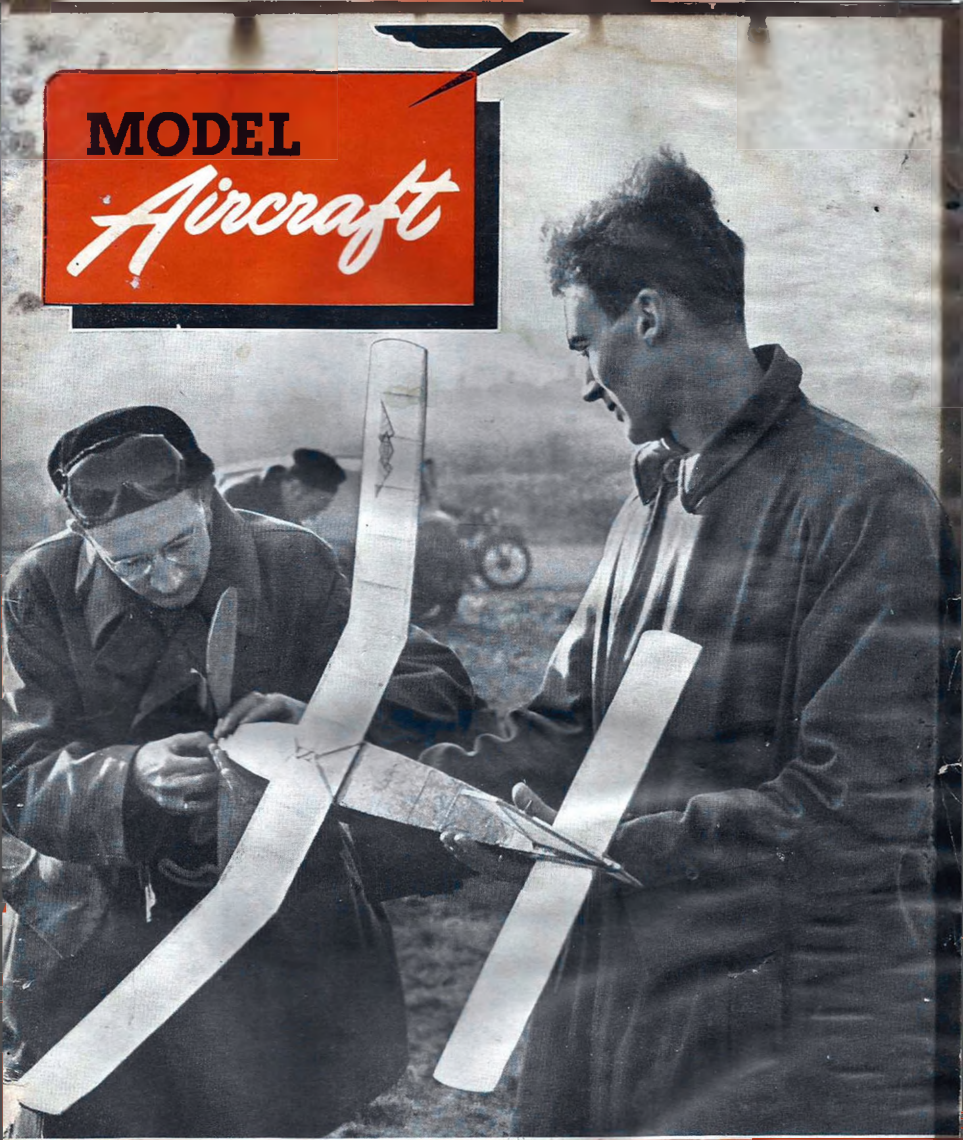
MODEL Aircraft



IN THIS ISSUE

● RADIO CONTROL NOTES ● WINTER COMPETITIONS AT FAIRLOP ● THE KALPER .32 ENGINE TESTED ● FOUR MODEL PLANS ● PROPELLER PITCH ● "HOW TO FLY" FEATURE ● MODEL OF THE BRABAZON

MARCH 1951

1'6

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Digital Edition Magazines.

This issue magazine after the initial original scanning, has been digitally processing for better results and lower capacity Pdf file from me.

The plans and the articles that exist within, you can find published at full dimensions to build a model at the following websites.

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

http://www.rcgroups.com/forums/member.php?u=107085

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AeroFred Gallery Free Plans.

http://aerofred.com/index.php

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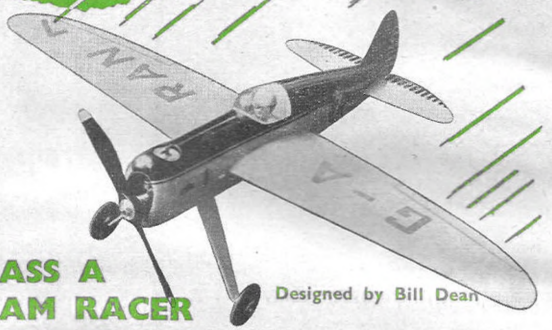

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Southerner Mite	32"	10/6 +	2/4 =	12/10
Southerner	60"	40/- +	8/11 =	48/11
Pirate	34"	12/- +	2/8 =	14/8
Bandit	44"	18/6 +	4/2 =	22/8
Outlaw	50"	22/6 +	5/- =	27/6
Junior 60	60"	39/6 +	8/9 =	48/3
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Skyjet 200	32"	7/6 +	1/8 =	9/2
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Phantom	21"	18/6 +	4/2 =	22/8
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Ace	30"	5/- +	1/1 =	6/1
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Senator	32"	5/6 +	1/3 =	6/9
Gypsy	40"	10/6 +	2/4 =	12/10
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Invader	40"	6/6 +	1/5 =	7/11
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Soarer Baby	36"	5/- +	1/1 =	6/1
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E.D. Bee 1 c.c. diesel ...	47/6	9/-	7/-
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Amco 3.5 c.c. diesel ...	97/6	17/6	14/2
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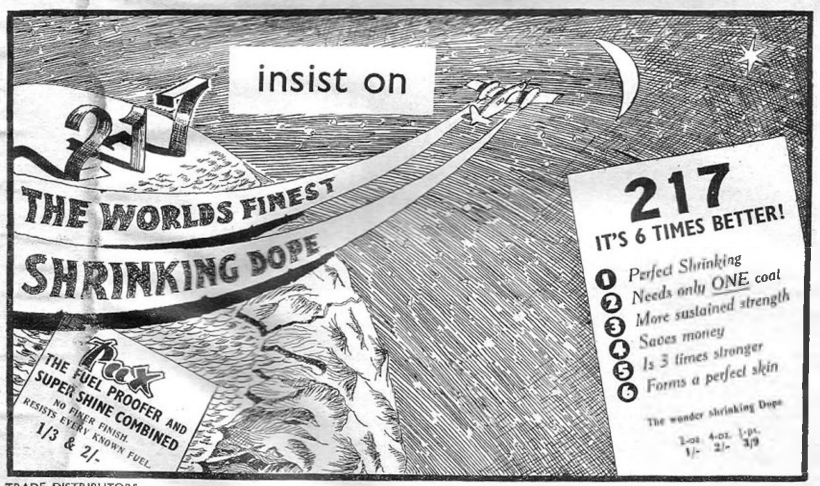

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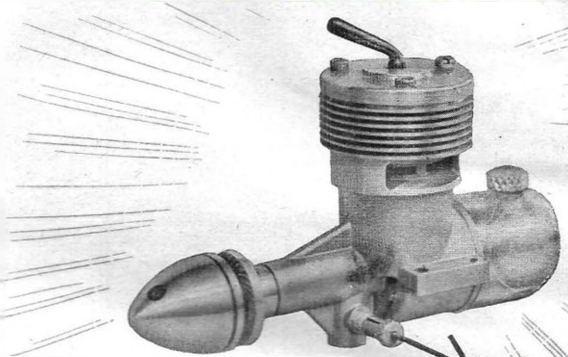

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GENERAL DESIGN FEATURES

A rotary induction, two stroke compression ignition engine with bore, stroke, and port-timing arranged for high power output at 12,000 r.p.m. and over. The overall height of less than 2 in. above the engine feet, enables cowling problems to be solved easily, and the engine is admirably suited for scale models. For maximum strength the cylinder and crankcase are one-piece construction and all moving parts have been chosen for their hard wearing properties.

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Crankshaft	Nickel steel, hardened, ground and lapped.
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THE DC 350 IS SUITABLE FOR :—

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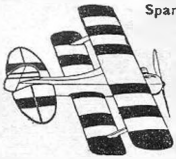

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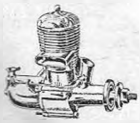

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THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Editor: E. F. H. COSH

Consulting Editor: A. F. HOULBERG, A.F.R.Ae.S.

Advertisement Manager: J. V. FORBES-BUCKINGHAM

MARCH 1951 VOL. 10 No. 3

Contents

EDITORIAL

At first glance the 1951 S.M.A.E. Contest Programme looks very much like the "mixture as before," but a closer study reveals that on the whole it is well balanced and is a praiseworthy attempt to cater for all tastes.

The very hard task of analysing the results of the questionnaire, which was circulated to all affiliated clubs, was energetically tackled by the new S.M.A.E. Competition Secretary, Capt. S. D. Taylor, and he is to be complimented on his fine effort. Certainly he was not helped by the fact that many of the replies to the questions cancelled each other out. For instance, a proposal that there should not be more than *three* Area Centralised Meetings received a large majority of votes, but so did a proposal that there should not be more than *four* such meetings and to complicate things still further there was a large majority in favour of all the Plugge Cup events being held on separate days—making *five* area events! There were a number of other examples of ambiguous results being obtained.

Now is the time to consider whether the questionnaire served its purpose and to decide whether it should be used again next year. Whilst there is no doubt that much useful information concerning the likes and dislikes of contest enthusiasts was obtained, on the other hand it must be admitted that the preparation of the contest programme by this method has proved to be a long drawn out affair. Although the forms were sent out to the clubs before the 1950 contest season ended, the 1951 programme has only just been finalised and the latest news of the S.M.A.E. Handbook which we have at the time of going to press is that it may not be ready for circulation before the commencement of the 1951 season—despite the fact that the S.M.A.E. officials concerned in its preparation have tackled a very arduous task in as prompt and efficient a manner as was possible in the circumstances.

We would suggest that the S.M.A.E. should decide as soon as possible on the system to be adopted for the formulation of the 1952 Contest Programme in order that the rules can be published in the Handbook before the end of this year.

Cover Story

Favoured by better weather than many of last year's events, the Blackheath Club's winter meeting at Fairlop Aerodrome attracted a large entry from all parts of the country. Our cover photograph shows one of the entrants in the "Bill White" Memorial Cup contest, M. Blake of the Thames Valley Club, being assisted by his club-mate D. M. Searle.

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Here and There

THE EDITOR COMMENTS ON CURRENT TOPICS

GOOD NEWS FOR C/L FANS

Control-line enthusiasts will be pleased to learn that through the efforts of the S.M.A.E. P.R.O., Mr. K. J. A. Brookes, arrangements have been made for the Festival of Britain National Model Flying Championships to be held at the Empire Stadium, Wembley on Saturday, July 21st, 1951.

The publishers of *The People* newspaper have very generously offered to donate no less that eleven trophies for the speed, stunt and team race events which are to be held. Spectators will be admitted to the Stadium from 1 p.m. until 6 p.m., the charge for such admission being 2s. 6d. for adults and 1s. 6d. for children. Competitors will have the use of the flying arena, workshops, etc., from 8 a.m. until 6 p.m.

This meeting will afford a grand opportunity for attracting attention to the model flying movement. We feel sure that every effort will be made by the S.M.A.E. and its affiliated clubs to ensure that it is an outstanding success.

S.M.A.E. E.C. MEETING

The Emergency General Meeting of the S.M.A.E. which was held on the January 7th, 1951, proved to be a very quiet affair, the proceedings being conducted in a far more harmonious manner than one usually expects at such meetings.

The decisions taken are reported in the S.M.A.E. News pages in this issue, but we should like to place on record—especially in view of the hard words we had to say last month about a certain London Club—that if it had not been for the members of this particular club, the meeting would have been a farce, as apart from them and the members of the Council there were only one or two other club representatives present. Even those who at the Annual General Meeting requested the calling of the E.G.M. failed to put in an appearance.

PITY THE OFFICERS

We can never understand why at the Annual General Meetings of the S.M.A.E. the Officers of the Society are made to sit in solitary aloofness at the top table, where they become the target for all those who have grievances, justified or otherwise, to air.

After all, these officials are only responsible for carrying out the Council's decisions, and, as they are outnumbered in the Council by the Area Delegates, they are not solely responsible for these decisions. Might it not be a good idea if at future Annual General Meetings the top table was occupied by the *whole* of the Council Members?

COLLISION

We heard of a remarkable coincidence which happened on the occasion of the Bill White Cup Contest at Fairlop in January. One model on its first flight was well and truly "treed" on landing about a mile or so from the take-off spot. Luckily, the damage was only superficial. On the next flight, and from a different launching point, the same model hit the same tree, almost to the identical branch and twig! Unfortunately this time the damage was more extensive and the third flight was not taken. Otherwise we have no doubt it would have found the same resting place!

This brings to mind other queer "accidents." Models colliding in flight are a comparatively rareity. The first occasion we can remember witnessing such an event was at Heston aerodrome some years ago, in the morning before the Bowden contest. A large power model, flown by G. W. W. Harris, we believe, collided with Bill Dean's *Zomby*. The smaller model came off much the best. There was also another mid-air collision at the 1950 Wakefield in Finland. Small wonder, in fact, that there were not more with many models landing right back on the take-off boards after three minute flights!

Another category of "accidents" is that of models being set alight with their own dethermaliser fuses! We have tried deliberately on many occasions to set a doped wing alight with a lighted fuse. (Yes, it was an old model. This was scientific research!) But we never succeeded in getting the doped tissue to do other than smoulder for a second or so and then go out, with just a patch burnt out of the covering.

Yet there have been models burnt up in this way. We recall three such incidents on one day. Our theory is that it is all a matter of temperature and humidity. On a hot day, and at a certain humidity figure, tissue is combustible in this manner. Then it happens! Fortunately there seem to be only a few such days during a year.

The classic example of all " aircraft fires " however, is undoubtedly the time when a large rubber model with an understung parachute dethermaliser fuse crashed on take off and the fuselage promptly folded up around the fuse ! In a matter of seconds the whole model was a flaming ruin !

CAPACITY AND POWER

The most convenient way of classifying miniature aero-motors is undoubtedly by size, or capacity. In the old days, too, capacity was a pretty good criterion for power. Performance followed the general rule that the larger the motor the greater the power, *pro rata*. Nowadays this simple rule no longer holds good for with improvements in motor design some racing 5 c.c. motors may develop more power than a 10 c.c. sports motor. Yet modellers still refer to designs as being suitable for a certain *size* of motor.

What is needed is some new reference—a power rating, if you like—still referred to capacity but taking into account the basic design features. It is well known, for example, that different types of porting give different speeds. The sideport motor is inherently the slowest, crankshaft rotary porting next and the disc rotor the fastest system. It appears, also, that the more powerful motors (for any given size) have a low bore/stroke ratio.

We wonder, therefore, if a simple formula for *power rating* could not be evolved by multiplying capacity with a factor derived from the bore/stroke ratio of the motor concerned. Better still, since capacity, or, strictly speaking, displacement, is itself derived from the bore and stroke, perhaps power rating may be expressed directly in terms of bore and stroke.

Perhaps our more technically minded readers may like to give the question some thought. We should be interested to hear their views.

ADVERSE PUBLICITY

The following extract from a recent edition of the *Scarborough Evening News* is a typical example of the type of publicity which the model aircraft movement can well do without.

" **Third-party risk and model plane.** The Sunday morning air up Sandybed way yesterday was disturbed by the drone of a low-flying plane. Schoolboys and men in the gardens of nearby houses watched as it skimmed over the Lisvane School playing field about 60 ft. up.

" Suddenly it stalled, its nose whipped down in a power dive, and it crashed through the roof of a Sandybed prefab. . . . But no one was hurt. It was only a model plane, powered by a petrol engine, belonging to one of the Lisvane schoolboys.

" The wings stayed on the roof, but the engine came off its mountings and went through the asbestos—or whatever prefab roofs are made of. The boy had to climb on the roof and put his hand through the hole to retrieve it.

" The corporation tenant got busy with roofing felt to keep out the rain. He was told by the self-possessed plane owner, with all the aplomb of a car-driver who has just scratched the paint of another vehicle :

" ' Don't worry about the damage. My insurance will cover the cost of the repairs all right.' "

We recently drew attention to the importance of model flyers who are involved in accidents not admitting any liability or stating that they are insured against third party claims. If reported correctly, the remark made by the modeller and quoted at the end of the above report was, to say the least, very stupid.

TEAM RACE ORGANISATION

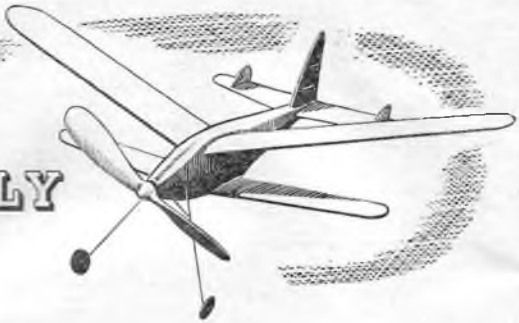
Having now had the opportunity of seeing a number of team races, we entirely agree with those who feel that this new development will give control-line flying a welcome boost and provide an attractive feature for the spectators who attend the large rallies. It is the last aspect in which we are most interested as it seems to us that up to the present no real attempt has been made to " stage " a team race for the benefit of the spectators.

We would suggest that at any well organised team race event a large lap scoring board should be provided to show the positions of the teams at the end of each heat, and to give details of the entries. An intelligent commentary should also be given over the public address system, and, whilst we do not wish to become advocates of fancy dress for model flyers, we do feel that the members of the competing teams might wear different coloured arm bands or some other reasonable form of identification.

It will be a great pity if this type of event which offers so much scope for providing an interesting and exciting attraction at the large model flying meetings is allowed to get into a rut and lose its appeal for the want of a little imaginative presentation

The splendid trophy which has been presented to the Royal Air Force Model Aircraft Association by Dr. A. P. Thurston. It will be competed for annually at the R.A.F. Championships and is for models built to the Wakefield Trophy formulae

THE DRAGONFLY



RUBBER-DRIVEN BIPLANE

By G. A. T. Woolls

AFTER considerable neglect biplanes are staging a come-back, especially amongst those who want a change from the serious business of contest flying, for there is a certain satisfaction in the steady, stable flight of a well designed biplane and it makes a pleasant change from the screaming climb of the duration monoplane.

However, this particular design has quite a good duration ; the prototype after flying steadily over a period of some four years, during which secondary minor repairs have added to its weight, can still knock up 70 or 80 sec. under decent conditions and what is more important can fly well and steadily in strong winds.

For those who imagine that biplanes are difficult to fly (a section of modellers rapidly becoming fewer, I am pleased to say) let me honestly say that they are no harder to fly than a monoplane and may frequently be definitely less critical in adjustment and therefore actually easier to fly.

Fuselage

It is logical to start with the fuselage so here goes :—Lay down the 3/32 in. sq. hard balsa longerons, cement the sheet spacers at the nose and tail permanently to the *outside* edges—not between the longerons—and lightly cement temporary spacers across the longerons as shown dotted on the drawings. Any scrap balsa will do for these spacers but their edges should line up with the formers. Make two identical sides. Side formers are built up from $\frac{1}{8}$ in. × $\frac{1}{16}$ in. strip being on opposite sides. N.B.—This type of construction is strong and allows ample rubber clearance, but should the constructor not be inclined to take the trouble involved, side formers may be made from $\frac{1}{16}$ in. soft sheet similarly to the top and bottom formers, in which case the side spacers should be permanently cemented between the longerons. It must be realised, however, that should this method be used, trouble may be experienced from insufficient rubber clearance and possibly the simplified formers may be forcibly removed by the fully wound motor !

FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN ST., LONDON, W.C.2. 5s. POST FREE.

Fuselage assembly from now on is straightforward, connect the sides by the top and bottom formers at the centre and by the nose and tail formers. Ensure that the fuselage is true in plan and add the remainder of the formers top and bottom. If the built-up side formers are used, assemble them, making sure that their tops and bottoms are cemented to the top and bottom formers. Remove temporary spacers. Add the $\frac{1}{16}$ in. sheet side plates to top and bottom, the paper tubes for using dowels and the stringers of $\frac{1}{8}$ in. × $\frac{1}{16}$ in. balsa. Gussets and the undercarriage tubes come next, followed by the diagonals. Finally sheet the nose with 1/32 in. sheet.

Mainplanes

These should present no real difficulty, although the fact that the main spars pass through the centres of the ribs may cause a little bother. Here's how.—Cut a template of the rib section from thin ply and drill holes at the top and bottom of the main spar position. When cutting out the balsa ribs, use these holes as jigs to bore holes in the ribs, then it is a simple matter to cut between them to form a slot. Slide the ribs on the spar, lay on the drawing and carry the assembly in the usual way.

Tailplane

You will notice that the main spar is full depth, with the ribs cut in two and cemented on to both sides. If preferred, instead of cutting the ribs to shape from a template, cement rectangles of wood in place and then sand to aerofoil shape afterwards.

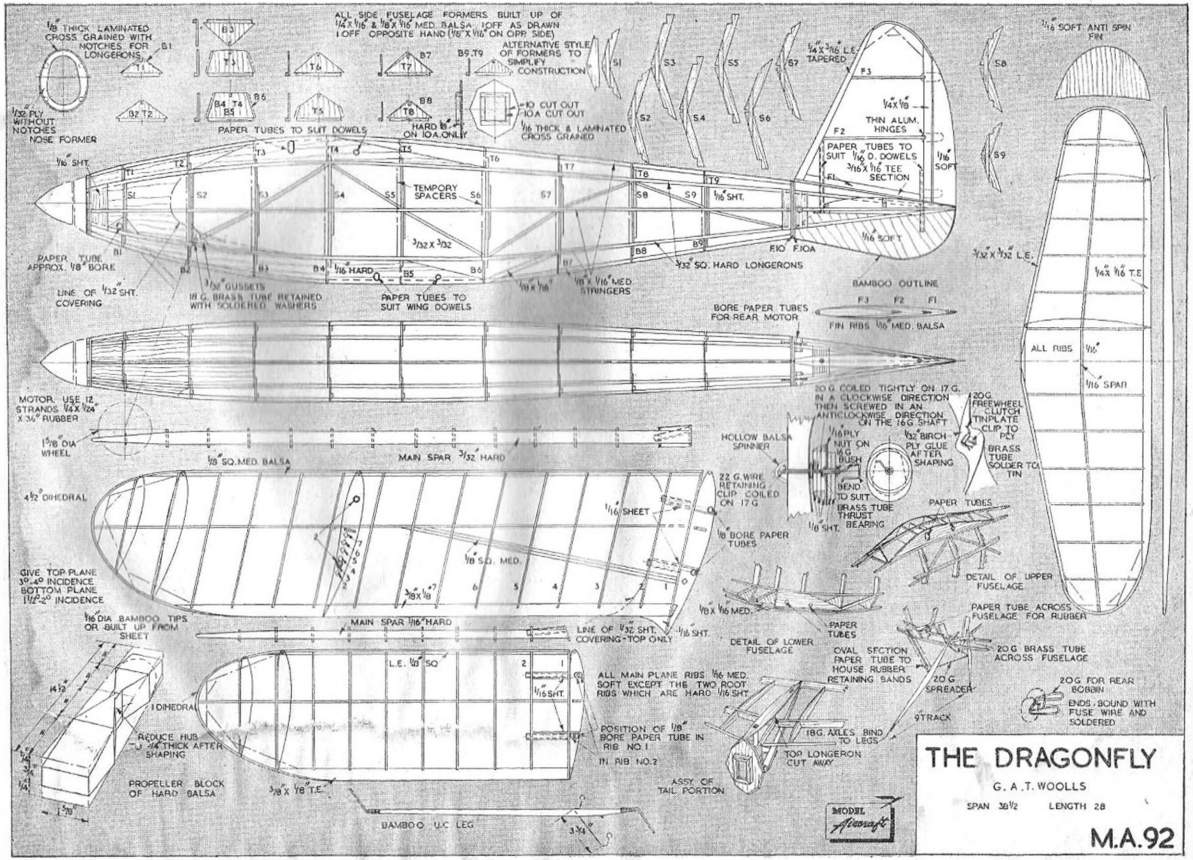
Tail

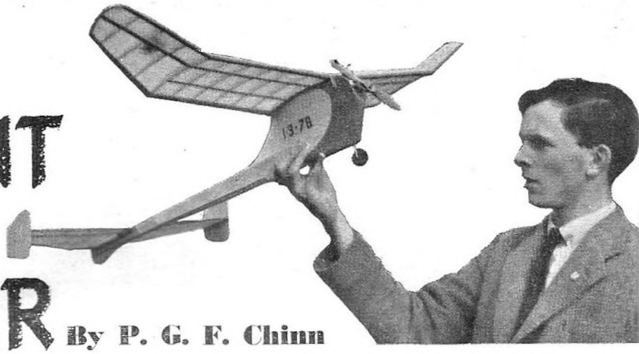
Make the sides from 3/32 in. sq. medium balsa, and assemble to former 10A joining the ends together to form a point. Fit the paper tubes for the rear dowel and the side stringers of $\frac{1}{8}$ in. × $\frac{1}{16}$ in. balsa, tapered at the end to blend to a point. Do not fit the under-fin at this stage, but fit the stabiliser, cutting the top longerons back to butt against the mainspar. Now add the rib forming the fin platform, but at this point no holes for the fin tubes should be cut.

Fin

This is quite straightforward, assemble this completely with tubes, etc. Fit into position on tail

(*Continued on page 141*)


1/8 THICK LAMINATED CROSS GRAINED WITH NOTCHES FOR LONGERONS
ALL SIDE FUSELAGE FORMERS BUILT UP OF 1/4"X1/16" & 1/8"X1/16" MED. BALSA 1 OFF AS DRAWN 1 OFF OPPOSITE HAND (1/8"X1/16" ON OPP SIDE)
ALTERNATIVE STYLE OF FORMERS TO SIMPLIFY CONSTRUCTION
1/32 PLY WITHOUT NOTCHES NOISE FORMER
PAPER TUBES TO SUIT DOWELS
10 CUT OUT 10A CUT OUT
HARD B8 ON 10A ONLY
1/16 THICK LAMINATED CROSS GRAINED
1/4"X1/16" L.E. TAPERED
1/16" SOFT ANTI SPIN FIN
1/16" SHT.
TEMPORY SPACERS
THIN ALUM. HINGES
PAPER TUBES TO SUIT 1/16" O. DOWELS
3/16"X1/16" TEE SECTION
1/16" SOFT
3/32"X3/32"
F10 F10A
3/32 SQ. HARD LONGERONS
PAPER TUBE APPROX. 1/8" BORE
LINE OF 1/32 SHT. COVERING
18 G. BRASS TUBE RETAINED WITH SOLDERED WASHERS
PAPER TUBES TO SUIT WING DOWELS
1/16" HARD
1/16"X1/16" MED. STRINGERS
BAMBOO OUTLINE
F3 F2 F1
FIN RIBS 1/16 MED. BALSA
3/32"X1/32" L.E.
1/16"X1/16" T.E.
ALL RIBS 1/16"
1/16" SPAR
BORE PAPER TUBES FOR REAR MOTOR
MOTOR. USE 12 STRANDS 1/4"X1/24" X 36" RUBBER
1 5/8" DIA WHEEL
1/8" SQ. MED. BALSA
MAIN SPAR 3/32" HARD
HOLLOW BALSA SPINNER
20 G COILED TIGHTLY ON 17 G. IN A CLOCKWISE DIRECTION THEN SCREWED IN AN ANTICLOCKWISE DIRECTION ON THE 16 G SHAFT
1/16 PLY NUT ON 16 G BUSH
1/32 BIRCH PLY GLUE AFTER SHAPING
20 G FREEWHEEL CLUTCH TINPLATE CLIP TO PCY.
BRASS TUBE SOLDER TO TIN
4 1/2° DIHEDRAL
22 G WIRE RETAINING CLIP COILED ON 17 G
BEND TO SUIT
BRASS TUBE THRUST BEARING
1/16" SHT.
PAPER TUBES
1/16" SHEET
1/8" BORE PAPER TUBES
1/8" SQ. MED.
DETAIL OF UPPER FUSELAGE
GIVE TOP PLANE 3°-4° INCIDENCE BOTTOM PLANE 1 1/2°-2° INCIDENCE
1/16 DIA BAMBOO TIPS OR BUILT UP FROM SHEET
MAIN SPAR 1/16" HARD
1/8"X1/8"
1/8"X1/16" MED.
PAPER TUBE ACROSS FUSELAGE FOR RUBBER
LINE OF 1/32 SHT. COVERING-TOP ONLY
1/16 SHT.
DETAIL OF LOWER FUSELAGE
PAPER TUBES
OVAL SECTION PAPER TUBE TO HOUSE RUBBER RETAINING BANDS
20 G BRASS TUBE ACROSS FUSELAGE
L.E. 1/8" SQ
1/16" SHT.
ALL MAIN PLANE RIBS 1/16 MED. SOFT EXCEPT THE TWO ROOT RIBS WHICH ARE HARD 1/16 SHT.
20 G SPREADER
9" TRACK
20 G FOR REAR BOBBIN
ENDS BOUND WITH FUSE WIRE AND SOLDERED
4 1/2"
1 DIHEDRAL
REDUCE HUB 1/4" THICK AFTER SHAPING
POSITION OF 1/8" BORE PAPER TUBE IN RIB NO.1
IN RIB NO.2
18 G. AXLES BIND TO LEGS
TOP LONGERON CUT AWAY
PROPELLER BLOCK OF HARD BALSA
3/8"X1/8" T.E.
ASSY OF TAIL PORTION
BAMBOO U/C LEG
3 3/4"
THE DRAGONFLY
G. A. T. WOOLLS
SPAN 36 1/2" LENGTH 28
M.A.92
MODEL Aircraft



ACCENT ON POWER

By P. G. F. Chinn

"HOW to operate power duration models:

"(a) Build any good kit model and use an engine of half the recommended power, or.

"(b) Build as per plan. Never open engine more than half throttle, or,

"(c) Build six models to plan. Five to write off, one for competition work."

Thus might the newcomer to competition power duration flying be advised. And if anyone thinks this too cynical an outlook, let him watch 50 per cent. of the contestants in almost any big P D competition piling in their models right and left.

There is no easy way out of this problem. As long as models are designed to go up as quickly as possible and come down as slowly as possible—which is the essence of the power-duration type—it is likely to remain with us. The solution is not necessarily to be found in building a Very Good Model. It is not as simple as that. With speeds under power exceeding a rate where the model covers its own length a dozen times a second, the smallest warp or error in trimming can prove fatal to the best designs. Only a good model plus *experience* will count.

It is true, however, that if one is prepared to accept reduced potential performance, the use of less power can simplify the problem considerably. The initial means of tackling this question, therefore, can be resolved into three main factors:

1. A sound aerodynamic layout.
2. Sound structural design and careful construction to avoid warping tendencies.
3. A reasonable power loading.

Long tail moment and large tailplane of the Javelin model are shown in this photograph.

The third factor is dependent on the degree of success in obtaining the first two and when consistent, stable flight has been achieved under moderate power, then increasingly powerful models can be used. Inevitably, for a given wing-loading and size, the more powerful the engine used, the greater the duration to be expected. Thus, in a new design by the writer's brother, consistently stable performance under full power—already giving a high rate of climb—has suggested the adoption of a lower power-loading to give an even greater rate of climb.

The object in P D design, therefore, is still to use the most powerful engine which (consistent with weight considerations) the design will take, since duration, or engine-run flight time ratio, is almost entirely governed by the altitude reached on a given engine run, there being quite obviously much closer limits to the glide performance attainable.

Little or no published information has been seen on actual still air sinking speeds of power-duration models—due, no doubt, to the difficulty of estimating heights with any degree of accuracy, but observation, backed up by two-line gliding data, would seem to suggest that a sinking speed bettering 100 feet per minute under non-thermal conditions, has yet to be realised with even large P D models, while 120 f.p.m. is a more probable figure with Class A types. For a ratio of 12 : 1 (a figure seldom bettered by the average of top placings in national contests) this calls for an average ascent of 1,320 f.p.m., or, say, a peak rate of climb of 1,500 f.p.m. allowing for acceleration and, possibly, deceleration, between the moment of release and the final splutter of the engine.

This figure (1,500 f.p.m.) is possibly nearer to the actual rates of climb of average successful power-duration models than some of the figures in excess of 2,000 f.p.m. frequently claimed. However, with the highest attainable glide performance fixed, the pursuit of greater flight ratios must lie in the direction of greater rates of climb. Some highly contradictory estimates of free-flight airscrew efficiencies have appeared from time to time and, after all, no model can climb faster than its propeller will pull it, but well over 2,000 f.p.m. should be attainable with modern high power/weight ratio engines.

Recent developments in P/D models, however, suggest that current emphasis is on glide performance.

The present tendency in power-duration design is towards larger models for any given engine size, but without any corresponding increase in weight. Although it has taken a little time to develop, this trend was obvious from the time, three years ago, when wing loading restrictions were removed by the American A.M.A. In earlier years, American rules had demanded quite heavy loadings: 7 oz. per 100 sq. in., or slightly more than 10 oz. sq. ft. This, combined with a minimum power loading of 100 oz. per cubic inch of piston displacement, resulted in American designers working close to both rules to produce relatively heavy, fast models. The U.S. being the home of the P/D model, when British modellers took up the type after the war, our designs were also influenced by these rules, although the less powerful engines available, combined with the very moderate F.A.I. wing-loading requirements (where these were observed at all) did lead to rather more moderate loadings.

The present F.A.I. rules require a total horizontal surface loading of 3.93 oz./sq. ft. and this, equivalent to a wing loading of less than 6 oz./sq. ft. even with a 50 per cent. tailplane, may be regarded as the practical minimum for competition P/D models, so that the current A.M.A. no-limit wing loading rule is of no particular value—except in the "$\frac{1}{2}$A" class—especially as a power loading of 100 oz. cu. in. engine capacity is also imposed.

Possibly, the advantages to be gained over the earlier A.M.A. formula by the adoption of the revised rules, were less readily appreciated in the U.S. than in this country. At all events, only during the 1949 and 1950 seasons has the swing to lower wing-loadings larger areas and the less vicious type of model which the rules now permit, been evident. Current "B" Class American models now average around 600 sq. in. wing area, whereas 1947 models were nearer to 400 sq. in. Weights have remained at around the 30 oz. mark for this class, so that wing loadings have gone down about 30 per cent. The tendency has, perhaps, been even more marked in the American "A" class (.199 cu. in.) where 3 sq. ft. of wing area can now be seen on 20-oz. models in contrast to the 230/240 sq. in. 16/17-oz. models of 1947 and earlier.

"Mallard" typifies modern trend in power-duration design, i.e. larger tailplanes, lower wing-loadings, lower pylons. This finely built example is by V. R. Theobalds.

The original Arden powered version of "Alacrity".

In Britain, larger models for given engine capacities have been a natural outcome of steady improvements in engine performance over the past two or three years, combined with individual departure beyond earlier American practice on which first designs were based. Some comparative data on earlier British and American models, and on the type now more generally favoured, are given in Table 1.

Table 1.

	1946/48 British	1946/48 American	1949/51
Wing Area sq. in.	300	230	400 plus
Tailplane Area % wing	33	35-40	40 plus
Weight oz.	20	17	20
Engine :	Diesel or spark ign.	Spark ign.	Diesel or glow-plug
capacity...	2-3.5 c.c.	3.25 c.c.	2.49, 3.28 or 3.5 c.c.
weight	6-8 oz.	7 oz.	4 oz.
approx. b.h.p. available	.1-.2	.2	.2-.25
Loadings :			
Wing oz. sq. ft.	9.6	10.6	6-7
Power lb. h.p.	6-12	5	5-7
C.G. Location % chord ...	50-	50-60	70%

In general, the pylon type model is still predominant, although a retraction from the excessively high pylon heights, favoured in some quarters shortly after the War, is apparent. Just whether the low-thrust-line pylon-wing layout is the best is continually open to question and has been a controversial point for the past ten years. The majority of power-duration models, however, share the essential characteristic of a deep narrow fuselage, offering large side areas, whether they be of the basic pylon type, the deep-bodied shoulder-wing type or the high thrust-line "hatchet" type. After experience with various pylon types, the writer is now inclined to favour the third type, although this preference is, admittedly, based entirely on the very promising performance of my brother's latest effort.

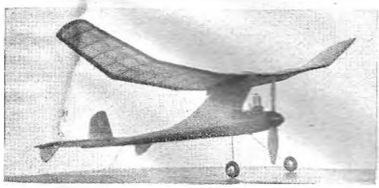
The original model to this design is illustrated, as an uncovered airframe and finished model, in the accompanying photographs, and various data are given, together with, for comparison, that of an earlier conventional pylon design, in Table 2. The design was first scaled to suit the Allbon Javelin 1.49 c.c. diesel. Building down to the minimum F.A.I. loading, a 42 in. span, 267 sq. in. model with

108 sq. in. tail-plane area was produced, weighing just under 10½ oz.

Table 2

	"Alacrity" (1948/49)	1950 Model
MAINPLANE :		
Area	221 sq. in.	267 sq. in.
Span	40 in.	42 in.
Planform	Parallel with 8 in. tapered outer panels	Parallel with 8 in. tapered outer panels
Chord	6.00 in.	7.00 in.
Aspect Ratio ...	7.24	6.61
Section	N.A.C.A. 6409	MVA.301
Dihedral	5 deg. inner 22 deg. outer	5 deg. inner 22 deg. outer
TAIL UNIT :		
Tailplane Area ... = % wing-area ...	72.5 sq. in. 33%	108 sq. in. 40.5%
Moment Arm (C.G. to 25% ch.T/P) ...	18.5 in.	20.25 in.
Total Horizontal Surface Area : ...	293.5 sq. in.	375 sq. in.
C.G. Location (min. and max.) ...	50-60% chord	65-75% chord
ENGINE :	1948- Arden 1.62 c.c. 1949- Mills 1.33 c.c.	Allbon 1.49 c.c.
Installation ...	Upright	Upright
Airscrew	Arden 8 x 4 Mills 8 x 6	9 x 4
Spinner	Keil 1½ in. on Mills	None
DETHERMALISER :	Tip-up Tailplane	Tip-up Tailplane
OVERALL LENGTH :	27 in. (Arden) 28 in. (Mills)	32.5 in.
F.A.I. WEIGHT REQUIRED :	8 oz.	10.24 oz.
ACTUAL WEIGHT :	9 oz. (Arden) 10.5 oz. (Mills)	10.5 oz.
LOADINGS :		
Wing :	5.9-6.8 oz. sq. ft.	5.66 oz. sq. ft.
Total Areas :	4.4-5.1 oz. sq. ft.	4.03 oz. sq. ft.
Power (approx. and at r.p.m. on prop. used)	5-8 lb./h.p.	5.5 lb./h.p.

This, of course, is still by no means a large model for engines of the Allbon and Elfin 1.49 calibre; even a good 1 c.c. engine in a normal P D model of these dimensions would not be too small in the interests of easy handling under power. However, since the main objective in the design was to produce not only a safer aircraft but one which would have a higher performance than the earlier pylon model, the dimensions chosen were deemed the best compromise. Anything above the wing area adopted, would have meant a heavier machine to keep within the rules, which would not have achieved such a high rate of climb and this, it is considered, would not be entirely compensated by any slight glide improvement obtained. Additionally, the Javelin has such a good power/weight ratio that its light weight would appear wasted in a substantially larger model, where this quality could not be fully appreciated. On the other hand, a smaller model would have had a greater sinking speed and, possibly might have exhibited the extra sensitiveness to trim, which was it desired to avoid.



1949 model with Mills Mk. II and cowled nose. Weight 10½ oz.

Judging by the all-round performance of the model, the break from the normal pylon layout at least appears to have no disadvantages, in this particular design. The climb is very rapid and is as good as anything previously seen, while the glide appears to be usually good for a small model. In this connection, it may be mentioned that our Javelin, suitably fed, turns its 8 × 4 prop at some 10,500 r.p.m. to account for most of the climbing ability. An MVA.301 wing section is used, which section seemed good when tried on the 12 in. chord wing of an F.A.I. sailplane, although this is said to be a "large model" section and, for a 7 in. chord, it is not suggested that it does, in fact, offer any advantages over the well tried N.A.C.A. 6409.

The model was first flown towards the close of last season and, apart from some minor excitement on the first outing when unintentional wash-in of the port wing caused some fantastic but harmless gyrations under full power, has given no cause for anxiety on any of the many flights it has since made. Although it is not sorted under ideal conditions, no tendency to warped surfaces has since been detected and the model is always flown full power straight off on each outing. Reduced power test flights with most power-duration models are not, in any case, any guarantee of stable full-power flights to follow and a model which is stable under full power may even appear out of trim if revs are reduced. The model turns to the left under both power and glide, and will roll off the climb into the glide nicely. If revs are reduced, however, the climb is straightened and a stall results when the engine cuts.

The basic layout of the model is not, of course, entirely original nor by any means new. A first sight resemblance to the Jersey Javelin is not confirmed by the actual line-up employed, but the high-thrust-line type P D model with deep nose section is as old as Carl Goldberg's original pylon "Zipper" and its beginnings can be seen in the early designs of Shulman and Taibi. The design of the model was, of course, mainly influenced by C. H. Grant's much debated theory regarding the relationship of C.G. and C.L.A., hence the low positioned fins.

The arrangement appears to offer a safer power flight in a relatively flat turning climb, as opposed to the banked spiral of a high-C.L.A.-low-C.G. model and may possibly permit a higher rate of climb.

The model is, undoubtedly, a better aeroplane than its Class "A" predecessor, the writer's conventional pylon type illustrated, which was originally constructed early in 1948. This 221 sq. in. model was first built for the Arden 099 and weighed slightly under 9-oz. The tail moment was relatively long but the tailplane area was restricted to the old S.M.A.E. 33 per cent. ruling, limiting its lift so that a 60 per cent. C.G. position was the maximum that could be safely used. The wing was in five panels and was of normal construction, while the fuselage was slimmed down to the minimum, being

circular in section and carefully faired into a slim integral pylon, the whole being planked. In 1949, a Mills Mk. II was used and the nose cowled in and a spinner fitted. This version weighed 10½ oz.

As might be expected from the power available and clean lines, the climbing speed was high. The glide was also good, but the model always remained somewhat tricky under full power. Eventually, after successfully avoiding spiral dives for two years, the model piled in under full power, during last season, breaking off one wing panel, and was then discarded in favour of the present design.

For any of the three S.M.A.E. classes, a large model, adequately powered, is, of course, potentially the better proposition, for two reasons: (1) its sinking speed will be lower and (2) it can remain longer within sight of the timekeepers. In the 2.5 c.c. "A" class, therefore, a limit capacity engine, with a proportionately larger model, should be better than a 1.5 c.c. version.

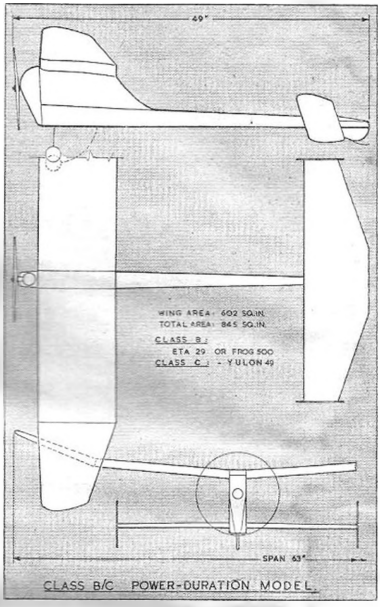
A Class "B" model to the same basic design as used for the Javelin model, has been drawn up (see accompanying three-view drawing) and an intermediate size is also scheduled for the Elfin 2.49, with which it is hoped to still further improve on the Class A performance obtained. General data on these two versions are given in Table 3.

Table 3

	A/B Version	B/C Version
MAINPLANE :		
Area	417 sq. in.	602 sq. in.
Span	52.5 in.	63 in.
Chord	8.75 in.	10.5 in.
Section	MVA.301	MVA.301
ENGINES :		
Class A	1949 Elfin 2.49 c.c.	—
" B	Amco 3.5 "3.46 c.c.	Frog "500" 4.95 c.c.
" C	—	Yulon "49" 8.14 c.c.
ESTIMATED WEIGHT ...	16/17 oz.	28/30 oz.
LOADINGS (approx.)		
Wing :	5.5-5.9 oz./sq. ft.	6.3-7.1 oz./sq. ft.
Power :	4-5 lb. h.p.	3.75-4.5 lb. h.p.

The precise areas shown were adopted for several reasons. Firstly, they represent convenient 125 per cent. and 150 per cent. scalings of the original prototype drawings. Secondly, they allow total weight figures well suited to the weights of the engines to be used, and thus present no complications in correctly locating the C.G. Thirdly, they should give a suitable compromise of climb and glide on the known power of the engines to be used in these two classes.

Since two engines of greater power, yet roughly similar weight, in each instance are, however, available outside the Class A and B capacity limits—the Amco 3.5 and Yulon 49 respectively—both models have been designed to accommodate these engines also, installation being such that they can be easily interchanged. Provided that the design can handle this extra power, an outstanding performance should result. There is also the advantage of possessing, in effect, four models, covering each of the three classes, for the price, in time and material, of two.



CLASS B/C POWER-DURATION MODEL

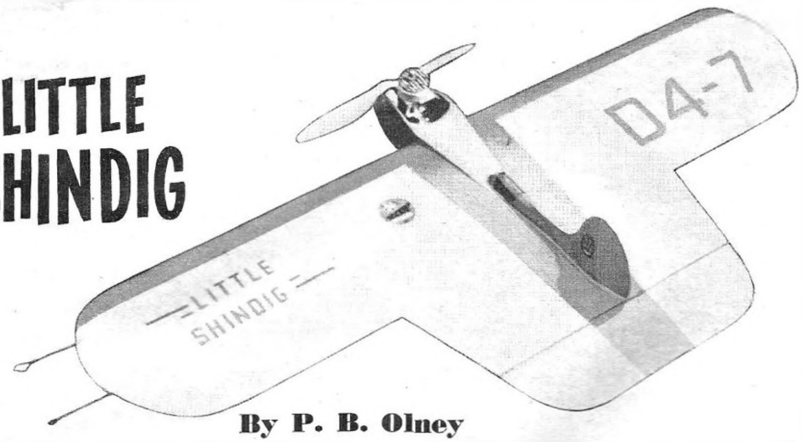
To anyone uncertain of the best formula to follow in the design of a model for 1951, we would suggest that the high thrust-line layout with a low C.L.A. relative to the C.G. determined in accordance with Grant's theories, may be well worth consideration since it does appear to offer that extra reserve of stability which enables the maximum power to be used—still the most essential ingredient in the achievement of maximum duration.

Following a recent fly-away by the Javelin model, the opportunity was taken, during repair of damage suffered in recovery, to substitute a short "bipod" undercart. While the single leg may appear to be the natural choice for a model of this type, take-offs are apt to be hampered by the low ground angle and introduce an unnecessary hazard in windy conditions. For the Class C version, the alternative of a two-leg retractable gear has been worked out.

Buck-passing Department

—And apologies to Ted Buxton. Re "Super Nova," credited with miserable 57 m.p.h., in January's article, please reverse digits to provide correct speed of 75, repeat, *seventy-five*. Also, for those unable to reconcile acrobatics with skis (last paragraph page 35) read *strut* fittings for "stunt" fittings.

LITTLE SHINDIG

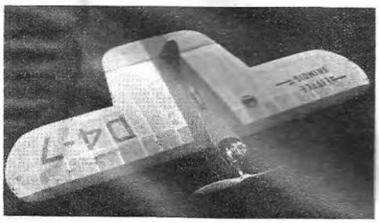


By P. B. Olney

TAILLESS models have always held great interest for the writer, so after seeing models of the "flap-jack" variety stunting without any difficulty, I set about designing something similar. the result was "Little Shindig." The original model was fitted with a McCoy "19" but it is suitable for any beam mounted motor of 3.5 c.c. to 5.c.c.

Wing

Commence construction with the wing as the fuselage is built round this later on. Cut out ribs and make the two centre section ribs $\frac{1}{8}$ in. smaller to allow for sheeting. Mark the position of the ribs on the main-spar and slide the ribs into position along the spar, cement into place, when dry add the leading and trailing edges and sand to correct section. Add gussets where shown. Cut away the mainspar between the two centre-ribs and cement the ply bellcrank support in place. While this is setting you can add the 1 oz. balance weight in the starboard wing, old cement tubes being useful for this purpose. Now you can fit the bellcrank into place. Cement in the wing-tips, fit the tubes in the port tip, and sand tips to streamline section. Cut out the elevator and sand to section. add the tape hinges and cement into position, cement the control horn into place, you can now add the push pull rod and wing wires. Sheet top and bottom of centre section, allowing space for the travel of the push-pull rod in the underside.



Fuselage

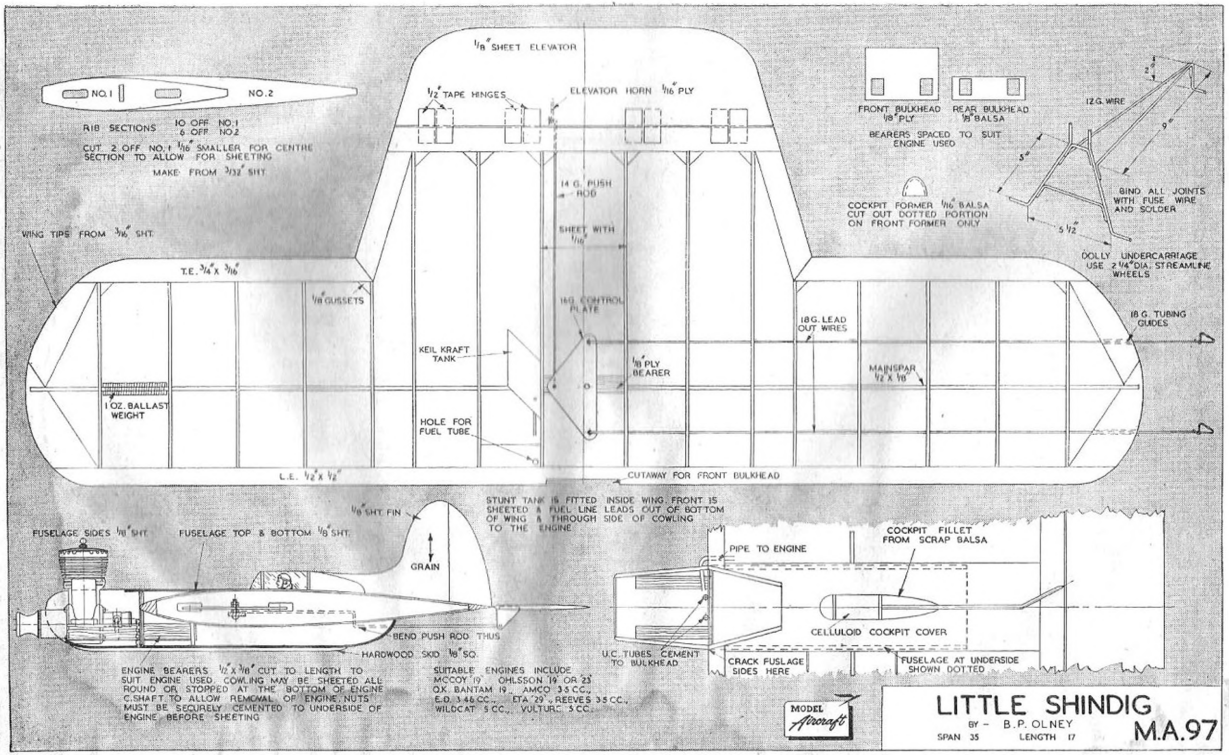
Cut out fuselage bulkheads. and cement into position. use "Casco" for front bulkhead where the leading edge is cut away. Glue motor mounts into position again using "Casco." Bind and cement the undercarriage tubes on the front bulkhead. Cut out the fuselage sides very carefully, as accuracy here is essential. Crack where shown and cement on the wing. Sheet the fuselage top and bottom. Fit the fuel tank into position (a Keil-Kraft tank just fits without projecting above the ribs). Run the fuel tubing through the bottom of the wing and through the side of the cowling to the carburettor. Cement the fin and cockpit into place. Make the cockpit fillet from scrap balsa block and sand to shape.

Covering

Before covering. fill in the grain of the fuselage with a mixture of talcum powder and clear dope ; when dry sand down and if necessary repeat the process. Cover wing with rag tissue and dope well, add coloured dope to suit your taste, then give whole model a coat of a good fuel proofer, including the cockpit as some hot fuels will dissolve celluloid.

Flying

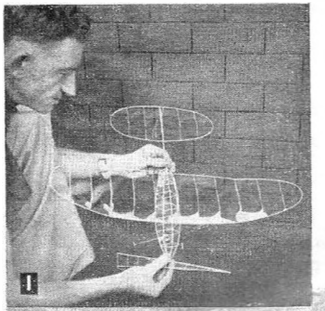
I don't suppose it will do any good telling you to wait for a calm day, you'll most likely test fly in a howling gale anyway ! I know I did ! At any rate, wait until you have got the feel of the controls before trying any stunts. You will find the model very responsive, so go easy with the elevator for a start, if you don't you will very likely have done half a dozen loops before you have realised it. The original takes about a quarter of a lap to take off the dolly but wait until the model is moving at quite a fast speed before giving any elevator movement. For fine weather flying use 50 ft. lines, and for windy weather 45 ft.



FULL SIZE DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN STREET, LONDON, W.C.2, 5s. 0d. POST FREE.

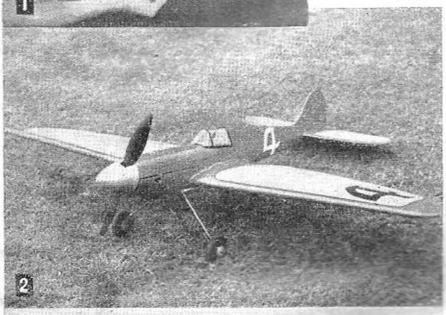
MODEL *Aircraft*

photonews



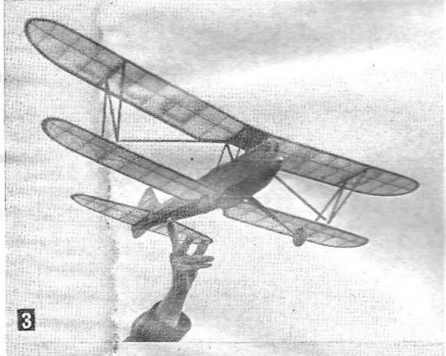
One seldom sees published these days photographs of microfilm covered indoor models—no doubt the introduction by the S.M.A.E. of the British Indoor Nationals will revive interest in this type of model. Our first Photonews picture this month shows Boyd Felstead of S. Australia with his neat fuselage job which won first place at the 1950 Australian Nationals with a flight of 12 mins.

J. A. Hulme, of Alderley Edge, Cheshire, sent us No. 2 which is of his latest C/L Stunt model, the main details of which are :—span 36 in. ; Amco 3.5 engine ; 9 × 6 prop ; speed 65 m.p.h. ; all-up weight 20 oz.



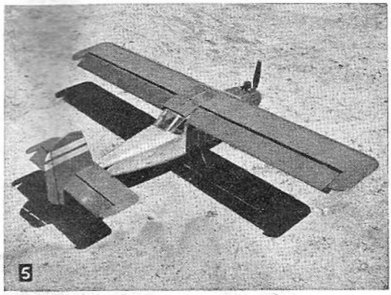
Ed. Stoffel can always be relied upon to send us good action shots and No. 3 shows one which he took recently at Fairlop of a very nice looking semi-scale biplane by D. S. Emm, of Battersea, London. Built from a M.S. kit and powered by a 0.75 Mills, it placed 9th in last year's Bowden event.

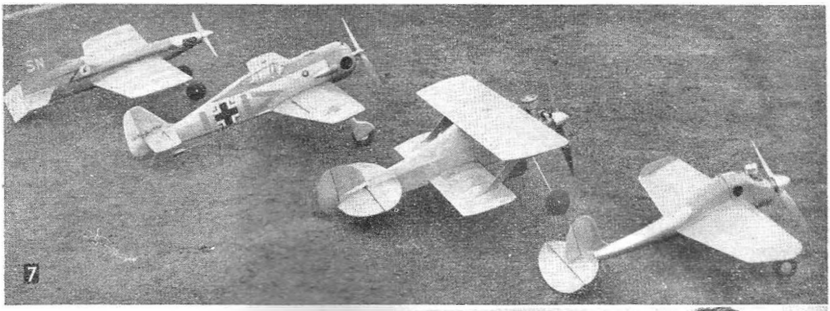
The Mills 1.3 powered D.H. *Chipmunk* by Cpl. N. Barker, late of R.A.F. Cardington, was one of the best scale jobs we saw last season and photograph No. 4 was taken at the 1950 R.A.F. Championships at Halton, where it gained a first place in the Concours d'Elegance.



F Rene Charette of Ottawa, Canada, is an aircraft designer and No. 5 shows a flying scale model of his Airmobile which has been test flown successfully. Talking of the full-sized prototype, he says :—" It will change from a motor car to an aircraft at the push of a button and requires no dismantling. Furthermore, it has automatic flap-control and cannot dive, stall or spin." Rene adds that his Airmobile design has been granted a patent, but lack of funds has compelled him to discontinue his experiments. Tough luck !

Reader K. R. Waddingham, of Nottingham, sent us photograph No. 6 of one of his American pen pals, Carl Markham, of the Peru Flying Tigers with his Torpedo Special "29" powered Long Midget *Mustang*. Thirteen coats of dope were used to obtain the fine finish—the colour scheme being cream, green and black. A nice job Carl—and thanks K.R.W.





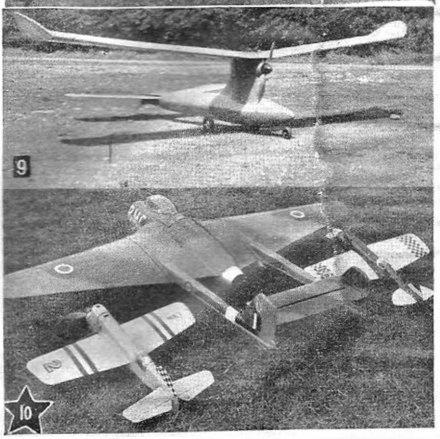
Being employed at the B.A.F.O. Gliding Club in the British Zone of Germany, Sepp Niederstadt has been able to obtain quite a number of British C/L kits and engines. Photograph No. 7 shows some of them. On the left is a Mercury *Monitor* with which he has already won three contests. Next is a Veron *Elf* 190—both models powered by Amco 3.5 engines. Third is a Drone powered de Bolt *Bipe* and on the right is one of his own designs. Named *Knurrhahn* and fitted with an E.D. Comp. Special, it has completed over 80 flights and is now being used as a stunt trainer by his friends.

L.S.A.R.A. member, Dick Annenberg, of Kingsbury, London, is a firm believer in putting his theories into practice. An advocate of swept-forward wings, he is seen in No. 8 with his latest Kalper .32 powered model and we can bear witness to the fact that this model really does have a most spectacular performance, in fact we are pretty certain that Dick will have had it by the time this photograph appears.

Turning to something very much larger, the *Hoverbird* (that's the name of the model) shown in photograph No. 9 was designed and constructed by A. E. Denham, of Twickenham, Middlesex. The wing span is 7 ft. and the power is provided by a 5 c.c. "K" Vulture diesel Look's quite a job, eh?

Star model of the month is the jet powered *Vampire* by Johnny Nunn of the Barking (Essex) Club which has performed well at a number of London Area Rallies. Also in the photograph are two of his team racers.

Our Photonews pictures this month have come from readers of MODEL AIRCRAFT in many countries—thanks a lot chaps and cheerio until next month.



OVER THE COUNTER

MODEL AIRCRAFT DEALERS . . .
Are invited to submit photographs of their premises for consideration as subjects for the heading of this trade feature. Such photographs should be accompanied by a brief history of the firm concerned.

THIS month we are dealing mainly with contemporary American model aircraft trade. British modellers have always shown a great interest in American productions. American miniature aero-motors have considerably influenced the design of many comparable British motors and the same is true to a lesser extent of kits. It is no secret that in the very early days of the model aircraft trade in this country—the mid-1930's—many manufacturers of that time started in business merely by imitating what the Americans were already doing. Quite a considerable proportion of the model aircraft trade in this country at that time was also the import and distribution of American kits and accessories.

Older modellers will no doubt remember the introduction of the original Brown Junior spark-ignition motor. The first of these were introduced in this country about 1936. They were really the first production miniature aero motors in the world and sold for the then fabulous price of about six pounds. Only the relatively wealthy modellers could afford them—and how the other less fortunate people envied them!

Not long after came the Baby Cyclone—a 6 c.c. motor which was the forerunner of the 10 c.c. Super Cyclone of modern times. This was a low priced motor with an excellent performance and a popular favourite of the immediate pre-war years.

Then came the Ohlsson. The first Ohlsson was the 10 c.c. "Gold Seal," a later design than the Brown and with a better performance. It was with a re-designed smaller version, however, the "23" model that Ohlsson's really made their name. The "23" was *the* motor of the time when free flight power was beginning to climb in popularity.

It is to the credit of the Ohlsson and Rice designers that the Ohlsson motor design has remained basically unchanged since 1938, and these motors still have an excellent performance judged by modern standards. Times have changed, and with them design standards and so the latest Ohlssons have their differences. Basically, however, the only difference is a change-over from sideport to rotary valve induction.

Ohlsson and Rice have been manufacturing miniature aero motors for fifteen years. The pre-war sizes—the "19" "23" and "60" are still retained, all now with rotary valve induction, and there have been two additions—the "29" and "33." The complete range is listed in the table below.

The original design of the Ohlsson, with detachable front crankcase, made it possible to change over to rotary valve induction with the minimum of upset and re-tooling. Just a new crankshaft and front bearing assembly and the job was done. In fact, conversion sets of this type were first offered before any rotary valve Ohlssons as such were in production. The sideport induction tube was then blocked—by corks!

During the change-over period from sideport to rotary valve one other major modification was also tried out—and then dropped. This was a pressed sheet fitting replacing the cast-in lugs for beam mounting. This fitting was held in place by the

MODEL AIRCRAFT SUPPLIES LIMITED
38, NEW KENT ROAD, LONDON, S.E.1.

Commenced business in 1930. Harry York, the pro-gressive chief in heading photograph) claims to have been the first to introduce to the British market small section balsa, lightweight dopes, banana oil, micro-film, indoor balsa and American kits and engines.

His interest in model aircraft dates back to 1913 and he built a radio-controlled model in 1921.

Was elected to the Council of the S.M.A.E. in 1931 and acted as Press Secretary from 1932-1942 and Acting Secretary from 1941-1942.

Elected a Fellow of the S.M.A.E. in 1942 and joined the R.A.F. in that year, being invalided out in 1945.

Was re-elected to the Council in 1946 and to the office of Press Secretary, which position he held until being compelled to resign in 1948 due to pressure of business.

Travelled to America with the British Wakefield Cup teams in 1936 and 1939.

Member of the Blackheath, Northern Heights, Hayes & District, and Park M.A.L. Clubs.

The main business of Model Aircraft Supplies Limited today, is supplying kits, engines, etc., by all the leading manufacturers.

The customer in the heading picture is a pioneer aeromodeller, Councillor H. Slack, who won his first model aircraft contest in 1913 and is President of the Sheffield Society of Aeromodellers.

OHLSSON AND RICE GLOW PLUGS

Number	Type	Thread	Thread length	Weight oz.	Weight grams	Price
S-2	Standard	¼ x 32	3/16"	.135	3.82	
S-4	Standard	¼ x 24	13/64"	.25	7.08	
S-R	Racing	¼ x 32	7/32"	.07	1.98	
S.R	Racing	¼ x 24	7/32"	.16	4.53	
A.A	Baby	¼ x 32	5/32"	.10	2.83	
Infant		None	None	.08	2.6	65c.
Spitfire O						
O.K. Cub	Hi-Glow	¼ x 32	5/32"	.10	2.83	
Atwood	Hi-Glow	¼ x 32	5/32"	.05	1.42	
S-RR	Hi-Glow Racing	¼ x 32	7/37"	.07	1.98	

three screws holding the front crankcase in place. Without the fitting the Ohlsson was a radially-mounted motor, utilising the overlength portions of the three crankcase assembly screws. A special tank mount was also produced to link up with this, both for the "23" and "60" sizes, although the "23" was the only model actually to have the detachable lugs. Now this has been dropped and all the models incorporate cast-in lugs.

Of the present series the "19" and "23" are virtually the same motor, as also are the "29" and "33." To achieve the difference in capacity the stroke has been shortened in the smaller of the "pair" sizes. The idea behind this, of course, is to produce virtually identical motors in two official classifications—one just below the maximum capacity in one class and the other just above the minimum capacity in the next highest class.

As far as British official classifications are concerned this is only effective as regards the "29" and "33." The "29" is in the top limit of Class B free flight and the "33" in Class C. We have been surprised that no British manufacturers have adopted similar production technique. It seems to have paid well in the United States.

Recently, of course, Ohlsson and Rice have branched out into other modelling fields. They first produced a range of propellers suitable for their complete range of motors for free flight and control line work, then a complete range of special fuels and, more recently, fuel proofer.

Something of a set-back was produced with the initial introduction of their fuels—the ignition fuel being condemned by several other motor manufacturers as unsuitable for their products. The manufacturers concerned all produced ringed-piston motors. The Ohlsson and Rice reply was a further ignition fuel especially for ringed motors, although they produce no ringed motors themselves. Even their race car and marine versions of the "29" still retain the pressed, centreless ground steel piston.

All the present Ohlsson motors are listed as primarily glow motors, although a spark-ignition version of each is available at a cost of an extra dollar. The present American motor trade is, in fact, almost one hundred per cent. glow motor. Spark ignition is a rarity and the diesel virtually unknown. No diesel is in current production in America. It was, in fact, largely this trend which led to the change-over to rotary valve induction on all the Ohlsson models. In the spark-ignition version many modellers do, in fact, feel that a better free flight performance is obtained with sideport induction.

Ohlsson and Rice have also their own glow plug design—a whole range, in fact, covering not only their range of motors but all other glow motors as well. We again include a full list of these as we have often received enquiries from modellers in this country on the subject.

Leaving the Ohlsson and Rice concern, which at their peak were producing motors at the rate of approximately one a minute throughout the forty-four hours of a working week, we turn to Duromatic, makers of the famous McCoy and Redhead series of ringed motors. All designs have been derived from the original McCoy "60" by Dick McCoy the model race car expert. McCoy, in fact, still holds one of the official American race car records.

The present Duromatic range is prolific, largely as the result of ringing the changes on a limited number of basic models. They have produced, virtually, only a "60," "49," "29," "19" and "09" motor, but currently list fourteen different models. At one time they had more.

Strictly speaking only the original "60" was

1951 OHLSSON AND RICE MOTORS

Model	Type	Displacement c.c.	Displacement c.i.	Class American	Class British Free F	Class British C/L	Bore	Stroke	Static Thrust oz.	Weight oz.	Price $
19	Glow	3.1237	.1962	A	B	III	.684	.534	40	4.75	10.95
19	Ignition										11.95
23	Glow	3.7674	.2299	A	B	IV	.684	.625	50	5.00	10.95
23	Ignition										11.95
29	Glow	4.9145	.2999	B	B	IV	.759	.663	64	5.25	12.95
29	Ignition										13.95
33	Glow	5.4061	.3299	C	C	V	.759	.729	68	5.37	12.95
33	Ignition										13.95
60	Glow	9.8322	.6000	C	C	VI	.937	.875	90	10.00	13.95
60	Ignition										14.95

DUROMATIC AND McCOY MOTORS

Series	No.	Description	Displacement c.c.	Displacement m.m.	Class American	Class British F/F	Class British C/L	Bore in.	Stroke in.	Weight oz.	Price $
McCoy Sports Glo-Motors	900A	'9' Glow-plug	1.557	.095	A	A	II	—	—	3.0	7.95
	1900AF	'19' Glow-plug	3.1959	.195	A	B	III	.625	.630	—	9.95
	2900AF	'29' Glow-plug	4.9063	.2994	B	B	IV	.750	.670	—	11.95
	3600A	'36' Sportsman Jnr.	5.7322	.3498	C	C	V	.809	.670	6.0	14.95
	5500A	'55' Sportsman Snr.	8.9969	.549	C	C	VI	.940	.790	10.0	16.95
Red Head Racing Glo-plug	1900AR	'19' Redhead	3.1954	.195	A	B	III	.625	.630	—	10.95
	1900AC	'19' Midget Car	3.1954	.105	—	—	—	.625	.630	—	10.95
	2900AR	'29' Redhead	4.9063	.2994	B	B	IV	.750	.670	—	14.95
	2500AR	'49' Redhead	8.1772	.499	C	C	V	.890	.790	—	19.95
	1800AR	'60' Redhead	9.9502	.6072	C	C	VI	.940	.875	—	22.50
Red Head Racing Ignition	1900A	McCoy '19'	3.1954	.195	A	B	III	.625	.630	4.0	10.95
	2900A	McCoy '29'	4.9063	.2994	B	B	IV	.750	.670	7.5	19.50
	7500A	McCoy '49'	8.1772	.499	C	C	V	.850	.790	11.0	25.00
	1500A	McCoy '60'	9.9502	.6072	C	C	VI	.940	.875	13.5	27.50

initially called a "McCoy" motor. Popular use of this name, however, has led to its re-introduction, officially, by the manufacturers in their latest lists. The same with their glow plugs. This was the "Duromatic" hot-point—not the McCoy glow-plug, although popular opinion thought otherwise. For this reason the Duromatic plug when manufactured in this country under licence was called the "McCoy" plug. This, incidentally, is one of the few examples of American products being manufactured in this country under licence. Another is the range of deBolt control line designs manufactured by Mercury Model Aircraft Supplies.

These two motor manufacturers we have described—Ohlsson and Duromatic, may be said to have enjoyed the bulk of American motor production and sales over the past few years. Neither, however, have entered the ½-A class. There are, of course, a number of other outstanding motor manufacturers in the States—Mel Anderson, Atwood, K. & B., Herkimer, Fox and Arden, for example. They have produced their large motors (with the possible exception of Arden who made only the "09" and "19" and now seem to have disappeared). Fox have produced some particularly outstanding motors in the various competition classes, but only on a relatively small scale. The bulk of the production of the other four companies has been concentrated on the very popular ½-A class, all glow ignition. At one time ½-A motors were estimated to constitute over 80 per cent. of miniature aero motor sales in the States and the proportion is still on a similar high level. It is significant, perhaps, that motor sales as a whole have tapered off very considerably over the past two years and with it the number of individual manufacturers in the business. At one time, for example, there were about one hundred and fifty different makes of American motor available. Now there are probably not more than ten or so individual manufacturers in current production. At least 90 per cent. of the demand for motors is then for glow-ignition.

If we compare the current position with our own home industry we could quite truthfully say that British miniature aero-motor production has quite grown away from American practice. The American *influence* is still there in the design layout of many of our best motors but the present British motors have a distinct, and comparable, standard of their own. This is both interesting and welcome for there are still people who think that "because it's American it's the best." In the specialised racing classes, admittedly, we still have nothing to touch the Doolings and the McCoys, but these larger classes have largely been neglected in this country. Our own production grew up around the small-sized diesel. We have very much concentrated on the diesel and, in this type, now probably lead the world for quality production and performance.

In the smaller sizes, too, it has been shown that the diesel is generally superior in power output to the glow motor. Few American ½-A motors, for example, compare in power with a British diesel of a similar size. The American neglect of this type has given us an undoubted advantage in this sphere and one which may well be rubbed home in the world market now that British model aircraft goods are being exported so widely.

Dealing briefly with kits we would say that British productions are now in every way comparable and, as a general rule, superior to their American contemporaries. The pro-American bias still exists amongst many modellers, but there is little or no justification for it nowadays. Our manufacturers may have learnt from the Americans but they have gone ahead on their own lines and a British kit now

The Ohlsson & Rice Dakota which in addition to its normal business duties has been used to transport teams of modellers to American events. Irwin Ohlsson (left) and Harry Rice, designer of the O & R engines, act as co-pilots

generally represents better value than a similar American kit—this, despite all the difficulties under which our own manufacturers still have to struggle.

Not only that, British kits now offer a far greater variety of model types than the current American market. Design standards, which admittedly lagged some years ago, are now generally on a higher level almost throughout. Whereas it used to be a real pleasure not so many years ago to receive a new kit from America, now, generally, it seems a waste of money for something at least equally good, and probably better, can already be obtained in this country at less cost.

There will, of course, still be the odd exceptions and to get a true picture, type for type, you must compare contemporary models—one produced by manufacturers of similar status on both sides, for example. Here again we get a significant picture of the growth and development of the British trade. Whereas the United States used to have a great many large-scale kit manufacturers the number has now dwindled to about three or four. All the others who have remained in the business have curtailed their productions drastically. Many of the well-known names of three or four years ago have faded right out.

In original designing and ingenuity most that is new now seems to be coming from this country. The Jetex, for example, was something really new to the model aircraft world—and it has been quite a success in America. This makes up a lot for the wholesale copying of American accessories and ideas in the immediate post-war period. In these fields, too, we have found our own feet and developed our own ideas. The successful plastic propeller, the vast range of wheels, timers, and so on are British items which now sell in America.

* * *

Wilmot Mansour, manufacturers of Jetex units, promise some interesting developments in the near future which will give a substantial increase of thrust from standard units. Possibly this will take the form of a thrust augmenter of some sort. We know that some excellent results have been obtained with experiments of this nature. They are also following their *Jeticopter* kits with a pre-fabricated helicopter model for the "50" motor.

* * *

New in the popular 2.5 c.c. motor Class, which is now the upper limit of capacity for motors in international (F.A.I.) power events, is the E-D series II 2.46 c.c. racing engine. This is one of the few motors in this size to incorporate twin ball-bearing crankshaft mounting. A short stroke design, great things are expected in both control line and free flight classes. Induction is rotary disc with 360 degree porting and exhaust stacks cast integral with the main body.

Initially this motor will be put out as a diesel. Another version will follow for glow- and spark-ignition and the manufacturers assure us that performance will be comparable in all three types. Too often a motor designed initially as a diesel is a comparative failure as a glow motor, and vice-versa, but this has been completely overcome in the new E-D design. The glow- or diesel versions should, therefore, be equally suited for competition work, depending upon personal choice. Main application of the spark-ignition version would appear to be for sports flying, and in particular radio control.

This motor, together with the new Frog "250," means that competition modellers now have the choice of two really excellent motors in the "International" free flight class.

* * *

Designer Phil Smith has been tempted into the Jetex flying scale field and a new Veron series of this type is promised. First model is that of the Hawker Sea Hawk, for the Jetex "50." Remember that it was also a Hawker prototype with which Veron's started their control-line stunt series of flying scale models? We confidently predict that this new series of Veron jets will also prove to be winners.

* * *

After seeing twelve shillings' worth of *Laystrate* tangled up in a hopeless mess we feel that this is *not* the stuff to use for glider towlines. Scandinavian modellers get over this problem by fitting a parachute to the end of a wire line so that it can be reeled in before it reaches the ground. It seems, at present, however, that control line influence is not likely to extend to towline gliders.

* * *

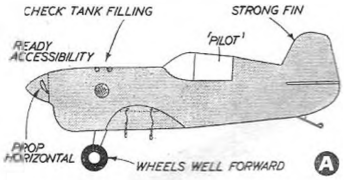
Why is it so difficult to obtain gears? Quite a number of modellers who have wanted to try out a return-gear system like Ellila's have had no end of difficulty trying to get suitable gears. Once upon a time every model dealer stocked them, now they do not even know where to order them from! Still, perhaps a non-geared model will win the 1951 event and nobody will want gears any more!

* * *

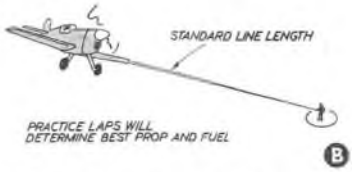
Modelspan now appears to be recognised as an ideal covering material for all types of models. Enquiries have been received from all over the world, even America. This, despite the fact that a new range of covering papers are now being put out by the original manufacturers of Silkspan.

* * *

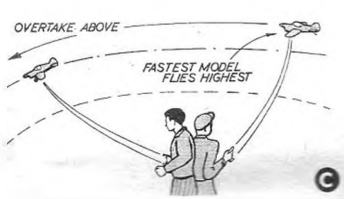
The interchange of modelling material seems to go on on a large scale these days. Modellers in one country seem to think that foreign modellers are getting the advantage. Italian modellers seem more than willing to swap Pirelli rubber for Dunlop; American modellers swap for British timers, rubber, bobbins and wheels. One swap deal which went a little awry, however, concerned a British modeller who negotiated for some sheet and strip sizes of light stock American balsa. He sent a list of the weights of the various sheets, etc., which he wanted. Finally, he was notified of despatch. . . . "I have found just the right density wood you want. I have sent off a block 48 inches long by 12 × 15 inches."



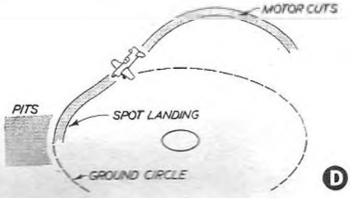
SEMI-SCALE APPEARANCE



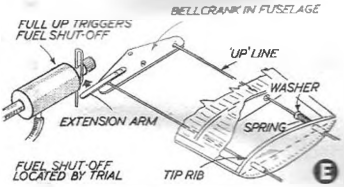
PRACTICAL TESTS FOR PROP SELECTION



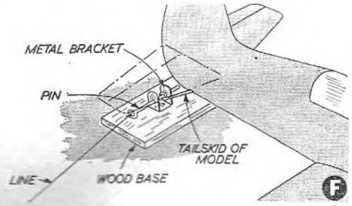
PRACTICE TWO IN A CIRCLE



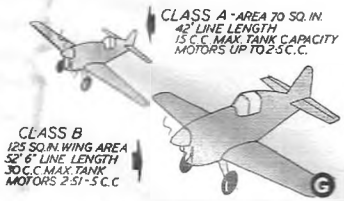
SPOT LANDINGS ARE IMPORTANT



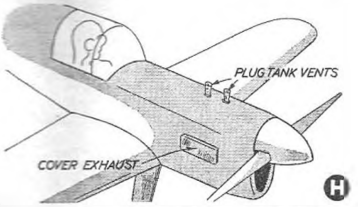
FUEL CUT-OFF ATTACHMENT



STOOGE RELEASE FOR SIMULTANEOUS START



BASIC SPECIFICATIONS FOR CONTESTS



ALWAYS CLEAN MODEL AFTER USE

(A) Team racers are the very latest class of model aircraft with a particular appeal both to pilots and spectators alike. The rules call for what is basically a semi-scale model, complete with dummy pilot, with a fully cowled-in motor, leaving only access to needle valve and compression adjustment (where applicable).

Since races are timed over a distance—up to five or ten miles—ground stability and ready accessibility of motor and fuel tank are necessary for a number of refuelling stops will have to be made. An undercarriage well forward helps prevent nose-over landings. A strong fin helps out—just in case !

(C) It will also take a little practice to get used to flying two or more models in the same circuit. Practise with a friend at first, preferably with older sports models. Both pilots must keep moving round each other and the fastest model should always overtake at a greater altitude. Each pilot has to watch both his own model and that of the other pilot, when they are close together.

(E) There are several possible systems for installing a motor cut-out. Spark-ignition motors, of course, could use a battery-operated relay, current being fed through insulated control lines and the circuit closed by a press-button switch on the handle. With the more popular glow and diesel motors, however, a mechanical fuel cut-off must be used. The three possible systems are, again, electrical, use of a third line, or worked off extreme movement of one of the two control lines. The latter scheme is almost invariably preferred.

The principle of this is, basically, that the control plate has more movement than is strictly necessary to obtain the required elevator movement. An extension is fitted to the control plate, or the end of the control plate bent up and shaped, so that in the extreme "up" or "down" position this arm or extension triggers a standard type of fuel shut-off, thus stopping the motor. To prevent accidental operation a compression spring is fitted to the appropriate lead-out wire which, under smooth control handle movement, would limit the travel of the lead-out wire at this point. A sharp pull is necessary to pull the line further against this spring action and so operate the fuel cut-off.

(G) Team racer classes are designed to cater for the two most popular ranges of motor sizes. There are few design restrictions, but a minimum limit has been fixed for wing area to ensure a reasonable semi-scale appearance. Tank capacity is limited in each class. Class A line length gives 20 laps per mile and Class B 16 laps per mile.

(B) It is comparatively easy to *design* a team racer, but quite another matter to get top performance out of it. Here only practice will determine which is the best prop. diameter and pitch, and the best fuel, for the job. For short races a fine pitch propeller may be best for good acceleration. For long distances the higher pitch prop. will provide a higher flying speed and better overall time. Similarly the fuel has to be one which gives trouble-free running over extended periods and, above all, the motor must be easy to re-start after pit stops. Practise with the model on standard line lengths with different propellers and different fuels.

(D) Not all team race rules state that the motor should be fitted with a cut-out, but this is a wise precaution. To be able to stop the motor should it be running badly and bring the model down right in front of the pits for instant adjustment and restart may save many valuable seconds. It may be impossible to land a model with a badly running motor and you then have to continue for lap after lap at something like half speed.

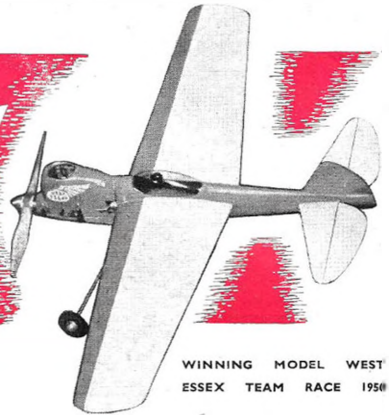
To be able to land the model right by the pits each time is another thing which is most helpful. If the ground crew have to run halfway round the circle to collect the model and then carry it back to the pits you are giving away several laps to your competitors. Spot landings, practised with the aid of a motor cut-out, will prove their worth in competitions.

(F) The "stooge" release is frequently adopted for simultaneous starting. The tailskid of the model is bent in the form of an eye which is locked by a length of metal passing between holes in a metal bracket secured to a suitable base. This base, in turn, is secured to the ground. Withdrawing the pin by means of a line releases the model. Any number of models can be released at the same time by pulling all the appropriate release strings together.

(H) A five- or ten-mile race is a lot of flying for a model and excess fuel and oil will be plastered all over it. Oil and dirt collects more dirt, and so on. Hence a careful and thorough wipe down at the end of the run is not only commonsense—it is imperative.

Dust is the prime cause of motors wearing out and it is strongly recommended that exhaust ports be kept covered when the motor is not actually being run. Plugging the tank vents lightly will also help to keep out grime here. A clogged fuel line can be a lot of trouble—especially with the tank and fuel line enclosed in the cowling. Team racing stresses consistent performance. In the long run that boils down to adequate and proper maintenance.

Cardinal Puff



WINNING MODEL WEST ESSEX TEAM RACE 1950

BY C. A. TAYLOR

"CARDINAL PUFF" was designed and built in a week of evenings prior to the West Essex Invitation Team Race, on October 15th last, and, indeed, was only finished at 10 a.m. on the morning of that day, so was entered with only one test flight behind it—73 laps at roughly 65 m.p.h., and that with the needle valve broken off in the jet, this allowing no "fiddling" with the settings. Tank check proved this weird arrangement to be 2 c.c. undersize (how *do* these things happen?), so a consistent 80 laps seems quite probable with a full quota of the right juice, the best prop., and a little experimenting.

In passing, it is significant to note that of all the major team races this season, only two have been won by glow-plug motors, the rest having fallen to the diesel fiends. Whilst I myself am at present one of the latter, I believe the main reason is that a diesel has given the impression of being more reliable on the whole, but I also believe that the time will shortly arrive when the racing motors will also possess this same reliability, and make a fallacy of the old tortoise-and-hare story.

I would like to say a word at this stage about cowlings. S.M.A.E. Rules state that "the motor shall be fully cowled, except for *access* to glow-plug or compression screw." This does not seem to disqualify the use of helmet-type cowlings, with most of the top surface of the head open, and, whilst "Cardinal Puff" originally incorporated this type of cowling, I am not so sure this is a good thing—that is, as far as appearance goes, and that the rule could be slightly modified in this direction, allowing *only* glow-plug or compression screw to protrude outside the cowl. It is an easy matter to provide a longer comp. screw for the diesels, which seem to be the chief "offenders" as far as this goes. However, that is a matter for the C.L. committees to decide.

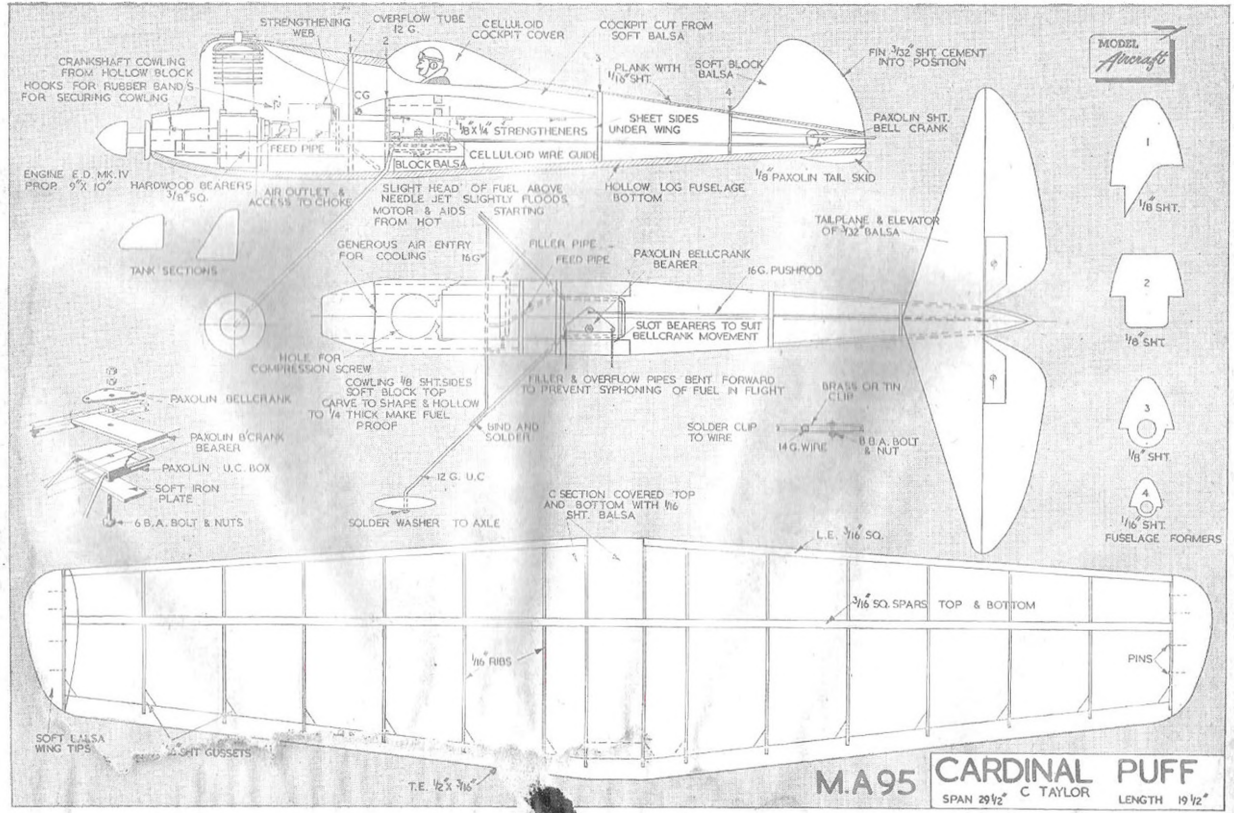
"Cardinal Puff" is a model which is simple to build, even for the beginner, and is a good team race trainer as well as a competition model. The basic idea was to keep the weight down to a minimum, giving those extra few m.p.h. that are so vital. This proved to be so when we came up against other models with the same power unit, but with the disadvantage of an extra few ounces to tow around.

Construction

First select a piece of medium block balsa, 2¼ in. × 1½ in. × 18 in., and carve to the shape of the bottom half of the fuselage. Hollow this out with a penknife or balsa knife—a simpler job than it sounds. Take your ¼ in. sq. engine bearers, and mark their position on the fuselage. Drill the bearers for the 6 B.A. engine bolts, and fit the bolts in, soldering pieces of 16 gauge wire to join the heads of the bolts on each side to prevent them from twisting round when the nuts are being screwed down. Mark the outline of the fuselage plan view on the bearers in pencil, and carve the fronts to this shape. Cut slots for the bearers in the fuselage, and firmly Durofix these in place, making sure to put a skin of Durofix all over them as well as at the joints. Allow this to dry overnight.

Now fit the main bulkhead and the two rear formers to the fuselage. The tailplane and elevators are cut from 3/32 in. hard balsa sheet, and the control horn and joining piece of 14 G. wire and tin clips soldered together and fitted to the elevators. Put an 8 B.A. bolt through each clip, and seal each nut with a small blob of solder. Cut the bellcrank from paxolin sheet, also the bellcrank bearer. Fit the lead-out wires, and then make the push-rod, which should be measured as accurately as possible, to obviate having to move the tailplane further than necessary from its planned position to correct faulty measuring.

From the plan, the u/c may at first appear a little involved, but this is not so. All it consists of is a normal type plug-in paxolin box u/c, fitted horizontally, instead of vertically, making it a permanent fixture in the fuselage. Make sure that the u/c is as tight a fit as possible in the paxolin box (Mercury on the original), and to prevent it from moving either forwards or backwards, solder a piece of 16 G. wire at each protruding end. Place the bell-crank bearer in position, and mark where the pivot bolt



FULL SIZE DRAWINGS ARE OBTAINABLE FROM YOU[illegible]CAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT [illegible]N ST., LONDON, W.C.2. 3d. 3s. POST FREE.

will come on the u/c box, and drill a hole there. Bind the whole box with thin copper wire, and solder this binding lightly all over, giving added strength to the box. A piece of $\frac{1}{16}$ in. soft iron sheet, also drilled to take the pivot bolt, is fitted underneath the box to prevent the bolt sinking in, and to spread the load more evenly. At this stage, insert the pivot bolt from the bottom, through the soft iron, the u/c box, the bellcrank bearer and the bellcrank itself, with a nut under the bellcrank on which to swivel.

Having drilled holes in the bottom of the fuselage for the u/c legs (which should not be bent to take the wheels until the u/c is fixed in position), cut a slot in each of the motor bearers to the length and depth of the bellcrank bearer, slip the legs through the holes, and firmly Durofix the complete unit into position. All joints should be pre-cemented. A piece of block balsa underneath the u/c box will help keep the fixing more rigid.

In a mix-up in the centre of the circle during our heat in the London Area meeting, "Cardinal Puff" hit the deck at about an angle of 20 degrees at top speed. The u/c was spreadeagled, and might easily and justifiably have been ripped out by such treatment, but a bit of bending made it as good as new—a little loose maybe, but it got us through the final with no bother, and has seen a great deal of flying since then with no adverse effects. Cement the tailplane in position, making sure that it is in the correct position for "neutral." Now make the tank. This may seem rather a queer shape to many modellers, but was purposely designed like this and has proved extremely efficient, feeding right down to the very last drop. The slight head of fuel above won fuel jet in the needle assembly gives just that diesel t amount of flooding to the motor to make fi e-flick starting a certainty on every pit-stop. Make sure that the filler and outlet pipes are bent forward to prevent fuel being syphoned from the tank during flight. This can make a huge amount of difference to the number of laps obtainable. Durofix the tank lightly in place, but firmly enough to stop be g shaken loose with vibration. Cement the front former in position, making it a good fit, and fill up any gaps with cement to prevent fuel seeping through to the rear of the fuselage.

The wing can be made very quickly, the original taking only half an hour to complete. Cement all joints very firmly, and cover the centre section with $\frac{1}{16}$ in. sheet balsa. Fit the $\frac{1}{8}$ in. sheet sides under the wing position (no incidence), add the horizontal $\frac{1}{8}$ in. sheet strengtheners, and cement the wing in position. Plank the fuselage from the T/E of the wing to the L/E of the tailplane with $\frac{1}{16}$ in. sheet. Carve a piece of very soft balsa to shape, with a cut-out for the cockpit, and fit this on to the top of the wing. Add the pilot and cockpit cover. The extreme rear of the fuselage above the tailplane is also made from soft block, and the fin, of 3/32 in. sheet, cemented in position. If the c.g. of the model turns out to be further forward than about $\frac{1}{4}$ in. in front of the L/E of the wing, add lead weight to the tail until it balances just on the L/E. The tailskid is cut from $\frac{1}{8}$ in. sheet paxolin, and is Durofixed in place.

Meet the Contributors

C. A. TAYLOR

Aged 21.
Shipping Clerk.
Single.
Member of West Essex Aeromodellers.

Commenced modelling in 1940. Built 97 solids during the War.

Ex-R.A.F. Jan. '48 to Dec. '49.

First became interested in C/L after flying a "Fireball" in Singapore.

Mainly active at present in Scale Stunt and Team Racing, but also interested in R/C.

Dislikes "experts" who seldom enter, and never place in contests.

Ambition: to win an Open Stunt Comp. with a scale model.

Other interests: Motor-cycling and photography.

The cowling is made of $\frac{1}{4}$ in. sheet balsa sides, with block fitted into the top, and carved to its exterior shape. Hollow the inside out until it is about $\frac{1}{8}$ in. thick at the top. Fuel proof the inside of the cowling with cement and dope, making it as smooth as possible. The bottom of the fuselage, under the motor, should also be well fuel-proofed in this manner.

Give the whole model a thorough sanding all over, a coat of glider dope, and lightly sand again. Covering is of lightweight Modelspan, doped on, and given 2/3 coats of full strength glider dope. Sand the solid surfaces very lightly in between each coat.

The $1\frac{1}{2}$ in. wheels can be fitted at any stage after the u/c fixing has been made. Make absolutely sure that there is no possible chance of the wheels coming off during a contest, as this could no doubt entail disqualification.

The writer has done quite a bit of experimenting with different props on the E.D. IV for this model, and the best laps speed combination was achieved using a 9 in. × 10 in. P.A.W. A smaller propeller will give more revs and resultant speed, but the number of laps obtainable is very much less. The larger prop. also gives some slight assistance to starting.

The colour scheme of the original model was:—Green fuselage, fin and wing L/E. Cream tailplane and wings.

It is imperative to colour-dope the tissue covered wings to give added strength and protection from possible shattering, etc. Colour-dope also helps make the model look more like the real thing.

Well, there it is, all completed. All you need now for success is handle, lines, fuel, two top-notch mechanics, and, oh yes!!—a team race!!!

Winter Competitions at Fairlop

268 contestants took advantage of the opportunity afforded by the Blackheath Model Flying Club's Winter Meeting at Fairlop, to restart contest flying. Many of them travelled from places as far distant as Ipswich, Luton, Yatesbury (Wilts), Birmingham, Portsmouth, St. Albans and York.

The weather was fine, but a strong wind carried the models o.o.s. very quickly. Nevertheless, the flying conditions were far better than those experienced at many of last season's inter-club events.

Two contests were held, the Bill White Memorial Cup (rubber) and the B.M.F.C. Winter Glider Contest. The flying was of high standard and the events were keenly contested.

This meeting has now firmly established itself as a popular annual event and the experiment of holding it at Fairlop Aerodrome this year instead of on the club's own ground at Blackheath undoubtedly contributed to the large entry.

BILL WHITE CUP CONTEST

1.	A. Ricks (Willesden)	377.3
2.	K. Miller (Croydon)	306.8
3.	J. B. Knight (Kentish Nomads) ...	303.0

B.M.F.C. WINTER GLIDER CONTEST

1.	H. A. C. Savage (Croydon) ...	291.2
2.	P. Wyatt (Ipswich)	267.8
3.	R. Clements (Luton)	256.7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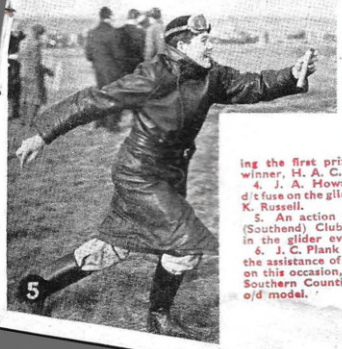
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1. H. A. C. Savage (right), of the Willesden M.F.C., preparing his model for one of its winning flights in the glider event.

2. K. J. A. Miller (Croydon & Dist. M.A.C.) who placed second in the Bill White Memorial Cup Contest is seen launching his model.

3. J. L. Pitcher, who placed 5th in the rubber event, presenting the first prize for the glider contest to the winner, H. A. C. Savage.

4. J. A. Howard (Kentish Nomads) lights the d/t fuse on the glider entered by fellow club member, K. Russell.

5. An action shot of G. Lawes of the Belfairs (Southend) Club towing up his "Windjammer" in the glider event.

6. J. C. Plank (West Middlesex) winding up with the assistance of C. Bonsey. Although unsuccessful on this occasion, he won the rubber contest at the Southern Counties Rally last year with the same o/d model.

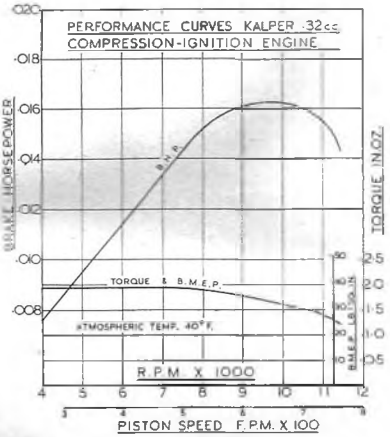
MODEL Aircraft

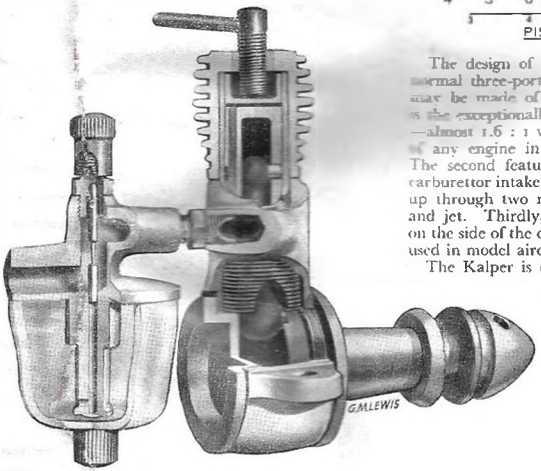
ENGINE TESTS

NO. 21 THE KALPER .32

THIS tiny engine, one of the smallest capacities ever to be put into production, is, of course, primarily intended for small free-flight models of the strictly "pleasure" type. Its size, weight and general standard of performance, readily suggest the small scale, or semi-scale model, and it has, in fact, proved quite popular for such types.

With an engine of such small dimensions, some care must, of course, be exercised in handling it to avoid risk of damage, although, in the construction of the Kalper, some thought has evidently been given to the reduction of such risks. The fine threads of the contra-piston lever and propeller-shaft, for example, run in brass inserts in the cylinder barrel and spinner-nut, respectively, rather than directly in the relatively soft material of these two components. However, only moderate pressure should be exerted on any of the threads. About an inch leverage on the tommy-bar for the prop nut is sufficient. The forefinger and thumb are all that are required to tighten the cylinder barrel on to the liner.



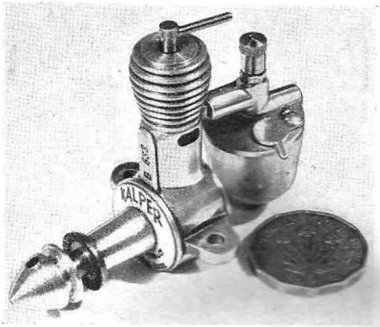


The design of the current Kalper model follows normal three-port two-stroke practice, but mention may be made of three uncommon features. First is the exceptionally high stroke/bore ratio employed —almost 1.6 : 1 which is believed to be the highest of any engine in production at the present time. The second feature is the unusual pattern of the carburettor intake passage now used which is stepped up through two right angles in passing the needle and jet. Thirdly, the induction port is positioned on the side of the cylinder, a layout now infrequently used in model aircraft engine design.

The Kalper is essentially a hand made unit and is regarded as representing good value at its present moderate price.

Specification

Type : Single cylinder, air-cooled, three-port, two-cycle, compression-ignition. Two exhaust ports, one induction and one transfer port. Flat top piston.



Swept Volume: 0.324 c.c. (0.0198 cu. in.).
Bore: 0.251 in. Stroke: 0.400 in.
Compression Ratio: Variable. Stroke Bore Ratio: 1.594 : 1. Weight: 1 oz.

General Structural Data: DTD.424 aluminium alloy crankcase with detachable main bearing housing and rear cover. Main bearing has hardened steel bush, ground and lapped. Cylinder, piston and crankshaft, Ubas, hardened, ground and lapped. Cylinder is threaded into crankcase and has threaded on finned barrel head. Steel connecting-rod with hardened big-end bearing. Cast steel gudgeon-pin, hardened, ground and lapped. Transparent bowl type free-flight fuel tank fitted below carburettor body. Beam type lugs for mounting with two 6 B.A. bolts.

Test Engine Data

Total time logged: 30 minutes at 4,500 r.p.m.

Fuel used: Mills Diesel Fuel with 4 per cent. Castrol XXL added as suggested in makers' literature.

Performance

The actual value of performance curves, as applied to such small engines as the Kalper is, of course, open to question. We are seldom interested in extracting the last ounce of power from scale models or other non-competition types. However, it is interesting to see how well performance standards may be maintained (or otherwise) in such small sizes, and the usual torque and power tests were, therefore, applied to the Kalper.

Starting the engine is quite easy, the normal choke method being employed, priming through the ports being unnecessary. As might be expected with such a small cylinder, combined with the porting system used, the engine runs relatively quietly, especially at the more moderate speeds.

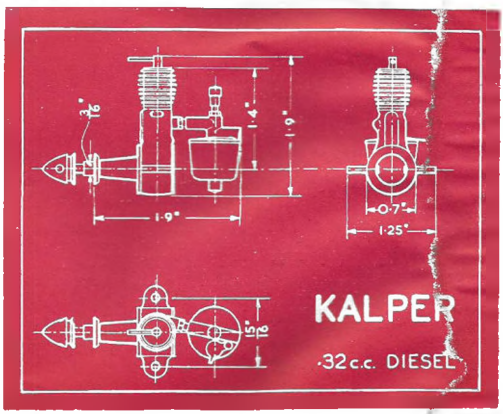
The engine submitted for test appeared to be fairly "loose" and would hold its r.p.m. under load reasonably well. A nominal running-in period of 30 minutes was, however, given.

For the performance tests, the engine was run at speeds from 3,000 r.p.m. upwards until the peak r.p.m. had been exceeded. There being no particular use for exceptionally high revolutions in the application of a unit of this type (plus the fact that the example tested was on loan, only!) no attempt was made to push the speed much beyond 11,000 r.p.m. The engine appeared to be quite happy at around the peak speeds, however. The actual power at around the peak (9,500-10,000 r.p.m.) was in the region of 0.016 b.h.p. which, equivalent to a specific output of 50 b.h.p. per litre capacity, indicates only a slight loss by comparison with model diesels of more normal dimensions.

In view of the small values involved, torque was recorded in inch-ounces to avoid the unwieldy decimals of scaling in ft. lb.

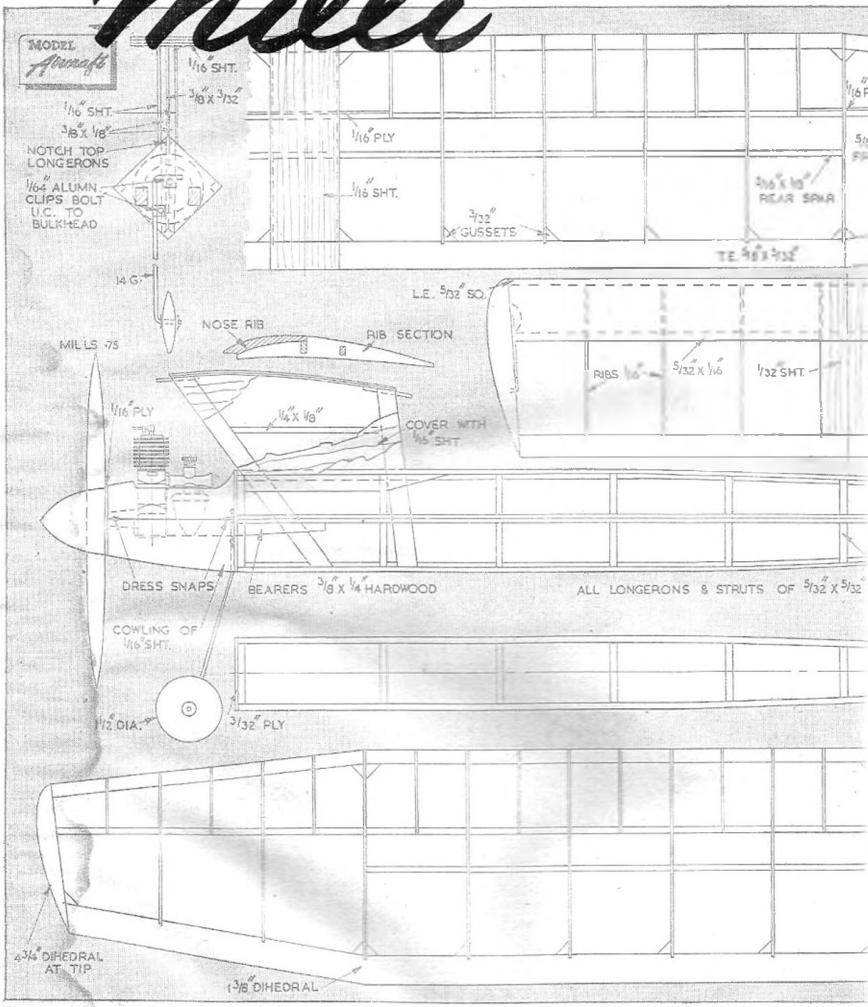
The general running characteristics of the Kalper are quite pleasing. It is not unduly sensitive to control adjustment and runs smoothly and evenly, particularly at speeds around 6,000/8,000 r.p.m. For most purposes, a 6 in. diameter prop of 3 or 4 inches pitch should be suitable and the Kalper will turn such a prop at up to 7-8,000 r.p.m. This, of course, is adequate power to fly 1 inch to the foot scale models of most lightplanes for which the Kalper seems a particularly happy choice.

Power/weight Ratio (as tested) 0.26 b.h.p./lb.
Power/displacement Ratio: (as tested) 50.3 b.h.p./litre.

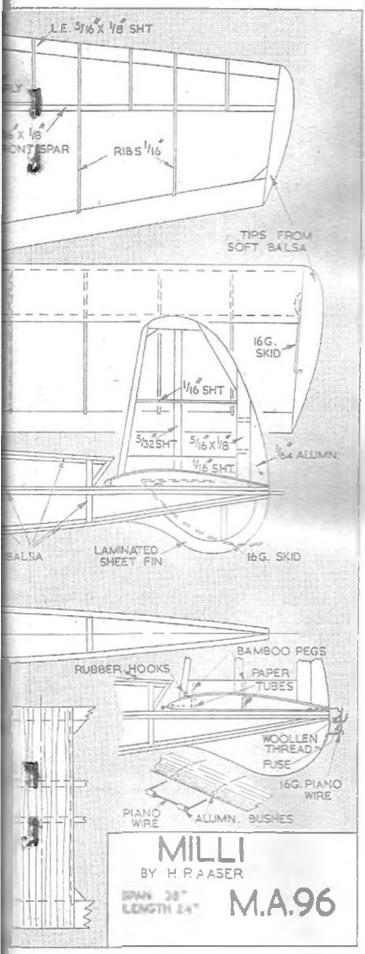


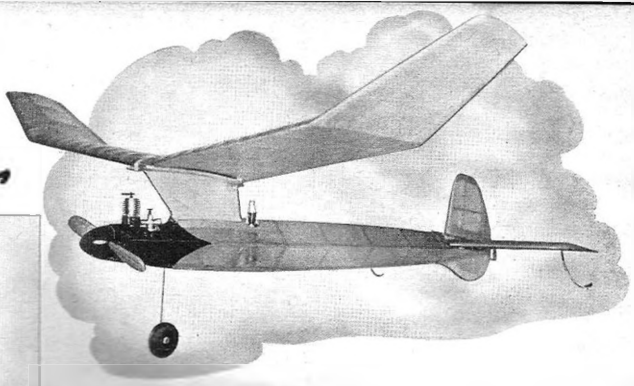
WINNER OF POWER DURATION
CONTEST 1950 NORWEGIAN
NATIONALS

Milli



H.P. Aaser





THE prototype was designed primarily as an experiment. The purpose was to investigate how a small and light model powered with an engine of 1 cm^3 or less would fare in competition with larger and higher powered models. Experience with the Milli has shown that whilst the small model is far better in some respects, it also has its disadvantages. The small model is, of course, easier to store, transport, process and handle on field. It may be built with lighter wing loading than the average higher powered model. Climb is good, but probably slower than that of the higher powered model. Glide is fairly good, but not the sailplane glide that may be obtained with larger models. The small size is a definite disadvantage when model is about to fly o.o.s. Also the comparatively fragile construction means that you have to act with some care when starting the engine, and retrievers with too many thumbs have no difficulties in puncturing single layers of Japanese tissue.

The Milli has proved to be a consistent flier and easy to trim. In the 1950 Norwegian Nationals it took first prize in class D.1—power duration models 0-5 cm^3—with aggregate time of 599.3 seconds. The first flight was o.o.s. and the shortest flight of the three was 169 seconds.

Construction

The writer prefers to start with the tailplane.

Make a rib template and cut out eight ribs of $\frac{1}{16}$ in. medium sheet for the elevator. Sand the trailing edge to triangular cross-section, make notches for the ribs and pin trailing and leading edges to the plan. Cement ribs and tips in place. Cement the 1/32 in. soft sheet to the leading edge and leave until the joint is thoroughly dry. Now cement the sheet to the ribs. The elevator is then removed from the plan and spar and top covering of centre section added. Put paper tubes for the fin and the small bits of aluminium tubing for the d.t. in place and cement well. Also put the rear piano wire in place with plenty of glue. Finally, add the 1/32 in. sheet bottom covering of the centre-section.

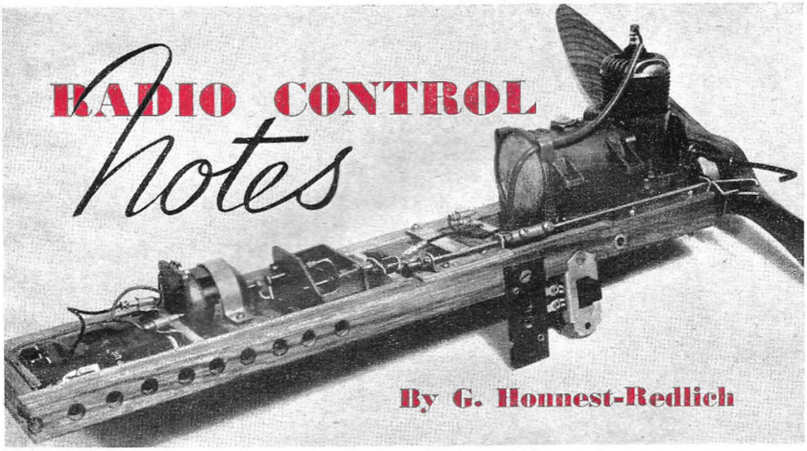
Make the fin from scraps. The rib is non-lifting, streamlined section. Cement the bamboo pegs securely in place and put on a trim tab of 1/64 in. aluminium.

Wings

Make a template from cardboard or aluminium and cut 16 ribs from $\frac{1}{16}$ in. medium sheet. Be very careful when the slots for the spars are cut, as a warp-face wing can only be obtained when the ribs are exactly alike. Cut 16 nose ribs from $\frac{1}{8}$ in. medium sheet. Sand the trailing edge strip to triangular cross-section and cut the notches for the ribs. Pin trailing and leading edges for the inner panel of the wing to the plan. Cement ribs in position and when dry push the spars in from the side and cement securely. Add the nose ribs.

Continued on page 152)

RADIO CONTROL *Notes*



By G. Honnest-Redlich

IF we reckon the advent of Radio-control in England from the time commercial equipment was put on to the market, then the year 2 R.C. (1950) saw not only its widespread popularity, but also the achievement of general reliability. It was not surprising that this reliability was generally due to simplicity of equipment and controls. The single control of escapement operated self-centring positional rudder reigned universally.

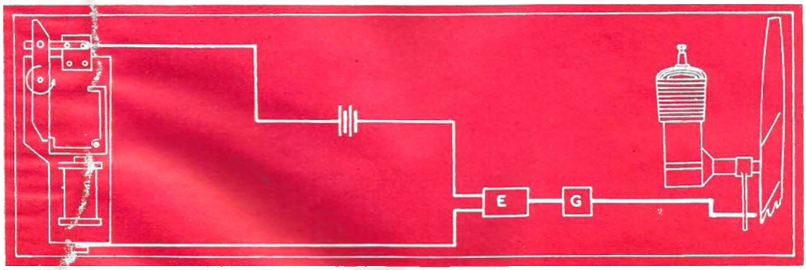
The very few exceptions were of an experimental nature generally in the hands of "experts." Multiple controls for the public will have to wait until the manufacturers have put their prototypes into production, and time will have to be weighed against both price and reliability. (This sounds rather Irish, but you will get what I mean.)

After the experience of over a year's R.C. flying a few amateurs have put some thought into the addition of another control, bearing in mind the necessity to maintain simplicity and without adding to that great enemy the "sequence."

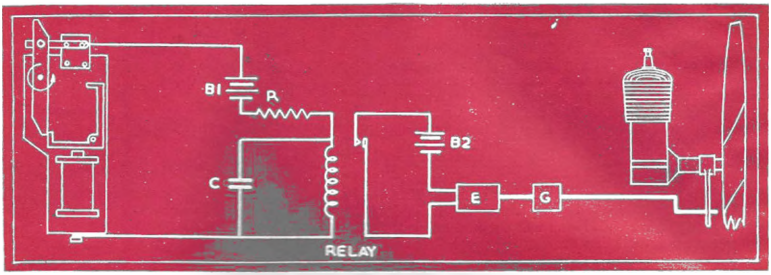
The following is a description of an additional motor speed control designed by the writer and tried out by Mr. Ted Hemsley, of the Bushy Park M.F.C.

The system is simple and requires no alteration to the existing radio installation with the sole exception of fitting a contact to the escapement which comes into operation on one neutral rudder position only. This contact via a battery sets a miniature electric motor (Electrotor or Ever-Ready midget motor) in motion. Via a reduction gear of about 2,500 : 1 (double worm drive) the timing lever of an ignition engine is advanced and retarded at about the rate of one complete cycle in six seconds. It is obvious that if, with the engine retarded, one rests upon the switched neutral position of the escapement for three seconds, then the engine will be fully advanced. A further three seconds will retard it again.

A little flying experience will be required to remember which neutral to return to if an engine



Wiring diagram for directly operated circuit. Contact and metal body of escapement act as switch to operate electric motor (E) which via reduction gear (G) and piano-wire horn rotates ignition lever over its operational arc. The heading photograph shows the author's prototype of the complete power unit which is described in this article.



Wiring diagram of delayed operation method. When the escapement switch closes the relay and battery circuit (R and B1) the relay contacts will close after the delay period. With a 5,000 ohm relay, a 100 Mfd condenser (C) and a 2,000 ohm resistor (R) the delay is approximately 1 to 2 seconds, according to the adjustment of the relay contact gaps and armature tension. The contacts of the relay operate the electric motor via battery B2. B1, according to type of relay, should be a 15 or 22½ volt battery.

speed variation is not required. The beauty of the whole idea is that in any case one can do no harm, providing that the plane is trimmed to a normal climbing flight at full engine speed. Wrong choice of neutral, battery or electric motor faults, can only produce either no change at all or a slowly advanced, retarded, advanced, etc., engine.

It is obvious that even when no change of engine speed is required, when passing over the engine speed neutral position, then for a fraction of a second the circuit will be closed and the electric motor will rotate slightly. If this neutral position is by-passed quickly enough, then it will make no noticeable change even after several times, due to the high reduction gear and the subsequent backlash.

However, the addition of a delay circuit comprising of a lightweight relay, condenser and resistor, will enable one to rest on the contact neutral for a chosen period up to a couple of seconds. This addition should only be made after satisfactory flights have been made with the basic non-delayed means. (See diagram on this page.)

In operation, the rudder-neutral position which gives the engine speed variation is best memorised by the direction of the previous rudder turn. That is, always remember that it is the neutral *following* a right rudder (or left, according to your particular rudder-horn position).

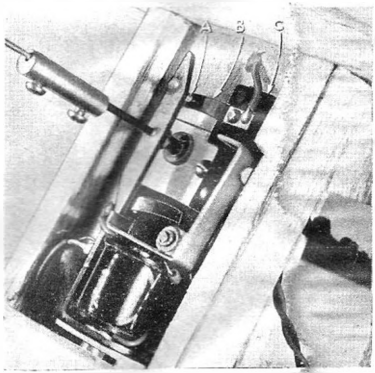
Now the general layout adopted by Ted Hemsley is of particular interest and is shown in the heading photograph. Knowing how often the "electrics" of ignition engines need checking, and also to make a very accessible unit of the entire power assembly complete with all of the batteries, everything is assembled on and between the two elongated engine bearers.

This complete power-unit slides firmly into the nose of the fuselage between hardwood or ply runners, and can be finally locked by an ¼ dowel shear pin. In fact, the only extra weight is that of the built-in runners and the extra length of the engine bearers. This is well balanced by the benefits of accessibility and the concentration of components, batteries and wiring all in one unit. Of course, two connections are required from this unit to the escapement contacts.

Now for the means of cutting the engine. This method is so simple that it is really worth while incorporating in any R/C plane fitted with a spark ignition engine (*See* photograph on next page).

The fixed end of the escapement rubber drive is hooked on to a tension operated contact switch. There are literally dozens of ways of making this switch, but remember that a switch which breaks suddenly is the best.

The escapement rubber is held by a hook on a hard-drawn brass wire which is an easy fit in a bearing sleeve (b). A spring (s) pulls the wire against

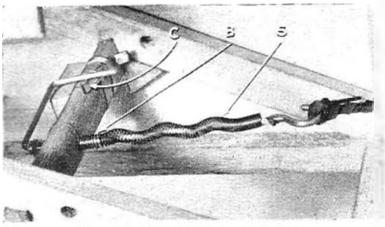


E.D. lightweight, current-saving escapement fitted with a contact-strip (B) on an insulated panel (C) contacted by a pin on rotor (A). This pin must not foul the current-saving contact strip when rotated to that pos

the rubber tension. The end of the wire is bent over and rests upon the contact strip of brass(e). The torque of the rubber will hold the wire tightly upon the contact strip. The position of the contact in relationship to the wire, also the spring and rubber tension, must be chosen by experiment, so that the escapement has still about 40 useful movements *after* the switch contacts have opened.

Operation is as follows:—Assuming that about 60 rudder movements will be required for a normal flight, then a good 80 turns should be wound on after the point where the switch just makes. This with the original 40 will be 120 turns. At the end of 80 rudder turns the engine will cut and one still has a further 40 to glide the model in with. If an engine cut is required before the use of the full 80, then a rapid "click, click, click" of the transmitter key will rotate the escapement until the engine cuts. A rapid rudder flutter will not upset the flight of the plane, except to slow it down slightly.

There are one or two points to take care of. The contact circuit is the primary of the ignition coil which carries quite a heavy current of over one ampere during the time the engine make-and-break



The author's engine cut-out device.

is closed. Therefore, to ensure a good spark, keep the wires to the cut-out switch short and of a heavy gauge. If the spark is weaker than normal without the switch, add another cell to the ignition battery to cancel the voltage drop in the wiring.

Finally, to avoid ignition interference to the radio, these switch wires should be twisted together and taken to the engine well clear of the receiver, aerial and all radio wiring of batteries and escapement.

Plotting an Ellipse

IN drawing out an elliptic wing or tailplane, the best method is to lay out the ellipse shape by ordinates—a similar method to plotting an aerofoil section, in fact. The diagram shows the ordinates relative to ten per cent. stations for a true ellipse.

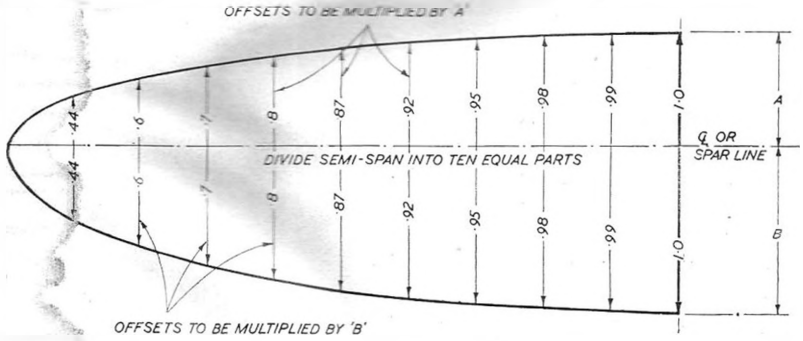
Simply divide the semi-span up into ten equal portions and draw vertical lines through these points at right-angles to the centre of spar line of the wing. It is very unusual to make the plan-form just one simple ellipse. A compound ellipse is far more common, and better aerodynamically, where the rear ellipse is broader than the front. In other words, the dimensions A and B differ, B being the greater. Of the total root chord width (i.e., $A + B$), A should be one-third to two-fifths in value.

Points on the outline are then given simply by multiplying the ordinate at each point by A and B, giving leading edge and trailing edge positions respectively at that point. Join all these points up with a smooth curve—and there is your true ellipse outline.

Area of such a wing is quite simple to calculate. The area of the whole wing (or tailplane), i.e., not just the half shown, is equal to :—

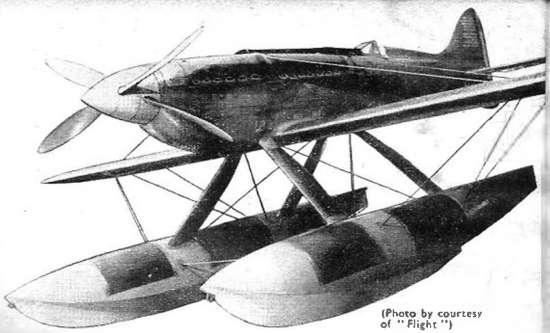
$$Area = \pi \times semi\text{-}span \times \frac{A + B}{2}$$

$$\text{or} \quad = \frac{\pi \times semi\text{-}span \times (A + B)}{2}$$



Prototypes Worth Modelling

BY C. B. MAYCOCK



(Photo by courtesy of "Flight")

The MC72 as modified for its World record attempt.

No. 9 THE MACCHI-CASTOLDI MC 72

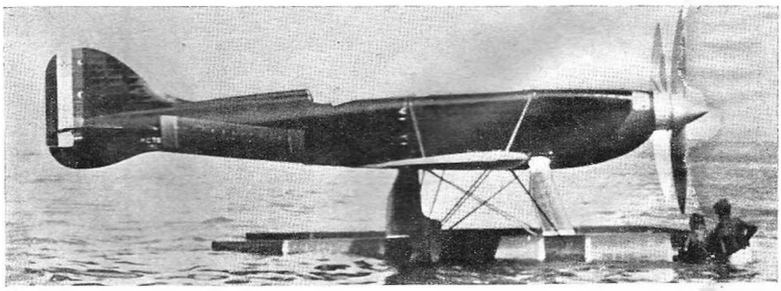
THE Macchi-Castoldi MC72 Racing Seaplane still holds the world's speed record for its class of 440.7 m.p.h., the record breaking flights being made by Lt. Francesco Agello, in October, 1934, at Lake Garda. This machine is still preserved at the Italian Air Force Station at Desenzano, Lake Garda.

It is a little difficult to understand why the particulars of this world famous machine should be so difficult to come by, but thanks to good work done by Mr. H. J. Cooper, the Librarian of the Royal Aero Club, and others who have helped with information, the writer has been able to prepare a three-view drawing and general particulars from the official drawings. It is shown in its latest form with the supercharger air intake along the top of the cowling and the tail unit modified.

The power plant of the MC72 was a 3,100 h.p. Fiat AS.6, which was composed of two twelve-cylinder engines mounted in tandem. The cylinders of each unit were in two banks of six and set at 60 degrees. The crankshafts revolved in opposite directions and were geared to the hollow shafts which drove the counter-rotating, fixed pitch, metal airscrews (see diagram at foot of three-view drawing). The supercharger was fitted to the rear engine only and fed the mixture to both units. Heat dissipation of such large power unit—nearly 1,000 h.p. more than the Rolls Royce engine of the Supermarine S.6B—was a major problem and this machine could almost be termed the flying radiator, as practically the whole surface of the mainplanes, the upper-surfaces of the floats, the struts for the float chassis and the afterbody of the fuselage were devoted to radiators.

The fuselage was of oval section the forward portion being metal construction and the after wooden monocoque. The tail unit was also of wooden construction, plywood covered with the exception of the control surfaces which were fabric covered. The wings were of dural construction and the aerofoil section was symmetrical. The floats were mounted on streamline section steel struts, and were of the single step pattern of mixed wood and dural construction. The main dimensions were: Span, 31 ft. 1¼ in.; length, 27 ft. 3¾ in.; max. height, 10 ft. 10 in.; wing area, 161.4 sq. ft.

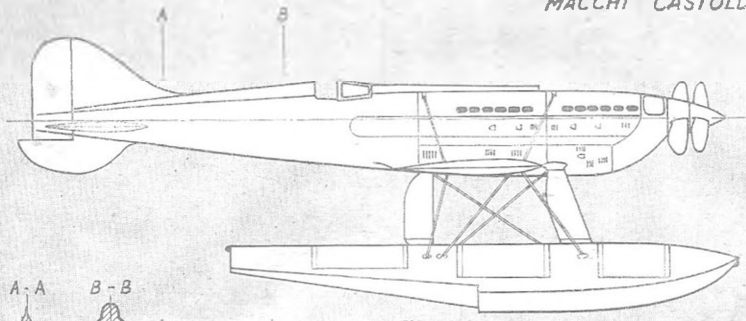
The colour scheme of this machine was blood red all over with the exception of the airscrews, struts and wings which were natural dural colour. The radiators were made of flattened brass tubing sweated together and left in self colour. The rudder carried the markings of the Italian Air Force, viz., red, white, and green stripes—the green leading. Towards the top of the white strip was the insignia of the House of Savoy.

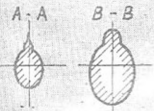


The M.C.72 as it appeared when first built.

(Photo by courtesy of Aeronautica Macchi)

MACCHI CASTOLDI - MC 72





FUSELAGE SECTIONS

DIAGRAM OF ENGINE LAYOUT

SCALE OF FEET

"Test Tube" GLIDER

By *I. S. Cameron*

THE published opinions of several well-known model aircraft designers dealing with the subject of spiral stability have lead to some interesting investigations on the part of the writer. The lateral area concept upheld by William Winter and debunked by Carl Goldberg, together with Charles Grant's Theory of Rotating Axes frowned on by N. K. Walker, has produced several good causes for continued experiment.

It was obvious from the start that a knowledge of the real angle of attack of the machine would be desirable in order to determine the direction of the airflow past the fuselage and fin and so help when it came to reason the results out. Trimming the machine to fly " near the stall " has lead to the thought that an improvement might be forthcoming if the wing were to be set at a geometric angle somewhere near the supposed flying angle, or, in other words, near the stalling angle. This would be approx. 8 deg. positive for the wing and to maintain a desirable longitudinal dihedral, approx. 4 deg. for the tail. This, it was reasoned would fly the model along the datum line in the path of least resistance.

Two experimental models were made and each embodied a geometric incidence for the wing of 8 deg. and 4 deg. for the tail, this latter being adjusted for trim. Two configurations for Grant's theory were salient features of the layouts. As far as the high angle set-up was concerned little or no improvement was apparent but it was considered unwise to come to any conclusion.

It was readily realised that an error in determining the angular deflection of the fuselage relative to the airflow going past it would foster misleading results when studying the c.g. C.L.A. relationships. On the geometric angle of the wing depends this angle of deflection of the fuselage relative to the airflow and consequently the static or geometric position of the C.L.A. may not be the same as the dynamic position. To clarify the position it became necessary to design some mechanism which would give the angle the wing was flying at during the greater part of the flight. By this means assumptions could be ruled out and authentic data substituted. Hence the design of the " Test Tube " glider here described.

Construction

Detailed perspective sketches illustrate the constructional features of the tube and the various component parts. The four sections which plug together to form the tube are cut from a length of 1½ in. i.d. × $\frac{1}{16}$ in. sheet balsa pre-formed around a length of conduit piping or any other suitable tube or rod. Measured laterally the sheet should be 5.3 in. in order to provide a suitable gluing area along the lap joint, and this will require joining up two 3 in. wide sheets if 6 in. sheet is not available. Wet the sheet and use casein glue to make the joint and cover with greaseproof paper to prevent adhesion of the binding bandage. Leave to dry for a period of 48 hours.

After removing the bindings and the paper, sand the joint smooth along the whole length and give the first coat of dope or banana oil. Four coats are desirable to give a fairly good finish and 12 hours should elapse between each coat. When the final one has been applied put the tube away for a week or so before removing it from the conduit. This is important otherwise sagging between the loops will occur when these are added later. On the original, full strength dope was used and two-to-three days' drying time after the final application was not sufficient to dry the dope thoroughly and sagging did occur. It is advisable to tallow the form tube before bending the sheet on to it.

Nose Tube

Section length 4 in., i.d. 1½ in. (common to all); Hoop No. 1, wound from 1/32 in. × ⅜ in. bass wood (two laminations); Hoop No. 2, wound from 1/32 in. × ⅛ in. and 1/32 in. × ¼ in. bass wood and made to plug into former of timer section.

Timer Sections

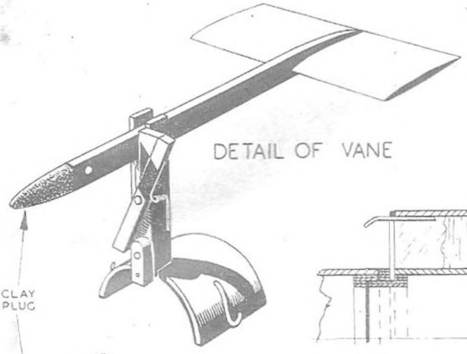
Hoop No. 3. This is the forward hoop in the timer section and is wound from 1/32 in. × ⅛ in. bass wood, and arranged to receive the No. 2 hoop spigot. A ply disc to carry the timer will be necessary and construction of this section can vary depending on the type of timer used. It may be necessary, for example, to change over the positions of the two hoops and have the ply disc at the rear end of the section. The section length is 1½ in.

Hoop No. 4. This is the rear hoop of the same section and is wound from 1/32 in. × ¼ in. and 1/32 in. × ⅛ in. bass wood.

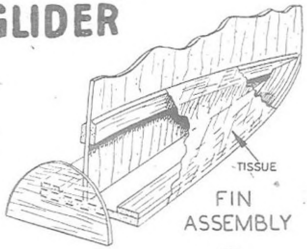
Centre Section

Hoop No. 5 is made from bass wood and is a little more complicated than the others; the section length is 5 in. The principle was to provide a seat for the wire mount support and this was done by using an extended spigot and a locking ring. The small pylon type mount keys into the tube and sits on the hoops, the front edge being reinforced with the vertical legs of the mount support.

The CAMERON TEST TUBE GLIDER

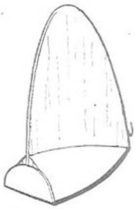


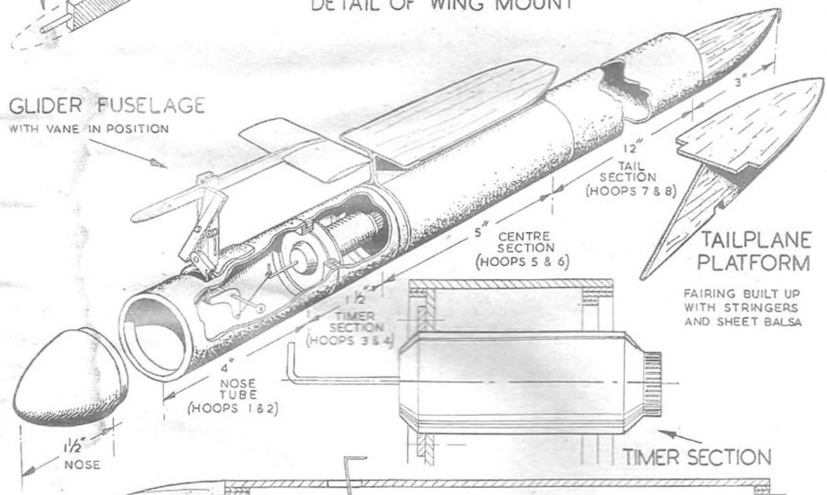
DETAIL OF VANE

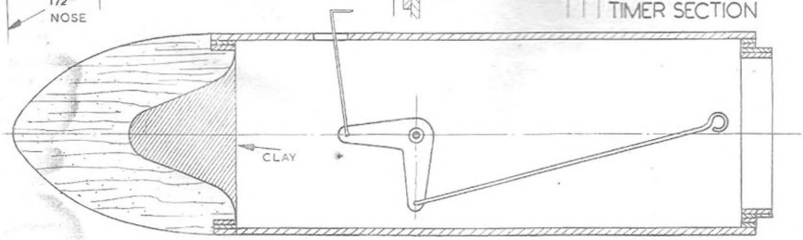


FIN ASSEMBLY

DETAIL OF WING MOUNT







NOSE AND NOSE TUBE SECTIONS

Hoop No. 6. From bass wood and arranged to plug into the tail section. (Same as No. 5, omitting the locking ring.)

Tail Section

Hoop No. 7. From bass wood and arranged to receive No. 6. Section length 12 in.

Hoop No. 8. A plain ring of two laminations of 1/32 in. × ½ in. bass wood.

N.B. If bass wood is not available use 1/40 in. veneer or 1/64 in. balsa.

The assembly of the glider is clear from the illustrations.

Method of Using the Vane

Rig the wing and tailplane to give the required longitudinal dihedral and trim the c.g. position to give the best glide for minimum sink and note the approximate duration of the glide. The model is now ready for use.

Remove the nose fairing and pull the timer-arm forward with a piece of wire thus permitting the trigger to hold the clutch shoe out of contact with the vane spar, and set the timer to operate the mechanism at some moment during the glide. This should be arranged to lock before the model gets too close to the ground and so minimise the chance of a false reading due to the effects of ground cushioning. Similarly, too early a lock will not give accurate results because the glide will not have settled down.

In the vane device for establishing the incidence of the machine while in flight, the trigger is set to hold the clutch arm out of contact with the vane spar and set to release it via the timer, after a predetermined period. No special friction arrangements are needed between the clutch shoe and vane spar, the grip between the balsa surfaces being sufficient to hold the assembly in its "streaming" position.

Measuring the Aerodynamic Incidence. (Angle of Attack)

Measure the vertical distance from the tube top to the trailing edge of the vane. Knowing the distance from the fulcrum to the tube top and the leverage from the fulcrum to the vane trailing edge it is quite simple to determine the angle of the vane relative to the tube which is used as the datum.

$$\text{Using Sine } \theta = \frac{\phi}{\lambda} \text{ i.e. Sine } \theta = \frac{y - x}{h}$$

θ can be obtained right away from trigonometry tables. This is the aerodynamic incidence or angle of attack of the particular set up you are trying.

As stated the tube is the datum and all measurements are taken from it, therefore, any geometric incidence in the wing will have to be added to the test result to give the true aerodynamic incidence. Thus as before :—

$$\text{Sine } \theta = \frac{y - x}{\lambda} \qquad \therefore \theta = \text{test result} + \text{any}$$

building in incidence.

No claims are made for the invention of the pivoted vane as a means for providing data on the direction of airflow ; it is believed Frank Zaic used one to do similar tests although no results are known by the writer.

This "Test Tube" glider has been tried out with a wing embodying L.D.C.3 and a tailplane of thin cambered section, and a zero value of longitudinal dihedral, the c.g. being placed in a position to give the lowest sinking speed. Not until we know how the airflow behaves over the model in a series of turning circles shall we reach the true heart of model aircraft design. It is considered that while the design here submitted has many shortcomings it can be said that it is a step in the right direction for achieving sound basic design.

Directly apparent from readings taken is the fallacy of high incidence for a machine where the c.g. is at 50 per cent. chord and for the best glide the wing should be at about 3-4 deg. because at the high angle of 8 deg. suggested by Leon Schulman the dynamic instability limit has already been reached. Similarly the popular term of trimming to glide "near the stall" is incorrect.

No tests have been conducted during climbing turns, so data on this part of the flight is not as yet available. Whether or not the high angle setting is beneficial here is not known and it would be interesting to investigate along these lines. Measurement of the downwash from the wing is another very feasible proposition with the vane.

It is desirable that, while testing the glider, a helper be situated somewhere near to where the glider will probably land. Observation can then be made to see if the vane moves after the landing, sometimes this will happen during a jolty landing and the glide can be repeated in order to get a true reading. In any event it is best to take about half a dozen readings and use the average result.

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DAILY DISPATCH RALLY PRIZES

DEAR SIR,—As one of those directly concerned with the organisation of the Daily Dispatch Rally, of which there has been so much praise, may I comment on the only criticism that I have heard of the 1950 meeting, viz., that the prizes were not all they might have been. Actually, over £30 was spent on prizes, apart from the many trophies which were awarded. The response from the trade was not all it might have been, and it is felt that this event is important enough to warrant a little spontaneous support from the trade.

However, my main reason for writing is to endeavour to find out what we can do to remove even the slightest criticism from the "Day." Will any of the critics and others who are interested please let me have their views on this subject so that we can assess the type and quantity of prizes they expect.

Yours faithfully,

9, Kirkham Avenue, Manchester, 18. G. SLEIGH, Hon. Sec., N.W. Area Committee.

TURBULATORS

DEAR SIR,—Like a good many rubber enthusiasts, I imagine, I was a little mystified to read in Lieut.-Col. Bowden's letter (Turbulators) in your January issue, that "rubber models are always tail-heavy."

The term "tail-heavy" surely refers to trim. If Lieut.-Col. Bowden means that the C.G. of rubber models is a good way back, necessitating a long nose, then they can still be trimmed nose-heavy just as easily as tail-heavy.

With regard to his remarks on Ellila's turbulator, I suggest that since the moment arm of an aircraft is the distance between the C.G., and the C.P. of the tailplane, the position of the wing has not the slightest effect on it, and so Lieut.-Col. Bowden's reference to getting a long moment arm "free of charge" does not make sense.

Yours faithfully,

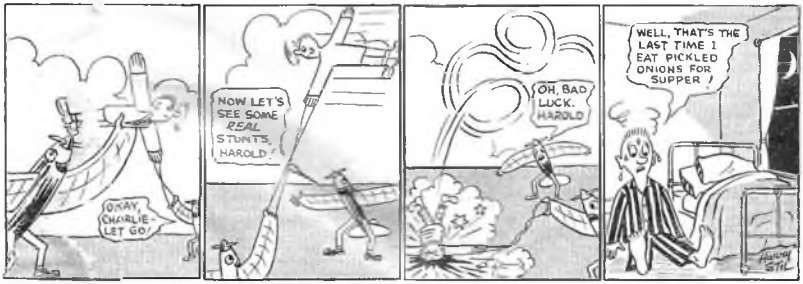
Harrogate, Yorks. K. F. P. RUTTER.

P. R. PAYNE ON PROPELLERS

DEAR SIR,—Mr. J. H. Maxwell's whirling arm has been "coming along" for quite a number of years now, and I should have thought that his first essay on airscrew performance could have been more than a series of quotations from old N.P.L. and N.A.C.A. Reports. (The information he gives was also published in I.S.A.R.A. Tech. Note, No. 3, in May, 1949.) As has already been pointed out these results cannot be accepted as valid for model work, and the very extensive research programme being carried out and published elsewhere by the I.S.A.R.A. on commercial propellers shows this up most clearly.

To take Mr. Maxwell's points in turn, it should first be noted that the constant chord plan form with which I seem to have become associated *is* less efficient, and I.S.A.R.A. tests have already shown this quite clearly. This is when the propeller alone is considered. When the propeller is mounted on a model the story is quite different, however, and it appears that plenty of blade area at the tips is the best compromise when the propeller is followed by a large and draggy fuselage. This is always difficult to show in flight (although simple in a wind tunnel) because of the many variables involved in comparing two different propellers. Perhaps the best proof lies in the fact that nearly everybody fitted "paddle-blades" to their stunt

ON THE OUTSIDE LOOKING DOWN — **By Harry Stil**



jobs in the days when stunt jobs *were* stunt jobs, with plenty of built-in headwind. Even today it is not unknown to hack the tips of a Tru-flo ! !

And as a final point I would mention that the most efficient design so far tunnel-tested by the L.S.A.R.A. is the Kan-doo 8 × 8. Now the Kan-doo can only be likened to two kippers lashed together by their tails. . . .

As far as blade sections are concerned, I'm afraid I've done too much practical work to be dogmatic on the subject these days. I agree that one reasonable section is probably as good as another, but some of the efforts tested at Farnborough makes one wonder if the sections need even be reasonable. About the only thing one can infer from present experimental work is that the sections must be flat-bottomed and thin. In this last respect the limit of 12 per cent. I suggested in my early articles seems to be about right.

On the subject of pitch distribution, I hope it will be accepted once and for all that I did not "invent" the non-helical pitch distribution : I publicised N. K. Walker's theoretical work on the subject, and he evolved the theory because of some practical tests carried out by D. A. Russell, who presumably got the idea from R. and M. Nos. 1673 and 829, which is the fountain head which Maxwell used. As we are now back in 1922, I can hardly claim much credit.

It is surprising to learn that spinners reduce propellers efficiency. Perhaps Maxwell has never tried removing the spinner from a C/L speed model.

Bristol. P. R. PAYNE.

WAKEFIELD TEAM SELECTION

DEAR SIR,—May I say how much I agree with the remarks of your Northern correspondent concerning the 1951 Wakefield Trials. Apart from the soundness of his ideas concerning the weather conditions late in the evening and early in the morning, his point regarding the travelling benefits are of immense importance to those who would have to travel long distances. Having to face a journey home, of maybe 200 miles, after a possibly hectic day's flying, is not a pleasant prospect, especially when one cannot start much before six or seven p.m.

Yours sincerely,

Bristol, 7. G. WOOLLS.

DEAR SIR,—I should like to support the suggestion made in your December issue that three Wakefield representatives for the 1951 contest should now be chosen, so that they may develop models suitable for still-air conditions.

It has long been a pet idea of mine that in any contest the best model will be different for different weather conditions. Such factors as wind velocity, gust strength and thermal activity have (or should have) a major effect on design. Recognition of this in Britain is long overdue.

Since the chances of "near-Finnish" weather for the Wakefield Trials are very poor, one can hardly blame entrants for developing their models to suit typical English weather.

Yours faithfully,

Acton, London, W.3. M. M. GATES.

Dragonfly

(*Continued from page* 108)

and mark position of the corresponding tubes on the platform rib. Cut out the underfin and mark on it position of the tube. Cut slot for tube and cement it in position. Finally add the tubes which should now line up with those in the fin.

Airscrew

The assembly is clearly shown on the plan. The fin which is self-locking and quite fool proof. The "wiggler" type clutch on the prop. shaft is more reliable than one using a soldered joint. Use at least four full coils and ensure that the action of winding the prop. tends to wind the driving pin around the shaft, rather than off it.

Flying

The motor recommended is 12 strands of ¼ in. 1/24 in. × 36 in. long Dunlop, suitably roped. With the stabiliser at 0 deg. incidence, i.e., in line with the centre line (the centre stringers) the top wings should be adjusted to about 3 or 4 deg. positive incidence and the lower wing approximately half this amount. It will be noted that the forward tubes for the wing dowels in the fuselage are elongated, to allow the angle of incidence to be adjusted. Pack the dowels in position with thin strips of hardwood—pipe spills are ideal. The model should balance very slightly nose down at the position marked on the drawing, add weight at nose or tail as necessary. Add 1/16 in. down thrust. Wind on about 50 turns and launch firmly and slightly downward. Wot no hand glides ? Well, I don't believe in them myself, in spite of the fact that they are so often advocated. In my experience all you learn is that the prop. is not so strong as you had fondly believed, and also very often the undercart. No, fly under power from the start, but, of course, low power. From now on trimming is normal, less weight in the nose or a more negative setting of the stabiliser for a dive and vice versa for a stall.

I do my winding from the rear with the motor outside the fuselage. No means of retaining the tail in position other than the tension of a well roped motor is needed.

One final point. In view of the widespread use of paper tubes on this model a word or two about these may not be amiss. Do not use gummed paper strips ! ! Good quality writing paper of a length sufficient to complete the tube without joining is best and use ordinary balsa cement. Start with a piece of paper about 6 in. long and a little wider than the length of the desired tube. A wooden former of cross section similar to the desired bore should be well waxed or scraped. Start by folding back the end of the paper strip on itself to an amount equal to the circumference of the former. Cement this to itself, and before it dries roll around the former, then carry on rolling the tube smearing on cement as you go until the thickness is about 3/64 in. (about 5 or 6 thicknesses of paper). Cut off the surplus paper and smear cement all over the outside. Remove from the former and let dry out thoroughly before using.

Propeller Pitch

By R. H. Warring

ON rubber model propellers and Wakefield propellers in particular, many even expert modellers are at something of a loss in accurately determining the *pitch* of any propeller. Carved from a block of certain width and thickness, cut out to a definite blank pattern the pitch can readily be determined from the geometry of the propeller blank. For all practical purposes these are the three factors which determine the pitch—block, width, depth and blank *layout*. Note that there *are* three factors. That explains why propellers of different pitches can be carved from the same size of propeller block.

Fig. 1 shows the usual way of marking out a propeller blank, dividing the block into quarters and marking the centre portion off as diagonals. Now if we cut out such a blank and carved this to propeller shape without tapering off the block in side elevation we should get the same pitch angle from half way out to the tip, which we do not want. But we will return to that subject in a moment. The first thing to note is that the *block* dimensions, width and thickness, determine the *blade angle* and it is best, in model practice, at least, to refer blade angle calculation and thus, directly, the *pitch* of the propeller

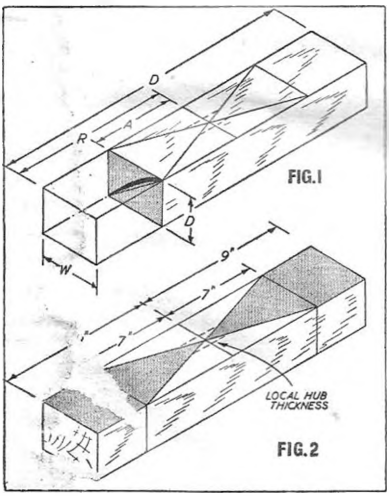


FIG. 1

FIG. 2

to the widest point. As drawn, we have laid out this to come at half radius. We will call this point the *pitch determinant station*.

Calculating the pitch is now easy. Mathematically, pitch equal 2π × radius × tangent of the blade angle. The tangent of the blade angle is the ratio block depth to block width at this radius or station. Hence we can write :—

$$\text{Pitch} = \frac{2\pi AD}{W} \text{ in. } \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where A = distance of pitch determinant station from the centre of the propellers in in.

D = block thickness in in.

W = block width in in.

2π = $44/7$, approximately.

Calculating pitch in this manner is very simple. We can see, also, that keeping the same block size (i.e., same W and D) we can increase or decrease the *pitch* by increasing or decreasing dimension A, respectively. We do not alter the blade angle at the pitch determinant station but move this angle farther out, or farther in and since the pitch is determined as the circumference of a circle at this station × the tangent of the blade angle, pitch varies accordingly.

For a typical Wakefield propeller, block size is 18 in. × 2 in. × 1⅜ in. The following figures have then been calculated showing the pitch given by different positioning of the pitch determinant station.

Wakefield propeller block 18 in. × 2 in. × 1⅜ in. (Maximum blade with 2⅝ in.).

Dimension A	*Geometric pitch of propeller*
4.5 in.	25 in.
5 in.	27.5 in.
5.5 in.	30 in.
6 in.	33 in.
6.5 in.	36 in.
7 in.	38.5 in.

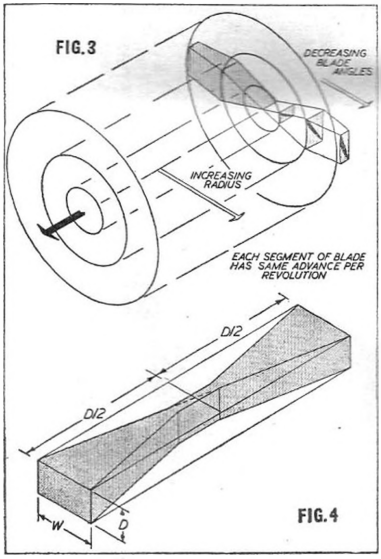
The ordinary " quartered " block, therefore, where A equals one half the radius or 4½ in. gives a pitch of 25 in., which is rather on the low side. Modifying the layout so that the dimension A is increased increases the pitch, approximately 3 in. increase in pitch for every ½ in. the pitch determinant station is moved outwards. A 38.5 in. pitch propeller from a 18 in. × 2 in. × 1⅜ in. block, for example, would be laid out as in Fig. 2.

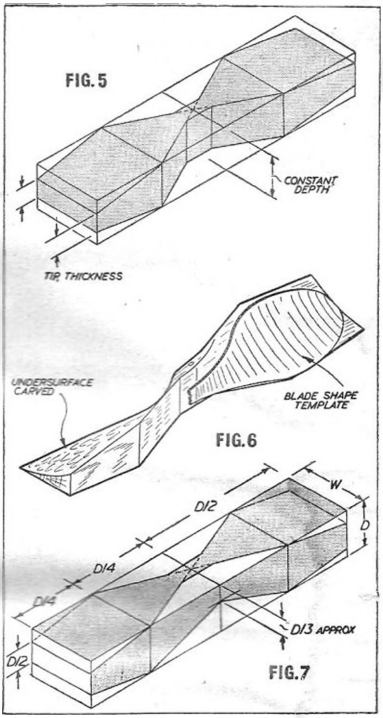
Alter the block dimensions in a different ratio and, of course, you need to carry out a further series of calculations. These are quite simple and are done in just the same way, with the new values of W and D

and varying *A* once more. For convenience, typical values are summarised in the table.

Having determined the pitch at the *pitch determinant station* it is now necessary to lay out and cut the propeller blank to such a shape so that, when carved, the blade angle decreases progressively from root to tip. Each section of the blade must have the same *pitch*, and pitch, as we have seen in dependent on the circumference of a circle at that station times the tangent of the blade angle. The circle circumference is dependent on the radius of that station. Thus to keep the pitch constant, as the radius *increases*, so the blade angle must *decrease*. Fig. 3. If not, then different parts of the propeller will be trying to advance at different pitches. The result will be inefficiency. If each blade segment has the same pitch, however, the propeller is geometrically true and is generally called a constant geometric pitch propeller meaning simply that all parts of the blade are operating at the same efficiency.

Now the method of laying out the blank to achieve this is quite simple. You can, of course, plot the blade angles at each station, superimpose the block size at each station and mark out the blank accordingly, but it is not necessary to go to such extremes. Suppose, first, we take the original layout of Fig. 1, and make *A* dimension equal to the radius. The top of the blank will then be laid out with diagonal lines, as in Fig. 4. Some people have, in fact, used this blank layout. It it also commonly employed for





indoor propellers. For any given *width* of block the pitch is now determined by the depth of the block. Thus for a 2 in. block width typical figures are :—

Pitch 30 in. . . . block depth 1 1/16 in.
Pitch 33 in. . . . block depth 1 5/32 in.
Pitch 36 in. . . . block depth 1 9/32 in.

Now cutting the blank to diagonal taper has also ensured something else. The blade angle change is correctly proportioned for each station. In other words, without tapering off the block in side elevation, but simply carving to planform layout a constant geometric pitch propeller is obtained.

For various reasons, however, this [illegible] of layout is not commonly employed. It is, in [illegible] suited to higher pitch values only. The [illegible] block layout is like Fig. 1.

To get the required change of blade [illegible]gle all that is necessary to do is to treat the centre port[illegible] like the " diagonal " propeller, i.e., leave the [illegible] untapered here and taper off the *outer* portions only to get the

TABLE I. CALCULATIONS FOR 18 in. DIAMETER WAKEFIELD PROPELLER

	DIMENSIONS						
	BLOCK SIZE						
PITCH	1⅝ in. x 1⅛ in.	1⅝ in. x 1⅜ in.	2 in. x 1⅛ in.	2 x in.2 in.	2⅛ in. x 1⅛ in.	2⅛ in. x 1⅜ in.	2⅛ in. x 2 in.
25	4⅜	4	3.33	4	3½	3¼	2.8
27.5	5⅛	4.4	3⅝	4.4	4⅛	3.55	3.1
30	5⅝	4.8	4	4.8	4½	3.86	3⅜
33	6¼	5⅛	4.4	5⅛	5	4½	3.7
36	6.7	5⅝	4.8	5⅝	5.4	4⅞	4⅛
38.5	7⅛	6	5⅛	6	5⅞	5	4⅜
Maximum blade width	2.36	2.57	2.5	2.82	2.7	2.88	3.0

required blade angle change or "twist" here. Fig. 5. A good approximation is to *halve* the block thickness at the tip. For most practical purposes this will suffice. Otherwise the tip thickness can be calculated and marked off accordingly.

18 in. diameter propeller, 2 in. wide block.

Pitch	*Tip thickness (approx.)*
25 in.	⅞ in.
27.5 in.	1⅛ in.
30 in.	1 1/16 in.
33 in.	1 3/16 in.
36 in.	1¼ in.
38.5 in.	1⅜ in.

"Halving" for the tip dimension, it will be noticed, is accurate only for $A = R/2$. With increasing pitches, halving the tip dimension gives, in effect, a blade with washout. For pitches of greater than 1.5 × diameter, therefore, it is always advisable to calculate the tip thickness. The formula for calculating tip thickness for any block size and pitch is :—

$$\text{Tip thickness} = \frac{\text{Pitch} \times W}{\pi \times \text{diameter}} \quad \ldots \quad \ldots \quad (2)$$

Now the obvious question at this stage is that such a propeller blank layout will give a most awkward blade shape—parallel chord with square tips and a very thick (wide) root chord. Actually none of these factors enter into blade shape at all. If the undersurface of the blades is carved to the blank laid out as given this undersurface *correctly establishes the blade angles at all stations along the blade* from root to tip. Whatever blade shape is then laid out on this surface and cut out cannot alter these blade angles. Using a template, for example, to mark off two identical blades—Fig. 6.—still preserves the same blade *angles*. It is necessary only to carve away all excess wood to form the correct upper surface of the blades.

This is the most logical, and the simplest, method of carving a true and constant geometric pitch propeller. It shows, also, that the "popular" method of laying out a propeller blank by cutting away to the hub elevation—Fig. 7.—does *not* give a constant geometric pitch propeller. All the blade angles inboard of the pitch determinant line are actually too fine and progressively finer as the root is approached. It may be that the root blade sections are actually generating *negative* thrust due to being at too fine a blade angle and consequently a *negative* angle of attack under working conditions.

Fortunately, however, it is the outer portion of the blade which does most of the useful work. Probably most of the blade inboard of about one half the radius is relatively useless as a thrust producer in any case, which would explain why propellers carved to blank shape as in Fig. 7 can still have quite a reasonable performance. At the same time, however, a little thought and the adoption of the modern method of layout with tip taper only in side elevation *should* lead to a more efficient propeller.

Basic formulae summarised :

(1) ... ... Pitch $= \dfrac{2\pi AD}{W}$

(2) ... Tip thickness $= \dfrac{PW}{\pi \text{ diameter}}$

(3) ... ... $A = \dfrac{\text{Pitch} \times W}{2\pi D}$

(4) ... Max. possible blade width $= \sqrt{W^2 + D^2}$

(5) ... For high pitch propellers (diagonal layout) $D = \dfrac{\text{Pitch} \times W}{\pi \times \text{Diameter}}$

Pitch $= \pi \times$ Diameter $\times$ D/W.

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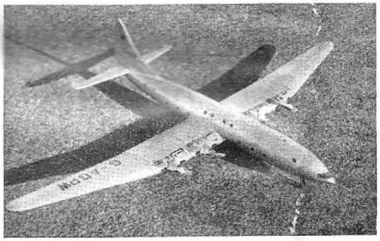
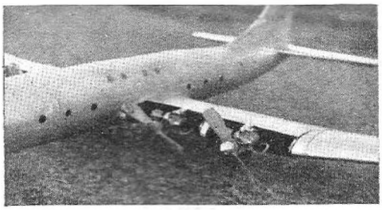
A SCALE CONTROL LINE
BRISTOL BRABAZON

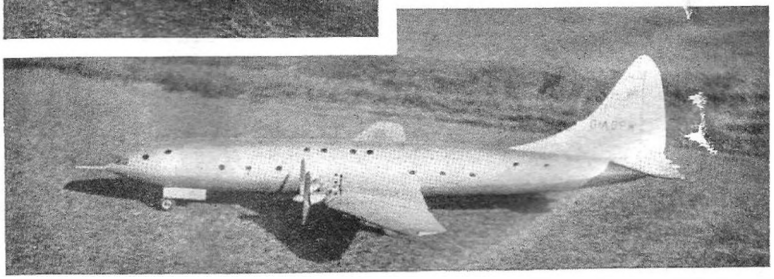
IN February, 1950, four members of the Wolverhampton Model Aeronautical Society decided to build a control-line model of the Bristol Brabazon and the result of their efforts is seen in the accompanying photographs. J. S. Bill and Keith Goodchild were responsible for the design and Tony Cliff and Keith Wright assisted with the construction.

Main details of this ambitious project are as follows: Span, 5 ft. 9 in. Wing Area, 430 sq. in. Weight, 5 lb. 4 "K" Kestrel engines driving 6 × 6 Truflow propellers through extension shafts. Undercarriage retracting mechanism operated by 12 volt Adamcraft electric motor.

The first test flight was made on July 20th, 1950, on 52½ ft. lines and was completed successfully despite some difficulty in getting all four engines running satisfactorily. In the light of experience gained on the first flights, modifications are now being made to the engine mountings.







BY BILL DEAN

● "A HARASSED modeller almost entirely surrounded by photographers" is an apt description of the average competitor at a model meeting nowadays. Anyway, we have noticed a definite increase in the number of modellers who turn up at the flying field with cameras (the remainder seem to go in for motor cycling, but that's another story). So for those who take an interest in photography we are leading off this month's *Model Talk* with some news about some of the well-known model photographers and their equipment.

Let's start with the Editor of MODEL AIRCRAFT, Eddie Cosh, who takes the majority of the pictures you see in this journal each month. Eddie's favourite camera is the Super Ikonta (f3.5 Tessar). He says: "I use Ilford H.P.3 film and usually manage to get along with only two accessories—a 2x yellow filter and a lens hood (no exposure meter). Sometimes I use a Reflex camera for "posed" shots, but find this type rather cumbersome for general use. I always try to get human interest into a picture and a good background if at all possible. For action shots under average conditions I use 1/500 at f. 5.6. I prefer "busy looking" shots rather than static ones and am not at all keen on pictures of models on the ground. I also try to avoid too many of those inevitable 'chap holding a model up' views. The worst contests to cover are glider and control-line speed—and the best, R/C, rubber and free-flight power."

Geof. Lewis, who does most of the art work for MODEL AIRCRAFT (including those excellent engine cutaways for the *Engine Test* feature) is a Leica fan. He considers that all the best cover photos "just happen" and that it is seldom possible to get a first rate picture by posing a subject.

Stuart Seager is on the photographic staff of Percival Marshall's and often attends contests for MODEL AIRCRAFT. Incidentally, he also draws those amusing cartoons that have been appearing in "M.A." recently, and signed "Sega." Stuart is another who favours the Super Ikonta and H.P.3 film. He uses a Weston exposure meter and where practicable likes to clip a yellow or orange filter over the lens. When light conditions are bad—as often happens by the time the prize-giving stage is reached—he switches to a flash-equipped American Kodak Reflex. Favourite type of meeting: Radio control. Favourite type of shot: Close-up of someone doing some tricky tinkering with a model—and studies in human expression. Pet aversion: Models that swing on take-off and either go out of focus or "come at you."

Harry Hundleby, Assistant Editor of the *Aeromodeller*, also finds that a Super Ikonta is ideal for model photography. He uses a Model 532/16 (f. 2.8 Tessar) complete with Yellow, Green and Red Filters—and loads up with either Kodak Super XX or H.P.3. Exposure meter is a Weston. Harry passes on the following notes about his photographic activities:

"I attend most of the important contests each year and my main task is obtaining a 'picture' and not just another photograph of a model. I like action shots, but they must include an interesting background, such as the launcher, or timekeeper or crowd—or preferably the lot! I feel that action pictures are sometimes overated, as a good 'still' showing every single detail of construction is often preferable from an aeromodeller's point of view. I'm somewhat allergic to flashwork as my bulbs always have an unfailing habit of exploding when photographing V.I.P.'s. The coupled range-finder of the Ikonta is invaluable for model work (with its rapid focusing attributes)—and the f.2.8 lens is a definite asset on such occasions as the 1950 Wakefield contest at Jamijarvi, Finland, which was held under extremely bad lighting conditions."

It's only just over two years ago since Ed Stoffel had his first model picture accepted for publication, but since then he must have sold hundreds to the model magazines. He writes:

"I use a Contax 35 mm. with an f.2 Sonnar Lens for most work and fit an 18 cm. Tele-Tessar for action shots from a distance at competitions. This tele-

photo lens fills the negative with launcher and model at a distance of thirty yards. In my opinion, the miniature 35 mm. camera is admirably suited to model photography, particularly if one can afford to buy the extra lenses. I standardise on F.P.3 except where winter conditions make it essential to load up with faster film (for action shots)."

" I advise keen amateurs to confine their early action shot activities to non-competition days, as it requires a certain amount of experience at the take-off point before good results are obtained. A 1/500 second shutter speed is needed to effectively ' freeze ' a modeller launching a 'plane—if *both* subjects are desired to appear sharp on the negative. In the case of a really fast free-flight model, shutter speed may have to be increased to 1 1000.

" My favourite subjects are Wakefield models—preferably action-shots. The most difficult subjects as far as I am concerned are control-line models, as their small size makes them appear insignificant in the hands of a modeller and almost impossible to photograph well at speed.

Peter Chinn takes most of those pictures used to illustrate his monthly " Accent on Power " articles. In a recent letter, Pete told us that he uses a German Kodak-Vollenda, fitted with a f.3.5 lens and an 8-speed Compur shutter. He continued:

" I prefer a 2¼ in. square negative—in preference to the 35 mm. size—as I make the same camera serve for both indoor and outdoor work. I generally standardise on H.P.3 and a medium or dark yellow filter for outdoor shots. For indoor work I use F.P.3 or sometimes an ortho film for engines. The latter are usually taken with close-up lenses at 12 in. to 20 in. range. I suppose I have had about 200 shots published and thrown an equal number in the waste-paper basket. I am still trying to get good action shots and consider that an American Speed Graphic would be just the job for consistent results."

Henry J. Nicholls specialised in child portraiture before he decided to enter the model industry, but nowadays he seldom photographs anything except model aircraft. Some of his pictures have appeared on MODEL AIRCRAFT covers. Henry uses a Leica 3c and a Super Ikonta—but usually sticks to the Leica. When photographing a model he keeps distortion to a minimum by using a long focus lens and keeping well back (8 to 15 feet). Another Leica fan is Ron Warring, who usually takes along his 3a (Summnar f.2) camera when he goes out flying. Ron Moulton uses a Leica to cover picture assignments for *Aeromodeller*. A. F. Houlberg—S.M.A.E. Chairman—is seldom seen at a model meeting without his Super Ikonta, and it has accompanied him to America, Finland, France, Ireland and other parts of the globe in recent years—many of his photographs have appeared in MODEL AIRCRAFT.

The writer's present camera is an Automatic Rollie-flex (f.3.5 Tessar)—a twin lens reflex with ground glass focusing. A shutter speed of up to 1 500 second and a frame-finder attachment make action shots practicable—but this type of camera is rather bulky to make it ideal for such work. We use H.P.3 film almost exclusively, but sometimes change to F.P.3 for indoor photos of models. Some of our best indoor pictures have been made with natural light, plus one photoflood to brighten up the side of the model remote from the window—using a small aperture to give good over-all sharpness. Ambition: To have a few pictures accepted for model magazine covers and to become really efficient at handling the Rollie. Advice: Get an exposure meter as soon as you can possibly afford one. We bought one recently and now wonder how we ever managed to do without it.

★ ★ ★

● HERE ARE a few tips, should you decide to submit any pictures to the magazines. To start with, all prints should be glossy and at least postcard (5½ × 3½) size. Half-plate (6½ × 4¾) is the most useful size. Be sure to give full details of the subject matter and your name and address on each print. Editors appreciate it if this information is given on a strip of paper gummed *under* the picture (not on the back) so that they can take in the subject and the caption at a glance. Do not be surprised if photographs are held for several months before publication as magazine contents are usually planned well ahead. And unless you want to become an outcast, only submit one print of each negative. It may seem a good idea to send out identical photos to all the magazines—in the hope that at least one will stick somewhere—but sometimes it happens that they all stick and then any future offerings will be eyed with suspicion. We should know, as it happened to us once during the war, when four magazines simultaneously published the same photo of a model we had sent to them.

★ ★ ★

● WE ALWAYS like to have readers' views on the material that goes into *Model Talk*. Here are a few frank comments from J. B. Knight—Member of the

Seen at Epsom recently—a semi-scale catapult launched glider—which, on being released immediately after this photograph was taken, scored a direct hit on a F/F model flying overhead at 100 ft. Sequel : Payment of ten shillings to pacify the irate owner of said F/F model !

1950 British Wakefield Cup team and the Kentish Nomads club. He writes:

"I was disappointed by the Dec. '50 *Power Talk* as it was devoted almost entirely to the Jetex Contest —which is sponsored by the manufacturers (of Jetex) purely for its advertising value—most of the competitors only entering because of the attraction of large money prizes. Furthermore, as a spectacle the contest is pathetic.

"Next, how about altering the title of *Power Talk*, since you have often included paragraphs about rubber and glider models. The scope of these articles should be widened to include all classes of models, as, for instance, team racing enthusiasts represent only a very small (but noisy) section of the aeromodelling community and there are ten glider and rubber fliers to every control-line fan. In fact, power flying, as a whole, receives far too much publicity. Too many youngsters are introduced to the hobby through a power model, with the result that they never learn the underlying principles of trimming—and consequently become discouraged at their lack of success."

Jimmy Knight also thinks that the same clubs get mentioned too often in *Model Talk*. We agree. Let's have some news about *your* club's activities and if it's sufficiently interesting, we shall be only too happy to fit it in. Now with regard to the other points, we wonder what "M.A." readers think? Interest in Jetex models has grown rapidly in the last year or two and the fact that this contest is not run by the S.M.A.E. is surely not a sound reason for ignoring it. We attended the last Jetex contest as a spectator and found it far from pathetic—in spite of the somewhat damp flying conditions. In our opinion, Jetex flying is a good way to get youngsters started on power flying and we personally fail to see that cash prizes do any harm.

What Knight says about power flying receiving more than its fair share of publicity depends rather on which side of the fence you happen to be standing. We seem to remember that the rubber boys had something like twelve pages devoted to the Wakefield contest. Many power modellers get quite excited about the fact that no International Free Flight contest of Wakefield status is at present in existence. At one time or another, different modellers have informed us that *every* branch is getting a raw deal in some way.

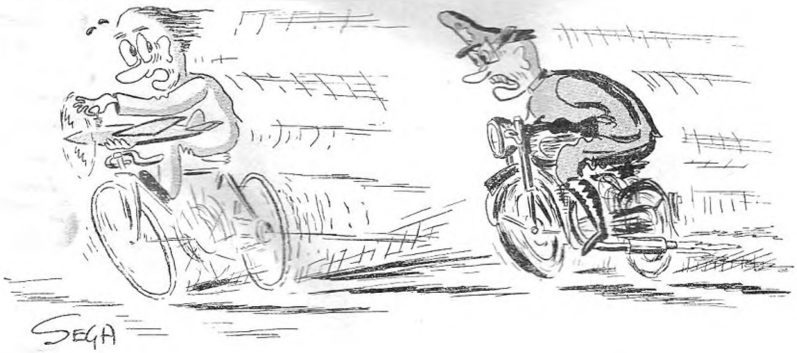
With regard to the title of the monthly notes; we have, as a matter of fact, discussed with the Editor in recent months the advisability of changing the title to *Model Talk* and this has now been decided upon—although they should probably have been called *Camera Talk* this month!

★ ★ ★

● THE CHINN brothers (of Cromer) were recently scanning copies of full-size aircraft magazines for a likely "Dart" F/F and soon picked the Cessna 170 as a "natural." Just as we did—quite independently —at about the same time. John Chinn took out his new Allbon Javelin powered F/F on Boxing Day and lost it in a hail-storm. A few days later, the police rang up to say that the model had been found at Cley, a small village on the coast. It appears that "engine collectors" are not the worry in this part of the country—only nature's hiding places: the tall crops in summer, the wild uninhabited spaces in winter and always, the North Sea. John is at present building a Grumman Guardian scale-stunt-model for the Amco 3.5—after considering practically every other single-engined aircraft designed since 1940.

In Brief

Franc Zaic is working on a new book—he hasn't told us the title, but we gather it's mainly concerned with basic stability problems . . . Henry J. Nicholls is planning to bring out a smaller "Dart" powered version of his successful Monocoupe kit design . . . We get some queer letters about this monthly column. One reader writes in to say that he prefers "Bedtime with Braden!" So do we friend, so do we!



Topical Twists

A New Genesis ?

After a rather ominous reference to a Mr. Gabriel's "Archangel," the Oldham and District Club report goes on to say " . . . where members . . . will be able to build six nights and days a week."

Such a re-arrangement of the cosmological order of things, would, I fear, mean no Sunday for flying. 'Oldham back, somebody !

* * *

Wishful Thinking

During the coming season
I would like to see
A Radio Model airborne
From a pukka R.O.G.
And a Wakefield Flyer,
If ever one were born,
Who'd never claim five minutes
Thermal free.

During the coming season
I would like to see
From the North a letter
Which will quite agree
That for all future comps
No venue could be better
Than the field of Fairlop—
Fancy free.

During the coming season
I might extend my scope
To visit Jamijarvi.
What a hope !

* * *

Wet and Windy

Perhaps if I were a Red-nosed Reindeer my knowledge of the frozen north would not be limited to a rather imperfect rendering of "Eskimo Nell," and I would probably understand why, in Finnish circles, the coincidence of a spell of dead calm weather with the coming Wakefield event is regarded with the same sure conviction that we, in this country, feel towards the inevitability of rain on Sunday. But, either for better or worse, I am not a Red-nosed Reindeer ; and, although it may well be a case of " where ignorance is blizzard," I have joined the general clamour for the selection of a Wakefield team most suitable for calm conditions. Such clamouring is all very well, but the big problem is how and when to carry out the Trials in a way which would reveal the best still air performers.

Many brilliant ideas have been put forward. For instance, a large mobile platform, several acres in area, moving cross country at wind-speed. Or, as someone else suggests, a form of wind-breaking device—such as a dose of bicarb.

For obvious reasons these ideas have been dismissed as impracticable, but there still remains one which is gaining in popularity. That is to hold the Trials at six o'clock on Sunday morning. Now this would be quite a reasonable proposition in any country possessing a wind with a mild, easy-going disposition, but it should be a well-known fact to all indigenous modellers that the mean hearted wind circulating this breezy little island, nurses a black hatred toward all species of model aircraft. In fact, there's nothing it loathes and detests more.

There are times, of course, when this antagonism isn't quite so marked. Perhaps on one or two Sunday evenings during the summer, when, either overtired after the day's exertions, or even because a pang of forgiveness has entered its blustery old heart, it quietly retreats into its bed-sitting room at the Met. office. Whereupon, with gladsome hearts, the Wakefield fiends troop out to notch up a few of those five minute hops (D.B.S.T.)*

Such lulls, we must admit, do occur, even in Yorkshire ; but never on a Sunday morning, when the wind is suffering the ill-tempered effects of a nasty hangover. That, as we all know, is the time when the merest glimpse of a model will arouse it to a vertiable fury. No matter how nonchalant our approach to the becalmed flying field may be, and, however we might pretend that our preoccupation with a large box is some sort of funeral rite, the ever-vigilant wind is never fooled. As soon as even a vestige of a model makes an appearance it begins to snarl and rage in the most forbidding manner. And as for six o'clock in the morning ! Well, let me tell you of two bright-eyed optimists who arranged to rendezvous on the flying field at this ungodly hour. One was arrested on a vagrancy charge shortly after leaving home, while the other, who did actually reach the flying field, was never seen again. Both he and his model vanished in the worst gale ever recorded in this island.

* Double British Stop-watch Time.

* * *

The Voice of Youth

According to an American model mag., air minded bobbysoxers, no longer content with the humble rubber model, now aspire to power model flying :

Junior: Gee, pop, I'm tired of playing around with these corny old rubber jobs, I wanna McCoy Redhead.

Pop: Seems like you're sorta growin' up, son. Guess I had a hankering after a Red Head at your age, myself. The real McCoy, too, Yes sir.

Junior: Aw, pop, you've got me all wrong. I mean a model gas engine.

Pop: Model gas engine ? Reckon that's different, son. Them things a dangerous, and I don't wanna see you gettin' into no trouble. No sir.

As you can see, I do have my adolescent moods of browsing through American model journals. And very interesting, too. Some, I find, even contain as much as a half page devoted entirely to model aircraft activities; a concession grudgingly wrung from the dollar-happy advertisers and the military aircraft write-up boys. Still, the adverts take some beating. I can never make up my mind whether, if I amassed the princely sum of one dollar fifty, I'd plump for the Super Sleepy Valley Assembly Outfit with which to end the drudgery of building and make modelling all fun, or to aspire to the proud ownership of a Giant Bullseye Torch.

* * *

Winter Sports

Disgusted, perhaps, with the limited properties of buoyancy to be found in " thin air " (quoting thus the Bard and not the Cockney Barber) a few progressive modellers have been experimenting in a somewhat denser medium. Or so it would appear from last month's club report of the Whitefield M.A.C., which states that a recent glider comp. was " flown in several inches of snow."

It is understandable that " visibility was rather poor," but this appropriately named club should be commended for such pioneering spirit.

By Pylonius

NORTHERN NOTES

★ IT SEEMS that the writer of these notes has been getting unpopular with some of the inhabitants of the Northern half of the country, since this column has, in the main, dealt with the doings of the Northern Area. I am in agreement with my critics, who inform me very bluntly that there are other Areas in the North of England besides the Northern Area. What the critics do not know, presumably, is the fact that the P.R.O.s of other Areas were approached with the request for any items which they thought would be of interest to the other two readers of this column, but to date we have not had a line of any kind. Now quite frankly, my chief source of information is from the Northern Area, but if any of the other Areas like to provide their facts and fancies I shall only be too happy to write them up in this column. By the way, this has been mentioned before, unfortunately without results; if you have any news about your Area or Club, any forthcoming events for which you need free advertisement, in fact, anything of interest, please let me know. C/o The Editor of MODEL AIRCRAFT.

➢ ➢ ➢

★ THUMBING BACK through the recent issues of "M.A." I came across a letter from Barry Haisman, deploring the use of reserve models in the eliminating events leading to the Wakefield and Nordic competitions proper. Now, whilst I do not intend to enter into an argument as to the merits or demerits of reserve models, I would pick Barry up on one point, and that is his statement that reserve models are not allowed in the Finals (by which I take it that he means the International Competition proper). We had a bit of a fiasco in a competition abroad last year because one of our team was not quite sure upon this point, so let's get it straight; according to the F.A.I. ruling, one may use two models in the comp. proper, either as two distinct models, or any combination of the two, i.e., a wing from one may be used with the fuselage of the other. That should clear up the Final situation. As far as the qualifying rounds go, I am open to correction but I am pretty well sure the rule reads, "a reserve model or models may be used to complete the three flights," so it would seem one may use ten models if necessary. Where's the building board!!

➢ ➢ ➢

★ LOOKING THROUGH the 1951 Contest Programme, it would seem we are in for somewhat of a busy time, and in addition to the usual run-of-the-mill type of comps, this year will bring us something more or less new to us all. I refer, of course, to the "Payload" event, to be held at Whitsun, probably at Fairlop (needless to say near London). It is a moot point whether or not this type of comp is going to be very popular, since it needs an entirely different type of model to all the other power events, I should think there is very little possibility of adapting an already constructed model to fit in. It might be a very good thing, of course, for us to get away from some of the competition monstrosities seen these days, and the rules call for something that looks like a passenger aircraft at least. What's the betting there are not more than fifteen British entries? Later on in the year I see we have a power scale event and I think this will be another one with but few entries. I understand that here the rules permit no divergence from true scale, which is not going to help with the trimming at all. Entrants will be required to produce drawings of the full size craft, and presumably their own constructional drawings too. Technical assistants and slide rules forward please!

➢ ➢ ➢

★ HOW DOES your club feel about team racing? To date not many people in the North seem very enthusiastic, but as far as I know there has not been a properly conducted team event held in the North yet, so we have not got much to go on. One must remember that there has to be a fairly skilful control line bod as the pilot, in addition to two intelligent and well drilled helpers. I would underline intelligent and well drilled, or the fun is likely to be fast and furious, the arguments loud and long and the model not doing so good. The secret seems to be a well thought out model, two willing helpers and practice, practice, and still more practice. Plus, of course, a good club kitty, to pay all the travelling expenses involved.

➢ ➢ ➢

★ BEFORE LEAVING the subject of competitions, may I remind you all that you will be asked to produce templates of your maximum fuselage cross sections, and of your wing and tail areas, when you compete in the Wakefield and Nordic events. This means you and you, because you have a box fuselage and square wing tips, don't think it doesn't matter.

★ I AM informed that the latest message from America contains a suggestion from one of their leading Wakefield Fliers [sic] that the Wakefield Competition as it stands is as dead as the Dodo, and should be modernised by being made a power event. I should imagine that this suggestion is made out of frustration, since altho' the gent in question has had a large number of plans published in the American journals (with an extraordinary large amount of ballyhoo) I cannot remember him ever figuring on a Wakefield Team. And whilst on about Wakefields, why is it that every one is so doubtful about a model good enough to beat Ellila's being strong enough to stand up to English conditions. Surely our memories aren't so bad that we have already forgotten the conditions under which Ellila won in 1949? Personally I think most Wakefields built today could shed a lot of weight without sacrificing any strength were the builder strong minded enough to dispense with fancy gadgets and special wing fixings, which whilst looking neat don't add as much as all that to the model's efficiency. After all, an ounce less weight to carry will probably improve the glide much more than a "clean design"—whatever that may be.

➢ ➢ ➢

★ THE SOCIETY'S E.G.M. 'tother Sunday seemed to be a beautiful calm after the previous heavy storm, everyone spoke sweetly and gently, and it appears that aerobods, can, after all, behave like sensible human beings. The upshot is that Fellows may now be elected on a two thirds majority of an A.G.M. (and presumably likewise demoted) and the sensible idea was brought forward that recommendations for Fellowship may be made through the usual channels to the Council, for their consideration. A good idea this, if one feels one ought to be made a Fellow, one can now write in and tell the Council so, instead of spending a lot of time and much money on beer lobbying Council members for their aid.

➢ ➢ ➢

★ GET YOUR bobs out blokes!! Rumour hath it that the Wakefield fiddle is on the way again, and, of course, that notorious Northern character is well mixed up in it again (only this year they are not letting him handle the cash!) I understand it will be on much the same lines as last year, but that the first three prizes will consist of trips abroad with International teams, plus, of course, lots of other good things. The other two instigators of this scheme for robbery with violence, are, I understand known to the police as Leicester Rushy, and the Lincoln Penny snatcher. Don't say you haven't been warned, but at the same time get your bobs out!!!

➢ ➢ ➢

★ THE RECENT decision of the Area Committee to allow the out of pocket expenses for those people nominated for a particular task might prove a big help in finding sufficient organisers, controllers, timekeepers and what have you at the Area Rallies. It should be noted that expenses will only be paid where a member attends a rally solely for the purpose of carrying out a nominated task, that is to say one cannot mix business with pleasure in this case. Anyone interested in doing a day's work under these conditions is requested to inform the Comp. Sec., who will draw up a list of willing victims and call upon them as necessary. One member put the situation in an apt nutshell by saying that if we can't find willing helpers we must now try judicious bribery.

➢ ➢ ➢

★ ANOTHER ADDITION to the list of three in a circle fliers is the name of Mr. and Mrs. Vic Duberry, who received their prospective control liner on December 27th. I know everyone in the Area will want to wish them all the best and I, for one, will be anxious to see Vic's latest model. By which oblique reference you will no doubt have gathered that Vic is now a proud papa of a brand new son, and I trust he will forgive this lighthearted announcement, and instead accept my sincere good wishes to himself, Mrs. Vic and little Vic.

Milli (Continued from page 131)

Pin the trailing and leading edges of the outer wing panel to the plan and cement the ribs in their proper positions. Make these ribs by sanding down the main ribs. Push the spar in place, add nose ribs and wing tip. When cement has dried, remove pins from the outer panel and raise tip $2\frac{5}{8}$ in. Join the two wing panels.

Make the other half of the wing in the same way. Finally, make the centre-section. Place the two wing halves on a flat table with inner ribs $1\frac{1}{2}$ in. apart and tips raised to $4\frac{3}{4}$ in. Fill in centre-section with spars, trailing and leading edges. Finally add $\frac{1}{16}$ in. sheet covering of the centre section.

Fuselage

The fuselage is made from 5/32 in. sq. medium hard balsa. Make two sides in the usual way by building the second one on top of the first one thus ensuring exactly equal sides. Join the sides at front and in the rear and then add the spacers. Be certain the spacers are of correct length. Cut the $1\frac{3}{8}$ in. square front bulkhead from 3/32 in. plywood. Make holes for the engine bearers. Bend the under-carriage from piano wire and fasten to bulkhead with aluminium clips and small bolts. Cement bulkhead to body. Make the engine bearers from ash, $\frac{3}{4}$ in. by $\frac{1}{4}$ in. and $4\frac{3}{8}$ in. long. Drill holes and mount engine. Slip engine mounts into holes in bulkhead, align engine and cement mount to bulkhead. Fill in with small balsa blocks at rear ends of mounts. Be careful to keep dust out of the engine by wrapping it in soft cloth before starting the construction of the engine mounts.

Construction of the pylon is the trickiest part. Cut one pair of leading edges and one pair of trailing edges from $\frac{3}{8}$ in. by $\frac{1}{8}$ in. medium balsa. On both sides of the top fuselage longerons cut notches $\frac{3}{4}$ in. long and of such depth that 3/32 in. of the longeron remains. Make one pair of notches just behind the front bulkhead and another pair just behind the first spacer. Cement pylon leading and trailing edges in these notches in the top longeron and to the bottom longeron in the positions indicated. Fill in the 3/32 in. space between the two leading edges and the two trailing edges with balsa sheet. Add rib from $\frac{1}{2}$ in. by $\frac{1}{8}$ in. balsa and fill in between leading edges and engine mounts with balsa blocks. Make pylon platform by laminating two sheets of balsa $\frac{1}{16}$ in. thick. Do the lamination directly on the underside of the centre-section of the wing. When dry place wing and pylon platform on top of pylon. Align for correct incidence of 4 deg. and cement platform to pylon. Fasten rubber hooks in positions indicated and cover pylon with $\frac{1}{16}$ in. sheet.

The engine covering is made as follows:—Cut a $1\frac{1}{2}$ in. diameter ring from $\frac{1}{16}$ in. plywood. Thread it on to the crankshaft housing of the engine, then put on propeller and spinner. Screw the engine on to the mounts. Temporarily fasten the plywood ring to the spinner with pieces of $\frac{1}{16}$ in. sheet. Cement stringers between ring and front bulkhead and cover with $\frac{1}{16}$ in. balsa sheet. Make the upper half of the covering removable. It may be fastened with dress snaps or rubber bands.

For contest work an automatic timer is indispensable. On the original Milli an Elmic timer was placed in the fuselage just behind the pylon and it has been found to work perfectly.

Covering

The framework of wing, tailplane and fuselage are well sanded. Wing and tailplane are covered with one layer of Jap tissue or its nearest equivalent and given three coats of thin clear dope. Fuselage of the prototype was covered with one layer of Jap tissue, but two layers would possibly be more practical.

Give the fusalage covering several coats of thin dope.

Flying

The assembled model should balance at approximately 60 per cent. of the wing chord from the leading edge. Test glide in high grass, and when a straight glide just on point of stalling has been obtained try powered flights of 5 seconds motor run. Adjust engine thrust and trim tab on fin for a straight, steep climb and a circling glide. Under full power the original climbed straight and very nearly vertically. The model may, in fact, be hand launched vertically. Do not allow more than 10 seconds motor run on test flights and *always* use the dethermaliser.

Book Review

Power Duration Models. Published by Percival Marshall & Co. Ltd. 100 pages. Price 6s. 0d.

How right the author of this book is when he says that design is largely a matter of studying what other people have done before and making use of their findings. Here are some 150 successful designs fully analysed together with dimensioned outline G/A drawings of many of the more outstanding machines.

Duration fans will well remember the Zipper, Zombie, Interceptor, New Ruler, and so on. They are all dealt with, and a host of others. The value of the tabular analysis is such that it gives you all the information you could get from a plan—and in most cases a plan which is now virtually unobtainable. Nor is the second part of the book, dealing generally with design and constructional problems, overshadowed by this mass of data. This section summarises design requirements very clearly with fully proportioned drawings of each particular type, all representative of best modern practice.

Spaces are provided in the tables for the inclusion of data on latest models, and we intend to keep our own copy up to date in this fashion. Considering the time we took to add just two models we now appreciate more than ever just how much work went into the preparation of these tables initially.

This is definitely a book which power model enthusiasts cannot afford to be without.

From the S.M.A.E. and the CLUBS

REPORT OF S.M.A.E. EMERGENCY GENERAL MEETING HELD AT THE HORSE SHOE HOTEL, TOTTENHAM COURT ROAD, LONDON, W.C., ON SUNDAY, JANUARY 7th, 1951 at 11 a.m.

In the Chair, Mr. A. F. Houlberg. The Meeting was attended by the members of the Council and a small number of representatives from affiliated clubs.

The discussion was very brief. Arising out of same it was unanimously decided to amend Article of Association No. 6 (C) to read as follows :—

" Fellows of the Society (direct membership). Persons who, in the opinion of a 2/3rds. majority at the Annual General Meeting, have performed long and outstanding service to the Society."

Fellowship of the Society carries life membership, which can only be rescinded by a 2/3rds. majority vote at an Annual General Meeting. Fellows are elected at the Annual General Meeting on the recommendation of the Council.

The Meeting terminated at 12.15 p.m.

REPORT OF THE S.M.A.E. COUNCIL MEETING HELD AT THE HORSE SHOE HOTEL, TOTTENHAM COURT ROAD, ON SUNDAY JANUARY 7th, 1951 at 1.15 p.m.

The following were present :—Messrs. A. F. Houlberg (Chairman), R. F. L. Gosling, D. A. Gordon, H. W. Barker, S. D. Taylor, C. S. Rushbrooke, M. A. L. Coote, K. J. A. Brookes, E. F. H. Cosh (London), B. A. Messom (Northern), G. Foden (East Anglia), J. S. Bishop (Western), W. W. [illegible] (S. Wales), J. M. Taylor (W. of Scotland), R. C. F. [illegible] (Southern), D. Sidgwick (Northern) H. G. Hundleby. [illegible] were acting.

South Eastern Area Council Meeting

The Chairman stated that with the Treasurer he had attended a meeting of the South Eastern Area Committee to discuss the deficit which had resulted from the organisation of their 1950 Control-line Meeting. The sum of £200 due to a local newspaper for the printing of the programmes had through the Chairman's representations been reduced to £160 and it was agreed that the Society should settle this account. Payment for the advertisements in the programme had not been made by a number of the firms concerned and Mr. Barker was instructed to deal with this matter direct. It was considered that these outstanding items might balance the amount paid by the Society.

Mr. Barker expressed his dissatisfaction with the way the Area's finances had been handled and it was agreed that he should deal with the Area's financial affairs for the time being.

As the Area Committee had entered into certain arrangements with the Brighton Corporation with regard to the 1951 Meeting, the Council decided to sanction this, subject to members of the Council serving on the Organising Committee.

1950 Nationals Prizes

The Records Officer reported on his enquiries with regard to the outstanding prize awards. The Council were informed that the prizes which were not collected at York were now in the possession of the ex-Competition Secretary, Mr. H. R. Turner. Arrangements were made for them to be collected and forwarded to the winners.

Junior Champion, 1950

It was confirmed as a result of an investigation that Mr. F. E. Hawkins (Birmingham) was the 1950 Junior Champion.

1951 Contest Venues

The following venues were decided upon :—Wakefield Trials—Cranwell ; Nationals—Fairwood Common, Swansea ; Indoor Nationals—Manchester ; British Championships—Cranwell ; Team League Finals—Fairlop ; U.K. Challenge Match—Heathfield, Prestwick.

Wakefield Draw

After a discussion it was decided to organise a Wakefield Draw on similar lines to that held last year. Mr. B. A. Messom agreed to make the necessary arrangements and Mr. C. S. Rushbrooke to deal with the distribution.

Prizes will be as follows :—

First—Visit for one to International Power Contest in Paris.

Second—Visit for one to International C/L Contest in Belgium.

Third—Visit for one to F.N.A. Cup Meeting in Holland.

There will also be fifty other prizes.

1951 Annual Prize Giving Dinner and Dance

The Council were informed that arrangements had been made for this function to be held at the Horse Shoe Hotel, Tottenham Court Road, London, W.C. on Saturday, November 17th, 1951.

The following Sub-Committee was appointed to handle the organisation : Messrs. E. F. H. Cosh, M. A. L. Coote, D. A. Gordon.

Dates of Council Meetings

In accordance with a resolution passed recently, the Secretary gave details of the dates of the 1951 Council Meetings. These are as follows :—

Saturday, March 31st, Londonderry House, 2.30 p.m.
Saturday, May 5th, Londonderry House, 2.30 p.m.
Saturday, June 16th, Londonderry House, 2.30 p.m.
Saturday, July 21st, Waldorf Hotel, Aldwych, W.C.2., 2.30 p.m.
Saturday, September 8th, Londonderry House, 2.30 p.m.
Sunday, October 21st, Horse Shoe Hotel, 11 a.m.
Sunday, November 18th, Horse Shoe Hotel, 11 a.m.
Sunday, December 2nd, Horse Shoe Hotel, 11 a.m.

1951 Model Engineer Exhibition

The Secretary read a letter from Messrs. Percival Marshall & Co. Ltd., asking the Society to co-operate in connection with the model aircraft section of this Exhibition on the same terms as last year. It was unanimously decided to accept this offer and Messrs. A. F. Houlberg, D. A. Gordon and E. F. H. Cosh were appointed as judges. Messrs. D. A. Gordon and K. J. A. Brookes agreed to deal with the necessary organisation and to co-opt others to assist them at a later date.

The Council agreed that up to £50 could be expended in re-imbursing stewards, etc., for out-of-pocket expenses.

Size Limitations of Models

The Chairman informed the Council that the Air Navigation orders relating to model aircraft were being reviewed and, whilst the Air Ministry were in favour of size limitation, the Ministry of Civil Aviation were acting on our behalf to ensure that any such limitation would not hamper our activities.

Finance

The Treasurer presented his Statement of Accounts which showed a balance in hand of £428 and was accepted. On Mr. Barker's recommendation, it was decided to reduce the price of transfers to :—Large 2d., Small 1d.

Area Resolutions

Northern Area :—

" That winners of the first three places in all S.M.A.E. competitions be informed as soon as possible by post after the event, via their club or Area secretary."

Captain S. D. Taylor stated that he had already agreed to do this.

London Area :—

" That the London Area regrets the recent proposal of the S.M.A.E. Council, restricting Officers of the Society from attending events of the Northern Heights Club, in view of the facts now established that Mr. Bell spoke at the recent A.G.M. as an individual, and not as representing his club. It is therefore, proposed that this motion be rescinded.

The discussion on this resolution was very brief and it was agreed to defer the matter until the next Council Meeting in view of the fact that a number of the Council Member had by this time left the meeting.

Advisory Committees

The Competition Secretary submitted the names of suggested

nominees to serve on these Committees and after a full discussion the following were agreed upon :—

Wakefield—Messrs. E. W. Evans, F. Holland, R. H. Warring and J. R. Knight.

Radio Control—Messrs. G. Honnest-Redlich, W. H. C. Taylor, M. A. L. Coote and J. A. Gorham.

Control-line—Messrs. E. M. Buxton, N. Butcher, J. Mc.Ness, K. Muscutt.

The appointment of the Competition Organising Committee was deferred.

Records

The following records were ratified :—

Control-line speed, Class IV—F. Guest (Country Member) 116.9 m.p.h. Light-weight Rubber Biplane—J. O'Donnell, (Whitefield) 2 min. 53 sec. Light-weight Power Tailless—P. B. Wyatt, (Ipswich) 2 min. 15.0 sec.

BRITISH NATIONAL RECORDS
as at December 31st, 1950

OUTDOOR
(Minimum F.A.I. Loading)

Rubber Driven			
Monoplane	Boxall, F. H.	(Brighton)	35 : 00
Biplane	Young, J. O.	(Harrow)	31 : 05.1
Wakefield	Boxall, F. H.	(Brighton)	35 : 00
Canard	Woodhouse, R.	(Whitefield)	2 : 13.1
Scale	Marcus, N. G.	(Croydon)	5 : 21.7
Tailless	Boys, H.	(Rugby)	1 : 24.5
Helicopter	Tangney, J.	(U.S.A.)	2 : 43.7
Rotorplane	Crow, S. R.	(Blackheath)	: 39.5
Floatplane	Parham, R. T.	(Worcester)	8 : 55.4
Flying Boat	Rainer, M.	(North Kent)	1 : 09
Sailplane			
Tow Launch	Best, F.	(Leeds)	63 : 46
Hand Launch	Field, P. E.	(Belfairs)	7 : 05.2
Tailless (T.L.)	Lucas, A. R.	(Port Talbot)	22 : 33.5
Tailless (H.L.)	Wilde, H. F.	(Chester)	3 : [illegible]
NordicA/2(T.L.)	Whittall, L.	(Birmingham)	29 : 51.7
NordicA/2(H.L.)	Pickles, K.	(West Yorks)	3 : 49
Power Driven			
A (0-2.5 cc)	Springham, H. E.	(Saffron Walden)	25 : 01
B (2.51-5 cc)	Dallaway, W. E.	(Birmingham)	20 : 28
C (5.01-15 cc)	Lund, D. S.	(Wakefield)	6 : 46
Tailless	Poile, W.	(Folkestone)	2 : 09.6
Scale	Tinker, W. T.	(Ewell)	1 : 36.5
Floatplane	Stainer, J. R.	(Canterbury)	2 : 59.4
Flying Boat	Gregory, N.	(Harrow)	2 : 09.5
Control Line Speed			
Class I	Scott, R.	(St. Helens)	80.00 mph
Class II	Free, D. W.	(Surbiton)	80.35 ,,
Class III	Carter, J. G.	(Croydon)	89.10 ,,
Class IV	Guest, F.	(C. Member)	116.90 ,,
Class V	Shaw, C. A.	(Zombies)	118.42 ,,
Class VI	Taylor, N. G.	(Wimbledon)	132.60 ,,
Class VII (Jet)	Scovold, R. V.	(Guildford)	133.30 ,,

OUTDOOR
(Lightweight)

Rubber Driven			
Monoplane	O'Donnell, J.	(Whitefield)	7 : [illegible]
Biplane	O'Donnell	(Whitefield)	2 : 53
Sailplane			
Tow Launch	Mace, J. A.	(Upton)	28 : 17.2
Hand Launch	Joyce, J. G.	(Leeds)	3 : 55
Tailless (T.L.)	Johnson, H. G.	(York)	10 : 44
Tailless (H.L.)	Faulkner, R. A.	(Whitefield)	1 : 08.5
Power Driven			
Class A	Archer, W.	(Cheadle)	31 : 05
Class C	Ward, R. A.	(Croydon)	5 : 33
Tailless	Wyatt, P.	(Ipswich)	2 : 15
Free Flight			
Stick (H.L.)	Copland, R.	(Northern Hts.)	18 : 52
Stick (R.O.G.)	Mackenzie, R.	(Blackheath)	8 : 42
Fuselage (H.L.)	Parham, R. T.	(Worcester)	6 : 55
Fuselage (R.O.G.)	Parham, R. T.	(Worcester)	6 : 42
Tailless (H.L.)	Thomas, M. R.	(Oldham)	1 : 25.8
Tailless (R.O.G.)	Thomas, M. R.	(Oldham)	1 : 46.2
Helicopter	Ward, S. A.	(Ashton)	2 : 00
Rotorplane	Mawby, L.	(Ealing)	: 32.2
Round the Pole			
Class A	Muxlow, E. C.	(Sheffield)	6 : 05
Class B	Parham, R. T.	(Worcester)	4 : 26
Speed	Jolley, A. T.	(Warrington)	42.83 mph

The following record applications were accepted :—Light-weight Glider H.L.—J. G. Joyce (Leeds) 3 min. 55 sec. A.2 Glider H.L.—K. Pickles (West Yorks) 3 min. 49 sec.

Merit Certificates

These were awarded to the following :—

Class B. No. 22 Davey, C. J. (Blackpool) 378 Gordon D. F. (Sheffield), 416 Jones P. G. E. (Streatham), 417 Bell M. (Streatham), 431 Churcher C. G. (Streatham), 439 Misklin F. (York), 470 Eifflander J. G. (Macclesfield), 471 Bolfield K. (Macclesfield), 473 Farrance W. (West Yorks), 474 Archer A. (Leeds).

Class A. No. 463 Mayo F.A. (Streatham), 464 Polhill R.A.C. (Chichester), 465 Hewitson J. (Lockwood), 466 Allen J. F. (Chichester), 467 Joyce J. W. (Leeds), 468 Farrance K.(West Yorks), 469 Baker W. R. (Burnley Skyrangers), 470 Eilflander J. G. (Macclesfield), 471 Belfield K. (Macclesfield), 472 Johnson D. A. (West Yorks), 473 Farrance W. (West Yorks), 474 Archer A. (Leeds), 475 Slator G. A. (Hallifax).

Applications for Affiliation

Applications from the following new clubs were accepted :—Tor Aeromodelling Club,S. 5, J. 9, Fee 32/- ; Tame Model Club, S. 12, Fee 52/6 ; Alnwick & District Model Club, S. 13, J. 3, *Fee* 46/- ; Mill Hill & District M.A.C., S. 16, J. 6, Fee 56/6. Ayr Y.M.C.A. M.A.C., S. 7, Fee 28/- ; Kilmarnock S. of Model Experimental Engineers (Aircraft Sect.), S. 11, J. 5, Fee 43/- ; S.A.S. Auchenharvie M.A.C., S. 18, J. 2, Fee 57/6.

The Meeting terminated at 6.16 p.m. with a vote of thanks to the Chair.

WEST ESSEX AEROMODELLERS

On Thursday, January 11th, 1951, at the Talbot Restaurant, London Wall, E.C., the West Essex Aeromodellers entertained representatives of the Trade Press, the Arts and the *Crafts*, and a good sprinkling of S.M.A.E. Officers at their Annual Dinner. From the word "go" originality, always the Club's keyword, was in good evidence. The [illegible] and the meal was sufficient to satisfy a glutton. Speeches were [illegible] and the presence of the female partner to one of the entertainers somewhat cramped the style of some of the speakers causing a hasty revision of scripts. After the Loyal Toast, Eddie Cosh proposed "The Club" in characteristic style and Bill Taylor responded, the latter's "spoiler" working bang on time. Doug Gordon, the W.E.A. Secretary in proposing the health of the visitors and absent friends, regretted the unavoidable absence of the President, George Temple. He paid tribute to those who had helped the Club throughout the past year, and wished a safe and speedy return to those absent members serving in the Forces. Max Coote replied on behalf of the guests and like the other speakers produced his inevitable yarn.

The Club's Trophies were presented by Rushy, and Doug Gordon received a presentation lighter from his colleagues in the Club.

A special "loving cup" (single-handled) gaily painted in Club colours "Stoo Pot" and "The Order of the Weazle," was presented mid loud applause to the Club character—Len Steward. We were then intrigued with a recording of a number of unexpurgated conversations taken throughout the meal by Max Coote's tape-recorder.

Further recordings were taken throughout the evenings proceedings, but it is very unlikely that they will be available for future use except to very discerning audiences. Roy Green provided some magical moments, on one occasion producing a scale model aircraft from a [illegible] in which he had only burnt a few sticks of balsa. Outstanding in the musical side of the programme was the West Essex [illegible]—The Singing Waiters! ("Stoo," [illegible]) who brought down the house with their burlesque of Edwardian waiters. We believe that Tickets for [illegible] keen demand !

PRESS SECRETARIES PLEASE NOTE

- **Club reports must reach the Editorial Offices by the 15th of the month.**
- **They should not normally exceed 200 words—preferably less.**
- **If possible they should be typed, otherwise they must be clearly written. (Ruled foolscap paper is more suitable for this purpose than club letter headings).**
- **Type or write on *one* side of the paper only.**
- **They should be addressed to :—The Editor, Model Aircraft, 23, Great Queen Street, London, W.C.2, and NOT to the S.M.A.E. offices at Londonderry House.**
- **Club reports are not primarily intended to furnish information to a club's own members, but to propagate news of general interest to other aeromodellers, such as the details of machines which make outstanding flights, forthcoming events of general interest, the successful overcoming of club problems, co-operation with local authorities—in fact, information which is likely to be of interest and assistance to members of *other* clubs.**

WORKSOP AEROMODELLERS

1950 was the club's best contest year so far, with three members taking 8 firsts, a second and a sixth—all in major contests.

On Boxing Day the Club held its annual Christmas Rally, a much greater success this year, thanks to the canteen run by the lady members in the nearby club room. The standard of flying was not high (weather cold and showery) but everyone had a good time. Results: C/L Novice: I. Kirkby (Whitwell) Musketeer; C/L Speed: Bridget McCann (Worksop) Elfin 1.49 O/D.; C/L Stunt: Tie, G. Upton (Retford) Musketeer, and C. Draper (Warsop) D.C. 350 O/D. F.F. Power: L. Mills (Mansfield Phoenix) Javelin O/D. Combined Rubber/Glider: T. Myatt (Creswell) Mick Farthing lightweight.

As there appear to be lots of budding speed Biers in the district, the club hopes to hold record trials on the last Sunday in March. All will be welcome.

BRIGHTON DISTRICT M.A.C.

The South Coast Gala Day will take place this year at a venue near Brighton on Sunday, August 12th.

As in former years this meeting is for free-flight power duration with a 15 secs. engine run. Models are divided into the three recognised engine capacities and the well known South Coast Power, Brighton and Chatri Challenge Cups are awarded for the class winners. It has always been the policy of the organisers to provide a first class prize list and last year prizes were awarded down to 6th place in Class A, to 5th in Class B and to 3rd in Class C, as well as a cup for the Gala Champion and the above Challenge Trophies.

EAST ANGLIAN AREA COMMITTEE

Despite very bad travelling conditions caused by snow and ice, the Joan R. Hooper R/C Trophy Contest held at Willingdale Airfield, on December 31st, was well attended.

Seven models entered, and the first round provided some good flights especially by Messrs. Gorham, Peck and Dynes (Senior). By the time the second round started conditions had deteriorated and visibility was down to 100 yards. J. A. Gorham made another good flight in this round, but other competitors did not do so well, due no doubt, to the poor conditions. Mr. Gorham was flying a "Rudder Bug" with his own design radio gear. Result:

Mr. Gorham, 316 points; Mr. Peck, 257 points; Mr. Dynes (Senior), 177 points; Mr. Wilmer, 173 points; Mr. Mitchell, 87 points; Mr. Dynes (Junior), 54 points; Mr. Hinsley.

WHITEFIELD M.A.C.

Due to the prevailing weather conditions, not much flying has been managed in the past month, and that done has been mainly with Wakefields, old and new! A couple of reasonable calm days over the Christmas Holidays saw the testing of new Wakefields designed to the 1951 Rules. These were a slab-sided high wing model by R. Woodhouse, and a diamond pod and boom machine by J. O'Donnell. This features very light construction (1.8 ozs., plus 4.2 oz. rubber !) and managed 4 min. 70 sec. (total on Boxing Day (200 turns !).

WEST YORKSHIRE M.A.S.

On January 6th at the handicrafts exhibition organised by the Sheffield Club, Mr. W. Farrance was awarded the Woollard trophy for his model of the "Seagull" Amphibian, for the best model in the show, also gaining, of course, first prize in its particular class. Finished in camouflage, this model has a 66 inch wing span and is powered by an Amco 3.5. Mr. E. Farrance gained highly commended in the same class with his 45 inch version of the Luscombe Silvaire.

Recently seen on our flying field has been a new version of Mr. H. Preston's "Presto." This has a wing area of some 300 square inches and is powered by an "Elfin" 1.8 which produces a climb which has to be seen to be believed, and a terrific glide.

OLDHAM AND DISTRICT M.A.C.

Despite adverse weather conditions the lads of the Oldham & District Model Aero Club have been getting in quite a lot of flying with more than a few bods taking advantage of the soft snow for trimming new models.

A. Rowley has fitted a sailplane with R.C. but as yet results are not as good as when flown free flight.

An indoor spot landing competition was won by a junior member K. Gabriels, with some very consistent flying.

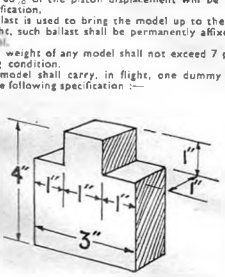
BRISTOL AND WEST M.A.C.

A number of members have braved the ice and snow this winter to test their new models, which include power, control line, Nordic gliders and Wakefields. Several team racers have been built, and that by Pete White has been clocking 70 m.p.h. with an Elfin 2.49. George Woolls continues his experiments with various types of Wakefield props, despite a rumour that he was going to build a power model.

Users of Lulsgate Aerodrome have often complained about the weather conditions there, but a short time ago the weather man excelled himself. On arriving at the 'drome one Sunday morning members found that the windsock had contrived to fold itself in half so that the small end was caught inside the large one! No wonder our models get bufleted in the wind!

BOWDEN INTERNATIONAL TROPHY
P.A.A. LOAD CONTEST
Specifications and Rules

1. The contest will be for power-driven models fitted with internal combustion engine(s) of not more than 3.5 c.c.
2. The minimum weight of the model, less pay-load, shall not be less than 100 oz. for each cubic inch of piston displacement of engines. If four-stroke cycle engines are used 60% of the piston displacement will be taken for classification.
3. If ballast is used to bring the model up to the required weight, such ballast shall be permanently affixed to the model.
4. Total weight of any model shall not exceed 7 pounds in flying condition.
5. The model shall carry, in flight, one dummy occupant to the following specification :—



6. The occupant must be provided by the entrant and carried in an upright position relative to normal flight, facing forward (the face is considered to be the broad side of the occupant), and within an enclosed compartment providing visibility through transparent area(s) at least one (1) inch high to the front and sides of the heads of the occupants. Inserting and removing of each occupant must be convenient with the model completely assembled, except for the operation of door(s) and or hatch(es).
7. Models must R.O.G. under their own power and without assistance. In releasing the model no portion of the contestant's body may move in the direction of the take off run.
8. Models must rest on the ground in a normal attitude, having at least three points of contact thereon. When a single wheel is used skids or similar devices shall be installed so that no other part of the model, other than the take-off gear is in contact with the ground.
9. The length of engine run after the model is released for flight shall not exceed 20 secs. If conditions warrant the Contest Director may establish an engine run of less than 20 secs.
10. Each competitor will be allowed three contest flights, their aggregate in minutes and seconds counting as points. The maximum score for each flight will be 10 minutes, and attempts of under 40 secs. will not count as contest flights. Only two such attempts will be allowed in each round.
11. Timing starts the instant a model is released for flight and terminates when the model touches the ground, meets an obstruction which prevents further flight, passes from the sight of the timers.
12. The General Rules for the conduct of International Contests as promulgated by the F.A.I. apply where relevant.

SUNDERLAND AND D.M.A.C.

The Club managed to get some Christmas flying done at Asworth Airfield, and a cold, foggy Boxing Day saw nearly thirty "keen types" out on the ice-bound tarmac. High spot of the session was a stunt display by the Chester-le-Street lads Short and Revell. When a proposed Team Race had fallen through (damage during practice, not non-attendance) they got into the ring with a pair of stunt jobs to show what "team stunt" could be like. The bit that had the audience standing on one leg was when Revell went into inverted and the two jobs started circulating in opposite directions! We found afterwards it was all quite intentional—but smelling salts will be handed round next time before they start.

Two items of "indoor" nature may be of interest. A choice selection of designs were put before the Club in the ballot for a Club badge, and the prize went to W. Stores (what! again! !) for an attractive emblem which should grace many models this summer. The other item is the Press Sec.'s "Swop Sheet" which is displayed at meetings—listing engines, model gear, etc., for sale or exchange (and no commission charged !).

CONTEST CALENDAR

Mar. 25th (Easter)	**GAMAGE CUP.** Unrestricted Rubber. D/C. **PILCHER CUP.** " Glider. D/C.	
April 1st	SURBITON GLIDER GALA.	Epsom Downs, Surrey.
April 15th	***ASTRAL TROPHY.** F.A.I. Power Duration Area.	
" 15th	**RIPMAX TROPHY.** Radio Control. Area.	
" 15th	**S.M.A.E. CUP.** A2 Glider Eliminator. Area.	
" 29th	NORTH HAMPSHIRE RALLY.	Lasham Aerodrome, Nr. Alton.
May 6th	***WESTON CUP.** Wakefield Eliminator. Area.	
" 6th	**HALFAX TROPHY.** Unrestricted Power/ Rasin. Area.	
" 13th &	**BOWDEN TROPHY.** Power/P.A.A.-Load. International.	
" 14th (Whitsun)	**POWER CONTEST.** Power/Duration. **" AEROMODELLER " R/C TROPHY.** Radio Control. Centralised. Probable venue Fairlop Aerodrome, Essex.	
May 27th	***K. & M.A.A. CUP.** A2 Glider Eliminator. Area.	
" 27th	**GUTTERIDGE TROPHY.** Wakefield Eliminator. Area.	
June 10th	**PREMIER SHIELD.** Wakefield Eliminator. Centralised.	
" 10th	**A2 CHALLENGE CUP.** A2 Glider Eliminator. Centralised. Cranwell Aerodrome, Lincs.	
" 17th	**WEST ESSEX GALA.** Fairlop Aerodrome, Essex.	
July 1st	***" MODEL ENGINEER " CUP.** U/R Team Glider. Area.	
" 1st	**WOMEN'S CUP.** U/R Rubber/Glider. Area.	
" "	**POWER CONTEST.** U/R Power/Duration (.01-1.5 c.c.) Area.	
" 15th	**KEIL TROPHY.** U/R Power/Ratio. Area.	
" 15th	**LADY SHELLEY CUP.** Tailless. Area.	
" 21st	**FESTIVAL OF BRITAIN.** National Model Flying Championships. Empire Stadium, Wembley. Control Line Stunt, Speed, and Team Race. **THE BRITISH NATIONALS** Fairwood Common Aerodrome, Swansea.	
Aug. 5th	**" GOLD " TROPHY.** C/L Stunt.	
" 5th & 6th	**C/L SPEED.** C/L Speed.	
" 6th	**THURSTON CUP.** F.A.I. Glider.	
" 6th	**" MODEL AIRCRAFT " TROPHY.** F.A.I. Rubber.	
" 5th & 6th	**S.M.A.E. R/C TROPHY.** Radio Control.	
" 6th	**SIR JOHN SHELLEY CUP.** F.A.I. Power/ Duration.	
" 12th	**SOUTH COAST GALA.** All free-flight power.	
" 19th	**ALL-HERTS RALLY.** Radlett Aerodrome, Herts.	
	INDOOR NATIONALS	
" 19th	Free Flight—Stick H.L.	
" 19th	—Fuselage H.L.	Probable venue
" 19th	" —Unorthodox	—Manchester
" 19th	R.T.P.—Class A & B	
" 19th	" —Speed	
" 26th	HUDDERSFIELD AIR LEAGUE RALLY.	
Sept. 2nd	***FARROW SHIELD.** U/R Team Rubber. Area.	
" 2nd	**JETEX CONTEST.** Radio. Area.	
" 2nd	**SCALE POWER.** Power/Duration. Area.	
" 16th	**BRITISH CHAMPIONSHIPS.** Rubber; Glider/Power. Cranwell Aerodrome, Lincs.	
" 16th	**TAPLIN TROPHY.** Radio Control. Centralised. (Venue to be announced).	
" 30th	**DAVIES TROPHY.** Team Race League Finals. Fairlop Aerodrome, Essex.	
Oct. 7th	**U.K. CHALLENGE MATCH.** Rubber/ Glider/Power. Centralised.	Heathfield, Prestwick.
" 14th	**" FLIGHT " CUP.** Unrestricted Rubber. D/C.	
" 14th	**FROG JUNIOR TROPHY.** Unrestricted Rubber/Glider. D/C.	
" 23th	**HAMLEY TROPHY.** Unrestricted Power/ Duration. D/C.	

S.M.A.E. CONTESTS IN BOLD TYPE

Clubs intending to organise rallies are advised to decide upon the dates of these without delay. Early publication of the dates of these events in the " Model Aircraft " Contest Calendar will avoid them clashing with other fixtures.

GOOLE D.M.S.

The Goole D.M.S. can claim to be the smallest club in the Northern Area with a total of nine Senior Members, all keen modellers.

Success in the Area K.O. Cup was three away wins against York, Harrogate and Hull Y.P.I. Exit from the Cup was made flying against W. Yorks. in the semi-final at home with eight flights to W. Yorks. nine and only 47 seconds difference in times.

Interest in the Club ranges from R.C. to Jetex, the main theme at present being Control Line Scale and Stunt.

The Club is not wholly competition minded but five prizes have been landed at various rallies during 1950. Records to date:—

Rubber	16½minutes	F. J. Warren
Glider	7.16 minutes	F. J. Warren
F.F. Power Ratio	10.1 minutes	G. Turner

ASHFORD M.F.C.

After considerable negotiation with the Local Council our Club has been able to rent from them (at a nominal figure) an old disused two storey brick stable building measuring about 30 ft. × 15 ft. We have had to carry out extensive repairs and still have a lot to do. When it is finished, we shall have a good workshop downstairs and a drawing office-cum-gen-room upstairs.

Furniture is a problem as our membership is now down to 10, consequently funds are low. We have, however, been able to pick up some bargains in the local sales.

We are badly in need of new members and those interested are asked to get into touch with R. Webb, 221, Godington Road, Ashford, Kent.

ALTON AND DISTRICT M.A.C.

The 2nd North Hampshire Rally, jointly organised by the Alton & D.M.A.C., R.A.F., Odiham & D.M.A.C., and Basingstoke M.A.C., will be held on Sunday, April 29th, 1951. The venue has been provisionally fixed at Lasham airfield, near Alton. Clubs will be notified individually by the Alton Club Secretary, Mr. A. J. Hunt, 75, High St., Alton, Hants., to whom any communication regarding the Rally should be addressed. Precise details as to competitions, etc., will be announced later.

We believe this to be the first Rally of the season and hope that, as such, it will attract as great a number of visitors as it did last year.

KNUTSFORD AND DISTRICT M.F.C.

The following have now obtained their " A " Certificates. D. Holme and A. Caveney. R. A. Jackson has obtained his " B ". The plane with which Hulme obtained his " A " has been flown by him for the past season but was lost on its last " A " Flight. Description of the model is as follows, the span is 44 in. Power Elfin 1.8, and the pylon is 7 in. in height from the fuselage. A. Caveney obtained his " A " with a Roma glider with the C/G moved to 60 per cent. of the chord. Jackson got his " B " with a " Sheelagh " glider, which model must be regarded as a potential winner of the " Mrs. Gressham " Cup to be held in April. Other models on the board for this contest include several own designs, a " Dream Bogey," " Sunnanvind " and a " Chief."

The Chairman (D. E. Parmenter) and Secretary (A. Caveney) joined forces in designing a C/L Semi-Scale model of the Bristol Brigand, the span is 55 in., weight 3 lb. 2 oz., the power is supplied by 2 E.D. Comps inverted. Take off on 2 engines is ¼ of a lap and on one engine 2 laps. Speed on both engines is 40 m.p.h. and on one engine 17 m.p.h. Props used were 9 × 6s. They have now built a De Haviland Comet, span 54 in. and the power is supplied by 2 Elfin 1.8s sidemounted.

At present we have 12 team racers with several more in the building stage ([illegible] these from 9 members). Not wishing to disclose our secrets we can list the following out. P. Wilson has obtained 63 m.p.h. with an E.D.3.46 powered Mercury Mk.1, doing 45 laps per tank. His team are using 10 prop and Mercury No. 8 Fuel.

In 1951 the Club will again be giving demonstration at various functions and any plane other than a Sole job gets into them it will be very lucky indeed. Scale jobs at the moment include an Amco 2 C Spitfire, Elfin 1.8, Hawker Fury (Biplane), Elfin 1.8 Fokker Triplane and the 2 twins mentioned earlier. Several more are in the stage before building—we hope to see them and not hear of them. May we wish all Clubs every flying success this coming season.

BLACKBURN MODEL AERO CLUB

The above club held its first Annual Dinner on Wednesday, January 10th, and the function which was attended by 65 members was a great success.

It was originally intended to hold a hot-pot supper but our " Supporters Club " decided to endeavour to raise sufficient funds in order to enable us to provide a full dinner at the original price of 4s. The Supporters " Club " consists of wives and friends of club members and their help and enthusiasm is quite amazing. They organised a draw and sold 2,100 tickets at 2d. each. From the proceeds of this and a Whist Drive they raised the sum of £30, which enabled us to arrange the dinner.

A local business man, Lt. Col. Bowman, D.F.C., was invited to present the trophies and the local press were invited to attend. As a result the function was given a good write-up.

Encouraged by the success of our first effort in this direction we are now looking forward to next year's function which we hope will be even more successful.

LONDON AREA COMMITTEE

The Area Secretary, S. Norris, of 3, South Hill Park Gardens, Hampstead, London, N.W.3, is desirous of bringing his mailing list up to date and requests all London Area Clubs to inform him of the names and addresses of their present secretaries. They are also requested to keep him advised of any future secretarial changes.

Area Meetings are held on the second Monday in each month at the Horse Shoe Hotel, Tottenham Court Road, London, W.C, commencing at 7.30 p.m. All clubs in the area are invited to send a delegate to these meetings.

CHANGES OF SECRETARYSHIP

West Middlesex M.F.C.—B. L. J. Neal, 73, Eastmead Avenue, Greenford, Middlesex.

Woodlands M.F.C.—T. Stead, 63, Grange Road, Woodlands East, Doncaster, Yorks.

Brixton D.F.C.—M. Billinton, 15, Raleigh Gardens, Brixton Hill, London, S.W.2.

Exeter M.A.C.—H. A. Stillings, 6, Alpha Street, Heavitree, Exeter.

Sheffield Society of Aero-Modellers.—G. H. Wilson, 206, Heeley Bank Road, Sheffield, 2.

Belfast M.F.C.—A. Hitchcson, 14, Porter Park, Finaghy, Belfast.

Perth M.A.C.—J. Attwood, Newlands House, Perth.

Bristol and West M.A.C.—P. J. Wiltshire, 35, Chantry Lodge Road, Downend, Nr. Bristol.

Southport M. and E.C. (Aircraft Sect.)—T. Nelson, 41, Hawkeshead Street, Southport.

Manchester M.A.C.—E. R. Tayler, 25, Glenhaven Avenue, Urmston, Manchester.

Horwich M.A.C.—N. Southern, 24, Bottom Oth Moor, Chorley Old Road, Bolton, Lancs.

Sunderland and District M.A.C.—G. F. Jackson, 21, Oswald Tree South, Castletown, Sunderland, Co. Durham.

Beverley and District M.A.C.—P. Done, Longcroft Park, Beverley, E. Yorks.

West Yorkshire M.A.S.—H. Preston, Hathaway, 103, Upper Batley Lane, Batley, York.

Huddersfield Air League M.A.C.—A. Coates, 33, Holly Road, Thornton Lodge, Huddersfield.

Forest Cottage M.A.C.—G. Dawson, 4, Earl Terrace, Lee Mount, Halifax.

Bournemouth M.A.S.—H. F. Weller, 17, Stillmore Road, West Howe, Bournemouth, Hants.

Ryde and District M.F.C.—G. C. Taylor, 9, Arthur Street, Ryde, I.O.W.

Men of Kent (Maidstone) Aeromodellers.—H. Brodie, 153, South Park Road, Maidstone.

Slough M.A.C.—C. R. Callcutt, 12, Cranbourne Close, Slough, Bucks.

Whitlesey M.A.C.—T. Cobb, 18, Hallcraft Road, Whitlesey, Peterborough.

Lincoln and District M.A.S.—P. V. Pepper, 75, Scorer St., Lincoln.

Meir Community Centre M.A.C.—F. S. Moffatt, 6, The Close, Weston Coyney, Stoke-on-Trent.

Loughborough College M.A.C.—D. C. Sugden, Loughborough College, Loughborough, Leics.

Black Eagles M.A.C.—F. Hathaway, 1, Stanville Road, Sheldon, Birmingham, 26.

Defford M.A.C.—E. R. Holloway, Geraldine Staff Club, Great Malvern, Worcs.

Derby M.A.C.—R. Adamson, 224, Burton Road, Derby.

Littleover M.A.C.—G. T. Monk, 28, West Croft Avenue, Sunnyhill, Derby.

West Bromwich M.A. and C. Soc.—N. A. Groucutt, 1, Thursfield Road, West Bromwich.

Blackheath and Halsowen M.F.C.—C. P. G. Wheldon, 59, Carter Lane, Quinton, Birmingham, 32.

Kensington and District Model Club.—B. A. Brittain, 5, Manchester Square, London, W.1.

Northern Heights M.F.C.—A. T. Wiegery, 20 Marriott Road, Barnet, Herts.

Tottenham M.F.C.—A. G. Ramsdale, 46, Selby Road, Tottenham, N.17.

The Vikings.—A. J. Comber, Rosemary, Queens Avenue, Byfleet, Surrey.

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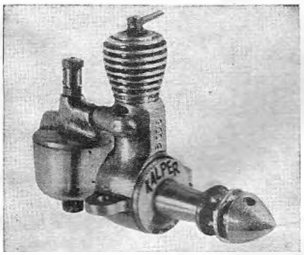

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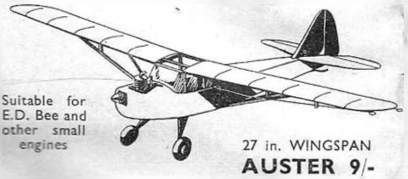

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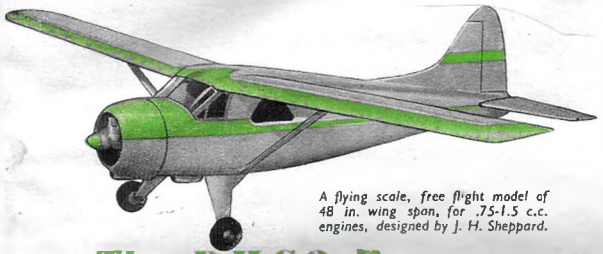

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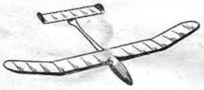

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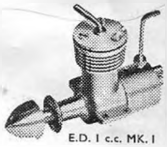

E.D. 1 c.c. MK. I

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	£	s.	d.
E.D. Mk. I "Bee" 1 c.c. diesel engine	2	7	6*
E.D. Mk. II 2 c.c. diesel engine	2	15	0*
E.D. 2 c.c. competition special diesel engine	2	17	6*
E.C. Mk. III 2.49 c.c. diesel engine	3	5	0*
E.D. Mk. III (Series 2) 2.46 c.c. racing engine	3	12	6*
E.C. Mk. IV 3.46 c.c. diesel engine	3	12	6*

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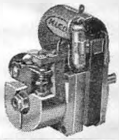
	£	s.	d.
E.D. Mk. III "Minizure" R/C Unit, complete less batteries	7	19	6
E.D. Mk. I three valve R/C unit, complete less batteries	14	10	0
E.D. Mk. III Transmitter and Aerial	4	12	6
E.D. Mk. I Escapement: clockwork	2	7	6
E.D. Special miniature hand Transmitter	5	0	0
E.D. Mk. III Receiver plus 4-pin battery socket and plug, 2-pin phone socket and plug, potentiometer and On/Off switch	3	0	0
E.D. Mk. III Escapement		18	6
E.D. Mk. I Transmitter and Aerial	4	17	6
E.D. Mk. I Receiver	7	15	0

THE TRANSMITTER



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M.I./E.D. MAGNETO

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E.D. FUELS

E.D. TIMERS

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E.D. "Challenger" hydroplane kit set	2	2	6
E.D. "Aerocar" Kit set	2	2	6
Challenger C/L aircraft complete with engine (*ready to fly*)	4	7	6

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E.D. Plastic Propellers	9¼ in. diameter x 6 in. pitch free-flight	2	11*
" " "	8¼ in. diameter x 9 in. pitch control	2	8½*
" " "	7¾ in. diameter x 6 in. pitch free-flight	2	3½*
" " "	6¼ in. diameter x 7 in. pitch control	2	3½*
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" " "	8 in. diameter x 4 in. pitch control	5	0*
" " "	9 in. diameter x 9 in. pitch free flight	5	7½*
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*Prices marked thus include purchase tax.

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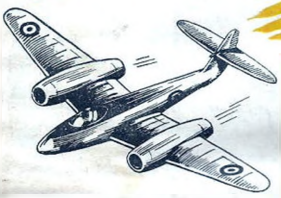

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