings were single surfaced (unless it was a scale model type) and bent-wood props, bamboo undercarriages and ply-wood wheels were the rage. These model were strong, and it was no uncommon thing for a model to last two or three seasons, with a new pair of props now and again.

I produced quite a number of the well known Mann type of twin pusher monoplanes, about a dozen with slight variations. These would fly in anything almost up to gale force, and were quite fast. Average dimensions were; "A" frame 33 ins. long, made of ¼ in. square silver spruce, wings of 18 s.w.g. piano wire, mainplane 20 ins. to about 28 ins. span with about four ribs, bent-wood props of 8 ins. diameter for racing or fast jobs, or up to 12 ins. for duration, with 6 strands of ¼ in. strip for duration and 8 strands on the so-called racers, I well remember about this time my pocket was strictly limited, and the chief problem was always the same—to design the best and largest model to take no more than 12 yards of rubber at about 9d. per dozen yards—the machine to suit the power available one might say!

Tractor types received some attention about the end of 1913 and early 1914. These were invariable on the well known German Taube pattern with piano wings and open, boat shaped fuselages, and met with moderate success although they were pretty heavy—round about 16 ozs. most of them. The high performance tractor model did not really arrive until a well known modeller named Doolittle published his "Gnat" model, which was a fairly light spar job, lightly loaded and well powered. This gave a very good performance if correctly adjusted. The tractor type model in those days was generally admitted by all to be the most difficult to adjust for good flights, but in reality we were only just beginning to understand the problems involved—at least I was!

A good flight of about 30 seconds' duration was something to talk about for quite a time. I remember too the stir caused in model circles by our pioneer power modeller, Mr. H. Groves, getting a flight of something over half a mile with his flash steam driven model down in London.

Together with a friend, we frantically started making one of these motors, but after the boiler was coiled up and we came to the silver soldering jobs, we had to admit the whole thing was beyond our skill and means, as we had no lathe on which to make the engine, and reluctantly shelved the job.

We had some wonderful schemes for doing away with the elaborate (to us) power plants, then gradually coming into use, with wild notions such as generating pressure with calcium carbide, or, in steam plants, using ordinary small boilers of the "pot" or central flue variety. The plan was to vaporise meths. instead of using water, use the pressure created in an ordinary steam engine in the usual way, and utilise the exhaust to assist the proposed small spirit lamp underneath—so saving a certain amount of weight. We never had the courage to try out either of these ideas. Maybe it's just as well.

I continued model making up to the year 1915, when I joined the Forces and eventually found myself in the lines in France. Having what was termed a "roving commission" I took the opportunity to examine all crashed aircraft of both sides (quite often—rather foolishly—attracting shell fire) and cutting off wire strainers of all sizes with the idea of using them in a full size glider we proposed to build after the war. My ideas came to nought as I soon found it necessary to dump this extra weight of kit, and in due course I proceeded to the Rhine area on occupation work.

There I contacted No. 12 Squadron, and did quite a bit of flying as a passenger in the good old Bristol Fighter. The favourite pastime in the R.A.F. then was what was known as "contour chasing", one machine tracking another at almost

zero altitude ! Stunting cannot compare with this for thrills, and in this period—during which I experienced all the known stunts, contour chasing and cross country flying remains impressed on my mind as one of the high spots of aviation.

My first power job was built about 1923. I obtained a German compressed air plant with a vertical three cylinder valveless engine working on the same principle as the well known " Bing Autoplan " engine. The piston of one cylinder was made to act as a valve for the preceding cylinder by means of airways or ducts drilled through the piston, and a system of connecting pipes. The arrangement could not be worked on less than three cylinders. This proved quite a powerful plant for its weight of about 12 ozs. and my first power job took shape—a light model of some 66 ins. span on the lines of the famous Nieuport Monoplane, with light single surfaced wings, braced to a central king post in the old fashioned style.

I was not cautious enough at the first trial. The model took off R.O.G. and commenced a steep climb, being over elevated, turned on its back and crashed. Obviously I had something to learn about adjusting power models ! After re-aligning the crankshaft (which was a three throw, one piece job) I got the engine giving the revs again, and built a new simple low wing monoplane, with a bow shaped outrigger for the tail unit firmly fixed to screws soldered direct to the container. This model proved successful. It had no bracing wires or struts like the previous Nieuport, and I continued to fly it until the crankshaft and its bearings were hopelessly worn and bent. Its regular duration was from 30 to 35 seconds R.O.G.

Many other types of model were built, too numerous to mention in detail, and included streamlined hollow spars tractors up to 5 foot span, with and without gears—also most of the published designs in the " Model Engineer " such as the well known Plater designs, Paveley's and others.

Moving to Nottingham in 1928, where I knew no model club existed at that time, I soon contacted a few real enthusiasts including one or two members of the " Experimental Light Plane Club ", who were still either building or modifying full size gliders or power driven machines. We became a united happy band of light plane chaps and modellers combined, to the general benefit of all. During this time I not only helped with the construction of full size machines, but also turned out what I consider to be one or two of my best model efforts.

Inter-club meetings were arranged, contests run off, and it was not unusual to have one or two light planes dropping in to see us on our ground, though we had anxious moments when it came to taking off again on account of the rather short run ! Models made (in addition to those of the member's own designs) included such well known machines as the Newall " Falcon ", Van Hattum's " Ghost ", " Kinglets ", " Skyrovers " and the Tony Willis Seaplane.

It was through constructing several of the latter design that we in Nottingham were instrumental in getting flotation tests imposed in the S.M.A.E. seaplane contests as we found this model could not float when at rest, the tail float being too small. It simply acted as a water vane when in motion. Our technical point was that the machine as published was neither a true seaplane or landplane (it was not fitted with wheels), yet this same design had recently won the event. Needless to say, the rule was soon changed, and since that time flotation tests of a proper character have been made previous to the actual flying tests in all contests for seaplanes run under S.M.A.E. rules.

Full size gliding by means of car towing took place at most of our meetings, and enlivened the proceedings in no uncertain manner. We had minor crashes at times, but no one suffered any injury during the two or three years of these efforts. Several designs of gliders were tried out, also power driven light planes, instances being a trainer type of glider with open boom, " Albatross "—an intermediate soaring type which frequently reached 300 feet altitude on a car tow, and the " Linnet ".

The latter machine was originally fitted with a 3 h.p. A.B.C. engine, and just staggered off the ground. Later the engine was removed, and a modified fuselage front was built. In this state the machine took on most of the efforts at towed flight, as it was a lightly built biplane, slow and easy to handle, performing very well in our rather small field. One of the members also built a full size tandem glider of the " hang " type, but this was discarded owing to its dangerous nature on landing.

The outstanding example in the full size category was, without doubt, the design and construction by our two leading members of the little tail-less monoplane known as " Archy " —or to give it the full name—" Archae opteryx ", meaning a legendary Grecian bird, which eventually grew a small tail.

Originally designed by the brothers John and Francis Granger for the purpose of learning to fly (when light plane clubs were scarce and tuition available being too expensive) the design of this machine was taken in hand about 1926. The machine was completed about 1930, representing just under four years hard, spare time work. Building was carried out in the garage, in which was also housed a steam car, several full size wings, two motor cycles, a dozen or so models belonging to members of the Model Aircraft Construction Society, and a normal complement of model engineers' tools—a large and small lathe, a drill press, circular saw, small forge, plus an assortment of the usual hand tools for wood and metal work. Every part except the engine was made in this workshop of materials bought locally, including the selected wood.

Technical points of interest are :—

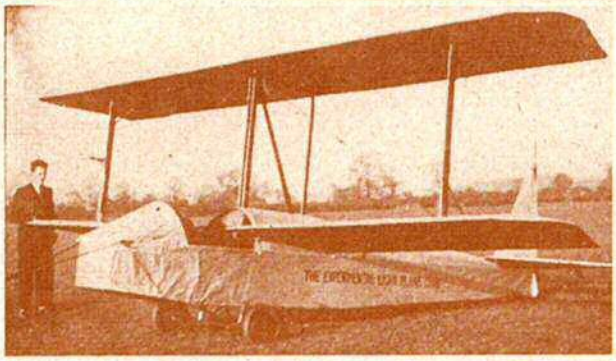
Wing designed with a stationary centre of pressure due to sweepback, and washout of incidence progressively toward the wing tip. (At the time this design was laid down in the 1920's this type of wing was not in evidence in full size aircraft.)

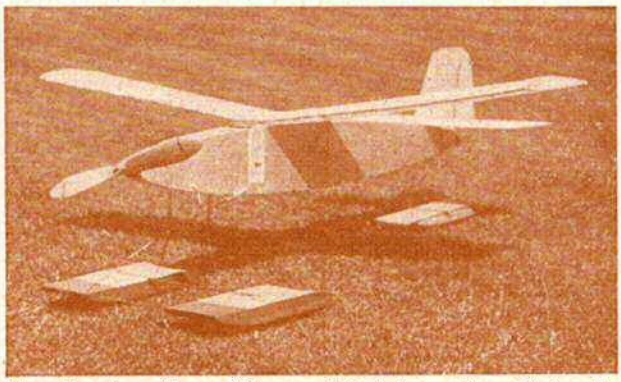
The stationary C/P not only produced stability, but also relieved the elevators of undue loads in restoring the C/P to its position on the C/G after the incidence changes during gusts or manœuvres. It was also of great assistance to maintain control near stalling speed.

Combined elevator and aileron control represents a unique feature, being rotatable when both are moved together, acting as elevators due to their position behind the C/G, and as ailerons when moved differentially. Differential movement does not effect fore and aft trim, since the moving wing tip section is symmetrical, and, up pressure on one side being calculated to balance down pressure on the other, there is no resulting turning movement about the transverse axis.

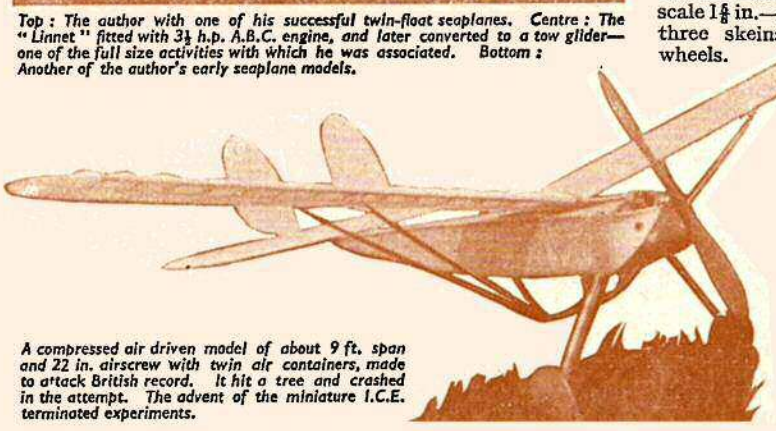
The machine was originally designed for a Douglas engine, but near completion a 30 h.p. Bristol Cherub was obtained. This meant a modification in the form of lead in the tail to counterbalance the extra engine weight.

After modification as indicated, ground hops were made, and a few test flips were carried out. The first test flight was made at Tollerton Aerodrome, the machine being taken up to 1,000 feet, and a cautious landing followed, the only trouble





Top : The author with one of his successful twin-float seaplanes. Centre : The "Linnet" fitted with 3½ h.p. A.B.C. engine, and later converted to a tow glider—one of the full size activities with which he was associated. Bottom : Another of the author's early seaplane models.



A compressed air driven model of about 9 ft. span and 22 in. airscrew with twin air containers, made to attack British record. It hit a tree and crashed in the attempt. The advent of the miniature I.C.E. terminated experiments.

being a slight tendency to swing on take off. This was traced to slipstream effect on the rudder, further increased by the short fuselage. A larger rudder area cured this, and further tests proved the machine to be under control at its lowest airspeed of about 25 m.p.h.

Performance etc. :—Top speed : 90 m.p.h. Landing speed 37 m.p.h. Span : 30 feet. Length : 14 ft. 10 ins. Area : 102 sq. ft. All up weight 616 lbs. Loading 6 lbs. per sq. ft.

The above quoted top speed is believed to be the fastest recorded using a 30 h.p. engine on any type of aeroplane.

About the time that "Archy" was tried out, I produced one of my most successful power driven models up to that date—a large compressed air driven model named "Crusader". This was another low-wing model of 8 foot span, lightly built entirely in hardwood, with fretted out ply ribs. The complete machine weighed slightly under 3 lbs. and took off and landed beautifully and with regularity. This particular model was a near scale effort of the D.H. 53 and was fitted with a Paveley engine. An attempt to beat the record of that time resulted in a head on crash into a tree after 48 seconds, the model being a good height at the moment of impact.

Several other compressed air models followed, including some small ones with containers and engines only 14 inches in length and of very simple construction, i.e. of the outrigger type. They all flew with modest durations up to about 30 seconds, and were a feature of the Nottingham Society's meetings at that time. The largest compressed air machine I built was one called "Cody" of 9 foot span, with single surfaced wings. This was successful for the purpose intended, duration, and was disposed of to a Leicester modeller who immediately entered it in a power event in a wind of gale force—flew it, crashed, and got the prize.

The great effort of pumping up these large compressed air models was always sportingly shared between the members of our Society, thus lightening the work. Experiments with heated compressed air were just about to be carried out with a view to increasing duration, when the comparatively small petrol engine came into being, and Col. Bowden broke the long standing record made by Mr. Stanger in 1914 for this class of power driven model.

It was realised that duration in plenty would be achieved very readily in due course, and Mr. Westbury soon obliged with his famous engine, the first really commercial petrol engine intended for model planes—the 15 c.c. Atom Minor. Our club bought a set of castings and we made the engine, fitting it into a model of 8 ft. 6 ins. span designed by Mr. W. Marshall. Although this machine weighed a full 9 lbs. the Atom Minor took it well. The complete model is still in quite flyable condition today, being mostly built of hardwood.

Seaplanes came in for a fair share of attention in the 1930's. I built six of varying design, both two and three float jobs, one of which still holds the Nottingham record for an observed flight with a modest 58½ seconds, rising from the River Trent. I have no doubt this could easily be surpassed today with a modern streamlined lightweight !

I will round off this outline of modelling attempts with a few notes on what I consider to be my most elaborate rubber driven model — a flying scale "Hawker Fury", scale 1⅛ in.—1 ft., weight approx. 2 lbs. driven by three skeins geared together with 11/16 in. gear wheels. Top plane span is 50 ins. and the job is finished in full markings of No. 41 (F) Squadron. This model took two years to complete in odd spare time. Maximum duration was 28 secs. R.O.G. and it was necessary to wind by hand on account of the outsize prop used, and the power behind it. The special steel plate free-wheel was enclosed within the prop spinner (which unscrewed) and was turned in hardwood.

Well, there is my outline. I do not pretend to have done anything wonderful, and there must be a number of the real old-timers who could tell a similar and much better story, and I appeal to them to do so. If I have succeeded in interesting only 10% of my readers, I shall feel the effort has been worth while, Happy landings !

ENGINE ANALYSIS

NUMBER FIFTY-FIVE THOUSAND

THE PERCULATOR 31¾ by PETER MONGOMERY

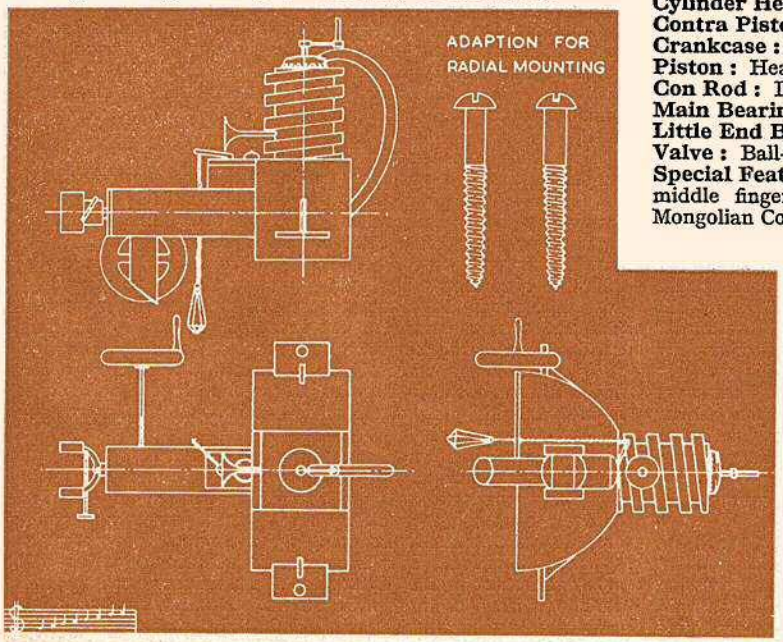
THIS amazing new engine is primarily a diesel but if the owner desires it may be converted for a few pounds, some ingenuity, much sweat and a great deal of bad language to glo-plug, spark ignition, electricity, steam, water power, jet or liquid fuel rocket. The layout is out of this world, and as a change from the usual clean designs this junkheap looks like a flying Xmas tree.

The engine is mainly intended for control line work but due to the special fuel valve assembly must be flown in square circles on rubber lines. For free flight it is not recommended due to the 3 min. starting rule.

Most unusual features are the square cylinder and piston and the oval crank-shaft, together with a new propeller retaining device in the form of a miniature vice which clamps the propeller from each side. Pistons and cylinders are individually matched using a crow-bar and sledge-hammer while contra-pistons are machined 1/8th undersize to ensure that they move easily. An updraft carburettor is fitted and this, combined with the gravity fuel feed, throws quantities of fuel all over the table, the floor and one's trousers.

The needle valve has an extremely fine adjustment thread but the engine will run with it fully closed or with the needle missing so the setting is not critical. In addition, owing to its proximity to the airscrews it cannot be adjusted when the engine is running, Normally no cut out is fitted as after 55·3 seconds running the engine seizes solid, but if desired a catch bolt can be fitted to slide through the exhaust port.

On test the motor supplied by the makers showed only fair results, the first attempt to bolt it on to a test bench resulting in two lugs breaking off the crank-case. This was overcome by binding the engine down with iron baling wire which also helped to secure the cylinder-head. Time to hand start from cold was three weeks, four days, fifteen hours, thirty-one minutes, seventeen seconds, and only one run was possible the engine being returned to the factory for rebuilding.

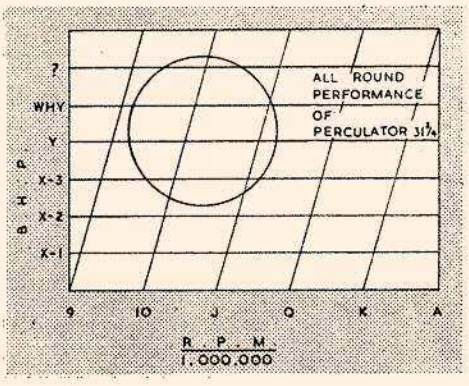


TEST

Fuel : 50% axle grease, 20% ether (any conceivable type of ether) 10% whisky, 10% caustic soda, 5% Trinitro–toluene.
Starting : Well nigh impossible.
Running : Does actually run although intermittently. Max. revs. 3051. Min. revs. 3050.
B.H.P.: Not verified, engine stopping as test gear was applied.
Checked Weight: 19 ozs. less tank, less airscrew less spinner, less contra-piston, less fuel needle, less purchase tax.
Power Weight Ratio : .0000467 B.H.P./Ton.
Remarks : xx ——————— . .....???????

GENERAL DATA

Name : Perculator 31¾.
Manufacturer : (Name and address withheld.)
Retail Price : What offers ? (+entertainment tax).
Delivery : Ex salvage F.O.B. Dartmoor.
Spares : Four complete sets supplied with each engine, free, gratis and for nothing. **Type :** Useless.
Specified Fuel : As in test or liquid oxygen.
Capacity : ·31¾ cu. ins. (5.214372777 c.c.).
Weight : 19 ozs. at 35,000 ft.
Compression Ratio : 100 : 7 (odds on).
Mounting : Beam, runs only at an inclination of 62½%.
Recommended Airscrew: 7 Blader, left hand 18 ins. by 1 in.
Tank : 5 gallon capacity supplied at £3 extra.
Bore : We are bored stiff. **Stroke :** The tester just had one.
Cylinder : Methanite Granite.
Cylinder Head : Converted bottle top.
Contra Piston : Quarter Grain Nylon.
Crankcase : Rough Filed Pig Iron.
Piston : Heat treated mercury.
Con Rod : Dunlop 6010 (2 strands).
Main Bearing : Shaft runs on two high spots.
Little End Bearing : Cracked (so are we).
Valve : Ball-cock type.
Special Features : Three spare fingers (two forefingers, one middle finger) supplied with each engine. Export only, Mongolian Countries.



A PRIMARY MODEL ESPECIALLY FOR THE BEGINNER

DESIGNED BY R. SCOTT & DESCRIBED BY THE REV. F. CALLON

THE WALTHEW GLIDER MK. III

The extreme simplicity of this design is apparent from the photographs, and its performance is equal to that of most advance contest machines. It was, for instance, lost 8 mins. o.o s. at this year's Merseyside Rally!

SO you've decided to try your hand at aeromodelling? Perhaps those snarling little engines took your fancy the other Sunday afternoon; and there were beautifully made models whipping round, over and round, on almost invisible twin lines; then those bigger free-flight planes that zoomed away spectacularly into the sky, then the engine cut, and Oh Boy! what a glide! Great fun it all looked, didn't it? And believe me, it IS great fun.

Or perhaps you have already built a model. If so, I hope you did not start as I did on a complicated 48-in. wingspan Wakefield rubber model that crumpled up on its first flight under power!

No; your best plan for the present is to keep off rubber or power-driven models, and start with the really fundamental type of plane—the glider. If you can build a glider that flies well, then you can build anything you put your mind to, for they are all gliders in the long run. When I saw a glider in action for the first time, I could scarcely believe that an engineless plane could fly as that model flew. It seemed simply uncanny; a steep, effortless climb, and a majestically slow glide that took the model quite literally over the hills and far away.

In this article I am going to show you, step by step, how you can build a small but highly efficient glider that will give you hours of enjoyment. If you have had no modelling experience whatever, you will find it rather a difficult job; first models always are. But if you follow the instructions carefully *and take your time* I guarantee that the model will fly, and fly well.

The Walthew Glider.

Mr. Scott, winner of the Bowden Trophy for 1948, designed this 28-in. wingspan glider for a newly formed club of youngsters at Upholland College in Lancashire. In designing it, he had in mind the shallow depth of the schoolboy pocket, and with the first few dozen plans turned off on a duplicator, the all up cost came to about 3/9d. He also arranged for the model to fly, and he did this so successfully that the first model flew out of sight (O.O.S, to the initiated) on a windy February day after 3 minutes. A later Walthew in warmer weather disappeared after 3 minutes 52 seconds. Both these were built by modellers of only a few months' experience. Going to have a shot? Then send off your postal order to the AEROMODELLER for the full-sized plan, and while you are waiting for the postman visit your local model and tool shops for whatever you have not already got of the following:

Equipment Needed.

A flat board, the bigger and flatter the better. For the Walthew a piece 30 ins. × 8 ins. and an inch thick will do. You will also need a pair of narrow-nosed pliers and a strong pair of wire-cutters, a stiff-backed razor blade or a balsa knife, and a *metal* ruler or straight edge. The rest of your requirements can be obtained at the model shop. These are:—one packet of straight pins and one of drawing pins; sandpaper, some rough and some smooth; a couple of sheets of grease-proof paper; a tube of balsa cement, another of tissue cement, and some tissue paste (ordinary office "Grip-Fix" is ideal for this latter, and it is supplied with a useful little brush too), one small bottle of banana oil, a *soft* thick brush and a tin of thinners to clean it after use. And finally the building materials themselves:—**Balsa Wood:** Six 3-feet lengths of hard 1/8-in. square, two 1/8-in. × 1/2-in., one hard 1/4-in. square, one hard sheet 3 ft. × 3 ins. 1/16th, one soft block 1-in. cube, one soft 1/4 sheet 12 ins. × 1 in. One piece 1/16th plywood, 4 ins. × 4 ins., a couple of feet of 18-gauge piano wire, two 6-in. lengths of bamboo, 3/32 in. thick, and two sheets of covering paper, coloured if you like. And that's the lot. Has the plan come yet?

Building the Fuselage.

Open out the fuselage part of the plan over your flat board, lay a sheet of grease-proof paper on top of it, smooth out wrinkles and pin down with four drawing pins. You will be able to see the plan quite clearly through the grease-proof which prevents the balsa cement from sticking to the plan itself.

Now take two lengths of 1/8-in. square balsa for the longerons, i.e. the long spars which run from end to end of the fuselage. Break these off roughly with half an inch overlapping at either end and lay them carefully along the lines marked on the plan. Start at the nose end by pushing a straight pin right through the longeron itself somewhere in the half inch of overlap. The balsa will be weakened at this point, but since it will be trimmed off later, this does not matter. Get the correct curve of the longeron proper by pushing straight pins vertically into the wooden board *on alternate sides of the longeron*. If the board is not too hard, you can use a thimble; otherwise you will have to tap the pins home. Don't put pins where the spacers—the fuselage cross-spars—meet the longerons.

When both longerons are pinned in position you can cut the spacers to length. Lay a piece of 1/8-in. square over the two longerons and over the spacer as marked on the plan below. Nick it lightly at the angle of the longeron's curve, and cut on a separate flat piece of hard wood. Now try the spacer in position. If it is ever so slightly too short, throw it away and start again. If it is too tight, trim or sand the end until you have a snug, accurate fit. Remember that balsa cement will stick almost any sort of a joint, but it sticks good joints best. When you are satisfied with your first spacer,

lay it over another piece of 1/8-in. square, and cut another, identical to it. Carry on until you have two spacers for each one marked on the plan. Lay these in pairs opposite the places marked for them.

Balsa wood contains myriads of tiny air cells, and into these the cement works its way, dries out into hard celluloid, and gives a strong, locked joint. To make sure that this happens it is best to " double cement " all joints. Put a dab of cement on each end of every spacer and all the relevant places along the longerons, and wipe the blobs off again with the finger tip. Give the smears a few seconds to dry, and then put another blob on either end of your first spacer and slide it into position. Do not move it about once it is there. Follow on with the rest of the spacers.

Now for the second side of the fuselage. Remove the four end pins (the ones that went through the overlap) and take two more lengths of 1/8-in. square for the third and fourth longerons. If your guiding pins are more or less vertical, you will be able to slide these two longerons down between them, and push them on to the lower longerons all ready curved. Now cement in your second set of ready cut spacers accurately over the first set. Give the whole about ten minutes to dry; remove the pins, and ease both sides in one piece off the greaseproof paper. Lightly sand the curves to uniformity and cut the two sides apart with a razor blade after trimming off the half-inch overlaps at each end. You now have the two vertical sides of the fuselage. No mention has been made about cementing together the tail ends of the longerons where they meet, and this should not be done, since they are later to be opened and a small 1/16th wedge cemented between them to leave sufficient space for the insertion of the tail-plane.

To complete the fuselage, cut two more sets of spacers over the plan and pre-cement their ends. Take one side of the fuselage and place it VERTICALLY over the plan. Obviously it cannot touch all the way along owing to the curve, so make sure that it touches between the fourth and fifth spacers from the nose. Use three or four drawing pins pushed on either side of the longeron between these spacers to prop up the side vertically in this position. Cement in the lower fourth and fifth spacers at right angles to the vertical side; they will be lying flat on the plan with one end free. When they have set, cement their free ends and slide up the other side of the fuselage vertically against them. Hold until fairly dry—30 seconds or so. Now cement in number four and number five of the UPPER spacers. Give these time to set; then draw together the fuselage sides at the tail; make sure that the ends *are* together, and slip a small rubber band round them.

Covering the wing needs extra care. You will need SIX rectangles of tissue: one for each of the three upper sections, and one for each of the lower sections. Start with the underside of the middle section. Since there is such a pronounced undercamber, you cannot work panel to panel. *Paste* the underside of the LE, and lay the edge of your tissue along it. The length of this piece of tissue must be cut carefully to reach from rib 5 to rib 12 with an overlap of not more than 1/8-in. at each end. Fold back the tissue and run *tissue cement* along the undersides of ribs 5 to 12, and quickly roll back the tissue and smooth it into contact with the ribs. When set, fold back the tissue from the TE, paste it, and smooth the tissue on to it. Trim off surplus right up against the TE. Cover the other two under sections in the same way.

Cover the top of the wing in three stages in the same way, leading edge first, then fold over right to the trailing edge. Use paste throughout except for those notorious ribs, 5 and 12, on which you must use cement owing to the extra pressure. Trim off with 1/4-in. margin along the LE and just less than 1/4-in. along the TE. Paste these and fold underneath.

Water Shrinking.

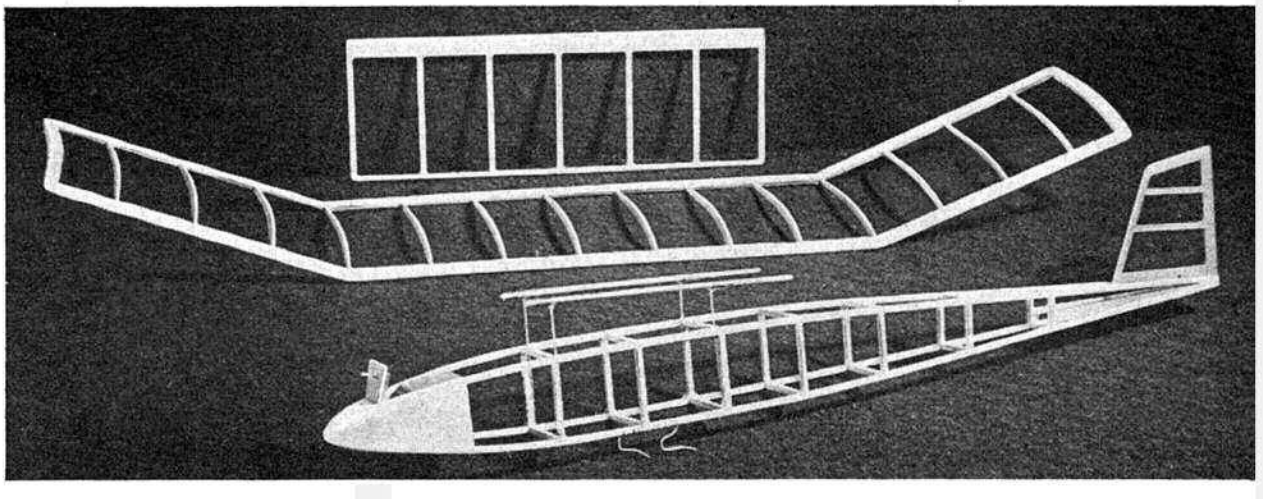
In order to tighten up the tissue is must now be shrunk. And here is where we must be very careful to avoid *warps*. Start on the fuselage, which is too strong to warp. A soft, thick camel-hair paint brush is ideal for applying the water. Just paint the tissue with water, very lightly, but making sure that it is damped all over. Put at one side to dry, and if it is the first time you have seen the effect, you will get a pleasant surprise. The fin, being so small, can be done in the same way and left to dry without pinning down. BUT, do not attempt to put any water *near* the tailplane, or it will end up in a reef-knot. This is vitally important; leave the tailplane as it is, wrinkled or not as the case may be.

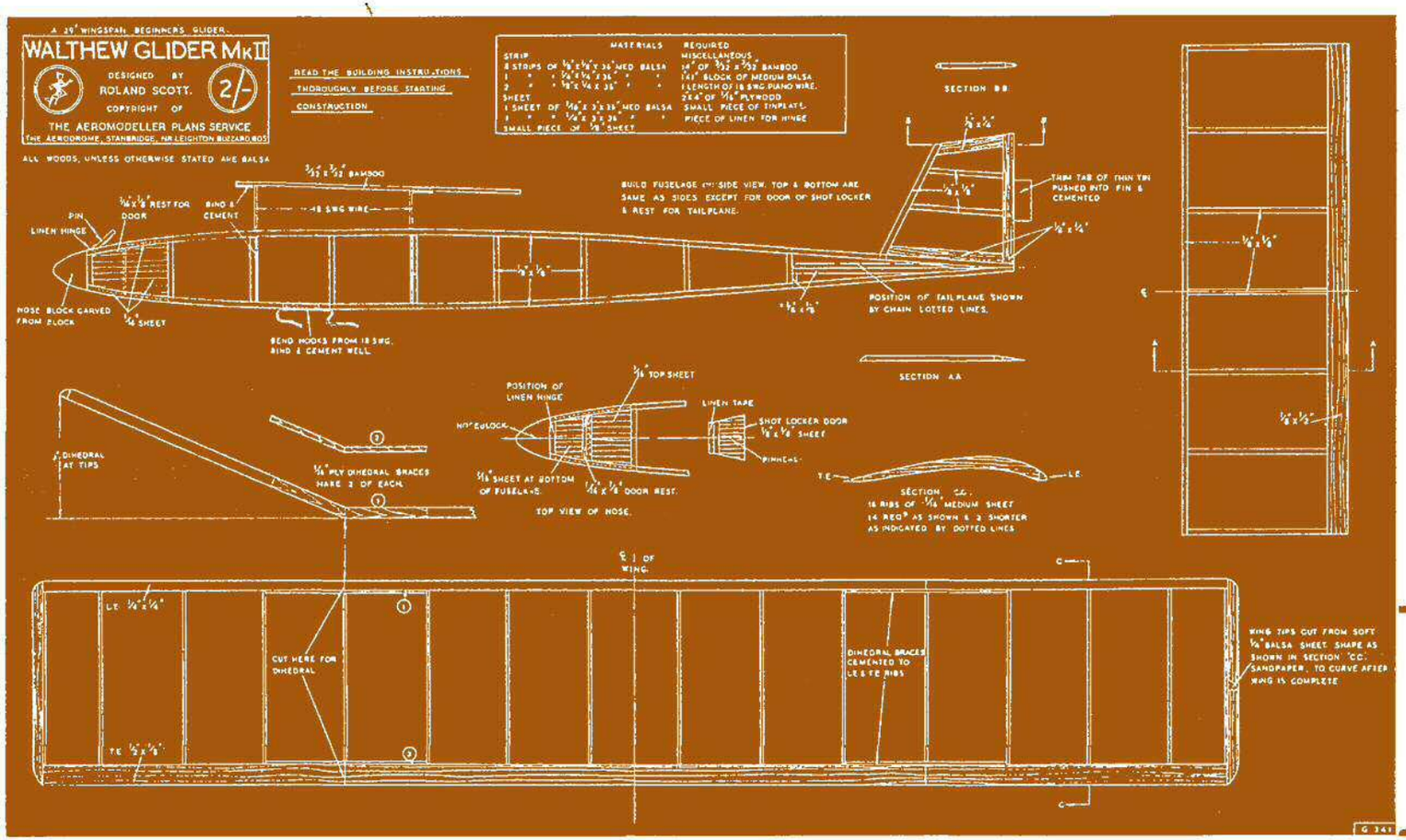
Damp the wing in three stages; middle section first, top and bottom, *and then pin down flat* with a row of drawing-pins along the LE and TE. Leave pinned down until *perfectly* dry. Only then may it be removed and one at a time the other two sections dealt with in the same way. You will find on finally removing the wing from the board, that the middle section has curved slightly upwards. This is because of the absence of any mainspar, but as long as both LE and TE follow the same curve, the flight will if anything be improved. N.B.—Now add fin to fuselage. Use plenty of cement.

Final Touches.

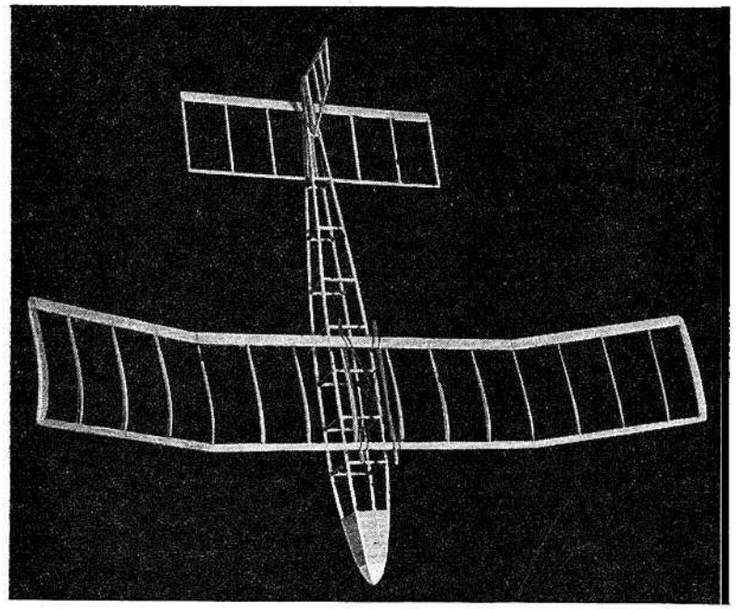
Take a soft brush and banana oil, and put one thin, smooth coat over everything, including the unstretched tailplane. Banana oil does not shrink as dope does, so there is no need to do any more pinning down while waiting for the covering to dry. Work as fast and as smoothly as you can, and try not to go back over areas once painted. In a warm room the job should be fairly dry in half an hour or so, and you can then give a second coat *to the fuselage only*. Allow to dry thoroughly.

Pass a thin rubber band over the fin and leave it round the middle of the fuselage. Push the tailplane through the space provided for it, and sliding along the rubber band up to its LE, stretch it over the tailplane, over the fin, and let it snap home, under the fuselage below the TE of the tailplane. Next, place the wing on its bamboo supports and hold it there by a rubber band across each support. Hold the nose of the plane towards you and check up for any warps in wing or





THIS IS A ¼-SCALE REPRODUCTION OF THE FULL SIZE PLANS, WHICH ARE AVAILABLE PRICE 2/- FROM THE AERODMODELLER PLANS SERVICE.



tailplane. If there are any, the remedy is to hold the warped member in front of the fire *twisting it in the opposite direction to the warp* for a few seconds until things appear to straighten themselves out. And there you are!

Trimming and Flying.

I've built a WALTHEW in between working at these notes to keep you company, so to speak. It has been ready for three days now, but has not yet been flown. I mention this fact to show you that it really is necessary to wait for a calm day for your tests. If the wind does not die down for another week, then I'll wait another week; that's all there is to it. I've learnt that by the hard road.

Don't take out your model until it is really calm. While you are waiting for the wind to drop, here's a few ideas on how a glider works. You take it up on a light line just like a kite, with the difference that when it has climbed as high as you want, you can release it; the flight starts from then. A hundred feet of ordinary white cotton will make an ideal tow-line for the WALTHEW. To one end of the line is attached a small metal ring, half an inch in diameter is big enough—you can make one out of thin wire. About six inches from this fasten a piece of silk or tissue paper the size of a small handkerchief. The ring is slipped over one of the tow-hooks under the plane. Held in this way, it is set off into the wind like a kite; if there is no wind, the fellow at the other end of the line may have to do some running, but light gliders usually go up very easily. When it is way up overhead it can be launched merely by slackening the line; the bunch of silk or tissue swings back under the plane and pulls the metal ring off the tow-hook, and away she goes. But don't be surprised if it takes you half an hour or so, even with a well made WALTHEW, to reach this stage

Hand gliding is the first thing to do when your calm day arrives. Drop about three-quarters of an ounce of lead shot into the weight box, squirt some cement after it to prevent it falling out, and close the lid. Choose a spot where there is some soft grass; hold the model above your head, and face what breeze there is. If it is blowing at more than four m.p.h., you may not have to move at all, but normally it is necessary to ease the model forward ever so slightly as you release it. If it just flops down, you will have to push it forward with more force. Two things may happen now: (a) A stall, i.e. nose up, plane stops, then dives. More weight needed in the box; or (b) A short swift glide to the ground. Too much weight in the box.

Add or remove weight until a slow, *almost* stalling glide is obtained. The position of the wing can also be used to regulate the flight; when pushed very slightly forward the effect is as though weight has been removed. When pushed slightly back, further from the nose, it is as though weight has been added, i.e., we are getting further from the stalling position and nearer to a dive.

When you have got a good glide, note which way the model tends to turn. If it does not already turn slightly to the *left*, bend over the trim-tab until this is achieved. The WALTHEW must always have a slight left turn, because the position of the tow-hooks on the port side of the fuselage means that the pull of the tow-line tends to make the model dive off to the *right*. The left trimming counteracts this tendency, and it is also a help to set off the model not directly into the wind, but with the wind coming in towards it a little from the right. The big advantage of having the tow-hooks on the side of the fuselage, is that when the model has got well up overhead the tension on the line slackens, and the left trimming takes over control, permitting a neat and easy launch on a slight left turn.

When a glider is going up on the line, it may tend to dive off either to the left or right. This can be checked by slackening the tension, i.e., by walking (or in extreme cases running) towards the model, line in hand. A few attempts will soon give you the feel of the thing.

So go to it . . . and HAPPY LANDINGS!

Postscript.

I mentioned that I had built a model of the WALTHEW while writing these notes, and I determined to tell you exactly how it flew. I have had to wait a week for the weather, but it was worth it. This morning was warm, with the merest suggestion of a breeze. Three of us set out for a large field complete with line and lead shot, and this is exactly what happened.

The WALTHEW had already been roughly weighted for hand gliding, but the stally nature of the first few hand glides decided me to add four more slugs. When tried on the back tow-hook, the model dived into the ground on a sharp right turn. This meant that the hook was too far back altogether—this has been modified on the plan now. On the front hook she went up very well, but when launched, staggered down in a series of desperate stalls. I concluded (*wrongly* as it turned out) that more weight was needed, and added three slugs. Once again she went up well on the front hook; the stalls had disappeared alright, but the flight was very disappointing, losing height steadily down to the ground—a mere 30 seconds. There had been a fair amount of left turn on the trim tab, so that the circles were rather tight, so this was now reduced and the model launched again, resulting in a straight sinking glide into the wind (such as it was) that ended in a nearby tree. This suggested a little more left turn on the tab, and less weight in the nose—two slugs were removed. The result was a poor 35 seconds.

It was obvious at this stage that if anything like a flight was to be obtained, there *must* be less weight used as the model was at present being dragged down to earth every time. But we were only one slug ahead of stalling weight, so I decided to try the wings about one-eighth-inch further back with five slugs less in the nose. On a gentle hand glide she almost stalled, but just managed to recover—the exact trimming I had been aiming to get. Being lighter in the nose she went up on the line like a rocket, and I launched her *almost* overhead. The result this time was a lazy, drifting sort of flight in fairly wide circles, ending gracefully in a hay field half a mile away after gliding for 5 minutes 35 seconds. Which really isn't too bad for a 28 inch wing span model.

GERMAN

FROM AUTHENTIC

Twin boom glider handlaunched at a model meeting held in the French Zone of Berlin in the early Summer. The juvenile nature of the "crowd" is not typical of this meeting as lower right-hand picture of the same meeting shows.

Introduction.

WHILST it is not so very long ago that we presented post war German aeromodelling activities to our readers under the title of "No Trojan Horse" we have accumulated so much further information on the subject, and so many readers have written for particulars of exenemy activity that we feel justified in providing a further selection of material. It will be remembered that our contemporary *Model Aircraft* published the views of the British Home Office, which deprecated any wide development of "penfriend" correspondence, and this view was subsequently confirmed in a similar communication to this journal. This statement of policy was received via the S.M.A.E., who had, rightly, enquired the official attitude so that their members could be instructed accordingly, particularly as at that time German enthusiasts were making every effort to get back "on the bandwagon" with a view to participation in the Wakefield and other international events.

Lipinski, Hanover, with wire mounted parasol wing glider featuring high-mounted tailplane.

Saeman, Hanover, with his pod and boom model — a regular postwar winner.

Tailless winner at "Pied Piper Town" of Hamelin. This is the Leipziger M-form. Time 6:46.

Parabola flying wing by Horst Stahn. Winner at Gottingen with 5:59.

Beushausen of Soltau with canard made from commercial plans sold by Huckebeins.

General Outlook for Modelling.

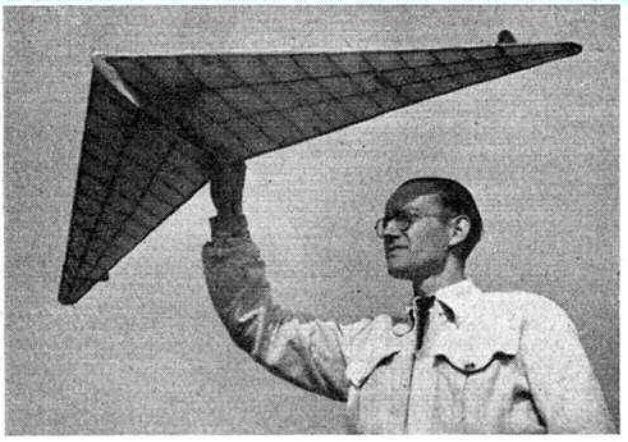
Limited reorganisation of clubs under Military Government licences in the Western Zones received a sharp check when it was discovered that a number of ex-Luftwaffe and ex-glider pilots had infiltrated into the movement, and were forming so-called aeromodelling clubs to develop and build full size gliders. A number of offenders were brought to book and sentenced to severe terms of imprisonment in consequence. In addition all further licencing of aeromodelling clubs ceased, and those already licenced had their permission withdrawn. This was a blow to the genuine aeromodellers and caused solely by the irresponsible action of a few—but, as is so often the case, all had to suffer because of those few. Private aeromodelling by individuals continues to be permitted, with some restrictions on power flying, but no club activities are now allowed. In certain cases permission has been given to hold aeromodelling meetings under special licence though here again the "bad element" have spoiled things by using such permission wrongly.

A number of aeromodelling magazines have also appeared, and offered exceptionally interesting reading along with attractive layouts. One even appeared with a mock "Rupert Moore" coloured cover, which should flatter our artist! Limited circulation and the restriction of club activity, combined with periodical difficulty over renewed publishing licences, has seen their extinction after only a very brief life. One only, the former *Modellflugpost* is still appearing under the title of *Sportflieger*, a general light aircraft magazine with an aeromodelling section. Prohibition of all private flying, however, makes this magazine little more than a ghost, filled with little but old material or reprints from other publications.

The solid core of true enthusiasts, who, like most aeromodellers, have only a very passing interest in full size activities, are naturally "browned-off" by all this, but, nonetheless are continuing to build and fly their models individually. Whether the recent change from Military Government to self government under High Commissioners

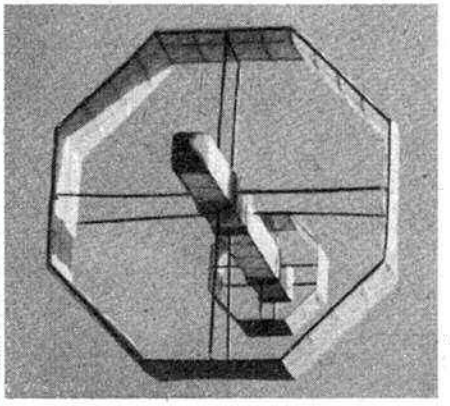
AEROMODELLING

SOURGES BY D. J. LAIDLAW-DICKSON



On the right: Seigfried Godau with his tailless model, featuring detachable wing panels.

On the right: Rohwedder from Osterode with another tailless, this pranged at the Gottingen contest.



On the left: Tailless model by Biesterfeld of Hameln. Notable for kite-like stability on the line.

On the right: Fantasy! Ring or "shroud" wing glider that proved a flop in spite of the theorists.

Below: Another shot from Berlin meeting. A "good" ex-glider pilot hand-launching the inevitable tailless.

will once more put their fate in their own hands, we do not know. Just as soon as they can be trusted to oust potential trouble-makers at the very start no doubt they will be allowed clubs again, and this must necessarily be their first step towards any wider acceptance of German entrants to international contests.

The following brief notes give some idea of the position in Germany, particularly in the British Zone, as it is today.

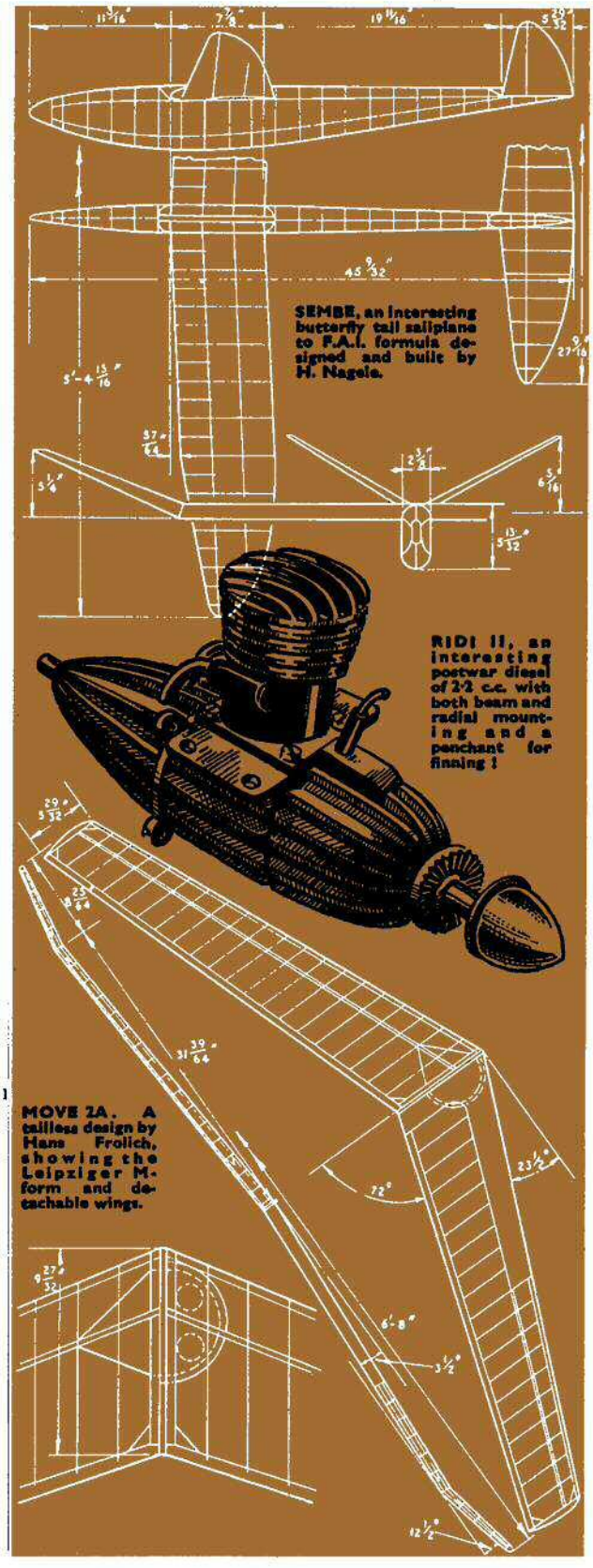
Engines and Power Models.

The position at present is roughly the same as in this country shortly after the end of hostilities, that is to say there are a few modellers with carefully hoarded pre-war—or in their case wartime—engines made by Kratzsch or Eisfeld, a few with "one-off" types made by themselves or more skilful friends, and an even fewer with engines that have leaked through from the Russian or American zones. So far as we can ascertain Eisfeld is still manufacturing in the American Zone, whilst Kratzsch is making both petrol and diesel engines for the benefit of comrade-aeromodellers in the Russian Zone. There are also two small companies manufacturing the Ridi II, a 2·2 c.c. job with finned crankcase and integral tank—and the Wilo 1·6 c.c. an engine rather like the E.D. Bee made in Bremen by H. D. Guldner. Production is limited, and beyond general descriptions we have no real performance reports.

To tantalise the non-Soviet Zone Germans, Kratzsch announce their programme of engines of ·3, ·6, 1·25, 2·5, 5, 7·5 and 10 c.c.—all to a standard and apparently identical pattern, with rear mounted transparent or spun alloy tanks, crankcase induction, detachable heads and variable compression. One enterprising dealer is offering 1·25 and 2·5 c.c. models in the British Zone, but there is a suspicion that these are old stock. Prices range from DM 40–65, making an approximate rate of DM 11 to the pound prices 72/6—£6.

Power model flying is slowly gaining ground in spite of a fairly general prohibition of this type of flying. Such restriction would seem to vary according to district even within the same zone, as while, on one hand, we have reports of a ban at other times we have details of recent flight performances of power models.

Nevertheless, enterprising power modellers are enjoying some flying in spite of bans, if only by proxy. One of our correspondents, who shall be nameless, is lucky enough to have acquired a brand new Elfin 2·49 c.c. and intent, at all costs on testing it, had it flown for him by a Brazilian, who did not of course come under any flying ban. Alas, good as his intentions may have been, this proxy flyer, in our correspondent's own words "smashed it up nicely in due course."



We have just received reports of first German control line efforts—the model in question being powered with a 3·5 c.c. Eisfeld diesel. Span and length are the same at 31½ inches, while chord is 6 inches. Flying weight amounts to about 2 lbs. and line length 65 feet. Speed is about 62 m.p.h. and general description is "sports-trainer." Construction is all hardwood and three ply, engine is mounted normally in the upright position, and flying direction is clockwise. Model is a highwing, with small cross-section boxtype fuselage, parallel chord wings and fixed undercarriage. In short, very much the same sort of model that introduced 90% of all controline addicts to the sport.

Of interest is the range of aerofoil sections being used for these models. They include Clark Y combined with M6 lower camber, the symmetrical NACA 0012 and 23009 and Gottingen 409. In detail fittings they have modified the triangular control plate, so that the pivot lies where normally one finds the lead to elevator, and this lead located where pivot is usually placed. This would seem to invite fouling with the leads to lines as clearance is limited, but it does reduce fierceness of control. With their usual fondness for gadgetry they have evolved a very neat combined line reel and handle, though somewhat cumbersome, we should think, for any thing but circuits and bumps.

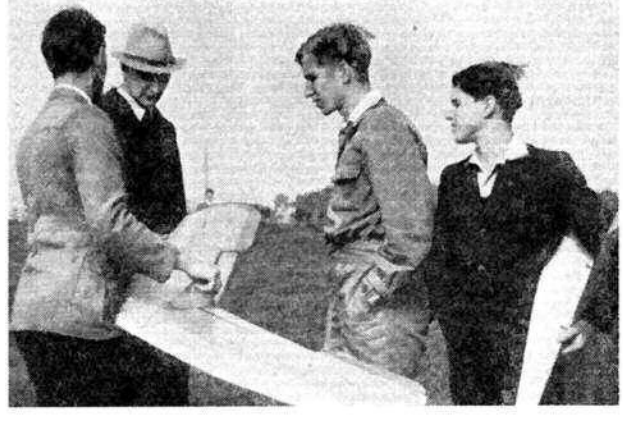
Sailplane and Gliders.

This is the one branch of modelling that has been reborn in anything like full strength. Absence of appropriate model materials—which means balsa to most British aeromods—has little deterred the German enthusiast. Happily the old time cements of pre-war days "Uhu" and "Peligom" are back on the advertising pages, while limited supplies of hardwood strip and sheet, some plywood and block is available. Only suitable covering papers are lacking which has led to a great deal of improvisation and trying out of odd materials. Nevertheless those keen enough to get their models to the covering stage seem to have managed the last part somehow, even if it meant cutting up little sister's party-dress. The materials are still therefore much the same as those used on the justly famous pre-war models.

Two significant changes may be noticed in the general style of modern gliders. First crowded public transport and the difficulty of getting really out into the country has reduced the average size of models, which are no longer near the F.A.I. limits. Higher prices of materials, longer working hours and less leisure may also have had an effect. Then the admission of a definite foreign influence is evident—particularly that of the Swedish stick type of design—"Sunnanvind" and such "banana-pod and boom" layouts. Also noted is the growing fondness for the butterfly tail. As usual the German love of complicated multihedral wings continues with as many angles as a surrealist picture.

Difficulties in obtaining engines and urge to find some outlet for their fantasies may be responsible for the great popularity of unorthodox designs. Germany has always been in

One of the famous Horten brothers—wartime flying wing and glider designers—casts an eye over Mothar Matte's slotted flying wing at the Gottingen meeting.



the forefront with tailless models, but now the tendency is even more marked—tailless models being comparatively normal amid flying planks, parabolas, Leipziger-M form wings and every possible and impossible curvature.

In addition to this there is an interest in purely freak models such as the ring-wing, while any American departures such as the Channel-wing have evoked an interested response.

Rubber Models.

As ever lack of rubber has prevented any real development in this branch of aeromodelling. Orthodox designs follow the simplest possible lines to provide lightweight models flying on the minimum of power. Again, however, it has been high jinks for the freak flyers, flapping tail models, true ornithopters, multiwing "superstable" designs, helicopters & autogyros.

The true enthusiasts, however, have retained a keen interest in contests held abroad and would dearly have loved to send at any rate an observer to the Wakefield at Cranfield.

Research and Theory.

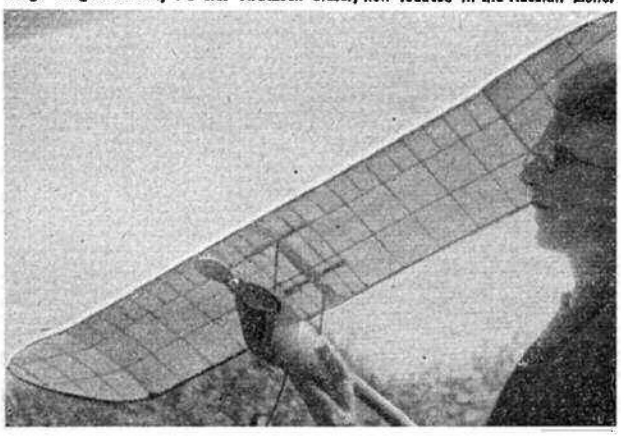
British and American magazines are in great demand throughout the zones, while the moribund or now defunct "native" aeromodelling journals were full of request from enthusiasts for back numbers of the old German "Modellflug"—a weekly that flourished for many years, until it was banned as the organ of the N.S.F.K. after the Occupation. Lack of time, cash and materials has also encouraged many theorists from amongst would-be practical builders. Interest is great in such British developments as the L.S.A.R.A., while German Gottingen aerofoil sections, particularly those developed by the Modellversuchsanstalt and indicated as MVA sections are being studied with Teutonic thoroughness.

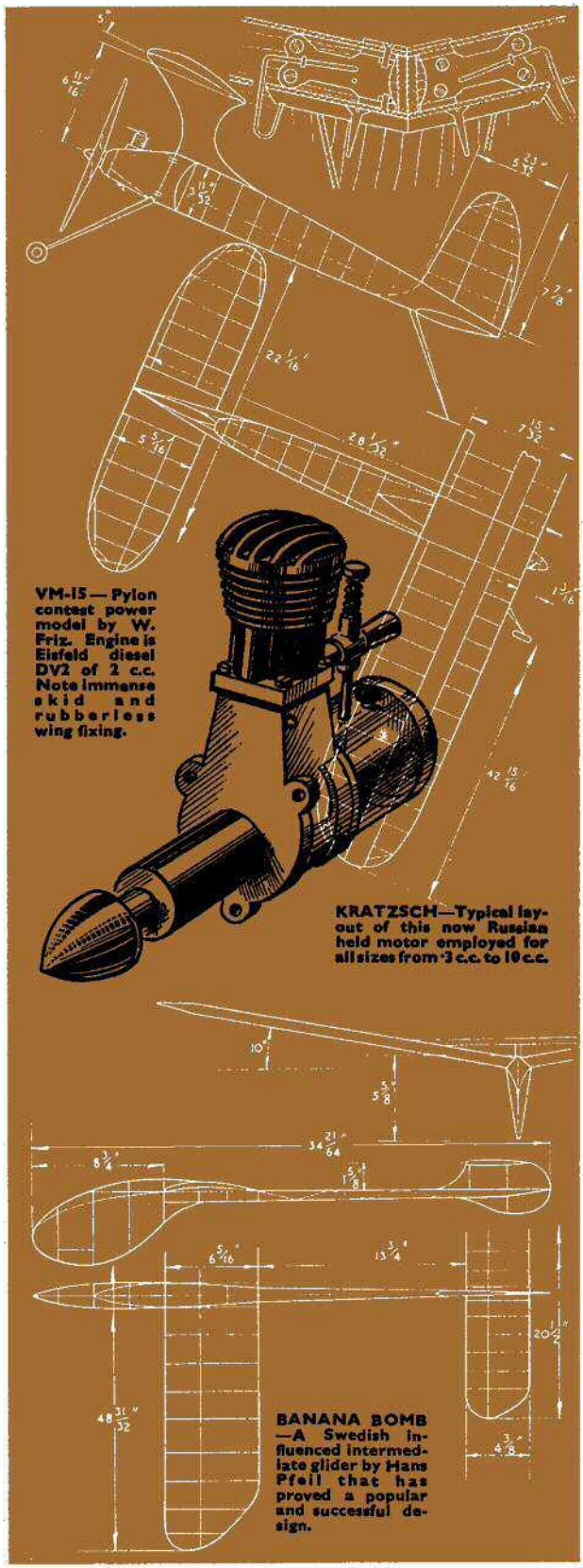
Substitute materials again figure largely in the armchair aeromodellers dreamplanes. Most practical is the increasing use of gummed brown paper strip for reinforcing such weak links in models as glider booms and the like. Many wing fixings also avoid the use of unobtainable rubber bands, but continue to be reasonably knock-off, a step in the right direction even if prompted by necessity!

Future Prospects.

Until such time as a reasonably national governing body can be founded there is no hope of German entries being accepted in international contests—though there is now nothing to prevent Germans leaving the country provided they are politically "clean." An effort was made to form a co-ordinating organisation under the awesome title of "Arbeitsgemeinshaft deutscher Modellflieger"—or Union of German Modelflyers, but the ban on clubs equally prevented any progress with this body. The FAI has already hinted in response to German enquiry that no record claims, contest entries or participation in any model events would be possible until they were able to make formal application through some such body. A parallel case is the desire of German motor racing aces to participate in European events. The motorists are likely to secure re-admittance, so perhaps there is some ultimate hope for the aeromodellers!

Rara avis in Germany—Diesel powered model of 3 ft. span, with wire parasol wing. Engine is early 1·3 c.c. Kratzsch diesel, now located in the Russian Zone.





VM-15—Pylon contest power model by W. Friz. Engine is Eisfeld diesel DV2 of 2 c.c. Note immense skid and rubberless wing fixing.

KRATZSCH—Typical layout of this now Russian held motor employed for all sizes from ·3 c.c. to 10 c.c.

BANANA BOMB—A Swedish influenced intermediate glider by Hans Pfeil that has proved a popular and successful design.

WEARING his new—and larger—hat, Fliar Phil would proudly point out that he has now made his footlight bow in the hands of artist Malmstrom—whose puppet version appears in this month's heading, accompanied by girl friend Polly Plane. This pair have been playing to packed houses under the title of The Vagabond Puppets in the Cambridgeshire district, where young and old have enjoyed the earthbound all-balsa Fliar Phil and his aerial popsy.

Thoughts of mistletoe will stir in many hearts at sight of our Model of the Month. The model (aeroplane!) is the S.E.5A built by Cliff Sayers of the Southgate & D.M.F.C.,. from an 8/9 kit designed by Bill Blake to 1/12th scale. Powered with an Elfin 2·4 c.c. as control-liner with all up weight of 18 oz. The model (flesh and blood) is Maureen O'Neill of Southgate, and *her* contest successes include R.A.F.A. (Southgate) Beauty Queen in 1948 and 1949, winner of Odol Smile Competition, 1949, Margate Regatta Queen, 1949, All-England Perfect Holiday Girl, 3rd. Specification: Weight, 7½ st.; Height, 5 ft. 4 ins.; Bust, 34 ins.; Waist, 23 ins.; Hips, 34 ins.; Brunette; Brown eyes. Max Coote—lucky dog—sent the photo and has plans!!

Albert Hatfull of Edmonton sends picture No. 2 of his Jetex 100 powered 24-in. span model. All up weight is 1¾ ozs. Note in particular the laudable efforts to give some sort of semi-scale appearance with cockpit, and open jet orifice to the pod. Other interesting features are endplates to wings and tailplane, which embodies butterfly layout—a style that is fast growing in popularity.

Fliar Phil has always been of the opinion that nothing looks quite so good as a really well-made model in the uncovered state, and picture No. 3 should do something to convince those who may think otherwise. This shows Lancastrian G. E. Coward of Southport with his 54-in. span Sportwagon. On completion model will be covered with nylon and powered by an E.D. Comp. Special. Happy landings, George.

Quality flying shots are rare—usually blurry studies of very small gnats in very large skies—but full marks must be given to No. 4, a study of popular A.P.S. model "Eros," built by L. Selby of King's Lynn, on its maiden flight. Power unit is an Eta 5 with extended copper exhausts. Photographer is S. A. Hirst, also of King's Lynn;

the camera used was a Robot with long focus lens at f. 3·8, exposure 1/250th with filter, and film Pan F. Less skilful camera-wielders would be helped by more data like this.

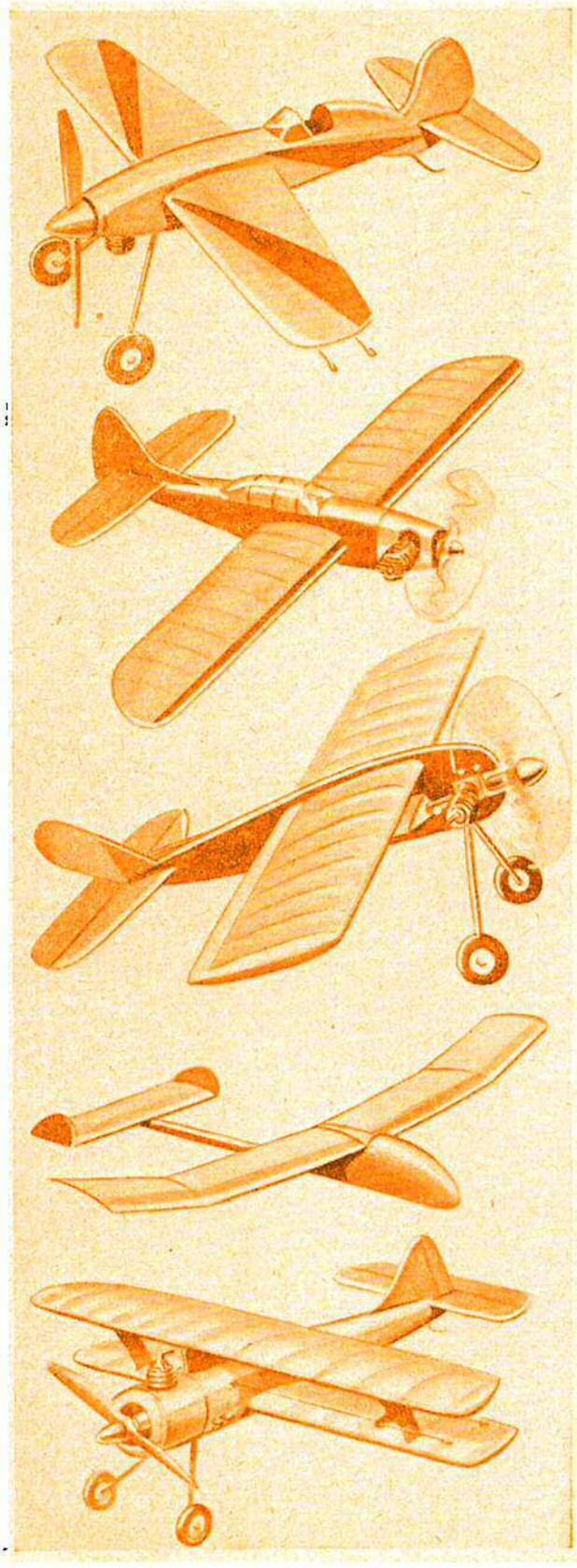
Fourteen-year-old J. R. Cadwallader of Wellington, New Zealand, sends No. 5. This was taken by R. Freeman of the Wellington Club, and shows fellow-clubman's "Lu Lu" seaplane just about to unstick. Span is 60 ins., and power unit native-manufactured Pepperell diesel of 2 c.c. The model was started and launched from a boat about one hundred yards out from the Petone foreshore. Lucky New Zealanders to have scenery like this—just now they will be enjoying their Christmas bathing season!

R. F. L. Gosling, complete with "Senior Gull" forms the subject of picture No. 6, submitted by well-known Northern clubman D. R. Hughes of Birkenhead. Occasion was the annual Merseyside M.A.C. outing to the Clwyd Hills for slope soaring. According to standard practice a few National records were nonchalantly cracked during the meeting. Just how R.F.L.G. fared history has not so far related, but Jim Amos flying a "Senior Gull" from the same nest lost his model in registering a win with 269 seconds.

Fliar Phil is reminded of the film producer's trick of magnifying the chorus in "mighty spectacles" with mirrors—so that you see hundreds of dancing girls where only dozens are paid for—by picture No. 7 by V. E. Smeed of Herne Bay, who informs us that this is a model of a model. The original is 96-in. span R.C. job he has designed for brother Bill to build, while the model pictured is a mere 8 ins. in span, and was produced as a wedding-cake decoration for said brother's nuptials. Complete miniature radio gear is installed (non-working!), ditto scale Ohlsson 60, while main material was 3/64th, and 1/32nd square and 1/64th sheet, duplicating the original building methods exactly.

From the miniculous to the majestic for final picture No. 8, a tenth-scale Percival Prince built by E. J. Pithers of Kensington. Believe it or not, this is a twin-engined control-liner powered with two Ohlsson glowplug 29s. Span is 5 ft. 7 ins., length 4 ft. 2¾ ins., and weight 60½ ozs. A cut-out is fitted to outer engine to prevent swinging into circle and is operated by a third line. Colouring is in light and dark blue. Positive achievement is indicated by an exhibition Silver Award.

Fliar Phil thus brings his Model News to a reluctant end for 1949, with the traditional Christmas Greetings to his long-suffering public, not to mention the better types in private and saloon bars, so lightning take-offs, happy landings, and may your dethermalisers never let up on you!



TRADE

THIS Review is of kits only, accessories will follow. We wish to point out that each kit is studied carefully before building and flying and criticism is given without fear or favour and all comments apply to the particular kits received.

Remarks on performance have not been made; those we have flown performed as their designers intended.

First is a beginner's model, NIPPY, manufactured by *Roadway Models, New Malden, Surrey.*

The price of the kit is 13/6 and the manufacturers describe it as a Sport model, suitable for the beginner. The power is supplied by Frog, Mills, Elfin or any engine of 1 to 2 c.c. capacity. The kit contains all parts pre-cut, except the printed wing ribs and plywood. Selected Solarbo balsa is used throughout, Burmese tissue, cement, wire, all nuts, bolts washers, plastic spinner with shaft attachment, solid rubber wheels and a fuel extension for Frog motors are supplied.

This is a very complete kit at an attractive price, and there are building instructions as well as the plan. One very good point shown is the installation of three different motors. The ply elevator horn was missing, and the pre-cutting of certain parts could have been more accurate. Apart from this, and the packing error, this is a good kit and makes up into a husky model, eminently suitable for the beginner. Rating ****

Next comes the VANDIVER, product of *International Model Aircraft Ltd.*, London, S.W.19. The price is 13/6, and the model is a mid-wing stunt C.L. Monoplane. The wingspan of the model is 26 ins. and it is designed for the Frog 100 and 180 and the Frog 160 G.P. engine. All parts are pre-formed or partly so, requiring only to be eased out of the balsa sheet. All wire parts are pre-formed and all other hardware is included. The kit is, in fact, absolutely complete.

This is one of the only British C.L. kits, which is, almost, entirely prefabricated. Closer inspection when packing would have obviated a badly cut fuselage side. However, there is a packing slip in the kit, and the manufacturers are prepared to rectify mistakes of this type. The plan and building instructions are excellent, the construction is straight-forward and, at the low price, the kit is good value. Rating *****

KANDOO, the model which won the first Gold Trophy, is next. Produced by *Kandoo Products Ltd., Coventry.* The kit costs £1. 5s. 0d., and the model is a high wing, stunt plane. Wing-span 30 ins., designed for the E.D. Comp. Special. The plywood fuselage profile and the wing ribs are pre-cut, as are the tailplane, elevator and fin. A dural bellcrank, all other hardware, rag tissue, cement, a pair of rubber wheels, and a Kandoo airscrew. In our kit, the plan was very poorly reproduced, and the wing ribs, nicely pre-cut, were of such soft balsa that the taughtening of the tissue crushed them.

The model is simple and speedy to build, and, apart from the stunt tank, the kit is complete. In our opinion, the price is rather high for the materials supplied, but one *is* buying the first Gold Trophy winner. Rating ****

GILI CHOPPER, F.A.I. Sailplane, the kit of which is manufactured by *Mercury Model Aircraft Supplies Ltd.*, makes a change from the C.L. kits. The price is 12/6 and the span 48 ins. The box contains eight printed sheets of first grade balsa, printed plywood, pre-cut blocks and assorted balsa strip and sheet. Also, necessary hardwood, piano wire, rag tissue, cement, plan and building instructions.

The sheet printing is clear and accurate, the plan straight-forward, and the step-by-step Building Instructions make for simple construction. The price is attractive and the kit is well worth the money. Rating *****

Excelal Models of Exeter produced the BIPACER, a 22 in. Stunt Biplane, at 17/6, for the Elfin 1·8. Ribs and formers are printed, tailplane, elevator and fin pre-cut. Bellcrank, hardware, etc., are supplied, also tissue and cement.

We do not consider this to be a very complete kit; there are neither wheels nor Stunt tank kit included, and the tank drawing is not detailed enough for the average modeller's purpose. Some of the printed formers were inaccurate. The quality of the wood is high and the method of assembly good, and save for the faults stated above, this is a nice kit, in which materials are not skimped. Rating ***

REVIEW

The Model Shop, Newcastle-on-Tyne, have with their COBRA, one of the most complete kits we have yet seen. Cobra is a C.L. Sport Biplane priced at £1. 10s. 2d., which at first glance, would seem to be somewhat high. However, this is a unique kit, in many respects. Sheet balsa is pre-cut and printed, plywood is pre-cut, and undercarriage pre-formed. There are rubber wheels, finished dural engine mount, dural bellcrank, plastic engine cowling, fuel tubing, M.S. wheel clips, nuts, bolts, washers, etc., sandpaper, tissue, cement, transfers, and finished plywood control handle. The plan is well printed, and includes exploded drawings and building instructions. The sheet balsa is printed accurately and, our only criticism is that there is some variation in the quality of the balsa. Span is of 18 ins. and it was designed for the Mill 1·3. From the wide range of kits we have inspected, we would certainly say this one gives first rate value for the money. Rating *****

For those who build duration models, CLUBMAN, design by *Excelsior Models*, Cheshunt, Herts, will be of interest.

A high-wing cabin job of 44ins., the Clubman costs £1. 1s. 0d. and is a very complete kit. Good quality balsa strip and printed sheet have been carefully selected for each purpose. Plywood, wheels, tissue, rubber, 12 in. hardwood prop., brass bush, wire, cup washer, cement, dope, rubber lubricant, sandpaper, in fact everything necessary to build and complete the model. If the plan and building instructions are followed exactly, this is a simple model to build and all parts fit perfectly. A very good kit. Rating *****

Veron's (Model Aircraft (Bournemouth) Ltd.) second Flying Scale Stunt Control-line model, the SPITFIRE 22, has a span of 22 ins., was designed for 1 to 3 c.c. diesels and 1·5 to 5 c.c. G.P. engines and the price of the kit is £1. 7s. 6d.

All parts are printed on sheet balsa, and the plywood is pre-cut. The stunt-tank as supplied requires soldering only. The dural spinner is of the correct scale type, as are the rubber wheels. Included are bubble canopy, bellcrank, all necessary hardware, tissue, cement and transfers for roundels, etc. This kit is absolutely complete, requiring only dopes as an extra to finish the model. The quality of the balsa is excellent, the sheet printing accurate, and the plan fully detailed, with step-by-step instructions. There is plenty of work in the construction, but it is worth it. Rating *****

Mercury Model Supplies Ltd., London, N.7, sent us their Monitor and Marlin kits and we review the former first.

Designed for the Amco 3·5, Yulon 30 and all radially-mounted 5 c.c. diesels and G.P. engines, the MONITOR is a short-coupled high-speed Stunt model of 39 ins. span.

The balsa is Solarbo of excellent quality, on which the ribs and formers are printed. The ply former is pre-cut and the nose and centre-section blocks are part-shaped and hollowed.

Included are the bubble canopy, supersonic type spinner, tank kit, paxolin control plate, Mercury elevator horn, all wire parts, nuts and bolts, Modelspan tissue, and cement.

This kit is well up to the standard we now expect from this firm, our only criticism being connected with the stunt tank, the parts for which were so inaccurate that, in some places, there was $\frac{3}{32}$ in. gap between the body and the end plates.

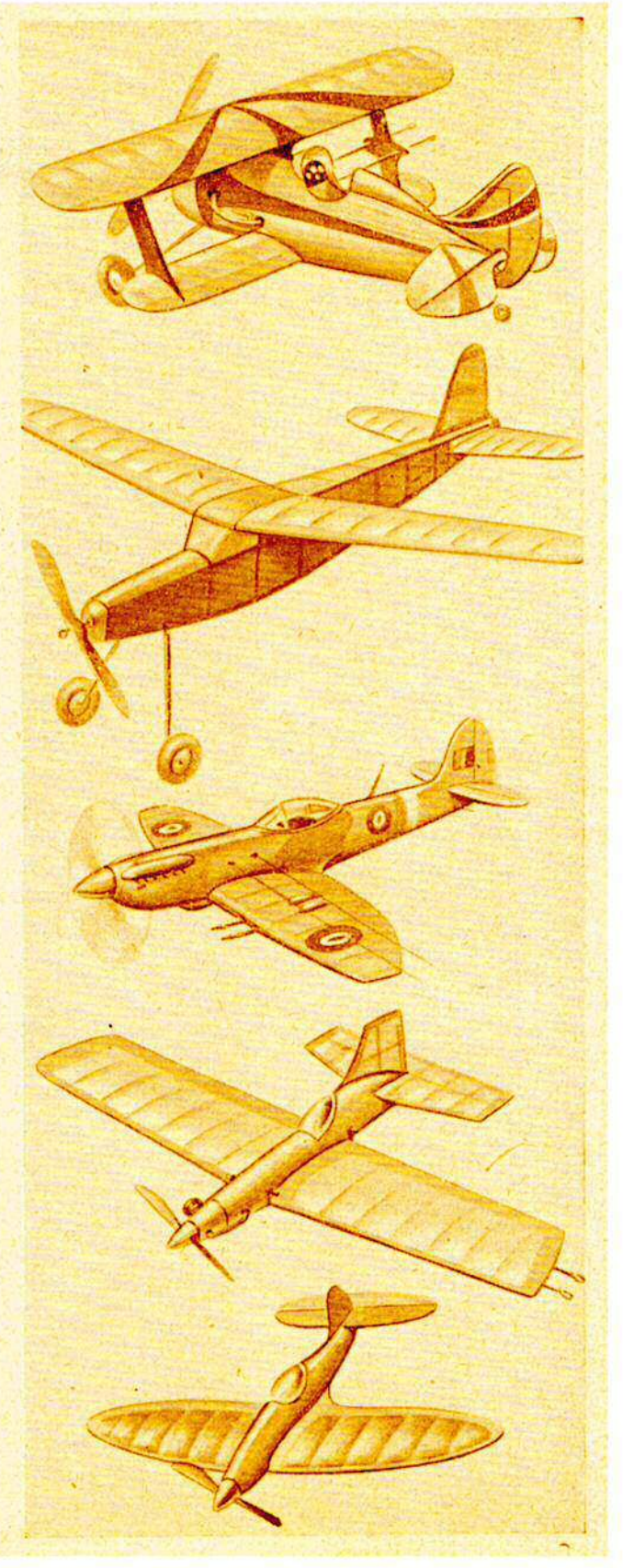
The plan is quite detailed enough for building, nicely printed, and the building instructions are complete and clear. These should be followed carefully, as they make the construction of, even the more difficult parts, straightforward. A unique feature is the knock-offable wing. The strength of the planked fuselage is particularly noteworthy.

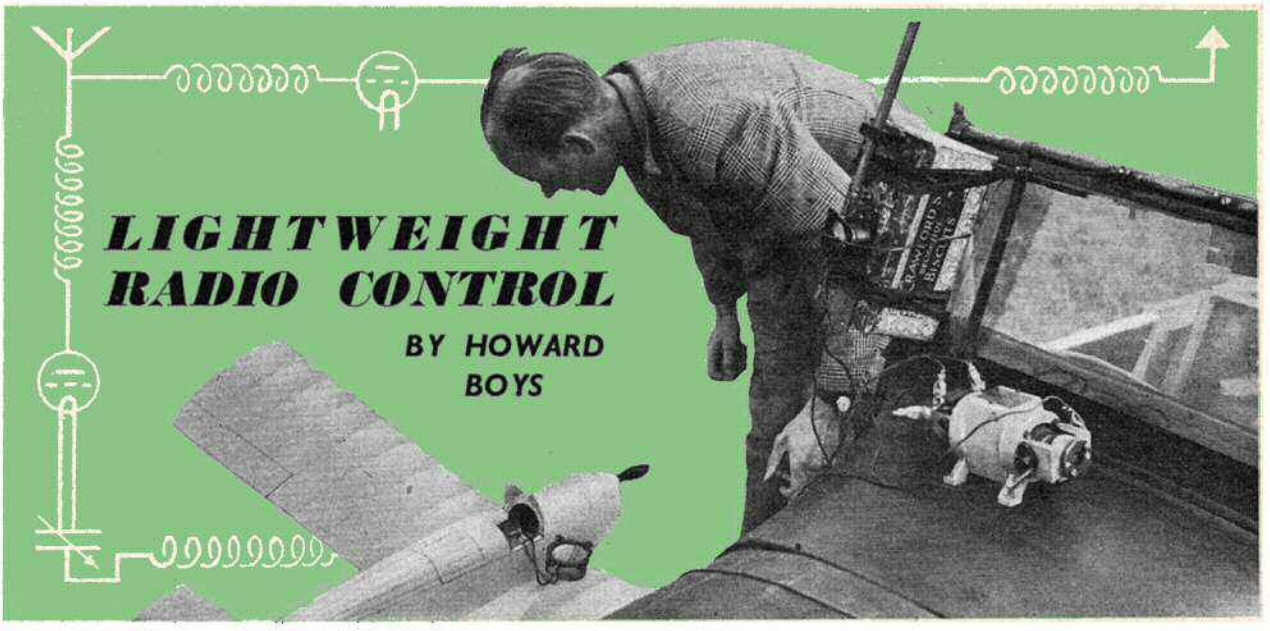
Price £1. 7s. 6d. and, it is well worth the money. Rating *****

The MARLIN, at 19/6, is a fully aerobatic lightweight Stunt C.L. Model with wing span of 32 ins., designed for the Elfin 1·8. The kit is similar to that of the Monitor, tank parts were better than in the former kit, and as it is of the same type, there is evidently some variation in pre-fabrication.

Discrepancies between plan and printed balsa, were due, mainly, to draughting errors. Apart from these, kit is very good. Rating ****

Further kits and accessories will be reviewed in January.





LIGHTWEIGHT RADIO CONTROL

BY HOWARD BOYS

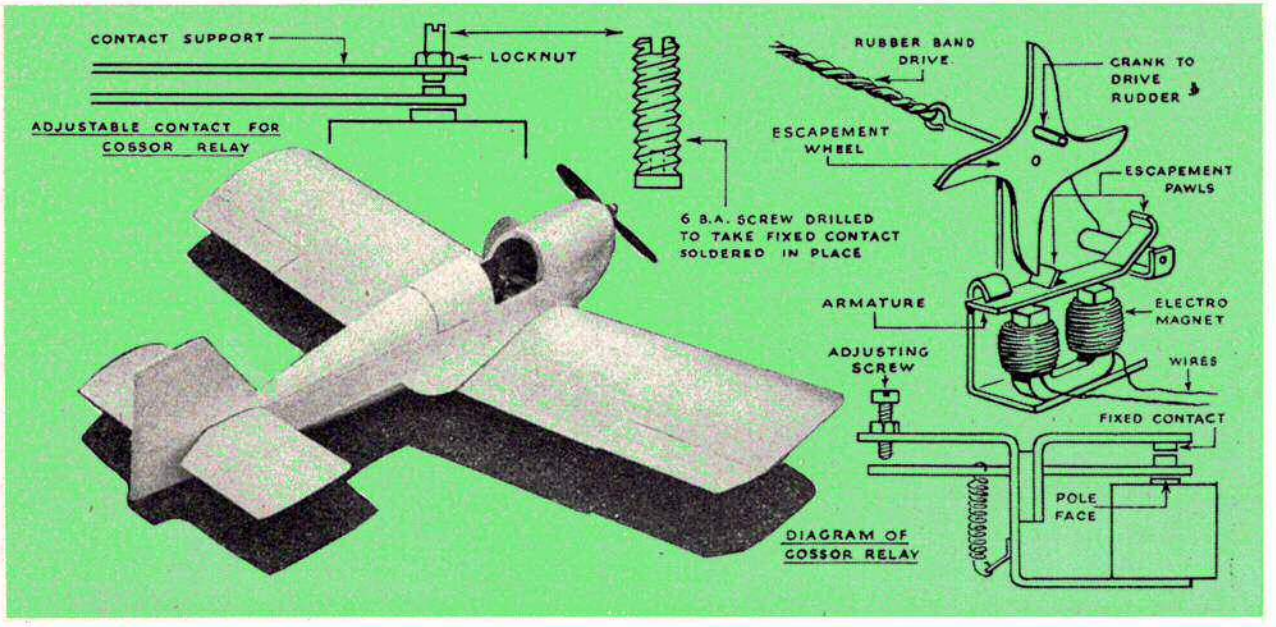
WEIGHT is probably the biggest factor against radio control of model aircraft, because the extra weight increases the expense. The smaller the model, the cheaper, and to get an idea of models capabilities, two were tried. A cabin type of 250 square inches area, built for the Amco ·87, was fitted with an Allouchery 1·25 c.c. engine and carried 4½ ounces. A flying wing of 580 square inches area with a 1·2 c.c. Foursome carried 7½ ounces in level flight from a hand launch, and might have done better with a little attention to fuel and airscrew. If only the American R.K. 61 valve were obtainable the flying wing could be adapted. Details published of the Cossor equipment gave a total weight of nearly 15 ounces, but this included an actuator that was rather heavier than is necessary for simple rudder control. It also seemed probable to the writer that other economies in weight could be made if the full allowable power was used for the transmitter. A Cossor radio control receiver was obtained by means of a " swop ", also various government surplus valves, batteries, etc., most measuring instruments being already available. A small low power transmitter was made up which gave a range of about 100 yards with the standard Cossor receiver. The receiver H.T. was reduced to 45 volts, and although the sensitivity was reduced, it still seemed sufficient for the purpose in mind. It was thought that a smaller model would not need so much range. For instance, if the half mile claimed for the Cossor was enough for a 9 foot span model, a third of a mile should do for a 6 foot span model.

With the reduced H.T. volts on the receiver the current was also reduced, which meant altering the receiver relay. To get the extra sensitivity here it was necessary to file the pole face flat, and this needs a great deal of care. A watchmaker's eye glass was used to examine the gap. As a further aid, the fixed contact was made adjustable, by soldering it to a 6 B.A. screw and tapering the support to suit. It now proved possible to adjust the relay to open and close with a difference of only one tenth of a milliamp, though for use it is adjusted for two tenths difference. This adjustable contact can also be used to obtain a slight increase in the overall sensitivity of the receiving set, but it should be emphasized that it requires engineering skill to carry out the modification, and is very different from such things as making engine mounts. The saving in weight due to this alteration is one and one third ounces, which is the weight of the smallest 22½ volt battery. It also reduces the H.T. cost by about a half, due to the reduced current consumption.

The next thing to consider is the actuator for the control surface. A rubber band is the lightest form of storing energy, and the power from it can be controlled by a simple escapement similar to that used by the American Aero-Trol or Good Brothers, of the E.D. One was made up using an American design as a guide, and the weight turned out to be one third of an ounce. It was found to work from a 1½ volt " Penlite " cell. In actual practice a 3 volt "Penlite" battery has been used for safety since much larger control surfaces have been used on the model than the usual rudder.

Adding up the weights now is quite interesting. Receiver four and a quarter ounces, H.T. two and two thirds, L.T. one half, escapement one third, and escapement battery one ounce, a total of eight and three quarter ounces, and for plain rudder control this could be reduced to 8¼ ozs.

At this point let us pause for a moment to consider radio control language. Take the term relay first. This is a piece of apparatus where a change in current in one part will open and close contacts to control a much larger current. In a radio control receiver it has the H.T. current flowing through, and changes in this open and close the contacts to switch on and off the current to the escapement, actuator, or other apparatus. The escapement is a mechanism which allows a shaft to rotate in steps, which may be a part or a whole revolution. In a clock the escapement allows a wheel to move one tooth at a time for each swing of the pendulum or hair spring. In the model the escapement has four positions in the simpler types, giving a sequence of say right, neutral, left, neutral, and so on. In the Cossor actuator, the escapement gives eight steps which could be used for say right, neutral, left neutral, up neutral, down, neutral, and so on. The actuator is the part that drives the control surface, or other equipment such as engine throttle, and may be of a variety of forms. The simplest is a rubber band driving a crankshaft which is stepped by the escapement to any of four positions as previously stated. The Cossor actuator is a spring driven cam arrangement working push pull rods, and has the escapement part built in. The actuator could be an arrangement of electric motor and gears to drive a control. It could also be a solenoid, magnet, compressed air motor or ram, and there are other types. Solenoid is a term which is very often wrongly used. A solenoid is a type of electro magnet which is a coil of wire with either no iron core, or more usually an iron core which is made to slide in and out of the coil. If the coil has a fixed core and a moving armature it should be referred to as a magnet. The term " actuator battery " has been used for the battery used with the Cossor actuator, but this is not strictly correct, as this actuator is spring powered. An actuator battery would be one which was used to drive an electric motor type of actuator, or other type in which the power from the battery worked the control. The work relay has



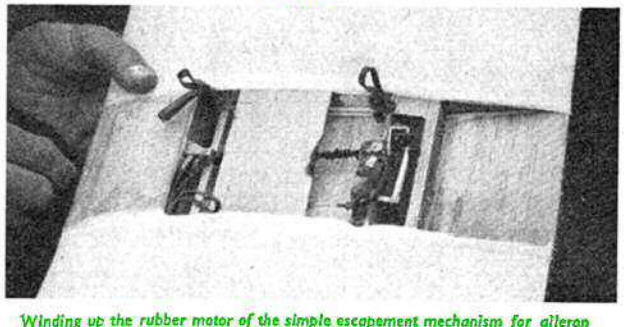
been used for the escapement, but it is very misleading, since the escapement is an electrical control for a different form of power. The wrong use of terms makes the expert think a fellow does not know what he is talking about, whereas the fellow may know perfectly well in his own way. " Call a spade a spade,—not a shovel ".

Well so far for the radio gear installed in the model. The transmitter, after many experiments is at present a single valve type using a 6V 6G valve in a tuned plate tuned grid circuit after the style of the one in Peter Hunt's book on Radio Control, though it is hoped later to make it crystal controlled. The range so far tested is all of 400 yards on the ground which means much more in the air, and if the model cannot be kept within that distance the writer will consider the model at fault rather than the radio. So far no attempt has yet been made to get full efficiency from the transmitter.

With regard to the model and its flying there are still a few " teething " troubles, almost entirely in the mechanical side of the control. For instance a rubber band became weakened by the hot sun, and the bearings in the escapement have had to be renewed. The control, when in proper working order is very pleasing, to the writer at least. The engine speeds up as the fuel runs out and on the first reasonable flight this caused a stall, and crash on the runway, but the control has been used to good effect to prevent a repetition.

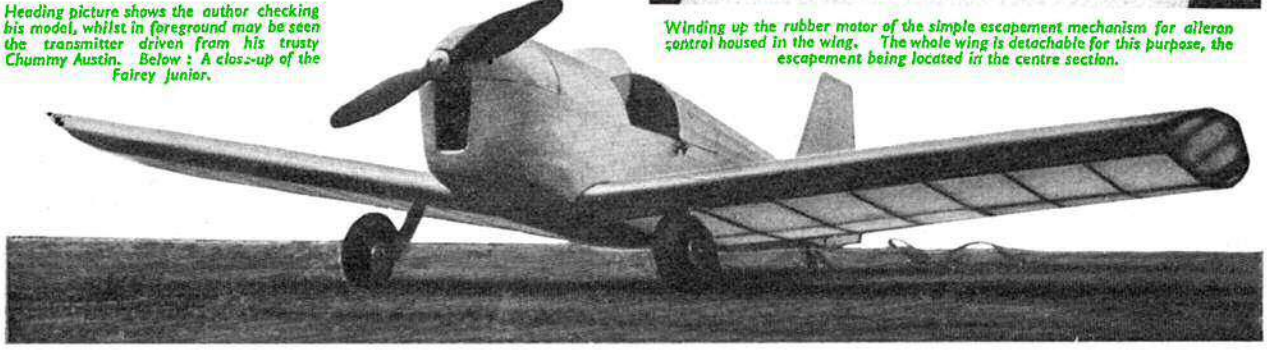
The model used is a four foot six inch span scale model Fairey Junior, with Allbon 2·8 c.c. engine and aileron control. This gives the same control with, or without engine, and the ailerons are scale size with plenty of movement. The undercarriage has been pushed forward, and an oversize tailplane fitted for the purpose of testing out the controls, though the model has flown with scale tail and undercarriage.

Fairey Junior in flight. The aerial extension can be seen hanging just aft of the tail wheel.



Winding up the rubber motor of the simple escapement mechanism for aileron control housed in the wing. The whole wing is detachable for this purpose, the escapement being located in the centre section.

Heading picture shows the author checking his model, whilst in foreground may be seen the transmitter driven from his trusty Chummy Austin. Below : A close-up of the Fairey Junior.



Bill Winter sends Christmas Greetings from the United States and his

AMERICAN NEWS LETTER

IT may be of interest to English and Continental free-flighters that, after our abandonment of wing loading rules (due to fearsome processing delays under the old rules) the most effective wing loading has proved to be in the neighborhood of five ounces per square foot for small models and some eight or nine ounces for big class ships. The disparity is due only to the practical limitations of size in Classes C and D. The interesting point here is that the loadings which are giving peak times, the loadings that seem best to compromise climb and glide on our 20 seconds motor run, are equal to, and higher than, the FAI rules of 3·9 ounces per square foot. Under our conditions the FAI rules would impose no handicap whatsoever. Inasmuch as it is realistic to assume that design and performance is comparable in both countries, the American modeler familiar with British and European rules and models is apt to speculate on the probability that actual power loadings (not displacement loadings) must be higher on your side of the pond. Unless your best ships are getting a good six minutes in still air, it would seem to us that the climb is not as high. Would any reader enlighten and perhaps correct us ?

This will come as a positive shock, judging by the quick development of speed in your country, but speed in the U.S. has suffered some body blows. There apparently is a trend toward stunt and free flight. What has happened is this. Over the past three years, speed was refined quickly to the point where only the most capable modeller stood a chance. Commercial fuels and glow ignition stemmed the tide by giving the less talented chaps a chance to put up good times. Nevertheless, the hot engine and a knowledge of props, to say nothing of top-flight design and flying technique, has limited the winner's circle to the well known few. Metal is beyond the ken of 99 out of 100 modellers. The disgust of the average chap is so strong that events at major meets sometimes have lacked entrants in some classes. At some of our biggest contests only one or two people might be found in some less popular class of speed. Unless the British modeler is able to control the vicious narrowing circle inherent to the brand of speed we developed, an interesting branch of the hobby most probably will become a cropper. (*We expressed the opinion some time back that control line flying—with the exception of scale types—would quickly run its course, particularly speed work. Our forecast is that speed flying will soon weed itself out to the works sponsored entry, and the amateur with the deepest pocket ! Ed.*)

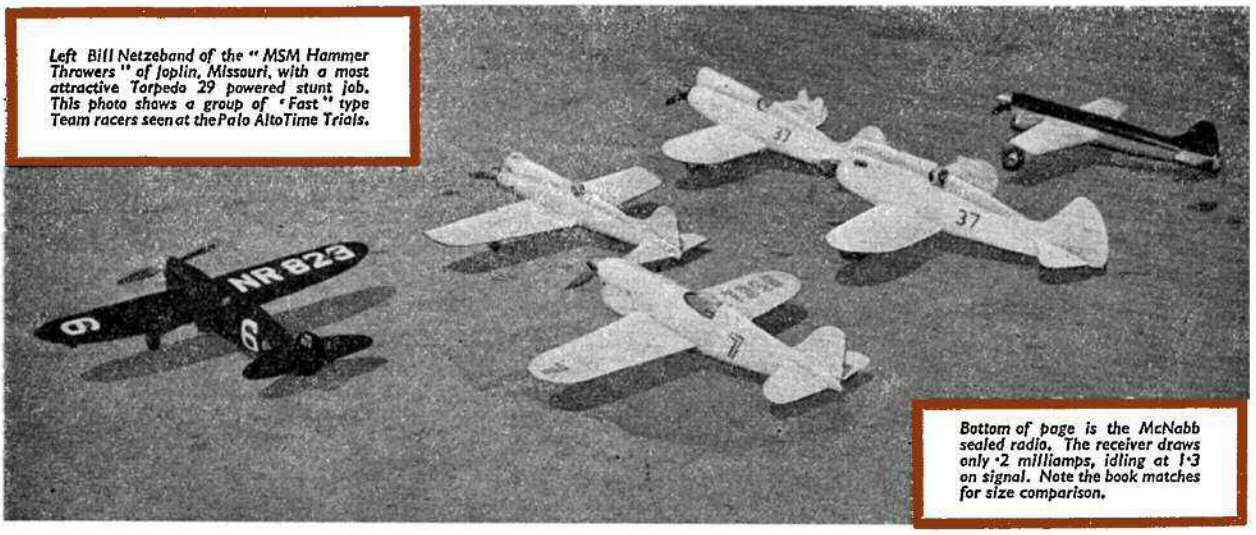
Stunt, despite somewhat similar beefs of being in a rut, continues to develop. While the " names " too often take the best prizes there is still a comparatively decent chance for the average fellow to improve his performance. The trend has been to lighter construction and, in some sections, less power. By minimizing those factors that contribute to high speed stalls, mushing, and so on, the general quality of stunting continues to improve. For example, the very recent development of weighing down the outside wing with a chunk of lead frequently is avoided by the off-center mounting of a wing, which may have one or two rib sections more on the inside of the circle than on the outside.

Finland's win of the Wakefield seems to have been a pleasant surprise to the average American builder, doubly so because the winning model involves something " new " technically. Although gears had been used before at least once (the writer recalls Frank Zaic taking a Wakefield second during the early thirties with a geared machine), their use is a new thought to the later generation of balsa butchers. How many of us have considered gears and now regret not having been first? The separation of this great trophy from English and American domination is one of the finest things that could have happened. For its beneficial effects on the American outlook and interest in the Wakefield, we were glad to see Italy take second. You chaps have had to fly against Continental airplanes of various kinds and know what these fellows can do in both rubber and gas. Americans lack this contact and the victory of Finland and Italy was an eye-opener. This will be a favourite topic of conversation whenever modellers meet during the winter. It will be interesting to see what manner of ships take to the air in the spring..

With the ill winds of late fall about to taper off our model flying here in New England, feverish eleventh hour activity marks everyone's flying. Our own flying this week includes a 1929 scale Monocoupe with an Infant engine and a new radio model with an Arden ·199, controlled by proposed licence-free equipment now under test. In fact, as this letter is being written it is six a.m. Due about mid-morning is Howard McEntee, editor of Model Airplane News, to see this new radio equipment do its stuff.

This new ship, incidentally, is but 57 inches in span and is designed to take any of the standard receivers now on the market, including those that require a fairly heavy B battery for reliable, economic operation. Since it is being recognized belatedly that a good dethermalizer is badly needed for radio-control models, we used a low aspect ratio of 5·7 in an effort to increase the angle of descent without boosting the gliding speed. (Piper's four-place Clipper gets by without flaps, and yet has a typical flapped glide path due to its low aspect ratio, according to its engineers.) By its fifth flight—all to date—this radio-control model proved its stability although glide is fast and flat so far !

You will want to know more about this equipment. Manufactured by the Vernon MacNabb Company, it operates on the Citizen's Band, or 465 megacycles. Because of this, the transmitter has some unique qualities. It is able to get by with a small antenna consisting of a short rod, attached to which are two small cross rods. To all intents and purposes it is antennaless when compared with the awkward dipole



Left Bill Netzeband of the "MSM Hammer Throwers" of Joplin, Missouri, with a most attractive Torpedo 29 powered stunt job. This photo shows a group of "Fast" type Team racers seen at the Palo Alto Time Trials.

Bottom of page is the McNabb sealed radio. The receiver draws only ·2 milliamps, idling at 1·3 on signal. Note the book matches for size comparison.

antennas. This dwarf antenna plugs into the top of the transmitter case. To operate, you aim the transmitter along the axis of the antenna within 30 degrees of the plane and simply press the usual button. Because, by law, the licence free transmitter must be tamperproof, tuning of the receiver is done to the transmitter rather than the customary opposite procedure. This tuning, by the way so delicate due to the frequency that valuable equipment is required for absolute accuracy, is done at the plant. The modeller need not touch the relay or the tuning.

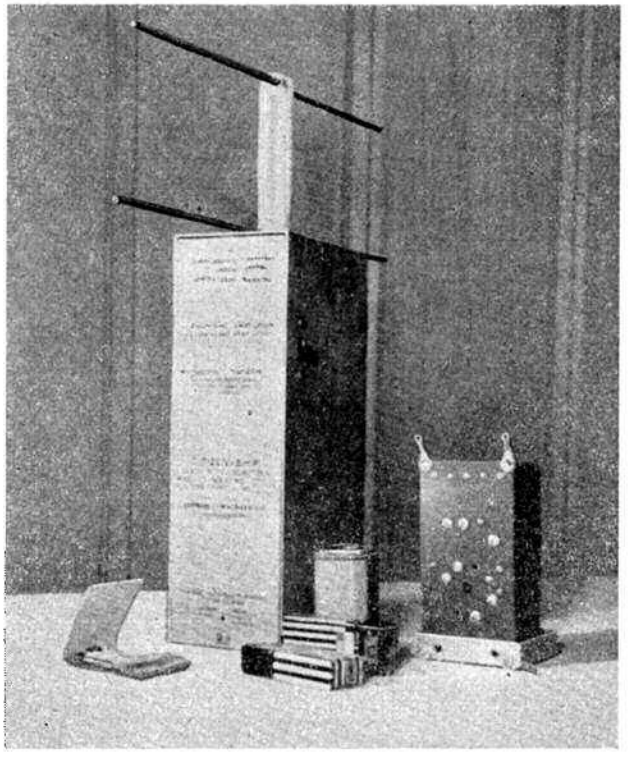
The McNabb equipment would be ready to go as it comes out of the package. Because it uses a tube with a heater plate rather than a filament—please excuse our inept radio terminology!—the set is incredibly rugged and will continue to operate after a medium sized prang. Our escapement stuck and spiralled the ship in, flying surfaces coming off as on any contest model, dirt flying, and yet the radio operated perfectly five minutes later. Because premature talk of any such equipment is bound to inconvenience existing manufacturers who actually have equipment to sell, it should be pointed out that the MacNabb equipment has not reached the manufacturing stage.

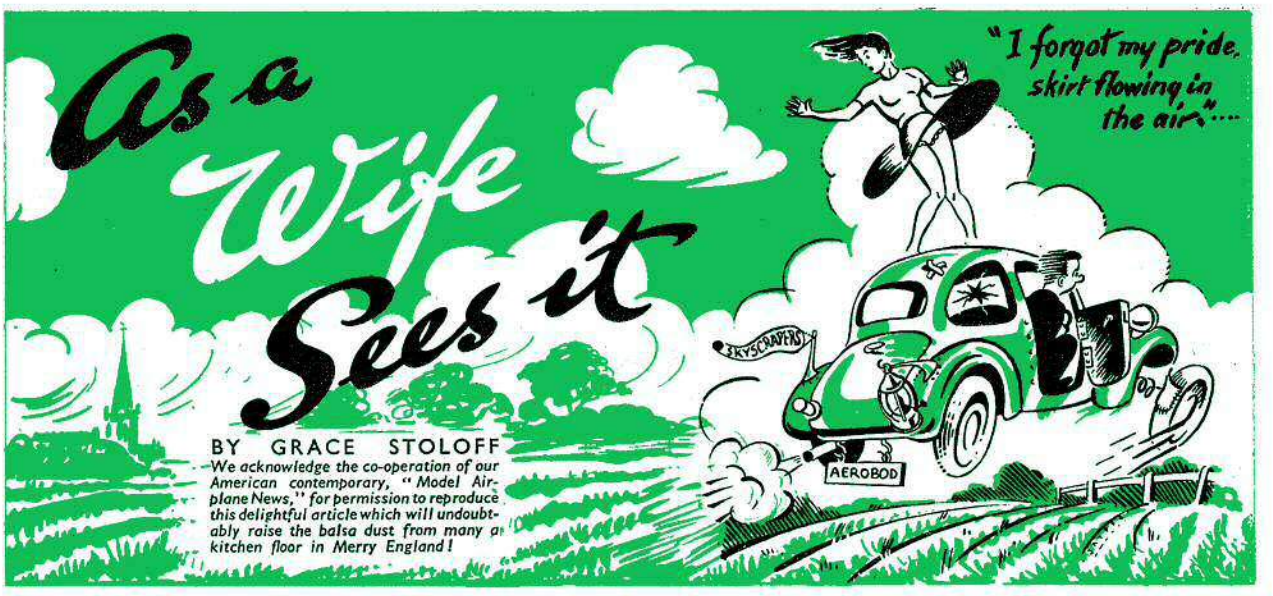
Probably the ultimate in "RC", if you can call it that, is Ches Lanzor's indoor model which weighs three thousands of an ounce. By use of a bi-metal wire Ches can move his rudder. It takes 100 watts to do it, and then the range is but 35 feet! The other extreme is the proposed development by the FAST team boys on the Coast of multi-channel high speed racing airplanes. These ships would require all airplane controls and various other features considered impossible from the piloting standpoint. Some idea of these machines may be obtained from the fact that they would have to be dragged in under power to make a landing. Whew!

A craze that is sweeping the country is another variation of your round the pylon deal. Done with baby engines and pieces of sheet balsa these wild little ships are short on science but long on the fun. It all began at the Nationals when the younger element amused itself in the night with impromptu pylon races held in a vacant hangar. Cub engines were hung on the front end of Walker sheet balsa gliders.

Speaking of baby engines, the field continues expanding at a breathless pace. Inasmuch as its development is almost entirely independent of the contest movement, the observer has something to chew on. Walt Schroder was in with the new K. and B. ·035 Infant and Charlie Brebeck, who makes the O.K. engines, sent us a new ·074 Cub to try out. As anyone who has fooled with our small engines knows, there is a wide gap between an ·02 and an ·045, the difference being roughly the same as between a ·199 and a ·06 where plane performance is concerned. This gap is plugged now with the ·035. In our own case, the .045 proved on the big side for our flying scale models and the ·02 left a little to be desired if the ship had any heft to it. Where the ·074 fits in, we can't say. Theoretically, it plugs a gap between the ·049 and the ·09 (one of which will soon be made by Herkimer). It is a hot little engine that should gain most of its popularity in small control-line stuff.

Outside of the round-the-pylon craze the only significant development is in the team racing deal which gradually gains popularity as the boys learn that more than one person in the centre of the circle is not quite the obstacle supposed. Al Lewis, *Air Trails*, has been taking in nearby team racing contests and advises that the chief problem is that of engine starting. At one meet, he reports, only two airplanes were able to get in the air simultaneously, whereas the event was built about four. He suggests the use of a mobile starter and that every entrant be made to start his engine within 60 seconds for a qualifying flight.



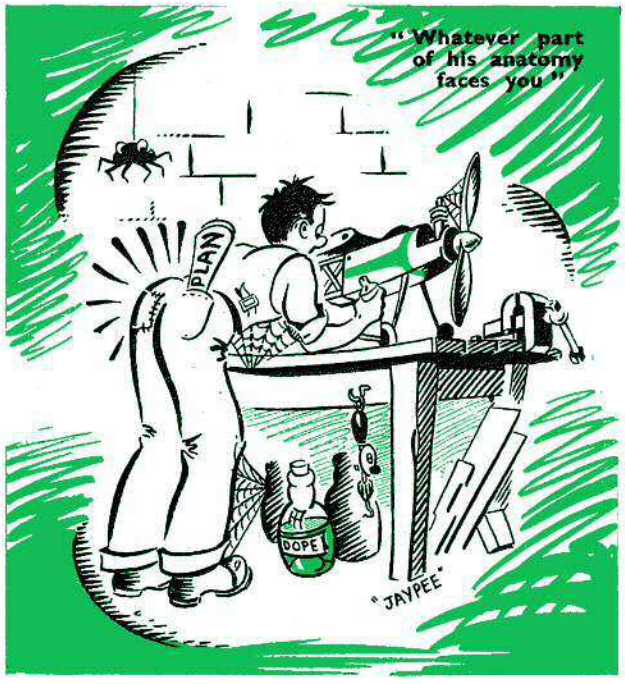


BY GRACE STOLOFF

We acknowledge the co-operation of our American contemporary, "Model Airplane News," for permission to reproduce this delightful article which will undoubtably raise the balsa dust from many a kitchen floor in Merry England!

YOU'VE heard of black spider widows, merry widows and grass widows, but did you ever hear of a model airplane widow? Well, that is the category into which I have fallen. Model airplane widows are by far the worst of all because the condition is seasonal. You have a husband throughout October to March. The rest of the year, you think you are married to a piece of balsa wood. There is balsa dust in your hair, on your floors, and in your food. However, you are very fortunate if this is the case, because it means your husband is building someplace in your apartment. Whenever you become doubtful, you can catch a glimpse of whatever part of his anatomy faces you, and reassure yourself you really do have a husband. The unlucky wives, like myself, live in a house with a cellar. Then your husband moves in with the mice and hibernates for the season.

Model building is actually a year-round hobby, but the season I refer to is the period of time when the contests take place. He may still go to work and eat his meals but he does that like an automaton. That is only a necessary evil he must put up with. Many a model airplane builder has been known to quit work during this season and live on unemployment insurance for the interim. This is much to the envy of the married men who wonder why they ever got married.



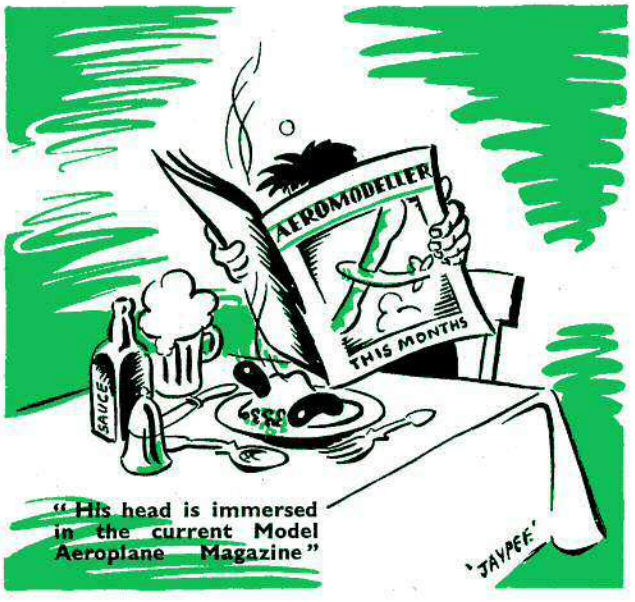
You do get to see your husband at dinner time, but if you yourself did not greet him at the door it could be the man next door sitting opposite you for all you know. His head is immersed in the current model airplane magazine. There is one advantage to this. You can save money on your groceries if you are smart. Since he does not know what he is eating and seems to care less, I take advantage of this by spending a pleasant shopless cookless day. Then five minutes before my husband, Jerry, is due home, I put the frankfurters on to boil and open up a can of beans. I taught my husband to be appreciative and he always says when he's through "mmm, delicious".

Now the evening is yours. Somewhere around eleven or twelve o'clock, the man leaves everything the way it is and goes to bed. When I say everything the way it is, that's exactly what I mean. And you dare not move or touch anything until the plane is completed. This process may take two days or two weeks, depending on what is being built. The most common in our house is free flight. This is where, once you get your motor started and the timer set, the plane takes off and hunts a thermal; when the ship finally does catch one and goes way up, the flier prays for it to come down.

Another design, currently enjoying popularity is the U control model. This is the ship that makes everyone dizzy but the flier, He controls it by means of long wires. He stands in one spot and turns the plane trying to see how much momentum he can gain without losing his own balance.

Model airplane building is supposedly a hobby, but it is much more than that to the more staunch enthusiasts. As Doris, one of the wives, so aptly inquired of her husband, "Now that you have an obsession, when are you going to get a hobby?" Most of the boys in our group belong to a club called the Skyscrapers. They formed this about ten years ago, and whereas they have gone through various jobs, through the Second World War (and the more private war called "the state of matrimony") one thing has remained intact—the Skyscrapers. And their loyalty and devotion to it remains on the highest peak. I often wonder where the married ones ever found time to woo and win a wife.

Contrary to public belief, I discovered model airplane building is not exclusively for children. In fact, while attending model meets, I was surprised to see that the contestants over twenty-one exceed those under this age by at least two to one. There is a good reason for this. Model



building is an expensive hobby when you consider that many motors sell at about fifteen dollars. Then you have to buy wood, propellers, gas and a dozen other incidentals.

Model builders are marvellous for their inventiveness. One of the boys living in crowded quarters took over a linen closet. All the linen was shoved into the already crowded clothes closet, and Bill managed to squeeze his six foot frame into the 3 ft. by 5 ft. closet and wreak his madness there.

Now, let us discuss the airplane contests. This is the ultimate goal of all model builders. Now they find out how their plane stands up against all the others. There is various merchandise awarded at these contests for time, speed, stunts and beauty events. The merchandise usually consists of some good looking trophies (dust collectors !) motors that sometimes work, and donated kits and merchandise that are outdated, outmoded or don't sell. This is what the model builders break their necks and risk a broken home for.

As most of these contests take place on Sunday, my husband sits in the cellar all day Saturday, putting the finishing touches to his plane. We don't go out Saturday night because where can you go at eleven o'clock ? We are up with the early bird that catch the worms on Sunday. This is the only day Jerry makes the bed, prepares breakfast and washes the dishes. He is not henpecked, it's just that time's awastin'. I always pack a tremendous lunch when I accompany my husband to the field; he flies and I eat. Jerry seems to have no appetite at the field, just an unquenchable thirst. When the contest is over, he suddenly becomes ravenous but there is no food left by that time. Having nothing better to do I have eaten it all (I usually gain about 10 lb. during a season).

At the field you meet the different types, the builders and the fliers. The builders hold a straw to the wind. If the straw sways ever so slightly they do not fly. They would rather break an arm than risk scratching the littlest bit of paint off the plane. My husband is a flier. He designs his own planes, throws them together in a few nights, and if he doesn't crack up during the first flights usually has a winner.

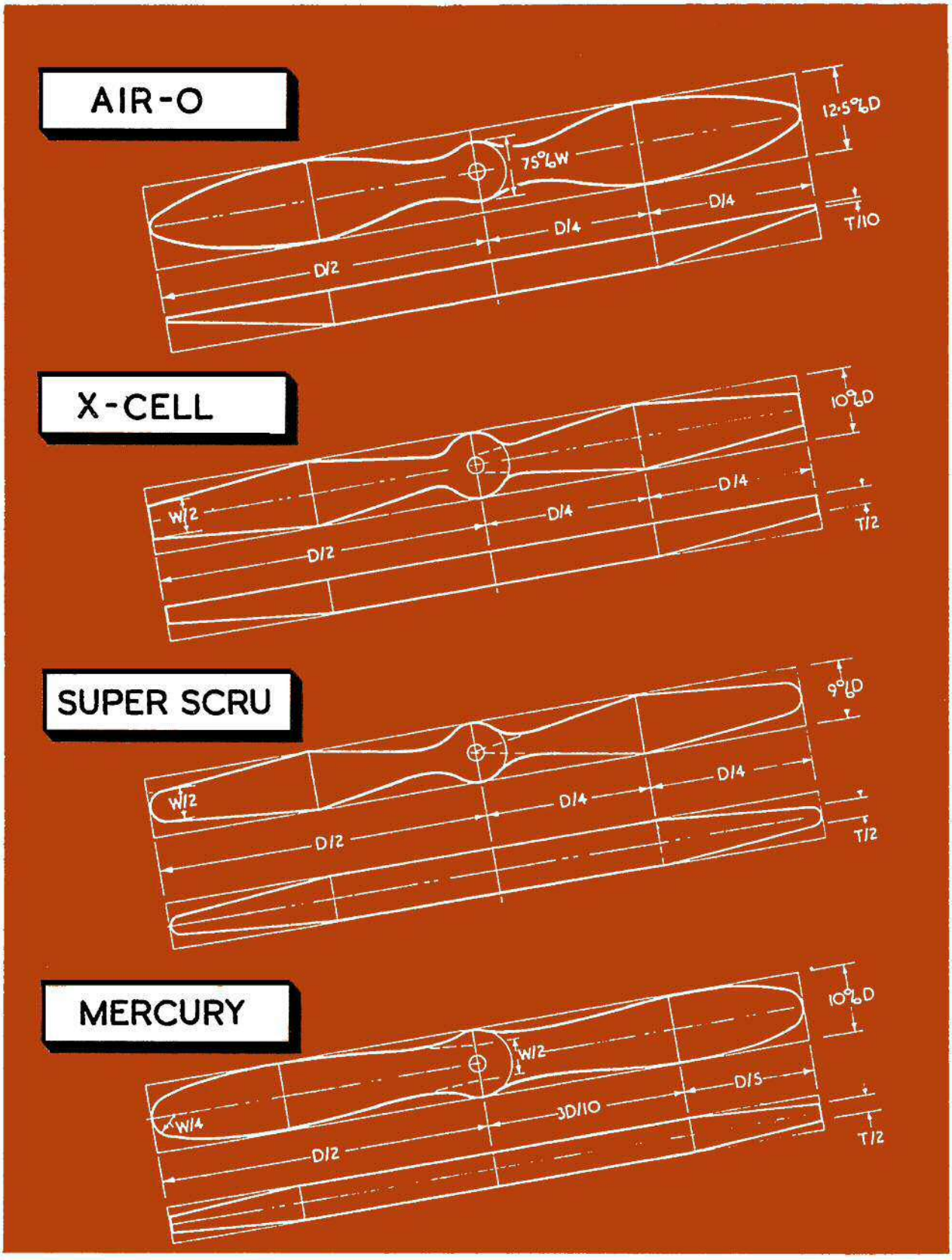
Aunt Sadie doesn't visit us any more. The lamps she gave us for a wedding present are down the basement. There is no room in our home because of the trophies. They take up every bit of table space. (I am really very proud of them.)

If you are the wife of a contest flier, you must double your life insurance, especially if you accompany him to the field. You are continually in danger of being knocked by an airplane, and you always risk an upset system, as there are never any wash rooms on these fields.

Recently I was out with my husband when he flew his newest plane. It went straight up about 500 ft., which is very good (this means it had enough right thrust and left turn—or vice versa), stayed in sight for about 4 minutes, then flew over a tree and was lost to the eye. Jerry jumped into our car, a '41 Oldsmobile (we just bought it last fall but after each season our car is usually so battered up we have to trade it in) and drove off in hot pursuit. Coincidentally I was sitting in the car, eating the last sandwich and on my side the door was open. Luckily I didn't fall out ; but just dropped the sandwich. We ploughed through a field of waist high grass looking for that four nights of work and sixteen dollar motor. But was that enough ? No, I had to get up and sit on the roof of the car where I could more easily spot the plane. I forgot my pride, skirt blowing in the air, and as there is nothing solid to hold on to on the roof, I held on to my faith, If I ever wondered where my husband's first love lay, I found out. Without a thought of my precarious perch, he drove wildly through the field, turning on two wheels, and making sudden starts and stops. I didn't tell him that the reason I didn't find his plane was because I was unable to look. Then I helped him search through thistles and thorns, and all varieties of shrubbery, amongst which I am now convinced there was poison ivy or poison oak.

After a while he got disgusted and we returned to the field. He persuaded one of his buddies to go out with him, and wouldn't you know it, they returned two hours later, all beat up but with big smiles, and bearing the missing plane.

The crowning insult of the day occurred when Jerry asked, " How would you like to have your picture taken ?" So I combed my hair, put on fresh lipstick and got ready. He handed me one of his planes, " Will make the picture look more interesting," he said. A few days later when the pictures were developed, there was I without a head. " But didn't the plane come out swell ! " Jerry exclaimed. To this remark I started hurling all the detachable objects I could lay my hands on. But Jerry was no longer there—he had already started back down cellar to start work—for next week's contest !


AIR-O
12·5%D
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D/4
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D/2
X-CELL
10%D
W/2
D/4
D/4
T/2
D/2
SUPER SCRU
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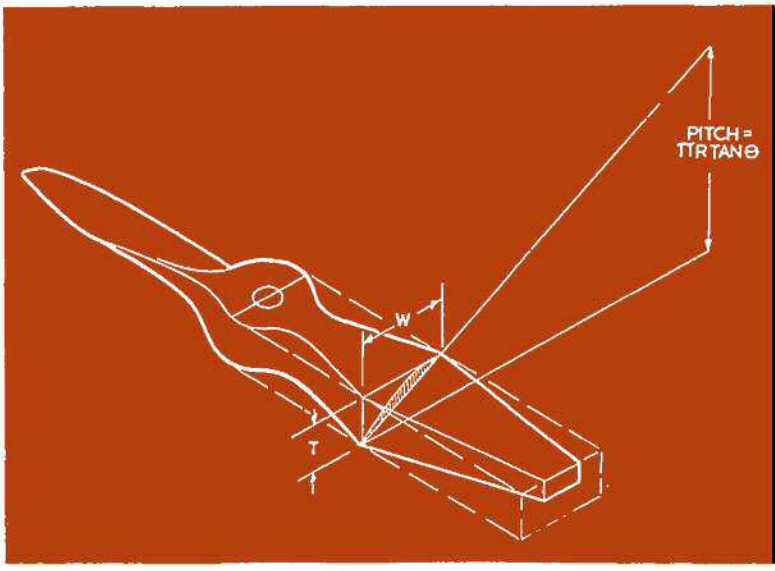


POWER PROP REVIEW

PART I

BY

R. H. WARRING

CORRECT choice of propeller is very important for best performance with a power model. With the very wide selection of commercial propellers now available, trial and error methods are generally used to find the best combination of pitch, diameter and blade area to suit any particular model and power unit.

However, this approach does suffer from two serious disadvantages. In the first place, propellers are not cheap and a comprehensive stock for testing may cost several pounds. Secondly, most commercial propellers have the common fault of incorrectly quoting pitch values. Almost invariably the actual geometric pitch of a commercial prop is less than that specified. A ten-inch (quoted) pitch prop, for example, may have a geometric pitch of anything between four and ten inches, according to the make chosen.

It is generally accepted that the geometric pitch of a power propeller should be taken as that geometric pitch at half the radius (R/2) which, mathematically, is :—

(Geometric) pitch$=\pi$ R tan θ (Fig. 1).

θ being the blade angle at R/2. However, tan θ can be expressed in terms of block width (W) and thickness (T), so that this formula becomes

$$\text{Pitch} = \pi \frac{\text{R.T.}}{\text{W}}$$

Pitch is the greatest single factor governing motor speed, the higher the pitch the lower the r.p.m. as a general rule. Diameter also affects motor speed to a lesser extent, as well as affecting thrust by varying the blade area. Variation of blade area and thickness have their greatest effect on thrust developed.

These are simple rules which can be used when arriving at the best propeller specification for any particular model. For control line models, pitch is the most important single factor, especially for speed work. Diameter and blade area are usually varied to match the pitch required for a particular speed, thrust being largely governed by the two latter factors. It is no good using the pitch required for 150 m.p.h. for example, if both diameter and blade area are so reduced that the thrust developed is insufficient to fly the model at that speed.

Until comparatively recently, fine pitches have been the general rule for free flight, used with blades of fairly generous area. However, some fliers now use small diameter high-pitch props for free flight contest work, although the merits of this are still a matter of controversy.

However, the object of this review is not so much to discuss propeller design features as to present typical examples of successful commercial propellers laid out with basic dimensions so that they can be duplicated for testing purposes on any particular model. Notes accompanying the diagrams illustrate for what purpose that particular prop is best suited.

To save tedious calculation, the following table has been calculated to give block proportions (values of T, the block thickness, for different values of block width, W, and different diameters), all based on the above formula defining geometric pitch at R/2. The usual method of tapering the outer panels of the propeller blank to T/2 at the tip gives an approximately constant geometric pitch along the outer half of the blade, although this method is not universally followed. Some propellers have a deliberate increase or decrease of geometric pitch towards the tip, but this will follow naturally from the layouts given.

AIR-O

Essentially a free flight propeller, characterised by a wide blade of generous area and extreme pitch gradation. The geometric pitch at the extreme tip is, in fact, almost zero. Such experts as Dick Korda and Chester Lanzo endorse them as amongst the the best in the States for power duration.

X-CELL

Thin-section, narrow-blade racing propellers which are suited to both free flight and control line work. Our own Tekni-Flo props bear a close resemblance. Machine cut on equipment designed by Don Williams.

SUPER SCRU

Don Williams is the designer, these being one of the few commercial propellers where the pitch is correctly quoted and truly geometric. Extremely well suited for control line speed work—finer pitches for free flight.

COMET MERCURY

Popular free flight propeller with fairly generous blade area and thick hub, originally designed by Carl Goldburg as a cheap production line. A general-purpose "sports" propeller rather than a contest type.

PITCH FOR ANY DIAMETER—VALUES OF T GIVEN IN INCHES

W = % D	PITCH IN INCHES										
	4	5	6	7	8	9	10	10½	11	12	14
7·5	·191	·238	·286	·334	·382	·430	·477	·500	·525	·572	·667
8	·209	·255	·306	·356	·408	·458	·508	·535	·560	·610	·715
9	·229	·286	·434	·400	·458	·515	·572	·600	·630	·686	·800
10	·255	·319	·383	·445	·510	·574	·637	·670	·700	·765	·892
11	·280	·350	·420	·490	·560	·630	·700	·735	·770	·840	·980
12·5	·318	·398	·477	·556	·636	·715	·795	·835	·874	·954	1·112
15	·382	·477	·572	·668	·763	·859	·955	1·000	1·050	1·145	1·335

D=Diameter (inches). W=Block Width (inches). T=Block Thickness (inches).

GADGET REVIEW

PRESENTED BY "CONSUS"

AFTER many moons of hibernation beneath a mountain of pranged models, worn-out engines, torn tissue and broken razor blades, Consus again bursts the cement skin, burrows out of the balsa dust and prepares to greet you.

Twenty-nine modelling days to Christmas . . . remove those control lines from the goose's port wing, mother, and refill his tank; in four short weeks he loses his covering and I can visualize his airframe already.

Enough of this drooling, though, and, as the French have it, *a nos moutons*, which translated literally means . . . if there is no bird for Xmas, try a leg of lamb.

Our offering of gadgets for your stocking, this Festive Season (another portion of snoek, Mabel?) begins with a brainwave for power-modellers; two waves, in fact, from the same brain.

Raymond Harris of West Wickham, Kent, offers alternative systems of cut-out timing for diesels on models with knock-off mounting. As illustrated in drawing 1, a dashpot timer is used in both cases, and the whole idea depends on an ordinary snap fastener. (Yes, dear, the same as those down the back of your dress.) The method is the same in both cases, that on the left being used when the engine cut-out is on the same level as the timer arm, while that on the right can be applied when the cut-out is below the centre of the timer, as with an inverted engine.

The principle of the thing is simply to have the timer arm extension in two parts, which connect by having half a dress snap soldered on to each of them. In the event of the engine mounting being knocked off, the dress snap opens, allowing the mounting to fall forward unhampered.

To prepare for cut-out operation, the front of the extension is attached to the engine cut-out, the dress-snap is closed and the $\frac{1}{8}$ in. diam. steel pin is pushed through the slots in the fuselage sides and aluminium sheet, passing through the loop on the timer arm, en route. The rod is now pulled forward and brought to rest in the lower slot. Immediately before take-off, the arm is released, allowing the timer to take charge.

While the dress snap is strong enough to withstand the pull of the timer, it will open if the mechanism is set from the front. Hence the employment of the dural bracket and steel rod.

In the event of the cut-out being below the timer, the extension arm is soldered to the timer pointing downward. It then passes through a "stirrup" to connect it to the extension arm from the engine and is kept in place by a soldered washer. Modeller Harris states that the system is positive, flexible in rough landings and the increase in weight is slight.

To prove that we believe in variety, our next will be of particularly interest to scale modellers, and is one of our, only too rare, Indian contributions.

D. Madhava Rao of New Katra, Allahabad, requiring wheels for his Fokker D.8, thought up this method of making a strong, true to scale, spoke-and-rim type.

From drawing No. 2, it will be seen that the tyre is of laminated balsa, sanded to circular section and painted matt black. Suitable cones of celluloid having been cut out, the spokes are drawn on them, using Indian ink. The celluloid cones are made by cutting out a circular disc of paper, of about $\frac{1}{2}$ in. diameter larger than the actual size required, removing a narrow triangle with its point to the centre of the circle, and joining the two straight edges left. The correct height of the centre of the cone can be obtained by altering the diameter of the circle and the width of the triangle. This paper template is now used to obtain an exact copy with celluloid. The number of spokes should be taken accurately from the plan and spaced equally on the celluloid. Four identical cones are made and cemented to the tyres. Use cement sparingly, to avoid spoiling the celluloid and make certain that the centres are in line before inserting the hub of brass or aluminium tubing. The finished articles will look right, as the celluloid between the spokes is almost invisible, and both lightness and strength result from the method of construction.

Giving a new twist to an old principle, A. Count, of Mansfield, comes up with No. 3 of our Yuletide offerings; a fuel gauge. Making use of the fact that liquid always finds its own level, he suggests connecting a length of stiff plastic tubing via a brass tube, to the lowest point of the fuel tank. This is then graduated, using the depth of the tank as the extremes of the scale, and will hold the same level of liquid as the tank.

The plastic tube must, of course, be vertical, and, in the case of a stunt tank, can be attached to the filler, which will have to enter the tank at the bottom, as does the air vent. However, the brass filler tube is cut off immediately it enters the tank, instead of continuing up to within a fraction of the upper surface. This idea should avoid the usual fuel bath, well-known to all who have squirted juice into a tin tank!

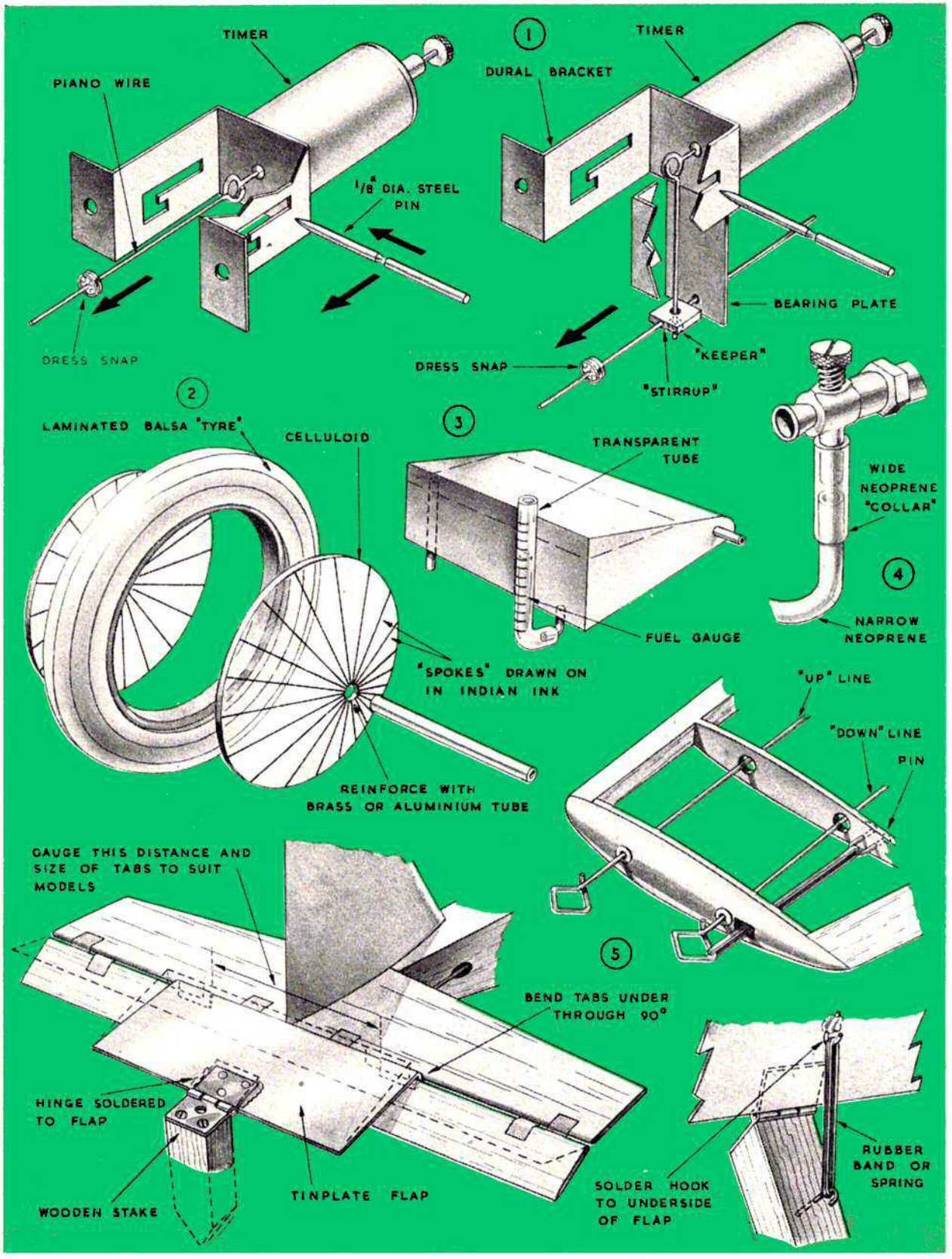
While on the subject of fuel and fuel tubing, D. Clarke of Ashton-under-Lyne, having experienced starting trouble with his Comp. Special hitched up to a stunt tank, worked out the solution shown in No. 4. The cause, he discovered, was not connected with the engine, but, as is so often the case, was to be found in the fuel feed. Starvation allowed only the fuel obtained by choking to enter the cylinder and as soon as this was burnt, the engine stopped. As will be seen from the drawing, the E.D. carburettor system has been shortened for more convenient connection to the stunt tank, and the answer to Brother Clarke's problem was, simply, two different sizes of neoprene tubing. A short length of the wider one fits on to the E.D. and into it, as a tight push fit, goes the narrower tube, the other end of which is attached to the tank feed pipe. Eureka! the fuel flows.

Continuing gadgets connected with control-line, the next two brain-children (one brainchild, two brain-children, three headaches) come from Cheshire, home of cheese and model-bods . . . in common with other places.

E. P. Lewis of Gayton, Heswall, has a new "stooge," and a way of getting full "up" on the elevator, if the lines slacken. Both are shown in drawing No. 5, from which it will be seen that the "stooge" is a solo release for those occasions on which one's friends cannot be cajoled into holding the tail-end.

It consists of a tinplate flap with two tabs bent at right-angles to it. These tabs fit into the space between the elevator and the tailplane. To the centre of the opposite edge to that on which are the tabs, is soldered a steel hinge. The free half of the hinge is screwed to the top of a pointed peg, which is about 6 ins. long. From a hook soldered to the under side of the flap, a light spring or rubber band is attached to the peg, about 1 in. from the top. This has the effect of pulling the flap lightly downward. The peg is pushed into the ground at the take-off point, and its height adjusted to allow the tabs to drop into position. It will now be found that the spring-loading will enable the flap to hold the model in place until the "pilot" gives full "up" on the handle. This raising the elevator, releases the flap and the tabs will free the model.

Points to watch, if making this gadget, are the spacing of the tabs so that they do not interfere with the controls and that the spring-loading is not too strong. The hinge must work easily, but engine vibration, tending to loosen the hold of the tabs, will call for a certain amount of trial and error work.


TIMER
PIANO WIRE
1/8" DIA. STEEL PIN
DRESS SNAP
1
TIMER
DURAL BRACKET
BEARING PLATE
"KEEPER"
DRESS SNAP
"STIRRUP"
2
LAMINATED BALSA "TYRE"
CELLULOID
"SPOKES" DRAWN ON IN INDIAN INK
REINFORCE WITH BRASS OR ALUMINIUM TUBE
3
TRANSPARENT TUBE
FUEL GAUGE
WIDE NEOPRENE "COLLAR"
4
NARROW NEOPRENE
"UP" LINE
"DOWN" LINE
PIN
5
GAUGE THIS DISTANCE AND SIZE OF TABS TO SUIT MODELS
BEND TABS UNDER THROUGH 90°
HINGE SOLDERED TO FLAP
WOODEN STAKE
TINPLATE FLAP
SOLDER HOOK TO UNDERSIDE OF FLAP
RUBBER BAND OR SPRING

Flier Lewis' other idea depends on one elastic band; many a time the fate of a model has depended on less.

The theory is that, in the event of the lines slackening, time may be gained for recovery if the elevator is made to spring into the "up" position. According to our contributor, this does work in practice, and he attains it by tieing a rubber band to the "down" line attachment at the wingtip. The other end of the band is fixed to the first rib inside the wing with a wire loop or bent pin (as in fishing) having passed through the tip. It would be as well to note that this idea applies to the "down" line only; horrible pictures are conjured up by the thought of what could happen with automatic full "down"!

Mr. Lewis states that this is not, repeat *not*, a substitute for footwork, but does give a second in which to get backwards.

Following a long draught from the fuel bottle, your scribe, suitably clad in a natty winter-weight suit of Burmese tissue, bursts into life again to continue his collection of gadgets, wheezes, notions and plain good ideas. So, pin back your leading-edge and prepare for Chap. Two.

Picture No. 6 depicts a neat idea in cowling, from B. L. Duck of Maidenhead. The main body is constructed from aluminium, the section which opens to allow access to the engine, being in two parts. If the drawing is studied, it will be seen that these two lids, which meet centrally over the engine, are hinged on wire rods. To the inside of the lids, two aluminium arms are riveted, care being taken to see that they will not touch the engine when the cowling is closed. These arms are connected by a piece of 22 to 24 gauge piano wire, either end of which is retained between two small washers soldered on. With the lids closed, the wire, due to its lightness, and the angle of the arms, will keep them shut, and either side may be opened as required. The important point is to arrange matters so that pivot on which the lids hinge is above the inside ends of the arms, when the lids are closed.

From over the Border, wi' a whiff o' the heather, comes a bricht notion for the fixing o' power model undercarts.

A. Scott (that is almost too good to be true) of the Falkirk Club, contributes the strong and simple attachment shown in No. 7 of our Art Gallery. Three bolts of 6 or 8 b.a. pass forward through a bulkhead of either plywood or hard balsa sandwiched between 1 mm. ply. A single nut and washer are threaded onto each bolt, after which the undercarriage is sprung between the lower bolts and over the upper one. Dural plates of suitable length are now slipped over the bolts and a further nut and washer put on. If these are now tightened, the undercart will be quite rigid, though easily removed, if necessary. So, returning South of the Border, we pass on to No. 8, for the simple reason that it is next on the list.

This one comes from over another border; yes, bach, from Rhondda, in Welsh Wales, and it was sent in by A. L. Higgs, look you.

Of particular interest to large sailplane enthusiasts, it is a method of giving good directional stability and was designed for flying from slopes, which abound in the Rhondda Valley.

Study of the drawing will show that the automatic aileron control depends upon a pendulum, which, in the event of either wing dropping, lifts the aileron of the other wing. The pendulum weight, remaining in the same position, relative to the ground, while the angle of the wings changes, turns the crown wheel and gear wheels, which actuate the ailerons through the shafts and flexible coupling. The pendulum arm should be as long as possible, to give the greatest effect, and that end of the installation must be toward the nose of the model, otherwise a slow roll will result. The movement of the pendulum, which needs to be very small, must be restricted between rubber bands, and the flexible connection of plastic tubing makes the idea practical despite dihedral. The gearing is housed in a tinplate casing, installation is near the C.G. of the model and in a large sailplane, the slight addition of weight is negligible. The mechanism can be made in a variety of sizes, as required, and would seem to be a practical, neat idea.

We are really going places with this Gadget Review; not only with the variety of offerings, but look at the country of origin of the next one. Half way around the world, where model-bods are standing on their heads with enthusiasm, in the land of Diggers and Kangaroos . . . in a word, Australia. As you read your Xmas AEROMODELLER, J. M. Fullerton of Glen Iris, Victoria, will be preparing for a warm Festive Season; turkey and Xmas pudd. in blazing sunshine, with snowflakes and robins on the Greetings Cards!

His triple (no soda, thanks) is offered to rubber twisters and covers both ends of the operation . . . winding 'em up and getting 'em down. To wit, an improved brace, a tail-end gripping gadget and a straightforward dethermalizer.

Take a dekko at No. 9 (not you, doctor, sit down) and you will see, in the bottom right-hand corner, the normal brace or drill, to which has been added a very useful handle. No explanation will be necessary as the drawing speaks for itself (this will please our tame artist).

In the larger drawing will be seen something like a cricket pitch roller, without method of propulsion. Who said Australia! It is not a cricket pitch roller, oddly enough, but a gadget with which to grip the tail-end of the model, while the turns are being packed on. The arms of ⅛ in. steel wire slide into a dural tube of correct internal diameter, attached strongly to the fuselage in two uprights, and are held in place by pressure applied to outside of them. When the nose-block has been returned to its normal place, the pressure is released and the gadget removed.

Model having become airborne, comes the problem of getting it down within an hour's walking distance. Friend Fullerton's idea is tried and proven and was good enough to install in three Wakefield Team models this year. That seems to be a fair enough recommendation for any idea.

The tail-end of the model is detachable and where it meets the main fuselage, has four pegs fitting into corresponding tubes. At the point of contact, on the top surface, immediately in front of the tailplane, is a hook of 20 s.w.g. wire, sandwiched between two pieces of 1/16 in. balsa. Immediately below this, under the bottom spacer, is another hook, and there are two more, one bay forward, on the main fuselage. With the tail-end in place, its top hook must be sloping forward at 60° to the top longeron. A rubber band is now placed over the two top hooks, connecting tail-end to fuselage. A second, shorter, band has a loop of thread tied to it and this goes over the lower tail-end hook. Hitching the band to the remaining hook attaches the tail-end firmly to the fuselage. Now, by connecting a piece of fuse to the thread and lighting same, it will be found that, when the thread parts, the lower band drops and the top band snaps the tail-end upward. The end of the two top longerons and rear spacer, being cut at an angle, act as a stop for the tail-end and the tailplane, will then be at an angle of 60° to the line of flight. If that does not spoil the glide sufficiently to bring the model down pretty sharpish, I'm a monkey's uncle. (Come down off that lampfitting, nephew.)

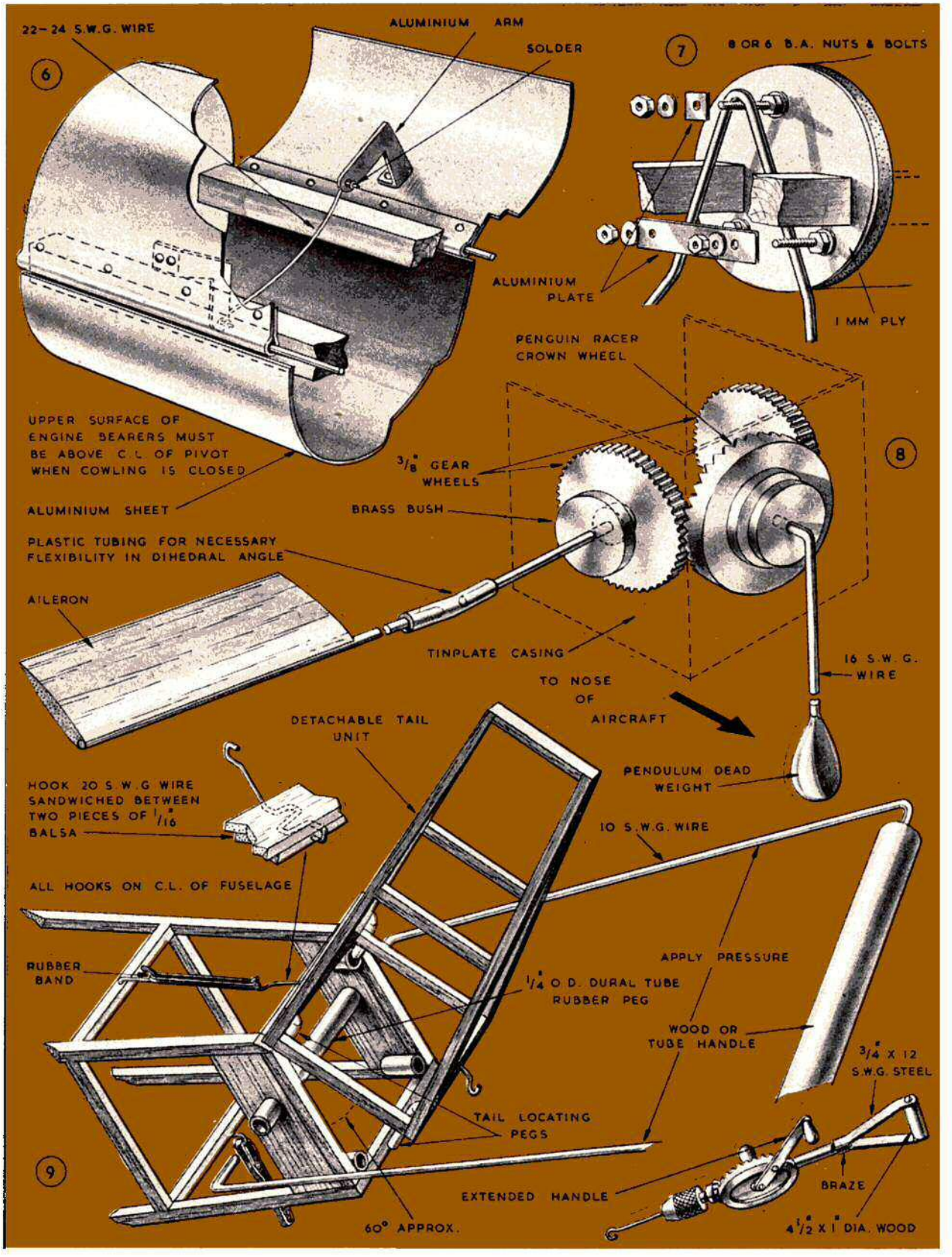
Well, there it is; try it out and save the old legs and shoe leather.

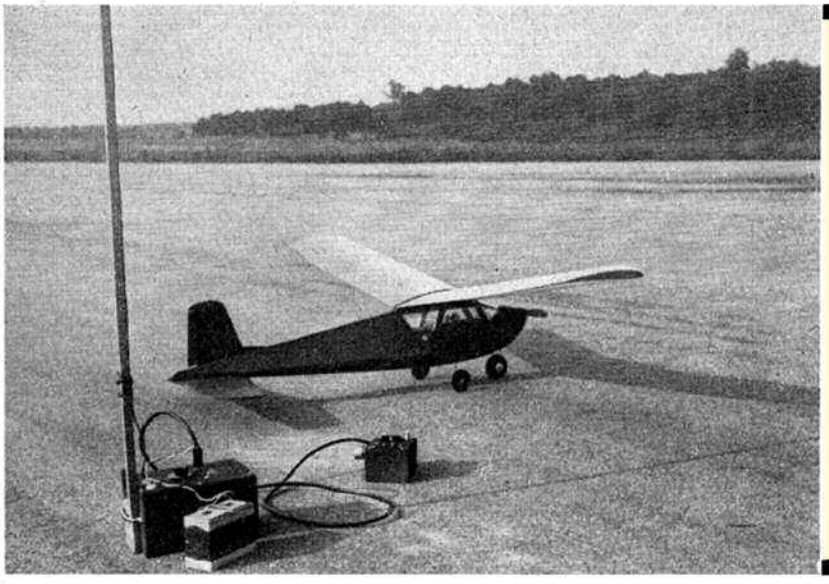
So, wiping the perspiration from his fevered brow, Consus prepares to retire, leaving you with food for thought and all good wishes for a hearty Xmas, a rollicking New Year and the best of modelling in 1950.

★ ★ ★ ★

May your timers always function,
May your fuses always burn.
May your engines start the first try out,
Your airscrews smoothly turn.
And if your flying C.L. stunt and tied up in a Knot,
Remember, friends, when up is down, then down is up, up not.
And when your rubber's fully wound, perhaps 800 plus,
Remember that that extra turn may wreck the blooming bus.
With these sage thoughts, I leave you, and may your models fly,
I wish you all you wish yourselves . . . till next Review . . . goodbyo.

CONSUS.


22–24 S.W.G. WIRE
ALUMINIUM ARM
SOLDER
6
8 OR 6 B.A. NUTS & BOLTS
7
ALUMINIUM PLATE
1 MM PLY
PENGUIN RACER CROWN WHEEL
UPPER SURFACE OF ENGINE BEARERS MUST BE ABOVE C.L. OF PIVOT WHEN COWLING IS CLOSED
3/8" GEAR WHEELS
8
ALUMINIUM SHEET
BRASS BUSH
PLASTIC TUBING FOR NECESSARY FLEXIBILITY IN DIHEDRAL ANGLE
AILERON
TINPLATE CASING
16 S.W.G. WIRE
TO NOSE OF AIRCRAFT
DETACHABLE TAIL UNIT
PENDULUM DEAD WEIGHT
HOOK 20 S.W.G WIRE SANDWICHED BETWEEN TWO PIECES OF 1/16" BALSA
10 S.W.G. WIRE
ALL HOOKS ON C.L. OF FUSELAGE
APPLY PRESSURE
RUBBER BAND
1/4" O.D. DURAL TUBE RUBBER PEG
WOOD OR TUBE HANDLE
3/4" X 12 S.W.G. STEEL
TAIL LOCATING PEGS
9
EXTENDED HANDLE
BRAZE
60° APPROX.
4 1/2" X 1" DIA. WOOD



INTRODUCTION TO RADIO CONTROL

BY BILL WINTER

Dr. Walter Good's Rudderbug, with Transmitter and auto-control switch.

AS long as we live we shall never forget our first radio-control flight. On a cold January morn, Walt Schroder had hand-launched our dream ship for its first " R.C." attempt. With the ignition timer set for one minute, the plane had responded to left rudder, coming back overhead then with dead stick, glided down a far runway between trees as we fought to make an on-field landing. Thump, thump, thump went the transmitter, quite audibly. The writer inverted the black box, pondered it curiously, even put an ear against it, before realizing that the noise was coming from his own chest.

Excitement and thrills are part and parcel of radio control as, I might add, are headaches and heartaches. It may come surprisingly easy at first—making *a* successful flight is hardly more difficult to our mind than developing a four-minute Wakefield, though the detailed work is far greater—but later, you find that the more you fly the more you appreciate what you didn't know at the beginning. After several successful flights, our timer was set for four minutes. This would be a flight! But after the first 180° to the left torque took over in a climbing turn, overpowering the rudder, and the ship flew over the next town completely out of control.

When the motor cut the model almost made it back to the field only to perch with a shattering crash in the top of a tall, dead tree in the middle of a swamp. With an infinite variety of possibilities for errant flights, the tyro learns the facts of radio control model flying the hard way. It isn't the things you'd expect that cause the mischief. Rather, the things they don't tell you create the problems, and most of them, we found boil down to built-in human error! Fortunately, one learns from his mistakes.

Neither Walt nor myself knew the first thing about radio. We depended entirely on the instruction booklet " How to Fly a Radio Controlled Model Airplane," written by the Good brothers for Beacon Electronics, manufacturers of their " rudder only " control. In our favour is the fact that we both understand free flight gas models and the writer has talked at many Nationals with expert radio-control men. Without exception all these people had insisted that a practical radio control job should free flight stably without radio control. No one yet has succeeded in controlling an unstable airplane and, through the years, I have seen numerous ships build up an innocent turn into a fatal spiral.

Further, they argued for the simplest possible control system. The Goods, for example, once used two controls, elevator and rudder, but back tracked to win in later years on rudder alone with a machine that could spin and loop. Walker, one-time proponent of proportionate control now reports that the system is not effective beyond a few hundred feet due to piloting limitations. And Walker can do most anything a big ship can do. However, Jim is not a rudder only man, believing that it does not permit the manœuvres he performs. (Walker has, instead, highly developed his own system which, it is rumoured, will make its appearance commercially.) The simpler the system, the less fuss on the field, the less battery trouble and expense, and the less strain on the pilot's " think box ", probably the weakest link in this art! Being new to the game, Walt and I settled for the simple things. Being most familiar with the Good's and their system we choose Beacon products, although others, such as Aerotrol and RCH work just as well.

The Good brothers equipment consists of a five-ounce, 52 megacycle super regenerative (whatever that is!) receiver, a one ounce escapement, and seven to 10 ounces of batteries. The total weight to be lifted amounts to 13–16 ounces. The transmitter is four watt power input at 52 megacycles.

We elected to build a 6½ foot machine having six square feet of wing area for a loading of about 18 ounces per sq. ft. It is a semi-scale cabin model with neatly cowled engine. Construction is quite sturdy, consisting of ⅜-inch square longerons, filled in forward with sheet wood, large built-up box spars, and the like. Two features that proved good, were a one-piece Cessna-type gear made on a bending brake from dural, and bolted to a slab of plywood which in turn was held snug to the primary box of the fuselage by the overlying balsa bottom fairing blocks; the second feature is the tongue-and-box wing, à la your British models, though, on a ship this size, due to weight and speed we were forced to add detachable struts to take up the dead weight of the wing on a hard landing, as after a partial stall on a hand-launched glide test. Further, we found it necessary to face the root rib, as well as cabin side at that point, with 1/32-inch ply to prevent chordwise splits. Pure balsa tongues tended to crack off a along the edge of the cabin, when ¼ inch ply centres were used, the root-rib end of the boxes tended to pull open, despite silk wrapping. Though the ply inside the tongues was very heavy it was worth its weight in gold and there can be no question that knock-off wings repeatedly saved the ship in hitting obstacles. (We did add ligut rubber anchoring inside the fuselage tip.) However, despite top and bottom sheeting of the leading edge section, plus a very substantial edge—breakage was transferred to frequent failures of the leading edge with much bothersome repair it would be well to back up such edges substantially. Covering was high grade silk with six coats full-strength aircraft dope, finished with three sprayed on coats of red dope.

A superstructure of ¼-inch square strips filled in between the wing and tail on top and large realistic doors permitted

easy access to radio for adjusting. The tail was a single unit held down by two machine screws running up through aluminum tubes in the fuselage. A screwdriver was filed down for driving these machine screws home. The nuts were sandwiched into the stabilizer.

In addition to a movable rudder, we used for a while small "kick" elevators whose wire horns were depressed by a wire horn just out from the rudder sides. Thus, if the rudder flicked left, its horn would push on the left-side elevator, tipping it up. The reason was to hold up the nose on the turns, this being a common failure of low-powered radio planes. Small trim tabs were set out-board to these elevators with special notched adjustment guides. While these "kick" elevators undoubtedly would prevent nosing down for a spiral crash with prolonged use of rudder, they have such an effect, on our ship, anyway, that the machine cannot be forced down in a spiral which both risks the airplane being lost, and prevents full manœuvring powers, as for a spin to build up speed for loop. These surfaces might be disconnected for some flights. The elevators measured roughly 1"×4".

A Gottingen 279 section was used, carefully plotted for all sections out to the very tip, including the edging. Flying characteristics were so delightfully full scale that it was assumed the accurate rib sections had some bearing on performance. Not once did a stall actually break for the full stall, dropping the nose abruptly, no matter how bad the trim of the early power tests. The ship performed easy approaches to a stall, perhaps a partial stall, but the recovery was always dead ahead, smooth, and soft. Sometimes, when the ship would circle very slowly in one direction with nose-high trim it would approach the stall, rolling over the top and away in the opposite direction, after the manner of a lightplane. The gentle stall and recoveries definitely saved repairs on a number of occasions. Once, nose high in a moderate bank, the engine conked, the airplane gliding down in the same direction recovering for a good landing. Of course, this high order of stability probably was largely due to the full scalish position of the c.g., with no load being carried by the tail, rearward c.g.'s are spin happy affairs. If the results were largely luck, the lesson still is obvious:—use the proportions and layout of the typical lightplane, modifying it with usual dihedral, etc.

The night the equipment arrived, Walt sat in the kitchen installing the receiver while the writer prepared a check list for the sequence of operations up to actual flight. For what was A.B.C. to the radio boys was X, Y, Z to us! Finally we were set. Each time I read off a item from the list, Walt would say, "Check," and slyly poke a switch to see if anything happened. When it finally did he almost jumped through the ceiling. A merry dance at three a.m. woke the house.

Next we determined to evaluate the pilot's ability to control the airplane. Sitting with eyes closed, transmitter control button under our finger we listened to Walt's description of an imaginary flight, controlling accordingly. To make things realistic Walt moved the ship about the kitchen while watching the rudder response. "You are turning to left, now the ship begins to bank more steeply (click would go the rudder), now it is straight, begins a right turn (click, click, click), now give me a 360 degree turn", and so on until it was obvious that we would be able to think ahead of the airplane. Outside of once spinning into the kitchen floor things came off smoothly. Up at five a.m. we drove madly to the airport.

It should be explained here that with this particular type of rudder control, there are a limited number of control positions, and each must be reached via a definite sequence. For example, if the rudder is in neutral, it may be moved to the right by depressing the transmitter button. If the button is immediately released, the rudder will jump to full right, but if the button is held down, the rudder will move half right, remaining there until the button is released. To go from full right to full left would require pressing and quickly releasing the button twice, once to get back to neutral, and the second time to reach full left. Now if the rudder is moved from left to neutral, and left is again desired, the entire sequence must be completed, taking the rudder to right, neutral, then full left. We hardly ever used half positions (mainly because the pilot kept forgetting their existence) but also because their value seems to be for precise manœuvring, as in making the same size circles in a figure 8, where the turn with torque might be tighter. Before take-off we always set the rudder on neutral-going-right in case of an emergency. An emergency probably would be in the direction of torque, hence the desirability of right rudder as the next operation. (Our first emergency was to the right!)

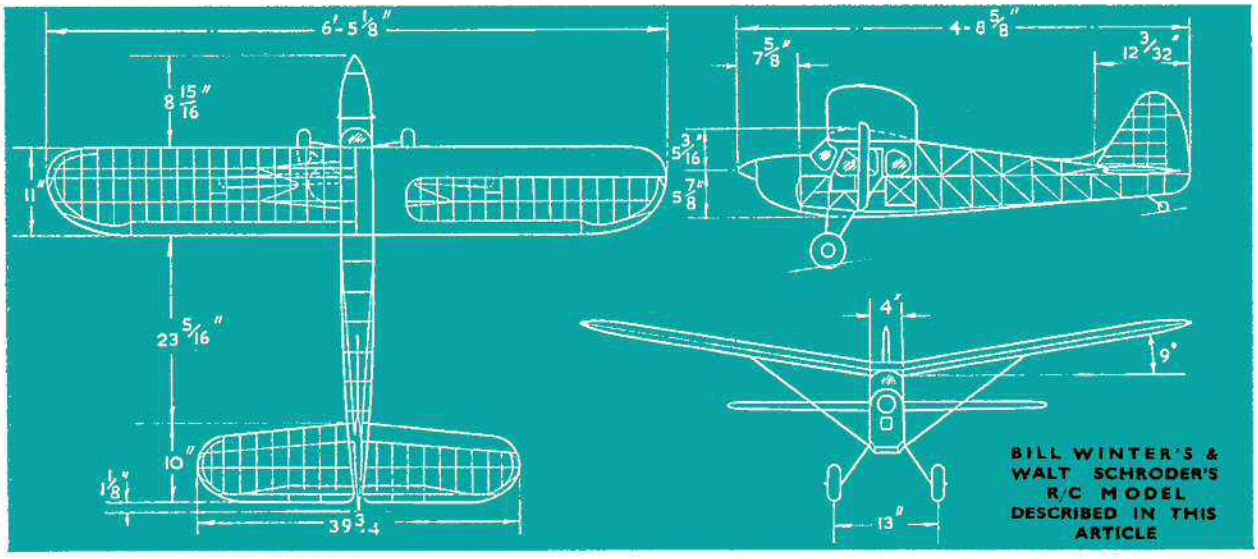
Before our first flight we had drawn diagrams of the L-shaped flying field, estimating distances, flying speeds, and probable durations according to various wind directions. Consideration was given to the position of houses, the hangar, and a highway bridge. Initial hand glides were made without batteries or radio in place. When the ship glided to our liking flight tests were begun. With a machine of this size and speed we were reluctant to try any motor run of less than 15 seconds. In fact, this duration did on several occasions permit lucky recoveries from mild stalls, lessening the angle of impact for merely a hard landing. But 15 seconds barely left room diagonally across the field (really a runway) to permit a glide and landing. Whereas we had always anticipated a straight power flight, hence had been tempted by smaller fields for free flight tests, the ship did a steep 180° turn on its first power hop and glided off the field into bushes. With low power and low speed, one of those big props develops plenty of torque effect.

Hitting the right combination is difficult and vital. A nice flying ship contrarily may refuse to do certain manœuvres? or give turn control in one direction only. or simply refuse to co-operate unless well adjusted. When this happens, you suspect radio and a couple of beginners trouble shooting a radio that has no trouble constitute a major menace! The ship had got to fly straight in the glide and under power. This means attaining the proper side and down thrust—so make provision for such adjusting. It is the classic free flight adjustment, only instead of, say, "right-right", you want "straight-straight"! Climb has got to be the bare minimum. There are several good reasons for this statement.

First, many a ship gets out of range overhead or off to one side if the transmitter isn't powerful enough. At a fair distance, it is extremely difficult to tell what a ship is doing. It becomes nothing but a spot. If it appears to circle it is difficult to tell which direction. We stumbled on another very important reason. The ship that is trimmed nose light or that climbs spritely for any reason, such as insufficient down thrust, or too much throttle, is difficult to control. Turning left, the combination of stall approaches and torque may make recovery difficult if not impossible. "This difficulty is acute when movable rudder area is not sufficient: it should be noted that rudder area required for windy weather manœuvring will be considerably greater than still-air performance suggests. It is advisable, therefore, to err or the side of too great an area, for the position of the rudder can be quickly altered by means of the transmitter." Even under control, such a ship may refuse to spiral down, not only limiting manœuvres but attaining more altitude all the time.

"The Goods have always preached an airplane that would climb only when on a definite heading. In turning flight, lift would be insufficient to maintain altitude, and the ship would work down with rudder. In other words, rudder was a kind of elevator control. In the beginning, the excellent response and manœuvrability of our machine made this philosophy seem obsolete. We soon found that a high-performance machine is difficult to control, no matter how stable and docile. After several fly aways due to tight climbing turns to the left it seemed better to back track to the old way of doing things, but recent experience has indicated that with great care in the free flight adjusting to eliminate power stall approaches, and left turns that build up with torque, it is entirely practical to fly with a speed that guarantees prompt, positive control and lively manœuvres. If the machine is flown fairly flat with plenty of rudder-power, the snap can be frightening."

"Motor and prop combinations are important. In our six-pound ship an Ohlsson 60 proved somewhat hard to handle at first. Flight was lively with the engine throttled down. A 14-inch prop turned over too fast, and the 16-inch prop was too efficient at a lower r.p.m. particularly proving troublesome due to its greater torque. Changes in propellers made necessary changes in adjustments, particularly as to right thrust due to torque variations. After extensive



flying in all conditions, we eventually returned to the 14-inch propeller, flying the machine at higher speeds and compensating fore-and-aft trim with increased downthrust. This brings up one of our first real lessons, which is that it is best to design a machine with a minimum difference between power-on and power-off trim, hence minimum down thrust. This is possible by keeping the thrust line close to the wing, as exemplified by the Good's Rudderbug.

If necessary, flight adjustments can be assisted by using a propeller of smaller efficiency. The fact that we did so with the Ohlsson 60 is an indication that power was too great. The latest trend, in fact, is toward engines of as little as ·23 displacement in five foot machines, an ·09 having been employed successfully with a six-foot Comet Clipper on the Coast. While the Ohlsson 60 could be throttled back to merely extend the glide, it seems desirable on our machine for easy engine operation to run a smaller plant at higher r.p.m.

After several dozen free flight tests to attain a rough kind of trim, the batteries were installed, and the equivalent of the radio was hinged in place by the rubber band suspension system. This mass consisted of an old B battery, to which was taped a pair of scissors that happened to be of the correct weight. The point was blunted with tape. While this was not very scientific it caused no harm and astounded spectators who looked inside to see the "radio". "Looks just like scissors," they would say.

The added weight had such a beneficial effect, dampening our stall approaches and recoveries, that we regretted not having worked with these weights in the beginning. (This presumes a well balanced, sound airplane, ours required shifting a B battery one inch forward when the c.g. came out very slightly to the rear of its intended spot.) In fact, after the wildest tilts with trees, it would have been possible to have had the radio installed from the beginning. Strange to say, the prop and the radio proved the sturdiest items.

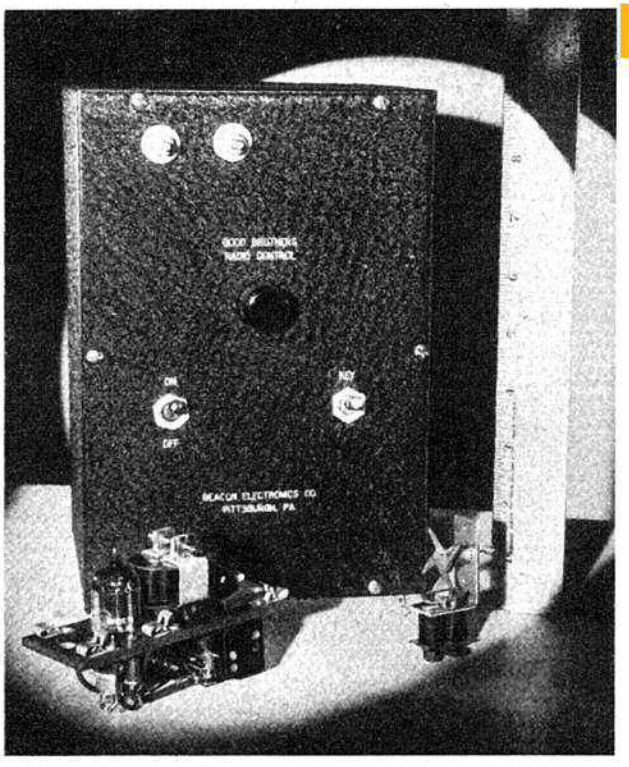
After that first "RC" flight, it was decided to increase the movable rudder area. As pilot, I had been unable to steer the ship well on the glide. And that is a point; borderline rudder control that works in calm weather may not be powerful enough to enable you to fly the ship back against a good wind! During the design, both of us had been afraid to use the recommended 20% of the vertical tail area for our rudder, remembering too well the spins of free flight models due to tiny tabs. But on these slower flying, heavier machines, the 20% is not dangerous. Once with a rudder jammed full left we had an out-of-sight flight instead of a spiral dive and crash—though a more nose heavy trim probably would have ended in the dive. Ultimately we attained maximum rudder area on a day when smoke lay flat after leaving the chimneys. As borderline area was reached, an interesting check suggested itself. In sending the machine up wind for flying a mimic lightplane pattern about the port, the model was allowed to gain perhaps 200 feet of altitude. As long as it flew straight in the climb, the controls were untouched. As soon as the nose began to swing slightly, opposite rudder was applied to check the movement, then removed for neutral as the ship swung back on course. However, it was noticed that too much rudder power could turn the machine abruptly enough to permit a gust to enlarge the deviation to a full 90 degrees, before opposite rudder could force the machine into the wind. Strong rudder response made it difficult to fly upwind without overcontrolling. Otherwise, large rudder area appeared to have no visible effect on performance.

The second flight was excellent in that the ship was brought around quickly to the left with torque to get it over the field before the timer cut the engine. Tentatively, we tried left rudder at first to see if a spiral would result, then full rudder was kept on! Overhead, right rudder rolled the ship out as the engine cut. It was possible to remain in the right turn until ten feet from the ground, then apply full left rudder, neutralized as the ship came to level wings position. The result, due to excess speed, with turn removed, was a slight zoom for what looked like a "flared out" landing. But familiarity breeds contempt. Setting the timer for four minutes we nearly lost the ship as recounted. After staying up all night for repairs, the stage was set for a fascinating adventure.

The next day was windy. With Bill Jr. and the airport operator to bolster the helper's department we prepared to fly toward sunset. Better to run and live to fight another day! It so happened that a 15-minute temporary tank was in use. No sooner was the ship airborne than it refused to recover from a left climbing turn. Then the timer failed. When last heard from the airplane was heading out over 50 miles of woods broken by occasional small towns. Helpers and pilot took off in all directions on foot and by car, only to assemble, cold and gloomy long after dark.

Planning an air search for the next day, a late phone call advised the lost model had been found. A backwoodsman out with his dogs had looked up at an airplane coming overhead in the twilight. Just then the motor stopped and the plane spiralled steeply down, scattering dogs in all directions. Hours later someone got up courage, amid talk of German bombers and flying saucers, to sneak up on the machine, pry off its windshield, and, by the light of a torch, to read the balderdash about "scientific instruments and don't touch buttons."

For days we argued about the cause of those hopeless left turns, not being sure whether the radio failed or, not failing, still, for some reason, being unable to affect flight control. Now we know. Finally, when discussion reduced us virtually to the expedient of passing back and forth polite



Good Bros. Radio Control by Beacon Electrics.

notes, it was thought that the escapement was sticking in full left. When the rudder area was increased, added rubber had been placed in the escapement drive on the theory that more " umph " would be needed to move the bigger surface against the slipstream. Rubber size was reduced to the size recommended in the instructions. Radio experts as far as 75 miles away were consulted by phone, radio and batteries were checked, new batteries installed all round, the ship retrimmed. Would the plane turn right. Yes, perfectly !

Every time we went out to fly, our small field compelled discussion of where to take-off, how to avoid buildings, and so on. One of us might vote for starting from the centre of the field (always a good compromise) but the other might argue that a wind required launching up at one end, with the rest of the field for an emergency landing place. On this particular flight, the glide had appeared a trifle too pretty—it should be flat touching down on two wheels without a trace of " swoop." Control seemed borderline in the turn, so I had asked Walt for one notch less on the elevator trim tab. Also, it was decided to disconnect the " kick " elevators to avoid all chance of climbing in left-hand circles. The wind, unnoticed, dropped to nothing. The launch produced a sinking flight due to insufficient flying speed for the changed trim and lack of wind and the ship struck on the left wheel, turning as it did so. Ahead was a fringe of bushes.

I decided to try for a full ground loop by using left rudder for added left turn. However from neutral-going-right, right rudder had to be used first. For the split second it seemed that right was on, both wheels got on the ground and the ship immediately took off.

Now trees were ahead, blocking a right turn, or straight flight. Full left rudder was applied but as airspeed increased torque took less effect, lessening the bank. The detachable wings fluttered back from the tallest tree, and the ship, sans tail group, barrel rolled through bare limbs and dived into the earth with the " 60 " screaming open. The ship has since been repaired ! Remarkably, the rudder was unbroken and this was our only broken prop.

Now lest these examples of how not to fly "RC" give the impression that our flying was a series of crashes, there were many fine flights. The ship never let us down. On our third flight we had done a " Figure of 8 ", and imitated co-ordination exercises. That first day we ran off six good flights in rapid succession despite complete ingorance of radio. So many flights were made that on some mornings we were able to assemble the ship, test and get into the air within twenty minutes. We learned enough in those two weeks, some of it contradictory to all we believed to be able to form impressions and reach some conclusions on ship design and size, manœuvring speeds adjustments, trouble-shooting (manufacturers should include in directions what to do when things don't work), possible improvements, the possibilities of rudder only and its limitations, and so pass on high lights of these experiences, as spotty as they are.

Anyone can fly radio control, provided they have a fundamental knowledge of how to build a good free flight model and adjust it. Sport free flight experience is even better, for this kind of pilot has more of an open mind : there is less of teaching an old dog new tricks. First step is to concentrate on the airplane to make it fly successfully without radio. The notion that the radio permits the pilot to make up for ship shortcomings, simply compounds trouble.

As to the size of the airplane, the smaller it can be made, still keeping practical loadings, the better. For the single channel control we used, our ship was close to the minimum size, the optimum by the way, for the weight involved. Under six square feet the glide would be too fast, leading to excessive damage in minor crack-ups, and the launching speed would require a good sprinter with a strong arm. As it is, Walt has the strong arm ! Smaller airplanes mean flight in smaller areas, reduced crack-ups against obstacles, smaller investment of time and money ($100 and four months for our ship), and less danger to people and property. A heavy airplane is dangerous—and we consider ours too big and heavy for peace of mind—as a suit against one of our experts proves (damaged a house). The penalty of small models is expensive short-lived batteries. For instance, Harry Guyer (Beacon) advises us we can reduce our radio and battery weight to nine ounces by using batteries with 45 minutes life (continuous operation). This might permit use of a ·199, certainly of a ·23 Ohlsson with lightened structures. The battery problem must be surmounted to clear the way to little " RC " airplanes.

Batteries almost invariably are the root of most failures. Battery life tables are much too rosy for radio control. Thinking battery failure impossible because of these tables, days were lost in hunting imaginary failures. A so-called 20 hour battery failed in an hour's flying time. Suspect batteries and have the equipment to check them, particularly when gradually failing batteries require continual resetting of the relay. It is the small batteries that give out first. The 3 and 1½ volt batteries require frequent replacement. We decided on complete replacement of small batteries before every flying session and keep handy taped packages with clips installed, ready to slide in place. On two occasions escapement batteries failed overnight. The B battery in the tailplane lasted most of two weeks steady flying and testing, although it was on for five hours after an out-of-sight flight. The transmitter batteries lasted about half as long. Complete replacement runs to about $10 when larger longer-lived batteries are used (no hearing aids), so it is a good idea to rig up a battery charging gadget if you stick with radio control. The writer has learned from other " RC " fans that batteries may be recharged again and again, one chap even recharging overnight batteries of ours that were six months old.

While the low-powered transmitter we used was purposely designed to keep hobbyists out of mischief, for its short range minimizes chances of interference, a more powerful transmitter would forgive relatively sloppy adjustment of the relay (now causing occasional loss of control) and would insure keeping the ship in range. At the last Nationals, Foxworthy's powerful transmitter frequently was resorted to when competitors' ships got out of range, he bringing them back ! Connection with an auto would be a good power source for more powerful transmitters.

In as much as our ship flew faster than most, it had –

definite snappy response. When flying properly flat, it would literally stand on a wing tip if rudder was left on. Reversing the controls would roll the ship beautifully into a turn in the opposite direction, just as if a pilot were using both aileron and rudder. This quick, powerful manœuvring was a life saver on one occasion. Due to engine noise Walt had misunderstood a request of a shade more right tab trim, and tried to oblige by launching the ship in a slight right turn! The stab struck him a glancing blow on the back of the head and the ship began a dive into the ground.

It was possible to through right rudder (remember that our take-offs were made with rudder in neutral-going-right), back through neutral to full left and pull the ship out before it hit the ground. This combination of speed and rudder power should permit many manœuvres like lazy-eights, chandelles, and so on. By spiralling down for speed, recovering to begin the loop by means of excess speed and lower-speed trim, it should be interesting to observe the effects of sudden full rudder in the loop, or on the top where a half roll might be affected, possibly without a split-S., An interesting speculation is the use of two-position throttle control using the second position, not for losing altitude by reducing power, but to add power in a burst for purposes of advanced stunting. This is dream stuff, true, but stunting at good speed with a sound basic machine should permit the beginnings of the spectacular with plenty of practice and an *occasional crashed airplane!* Spirals and loops are routine with the Goods on rudder alone.

As pointed out, a machine such as ours, however, must exhibit a low rate of climb straight ahead. Flying almost "flat" at good speed its manœuvres are rather abrupt, sometimes breath taking to the pilot. With more than minimum climb, loss of control is immediately risked. If we climb slightly in turns and retain control it becomes impossible to force the ship down by spirals.

The other alternative to our relatively high-speed manœuvres is the ship described by the Goods, in which altitude is barely maintained or actually lost by the turns, depending on the severity of rudder use. To our way of thinking this slow speed manœuvring has its disadvantages, often permitting the airplane to slide off and spiral, as many do, into the earth. Of the two methods, the slow one is preferred, in that general use has built a field of experience. The faster you go the more the "bugs" penalise you. Able to manœuvre positively from the instant of launch right down until the wheels practically hit earth, good manœuvring speed seems desirable enough to encourage design and trim progress, to ensure control through more attitudes of flight.

Smooth teamwork between the two or more members of the crew goes a long way in minimizing misunderstandings and accidents. No one should argue, or kibitz with the pilot when the machine is in flight. For example, on one of our flights the glide was straight ahead, the ship passing directly over the airport without responding well to rudder. Desperately the rudder was flipped back and forth to see if there was any response in either direction, in which case the turn, would have been held. Finally, left rudder produced an almost imperceptible turn, so the pilot resigned himself to a close shave with trees that loomed in the general landing area. Just then, Walt thinking we had neutral rudder, and watching the ship fly closer to the trees, cried, "Give it left rudder!" Now we were rattled. Did we have left? Did we have any rudder? The result was complete confusion. That lesson was learned on our very first flight.

Complete concentration is required by the pilot to know which position the rudder is in, what manœuvre the plane is performing (at long distances you can't see which way the turn is and, once losing track, loss of control is probable), which position of the rudder you want next, how are you going to get that position, what you want the plane to do next. Under pressure, when actually you can't be sure whether the ship is under control or not, the difficulties weigh heavily on the man with the transmitter. And on the field when one man may walk the machine a couple of hundred feet out for reception tests, and so, while the other operates the transmitter, convenient signals are needed. Many a time, we met in the middle to get ourselves straightened out! Settle all disagreements before the ship is airborne and, once a decision is reached, no recriminations! These things work both ways with time! No flippant "let's try this."

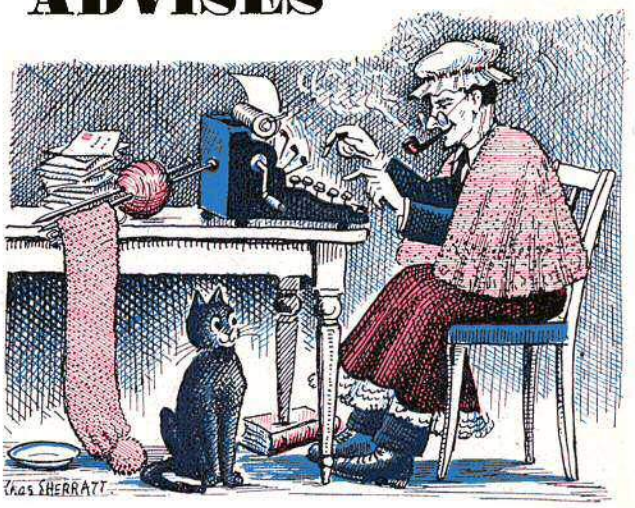
Don't fly late in the afternoon near approaching darkness. An expected two or three minute hop may end up fifteen minutes later 1,000 feet high and a mile away. Avoid wind if possible. A good ship will perform in a heavy wind but the airplane may not have too great a margin of speed to come up wind when it attains altitude, and could drift away regardless of control! Impatience got the better of us one cold afternoon as we waited for slackening winds, with the sun sinking low in the west, so we launched into a fairly sturdy breeze. The airplane quartered out of a gust and immediate left rudder was given to fight against drift even at ground level. Just then the plane ran into a gust that almost stopped it dead in the air. Then the motor cut! That ship fell, not glided, into a large bush that ripped the belly out of the fuselage.

All of our foolish crashes involved collisions with obstacles. It was evident that ignition timers were unreliable, particularly on cold days when they might work in 40 seconds or three minutes. So put this down in big red letters: the must of musts is some means of stopping the engine in the air. Beacon, for example, now has a bi-metal engine cut-off switch that is wired into the ignition switch. When the transmitter button is held down for five seconds, this switch bends, breaking contact. If the ship heads for mischief on take-off, say, hold down the button and in five seconds you can breath freely again!

Our experiences as beginners in the field of radio control proved to us that this game has reached the point of development where, barring cost, "RC" is practical for all competent modellers.

Left to Right: 9' Cub Cruiser, Jos. Poco of Livermore. Buzzard Bombshell, John Terry, Oakland, California. 7' Cub Cruiser E L. Rockwood, Walnut Creek, California.

AUNTIE AGATHA ADVISES



Dear Girls,

Isn't it just too too sweet of the dear Editor to let us have this little corner all to ourselves? I know that all those keen aeromodelling girls who follow their menfolk week after week to the flying fields and pretend to like it, will welcome this opportunity to enjoy their true interests. Keen as we may be on those sweet little model aeroplanes, there are, after all, other things in life, aren't there, my dears?

Like myself, many of you must—on some crowded flying field—have often thought of those beautiful lines of Lord Byron:—

I'd like to get you
On a slow boat for China:
All by yourself—
Alone . . .
O! doody, do, do-o-o-o.

It is so sweet of you, my dears, to send me all those sweet letters, and I trust that my answers will be of help to you.

Yours affectionately,
"AUNTIE AGATHA."

OUR lady readers will be thrilled to bits at this new "Aeromodeller" feature. Auntie Agatha will answer your problems with insight and sympathy. Why not write to him (er . . . her!) to-day?

Q. My boy friend has recently taken up aeromodelling, and I fear that he is drifting away from me. What can I do to regain his affection?

"Brokenhearted" (Barnsley).

A. It is always difficult, my dear, to get a man back into your clutches, but are you sure that you are doing all you can to make yourself attractive to him? Why not try using banana oil in place of your usual make-up? In similar cases to yours, I have known a few dabs of diesel fuel behind the ears to do wonders in a warm room. Or you might try wearing square roll-ons to give you that slab-sided look which aeromodellers find so attractive. I am sure that with a little ingenuity you could knock up something from a couple of biscuit tins. Best of luck, my dear, and do write again.

* * * *

Q. I was recently scared stiff when a "Vampire" flew in through the front door and out at the back. Do you think my baby will be jet propelled?

"Anxious" (Altringham).

A. You have not the slightest cause to worry, my dear, as your fears are grounded only on an old R.A.F. superstition. Do try to be sensible, and take no notice if such a thing happens again.

* * * *

Q. Last Sunday I accidentally trod on my young man's control-line model. He seemed very upset, and threw me to the ground and kicked me seven times. Do you think he still loves me?

"Poppy" (Peckham).

A. Well, "Poppy" (Peckham), it is a little difficult to say. You must not think that because your young man threw you down he has thrown you up. You must remember that he kicked you only seven times, in spite of the fact that you smashed up his model, and this shows that he still has consideration for your feelings, and was able to restrain himself even in the heat of the moment. Now, if it had been my model . . .

* * * *

Q. I am engaged to a Frenchman who is a keen aeromodeller. In his last letter, written from Paris, he said he was experimenting with a model flying-boat from a rubber dinghy. That was over two months ago, and I have not heard from him since. Could you help me to get in touch with him again?

"Worried" (Worthing).

A. On receiving your letter I immediately wrote to our French correspondent, and I am afraid I have bad news for you, "Worried" (Worthing). He has sent me a cutting from a Paris newspaper, which I am forwarding to you. The paragraph is headed: "Aeromodeller Drowned While Temporarily In Seine," and the chap in our office who does the foreign correspondence says that this undoubtedly refers to your bloke—pardon!—fiancé. Should you get the paragraph translated, would you send me a copy, dear? I'm dying to know what it says.

* * * *

Q. A few evenings ago I met a young man at a dance, and I was immediately attracted to him. He was very nicely dressed, and wore a collar, and I like dressy men. He told me he was a gentleman of independent means, and a B.B.C. announcer as well, and he has asked me to meet him inside our cinema (3rd row, 1/9's) next Thursday. What puzzles me is that I saw him on Sunday in the park, flying a model aeroplane with the local M.F.C. I really believe he is a B.B.C. announcer, because he didn't half speak funny. At the same time, I now remember that he had a tiny windsock on top of his bowler. Do you think he is trying to deceive me?

"Simple Sue" (Slough).

A. It is very difficult to decide your question, "Simple Sue" (Slough), because there is strong evidence for both sides of the case. The fact that you saw him flying a model aeroplane certainly seems to rule him out of the gentleman class—independent or otherwise. On the other hand, you say definitely that he wore a collar, which makes it seem almost impossible that he can be an aeromodeller. I don't think that anything can be deduced from the fact that he didn't half speak funny. After all, dear, lots of other people have an impediment in their speech.

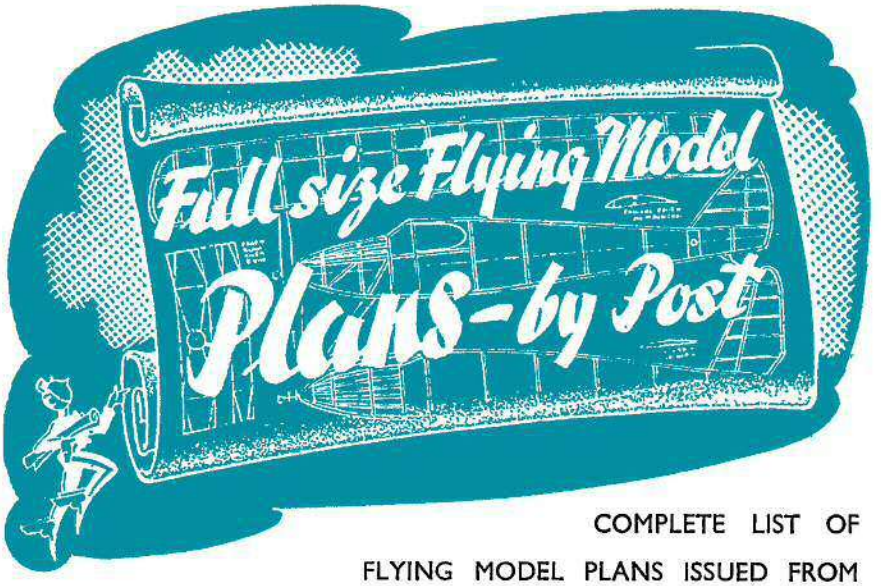
On the whole, I think it safer not to see this young man again. Any man who would wear a tiny windsock on his bowler at a dance can be nothing but a cad, and probably capable of anything. Are you sure it wasn't a bit of the lining sticking out?

* * * *

Q. Can you tell me why my young man uses rubber lubricant instead of proper hair cream? I am a very attractive blonde, and all the boys chase me, so I do not see why I should put up with such peculiarities unless there is a good reason.

"Showgirl" (London, W.1).

A. I am afraid that this matter is far too delicate to be handled in this column, and I suggest that a personal interview with you would be much more satisfactory from all points of view. If you could call at the office any evening after 7 o'clock . . . *(No you don't.—Ed.).*



COMPLETE LIST OF

FLYING MODEL PLANS ISSUED FROM

JANUARY 1949 — DECEMBER 1949

GLIDERS

G/317. **COBRA.** By R. Twomey. British Class A.H.L. Record holding glider with elliptic dihedral round fuselage. Span 48 ins. 3/–

G/330. **DREAM BOGEY.** By D. Posner. Low aspect ratio high wing contest sailplane. Span 60 ins. 5/–

G/314. **JINX.** By N. G. Marcus. Streamlined parasol wing type sailplane, spring-up tail dethermaliser. Span 72 ins. 5/–

G/338. **LULU.** By J. Roberts. Beginners' slab-sided contest glider. Span 50 ins. 3/–

G/310. **MOBY DICK.** By Eric Smith. Shoulder wing high performance contest sailplane utilising laminar flow wing section. Span 82½ ins. 8/–

G/341. **WALTHEW GLIDER.** By Roland Scott. Novices' first glider. Parasol wing, parallel chord wing, slabsider. Span 29 ins. 2/–

CONTROL LINERS

CL/325. **ARIEL.** By R. J. North. Super-simple basic stunt control line trainer or contest model. For 1–1.5 c.c. engines. Span 30 ins. 3/6

CL/313. **CHEETAH.** By E. Wiggall. Profile fuselage high wing stunt control-liner with folding prop. Engines 1–15.c.c. Span 23 ins. 2/–

CL/342. **HAPPY HAROLD.** By H. Butcher. Lightweight slabsider stunt control-liner. Engines 1.8–2 c.c. Span 30 ins. 3/–

CL/318. **JET TRAINER.** By R. C. Jude. An ultra-simple basic control-line model for British and American jets. Span 30 ins. 3/–

CL/339. **LI'L ZOWIE.** By B. T. Falconer. Simple midwing stunt control-liner for 1 c.c. engines. Span 22 ins. 2/–

CL/347. **M 48 CONVERSION.** By H. J. Pridmore. Control-line adaption to designer's earlier scale model. Miles M.48. 2/–

CL/336. **TEMPEST.** By H. J. Pridmore, Scale control-liner for engines 2.5–5 c.c. Span 31 ins. 3/–

CL/321. **TIPSY JUNIOR.** By H. G. Hundleby. 1¼ in. scale stunt control-liner complete with "pilot" for 1–2 c.c. engines. Span 28½ ins. 4/– (Also available as *CL*/322. 34 ins. span for motors 2·5–5 c.c. 5/– and *CL*/323. 39½ ins. span 5–10 c.c. 6/–)

CL/328. **SIRIUS.** By W. Musciana. Scale control-line model of the Lockheed floatplane. For engines 2·5–5 c.c. Span 32 ins. 3/–

CL/334. **YOICKS.** By J. W. Coasby. Biplane stunt control-liner; using laminar flow wing section. For engines 5–10 c.c. Span 33 ins. 3/–

FLYING SCALE POWER

FSP/343. **AVRO 504K.** By J. Booth. "Old Timer" scale bi-plane. For engines .5–1 c.c. Span 36 ins. 5/–

FLYING SCALE POWER *(contd.)*

FSP/340. **CHILTON D.W.1.** By J. M. Greenland. Scale low wing power model for engines .5–1 c.c. Span 36 ins. 3/–

FSP/331. **CHRISLEA SUPER ACE.** By E. J. Riding. 1½ in. scale power model. For engines .87–1 c.c. Span 54 ins. 5/–

FSP/319. **SEABEE.** By H. J. Towner. Lightweight flying scale model of Republic amphibian Engine 1.25 c.c. Span 53½ ins. 7/–

FREE FLIGHT POWER

PET/315. **DOLPHIN.** By. R A. Collins. Elegant streamlined model with mono wheel U/C. For engines 3–5 c.c. Span 80 ins. 7/–

PET/346. **FRANKENSTEIN.** By M. W. Thompson. Precision power high wing cabin slabsider. Engines up to 1.8 c.c. Span 50 ins. 3/–

PET/327. **GOSSAMER.** By K. L. Stothers. Sometime Class A Record holder, pylon power model. For engines ·5–1 c.c. Span 32 ins. 3/–

PET/332. **HORSA II.** By J. Marsh. Tip-dihedralled pylon contest power model for 2–3.5 c.c. engines. Span 50 ins. 5/–

PSS/329. **WINDY AIN'T IT?** By Ron Aaron. Shoulder wing semi-scale power model for engines 2.5–3 c.c. Span 60 ins. 5/–

UNORTHODOX

U/320. **B.D.12.** By R. Dykman and J. v. d. Caay. Dutch record holding tandem glider. Hexagonal fuselage, tapered wings. Span 58 ins. 3/6

U/337. **BUCKS DUCK.** By A. J. Day. Pusher contest power model suitable for R.C. For engines 5–10 c.c. Span 77 ins. 7/–

U/335. **CANELLARD 3B.** By P. Cannell. Rubber driven pusher canard model. Span 20 ins. 2/–

U/326. **DACTYL.** By C. M. Holden. True flying wing glider without centre pod. Elevon controlled. Span 60 ins. 3/–

U/333. **FLAP HAPPY.** By Parnell Schoenky. Rubber powered U.S. record-holding fuselage type ornithopter. Span 41 ins. 3/–

U/324. **OLD TIMER.** A Mann & Grimmer replica of their 1913 de luxe design. "A" frame twin pusher stick model. Span 33 ins. 5/–

U/345. **STRUIJKPLANK.** By T. van Tennenboeck. Dutch flying "ironing board" glider. Span 60 ins. 3/–

PLANS

AA/1 **PINOCCHIO II.** By G. Martin. Semi-scale biplane with slabsided fuselage. For engines up to 1 c.c. Span 23½ ins. 2/–

AA/2. **BMI.** By Dr. G. Benedek. World-record seaplane; in landplane from world record distance. Span 40½ ins. 3/–

AA/3. **TASS 130.** By G. Meszetler. World record rubber duration model. High wing. B-series aerofoil. Span 40 ins. 3/–

AA/4. **DON QUIXOTE.** By S. Baguena. Simple pylon type sailplane of elegant lines, suitable for beginner. Span 33 ins. 1/6

AA/5. **FLYING BOMB Mk8.** By O. Mischler, High aspect ratio parasol wing glider with laminar flow wing section. Span 39 ins. 2/6

AA/6. **BAD PYRMONT INTERMEDIATE.** By H. Pfeil. Pod and boom high performance sailplane. Span 53 ins. 3/–

AA/7. **SCALDED KITTEN.** By R. H. W. Annenberg. Shoulder wing vertical climbing model .5–1 c.c. engines. Span 27 ins. 2/–

AA/8. **TAURUS.** By J. W. Coasby. "Giant size" low wing stunt control-liner for 10 c.c. engines. Span 68 ins. 5/–

AA/9. **RUDDERBUG.** By Dr. Walter Good. U.S. Nationals' radio control winner. High wing triangular fuselage. Span 72 ins. 7/–

AA/10. **SOPWITH TRIPLANE.** By J. Pleydel (after M.R.A. design). Old-timer, scale control-liner. For ·5–1 c.c. engines. Span 20 ins. 2/–

AA/11. **STUNTSTER.** By G. Ridenti. Winner of Monaco International Meeting for stunt control-liners. For engines 3·5–6 c.c. Span 39½ ins. 3/–

AA/12. **KR56.** By K. Rechnagel. Nordic sailplane winner. Streamlined fuselage, modern lines. Span 65 ins. 3/–

AA/13. **F.19 SWISS SHOULDER WING PLANE.** By F. Strub. Mono-wheel U/C twin fins. For 7·5 c.c. engines. Span 78 ins. 7/–

AA/14. **FLANDERS FLYER.** By G. Joostens, Famous Belgian contest winner in latest form. For 3·5–5 c.c. engines. Span 55 ins. 5/–

AA/15. **FLICKA.** Streamlined super-stunt control-liner built round Yulon, Eta and Amco engines. Span 40 ins. 5/–

RUBBER DURATION

D/311. **ARISTOCRAT.** By E. Stoffel. High wing semi-sreamlined cabin Wakefield rubber duration model. Span 43½ ins. 3/–

D/344. **MERLU.** By E. Sadorin. Third in 1949 Wakefield. Elegant shoulder wing semi-streamlined model. Span 44 ins. 3/6

D/316. **ZOMBIE.** By R. H. Warring. Highly efficient shoulder wing Wakefield, by foremost British expert. Span 44 ins. 5/–

RADIO CONTROL

RC/312. **GOLIATH.** By G. W. W. Harris. Semi-scale high wing power model for R.C. based on Auster. For engines 10–30 c.c. Span 9 ft. 17/6

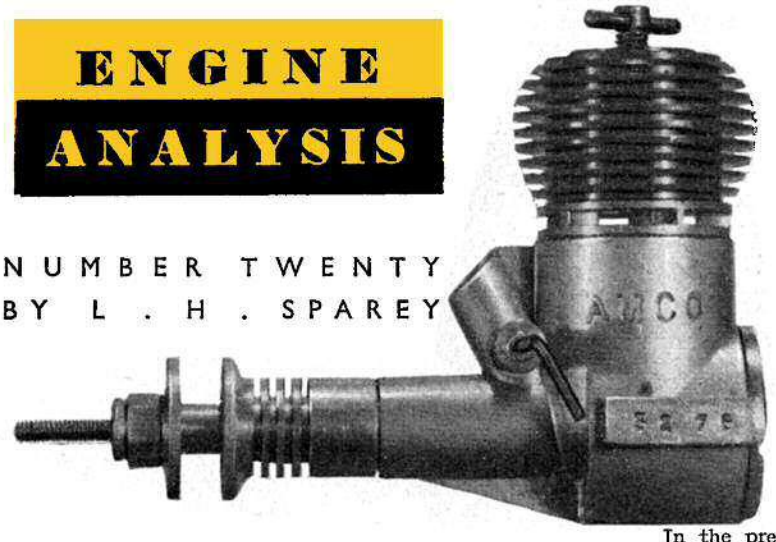
INDOOR

I/309. **FEATHERWEIGHT.** By B. Roberts. Tissue and "mike" high wing Class A indoor R.T.P. Span 20 ins. 2/–

ENGINE ANALYSIS

NUMBER TWENTY

BY L. H. SPAREY



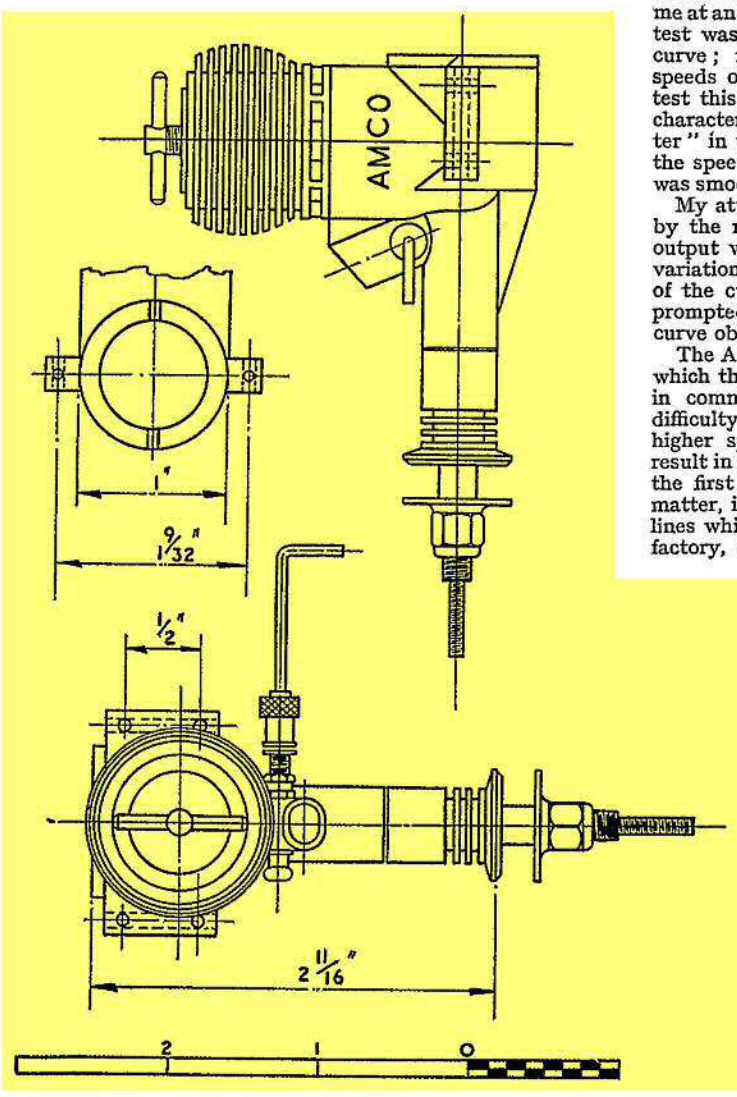
THE AMCO 3·5 c.c. DIESEL ENGINE

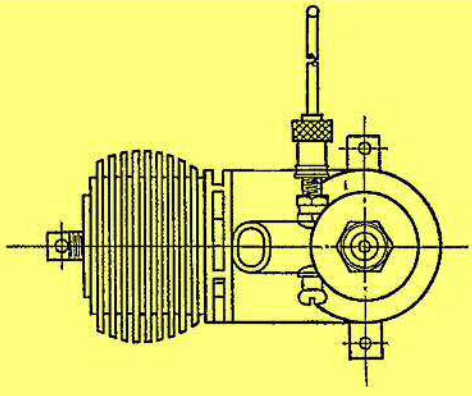
IT has often been asked if the results published in these pages may be taken as typical for any engine of the same make and capacity. Broadly speaking, it may be said that similar engines from the same manufacturer do not vary to any appreciable extent, although for reasons which are still a mystery, apparently identical engines sometimes do show marked variations in performance.

In the present instance, a good opportunity has been presented to form some judgment on the matter, as, for certain reasons, two Amco 3·5 c.c. diesels have been tested by me at an interval of several months. The reason for the double test was that a rather curious character arises in the test curve; namely, a slight decrease in power output between speeds of about 10,500 and 11,500 r.p.m. During the first test this discrepancy was noted, but as I had not met this characteristic before, the variation was attributed to "scatter" in the readings due, probably, to small inaccuracies in the speed readings. On this assumption the finished curve was smoothed out, as is the usual practice.

My attention was later drawn to a power curve published by the manufacturers, wherein a very pronounced drop in output was registered at around the speeds where my own variations lay; although I must confess that the remainder of the curve had but little resemblance to my own. This prompted me to make an entirely new attempt; the resultant curve obtained is that now published.

The Amco 3·5. c.c. diesel engine is of that class of design in which the cylinder barrel is screwed into the crankcase, and, in common with other engines using this fixture, great difficulty was found in keeping the screwed joints tight at the higher speed range. Excessive tightening did, as usual, result in seizure of the piston within the bore. At the time of the first tests I drew the manufacturer's attention to this matter, in consequence of which modifications were made on lines which I suggested. The alterations appear to be satisfactory, because the second engine—obtained at random





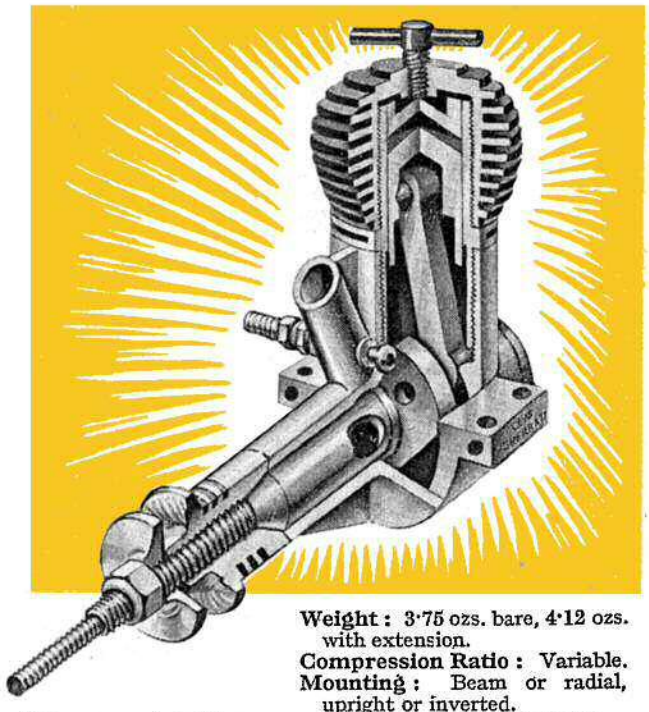
from a retail stockist — did not exhibit this seizing tendency although the treads were tightened up by myself by drastic methods. It would appear that the conditions of test aggravate any tendency which parts have to unscrew, as I have experienced this difficulty on engines which users assure me behave perfectly under flight conditions.

TEST

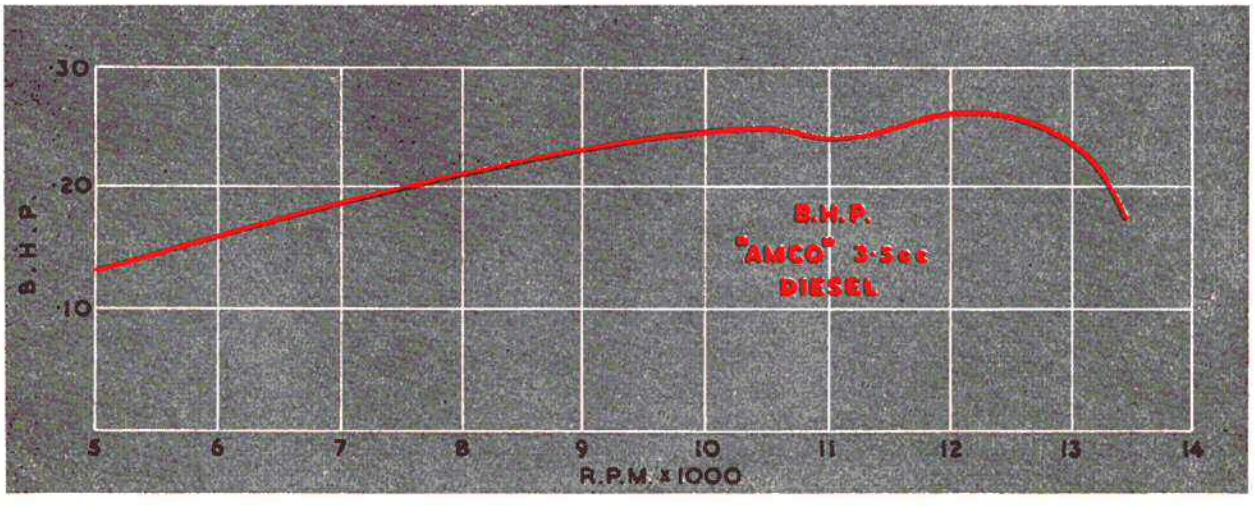
Engine : Amco 3·5 c.c. Diesel.
Fuel : Mercury No. 3.
Starting : Pulley and cord used for convenience, but the engine was experimentally hand-started from time to time. No difficulty was experienced with engine either hot or cold.
Running : Runs well and evenly at all speeds from 5,000 to 14,000 r.p.m. and accommodates itself well to various loadings. Below 5,000 r.p.m. signs of erratic running became evident, probably due to the quick cut-off of ports. Cylinder started to unscrew from the crankcase at speeds in excess of 11,000 r.p.m. but the trouble was not repeated when the cylinder was screwed down really tight when hot.
B.H.P. : The Amco 3·5 diesel is definitely in the "super" class, as the peak output was ·260 b.h.p. at 11,600 r.p.m. This figure remains almost constant up to about 12,000 r.p.m., when the output falls very gradually. At 13,000 r.p.m. a distinct drop commences, showing a loss of about ·001 b.h.p. for every 100 r.p.m. increase. The curve is remarkably flat, yet the most interesting part is that lying between 10,500 and 11,500 r.p.m. Here, a distinct drop in power is to be noted; a loss of ·002 b.h.p. from maximum, occurring at 11,000 r.p.m. The reason is difficult to state with any certainty, but is probably due to resonance at this point. The graph does, however, serve to show the desirability of running the engine as near to the 12,000 r.p.m. mark as is possible.
Checked weight : 4·07 ozs. (less tank).
Power/Weight Ratio : 1·022 b.h.p./lbs.
Remarks : Readers will note the extraordinary high power/weight ratio of the Amco 3·5 c.c. engine, which is the first of any miniature engines yet tested to reach a figure of 1 b.h.p. per lb. weight. In view of this extreme figure one might have expected some mechanical failure due to excessive lightening of the parts, but, in fact, no trouble of this kind was experienced. The test on the first engine, some months ago, revealed excessive wear on the con-rod bearings, but the present use of new materials seems to have overcome this.

GENERAL CONSTRUCTIONAL DATA

Name : Amco 3·5.
Manufacturers : Anchor Motors, Model Engineering Division, The Newgate, Chester.
Retail Price : £4. 17s. 6d.
Delivery : 14 days. **Spares :** Ex. stock.
Type : Compression Ignition (Diesel), G.P. when run in. Designed exclusively for Control Line.
Specified Fuel : C.I., Mercury No. 3. G.P., Mercury No. 5.
Capacity : 3·43 c.c.



Weight : 3·75 ozs. bare, 4·12 ozs. with extension.
Compression Ratio : Variable.
Mounting : Beam or radial, upright or inverted.
Recommended Airscrews : Depends on type of model.
Tank : Not fitted. **Bore :** ·6875 in. **Stroke :** ·5625 in.
Cylinder : S.14, hardened, ground, honed, round and parallel to ·00005 in. 10 ports; 5 transfer, 5 exhaust. Screws into crankcase.
Cylinder Head : Dural, black anodized. Screws to cylinder.
Crankcase : L.A.C. 112A. Pressure diecast.
Piston : Centri-cast iron. Conical Crown. Ground and honed to ·00005 in.
Connecting Rod : 24 St. alum. alloy. Drop forged.
Crankpin Bearing : Plain, honed.
Crankshaft : S.11. Hardened, tempered, ground.
Main Bearing : Plain, honed.
Little End Bearing : Plain, reamed.
Crankshaft Valve : Shaft rotary.
Plug : K.L.G. Mini-Glow, short reach.
Special Features : High power, high r.p.m., light weight. Very flexible carburation. Adaptibility. Good finish. Easily attached exhaust manifold, 2/6. Glow-Plug Conversion (for fully run-in engines), 10/–.



Readers' Letters

Ye Olde Editor taketh not unto himself ye brickbats. Naught but ye bouquets may be bestowed at this festive season, be they upon his ancient frame or the pates of ye knavish scribes.

DEAR SIR,

With great satisfaction I notice that the idea of an International Model Sailplane Class is at long last being discussed. Since the four Nordic countries, four and a half years ago established such a class they have repeatedly tried to persuade the F.A.I. model commission to adopt such a class for international contests. As the F.A.I. meetings are too seldom, too short and attended by changing delegates we have still not gone farther than being promised a written discussion in preparation for the next meeting, but this has never materialized. When this year's general regulations for contests were established the sailplanes seem to have been forgotten.

Maybe the history of the Nordic A 2 class will be of interest. In the March, 1945 issue of the Swedish "Modellteknik" I wrote an article called "A Wakefield Sailplane" in which I proposed a glider class corresponding to the Wakefield class, as we can only obtain a fair comparison at contests by using models of the same size. From previous experience I suggested a model about double the wing area of the Wakefield as a most practical compromise between performance and transport demands (as well as considerations of cost in hours and money).

When the common Nordic model flying rules were agreed to in June, 1945, in Stockholm, they included the A 2 class with a main wing area of 25 sq. dm. + or — 1, a fuselage section of L²/300 and 400 grams minimum weight. After the F.A.I had altered the definition of wing area to include the tailplane and based the fuselage section on the area a meeting at Hamar, Norway, in March, 1948, modernized the A 2 to the present rule (total area 32 to 34 sq. dm.; cross-section St: 100; minimum weight 410 g.).

The A 2 class has since been used for the annual Nordic sailplane contest, for the national championships and has generally proved itself our most popular class. The larger A 3 class at first was popular, too, but is now nearly dying like the dinosaurus and other prehistoric animals which were too large to be practical in this world. Experience has proved that by using modern aerofoil sections the performance of the A 2 models can be just as good as of the larger ones. Average of number 1, 2 and 3 in Danish contests proves this:

1946: A 2—116 seconds. A 3—133 seconds.
1947: A 2—131 seconds. A 3—128 seconds.
1948: A 2—146 seconds. A 3—143 seconds.

As even a neat box with A 2 models meets "opposition" from the airlines when you want to take it with you, I think that we alone, owing to its large size, will oppose strongly to the much too large class proposed by my friends, Frank Zaic, van Hattum and R. L. Gosling. Our smaller size will force you to make better aerodynamic designs. Just as the Wakefield rules have improved design of rubber models, so the A 2 class will improve the breed of sailplane models, while the enormous 50–60 sq. dm. class will not do that to the same extent as every kite of this size will fly excellently with most old-fashioned full-scale aerofoils.

When our Nordic meeting next year is expanded into an international contest because of the 50-year anniversary of the Royal Swedish Aero Club, we hope to meet aeromodellers of many other countries in Sweden, and as you still have plenty of time to design and build A 2 models we expect strong opposition and a very interesting contest.

Copenhagen. PER WEISHAUPT.

DEAR SIR,

As a member of the trade I should like to reply to Mr. Swanstone's letter in the October AEROMODELLER. I feel certain that his attitude towards trade contest fliers is not general. No doubt Mr. Swanstone would like to whittle down the number of contest entries in order to bring his own name nearer the top of the results list. His argument seems to be that traders (or professionals, if you like) *become expert* because they have more time to spend on models, have access to better motors and can get their building materials more cheaply. Actually it's usually the other way round. A modeller becomes an expert *and* then decides he is competent enough to make a living out of modelling. From my own personal experience, I find that being in the trade leaves me little time for contest building and only wish that I had half as much spare time as many amateurs I know.

But to answer Mr. Swanstone's questionnaire.

(*a*) Trades people—both manufacturers and dealers—have to also put in a full day's work just the same as anyone else. I did know one dealer who made a habit of shutting up shop and going flying every time the weather looked good. Unfortunately he is now out of business and may again rejoice in the title of "amateur"!

(*b*) Can Mr. Swanstone give the name of just one 1949 contest at which a trader used a motor not readily available to the public? If he means American motors, these are available to all who can afford them. And don't think everyone in the trade is making a fortune.

(*c*) I think I am right in saying that the percentage of contest wins by trade entrants was not high this year. Winners of the Gold Trophy, Thurston Cup, Nationals R/C, Wakefield Trials, Bowden Trophy and many others were NOT trade entrants.

(*d*) Granted a trader can get R/C sets and other materials at cost price, but surely the prices are not such to debar the average aeromodeller anyway. It may be of interest that I have personally spent some £350 on R/C models and equipment. It is hoped that this will ultimately be repaid by R/C advances, in which incidentally amateurs will also benefit.

(*e*) Resources of time and money mean nothing beside the ability to build contest winning models. I could name plenty of traders who have plenty of the first and none of the latter.

The same goes for amateurs—some are rich and some are poor. But the good contest flier *ALWAYS* gets to the top ultimately—in addition to obtaining an American motor if he decides his design needs one!

(*f*) A "Phantom" is still a "Phantom"—even if you stick a Merlin in the front. Mr. Swanstone is probably referring to the 1948 West Essex contest which Bill Dean won with an Arden ·099 powered Phantom Mite. Did he also take note of the fact that the second place also went to a controliner similarly powered and flown by an *amateur*.

In my opinion, the most unfair part of the present contest system is the fact that there are no Junior events for modellers under 16. I should like to see a "professional only" contest in 1950—but the suggestion of excluding the trade from other contests would mean the finish of contest flying on anything like the scale which we now enjoy. And another thing—trade entrants are not discouraged in the U.S.A. as Mr. Swanstone suggests.

I think it should be pointed out that the trade provide many of the trophies and practically all the prizes at contests. If the trade are to be kept out of contest flying they can hardly be expected to show much enthusiasm for contests at all. Hundreds of pounds worth of engines, kits, cash prizes and even repairing materials are provided every year by manufacturers and dealers. Very seldom do we even get a word of thanks in return—just a letter every so often of the type that Mr. Swanstone sent in to the AEROMODELLER.

London. EDDIE KEIL.

Mr. Keil's letter is one of many received in answer to Mr. Swanstone's, and we feel should settle once and for all this time-honoured dispute. We state emphatically here and now that this subject is now closed as far as "Aeromodeller" is concerned. (Ed.)

Make it a MERCURY Xmas

Mercury Model Aircraft Supplies Ltd. design and produce their own kits. They also manufacture many accessories which are today integral parts of all modelling. Mercury Fuels need no introduction, and a number of good products of other manufacturers are also distributed by Mercury to the trade. By these methods, Mercury offer a service second to none, and make their slogan "Mercury for Better Modelling" a living, significant statement of fact. Trade Lists to bona fide dealers.

MERCURY C/L KITS
MERCURY FUELS
MERCURY ACCESSORIES
AMCO ENGINES
ALLBON ENGINES
ELFIN ENGINES
E.D. ENGINES
NORDEC ENGINES

DeBolt SPEEDWAGON 30

For the modeller who wants the tops in speed, only a "Speedwagon" will satisfy. These race-bred marvels by Harold deBolt of U.S.A. hold more American records than all other designs put together, and the Speedwagon Kits made by Mercury under licence from deBolt are identical to those of the designer himself. The "30" is for Class 29 and 30 engines, and the Yulon 30 and similar 5 c.c. G.P. power units are recommended. The plan included is an exact reproduction of the original by deBolt, with building and flying instructions also by the designer. Authentic American-style kit containing top-grade Solarbo precut, ply-wood, wire, plan and instructions.

14/6

DeBolt SPEEDWAGON 20

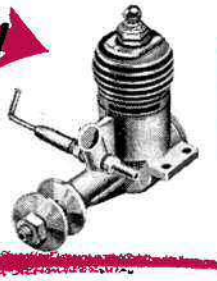
Prominent amongst the honours won by this model are N.Y. Mirror—1st. (100 m.p.h.), Olathe Nationals—1st (108.6 m.p.h.). Canadian Nationals—1st (119 m.p.h.) and there are very many others. The Mercury Kit, produced under licence, is identical to the designer's own dry-kit in America, and includes deBolt's own plan and building and flying instructions. For McCoy 19 and similar G.P. motors, or Amco 3.5. Authentic American-style dry-kit as described

12/6

ALLBON ARROW

With r.p.m. reading at 16,000 and a weight of only two ozs., here is a triumph of British design and engineering that is fast winning support everywhere. The Arrow is the smallest Glow-Plug Engine made in this country, and it carries a name of great renown. Junior modellers particularly like it for its easy handling and lively performance.

55/-



Mercury also distribute Britfix, Solarbo Balsa, Dunlop Rubber, Tissue, Aerolac, Mercury Balsa Tool, Mercury Radio-Control, McCoy 'Hot Point' Glow-Plugs, etc.

We are members of the F.M.A.M.W.

SEE ALSO PAGES 804 and 834.

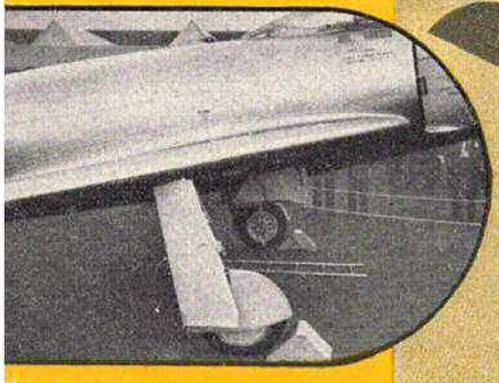
MERCURY MODEL AIRCRAFT SUPPLIES LTD., 308, HOLLOWAY ROAD, LONDON, N.7.

MERCURY FOR BETTER MODELLING

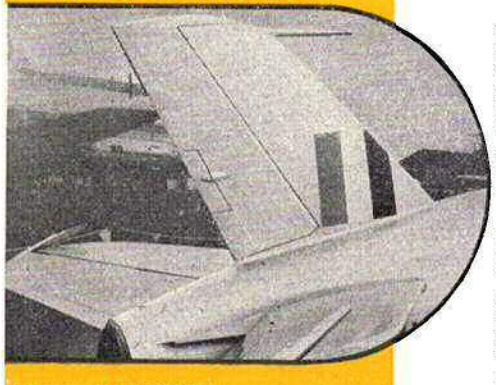
AIRCRAFT DESCRIBED No. 26

SUPERMARINE 510

(Central Press Photo.)



BY E. J. RIDING



("Aeromodeller" Photos.)

Developed from the Attacker, and retaining the tail wheel type under-carriage, the Vickers-Armstrongs Supermarine 510 is the first British aircraft to have sweep-back on the tail surfaces as well as on the wings. The design work was carried out under the direction of J. Smith, Supermarine's Chief Designer, and the machine made its first flight at Chilbolton aerodrome, near Winchester during December, 1048. It has since been engaged on extensive research flights, investigating the problems of high speed operational flight at and beyond the speed of sound—it was this important programme of development flying that prevented the machine from flying in the Kemsley high speed event at this year's National Air Races at Elmdon.

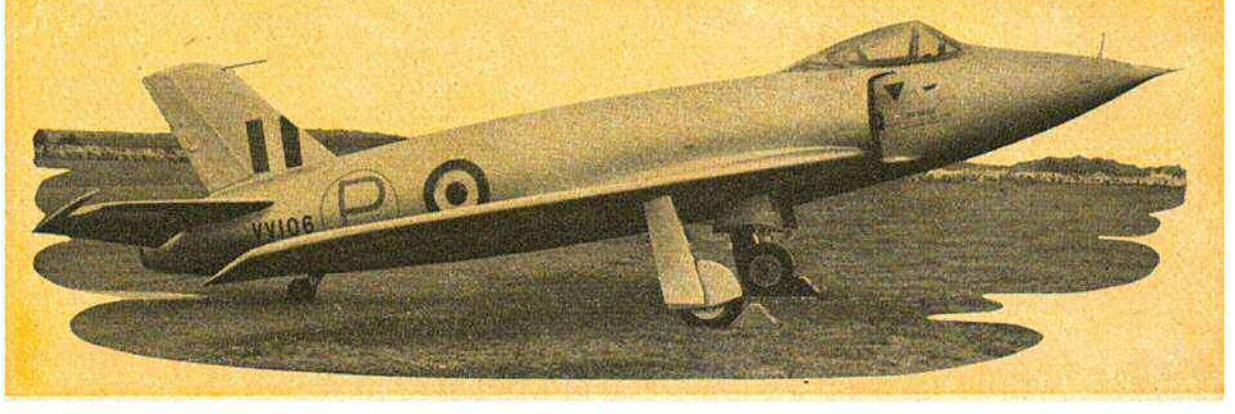
As yet very little information has been released regarding performance details etc., but the following dimensions are available: Span: 31 ft. 8 ins. Length: 38 ft. 1 in.; Height: 8 ft. 9¾ ins.; Wing Area: 273 sq. ft. Thus it will be seen that the wing area is greater than that of the Attacker by 47 sq. ft.

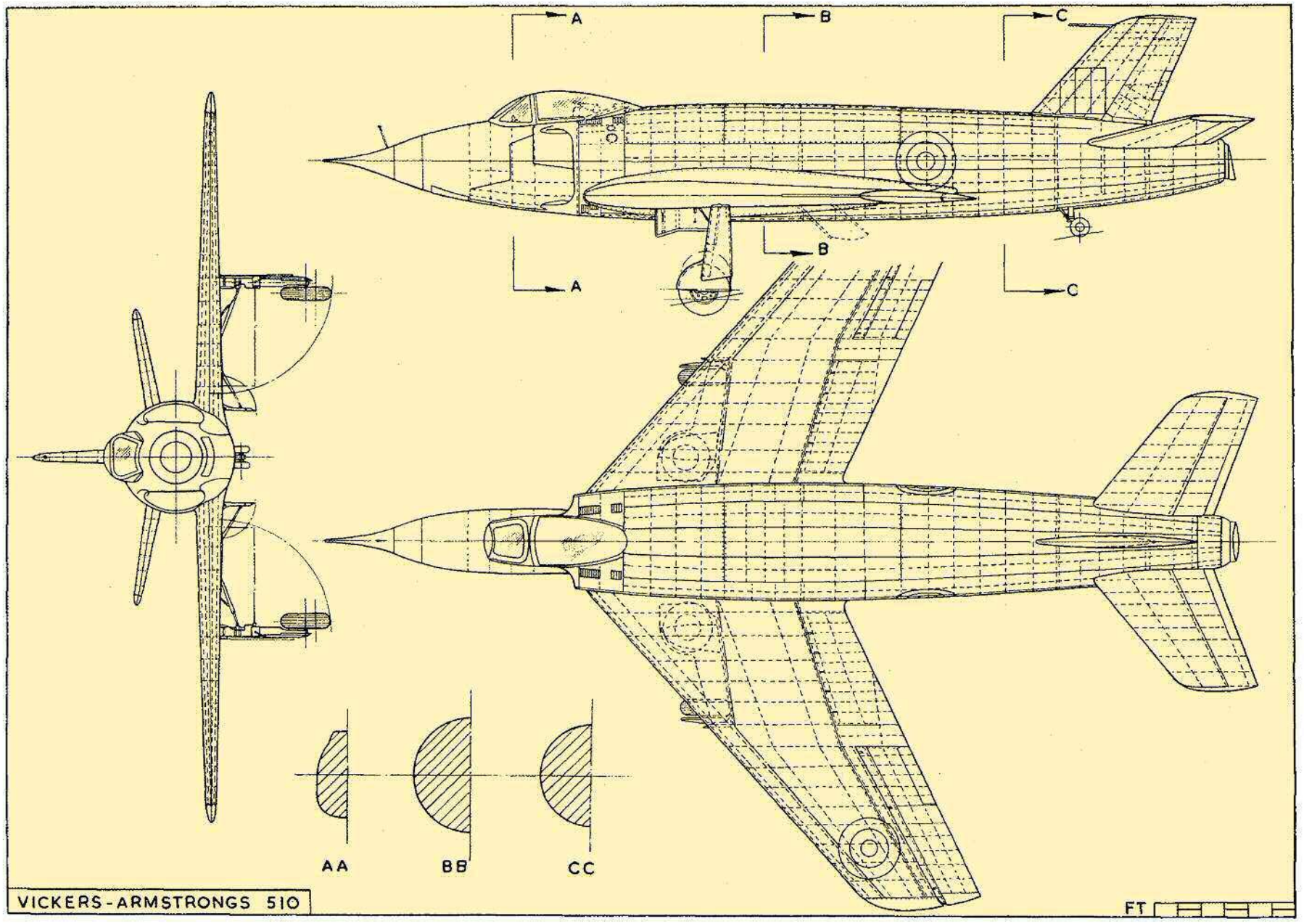
Power is supplied by a Rolls-Royce Nene 2 developing 5,000 lbs. static thrust.

Structurally the fuselage is that of an Attacker modified to take the swept-back wing and tail unit. The wings are of symmetrical aerofoil section and were fitted originally with leading edge automatic slots. Large chord power-assisted allerons are fitted, and to these, the machine owes it's exceedingly fast rate of roll (160-180 degrees/second.)

A recent addition is the needle shaped nose—a feature which when the machine is rolling at speed makes it look more like a dart in flight than an aircraft. The colour scheme is aluminium all over with red, white and blue roundels on the wings and fuselage sides, together with red, white and blue fin flashes and yellow circumscribed "P" symbol aft of the fuselage roundels.

¼ inch to 1 inch reproductions of the G. A. drawing may be obtained, price 1/- from A.P.S., and copies of the photographs marked "Aeromodeller" photo from Eaton Bray Studios at the usual rates.

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VICKERS-ARMSTRONGS 510
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F.A.I. CONFERENCE

SYNOPSIS OF DECISIONS TAKEN BY THE COMMITTEE

THE F.A.I. Conference took place in Cleveland, Ohio, this year between September 2nd–8th and the Model Aircraft Committee met under the Presidency of the English representative, Mr. A. F. Houlberg, with representatives from France, America, Holland, Monaco and Turkey in attendance.

When the circular flight speed rules were established last year no limit was placed on the height at which the model could be flown, preliminary investigations indicating that there was no advantage to the person making the record attempt. Subsequent experience has, however, indicated that advantage is gained by allowing the model to rise to a considerable height as a result of the reduced effective radius of the lines.

It was proposed by the U.S.A., and agreed unanimously, that the maximum height to which the model should be permitted to rise should be limited to 5 metres and that clear indication of this height should be given adjacent to the course to enable the judges or recorders to check this accurately.

It was proposed by U.S.A., and agreed unanimously, for speed records in a circular course, a rigid pylon terminating in a yoke, adjustable for height to suit various operators, must be used, and that the operator's wrist must be kept in the yoke throughout the record attempt.

It was also proposed by U.S.A., and agreed unanimously, that the timing of the record attempt should start after the dropping of a white flag, or its equivalent, by the person making the record attempt. The time of flight shall be taken from the moment the model next crosses the starting line to the time it recrosses the line at the termination of the required number of laps. The question of timing speed record attempts was discussed to some length in view of its importance and the difficulties involved. The final conclusion was that electrical timing is essential in dealing with speeds now attained and a suitable apparatus was demonstrated by the kindness of Mr. Leo B. Dixon of Cleveland. It was agreed that a description of this apparatus and suitable diagrams should be made available to the various Aero Clubs through the F.A.I. Bulletin.

It was proposed by the U.S.A. that electrical timing, or its equivalent, be compulsory from May 1st, 1950, this date being fixed to provide time for timing units to be developed.

Homologation of the new Code Sportif was agreed to unanimously, subject to such alterations as are necessary as a result of the decisions made at the conference.

It was unanimously agreed that experience has shown the existing regulations concerning jet propulsion models to be sound and desirable and no modifications were deemed desirable.

It was felt desirable to produce a set of basic regulations for the conduct of all international contests. Draft rules were produced and their details agreed to unanimously. They form an appendix to this report.

It was proposed by England that the A.M.A. Flight Pattern scheduled for aerobatic circular flight contests should be established as the international standard, and that these should be included in the Code Sportif with the above contest regulations. This was seconded by France and agreed unanimously.

The Universal Badge for Holders of Performance Certificates was discussed and it was unanimously agreed that while these badges were desirable, time did not permit of their adequate consideration at this conference. It was agreed that designs should be prepared and a postal decision sought.

The following propositions were received from National Aero Clubs.

Switzerland.

Requested that hand-launching of models for speed record attempts in circular flight be permitted to enable sites with a poor take-off surface to be used.

Not agreed to as it was felt that the hand-launching of high-speed models was not completely satisfactory and that a world record was of sufficient importance to justify the selection of a suitable ground.

Two other items raised are covered by the new rules of the Code Sportif of the C.I.M.R.

Proposed a revision of the official list of records.

This was not agreed to.

Proposed a change in the rule governing the cross-sectional area formula for the fuselage. *This was not agreed to.*

France.

Proposal to revise the rule insisting on the wrist being held in the yoke of the pylon for circular flight speed record attempts. The reasons for the abandonment of this rule, advanced by France, were not considered valid as other nations has not encountered the difficulties referred to.

It was decided that the rules as now put forward should cover the position adequately.

GENERAL RULES FOR THE CONDUCT OF INTERNATIONAL CONTESTS

(1) The models must be made by the competitor entirely with the exception of the motor, in the case of power-driven models; or gear wheels and thrust races in the case of rubber-driven models.

(2) Each entrant may enter only one model in any one event.

(3) The use of metal-bladed propellers is forbidden.

(4) In contests for power-driven models, the duration of the engine run must be limited to 20 seconds from the moment of release. If conditions demand, the contest officials may establish a maximum engine run of less than 20 seconds before the start of the contest. The time of engine run may not be changed after the first contest flight has been made.

(5) If ballast is used to bring the model up to the required weight, such ballast shall be permanently fixed to the model. Similar requirements apply to any other modifications necessary to bring the model into line with the contest specifications.

(6) An official flight occurs when the model remains airborne for ten seconds or more.

(7) **False Starts.**

(*a*) When the flight is less than 10 seconds duration.

(*b*) When the model collides with another model after flight timing begins.

(*c*) Flights in which the engine run exceeds 20 seconds (or the time of engine run fixed for the contest).

Disqualifications.

(1) Flights during which any part of the model is dropped (free flight models).

(2) Failure to become airborne within the 2 minutes allowed for starting.

(3) Flights in which the model has been assisted on take-off or during flight by artificial means.

(8) **Number of Flights.**

Each competitor shall be allowed three flights and three consecutive false starts shall constitute one official flight.
Where two competitors tie for a position the contest officials may permit such competitors to undertake a fourth flight to decide final placement, but the time of these flights must not be included in the recorded time.

(9) **Recording of Flights.**

The timing of free flight models shall be carried out by at least two timekeepers with approved stop watches registering to 1/5th of a second.
For the purpose of scoring the total elapsed time of the three official flights shall be recorded.
Individual flights of more than 5 minutes will be recorded as 5 minutes.
In the case of the third flight of the contest, the flight must be timed to its conclusion, providing the contestant has already achieved two maximum flights.

(10) **Identification of Model.**

Each model should carry a distinguishing mark identifying its nationality and individual identity.

(11) **Time Allowed to Start Engines.**

Competitors are allowed 2 minutes to start their engine from the time they are called upon to start for a flight attempt by the timekeepers.
Competitors must start their own engines and carry out their own tuning adjustments.
Competitors are only allowed one assistant at the take-off area.

(12) **Size and Construction of Control Lines.**

All lines and connections used to control flight shall be steel wire or metal of equivalent strength in good condition and free of kinks and rust, having a diameter of at least ·001 inch for each two ounces of the model's flying weight up to two pounds. Models weighing two pounds or over may use ·016 inch

(*Continued on page 821*)

FROG TRADE MARK

SUPER CONTEST MODELS

Every FROG model aircraft is the result of careful design by an expert and the intensive testing of several prototypes over a long period in all weather conditions. The production model—which you receive in a FROG super kit—embodies all the better features developed in the propotypes plus the well-known FROG high standards of simple construction and outstanding strength in the completed model.

All these FROG models—plus many more—are on sale at your local Model Shop. We do not supply direct.

FROG "Venus." 38" span shoulder-wing, rubber powered, duration model **15/-**

FROG "Stardust." 37" span contest model. Polyhedral, parasol wing. Rubber powered **10/6**

FROG "Vanda." 40" span Sailplane—with a terrific reputation for performance and simplicity **9/6**

FROG "Prince." 60" span contest Sailplane. A magnificent kit for a high efficiency model **25/-**

FROG "Vandiver." A Stunt Control line cabin model which does everything in the book **13/6**

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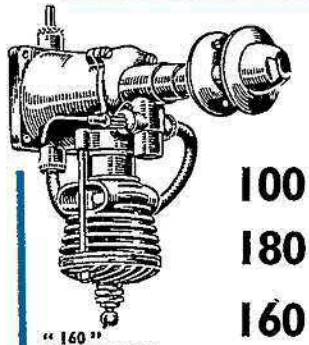


"160" RED GLOW

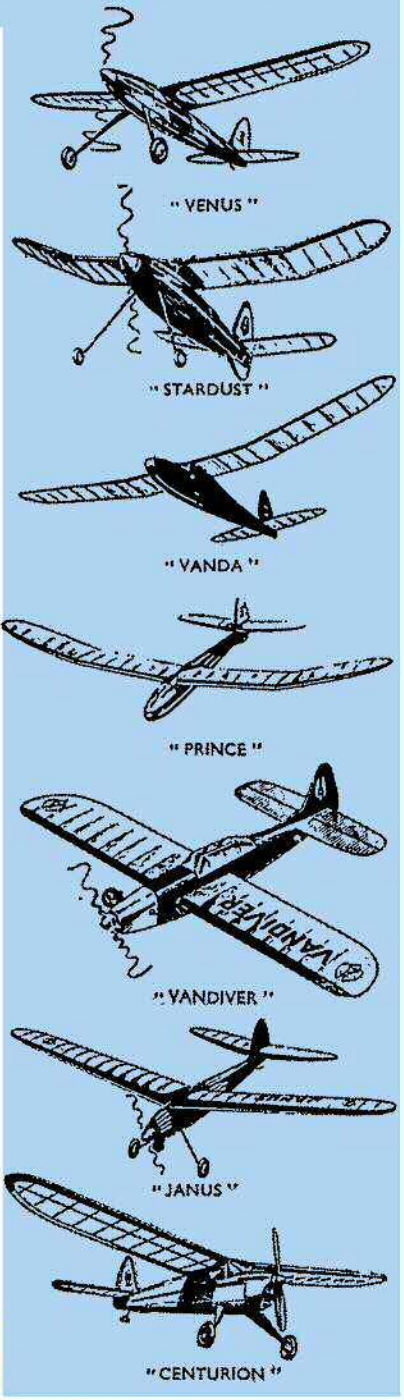
FROG ENGINES

FROG Diesel and Red Glow engines are famous for their contest-winning power and reliability. See the NEW FROG '100' at your dealers — more power than ever to make it the finest in its class!

100 1 c.c. 600–6,800 r.p.m. with airscrew; 15,000 with flywheel. Weight: 3·25 ozs. **48/-**

180 1·66 c.c. 1,000–9,500 r.p.m. with airscrew; 15,000 with flywheel. Weight 3·75 ozs. **54/9**

160 1·66 c.c. 9,250 r.p.m. with airscrew; 1,600 with flywheel. Weight: 3·25 ozs. **48/-**



FROG Flying Models & Engines — International Model Aircraft Ltd. MERTON · LONDON · S.W.19 · ENGLAND — PENGUIN Plastic Scale Models

S.M.A.E. NEWS

INSURANCE & REGISTRATION. As from November 1st, 1949, only one class of S.M.A.E. Third Party individual Insurance will be available. This will cover members for Power, Rubber and Glider models, and will include Registration for fee of 3/-.

MERIT CERTIFICATES. Following representations regarding the popularising of these records of efficiency, it has been tentatively agreed to alter the qualification requirements for the Class A and Class B Certificates. Qualification with more than one type of model will no longer be required (thus giving the specialist a better chance), and the flight time factor upgraded as follows :—

Class A. 3 flights of 2 minutes each duration.
Class B. 3 flights of 3 minutes each duration.

The Class C Certificate requirements remain as before (F.A.I. Regulations) to coincide with International Class.

BRITISH NATIONAL RECORDS. Records were ratified at a Council meeting held on the 16th October, as follows:—

FLOATPLANE (POWER)	
J. R. Stainer	2 min. 59·4 secs.
TAILLESS GLIDER (H.L.)	
M. A. King	1 min. 24·3 secs.
T. Comber	2 min. ·01 secs.
F. H. Wilde	3 min. 17 secs.

RECORD APPLICATIONS. Applications for British National Records have been received from the following, and will be presented for ratification in December :—

POWER—CLASS C	
F. A. Chatwin (Birmingham M.A.C.), 11/9/49	3 min. 12·5 secs.
CONTROL-LINE SPEED—CLASS I	
R. Scott (St. Helens M.A.C.), 25/9/49	70·6 m.p.h.
CONTROL-LINE SPEED—CLASS IIIA	
J. G. Carter (Croydon D.M.A.C.), 25/9/49	89·1 m.p.h.
CONTROL-LINE SPEED—CLASS VI	
R. V. Stovold (Guildford M.A.C.), 25/9/49	133·3 m.p.h.
INDOOR TAILLESS H.L.	
R. Booth (Manchester M.A.C.), 16/10/49	1 min. 17·4 secs.

CONTEST & RALLY PRIZES. The Trade Federation are viewing with some perturbation the growing demand from Clubs, etc., for gifts as Prize Awards. Whilst fully prepared to give full support to the S.M.A.E. British Nationals contests, they propose withdrawing the somewhat indiscriminate distribution of gifts to individual clubs, but are—in certain warrantable cases—willing to accede to requests for the supply of goods at wholesale prices. All requests must be made via Area Committees, who will vouch for the validity.

AREA OFFICIALS' CONFERENCE. Held at Londonderry House on October 2nd, agreed that every effort should be made to prevent the practice of soliciting American Traders for gifts. Many applicants are trying to make their request more plausible by declaring that the American article is superior to the British-made article, and there is no doubt that such letters have a detrimental effect on our export drive.

It was unanimously agreed that future Speed Control-line Contests should be held on private grounds (football stadiums, etc.) in order that the maximum degree of protection could be provided. All members agreed that the roping-off of flight areas should be compulsory, and a condition without which sanction would be withheld.

The North-Western Area suggestion of Area Championships was well received, and consideration will be given to this for the 1950 programme. It is hoped to stage British Championships at a later date, teams being selected from Area eliminators.

The suspension or other penalties imposed on members found guilty of infringements of rules was fully discussed, it being generally agreed that such persons be dealt with by Area Committees, who shall agree upon the suspension period, all such actions being submitted to Council for confirmation. The defendant has right of appeal to the Council.

The next Conference will take place on February 12th, 1950

CONTEST RESULT CORRECTION. Confusion having ariens over the correct entry in Classes IIIA and IIIB in the Speed Control-line Contests held on September 25th, Mr. J. G. Carter (Croydon D.M.A.C.) is now announced as the winner of Class IIIA, Mr. D. W. Evans (Western Controliners) going to second place.

Please note that entries are made according to engine capacity, that for IIIA being between 2·51 c.c. and 3·5 c.c., and IIIB 3·51 c.c. and 5 c.c.

F.A.I. CONFERENCE *(continued from page 818)*

diameter wire. Wire used for any model, regardless of weight, shall be no less than ·008 inch. No swivels are to be used as part of the control system of control line speed models.

Pull Test.

The entire control mechanism, from the handle to and including the model, shall be strong enough to withstand a pull-test equal to 20 times the weight of the model.

Size of Control Handles.

Control handle, fixture, or device shall not extend more than 6 inches beyond the hand of the operator. It is recommended that flexible, multiple-strand cable be used at the control handle end of the lines for a length of 3 feet for safety purposes, in the event that lines wrap around the flyer's fingers.

Flying for Record (Control Line).

The Contest Director shall provide a substantial, fixed pivot-post or pylon from which all official speed flights shall be controlled. The pylon shall be between elbow and shoulder height, and equipped with a free revolving yoke for centring the flight path. During the entire period when official timing is being made, and for at least three laps immediately preceding, the contestant shall keep his wrist, his hand holding the control handle, or the control handle (device) in the yoke. Any infraction of the above requirement, or any attempt by the flyer to lead the model in its flight, shorten the effective length of the control lines or touch the lines between the control handle (device) and the model shall constitute a foul. Only these flights made outdoors shall be recognised for record purposes.

Safety Rules (Control Line).

Where a protecting wire screen is not available offering complete protection to spectators, such persons shall be at least 75 feet from the flying circle. Any contestant releasing the controls, either accidentally or purposely, shall be barred from further participation in the meeting and all of his previous flights cancelled. Repeated violations shall result in revocation of his model flyer's licence.

Launching (Control Line).

Models shall take off from the ground or runway under their own power. Take-off gear may be fixed, removable, retractable or droppable. Removable take-off gear includes dollies, or any similar device, which shall remain on the ground. Any take-off gear which does not fall free of the model before it becomes airborne, including drop-off gear operated by delayed action, shall be provided with a safety line to prevent hazard to spectators.

Timing Pole—Height Marker (Control Line).

A pole or reference marker shall be provided outside of the flight circle for timing and judging flights. An elevation of 5 metres to be clearly marked for reference purposes. Maintenance of flight in excess of the above height for more than ¼ lap shall constitute a foul and disqualify the flight.

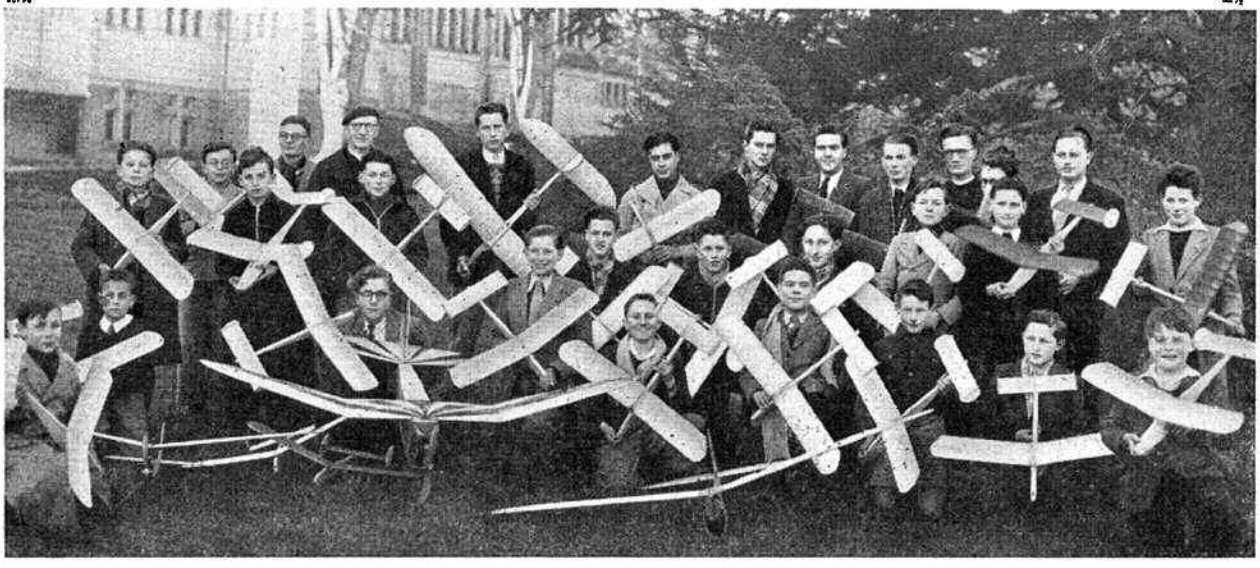
Judging (Control Line).

At least three timers, equipped with stop watches having 1/10th second or finer graduations, shall time flights in unison at a point on the opposite side of the circle from the timing pole or marker. Timing shall start after at least three full laps have been completed, as provided for in " Flying for Record " above, following a pre-arranged signal to the timers by the contestant. Records shall be recognized where no more than 2 seconds variation exists between any two of the three watches used. The Contest Director shall announce prior to the beginning of competition what shall constitute an attempt, such as a time limit for starting engines; the best of three attempts by each competitor in an event, in terms of miles per hour, being used for competition and record purposes.

(18) Proxy Flyers.

In the case of an entrant not being able to travel to the contest, or be unable to take part for any valid reason, he may request to have his model flown by proxy. The selection or approval of such proxy flyer shall rest with the contest organizers.

CLUB NEWS & CHRISTMAS GREETINGS FROM CLUBMAN



In this group will be recognised our old friend Father Amiard complete with his Club at the Ecole de l'Immaculee-Conception.

THE unfortunate repercussions of the meeting held at Sealand Aerodrome on September 25th may do a little bit of good in bringing to the mind of the average aeromodeller that a normal standard of conduct is expected of him, and much as I should hate to see the free-and-easy conduct of aeromodelling meetings curtailed, we must face up to the fact that we are duty bound to observe at least some semblance of good conduct.

The main trouble seems to be (and I have witnessed a number of instances of this during the past season) that the average visitor to an aerodrome, possibly over anxious to enjoy his day out, displays little regard for any restrictions applying to that particular field, and tends to leave his rubbish about in the sublime expectation that the local modellers will clear up after him. This conduct is just not good enough, and the sooner an example is made of one or two culprits the sooner we shall get these meetings on to a commonsense footing.

Naturally the whole affair has stirred up considerable comment in the North Western Area, and the shape of things to come is indicated in their current newsletter which states ... "*If we do manage to persuade anybody to let us use a private, or Services field again there will have to be a strict and ruthless application of a code of behaviour, as well as an application of the normal flying rules. It also means that all future Area meetings will be pre-entry events with a signed declaration from all entrants that they will abide by the rules governing good order on the field. The officious and selfish types will be most unwelcome if they persist in their pernicious tricks.*

The need for a tight and impersonal organisation is brought about by the growth of the Movement and in some ways it is to be regretted that the happy-go-lucky meetings of yesteryear are to be superseded by such contests. However, since certain of us cannot be trusted to behave in a reasonable manner there is no alternative."

Following protracted negotiations with various Ministries and the Home Office, the S.M.A.E. have practically finalised a set of bye-laws and regulations which will govern the flying of model aircraft in public parks. Both sides have worked on a give and take basis and preliminary information indicates that the modeller will in future get a very reasonable deal. Under the new bye-laws (when enforced) any Local Authority wishing to ban model flying will have to give due notice in the local press at least one month before the ban comes into operation. In the event of this happening the local club has that month in which to make its representations and the bye-laws allow for the attendance of advisers who will be empowered to indicate whether or not they think the ground is suitable for the proposed activities.

In order to obtain the fullest co-operation and backing it is stressed that all such matters should be referred (in the case of affiliated clubs) via their Area Committees, and I suggest that non-affiliated clubs seek the assistance of the S.M.A.E. in handling such delicate matters.

Objections having been received from certain lads who think they are "downgraded" by the term Junior, the American A.M.A. have revised the terminology for contest classes and from now onwards they have Classes III, II and I, instead of Junior, Senior and Open. Class III is for fliers up to the age of 16, Class II takes care of those between 16 and 21, and the "oldtimers" come into Class I.

Reference to the current issue of the A.M.A.'s "Model Aviation" shows a list of American model aircraft records of no less than 140. This shakes one until a check is made, when one finds that each type of model is divided into three or four categories according to size, and each class has three sections—junior, senior and open.

The **LONDON AREA** are in luck in having found a P.R.O. who can write Latin tags—and then translate them in the following issue! (What is the translation of *Nil Illegitimi* Carborundum?) Concern is expressed over the litter-cum-behaviour situation as applied to Fairlop, and there is no doubt that the loss of this ground would seriously handicap many London clubs. North Kent won the London Area Keil Trophy with a score of 32·2, Manor House placing next with 24·4. B. Parodi of P.M.A.L. is the winner of the Area Junior championship for 1949.

The Hon. Secretary of the **BATTERSEA & D.A.M's** points out an inaccuracy in our report of the "Daily Despatch" Rally, when the winner of the Radio control event was given as "Des" Allen. This should read S. Allen, of the Battersea group, and we are pleased to print this correction.

This past month had two pleasant trips for me—first to Blackpool for the **BLACKPOOL & FYLDE M.A.S.** annual dinner and prizegiving (with illuminations thrown in!) and later to **SHEFFIELD M.A.C.** for a similar function.

It was a great pleasure to travel up to Blackpool, as this is very close to my old courting ground!—also the scene of my first real contact with model aviation, the wife's nephew roping

me in for expert (?) assistance in flying a Warneford stick model. 'Twas then the bug bit—good and hard!

The social function was very enjoyable, and it was my pleasure to hand over the club trophies to the 1949 winners, C. J. Davey collecting the Senior Champ. cup, and D. A. Wilcox the Junior ditto. Other trophy winners were A. B. Munden, G. Martin, J. P. Clark, R. Morgan and S. Newton. (Incidentally, this club has put the notorious rubber dinghy to good use—they take one along when they fly at Marton Mere, and launch when a model requires retrieving from the rushes.)

The Sheffield club put on their first Dinner on the 21st October, when over 100 members and friends had a rip-roaring evening. Dinner was followed by prize-giving and speeches, then the room cleared for a show of modelling films. The Sheffield club film is very good, and in "glorious technicolour", giving a very good idea of general club activities, and containing many sections taken at various Rallies. (I understand this film can be hired by clubs who wish to put on a film show during the winter session, so if interested, get in touch with the club sec. at 9, Crofton Avenue, Sheffield 6.)

Following their success in winning the Indoor Championship at Manchester last winter, the "Cutlers" have had a very successful year, collecting 10 firsts, 5 seconds and 2 thirds in outside events, their best showing being in rubber and glider classes. G. H. Wilkin proved the club champ. for 1949, based on a points system on all contests attended, with G. F. H. Singleton filling the junior honours. (Father bought him a Mills ·75 as a reward!)

The **BELFAIRS M.A.C.** have two successes to report this month, comp. sec. M. A. King having won the National K. & M.A.A. Cup and P. Field the concours class at the All-Herts Rally. King's machine was one that had flown from Southend Airport and landed on the Isle of Sheppey at Eastchurch, having crossed 8 miles of water, and taking 3½ hours for the trip!

In conjunction with "Battle of Britain Week", the **EVESHAM & D.M.A.C.** showed over 60 models in the local Town Hall, also staged a Rally at Pershore Aerodrome which was well supported by Midland Area clubs. Fine flying took place in excellent weather. Results:

Concours	**Gibbons**	**(Cirencester)**	
Rubber	**Wytcherley**	**(Five Towns)**	**5 : 24**
	Bishop	**(Cheltenham)**	**2 : 30·4**
	Pike	**(Tetbury)**	**2 : 18·4**
Glider	**Bond**	**(Cirencester)**	**4 : 15**
	Bishop	**(Cheltenham)**	**3 : 53**
	Hart	**(Cirencester)**	**2 : 21**
Power	**Roberts**	**(Five Towns)**	**2 : 31**
	Johnson	**(West Midland)**	**2 : 22**
	Rawlings	**(do.)**	**2 : 21**
C/L Stunt	**Buck**	**(Five Towns)**	**270 points**
	Wiggal	**(Gloucester)**	**255 ,,**
	Cock	**(Coventry)**	**249 ,,**

The R.A.F. Association Cup was awarded to R. Howard of Evesham. At a later meeting S. White put up a new club record with glider flight of 14 : 00 o.o.s.

The **ASHFORD M.F.C.** first Open Day held on Sept. 25th proved a great success, and was attended by members from many clubs. Thermals were in abundance resulting in several models being lost, best time of the day going to K. Wenborn's "Frog" powered "Hi-ball" with a time of 8 : 30 on a 22 secs. motor run. R. Barlow's "Skyrocket" put up a time of 7 : 30 o.o.s. for his first flight in the rubber event, but in spite of him losing the model, this one flight placed him second in the event with 300 secs. aggregate. Full results:

Power/Ratio	**L. Sladden**	**(Pilgrims)**	**10.6 ratio**
Power/Precision	**R. Kendall**	**(Ashford**	**5 secs. error**
	J. Carpenter	**(Thanet)**	**19·5 secs. error**
Rubber	**V. Smeed**	**(Pilgrims)**	**7 : 17·5**
	R. Barlow	**(Folkestone)**	**5 : 00**
Glider	**R. Turner**	**(Ashford)**	**3 : 43·8**
	V. Smeed	**(Pilgrims)**	**3 : 20**

Some excellent flying has been witnessed in the **REGENTS PARK M.F.C.** as their current list of club records shows. The F.A.I. Glider figure stands at 17 : 45, Wakefield 9 : 12, and Power 8 : 00.

There are some fifty members of the **HALTON M.A.C.** spread over the three wings on the station, with a main interest in controlling in view of the ban on the use of the airfield for free flight. In a R.A.F.A. competition staged on the 2nd October, the Station stunt championship went to Eric Hall flying an "Elfin King", with "Nobby" Birch only ¼ points behind.

At last, after having a crack at most of the National comps. without real success, (but enjoying them none the less) the **SOUTHEND SENIOR M.C.** is proud to announce that two of its members, Frank Ashdown and son, captured the Taplin Trophy for radio-controlled aircraft on Sept. 25th at Fairlop. During the last few meets some very good times have been set up, among them being 11 : 09 with a glider by B. Eyres, who also bagged a flight of 10 : 59 with a power model from a 15-second engine run. Best rubber time goes to D. Nichols with an r.o.g. effort of 6 : 05.

CRYSTAL PALACE M.A.C. report a fine time at Epsom for the last of the outdoor events this season. Models were lost left, right and centre, and the power event was abandoned owing to the majority of the entry being otherwise engaged in looking for lost models! B. Suter won the rubber event with an aggregage of 10 : 44, his best time being 7 : 24, whilst N. Whistler repeated his earlier success by winning the glider event with a total of 6 : 24 for two flights.

Though only a small club, the **ILFORD & D.M.A.C.** can look back on some good progress. E. Stoffel won the "Flight Cup", and D. Elmes qualified for the Wakefield 100, whilst several members have figured in high positions at other events. On the promise of a transmitter from the President, eight members got busy on a radio job of 7 ft. span, powered with an Ohlson 60. Unfortunately, the job was crashed shortly before the Taplin affair, but though unplaced, made an excellent take-off and landing.

R. Booth has been doing some very nice flying in the **MANCHESTER M.A.C.** with his flying scale jobs. Having found some commercial radio control equipment not too reliable, members are now relying on their own-built affairs ... which is of course all in the interests of the hobby. Most progress is made by amateur experiment.

The **CARDIFF M.A.C.** had a most successful day at Swansea for the "Battle of Britain" rally, taking home three first places. M. Bennet won the Open Rubber class with 5 : 32, also the Glider event with 6 : 45, losing both models in the process. He was awarded "Championship" as consolation!

Fine weather attended the club comps. held by the **STREATHAM & D.M.A.C.** at Epsom on the 9th October. All types of models were flown in a comp. with a three flight aggregate, and though power models were in the majority, the rubber and gliders showed them the way into first three places. Ron Rock took first with a glider, time 7 : 49·8, with Sam Mayo second, flying a rubber powered model for an aggregate of 6 : 54·5.

Although not (surprisingly) organised nowadays, the Doncaster district model fliers staged an open Rally in order to fly off the "Doncaster Gazette" Cup. Ten clubs competed, the weather held fine in spite of a strong breeze, and H. Tubbs (Leeds), won the trophy by collecting two 2nd places. Other results were;

Power/Ratio	**C. Gordon**	**(Sheffield)**	**7·9 ratio**
	H. Tubbs	**(Leeds)**	**7·7 ,,**
	A. Cameron	**(Leeds)**	**7·0 ,,**
Rubber	**E. Muxlow**	**(Sheffield)**	**5 : 54·6**
	H. Tubbs	**(Leeds)**	**5 : 09**
	A. R. English	**(Doncaster)**	**4 : 00**
Glider	**W. Rockwell**	**(Gainsboro)**	**5 : 12·6**
	T. R. Mander	**(Woodlands)**	**4 : 10·4**
	J. Masselis	**(Goole)**	**3 : 50·6**
C/L Stunt	**P. J. Russell**	**(Worksop)**	**261 points**
	M. L. Halford	**(Doncaster)**	**230 ,,**

After a number of false starts, members of the **PHOENIX M.F.C.** have succeeded in getting a jet job on the go. (If any other club has any spare Dyna-jet petal valves for disposal they will earn the undying gratitude of the Bristol boys if they will contact the club Sec.)

The **PETERBOROUGH M.A.C.** contest for the "Carley Cup" for the best all-round performance in all classes was won for the second year in succession by G. Truss. Juniors showed the way home to their elders in the "Billings Trophy"

This cheery group is composed of prize-winners at the Walsall C/Line Rally who are shown receiving their "pots."

event, a power duration effort held on Sept. 25th. D. C. H. Witt set a ratio of 16 : 2 to win from fellow junior B. Dewey, with senior T. Gooding well behind with 8·64.

Apprehension regarding the suitability of the site kept most of the **BRIGHTON M.A.C.** members away from the Southern Counties Rally at Thorney Island, and are they not kicking themselves for missing out on a fine day! The club Glider Cup attracted only five entries, F. H. Boxall aggregating 12 : 30 for an easy win with his old, original "Bloater", with Mr. Clarke, one of the oldest members and a keen sailplane enthusiast, second with his own design "Goose II."

As a result of a model engineering exhibition held in Knutsford, the **KNUTSFORD & D.M.F.C.** has been formed with 12 members. Indoor flying has commenced while an outdoor meeting held on October 16th, produced first club power record, D. Hulme's "Elfin" powered model clocking 2 : 37·5.

Membership of the recently formed **SHEPPEY M.A.C.** is coming along nicely, and a further increase is likely following participation in an exhibition at the local Masonic Hall.

To hand is the report from the **HILLINGDON & DISTRICT M.F.C.** of an Exhibition held at the R.A.F. Camp, Uxbridge. This comprised both flying and non-flying classes and the proceeds went to the R.A.F.A., who are going to arrange a similar show, annually, in future.

There were about sixty models present, ranging from chuck gliders to large power jobs, all brought by members. Seen flying were gliders of all types, rubber and powered free-flight, and Control-liners. The show last d for three hours and while the flying was in progress, a concours d'elegance took place. An anonymously awarded cup was presented by the judges, Group Captain Baines, R.A.F. and Mrs. Baines. The winner was Mr. R. Hill with his "Ethereal Lady", taking top place in a class of twenty entrants, the general standard being, in the opinion of the judges, very high.

A noteworthy point is that ten Town Councillors were present, and it is hoped that concessions for flying will be obtained as the result of a discussion which is to take place at a future date.

The season's programme being finished, the **SOUTHERN CROSS A.C.** "brick on a string" boys have decided it's about time the "Gold" Trophy went South. Consequently, gallons of fuel are consumed each Sunday—main bugbear at the moment being the fourth corner of a square loop! In other quarters, drawing boards and T squares are being put to good use judging by the designs showing up lately. Large gliders seem to be the vogue—the smallest seen so far being a mere 8 ft. span.

By co-operation with the local Council, members of the **LOUGHBOROUGH COLLEGE M.A.C.** were allowed a generous square in the town park for a demonstration of control line flying during the College Rag celebrations. Flight followed flight in quick succession as lines were ready laid out and tanks filled, and much comment followed the flying of a scale "Tipsy Junior" and "double stunting". W. Ross's "Rampant Haggis" (ETA 29) put up a speed of 73 m.p.h. to the delight of the crowd, and the boys feel they have done good service to the movement by showing the general public something of our hobby.

The new **ABERDEEN & D.M.F.C.** came into being on the 3rd Sept and already plans for an exhibition in the new year are laid. Members will be welcomed, and should apply to the Clubroom at Blenheim Lane.

The **DARLINGTON M.A.C.'s** "Neasham Cup" went to J. Irwin for the second year in succession, due reward for his perseverance with Wakefield models. The glider cup was awarded to H. Copeland. Official club records are as follows :

Power Duration	**D. Skelton**	**2 : 54**
Rubber ,,	**J. Irwin**	**2 : 06**
Glider ,,	**W. Skelton**	**7 : 30**
Canard Glider	**R. C. Poad**	**2 : 00**
Indoor	**J. B. Renton**	**: 46**

Forty **LEEDS M.F.C.** members and friends were entertained recently by a film show provided by Messrs. Capel and Vauvelle. Shots taken nine years ago were shown as well as recent ones, and they afforded an interesting comparison showing the advance (or retrogression!) in modelling. Particularly noticeable was the entirely different power flying as between 1940 and 1949.

Over 6,000 people paid to see the Hobbies Exhibition at Sutton, where the model aircraft section was staged by the **BY-PASS (Sutton) MODELLERS.** Some 43 models of all types were exhibited, and the attendants were kept at it all day answering questions.

Barry Smythe of 38 Dupler Avenue, Toronto 12, Ontario, Canada wishes to swap a slightly used K & B Glo-torp "29" engine for an Amco 3·5 diesel. Any takers? Also from abroad comes a plea for a pen-pal of 18–20 years of age, to correspond with Salvador Bellver, c/Conde Penalver, No. 16, Madrid, Spain.

Mr. J. S. Wreford advises us of a blue model aircraft found on the 3rd October near Romford, engine No. DI/31. Owner apply to Mr. Chawser, Romford Sanitary Steam Laundry, Main Road, Romford.

Talking of engines brings up the question of two items stolen recently! J. Tatton Winter of 33, St. James Road, Kingston-on-Thames, advises that he had a modified "Frog" 160 stolen from his home, and asks that anyone who sees an engine of this make with the cylinder head cut away to above the exhausts, and crank case cut away at the rear will contact him immediately.

J. M. Clark offers a reward for news of his orange coloured "Spotwagon" (ED2 No. G704/7) which was lifted from Epsom Downs. The model landed behind some bushes, but was gone by the time the owner reached the spot!

The only "Tall Stories" received this month are in connection with controliners that grew jealous of their free-flight brethren, and turned in contest winning durations when the fliers let go of the handle! As this occurrence is no longer news, no award is made this month. Keep trying lads.

The CLUBMAN.

NEW CLUBS

WIDNES M.A.C.
T. Ronan, 20, Regent Road, Widnes, Lancs.
LEEK M.A.S.
J. P. Dickenson, 4, Beech Cottages, Stanley Street, Leek, Staffs.
MID KENT A.M.
B. G. Hope, 18, Romney Place, Maidstone, Kent.
DURSLEY M.A.C.
R. Bryon Petrie, Fairview, Woodmancote, Dursley, Glos.
DARTMOUTH & D.M.A.C.
E. A. Bovey, 6, Lower Broadoak, Victoria Road, Dartmouth, Devon.
SUNNINGDALE M.A.S.
A. G. Turnbull, Mount Cottage, Broken Hill, Sunninghill, Berks.
ABERDEEN & D.M.F.C.
J. D. Low, Blenheim Lane, Aberdeen.
KNOWLE M.A.C.
Miss E. N. Prior, 141, Longdon Road, Knowle, Nr. Birmingham.
ORPINGTON FALCONS.
F. J. Evans, 82, High Street, Orpington, Kent.
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(*Continued on page 836*)

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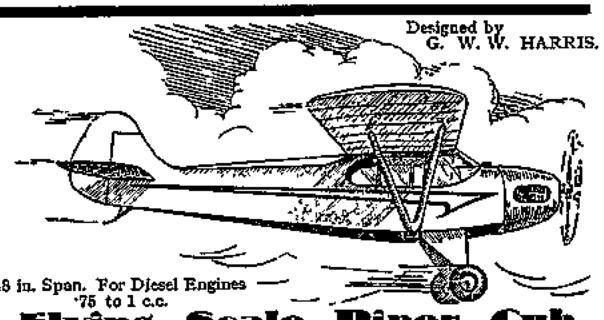

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CLASSIFIED ADVERTISEMENTS

(*Continued from page 825*)

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