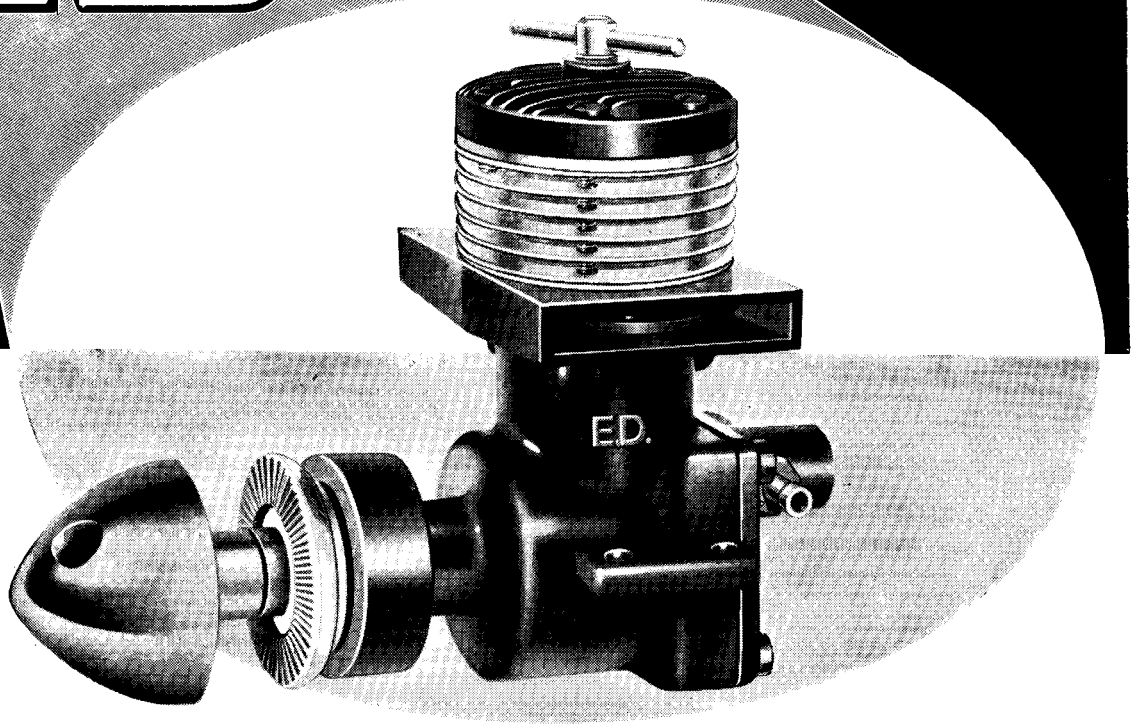
AEROMODELLER

CONTENTS

- Four top-notch Plans of planes you'll want to build
- Norman Marcus's famous JADED MAID shown here
- Pete Wyatt's PLANK The British Power Tailless Record Holder
- LAZY DAISY Smart Team Racer from Cape Town
- An A/2 for beginners by Roland Scott
- Readable Articles on . . . Towlaunching, Running Exhibitions and Feathering Props

MAY 1951 1/6

E.D. Spotlights the NEW 2·46 RACER



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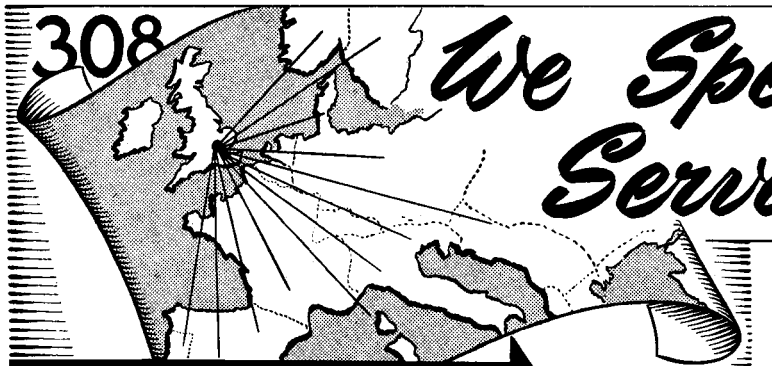

THE WORLD'S No.1. MODEL SHOP

We supply direct to North and South America, Canada, Australia, India, etc.

We specialise in supplying Modelling Clubs within the Services, including those of the U.S.A. in Germany. Monthly credit facilities are extended to all officially authorised Service Modelling Clubs. Orders from areas other than B.A.O.R. are exempt from Purchase Tax. In addition, we despatch to individuals and clubs all over the world AND WE DON'T FORGET HOME-MODELLERS EITHER! Enquiries from intending purchasers' overseas welcomed. Priority given to Service Clubs' Orders.

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Prices quoted include P.T. and are based on latest information from the manufacturers whose announcements should also be studied. The range given here is intended to be representative. Complete ranges are carried and orders met with the utmost speed.

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Panther C/L stunt	30/6
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Ladybird	22/8
Stunt Queen	25/8
Skystreak 40 (basic)	12/10
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Invader 40" Glider	7/11
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Allbon Dart 0·5	65/2
Allbon Javelin 1·5	68/3
Allbon 2·8 (new)	50/-
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D.C. 350	87/6
E.D. Bee I c.c.	52/6
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E.D. Mk. IV	75/-
E.D. Series 2, Mk. III	72/6
Elfin 1·49	59/4
Elfin 2·49	70/-
Frog 500	75/-
Frog 250	72/6
Mills Mk. II 1·3	91/1
Mills 0·75 (cut-out)	66/9
Mills 0·75 (no C/U)	60/9
Mills 2·4 c.c.	102/-
Yulon Eagle 30	86/10

A number of used-engine bargains are available from time to time to personal shoppers.

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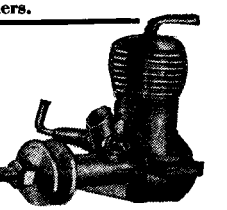

STOP PRESS
PRICE ADJUSTMENTS

With the increasing costs of raw materials, price increases have become inevitable, and we publish here details of altered prices which should be of guidance to modellers. We can take no responsibility if at the time of publication prices in our advertisement do not agree with those of manufacturers.

DUNLOP RUBBER

¼" × 1/24" ; 3/16" × 1/24" ; 1/8" × 1/24" **18/6** per lb.

MERCURY KITS.—See page 261.

CELLON MODEL AIRCRAFT FINISHES

Glider and Clear Model Dope—2 oz. **1/3** ; 4 oz. **2/-** ; ½ pint **4/-**.
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Sanding Sealer—2 oz. **1/3** ; 4 oz. **2/-** ; ½ pint **4/-**.
Fuel Proofing and Anti-Blush Thinners—2 oz. **1/-** ; 4 oz. **1/9** ; ½ pint **2/-**.

JETEX.—See page 261.

BRITFIX.—6d., 7d. and 1/3.

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STANT Machine-Finished Props—Mathematically accurate and ready for use.
Prices (inc. P.T.) All Pitches : 6" **1/10** ; 7" **2/1** ; 8" **2/5** ; 9" **2/9** ; 10" **3/1** ; 11" **3/4** ; 12" **3/8** ; 14" × 6" **7/11**.
Engine Test Stand, screws to bench or table ... **12/6**
Building Pins, per gross ... **3/-**
Rubber bands, assorted giant packet ... **2/6**
Mercury Super-lite ignition coil ... **18/6**
Ever Ready Batteries for R/C Solarbo, Balsa, all sizes, absolute best. **Britfix Cement. Modelspan and Rag Tissue. Trimstrip and Transfers**

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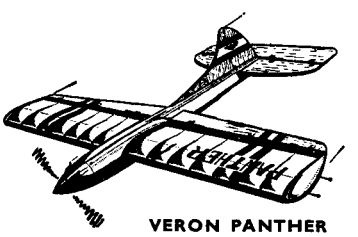
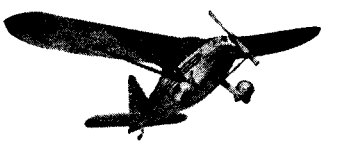
¼ in. Drill Kit	£10 . 17 . 6
Vertical Bench Stand	£2 . 5 . 0
Horizontal Stand	14/-
Buffing and polishing accessory	17/6

These tools are a boon to modellers.



VERON PANTHER



MERCURY STINSON 105

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Please add 1/- to ALL Home Orders for postage and packing. This is to ensure maximum safety in transit. We cannot accept responsibility for breakages on small orders for balsa. Postage and packing are charged according to size and distance on overseas orders.

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Complete equipment and accessories by the following in stock.—E.D. Mk. I and Mk. III units and components as advertised—E.C.C.—"IVY" THYRATROL—HIVAC XFG1 Valve also *Batteries, Switches, Meters, etc.*

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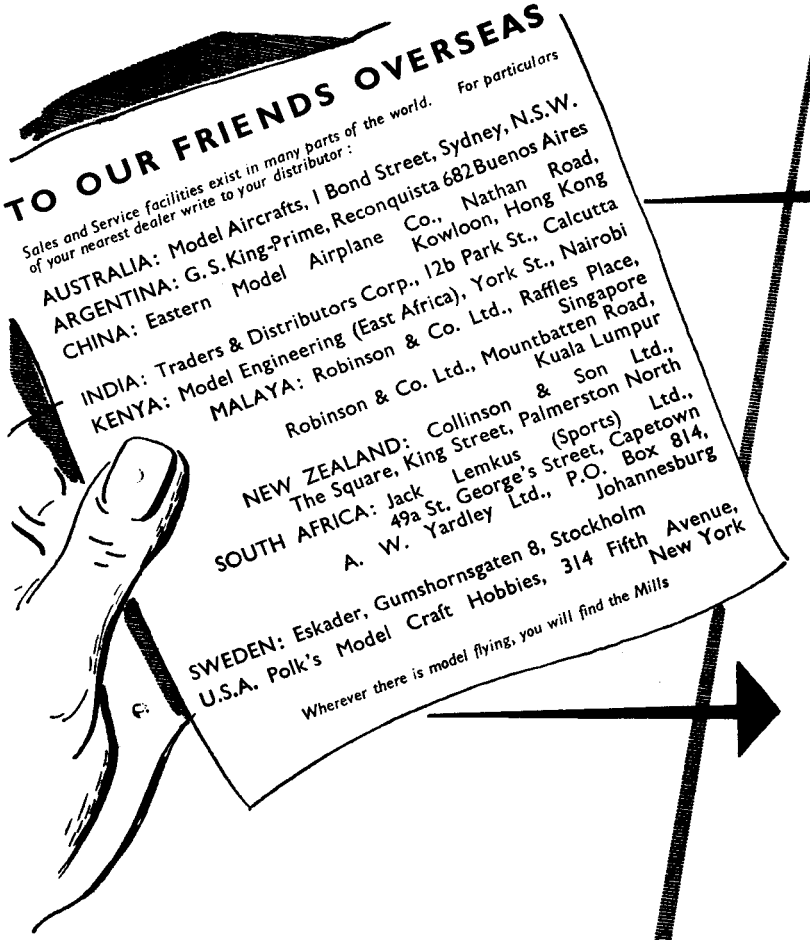
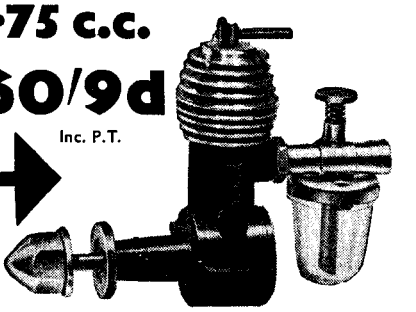


·75 c.c.
60/9d
Inc. P.T.



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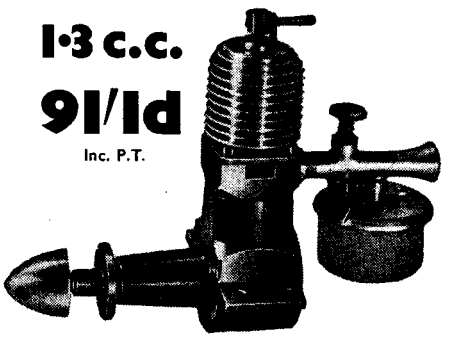
91/1d
Inc. P.T.



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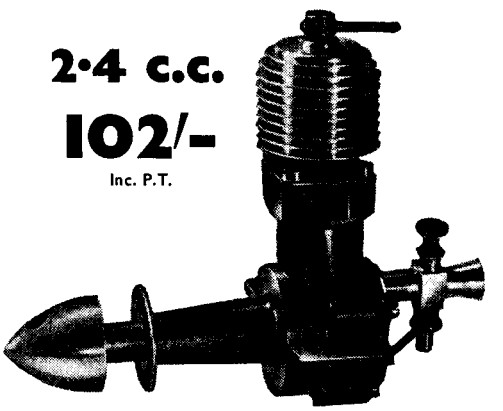
102/-
Inc. P.T.



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·75 c.c. (1¾ ozs.)	60/9	without	cut-out.
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(Including P.T.)

Mills Blue Label Fuel, 3/- large standard bottle. (Re-fills 2/6)

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Organised by the S.M.A.E., will be held on Sept. 2nd. Authenticity and accuracy are two essentials for this Contest; build an A.P.S. Flying Scale model and you can be sure of these—plus proved performance. Make your choice from this range.

FSP 343. **Avro 504k** by R. Booth. 36″ span. For ·5 to 1 c.c. 5/6

340. **Chilton D.W.1** by J. M. Greenland. 36″ span. For ·5 to 1 c.c. 3/–

290. **D.H.C.1 Chipmunk** by J. M. Greenland. 51½″ span. For 1·3 to 2 c.c. 5/–

372. **Typhoon 1B** by P. E. Norman. 32″ span. 1·8 to 2 c.c. 5/–

160. **Westland Lysander** by A. Welsberg. 60″ span. For 2·5 c.c. 7/–

285. **Bishop's Nieuport 17c** by L. C. Bagley. 41½″ span. 1 to 1·3 c.c. 5/–

319. **Republic Sea-Bee** by H. J. Towner. 51″ span. 1 to 2 c.c. 7/6

305. **Sopwith Pup** by G. E. Fisher. 40½″ span. 1 to 1·3 c.c. 5/–

331. **Chrislea Super Ace** by E. J. Riding. 54″ span. ·5 to 1 c.c. 5/–

FSP 174. **R.W.D.8 Polish Trainer** by A. Welsberg 67″ span ·10 c.c. 8/3

404. **Missel Thrush** by E. J. Riding. 42″ span. ·75 to 1·5 c.c 5/6

411. **R.E.8.** by D. R. Hughes. 43″ span ·75 to 1·5 c.c. 4/6

425. **Prestwick Pioneer** by R. Burns. 52″ span. 2 to 2·5 c.c. 5/6

373. **S.P.A.D. S-7C1 Scout** by L. C. Bagley. 38″ span. 1 to 1·5 c.c. 5/–

388. **De Havilland C2 Beaver** by A. Moore. 60″ span. 2 to 2·5 c.c. 5/–

392. **Zaunkoenig** by J.M. Greenland. 39″ span. ·5 to 1 c.c. 5/–

395. **Boeing XL15** by E. C. Martin. 49″ span. For 1 c.c. 5/–

410. **Gloster Gamecock** by P. E. Norman. 36″ span. 2 to 3 c.c. 5/6

428. **Sopwith Scout F1 (Camel)** by F. C. Saunders. 41½″ span. For 1 to 1·3 c.c. 5/6

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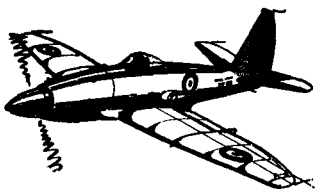

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VERON
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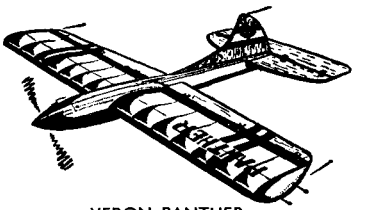
RANGE OF ENGINE KITS AND ACCESSORIES



VERON PANTHER
Superb Design
Completely Prefabricated
PRICE 30/6

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	Cash Price	Deposit	Weekly Pymts. Over 20 Weeks	Monthly Pymts. Over 5 Mths.
Yulon Eagle—Panther	117/4	23/–	5/–	20/–
D.C. 350—Panther	118/–	24/–	5/–	20/–
E.D. Mk. IV—Panther	105/6	19/4	4/7	18/4
D.C. 350—Wyvern	116/2	22/6	5/–	20/–
Frog 500—Wyvern	97/5	18/6	4/3	17/–
D.C. 350—Philibuster	116/2	22/6	5/–	20/–
Frog 500—Philibuster	97/5	18/6	4/3	17/–
Elfin 1·49—Ranger	72/3	12/6	3/3	13/–
E.D. Bee—Ranger	65/4	11/6	3/–	12/–

Free Flight

	Cash Price	Deposit	Weekly Pymts. Over 20 Weeks	Monthly Pymts. Over 5 Mths.
Elfin 2·49—Monocoupe	136/–	27/6	5/9	23/–
E.D. Comp Special—Monocoupe	126/–	22/6	5/6	22/–
Mills 2·4 — Monocoupe	168/8	34/6	7/–	28/–
Allbon Dart—Junior Mallard	79/6	15/6	3/6	13/6
Mills P.75—Junior Mallard	75/6	11/6	3/6	13/–
Allbon Dart—Stinson	91/9	17/6	4/–	16/–
Mills S.75—Stinson	93/10	19/6	4/–	16/–
E.D. Bee—Ladybird	75/2	11/6	3/6	13/–
Mills S.75—Ladybird	89/11	16/–	4/–	16/–

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FLASH! **Keilkraft's latest Flying Scale Kits complete with 5" plastic prop now in stock, price 3/8**

Raeburn Model Service, 9 Arcadia, Colne, Lancs.

ROLAND SCOTT OFFERS YOU

SUCH EASY TERMS

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K. Vulture 5 c.c. Diesel, as new	40/–
Frog 500 5 c.c. G.P., perfect	55/–

FULL LIST ON REQUEST.

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A complete set of materials including :— Plan ; All Wood ; Tissue ; Cement ; etc. Supplied for ... 12/6

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1·5 v., ½ A/H., ⅝ oz. Type C ... 10/–
3 v., ½ A/H., 1¼ oz., Type C3 ... 21/–

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where all your modelling requirements will be supplied.

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My offers for Second-hand Engines are seldom turned down and I now have many customers who wouldn't dream of sending their engines elsewhere. Why don't you ask for a generous allowance on that engine you aren't using?

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ANY KIT CAN BE INCLUDED WITH AN ENGINE

	Cash or C.O.D.	Deposit	20 weekly pymts.
ENGINES			
Kalper ·32 c.c. Diesel	52/6	12/6	2/3
Mills ·75 c.c. Diesel	60/9	12/6	2/8
E.D. Bee 1 c.c. Diesel	52/6	12/6	2/3
Elfin 1·49 c.c. Diesel	59/6	12/–	2/7
Mills Mk. II 1·3 c.c. Diesel	91/8	16/8	4/–
E.D. Comp. Special 2 c.c.	60/–	12/6	2/7
Reeves 1·8 c.c. Diesel	62/6	12/6	2/9
Frog 180 1·6 c.c. Diesel	55/–	10/–	2/6
Elfin 2·49 c.c. Diesel	70/–	14/6	3/–
Frog 250 2·5 c.c. Diesel	76/–	15/–	3/4
E.D. Mk. II Series II 2·5 c.c.	72/6	15/–	3/2
E.D. Mk. IV 3·46 c.c. Diesel	75/–	12/6	3/4
D.C.350 3·5 c.c. Diesel	87/6	15/6	3/10
Amco 3·5 c.c. Diesel	97/6	17/6	4/3
Yulon "Eagle" 5 c.c. G.P.	86/10	15/6	3/10
Yulon "49" Glow Plug	124/5	24/5	5/3
RADIO CONTROL			
E.D. Mk. III R/C unit	197/6	40/–	8/3
E.C.C. 950 R/C unit	212/6	42/6	8/9
E.C.C. International Transmitter	168/9	38/9	6/9
Comet Mk. I R/C unit	169/6	39/6	6/9
Comet Mk. I Receiver only	75/–	12/6	3/4
KITS			
Junior 60 60" span	48/3	10/–	2/1
Monocoupe L7A 64"	60/6	12/3	2/8
Southerner 60	48/11	10/6	2/1

ROLAND SCOTT
185, CAMBRIDGE RD., ST. HELENS, LANCS.

A PERSONAL MESSAGE FROM R.S.

Shortages of this-that-and-the-other are now beginning to be more noticeable and I would advise all serious modellers to plan well ahead with their building programme. You can afford to do so "on the very best of terms".

Sincerely yours,
ROLAND SCOTT

★ **RADIO SERVICE** ★

My Radio Service Department is available to all modellers who are experiencing difficulty with their sets. A complete check including Wiring – Relay Setting – Bench Test will be made for a service charge of 5/–. Faulty parts replaced at cost.

THE "COMET" MK. I R/C UNIT

When this unit was first introduced, it was predicted to be a "Snowball" unit. And by the local demand after seeing one in action, I can well imagine that my radio staff will have to be on top form to keep deliveries up-to-date. Delivery is still ex-stock.

LEAFLET ON REQUEST.

"COMET" MK. I RECEIVER

The Comet Mk. I Receiver can be operated from any carrier type transmitter and can be supplied from stock at 75/–.

ESTABLISHED 1935

AEROMODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

VOLUME XVI
NUMBER 184
MAY 1951

"Covers the World of Aeromodelling"

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Published monthly on the 15th of the previous month by the Proprietors: THE MODEL AERONAUTICAL PRESS LTD.

Allen House, Newarke Street, Leicester.

Subscription rate 21/- per annum prepaid (including Christmas Double Number).

Contents

Advertisement Office:
THE AERODROME, BILLINGTON ROAD, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDFORDSHIRE. Tel.: EATON BRAY 246

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The Festival & Aeromodelling

THERE is hardly need to remind readers that this is Festival year. A year in which the products and achievements of Great Britain are exhibited; a year in which the measure of our progress throughout the centuries is to be marked and displayed for the benefit of the whole world.

And where does Aeromodelling fit in this overall pattern of national progress? Firstly, we would say that 1951 is as important to aeromodelling as the Festival is to the Nation, for it marks a turning point in this hobby of ours.

Spectacles and pageantry are the order of the day, or rather year. There are exhibitions of control line flying on the South Bank site and the "Festival Championships" at Wembley Stadium, both of which will be witnessed by many thousands of visitors, who will, incidentally, for the first time be paying for the privilege. There are the "Nationals" at Swansea, the United Kingdom Challenge Cup at Prestwick, the Indoor Nationals at Manchester, besides all the multitude of club exhibitions and demonstrations that will be taking place in conjunction with local Festival activities. In other words, aeromodelling will be well in front of the public eye in every corner of the British Isles.

Now aeromodelling includes both model aeroplanes and the people who fly them, in short aeromodellers, and they hold the responsibility of favourably impressing the general public.

We do not wish to lose our sense of humour, but will the "funny hat" brigade convince the man in the street that ours is a serious, scientific and sporting hobby? We quote this particular malignance only by virtue of the fact that it was the first that leapt to mind. There are many other undesirable traits equally damaging to the prestige of aeromodelling.

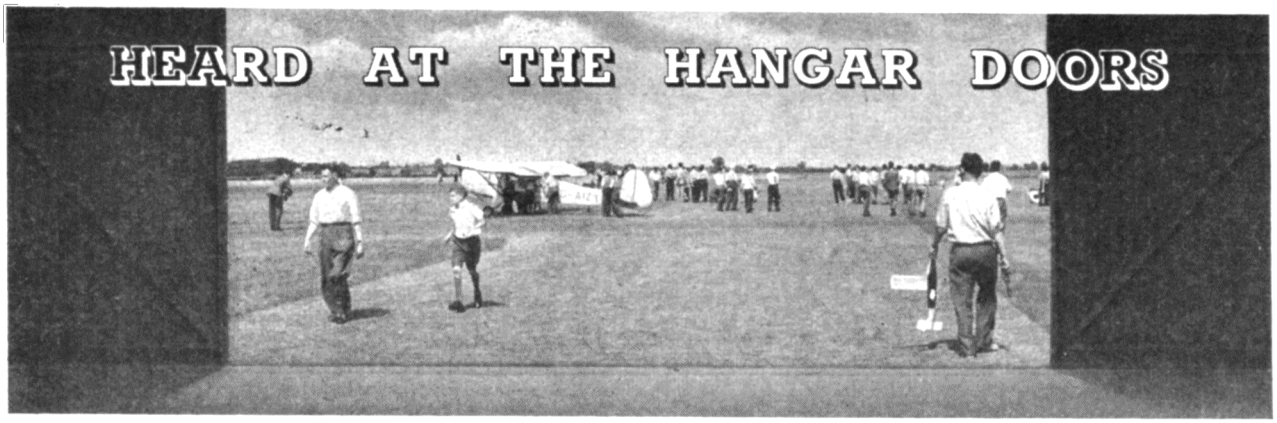
And what of our models? Are they setting a standard that we have reason to be proud of? Let we aeromodellers in this Festival year show not only the British public, but the whole world that British aeromodelling is to the fore. No matter how small your club exhibition may be, see to it that it really does convey to the uninitiated all the skill and creative energy that the club can muster. Co-operate with the local Council in their Festival plans, it may go a long way towards getting that long sought for flying ground that you so badly want!

Model aeronautics has now reached the stage where it is accepted by the community at large as a recreative hobby not enjoyed by a species of cranks in funny hats, but by hundreds of thousands of intelligent people who have skill in their hands, creative thoughts in their minds, and a love of the outdoors.

Let us this year, whilst the time is ripe, strengthen and consolidate public opinion on these lines.

Cover Photograph . . . .

The man behind the sunspecs. with mouth agape at such a snappy get-away, is Norman Marcus, with his famous contest pylon design, Jaded Maid. In a moment, the lightweight five-footer will have curled into a steep right-hand climb, and in ten seconds, have climbed to almost 500 feet. Plans, and Norman's own description of the design, are presented on pages 270-272 of this issue.



NOWADAYS, the mention of " Comet " immediately conjures up visions of the De Havilland jet air liner that has been making the world sit up and take notice in recent months, but our older readers will recall a time 17 years ago, when a very different " Comet " earned an equally exciting share of glory by winning the England–Australia race. This month's " Aircraft Described " will revive memories of this great aeroplane and enable our readers to more fully appreciate the sight of this old-timer " in the flesh ", at her first public appearance since before the war. The place to see her is The Transport and Communications Pavillion at the Festival of Britain Exhibition which we've all been waiting to see and which, needless to say, opens this month. Keeping the " Comet " company is another veteran, the famous Supermarine S.6b, which in 1931 won outright the Schneider Trophy for Great Britain, and two sleek modern sailplanes, an Olympia and Slingsby T.34A.

Those with an eye for the real thing will also appreciate the show cases full of 1/24th scale models of all the post-war British civil aircraft, and we can see that these will become a Mecca for the active core of solid modellers whose products remain a joy for ever. In addition and in contrast to the static exhibits, there is control line flying arranged by the S.M.A.E., to be seen at various weekends.

When visiting the Exhibition, more than a few club secretaries will be making mental notes for use when their own club exhibitions come to be staged, and for these long suffering men we present in this issue a three-page feature on " how to do it ", which we hope will relieve the misery and add to the joy of running the club " do's ". So, with the object lesson of the Festival Exhibition and the guidance of this article we look forward to bigger and better club exhibitions this year.

The South African Wakefield Mystery

Readers will recall the upset when it was discovered that the South African entries for the 1950 Wakefield Contest had not taken part in the event, even though the models had been dispatched by air some weeks before the date of the contest. The case containing the models was eventually returned to the Union—unopened.

The full story has now come to light. Following handing over of the case to airport officials, they were placed aboard a " Tudor ", and started off for England. Unfortunately, the plane " lost " an engine and turned back, and all luggage remained on board until a new engine was brought out from the United Kingdom. As a result of this, the models arrived in England on the 23rd July—the date of the contest—and were forwarded on to Finland. They were then returned to South Africa, where they remained in bond for three months before being released to their rightful owners.

The charter firm has waived their charges for air freight to England and back as a small measure of compensation to the S.A.M.A.A., who have only to produce the £13 charge for the England–Finland part of the journey. Thus ends another strange chapter in the history of South African modelling.

Northern Models Exhibition

The model aircraft exhibits at this years' Northern Models Exhibition were of a very high standard, and compared favourably with any models seen elsewhere. Best supported class was that for scale models, all being engined powered machines, and exhibiting an excellence of workmanship that would be hard to surpass.

Full credit for such a fine display goes to the members of the North Western Area Committee of the S.M.A.E., who were responsible for the model aircraft section, they in turn being better supported by their constituent members from the Area than in previous years. An official S.M.A.E. stand was provided, though we felt it to be somewhat isolated from the aircraft section.

Many well-known modellers had examples of their art on show, but we are pleased to record a new name on the " Aeromodeller Challenge Trophy ", C. D. Fitzpatrick of Southport taking top honours with his beautifully finished sailplane decked out in black and orange.

A fully illustrated report will appear in our next issue.

That Man Walker Again ! !

Not content with having started the avalanche of control-line enthusiasm by his patent application of bellcrank control ; with having invented the perfect carburretion system by his pressure tank ; with having been a leader in Radio Control design and above all, with having the ability to guide and direct administration of aeromodelling, that " man from Mars ", Jim Walker, has topped the bill with his latest gesture.

For Jim has *taken it upon himself to sponsor the American Wakefield Team to Finland in July.*

This overwhelmingly generous gift will be appreciated by modellers the world over, and reflects the great sincerity of this famous, even fabulous aeromodeller. (Incidentally, Jim is an Honorary Member of a notorious Essex club, and they are hoping he will stop by on the trip to Finland, and put them wise to all that's new and coming in the U.S.A.).

A.M.A. Definition of a Theorist ! !

A model aeroplane designer is a person who passes as an exacting expert on the basis of his ability to turn out with prolific fortitude, infinite strings of incomprehensible formulae and hypothetical analyses calculated with micro-matic precision from instruments of problematical accuracy by persons of doubtful reliability and questionable mentality for the avowed purposes of annoying and confounding a hopeless group of esoteric fanatics referred to altogether too frequently as practical aeromodellers

.....*A.M.A. News Sheet.*

A Price Cut you can enjoy

At a time when most things seem to be getting more and more expensive we are happy to be able to announce a price *reduction*. When Eaton Bray Sportsdrome opened for the flying season at Easter all admission charges were standardised at 1/– per head. There will no longer be Adult and Junior prices but this one standard price applicable to all visitors other than babes in arms. From Easter the Sportsdrome will be staffed every Saturday and Sunday, with Control Tower in operation, so that those enthusiasts who have suffered from uncontrolled radio control flying may like to sample the benefits of a 75 acre area where some organisation is at their disposal. We would also add that *under no circumstances* may cars be parked other than around the perimeter. If your model has ever hit a car you will understand why!

How to wreck your Club

(1) Stay away from all meetings, especially the Annual General, and whenever its your turn to pay for drinks afterwards.

(2) Never consider taking an official position, just be content to sit back and criticise.

(3) After any election, raise a grouse on not having been elected, and point out that the wrong people have gone into the committee.

(4) Never offer to do anything that involves physical or mental effort. Others will always volunteer to erect the control tent, stake out or paint the control-line circles on rally day.

(5) Hold back your subscription until the last possible moment, then try to clip the dues and forget about paying for the annual dinner which should have been free to members anyway.

(6) If the weather is at all doubtful, don't go to the flying field, stay at home and think up a new grouse.

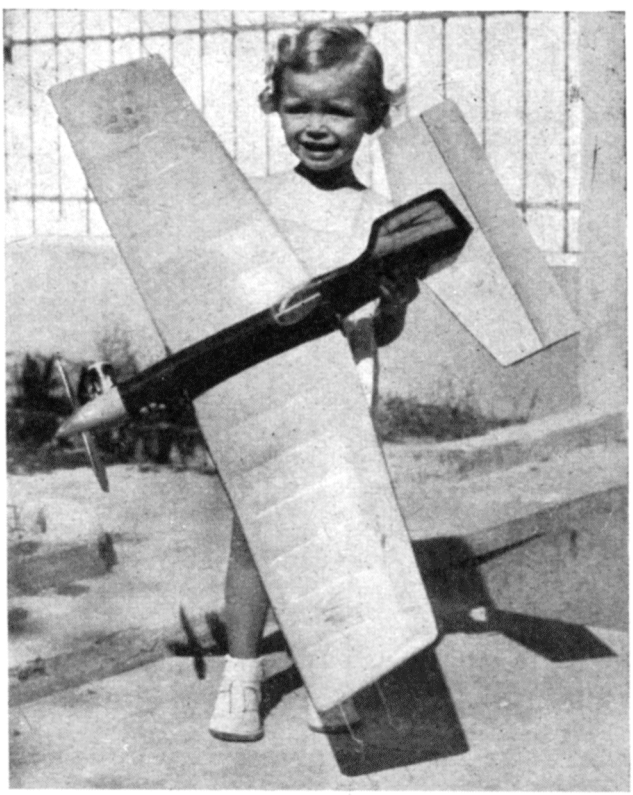
(7) Above all, don't be sociable, never recognise another's efforts, especially if it's the kind of model you can't build, and if you have a radio-job, remember you are " IT "—the last word ! !

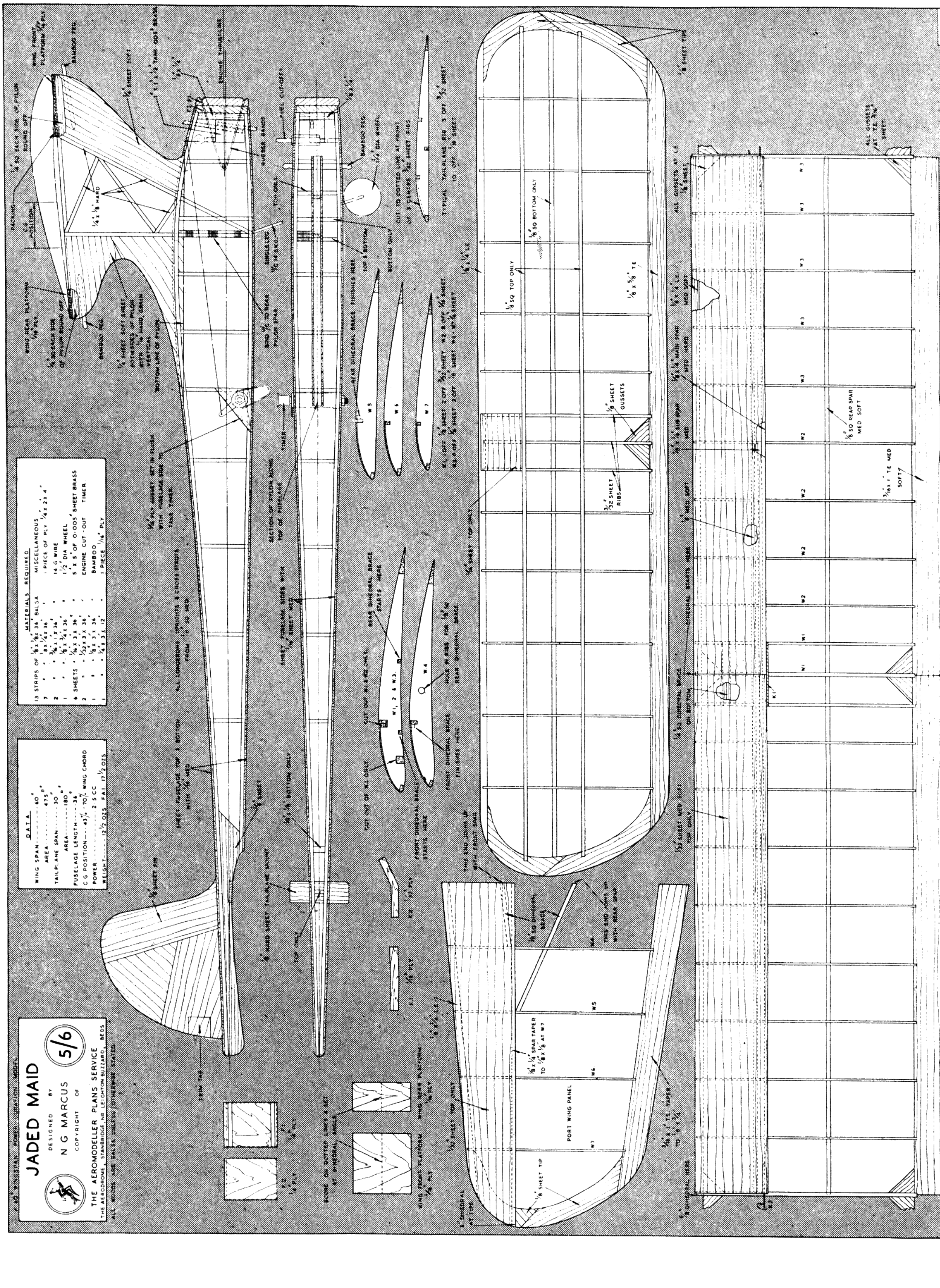
. . . . . Or would you rather be happy ? ? ? ?

N.G.M. Insurance

Is well known to all our readers, many thousands of whom take advantage of its Third Party and O.O.S. policies. Third party cover to the extent of £5,000 is available for modellers flying any type of model aircraft and cover against loss by out of sight flight may be obtained for rubber, glider and rocket powered models. The two special policies covering damage to models at exhibitions and travelling to exhibitions have, however, not proved popular or economical and we have regretfully decided that they must be discontinued.

MY DADDIE'S GOT A MONITOR! Says Master Symes from far-away Sungei Besi, Selangor, Malaya . . . . SO'S MINE Says Miss Shiela Oddy in Sunny Tripoli, North Africa. These very similar views, taken over 7,000 miles apart, travelled almost Ten Thousand miles to reach AEROMODELLER office on the same day!





THIS IS A 1/5 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 5/6 POST FREE, FROM THE AEROMODELLER PLANS SERVICE.

Presenting yet another AEROMODELLER Scoop

NORMAN MARCUS'S

famous 60" span contest winner

. . . the pylon model YOU have requested, now available in our accurate, high quality Plans Service.

FEW models can boast the list of contest successes that Norman Marcus' " Jaded Maid " amassed during the 1950 season. Often an outstanding design will eclipse others in perhaps two of the many major annual contests, but the " Maid " outflew its rivals to win no less than five firsts in one season.

Here is its record :—

Contest	Avg. Ratio	Position
Halfax Trophy	13·65	1st
South Wilts Rally	13·33	1st
West Essex Gala	11·61	Unplaced
Hamley Trophy	12·51	9th
South Coast Power Gala	14·85	1st
Astral Trophy	16·38	1st
East Midlands Gala, Cranwell	10·7	2nd
Croydon Club Davis Power Trophy ...	17·0	1st (flight only)

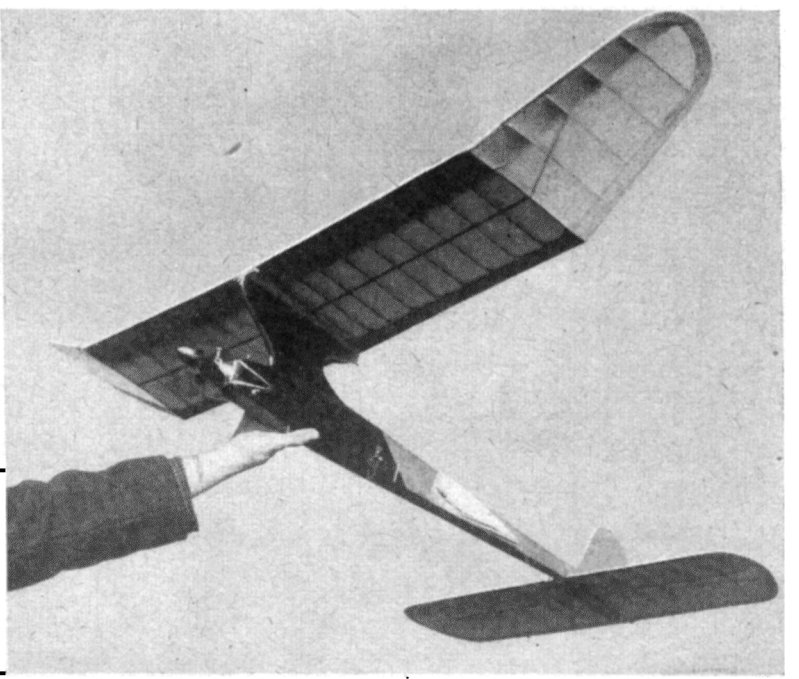
These give an average contest ratio of just over 13, which, incidentally, is the average evening air ratio for the " Maid ".

The most impressive flight, however, was at the Northern Heights Gala, where just after release, the " Maid " collided with a 10 ft. glider and had half the tailplane neatly clipped off. The model continued to climb, then glided for 1½ mins. straight into wind and going up in a thermal. It then turned away out of wind descending to *terra firma* much more rapidly than desired. The pieces were salvaged, and after much cementing and re-covering the " Maid " was ready to fly again.

" Jaded Maid " was not flown in the Nationals nor at Radlett, due to the adverse flying conditions. The " Maid " was developed from the 1948 " Firecracker " plus an outside influence from Frank Ehling's " Super Phoenix " (American 1949) via several unsuccessful to mediocre power jobs during 1949, the last of which placed 3rd at Brentford and Chiswick Gala, and 2nd at Radlett, 1949. The flying surfaces have been increased in area and the weight reduced as compared to " Firecracker ", hence the wing loading is very low — so low in fact, that the " Maid " tends to stall in high winds, and seemingly flies backwards when gliding into a strong wind.

From a study of the individual flight times it can be seen that they are rather erratic (*e.g.* the Astral Trophy flight ratios were 25·92, 8·2 and 15·05—the 1st and 3rd flights were made in fine misty rain and the 2nd flight made in *Calm Dry* air ! !) : the designer feels the performance might be made more consistent with an increase in weight—up to 17¾ ounces, which is the required F.A.I. power loading weight. The original is definitely on the flappy side, the wing tips vibrate about ½ in. with the motor running, and the extra weight could be well used in strengthening the structure, especially the pylon.

It will be seen from the plan that it is of a fragile nature, and if the builder has any doubts about the strength, it is suggested that he reinforces the structure where considered necessary. For guidance as to the weakest members, the fuselage has withstood two vertical dives, whereas the pylon has broken just by turning over in a rough landing. The wing structure is



With folded d/t 'chute alongside the fuselage, Elmic timer set for just over 10 seconds, and Elfin 2·49 primed, Jaded Maid is set for a regular 2 m. 10 sec. flight average. Asymetrical tail on this Maid was an experiment to stabilise climb.

reasonably rigid, but a stronger leading edge (say 3/16 in. × ⅜ in.) would be advantageous; the main spar might be increased to ⅜ in. × ⅛ in. hard balsa. The tailplane has withstood everything, except a Northern Heights Gala!

The construction of the " Maid " need not be described in detail, as it is felt that those who cannot build the model from the plan, which is self-explanatory, will not have sufficient experience in modelling to be able to fly it. Indeed, it is suggested that only those who have flown power duration models with some success should attempt the " Maid ".

However, a word or two on the covering might not be amiss. The original flying surfaces were covered with Jap tissue, but the Modelspan series could be used with good effect—heavyweight on centre of wing and lightweight on the tips and the tailplane. The wing was given two coats of dope and one of " special ", and the tailplane one of each. The " special " (thinned if necessary) being 2 : 1 mixture of clear dope and banana oil plus a few drips of castor oil—this waterproofs the flying surfaces and lessens the warps due to heat and damp.

The fuselage was given ONE coat of coloured dope and one coat of banana oil. The banana oil is diesel proof (but not methanol proof) and is preferable to the regular fuel proofers, for repairs can be made more easily.

For the dubious, there are several reasons why the engine is side mounted :—

1. Easier to start. 2. Accessibility of needle valve and compression lever. 3. The slipstream effect blows the exhaust gases away from the wing and the pylon.

Now assuming the model is built, the C.G. in the correct position—everything perfect! It must fly, you think! But a word of warning, dear friend, be very careful when trimming the model, or you may end up with a pile of wood. Get the glide correct first. The initial power flights should be made with the motor running slow and the timer set for 5 secs. Increase engine speed as confidence grows, but stick to 5 sec. run.

Several methods of trimming power models have been suggested in other articles. There is right climb, right glide (which I use), right climb, left glide, and similar variations for left climb. Some writers advocate downthrust by the handful (I use about 2°), others say use left side thrust, others say .... Well! You've most likely read the articles. The fact remains that to trim a power duration model, patience is required, and yet more patience.

Just to cheer up prospective builders, it may be recorded that after the initial terrors of trimming the " Jaded Maid " were overcome, the original has remained in almost perfect trim since last March (1950), and that's over a year now!

The nose of the model may be varied to suit most engines. The writer suggests that only diesels up to 2·5 c.c. and glow motors up to 3·5 c.c. be used for power, otherwise the builder may find himself with a load of trouble.

Approximate weights of components of original :—

Wing	2½ ozs.
Fuselage (tank, timer, fin, etc.) ..	3½ ozs.
Tailplane	¾ oz.
Engine, propeller, back formers, etc.	5¼ ozs.
	12 ozs.

Contest Flying

Before the contest, preferably on the preceding Saturday, take the model out and make sure the trim has not altered. Using a short motor run (5 sec.), " check " fly with the engine flat out . . . if correct, put the model away. Do *not* fly for the fun of it, if you want the model to have a long contest life.

Carefully listen to the weather forecast on the morning of the competition (especially for all day events) as the usual wind and rain may be due for the morning or afternoon (or both !). Flying at the right time of the day often wins a contest.

Now for your flights. The engine should already be tuned—never alter the needle valve during the day. Make sure the timer is set for the required motor run. You're ready, now . . . you hope! But no—what of your helper? Is he genned up? Is there any mobile transport available for chasing (very necessary nowadays)? Right! Proceed to the take-off point, obtain timekeepers—preferably those known to be reliable! Light the D.T. fuse (5 mins. to inch variety, if obtainable). Start the motor, after setting the timer, cut-out, etc., by priming, choking, etc. If the compression is reduced for starting, return to running position before launching.

Don't forget, now, that you're ready to set the D.T. fuse for 5 mins. and release the timer before letting go.

And the best of luck!

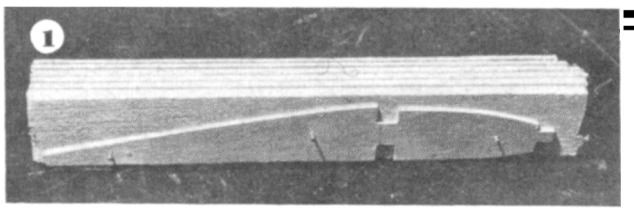
Designer Marcus in characteristic attitude, launching prototype Maid for a test. Less span, and longer port tail-half are differences. Wheel or bent hoop are alternative u/c's.

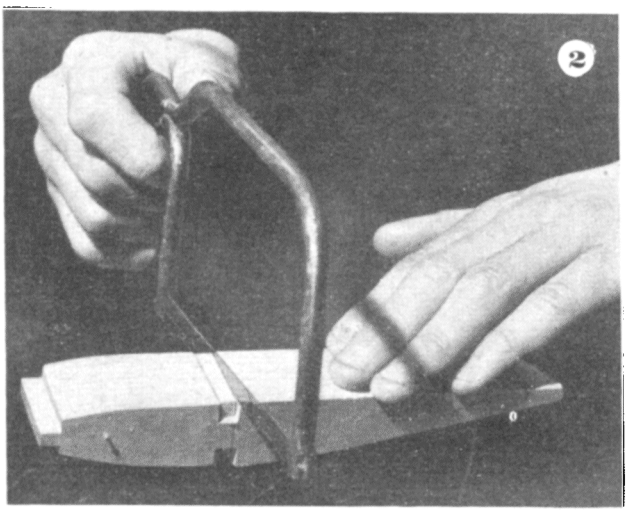
ESPECIALLY FOR THE BEGINNER Part XVI

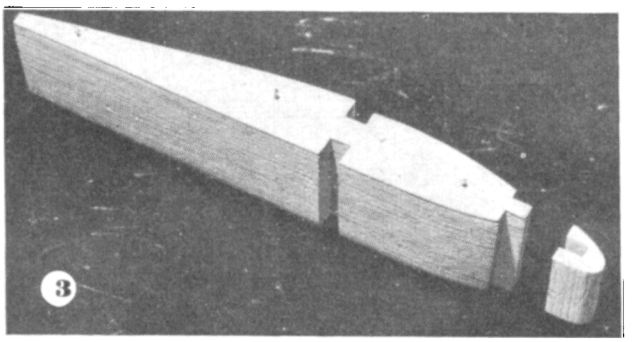
DESIGNED BY ROLAND SCOTT

by the Rev. F. Callon

THE WALTHEW A/2 GLIDER







AS was stated in last month's "Especially for the Beginner" article, this month is intended for beginners; but it is not supposed to be a first model. As a third or fourth model, however, it will offer little difficulty, although owing to its relatively large size you may get the idea that it will *never* be finished! The model used for illustrating this article was built at top speed using every available spare minute and some extremely late nights (followed by hectic mornings!) and took exactly a week, which shows that it can't be very complicated. But if it is your first large model you will probably find it rather a slow job; the result, though, will be more than worth the trouble.

Scattered through these notes you will find one or two suggestions which experience has shown to be improvements, though only in slight details, on the original design. For instance it was found that the wing was held more firmly in position when the dowels were set slightly nearer together—*inside* the adjacent vertical spacers instead of outside them. Again, the underfin would be much stronger if laminated from cross-grained 1/16 in. sheet; on the original this unit snapped off on a hand-glide in gusty weather just before the outdoor photographs were taken, the result being a slight loss in directional stability—*i.e.* a tendency to wander from side to side, the direction of the flight being affected by any unexpected puffs of wind.

Cutting out the Ribs The method here is identical both for tailplane and wing, so we will deal with the latter only. First trace the rib outline twice onto 1/16 in. plywood. If you are using a ready shaped grooved L.E., then the forward end of the ribs will have to be tongued (as in the illustrations); if a ½ in. square spar is used, it will have to be straight. Cut out the ply master ribs, and sand them to a uniform accuracy. Test the spar holes with the correct size of spar, and see that the tongue fits snugly into the L.E. groove.

Now cut up two full sheets (36 in. × 3 in.) of 1/16 balsa into rectangles, slightly larger than the rib outline, and sandwich them between the two master ribs with pins

A 50" WINGSPAN BEGINNERS A/2 SAILPLANE.

THE WALTHEW A/2.

DESIGNED BY
ROLAND SCOTT
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3/6

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

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

DATA.	
WING SPAN	50"
" AREA	380 sq"
TAILPLANE SPAN	21½"
" AREA	128 sq"
TOTAL HORIZONTAL AREA	508 sq"
FUSELAGE O/ LENGTH	34¼"
MAX. X SECTION	8·4 sq"
C.G. POSITION	30⅝" WING CHORD
WEIGHT	14½ OZS

NOTE:- STEAM BEND LONGERONS FORWARD OF FRONT WING DOWEL.

MATERIALS REQUIRED.

STRIP	SHEET	SMALL PIECE OF CELLULOID
10 STRIPS OF 3/16" x 3/16" x 36" HARD BALSA	5 SHEETS OF 1/16" x 3" x 36" MED BALSA	10" OF 3/16" DIA DOWLING
5 " " 1/4" x 1/4" x 36" "	1 " " 1/8" x 3" x 36" "	6" x 1" OF 1/4" SHEET BALSA
2 " " 1/2" x 1/2" x 36" MED "	1 " " 3/16" x 3" x 36" "	7½" x 2" OF 1/2" " "
1 " " 3/16" x 3/4" x 21" HARD "	MISCELLANEOUS	8" OF 16 S.W.G. PIANO WIRE
2 " " 3/16" x 1" x 36" " "	4" x 8" OF 1/8" PLY	3" OF 18 S.W.G. PIANO WIRE

HARDWOOD PLUG

NOSE BLOCK LAMINATED FROM 10 PIECES OF 3/16" SHEET CROSS-GRAINED. HOLLOW FROM PIECE 2-4 TO TAKE LEAD BALLAST

1/16" SHEET LET IN FIRST BAY

3/16" SHEET GUSSET

3/16" DIA DOWELS FRONT & REAR

1/8" SHEET FIN

HOLE FOR RUBBER BANDS WHICH IN TURN PASS AROUND DOWEL IN FUSELAGE

THIN COPPER FOIL OR TIN TRIM TAB

3/16" SQ

RUBBER BANDS

3/16" SHEET LET IN

3/16" DIA DOWEL

1/8" SHEET LET IN BETWEEN LOWER LONGERONS

1/8" SHEET LOWER FIN CEMENTED TO SHEET BETWEEN LOWER LONGERONS

SMALL STRIP OF BAMB

18 S.W.G. HOOKS

1/8" SHEET TAILPLANE PLATFORM.

FORM TOW HOOKS FROM 16 S.W.G. PIANO WIRE BIND & CEMENT TO LONGERONS.

WINGSPAR DIHEDRAL KEEPER. 1/8" PLY

WING L.E. DIHEDRAL KEEPER. 1/8" PLY

ALL LONGERONS UPRIGHTS & CROSS STRUTS FROM 3/16" SQ HARD

SPLIT SMALL PIECE OF 3/16" DIA DOWEL DOWN CENTRE & CEMENT EACH HALF TO LOWER SURFACE OF L.E. & T.E. NOTE-THAT L.E. PIECE IS OFF-SET 1/8" TO STARBOARD.

GROOVE PLATFORM FRONT & REAR TO TAKE 3/16" DIA SPLIT DOWELS WHICH ARE CEMENTED TO UNDERSIDE OF TAILPLANE

TYPICAL TAILPLANE RIB. 12 OFF 1/16" SHEET. 2 OFF 1/8" SHEET.

STARBOARD WING PANEL

1/2" SHEET WING TIP CARVE TO WING SECTION

1/4" SHEET TAILPLANE TIP CARVE TO TAILPLANE SECTION

3/16" SQ TOP SPAR

1/4" SQ L.E.

3/16" SHEET GUSSETS

3/16" SHEET GUSSETS

3/16" X 1" T.E.

3/16" SQ BOTTOM SPAR

DOTTED LINE SHOWS AMOUNT OF L.E. TO BE CARVED AWAY IF USING 1/2 SQ STRIP

1/8" SHEET CENTRE RIBS

SLOT FOR FIN

1/8" SHEET GUSSET

TYPICAL WING RIB. 28 OFF 1/16" SHEET

CUT KEY OFF FLUSH IF USING 1/2 SQ L.E.

L.E. DIHEDRAL KEEPER

MAIN SPAR DIHEDRAL KEEPER

1/4" SQ SPAR TOP & BOTTOM

3/16" X 3/4" T.E.

1/2" X 3/8" PRE-SHAPED L.E. OR 1/2" SQ NORMAL STRIP

1/8" SHEET GUSSET

1/16" SHEET TOP ONLY

PORT WING PANEL

1/16" SHEET TOP ONLY

3/16" SHEET GUSSET

CELLULOID REINFORCEMENT STRIP

3/16" X 1" T.E.

pushed through from both sides. Since the pin points must reach comfortably past the middle of the sandwich, you will need extra long pins, or failing this, do the job in two instalments—thirteen ribs at a time. Carve and sand the balsa rectangles to follow the outline of the master ribs. Fig. 1 shows the rectangles pinned in place between the ply ribs.

Use a small hacksaw to cut out the spar holes (see Fig. 2) and finish off neatly with a file and smooth sandpaper—see Fig. 3, which also shows a cross-section of the L.E.

As there are no formers to worry about, we can go straight on to the fuselage.

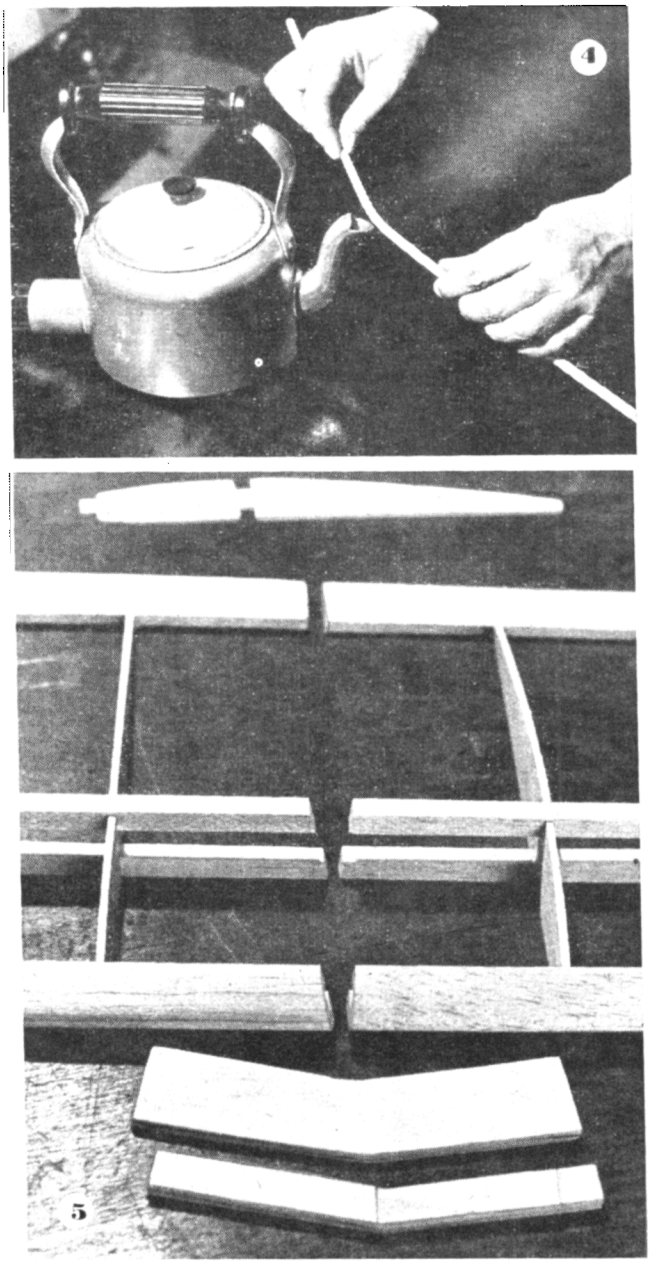
The Fuselage The 3/16 in. square longerons should be really hard stock, which means that the curves at the nose will have to be steamed more or less to shape before pinning down. Fig. 4 shows the general set-up. If the spar is held stationary in the jet of steam from the kettle spout, a sharp curve will result, so move it to and fro as pressure is applied, comparing the spar with the plan every so often as you go along.

The 3/16 in. sheeting at the extreme rear of the fuselage is best done as follows: first, cut the sheet accurately to shape, then cement it against the lower longeron which carries right on to the tail. The upper length of 3/16 in. square spar which passes along immediately below the tailplane platform can then be cemented against the top of the sheet. Build the second side of the fuselage over the first; remove from the plan when dry; sand and slice apart.

Join the two sides together in the usual manner, sheet in the front panel all the way round, and add the wing dowels and tailplane platform, having first cut out the grooves which are to take the split 3/16 in. dowel keys, later to be cemented to the underside of the tailplane. Since the underfin will come in for some hard knocks on landing, it is also advisable to sheet in the triangular space between the last bottom spacer and the end of the fuselage directly beneath the tailplane platform, with $\frac{1}{8}$ in. sheet. This sheeting should not be covered before the underfin has been cemented in place, so as to ensure the cement getting the best possible grip. Finally add the single rear dowel round which the rubber bands working the tip-up tailplane will pass.

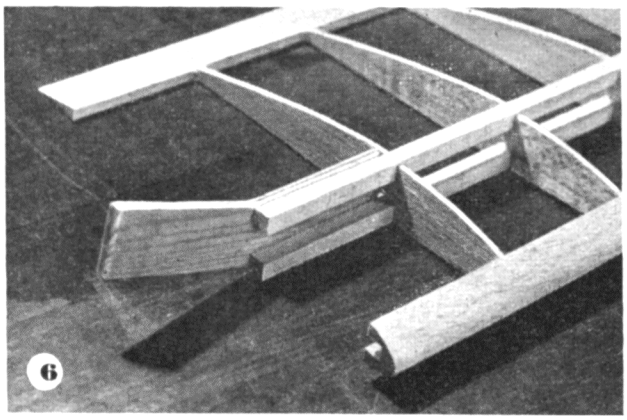
The Nose Block Cut the ten rectangles from 3/16 in. sheet slightly on the large side to start with. With the grain running in opposite directions on alternate pieces, lightly cement them together in a block, putting a single blob of cement in the centre of each rectangle, and carve and sand roughly to follow the curve of the fuselage longerons. Then slice the pieces apart and cut rectangles out of the centres of number 2 to six going from the front of the fuselage towards the nose. Since quite a lot of weight will have to be inserted into the nose block, these rectangular apertures will have to be as large as possible—up to $\frac{1}{4}$ in. off the edges of the pieces of sheet. On the original, the centre was also cut out of the largest sheet (number 1), and a piece of 1/16 sheet cemented between it and the front of the fuselage when the block was put in position.

The laminations are now reassembled and cemented firmly together under the pressure of a vice or some sort of weight, and left to dry for several hours. The block is then cemented to the front of the fuselage, and a $\frac{1}{4}$ in. hole drilled into the top for the insertion of the lead shot. Final sanding should be first with rough, then with very smooth sandpaper.



The Wing The trailing edge will have to be cut from 3/16 in hard sheet and carved and sanded to shape. Lay out the T.E. and lower mainspar for the flat centre-section over the plan and add the ribs, making sure that the two middle ribs have been cut down 1/16 in. to leave room for the sheeting. The top spar is now added, and finally the L.E. The two tips are built separately in the same manner. Note that the ribs at either end of the flat centre section are the same two ribs as those which occur at the inner ends of the tip sections, and that these ribs must not be added until after the dihedral joint has been made.

The Dihedral Joints Trace the dihedral braces —two of each width—carefully onto ⅛ in. plywood, cut them out with a hacksaw, and sand the edges smooth. Wrap a piece of sandpaper round a large sanding block; it should be a couple of inches longer than the size of the wing chord. With this the L.E., mainspars, and T.E. can all be sanded at the same time to the correct angle needed between the ends of the centre section and the tip sections, as is shown in Fig. 5. Check carefully that these joints meet flush with each other when the tip is raised to the correct height. The joints are then made in the following way :—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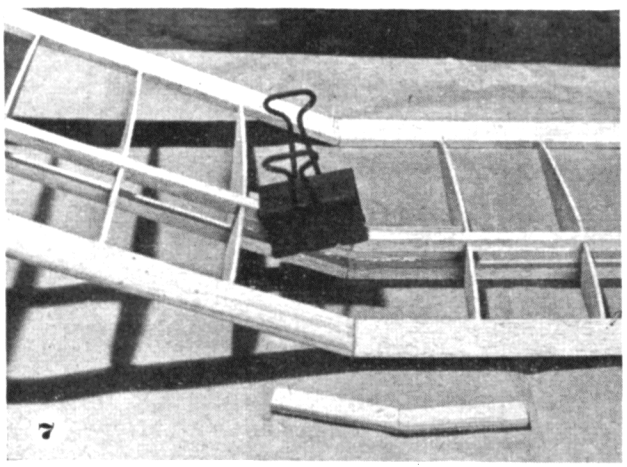
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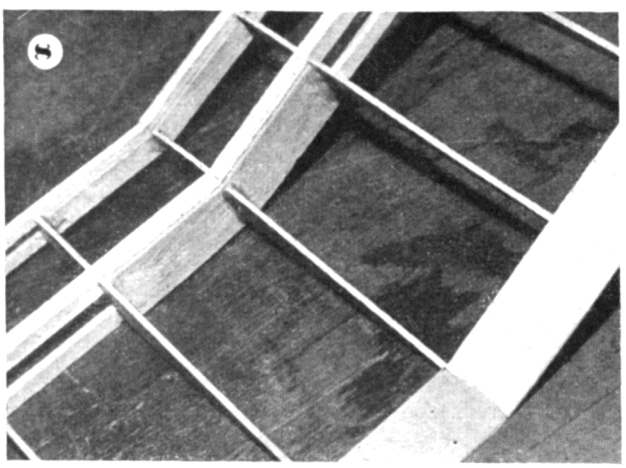
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1. Cement one of the wide braces against the ends of the mainspars of the centre section—Fig. 6.

2. Having pre-cemented all the ends—L.E., T.E., and spars—bring the tip into position and hold the ends of its spars firmly in contact with the projecting half of the dihedral brace by a strong paper-clip or some such method—see Fig. 7.

3. Cement the thinner dihedral brace against the inside of the leading edge across the joint.

4. Cut the dihedral joint rib in two, and having removed ⅛ in. from the forward end of each part (to leave room for the ply braces), fit the rib in place—see Fig. 8.

5. Add 3/16 in. gussets between each side of the joint rib and the T.E.

6. Add 1/16 in. leading edge and centre panel sheeting.

Tail Units The tailplane is perfectly straightforward and will offer no difficulty. Since the fin is six inches long and the grain has to run vertically, two pieces of 3 in. wide sheet will have to be cemented end on together. Pin one piece down over greaseproof paper, cement both edges, and slide the second piece up against it, pinning this also in place to dry. When the joint has set, trace the fin outline onto the sheet and cut it out. Slots will now have to be cut out of the lower edge of the fin to slip over the two tailplane spars, and the front of the fin will also have to be cut away to fit over the L.E. But do not cement the fin in place between the two centre ⅛ in. ribs of the T.P. until after this unit has been covered and is ready for doping; the tissue between these ribs can easily be trimmed away with a blade. (Note that the 3/16 in. T.E. may have to be sanded down somewhat to fit the ends of the tailplane ribs.)

FINAL DETAILS

We are now almost ready to begin covering, but there are still one or two small points to be attended to. Tow hooks must be bent to shape, bound and cemented to the starboard lower longeron at the places indicated. Try to get the slight curve correct in the horizontal part of the hooks; this helps to prevent the towline ring from slipping off before it should do.

Cement rectangles of soft ⅛ in. sheet (¼ in. for the tailplane) to the tips, and when dry, carve and sand to shape. The centre section of the wing must also be sheeted, the grain running parallel to the length of the wing. Check over all joints, and see that no gussets have been left out: there should be one at every corner of both wing and tailplane. A final sanding all over with very smooth sandpaper will make for neater covering. Fig. 9 shows the model at this stage; the fin has been loosely slipped into position for the sake of the photograph.

Covering Heavyweight Modelspan should be used. On the original, the undersurfaces were light blue, sides and upper surfaces white apart from the fin which was also light blue. Paste or dope the tissue onto both fin and underfin; this improves them in strength as well as appearance. When covered, they are cemented in place.

Doping Two coats of clear dope should be applied to the fuselage and one to the rest of the model, this being

followed up with an over-all coat of thin banana oil. The wing can be doped all over as a single unit, the centre section only being pinned down flat to dry. The tailplane too should be pinned down. If the T.E. of the wing is made from really hard balsa, there will be no need to add the strip of celluloid over its upper side at the centre; this is intended to prevent the rubber bands from biting into the wood. If celluloid has to be added this should be done before doping, and cement should be used for the job.

D/T. Arrangement This was dealt with in full last month, so there is no call for a repetition. All that has to be done is to drill a 3/16 in. hole through the fin at the point indicated, and to bend and insert the two rear retaining hooks into the T.E. of the fin and the end of the lower longerons at the tail.

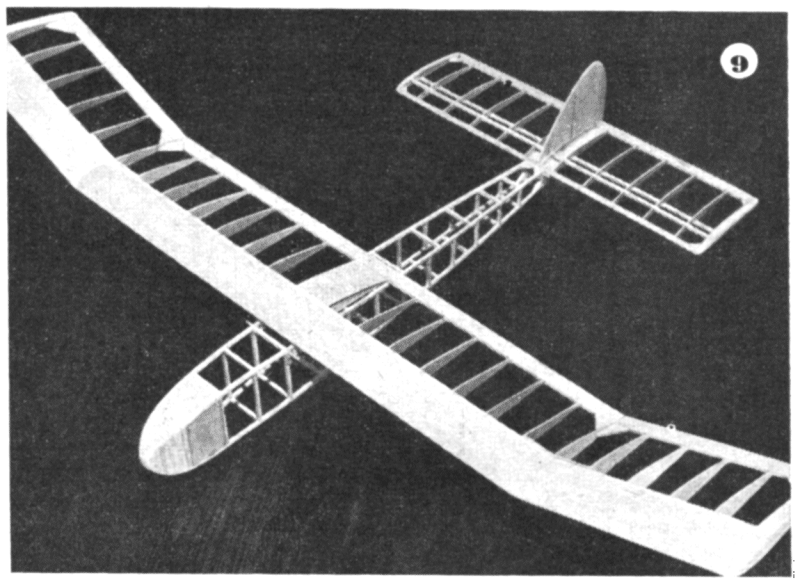
TRIMMING ARRANGEMENT

The entire tail unit is permanently offset to give a slight right turn, by cementing the front tailplane key (split dowel) under the L.E. of the tailplane $\frac{1}{8}$ in. to the starboard side—just off-centre. The rear key should be immediately below the fin. Cut the trim tab from thin copper foil or tin; open up the T.E. of the fin with a blade, and push the tab home. The joint may be strengthened by the addition of a gusset of cement all the way down both sides.

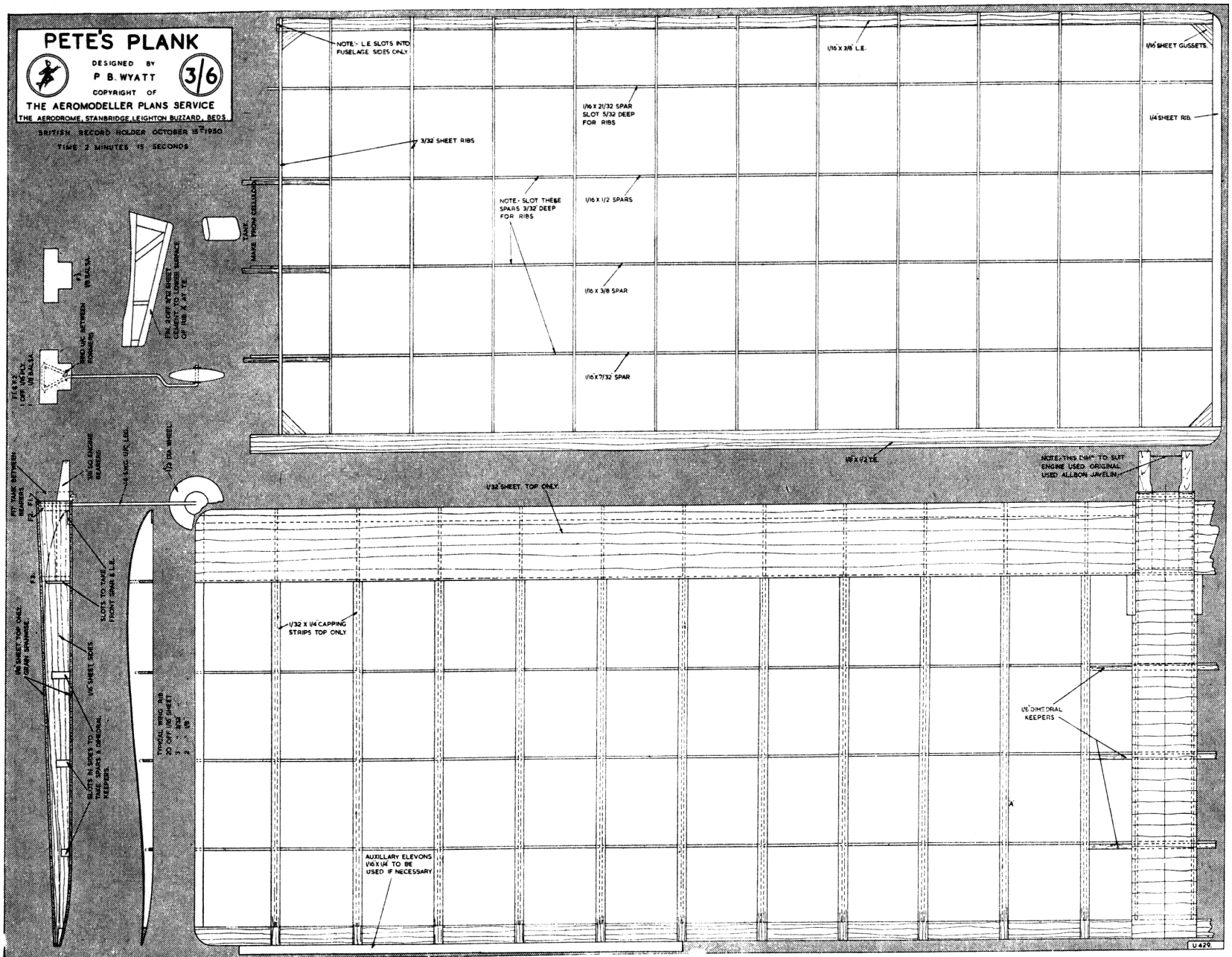
FLYING THE WALTHEW A/2

Add lead shot to the nose block until the centre of gravity approaches a point below the thickest part of the wing chord. With a model of this weight the flying speed is fairly high, so hand launches should not be too gentle—see where the designer Roland Scott (complete with Rolliflex camera!) is having a go. A flat glide of about twenty yards should be aimed at, and the tab adjusted to give a very slight right hand turn.

Your towline will have to be something much stronger than ordinary cotton, for the strain, once the nose lifts, is considerable. All three hooks have been used successfully, but start with the front one for safety's sake. In very calm weather when the rear hook has to be used, be careful to reduce the pull should the model swing over to one side, and only take the full strain when the nose points well upwards. Launch on a slight *right* turn, otherwise height will be lost while the model finds its true direction again.



Simplicity of the Walthew design offers the less experienced modeller the opportunity of entering the international contest field. Constant practice throughout this season with the Walthew should see you prepared for the 1952 eliminations.
Full sized plans, see ¼-scale reproduction page 278, are available from A.P.S. in the usual way.



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PETE'S PLANK

A 54 INCH SPAN FLYING PLANK

Build this British Record Holder

By **PETE WYATT**

Member Ipswich M.A.C. . . . . Aged 20 . . . . Engineering Apprentice . . . . An accomplished flier of A/2, Power Duration and Tailless types . . . . Winner International Power Event, Eaton Bray 1950 . . . Has only one hobby—Aeromodelling, and more Aeromodelling.

Huge 650 sq. ins. Plank can be judged for size by comparison with designer P. B. Wyatt. Despite the size, Pete motors between E.D. Bee and Allbon Javelin. Lower photo shows fin arrangement.

THE very first model that Peter Wyatt built and flew successfully was the tailless R.F.L.G. 53. There is little doubt that this has given him a good start in aeromodelling, for as current holder of the British record for powered tailless models, and always a leading competitor at power duration contests, Peter Wyatt has become an established expert.

PETE'S PLANK is the ninth of a series. It established the British record of 2 mins. 15 secs. on the 15th October last, at his home town, Ipswich. Earlier versions have exceeded 4 mins. on 30 seconds motor run, and could easily have been used to try and beat the world's record which allows unlimited motor runs. However, Pete secs little point in such an effort, and is content with this very high performance ninth design.

Incorporating a very novel and necessary d/t, we recommend this design to all tailless enthusiasts as an experiment guaranteed to be successful. Note the absence of sweep-back, and the diminutive elevons. What could be simpler ?

Building Instructions

Shape 1/16 in. ply template and cut 20, 1/16 in. ribs, 4, 3/32 in. ribs from medium balsa and 2, ¼ in. ribs from soft balsa. Pin together and sand to shape. Notch for spars, noting that slots are not as deep as spars.

Make spars from 1/16 in. hard balsa and slot for ribs. Assemble ribs on spars at 2½ in. spacing, except for centre ribs which are 1 5/8 in. apart. Place two halves of wing together at correct dihedral angle, and place dihedral braces on spars 2, 3 and 4. Fit ⅛ × 1/8 in T.E.

Place 1/16 in. fuselage sides between centre ribs and fit 1/16 × 3/8 in. leading edge. Durofix engine bearers to fuselage sides, blind undercart to F1 and place F1, F2 and F3 in position. Sheet top and bottom of fuselage with 1/16 in. sheet and sheet and cap strip wings with 1/32 in. sheet balsa.

The original plane was covered in heavy Modelspan. After doping, give fuselage, and wing as far as the fins, a coat of banana oil to keep out diesel fuel. Fuselage can be finished off with a Mercury cockpit cover if required. The engine bearers can be carved to suit the engine. The original had an inverted Javelin 1·49 c.c. diesel with home-made tank formed from a piece of sheet celluloid. The E.D. Bee would also be an ideal power unit.

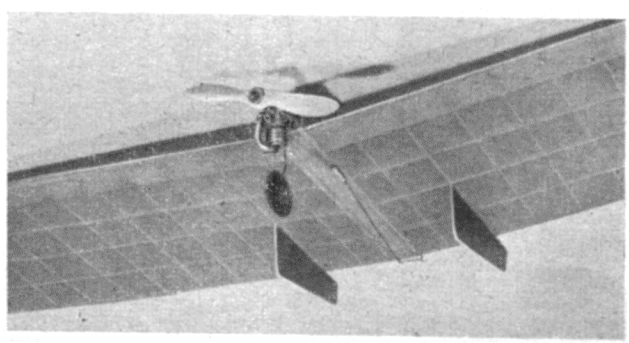
The fins are added after the wings are covered. They do not tend to get damaged, as the plane turns over in a bad landing.

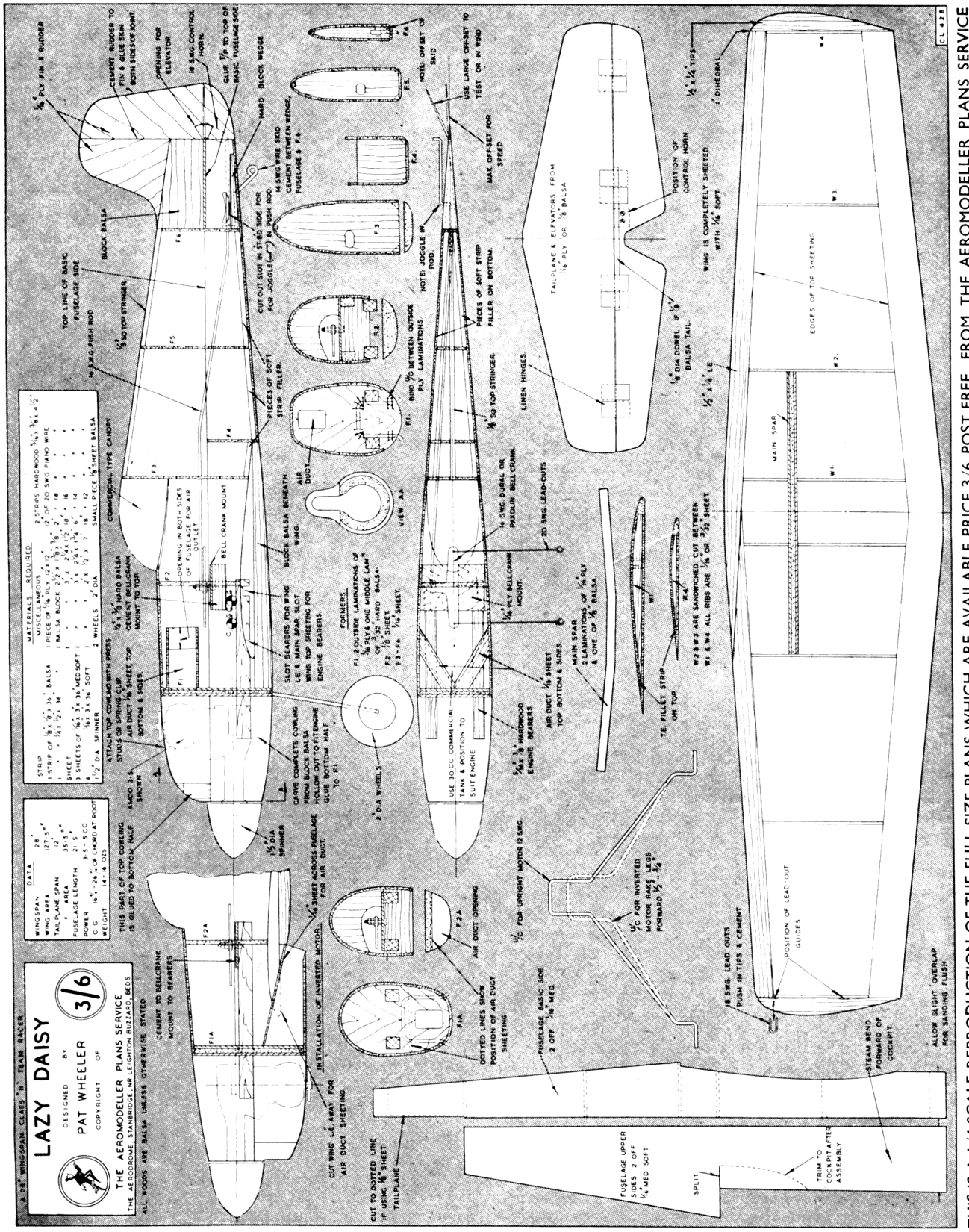
Trimming

The required downthrust is approximately as shown. No sidethrust was found to be necessary. The plank will very likely be found to be nose heavy and trim is pro duced by using auxiliary elevons as shown. First flights were made with the engine throttled down; but a reversed prop. could have been used. It is better to R.O.G. than hand launch, since on low power there is a tendency for the plank to drop from the hand. A slight left turn on power and glide is safe, there being a tendency to spiral dive to the right.

Note

Do not have any hinged trimming tabs which can move unnoticed. All tabs should be well cemented before flying.




LAZY DAISY
DESIGNED BY PAT WHEELER
3/6
COPYRIGHT OF THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
A 28" WINGSPAN CLASS 'B' TEAM RACER
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED
DATA
WINGSPAN 28"
WING AREA 127.5 sq"
TAIL PLANE SPAN 12"
" AREA 31.5 "
FUSELAGE LENGTH 21.5"
POWER 5 CC
C/G 16" - 24" OF CHORD AT ROOT
WEIGHT 44 to 0Z5
MATERIALS REQUIRED
STRIP
1 STRIP OF 1/8 x 1/2 x 36" BALSA
1 " " 1/16 x 1/2 x 36"
SHEET
3 SHEETS OF 1/16 x 3" x 36" MED SOFT
1/16 x 3" x 36" SOFT
4 1/2" DIA SPINNER
MISCELLANEOUS
1 PIECE OF 1/16 PLY 12" x 12"
1 BALSA BLOCK 2 1/2" x 1 1/2" x 1 1/2"
2 WHEELS 2" DIA
2 STRIPS HARDWOOD 1/16 x 3/16 x 4 1/2"
12" OF 20 SWG PIANO WIRE
" " " " 18"
" " " " 16"
" " " " 14"
" " " " 12"
SMALL PIECE 1/8 SHEET BALSA
TOP LINE OF BASIC FUSELAGE SIDE
BLOCK BALSA
1/8" SQ TOP STRINGER
14 SWG PUSH ROD
CUT OUT SLOT IN ST-RD SIDE FOR 14 SWG PUSH ROD
HARD BLOCK WEDGE
14 SWG WIRE SKID CEMENT BETWEEN WEDGE, FUSELAGE & F4.
CEMENT RUDDER TO FIN & GLUE SKIN BOTH SIDES OF JOINT
OPENING FOR ELEVATOR
18 SWG CONTROL HORN
GLUE 1/8 TO TOP OF BASIC FUSELAGE SIDE
1/16 PLY FIN & RUDDER
COMMERCIAL TYPE CANOPY
PIECES OF SOFT STRIP FILLER.
BIND 1/8 BETWEEN OUTSIDE PLY LAMINATIONS
NOTED JOGGLE IN ROD.
NOTED OFF SET OF SKID
USE LARGE OFF-SET TO TEST OR IN WIND
MAX OFF-SET FOR SPEED
1/8 SQ TOP STRINGER
PIECES OF SOFT STRIP FILLER ON BOTTOM
LINEN HINGES
TAIL-PLANE & ELEVATORS FROM 1/16 PLY OR 1/8 BALSA
POSITION OF CONTROL HORN
1/8 DIA DOWEL x 1/2" BALSA TAIL
1/2 x 1/4 LE
WING IS COMPLETELY SHEETED WITH 1/16 SOFT
1/2 x 1/4 TIPS
1° DIHEDRAL
EDGES OF TOP SHEETING
MAIN SPAR
W1
W2
W3
W4
F1
F1A
F2
F2A
F3
F4
F5
F6
F7
F8
THIS PART OF TOP COWLING IS GLUED TO BOTTOM HALF
ATTACH TOP COWLING WITH PRESS STUDS OR SPRING CLIP
AIR DUCT 1/16 SHEET TOP BOTTOM & SIDES.
AMCO 3-5 SHOWN
1/2 DIA SPINNER
CEMENT TO BELLCRANK MOUNT TO BEARERS
CARVE COMPLETE COWLING FROM BLOCK BALSA HOLLOW OUT TO FIT ENGINE GLUE BOTTOM HALF TO FIT.
2" DIA WHEELS
1/16 SHEET ACROSS FUSELAGE FOR AIR DUCT.
INSTALLATION OF INVERTED MOTOR
CUT WING L.E. AWAY FOR AIR DUCT SHEETING
CUT TO DOTTED LINE IF USING 1/8 SHEET TAIL-PLANE
DOTTED LINES SHOW POSITION OF AIR DUCT SHEETING
AIR DUCT OPENING
FUSELAGE BASIC SIDE 2 OFF 1/16 MED.
1/16 FOR UPRIGHT MOTOR 12 SWG.
1/16 FOR INVERTED MOTOR RAISE LEGS FORWARD 1/2 x 1/4
1/8 SWG LEAD OUTS PUSH IN TIPS & CEMENT
POSITION OF LEAD OUT GUIDES
STEAM BEND FORWARD OF COCKPIT
ALLOW SLIGHT OVERLAP FOR SANDING FLUSH
FUSELAGE UPPER SIDES 2 OFF 1/4 MED SOFT
SPLIT
TRIM TO COCKPIT AFTER ASSEMBLY
SLOT BEARERS FOR WING LE & MAIN SPAR. SLOT WING TOP SHEETING FOR ENGINE BEARERS.
BLOCK BALSA BENEATH WING.
AIR DUCT
FORMERS.
F1, 2 OUTER LAMINATIONS OF 1/16 PLY ONE MIDDLE LAM OF 1/32 HARD BALSA.
F2, 3, 5, 6, 7, 8 1/16 SHEET
F3 - F6 1/16 SHEET
VIEW AA.
OPENING IN BOTH SIDES OF FUSELAGE FOR AIR OUTLET
BELL CRANK MOUNT
14 SWG DUBAL OR PADDLE BELL CRANK
20 SWG LEAD-OUTS
1/16 PLY BELL CRANK MOUNT
AIR DUCT 1/16 SHEET TOP BOTTOM & SIDES.
MAIN SPAR 2 LAMINATIONS OF 1/16 PLY & ONE OF 1/8 BALSA.
5/64 x 3/8 HARDWOOD ENGINE BEARERS
USE 30 CC COMMERCIAL TANK & POSITION TO SUIT ENGINE
T.E. FILLET STRIP ON TOP
W2 & W3 ARE SANDWICHED CUT BETWEEN W1 & W4 ALL RIBS ARE 1/16 OR 3/32 SHEET
THIS IS A 1/4 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 3/6 POST FREE, FROM THE AEROMODELLER PLANS SERVICE
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LAZY DAISY MK. III

A SOUTH AFRICAN CLASS B TEAM RACER

By PAT WHEELER

Committee member, S. African Model Aircraft Club (Cape Town)..... Aged 31..... Married, with one son..... Trained at Vickers, Brooklands, 6 years R.A.F. as Fitter 11A.... Emigrated South Africa 1946..... Now Draughtsman with City Corporation..... Other hobbies, photography and cars.

LATE last year, Pat Wheeler built Lazy Daisy Mk. I and based the layout on an earlier sports model, the "Fury Screwball". This first racer had a low aspect ratio wing with a 7 in. root chord, and an Amco 3·5 diesel mounted inverted for better appearance. Baulky starting influenced a change in design, so Mk. II appeared with an upright motor. Starting then proved easy, and the handling characteristics aroused fellow Cape Town clubsters to compare it with the proverbial dream.

With the progress of experience, and showing how far-away modellers keep abreast of our own British findings, Pat Wheeler decided to make a Mark III as presented here, and incorporated a higher aspect ratio wing based on facts and figures in the AEROMODELLER "It's designed for You" feature. He also made an earnest attempt to clip the weight down.

Thus lightened to an all-up weight of 14 ounces with the Amco 3·5, Lazy Daisy was soon lapping at over 70 m.p.h. using a locally produced 9 in. × 8 in. prop. At the time of writing, Pat was in the throes of fitting a Dooling 29 to Mk. III with hopes of raising the flying speed over the 100 m.p.h. hurdle. And judging by its slim lines and light but simple structure, installation of any 5 c.c. first-class motor, either upright or inverted, should push Lazy Daisy into the nineties without effort.

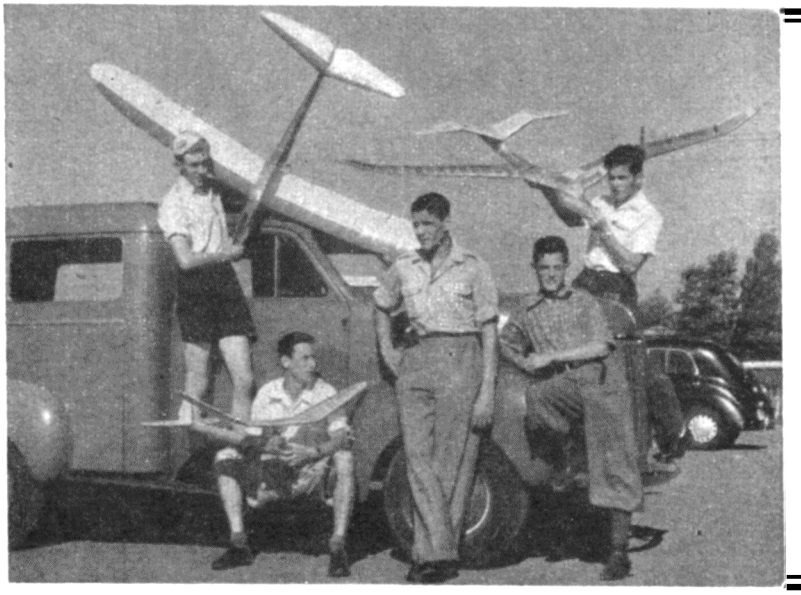
... We almost forgot!! This is but an eight evening job, no planking and no tissue covering—and of course, it complies with all the '51 S.M.A.E. Team Racer regulations. What more could a racer want?

BUILDING

Wings: Cut lower surface from butted 3 in. sheets, dope and steam at cranking position for 1 in. dihedral at tips. Pin to a board, with c/s flat and tips propped up. Add L.E., front halves of R1 and R.2, R.3, R.4. Make up and fit laminated mainspar. Unpin and lay one side flat, then attach steamed upper surface, trailing edge filler strip and tip piece. Repeat for other half, joining the upper surfaces with a good butt joint and cement skin, and not forgetting the tip guides for the lead-outs. Shape the edges, sand down and dope on paper protection.

Fuselage: Assemble basic sides to F.3, 4, 5, 6. Add top longeron, then attach steamed upper sides. Make up the firewall/undercarriage unit, attach motor mounts and F.2. Add bellcrank complete with overlength push rod and short lead-outs. Fix these two units together, lining up the thrustline carefully. Assemble tailplane to elevator using tape hinges, fit horn, bend push rod and cement tailplane in place with bellcrank and elevator neutral. Fix fin and rudder after scoring and making cement skin for rudder movement, finish tail end with fairing blocks and tailskid. Fit wings in position, using plenty of cement. Part of the centre section leading edge will have to be cut away for the inverted motor duct, or slots cut into the top for some upright motor mounts. Add scrap strips and lower fuselage sheeting, then round off. Fit engine, tank and spinner, add wrapped sheet between firewall and F.2, carve cowl from block. A pilot can be formed with Plasticine, hardened afterwards with varnish. Add pilot, canopy and wheels after decorating with colour dope. Original was Eggshell blue with Maroon trim. Okay?—now go to it racers!

Finished with Dulux Eggshell blue, and maroon trim, Mk. II Lazy Daisy has an upright mounted Amco 3·5 Diesel. Upper Photo shows designer Wheeler and his original; note 1¼" wheels, which should be replaced with 2" dia. for British rules.



The ART OF TOW-LAUNCHING SAILPLANES

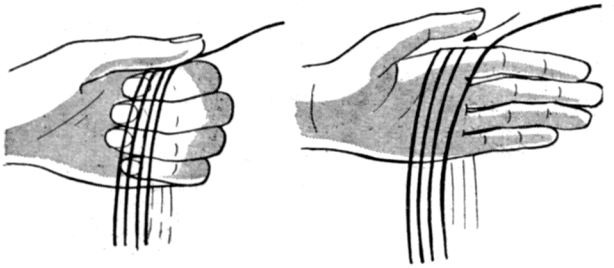
BY P. J. VRIEND

well-known Dutch Sailplane exponent who is standing on the left in the photo with fellow members of the 's-Hertogenbosch M.A.C.

ONE need not be particularly observant to notice the striking lack of training and experience that marks many an aeromodeller when it comes to making a tow-line launch. The percentage of models to reach the maximum height permitted by the tow-line is heart-breakingly small and the number of frustrated attempts innumerable. I think it is sad that builders have taken such pains to make a graceful and fine model, yet at the same time seem to regard one of the most important points, the launch, as something not worth bothering about. It is ridiculous that competitors should congratulate themselves and even shout with joy, when their models have released gently at the full height! The Achilles' heel of many a model/modeller combination is more often than not, the tow-line launch.

I need not explain to any contest flyer what the launch really means; fifty per cent. of one's chances are decided by the launch. You will, therefore, agree that the art of launching your model is worth your full attention and interest. In fact, your contest-reliability is just what your starting-technique is worth.

Keep the loops which may have to be paid out loosely in the hand, pressing the thumb on them as a brake. Let one go at a time (right). Do not shut the hand tight so that the line must pull itself free otherwise you will be in a tangle as soon as you start paying out (left).



Stability and the Launch

A model may be regarded as being stable in two senses: in flight and during the launch. The connection between the two is a very loose one and it is by no means certain that a model which is stable in free flight will also be easy to tow up straight. I am not going to assert that it is impossible to make a perfect tow-up with a model that yaws this way and that. I would, therefore, like to give the following definition: a good launch is any launch where the model reaches maximum altitude, whatever the path it may follow. I consider a model to be stable in the launch when the yawing movements to right and left are equal. The absolute straight tow-up is obviously ideal.

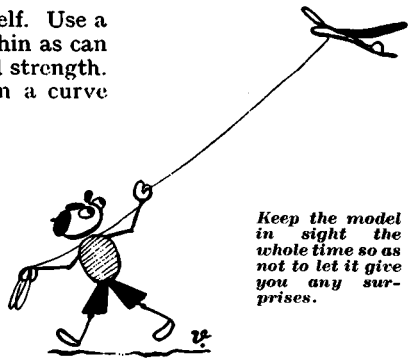
Which types of models have the best chances to fulfil this requirement? The answer can be short: models with moderate sweep-back (4–5 degrees), dihedral 1 in 7, moderately sized vertical area aft, distance between centre of pressure of wing and centre of pressure of tail-plane about 3½ to 4 times the mean wing-chord.

Inspect the ground carefully before you start running. This is not a cross-country.

Let us now see how factors outside the model affect the launch. First the surface of the flying ground. Irregularities of the terrain, nearby woods and bushes, these will cause quite pronounced changes in wind-direction and strength at low levels. It will be desirable to keep a certain length of tow-line in reserve in order to anticipate sudden changes in the pull exerted by the model. The sketch shows how this should be done. The spare length is held in one hand in the form of loops and a loop is paid out smoothly by the other hand as and when needed. Never suddenly let out extra line, for that defeats one of the major demands, which is constant tension. Contact with the model will thus be lost, so release the line with one hand and let it slip smoothly through the other by closing or opening the fingers.

Do not wind the loops round the hand for then they will get tangled up, nor take them so long that they drag along the ground. Ten to thirteen feet of spare line is ample for most cases. But see to it that the full length is paid out before releasing the model or you will not reach full height.

Another point: whatever the state of the ground and however rough or treacherous it may be, never lose sight of the model for more than a single second. Before you start have a good look ahead to spot holes, etc.



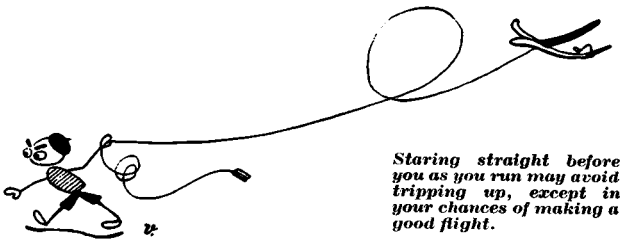
Keep the model in sight the whole time so as not to let it give you any surprises.

Now the line itself. Use a light line and as thin as can be for the required strength. If the line hangs in a curve owing to weight and drag, as much as 15 to 25 feet may be lost in altitude. A thin nylon line is ideal but owing to its elastic nature it can only be used successfully after practice. When it is under tension the load should be carefully reduced before releasing the model or it will cause a sudden stall off the line.

Then there is the location of the towing hook. Many believe that separate hooks should be provided for different strengths of wind. Practice, however, shows that one hook, provided it is placed correctly, will serve for all possible cases. There used to be an old-fashioned rule which said that the line drawn through the angle of the hook and the centre of gravity should make an angle of 60 degrees with the horizontal. Fortunately that rule has gone out of fashion. The location of the hook is different for all models and I think it is somewhat slipshod to assume a mere average. I would advise mounting a series of five hooks on a new design, the centre one in the position mentioned above. One will probably find that the rearmost or rearmost-but-one gives the best results. This will increase the angle of climb and reduce the chances of deviation owing to the increased speed.

The shape of the hook is also of great importance. Do not let the lower prong slope down, as this may cause dropping the line when the model is towed up at a large angle. A smooth hook, not too deep, a line provided with a smooth ring which will easily drop away in any attitude and a very light vane which is well able to drag the line off the hook when the model is straight over the starter.

And now something about the running speed at which the model should be towed up. I have already said that wind speed and direction may vary greatly near the ground. It will therefore be necessary to reduce speed as the model climbs. One may also have to change the direction in which one has started. Wind-speed will increase at greater height and in order to keep constant tension on the line we shall have to slow down. This should never be done suddenly for that would cause the model to lose speed and a small change in wind-direction will give it a chance to veer off its course. It should be done gradually and both the tension on the line as well as the speed of the model should be kept as constant as possible. When the wind is so strong that flying speed is reached before we move a step, then we can obviously stay in one spot. As soon as the tension increases we walk or run back and so keep things always in equilibrium. Is there anything simpler than just watching our model go up? We can keep it in view all the time and are able to correct every swerve.



Staring straight before you as you run may avoid tripping up, except in your chances of making a good flight.

Towing Turns

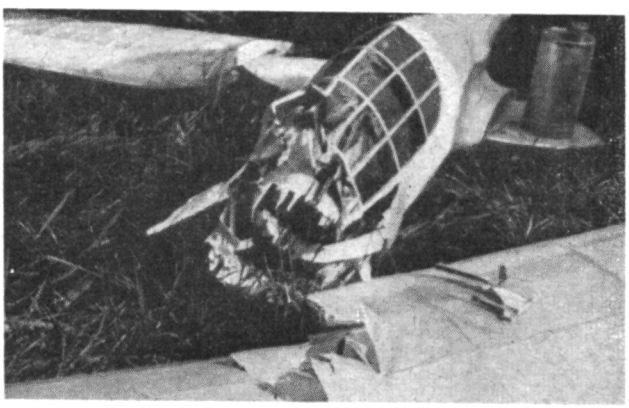
A few words here about the procedure required to counteract these swerves. Not all models react in the same way, and I cannot give a cure-all, so let us deal with two types: (A) and (B).

For (A) the following will provide the cure: as the model veers off to one side, the starter should run in the opposite direction. For there may be two causes for the model to veer; either the direction of the wind has changed and in that case it will be logical to pull it up nose-to-wind. In the other case it is caused by a defect in the model itself. Such defects may be of two kinds: inherent instability on the tow-line or accidental and temporary assymmetry owing to warps and suchlike.

In the case of (B) it may be found that running in the opposite direction does not help at all; in fact it only steepens the bank and such models must be given time to right themselves by reducing the pull in the tow-line as much as possible without the model becoming detached. They can only be pulled up bit by bit. If you keep pulling they will end in a nearly vertical dive.

No self-respecting designer should be satisfied with

A faulty or careless launch only too often leads to this. Time spent building a model is wasted if time and thought are not used in the flying of it.



such a model. He should experiment with different locations of towing hooks, varying sizes and locations of fins and not stop until the model is really under control during the launch.

Inspect your model thoroughly before each flight, it is well worth it.

Stretch in the line is dependent on the size of the model and by the heat of the sun, and should be determined in each particular case. Unfortunately nothing has yet been found to make either models on line quite immune to the sun's rays. Never leave a completely rigged model about in the sun. Why is it that modellers will run to cover their models when it rains, but ignore the sun's heat which is just as damaging? How many models have been crashed because they were kept in the scorching sun too long? Put the model in the shade (with all components detached) and not under a heavy coat.

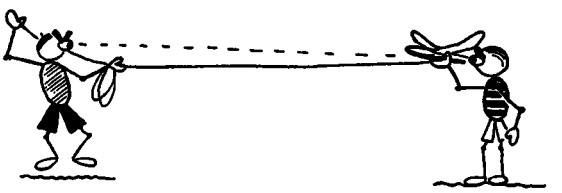
Another point I touched upon and which we may call the finishing touch of launching technique, is the art of detaching the model from the line. When the model is right overhead on a taut line and moving at high speed, the lifting force on the wing will be considerable. By removing the line, tension will be removed and if this is done abruptly it is obvious that the model will be suddenly flung up and stalled. In this case the best thing to do is first to pull the model down gently and then pay out the line equally gently and the model will be released without any shock whatever.

Pre-Flight Precautions

Before starting, look the model over very carefully. See to it that the wing is properly fixed and in the right position. Check for warps that may have been caused by a hand-launch. Also check the tail-surfaces to see that they are not crooked. But one thing: never mess about with the position of the centre of gravity during a contest. You arrive—I hope—with a properly trimmed model. Well, in that case the model is trimmed for any type of weather. The fairy tale about adding an ounce or so of ballast before the contest is bad advice. Once you change the C.G. the longitudinal trim is ruined.

Never underestimate the task of the chap who holds up the model for you. His job is to make the very last check and it is he who must determine the direction which your model shall take during the first part of its upward sweep. He must take good care that he releases the model with the fuselage pointing dead along the tow-line. The nose should be pointing up at 30 to 40 degrees. When flying speed is reached he just releases the model. He should not give it a final push or try to alter its direction at the last moment, thereby upsetting the entire launch. Do not think that anyone can do this, it is not as easy as one might think! Preferably charter the same fellow to assist you every time, especially someone you can really rely on, so that you need not worry whether he will know his job at that critical moment. That also avoids the unnecessary shouts of "rear hook", "front hook"! If you have installed a battery of experimental hooks and finally chosen one either cut the others off or paint the one to be used a bright colour to avoid mistakes.

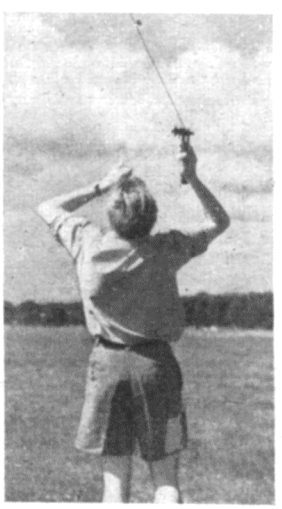
Take care that you and your helper have a complete understanding. Explain to him your model and your signals for launching.

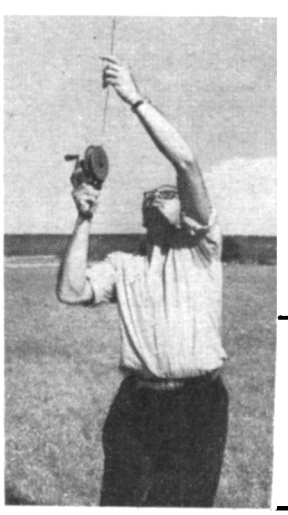


Co-operation between competitor and helper is an essential for a good launch.

To close I would like to give a few general points of advice. Watch the man who always tows up his model well and seldom makes a failure of it. That is easy and does not cost a penny. Then ask him how he has learned the art. The reply will probably be: by continuous practice, not bothering about the seasons nor much about the weather.

Happy Towings!!!





All eyes on the ball! Or should we say model. Here are three expert fliers practising what is preached in this article at last year's Swedish Glider Cup. They are left to right, Maret of Switzerland, Hagen of Norway and Lauridsen of Denmark.

When you have won the cup, remember that your helper made the victory possible and could in fact have spoilt your chances. . . .

RUNNING AN EXHIBITION

VIC SMEED offers some practical advice to those clubs planning an exhibition this Festival year.

FROM all reports, most clubs in the country will be putting on some form of show during the Festival period, and many of these efforts will be static exhibitions. Some clubs have never run an exhibition, and the aim of these notes is both to give such clubs some guidance on what to expect, and to present to them and other clubs some ideas, short cuts, etc., which have proved most successful in practice.

No matter how long or big the proposed show, the most important point is to get cracking NOW. The amount of work involved in even a one-day stand is quite astonishing, and it is far better to spread as much as possible over preceding weeks than to attempt to jam everything into the last few days. It is, of course, only fair to intending exhibitors to notify them as soon as possible, but from your own point of view an early start is more than desirable. The evening before the show's opening will be the busiest one in your experience even if all possible work has been got through beforehand !

The first step is to decide upon a date and then to seek out a suitable hall. Find out all about it—availability, cost, insurance cover, whether equipped with tables, overhead trusses, etc. The major consideration is that the hall should be on or very near the main street or shopping centre. No matter how well-known the hall may be, it is no good if it is not near the main street—casual visitors will provide probably 70 per cent. of your " gate " unless you live in a very large town and can afford really extensive advertising. Rates for hire of halls vary considerably, but you can expect to have to pay something in the order of £5 per day, including the previous evening and the following morning. This is only the first expense—it would be very good going to stage a first-class show for under £15. Should you feel that this is a bit steep, contact the local branch of the R.A.F.A., who would probably be keen to help, taking over the expense of hiring the hall and one or two incidentals in return for the gate, which would then go to R.A.F. charities. The club expenditure can easily be made up on raffles inside. A guide to the size of the hall required can be obtained by estimating the number of models likely to be shown and allowing a maximum of 20 sq. ft. of floor space for each. Thus, 90 models would adequately fill a hall 60 ft × 30 ft., though twice that number could easily be shown in the same space.

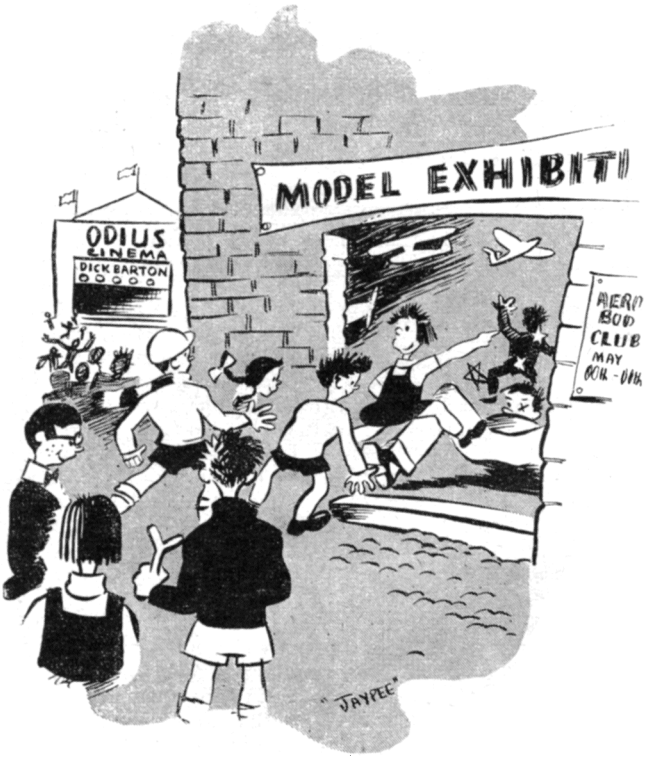
While at this distant stage, decisions on opening times and so on should be made. These notes deal generally with a one-day show (though most of them are applicable to exhibitions of longer duration) and such a show should naturally take place on the busiest day, *i.e.* Saturday. It is best to open at 11 a.m. and close at about 10 p.m., which means that most of the preparatory work must be done on the previous evening and the cleaning up on the following morning. All hands will be required on both occasions, as well as on the actual day. Opening at 11 a.m. catches the children's cinema clubs when they turn out and many people leaving work at 12 or 12.30 will slip in before going home. Staying open till 10 gives those working all day a chance to visit the show and also catches cinema crowds turning out. However, things will be quieter after the prize-giving, the best time for which is about 8 p.m.

Having booked the hall, review the amenities included with it. Are there tables ? If not, there is bound to be a nearby source of these—firms hiring out tents and marquees usually supply trestle tables, charging as a rule 10/- to 15/- per 100 ft. run per three days. Alternatively, it may be possible to borrow sufficient tables from another hall. Bear in mind that too many tables are better than too few. Are there overhead beams or means of attaching strings to the walls, and if so, are a couple of pairs of steps available ? Nothing impresses like a cloud of models suspended overhead, and all the old crocks can go up there. Decorations will be needed for the tables and the stage (if any). Builders' lining paper, costing 1/9d. a 36 ft. roll, is eminently suitable for covering the tables, and 6 in. strips of coloured crepe paper pinned along the edges add a showmanlike finish.

Now, having sorted this much out, you will begin to have an idea of how the finances are working out. At this stage the organisers begin to wonder how many people will pay how much to come in. Well, an entrance fee of 6d. is advisable—more, and you run into complications with Entertainment Tax ; less, and the complications are whether the show will pay for itself or not. You can reasonably expect up to 5 per cent. of your local population to visit a one-day show ; that is, the gate would be around £20 in a town of 20,000—if the hall is well-placed, if the weather is fair, if there are no big rival spectacles, and if the advertisements are thorough and well-placed.

Local newspapers charge, normally, from 3/6 to 7/6 per column-inch of advertising space, depending on circulation. Most people read all the ads. in their local papers, so that a few shillings spent on, say, four column-inches in the issue immediately before the show will pay dividends. In addition, you would probably get a free write-up by the papers if they were approached tactfully, particularly as this is Festival year. Give them copy already written out (with, if possible, one or two sharp, interesting photos), and pander to the public by exploiting the sensational-sounding things like " 80 m.p.h. Jet Cars in Action " and " Demonstrations of Radio Control " or whatever you are going to demonstrate. Newspaper offices with shopfronts are usually prepared to put one or two models in the window for a week before the show, with a card saying that " hundreds of models will be on view ", etc. These " teaser " displays are very valuable, and the right approach can get two or three large shops, cinema foyers, etc.

Posters are a big feature—the local paper will oblige again here. Fifty crown (20 in. × 15 in.) posters will cost around the thirty shilling mark. Again, on these, go for the sensational—the enthusiasts will come to your show anyway, but it is the lay public and (let's face it !) the kids who will gild the ginger-bread. In this connection, don't forget to send a poster to each school in the area, and brief your juniors to spread the word. More expensive forms of advertising, such as cinema slides and mobile P.A. systems, are hardly worthwhile, unless you have strategically placed friends. If you can



" Opening at 11 a.m. catches the Children's Cinema Clubs when they turn out . . . . . "

use these aids cheaply, do so by all means. A banner outside the hall on the day is a must; a tethered meteorological balloon is a tremendous drawing point, and might be borrowed (see R.A.F.A.) or even bought—they cost about 10/- each. If the hall has an adjacent yard, or if there is a nearby car park and you can get permission to use it, a control-line flight every half-hour or so will attract a huge crowd, most of which can be siphoned off into the show proper.

If you approach the local Council's Entertainment Officer (or corresponding official) your exhibition will go on to the official Festival Programme and gain much added publicity free. If you feel that the show will attract two or three thousand people, the Automobile Association may be coaxed to erect half-a-dozen of their well-known direction indicators (which are wonderful adverts !)—free of charge, especially if your club includes one or two A.A. members. Don't forget to ask the papers to send a reporter along to the show.

Now, how is the inside going ? We have the hall, tables plus covering and decoration, and, we hope, facilities for slinging a good few models aloft. What of the actual lay-out of the tables ? For best results, stand them three feet out from the walls and leave at least ten feet between the rows. If there is room for four rows, make the centre two into a " box ". Three feet out (and the box) means room for patrolling club-members *behind* the tables—a better view-point for the patrols, and a person behind the table has ten times the authority of the same person in front. Members will be required at frequent intervals when you're busy, one every twenty feet, at least. Do arrange a badge of some sort; even a card pinned on the lapel carries weight. Try to steer the crowd in a definite pattern, everyone moving the same way. Intelligent arrangements of the tables and an initial send-off in the shape of a couple of forms as a barrier will go a long way towards this.

What of the exhibits themselves ? Firstly, as many as possible, please. Show every possible model; lay folk can't appreciate fine workmanship unless there is a standard of comparison, and, as mentioned, anything very shocking can be hung in the roof. Don't restrict yourselves to one type of model—hundreds of people will be interested in architectural models, scale period furniture etc., even if you as a club don't touch that sort of thing. Anything in any way connected with modelling (or, indeed, small engineering) should go in—it is astonishing how many people are fascinated by having the workings of a metal-turning lathe explained to them.

Needless to say, the most impressive models should be placed so that they are tantalisingly visible from outside the door, if possible. Hang the largest aeroplanes in a line so that peepers-in are awe-struck, and place a locomotive and a ship model in full view to indicate the scope of the show. A model outside is a draw, if it can be arranged. Have a bench devoted to motors and other messy working jobs, but don't run a noisy motor incessantly, as this puts womenfolk off and may lose you the custom of accompanying males. Once an hour, for a short run only, is enough of ear-splitting motor demonstration. Naturally, a working railway lay-out is most desirable (with plenty of disappearing and reappearing on the part of the train !), and small boats can be operated if a large " J " type dinghy can be borrowed and filled with water. Add Reckitt's blue to the water. Runs by Jetex cars are always a centre of interest, as are R.T.P. Rubber and Jetex aircraft. An electric R.T.P. job is an asset, too. The stage, if any, is the best site for such working jobs; alternatively, try to arrange a platform about three feet high with three sides available for spectators. Four sheets of hardboard 12 ft. × 4 ft. can be laid on tables in the form of a hollow square 12 ft. × 12 ft., the $\frac{1}{8}$ in. overlap being adjusted to step down. If you can borrow the hardboard, that is. At a pinch, the models can be used on the floor, though fewer people see them that way.

The static models should be posed so as to present their best views protruding into the gangways. See, too, that the tables are firm. One of the finer points is to provide each model with a typed card describing what it is, what its aims are, and what it does, besides the builder's details. If this isn't possible, arrange things so that the first exhibits seen on the way round represent each category, (pylon, C/L speed, etc.) and describe these fully—performance, weight, speed, points of design and all the whys and wherefores. This makes it so much more interesting for the unversed visitor. Don't separate the models into groups of one type—mix them, as this will avoid congestion among the crowd, as well as making them seem a lot more. It is, however, advisable to group everything small or very special in one place, so that extra watch can be kept. Alas, things do disappear or get damaged if vigilance is relaxed.

Further interest can be added to the show by inviting local model shops, the R.A.F.A., and the A.T.C. to each take a stall free of charge. This adds " tone " to the exhibition and puts your stock up with the local officials. These people will normally lay on very good stands which, in the case of the Services, add just that touch

of difference, like horseradish to roast beef. The hall walls look well if decorated with a border of plans and blueprints (in reasonable condition !) which can be held in place with scraps of cellophane tape.

A club stand, with model books and publications, can do a tremendous amount of good work in " educating " the public. " Throwaways " (hand-out leaflets) giving a short description of the club and its activities, cost little if duplicated off and are excellent propaganda. At this stand, too, raffle tickets may be sold ; contrary to general belief, there is nothing illegal about a raffle provided it does not entail private gain. The three most successful raffles in the writer's experience are :

(a) A ready-finished model, rubber or sailplane. Some member will probably have one in reasonable condition that he is prepared to devote to a good cause ; if not, build something up in readiness. Obviously, the bigger the better. Well displayed, tickets at 3d. each, expected revenue £3 per 1,000 visitors.

(b) A power model (of the " bumbler " type) actually built during the course of the exhibition. This is a terrific publicity stunt—team of builders start at opening time, model must be finished by prize-giving time. It is not difficult to do, from a simple kit ; the Pilgrims did it at a show last September and it was the hit of the day. Relays of three worked on it, and, due to a misunderstanding over the motor installation (necessitating modifications) the model was actually finished and dry only five minutes before presentation ! Revenue £5 per 1,000 from 6d. tickets.

(c) A working cake. Order (or get presented with !) a large ice-cake, suitably decorated with a green top, club name, etc. Cost about 15/–. Have the baker pierce a hole in the centre and insert a glass tube right through the cake — and baseboard. Get the club handyman to carve a 3 in. figure (use ½ in. sq. for body and head, and carve limbs separately from ¼ in. sq.) in the stance of a control-line flyer, and a midget speed model about ½ in. span (use card for wing and tail). Two 6 in.–8 in. lengths of ordinary C/L wire will hold the model stiffly in the flying position. Mount one leg of the figure on a 16 s.w.g. shaft passing through the tube and fitted with a 3 in. pulley beneath the cake. A small electric motor running off a bell battery will drive the figure round, via a concealed rubber belt. Adjust motor speed or pulley ratios to get the figure speed right. It looks amazingly effective and is well worth the trouble—we made over £4 per 1,000 visitors at 3d. a ticket with this novelty. Raffle tickets by the way, are obtainable at stationers and printers and are very cheap, though if you can get them sale or return you might as well.

A public address system in the hall is undoubtedly an asset, especially when it comes to prize giving and draws. Competitions should be what you feel you can manage as far as the number of classes goes, remembering that the larger the variety of classes, the smaller the support for each, but the larger the number of prizes required. Judges should be people qualified to carry the job out—it is very nice to have a local dignitary judging, but unless he is an experienced aeromodeller the spectacular model might get the prize which should have gone to a better-built job. In connection with prizes, try to give a certificate as well as a small prize, as most modellers secretly value a record of even a small win. Prizes might be " scrounged ", if you have the contacts, or made up from entry fees ; these are usually 1/– for

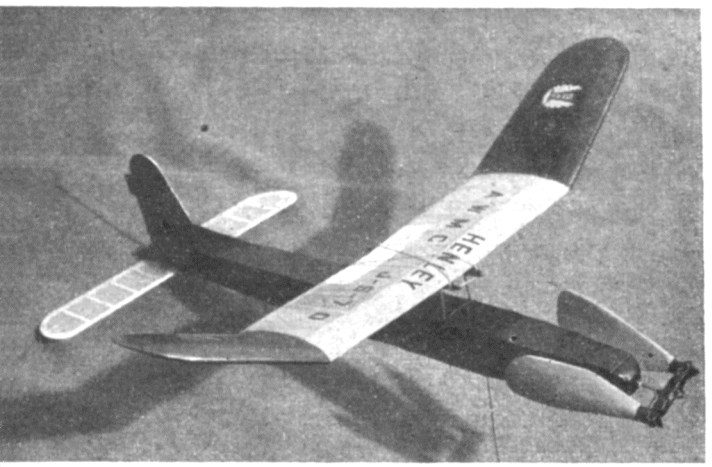
" . . . . Don't restrict yourselves to one type of model,— "

seniors and 6d. juniors. It is usually not difficult to persuade a local personality to perform the presentation.

Entries for competitions should be culled from as wide an area as possible, every club within thirty miles being notified and supplied with entry forms. The forms can be duplicated off by an office service firm, unless you have a friend in the printing trade, and it is advisable to make a portion of each form a receipt which must be exchanged for the exhibit. The big bugbear of any exhibition is collection and return of models. Many exhibitors will bring their models in and fetch them after the show, but others will lend you models only on condition that you collect and return them. If a car is available this isn't much of a headache, but otherwise it is advisable to arrange a central collecting point near the hall and spend one or two evenings before and after the show picking up and returning such models. Insurance costs, as a rule, as much for one day as for three or four, and several companies will arrange coverage for fire, theft, and damage for only about 4/– per cent. It is well worth having ten bob's worth of this. Just in case.

Does all this sound a lot of work ? Well, of course it is, but if you want proof of what good it can do your club, consider the case of the Pilgrims. Their first full-scale exhibition (400 models) brought them (a) a flying field, sorely needed, (b) a club headquarters, also welcome, and (c) an invitation to use the machine-shop at the local Tech. School one evening a week. 'Nuff said ? Good luck with your show !

MODEL
OF THE MONTH



MODEL NEWS

SELECTED ITEMS BY FLIAR PHIL

At darts in the Local,
Fliar Phil is a winner.
For with speed job dis-lined
And sharpened point spinner
Double top every time
Is but simple endeavour.

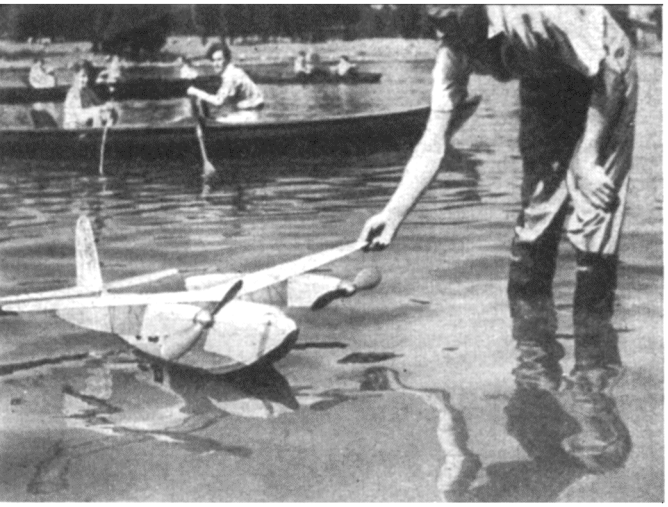
But, sweetened with beer,
The others aim-taking
Is not what it should be
And more like hay-making.
See Giles 'neath the seat
Protecting his rear,
And mod-bod outgoing,
In trembling and fear
Of swift penetration,
" Double bottom," by spear . .

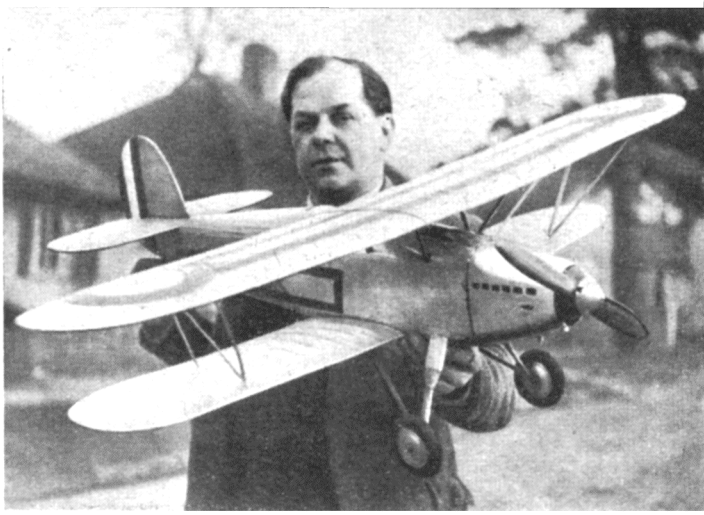
OUCH ! ! Such corn ! But nevertheless it's a nice quiet sort of game, with powerized darts zipping and ripping around the boozer, and there's nothing like a pint o'wallop to wash the diesel juice down afterwards !

But Fliaring to the serious, and that's a very apt adjective for this month's choice picture, Phil presents the first release pic. of a Wakefield with a big future. Most of the keen 294½ sq. ins. boys will recognise the face of Johnny Knight, the Kentish Nomad who won first place at the Wakefield trials last year and went to Finland for the old country. And that's his new job for 1951, or at least the Mark I, for even now an improved Mark II (possibly with featherer) is being tested.

This one, shown at left, has diamond fuselage, fixed pitch prop. two piece wings, tip up tail d/t, retracting u/c, and a 55 ins. Pirelli motor. Recent flight tests your noble scribe spied out, showed a literally phenomenal performance of regular, 4 minute, 40 second flights in *damp* air. With lift about, Johnny should jump the five minute hurdle with regularity—no wonder he has given up gears and their complications !

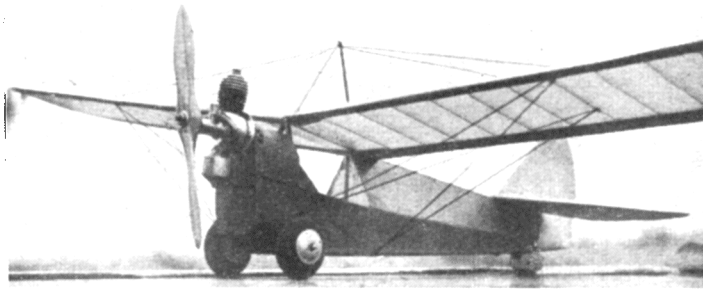
Next, left, is a view by Mr. B. G. Head of rabid enthusiast A. W. M. Cooke's (Henley Model Club) successful Bazooka, made from A.P.S. plans. After some difficulty with the retraction of the original u/c, Mr. Cooke fitted a fixed leg of 18 s.w.g. piano wire. Otherwise the model is built exactly to plan. With 12 strands ¼ in. by 1/30th rubber, best flights average around 2 minutes on 700 turns. It has even flown after one prop. blade broken off in a launch, and the d/t parachute opened up at the same time—some determination ! !



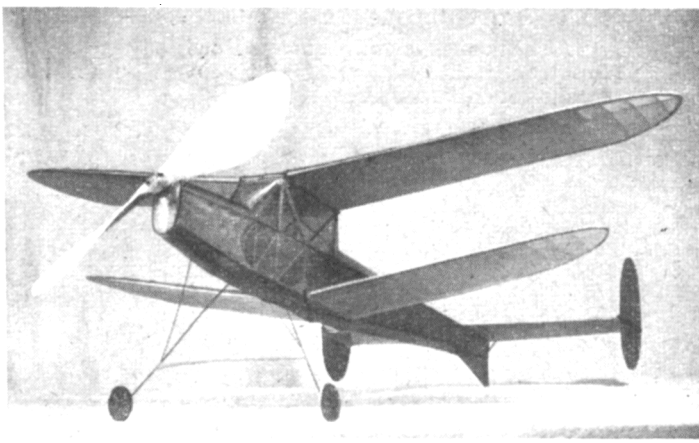


Bottom left is that old favourite, a scale model of Betty Skilton's famous Little Stinker aerobatic 'plane. This one comes from Holland, and was made by 17 year old Hans Janssen at the Zwolle Luchtvaart Club of which he is a member. Alternatively powered by O.K. Cub or E.D. Bee diesel, this sports job flies well, providing the take-off and landing is made on a smooth surface.

Remember H. S. Sayers' British record holding 42·3 sec. Flying Boat, " G.B.2 " of 1941 ? The one at top left was made from A.P.S. plans by J. Tennant of Crayford, Kent, and for sheer beauty in performance he says it would take a lot of beating. The sight of such a voluminous model airborne for three parts of a minute should be worth seeing.

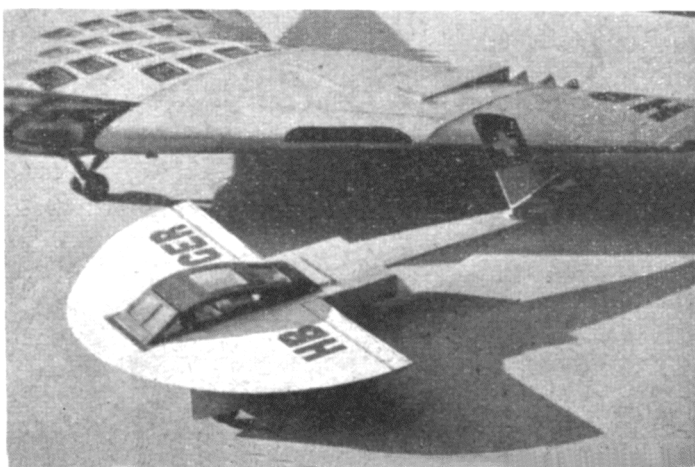


Latest from the P. E. Norman stable of ultra high-speed aerobatic free-flighters is over in the top right corner. This picture by Bill Dean, shows the 45 ins. 3¼ lb. Hawker Fury Mark II to good advantage. Powered by Amco 3·5 diesel, and with accurate dihedral and tail surfaces, P. E. should soon be renting the Epsom Downs air at 40 m.p.h. plus !

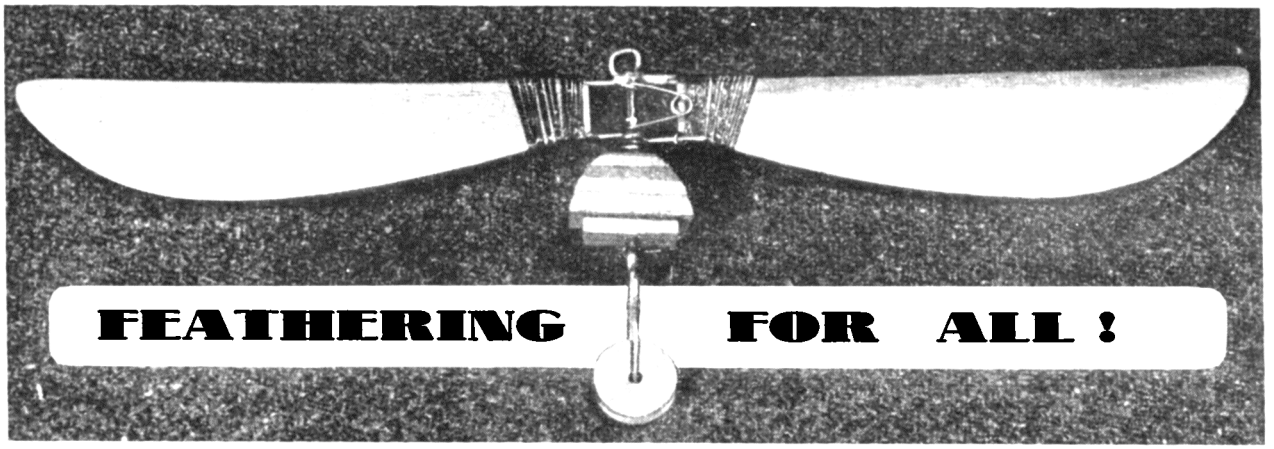


Next right is one from way over in California U.S.A., and is one of those tiny power jobs we thought so impossible only a few years back. Only 28 ins. span, this Aeronca C-2, highly braced and apparently a trifle tricky to trim, has a K. & B. Torpedo Jr. glow motor for power. Later news from Bob Linn, who made the Aeronca, shows that a ·75 c.c. Mills powered 54 ins. Aeronca K is a more suitable subject for scale flight.

Bristolian M. Garnett sends the pic. of his bipe. Span 36 ins., wing area 260 sq. ins., 5·5 oz. and with the club's regulated rubber motor weight at 25 per cent. total weight, it can consistently turn in an 80–90 seconds flight from r.o.g. Stable under almost all flying conditions, the bipe won the Bristol club's Biplane cup in '49. Photo exposure, 65 secs. at f44.



Hold tight fella's, here we go on a trip to the future by Joe Rimensberger's Raie Volante (Flying Ray) model. Hailing from Lausanne, Switzerland, Joe is a different kind of aeromod, for all his models are made with pasteboard and afterwards varnished. Needless to say, Joe uses his imagination somewhat liberally, and this project, No. XRV4–R22349J, HB–GER is of a twin jet four-seater. The wings are a semi-circle, span 15 ins., length 18 ins. Other models by this designer with an unusual flair, show futuristic lines fit to make one's hair go on-end. Joe should really be with the Atomic energy commission ! !



FEATHERING FOR ALL !

BY H. G. UNDERWOOD

THE full advantages of feathering airscrews are at last being recognised—particularly on duration rubber models such as Wakefields with their large airscrew blade areas.

Given a good design, the following desirable—indeed necessary—characteristics, may be expected :—

1. Reduction of frontal blade area during glide from up to 40 sq. ins. down to 4 or 5 sq. ins. or less.

2. Complete stability of centre of gravity position when compared with folding airscrews.

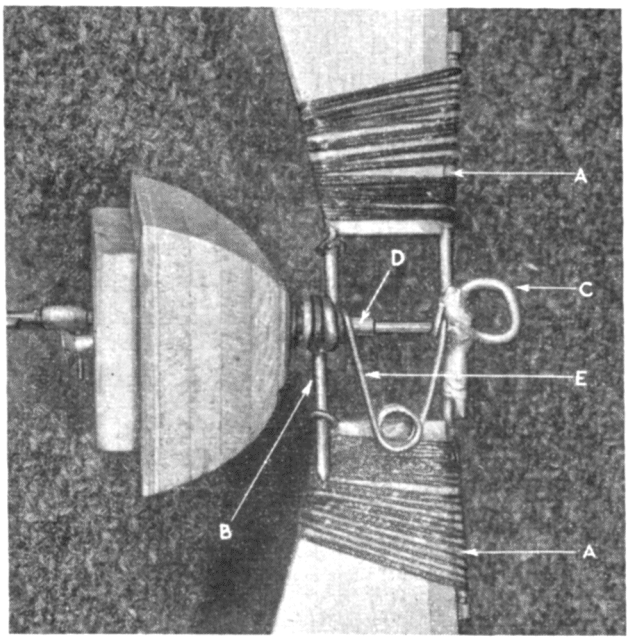
3. Complete stability of air-flow and lateral balance, together with elimination of undesirable gyroscopic forces when compared with the free-wheeling airscrew.

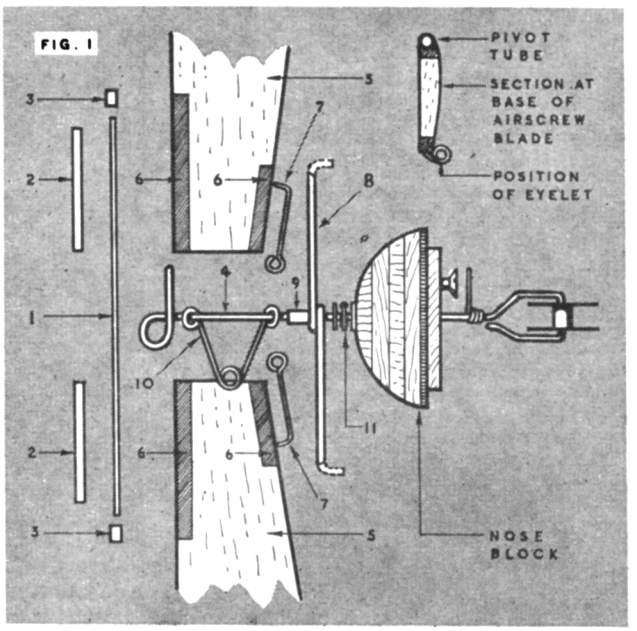
4. The most efficient blade incidence angles (" pitch ") to suit the particular aircraft may be used, with no other consideration involved.

Readers may have studied the description of Mr. E. W. Evans' feathering airscrew in the September 1950 issue, noted the beautiful workmanship involved, and the appealing sight of that thin strip of frontal area when the blades are feathered.

In the hope that a somewhat less precise, more easily built, yet quite efficient feathering airscrew, may be welcomed, I take the opportunity of presenting details of a device evolved and tested by myself over the last six months. This particular design, I find, turns out to be *lighter* than similar fixed airscrews used previously, and, whilst I use sheet balsa blades steamed to give the necessary reduction in pitch towards the tips, conscientious modellers may prefer to carve the blades from the solid. I can only say that I find the sheet blades as strong and as efficient, and certainly easier and quicker to make.

The feathering and " driving " actions are positive, that is, there is no reliance on air pressure to operate the change in angle of the blades, and whilst it might appear at first glance that some sort of variable pitch action is obtainable in flight, this is not so, as the blades





maintain their optimum working angle right up to the the last few turns before the motor stop comes into action.

16 gauge piano wire has been used for airscrews up to 16 ins. diameter, but for diameters greater than this I would recommend 14 gauge wire for the driving shaft and pivot shaft.

From the photograph it will be seen that the airscrew blades are pivoted on their leading edges at (A), and the operating lever (B) moves forward under motor tension, sliding and pivoting on the driving shaft (C) and carrying the rear edges of the blades forwards and sideways so that the blades take up their normal driving position. The driving angle of the blades (pitch) is determined by the length of the brass bush (D) to which the operating arms (B) are soldered. When the motor runs out, the tensioning spring (E) takes the blades back again to the fully feathered position. It will be seen that there is no large hub to the airscrew, and that every inch of the blades is effective in producing thrust.

The actual device is shown in " exploded " form in Dia. 1., and construction is as follows :—

Cut off a piece of 16 gauge piano wire (1) to the required length (approx. 3 ins.), and two shorter lengths of 16 gauge internal bore brass tubing (2) approx. 1 in. long. Thread both pieces of brass tube on the wire, and solder small pieces of brass tube (3) on the ends of the wire to act as bearing caps. Form the front end of the 16 gauge driving shaft (4), and bind with fuse wire to the pivot shaft (1) and solder firmly. Form the airscrew blades (5) and cement in the hardwood strips (6). Make the two eyeletted wires from 22 gauge piano wire ; the actual eyes should be a comfortable sliding fit over 16G wire, it is better to have them slightly too large than too small.

Now make the operating lever (8 and 9), leaving the arms longer than necessary for trimming later. Note that the (arm 8) is wound once, tightly, round the small 16G bore brass tube (9) and well soldered thereon. Adjust the arms so that they maintain a straight line through the centre of the driving shaft.

Make the tensioning spring (10) from 20 gauge piano wire, giving 3 turns for the spring and making the forward end loop a *close* fit on the driving shaft, and the rear loop a *loose* fit over the tube (9).

Now thread the tensioning spring on the driving shaft, followed by the operating lever. Insert the bent-over end of one of the eyeletted wires into the rear hardwood insertion of one airscrew blade in its correct position, so that the eyelet is positioned above the top surface of the blade, slide the eyelet over one arm of the operating lever and temporarily tape the blade on to the pivot bearing tube (2) and eyelet wire (7)—both of which should be recessed into the hardwood strips.

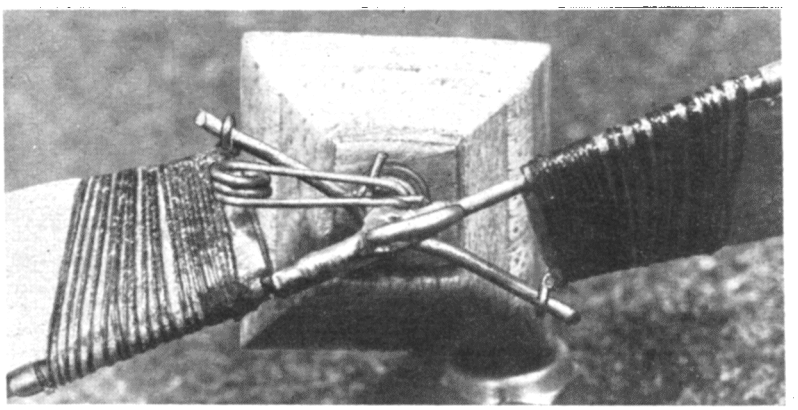
Push the hub of the operating lever fully forward, and check the blade for correct incidence. Adjust the pitch by filing the operating lever bush to decrease incidence, or fitting a washer to increase incidence.

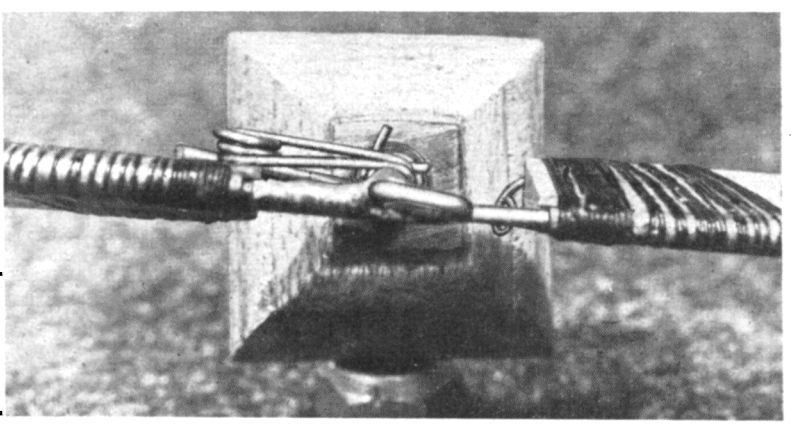
Adjustments completed, remove the tape from the blade and cement well, and bind the pivot bearing tubes and eyelet wires in place on both blades. It is best to tie the operating lever forward whilst doing this so as to overcome the pressure of the tensioning spring. The ends of the operating lever arms may now be trimmed to length, and bent over at the ends, if desired, to make it impossible for the eyelets to slip off. This is not really necessary, as I have found that only in a first-class prang do the eyelets sometimes jump off the arms.

All that is necessary, now, is to adjust the angle of the eyelets until everything moves sweetly. Finish off the blades as desired, fit the ball bearing behind the operating lever, fit the nose block and fix up the motor stop, using a counter-sunk head wood screw in the nose block. Bend the driving shaft back to receive the motor bobbin and give all the bearing surfaces a smear of thin oil.

Adjust the motor stop, of course, to stop the blades in a horizontal position, and make sure that when the wire stop on the driving shaft is at the base of the countersinking on the wood screw, the airscrew blades are just fully feathered.

It will be found that even in a serious crash the airscrew usually comes out unscathed, and in any case it is quite easy to bend things back to where they belong !

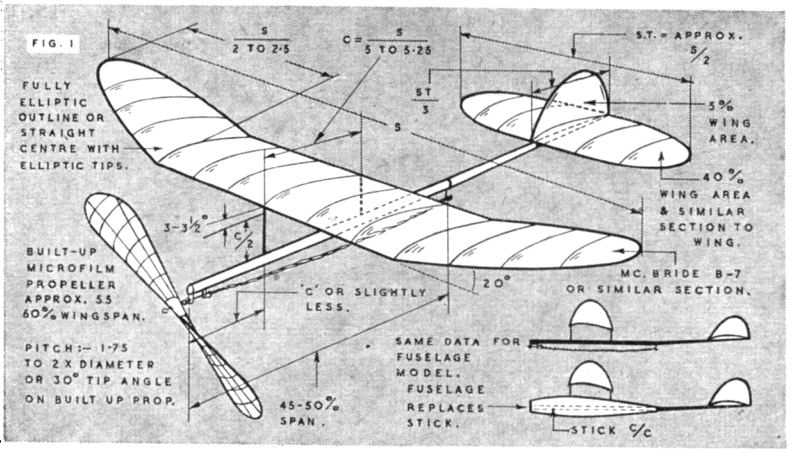




These close-up photographs of the hub demonstrate, top, the working position and bottom, the feathered position.

It's DESIGNED for YOU

NUMBER TEN INDOOR MODELS



THE design of indoor free flight models is a specialised one. Performance is almost entirely dependent on power run and it has been fairly well established that maximum duration is realised when just about all the motor turns are used up during the flight. In other words, if the model " deadsticks ", *i.e.* the power runs out with the model still in the air and the final descent is a glide, it is overpowered. If, on the other hand, the model lands with turns still on the motor, it is underpowered—for that particular trim, at least. Thus maximum flight duration is almost exactly maximum motor run.

We said that performance was " almost entirely " dependent on the length of power run, for the design of the model enters into it. A heavy model needs more power and will thus have a shorter power run. A model out of trim may also appear underpowered when, in fact, it might have the right motor for maximum performance, *i.e.* the minimum cross-section of motor, and fly on this motor if properly trimmed.

Maximum performance, therefore, may be boiled down to this. We want to use the smallest possible cross-section of motor coupled with the largest possible diameter and pitch propeller to extend the power run. This, in turn, means the lightest possible model and a very efficient one. Both are equally important. Increasing weight and decreasing efficiency both demand more power. Decreased weight or higher efficiency allows the model to fly on less power.

It is true to say that the number of expert indoor model fliers is strictly limited. It does not follow, for example, that a good " outdoor " contest flier will also be a good " indoor " flier. The technique has many differences. Constructional skill also enters into it. It needs a skilled and patient modeller to construct an indoor model airframe of minimum weight, yet still possessing adequate strength. This is " still air " flying. There are no thermals to help and performance is a pretty true reflection of the modeller's skill and ability in this particular sphere. The fact that some indoor experts in the U.S.A. and Australia are also engine manufacturers is a noteworthy coincidence.

Like almost all other departments of model work, success is largely dependent on practical experience. Theoretical analysis is virtually useless for the forces involved are so small that only practical tests can produce worthwhile results. Fortunately, not all these tests require that the model actually be flown. Quite a number of " static " tests, such as motor torque tests, can be carried out which will be very useful when it comes to flying in competition—and the facilities for flying are usually limited.

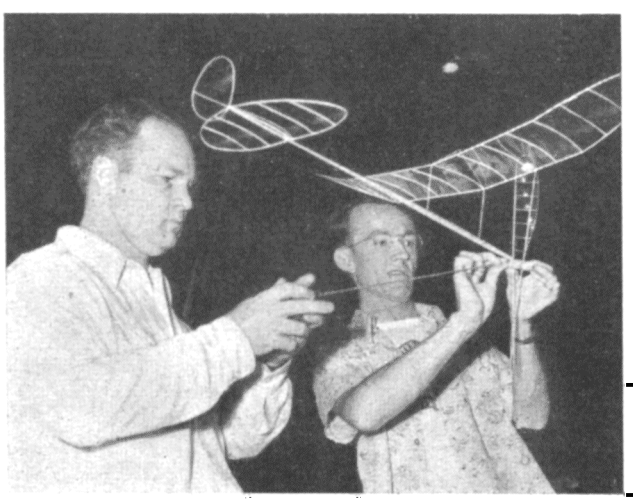
The indoor free flight model has largely been neglected in this country, one of the main reasons being lack of suitable sites or halls for flying. Before the war there were one or two National meetings at the Albert Hall in London, and the high times established there in 1938 have stood to this day in many classes. Subsequent indoor meetings have been restricted to smaller halls and flight times have suffered as a consequence. These meetings, too, have been few in number.

With the re-introduction of an " Indoor Nationals ", therefore, we are very much in the position of starting again from scratch. Virtually no advances have been made in this field since 1938. The hand launched stick record established then—18 mins. 52 secs.—still stands, and will be the immediate goal of the 1951 indoor fliers.

Progress in the U.S.A.

America, on the other hand, has gone ahead with indoor model development. Times have gone up to over half an hour, the present record being 32 mins. 19 secs. Nor is this performance confined to one outstanding modeller. Several men have topped the thirty-minute mark besides Merrick Andrews, the record-holder. It is also interesting to note that Andrews' record flight was the third of three contest flights, all of which beat the thirty-minute mark.

At this stage it is interesting to digress a little and discuss the advance of indoor model performance. Since this country has been far less active than America in this sphere we shall



The delicate operation of winding an indoor job for a possible 30 minute flight is demonstrated here by well-known American modellers, Harold Le Claire (Detroit) and Don Donahue (Los Angeles). A high geared winder is a boon on such occasions !

take American figures. There, indoor contests had a popular appeal by the mid 1920's. Models of this era were tissue covered and had flat aerofoil sections for wing and tailplane and times were low—somewhere around the two-minute mark. 1928 saw the introduction of the cambered aerofoil and duration climbed as a result to around the five-minute mark. Hollow motor sticks followed, then an overall lightening of the weight until the ten-minute mark was approached. Times went up to ten minutes.

Then came the greatest single development in the history of the indoor model—microfilm. This covering material, so much lighter and, incidentally, less porous than tissue, made even lighter models possible. The duration record went up to twenty minutes and models were lightened to a degree hitherto thought impossible. Circular, elliptic and teardrop section booms were being used for both the motor stick and tail boom. Propeller diameters and pitch diameter ratios increased enormously.

It was around this period, in fact, that indoor model design more or less standardised itself into a layout which has remained basically unchanged to this day. Carl Goldberg's 22 minutes in 1934 is still better than anything that has been done in this country and the model is still an excellent one, judged by modern standards. Increasing times since that date have been the result of detail modification and development rather than any radical changes in design. Lighter, stronger structures rather than changes in shapes and sizes. This is emphasised by the fact that Goldberg's 22-minute 1934 model weighed ·133 ounces as compared with Andrews' thirty-minute model weighing ·0656 ounces. That extra ten minutes has largely been made possible by halving the total weight. This advance, however, was slow in coming. Various factors, such as the war, poor rubber and so on, delayed the establishment of the thirty-minute flight. How flight times crawled up to this level is shown briefly below.

1934	22 minutes (Goldberg)
1935	23 minutes (Goldberg) 24 minutes (Webster)
1936	25 minutes (Jacobson)
1940	26 minutes (Andrews)
1946	27 minutes (Andrews)
1948	28 minutes (Cummings)
1949	29 minutes (Cummings) 32 minutes (Andrews)

It took four years—1936 to 1940—for the times to climb from 25 to 26 minutes and then another six to add the next minute (this, however, was largely the influence of the war period). Since then progress has been more rapid and the present holder is quite confident that the limit has by no means been reached.

Our Nationals

We now have this background to set about designing and building models for our own re-introduced Indoor Nationals which, it is felt, will almost certainly become an established "annual". When we left off serious indoor flying we were still below the 1934 American times but we have their experiences on which to draw when starting out to establish new records.

The success or failure of the British Indoor Nationals will depend largely on the selection of the flying site. It is most fortunate that, through the generosity of the *Manchester Daily Dispatch*, one of the largest halls in the country has been secured for Sunday, August 19th—the Manchester Corn Exchange. It is large enough and suitable for high times, and if similar accommodation can be assured each year this type of contest will undoubtedly achieve great popularity. If it is restricted to smaller halls in future, times will suffer and, with it, popular appeal.

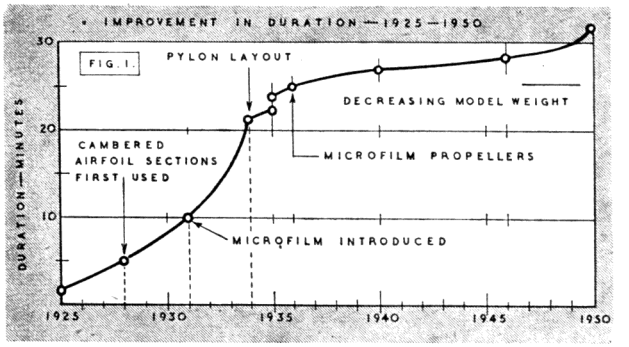


Fig. 1. Progress of Indoor Duration performance over the past 25 years is shown in this chart. From 2 minutes to 32m. 19s.

Sheer performance will be the most popular subject, and there is only one type of model for this—the stick model. This is the type which is possible to build down to the lightest weight. The fuselage model—a separate class—will always lag behind in time due to the extra weight and drag of its fuselage. The other competition class is for unorthodox models, which is beyond the scope of this present article. We are concerned here with maximum duration performance.

Size and Duration

In laying out our duration model, the first—and very important—factor is size. In general, the larger the model the more efficient it is, and also the lighter loading it is possible to achieve. High times, therefore, are achieved with the bigger sizes of models. This holds true through almost all conditions, except where flying space is severely restricted and the large model is continually colliding with obstructions or hitting the walls or roof. With plenty of floor space, however, and a restricted ceiling the large model will still score.

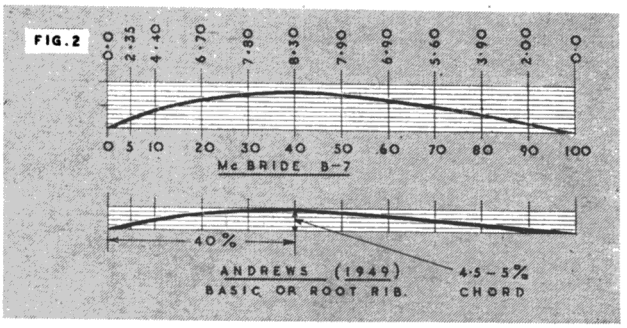
First, then, we want to know what is the upper limit in size, if any. Strictly speaking there does not appear to be any theoretical upper limit although there is a definite practical limit to size beyond which it is difficult to obtain a strong enough airframe without adding excess weight. This is a point which must be borne in mind. The large model is the obvious choice, but it is very much more difficult to make. It is easy enough to construct a large model, but to make it strong enough and still down to minimum weight is quite another matter.

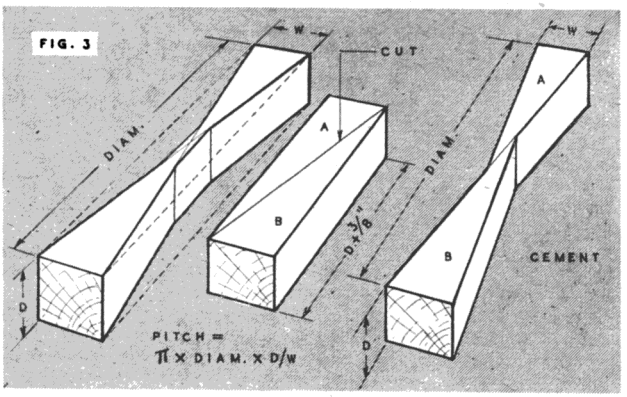
Size, in America, is actually restricted by class rules. We have no such rules in this country at the present time, and it would seem best to follow American practice. The largest models they build, therefore, are restricted to 150 sq. in. maximum wing area, and these are the models which put up the high times.

TABLE I. DESIGN DATA.

*Wing Area (sq. in.)	Span (in.)	Root Chord (in.)	Centre Section (in.)	Tip Rise (dihedral) (in.)	Motor Stick (in.)	Tailboom (in.)	Tailplane Area†* (sq. in.)	Tailplane Span (in.)	Tailplane Root Chord (in.)	Dia. (In.)
150	30	6	17	2¼	14	11	60	14½	5	18
125	27½	5½	15½	2	13	10½	50	13	4½	17
100	25	5	14	1¾	12	10	40	12	4	16
75	21	4	11	1¼	10	8	33	10	3½	11/12
50	16	3¼	9	1¼	9	7	24	8½	3	9

* Blunt elliptic outline. Area = $S^2/6$ (approx.). † Blunt elliptic outline. Area = $S_T^2/3{\cdot}5$





Layout

Proportions of the model, incidentally, are similar whatever the size. Proportioning a projected design, therefore, on successful American practice in the 150 sq. in. size we have a design layout which can be scaled down right to the baby sizes. The outstanding British models have, in fact, hitherto been smaller than this maximum size.

Design layout, as we have already said, is more or less standardised. This, in fact, is summarised in the heading drawing. There is little or no excuse for departing from this suggested layout. In Table I we have given recommended detail dimensions for various model sizes based on this generalised design. Maximum performance will decrease proportionately with decreasing size.

For a really serious attempt at setting new duration standards for this country we would recommend the 150 sq. in. model. The next step down—the 125 sq. in. size—is probably the best compromise for the less experienced modeller, who is then not so likely to run into trouble with weak or floppy construction. Nothing smaller than the 100 sq. in. model will do for serious competition work, especially if it is to come up against the larger designs.

Both wing and tailplane planforms are of elliptic outline, with rather blunter tips than a true ellipse. Wing root chord should be between 1/5 and 1/5·25 of the span, giving an aspect ratio of between 6·4 and 6·7. This appears the best compromise between an efficient aerodynamic planform and an economic structural one. Tailplane aspect ratio is lower—a root chord of one third of the span being a good figure. The remainder of the model is then proportioned accordingly as shown, and detailed in Table I.

Regarding the wing, there are two other points which we might discuss—dihedral and wing section. Due to the very large propeller diameter—well over one half of the wing span—polyhedral or tip dihedral seems preferable, for stability, but both necessitate more dihedral breaks or joints than a straight-dihedralled wing. More joints mean added weight. At the same time, however, it is very desirable to break the wing down into separate sections, if only for ease of covering. Producing and handling a large sheet of microfilm is quite difficult.

Most top designers in the indoor field consider that straight dihedral is not effective enough—or needs too large a dihedral angle to be effective. The best compromise, therefore, appears to be the tip-dihedralled wing.

As regards wing section there is one "popular favourite"—the McBride B-7. This has a universal following, although the modern trend appears to be to regard the wing section as not particularly critical and aim, simply, at a curved section with a definite camber height and location. Fig. 2, for example, shows the McBride section and also the section used by Andrews on his 32-minute model.

The same section is usually employed for both wing and tailplane and the method of reducing the basic section for taper is a simple one. Wing and tailplane ribs are simply cut down from the rear to the required length.

The remainder of the design process can now be grouped under three main headings: structure design, propeller design and construction, and the rubber motor. All are inter-related, and there are many ways of tackling this relationship.

The simplest way would be to build a "recommended size" propeller and then select the size and weight of rubber motor to suit. Rubber power can be varied initially by different cross section, and then by increasing or decreasing the overall length of the motor, altering the overall weight of the model and thus the power required for flight. The first is an extreme adjustment, the second a finer one.

The question of rubber size is going to be an important one for modellers in this country. We have no rubber available in fractional sizes, varying in width by 1/64 inch at a time and so we are not likely to have enough selection of rubber cross sections to enable us to adjust motor size in this way. It may be necessary, therefore, to use whatever rubber is available and design the propeller accordingly.

On his thirty minute plus flight, Andrews used a 15 in. loop of 1/16 × 1/30 rubber powering a propeller of 17½ in. diameter. The model had 147 sq. in. wing area, but was very

TABLE II. STRUCTURAL DATA.

Wing Area (sq. in.)	Type	WINGS				Motor Stick	Tailboom	Tailplane Outline	Tail Ribs	Fin Outline
		Outline Spars	Ribs	Rib Spacing (in.)	Tip Section					
150	Braced Unbraced	3/32×1/16 5/32×5/64	1/64 sheet	2–2½	3/64 sq.	1/32 sheet	1/64 sheet	1/16×1/32	1/64 sheet	1/64 sq.
125	Braced Unbraced	3/32×3/64 ⅛×5/64	1/64 sheet	2–2½	1/32 sq.	1/32 sheet	1/64 sheet	1/16×1/32	1/64 sheet	1/64 sq.
100	Braced Unbraced	5/64×3/64 ⅛×1/16	1/64 sheet	2–2½	1/32 sq.	1/64 sheet	1/64 sheet	3/64×1/32	1/64 sheet	1/64 sq.
75	Unbraced	⅛×1/16	1/64 sheet	2	1/32 sq.	1/64 sheet	1/64 sheet	1/32 sq.	1/64 sheet	1/64 sq.
50	Unbraced	5/64×3/64	1/64 sheet	1¾–2	1/64 sq.	1/64 sheet	1/128 sheet	1/32 sq.	1/64 sheet	1/64 sq.

light. Few modellers in this country are likely to get down to the same ultra-light wing loading as the American experts, when a greater rubber cross section will be necessary. Times, of course, will go down accordingly.

This is one of those problems which has numerous twists to it. For the purpose of standardising a design technique, therefore, we have decided that the best method is to use a recommended size propeller and then choose the rubber cross section according to the overall weight of the model, irrespective of its size. This should work out satisfactorily for all sizes of models, and fine adjustment can be made by varying the motor length. Recommended rubber section would then be :—

Model weight	*Rubber section (two strands)*	*Potential maximum time**
·030–·045 oz.	1/16 × 1/30 ins.	30 mins.
·045–·055 oz.	5/32 × 1/30 ins.	27 mins.
·060–·080 oz.	3/32 × 1/30 ins.	24 mins.
·080–·100 oz.	1/8 × 1/30 ins.	20 mins.

*Based on 15 in. dia. prop. and 150 sq. in. model.

As regards propeller design and construction the standard carved propeller is invariably cut from a diagonal blank with no depth taper, either from a single integral block equal to the diameter, or a block equal to one half of the diameter plus about ¼ in. cut along a diagonal lap jointed, as shown in Fig. 3. Carved propellers, however, are largely out of date. The built-up, microfilm-covered propeller is very much lighter and equally, if not more, efficient. Furthermore the microfilm propeller is, if anything, easier to make. Much of the recent improvement in American record times is due to the use of the microfilm propeller. This, in fact, became almost standard practice in about 1940. We would, therefore, recommend this type in preference to a carved propeller. Details are summarised in Fig. 4.

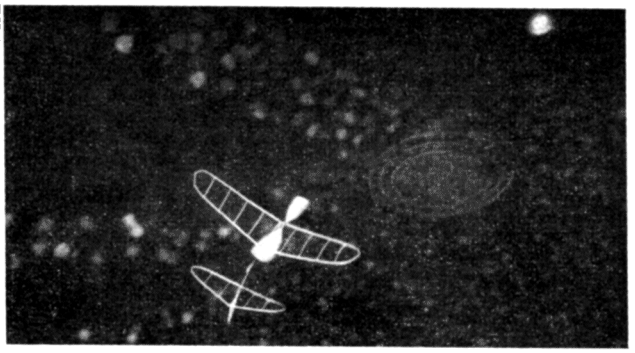
Construction

There remains, now, the construction of the airframe. Here we would emphasise that light weight with adequate strength can only come as the result of very careful selection of materials. Ordinary stock balsa just is not good enough. Light stock is usually too weak. Hard stock is far too heavy. The right type of wood has to be picked out and it takes an expert to appreciate the qualities really required. Materials therefore, should be obtained from a first class model shop where an experienced retailer can help, if necessary. The recommended density is 4–6 lb./cu. ft. stock.

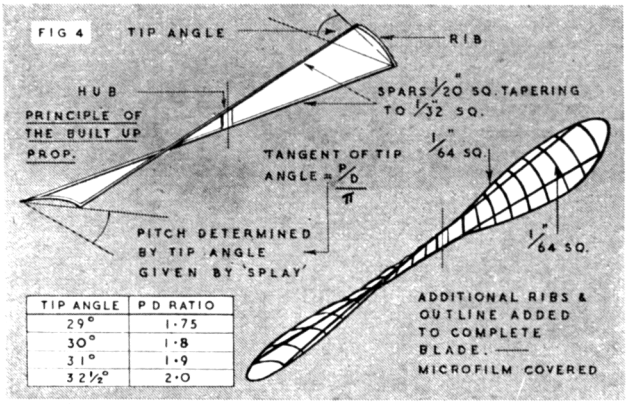
Wings and tailplane are invariably of sparless construction, relying purely on the outline spars for strength. To conserve weight, spars should be tapered out towards the tips, reducing the tip sections to the smallest possible figure. Details of wing construction are summarised in Fig. 5 and in Table II. To achieve the lightest possible weight a braced wing should be used—the bracing being ·001 nichrome or tungsten wire. Proper bracing, however, is a tricky business and many modellers will prefer to build an unbraced wing, when spar sizes must be increased accordingly. On account of weight it seems better to use solid stock for the outline spars, rather than laminated strips, although the latter type of construction is usually stronger and considerably easier to handle. It may be worth while where weight is to be sacrificed for increased strength.

As regards fuselage and tail boom construction it is interesting to find that the minimum sheet thickness possible on the very largest models is also the minimum size which can be used for *any* model, emphasising the potential advantage of the large model as regards overall weight saving and thus reduction in wing loading. Only the experts, however, can really handle a 1/64 sheet motor boom and 1/128 sheet tailboom with safety on a large model. The recommended sizes in the structural data table are more common. Fuselage bracing with similar ·001 wire is sometimes used but should not be necessary with correct selection of boom material. Boom construction is detailed in Fig. 6.

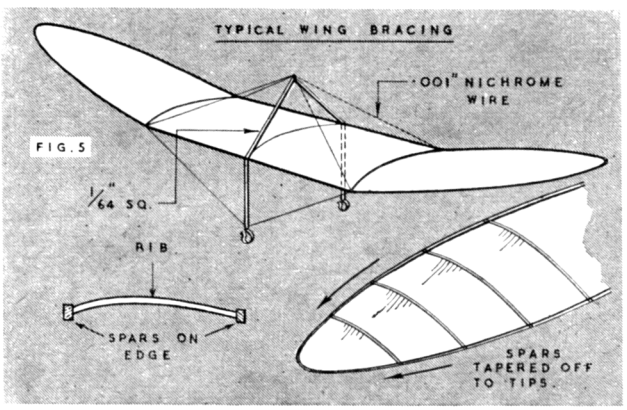
Finally, detail fittings are summarised in Fig. 7 representative of modern practice. It is not possible to go into the

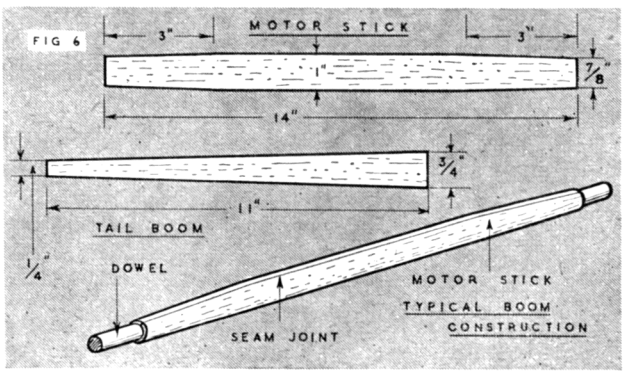


A slow circling microfilm model, with large fin offset, slow rotating prop, and bouncing on every eddy in the hall, brings many a happy memory to those who attended pre-war Albert Hall meetings. Will this year's Indoor Nationals revive the old keenness?



TIP ANGLE	P D RATIO
29°	1·75
30°	1·8
31°	1·9
32½°	2·0





structural side in detail, on account of space. Similarly, no mention has been made of the production and application of microfilm. There have been other articles on this subject, to which reference should be made. Nor can we elaborate on the effect of different rubber qualities. The recommended rubber sizes, for example, were quoted for T-56 rubber. Other varieties may have more or less power for the same cross section, which is where a simple torque tester will be invaluable for comparative tests.

Nor do we feel that we can give a recommended table of weights. As we have stressed earlier, the lighter the model the better, provided that it is not so weak that it will deform in flight or break up. The aim, therefore, is to reduce weights as far as possible, consistent with this requirement. We will quote, simply, the weights of Andrews' record model which probably represents the best example of weight reduction and one which will be difficult, or near-impossible, to duplicate. Rubber weight, in any case, needs to be at least 50 per cent. overall weight of model.

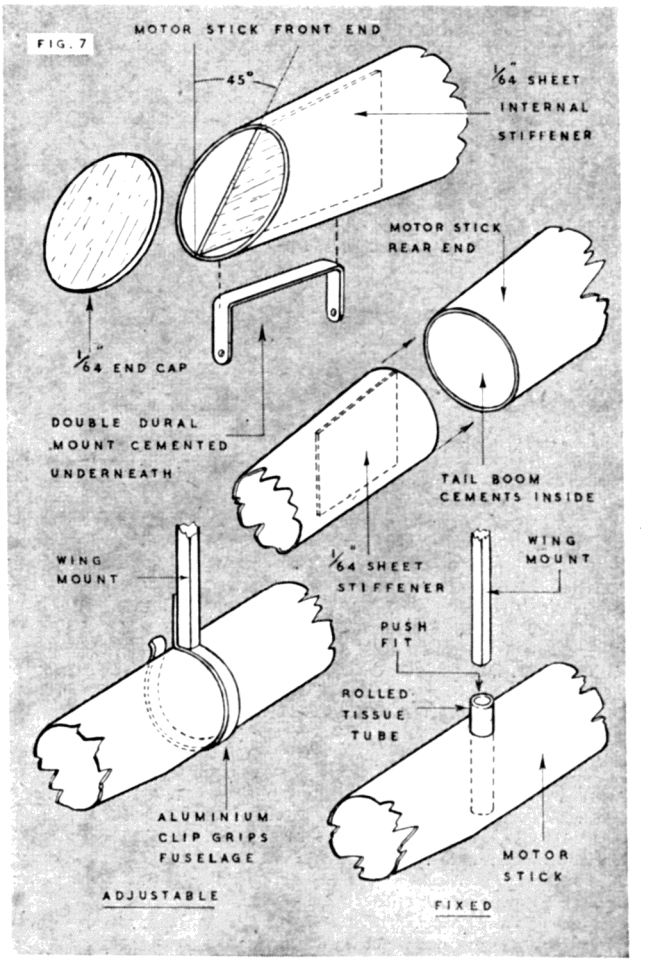
Microfilm Formulæ

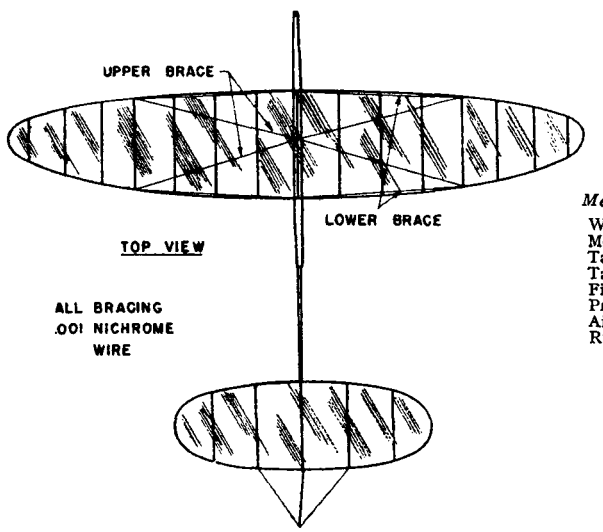
A good general purpose microfilm solution can be made by adding a teaspoonful of castor oil to two ounces of clear dope or banana oil. The following formulæ have been used to good effect on prewar British models and provide a variety of materials that the film can be made from :—

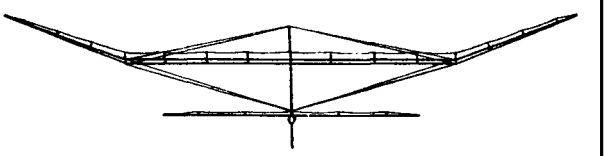
1.	Flexible collodion	1 oz.
	Amyl acetate	16 drops
	Castor oil	10 drops
2.	Plain collodion	1 oz.
	Amyl acetate	16 drops
	Tricresyl phosphate	16 drops
3.	Flexible collodion	1 oz.
	Amyl acetate	16 drops
	Camphorated oil	13 drops
4.	Flexible collodion	1 oz.
	Acetone	18 drops
	Castor oil	12 drops

(This is a heavier film).

Below, we give a general arrangement diagram of what the U.S.A. acknowledges to be the first "over 30 minute model." Designed and built by Merrick Andrews, the record flight of 32m. 19s. was made in the airship hangar at Lakehurst, New Jersey. Total weight is only ·0656 oz. . . . actually less weight than the dope on many an outdoor model !

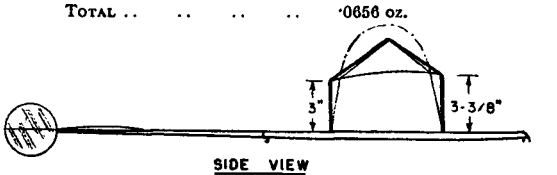






Merrick Andrews' 32 *min. stick model. Component weights.*

Wing (area 147 sq. in.)	·0105
Motor stick	·0090
Tailboom	·0016
Tailplane (55 sq. in.)	·0022
Fin (7 sq. in.)	·0003
Propeller (17½ in. dia.)	·0070
Airframe	·0306
Rubber—15 in. loop, 1/16×1/30 (53 4 per cent. overall weight)	·0350
TOTAL	·0656 oz.



RADIO CONTROL NOTES

BY HOWARD BOYS

A NUMBER of people will be trying radio control for the first time in the next few months, so the next few remarks should help them. The best way to avoid trouble is to begin with a well tried free flight power model design of a simple type about five feet span. A robust slabsider with no fancy trimmings is the thing. A fairly light receiver is recommended ; not heavier than 3 ounces and using no more than 45 volts H.T. An engine of 2 or 3 c.c. will be suitable and need not be a high performance type. An easy starting one is much more to be preferred. A self centering type of actuator is best, but not essential if moderate control is used.

The rudder should be about a quarter of the fin area and situated fairly low down, see the previous edition of these notes, and movement quite small at first. To begin with it should be only enough to trim the model to turn. Make the first few flights very short. As soon as the model is in the air (R.O.G. being best), give a quick turn and then straight again to see what the model behaves like. By this time the engine should have stopped. If all is well try again with a little longer engine run, and try to get in two turns. Repeat these very short flights until the model is correctly trimmed and it will turn in either direction without losing height. The engine will need some side thrust to give straight flight with engine on or off, and the rudder neutral. As experience is gained the length of flight can be increased, but do not let the model get far away. That is the safe way to fly. When confidence has been gained, the control can be increased by making the rudder move over more and more, until the control gets quite exciting. The turn will develop into a spiral dive, followed by a zoom on straightening out. When this stage is reached it is likely to end in disaster if anything goes wrong, but this risk is reduced by using the self centering type actuator.

We owe an apology to Mr. Sinfield of Luton as a result of giving the wrong circuit with his letter published in the March issue, and accordingly quote verbatim :—

Dear Sir,

I note that you have printed my letter re radio control in the March, 1951 AEROMODELLER. *However, you refer in the first letter to Fig. 2. The transmitter in Fig. 2 is not my recommendation, and belongs to Mr. Bovey.*

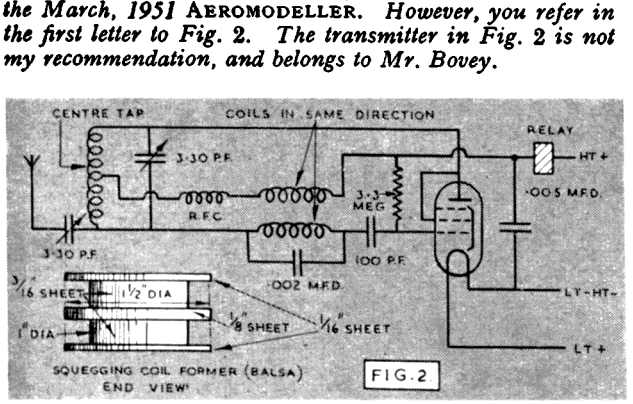


FIG. 2

I have **tried** *this circuit (as noted in my second letter) using one tuned circuit and a duo triode using a 1 or 2 turn aerial coupling coil. Tested with almost all types of suitable duo triodes, e.g.* 6J6, 3A4, 6N7, *etc., and with various values of grid condensers and resistors. I find it* **always** *of poor efficiency with low output and bad frequency stability with loading variations.*

It is, in fact, the very type of standard circuit practice which I deplore so much in my first letter. The highest efficiency and stability I have so far obtained with single valve is still as Fig. 5 (using tuned grid, tuned plate, with grid circuit screened).

I note that a printing error puts one anode of 6J6 in Fig. 5 to earth. Although crossed out it is still not very definite, and may be interpreted to mean something else.

I hope I do not offend Mr. Bovey, but while I agree that the split stator condenser simplifies tuning, it does not improve output or stability with loading.

I have found the best coupling arrangements to be 2 turns of 20 G P.V.C. covered wire swinging into centre of coil. The position is adjusted for maximum output under operating conditions and then **permanently** *fixed.*

The next item is a letter from Mr. Bolton of Nottingham, who has been experimenting with receivers. The writer has tried receiver No. 1 with good results and will be commenting on this next month. Here then is the letter :—

" I thought you might be interested in the following two radio control receiver circuits, both of which employ normal type hard valves.

Receiver No. 1

This is a one valve circuit similar to the normal type super-regenerative receiver but modified by the addition of squegging coils, Fig. 2. Each slot of the coil former is wound with 400 turns of 36 s.w.g. enamelled wire. Valve—3S4 or 3V4.

If the L/C ratio of the tuning circuit is high (*e.g.* 11 turns of 18 s.w.g. wire $\frac{3}{8}$ in. diameter for the coil) the receiver will operate with only one side of the filament connected (thus reducing the L.T. consumption to 50 m.a.).

Some difficulty may be experienced in getting the receiver to function satisfactorily, but the following procedure has given good results with most of the receivers of this type that have been constructed.

Do not connect the aerial, use 45V H.T. and place a pair of headphones and a milliameter in series in the H.T. lead. The current should be between 0·5 and 1·0 MA. and a hiss should be heard in the 'phones. Tune up, and about 0·3 MA. current drop will be obtained. Now connect up about 3 ft. of wire for the aerial, and raise the standing current to around 1·5 MA. by adjustment of the aerial condenser ; (It may be necessary to tap the aerial straight on to the coil). A faint hiss should be audible in the 'phones. On slightly retuning, a current drop of about 1 MA. should be obtained, the aerial coupling being adjusted until the receiver just passes out of oscillation (indicated by a reduction of hiss and a rise of anode current).

The receiver of this type which I am using at present, employs a 3S4 valve (one side only of the filament is connected). Using 37½v. H.T. the standing current is 1·4 MA., which drops, on signal, to 0·5 MA. at fairly close range, and to 1 MA. at long range.

Receiver No. 2

This is a 2-valve circuit employing a super-regenerative detector coupled to a D.C. amplifier, as Fig. 3.

A super-regenerative detector usually gives a small current drop which is just too small to work a relay reliably (when a hard valve is used).

Suppose valve V1 draws an H.T. current of 0·5 MA. which drops to 0·45 MA. on signal, using 22½ or 30 H.T. If E is a 30v. battery, and the anode current of V2 cuts off at –4v. grid bias on 30v. H.T., the H.T. current to V1 passes through R, causing a voltage drop across it of $\frac{0{\cdot}5}{1000}$R volts. If R is adjusted to 68,000 ohms, there will be a voltage drop across R of 34v., *i.e.* the grid of V2 will be at 30–34=4 volts, with respect to the filament, *i.e.* the anode current of V2 will just be zero.

On signal the H.T. current to V1 drops to 0·45 MA. This causes a change in the voltage drop across R. The new voltage drop will be $\frac{0{\cdot}45}{1{,}000} \times 68{,}000$ volts = 30·6v. The voltage applied to the grid of V2 will be 30–30·6 = –0·6v., *i.e.* there is a voltage increase of 3·4v. to the grid of V2, *i.e.* the valve conducts.

At first sight it might appear that a voltage change of 3·4v. on the grid of V2 will cause a current rise of several milliamps. In practice only about 1 MA. rise is obtained due to the low anode voltage of V2.

This current can be increased as follows :

1. Experiment with the circuit components associated with V1 so as to obtain a larger current drop from this stage.

2. Use the circuit of receiver No. 1 for the first valve, when an anode current rise of 2 MA. from zero is obtained from V2, when E1 is 30v. and E2 is 22½v.

3. Increase battery E1 to 45v. or more.

If E1 is doubled, not only will V2 have a higher mutual conductance, but the voltage change applied to the grid will be doubled, since R must be increased to keep the voltage normally applied to the grid of V2 at cut off point.

As a matter of interest, one receiver using a combination of 2. and 3. (E1 was increased to 60v.) gave a current rise of over 5 MA!

4. Replace valve V2 by 2 similar valves in parallel. This doubles the current rise. Both V1 and V2 can be either 3S4 or 3V4 valves, and V2 must be wired as a triode ; it is only necessary to connect up one half of the filament, thus economising in L.T. batteries.

If R is made variable, it is a simple matter to adjust the anode current of V.2.

The advantages of a receiver of this type are :

1. A current rise is obtained.

2. Quite large current changes can be obtained, but the weight is considerably less than most multi-valve receivers.

The disadvantages are:

1. The layout is rather complicated.

2. If the anode current to valve V1 ceases for any reason, and the filament of V2 is still connected, no voltage drop occurs across R, *i.e.* the voltage of E1 (usually 30v.) is applied to the grid of V2, which may possibly damage the valve.

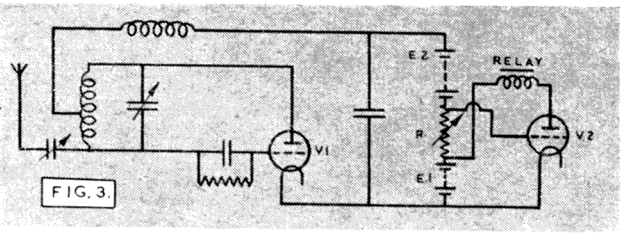


FIG. 3.

This can be overcome by connecting a ½ meg. resistor in the grid lead of V2, thus limiting the grid current which V2 can pass if the grid becomes positive ".

A Crystal Controlled Transmitter

Another reader, Mr. G. A. Kemp of Horley, has built a crystal controlled transmitter, and sends the following particulars :—

" I have just finished testing a new 1 watt crystal controlled transmitter in conjunction with a standard E.D. Mk. III (Hivac) receiver to a range of 770 yds. (measured), which I think is ample for most people's requirements.

The basic circuit is supplied with the crystal by the Quartz Crystal Co. Ltd. but needs slight alterations to obtain the full power available with the low H.T. voltage used on the valve.

The advantages of this transmitter are the comparatively low cost, frequency stability (therefore no trouble from the post office authority), and low current consumption of H.T. and L.T. batteries, and above all *easy tuning*.

1 Watt Crystal Controlled Transmitter. Details of my circuit are as Fig. 4.

L1 Coil. Wind on ½ in. dia. former with 20 s.w.g. enamelled copper wire 14 turns to a length of ⅞ in. (16 t.p.i.).

H.T. tap. Try 4th turn as stated on Q.C.C. leaflet, my TX needed 4½ turns to make it oscillate.

Grid resistor. Do not use a lower value than stated as the crystal may fracture. The cost of this TX is approximately £2. 10s. 0d., according to the source of supply (W.D. etc.) less batteries.

The crystal costs 32/6d. ground to a frequency in the 27 mc. band, if a " spot " frequency is desired the charge is 37/6d. approximately.

If you are interested in publishing this transmitter, I will be only too glad to supply further information ".

Good work Mr. Kemp, it is most gratifying to find someone using a low power crystal controlled transmitter. It is a pleasant change to find a fellow

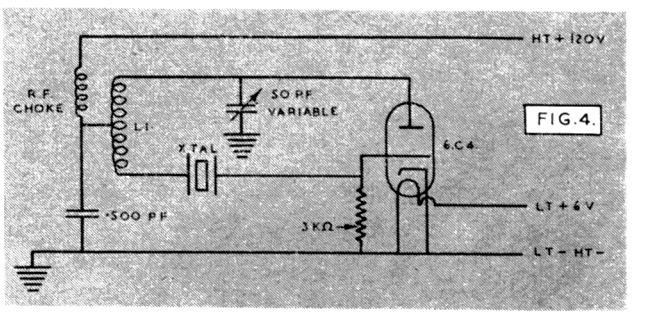


FIG. 4.

determined to stick to the waveband we have been allowed to use. Low power is another step in the right direction, as it will help to avoid trouble. The range is adequate for all ordinary needs. The type of battery used for the low tension is not mentioned, but as the current required is only ·15 amps., which is about half that used by ordinary flash lamp bulbs, a couple of cycle lamp batteries should be satisfactory.

Radio News in General

Through the courtesy of a friend, the writer was recently privileged to see some copies of radio periodicals published in New Zealand. In " Radio and Electronics " was a description of a most interesting receiver, designed around a particularly sensitive relay. This particular relay is manufactured in this country under the name of Elliott, but as the cost is reported to be £7 or £9 there is no point in giving many details of the receiver. Three hearing aid valves were used, costing 17/6d. each, and this enabled the H.T. to be as low as 22½ volts, and the current flow about a quarter of a milliamp rising slightly on receipt of a signal. The principle of working was new to the writer, so will no doubt be new to a number of readers. The first valve was a super-regenerative detector, and as is well known this circuit produces a noise which disappears on receipt of a signal. This noise was passed through the next valve and made to provide a bias on the grid of the relay valve. When a signal was received, the noise disappeared and with it the bias on the relay valve, so up went the H.T. current and operated the relay.

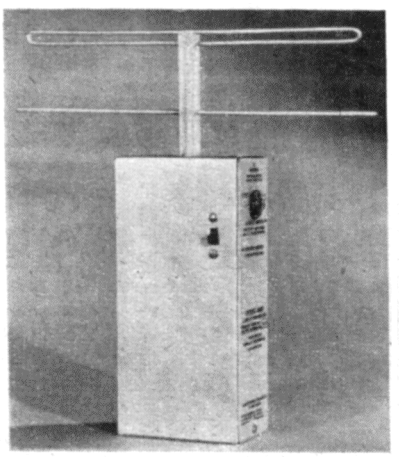
Another of these periodicals was the "I.R.E. Proceedings," and contained a description of a professionally made receiver for use in a ten foot span model for a particular range of experiments. This equipment used four audio frequency channels operated by a " joy-stick ". This gave a neutral and four control positions, up, down, left or right. Only one at a time of course, and no intermediate control positions. The receiver used eight valves, a R.F. valve being used to isolate the aerial, a super-regen. detector, two A.F. amplifiers, and then one relay valve for each channel. Choke tuning was used for each of these. The transmitter was an official secret, so no details were given.

There is news of people fitting two receivers in their models to operate two controls independently. So far no details of the means adopted have been published, but if these two receivers operate from transmitters within the band width we are allowed, the means of doing so is by far the greater achievement. Some time ago the writer tried this scheme and came to the conclusion that if two transmitters were tuned as far apart as possible within the band width allowed, a receiver tuned to one could be operated by the other. At least separate operation seemed unreliable. Where two or more controls are required to operate independently, audio frequency channels can be used. The coming season will no doubt see models controlled in this way.

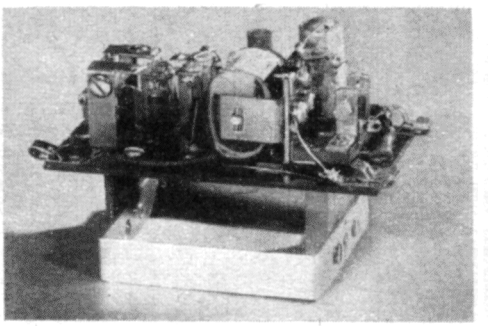
There is another scheme the writer has thought of trying for just two controls. The International Radio Controlled Models Society have issued a pamphlet describing a receiver using a 3A5 valve in conjunction with a 1T4. It is used with a modulated transmitter of the type used with the E.D. Mk. 1 equipment. The current through the relay varies according to the signal. With no signal at all the current is 1 m.a. With the carrier wave switched on the current drops to ·01 m.a. With the modulated carrier the current rises to 2 m.a. If two relays were put in series, one to operate between ·01 and 1 m.a. and the other between 1 and 2 m.a. one could be operated by just switching on the transmitter carrier wave, and the other by switching in the modulated carrier. This could be done quite simply with two push buttons, one of which would need two contacts. These two push buttons would then operate two separate sequence controls such as two escapements, one for rudder and one for elevator. If self centering types were used, both return to neutral with the transmitter off or out of range. These two controls could also be used for rudder only, one for right and one for left with the control switch in the form of a " joy-stick " with just three positions.

That is all for this month. Here's wishing you all " Good Flying ".

Many people are now experimenting with 465 megacycle equipment, amongst them George Honnest-Redlich shown on the right with his latest transmitter. He is controlling a " Radio Queen " and will describe his equipment in a future issue.



Left and below are views of the American McNabb " Citizen-Ship " equipment, which again is on the 465 megacyle band. This band known as the " Citizens' Band " is virtually the only licence-free wavelength available to American R/C fliers.



WORLD NEWS

BY

ARIEL

MUCH as we dislike repetition, we just have to bring up the subject of photographs, again. It really grieves us to have to return pictures of interesting subjects, but we do so regularly, because they are not sufficiently clear for reproduction. It is useless to send in anything out of focus; we cannot use them.

Good black and white glossy prints are what we need, the larger the better, or the negative itself, and photos of modellers and their models with local surroundings are preferred for World News. Pics of the models alone should be offered to Model News.

After which gentle reminder, we get down to business.

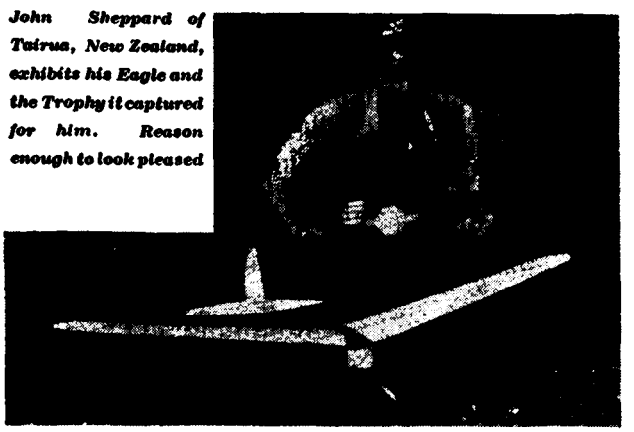
Finland Kalervo Kinnunen of Helsinki sent in the photo of Rolf Wallenius, Finnish triple A2 Glider Champion. The glider shown was flown in the Swedish Glider Cup Contest last year and flew o.o.s. in 10 min. 34 secs. Wallenius' 29th model, it is of orthodox construction, except for the fact that the wing fixing incorporates a dihedral trimmer. This is managed by making the wing tongues of wire instead of the more usual plywood.

Data of interest to A2 exponents are, span 79¼ in., wing area 432 sq. in., length 32½ in., tail area 93 sq. in., weight 17·6 ozs.

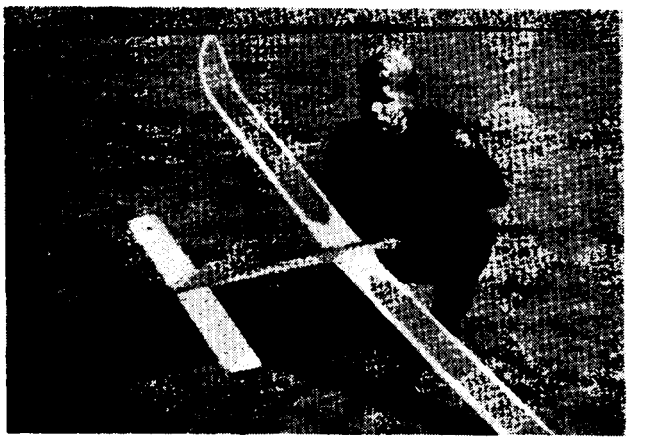
Switzerland The Aero-Club of Switzerland celebrates its Fiftieth Birthday on March 31st, a milestone in history of particular interest to aeromodellers, as this Club is the governing body of Swiss model aircraft flying.

In half a century the Club has advanced from 72 members, interested in ballooning, to a membership of 5,800, who participate in the flying of all types of full scale and model aircraft.

The many successes of Swiss model flyers are well known, and among the full-scale honours, gliding holds pride of place. Alpine gliding, with its centre at Sameden, enjoys an International reputation.



John Sheppard of Tairua, New Zealand, exhibits his Eagle and the Trophy it captured for him. Reason enough to look pleased



Rolf Wallenius, Finnish Glider Champion, holding his high performance A2 model. The wide open spaces behind him will be the envy of many of the less fortunate fliers.

The half-century was marked by an official celebration at Berne on March 31st. On May 26th there is to be the Spring Congress at Lucerne, and this and the International Round Switzerland Flight, and the Flying Week at Saenen-Gstaad, both in August, will combine to make a memorable year in Swiss aviation.

Egypt Writing from Ward 7, R.A.F. Hospital, Wroughton, near Swindon, Wiltshire, L.A.C. Taylor gave us news of his old club, at Shallufa, in the Canal Zone.

With a membership of thirty, about 10 per cent. of the total strength of the station, the Club is justifiably proud of its size. The Secretary is Sergeant "Slats" Benton, builder and flyer of a very successful A.P.S. "Black Magic". With a maximum time of 20 minutes, up to our correspondent's leaving the Club, this model has been the envy of many for its consistent performance and "prang-free" life.

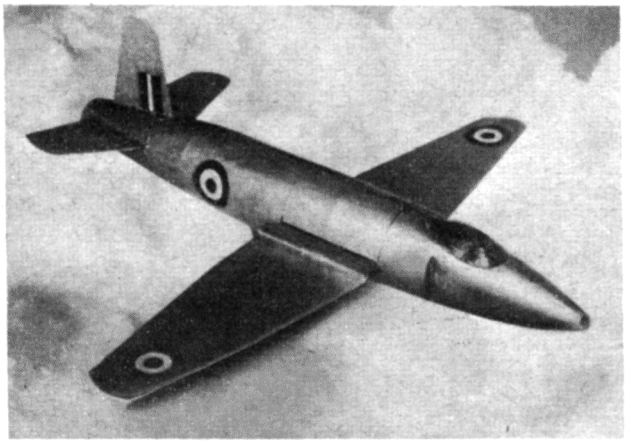
The unluckiest member, Bill Broadhurst, has lost two good engines in flyaways, one being in a "Sporty" which disappeared in cloud which, vide the Station Met. Office, had a base at 3,000 feet. Taylor also had an o.o.s., a 38 in. span cabin job of his own design, E.D. Bee powered, which he chased over the desert on a bicycle, to no avail. Having found a nice strong thermal, it just went on climbing until lost from sight.

The supply problem is acute for this Club, and modellers will sympathise with fellow builders who are without cement for almost two months. The heat does things to the wood which, to quote our correspondent "does not please the boys at all".

We would like more news of the Shallufa bods and would welcome some good photos; what about it, you types?

New Zealand One of our regular correspondents is John Sheppard, of Tairua, North Island. He is a modeller well off the beaten track, Tairua being 49 miles from the nearest railway station, and getting its supplies by boat each week. Situated on the River Tairua, it has its own quay, three stores and a post office, and a population of around one hundred.

John has two flying fields, one a sixty acre grass paddock, the other a dry river bed. As the latter is



about a mile wide, and extends for a further three and a half miles inland, it is a pretty useful spot. At low tide all but 60 to 80 yards in the centre is dry. Thermals are guaranteed, when the sun dries the moisture out of the sandy bed and dethermalizers are imperative.

Latest news from Tairua is that John has broken several Junior Records unofficially and hopes to get them on the books at the North Island Championships. He has been having considerable success with a 45 in. span Stick model, and has hopes for his Eagle glider, which is shown in the photograph he sent us.

A still later letter from this correspondent tells us that the North Island Championships have been cancelled; bad luck, John.

We now await those action shots of your R.O.W. spar model.

Switzerland Returning to Switzerland, we have a regular correspondent at Davos, Arthur Guttman. He has lately built a 12 in. span scale "Attacker", shown above, for Jetex 50 power, which will prove interesting to many Jetex enthusiasts and others.

The fuselage is of laminated paper, and was constructed as follows. An accurate Plasticine model was built up around a cardboard frame and strips of wet tissue, about ½ in. wide, were glued together crosswise over this. At the nose, the tissue was built up to eight layers thick, and four layers from the air intakes back. When dry, the tissue skin was cut open lengthwise top and bottom, pulled off the plasticine and re-joining with cement, reinforced with strips of newspaper.

The wings are of 1/16 in. sheet, undercambered by rubbing a little cement into the lower surface, cemented into slots in the fuselage and reinforced with strips of tissue. The Jetex motor, which is screwed to the strengthened centre-section of the wing, is under a removeable hatch. Tail surfaces are 1/32 in. sheet, cemented to the fuselage and also reinforced with tissue.

Guttman, who had to build the whole model while lying in bed, found the cockpit cover to be the most troublesome part of the job. Eventually, wet cellophane and several coats of thick dope provided the answer.

The model is doped silver, has appropriate roundels and weighs under half an ounce.

Our correspondent would not guess at the performance he might get from his "Attacker", but intends to experiment with similar prototypes if this one is not successful.

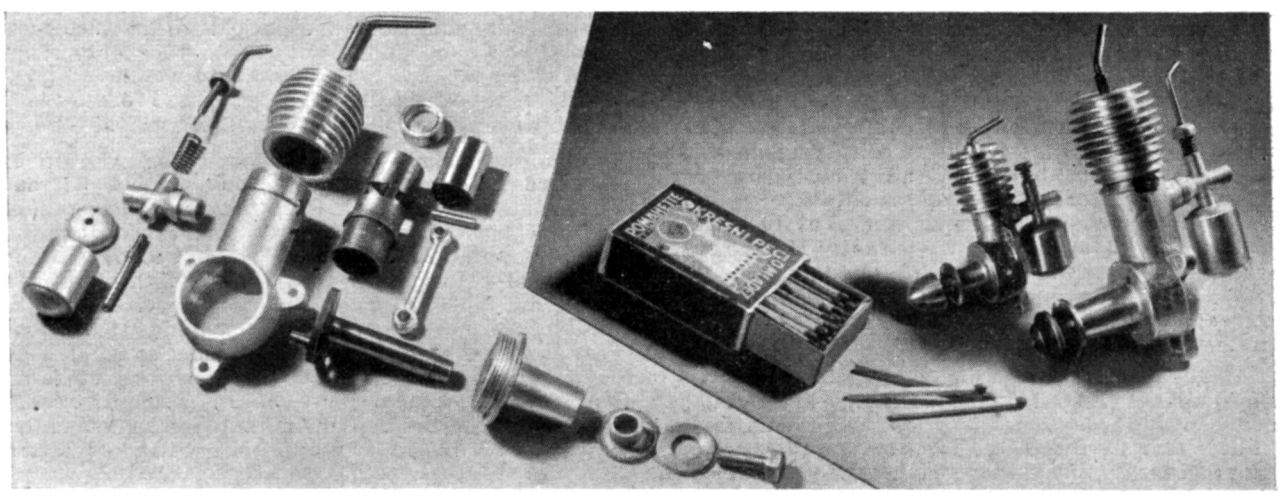
We would like to offer him a bouquet, anyhow, for managing the entire construction on his back; we hope it flies, too.

Czechoslovakia We reproduce photographs of two Letmo diesels, and readers will be interested in a few particulars of these, as they are somewhat rare outside their country of origin.

The larger of them, of 2·7 c.c., weighs 120 grammes (4·25 ozs.) and develops ·18 h.p. at 6000 r.p.m. It has a speed range of 1,800 to 11,000 revs. The overall height is 93 mm. (3 21/32 in.), length 85 mm. (3 11/32 in.) and width 42 mm. (1 21/32 in.

The smaller motor is of ·6 c.c., weight 45 grammes (1·59 ozs.) and develops ·05 h.p. at 6,000 r.p.m. Its speed range is from 2,000 to 12,000 r.p.m. Overall height, 56 mm. (2 13/64 in.), length 64 mm. (2 33/64 in.) and width 23 mm. (21/32 in.).

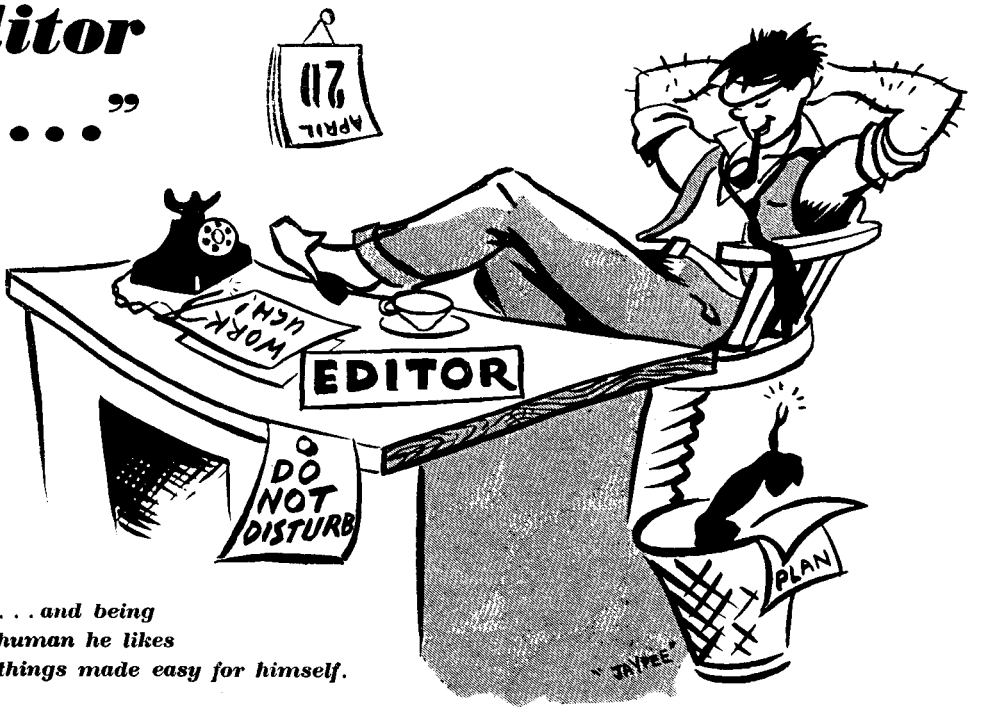
Both motors are normal C.I. type, with adjustable compression, and, according to the official description, from which the above data is drawn, of normal construction. No screws are used, to reduce weight and to simplify replacement of parts. Both motors are run on a standard fuel comprising equal parts of ether, diesel oil and lubricating oil.



"The Editor Regrets..."

Robert Burns

Imparts some pukka gen on how to avoid the unwelcome slip that accompanies so many returned manuscripts.



. . . and being human he likes things made easy for himself.

SO you have a good model, better than that old thing they printed in the October number, and you would like to see yours in print too, and if they print that stuff, why not ? All you have to do is send it in, isn't it? Or is it ?

Maybe you had better get wise to things first. It all depends on how you send it in. Did you ever think about the Editor, and how he looks at your model. Mind you, he never saw it that time it did the ratio of 50 plus and no thermals (you say), or the time it flew right up out of sight into the blue sky, and all the other things it did. All he has to go by is what you send in. So you have to make him want your model, and make the readers want to build it too. After all, the Editor tries to guess what the readers will go for, and it takes salesmanship to sell him your model, rather than that other one very like it which he probably has been offered at the same time.

Perhaps the looks of your model are its best selling feature. If that is the case you need to bring this out by a GOOD photograph. Or several. Not a blurred outline of any old shape, but a photograph so clear that you can see that scratch where the thorn cut it, and the odd patch or so. One that will stand up to being magnified about ten times and still be clear. And it must show off the beauty of the model too, so look at old issues and try to spot photographs which make you want to built the models they show, and then try to spot WHY they make you want to. If you can get the same into your photographs, you have put over the hardest half of the job. An expert pal is a help if you show him just how you want it done.

Maybe your model is a high performance one. Has it won any big event ? If so that will help a lot. But it may not be enough, as there are a lot of big events, and the Editor may have to chose from two or three winners. Not that the Wakefield winner is ever likely to be rejected, but there are lots of free flight power models, or stunters, to name two very popular classes, which are likely to be duplicated near enough. When asked to accept a model in these classes, the Editor has to think over what he has in stock already, and as there are probably several, he must decide whether the new offering has any feature which will justify including it. For example, it may be designed round a new hot engine. There will be readers with that engine and nothing has been published for it yet. Then he may accept it. But he will be more likely to do so if there is some out-of-the-ordinary feature about the model, a new light construction, or a new theory of design, and if there is, then that should be mentioned in the article sent with it. A model which is just a re-hash of standard construction and has no great merit otherwise is not likely to be taken on.

You must keep up with rules, new engines and current tastes. For example, any Wakefields to the 1950 rules aren't likely to be wanted, but there is scope for development under the new 1951 rules, and if you have a good one, a lot of people will want to see it, and to know how it compares with the nearest to it under the old rules.

Then the plans. How are your plans, well up to standard ? Of course they are, didn't you build that honey of a job off them ? Well brother, I used to think the same, but I took to lending my plans around, and the borrowers came back and said " I can't follow this bit here " and " How do you get the shape of this former ", and " How in Sam Hill can a bloke be expected to build this bit ". So now I know that it is one thing to build from your own plans and another to make them so simple that anyone can build from them. So that I have two standards for plans, one for my own use, when it is simpler to take a chunk of wood and cut and fit it until it is right, and the other which shows every piece full size with a lot of extra drawings of sub-assemblies, which plans are only drawn

for the few models I send in to the papers. It is not uncommon for the drawing of this sort of plan to take a week, while the whole model only took three weeks to build, these times being for a flying scale model. The thing I forget most often is to write down the sizes of wood used in all the parts. Maybe it is shown on the plan somewhere, but you can bet that a lot of people won't see it. And if the wing calls for any packing up while it is being built, mention it right on the wing plan where it can't be forgotten.

Then there are these articles to go with the job. Do you ever read the instructions when you build a model? I don't, after the first glance through. So if your model absolutely needs a special building procedure, have it on the plan, or put "see instructions" at that bit. All ordinary models don't need half the instructions they get, as ordinary models for building by ordinary experienced clubmen need none at all, and only the very simple jobs, for beginners, and the very difficult jobs, which can only be built in one special way, need step by step details. You would be far better to use your article, first to get the reader interested in the model, then to tell him any special things about it, and then to say how to modify it for other engines, or stuff like that, and what sizes of engine it will take, apart from your one, and then to give all the dope on trimming. Keep it from rambling on and you have a better chance of selling it.

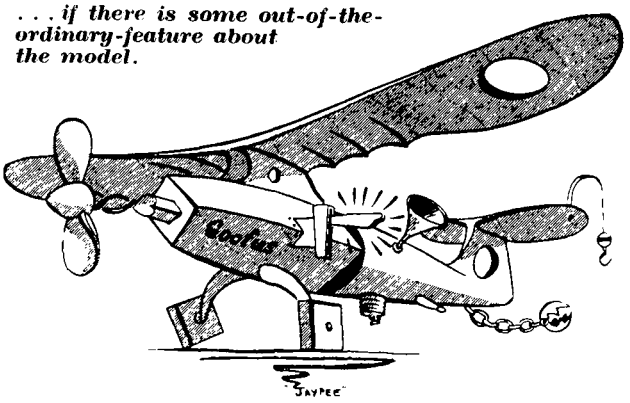
Maybe you want to write something apart from an article to go with a plan. Articles about experiments, or theory, or making things, or a new construction you have discovered, or something. Well, keep it simple. I want you to get this right. If you are one of these lads who think in the Calculus and write a brilliant article in a firework display of Greek letters and odd symbols, you are no use at all to 99% of us, and the other 1% probably won't believe you anyway. But if you can say the same thing in ordinary English, you may find ten times as many people will understand it all, and most of the rest will get some good out of it. After all, they had to translate the Bible into English, even if all the Cardinals could read it in the Hebrew. You will find it harder work to write the English version than to do the original research, but stick to it, it is worth while and that is the only way for the very best models to come into being, by the ordinary modeller getting an insight into the ideas of the research men.

There are rules to follow in this too. A solid chunk of print isn't attractive, and even the most abstruse article on research ought to be broken up by using diagrams and sketches, photo shots of apparatus, or of models, and even one of the author if all else fails! It helps the Editor to lay out a page which will attract readers, and being human, he likes things made easy for himself, by having the contributor doing the work for him if possible.

Can you write? Or can anyone read the stuff when you have written it? If not, or if in doubt, type it and only one side of the paper, with lots of space between lines. This is because the Editor uses the extra spaces to put your spelling right, to cut out bits, to rearrange parts, and muck the whole thing up generally. He also has a secret code which he uses to tell the printer how to mangle the remains still further, so humour him, double spaces and decent margins, and mind you put in a few spelling errors to give him something to do . . . . (*space for the Editor to be rude in*).

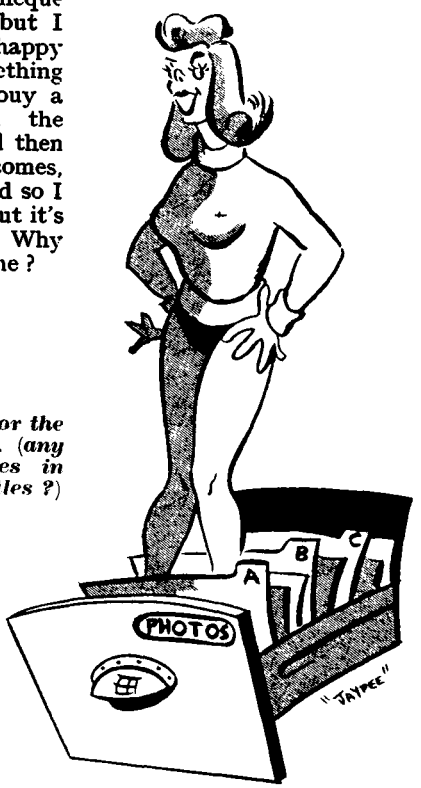
After all that, maybe you get your article back. Then it is a No Sale job. Maybe it is just a dud, huh? Or

. . . if there is some out-of-the-ordinary-feature about the model.



maybe the Editor has too much like it already. He has to try to give all sorts of readers (and we mean ALL SORTS) something every time they buy the paper. So he would like to print a good flying scale job, a radio control job, a rubber job, a glider, a power duration job, stunters, speed jobs and engine tests, and all the other things, news of contests, etc., not forgetting something for the juniors (any good blondes in the photo files). He can't do it, but every type gets its share, so that he keeps a sort of skeleton for the next four or five months ahead and spots each plan he buys, into its place. If he has too many of one kind, then he must reject yours if it is the same, or you must expect to wait for maybe close on a year before he can print it. Models go out of date like every other device, so that he can't keep them too long.

Maybe you think that we who get into print from time to time are blooming millionaires? Well, guess again. It is true that a cheque helps us along, but I find that I am so happy when I get something accepted that I buy a new engine on the strength of it, and then when the cheque comes, I buy another, and so I am still broke. But it's all in the game. Why not try it sometime?

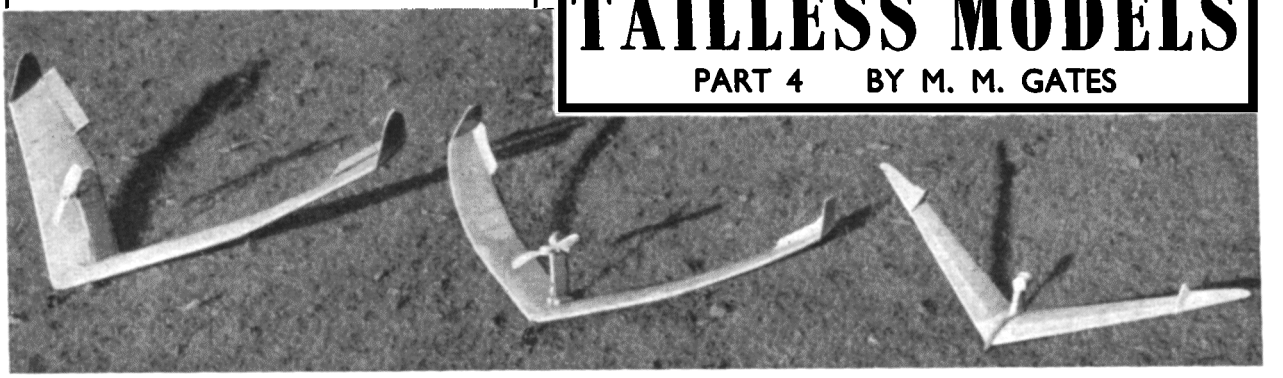


Something for the Juniors . . . (any good blondes in the photo files?)

This concluding article describes the Author's experiments with the three models shown below. Left to right, they are :—the 48" Ghoul 111 (Elfin 1·49), 32" Ghoul II (Dart ·5), and the 27" Jetex Flying Wing (2 oz. thrust).

POWERED TAILLESS MODELS

PART 4 BY M. M. GATES



Diesel Powered Tailless Models

THE forecasts in Part One of this series have since turned out to be amazingly accurate. No serious difficulties have been encountered in trimming tailless diesel models. The gyroscopic effect which keeps the nose up in a left turn seems to make a tremendous improvement over a jet tailless.

Even with the 1·3 thrust/weight ratio of the Dart-powered Ghoul II, only very slight left turn was necessary to give a vertical spiral climb, although the model appeared to be climbing with considerable lift on the wings. This was because the engine was mounted on a low pylon, compared with that used for the jet. (It was considered safer to have too little downthrust, than too much.) This nearly turned out to be wrong, for the model stalled violently whenever the thrust fell to less than the weight of the model. Another pylon was made ; 1 inch taller than the previous one ; but this did not give the anticipated improvement. Instead it seemed to reduce the climbing spiral stability, which one might expect, so that the model would climb very slowly while circling fast. I next made tests with larger tip fins. These further reduced the climbing stability, although they improved the slight Dutch rolling which had previously been apparent on the glide. My latest tests, with *forward* fins, show that they greatly improve the steadiness of the glide, while reducing the climbing stability only very slightly.

In contrast with the Ghoul II, the larger Ghoul III climbed steadily with any thrust within the Dart's range (up to a thrust/weight ratio of 0·9). Again the two types of pylon were tried, the taller one giving a slightly better performance. In particular it gave a wider climbing circle, and made a straight climb possible without stalling. On the other hand it seemed to lengthen the take-off run required, so there would appear to be little to choose between the two pylons. A fairly tall mounting was also used for installing an Elfin 1·49 in the Ghoul III, giving a thrust/weight ratio of around 1·5. This also gave a very stable spiral climb, both at maximum power, and with reduced thrust.

After testing the Ghouls under power the downthrusts were compared with the calculated ones for straight climbs, given in Part Two of this series. This was interesting, for it showed that for a steady climb, they were mainly between $\frac{3}{4}$ and $\frac{7}{8}$ of the calculated values, one exception being the Elfin powered Ghoul III at full power, which was nearer $\frac{1}{2}$. This provides a good basis for the design of diesel models—both for normal and vertical climbs with left turn we can use a downthrust of $\frac{3}{4}$ the calculated value, and we shall not be far out. More than $\frac{7}{8}$ will probabiy lead to trouble with stability, but as little as $\frac{1}{2}$ may be necessary with very high thrust/weight ratios (say, over 1·4) where the downthrusts would otherwise become very large.

From these tests, we conclude that there is no fundamental difficulty in achieving stable climbs with diesel powered flying wings, at any rate up to a thrust/weight ratio of 1·5, although the arrangement of side areas is rather critical. Thrust/weight ratios of the order of 2 will prove possible very soon, and it remains to be seen whether climbs will still be stable under these conditions.

Tailless Jet Models

When the Allbon Dart appeared on the market, it was used to replace the Jetex units on all the Ghouls. All jet tests were then concentrated on a " Jetex Flying Wing ". Since this was a kit, it was possible to build the model more quickly than one especially designed for the purpose of further tests. Increased dihedral was incorporated to improve stability at high thrusts.

The result was at first rather worse than expected ; very violent Dutch rolling on the glide was caused by the smallest gust of wind, the oscillations being slow as with a heavy, model. The reason was immediately apparent—the wood for the sheet wingtips had been hard balsa. When new light balsa tips had been substituted, and the fins increased in area, the glide was satisfactory. (It should be pointed out here that the trouble was primarily due to the increase in dihedral, and not to any fault of the kit.)

After a few flights with a Jetex 50, this was replaced by a unit giving a thrust which could be varied between $\frac{1}{2}$ oz. and 2 oz., and the weight complete was 1·6 oz. without fuel. The first flights, with 2 oz. thrust were not really stable. The climb would begin shallow but would then become more steep, eventually passing the vertical and continuing as a series of loops. In an effort to induce stability, a new technique was devised. It is a method of increasing the thrust at which the model is still stable, at the expense of a certain amount of aerodynamic efficiency and weight.

Asymmetrical Trim

There being no favourable torque or gyroscopic effects, the control of a high thrust jet model is apt to be a little critical, to put it mildly. Here is the method suggested for improving the flight path stability.

Let a small lead weight into the port wingtip, then twist the wings or adjust trim tabs until the model has the required rate of turn to the right on the glide. Offset the thrust line a sufficient amount to the right to give the model a slight turn to the left in the climb. Now any tendency to spiral would be to the left. If the turn became more steep the model would speed up, thus increasing the effect of the twist which tries to turn the model to the right. The effects of the tipweight and the sidethrust, turning the model to the left, do not of course increase. Thus the model should be righted to its correct rate of turn.

A series of flights was then made with the " Flying Wing " at a thrust of about 1½ oz., with a weighted port wingtip and extra washout on the starboard wingtip to give a right-hand glide. The thrustline was slightly offset to starboard. The climb would then start straight, but the turn would increase, until, just before the fuel was expended, it was so steep as to prevent any further climb. *However the climb did not change to a spiral dive.* By contrast, a right hand turn rapidly increased in steepness, until the inevitable crash—perhaps this was the most striking demonstration of the effectiveness of the method ! With no turn the climb finished in a series of loops.

With less thrust (about 1 oz.) and very little turn, the behaviour after a poor launch was interesting, and rather as would be expected. The model would zoom up straight into a near vertical position ; then, as it lost speed, the extra weight of the port wing caused that wing to drop, so the model would continue climbing in a direction at right angles to its original heading. Thus a true stall was avoided.

It therefore seems to be conclusive that this trimming technique makes for a less sensitive and more stable model, and that its use would be advantageous on most, if not all jet models, and probably on many power models as well. The final improvement to the climb of the " Flying Wing " was made by adding a triangular forward fin, extending from the wing leading edge to the top of the jet pylon. This eliminated the rapid circling which had previously occurred at the end of the climb, even with thrusts up to 2 oz. and also further improved the steadiness of the glide.

The Ghoul III

One result of the powered flying wing flights has been to show that the layout of the Ghoul III includes all the best aerodynamic features which have so far been tried.

An important feature is the use of the so-called ' crescent ' wing planform, with reduced sweepback on the outer sections. In contrast the earlier Ghouls had the greatest sweepback on the wingtips. This sometimes led to spinning, especially when side areas were small. This has not happened with the Ghoul III layout. The undercambered NACA 6409 aerofoil section certainly gives a big improvement to the glide, compared with the old reflex type which was used on the Ghouls I and II.

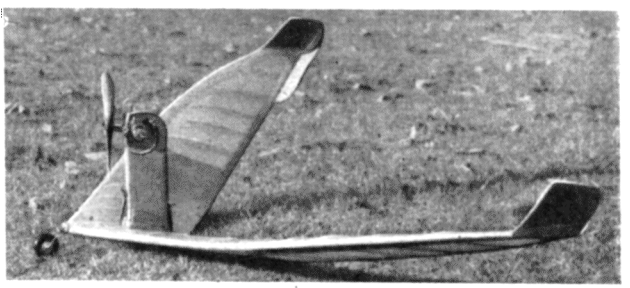
When designing a sweptback wing, it is essential to provide adequate resistance to the shrinkage of the covering. This is done on the Ghoul III by extensive use of gussets. Probably a more efficient way would be to use W-bracing, but it would be less simple. Failure to use one of these methods would soon lead to the wing collapsing, or bad warps.

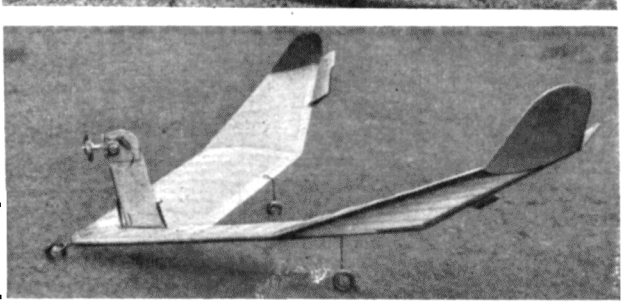
Reflex Sections

More than any other single factor, the continued use of reflex aerofoil sections of full-size type has retarded the development of flying wing models which can compete with pylon models. It is therefore encouraging to see the many tailless designs which have appeared in this country during the past year utilising undercambered sections. Two facts make the practice of using a reflex section bad, at any rate for duration models. Firstly, these aerofoils were designed for good lift/drag ratios, not for duration. Secondly, they were designed for large Reynolds Numbers, and due to scale effect they are unsuitable for small wings. There is still a lack of suitable aerofoil sections for tailless models, giving a high lift *and* good stability.

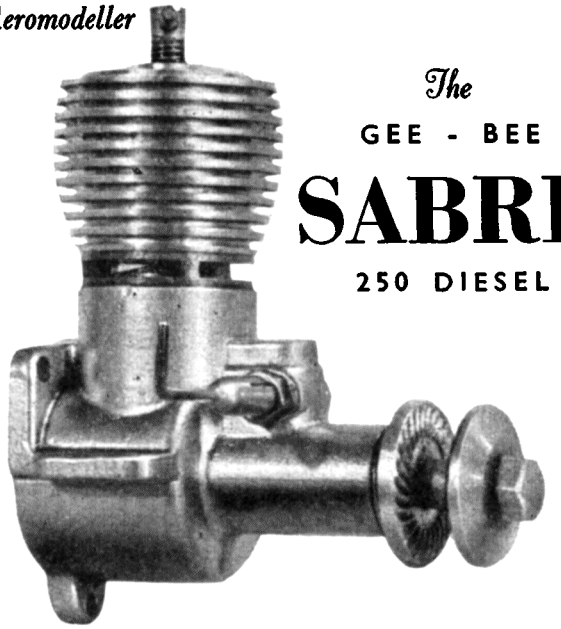
It is hoped that this series will have shown many aeromodellers that tailless power models have far greater possibilities than are generally known, and that it will help them to get enjoyment from flying tailless models of their own. It is very satisfying to see your tailless model climbing in a vertical spiral, then descending in a shallow glide, comparable with that of an orthodox model. Even though efficient tailless models can be made (and a *still air* ratio of 12 : 1 should not be difficult to achieve with an F.A.I. loaded model based on present knowledge) it is doubtful whether tailless models can be made to give a better performance than the best orthodox models, except possibly in a few categories. Even so they can still be greatly improved—the development of new elevon arrangements, new aerofoil sections, improved climbing stability combined with the elimination of Dutch rolling, lighter structures, higher thrust/weight ratios ; these are some of the things which can give greatly superior performances. With all this scope why don't *you* build a tailless model?

Plans for Ghoul III will be described in July AEROMODELLER.





***Right:** Upper view of Dart powered Ghoul II shows increase in sweepback at tips. Weight of this version is 4¼ oz. Lower photo shows less sweepback on Ghoul III tips. With Dart power it has flown 2 m. 47 secs. in still air British record attempt.*



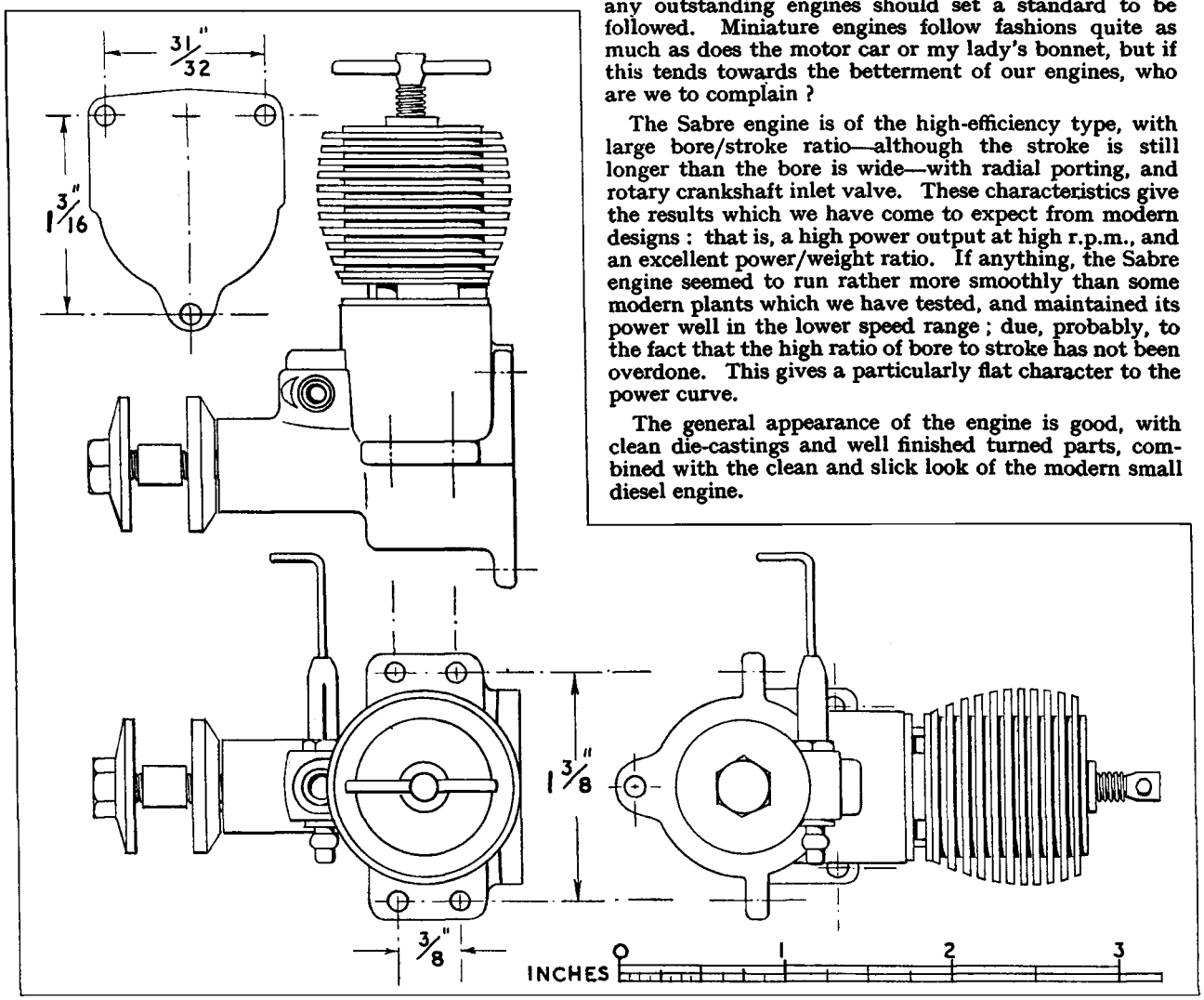
The GEE - BEE SABRE 250 DIESEL

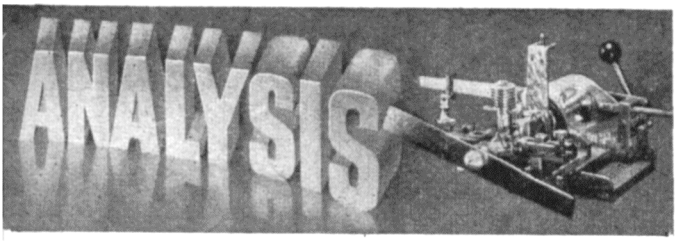
ALTHOUGH most of us are aware of the great expansion which has taken place in recent years in the Australian engineering industries, it is surprisingly seldom that one actually encounters mechanical products from " down under ". It was with great interest, therefore, that we carried out the tests on the " Sabre " engine, recently sent to us from South Australia, and if this is a fair example of Dominion engineering, then their products can rank with the best.

Although bearing a marked resemblance to certain recent British designs, it is, I suppose, inevitable that any outstanding engines should set a standard to be followed. Miniature engines follow fashions quite as much as does the motor car or my lady's bonnet, but if this tends towards the betterment of our engines, who are we to complain ?

The Sabre engine is of the high-efficiency type, with large bore/stroke ratio—although the stroke is still longer than the bore is wide—with radial porting, and rotary crankshaft inlet valve. These characteristics give the results which we have come to expect from modern designs : that is, a high power output at high r.p.m., and an excellent power/weight ratio. If anything, the Sabre engine seemed to run rather more smoothly than some modern plants which we have tested, and maintained its power well in the lower speed range ; due, probably, to the fact that the high ratio of bore to stroke has not been overdone. This gives a particularly flat character to the power curve.

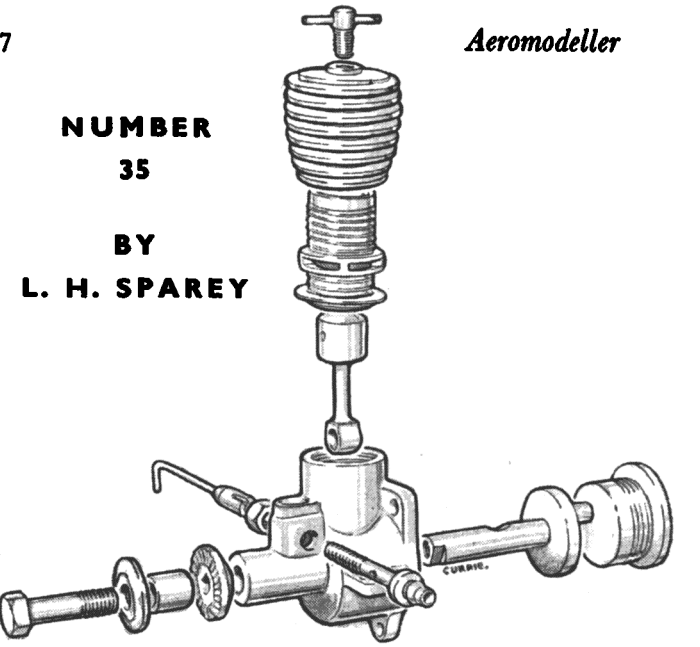
The general appearance of the engine is good, with clean die-castings and well finished turned parts, combined with the clean and slick look of the modern small diesel engine.





NUMBER 35

BY L. H. SPAREY



TEST

Engine : Sabre 2·50 c.c. Competition Diesel.

Fuel : Equal parts Castor Oil, Paraffin, Ether, plus 2 per cent. Amyl Nitrate, as recommended by makers.

Starting : Good at all times, with engine hot or cold.

Running : This engine runs extremely well and evenly over a range of speeds greater than would be expected from an engine of this class. Needle control is not unduly sensitive, but the position of the needle valve is dangerously near to the airscrew.

B.H.P. : The maximum b.h.p. figure of ·225 at around 13,000 r.p.m. puts this engine into the super class. The power curve is exceptionally flat and shows surprisingly little variation between about 10,000 and 14,000 r.p.m. At speeds above this figure the output drops fairly sharply, until it is down to ·060 b.h.p. at 15,100 r.p.m. At the other end of the scale, a similar ouput is found at around 4,000 r.p.m.

Checked Weight : 4·2 ozs. less tank.

Power Weight ratio : ·860 b.h.p. lb.

Remarks : As the fuel recommended for this engine is rather unusual in these days of proprietary fuels, a few random readings were taken at various points of the speed-range, using a well-known branded diesel fuel. Results seemed to be about the same using both, so the test was recorded on the fuel advised by the manufacturers.

GENERAL CONSTRUCTIONAL DATA

Name : Sabre.

Manufacturer : G.B. Motors, Grange, South Australia.

Distributor : Model Aircraft Industries, Glenelg, South Australia.

Australian Retail Price : 99s. 6d. (equivalent £4 sterling).

Type : Compression ignition (diesel).

Fuel : Equal parts Castor oil, Kerosene (paraffin), Ether, plus 2 per cent. Amyl Nitrate.

Capacity : 2·45 c.c. ; ·14 cu. ins.

Weight : 4 ozs.

Mounting : Beam or radial.

Recommended Airscrews : 8×6 ins., 8×8 ins. for Control-line ; 9×5 ins. for Free-flight.

Bore : ·555 ins. **Stroke :** ·620 ins.

Cylinder : Hardened steel, 360 degree porting.

Cylinder Head : Duralumin.

Piston : Meehanite.

Contra Piston : Meehanite.

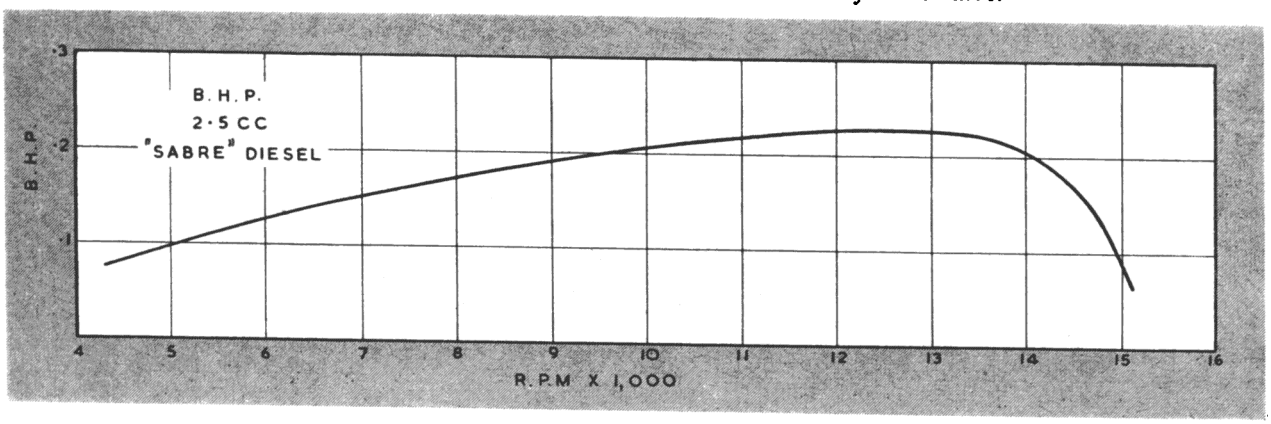
Crankcase : Diecast aluminium D.T.D. 424.

Connecting Rod : Machined duralumin.

Crankshaft : Nickel steel, hardened, ground and lapped.

Main Bearing : Meehanite.

Induction : Rotary shaft valve.



AIRCRAFT DESCRIBED No. 41

THE DE HAVILLAND 88

COMET

BY G. A. CULL

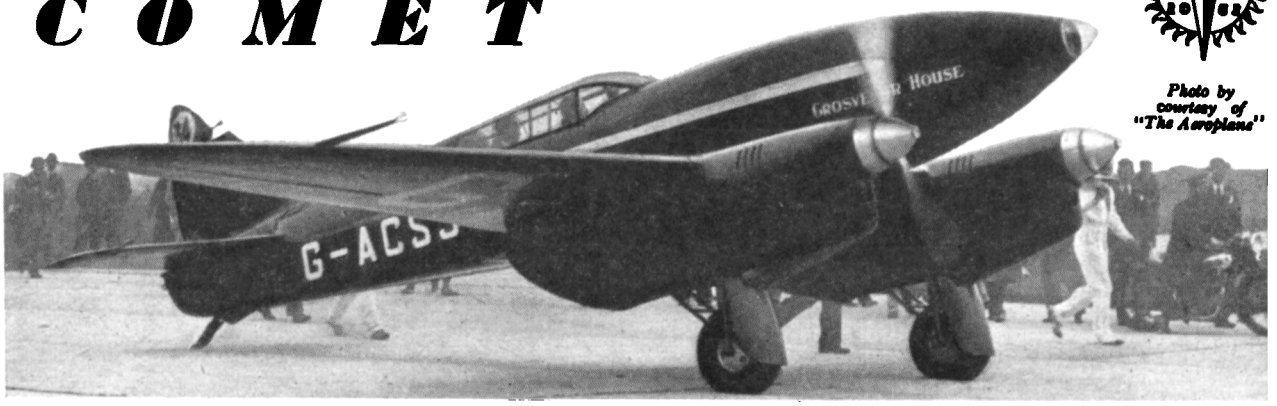


Photo by courtesy of "The Aeroplane"

Now to be seen at the Festival of Britain Exhibition, the famous "Grosvenor House" wears the red and white colours in which she raced 17 years ago.

THE most important job on hand at the De Havilland works at Hatfield in 1934 was the production of an out-and-out racer, intended to win the Mildenhall to Melbourne MacRobertson Race in October of that year. This design, to become world-famous as the "Comet," was produced from scratch in just over eight months and was all that a twin-engined racer should be, with fine rakish lines that took every advantage streamlining had to offer. Frontal area was kept low by tandem seating for the two pilots, a manually retracting undercarriage and a thin wing. For the race, ten specially hotted-up Gipsy Six "R" racing engines were modified from standard, these having the compression ratio raised to 6·5 : 1 and revving faster to give a maximum of 224 h.p. at 2,400 r.p.m. at sea level. Cut-down Hamilton V.P. propellers were tried but they were heavy and their root form hampered cooling, so Ratier propellers were fitted to the Comets built for the race. Supercharging was not employed as the increased fuel consumption and consequent fuel load, would have cancelled out any advantage.

H. Broad flew the first Comet, G–ACSR, on the 8th September, 1934. This was flown in the race by Ken Waller and Cathcart Jones, and the other Comets were G–ACSP in the hands of the Mollisons, and G–ACSS flown by Tom Campbell-Black and C. W. A. Scott. 'SR was green with white lettering with the racing number 19, 'SP, named "Black Magic," was black and gold and was No. 63, and 'SS, "Grosvenor House," was brightest in red and white and numbered 34.

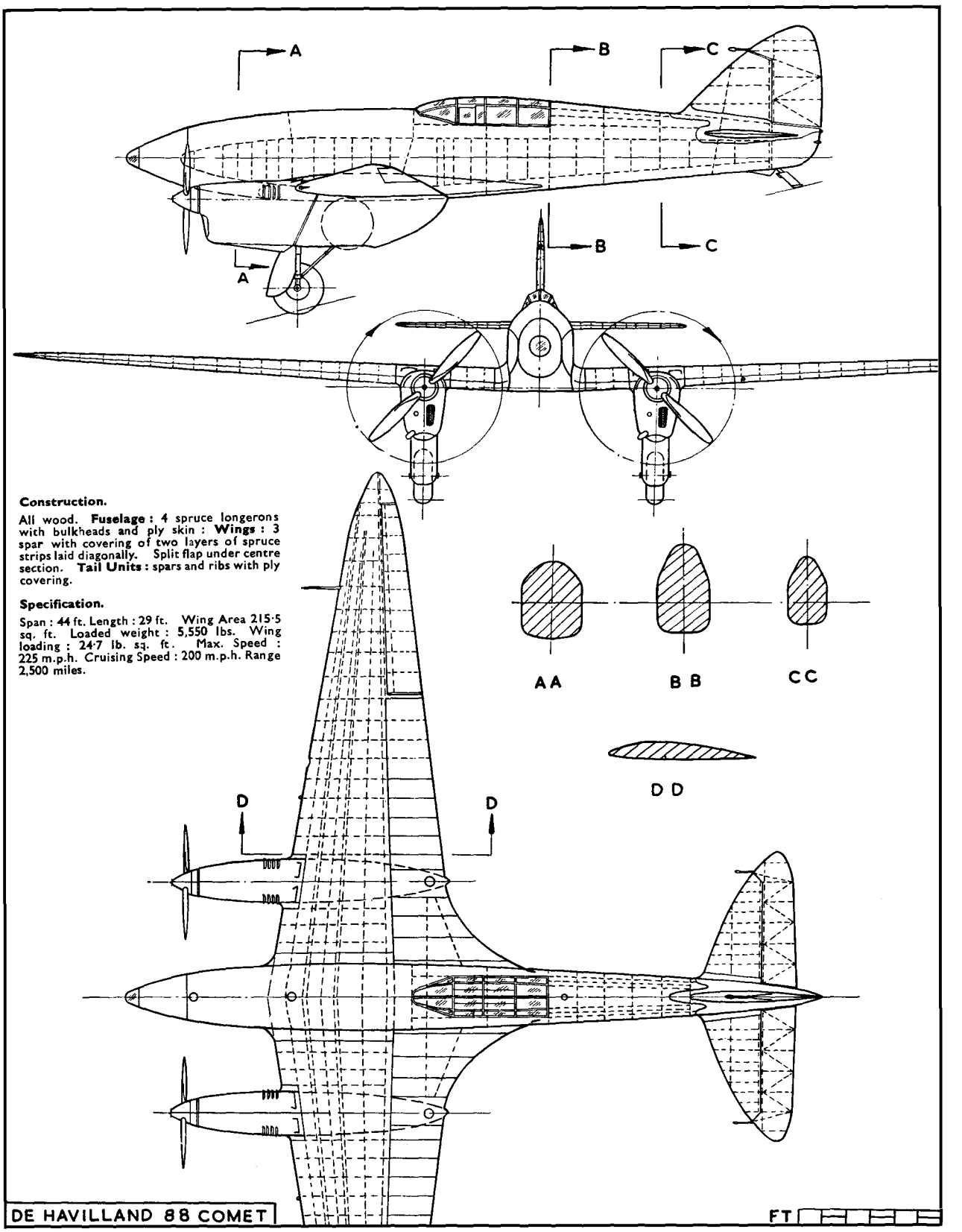
The Mollisons reached India in record time but had to retire at Allahabad with engine trouble, and 'SR had similar trouble but reached Melbourne after a long spell of one-engine flying. Campbell-Black and Scott experienced loss of oil pressure but kept on to win and establish a record in 2 days 23 hours 18 secs. 'SR landed back at Lympne on November 2nd to make an out-and-back record of 13 days 6 hours 43 minutes.

In 1935 G–ACSP was sold to Portugal to become CS–AAJ, and G–ACSR became F–ANPY, having been bought by the French Government, and was flown from Croydon to Paris on April 11th at an average speed of 227·77 m.p.h. The famous Grosvenor House was acquired by the Air Ministry who obliterated her finery with silver dope, R.A.F. roundels and the serial K5084. In this dress she made a further public appearance when she flew at Hendon in the 1936 R.A.F. Air Display. In June, 1935, a fourth Comet emerged from Hatfield, destined for the French Government, and this machine had a pointed nose fairing in place of the landing lamps of its three predecessors.

After two years of service investigation, G–ACSS was handed over to Essex Aero Ltd. who, at Gravesend, completely overhauled her for F/O Clouston to fly in the Marseilles–Damascus–Paris race in August, 1937. Various modifications were made, the main ones being the installation of standard 205 h.p. Gipsy Six Series II engines which necessitated larger cowlings and intakes, and D.H. "1,000" size V.P. props. were fitted. Now named "The Orphan" and finished in pale blue, the Comet averaged 194 m.p.h. in this race, and finished fourth behind Italian tri-motor S.M.79's. Next outing was in the '37 King's Cup piloted by Ken Waller, but harsh handicapping placed 'SS twelfth after averaging 213·4 m.p.h.

In preparation for another record attempt, more modifications were made, e.g. fuel tankage was increased by 8 gallons to total 246 galls., radio installed, larger wheels to take the increased weight, and new tank venting fitted as a result of icing in the Damascus race. G–ACSS was renamed "The Burberry" and, with F/O Clouston and Mrs. Kirby Green (both clad in Burberry flying kit), set off for the Cape in November, '37. A new record of 45 hours 2 minutes was set up and, on returning, the Croydon–Cape–Croydon record was also in the bag at 5 days 17 hours 28 minutes. In company with V. Ricketts, Clouston set off for New Zealand in March, 1938, and returned in less than eleven days, having established ten new records.

Thereafter G–ACSS lay at Gravesend and during the war fell derelict in the open until rescued by De Havillands. In recent months the ravages of exposure have been repaired as far as possible under the direction of E. J. Mann at Hatfield. Unfortunately the weather had so weakened the structure that it has not been possible to mount complete engines. Externally, however, she is again "Grosvenor House" as she was in her prime, and at present makes a proud show at the Festival of Britain Exhibition where all may see her and recall the magnificent record of this fine British veteran.



Construction.

All wood. **Fuselage :** 4 spruce longerons with bulkheads and ply skin : **Wings :** 3 spar with covering of two layers of spruce strips laid diagonally. Split flap under centre section. **Tail Units :** spars and ribs with ply covering.

Specification.

Span : 44 ft. Length : 29 ft. Wing Area 215·5 sq. ft. Loaded weight : 5,550 lbs. Wing loading : 24·7 lb. sq. ft. Max. Speed : 225 m.p.h. Cruising Speed : 200 m.p.h. Range 2,500 miles.

That Abadan Man

DEAR SIR,

The blast blown by Mr. G. C. Hughes on Mr. G. C. Hughes' trumpet (Hangar Doors, March 1951) hardly merits response, but this club wishes to place on record that on no occasion during '46, '47, '48, '49 or '50 did a Mr. G. C. Hughes endeavour to enter any of the local contests organised or attended by the Pilgrims—and there were twenty-two contest events, exclusive of C/L, in 1950 alone. All-comers are welcome. When, for example, the Yeabsley twins (on holiday) cleaned up the sailplane event at our Open Day, everyone was tickled pink.

As for " class modellers in or near Margate "—well, we contend with coastal breezes (and fewer thermals than inland clubs), but some of our club records are: Power ration 86·3; Power open 12m. 40 (o.o.s.); Sailplane 13m. 35 (o.o.s.); Speed Class IV 106·2 m.p.h., etc., apart from one national record.

If we may be permitted a somewhat asthmatic snuffle down our own aged post-horn, we reckon to give any club a struggle on contest days, and if Mr. Hughes cares to talk through his pocket instead of his hat, I will lay him 10 to 1 that this club can produce at least half-a-dozen members capable of matching his times in any contest he cares to name, and at least three who will give him time-and-a-half and still see him off, provided that we select one event for every two he names.

Iranian papers please copy.

Yours faithfully,

V. E. SMEED

Chairman, Canterbury Pilgrims M.F.C.

Jet-Age Scale Plans

DEAR SIR,

I have felt for some time that your otherwise excellent magazine does not give sufficient attention to " solids ". As a small minority we cannot expect more space, but surely you could include 1/72 plans of modern aircraft such as the Hawker 1081, Sabre, Russian jet, etc., instead of obsolete types such as the Missel Thrush, which few modellers can wish to build. Also the identification value of such plans might unfortunately be of great importance in the future.

I am sure that many other solid modellers also have similar views.

Cambridge. H. W. GARWOOD.

(As our regular readers well know, we publish " Aircraft Described " especially for the scale enthusiast and endeavour to cover as widely as possible the full size sphere. It is, however, our strict policy only to give 100% accurate drawings and information of the aircraft so featured, and it is in turn obvious that this can only be done when all the necessary information is available. Unfortunately, with the majority of modern jet aircraft, including those quoted by reader Garwood, this is not always forthcoming. Admittedly the aircraft can be seen at Farnborough and one can obtain scanty silhouettes from the manufacturers, together with a note that "as the aircraft is still on the Part Publication List, no further information is available for the present". This is, however, not sufficient for our purpose unless we are to risk the possibility of giving readers inaccurate drawings and information. We believe that in refusing to risk the possibility of inaccuracies we are carrying out a policy in accordance with the wishes of our readers, and propose to stick to this policy unless they inform us to the contrary.

Finally, we would stress that the unremitting efforts of George Cull are directed at obtaining " gen " on the latest types, and as a sop to reader Garwood would mention the not too distant possibility of featuring the Canberra.—(ED.)

Antipodean Appreciation

DEAR SIR,

This is a note of appreciation of a very fine little model, the plans of which I saw in the AEROMODELLER in your very good series of articles " Especially for the Beginner". I refer to the Tomboy.

I am not a beginner exactly, having begun modelling back in the early 1930's, when spruce was the best timber available here and oiled silk the last word in covering material. I have since those days built and flown many models—my own designs, and those of some of the most famous flyers in the world. From Knight's " Kinglet " and Pelly Fry's Seaplane to Evans' " Jaguar " and Twomey's " Rebel "—and amongst the Americans I have built from Ruggeris, Light, Cahil, Zaic and Goldberg and many more, but I have never had such a plane as the Tomboy. I could not await the arrival of the A.P.S. plans, they do not arrive here until a month after the AEROMODELLER, so I scaled my own, and built the model within a week of receiving the issue in which it appeared. It flew straight off the board, the only trimming needed was turn and even this set to the 30° recommended was dead right.

Three test flights with increasing power, and motor runs, saw a 3 min. flight with the last on 20 secs. Next came R.O.W. tests and here again she flew perfectly. I changed to a 7¾ × 6 E.D. prop. and my Bee dragged the Tomboy up in a competition climb even with the floats. For two months I flew Tomboy at every opportunity, and never had a poor flight, and quite a few outstanding ones. 5 mins., 7 mins., and 4 mins., and R.O.W. I had 2 mins. in a high wind and off very rough water, and again 3 mins. in the evening. Last Sunday at our Championship I flew her and tempted the fates once too often. With a 20 sec. motor run she was timed for 6½ mins. from the take-off spot. I followed her across country until after 15 minutes she disappeared into some cumulus at about 1,500 ft. and a couple of miles to leeward of me. My next Tomboy (which will be built for an Elfin 1·49) will have a " de-therm " on it.

So thanks to Vic Smeed for a fine design, and thanks to you, Sir, for publishing the plans.

Auckland, New Zealand. F. G. MARTON.

CLUB NEWS

The types looking so pleased with themselves have reason to be as they were prize winners at the 1950 North West Area Rally, organised by the Lancaster and Morecambe model aero club, at Bolton - Le - Sands.

BY the time you read these few lines the 1951 Contest season will have got under way, and our main hope at the moment is for better treatment from the Clerk of the Weather than was experienced in 1950. With our experiences during last season's contests, followed up by what must be one of the wettest and dreariest winters on record, the law of averages should provide us with a more reasonable amount of flying weather this year.

The **SOUTH EASTERN AREA** are apparently having a little spot of additional trouble, complaints having been lodged against the regular holding of Area meetings in Brighton. This distribution of meetings is a point that many Areas have to contend with, though quite a number have now finalised on a central meeting place that seems to meet with approval. Travel difficulties are of course the main stumbling block, for I know in my own Midland Area that whilst it is comparatively easy to travel north to south, any east to west journeys are ten times as difficult. In all places where a centralised meeting place is impracticable, I advocate that both business and contest meetings should be travelled around the Area.

The **NORTH EAST SCOTTISH AREA** is to hold a Scottish National Control line Rally at Montrose Cricket Park on Sunday, June 17th, and they intend to make it the biggest and best ever. Nothing on this scale has so far been attempted and they are certain the event will decidedly improve the standard of flying if nothing else. As the major event in Montrose's Festival of Britain week it is anticipated that a crowd of thousands will witness just what aeromodellers can do, and we wish the Area every success with their meeting. Everyone is welcome, there are no entry fees and a magnificent prize list is available! It is anticipated that official Scottish speed records in all classes will be attempted, so if any speed merchant wants an " easy " record, now's the chance!

Contest venues in the **NORTH EASTERN AREA** have been well spread around and will take place at Morpeth, West Hartlepool, Tow Law and Newcastle, respectively. An inter-club knock-out competition has been arranged, teams of three flying rubber, power and gliders.

The **NORTH WESTERN AREA,** in accordance with its policy of catering for the clubs under its control during the winter period, staged a winter rally on Sunday 11th February, on a ground adjacent to Sealand, now, alas, out of bounds. Although the ground was excellent the weather let them down badly, a cold easterly wind and continual rain making flying rather hectic and very

CONTEST CALENDAR

April	29th.	North Hampshire Rally. Lasham. London Area C/L Championships. Fairlop.
May	6th.	WESTON CUP & HALFAX TROPHY. (Area.)
	13–14th.	INTERNATIONAL MEETING; BOWDEN TROPHY; AEROMODELLER R/C TROPHY; POWER DURATION (Centralised).
	13th.	Stockton on Tees Slope Soaring Meeting. Sheepwash, Osmotherly.
	14th.	Stourbridge Control Line Rally. Stourbridge.
	20th.	Bushy Park M.F.C. Gala.
	27th.	GUTTERIDGE TROPHY & K.M.A.A. CUP. (Area.)
June	3rd.	South Wilts Rally. R.A.F. Old Sarum Salisbury.
	10th.	WAKEFIELD & A/2 TRIALS. Cranwell Aerodrome, Lincs.
	13–17th.	Power Championships & Radio Control. Paris.
	17th.	West Essex Gala. Fairlop; Walsall Festival of Britain Rally. Walsall Airport; South-Western Area Rally. Chudleigh Knighton Heath; Scottish National C/L Rally. Montrose Cricket Park.
	24th.	Merseyside 9th Annual Clwyd Slope Soaring Meeting. Clwyd Hills, N. Wales; Northern Heights Gala. Langley.
July	1st.	MODEL ENGINEER CUP; WOMEN'S CHALLENGE TROPHY; POWER 1·5 c.c. (Area.)
	7–8th.	Wakefield Finals. Finland.
	14th.	FESTIVAL OF BRITAIN CONTROL-LINE CHAMPIONSHIPS. Wembley Stadium.
	15th.	KEIL TROPHY & LADY SHELLEY CUP. (Decentralised.)
	22nd.	Wakefield (Yorks) M.F.C. Open Day. Heath Common Wakefield.
	29th.	Control-line Championships. Belgium.
August	5–6th.	BRITISH NATIONALS. Fairwood Common, Swansea.
	6th.	Control-line Rodeo. Chester.
	12th.	South Coast Gala. Brighton; Bolton M.A.S. Annual Rally. Affetside, Bolton.
	15–20th.	A/2 Glider Finals. Yugo-Slavia.
	18th.	INDOOR NATIONALS. Manchester; Daily Dispatch Rally. Woodford Aerodrome.
	19th.	All Herts Rally. Radlett.
	26th.	4th Huddersfield Rally. London Area F/F Championships. Fairlop.
August to September	21st to 1st.	Model Engineer Exhibition. Royal Horticultural Hall.
	2nd.	F.N.A. Cup. Holland; FARROW SHIELD; JETEX CONTEST; FLYING SCALE (Power) (Area.)
	9th.	Northern Area Rally.
	16th.	BRITISH CHAMPIONSHIPS & TAPLIN TROPHY.
	30th.	DAVIS CUP FINALS. Fairlop.
October	7th.	UNITED KINGDOM CHALLENGE MATCH. Heathfield, Scotland.
	14th.	FLIGHT CUP & FROG JUNIOR CUP. (Decentralised.)
	28th.	HAMLEY TROPHY. (Decentralised.)
November	17th.	S.M.A.E. Annual Dinner & Prizegiving.
	18th.	S.M.A.E. Annual General Meeting.

unpleasant. Despite this, however, the times put up in various contests were really high. Organisation was good under the trying conditions, and a word of praise must be passed to the recorders and time keepers who stuck it out, and did a first class job of work in spite of the rain. A. Wrigley (Prestwich), a junior member, proved to be Champion of the rally, the full results being as follows :

Power :	A. Motler	(Accrington)	8 : 01·5
	J. Bickerstaff	(Accrington)	5 : 32
	J. Chadwick	(Ashton)	5 : 16
Rubber :	J. O'Donnell	(Whitefield)	4 : 47·4
	A. Wrigley	(Prestwich)	4 : 41·1
	S. A. Ward	(Ashton)	4 : 16·6
Glider :	J. Moren	(Bolton)	6 : 15·6
	Evans	(Cheadle)	5 : 03
	R. Taylor	(Bolton)	4 : 30·2

The main topic of conversation in the **WEST OF SCOTLAND AREA** is of course details of the United Kingdom Challenge Contest due to take place at Heathfield (next door to the international airport at Prestwick). I compliment this Area on thrashing out detail requirements well ahead of the contest date, for true success only comes by such preparation. This event, although restricted to a comparative few, will nevertheless provide some ultra hot competition. It is anticipated that teams will be nominated from earlier contests held during the season.

The **NORTHERN AREA** announce the date of their annual rally as September 9th, although the gala venue has not yet been settled.

Another rally due to take place within this Area is that staged by the **WAKEFIELD (YORKS) M.A.C.**, their annual open day taking place on July 22nd at Heath Common, Wakefield.

I regret to report that the old established **CHEAM M.A.C.** was disbanded as from 31st March. It is a pity to see a club of good standing like this go out of existence, but I am pleased to record the fact that the assets of the club have been realised and made over to the Wakefield Fund, a gesture which I heartily commend.

At a recent meeting held at Ely, Cardiff, the **BARGOED EAGLES POWER CLUB** competed with the Cardiff, Penarth and Pontypridd groups, the Bargoed Chairman, Mr. D. D. Dudderidge, winning the power ratio event with a Mills ·75 pylon job which did 3 : 19·2 o.o.s. on a ten second engine run, creating a new club record. After a winter of control-lining the club is now turning to free flight, the most ambitious projects being 72 in. span jobs for Frog 500's. Club secretary Alan Davies has started a model group at the Bargoed Grammar School where he is on the teaching staff ; the current membership is 30 odd pupils.

With the date of August 19th now definitely fixed for the annual All Herts Rally, the **ST. ALBANS M.A.C.** would like suggestions on anything (apart from weather) that competitors have found unsatisfactory in previous years. All contests will be run from 10 a.m. to 6 p.m. and the main theme of the day will be "Fly when you like and how you like ". The five minute rule will operate, and for the power ratio event a 10 second minimum engine run (but no maximum) is in force. To cut down time a 200 ft. maximum tow line has been suggested for glider events, and they would like to hear whether this will be popular amongst contestants. (Note : If the weather is like last year there will be a swimming gala instead !)

The **WINCHESTER M.A.S.** run a worthwhile type of contest, this being a construction and finish competition held in different stages. Round I of the contest (for complete but uncovered models) was held on the 27th February, when H. J. Child's own design Wakefield was judged top model with 100 points.

After wandering hopefully from farmer to farmer for most of last year, **FORRESTERS M.F.C.** have managed to secure "control-line only" facilities at Tollerton Aerodrome. It is hoped to extend these activities to free flight eventually, but in the meantime the resident Flying Club have invited the model bods to make full use of the club house, bar, etc., and naturally the lads were not slow in taking advantage of such an offer. A series of control line contests held during the winter months produce nothing outstanding, but much practice has been gained in team racing. The most successful Class " B " jobs so far produced have been E.D. IV powered, averaging 45 m.p.h. including stops. I had the honour of attending the first dinner of this club when an enjoyable time was had by all, particularly during the strenuous " games " period which followed the dinner. Mrs. Rushbrooke presented cups to D. Bolton who won the stunt, scale stunt and club championship, and tied with Dick Nobel in the Class " B " team race. M. Crawforth and J. Weston took honours in Class " A " team and speed respectively.

YORK M.A.S. seem all set for the 1951 struggle, a bright idea being to hold a club event exactly a fortnight previous to its S.M.A.E. counterpart, thus getting those interested in the S.M.A.E. comp. into training. The winter points contest concluded with yet another junior victory, Mike Steele regularly flying his " Norseman " glider to obtain the top score of 851·9 a lead of 122·3 over his nearest rival.

There has been considerable activity amongst members of the **ASHTON M.A.C.** during the past few weeks, and already the annual records chart has shown several changes. 1951 records to date are as follows :

Glider :	H. Ward	2 : 15
H.L. Rubber :	C. B. Jackson	2 : 20
R.O.G. Rubber :	C. B. Jackson	2 : 15
Power Duration :	F. Lees	2 : 05

On the 4th March contests for chuck gliders and flying scale were held, there being a surprisingly large entry for the former event (the first to be held since 1937) with consequent extreme danger to body and limb ! Jackson won the glider event with 130·5, F. D. Ward winning the scale class with his " Sopwith Pup ".

Wakefield models are coming in for concentrated attention by the **FLYING SADDLERS M.A.C.**, Pirelli rubber and single wire loop undercarriages being all the rage. Malcolm Gilbert's latest job features a diamond fuselage, mid-wing cabin and is built to the upper limits (mainly as extra wing area) with 32% tailplane.

The **WHITFIELD M.A.C.** also experienced good weather on the 10th February and some good flying was witnessed. J. O'Donnell made flights of 3 : 42 and 3 : 48 with his own design glider and a new club member, E. Stafford, made two good flights of 4 : 00 and 7 : 30, unfortunately losing the model (a " Lulu ") on its second flight. The club had bad luck the following day at the aforementioned North Western Area Winter Rally, H. O'Donnell losing his 6 ft. glider for only 1 :36 o.o.s. going straight up. R. Faulkner, who did two good flights of 2 : 41 and 2 : 00 plus had a flight disqualified under the three minute starting rule when his wire tow line broke. This cost him an almost certain place in the contest. The club's " Freshman's Trophy " was flown on 4th March and was open to rubber and glider models. Open only to members who had not won a contest during the past season a two-minute flight limit was used and the contest became a keen struggle between R. Faulkner

G. Dawson, P.R.O. to the Forest Cottage Aero Club, Halifax, sends us this picture of the members. As can be seen, their activities mainly centre around control line flying, and although only a small club they have great hopes for the future.

(flying a 10 oz. glider of Nordic area) and M. O'Donnell using a Zaic " Floater ". This necessitated six flights each and ended in a win for O'Donnell with six maximums to Faulkner's five maximums and 1 : 42.

At the request of the local Council the **WALSALL M.A.C.** are staging a Festival of Britain Rally at Walsall Airport on the 17th June. Events will include rubber, power and radio control, the entry fee being 1/6d. inclusive. Full details can be obtained from the club secretary.

Another club to experiment with chuck gliders is the **SIDCUP AERONAUTES** (formerly the R.P. M.A.C.) who have found that there is more in this type of flying than meets the eye. D. Tillery has lost about three lightweight efforts o.o.s. after several minutes flights. A. B. Hodgson is still looking for his Elfin 2·49 powered model, lost last year off a five-second motor run and last seen heading out into Kent at cloud level after 35 minutes. News would be very welcome !

March 4th saw the first of the 1951 contests of the **SWINDON M.A.C.** held at Wroughton Aerodrome. The early part of the contest was slightly marred by a cold east wind, but the sun persisted and by mid-afternoon conditions were near ideal. Models were finding the risers and it was not long before Ron Poole's nice looking A-2 of original design went o.o.s. (on its second test flight) after clocking 4 : 41·2. Contest times were below average though this may be partly due to the large number of machines on their first trials.

The **TIMPERLEY & D.M.F.C.** have a big programme of Wakefields and A-2's under weigh, while the club Class " A " power ratio record has been increased to 19-1 by T. Simpson. An Arden ·199 powered "Mallard " did a 14-1 ratio on the same day from a 7½ second engine run, and is now being jealously guarded by the owner ! It was only its second flight on test.

The **CHESTER M.F.C.** (reverting to its old title from Chester M.A.S.) draw your attention to their Grand Control Line Rodeo to be held at Chester Autumn Sports on August Bank Holiday. All the usual events will be included and there will be substantial cash prizes Just the job for those who can't afford to go to the Nationals ! !

The **BELFAIRS M.A.C.** held its Fifth Annual Exhibition on March 10th and, considering the miserable weather prevailing, had quite good support from the public. Although membership has decreased to about 30 members there were over 70 models on show, including a class of selected flown models which helped to prove that not all planes come to grief on their maiden flight. Senior Championship was shared between D. Wilmott's " Javelin " and A. Longstaff's Wakefield, the latter chap also taking the cup for the best collection of three models in the show. Junior Champion was John Ilott with a " Junior Mallard ".

Following previous successes, the **STOCKTON & D.M.A.C.** have decided to co-operate with the Darlington Club in holding a slope soaring rally on Whit Sunday at Sheepwash, one mile from Osmotherley. The site is ideal for the purpose and is easily accessible by road. Refreshments will be available and valuable prizes are offered. Pre-entry is desired from prospective competitors, full information to be obtained from Mr. A. M. Robson, 24 Coniston Road, Stockton-on-Tees.

The **OUTLAWS (CANNOCK) M.A.C.** are very active in control line and free flight and should be well represented in contests this season. A-2 gliders are very popular with lightweight rubber a close second, very consistent times being clocked in both classes. The control line section has dwindled to a small band of experts but hopes are high for the coming season. Best Nordic in the club is the A.P.S. " Satu " two of these turning in regular 3-4 minutes flights in air " one stage worse than dead ".

In an effort to sort out the " passengers " among the junior members of the club the **OLDHAM & D.M.A.C.** has decided that each junior must complete three flights of over one minute on any one day before the end of June. Failure to do so may lead to expulsion from the club. (Drastic ?). Best Flight of the winter goes to the credit of A. Peatfield's " Sunnanvind " with an unofficial twenty minutes.

Despite winter conditions members of the **CHEADLE M.A.C.** have enjoyed several outdoor events. January 21st saw 26 stout (!) members up in the Pennines for the club winter contest when, despite low cloud, Garth Evans aggregated 7 : 16 to win the glider event with an A-2 of his own design, and Taylor managed to coax his Wakefield into first place in the rubber section with 6 : 30·5. Surprisingly enough the power comp was scrubbed due to there only being three entries (who said they were a power club !). Bob Askew collected the club glider record with a 4 : 15 flight on March 4th, B. T. Faulkner scraping in flights of 3:: 48 3 : 05 and 3 : 25 to qualify for his " B " Certificate. A clubroom has been secured through the co-operation of 284 Squadron A.T.C. who have given them the use of their H.Q.

In announcing their Gala Day as Sunday 24th June, the **NORTHERN HEIGHTS M.F.C.** wish to thank the Hawker Aircraft Co. for the continued use of Langley Airfield. A full programme of events will take place, the " Aeromodeller " Trophy going to the Gala Champion. The 1951 rules for the " Queen's Cup " have been modified, miniumum weight of 12 oz. and S.M.A.E. fuselage formula of $L^2/100$ being retained, but the total area of flying surfaces now being between 266 and 400 square inches. A happy day in the club's annals was April 7th when Joy and Max Coote were married at Holy

". . . . Now having completed the N.A.C.A. series, would you please commence on the Gottingen sections?"

Trinity, Holborn, and I am sure we all join in wishing them all the best for the future.

A new club record of 14 : 35 o.o.s. has been set up by K. Warburton of the **DERBY M.A.C.** the model being an A-2. All classes of models are being built, power classes A and ½-A being most popular. Club membership is low and new members are urgently needed.

To encourage club members to enter competitions, six of the **NORTH WEST MIDDLESEX M.F.C.** Club Trophies are to be awarded on a points system for comps flown throughout this year. The seventh trophy is for a Ratio Pay-Load Competition. The following rules for this contest should be of interest to readers:

(*a*) Unrestricted Power Models. (*b*) Unrestricted Pay Load. (*c*) Points awarded as follows:

$$\frac{\text{Flight duration}}{\text{Motor run}} \times \frac{\text{Pay Load}}{\text{Unballasted wt. Model.}}$$

e.g. (1) $\frac{300}{20} \times \frac{6}{12} = 7{\cdot}5$

e.g. (2) $\frac{300}{20} \times \frac{8}{12} = 10$

e.g. (3) $\frac{200}{20} \times \frac{15}{10} = 15.$

(*d*) Agg. points of three flights determine winner.
(*e*) Five minutes flight rule and twenty second maximum motor run.

The **WEST YORKSHIRE M.A.S.** appear to have been lucky with the weather late in February for they report perfect flying weather and some high times. W. Farrance flying an Eta 19 powered job, lost the machine after five minute s o.o.s. and gave it up as gone for ever. However, the following Thursday the Barnsley police phoned him stating they had found the model. (The distance from Batley to Barnsley is approximately 15 miles). Mr. K. Pickles put in good flights with his glider "Drambuie II" doing a steady 2 : 10 on a 150 ft. line.

APSLEY M.F.C. recently celebrated its third anniversary with the usual "binge" which included a film show by the club's own film unit. Big gliders are the order of the day here, some successes being scored last year with this type of model. This year's attraction is a 115 in. span "Brabazon" using diesels plus retracting undercarriage.

The **BLACKPOOL AND FYLDE M.A.S.** staged their regular exhibition recently when a number of fine models were on view. Though smaller in numbers than in previous years the 28 models on view were displayed to better advantage and were of a very high class. Gliders formed the bulk of exhibits, showing a definite trend towards the larger size of model.

Forthcoming meetings of the **INTERNATIONAL RADIO CONTROLLED MODELS SOCIETY** are

Manchester	April 21st	2.30 p.m.	Milton Hall, Deansgate.
Tyneside	April 27th	7.30 p.m.	176, Westgate Rd., Newcastle-on-Tyne.
Birmingham	May 5th	2.30 p.m.	University of Birmingham.
London	May 13th	2.0 p.m.	Horse Shoe Hotel, Tottenham Court Road.

Ralph Costlow, of 196, James A.N. Minneapolis, Minn., U.S.A., would like to correspond with readers interested in jet U-control, free flight gas and rubber. He is 24 and married, and would like to work an exchange system with readers in this country.

Which brings us to the end of this month's Club News, and your humble leaves you in the fond hope that the weather will at least enable him to take his model out of the box.

CLUBMAN.

NEW CLUBS

SHIREBROOK & D.M.A.C.
D. Pursglove, 24, Brunner Avenue, Shirebrook, Nr. Mansfield.

SECRETARIAL CHANGES

HULL "PEGASUS" M.F.C.
K. H. Kirby, 7, Pearson Park, Hull, Yorks.
BOLTON M.A.S.
J. Moran, 28, Patterson Street, Deane, Bolton, Lancs.
COLLEGE OF AERONAUTICS M.A.C.
Alan C. Brown, Mitchell Hall, College of Aeronautics, Cranfield, Bucks.
LEAMINGTON & D.M.E.S.
A. M. L. Kennaugh, 20, Regent Street, Leamington Spa, Warws.
WEST COVENTRY M.A.C.
K. F. Hopkins, 169, Lavender Avenue, Coventry.
FAKENHAM M.A.C.
C. Williamson, 9, Greenway, Fakenham, Norfolk.
SKYSCRAPERS (Rossendale) M.F.C.
L. Rothwell, 52, Deardengate, Haslingden, Lancs.
CHESTER M.F.C.
H. F. Wilde, 22, Overleigh Road, Handbridge, Chester.
R.A.F. FINNINGLEY M.A.C.
F/Lt. G. Wrigley, 15, Officers' Married Quarters, R.A.F. Finningley, Nr. Doncaster, Yorks.
CRESWELL M.F.C.
J. Thompson, 53, Bevin Estate, Creswell, Worksop, Notts.
NORWICH M.A.C.
P. G. F. Chinn, Hill House, Holt Road, Cromer, Norfolk.
GREAT YARMOUTH & D.M.A.C.
J. Raby, 34, Middleton Road, Gorleston on Sea, Gt. Yarmouth.
FLYING SADDLERS M.A.C.
A. E. Reynolds, 423, Darlaston Road, Pleck, Walsall, Staffs.
MALVERN M.F.C.
G. Rae, 10, Lansdowne Close, Malvern, Worcs.
EGHAM M.F.C.
J. Carr, 158, Laleham Road, Staines, Middx.
RUSHDEN M.A.C.
C. Longstaff, 16, Link Road, Rushden, Northants.
CHELTENHAM M.A.C.
S. B. Perry, 41a, Rodney Road, Cheltenham, Glos.

CLASSIFIED ADVERTISEMENTS

PRESS DATE for June issue April 25th, 1951.
ADVERTISEMENT RATES :
Private **Minimum 18 words 6s., and 4d. per word for each subsequent word.**
Trade **Minimum 18 words 12s., and 8d. per word for each subsequent word.**
Box numbers are permissible—to count as 6 words when costing the advertisement.
COPY and Box No. replies should be sent to the Classified Advertisement Department, The "Aeromodeller," The Aerodrome, Billington Road, Stanbridge, Beds.

FOR SALE

Eta 29, £4 ; 100 AEROMODELLERS, 1937–42, 1944–46, 1948–50. Offers. "Model Aeroplane Constructor", 1936–38, bound, 10/–; Model Aeroplane Design by C. H. Grant, 15/–; 160 postcards, aircraft 1903–42, 25/–; Leitz Episcope lens, f4, focus mount, £7. Marsden, 13, Valley Crescent, Spital, Chesterfield.

Yulon 29, brand new condition, bench run only, £3. Amco Mk. II ·87, good condition, £2. 10s. 0d. or offers. Wroe, 18, Churchfield Avenue, Kexbrough, Nr. Barnsley, Yorks.

Dennymite 9·5 c.c., Aerospark coil, condenser, prop, £6. Yulon 29 £3. Juggernaut Jet, £3. Ohlsson 23 electrics, £3. 1·8 c.c. diesel, 30/–. 2448208 L.A.C. Walker, F. Group, 2 Site, R.A.F. Altona, B.A.O.R. 3.

Ohlsson 60, two coils, condenser, flight timer, excellent condition, £6. Mercer, 6, Warren Crescent, Market Drayton, Salop.

E.D. Mk. III, bench tested only, with glow-plug. £3 ; Elfin 1·8 c.c., £2 ; Bunch 7·5 c.c., £2 ; Frog 1·75 c.c., complete electric, 25/–. Sandbrae, West Road, Old Colwyn, N. Wales.

E.D. Comp. Special, unused, 42/6. Mills, 238, St. Helens Road, Hastings.

1951 Eta 19, not yet run in, £5. 10s. 0d. Smith, 12, Ash Road, Dudley, Worcs.

Jetex 200, unused ; Mills 1·3, as new ; E.D.B. Mark 2, with models and accessories, £10 the lot.

Ohlsson 60, 90/– ; Amco 3·5, 45/– ; Owat 5, 20/– ; E.D. Bee, 25/– ; 3½ in. Riderwheels, 12/6 ; Rudderbug E.C.C. R/C, 170/–. 13, Kimberley Road, Exeter.

Model shop stock, large amount. Fresh, pre-tax. Aircraft, ships, etc. Under cost, whole or part. Box No. 326.

Brand new Amco 3·5, unused, in original box. 98/– or nearest offer ; Frog 160, little used, 22/6. Handel, 74, Campbell Avenue, Ilford, Essex.

Amco 3·5 70/– ; Elfin 1·8 40/– ; Mills Mk. II 40/– ; Outlaw freeflight for Mills 1·3 53/–. Controliners, props, tanks, hydroplanes for Frog 500 and Amco 3·5. S.A.E. please. Stevens, 117, Kingsway, Petts Wood, Kent.

WANTED

Any types of Juggernauts or Dynajets. Will give up to £3. A. Rudolf, 77, Norfolk Crescent, Sidcup, Kent.

TRADE

Earn cash spare time. Making Scale Model Bungalows at home. Top rates paid. Send stamped addressed envelope for free details. Bennett Models, 10, Duncan Road, Richmond, Surrey.

American Magazines, one year's supply post free. "Model Airplane News," 25/– ; "Popular Mechanics," 32/– ; "Flying," 28/9. For full list send stamp to Willen Ltd. (Dept. 1), 101, Fleet Street, London, E.C.4.

New machinery from stock. Half-inch Motorised Drilling Machines, £18. 10s. Wood Planing Machines from £8. 10s. Sanding Machines from £7. Forge Blowers, Paint Spray Plants, Electric Motors, Grinders, etc. Deferred terms available. Catalogue from manufacturers : John A. M. Steel, Dept. 74, Bingley, Yorks.

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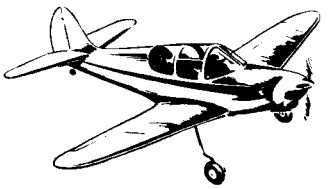

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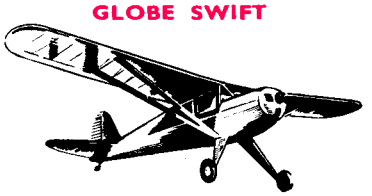

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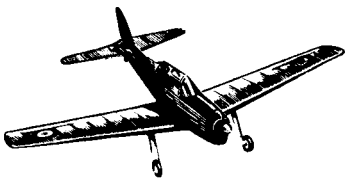

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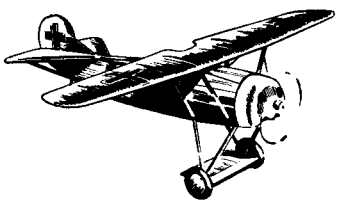

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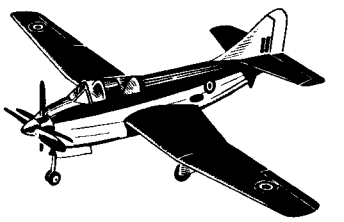

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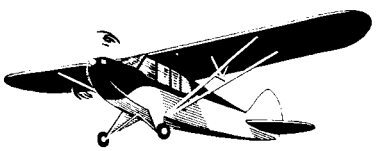

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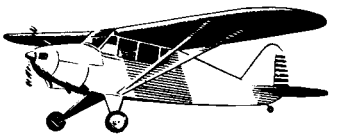

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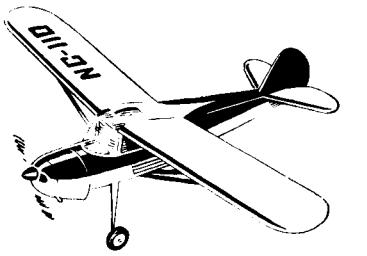

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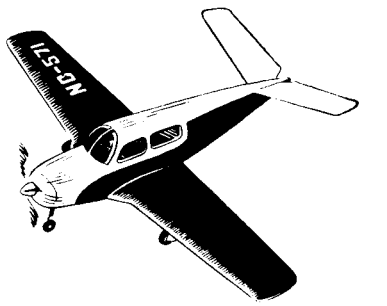

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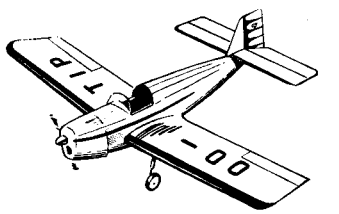

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