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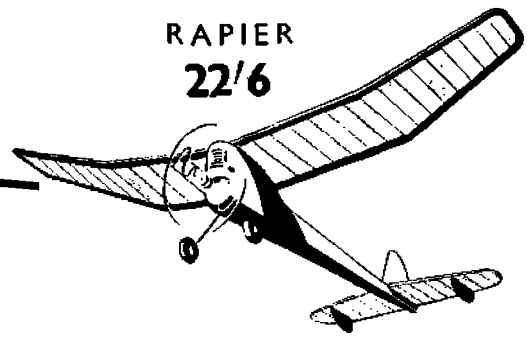

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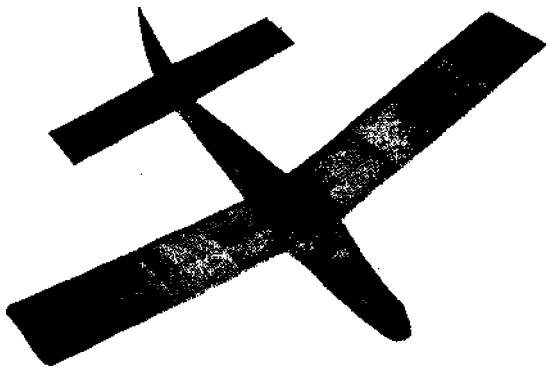

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THE MERCURY MAGPIE IS ABSOLUTELY COMPLETE AND IS WONDERFUL VALUE FOR THE MONEY.

MAGPIE BEGINNER'S GLIDER **3/9**

t's all n the NEW 950 ERCURY ATALOGUE

EASE DATE JAN. 1st, 1950

Here it is—a Catalogue of all the lines MERCURY make and handle, including vital accessories, super kits, proven engines, and radio control. Illustrated and full of information. From your usual Mercury stockist. Released January 1st.

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So rapidly have Mercury Kits established themselves in the minds of modellers that it is timely to remember that MERCURY established themselves originally on the design and quality of the many accessories they introduced, particularly in the fields of control-line and power flying generally. Here are some examples from our catalogue. WE WHOLESALE ALLBON, ELFIN, AMCO, AND E.D. ENGINES.

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MERCURY RADIO-CONTROL EQUIPMENT

MERCURY PLUG PROTECTOR—holds 8. **2/-**

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MERCURY FUELS — see page 63.

We also wholesale DUNLOP RUBBER, SOLARBO BALSA, E.D., RADIO CONTROL, Etc.

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This 1·49 G. Plug Engine makes special appeal to the less experienced, yet it has characteristics that "hot" modellers particularly like. With 15,000 r.p.m. and only 2 ozs. in weight, it's a grand job at the price.

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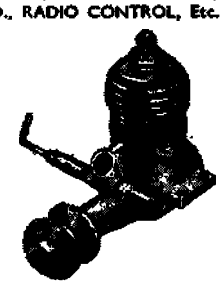

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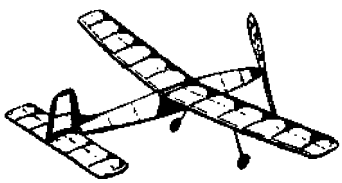

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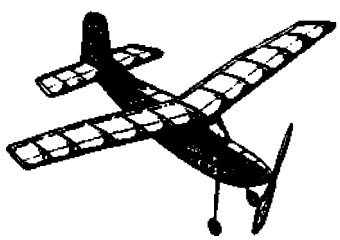
An ideal kit for introduction to aeromodelling, beautifully proportioned and simple to build. Flies with perfect stability. Detailed and illustrated plan and instruction sheet give full assembly instructions; kit contains everything you require for building and flying—including a hand-carved Balsa airscrew!

KIT PRICE **3/3**

The "RASCAL" 24" SPAN LIGHTWEIGHT CABIN DURATION MODEL



An appealing little flier designed in the "modern trend". Has a superb performance—even the connoisseurs will envy you! Kit contains everything you need to build and fly the model, including a semi-finished hand-carved balsa prop.

KIT PRICE **4/6**

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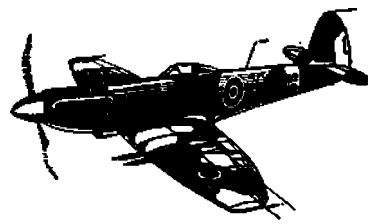
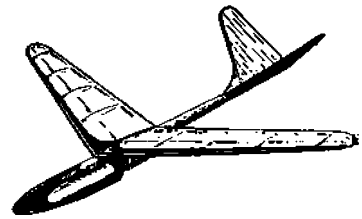


A most popular true-scale control line model. Does everything in the stunt schedule, combined flap and elevator control. For Diesel or Glow plug motors, 1 to 5 c.c. Complete

Kit only **27/6**

MIN-O-JET



The simple to build jet plane. A lightweight model for use with the Baby "JET-EX 50" motor. 18" span. Really amazing value at **3/-**

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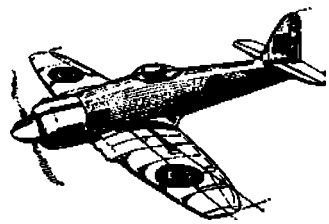

The first of the Veron true-scale control line models. The unique combined flap and elevator control gives advanced stunting capabilities. A super high-speed performer.

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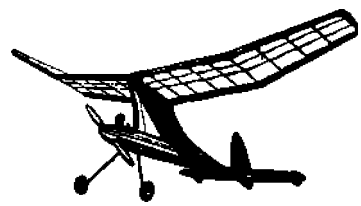
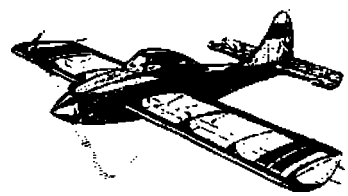


A Power Duration model guaranteed to outfly and outclimb everything else in its class. Span 37". A smart, light-weight plane for the small Diesel motors up to 1 c.c..

KIT PRICE **19/9**

BEE-BUG



The snappiest little stunter ever created. Designed expressly for the small Diesel motor up to 1 c.c., 108 sq. ins. of area make it fast. 22" span. Only 6½ ozs. all up.

KIT **11/6**

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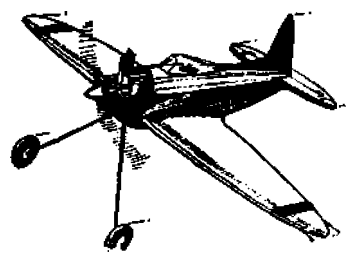

17" span control line model, streamlined for performance. A super sport plane for the miniature motor. Simple to build, easy to fly. Real Veron value at **9/6**

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Suggestions for CONTEST FLYERS

PET/354. **FLANDERS FLYER.** *By* G. Joostens, famous Belgian contest winner in latest form. For 3·5–5 c.c. engines. Span 55 ins. 5/–

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

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

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/–

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/352. **SCALDED KITTEN.** *By* R. H. W. Annenberg. Shoulder wing vertical climbing model ·5–1 c.c. engine. Span 27 ins. 2/–

Recommended for BEGINNERS

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

G/356. **DON QUIXOTE.** *By* S. Baguena. Simple pylon type sailplane of elegant lines, suitable for beginner. Span 33 ins. 1/6

J/292. **ZEPHYR.** *By* H. E. Hervey. High-wing simple duration model for "Jetex 200" solid fuel units. Span 34½ ins. 2/–

CL/313. **CHEETAH.** *By* B. Wiggall. Profile fuselage high wing stunt control-liner with folding prop. Engines 1–1·5 c.c. Span 23 ins. 2/–

G/148. **IVORY GULL.** *By* R. F. L. Gosling. One of the most popular designs in the A.P.S. range, with a first-class performance. 50 inch span. 2/3

D/116. **A. M. CABIN MONOPLANE.** *By* W. A. Dean. A handy little high wing type with good performance. 23 inch span. 1/–

For SCALE ENTHUSIASTS

FSP/285. **BISHOP'S NIEUPORT.** *By* L. C. Bagley. Old timer biplane (¼th scale) with special stabilising rudder. Span 41¼ ins. 5/–

FSP/290. **D.H.C.–1 CHIPMUNK.** *By* J. M. Greenland. Masterpiece of low wing scale design for 1·3–2 c.c. diesels. Span 51½ in. 5/–

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/319. **SEABEE.** *By* J. H. Towner. Lightweight flying scale model of Republic amphibian. Engine 1·25 c.c. Span 53½ ins. 7/–

In this issue . . .

RC/366. **RUDDER BUG.** *By* Dr. Walter Good. Highwing U.S. Radio Control Nationals Winner — well tried and stable design for 5 c.c. engines. Span 73 ins. **10/–**

CL/350. **VIRAGO.** *By* V. E. Smeed. Out-of-the-rut semi-scale radial nose stunt control-liner. For engines 1·8 c.c.–3·5 c.c. Span 30 ins. **3/–**

PET/349. **REBEL.** *By* R. A. Twomey. Successful highwing cabin duration or precision contest power model. For engines 1–2 c.c. Span 50 ins. **5/–**

*FSR/P*243. **MILES M48.** *By* H. Pridmore. The original rubber-driven version and latest C/L conversion have now been combined on one plane. For 2 c.c. engines. Span 36 ins. **3/6**

★ *These few plan suggestions form but a very small part of a selection of over 250 flying designs of all types. A new and comprehensive Plans Service Catalogue is now in the course of preparation: let us know when ordering if you would like a copy reserved for you, or send your name and address on a postcard for filing.*

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AEROMODELLER
INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

HOPING that rail facilities will not have broken down, and that consequently readers will have received their copies of this issue on or before Christmas Day; we commence this Editorial with sincere wishes from our staff to all our our readers for 1950 with good flying and many happy landings".

From these good wishes we come straight to the main point of the current issue's Editorial; which may be summed up in two well known—and somewhat abused words—" Purchase Tax ".

In the past, Purchase Tax has not concerned the aeromodeller very much, but in the future may possibly do so quite a lot! In the Autumn of last year H.M. Customs and Excise sought to bring under Purchase Tax certain model aircraft accessories *including engines*. This action was strongly resisted by members of the model aircraft trade, who quickly banded themselves together into the Federation of Model Aircraft Manufacturers and Wholesalers with offices at Londonderry House, Park Lane, London, W.1.

Mr. H. J. Nicholls of Henry Nicholls Ltd., was elected Secretary, Mr. J. E. Ballard, of Electronic Developments (Surrey) Ltd., was elected Treasurer, and the Council was formed under the Chairmanship of Mr. E. M. F. Cosh (*Model Aircraft*), supported by Mr. D. A. Russell as Vice-Chairman (AEROMODELLER).

During the present year discussions have from time to time taken place between members of the Federation and H.M. Customs and Excise, but as a solution acceptable to both sides could not be arranged, it was eventually agreed that a test case should be made out. It seems that within the coming months this case will arrive at the Courts for decision, and with a view to acquainting readers with the current position we publish hereunder a letter recently received from the Secretary of the Federation.

Dear Sir,

PURCHASE TAX.

Aeromodellers throughout the country will naturally be anxious to be kept informed as to the progress being made by the Federation of Model Aeronautical Manufacturers and Wholesalers in their efforts to secure a legal ruling as to the liability or otherwise of Model Aircraft and Model Aircraft Accessories including engines, to Purchase Tax.

Model Aircraft kits together with the accessories including power units that go with them had until comparatively recently been treated as free from Purchase Tax. A dispute has now arisen with H.M. Customs and Excise as to the liability of certain accessories and power units to Tax.

Certain members of the Trade on being informed of this dispute formed a Committee for the purpose of dealing with the authorities on this matter. This Committee afterwards became the nucleus of the newly formed Federation. The founder members were :

Messrs. E. Keil & Co., Ltd.
Messrs. Mercury Model Aircraft Supplies, Ltd.
Messrs. Electronic Developments (Surrey) Ltd.
Messrs. Mills Bros., Ltd.

The Federation now represents more than seventy per cent. of the Model Aircraft Industry and its members are unanimous in supporting the case for freedom of the goods in question from Tax.

In order to settle this question of liability to Tax a test action has now been commenced in the King's Bench Division in which Messrs. E. Keil & Co., Ltd., are the Defendants. The Federation is bearing the costs of the action which will be considerable, and the best available legal advice is being taken.

Modellers may, therefore, rest assured that their interests are being watched in the best possible manner. The outcome of this action will obviously be of considerable interest and importance to aeromodellers no less than to the Trade.

The recent Government White Paper on Private Flying prepared by the Whitney Straight Committee made several mentions of the importance of Aeromodelling in making the youth of this Country " airminded ".

The S.M.A.E. have co-operated in assisting the Federation to prepare a Memorandum setting out the importance of the hobby of aeromodelling.

Leading personalities in the world of aeronautics including Lord Brabazon, Sir Frederick Handley Page, and Air Commodore Whitney Straight, have promised their support.

In the face of such support for our case it is the more regrettable that the whole *of the Model Aircraft Trade is not co-operating in the combined effort being made on their behalf.*

Your readers may like to know that all the following members of the Federation (see list on Page 64) are co-operating to the full.

I am Sir,
Yours truly,
H. J. NICHOLLS,
Secretary:
Federation of Model Aeronautical Manufacturers & Wholesalers.

In regard to the reference to the *whole* of the model aircraft trade not co-operating in the combined effort being made on behalf of the aeromodelling movement, it may be noted that those who *are* members of the Federation are essentially those firms who form the backbone of the model aircraft trade.

Naturally, it is hoped that the decision when given will be in favour of the Federation, and it is hoped either way, that many of the smaller aircraft traders throughout the country will contribute to the " Defence " Fund. We understand that recently a circular letter was addressed to all the model shops throughout the country inviting subscriptions to this Fund, and a very useful response has already been received. Nevertheless, it is inevitable that an action of this sort will involve

Contents

VOL. XV. No. 168 JANUARY, 1950

COVER PAINTING

RUDDER BUG Featured on page 14

THE MODEL AERONAUTICAL JOURNAL OF THE BRITISH EMPIRE

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Col. Preston Secretary General of the Royal Aero Club, on the right, congratulates a very happy Mr. and Mrs. Houlberg after presenting Alec Houlberg with the handsome set of coffee tables shown in the foreground.

the Federation in an expenditure which may run into £1,000 or even more, and we therefore suggest to readers of this Journal that they, too, may wish to send a contribution, if only a few shillings, to the Federation " Defence " Fund. All such contributions should be addressed to the Secretary, Londonderry House, Park Lane, London, W.1.

It is not possible for us to comment on the merits or otherwise of the action as it is *sub judice*, but it may be noted that both the proprietors of this journal and *Model Aircraft* are members of the Federation, and readers may like to know that substantial contributions to the Defence Fund were made by them as soon as it was opened.

40 Years a Modeller !

The occasion of the S.M.A.E. annual Prizegiving Social was marked this year by a pleasing ceremony, putting the hallmark on what is probably the most outstanding career in the annals of the Society.

It is possibly not widely known that the present Chairman of the S.M.A.E. has been connected actively with the movement for some 40 years—long before the majority of us were even remotely aware of such things as model aircraft. However, the fortunate possessors of copies of " Flight," published prior to the first World War, will note the name A. F. Houlberg as a consistent winner of model aircraft competitions, and a breaker of flying records. That he has maintained his active interest in the flying of models is amply demonstrated by the fact that he qualified for the 1949 Wakefield Trials by virtue of a fine performance in the South Midland Area eliminators, flying his well known design " Isis "

Of greater merit is his record of service to the aeromodelling movement by virtue of his vigilant attention to the administration of the hobby, for it is a proud record to be able to boast (the word is ours, not his !) that he has held the post of Chairman to the S.M.A.E. for no less than 25 years—surely an achievement that would be hard to surpass.

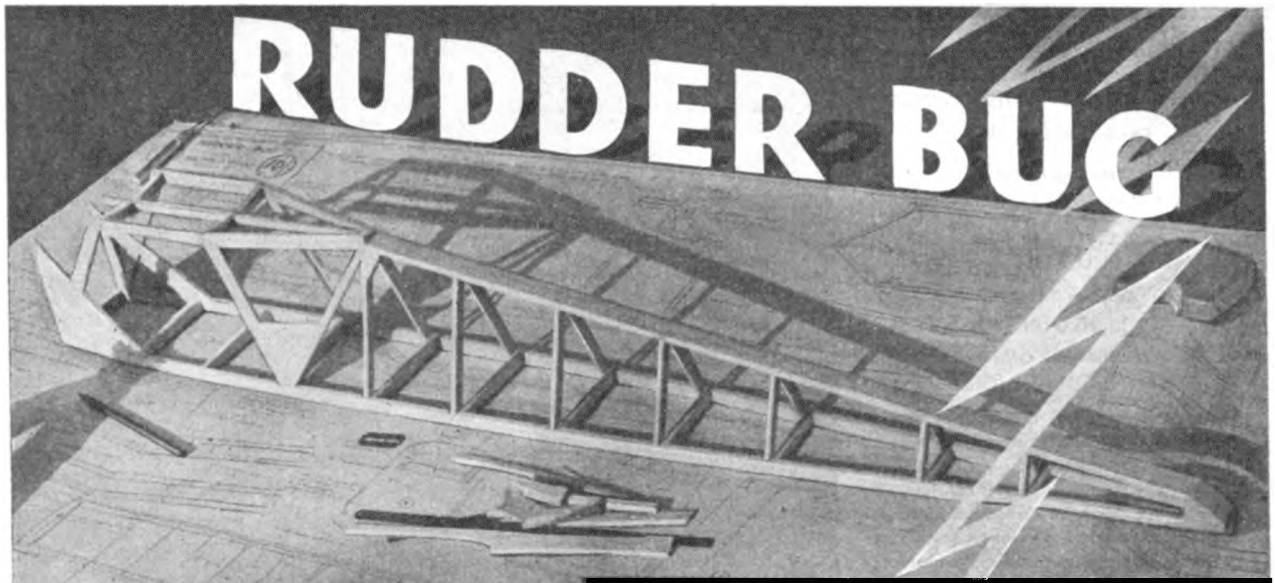
Recognition of this fact was paid when Col. Preston, Secretary General of the Royal Aero Club, on behalf of the Council and Members of the Society, presented Mr. Houlberg with a set of coffee tables carrying an engraved plaque, as a taken of their esteem.

Truly a well-earned tribute to a hard worker, and a mark of appreciation to which we add our sincere support.

Book Collectors please note

The Publishers require a limited number of clean copies of (*a*) Aircraft of the 1914–18 War ; (*b*) Volume II of Aircraft of the Fighting Powers ; (*c*) The Book of Bristol Aircraft. (Copies of any of the other volumes are not required—only those of volume II.) Condition of binding cases is not so important but the contents of the books must be in good condition. Payment from 10/– to 15/– in the case of (*a*) and (*b*) ; and from 7/6 to 10/– in the case of (*c*) will be made according to condition. All books to be sent direct to " Harborough " Publications, The Aerodrome, Billington Road, Stanbridge, Nr. Leighton Buzzard, Beds.

RUDDER BUG



A 6 FOOT SPAN RADIO CONTROL MODEL

Designed by Doctor Walter Good.

With acknowledgment to Model Aeroplane News.

The designer won the 1949 American Nationals Contest, flying Rudder Bug on rudder control only. In addition to his numerous radio control activities, where he is acknowledged leader of the field, he is also Chairman of the A.M.A. Rules Committee where he has the unenviable (and we surmise impossible) task of trying to formulate rules to the satisfaction of American modellers.

THE Scene—A late October afternoon with a hint of winter in the air, just a vestige of wind and a small group of figures gathered anxiously around a model. Occasion—First test flight of a brand new " Rudder Bug", resplendent in blue and yellow dope.

Satisfactory glide tests having been completed we were trying our first power flight with the model unladen, not without a certain amount of trepidation on the part of the test team. A suck-in and a flip and our Yulon was cracking in its customary style. A jerk on the battery leads, a final adjustment to the motor, and the writer was cantering across the grass for a running hand-launch. The model dipped a shade as it sought its correct flying speed and then up went the nose in a steep climb. Horrors, it must stall ! ! ! But no, up comes the tail, she levels off and then more climb and still more climb ! Soon the model is six to seven hundred feet up turning in leisurely circles and appearing practically stationary as it meets the almost imperceptible breeze. The writer was by then sadly reflecting on his underestimation of the Yulon's fuel consumption under free flight conditions, and Rudder Bug, a mere speck in the distance. It was eventually recovered some three miles away where it landed safely apart from a thorn-

punctured tyre in a field.

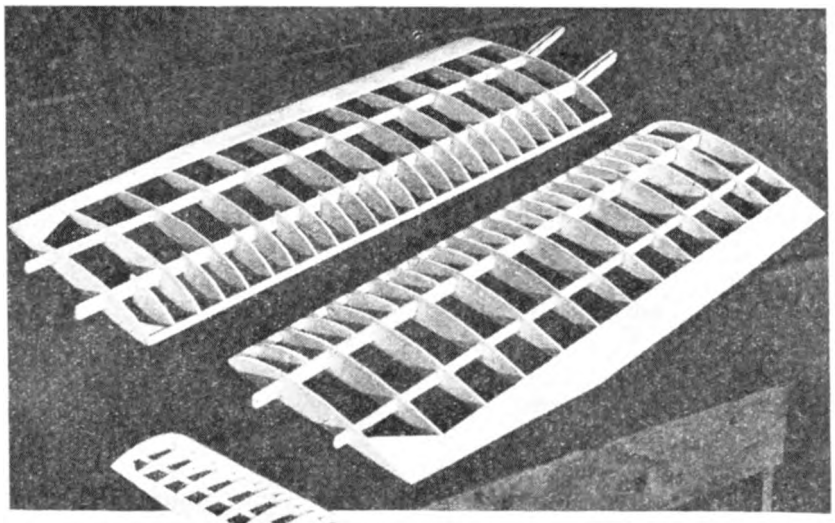
Well there it is. You have oft heard that much maligned expression "it flew straight off the board " but so help me, hand on my heart and the editorial hat raised to Doc Good, this Rudder Bug of ours certainly did. Absolutely no trimming was necessary, the model flying exactly " as per ". Laden it loses the steep climb and gains altitude at an ideal rate for R/C purposes. Almost impossible to stall it is barely influenced by torque and will fly dead straight with the minimum of trimming. Stability is first rate yet it is extremely sensitive to rudder movement and generally fulfils all the requirements the Designer intended. As far as the writer is concerned Rudder Bug has the most delightful flying characteristics of any power job he has yet flown, and although serving as a stooge for his first radio control flights has not suffered even so much as a heavy landing to date, which, as someone remarked says a helluva lot for Rudder Bug!

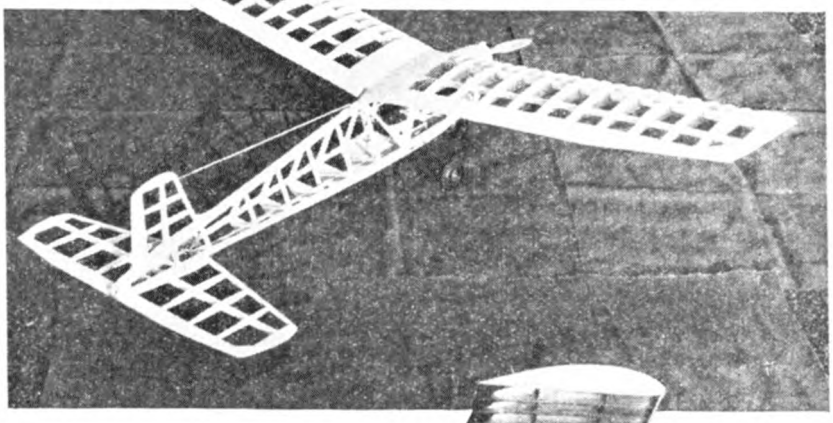
Writing in *Model Airplane News* Doc. Good says, " The general impression of radio control enthusiasts is that final performance depends on about 75 per cent. model design and 25 per cent. radio gear with lots of practice added. Thus, since model design has assumed such importance what are the design factors involved? Briefly they are: overall size and payload, stability, number of controls, engine power, accessibility of gear, power-on, power-off characteristics, landing gear, and ruggedness ".

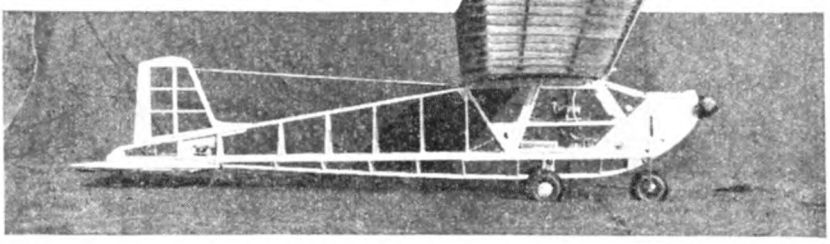
All of these factors have been faithfully met and dealt with to their best advantage in Rudder Bug, which was incidentally in the drawing stage for several years and took a year of limited spare time on the Doc's part to build. Not that the final design, as presented to our readers, involves as much labour. For we ourselves found its construction simple and straightforward and well within the capabilities of the average modeller.

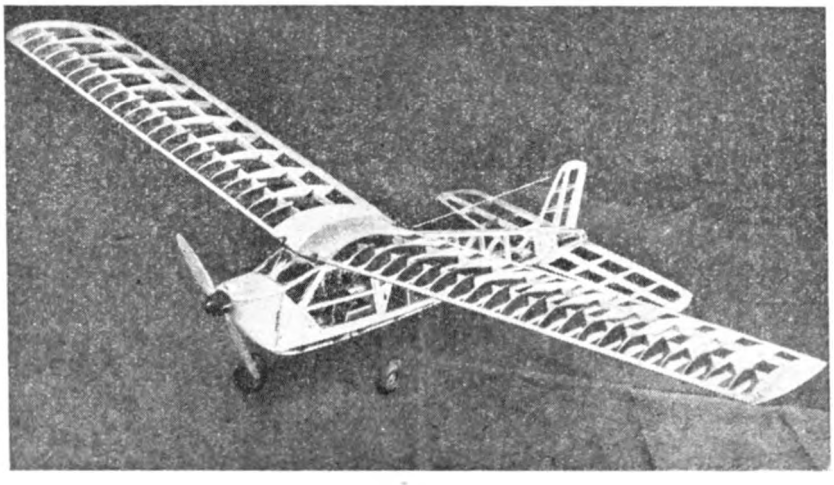
The writer would only add that he was exceedingly fortunate in choosing Rudder Bug for his first radio control efforts. It has completely eliminated any troubles as far as the model side of the question. He only wishes there was a radio control set half as reliable and laughed his head off at Bill Winter's remark in the December issue " Our experiences as beginners in the field of radio control proved that this game has reached the point of development where, barring cost, R/C is practical for all competent modellers ". Bill should have qualified this with, " in America ".

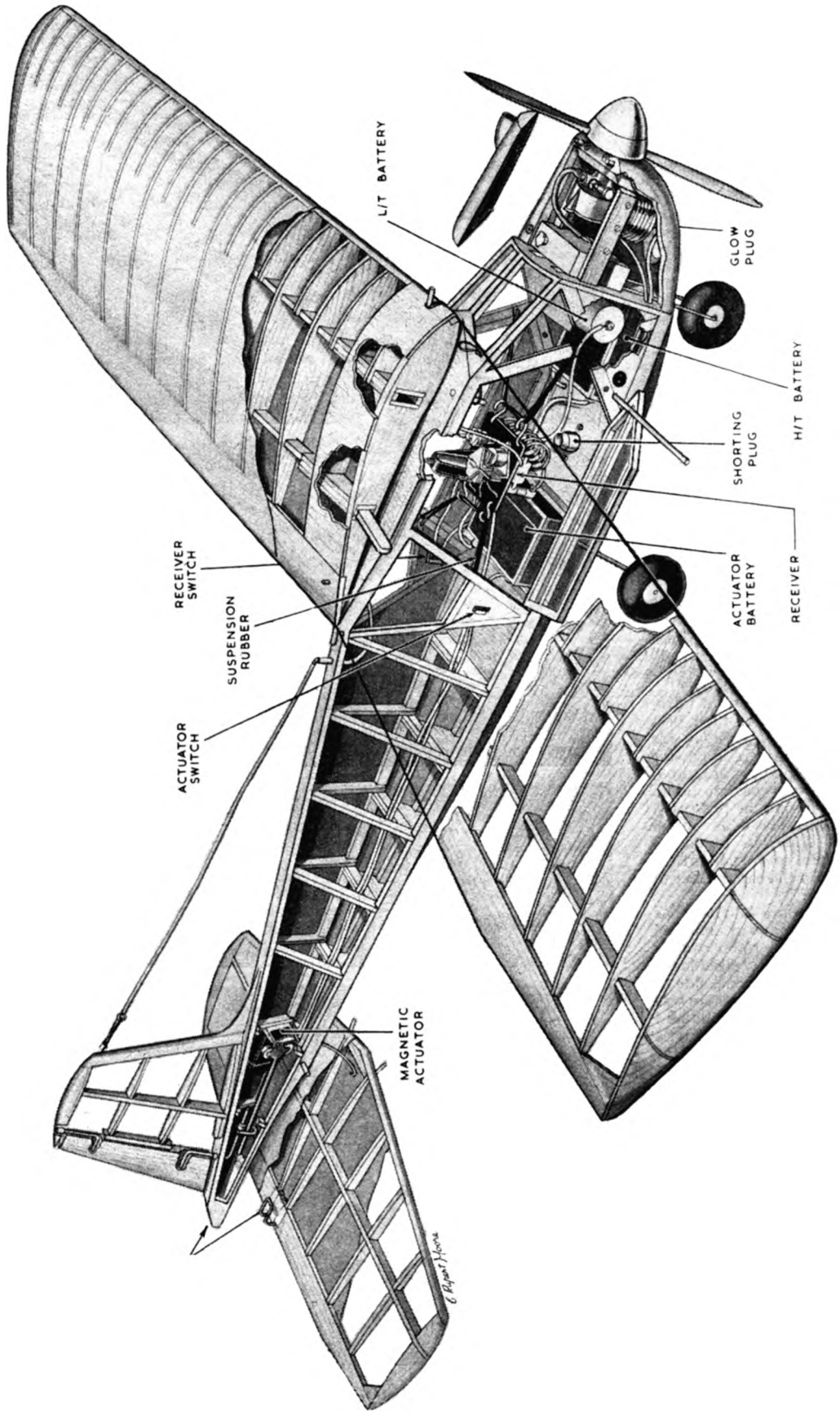
However, the radio installation, etc. is being dealt with next month, and necessarily learning the hard way, with my limited radio knowledge, maybe I shall have acquired a little more " gen " by then. Those controlled flights undertaken to date, although rare, have been most enjoyable and certainly worth the brain fag involved in tracking down elusive faults in anode current, etc. H. G. H.










L/T BATTERY
GLOW PLUG
H/T BATTERY
SHORTING PLUG
RECEIVER
ACTUATOR BATTERY
RECEIVER SWITCH
SUSPENSION RUBBER
ACTUATOR SWITCH
MAGNETIC ACTUATOR

Aeromodeller Photos.

CONSTRUCTION of the Rudder Bug is fairly straightforward, and although in some ways it may appear to be rather unconventional to British eyes, it follows accepted practice in the U.S.A.

Fuselage. The fuselage is designed around a battery platform and 2 large access doors. Those of you who have already dabbled in Radio Control will appreciate the size of these doors. They really do allow all round access to the Radio Control equipment, and engine batteries, etc., where a spark ignition engine is used. Most of the fuselage may be built on the plan as you will notice in some of the accompanying photos.

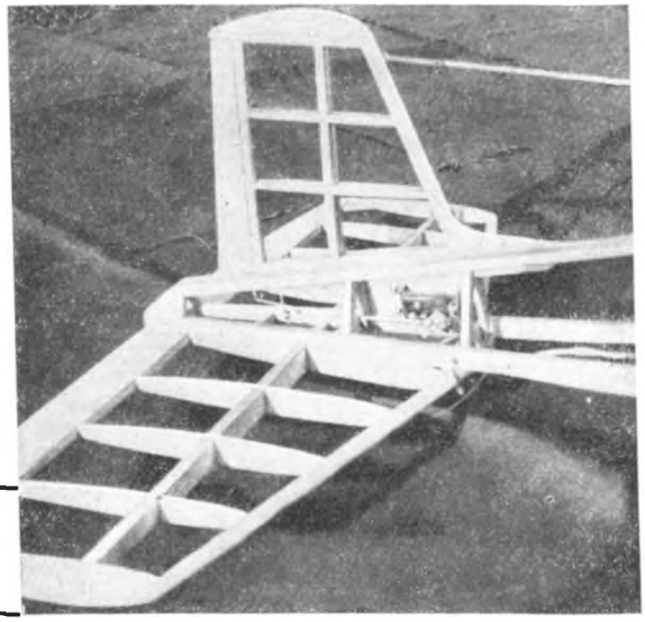
First, the "crutch" is built flat on the plan using $\frac{1}{8} \times \frac{1}{4}$ in. hard balsa. The longerons will need to be spliced unless you can obtain 4 ft. lengths locally. Before pinning down the longerons, it is wise to carve the cut-outs for the tailplane, and care should be taken to ensure that you get the correct negative incidence angle of $-2\frac{1}{2}°$. The uprights lettered E to K are cut from $\frac{1}{8} \times 3/16$ in. balsa and cemented to the crutch, each upright being cemented to the longerons and the front face of the corresponding crosspiece. It is advisable to make card templates to check the angles of each upright, so that they line up fore and aft. The top longeron of $\frac{1}{4} \times 1$ in. balsa is cemented in place and then the $\frac{1}{4}$ sq. diagonals from the top of upright E to the crutch at D. While the cement is setting, the block in the extreme tail can be shaped and fitted.

The main cabin structure is cut from $\frac{1}{8} \times \frac{1}{4}$ in. balsa together with the 2 $\frac{1}{4}$ in. sheet shaped crosspieces. The front upright and bracing members are cemented together on the plan so that the angles are correct when they are attached to the crutch. After cementing the front uprights to the crutch, one of the shaped crosspieces should be joined to the top rear faces, and the $\frac{1}{4}$ in. sq. central member glued to the crosspiece and to the upright E. Then assemble the rest of the cabin in following order: cement the 2nd crosspiece to the central member, the 2 side members which connect the cross pieces, the uprights at D and the 2 side members which connect the tops of D and E. (These last 2 should be cut to size on the plan elevation.) Then fit the 2 pieces of $\frac{1}{4}$ in. sq. balsa at D and the 1/8th sheeting at D and C. The fuselage may now be lifted from the plan.

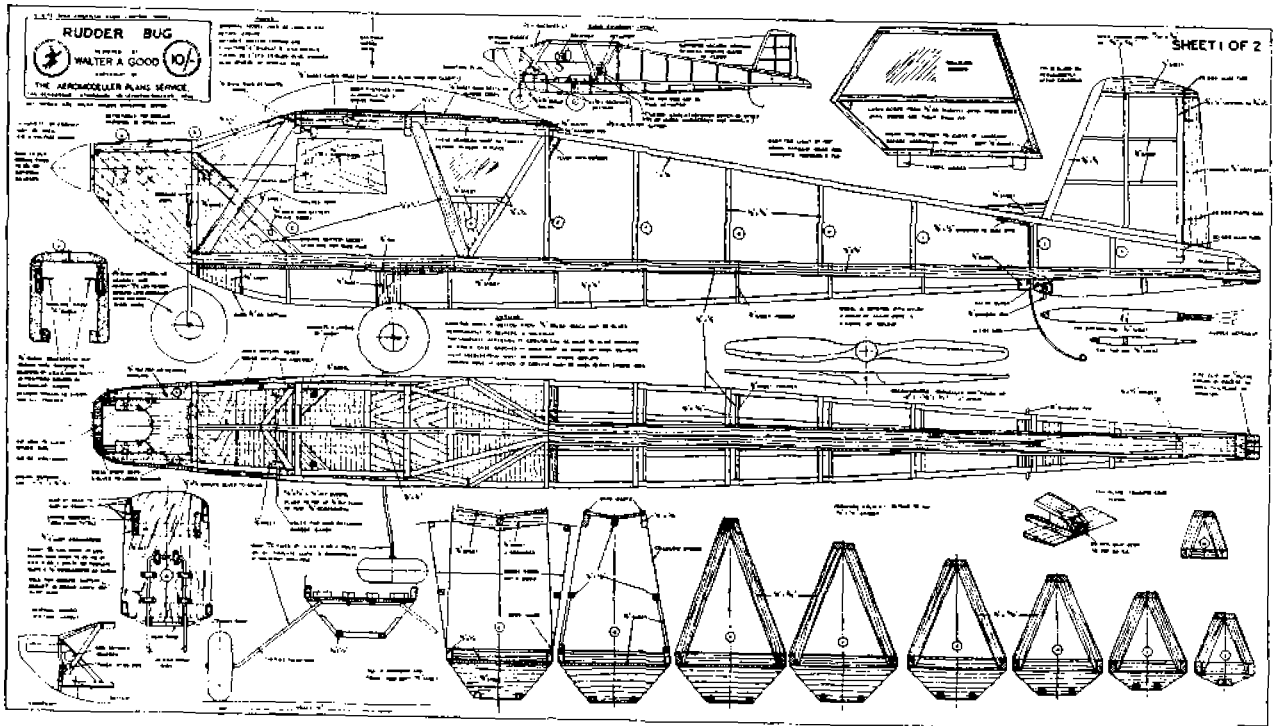
The next step is to cut out the $\frac{1}{4}$ in. ply bulkhead at B and fit the $\frac{1}{4} \times 1$ in. ply engine bearers. The bulkheads may then be glued to the crutch, and the cabin and windscreen structure completed. When this has set, the roof of the cabin should be covered with 1/8th sheet balsa and the wing-fixing pegs cemented in place. Note that the front pegs are located in $\frac{1}{4}$ in. sheet balsa gussets and that 1/8th sheet gussets are cemented in each side at the top of the windscreen. A hole is cut in each of the 1/8th gussets through which the rubber bands pass from pegs inside the cabin to those on the leading-edge of the wing.

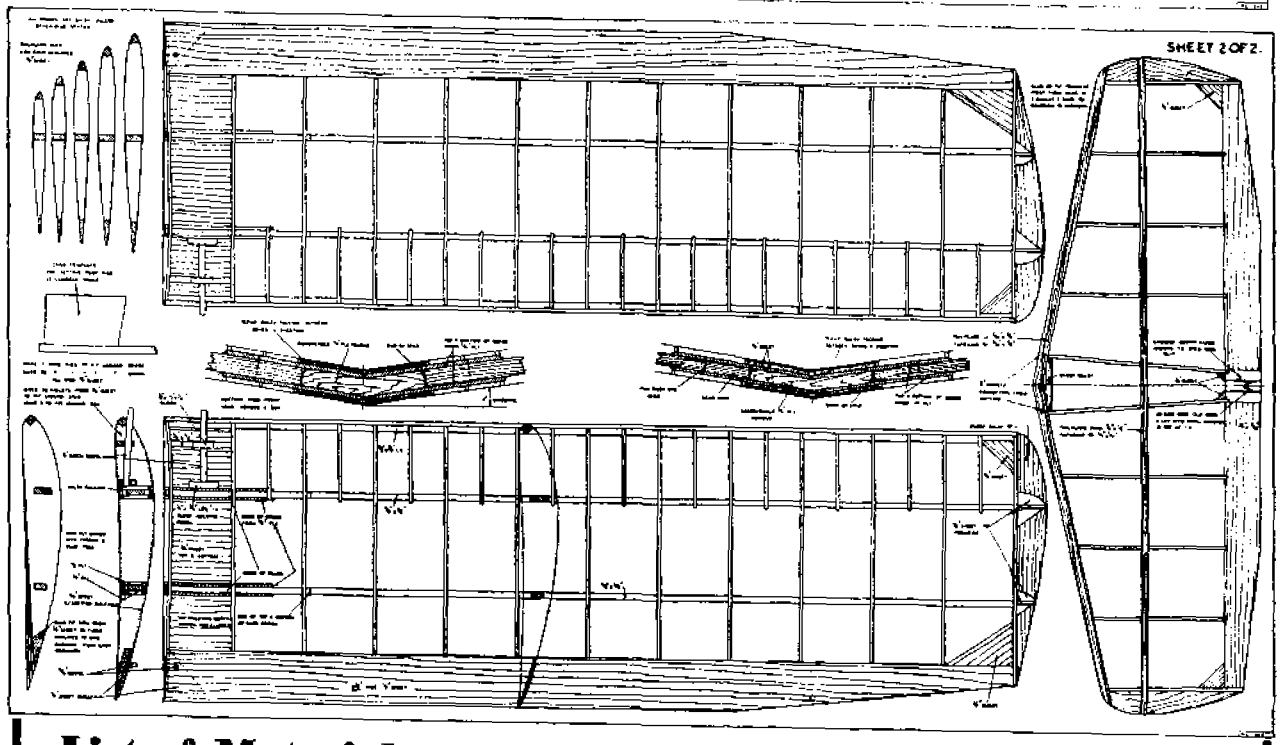
The floor of the cabin is covered with 1/8th sheet balsa from the bulkhead B to Former E, except where the main U/C legs are fixed, where it is covered with 1/8th ply. The main U/C legs should next be bent to shape, using 10 s.w.g. wire, and either screwed or bolted to the ply floor of the cabin.

The formers for the underside of the fuselage are cut from 1/8th sheet balsa. Formers B to E are glued directly onto the cabin floor, while formers F to J are cemented to the rear faces of the crosspieces. When they have set, the 2 $\frac{1}{4}$ in. sq. longerons should be cemented into place. You can either steam them to shape at the front or use the continental



The constructional photographs on this and previous pages, together with the cut-away drawing, give an indication of the simple yet efficient design of this outstanding model. Close-up of tail unit shows installation of the magnetic actuator (Pro. Patent No. 29978) used on the "Aeromodeller" Rudder Bug, brain child of our old friend Howard Boys.





List of Materials

STRIP

5 @ ⅛" × ⅜" × 36"
3 @ ⅛" × ½" × 36"
8 @ ⅛" × ¼" × 36"
3 @ ⅛" × ⅜" × 36"

SHEET

1 @ 1/16" × 2" × 36"
2 @ ⅛" × 3" × 36"
1 @ ¼" × 4½" × 18"
1 @ 1/16" × 2" × 12"
13 @ ⅛" × 2" × 36"
2 @ ⅛" × 3" × 36"
1 @ ⅛" × 2" × 12"
1 @ 1/16" × 1½" × 30"

BLOCK

2 @ 1½" × 1½" × 12"

PLY

1 @ 1/16" × 2½" × 4"
1 @ ⅛" × 4" × 15"
1 @ ¼" × 4" × 18"

MISC.

3' 10 s.w.g. piano wire.

1' 16 s.w.g. piano wire
1' 20 " " "
1' 11 " aluminium tube
1 sq. foot celluloid
3 3½" dia. airwheels
1 2" dia. spinner
1' ¼" dowel
1' ⅛" "
1 block spruce or other hardwood 2½" × ½" × ½"

method of making 2 or 3 cuts along the grain, flooding the cuts with cement when bending to shape. The 1/8th sheet balsa around the U/C and the 1/8th and 1/16 sheeting at the nose should now be cemented into place. The balsa block on the underside, at J, should be shaped and fitted, and also the 16 s.w.g. tailskid, which passes through the joint of the 2 ¼ in. sq. longerons and is held in place by a piece of balsa cemented to the ¼ in. × 1 in. top longeron. The tailskid, although not fitted to the original model, has been incorporated in the light of recent experience, which shows that despite the tricycle U/C the model is liable to write-off its tailplane when landing on rough ground. Probably the reason we found a tailskid necessary, and Walt. Good did not, is because so few of us in this country enjoy the wide open spaces which are the lot of our more fortunate cousins across the " herring-pond ".

Turning again to the front of the fuselage, the nose wheel may now be fitted, bolting or screwing the 10 s.w.g. wire leg securely to the ¼ in. ply bulkhead. It had better be secure, as the poor nose wheel takes nearly all the bumps !

If you are going to use a spark ignition engine, now is the time to fit the batteries, coil and condenser, as per the layout on the drawing. They should be sandwiched between the engine bearers and 1/16th ply dashboard, so that you get the neatest possible installation, bearing in mind the fact that you also have a whole heap of Radio Control equipment and batteries to go in the same locality. The AEROMODELLER Rudder Bug is fitted with a glow-plug engine and in order that starting may be effected with the least number of lacerated fingers (due to fishing about in the cowling for battery leads) a battery plug is fitted on the starboard side of the cabin. One lead goes to the glow-plug, and the other is earthed on the crankcase.

The shape and construction of the cowling depends on the engine installation and personal whims of the builder. The original by Walt. Good consisted of 2 sides and a detachable top, whereas the AEROMODELLER version is completely cowled-in, the whole cowling being detachable.

The doors are constructed of ¼ in. sq. balsa. They should not be built flat on the plan, but on the model, as they are twisted, and the bottom member is curved. All that remains is to chamfer all the edges that should be chamfered, and sand the sheeting flush.

Wings and Tail. The wings can be built flat on the plan in the usual way. The 2½° washout on the tips can be automatically built in, using one of two methods. One way is to cut the 4 outer ribs on each, to the outlines shown on the drawing, and block up the trailing edge to give the correct washout. The other, and possibly more accurate method, is to build the wing entirely flat, with " square " tips, the outer ribs being the same section as the rest of the ribs. Then slice off the trailing edge to the correct outline, shaping the bottom camber of the ribs to fair smoothly into the trailing edge. The tips are made from soft block balsa, sanded to shape.

The tailplane section is symmetrical and has a full depth spar of ¾ × ¼ in. hard balsa. The spar should be pinned flat on the plan and the rear halves of all but the two centre ribs, cemented vertically to the spar.

Make sure they are all at right angles in every direction, and that they line up at the trailing edge. While the cement is setting, cut the trailing edge from 5/16th medium balsa, slotting it to receive the ribs. Sand to the correct section and cement in place on the ribs, then add the rear halves of the centre ribs. When the cement has set, remove from the drawing, attach the front halves of the ribs to the spar, again leaving out the centre ribs, and make sure that all the ribs line up fore and aft, and along their leading edges. When dry, add the leading edge, the centre ribs and the balsa block between them. The tips are made from soft balsa block and sanded to shape.

The fin is built in the same manner as the tail-plane, and is cemented to the fuselage after covering. The movable rudder is made from soft 3/16th balsa, and is intentionally left thick to operate effectively. Make absolutely sure that the rudder moves very easily without any sign of stickiness. You will find that if the rudder is not perfectly free, your actuator will not work reliably, if at all.

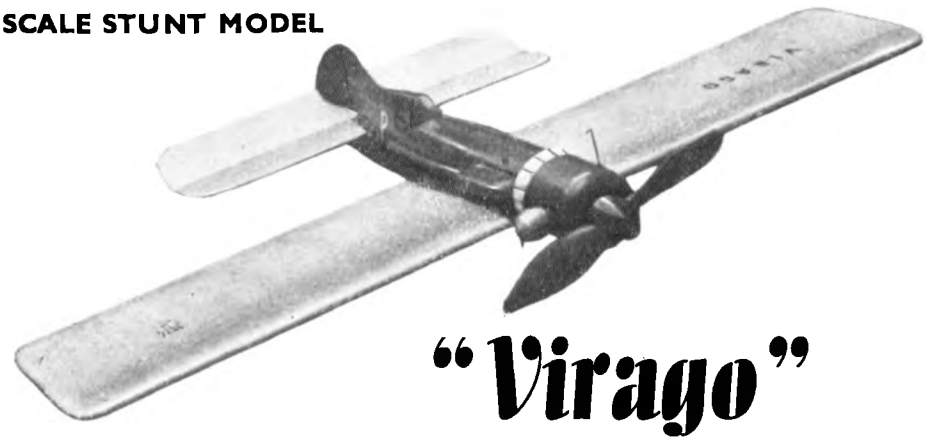
Covering. Walt. Good's original Rudder Bug was covered with nylon, but as our girl friends " borrowed " ours, the AEROMODELLER version is covered with lightweight parachute silk. You will find that 5 panels will be sufficient if you go carefully, but don't forget to cover only with the grain running along the length. After first water shrinking the entire covering, give the whole model 3 coats of clear dope, and the rest is up to you ! The AEROMODELLER Rudder Bug colour scheme is : Blue fuselage, fins and rudder, and yellow wings and tailplane. The dope was sprayed on very thin giving a translucent effect, and finally the model was given one coat of fuel-proof dope. Naturally, if you are using a diesel or petrol engine, there is no need to fuel proof the whole model. A word of warning here about the fuel-proof dope. Do not expect to fly the model the day after applying it. Ours took 4 days to dry out thoroughly, despite the advice to " leave for 2 to 4 hours for dope to dry completely ".

Aeromodeller Photo.

Rudder Bug takes the air at Eaton Bray on its first test hop.
The reproductions opposite are 1/6th scale of the full sized drawings, which are available price 10/– post free from the "Aeromodeller" Plans Service. Start building your model now, ready for the radio installation instructions which follow next month.

A 30 in. SPAN SEMI-SCALE STUNT MODEL

DESIGNED BY
V · E · SMEED



"Virago"

Chairman of Canterbury Pilgrims M.F.C. . . . . runs Canterbury's Model Shop . . . misogynist . . . . . modelling nearly 20 years . . . . . prefers rubber to anything . . . . ex-F/Lt, has flown 28 types of full-size aircraft . . . . . soaring enthusiast . . . . builds at least six different models at same time . . . . . best-known model "Ethereal Lady" . . . . . plays (?) sax. and clarinet, etc. . . . . froths at the mouth when anyone says "spin" meaning "spiral dive."

IT was felt that the lines of a typical stunt job could be worked over to improve the appearance, and while no one would say that this model is exactly beautiful, most people seem to find the general aspect attractive.

Construction.

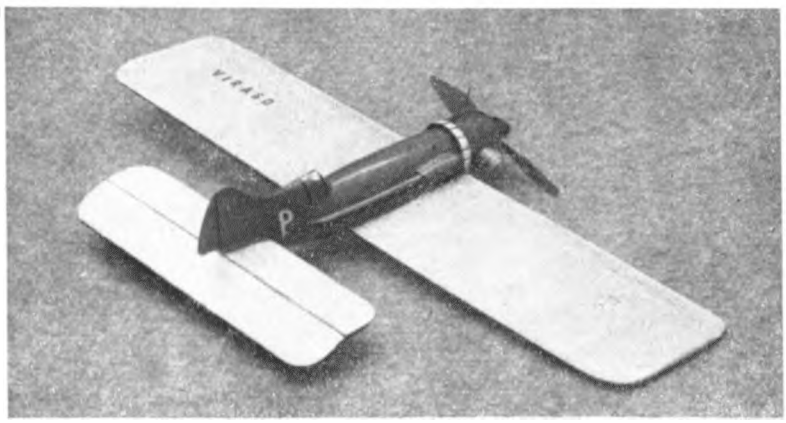
The wing must be built first. Notch a length of standard 1/4 in. × 3/4 in. trailing edge stock to receive the ribs and cement these in. Glue a 1/4 in. wide strip of 1/16 in. ply to a hard 1/4 in. × 1/4 in. (leading edge) and cement in place. Add the tips, which are three laminations of 1/2 in. × 1/8 in. soft, and the tip gussets. Insert the lead-out wire bushes. The lead-out wires, already attached to the bell-crank, must be fitted at this stage. Add the soft 1/16 in. sheeting top and bottom and the centre-section capping and sand the wing.

Cut the formers and the soft 3/8 in. sheet base. Cement F2 and F4 to each end of the base, leaving 1/8 in. below the formers to make a step for the later addition of the planking. If a beam-mounted motor is to be used, F1 and the bearers should be attached at this point. Assemble the bearers and the cross-strut on F1, using plenty of glue and two 3/4 in. screws. Let the lower bearer into the 3/4 in. base and see that the whole unit is well cemented. The wing is now cemented into the cradle between F2 and F4; pack with scrap beneath the leading and trailing edges and line the assembly up accurately. The bell-crank attachment bolt hole should now be drilled and small ply biscuits added above and let in below to prevent the bolt from working in the hole. Bolt in the bell-crank, using washers to bring it level.

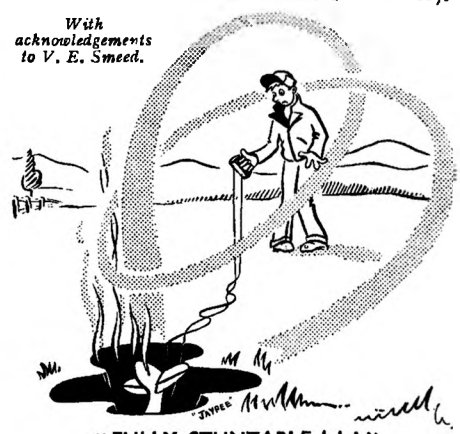
Two 1/4 in. × 1/8 in. strips are now cemented in position and drawn together at the tail. Since the tailplane will rest on the top of this "false crutch," accurate alignment is essential. With the 3/8 in. base flat on a board the tops of these strips should be 1 5/16 in. from the board. Add F3 and F4 and plank the underside of the fuselage, using soft 1/4 in. × 1/8 in. strips. The central strip cements to the false crutch at the tail and the other planking is tapered to fit. A slot is later cut at the extreme tail to accommodate the push-rod movement. All gaps occurring between the centre-section ribs and the fuselage base should be filled.

Instal the tank at this stage, using scrap for support. The top planking provides most of the tank mounting. A commercial tank was used on the original and projected through the starboard side; this was "camouflaged" with a small fairing and a long exhaust. Finish interior details (fuel lines, push-rod, and so forth), add tailplane and rudder post, and complete the planking. The whole fuselage should be glass-papered down to 3/32 in. thickness. An instrument panel and pilot's bust were fitted up in the original's cockpit—the extra trouble is well worth while from the appearance point of view. Attach the elevator—tape hinges are quite suitable if the centres are kept free from cement. If a radial motor is being used, F1 may now be firmly cemented to F2, ensuring that the bolts are already in place.

The cowl should be constructed from an old cardboard packing ring of the type sometimes found in crates of bottles, cut to correct length. It may be wound from 1/32 in. or 1/16 in. sheet if desired. After cutting all necessary holes, cement on to a circle of 1/2 in. sheet and round off. Instal the motor and glue or cement the cowl in place; make a very strong joint as during starting and landing the cowl may be subjected to some buffeting. Finish all details, sand all over, and cover the entire model with rag tissue. Two coats of clear dope may be applied all over, but it is best to confine coloured dope to the fuselage only. All-up weight should be approximately 9½ ozs.—with proper grading of materials this can be reduced to 8½ ozs. without sacrificing necessary strength. The model should balance on the front lead-out wire (3½ oz. motor).



With acknowledgements to V. E. Smeed.



"FULLY STUNTABLE ! ! !"

A 20" WINGSPAN CONTROL LINE STUNT MODEL

VIRAGO

DESIGNED BY
V. E. SMEED

3/-

COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

SUITABLE FOR RADIAL & BEAM MOUNTED MOTORS, DIESELS OR GLOWPLUG FROM .25 TO .5 CC

ALL UP WEIGHT 9½ OZS

MATERIALS REQUIRED

SHEET	1/32" x 3" x 36"	MED BALSA
1 SHEET	1/16" x 3" x 36"	MED SOFT
1 "	1/8" x 3" x 36"	" "
1 "	1/16" x 3" x 36"	" "
1 "	1/8" x 3" x 36"	" "
1 "	3/16" x 3" x 36"	" "
STRIP	1/2" x 1/2" x 36"	HARD
"	1/8" x 3/4" x 36"	"

MISCELLANEOUS
1 PIECE OF PLY 1/16" x 2" x 6"
" " " 1/32" x 2" x 3"
36" OF 22 SWG PIANO WIRE
½" x 16 "
½" x 20 SWG TUBING
SCRAP BALSA, TISSUE, CELLULOID, TAPE BOLTS, SUNDRIES.

FORMERS F1 & F5 = 3/16" BALSA
F2 F3 F4 = 1/32" PLY

TAILPLANE 1/16" SHEET MED BALSA

ELEVATOR 1/16" SHEET MED

TAPE HINGES.

EXHAUST SLIT.

FUSELAGE PLANKED WITH 1/16" x 1/8"

¼ SWG PUSH ROD

1/16" SHEET

GILL STRIP

⅛" SPINNER

TANK

F1 F2 F3 F4 F5

⅛" SHEET

BRISTOL BOARD OR 1/16" BALSA COWLING

1/16" SHEET

PLY BISCUIT FOR BOLT

4 B B SCRAP BLOCKS TO ALIGN RING

CUT AWAY FOR PUSH ROD

SCRAP 1/16" SHEET & BLOCK FAIRING OVER TANK END

BELL CRANK 1/16" PLY

1/8" x 1/4" ROUNDED EXHAUST

RUDDER OFF-SET

HOLES FOR BUSHES IF DROP-OUT GEAR IS USED

HOLE FOR NEEDLE VALVE

AIR INTAKE OF SCRAP BLOCK AS DUMMY CARBURETTOR AIR INTAKE BLOCK IS NECESSARY TO COMBAT VENTURI EFFECT.

PILOTS HEAD SHOWING INITIAL CARVING STAGES.

COCKPIT CANOPY PARTS OF OLD CELLULOID CUT TEMPLATES IN CASE OF SLIGHT VARIATION IN CORNING SHAPE

GILL STRIP MADE OF BRISTOL BOARD OR CARD

CUT COWLING FROM CARDBOARD CONTAINER (VIM ETC) OR WIND FROM STRIP
CUT CYLINDER AIR & NEEDLE VALVE APERTURES
& ADD 1/16" SHEET RING

LENGTH TO SUIT MOTOR

WIRES & CRANK MUST BE INSTALLED BEFORE SHEETING LE

1/16" PLY SPAR STIFFENER

1/16" x 1/4" HARD LE

1/16" SHEET BASE

20 SWG TUBING

DOUBLE LOOP

22 SWG LEAD-OUTS

CUT CENTRE RIBS TO BUILT STIFFENER

ALL RIBS MED 1/32 SHEET.

CENTRE RIBS TRIMMED & CAPPED 1/16" x 1/2"

1/16" SHEET TOP & BOTTOM

3 LAMINATIONS 1/16" x 1/2"

1/16" OR LAMINATED GUSSETS

1/2" x 3/4" TE

P. CELLULOID

WOODSCREW

CROSS STRUT

5/16" x 3/8" BSH BEARERS

TYPICAL NOSE BLOCK FOR BEAM MOUNTING (TO CONT)

TANK MADE FROM OLD BRASS SHIM FAIR PROTRUDING AIR AS SHOWN ANY COMMERCIAL TANK WILL DO

CUT OUT FOR INDUCTION STUB

F2 & F3 FOR BEAM MOUNT

FIRST TWO 1/8" x 1/4" PLANKS FALSE CRUTCH

TAILPLANE SITS ON TOP OF THESE TWO PLANKS

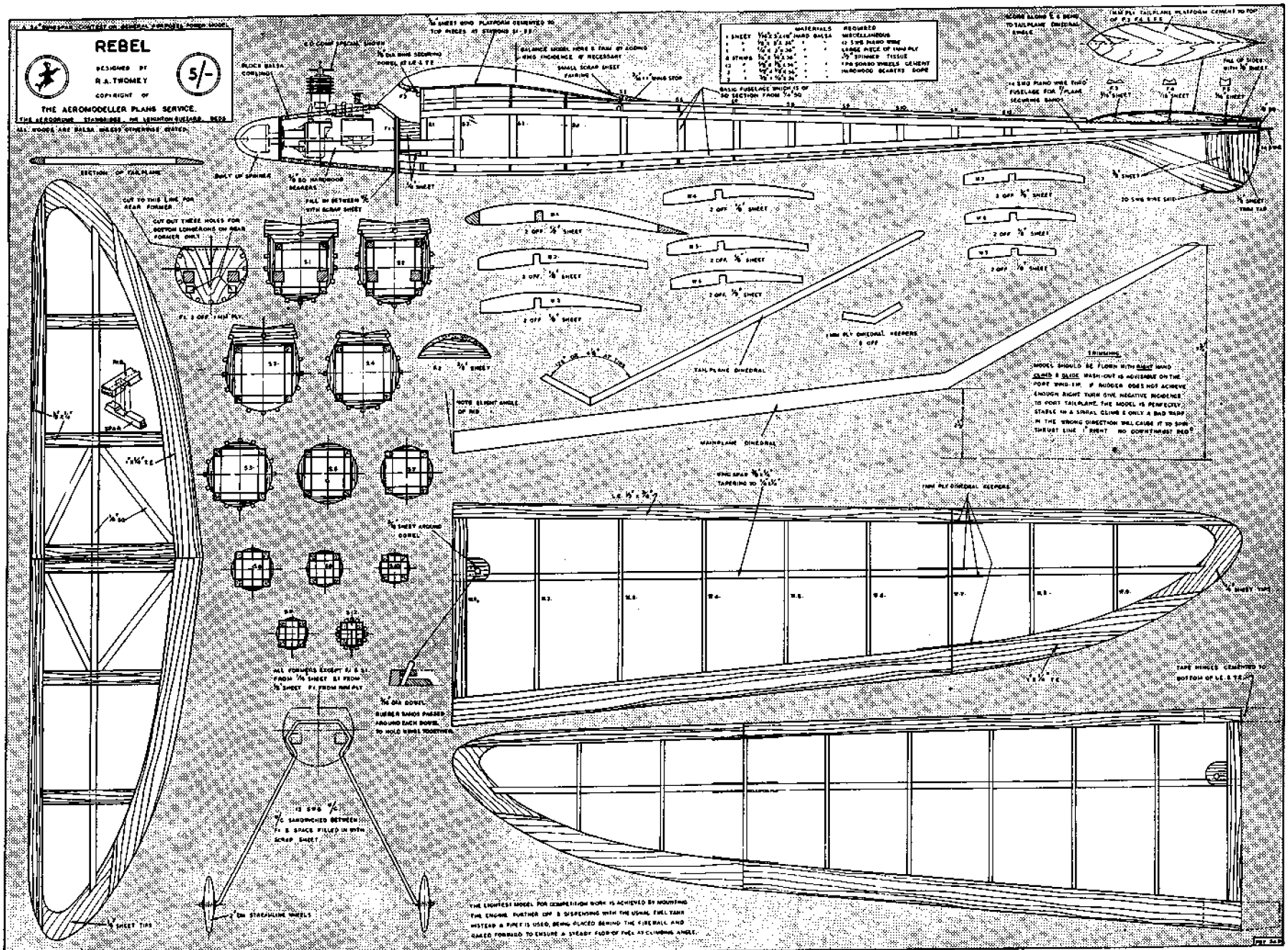
WING SITS ON BASE ALIGN WITH SCRAP BLOCK

1/16" SHEET

CRADLE & CRUTCH

CL 390

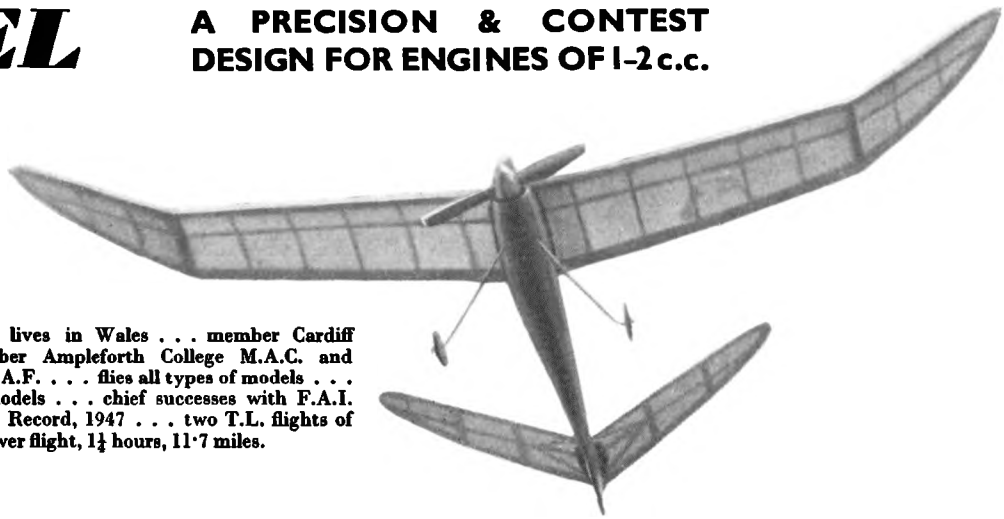
THIS IS A 1/4 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3/- POST FREE FROM THE AEROMODELLER PLANS SERVICE



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

REBEL

A PRECISION & CONTEST DESIGN FOR ENGINES OF 1-2 c.c.



By R. TWOMEY

Irish and proud of it . . . lives in Wales . . . member Cardiff M.A.C. . . . Founder Member Ampleforth College M.A.C. and Sec. 2¾ years . . . now in R.A.F. . . . flies all types of models . . . soft spot for unorthodox models . . . chief successes with F.A.I. sailplanes . . . British H.L. Record, 1947 . . . two T.L. flights of over ¾-hour . . . longest power flight, 1¼ hours, 11·7 miles.

THE " REBEL," as its name shows, was designed with a view to being " out of the rut " as well as being efficient. Though it has no particular claim to beauty, it is, at least, different.

It has an excellent glide, largely owing to its low-drop streamlined fuselage and its vee-tail, which gives considerably less drag than the conventional tail formation. Its climb is a tight spiral which is perfectly stable. In fact, those theorists who condemn the vee-tail on the ground of spiral instability, should think again, for the " Rebel " can out-spiral many a pylon model.

As to performance, the " Rebel " broke the Club Ratio Record when flown in dull, drizzling November weather, with a flight of 2 : 45 on 18 secs. motor run (ratio of 9 : 2). The engine was an old one, giving only 4,200 r.p.m.

Building Instructions

Fuselage. The fuselage is as strong as a horse. The first thing to build is the slab-sided box of 1/4 × 1/4 in. balsa, then the 1/16 in. sheet formers are cemented in place, followed by the 12 stringers of 1/8 × 1/8 in. which are glued ON TOP of the formers and not slotted in. The undercarriage and engine bearers are firmly fixed. The wing platform is covered with 1/16 in. sheet, and the platform for the vee-tail is made of 1 mm. ply. The underfin, which carries the rudder, is also fixed in place, now.

Wings. Construction of the wings is straightforward. It may be worth mentioning that I personally prefer to build the whole semi-wing flat on the plan, first before cracking the tip up to the required dihedral angle and inserting the ply braces.

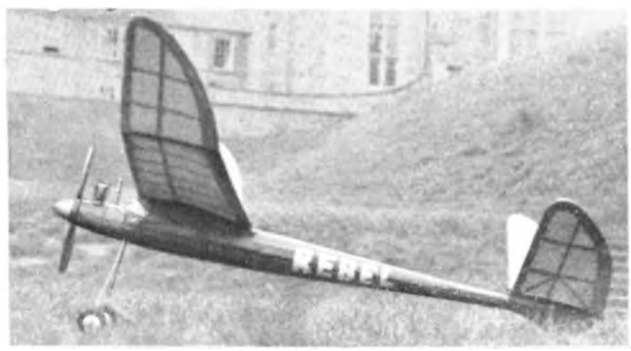
The reader may be wondering about the pros and cons of hinging the wings. Personally, I am sure that my wings have been saved from breaking many a time when (as so often happens on rough ground) the model has tripped up on landing. However, these hinges have saved my " Rebel " from worse things than a mere cracked wing, and the story is worth telling : I was fool enough to fly with a damaged prop., which proceeded to repay me for my rashness by throwing off a blade in the middle of the climb. The engine continued to turn the remaining single blade, but the vibration was so great that the incidence of the wings must have changed completely, for the plane started to dive steeply. I braced myself for the disaster, but as the power dive became vertical, the pressure on the wings forced them into an anhedralled position, and the " Rebel " pulled out slowly and made a perfect landing—upside down ! This is not just another " Fliars Tale," for it happened at a competition, so I have witnesses. This flight produced a ratio of 1 and near disaster, but the " Rebel " flew again (with a new prop. !) and gained second place in the contest.

Hinged wings also make for greater ease of transport. So much for the advantages ; the only disadvantage is that the hinges must be regularly inspected for wear and replaced when necessary. Mine have caused me no regrets.

Tail. The flat-plate sectioned vee-tail presents no difficulties. Make sure that the halves are firmly cemented together at the angle shewn on the plan. Use plenty of rubber bands to strap the tail to the fuselage, for tail wobble would bring certain destruction.

Covering. The whole machine is tissue-covered and given two coats of dope.

Trimming and Flying. Trim for a right-handed glide and tight right spiral climb. When C.G. is in approximately the right position, optimum glide should be achieved by adding incidence, if necessary, to the mainplane. Tail incidence should be left alone. Washout is advisable on the port wing-tip. Slight right sidethrust is required, but no downthrust. In fact, my model actually uses 1 degree of upthrust for best results in the spiral climb, a point where it scores over the pylon formula, whose excessive downthrust wastes considerable power and often prevents quick take-off.



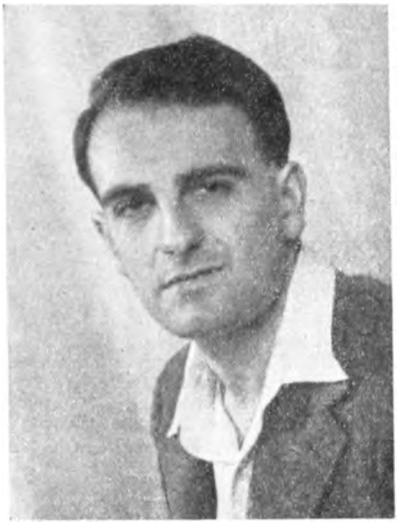
Q.E.D.

or

A YEAR WITH THE L.S.A.R.A.

BY

P. R. PAYNE



Left, N. K. Walker, B.Sc., Director of Research and right "Bob" Annenberg, B.Sc., of "Scalded Cat" fame, who is Assistant Director of Research.

PROFESSOR A. A Hall, M.A., F.R.Ae.S., has aptly described the L.S.A.R.A. as a "Junior Learned Society".

To amplify this it may be described as international, with branches in most leading countries of the world; it can be mentioned that it has the finest equipment in the World for model research; that at least one foreign government research establishment has requested its advice; that it receives a grant from the A.R.C. . . .

Or we may descend nearer to the personal and say that half the members of the Association are overdue with their subscriptions; that the members who occasionally complain about the tardy dispatch of reports owe about £50 for reports between them; that little short of a miracle can make the books balance this year . . . . . .

But descending to the completely personal, I propose instead to describe a few events and personalities of interest.

Although normally the organisation ticks over, a number of people must have noticed that an occasional seizure occurs.

This is almost entirely due to the fact that all work is voluntary, and hence—as is usual in such cases—the tedious and un-interesting "office work" falls on the shoulders of an ever-diminishing number of workers. At one particularly black spot the work was finally left to N. K. Walker himself, in addition to his many duties as Director of Research. The inevitable nervous breakdown shocked other members into awareness for a time, and some time later in an effort to offset her quiet rural existence, my wife took over issuing of reports and all office work. Once again the organisation ticked over until history repeated itself with the arrival of a small Payne and my wife's six-months round of hospitals.

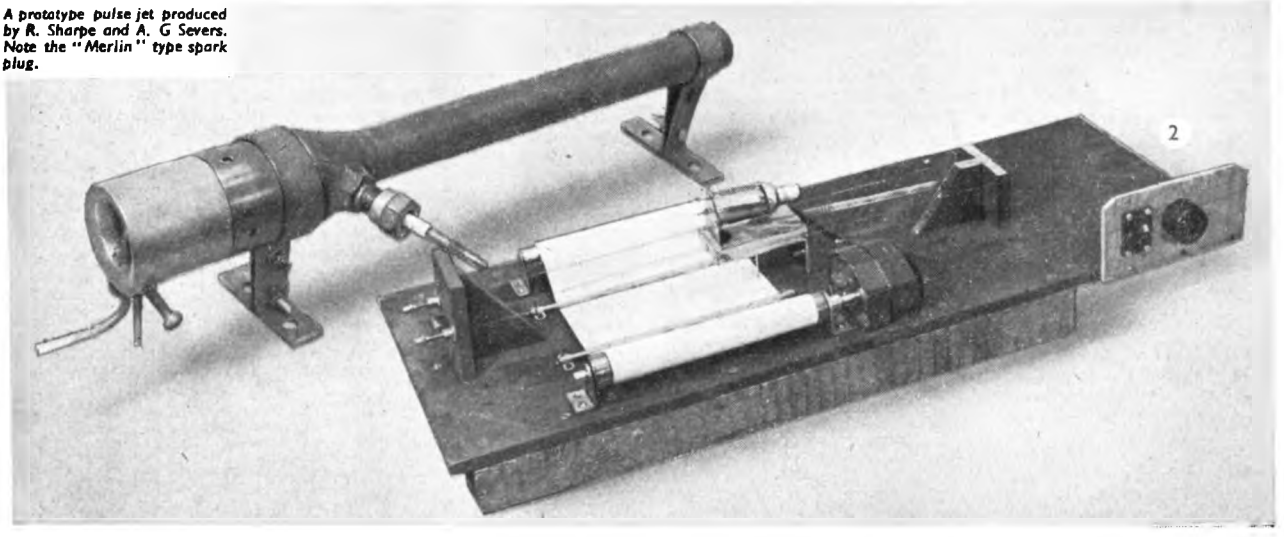
This sort of thing will go on and on until the Association is wealthy enough to afford a full-time salaried Secretary for six months. Once this has been achieved it seems likely that finances will improve as the square of office work, and we shall be soundly established.

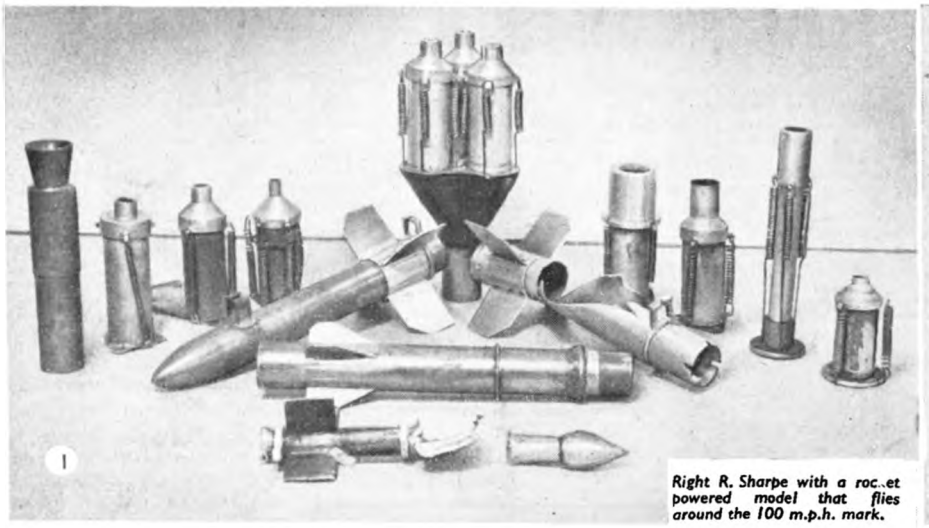
Another item in the dirty linen pile is the now almost certain fact that there will be no A.G.M. this year, owing to the difficulty in obtaining a suitable meeting place in London. This excuse looks very feeble at first sight, like the 7 month overdue meeting of the Research Committee, which is due to a member failing to confirm the arranged meeting place: but it should be remembered that things like this are insuperable obstacles sometimes when one is working seven nights a week.

Current Research.

At the time of writing all work at H.Q. Farnborough is rather overshadowed by the tremendous effort being expended on prop tests and the completion of the 2 ft. working section tunnel. It is doubtful whether such a comprehensive programme would have been attempted for many years had not the Model Aeronautical Press offered to finance a series of tests to find the relative efficiency of some contemporary commercial props. But with this programme in hand it was

A prototype pulse jet produced by R. Sharpe and A. G Severs. Note the "Merlin" type spark plug.





Right R. Sharpe with a rocket powered model that flies around the 100 m.p.h. mark.

natural to extend and work on the related theoretical investigations at the same time. Some idea of the aims of this programme is given in the 30-page " Unrestricted " report which the summarises static work.

Moving on to another form of propulsion, Figs. 1 and 2 illustrate some of the interesting work being done by Associate Member Ray Sharpe with rockets. All the units shown are charged with cordite, and static testing is carried out on the thrust rig shown in Fig. 2, thrust being automatically plotted against a time base on the moving paper. The final rockets in Fig. 1 are launched from rails in some wide open spaces near Farnborough and stable flights at 200 m.p.h. have been achieved—hardly low speed aerodynamics ! The two rather battered looking specimens blew up on ignition, and hence the Jetex-like springs on the rest.

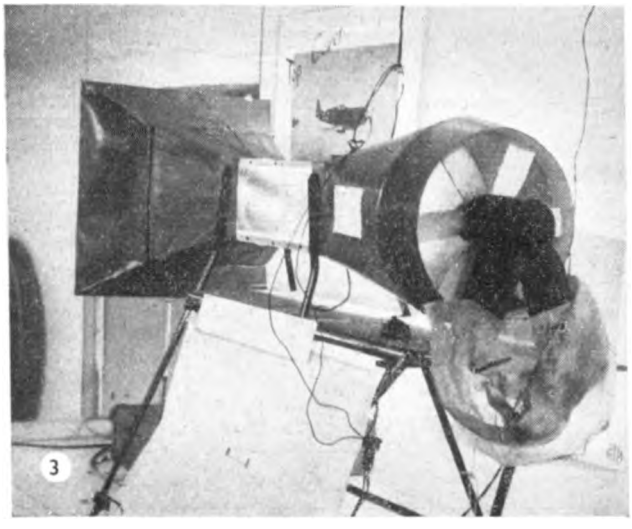
Ray has managed to get thrusts of around 20 ozs. with the best of these units, but has now passed on, with the able assistance of friend A. G. Levers, to pulse jets. His latest design must be regarded as the best so far produced in this country.

The Assistant Director of Research, " Bob " Annenberg, B.Sc., has of course been hitting the high spots with the equation thrust equals drag plus weight, and with T. W. Smith is thinking up new ways of getting there even faster. Of future developments he says, " We are both using sweep forward but are proceeding on different lines of thought. My wings are out and Smith's are in the slipstream, and although we have both managed so far to turn in order to stop looping under present power/weight ratios, it will be interesting to see which line-up comes unstuck first."

As a quite irrelevant reflection it seems a pity that some of the more verbose " fly 'em around like barges " enthusiasts—particularly those who have never been known to build a high performance model—do not realise the immense amount of thought and care which go into producing one ; I do not refer to the ordinary contest model, of course !

L.S.A.R.A. No. 2 Wind Tunnel, shown in Fig. 3, has returned to H.Q. and should shortly be in use again for routine work. Unfortunately it is unsuitable for the more critical experiments such as determining critical V.L., but the new Canadian tunnel (Fig. 4) built by Mr. D. Henshaw and Mr. E. Willing of the Canadian Section, will take its place to a large extent. A short report (No. 37) has already been issued by this section on the critical VL of N.60.

Finally, the future is bright as always. Sitting behind a pipe it is easy to believe that financial difficulties will fade away, that organisation will look after itself once a regular office staff has been engaged ; that we can then get out a regular journal and indulge in the luxury of attending members' lectures in London, doing all ambitious experiments in the small but well-equipped area sections. And what better time of year for such thoughts ; or even, maybe, helping just a little ?



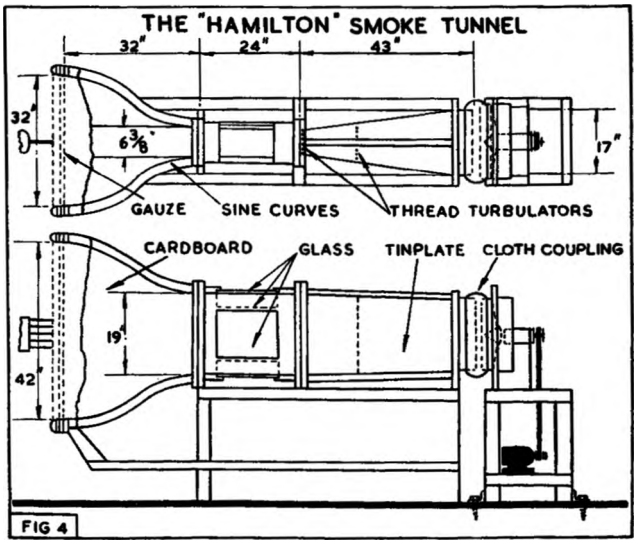
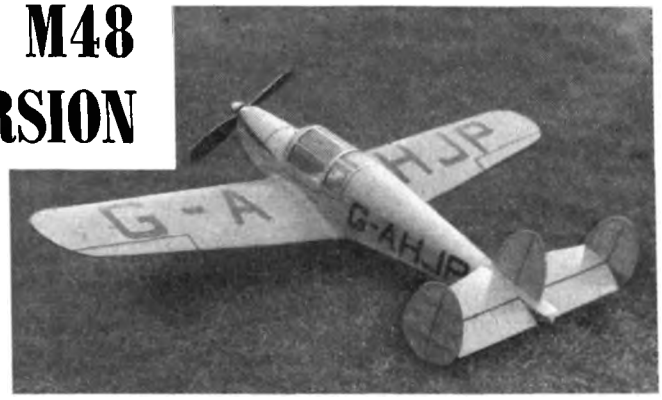


FIG 4

MILES M48 CONVERSION

by

H. PRIDMORE



COMING across my 1 in. scale rubber-driven Miles M.48 recently, which was described in the August 1946 issue of the AEROMODELLER, I decided to give it a new lease of life by converting it for Control-Line Flying.

The result proved an outstanding success, and I thought that readers might be interested in the conversion. With the aid of the conversion drawing, together with the notes given here, any fairly experienced modeller should encounter no difficulty in constructing the model as a Control-Liner, from the original plans. Powered with the popular E.D. 2 c.c. diesel—either Comp. special or Mark II—it has a really first class performance, and is delightful to fly. Wing-overs, vertical climbs and dives are easily attained, and the model will hold high level flight with the lines well over 45°.

Fitted with a stunt tank, and a well tuned engine, it should easily accomplish inside loops. Unlike many Control-Liners that just drop out of the air when the motor cuts, this model seems to float on indefinitely and, if a little care is taken, perfect three point landings can be obtained.

Control-lines from thirty to forty feet long are recommended, the shorter lines being used for windy weather.

So much for its performance, now for a few words to assist would-be constructors. Delete the fuselage formers marked F1, F2, F3, and F4, shown on original plan. Cement conversion half formers C3 and C4, (do not forget to face these ply) to keel.

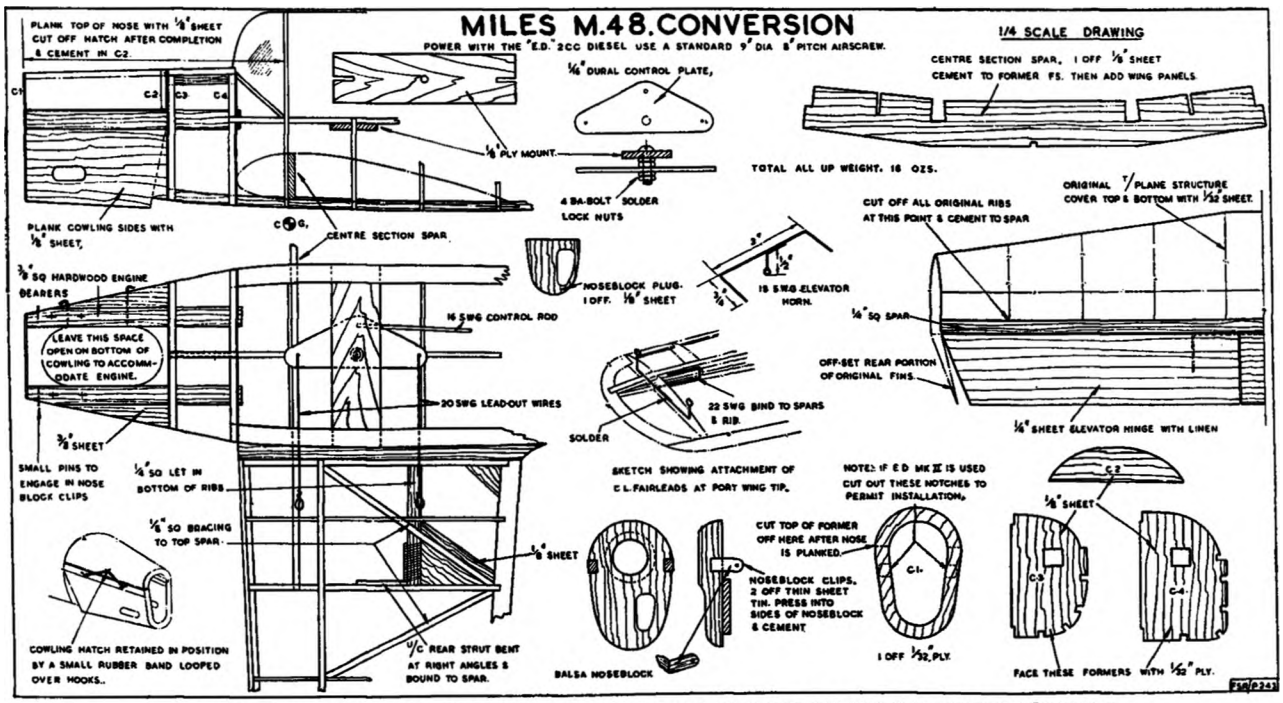
If the builder desires to fit a stunt tank this should next be installed. It is suggested that it is built in between formers C3 and C4, and on the same level as the engine carburettor.

Next glue in the engine bearers and cement on former C1, plank top and sides of cowling with ¼ in. sheet and sand to a smooth surface. Cut off the cowling hatch, cement in C2, and hinge hatch on port side with linen.

Construct wings as originally, but omit wing boxes and tongues together with ribs W3, W4 and W5. It should be noted that the wings are set at a slightly lower angle of incidence than originally, and that scale dihedral is employed.

Undercarriage construction remains similar to original with the exception that 14 s.w.g. is used for front strut and 1/16 s.w.g. for rear. Note that rear strut is bound to a spacer and does not slide between wing ribs W3, W4, W5, as originally. A small loop may be bent in rear strut to give better shock-absorbing qualities. 2½ ins. dia. sponge rubber wheels are recommended in place of the former 1½ ins. dia. The incorporation of elevators to original tailplane structure, completes the conversion of the model. Elevators should have 45° up and down movement. Cover top and bottom of tailplane with 1/32 in. sheet balsa, link elevator horn to control rod and cement tailplane to fuselage.

Fins may be either built up as originally, or may be cut from 3/16 in. sheet soft balsa and sanded to section.



BOTH THE RUBBER-DRIVEN M.48 AND THE C/L VERSION ARE AVAILABLE ON ONE PLAN PRICE 3/6 POST FREE

NORDIC A2 SAILPLANES

by

Ing. Per Weishaupt

Chief Instructor Dansk Model Flyver Union, Denmark . . . Age 31, single . . . aeronautical engineer . . . glider enthusiast, holds Silver C . . . other hobbies photography and classical music.

"Aeromodeller to-day, to-morrow — ?" A Danish modeller studies an Airspeed Oxford.

THE Nordic countries, with four years of successful experience with their "Wakefield Gliders" (which they hope will become as famous as the rubber-powered Wakefields) look forward to meeting modellers from other countries, at the 1950 International Glider Contest, in Sweden. As we should not like our foreign friends to be handicapped with this class of model, we present you with the design data of a number of proven models from 1946 to 1949.

In a letter to the AEROMODELLER I have traced briefly the history and background of this class. Now, let us just remember the rules :

1946–47 : Main wing area 24–26 sq. dm. (374 to 404 sq. ins.)
Fuselage section L ×L : 300 (L=total length.)
Minimum weight 400 grams (14·1 ozs.)
Tailplane not more than 33% mainplane area.

1948–49 : Total area 32–34 sq. dm. (495–526 sq. ins.)
Fuselage section : Total area : 100
Minimum weight 410 grams (14·46 ozs.)

The present rules leave the designer more scope with regard to wing and tailplane area and using a small tailplane you are able to have a large wing. Although some Swedish and Finnish models have very small tailplanes of less then 20% of mainplane area in 1947 this idea does not seem to have impressed Danish designers much in spite of its new possibilities.

Aspect ratios vary from 7·8 to between 12 and 13 for the Finnish models in 1947 and up to 14·5 for the winning Danish design of 1949. High aspect ratios make the use of suitable aerofoil sections imperative.

Although exact information is not always available it will be seen that no Clark Y or RAF 32 or other thick old-fashioned full scale aerofoils are now used. The Swedish SI-aerofoils and similar comparatively thin, cambered and pointed aerofoils are used extensively. The lifting tailplane sections are even thinner. Constant chord wings are used partly because of the Reynolds number partly for practical reasons, as you are allowed to buy finished ribs in these countries.

With the old rules the use of very short fuselages allowed you a thinner fuselage and so less drag. The present rules base the section on the total area, but by using short fuselages you can of course keep the "wetted area" down.

The weight of 410 grams is fixed so that the largest possible model is just above the FAI minimum loading. Generally you may build the model as light as possible and still strong enough.

Successful canards have been built and flying wings too, and while the old rules handicapped flying wings, the new ones allow you a wing of up to 34 sq. dm. This will, even with a considerable non-lifting tip, owing to wash-out, give the full effective lifting area.

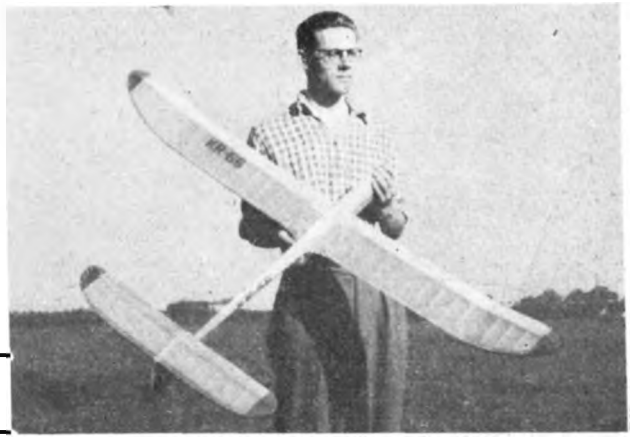
A few comments on each of the models in the table may be of interest :

The Senior Danish aeromodeller, Aage Host-Aaris, is one of the few who take the trouble to build tapered or elliptical wing and well-formed fuselages. The *AHA/12* was one of the first successful A 2 models.

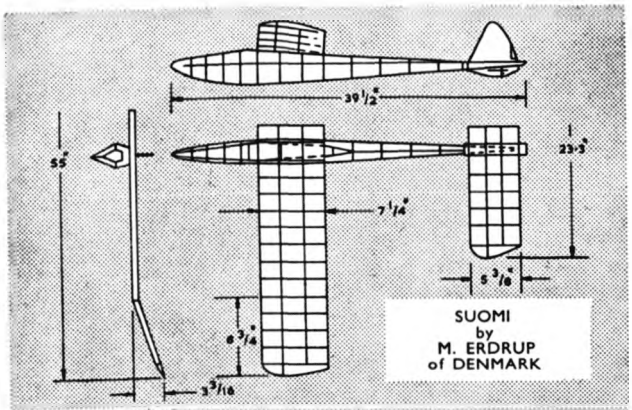
After its record flight of nearly half an hour this *canard* made another flight of nearly half an hour on the same day and disappeared ! The front wing is very critical and must often be re-built as only slight inaccuracies spoil the flight.

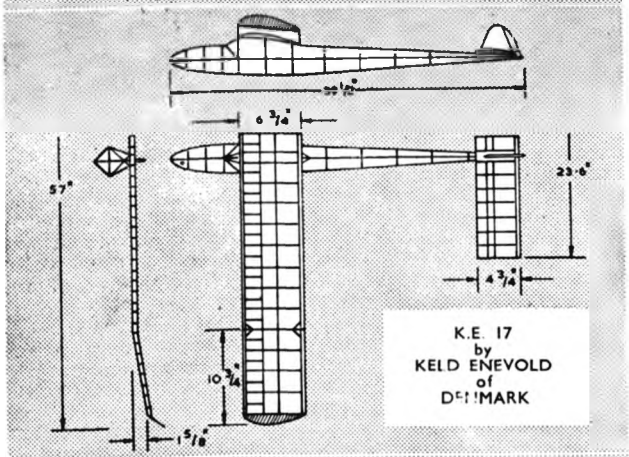
Sigurd Isacson, designer of the famous series of aerofoils as well as of the small Sunnanvind, flew his *Scout* to second place in 1946 with 155, 192 and 219 seconds respectively. Differing much from normal models the Scout has a polyhedralled swept-back wing, a short fuselage and tailplane with double fins on two booms. Stability was improved by a turbulent-wire in front of the tailplane.

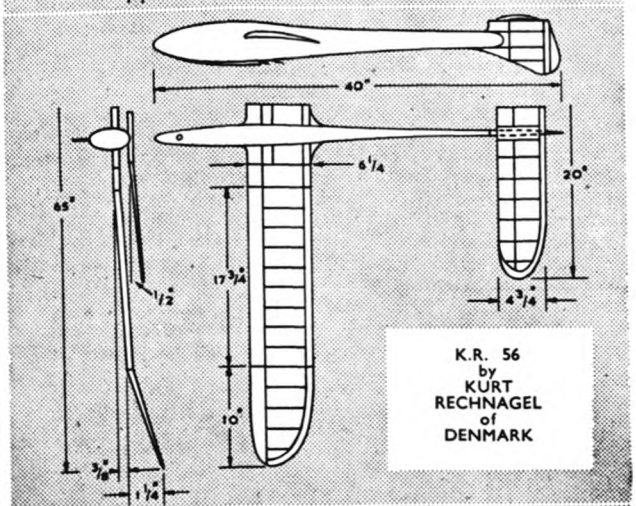
The *Suomi* was designed by Mogens Erdrup (former holder of the international distance record for gliders with 85·436 kilometres (53 miles)), for the 1946 Nordic contest in Finland (Suomi in Finnish) and was the best Danish model there. It placed third, individually, with an average of 185 seconds in calm evening air (perhaps with slight down-currents on the first flight). Later Erdrup passed his Danish C-diploma test with non-thermal flights of 228, 212, and 210 seconds. With simplified construction the model was published in the series of tested and approved model plans by Dansk Modelflyver Union and has been sold in big numbers as a kit. It can be built and flown by an aeromodeller, with good results, as his

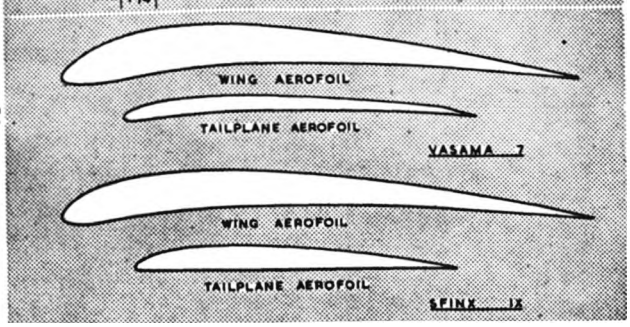


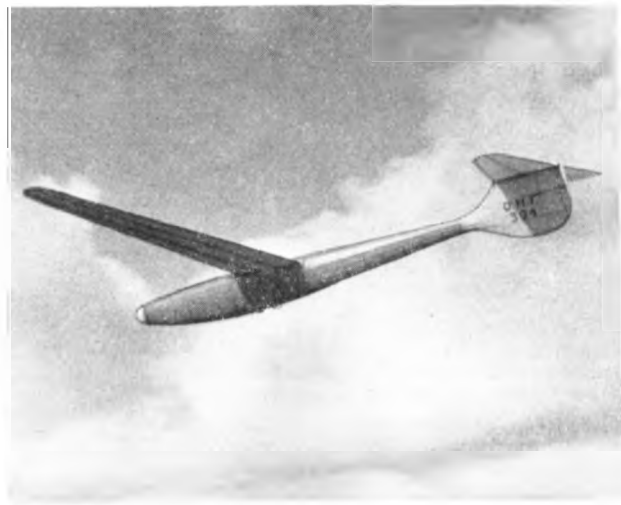
Kurt Rechnagel, winner of the K.L.M. cup with his A2 sailplane, KR 56.











A beautiful action shot of AHA 12, designed by Aage Host-Aaris of Denmark.

second model and is also being used by experts with little time for building. While not being very handsome it is easy to launch and fly and by far the most popular Danish A 2 model with an impressive list of contest wins.

Keld Enevold took part in Finland, was Danish champion with gliders in 1946, won a winter town-match in Oslo in Dec., 1946. He uses same type of aerofoil designation as Isacson.

Whether or not the model by Bent Larsen is a particularly good design is not known, but at any rate it holds the Danish duration record with 1 hour 27 minutes 5 seconds, after which it landed a few hundred yards from where it was launched—this is very rare in Denmark (here, too !)

The winning model of the 1947 contest, of typical Finnish design, made three flights of respectively 251, 271 and 194 seconds : Toropainen found some very slight runway thermals. His fellow-countryman Santala was fourth with 213, 137 and 208 seconds.

Like the two former models this one by Persson does not

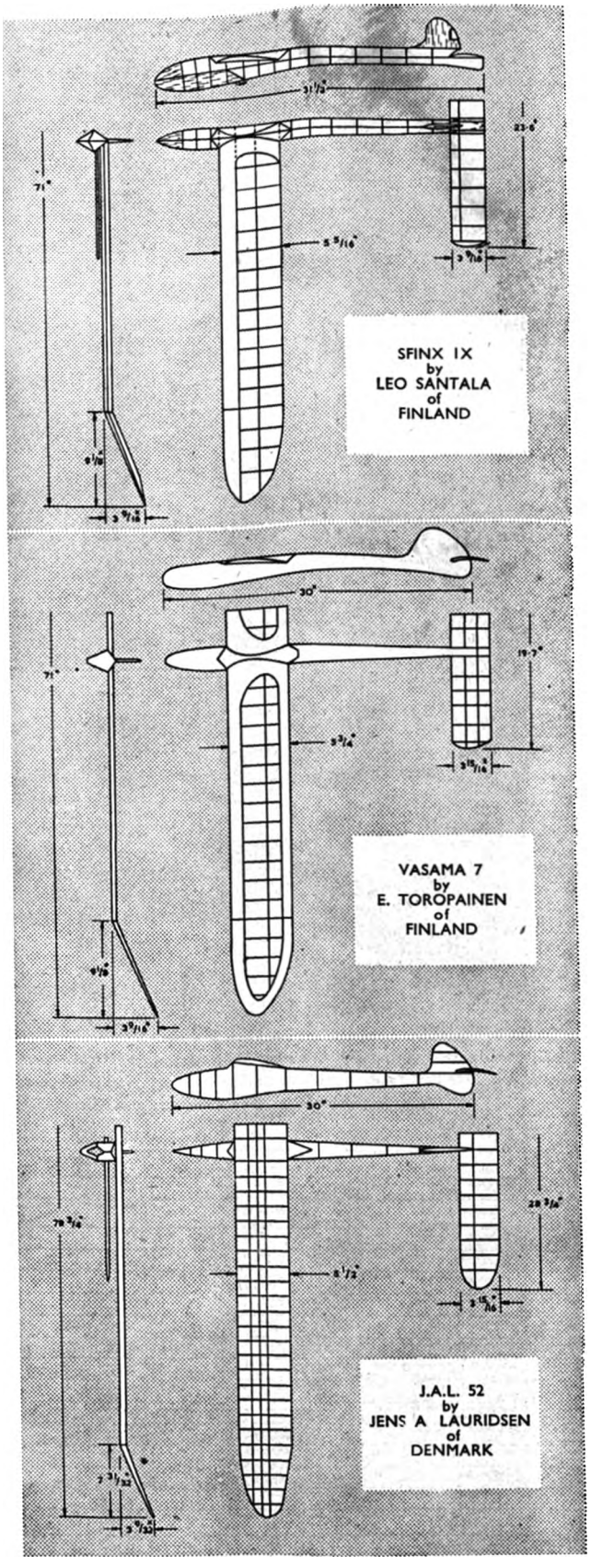
Host-Aaris left, holding AHA 19, with Rune Andersson of Sweden.

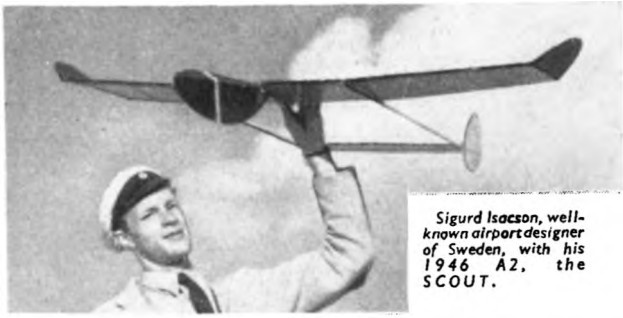
Jens Arne Lauridsen with his 1949 first-place sailplane, J.A.L. 52.

conform to the present rules owing to its very small total area. Gunnar Persson was first in Finland in 1946 and second in Denmark in 1947 with 360 seconds, (o.o.s.), 134 and 164, although whether this particular model was used is not known. The Nordic rules put no limit to the number of models entered and used in a contest. Generally three are used for big contests—in order to have enough for three out of sight flights! For this reason the models are mostly of simple construction, but the advent of suitable dethermalizers (fuses have hitherto not been used here) may alter this. When Persson arrived in Stockholm on his way to Finland in 1946 the Swedish team manager, Mr. Dérantz, asked him how many models he had brought with him. When he answered "17", Mr. Dérantz shouted something in astonishment, to which Persson calmly replied "I am very sorry, Mr. Dérantz, but I had no time to build any more!"

Thor Molbach of Norway was best Norwegian in 1947 with 77, 231 and 208 seconds. Owing to lack of aerodromes the

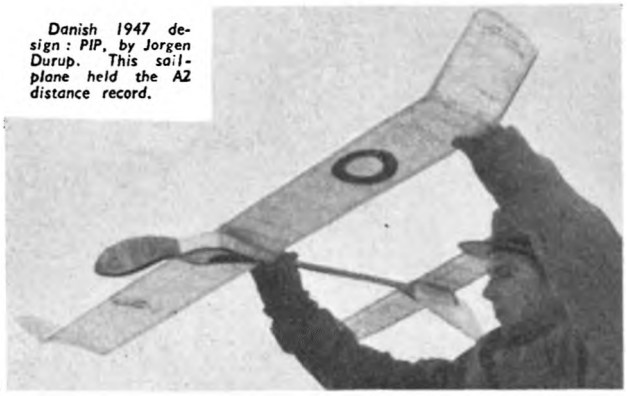
SUOMI, a 1946 winning design, by Mogens Erdrup of Denmark.



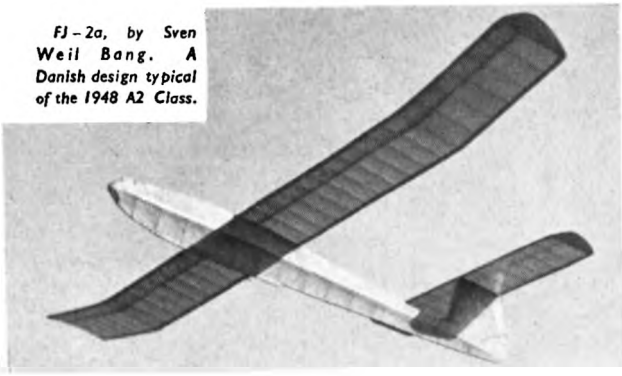


Sigurd Isacson, well-known airport designer of Sweden, with his 1946 A2, the SCOUT.

Danish 1947 design: PIP, by Jorgen Durup. This sail-plane held the A2 distance record.



FJ-2a, by Sven Weil Bang. A Danish design typical of the 1948 A2 Class.



Norwegians are forced to fly, in the winter, from frozen lakes.

A somewhat strange way of obtaining the fuselage section was used by Jorgen Durup for his Danish A 2 distance record of 59·4 kilometres (37 miles).

The 1948 contest took place in March, in a sudden gale on a frozen lake in Norway. Results depended largely upon the colour of the model and the eyes of the timekeepers. Although Sweden won the team contest Host-Aaris of Denmark was first with 159 seconds average. Using partly the AHA-19 and partly an older and stronger model.

Jens Arne Lauridsen was Danish glider champion in 1948. His model flew for more than 10 miles.

Well known designer of a series of glider models Sven Wiel Bang designed the *FJ-2a* with an eye for appearance as well as for utilising the new rules (large main wing).

When in 1949, Denmark won the Nordic contest for the first time, Jens Arne Lauridsen placed first with this model, flying 180, 239 and 253 seconds in the evening. The high aspect-ratio model was designed especially for non-thermal evening or night flying in Finland, even if Jens Arne is the Danish specialist in catching thermals. In the summer camp of 1949 he was fourth in the small A 1 class, where he had one o.o.s. flight. He won A 2 with 773 seconds aggregate and one o.o.s. flight and won the big 3 A class too. On the second flight he had to go 7 miles away for his model, and when he made his last flight he had the only thermal flight of the period. The model was later found 44·2 kilometres (27·5 miles) away, the longest flight of 1949.

Finally we come to the model of Kurt Rechagel. He has, for three successive years, won the KLM-cup for the most beautifully built model of the year. He is the designer of the "Diogenes," a 56 sq. dm. model which was very popular a few years ago. His winning 1947 model was the "Super-Diogenes" (see AEROMODELLER, November, 1948, page 647), but in 1948 and 1949 he built the more practical A 2 models. The *KR-56* was originally designed for appearance and placed only 18th with 140, 153, and 83 seconds, being new and unknown and somewhat unstable on the towline as well as rather heavy. However, it shows you that an A 2 model need not be ugly.

When designing A 2 models as well as Wakefields, the idea is not to design as near the upper limit as possible, but to keep to the middle of the class. This makes the model control easier and your chance of having to alter your model, less.

While design, of course, plays an important part in a successful model it is equally important to be acquainted with the model and the flying of it. Therefore design and construct your A 2 model as soon as possible—we shall be glad to see you in Sweden in July!

Abbreviations: dm=decimetres, mm=millimetres, g=grams. Gö=Göttingen. SI=Sigurd Isacson.

*** Models marked thus fulfil the present requirements.**

Contest results referred to under "Remarks" date from the annual Nordic team contests which took place in 1946 in Finland, 1947 in Denmark, 1948 in Norway and 1949 in Finland. Scheduled to take place as international contest in Sweden, July, 1950. The contest in Norway, December 29th, 1946, was a club contest between Oslo (Norway) and Odense (Denmark), a wintry non-thermal contest with excellent results.

DESIGN DATA OF DANISH, FINNISH, NORWEGIAN AND SWEDISH "A 2" MODELS. NORDIC MODEL SAILPLANE CLASS

TYPE	DESIGNER	COUNTRY	YEAR	MAINPLANE AREA	SPAN	ASPECT RATIO	AEROFOIL SECTION	TAILPLANE AREA	TAILPLANE SPAN	ASPECT RATIO	AEROFOIL SECTION	% OF MAIN-PLANE AREA	LENGTH	FUSELAGE SECTION	WEIGHT	TOTAL AREA	LOADING	REMARKS
AHA-12	HOST-AARIS	Denmark	1946	35·6 sq. dm. 397 sq. ins.	1,480 mm. 58·2 ins.	8·5	Gö 490	8·0 sq. dm. 124 sq. ins.	— mm. 2 ins.			21	1,100 mm. 43·0 ins.	0·47 sq. dm. 7·3 sq. ins.	463 grams 16·3 ozs.	83·6 sq. dm. 832 sq. ins.	13·7 g./sq. dm. 4·5 ozs./sq. ft.	First, Danish "A 2" record 9 min. 14 sec.*
DONALD DUCK	OSCAR YANG	Denmark	1946	35·5 sq. dm 396 sq. ins.	1,480 mm. 58·2 ins.	8·6	O.V	(Ironsplane) 7·2 sq. dm. 111 sq. ins.	600 mm. 23·6 ins.	5·0	O.V.	28	1,000 mm. 39·5 ins.	0·40 sq. dm. 6·2 sq. ins.	435 grams 15·4 ozs.	77·6 sq. dm. 807 sq. ins.	13·2 g./sq. dm. 4·36 ozs./sq. ft.	Second, Danish "A 2" record 29 min. 42 sec.*
SCOUT	S. ISACSON	Sweden	1946	34·7 sq. dm. 364 sq. ins.	1,450 mm. 57·1 ins.	8·5	SI 64009	5·9 sq. dm 93 sq. ins.	510 mm.* 20·1 ins.	4·4	SI 13006	24	998 mm. 39·3 ins.	0·33 sq. dm. 4·9 sq. ins.	480 grams 16·3 ozs.	30·6 sq. dm 476 sq. ins.	13·0 g./sq. dm. 4·26 ozs./sq. ft.	Second, Finland, 1946. Plan obtainable
SUOMI	HOGENS ERDRUP	Denmark	1946	35·0 sq. dm. 389 sq. ins.	1,400 mm. 55·0 ins.	7·8	Gö 480	8·0 sq. dm. 124 sq. ins.	590 mm. 23·3 ins.	4·1	SI 13007	23	1,000 mm. 39·3 ins.	0·39 sq. dm. 6·0 sq. ins.	410 grams 14·5 ozs.	33·0 sq. dm. 510 sq. ins.	12·4 g./sq. dm. 4·06 ozs./sq. ft.	Third, Finland, 1946. Plan obtainable.*
KE-17	KELD ENEVOLD	Denmark	1946	35·6 sq. dm. 398 sq. ins.	1,490 mm. 57·0 ins.	8·2	KE 63009	7·2 sq. dm. 112 sq. ins.	600 mm. 23·6 ins.	4·8	KE 42508	28	1,000 mm. 39·5 ins.	0·35 sq. dm. 5·5 sq. ins.	410 grams 14·5 ozs.	33·0 sq. dm. 510 sq. ins.	12·5 g./sq. dm. 4·1 ozs./sq. ft.	First, Norway, December, 1946.*
BEL-13	BENT LARSEN	Denmark	1946	35·5 sq. dm. 396 sq. ins.	1,360 mm. 61·5 ins.	9·5		7·5 sq. dm. 117 sq. ins.				29·4	980 mm. 38·6 ins.	0·37 sq. dm. 5·7 sq. ins.	410 grams 14·5 ozs.	33·0 sq. dm. 512 sq. ins.	12·4 g./sq. dm. 4·06 ozs./sq. ft.	Danish duration record: 1 hr. 27 min.*
YASAPA 7	E. TOROPAINEN	Finland	1947	35·1 sq. dm. 390 sq. ins.	1,800 mm. 71·0 ins.	13·8	See drawing	5·0 sq. dm. 78 sq. ins.	580 mm. 19·7 ins.	5·0	See drawing	30	880 mm. 31·5 ins.	0·22 sq. dm. 3·4 sq. ins.	405 grams 14·3 ozs.	38·1 sq. dm. 467 sq. ins.	10·6 g./sq. dm. 4·6 ozs./sq. ft.	First, Denmark, 1947.
SPINX IX	LEO SAINTALA	Finland	1947	35·7 sq. dm. 396 sq. ins.	1,800 mm. 71·0 ins.	12·8	See drawing	5·4 sq. dm. 84 sq. ins.	600 mm. 23·6 ins.	5·6	See drawing	21	880 mm. 31·5 ins.	0·306 sq. dm. 3·3 sq. ins.	525 grams 18·5 ozs.	31·1 sq. dm. 464 sq. ins.	16·9 g./sq. dm. 5·53 ozs./sq. ft.	Fourth, Denmark, 1947.
A 3-1	G. PERSSON	Sweden	1947	24·6 sq. dm.				4·2 sq. dm 65 sq. ins.				17	850 mm. 33·5 ins.	0·26 sq. dm. 3·6 sq. ins.	487 grams 16·4 ozs.	28·8 sq. dm 447 sq. ins	16·2 g./sq. dm. 4·65 ozs./sq. ft.	Best Swedish model in Denmark, 1947.
A 2-35	THOR MOLBACH	Norway	1947	35·7 sq. dm 398 sq. ins.	1,480 mm. 57·1 ins.	8·3	SI 63010	7·5 sq. dm. 117 sq. ins.			SI 04008	29	990 mm. 39·0 ins.	0·34 sq. dm. 5·3 sq. ins.	425 grams 15·0 ozs.	33·3 sq. dm. 518 sq. ins.	12·8 g./sq. dm. 4·2 ozs./sq. ft.	Best Norwegian model in Denmark, 1947.*
PIP	JORGEN DURUP	Denmark	1947	35·7 sq. dm. 398 sq. ins.	1,510 mm. 59·5 ins.	8·8	Selenius/ KE 63009	7·8 sq. dm. 122 sq. ins.	600 mm. 23·6 ins.	4·6		30·4	1,000 mm. 39·5 ins.	0·35 sq. dm. 5·4 sq. ins.	412 grams 14·6 ozs.	33·9 sq. dm. 531 sq. ins.	12·2 g./sq. dm. 4·02 ozs./sq. ft.	Danish "A 2" distance record: 37 miles.*
AHA-19	HOST-AARIS	Denmark	1948	36·9 sq. dm. 416 sq. ins.	1,730 mm. 68·0 ins.	11·1		5·65 sq. dm. 88 sq. ins.	570 mm. 22·4 ins.	5·7		21	950 mm. 37·4 ins.	0·39 sq. dm. 6·0 sq. ins.	478 grams 16·9 ozs.	33·35 sq. dm. 509 sq. ins.	14·4 g./sq. dm. 4·8 ozs./sq. ft.	First, Norway, 1948.*
JAL-46	J. A. LAURIDSEN	Denmark	1948	34·3 sq. dm 376 sq. ins.	1,490 mm. 56·8 ins.	8·5	JAL	7·9 sq. dm 123 sq. ins.			JAL	23·6	1,010 mm. 39·8 ins.	0·42 sq. dm. 6·5 sq. ins.	450 grams 15·9 ozs.	32·1 sq. dm 499 sq. ins	14·0 g./sq. dm. 4·58 ozs./sq. ft.	Plans available, sent in Denmark, 1948.*
FJ-2a	SVEN WIEL BANG	Denmark	1948	27·0 sq. dm. 420 sq. ins.	1,710 mm. 67·3 ins.	10·8	Gö 301	6·5 sq. dm. 101 sq. ins.	513 mm. 20·2 ins.	3·8	80% Clark Y	24	966 mm. 38·0 ins.	0·354 sq. dm. 5·5 sq. ins.	478 grams 16·6 ozs.	33·5 sq. dm 521 sq. ins.	14·0 g./sq. dm. 4·58 ozs./sq. ft.	Plan obtainable.*
JAL-52	J. A. LAURIDSEN	Denmark	1949	35·3 sq. dm. 483 sq. ins.	2,065 mm. 79·75 ins.	14·5		7·3 sq. dm. 104 sq. ins.	730 mm. 28·75 ins.	8·3		23·5	800 mm. 31·5 ins.	0·45 sq. dm. 6·5 sq. ins.	420 grams 14·8 ozs.	40·3 sq. dm 569 sq. ins	10·7 g./sq. dm. 4·8 ozs./sq. ft.	First, Finland, 1949.*
KR-56	KURT RECHNAGEL	Denmark	1949	26·7 sq. dm. 384 sq. ins.	1,660 mm. 65 ins.	11·25	SI 64009	7·88 sq. dm. 114 sq. ins.	737·5 mm. 29 ins.	4·7	SI 63506	29·5	1,013 mm. 40 ins.	0·39 sq. dm 6·0 sq. ins.		32·5 sq. dm 507 sq. ins.		Won KLM cup in Danish concours d'elegance.*

All Your Eggs..

by

R. Musgrove

Heading photo illustrates the compactness and ease of access of the mounting.

THE snapshot of C. O. Wright holding a " Super Zipper " in the July issue of AEROMODELLER has prompted me to write these few notes on the method of engine mounting displayed there on. I have used such a mounting for the past 18 months with great success and am confident that it will become a standard method in the future. The idea first came to me when trying to devise a convenient inverted mounting for a cabin type gassie, where the engine would be easily removable.

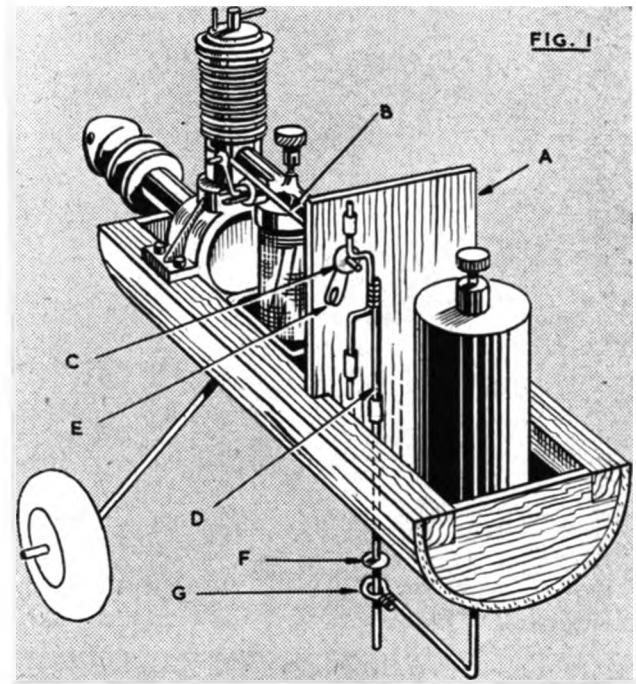
The main advantage is in the grouping of engine, ignition, timer, etc., as one unit of the model which, being easily detachable, lends itself to quick checkovers of wiring and the like. I can best describe the method by reference to my own Amco-powered duration model in which, of course, there are no spark ignition parts. The engine, timer and undercart are all mounted together as in the photograph, the engine being bolted to two bearers which form the crutch of the mount. Formers are glued to the underside of this and the whole planked with sheet and well doped as a safeguard against oil. The timer is fixed vertically in a hole through the planking and the complete assembly held against a plywood base glued to the upper part of the fuselage. This base is cut away to fit the particular engine used. Use wire clips or rubber bands as retainers.

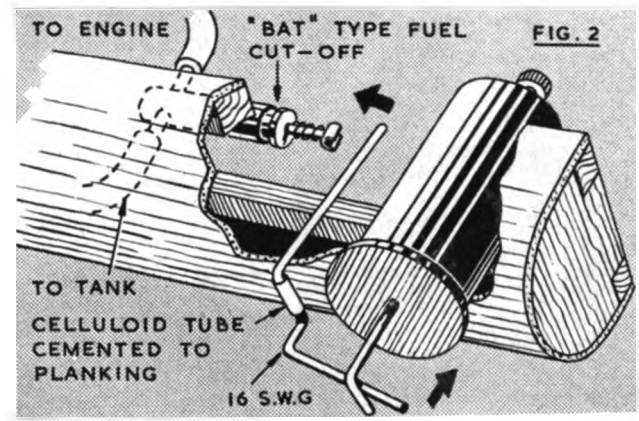
The engine, of course, is completely cowled, and exhaust ports, filler holes, etc., must be cut in the upper fuselage. In the particular model in the photo, no cowling was allowed for, and indeed was not necessary, for even with a 20-second contest motor run I found that I could get the model away within 5 seconds, i.e., a total engine running time of 25 seconds per flight. This requires the presetting of compression and needle value but this is easy if a little care is used. A 3/16 in. bore brass tube, soldered to the air intake, or a piece of flexible fuel tubing protruding through the bottom planking facilitates doping.

For the benefit of diesel fans I will describe in detail the timer to cut-out hook-up that I use. It is of the snap-action type and allows for accurate timing with air-leak timers. Refer to sketch 1. A bulkhead A, fixed in the mounting, separates the airdraulic timer from the carburettor, and is made to fit inside the upper fuselage. B is a 22 s.w.g. wire rod connected to the engine cut-out arm and passing through a small hole in A. At a fixed point on B, determined by the dimensions of the model, and on the timer side of A, a small washer (¼ in. diameter) is soldered, C. Between C and the bulkhead there is a light spring E which pushes the washer away from the bulkhead and therefore pulls back the cut-out arm. D is a wire fork sliding in tubes on the bulkhead and has a step, approx. 3/16 in. deep, bent in it, as shown. One arm of this fork protrudes through the bottom planking and has soldered on to it a small stop F which will not allow the loop G, soldered on the timer arm, to pass over it. To operate the mechanism, the cut-out arm is pulled forward until the washer is against the bulkhead. The timer arm is then pulled out and the wire fork pulled down until the cranked part of it is on top of the washer, thereby preventing the spring from pushing the washer back. As the timer arm moves in, G connects with F and the wire fork is pushed in until the cranked part slips off the washer which then moves back and operates the engine cut-out. A spot of oil on the sliding parts completes the assembly. More initial work is involved than with a direct pull linkage but this is outweighed by the security of correct engine run. The sketch actually shows a small refinement over the photograph, for here the bulkhead A was cemented in the upper fuselage, which meant that the rod B had to be disconnected from the engine at every withdrawal of the mount.

N.B.—The position of F must be obtained carefully so that no work is done against friction by the timer until the by-pass of the timer works.

Sketch 2 shows a suitable linkage for engines of the rotary valve type employing a fuel cut-off of the type currently available. Fabricate the fuel tank from sheet celluloid and cement it in bay behind the engine. Fix the cut-off horizontally with the plunger pointing rearwards. This plunger is then pushed forward against the tension of the spring as the timer arm moves in.





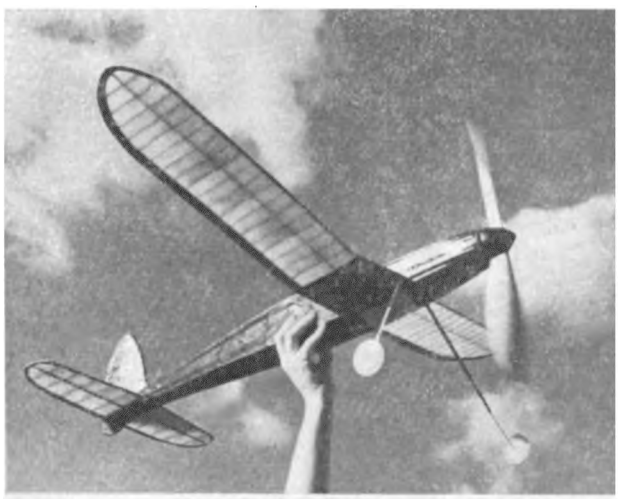
Model of the Month

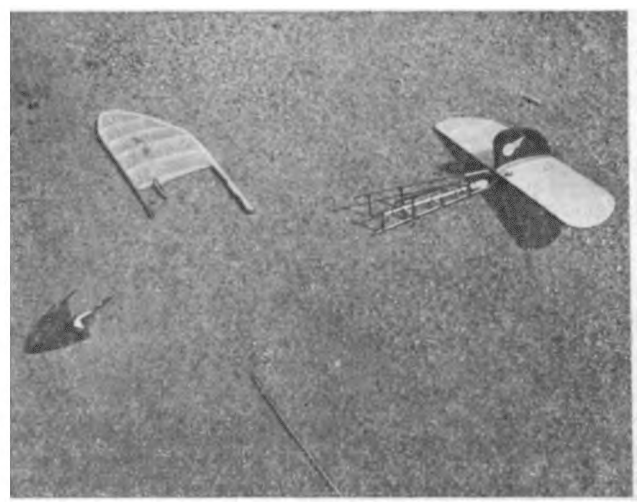
FOR many months past Fliar Phil has been pleading for better and brighter pictures from his readers, and like the answer to a maiden's prayer comes the photograph of Model of the Month—a de Havilland 89A Rapide built by Robert Hutchings and photographed by Edwin Stoffel of Ilford. The model, which has a wing span of approximately six feet, is an exact replica of G–AGSI, one of the fleet of Olley Air Services at Croydon Airport. It took 18 months to complete and is powered by two specially tuned Frog 100 Diesel motors. It is mainly of balsa construction with silk covering, and is fitted with an automatic pendulum controlled rudder. At the moment of writing the machine is still undergoing taxying trials, and we await with interest an account of its first test flight.

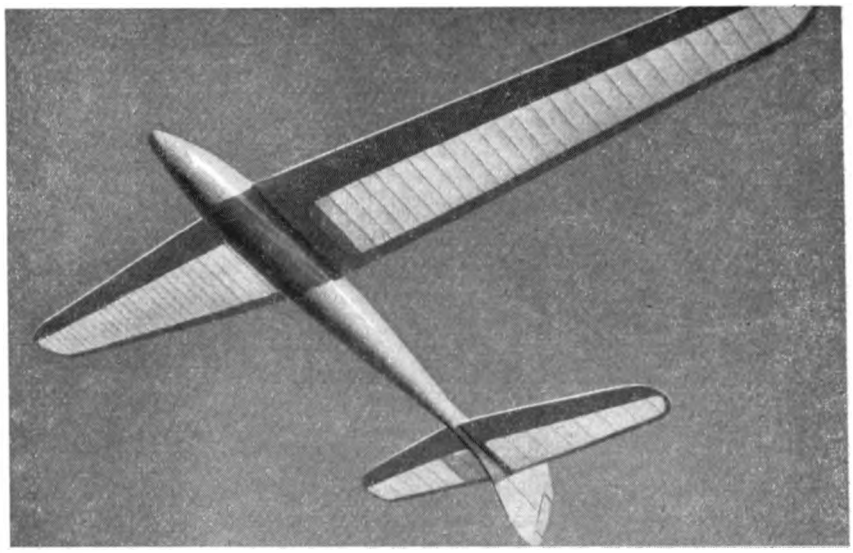
Photo. No. 2 shows that hectic moment which we all know so well—a fine get-off by P. Buskel of the Surbiton and District M.F.C., showing perfect balance both by model and modeller!

Photo. No. 3 taken by R. A. Adams of New Eltham is an example of the first class work now reaching us from modellers all over the country. A beautifully posed picture of the sender's "Aristocrat" built from A.P.S. plans.

Fliar Phil has always had a morbid interest in crash photos, and Photo. No. 4 submitted by D. R. Hughes of Noctorum, Birkenhead, is no exception and shows the horrible result of a "Doofa" lightweight glider landing on its own dethermaliser fuse. Mr. Hughes says that on leisurely strolling towards the spot at which the machine had landed he was surprised to see smoke rising from it. When the crash squad had done







their stuff, all that remained was, as the Yanks used to say, two wing tips and a pile of cigar ash !

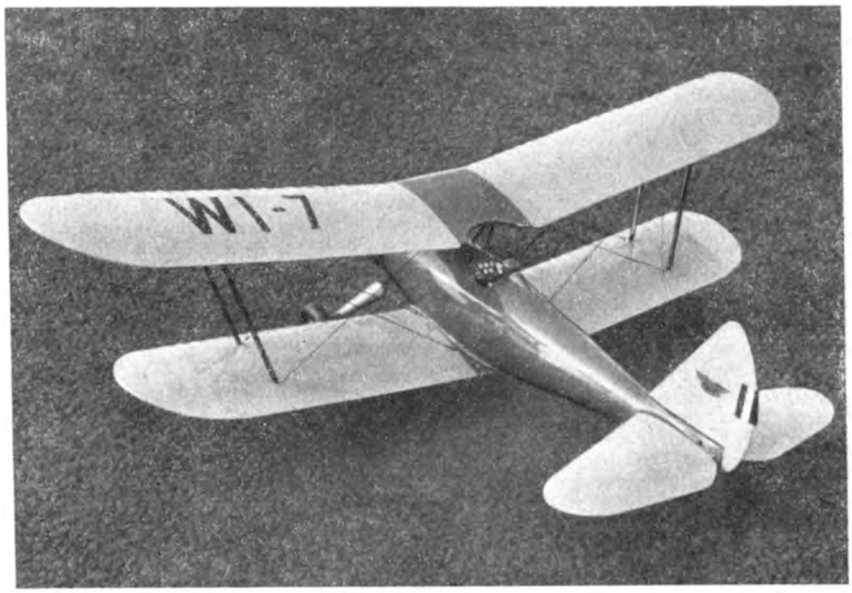
Somehow or other we always associate the name " Girl Pat " with a certain fishing trawler who's adventures made headline news in the 'thirties. Anyway, R. Young's unusual amphibian design shown in Photo. No. 5 certainly has a nautical flavour about it. Powered by a 1·3 c.c. Mills Diesel, the wing span is 4 ft. 5 ins., and, although it has not yet flown, the model has shown great promise during its navigability trials. It was awarded a V.H.C. diploma at this year's Model Engineer's exhibition.

The beautifully finished six foot span semi scale single-seater biplane shown in Photo. No. 6 is the work of J. A. Newton of Blackheath. It has a dummy radial engine in front of the real power plant, torque being transmitted to the airscrew by means of an extension shaft. The model was a silver medal winner at the Model Engineer's exhibition. Photography again by E. Stoffel.

Lastly, a nicely posed shot of " Challenger ", a 60" wing span sailplane by our old friend of solid modelling fame, G. R. Woollett of Maidstone—just goes to show what you can do when you know how, doesn't it ? Good show chaps—give 'em the money, Barney !

Although temporarily tied up with a dolly Fliar Phil once again winds up his discourse with yet another plea for more and better model photographs, so come on, blokes—get out those black boxes, give the lemonade bottle stoppers an extra suck and let's see what you can do about it !

He prefers negatives, but good black and white glossy prints will do as long as they are postcard size or larger, and there is no limit to the number he is prepared to accept, providing they are good photos and that the subject matter is interesting.



AILERON RADIO CONTROL

BY

HOWARD BOYS

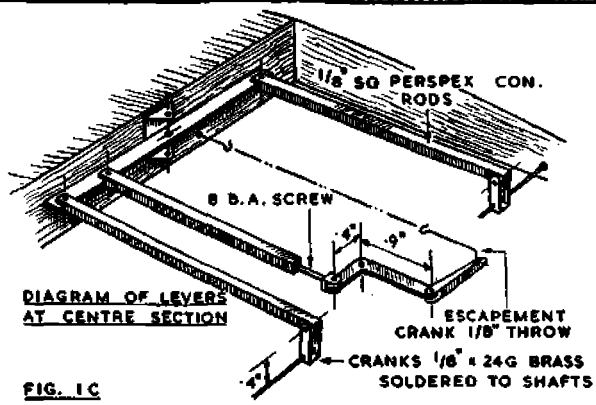


FIG. 1C

SOME years ago an aeroplane was described in "Flight", the headline being "Rudderless for Safety". The machine was like a Taylor Cub with twin fins and was intended for safe flying with inexperienced pilots. Another machine with simplified controls is the Ercoupe which has rudders and ailerons coupled together, and has been flown with the rudders locked. Many full size aeroplanes will turn satisfactorily on ailerons alone.

The difficulty with rudder control is that, being in the slipstream, the rudder has more effect with engine on than off. Another advantage in trying aileron control for first attempts was that no one else seemed to have tried it, and the experiment would be interesting and useful. Not very much flying has been done with aileron control due to another trouble developing, but the control seemed very good, and certainly better than the rudder which has been tried since.

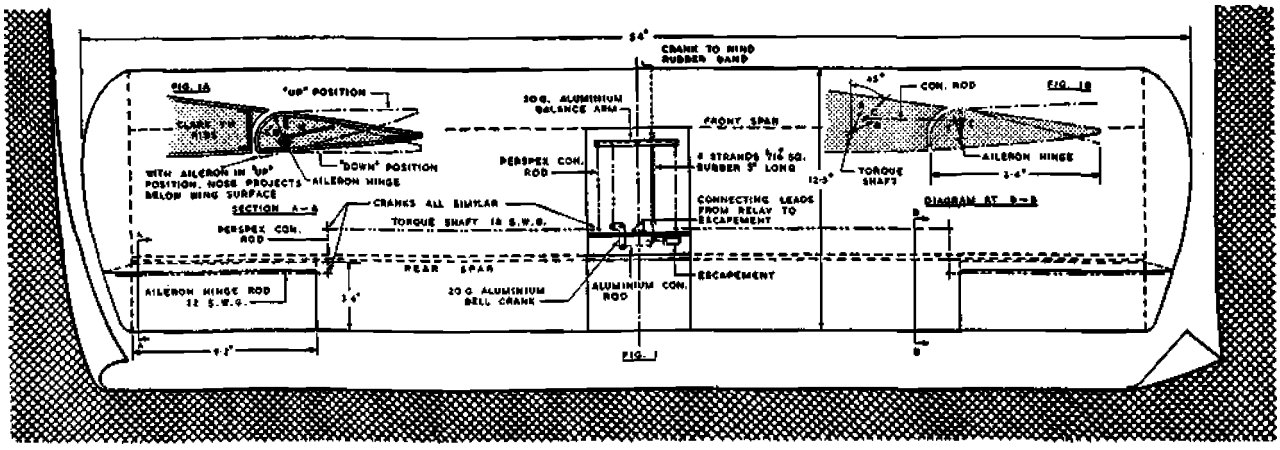
With ailerons a downward deflection increases the drag more than an upward deflection of the same amount, which tends to make the machine yaw, and is the opposite of what is wanted. One way to help towards making the machine turn properly is to make the upgoing aileron move more than the downgoing one and can be done simply with cranks and rods. Another help is to make the upgoing aileron poke its nose below the wing surface. Both these methods were used at the same time, and quite a lot of movement was given to ensure a quick response. The turn is sharper than most people seem to want, but the movement can easily be decreased.

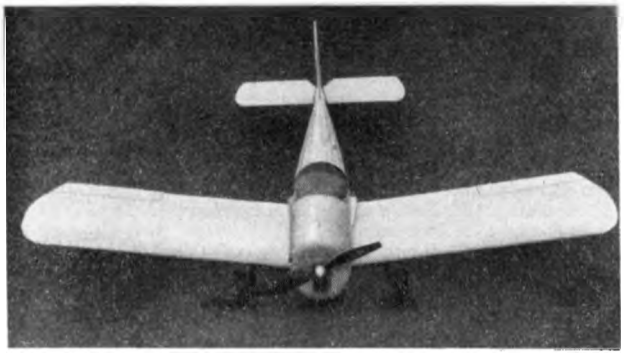
It would perhaps be as well to mention here that with any radio control model it is advisable to avoid long conductors of any sort in line with the aerial. It would for instance be unwise to put the escapement in the tail when using a trailing aerial, but not so bad if the aerial was along the wing. Also with a trailing aerial, and the escapement up forward, a connecting wire or rod from escapement to rudder would reduce the sensitivity of the aerial from some directions. The wire or rod should be split into two or three lengths insulated from each other. For the Fairey Junior control, the rods along the wings are insulated at the centre section and again at the inner end of the ailerons, using "Perspex" connecting rods. (Any similar type of insulator would do). With the later rudder control model a balsa rod is used between the escapement and the rudder.

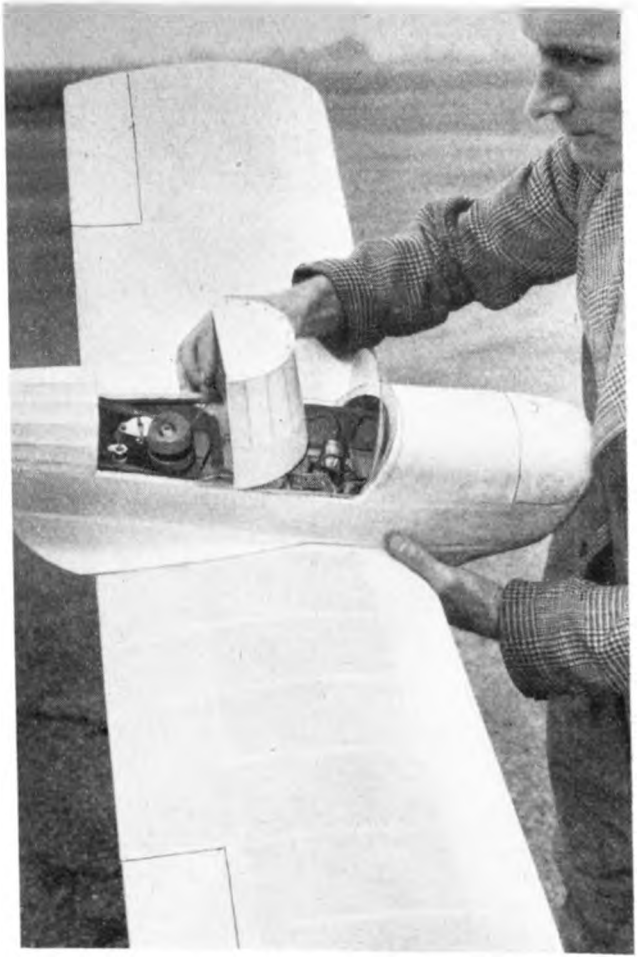
Fig. 1 gives a plan view of the Fairey Junior wing with ailerons and control runs. Dimensions are given so that people can convert to other models by proportion. The torque shaft runs in bearings made from 1/8 inch wide strips of 18 gauge aluminium about 1 inch long. There are five bearings to each shaft to keep it straight and prevent whip. The ailerons have a similar bearing at each end of the hinge rod. Cup washers are soldered at each end of shafts and rods to prevent endwise movement. The aileron is made to rotate with the rod by having a piece of 22 gauge steel wire wrapped round the hinge rod and soldered, and glued to a rib. See W in Fig. 1A.

The arrangement of levers to give more upward than downward movement is shown in Fig. 1B. The torque shaft rotates the same amount in each direction, but the crank is set up at 45 degrees aft, to point C with the aileron in the neutral position. To pull the aileron up, C moves to A, and moves X to Y. To push the aileron down C moves up to B and pushes X to Z, which is a much shorter distance than X to Y. This arrangement is a well known principle, but if you have not come across it before, draw it out on a large scale and see how it works.

Fig. 1C shows the rod and levers at the centre section and illustrates how one aileron moves up while the other goes





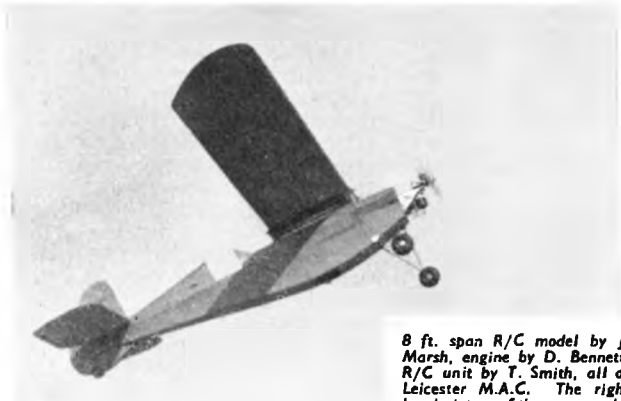


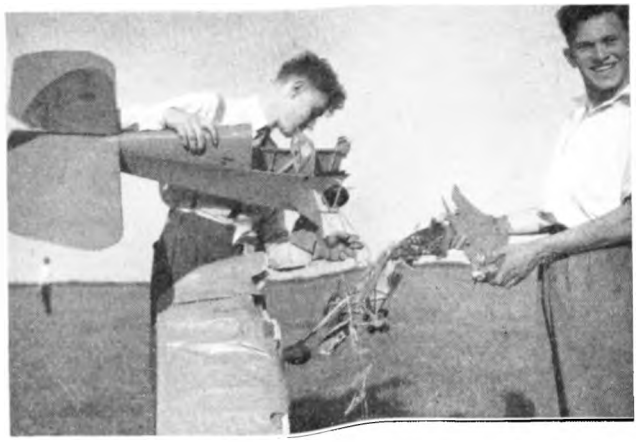
Above, head-on view of the Tipsy which although a scale design operates perfectly on Aileron control. On right, the author lifts the hatch to disclose the receiver whilst batteries, etc., can be seen in the cockpit itself.

down, and how the escapement is coupled up. The connecting rod from the escapement to the balance arm is trapped 8 BA and an 8 BA screw has a U shaped piece of brass soldered to it to form the rod end. The effective length of the rod can be varied to balance the ailerons in the neutral position. It would be a help if the other two rods were made adjustable in the same way. The escapement is a home-made affair and is no wider than the depth of the rib at that point. It is remarkable how small and light this part of the control is, the escapement weighing less than half an ounce, and will work from half a No. 8 battery, and when first constructed only two strands of 1/16 inch square rubber was used to operate the ailerons. The bands were increased to four because one day the ailerons began to waggle in one of the neutral positions, and this caused the wings to waggle. They waggled gently at first, about three times a second, but the waggle increased and began to get alarming, until a change of neutral position stopped it. This trouble has not been experienced with a four-strand motor.

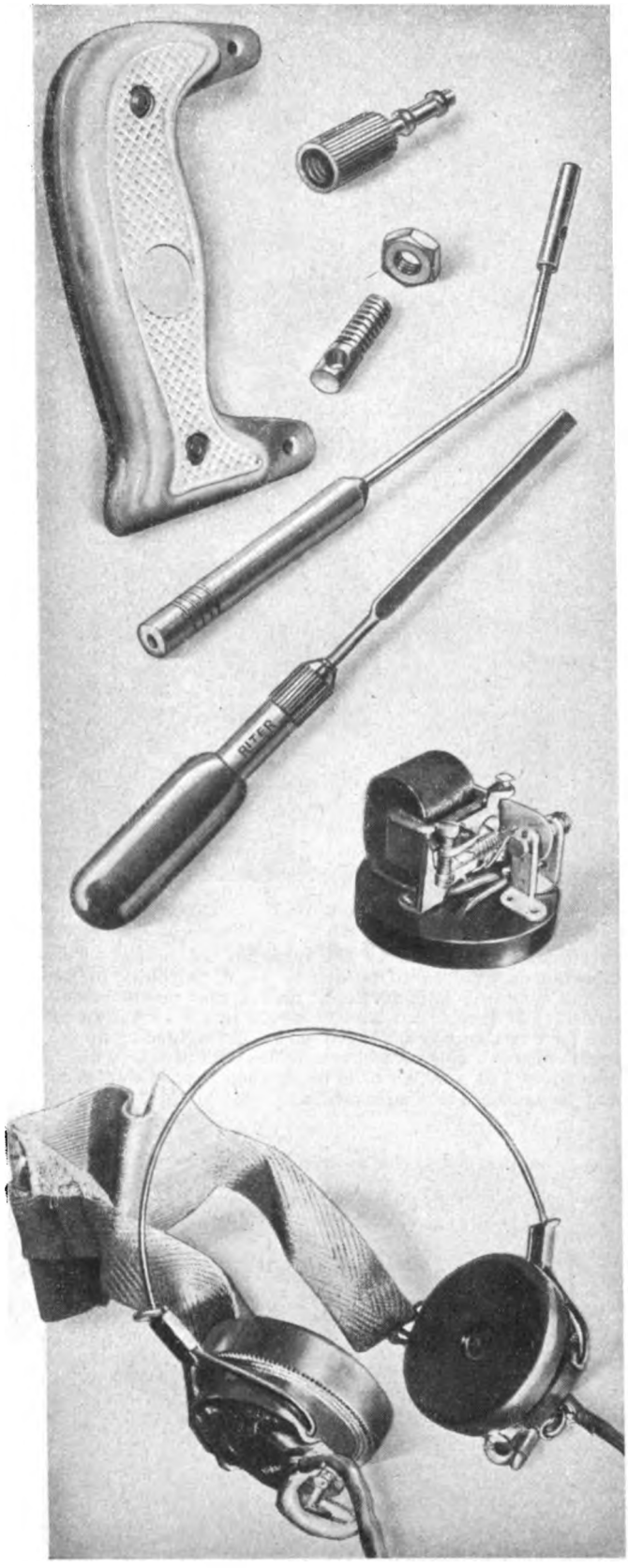
Everything was done to avoid backlash in the control system but quite a lot crept in. It was taken up by using rubber bands at the wing tips to pull the ailerons to the up position. They were then pushed down to the neutral position by adjusting the position of the balance arm. This is where adjustable connecting rods would be useful as the balance-arm pivot had to be packed out from the main spar and re-glued. The leads from the escapement were taken to two flat plates on the wing which butted against spring plungers on the fuselage and made the wing detachable without having to disconnect wires.

After a number of satisfactory flights, trouble developed due to engine vibration, and the model was put on one side for a time. The vibration caused the escapement armature to vibrate and unwind all the turns on the rubber. This vibration is believed to be due to slight flexibility in the engine mounting as it developed after a time on the second model. The trouble has been overcome in the second model but the exact cure is not known as besides tightening up the engine mount a new control system has been installed, which does not rely on a rubber band being wound up. This system may be described in a later article.





8 ft. span R/C model by J. Marsh, engine by D. Bennett. R/C unit by T. Smith, all of Leicester M.A.C. The right hand picture of the same model requires no comment



TRADE

AS mentioned in the Xmas Review, we now present a further selection of kits and accessories sent in to us. All have been examined, thoroughly tested and now receive our frank criticism and the usual rating.

A new CONTROL LINE HANDLE, first advertised in the Xmas AEROMODELLER, is a product of *Norton Plastics Ltd., of Ilkeston, Derbyshire.* A shaped dural plate is sandwiched between two moulded plastic grips, held in place by nuts and bolts. Shaped to fit the hand, it is light and strong and is finished in red and blue for better visibility in the grass. The ends are of different shape as an aid against picking up the handle the wrong way round. We should have liked a spike on the bottom for leaving the handle upright and some method of line adjustment built in, but at the price of 3/9, it is a worthwhile buy.

Also from Norton Plastics is a pair of 1¼ in. diameter PLASTIC WHEELS of the balloon type. These would be suitable for small Power models and some types of rubber job. They are strongly made and cost 3d. each.

An addition to the efficient and simple methods of attaching Power model undercarts, are the EYEBOLTS manufactured by *Roadway Models of New Malden.* A 3/16 in. hole drilled in a ply former is all that is required for each of the eyebolts, which are held in place by the undercart wire on one side, and a nut on the other. By pulling up the nut the wire is held tight against the plywood and will be a fixture until such time as its removal may be required. Three or four of the eyebolts, positioned properly, will make a good job of any rigid fixing, and with a little adaptation make suitable sockets for drop-off under-carriages. They are 8d. per set of four

The same firm have another good small accessory on the market, a STUNT TANK ADAPTOR for the E.D. 2 c.c. engines. Anyone who has played around with plastic fuel-tubing in assorted diameters in an endeavour to connect the feed of a Comp. Special, for example, to a tank, will readily appreciate the utility of this item. Removal of the free-flight tank and the screwing on of this adaptor in its place, permits the use of a single piece of tubing of popular size and results in a trouble-free connection. Good, and only 6d.

The "TARGET" FINE FLAME GAS BLOWPIPE of *Target Mfg. Co., Wollaston, Wellingborough,* is one of the most compact accessories we have handled. It is the answer for running solder into odd corners, as with wheel retaining washers and the making of Stunt tanks. Brazing can be carried out on small jobs with the aid of this pipe, and it is capable of melting small copper rivets. It is connected to the gas supply by rubber tube and the flame is adjustable by screwing down the copper end. Small and light, we are sure it will meet with the approval of all who try it. 2/6 each.

Riter Products Ltd., Feltham, Middlesex, are the manufacturers of the NEW UNIVERSAL TOOL HOLDER, which, with its variety of uses, is a worthwhile addition to the tool-box of all modellers. It comprises an adjustable cylinder attached to a handle, looks like the business end of a ratchet screwdriver, and will hold the shank of coping-saw blades, awls, screwdrivers, large needles and even broken files which can no longer be used in their own handles. The metal tools are gripped in rubber, so even soft metal can be held without damage. 2/6 for this general purpose tool.

Radio control enthusiasts will be interested in two items from *G. Lawrence & Co., of Liverpool.* The first is a miniature SENSITIVE RELAY, type SCR 522, as specified by Mr. Dews in his article (October, 1949, AEROMODELLER). We find that it operates well and is a thoroughly reliable job. The price is 14/–.

The other item is a pair of HEADPHONES for use in tuning such R.C. equipment as the E.D. These, too, are effective and well made and the price is 7/6.

The first kit to receive attention this month is "DERVISH" by *Shaw's Model Aircraft Supplies of Chertsey, Surrey.* This neat C.L. Stunt model, is designed for the Mills 1·3 diesel and the price is 19/6.

The fuselage sides are pre-cut, as are the fin, tailplane and

REVIEW

elevators and plywood former. The remaining formers and the wing ribs are printed on sheet in clean lines. Moulded bubble canopy, pre-formed Stunt tank parts, aluminium spinner, all necessary hardware, wheels, tape, tissue and a speed chart, combined with a straightforward plan, make this a comprehensive kit. The construction has no snags and the finished model is most attractive. We like this model very much and we are pleased to give it full marks. Rating *****.

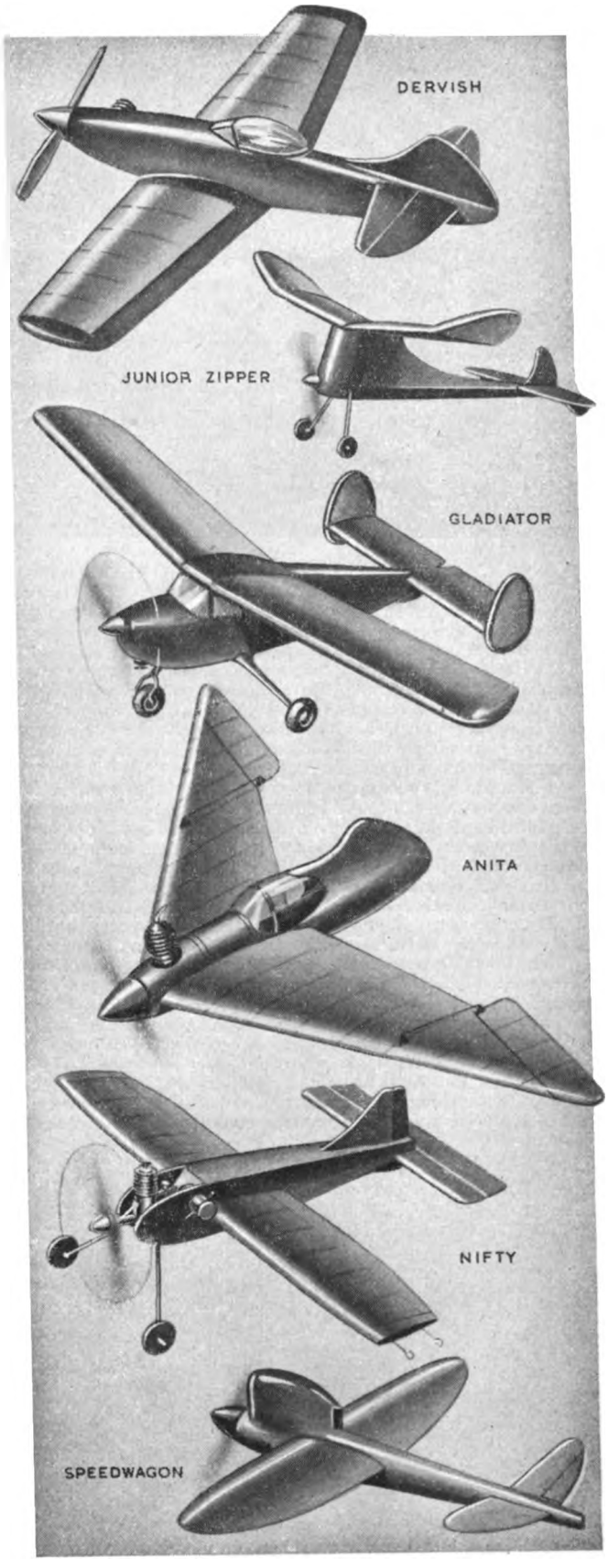
" JUNIOR ZIPPER " is a Free Flight Pylon Contest Model of 31 ins. span, designed for diesels of 1 to 1·5 c.c. The kit is a product of the *B.M.A. Mfg. Co. Ltd. (Skyleada), Mitcham, Surrey*, and the price is 14/6. In our kit we found that there were no upper formers printed on sheet, but that was doubtless an error of packing, as the lower formers were in the box. The wing ribs are also printed, and all other balsa needed is included, also wheels, wire, washers, covering tissue and a clear plan. The printed wood is accurate and the kit is good value for the money. Rating*****.

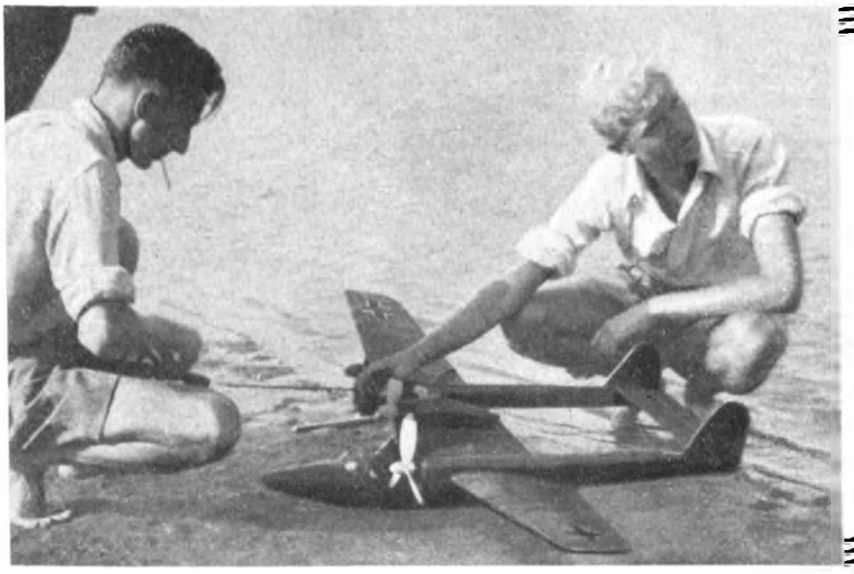
Lammergeier Model Aircraft of Barnes, London, introduced, with their GLADIATOR kit, a new modelling material, *ONAZOTE*. This takes the place of balsa block on the model, for wingtips, engine cowling, etc., and is a very light, balsa-like material, non-absorbent and, consequently, requiring glue to stick it. It cuts cleanly if great care is taken, using a very sharp blade, but we did not like the brown dust resulting. The slow-drying glue required is a drawback, after years of using balsa cement, but we certainly like the model itself. The kit is very complete, even to clear dope and the balsa is of good quality, marred, unfortunately, by very thick printing. Power is engines of ·5 to 1·5 c.c. and the price of the kit is 25/–. Rating ****

Probably the most unusual looking C.L. job on the market is " ANITA ", design and kit by *J's Model Centre, London, S.E.*15. This flying-wing can be built, from the one kit, as a Stunt, Speed or Sport Model, as desired, by installing engines of different power and making the elevons of different size. Engines from 1 to 3·5 c.c. can be used, and the parts for constructing the various control surfaces are in the kit. All parts, including plywood, are printed, and bellcrank and all hardware are included. Pneumatic-type " Slipstream " wheels, which we like very much, are supplied for the take-off dolly. We found, however, that the plan could have been rather more explicit in parts and that the method of construction was somewhat tricky. However, when the fuselage is completed, it is tremendously strong. As no part of the model is built on the plan, alignment is not easy, and we experienced difficulty in getting both halves of the wing identical. Apart from these criticisms, we like the kit and the model. Rating ****.

*Don Models, Brixton, S.W.*9, second C.L. model for the E.D. 2 c.c. engines is " NIFTY," a slabsider with parallel chord wing, of straightforward construction. The kit contains plenty of good quality balsa, the fuselage sides being pre-cut and the wing-ribs printed accurately. The plan is clear and the building instructions explicit. The kit is complete save for wheels and the completed model is very strong. Had the position of the slots for wing and tailplane been marked on the fuselage sides, positioning would have been easier. The kit is good value for 12/6 and the model is well suited for Stunt training. Rating *****.

*Mercury Model Aircraft Supplies, London, N.*7, kit, under licence from Harold de Bolt, the SPEEDWAGON which was, a short time ago, the tastest Control Line model, powered with a piston engine. As in the U.S.A. the whole job is pre-fabricated, cutting building time to the minimum. The quality of the wood throughout is excellent, and the method of construction straightforward. Everything is supplied except the fuel tank, including step-by-step building instructions. " Stuntwagon " comes in two sizes, one for the 5 c.c. engines, price 14/6, the other for 2·5 to 3·5 c.c. at 12/6. The models have made their own reputation, and for anyone who wants some really fast flying, here are the kits. Rating *****.





WATERBORNE MODELLING

BY D. D. HEBDEN

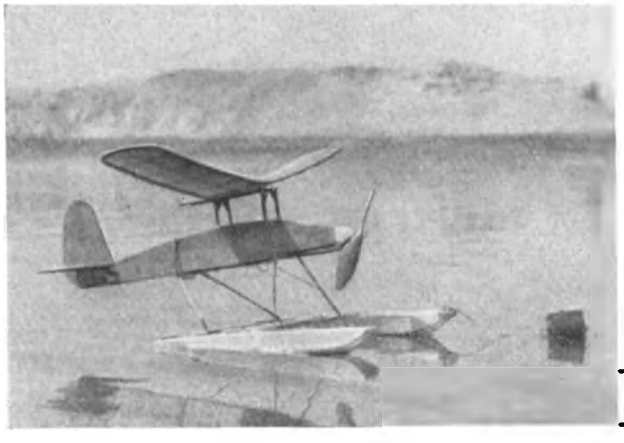
Tony Etheridge (left) assisted by the Author puts the turns onto his B.V. 138.

POSSIBLY the most neglected branch of British Aeromodelling is that of the waterborne model. Admittedly there are a few enthusiasts who know the joys of the combination of flying and messing about with water, but they are very few and little publicised.

At first sight this may seem strange. The British are a maritime nation; there is plenty of water around and about the country (often too much) and yet the vast majority of modellers are still air/landlubbers. Actually there are two main reasons for this lack of interest, the first of which is concerned with competition flying.

At contests it is customary for the seaplane and flying boat events to be flown off from a small tank, the model being compelled to alight on neighbouring fields or roads. Now, one of the first essentials of this type of model is that it should be waterproof, but few models can possibly remain in this condition after coming down on a rough surface. Even a pin prick from a thistle is enough to make the average waterborne model unseaworthy, and yet this peculiar state of affairs still exists. A fairly central site is required where national contests could be flown off with ample space for the model to both take off from and alight on the water. Think how annoyed the Wakefield contestants would be if expected to fly off their models from a raft moored in the middle of the Wash!

Responsibility for the second cause of this lack of interest lies with those enthusiasts who have been occasional contributors to the AEROMODELLER. Their articles so often enumerate the things that cannot be done (often erroneously) rather than the things that can or could be done. In this article I hope to give some idea of what the possibilities are in this branch of modelling, and an indication of what *has* been done.



Barnes' experimental model with fittings for alternative float positions.

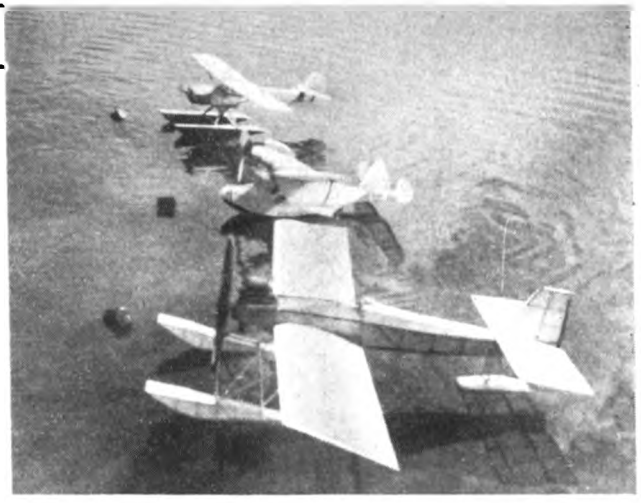
It has often been stated that wing-tip floats are impracticable on model flying-boats due to their tendency to dip and swing the model off course. Careful design and careful launching can, however, overcome this bugbear. In the modelling club at Mauripur there were two flying boats with wing-tip floats and the design of both allowed them to be operated without any difficulty. One was a single-engined model with the propeller mounted above and forward of the leading edge of the high wing. The rubber motor ran back through a tube to the extreme tail and was totally enclosed. The planing bottom was very broad and when at rest was capable of keeping the model upright under very calm conditions. The wing-tip floats were mounted well clear of the water so that, even with the tilting of the model under torque, they did not touch the water, but only came into operation on alighting.

The other model was a large scale model of the "BV. 138", built by myself and Tony Etheridge, and, in this case, the floats were only just clear of the water when taxying. This was all that was necessary as the two outer motors revolved in opposite directions and the torque from the small and somewhat inefficient centre motor was negligible. Incidentally, a three-pronged bar was used to hold the three propellers during launching operations. In both these models, the rear motor peg was on the waterline, carefully built in and accessible through a trap door.

It was found that doping the structure of a seaplane or flying-boat was quite unnecessary. Provided the covering was done with care and was carefully doped, the model would last almost indefinitely. All surfaces that came into contact with the water were covered with air-mail paper and when this was doped it was found to be immensely strong. The few models that were originally covered with tissue soon began to take in water. Experiments with thick celluloid as a medium for floats were soon abandoned, as this material was found to warp excessively, but it is likely that this was in some measure due to the general climate.

One essential for any waterborne model is adequate provision for letting out any water that may have seeped in by various means. Few models can be expected to R.O.W. with a couple of ounces of water slopping about in the bilges. The take-off is possibly the most difficult aspect of this type of flying, but a little ingenuity and experiment will usually overcome the model's reluctance to get into the air. In the case of

Line up at the mooring (top). A.B.C. Robin by Tony Etheridge (centre). Jim Thorpe's model after a stall (bottom).



my " Auster " seaplane, the twin floats were originally fixed parallel to the C.L. of the model and in its early trials the model just chugged across the water throwing up clouds of spray. It was discovered that under the initial burst of power the model simply rocked forward and dug the bows under water. A piece of $\frac{1}{8}$ in. balsa packing under the rear float struts remedied this and it was found that with the floats raked up in this manner, the "Auster " could take off on about one third of its maximum turns. The floats on this model were of square section with a V bottom added forward of the step.

On this " Auster " model it was also found necessary to fit an auxiliary fin (attempts to fly without it resulted in a ferocious spin that did the wing tips no good at all), but several other converted landplanes did not need this refinement.

In our early days of waterborne modelling, we invariably launched all models into wind but it was eventually discovered that, in conditions of little or no wind, it was preferable to launch the model with whatever breeze there was. Float-planes were usually inclined to leap off the water, but the flying-boats took off in a scale manner, first rising on to the step and then getting airborne. Unsuccessful experiments were made with airscoops directing a stream of air through the floats of one model down to the step, but this model stood little chance of becoming airborne in any case, and this is a practice that would repay further investigation.

A reliable windsock or smoke float should be an essential part of every waterborne modeller's equipment, but it is advisable, if a 'sock is used, that the supporting pole should be as fragile as possible, for at Mauripur we found that such obstacles appear to hold an almost irresistible fascination for fast flying models ! Mooring buoys with appropriate attachments on the model are also useful as the average seaplane or flying boat does not take kindly to being dumped on a rough surface whilst its owner is having his "elevenses".

It should be understood that the water is a hard taskmaster, and for a model to come down badly on the water is as bad for it as to come down on concrete, but the modeller who has once taken to his sport will find normal flying uninteresting. Personally I have had more pleasure and laughter whilst paddling around with my model than I have whilst flying any other type of model.

I can still picture Eddie Edmonds " Drambuie " flying inverted a foot above the waves, finally rolling as the engine cut and touching down neatly only to have its floats retract accidentally. I can remember the thrill of seeing my own " Auster " complete its first water-to-air-air-to-water circuit, and the beauty of Tony Etheridge's converted " A.B.C. Robin " gliding in to a perfect touchdown. The scale type performance of Jim Cox's flying-boat " Webby " was a magnificent sight and I sometimes regret that I am no longer with the modelling club at Mauripur (where we believed all obstacles could be overcome by experimenting) and that I am back in a country where the experts so often say " it cannot be done".

Let us have more reports about seaplanes and flying boats. Let us hear from the people who have made amphibians that will " amphib ", let us hear from the people who have made seaplanes with one central float and wing-tip floats. Let us hear more from the people who know what can be done, and less from those who know that they cannot do.

With acknowledgments to V. E. Smeed.

ESPECIALLY FOR THE BEGINNER

PART I

BY THE REV. F · CALLON

What is all this about?

Glider plan pinned down under waxed paper. Slab-sided fuselage being built. Note tools: wire cutters, pliers, balsa knife, blade, metal straight edge, pins and drawing pins.

THE scene is an aerodrome on a warm August afternoon. A model aeroplane competition is in progress, and an experienced modeller is preparing his rubber-driven entry for a test flight. His audience is a very interested small boy.

"Gosh! It's a smasher, isn't it?"

A rubber band snaps home over the tight upper surface of the wing. How about downthrust? First flight on 1/32nd, or . . . .

"Will it fly?"

A slight adjustment is being made to the trim-tab now, dependent on the probable torque to be produced by an initial 600 turns . . . . .

"Did you make it yourself?"

"Eh? Oh, this? Yes . . . sure." Now is it worth while using the DT for this flight . . . . .

"Was it easy to make?"

"What? Easy to make? Oh yes, it's not a difficult model. You should build one yourself sometime." And he stands up, launches the model on a long lazy hand glide, and trots away after it, still very preoccupied with his own immediate problems.

That is precisely what all this is about.

In other words, it is often very difficult for a youngster, or a would-be beginner of any age, to find out just how these fascinating little planes are made. Far be it from me to criticise modellers: as a body, I have found them the friendliest and most helpful people. But before you can join in, it is necessary to be able to speak their language. In any case, no one could reasonably expect a fellow who is out on ops. to sit down and painstakingly explain the intricacies of modelling to every tenderfoot who comes along. Hence this series of articles.

We are going to start absolutely from scratch, and we are going to make the treatment as simple as possible—if only for the sake of a couple of youngsters who were good enough to retrieve a model of mine from Connah's Quay recently, and who will, I hope, be following the series. So pull out your pipe or bag of sweets as the case may be, and here goes!

Making a Start.

In the long run there is only one way of learning how to build model aeroplanes, and that is by building one. It may or may not fly well, according to the number of thumbs you have on each hand, but the experience gained will ensure a much better second attempt. This article will give you some ideas on how to begin; if you get quite stuck, then drop a line to the Editor mentioning your difficulty. In the later articles we will deal with the various stages and problems of building, in detail.

Your first model. What's it going to be? Not a two-engined super-streamlined seaplane I hope. No. Start with something fairly simple. Diesel driven models are expensive and need to be very well made. Rubber driven models are generally rather intricate, too. So if you take my advice, start by building a glider, and not too big a one either. A wingspan of 30 to 40 inches would be ideal.

There are two possible ways of going about this. Either you can buy a kit from the local model shop, containing all the materials necessary, including the plan on which you must build. This will cost anything from 4/- to 10/- according to the design chosen. Or you can buy just the plan by itself, and ask the shopkeeper (generally an enthusiast himself) to sort out the various building materials you will need. This latter method is by far the cheaper, and in my opinion, the better of the two, but it has one big disadvantage. A ready packed kit contains very useful building instructions, whereas working from a plan alone would be rather tricky for a beginner. A kit too has all the parts which have to be cut out ready printed on the sheets of balsa wood, so that all you have to do is to cut along the lines: whereas with a plan alone you will have to trace certain parts through the plan onto the wood by means of carbon paper.

My suggestion is this: if you can get hold of a copy of last month's AEROMODELLER, then send up for the plan of the "Walthew" glider. The December issue contains sufficiently detailed building instructions on this model for a beginner to make a good job of it—I hope I am not prejudiced! Otherwise you would do best to buy a kit.

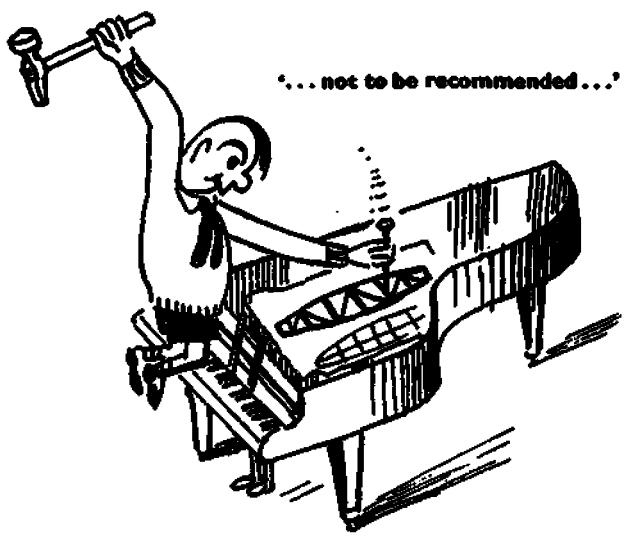
The simplest type of model is generally known as the "slabsider". This means that the body or fuselage of the plane is box shaped. The two sides are exactly the same shape and are both built in the same way. I will explain how in a moment. Models which are not of this type are called streamlined, the fuselage being more or less circular in cross-section. Some people hold that this shape makes for a smoother and longer glide, which in theory is the case. But as far as we are concerned the advantages are pretty well non-existent, while the greater difficulty of building a streamlined model is certainly a fact. So choose a slab-sider.

Building Equipment.

A certain amount of money will have to be spent on tools, etc., if these are not already knocking about the house. The following are absolutely essential:

1. A pair of small, strong pliers—preferably of the narrow nosed variety.
2. A *metal* ruler or straight edge, at least 12 ins. long.
3. A stiff-backed razor blade, Ever Ready type. A proper balsa knife is the best thing to use, of course, and costs about 2/- complete: spare blades cost only a few pence.
4. Sooner or later you will have to buy a pair of extra-strong wire cutters; *extra* strong, because they must be able to cut through steel piano wire. Take a piece along to the shop when buying your pliers, and ask the shopkeeper to demonstrate.
5. A packet of straight pins, and one of drawing pins. It is well worth while paying the little extra for good quality drawing pins, rather than buying the type which fold under when you press them.
6. Finally, and most important, a board on which to work. This should be of fairly soft wood so that pins do not need to be hammered into it, and it must be perfectly flat. The ideal work board is an artist's or draughtman's drawing board. If you have at home a table with a level top that doesn't really matter, you can work directly onto this. The top of the piano may be beautifully level but is not to be recommended as the wood will be too hard. Other reasons may occur to you as well! Whatever you use for a work board, it must be larger in area than the largest unit on the plan—generally the fuselage, since the wings will be constructed in two halves and pieced together off the board. For a small model, a length of well-planed board will do quite well—1 in. thick, 10 ins. or 12 ins. broad, and two to three feet long. See that it is not warped or bent, and choose a piece that is free from holes or knots.

Later on you may find the need for extras, such as round-nosed pliers, a few small drills, and perhaps even a soldering iron; but for the present you will be able to get on quite well without such luxuries.



'... not to be recommended ...'

General Building Principles

If you have seen any completed models at close quarters, you will, undoubtedly, have been very impressed with the smooth drum-like tightness of the covering material, and with the fine glossy finish. You might even have thought that you could never build a job as neatly as that. Believe me, the whole secret lies in the *method* of building, which anyone can pick up quite soon. If you follow the instructions carefully and don't rush, in order to finish quickly, you will be amazed at the good looks of your own first effort.

Another thing that may have struck you about a model is its extreme lightness and apparent frailty. Actually, we are touching here on the biggest headache in the designing of all aircraft, whether full size or model. If a plane is going to climb high it must be light: but the lighter the construction is, the *weaker* it must be. You may have heard of Stress and Strain, two vile genii who go about trying to smash up aircraft; and the lighter the aircraft is, the stronger they become. A model built out of metal or hardwood will not be affected by them, but it will be so heavy that the chances of its ever getting off the ground are slight. Our answer to the problem is ultra-light balsa wood strengthened immensely by a stressed skin of tightened tissue paper, which is again strengthened by a thin coat of celluloid. Sounds complicated, doesn't it? It isn't really. You build the balsa framework as accurately as possible, laying the strips of wood over the lines marked out for them on the plan, and holding them in position by pins pushed through into the board beneath on alternate sides of the strips. The plan itself is pinned down flat onto the board and covered with a sheet of greaseproof paper to prevent the balsa cement from sticking to it.

The balsa framework is then covered with tissue paper, smoothly but not tightly. This is then damped, and as it dries again, all the wrinkles will shrink out. The tightened covering is painted with banana oil or dope, which, in turn, dries out leaving a thin skin of celluloid.

That, very briefly, is the method. We will be dealing with all the details and difficulties later on.

Final Recommendation

In conclusion, if you are feeling in the mood, by all means start on a model right away. But if you do so, then please remember this: your only chance of building a successful model depends, at present, on following the instructions which accompany it with the GREATEST POSSIBLE CARE. Read over them several times before thinking of making a start. Study the plan properly, until you are familiar with everything on it, and know what everything is for. An hour or so spent in this way will not be wasted by any means. Then, when you feel quite confident, go to it, and good luck!

MODELLERS' MENU

For February we present, with our usual aim for variety, something for all tastes. The following designs and a selection of first-class articles should appeal to all.

Bazooka:— a 29½ in. span F.A.I. Rubber Model, by N. G. Marcus. (Postponed from this issue.)

Sporty:— J. Humphries' Bi-plane for ½ to 2 c.c. engines, with a wingspan of 30 in.

Unlimited:— a Control Line Stunter, as unusual as its name. Designed for the Elfin 1·8, by W. R. Smith.

Archangel:— a 72 in. span Sailplane by L. Gabriels.

Joining our Regular Features is the first of a new series "It's Designed for You," prepared in collaboration with R. H. Warring. Special Articles for February include "Handling R.C. Models" by Col. Bowden, "Wing Loadings" by J. H. Maxwell and "The Doping of Power Models" by Dr. Frederick C. B. Marshall, of Barron Industries.

DEAR SIR,

I was pleased to read in last month's AEROMODELLER that there is the possibility of an International Class for sailplanes being set up. As readers views are asked for I would like to put forward my reasons for favouring the Scandinavian "Nordic" class as International class.

1. This class has already been put forward to the F.A.I. as International Class, and British modellers may find themselves unable to enter International "Comps" with models built to the specifications set down by Mr. Gosling.
2. This class (Nordic) is easy to transport, a very important point if one has to travel several hundred miles to a competition.
3. It would be almost as difficult to produce an absolutely top class model to this specification as it is to produce a top class Wakefield.

This would make it practically irresistible to some modellers!

I would like to add that I am most definitely not in favour of the Scandinavian "Class" system being adopted in this country at the present stage of aeromodelling development. *Unless* the "Comps" for these classes are run in addition to those at present on the S.M.A.E. programme.

At the present moment there are only about six S.M.A.E. sailplane competitions during the year. This means that modellers would hardly be inclined to build a really large model for one competition, and it seems extremely likely that the large model will die out under these conditions. I think all will agree that this is highly undesirable.

With regard to competitions as they are to-day, I feel that if modellers feel they are at a disadvantage flying small models then they should build a big one, but I would like to point out a little truism before they do. Certain models especially large gliders look deceptively easy to handle when the one who handles them is an acknowledged expert. The moral is obvious. If you get beaten in a competition it is because the man who beats you is the better flyer. It is not because his model is somewhat larger.

Dagenham, Essex. J. HOLT.

DEAR SIR,

The proposed establishment of an International Class for model sailplanes had been made known to me so I was very pleased to see the letters of Messrs. Guilmant and Gosling in the November AEROMODELLER. Before I add to the suggestions already made, I would like to state for consideration some of my reasons leading up to them.

Initially I would say two things. Firstly, that sailplanes are getting far too big at 10 ft. span, and secondly, that the towline length at present in use is too long. A large model is more efficient aerodynamically than a small one, so an improved performance is only to be expected, but apart from the satisfaction of increasing the frequency of half hour-flights, any further advantages are doubtful. In any event I personally do not regard a model which has just done 30 minutes as something to go crazy about, since the only point proved is that the weather conditions were favourable when the flight was made, and is not a pointer to a superior design, nor necessarily a good flyer.

Why use a 300 ft. towline? I contend that it only increases the potentiality of o.o.s. flights by more than twofold of what would be expected from a 150 ft. line, so why use such a long length? Even if a D.T. is used the proportion of *thermal* flights increases by the same ratio. On 150 feet thermal flights will still be made but the important point is that they will not be made so often and still less will be the chances of getting three 5 min. flights, and winning a contest on luck.

The Nordic proposal to use 32–34 sq. dm. for an International Class would give a model of between 62 ins. and 65 ins. span. When using an A.R. of 8 and the Gosling, Zaic, Van Hattum figure of 50–60 sq. dm., 79–86 ins. span for the same A.R. The 60 sq. dm. figure is nearly twice the 32 sq. dm. one, and in my opinion the smaller plane combined with a shorter towline than the one at present in use, would produce the more interesting and fairest competition.

The idea to have a minimum all-up weight instead of F.A.I. loading is a good one and a necessity when checking on a large scale is only part of the effort put into the running of an International contest. I feel that a model which will give a regular 2 mins. from a 150 ft. line deserves more credit than the "long flight" jobs from 300 ft.

Birkenhead, Cheshire. I. S. CAMERON.

The above are but two of several letters received on the subject of International Sailplane classes. To date we have not received a single letter supporting the larger size suggested by Gosling, Zaic and Van Hattum which would suggest that the majority of readers are in favour of the Nordic class, proposed by Guilmant and Per Weishaupt. (Ed.)

DEAR SIRS,

On October 29th the prize-giving of the "Concours Miniwatt", for radio controlled boats and planes was held at the "Aero Club de France" at Paris. At the same time an exhibition of the winning R.C. models and others was held.

Publicity has already been given to the planes and equipment taking part at the contest, but as the main technical developments were to be seen in the boats, it may be of interest, with a view to their certain adaptability for planes, to describe some of the methods used.

With the exception of L.U.K. the boats were single channel selector switch operated. The main developments being at the transmitter control box. C. Pepin uses push-buttons for operations but these push-buttons work something like a mechanical calculator which operates a selector switch for the required number of transmitter pulses. By this method without using a self-zeroing selector in the boat, the strain on the memory is relieved. The majority of other boats follow similar methods. The well-earned first prize was won by the outstanding model boat L.U.K. (36 inches long) which had no less than 15 L.F. channels operating tuned reeds. The reed assembly was only about four inches long by one and a half by one and a half. One octave only covered the scale, from 217 to 435 cycles. The steering was progressively variable using eight of the reeds. In this case the transmitter modulation was continuously variable and could sweep over the entire range. The other channels were used for stop, start, half and full speeds, forward and reverse, electric bell and klaxon. The transmitter and control box (one unit with self-contained frame aerial) had a ten inch steering wheel, a gear type lever at the side for forward and reverse, speeds and stop-start. Push-buttons for auxiliary operations completed the job.

The transmitter itself, ·2 watt power (72 M.C.), consisted of two 354 in push-pull for H.F. oscillator the same valves also oscillated in parallel at the L.F. frequencies. H.T. being a *miniature 60 V, 3·5 M.A.* total consumption. With the internal aerial the range exceeded 100 yards. This system shows great promise for planes. With less channels and usual 1½ watt transmitter with a full radiating aerial it should have range of over 500 yards.

Following the prize-giving a meeting was held to inaugurate the first "Radio Controlled Club" in France. Thirty-seven members signed on, including several well-known names of both radio and modelling members. I was the one foreign founder member.

Full details of the Club can be obtained from the Hon. Sec. M. Brissaud, 66, Avenue de Stalingrad, Stains (Seine)., France.

Richmond, Surrey. G. HONNEST-REDLICH.

Tanking-up before take-off. " Jock " Wright, with the handle, waits for the Lancaster to be released.

Close-up of the Lancaster and its builder.

LAST year I had the pleasure of attending and judging an exhibition of models staged in Arbroath, Angus, and one exhibit (which, fortunately for the other competitors) was not entered for competition, immediately took my eye. This was a large scale model of the Avro Lancaster, and closer inspection showed a wealth of detail, including four very neatly housed E.D. Competition Special diesels. Probably the most ambitious power model yet to be tackled in these Islands, great credit is due to the designer and builder, Mr. John Wright, of Kirkcaldy.

" Jock " Wright is a cabinet maker by trade, 35 years of age, married and has three sons. Commencing model building in 1928 with a 6 ft. span glider, he was a member of the Glasgow Club from 1941–1943 whilst engaged in repairing bomb-damaged houses on Clydebank. He joined the Kirkcaldy Club after the war when he finished travelling about the country, and is one of the keenest and definitely the most prolific builder in the club.

Becoming interested in control-line models in early '48 he has built 20 control-line jobs, progressing to this distinguished effort. Commencing with the ordinary run of C.L. jobs he turned to scale models early this year and commenced work on a Lockheed Lightning, but later abandoned this in favour of the Lancaster.

Main details of the Model are : span 51 ins., weight 3 lbs., overall length 34 ins. The four E.D. Comp. Specials have been modified to fixed compression, and to ensure quick starting the needle valve positions are fixed and the engines primed by injecting fuel direct into the ports.

Came the great day when the Lancaster was taken out for its first flight trials. Using 50-ft. lines, and assisted by Peter Montgomery and others, the motors were started up and, in spite of a 35 m.p.h. wind and lashing rain, the four engines were going in less than a minute.

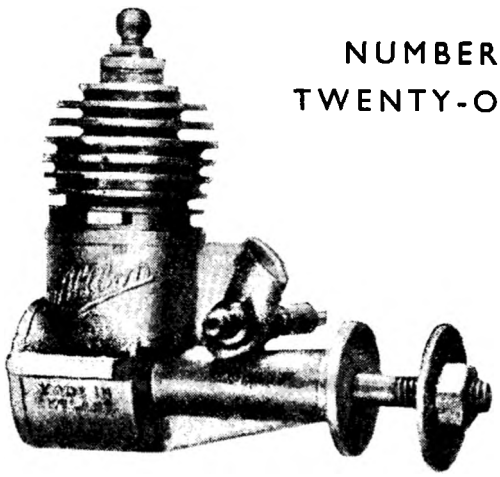
Quoting Peter Montgomery, who states . . . " I was holding the model and it was most impressive as engine after engine picked up, ran roughly for a few seconds and then smoothed out into a steady roar. I released the model and it took off with a scale type R.O.G. just like the real machine, and the whole club cheered ! Just as it left the ground, however, the port outer engine cut and stopped, and consequently the machine was flying with a dud engine on the inside wing. We were afraid the pull of the two engines on the outboard wing would swing the model into the circle but this did not happen and the model flew perfectly on three engines."

This first flight was of some three minutes' duration and the landing was perfect. A second flight was successfully accomplished in the course of which the starboard inner engine died, and flying was subsequently stopped for the day with the machine still in one piece !

This Lanc. completed about 30 flights without a scratch and was then taken apart piecemeal to see where all the weight lay. A second version built much lighter and smaller was a complete flop. Undaunted Jock progressed to a Lancastrian and at the same time reverted to the larger size (51" span). This was fitted with a drop-out undercart and weighed 47 ozs. It takes off on two engines and can fly on one ! After this he built the semi-scale airliner shown below.

Latest news is that " Jock " is now working on a free flight Flying Fortress (B17) of 88-in. span, and we await with great interest further news of this even more ambitious effort, as I am sure readers will be interested in details of this Scottish builder's accomplishments. His speed of construction and standard of workmanship are in a class of their own. C. S. R.

Left, the semi-scale airliner on the tarmac. Powered with four side-mounted E.D. Comp. Specials, faired into the wings. Right, the pièce de resistance; Lancastrian, by " Jock " Wright.



NUMBER
TWENTY-ONE

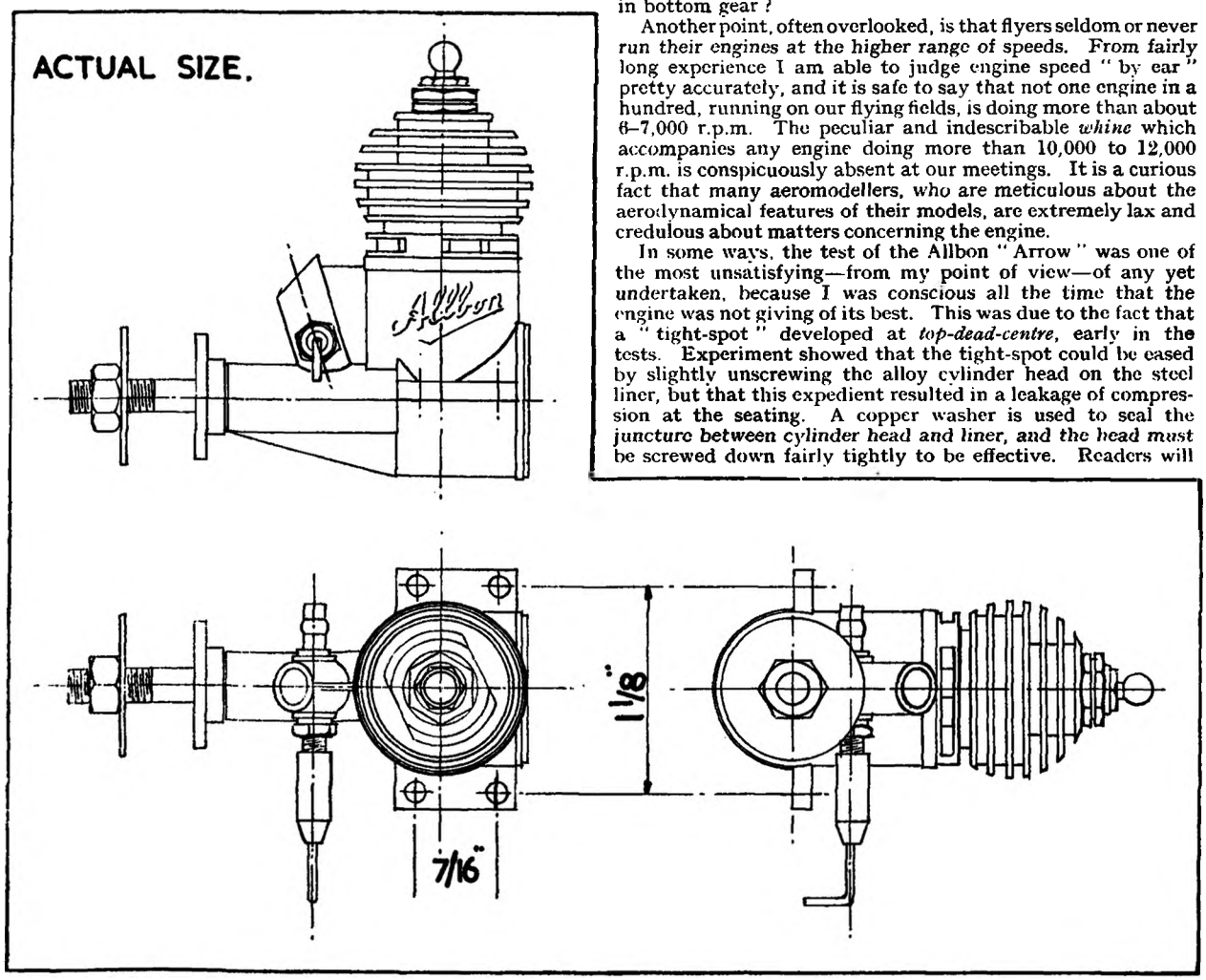
The Allbon Arrow

IN a recent letter from a reader—who, for some reason, seems indignant—it is suggested that I suffer from " excessive un-screwing of parts " during these tests ; and it is pointed out that he has had no similar experience with two of the engines which I found troublesome. To which I answer " Precisely ! "

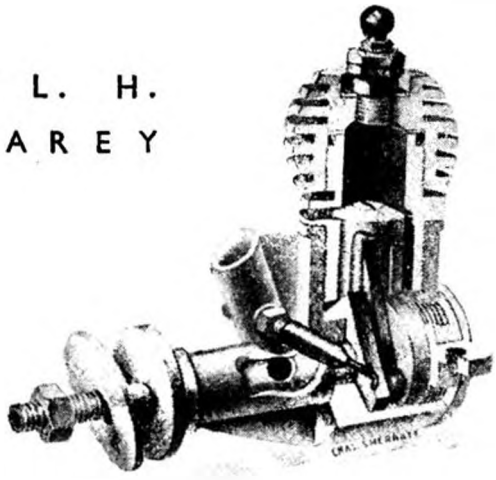
Time and again I have emphasised in these reports that my troubles are not necessarily yours: in fact, I still hold the belief that mechanical failures—except where they have a direct bearing on B.H.P. results—have no place in these articles. Yielding to readers' (and Editorial) pressure, I now include mention of mechanical troubles, although I believe that they are misleading to actual engines users. Conditions of test, bear little relationship to flying conditions ; the excessive " racing " of engines, inadequately cooled, for long periods, being a case in point. Would any reader condemn his car for a mechanical failure when driving from London to Manchester " flat out " in bottom gear ?

Another point, often overlooked, is that flyers seldom or never run their engines at the higher range of speeds. From fairly long experience I am able to judge engine speed " by ear " pretty accurately, and it is safe to say that not one engine in a hundred, running on our flying fields, is doing more than about 6–7,000 r.p.m. The peculiar and indescribable *whine* which accompanies any engine doing more than 10,000 to 12,000 r.p.m. is conspicuously absent at our meetings. It is a curious fact that many aeromodellers, who are meticulous about the aerodynamical features of their models, are extremely lax and credulous about matters concerning the engine.

In some ways, the test of the Allbon " Arrow " was one of the most unsatisfying—from my point of view—of any yet undertaken, because I was conscious all the time that the engine was not giving of its best. This was due to the fact that a " tight-spot " developed at *top-dead-centre*, early in the tests. Experiment showed that the tight-spot could be eased by slightly unscrewing the alloy cylinder head on the steel liner, but that this expedient resulted in a leakage of compression at the seating. A copper washer is used to seal the juncture between cylinder head and liner, and the head must be screwed down fairly tightly to be effective. Readers will



BY L. H. SPAREY



remember that similar difficulties have been experienced with other engines using " V " threads in this way. The wedging action of the sloping sides of a " V " thread exerts an enormous compression strain on the inner component. The use of the wedge does, in fact, form one of the most powerful applications of leverage known to engineering.

In deference to public demand I must also record that I encountered a most obscure and unusual difficulty. Halfway through the tests the glow plug refused to heat-up when the battery was switched on for starting, although the glow plug itself was working perfectly *out* of the engine. The alloy head of the " Arrow " is coloured a most pleasing metallic blue, obtained, I imagine, by some " anodising " process, which changes the chemical properties of the surface of the metal. It appears that this surface is a non-conductor of electricity, and that, for some reason, contact between the cylinder head (into which the glow plug screws) and the liner became interrupted. On removing the cylinder head and scraping the coloured surface of the seating, so that contact was renewed with the copper washer, the matter was put right.

The piston of this engine is in the form of a Mehanite cap, or " thimble ", which is a push-fit on an inner component forked to take the con-rod and gudgeon-pin. The thimble is secured with a countersunk screw, passing through the top of the piston, into the inner component. After a bout of " high-revving ", the engine refused to restart, and all suction from the carburetter ceased. Investigation showed that this retaining screw had become undone, so that the thimble remained stationary at the top of the cylinder. No damage was done to the engine, however, and on replacing the parts, and tightening the retaining screw, the engine ran as before.

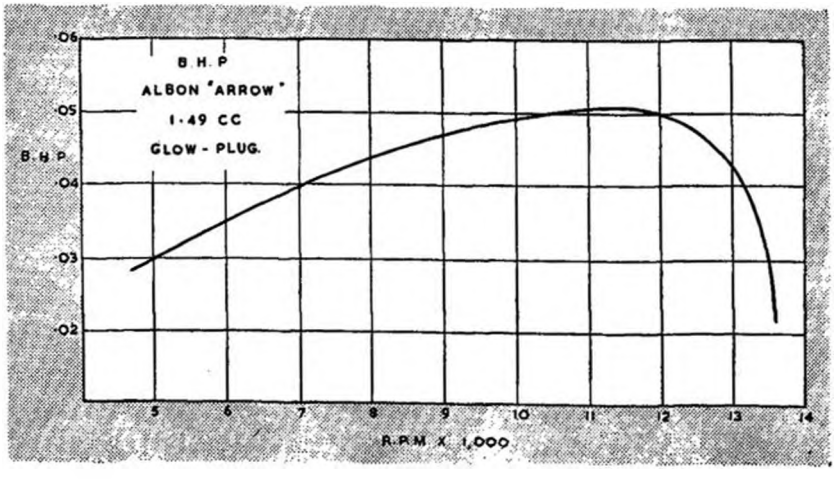
These happenings were all the more unfortunate because this little engine was one of the most pleasant that I have yet handled. Easy starting was phenomenal, in fact, after a short period of " training ", I had only to threaten it with the starting cord for it to burst into life. The most easy starting engine I have ever handled! This was, in some part, due to the exceptional carburetter control, which made the engine most flexible. Its behaviour was, in this respect, more like a four-stroke than a two, as it was possible to shut down the needle valve until the engine almost stopped, when, with a quick opening of the needle valve, the engine would again pick-up and run merrily on. A pleasant change from the splutterings and staggerings which I have encountered.

TEST

Engine : Allbon " Arrow " 1·49 c.c.
Fuel : Mercury No. 7.
Starting : Exceptional under all conditions, using both hand or cord-and-pulley methods.
Running : Extremely smooth and consistent at all speeds, with remarkable flexibility of needle control.
B.H.P. : For reasons stated I feel that the output shown, especially at the higher speeds, is low, as frictional losses must have been great. Above 8,000 r.p.m. readings were inclined to be inconsistent, and considerable "smoothing" of the curve was necessary above this figure. In spite of this, a maximum b.h.p. of ·051 was obtained at around 11,500 r.p.m.
Checked Weight : 2·2 ozs. less tank.
Power/Weight Ratio : ·370 b.h.p. lbs.

GENERAL CONSTRUCTIONAL DATA

Name : Allbon Arrow.
Manufacturers : Allbon Engineering Co. (Sunbury) Ltd., 51a, Thames Street, Sunbury-on-Thames, Middlesex.
Retail Price : 55/-.
Delivery : Approximately 8 weeks. **Spares :** Ex. Stock.
Type : Glow Plug Motor.
Specified Fuel : Mercury No. 5 or No. 7, or 3 parts Methanol to 1 part Castrol R.
Capacity : 1·49 c.c. **Weight :** 2 ozs.
Compression Ratio : 10 : 1.
Mounting : Beam, upright or inverted.
Recommended Airscrews : Free Flight 7×3 or 7×4 ins. Control-line 6×6 or 6×8 ins. Flywheel 1¼ in. diameter. 2¼ ozs. approximately.
Tank : Not fitted. **Bore :** ·526 in. **Stroke :** ·420 in.
Cylinder : Mehanite. Screwed into crankcase. 6 ports, 3 exhaust, 3 transfer.
Cylinder Head : Dural. Screwed on to cylinder.
Crankcase : Aluminium Pressure die-casting.
Piston : Mehanite with Dural Gudgeon Pin Carrier. Conical top. No rings.
Connecting Rod : Hiduminium R.R. 56 Forging.
Crankpin Bearing : Plain.
Crankshaft : Heat Treated Alloy Steel, ground and polished on bearings.
Main Bearing : Plain—no bush.
Little End Bearing : Plain.
Plug : ¼×32 T.P.I., K.L.G. Short reach.
Special Features : Gudgeon being inside piston prevents scoring of cylinder bore. Pistons honed individually.



Bill Winter writes . . .

A SCANT generation ago America had a craze for marathon stunts. People sat on top of flag poles, danced until they dropped, rode bikes until they fell off, flew airplanes until the engine stopped running, and kids flew kites until the wind gave out. It took a long time but the same idea has come to model building. Looking for new things to do, an occasional U-controller connected an entire can of fuel to his engines and proceeded to fly as long as he could hold his feet. As it once was with transatlantic flying, the idea certainly is contagious.

First there was an Ercoupe that stayed up for 45 minutes on a pint of fuel, then a chap named Hall managed 461 laps using a pint can of Power Mist, and topped that with 587 laps in one hour and 10 minutes. So along comes a girl, Bernice Jaynes, of San Francisco, who put 2 1/3 quarts of fuel in a special 56-inch Spitfire job and flew for 910 laps without letting go the handle. On 70-ft. lines, it averaged 46·6 miles an hour and covered some 78 miles. The ship weighed eight pounds loaded. If someone could dope out an ignition system that would function for the required length of time superior economy would result in still longer durations.

The same spirit of unrest is visible in all branches of model flying except, of course, those indoor jobs. In free-flight, pre-voting feelings run high, with one group favouring the *status quo* on classes, another plumping for three classes (up to ·065, ·066 to ·200, and ·201 to ·650), still another for throwing everything in together for a single class. Some like up to ·065, ·066 to ·300, and ·301 to ·650. There are proponents of a combination Class C and D, with the old Classes A and B remaining the same, plus the addition of a class for the new small motors. Another late suggestion calls for Class A—0 to ·065; Class B—·066 to ·200; Class C—·201 to ·300 and Class D—·301 to ·65. This latter suggestion is said to attain approximately the same number of contestants for each event.

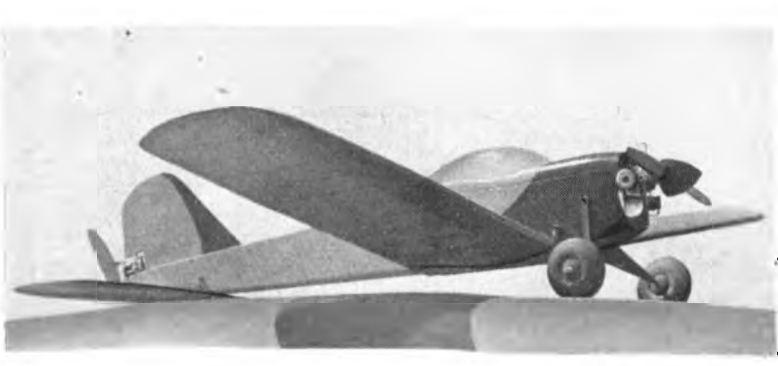
In control-line many clubs, desperate to pep up interest in speed, have been offering special inducements to the beginner and to the owners of the very popular ·23 to ·29 sport engines. The main idea seems to be a combination contest with all size and power speed jobs competing under a handicap system. Roughly, you can deduct the cubic inch displacement as a whole number (as 60) from the time and the results do not vary hopelessly. A Canadian club imposed a further handicap of 10 miles an hour on larger ball-bearing engines like the big McCoy, Dooling, Hornet, etc. Smaller ball-bearing engines were exempt. For engines of less than ·24 displacement they used 55 ft. lines, with 70 ft. lines for the bigger jobs. Results then varied but a few miles an hour from class to class. The problem is admittedly a tough one, but many people are toying with the combined speed deal. One big factor in its favour is that the chap who would have trouble flying the big engines seems to manage fairly well with his smaller engines. It is this group the Canadians have been wooing. Stunt is still following the bigger, lighter, shorter, less-power trend.

Our own flying of late has been limited to radio control, using experimental license-free (it is hoped !) equipment produced by MacNabb. This radio operates on the Citizenship band. It does have some unique advantages, such as the use of a very small antenna which plugs into the top of the transmitter box (the transmitter being aimed like a gun within 30 degrees of the ship). This means that you can pile on a car to chase an airplane, or make a cross country flight while following on the ground. The unit comes set from the manufacturer and requires no tuning or adjusting of the relay. If it doesn't work, ship it back! The thing we like most of all is that, flying in this rugged New England hilly country of woods and rocky pastures, that the receiver is virtually unbreakable. Experimenting with a new ship we spun in three times, once for three turns, and the radio was not bothered in the least.

Radio expert Howard McEntee, of Model Airplane News, dropped in, with Jack Luck of Canada, to inspect the equipment. With Howard trouble shooting the experimental radio and Jack doing our launching, ours was a pretty sharp crew. But at that, when we turned to a spectator and asked how he liked it, he grunted, " Pretty frustrating isn't it."

This new ship has a 14 oz. wing loading and, with the Arden ·199, 300 ozs. of power loading. Span is 56 inches. This power is far too much and trouble is encountered at running the engine at low enough r.p.m. On spark ignition, an ·09 produces very slight, but insufficient climb. The latter engine is loaded to 600 ozs. It would seem that an ·09 could fly anything up to about 7 feet provided the wing loading was in the neighbourhood of 10 to 12 ozs. maximum. Glow ignition could be used very well with limited power of this nature. Someone weighed our old six-foot cabin job and it had gained from 6 pounds up to 7¼ pounds. This gives 18 ozs. a square foot of wing but with an Ohlsson 60, still throttled back, flight is satisfactory. However, the bigger, heavier ship is vulnerable in crashes with obstacles and the little ship withstands spins and power crashes with bare trees. One is always learning, but it seems to us that 400–500 ozs. power loading is a practical yardstick. And, as Good indicated in the Rudder Bug, about 13 ozs. wing loading.

When that flying session was over, McEntee got out a midget free-flight with the small Campus CO–2 engine. This job was of made light sheet and looked like a P–38 except that it was a pusher. After a half dozen circles or so it was silhouetted against the late sunset sky after nearly two minutes of flying. Sometimes it is the simple things that give the greatest pleasure.



Heading photo :—Control-line Boeing P-12F built in Kansas. Power is a Vivell 35 petrol motor. On left :—Low-wing R/C model by Dick Schumacher of Resedo, Califarnia.

ARMCHAIR AERONAUTICS

A REVIEW OF NEW BOOKS OF INTEREST TO MODELLERS

Miniature Aero Motors. *By Ron Warring.*
Ian Allan Ltd., 7¼"×5". 180 *pages. Sewn. Card binding* 7/6

A new book by Ron Warring is always an event that can be looked forward to and savoured with every expectation of satisfaction, and we are happy to welcome to our shelves his MINIATURE AERO ENGINES, which combines textual excellence with presentation worthy of the subject. It is quite the most useful and practical book covering the whole range of fuel-operated power units for models that has yet appeared and should be in the hands of every aeromodeller who owns an engine or is even thinking of acquiring one. There is enough in it both to instruct the novice and provide the expert with a useful mass of data that must otherwise be acquired from widely scattered sources.

Its thirteen chapters are adequately illustrated with fifty-six half-tone illustrations of engines and accessories and aircraft, together with fifty-seven line drawings that leave no part of the text in doubt. In addition there are fifteen full-scale drawings of popular engines in g/a form, and three impulse duct jet engine g/a's fully dimensioned, in the extensive appendices, which cover also British and American engines most comprehensively with a wealth of data in the usual Ron Warring analysis form.

Spark ignition, glow plug operation and the ever-popular diesel have their own chapters. Definitions, classifications, carburettion, fuels are all dealt with from first principles. Power propellers and their design are covered. Testing and performance and the essential care and maintenance of engines are all fully detailed. Model jet engines are discussed, with notes on Jetex in addition to the expected impulse duct jets.

If we can venture one small criticism without appearing to be carping, we would say that a somewhat stouter cover would have ensured longer life to a book that will certainly be in constant use by the " oily-fingered brethren !"

Modern British Aeroplanes.
By Charles Gardner, O.B.E., A.R.Ae.S.
Temple Press Ltd. 9¼"×7¼". 112 *pages. Cloth.* 8/6.

The voice of Charles Gardner is known to a sufficient number of aeromodellers as the Air Correspondent of the B.B.C., both for his full-size broadcasts and for his informal commentaries on model aircraft meetings to ensure that any book under his name is certain of a friendly reception. This volume, which fills a gap in the Boys' Power and Speed Library, is intended for the youthful rather than the technical reader, and as such fulfils its purpose admirably. Written in the friendly first person, it deals with the essential technicalities lightheartedly and contains any amount of useful modern " gen " in a palatable style. Throughout, the reader will feel that this is not an expert talking down to the youngsters but our old friend Charles Gardner having a chat about aeroplanes. As a really up-to-the-minute book on the subject it should definitely be on every enthusiast's "wants" list, and though intended in the first place as a boys' book is equally a book that every untechnical adult will find of intense interest.

The Observer's Book of Aircraft.
By Joseph Lawrence
Fredk. Warne & Co. Ltd. 5¼"×3¼". 256 *pages. Cloth.* 4/6.

First and last impressions of this little pocket reference book are that it is magnificent value for 4/6. It originally appeared in 1942 when its need was far more pressing than, happily, it is to-day. The present impression is an entirely new edition, describing one hundred and nine aircraft with 370 illustrations, and has been compiled with the present day trends well in mind. Illustrations and descriptions include mainly British and American types, since there are more of these flying to-day. It covers both piston and jet types, helicopters and gliders.

The accent is nicely balanced between service and civilian machines, and the latest Farnborough designs such as the Cierva Air Horse are described. Recent British military and civil experimental machines appear in a special appendix.

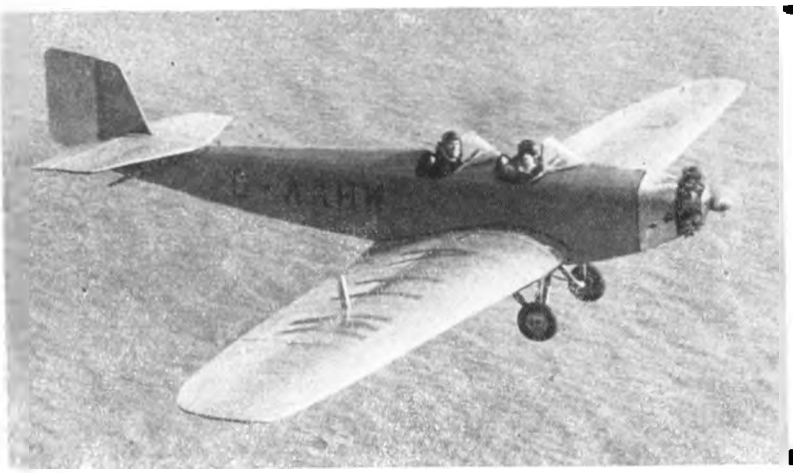
A brief glossary of technical terms will assist the uninitiated in enjoying the contents, whilst such additional information as international aircraft markings and the latest American type designations and manufacturers code letters will always prove useful.

Aeromodeller Annual, 1949.
Compiled by D. J. Laidlaw-Dickson and Edited by D. A. Russell, M.I.Mech.E.
Model Aeronautical Press Ltd. 8½"×5½". 192 *pages. Cloth and card.* 7/6.

AEROMODELLER ANNUAL makes its second bow, and bids fair to establish itself as a regular annual " gen " book for aeromodellers. Now increased to 192 pages—thirty-two more than last year—it contains something for every class of enthusiast. Of particular interest to the budding designer will be Ron Warring's comprehensive data charts and comments on design trends which place at the disposal of the veriest tyro all the information that has gone to the development of some of the world's most successful contest models. Over forty plans of notable aircraft throughout the world are also portrayed, fifteen of which can be obtained as full-size drawings by those who would like to build them. Recent new airfoils, complete with ordinates, will be another popular feature. Throughout, the compiler has been at pains to avoid the technical and the vast majority of aeromodellers who are unashamedly " rule-of-thumb " builders will find no baffling formulae to depress them. Kindly relations who may have left present buying to this late stage may plump for AEROMODELLER ANNUAL with that sense of relief coming from a good deed done in the nick of time.

Model Car Manual *By G. H. Deason.*
Drysdale Press. 8½"×5½". 128 *pages. Cloth and card.* 7/6.

The line of demarcation between aeromodellers and model engineers, at one time so sharply defined, has become increasingly blurred since the universal development of the internal combustion engine in model sizes. To-day many enthusiasts have a foot in both camps, and many of them will devote the winter months to robbing their aircraft of engines to provide motive power for model cars. MODEL CAR MANUAL will be found particularly suitable for such enthusiasts, for it is an essentially practical book, covering a wide range of model cars, in detailed step-by-step construction. What is of equal importance is the adoption of model aircraft technique in the building of many of the simpler cars portrayed, where balsa plays a large part in body building, and metalwork is relegated to a secondary place. For those wishing to proceed still further into the model car realm there are opportunities in the shape of a high speed racing car, which to a reasonably proficient speed control line fan should offer 100 m.p.h. and plus possibilities. A change is as good as a rest, so go to it aeromodellers !



AIRCRAFT DESCRIBED No. 27

THE

KLEMM L25 1A MONOPLANE

BY E. J. RIDING

Mr. Lush flying along the seashore at Hastings for the benefit of our photographer.

IN direct contrast to the machine described last month, we present this month the oldest machine on the British Civil Register bearing a current Certificate of Airworthiness—the Klemm L.25.1A monoplane with 40 h.p. Salmson A.D.9.

The history of the Klemm goes back into the middle and late 'twenties when the Leichtflugzeugbau Klemm of Böblingen, first put the Type L.25 into quantity production—the first practical light aeroplane to be mass-produced in Germany. By the middle of 1928 machines were coming off the line at the rate of 15–20 per month, and were selling for £400 ready to fly away.

In the September of 1928 the Klemm made its name as one of the leading light aircraft designs in Europe, when, piloted by Herr R. Lüsser, one of the firm's directors, it won the French Light Plane trials at Orly. In the efficiency trials Lüsser gained 150 points more than his nearest competitor, Hubert Broad on a de Havilland Moth, giving a fair indication of the Klemm's capabilities when matched against Great Britain's best designs of that period.

Other Klemm achievements included a landing on the Jungfrau by Capt. Wirth in July, 1928, and a World cruise by Baron von König-Warthausen during 1928-9.

In July 1929 the firm of S. T. Lea Ltd. became the sole concessionaires for the Klemm in Great Britain, and they demonstrated the machine at nearly every aviation meeting in the country during that year. One of their demonstration machines was D.1565, later to become G-AAFU on the British Civil register. It was later followed by G-AAFV, G-AAHW, G-AAHL, G-AATD, G-AAUP and G-AAWE. Later, with the installation of various types of engines and the substitution of a rounded and balanced rudder, the L.25 developed into the L.26 and L.27 with various Mark Nos. until the early 'thirties, when the type was built here as the B.A.M. Swallow, several examples of which are still flying.

G-AAHW was the 152nd machine to be produced at Böblingen, and was first registered in this country to C. W. G Wood on June 7th, 1929. It was acquired by Mr. G. R. Lush its present owner just before the outbreak of war in 1936.

'HW lives at Hastings, where it is normally pegged out in the open on Pebsham aerodrome. During the winter months it is dismantled and put away in a small shed, and we were fortunate enough in being able to fly in and photograph the machine one weekend during October through the courtesy of Mr. Lush.

Construction : All wood. The fuselage being made from four longerons with vertical cross-members and plywood covering. The wings are of orthodox twin spar construction, plywood covered from the rear spar forward to the leading edge, the remainder including the ailerons being fabric covered. The tailplane is of similar construction, the elevators being fabric covered. For transport and hangarage the wings are detached from the centre plane and fitted onto each side of the fuselage, port wing on the starboard side and vice versa. For this operation, which takes about 25 minutes, knobs on the wing leading edge fit into slots on the centre-plane walkways, the wing tips being secured to the fuselage sides by means of clips situated just forward of the tailplane. Dual control is fitted, although instruments are not provided in the front cockpit. An interesting feature is the provision in the front cockpit for a crank-operated engine starter.

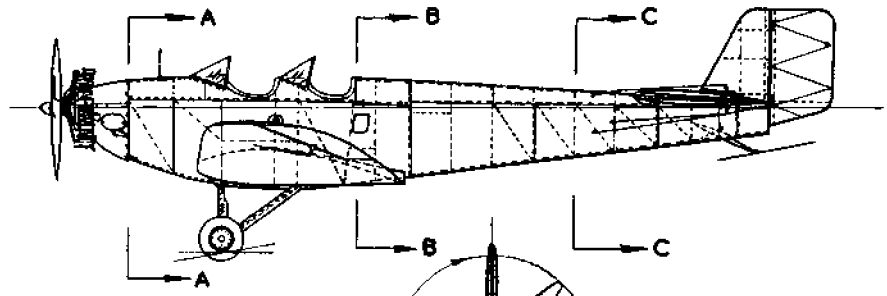
Colour : Most of the German-built Klemms were left in the natural varnished wood state, but the scheme used on 'HW is as follows :—

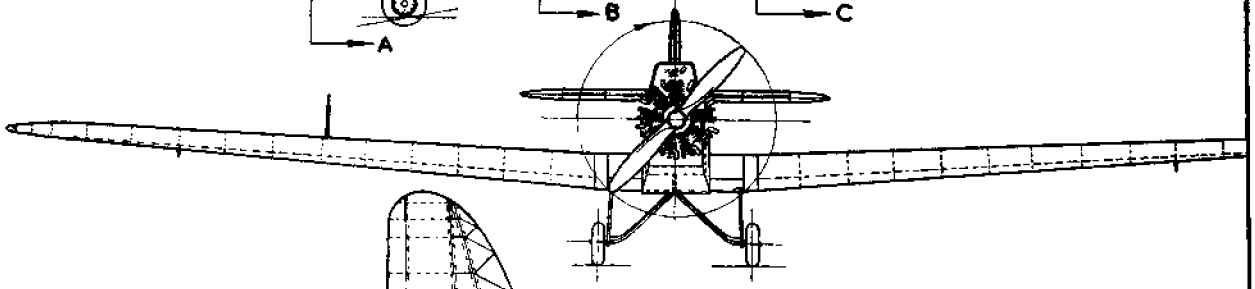
Fuselage, portion of wing forward of rear spar, leading edge of tailplane, fin and undercarriage legs dark blue. Remainder of wing and tailplane, rudder and cowlings aluminium. Crimson registration letters on fuselage and wings.

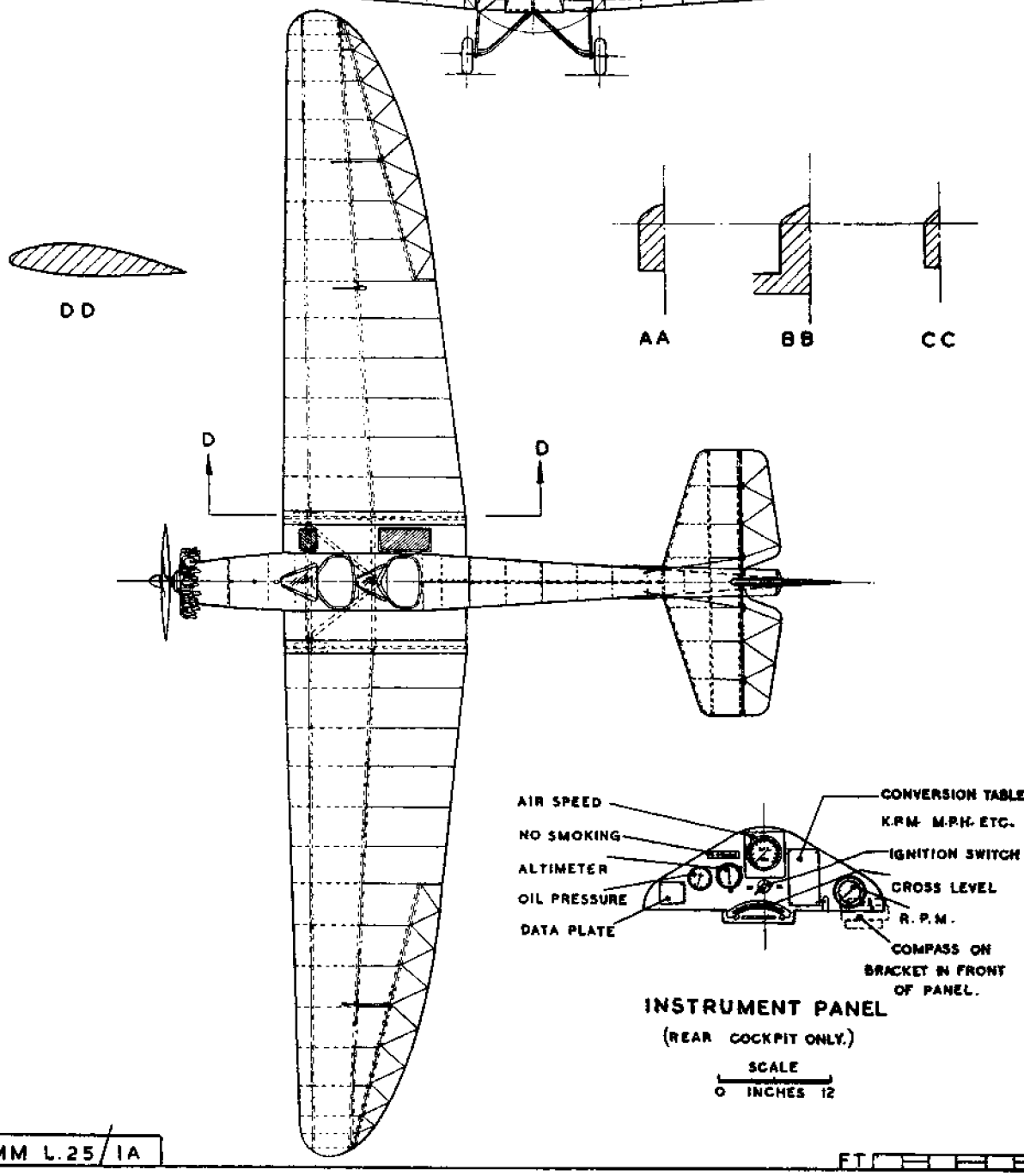
Specification: Length : 24 ft. 0 ins. Span : 42 ft. 0 ins. Height : (overall) 7 ft. 10 ins. Wing area : 215 sq. ft. Tare weight : 627 lbs. Max. loaded weight : 1,367 lbs. Max. speed : 87 m.p.h. Cruising speed : 65 m.p.h. Landing speed : 25 m.p.h. Range : 600 miles. (22 gals. fuel in tank to rear of engine bay). Ceiling : 21,300 ft.

¼ in. to 1 ft. reproductions of the G.A. drawings price 1/- from A.P.S. 6 in. × 4 in. prints of photographs price 2/- each from Eaton Bray Studios.

Aeromodeller Photos.







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INSTRUMENT PANEL

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S. M. A. E.

ANNUAL PRIZEGIVING AND DANCE, NOVEMBER 19th

THE stately ballroom of Londonderry House that, in its day, has reflected the elite of the capital's *Corps Diplomatique* glowed anew on November 19th with the array of newly polished S.M.A.E. trophies arrayed for presentation at the annual prizegiving and dance. The attendance of something in the region of two hundred aeromodellers from all over the country accompanied by their ladies or let out on parole as the case may be must have been a welcome sight to the organisers intent on maintaining Treasurer Barker's satisfactory financial year.

Prominent, as usual, amongst those present was the indefatigable Henry J., clad in D.B. Dinner jacket—and let it be whispered *tennis shirt* to keep out any occasionally chilly blasts. Apart from leading the band, when allowed, and sampling any toasts that might be going in the silverware he was seldom out of the picture. Council members and fellows were there in strength to do honour by their company to the presentation made to Mr. Houlberg on the completion of twenty-five years as Chairman of the Council of the S.M.A.E., and forty years connection with the model aircraft movement —a record unlikely to be equalled in time and certainly not in service. Colonel Preston of the Royal Aero Club, on behalf of the S.M.A.E. presented Mr. and Mrs. Houlberg with a handsome burr walnut coffee table with pull out side tables, covered in glass, and with suitably inscribed silverplate let into its surface. Then followed the presentation of awards to winners of the year's trophies. It seemed rather a pity that certificates only were handed over, as even the momentary handling of each trophy would have been a boon to the massed photographers, and convinced the holder of this solid achievement. Nevertheless some of them did manage to escape for long enough to be filled with a potent brew and circulated.

Amongst a good northern and midland contingent we noted Len Scott, " Chuck " Doughty, Roy Chesterton, and many others. London members were naturally there in force with T. Wickens of North Kent, making his first appearance after his recent operation ; quite a number from more southern areas including a S.E. Area group from the Brighton district, full of their forthcoming Control Line Meeting at Brighton.

Those intent on dancing had ample opportunity to swing to the melodies of Jeff Parks and his Boys, playing some really good strict tempo music. The elderly and non-dancing types naturally gravitated to the bar—marked, rather unkindly we thought, " Cash Bar " and spent vain and wasted minutes looking for the credit department—where hangar flying continued until closing time, to such an extent indeed, that some of the habitues missed the generous buffet supper.

No festival of this kind could be passed over without some reference to the ladies, who on occasions such as this shed their fuel soaked raiment and come out in all their glory. Ex-champion Mrs. Buckeridge, now retired from the fray and recognised as the G.O.L. of aeromodelling was there to lend support to Jim ; reigning champion Mrs. Eves of Upton took a big hand when receiving her award ; whilst wives and girl friends gave traditional glamour to the fine old ballroom.

As a brief fashion note for aeromodelling ladies not present we would remark that most garments were of the stressed skin variety, that is unsupported by anything visible beyond will power, and materials varied from nylon that had escaped the power modellers, in all shades, to watered silk, in all shades of black and flowered chiffon. Tiaras were not worn, and nary a windsock amongst them all !

From top to bottom:—1. "Chuck" Doughty, Radio Control winner and Colonel Preston. 2. Roy Chesterton samples an oversize "pint". 3. Kennedy, holding cup, and fellow members of the Upton Club assist Val. Turner who is about to apply a little suction to the Pilcher Cup. 4. From left to right, Eddie Cash, Roy Clements, Alec Houlberg, Doug Gordon and Col. Preston.

NEWS

ANNUAL GENERAL MEETING, NOVEMBER 20th

THIS meeting was well attended, a very fair provincial representation being noted. As a welcome change from some previous A.G.M.'s we have attended, the 1949 affair was well behaved and orderly.

ELECTION OF OFFICERS resulted as follows:

Vice-Chairman:			*Technical Secretary:*		
R. F. L. Gosling	(Merseyside)	662	H. J. Nicholls	(Zombies)	582
C. A. Rippon	(Southgate)	542	W. Trow	(Dudley)	408
H. Rewell	(Brighton)	146	Deudney	(West Essex)	364
Hon. Secretary:			*P.R.O.:*		
D. A. Gordon	(West Essex)	712	F. E. Wilson	(N. Heights)	688
D. Laidlaw-Dickson	(Icarians)	629	H. G. Hundleby	(Icarians)	655

It is surprising to learn that only approximately 80 clubs troubled to vote (*i.e.*, some 20 per cent.) and as the London Area Press Secretary states in his current report, " no doubt the remaining 300 odd (very odd) clubs will still consider they have a right to complain about, and instruct the Council on how to conduct the Society's business ".

THE FINANCIAL POSITION has improved out of all recognition compared with twelve months ago, due to careful consideration of expenditures by the Council and the excellent handling of the Society's financial matters by the Treasurer, Mr. H. W. Barker. He fully deserves the bouquets received at the meeting, and his case demonstrates the wisdom of appointing the right man for the job—when you can find him!

Affiliation fees remain the same, with a 10/6 entry fee required from newly affiliating clubs. In future, clubs will receive notice of re-affiliation one month prior to expiry, and will have a further month's grace in which to forward their dues. If fees are still unpaid at the end of this period the club will be considered as lapsed from benefit. At the end of three months such a club will be considered only on the basis of a fresh application, and liable for the entry fee of 10/6.

COMPETITIONS during 1949 were poorly supported in comparison with previous seasons, the opinion being advanced that an " all-F.A.I." programme was the possible cause. Mr. Turner stated that the participation represented an entry of ½ member per club throughout the season—but did not say which half! The recent voting on his questionnaire showed a 50/50 preference for F.A.I. and Open contests, and the 1950 programme, now in course of preparation would be based on this.

RECORDS claimed during 1949 amounted to 22, six more than in 1948, and the Society is proud to have two International Records on its books. On the proposal of the North Kent M.A.S. the meeting decided to introduce additional British National Records for Lightweight machines in all categories with effect from January 1st, 1950. The definition of a Lightweight machine was agreed as follows:

> " A model complying with F.A.I. formulae for measurement, except that the wing loading shall be below the F.A.I. minimum of 3·93 ounces per square foot."

P.R.O.'s DUTIES were discussed and clarified, it being generally agreed that he should devote the whole of his time to publicity matters, and such a routine matter as the News-Letter become a routine office responsibility.

HONORARIUMS TO OFFICIALS were considered, and the meeting voted the sum of £150 for such purposes, to be apportioned between the Hon. Secretary, Hon. Treasurer, and Hon. Competition Secretary as the Council decides.

THE NEXT A.G.M. is in November, 1950, and in order to give the Treasurer and Auditors adequate time to prepare accounts, the books will be closed a month earlier than hitherto.

1. North Kent, who this year lifted the Plugge cup from Croydon, display their silverware. 2. Kennedy, winner of the Pilcher cup and Mrs. Eves, winner of Woman's Challenge Cup. 3. Need we say it!! and fancy wasting beer like that too! 4. Gold Trophy winner Brian Hewitt. Copies of these and many other Aeromodeller photos taken at the dance are available at usual rates.

CLUB NEWS

BY CLUBMAN

Now at the height of its flying season is the Dunedin Club from "way-down-under". Shown here during their chilly season during July l

THOUGH you will be reading this before we have seen the last of 1949, I take this opportunity of wishing all readers the best of luck, weather and thermal conditions during the New Year, and trust that we have as fine a season as we (so unexpectedly) enjoyed in the Old.

The London and Midland S.M.A.E. Areas share equal honours considering the number of National contests won during 1949, having eleven trophies each. North West won two, and singles went to the North Eastern, East Anglian, and South Midland. Congratulations to North Kent on finally ousting Croydon from the Plugge Cup, though Croydon have the fine record of a four-year consecutive win, and runner-up position for 1949. "Always second" Revell (Northampton) won the Caton Trophy for the second year running.

Having in mind recent criticisms of control-line speed flying at Fairlop, the **LONDON AREA** took the wise precaution of holding their Area C/L Contests on a private drome, through the good offices of the C/O at Chigwell R.A.F. Station. In spite of cold weather (date November 6th) some good times were set up, and at least one application has been made for a British Record. Results were :

Stunt :	**K. Muscutt**	**West Essex**		
	L. Stewart	**West Essex**		
	R. Prentice	**Chingford**		
Speed :				
Class II	**A. Dawson**	**East London**	**70·6 m.p.h.**	**(Elfin 1·8)**
	K. Muscutt	**West Essex**	**70·5 ,,**	**(Elfin 1·8)**
Class IIIA	**J. Claydon**	**East London**	**90·4 ,,**	**(Amco 3·5)**
Class IIIB	**D. Powell**	**East London**	**97·3 ,,**	**(Eta 29)**
	E. Wallis	**Surbiton**	**81·6 ,,**	**(Eta 29)**
	M. Hurcombe	**Zombies**	**66·1 ,,**	**(McCoy 29)**
Class IV	**C. A. Shaw**	**Zombies**	**105·9 ,,**	**(McCoy 49)**
Class V	**N. G. Taylor**	**Wimbledon**	**111·1 ,,**	**(McCoy 60)**
	C. A. Shaw	**Zombies**	**110·4 ,,**	**(Fox 59)**

The **SOUTH EASTERN AREA** are cooking up something pretty terrific for their 1950 All Control-line Meet due at Brighton on Easter Monday. Stunt and speed events will be staged for both functional and scale models, and team racing will be introduced. Affairs conclude with a Dance (take that bloodstained bandage out of my back, you cad !) so things should really rip on the South Coast next April.

Word from a Canadian correspondent gives news of a two-day series of contests staged by the Canadian Gas Model Club of Toronto in October, the first day being devoted to free-flight events, with C/L on the second day. Times and speeds make interesting comparison with our own flying, as the following list indicates :

Towline Glider :	**Ken Easton**	**(Toronto)**	**3 : 22·6**	**aggregate of 3**
Rubber :	**Norman McKay**	**(Toronto)**	**7 : 14**	**,,**
Rubber Stick :	**Dave McKay**	**(Toronto)**	**7 : 55**	**,,**
Class A Power :	**Barry Smythe**		**8 : 50**	**,,**
Class B Power :	**Hockin Bros.**		**7 : 11**	**,,**
Class C & D Power :	**Keith Bousfield**		**10 : 17·5**	**,,**
C/L Speed :				
Class A :	**D. Wilson**	**94**	**m.p.h.**	
Class B :	**W. H. Allison**	**85**	**,,**	
Class C :	**W. H. Allison**	**91·5**	**,,**	
Class D :	**Ken Savory**	**119**	**,,**	

Norman McKay flew the Wakefield model he used with such success over here in the 1949 Contest, this machine being notable for its extraordinary spiral, stable climb.

The **NORTH WIRRAL M.A.C.** carries out a monthly competition in which members may fly any one of the three types of model ; rubber, glider or power. The winner is the competitor whose flight is the highest fraction of the club record in its own class. For example, if the rubber record is 2½ minutes, a flight of one minute gives a higher fraction (1–2½) than a glider flight of 3 minutes against a record of 9 minutes (3–9), and similarly with power flights. The system has met with good reception from club members, and has shown promise of interesting developments. Rubber powered flying, which has been somewhat neglected, with a consequent low record, is now attracting more attention. In fact, all three classes should benefit over a period.

The first annual North Hampshire Rally staged by the **R.A.F. ODIHAM & D.M.A.C.** on the 9th October, was well supported, modellers competing from all parts of the South of England. Forty clubs in all competed in favourable weather, plenty of thermals being about except for a short period during the afternoon when a sharp shower sent everyone scampering for shelter. The standard of flying was exceptionally high as the results show, several contestants returning flights of over five minutes. Lack of timekeepers was the usual headache, and this is definitely something that has to be tackled at all meetings if the organisation is not to be swamped by the ever increasing entries. Results :

Rubber :	**J. Playle**	**(Hayes)**	**12 : 21·5**
	J. B. Knight	**(North Kent)**	**12 : 01·5**
	J. L. Pitcher	**(Croydon)**	**11 : 15·6**
Glider :	**D. Yeabsley**	**(Croydon)**	**14 : 18·2**
	P. Gilbert	**(Pharos)**	**13 : 51·3**
	L. Barr	**(Pharos)**	**13 : 49·8**
Power :	**E. J. Russell**	**(North Kent)**	**169 ratio**
	C. W. Allen	**(Newbury)**	**12·75 ,,**
	R. J. North	**(Croydon)**	**11·59 ,,**
C/L Stunt :	**L. Glover**	**(Portsmouth)**	**280 points**
	D. Palmer	**(Basingstoke)**	**252 ,,**
	A. Piacentin	**(Salisbury)**	**247 ,,**

Indoor meetings staged recently by the **MERSEYSIDE M.A.S.** introduce a new idea that is worth copying by other clubs looking for interesting activity for the winter season. Expert members of the club form a Brains Trust under the chairmanship of R. F. L. Gosling, a few of the questions and summarised answers being as follows :

Q. Is Control Line jeopardising the aeromodelling movement ?
A. It has some detriment at the moment, but provided proper safeguards are enforced it can be instructive to a limited degree.

Q. Is Aspect Ratio important in model design ?
A. Yes, important for torque-control on rubber models. Minimum safe A/R for such models is 10–1. Advocate high A/R for most types of sailplanes provided wing structure is properly stressed.

Q. What is the best method of constructing a warp free wing ?
A. Triangulation : box L.E. and built-up T.E. (Note here

that 40–50 per cent. of sheeted L.E.'s strength is lost if back of main spar is not filled in, completing the " box " structure.)

Q. Why the modern trend towards very large model sailplanes?
A. They are more efficient, flying at higher Reynolds numbers; also they remain in sight much longer.

Indoor flying has been recommenced by the **WHITEFIELD M.A.C.**, the r.t.p. record having already been broken by J. O'Donnell who clocked 3 : 13. Outdoor flying has not been neglected, H. O'D. getting 5 : 30 o.o.s. straight upwards with a " flying axe " glider, whilst brothers J. and S. R. Targett each got 5 minute flights.

Like most clubs, the **CHEAM M.A.C.** made the most of the remarkable 1949 summer, running seven club comps. in addition to participation in outside events. M. J. Lockyer won four of them, J. D. Palmer the other three, whilst a junior event went to young Smith. Lockyer won the club championship with 134 points. The most remarkable flight of the season was by Secretary Costenbarder's 10 year old, 13 ounce Wakefield (variously known as the " Tram ", " Barge ", " Heap " or " Costy-Killer "). This old-timer clocked 6 : 18, bringing forth the remark—" What a thermal ! ! " (Must have been taking lessons from Ellila.)

A fine display of the club's work was given by the **LEEDS M.F.C.** during a three-day Model Engineering Exhibition held in the city, which provided excellent publicity and substantially augmented the clubs funds. Amongst a very representative selection of well-made models, mention should be made of a neat semi-scale twin Elfin control-liner, two well worn but nevertheless impressive 10 foot span gliders, and a 1/5th scale model fitted with a 15 c.c. engine. Surprise winner was the 10 year old Brown Junior powered " S.E.5 " entered by H. E. Vauvelle. Johnny (Tailless) Capel becomes the first of the many radio-controllers to build a successful set and demonstrate it to members. Unfortunately they are to lose him on " transfer " to the Ilford club; however, to take his place they have recently welcomed Norman Pettingale, ex Northern Heights clubman. Transfer fees are not to be disclosed ! !

The following details of lectures held by the **RADIO CONTROLLED MODELS SOCIETY** are of interest. Meetings are held monthly on the second Sunday at 2 p.m. at St. Ermins Hotel, Caxton Street, S.W.1, and visitors are welcome. Monthly meetings are also held in Manchester, and a Birmingham group is in process of formation. Make a note of the following :

January 8th, 1950—" 27 Mc/s Receivers."
February 12th, 1950—" Relays and Intergear."
March 12th, 1950—A.G.M. "465 Mc/s Techniques."

The decision of the **OLDHAM & D.M.A.C.** to hold an inter-club indoor comp. has resulted in a rash of indoor models, many of them weird and wonderful. A scheme has been introduced whereby every junior must build a model capable of flying for at least 30 seconds by the beginning of the outdoor season; failure to do so may lead to expulsion. The idea is to weed out those irresponsible youngsters who use the clubrooms for anything but model flying ! Encouragement of a further type is to be given in the form of prizes for the best junior performance each month.

Looking back on the past season, a goodly number of the **SOUTHERN CROSS A.C.** records have been broken. The sailplane record has soared to 29 : 20 and the juniors have put theirs up to 4 : 35. The rubber record now stands at 7 : 47, seaplanes 3 : 22·7 and canard 1 : 57·8. Cold and gusty winds do not encourage flying at present, but the C/L boys still get in the sheltered spots—latest lark is as many in the same circle as possible. Good practice for next year's team races !

An exhibition staged by the **WORCESTER M.A.C.** proved such a financial success it is hoped to purchase a club R/C outfit and finance several outings next year. There is a seasonal slackening in flying, but interest in speed C/L is increasing, the club record now standing at 100·37 m.p.h., engine a 10 c.c. local made affair. A new design by the same maker is expected to have greatly increased output, and the 130 m.p.h. mark is confidently anticipated.

The annual competition for the " Bill White Memorial Cup " will be staged by the **BLACKHEATH M.F.C.** at Blackheath on Sunday, 8th January, between 10 a.m. and 2 p.m. The contest is for unrestricted rubber-driven models, and will be flown whatever the weather. The cup is currently held by J. B. Knight of North Kent. Programme and full particulars can be obtained from the secretary (see " changes " column at end of these notes).

The **SALFORD M.A.C.** now has ideal accommodation in a big house, supplied by the local Education authorities. The present tendency is toward high-climb power models using Ardens and Ohlssons, with a few turning towards the newest phase, i.e. radio control. On the 30th October, the North West Manchester club was entertained to a day's flying on the local field, best flight of the day being 2 minutes from a 150 ft. towline by E. Wainwright's 8 ft. sailplane.

CROSBY M.A.C. are concentrating on free flight power, current records being 12-1 H.L. and 11-1 R.O.G. Some McCoy 29's and 49's have recently made an appearance, the former going into " San de Hagan " designs, and the larger jobs into de Bolt Speedwagons.

The **LUTON & D.M.A.S.** finished off the 1949 season by placing fourth in the Plugge Cup. The winter programme is in full swing with lectures, debates and film shows every fortnight.

A rally organised in Whitley Bay by a local trader proved a big success, and it is hoped to make this an annual event. High winds spoiled what could have been a grand day, many models being smashed. In spite of this some 50 competitors braved the elements with the following results :

Glider :	G. Nicholson	(North Shields)	4 : 85
	K. Murray	(North Shields)	3 : 12
Rubber :	K. Murray	(North Shields)	3 : 49
	F. Anderson	(Blyth)	3 : 08
Power :	W. Wilkinson	(North Shields)	26·1 ratio
	N. Cherrett	(North Shields)	17–1 "
C/L Stunt :	D. Shawcross	(North Shields)	

Formed during last summer, the **R.A.F. ASTON DOWN M.A.C.** have increased membership to a very good percentage of the station personnel. Flight times are not startling owing to the heavily wooded nature of the surrounding terrain. (Incidentally I suppose you know that the R.A.F. have formed a special aeromodelling section. Clubs are already in action on a number of stations, and inter-station contests will be staged next year, with the possibility of inter-Command events following on. The R.A.F. Association has co-operated with the S.M.A.E., and all Service clubs are to be affiliated.)

Owing to lack of support the **MORDEN & D.M.F.C.** is disbanded as from October 24th, 1949.

The A.G.M. of the **LEICESTER M.A.C.** was notable for the absence—or lack of voice—of those who had intimated they would have something to say ! ! Popular " Bob " Bennett was re-elected Secretary, and a full winter programme was mapped out. This started a fortnight later with a concours at the clubroom, when yours truly adjudicated. An exceptionally fine show of models gave me quite a job deciding the winners, the awarding of the Cup being particularly difficult, the margin between winner R. Tailby's power model and the runner up, Ken Stothers' sailplane being very small. A Xmas Party is to be held on December 12th, a repeat of last year's popular social.

After a heavy session of flying at various fetes and shows (for which efforts the club earned a substantial amount of cash !) the **CHESTER M.F.C.** has settled down to building and testing free-flight jobs for next season. The S.M.A.E. Merit Certificates have proved quite an incentive in this direction. E. Meredith's R/C job recently provided quite an interesting afternoon's entertainment, the result of much painstaking testing with and without the radio. The club annual Dinner will take place at Brown's Restaurant, Chester, on the 4th February. Tickets (8/6 each) can be obtained from the Secretary.

The newly formed **SHEPPEY M.A.C.** held an exhibition which proved highly successful, and a good incentive to this new group. Chairman G. Rogers won first prize with his well-finished " Ethereal Lady ", second place going to P. Peters' " Aristocrat ", judges being supplied by the nearby Sittingbourne club.

The Castleford & D.M.F.C. has merged with the **PONTEFRACT & D.M.A.C.** with G. Richards as the new secretary.

The **HAYES & D.M.A.C.** had a very successful day at the B. & E. Gala at Chobham, K. Johnson taking a well earned first place in the glider event with a time of 19 : 28. F. Brench took second place in the rubber event with 8 : 29, third place going to D. Burton with 8 : 00. Flying his latest Wakefield, F. Playle gained first place in the rubber comp. at Odiham.

Howard Boys opened the winter session of the **RUGBY M.E.S.** with an interesting talk on Radio Control, and other members are booked to follow the series in due course. The final competition of the year took place at Lawford for the club's trophies, winners being W. Eales (Wakefield), J. Middleton (rubber) and S. Burton (glider).

The **DARTMOUTH & D.M.C.** recently formed consists mainly of boys attending the local schools. Members are fortunate in having the school workshop on Monday evenings during the winter, while r.t.p. flying takes place in the main hall of the school. During the summer months the club has the use of the school playing fields. Although the membership is not large, great keenness is shown.

Two overseas readers are asking for pen-pals, so those of you interested can contact the following: Ralph E. Wethli, 15, Persona Street, Westfield, New York, U.S.A., is 24 years old, of Swiss descent, an aircraft mechanic by trade, and prefers C/L types. 14 year old Athol Hutchinson wants to get in touch with a girl modeller of her own age—address: 24, Zeralba Road, West Wallsend, Newcastle, N.S.W., Australia.

This month's prize for Tallest Story goes to R. Elsegood of Corby for the following. "Whilst carrying home my 'Monitor' from a spot of flying I was stopped by an engineering friend of mine. I had a small piece of rag stuffed into the carburettor venturi of my Amco 3·5 to prevent dust getting into the engine, and the engine came in for comment as he had not yet seen a motor minus spark-plug. After inspecting it for a minute he said—'Oh, of course I see how it works now. I suppose you turn up the wick there to get it to start; light it up and the bigger the flame the faster it goes'." It just goes to show!

Well, happy new 1950, and the best of fun and flying.

The CLUBMAN.

NEW CLUBS

MEDINA M.C.
C. S. W. Stock, 8, Gunville West, nr. Newport, Isle of Wight.

PARACHUTE COURSE ADMIN. UNIT M.E.C.
Pte. G. Burns, Middleton Stoney, nr. Bicester, Oxon.

YSTRADGYNLAIS & D.M.A.C.
C. Harding, "Penylan", Station Road, Ystradgynlais, nr. Swansea.

MERLIN M.A.C. (R/R Hucknall).
W. Codd, 23, Florence Street, Hucknall, Notts.

NORTH COTSWOLD M.A.C.
H. R. Herbert, 10, Park Road, Blockley, Glos.

BELPER & D.A. & M.E.C.
G. N. Webster.

R.A.F. ASTON DOWN M.A.C.
2385389 L.A.C. Watts, Hut A.6, R.A.F. Aston Down, nr. Stroud, Glos.

FALCON M.A.C.
A. Brown, 91, Station Road, New Selston, Notts.

BLIDWORTH M.A.C.
M. C. Williams, 19, New Road, Blidworth, Mansfield, Notts.

SECRETARIAL CHANGES

WEST KENT M.F.C.
I. McDonald, 27, Pickhurst Rise, West Wickham, Kent.

HUNTS M.A.C.
A. V. Holley, 31, Ambury Hill, Huntingdon.

PONTEFRACT & D.M.A.C.
G. Richards, 41, Robinson Street, Allerton Bywater, nr. Leeds, Yorks.

DURHAM CITY M.F.C.
K. J. Warriner, 21, Brandon Village, Brandon Colliery, Co. Durham.

WINCHESTER & D.M.F.C.
J. C. Chaplin, Oak Cottage, Crawley, Winchester.

WEST YORKSHIRE M.A.S.
E. Fyrah, 22, Fairview Avenue, Carlinghow Lane, Batley, Yorks.

SLOUGH M.A.C.
C. Callcut, 12, Cranbourne Close, Slough, Bucks.

WAYFARERS M.A.C.
D. A. Lawrence, 20, Alma Road, St. Margarets, Middx.

COVENTRY & D.M.A.C.
J. J. Grantham, 56, Thomas Lane St., Bell Green, Coventry.

BY-PASS (Sutton) MODELLERS.
G. A. Pearce, 1, Oldfields Road, Sutton, Surrey.

BEVERLEY & D.M.A.C.
A. C. Brown, "Sunnycroft", Manor Road, Beverley, E. Yorks.

BLACKPOOL & FYLDE M.A.S.
J. P. Clark, 98, Greenwood Avenue, Blackpool.

BLACKHEATH M.F.C.
K. C. Hackman, 22, Lambert House, Beckenham Hill Road, London, S.E.6.

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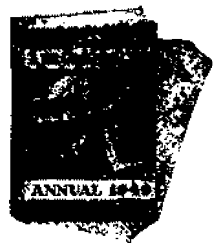

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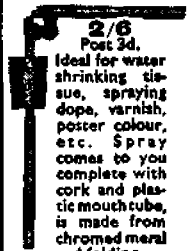

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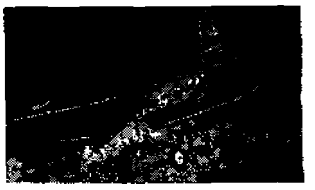

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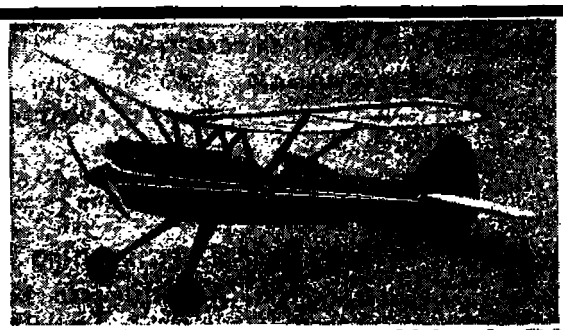

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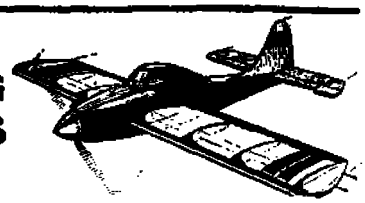

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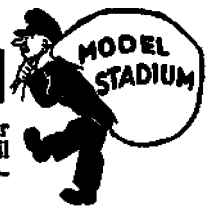

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