AUG. 1947

# AEROMODELLER

1/3

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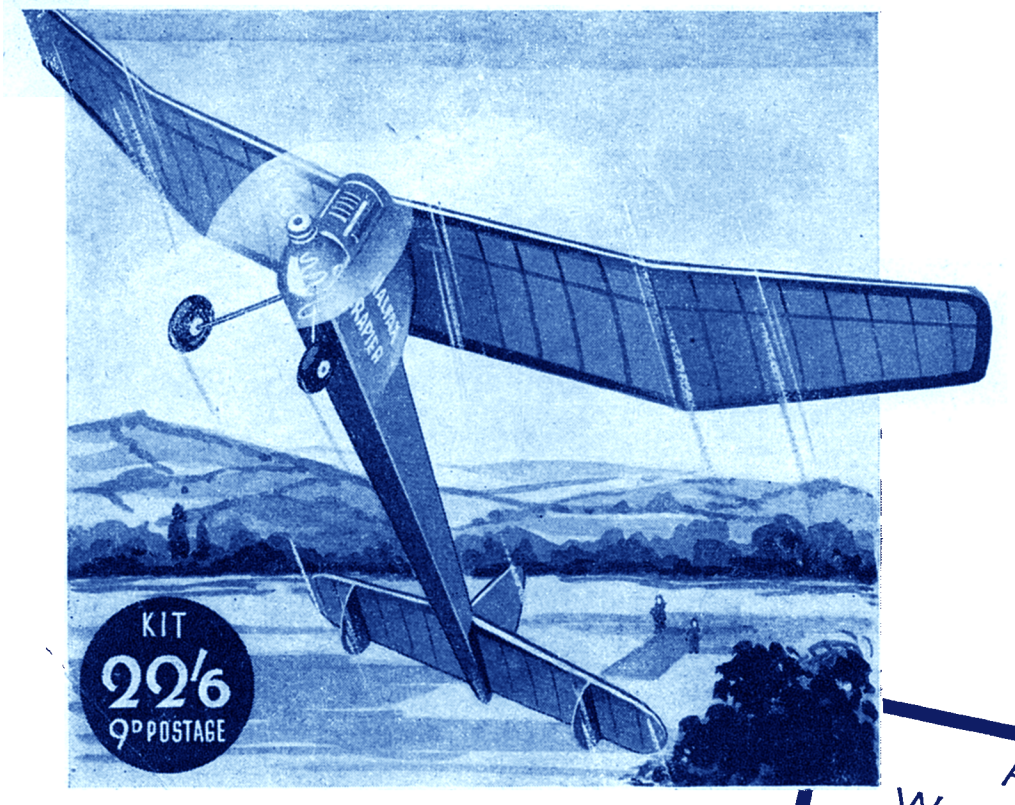


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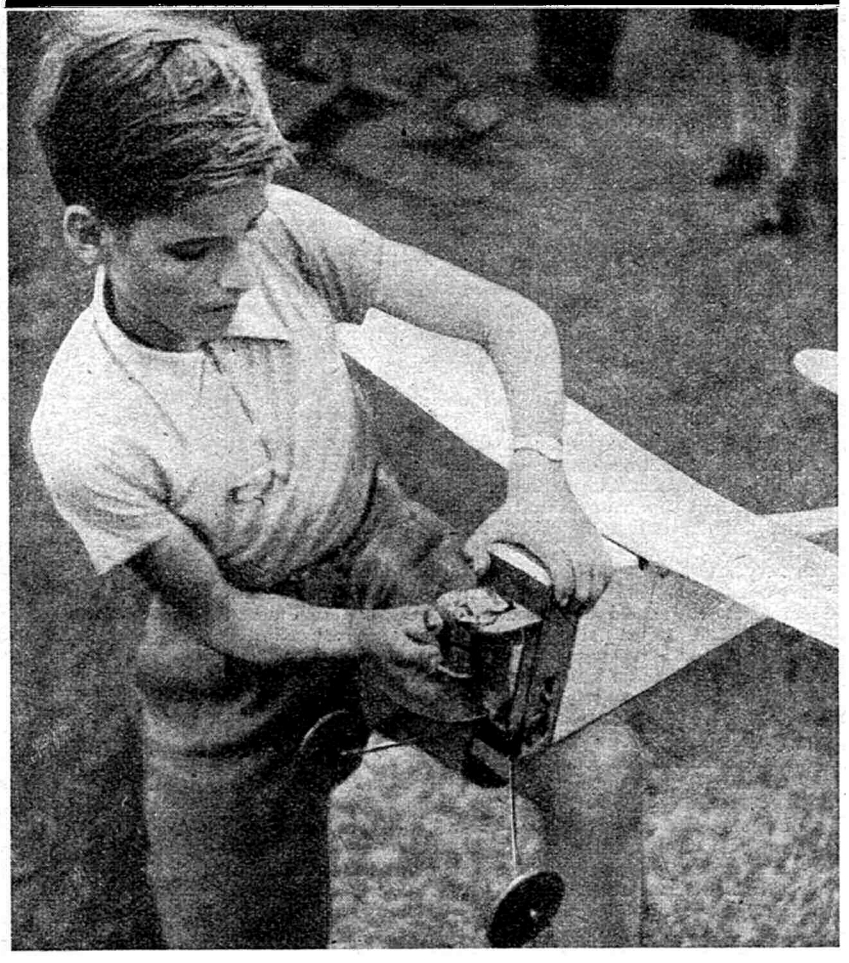

*They catch them young abroad : International Swiss team member Rainer Senn, starts up at their recent meeting.*

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VOL. XII — No. 139 — AUGUST 1947

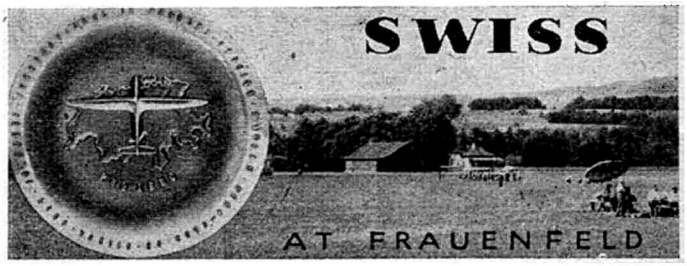
# EDITORIAL

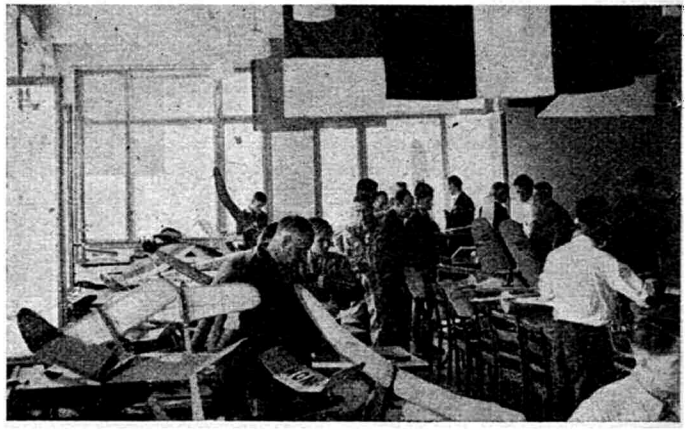
THOSE few fortunate—and skilful—aeromodellers who have been able to take part in the recent spate of meetings abroad will find in our columns many welcome reminders of their triumphs, or otherwise, in more distant lands. But the vast majority of our readers must perforce enjoy their sole contact with continental enthusiasts through these same columns. For that reason we have built up an unequalled foreign correspondence all over the world to give the most up-to-date service possible, and members of our staff report the principal continental rallies in words and pictures. In this issue will be found first-hand accounts of meetings so far apart as Frauenfeld, Flers and Dublin. It says much for the healthy state of British competition modelling that strong teams were fielded for each of these events, in spite of the fact that they all fell within the space of one weekend.

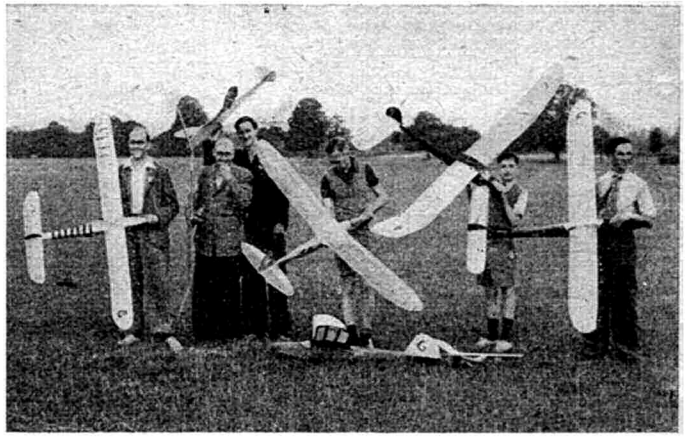
In Dublin both power and Wakefield contests fell to the visitors, British entries occupying the first three places in each case. This is not to suggest that their victory was anything of a walkover as the standard of flying in Eire is considerably higher than in 1946 and only sustained efforts brought about this happy result. In Flers the tables were turned, French contestants taking full measure of the plums, though of course this British eclipse *might* be attributed to the very lavish hospitality of their hosts. Main event of this eventful week-end must be the three-day International Meeting at Frauenfeld organised by the Swiss Aero Club. Eleven nations took part, and though the British team failed to prevail in either power or sailplane events, they did at any rate set a splendid example of sportsmanship by their continued efforts right to the end of an obviously losing battle. We must place on record our appreciation of the magnificent organisation that made this meeting an outstanding success and an example to all who may essay similar efforts in the future.

But stay-at-home modellers need not feel entirely neglected for they too may meet many of the most famous continental experts at Eaton Bray's Second International Week, which starts on Saturday, July 26th, and continues until August Bank Holiday Monday. Already acceptances have been received from enthusiasts in France, Belgium, Monaco, Czechoslovakia, Sweden, Palestine and Italy as well as a contingent from Eire. On Sunday, July 27th, proceedings begin at 11.30 a.m. with a Concours d'Elegance followed by Rubber Duration Events for both open and Wakefield types, a Waterplane Contest and a Power Event. Sunday August 3rd, is scheduled for a Trade Circus when members of the model aircraft trade will be free to demonstrate their wares, while for our foreign visitors and their British rivals there will be the experimental classes, including Tailless, Canard, Control-line, Rocket and Radio-Control events. Final day will be Bank Holiday Monday with another Concours d'Elegance, Sailplane events for Open and F.A.I. formulas and a Power contest. The best known British contest modellers have been invited to take part together with those selected at the Eliminating Trials on July 6th, whilst every club has been invited to nominate its champions. Additional entries will be accepted on the field to bring the lists up to the highest possible total that can be flown off in the time allotted.

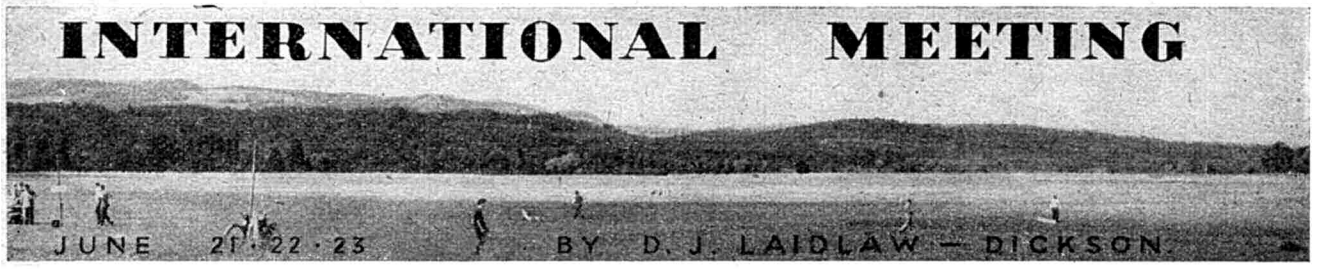
As described on another page, additional camping facilities will be available at Eaton Bray as from Saturday, August 9th, when up to one hundred can be given dormitory accommodation, and the usual three square meals a day. Instructional lectures will be held for those who wish, together with all the fun of the flying field. Members of the recent camp who have now returned home were able to make many helpful suggestions for the future and the prospect of an aeromodelling week should appeal to those lucky people with summer holidays yet to come.





# INTERNATIONAL MEETING




ELEVEN countries participated in Europe's most successful post-war International Meeting organised by the Swiss Aero Club, at Frauenfeld, on June 21st, 22nd and 23rd. Teams were entered by Switzerland, Belgium, Czechoslovakia, Denmark, England, France, Holland, Italy, Jugoslavia and Monaco, with a lone representative from Finland, totalling in all over sixty visitors. But of all those present no-one would deny that the most outstanding team was that headed by Dr. Prof. Frischi, Messrs. Degan and Dollfuss, who were primarily responsible under the direction of the Aero Club for an organisation that was remarkable for its smooth running and attention to detail.

From the moment teams crossed the Swiss Frontier, where Customs officials had been warned to expect them, and clear their models promptly, through a warm welcome at the Frauenfeld Artillery Barracks, to a handsome spread in the flag-bedecked dining hall they were made to feel at home. Field organisation was splendid, all contestants being easily identified by badges bearing their names and countries. Finally the prizes and souvenirs that were provided showed an originality of thought that will keep the memory of this meeting evergreen in many lands. Large wall plaques of a local alloy suitably inscribed and bearing the arms of Thurgau, were awarded to the five individual winners in both Contests, together with watches and a Dyno diesel. The winning team in each case received smaller silver medallions with a Greek flying motif and inscription on reverse. In addition every entrant was given a highly polished salver commemorating the meeting and embossed with a sailplane stretching its wings across Switzerland.

Models were arrayed in the main hall of the barracks on Saturday morning for checking in. With slide rule, scales and occasional slips of paper they were passed and all parts stamped to prevent any possibility of substitution. The contest proper began at 2 o'clock in the afternoon with the Power Event. A remarkable portable take-off board was provided which folded up like a Venetian blind. In an orderly procession—except where Italian excitement occasionally caused a hold-up, until the "Vivas" greeting a compatriot's flight had died down—model followed model. Wilson had probably one of the day's best flights but was disqualified for exceeding the motor run by one second. Swiss entries were unlucky and never showed so that the issue seemed always between Belgium and Italy with France and Czechoslovakia occasionally challenging with good flights. Italy favoured the popular high pylon design, mainly powered with Movo 2 c.c. diesels, though there was also a 5·65 c.c. Super Tigre and a new 10 c.c. Movo. Belgian models were slabsided high wings with 2·65 and 3·5 Delmos and a 5 c.c. Bonnier to power them. In spite of their simplicity—or perhaps because of it—they managed to beat the Italians by less than two points in a keen finish.

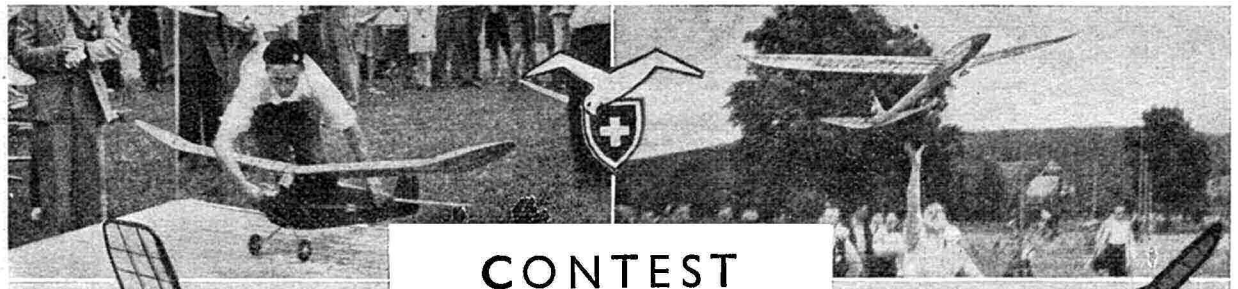
Individual winner proved to be Paul Maeght of France former Power Champion of that country, followed by Volveno Pecorari of Italy. Highest English placing was G. G. (Pa) Harris at sixteenth. Incidentally, "Pa" Harris proved the social lion of the English team and his hands worked overtime in a variety of languages.

Power placings were determined on each entrant's best two flights out of the three allowed, and dividing motor run, which must not exceed twenty seconds, into total length of flight. For team placing the five best aggregates so obtained were totalled. A similar method of counting the best two of three flights was employed in the sailplane event. Timing was by three stopwatches the first of which was stopped when a model passed out of sight, whilst the other two continued for one minute in case it came back into view. Binoculars were used to follow models, and a network of army field wireless stations reported their whereabouts. Boy Scouts and Wolf Cubs acted as a very efficient recovery squad. There was no need for entrants therefore to move more than a few yards from the take-off area; in fact when G. W. W. instinctively padded off he remained o.o.s. longer than his model, and was eventually retrieved by an alert Wolf Cub, from some three miles away.

The Sailplane Contest on Sunday, commenced with little prospect of thermals, until Tage Hansen, of Denmark, found one for 22 : 41, followed by two Italian flights of six minutes plus. The English team began to recover then from their feeling of being dwarfed by the immense spans of so many of their rivals. G. W. W. made a nice 7 : 51 before lunch, and his team mates all gave good average performances. After an *al fresco* lunch the weather deteriorated; no more thermals were to be found and by 3.0 p.m. rain settled down, so that only between showers was the second round completed. The final round therefore took place on Monday morning, when England lay only nineteen seconds behind the leaders Switzerland. Again no thermals seemed likely, and the good English averages began to make a British victory possible. But the locals who had hung back, together with the contest-wise Belgian and Italian teams, reaped their reward in the crop of thermal flights that increasing sun encouraged during the last half hour. So after all that England secured only fifth place.

Sunday evening was the social climax with Gusti Wengler, the Champion Yodeller, to entertain the boys, as well as a film of Swiss model meetings in the snow. Happy thought was a speech by A. F. Houlberg; the English leader, thanking the organisers for all the hard work inseparable from an occasion of this sort. We, too, say thank you Switzerland, and here's to the next time!

*Heading: On left, souvenir salver presented to contestants; panorama of the flying field. From top to bottom: Checking models in the barracks dining room. The English team, left to right, L. M. Walker, G. G. ("Pa") Harris, A. H. Taylor, A. H. Wilson, Jimmy Wingate, and G. W. W. Harris. Team managers receive their briefing from the organisers.*



# CONTEST RESULTS

## POWER CONTEST

### TEAM

| | | |
|---|---|---|
| 1 | Belgium | 57·26 pts. |
| 2 | Italy | 55·19 ,, |
| 3 | France | 47 96 ,, |
| 4 | Czechoslovakia | 42·38 ,, |
| 5 | England | 38 02 ,, |
| 6 | Switzerland | 13·37 ,, |
| 7 | Jugoslavia | 4·85 ,, |

### INDIVIDUAL

| | | | |
|---|---|---|---|
| 1 | Paul Maeght | (F) | 15·99 pts. |
| 2 | V. Pecorario | (I) | 14·92 ,, |
| 3 | E. Sysmans | (B) | 13·74 ,, |
| 4 | E. Marin | (B) | 12·97 ,, |
| 5 | G. Lippens | (B) | 11·28 ,, |
| 6 | Piero Gnesi | (I) | 11·20 ,, |
| 7 | L. Damicheli | (I) | 10·58 ,, |
| 8 | V. Pecorari | (I) | 10·14 ,, |
| 9 | A. Jindra | (C) | 10·10 ,, |
| 10 | Igor Manka | (C) | 9.82 ,, |
| 16 | G. G. Harris | (E) | 8·31 ,, |

## SAILPLANE CONTEST

### TEAM

| | | |
|---|---|---|
| 1 | Switzerland | 4858 secs. |
| 2 | Italy | 3827·5 ,, |
| 3 | Denmark | 2662·8 ,, |
| 4 | Belgium | 2581·1 ,, |
| 5 | England | 2259·4 ,, |
| 6 | Holland | 2051·5 ,, |
| 7 | Jugoslavia | 1347·8 ,, |
| 8 | Czechoslovakia | 1063·2 ,, |
| 9 | France | 846·9 ,, |
| 10 | Finland | 310·2 ,, |

### INDIVIDUAL

| | | | Best | Total |
|---|---|---|---|---|
| 1 | F. Cattaneo | (I) | 31 : 30 | 1906 |
| 2 | B. Schibler | (S) | 28 : 10 | 1840 |
| 3 | H. Tage | (D) | 22 : 41 | 1593 |
| 4 | T. Haslacht | (S) | 18 : 10 | 1183 |
| 5 | L. Van Camp | (B) | 16 : 43 | 1176 |
| 6 | Willi Tauss | (S) | 14 : 38 | 1036 |
| 7 | G. W. W. Harris | (E) | 7 : 51 | 710·2 |
| 8 | M. Bargelli | (I) | 7 : 10 | 658 |
| 9 | J. Hinkegk | (H) | 5 : 42 | 641 |
| 10 | R. Senni | (S) | 8 : 47 | 629 |
| 11 | F. Cattaneo | (I) | 7 : 34 | 625·8 |
| 12 | J. Wingate | (E) | 5 : 09 | 501 |

Monaco included with France in team figures

*Top left : " G.W.W." gets his power model away. Top right: Dutch sailplane going up. Left, top to bottom: Igor Manka shows his Czech sailplane; Morisset of France with his successful model; Beny Schibler of Switzerland adjusts his low-wing sailplane; Manka's super pylon takes off. Right, top to bottom: Finland's Hegelstam with his hard-wood fuselage glider; Italian power model leaving the deck; Danish glider built by Tage Hansen which put up 22: 41; typical Italian sailplane similar to Cattaneo's 31: 30 winner; Jindra of Czechoslovakia sees off the Süper Antares.*

# "FLERS 1947"

BY C. S. RUSHBROOKE

*A view on the tarmac during the concours d'Elegance.*

SOME nine years having elapsed since my last participation in the "annual exodus to Flers," it was with keen anticipation that I booked for the first of the post-war visits. An abortive attempt to fly across in 1946 only whetted my appetite, and the nine additional years to my hoary old age seemed to vanish when the party met at Victoria Station on the morning of June 21st.

Nineteen hardy—and possibly thirsty—souls formed the 1947 contingent, and an abnormally large number of model boxes was to be seen! I even had one myself—and friend Cosh, who was travelling light, didn't remain in that state for long.

A grand crossing took us from Newhaven to Dieppe, where members of the local club took us under their wing and wangled us through the Customs formalities, finally heaving a sigh of relief when we were duly seated in our Ancient Chariot in readiness for the long road section.

Did I say "Ancient Chariot"? That vehicle must have been used by Noah when reconnoitring from the Ark. Suffice to say that a long chapter of accidents included punctures, clutch burning, lack of petrol and water, loss of way, and near loss of one complete box of models! All this, plus a few stops to sample the local vintage, delayed our arrival at Flers until past 3 a.m. on the Sunday morning, and then the fun started!!

It is one thing to arrive in a strange town in daylight, when someone can direct you to your destination, but to land in a small Continental town at 3 a.m. on Sunday, in pitch dark, and with all remembered landmarks blitzed out of existence—well, I ask you . . what would you do, chums?

Finding our way to the station square, some railway workers were roused from their slumbers, and semi-directed us out of the town once more. To cut a long story short, after many further adventures we eventually found Father Amiard (who had just about given us up for lost), and he immediately shepherded us to our hotels on the edge of —— yes, the station square we had left some time earlier!!

A good sleep put us in fettle for the contests staged during the afternoon, and perfect weather topped off things in the hoped-for manner. Many old friends were met, and reminiscences exchanged.

I was roped in for timekeeping, and thus had a good view of the flying, which was of a fairly high standard. The English chaps put up a very creditable showing in spite of somewhat conflicting regulations, the efforts of Allen and Salloway being especially noteworthy. The latter could have done better had he had a clear start at the board, but surrounded by a number of other contestants, all trying to get their motors started (first one to start had the take-off) does not make for steady nerves, and "Sally" had four attempts baulked.

Some misunderstanding had taken place regarding the events, and those of us who took rubber jobs and gliders along were disappointed to find that no contests had been scheduled for them! However, everyone enjoyed themselves thoroughly and got some fun watching the control line demonstrations. Mick Rutherford (our South African companion) made a spectacular flight with his new model, the job bouncing off the deck after two laps and catching fire in a most realistic manner.

Light entertainment (!) was provided by Bunny Ross donning a pair of gas-job wings, and, holding a fast-revving diesel motor in his hands, was led out on a length of half-inch rope to circle round the arena very much "uncontrolled." The crowd of several thousands certainly enjoyed the spectacle, but the owner of the borrowed wings had other ideas when Bunny pranged in pukka style—and cracked the centre section in no uncertain manner! Mad dogs and Englishmen . . .

A most enjoyable dinner wound up the evening, and we retired for bed at around 2 a.m—only to be shook rigid when the bus driver stated that we must leave at six in order to catch the boat from Dieppe! And so it was up at 5 a.m., no breakfast, and once more on the road. After further adventures we arrived in Dieppe in comfortable time to catch the boat, and no-one in the Customs shed to further delay us.

However, having half unloaded the luggage, we were moved on by the railway authorities to allow a train to pull in, and by the time we had gathered our belongings and said goodbye to our sterling driver, a queue of some two hundred travellers was in front of us!

Another perfect crossing brought us once more to the good old White Cliffs, and so home to plenty of sleep to make up for those hours lost but not wasted on this, the first of what I trust will be many post-war trips to Flers. Our thanks go to Father Amiard and others who made our visit possible and so enjoyable, and we may yet bring home that beautiful trophy to grace the offices of the S.M.A.E.

**RESULTS**

**"CLAUDE SALLE" TROPHY**

| | | | |
|---|---|---|---|
| 1. | Fillon | M.A.C.A. | 5·83 |
| 2. | Langloise | Cherbourg | 5·1 |
| 3. | Allen | West Essex | 4·11 |
| 4. | Salloway | Rochdale | 3·8 |
| 5. | Chabot | M.A.C.A. | 3·5 |
| 6. | De Neuflize | M.A.C.A. | 3·45 |
| 7. | Ross | S.M.A.E. | 3·03 |

**CONCOURS D'ELEGANCE**

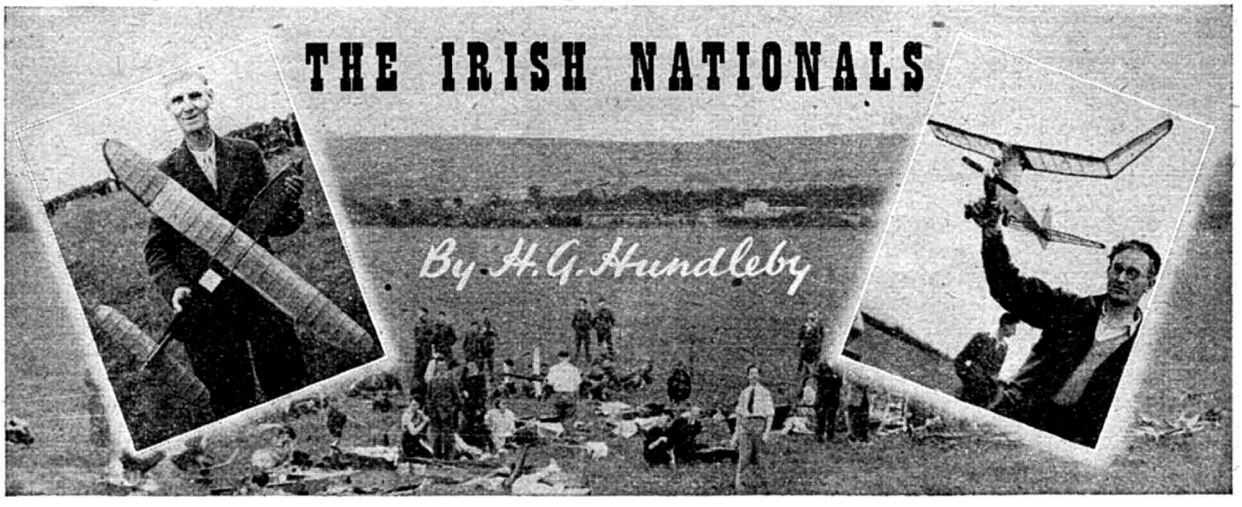
| | | |
|---|---|---|
| 1. | Dartoise | Flers |
| 2. | Ross | S.M.A.E. |
| 3. | Crivelli | M.A.C.P. |

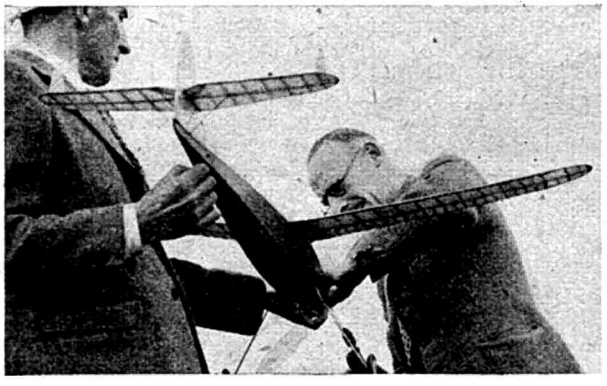
**CONTROL LINE**

| | | |
|---|---|---|
| 1. | Mitan | Cherbourg |
| 2. | Emery | Flers |
| 3. | Crivelli | M.A.C.P. |

# THE IRISH NATIONALS

By H. G. Hundleby





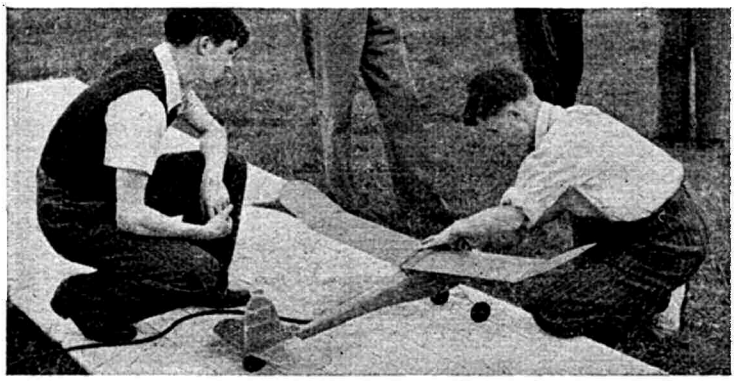
## BALDONNEL AIRPORT 22nd JUNE 1947

JUDGING by the increased number of British competitors this year the popularity of the Irish Nationals is fast increasing and has now been established as one of the season's main events. The S.M.A.E. team under the paternal eye of Fred Hempsall, adopted the pre-war technique of many well-known boxers by going into extensive training on large beefsteaks which evidently served them in good stead, as the final results indicate.

Sunday morning found the usual bustle and activity that invariably precedes a contest. Wakefields were being test-flown and the scream of small motors indicated the power models being put through their paces. Eddie Keil and Bill Dean, with their impressive array of pylon "Slickers," appear to be having difficulty in sorting out the pieces owing to the similarity of their stable. However, an involuntary exchange of a wing now and again appeared to have little effect on the performance of these models.

Very soon Gilbert Row, the controller, called competitors to the control point and explained the rules of the Wakefield Contest and almost immediately the first competitor was off the board. The weather was perfect. Blue sky with scattered cumulus and a light variable breeze. The latter provided a few headaches at the take-off board by virtue of its very frequent changes in direction, an advantage of course, once the models were airborne.

Times were average to start with until Dennis Lees, who needs none of his well-known father's reflected glory, turned in a very pretty flight, disappearing behind the hangars at just over five minutes. After this the tempo increased and outstanding times became commonplace. Gordon Drew, of Belfast, climbing as rapidly as any power model in an amazingly tight turn, recorded nearly four minutes. J. Vincent, of Ulster, produced an out-of-the-ordinary twin



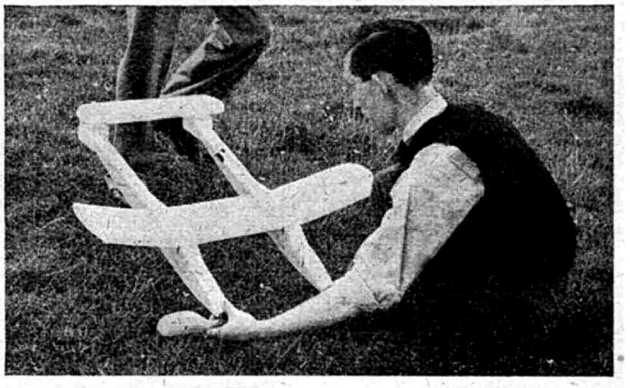
which unfortunately failed to clear the long grass at the end of the take-off strip. Phil Smith of Bournemouth, with an unusual model of extremely high aspect ratio, unfortunately lost same o.o.s. with a flight of over 13 minutes.

By now a succession of substantial times from Bob Copland, G. Salt, R. Hinks and other English flyers were having good-humoured effect on our old friend Billy Brazier, who called, in all the richness of his Irish brogue, upon St. Patrick to invoke his wrath on Ken Young's Wakefield as it climbed steadily upwards to the awaiting thermals. St. Patrick, it appears, was at least in residence at Baldonnel for these few precious moments, as a rubber band promptly parted from the tail assembly with disastrous results. However, not even St. Patrick can keep a good aeromodeller down, and Ken set about rebuilding the front half of his fuselage, completing the job in approximately two hours, and just to give our worthy saint something to dwell upon, finished second in the contest! A word of praise here to C. Corry, a youngster from Sligo, who, with his first Wakefield, a "Flying Minutes," clocked over eight minutes on his second flight alone.

The outstanding performer of the day was that Croydon veteran, J. Pitcher, who thoroughly deserved his ultimate win. With a beautifully trimmed model he certainly had no difficulty in getting right up amongst those Irish thermals; furthermore, he finished up *with* the model in spite of a last flight of over 25 minutes. Space does not permit comment on all the outstanding competitors but it was certainly the prettiest day's Wakefield flying the writer has yet witnessed.

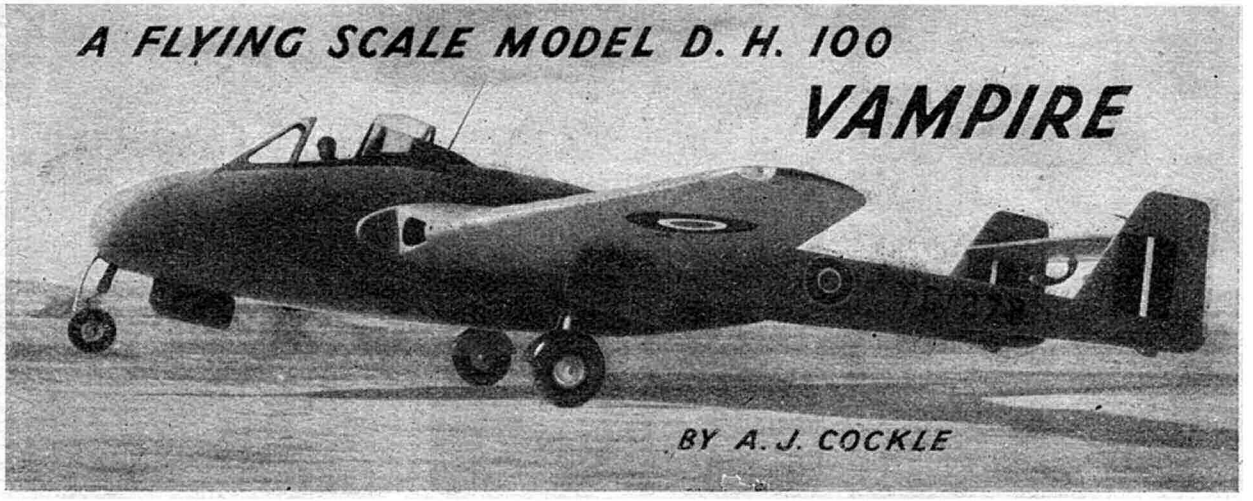
And now for the power contest which started late in the afternoon and was, unfortunately, preceded by a complete change in the weather, known, we believe, as a cold front. Anyway, cold or warm, it dispensed with the thermals and the sky became completely overcast; in fact, viewed through the bottom of a Guinness bottle (as was often the case), it

(*continued on page* 529.)



*Heading picture shows J. Pitcher & Gus Gunter (inset) and general view of Baldonnel field. Other pictures viewed anti-clockwise —Triple finned Wakefield with owner J. Wade, of Sligo. J. Pollard winds assisted by Monty Stuart. G. Drew starts his petrol model. Henry Nicholls launching. Billy Brazier getting his Wakefield away. J. Vincent with twin Wakefield. Doc. Charles with starter Gremlins in his Ohlsson 60. C. Corry with his "Flying Minutes" and finally, left, Ken Young re-building his fuselage, and right 2 hrs. later, the repairs completed, he fits his rubber motor.*

# A FLYING SCALE MODEL D. H. 100 VAMPIRE



BY A. J. COCKLE

A SCALE model when finished should look like the real thing in miniature—how many do? This model looks like a "Vampire," takes off like a "Vampire," and has a scale speed approaching that of its big brother.

The whole model is sheeted, including fins and tail, and the additional weight is more than compensated for by the model's ability to take far more knocking about than the usual flying scale.

Weight without rocket is 12 ozs., giving a wing loading of 7·2 ozs. per square foot (approx.).

It is advised that the sequence of making is strictly adhered to as this will save a great deal of trouble.

**Fuselage.** Formers cut in two halves, cemented and braces cemented top and bottom. Assemble formers in F top and F bottom, and cement; great care needed with F and H for squareness, as main and rear spars of centre section are cemented to these—these spars may be fixed now.

Two $\frac{1}{4}$-in. strips are now placed in cuts in side of fuselage formers. Fix ribs 1 and 3 either side and cement in position leading edges. Make boxes and cement in position, then fix boom spars.

Before going on with booms cement at least four more strips to keep fuselage more rigid. Cement a strip $\frac{1}{4} \times \frac{1}{16}$-in. down either side of booms when formers have been placed in position. Make and fix fin shapes and place fin ribs in position.

Make plywood boxes for undercarriage legs and cement in position, then fix trailing edge to centre section—these pass through the booms. Sheet the whole of the fuselage with $\frac{1}{16}$-in. balsa (medium) then sheet both booms. It is now possible to sheet centre section of wing meeting up with fuselage and booms The sheeting on centre section should be done from ribs 1 and halfway across 2, both top and bottom, and then from ribs 2 to 3. This is necessary because of the different slopes between the ribs.

**Wings.** These are quite straightforward and when spar boxes are fitted both may be sheeted. The drawing shows $\frac{1}{32}$ in. sheet. A better job is made if sheeted with $\frac{1}{16}$ in. and sanded down to $\frac{1}{32}$ in.

**Undercarriage.** Both front and rear wheels are simple in construction.

**Nose.** Laminate and carve roughly to shape. Drill hole in position for front wheel. It is suggested that fuselage and booms are sanded before sheeting the fins.

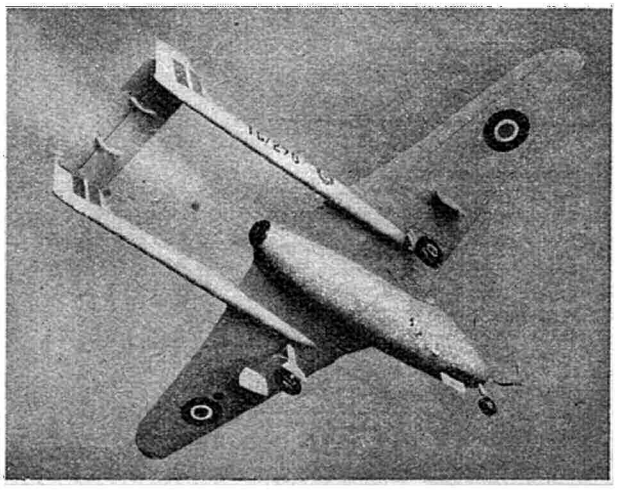
**Fins and Tail.** When fins are sheeted place paper tube to take $\frac{1}{8}$ in. dowelling in position. Make tail-sheet, sandpaper, and cement to fins. Make and sheet elevator, which can then be placed in position and held with two pieces of $\frac{1}{8}$ in. dowelling, which should be a tight fit in both fins and elevator ends.

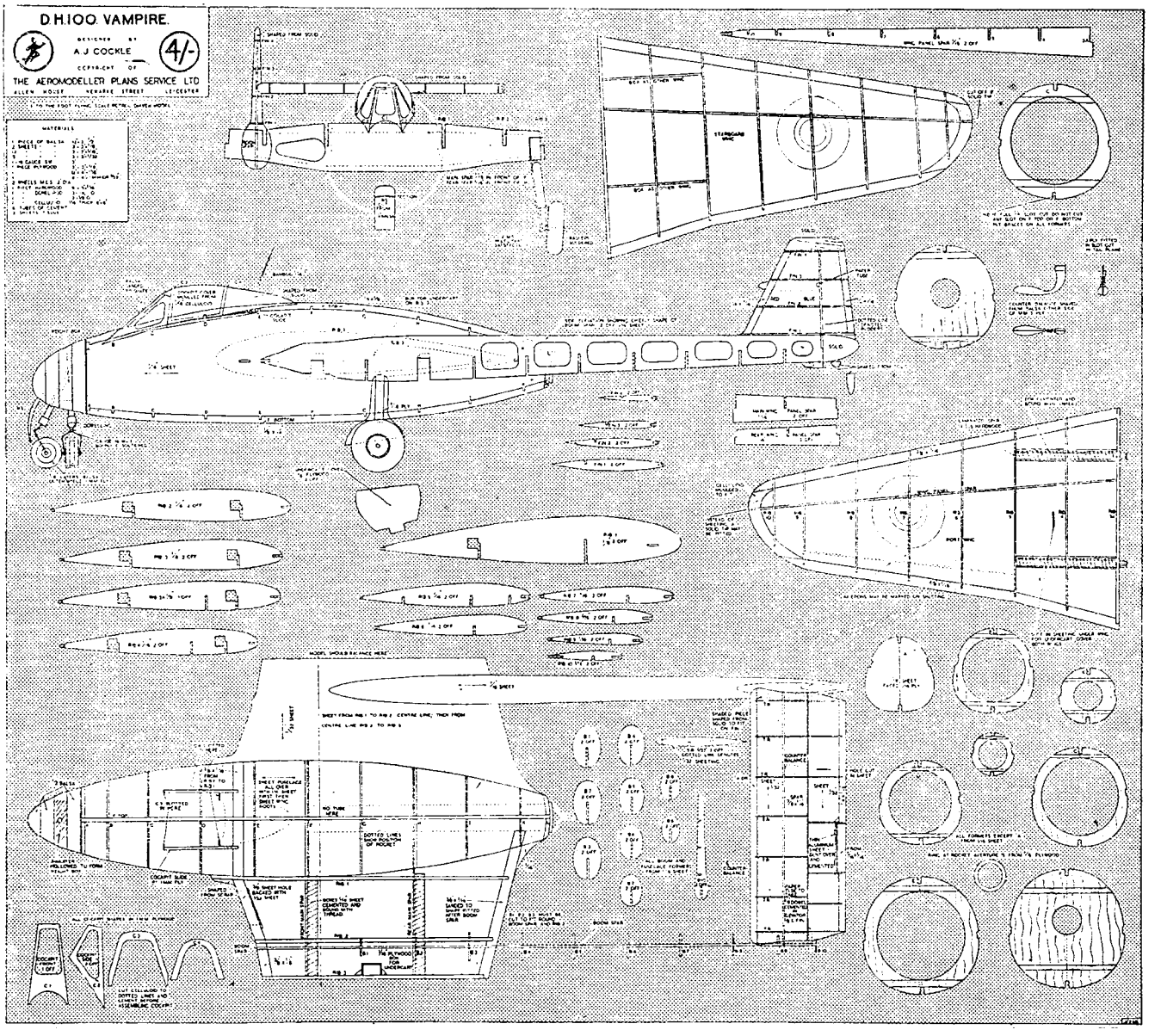
**Cockpit.** This is far more simple than at first appears. Cut pieces of plywood, and cement shaped celluloid pieces at back. Cement front of cockpit in position, then cement two sides. Make up with scrap balsa at top and sand to shape. Carve rear of cockpit from solid and cement in position. Make and cement runners down sides of cockpit, then with sharp knife cut out the inside of cockpit in the fuselage. This makes a neat job and does not weaken the fuselage.

**Spars.** The spars to fit in the boxes should be made in four strips each box. Each strip to be $\frac{1}{4}$ in. $\times$ $\frac{1}{16}$ in. hardwood. These give the necessary "plug" should the wing hit anything first.

**Markings.** No roundels are made commercially this size, and must be hand-painted. Similarly the red, white and blue flash on the fins. The yellow, red, white and blue on the booms can be bought at most modelling shops.

Full-size Plans (see $\frac{1}{8}$th scale reproduction opposite) may be obtained from the Aeromodeller Plans Service for 4/- post free.






## *THE IRISH NATIONALS* (*cont. from page* 527.)

could hardly have been darker. A motor run of 20 seconds was stipulated, with two flights per competitor, and an allowed starting time of three minutes.

Gus Gunter, capping his win in the British Nationals, slow-rolled his amazing " Banshee " vertically into first place. Gus, by the way, uses an Ohlsson motor with a folding airscrew, and, we gather, employs a special " hot fuel " of his own concoction, made up of Pool, 87 octane, ether and castor oil ! Just to prove that pylon jobs are not the only models capable of "hitting the high spots," Bob Copland demonstrated a breathtaking climb with his orthodox high-wing cabin job, gliding home to second place twenty seconds ahead of his nearest rival, Eddie Keil, who placed third with a " Slicker." A word of commiseration to Bill Dean who, on his first flight, reached an astonishing altitude, disappearing o.o.s. after two minutes. Neither Bill nor the model were seen again during the contest ; whether he is still searching the fields around Baldonnel we don't know, but a second flight might have placed him very near to winning. Harry Daulman, always a consistent performer, placed well, and Monty Stewart was the first Irish competitor on the list. Fred Hempsall, with " Black Magic " also gave the " pylon-ites " a run for their money, finishing fifth. There were very few non-starters, but Doc Charles, last year's winner, certainly suffered in this respect and nothing would induce his Ohlsson 60 to start. Petrol models reigned supreme, the first diesel being tenth on the list. This, a new version of the "Leesil," was flown in Trevor London's " Rapier," which would have undoubtedly placed higher had he not exceeded the stipulated motor run on his second flight.

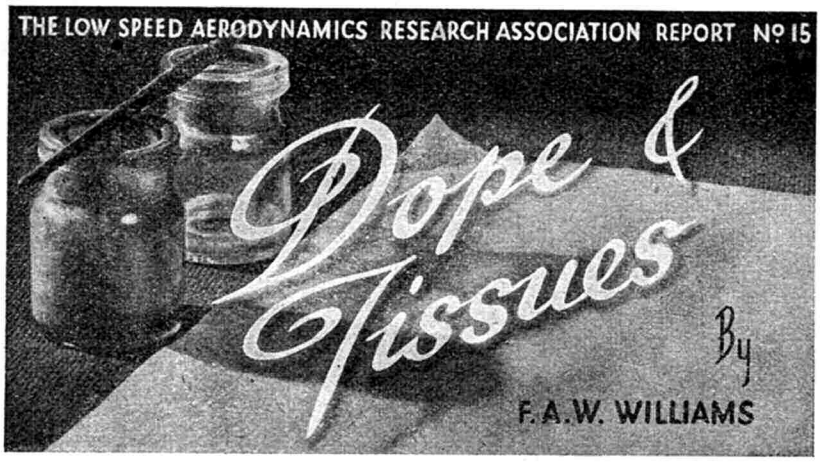
The meeting closed with a presentation of the trophies before competitors and officials returned to Dublin for the usual " get together " that follows the contest.

Our thanks and appreciation are extended to members and officials of the Model Aeronautics Council of Ireland and the Irish Aviation Club for their splendid efforts which served to provide such an excellent day's sport.

**RESULTS**

| WAKEFIELD | Average | POWER | Total |
|---|---|---|---|
| J. Pitcher, S.M.A.E. | 631·4 | B. G. Gunter, S.M.A.E. | 291·5 |
| K. Young, S.M.A.E. | 342·38 | R. Copland, S.M.A.E. | 182·3 |
| R. Copland, S.M.A.E. | 314·9 | E. Keil, S.M.A.E. | 164·8 |
| D. G. Lees, S.M.A.E. | 250·0 | W. Dean, S.M.A.E. | 139·2 |
| G. Salt, S.M.A.E. | 230·6 | F. Hempsall, S.M.A.E. | 114·4 |
| C. Corry, SLIGO | 226·1 | B. M. Stuart, D.M.F.C. | 113·0 |

*Best Irish Design* : (Wakefield) G. Drew, B.M.F.C. 171·6




The data in the accompanying article is abstracted from L.S.A.R.A. Report No. 15. The complete report gives in addition extensive tables of varying weights with selected commercial dopes on test, percentage increases in weight, absorption tables and tissue strength tables under standard conditions. The author devised a series of frames for these tests, and employed a modified version of the Finlayson Scale (described in "Aeromodeller," July, 1941). A special tissue strength testing board was also rigged, using a coil spring for tensioning tissues to breaking point.

Readers desirous of studying the full report and many others of considerable interest to aeromodellers are invited to get in touch with Mr. N. K. Walker, Low Speed Aerodynamics Research Association 9, Alexandra Rd., Farnborough, Hants, for details of membership and publications.

CASUAL investigations by the author into the weight of a Wakefield model when re-covered and re-doped revealed so surprising, and indeed, shocking, an increase in weight, that he decided a more exhaustive investigation would be justified. As a result of this accidental discovery careful research over a period of months enables some most interesting conclusions to be drawn. In addition to weight problems, comparative data of all sorts was gathered on the principal tissues both readily available and in short supply.

Results of the experiments with dopes and tissues shows wide variation in weight. Bamboo Tissue (N.B. *Tissue* not Bamboo Paper) proved best on all counts. It weighed least undoped; it absorbed less dope than others; and was stronger across the grain before *and* after doping. Undoped it was five times as strong as ordinary Superfine (Jap) across the grain but only 60 per cent. as strong with the grain. Because of this strength across the grain it has a very great advantage over other tissues *when used singly*. This advantage largely disappears if double covering (grains crossing) is used. Double covering when doped is NOT twice as heavy as single covering. Doping twice does not increase the strength by any appreciable amount. Double covering and doping without wrinkles is very hard to do, and the writer has not yet found an entirely satisfactory method. Wrinkles spoil the surface and therefore the airflow, and fill with dope and add weight.

It would seem that what is needed for aeromodellers is a tissue that is either grainless or be made up of two thicknesses of very fine tissue so that it has a tensile strength in any direction of at least 30 lbs./inch. The "utility" English tissue was grainless but gave very poor results owing to lack of elasticity under loads.

It will be noted that the ordinary amount of damp in tissue from the air is of the order of three to four thousands of an ounce per sq. ft. Weight dry is when ironed.

Varnish is six times as heavy as dope, and so-called varnish-dope is three times as heavy. The finish obtained is wonderful, but the price in added weight, terribly high. Varnish more than *doubles* the weight of covering and doping and adds only a little strength; even glossy dope-varnish adds 83 per cent. or 60 per cent. if used in place of second coat of dope. If used instead of dope it is 47 per cent. heavier than two coats of dope.

Since the area of doped surface on an ordinary Wakefield model is in the neighbourhood of 6¾ sq. ft., making a ten per cent. allowance for overlaps, it will be appreciated that tissues and dope play a very large part in the all up weight of a model. The table given below summarises some of the more important and useful findings of the investigation. Pre-war favourites such as superfine and bamboo tissue are now quite unobtainable in the shops but it is surprising how many modellers still possess a carefully guarded hoard.

COMPARATIVE WEIGHTS OF TISSUES—DOPED AND UNDOPED

| Colour | Grade | Ply | Weight, Dry (Ironed) | Weight, Damp (Natural) | Doped Once | Doped Twice | Glossy Dope/ Varnish | Plain Varnish | Weights of Dope | | | | Total Wt. Added |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 1st Coat | 2nd Coat | Dope Varn. | Varnish | |
| Orange | Bamboo Tissue | 1 | 34 | 37 | 40 | 47·5 | | | 6 | 7·5 | | | 13·5 |
| Orange | Bamboo Tissue | 2 | 68 | 74 | 79·5 | 92·5 | | | 11·5 | 13 | | | 24·5 |
| Yellow | Superfine | 1 | 39 | 42·5 | 50 | 65 | 119 | | 11 | 15 | 53 | | 80 |
| Yellow | Superfine | 2 | 83 | 89·5 | 98·5 | 108 | 164 | | 15 | 10 | 55 | | 81 |
| Blue | Superfine | 1 | 37 | 40 | 44 | 49 | | 131 | 7 | 5 | | 82 | 92 |
| White | Utility English | 1 | 70 | 77 | 79 | 90 | | 200 | 9 | 11 | | 110 | 130 |

All weights given in one-thousandths of an ounce for one square foot of tissue.


## 1946 PILCHER CUP WINNING LIGHTWEIGHT SAILPLANE

ORIGINALLY designed in the middle of January 1946, construction, though started immediately, was delayed somewhat so that eventually the machine was completed just two days prior to the Pilcher Cup Contest. A test flight on the morning of the competition resulted in the machine being lost in the mist prevailing at the time, and it was only recovered after an intensive two hour search. Its three contest flights were extremely consistent, all being of just over three minutes in duration with barely a ten second variation between the times,—this proved sufficient to win the competition, which incidentally was run under the S.M.A.E. Area Centralization Scheme.

The machine is in the main quite orthodox, employing as it does the high wing polyhedral type layout with dihedralled tailplane. The fuselage shape and construction is, however, slightly unusual and is my way of complying with the fuselage formula yet still retaining reasonably slim proportions. Medium quality balsa is used throughout the construction so let's start with the—

### Fuselage.

First cut out the four pieces of 1/32 in. sheet, which take the place of cross struts in the greater part of the fuselage; the size of these pieces is 252 long by 13/16 in. wide, tapering to nil—this taper, by the way, is a straight one. Next pin down the 3/32 sq. balsa longerons, being careful to cut the taper at the rear very accurately. Cement in the 1/32 in. sheet balsa panels and add the cross struts in the normal manner. Build two sides in this fashion and when set remove from board, sand smooth and proceed to join same with the cross struts adjacent to former No. F2. Add the third 1/32 in. sheet balsa panel and this is the stage at which the 18 s.w.g. wire tow hook should be fitted and bound in place. Former No. F2. should now be cemented in position and the last panel of 1/32 in. sheet can be fitted in. Add the remaining cross struts and former No. F1, fill in the entire nose with 1/16 in. sheet balsa panels, carve a nose block, securely fix the 1/8 in. sq. hardwood skid and sand the whole assembly smooth. You now have the basic fuselage. Add formers F3 and F4, obtaining the correct angle by using the gussets shown, secure the 1/8 in. sq. balsa runners to the formers and bind the 18 s.w.g. wire wing retaining hook in place, cover sides of pylon with 1/32 in. sheet balsa, build up cabin framework from 3/12 in sq., add wing retaining dowel, wing mounts and also tailplane mount, not forgetting the piece of 1/8 in. sheet to correct the datum line. Cut out the sub rudder and cement in place, the tailplane retaining dowel also being fixed in position at this stage. After sanding smooth, cover the fuselage with tissue, the cabin of course being covered with celluloid. Dope and apply several coats of Banana Oil, lightly sanding between each coat. Finish off by applying two coats of coloured dope, the colour used being left to individual taste.

**The Fin** being straightforward needs no explanation, merely see that it is securely cemented to the fuselage, cover with tissue, water spray and apply one coat of clear dope.

### Wings.

The construction of these is quite simple and should present no difficulties, make certain however that the aerofoil section is accurately cut, the L.E. carved correctly, and also rather important, the dihedral joints securely and strongly made. Cover with lightweight tissue, spray with water to tighten and give one coat of good quality clear dope.

### Tailplane.

This is also very simple, it should be noted that the ribs are not slotted into the L.E. but merely rest on top of it. Cover with lightweight tissue, water tighten and give one thin coat of Banana Oil.

Trim by adding weight in the form of lead shot to the weight box in the nose, until a perfectly flat glide is obtained. All up weight should be six ounces, giving a wing loading of three ounces per square foot.

### Full Size Plans.

These may be obtained as usual from Aeromodeller Plans Service, Allen House, Newarke St., Leicester, price 3/- post free. A one-third scale reproduction is printed overleaf.

# FUGITIVE MK. I.

DESIGNED BY

D. C. BUTLER.



THE AEROMODELLER PLANS SERVICE.

ALLEN HOUSE, NEWARKE STREET, LEICESTER.

3/-

A 50" WING SPAN SAILPLANE.

**PERFORMANCE**

TIMES OF THREE CONSECUTIVE NON THERMAL FLIGHTS ARE AS FOLLOWS:-
3 MIN 22·0 SEC. 3 MIN. 10·5 SEC. & 3 MIN. 10·0 SEC.

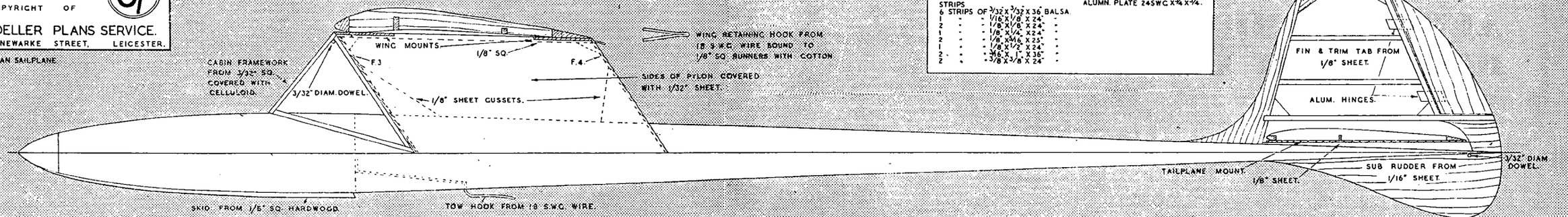
**FINISH.**

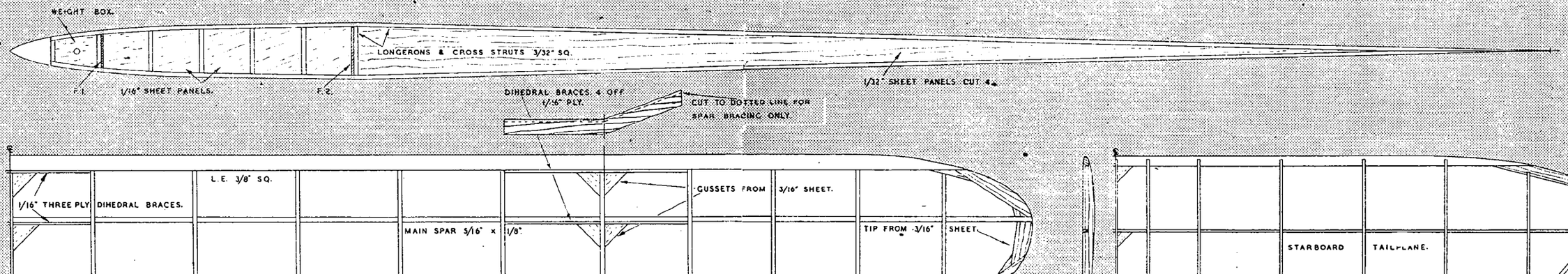
ALL SURFACES COVERED WITH LIGHTWEIGHT TISSUE & GIVEN ONE COAT OF CLEAR DOPE EXCEPT TAILPLANE WHICH IS GIVEN ONE THIN COAT OF BANANA OIL. FUSELAGE IS GIVEN TWO COATS OF COLOURED DOPE, TO TASTE.

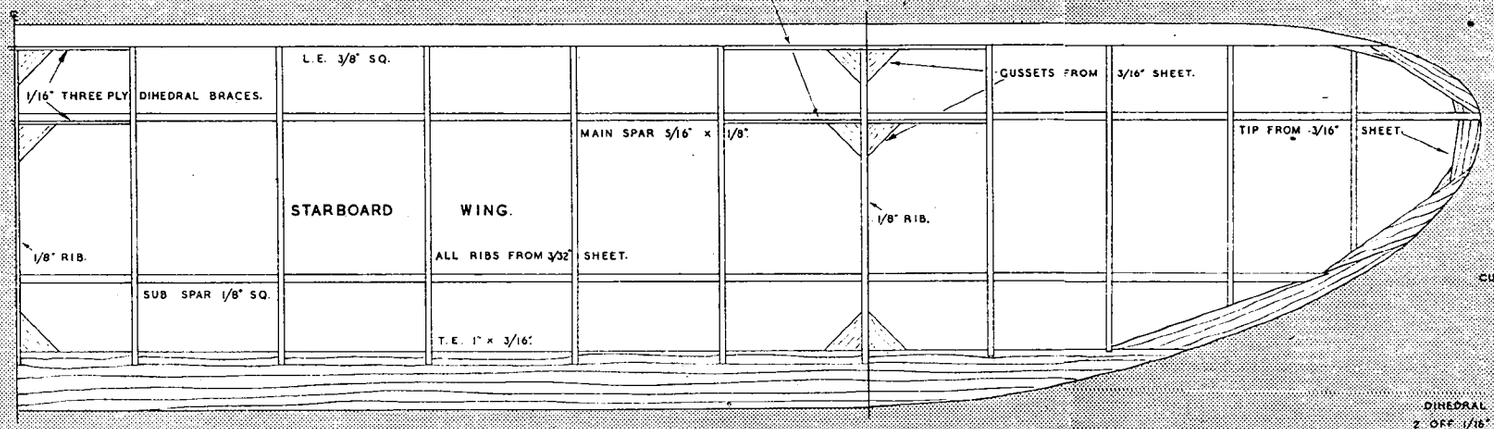
**MATERIALS REQUIRED**

| | | |
|---|---|---|
| SHEET | | |
| 2 SHEETS OF | 1/32" X 3" X 36" | BALSA. |
| 1 " " | 1/16" X 3" X 48" | " |
| 1 " " | 3/32" X 3" X 36" | " |
| 1 " " | 1/8" X 3" X 18" | " |
| STRIPS | | |
| 6 STRIPS OF | 3/32" X 3/32" X 36" | BALSA. |
| 2 " " | 1/16" X 1/8" X 24" | " |
| 2 " " | 1/8" X 1/8" X 24" | " |
| 1 " " | 1/8" X 1/4" X 24" | " |
| 2 " " | 1/8" X 3/16" X 25" | " |
| 1 " " | 1/8" X 1/2" X 24" | " |
| 2 " " | 3/16" X 1" X 36" | " |
| 2 " " | 3/8" X 3/8" X 24" | " |

MISCELLANEOUS
1/16" PLYWOOD 6" X 6"
HARDWOOD DOWEL 3/32" DIA X 2"
HARDWOOD BLOCK 1" X 1"
8" X 18 S.W.G. PIANO WIRE.
ALUMN. PLATE 24 S.W.G. X 3/4" X 3/4".



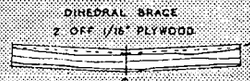



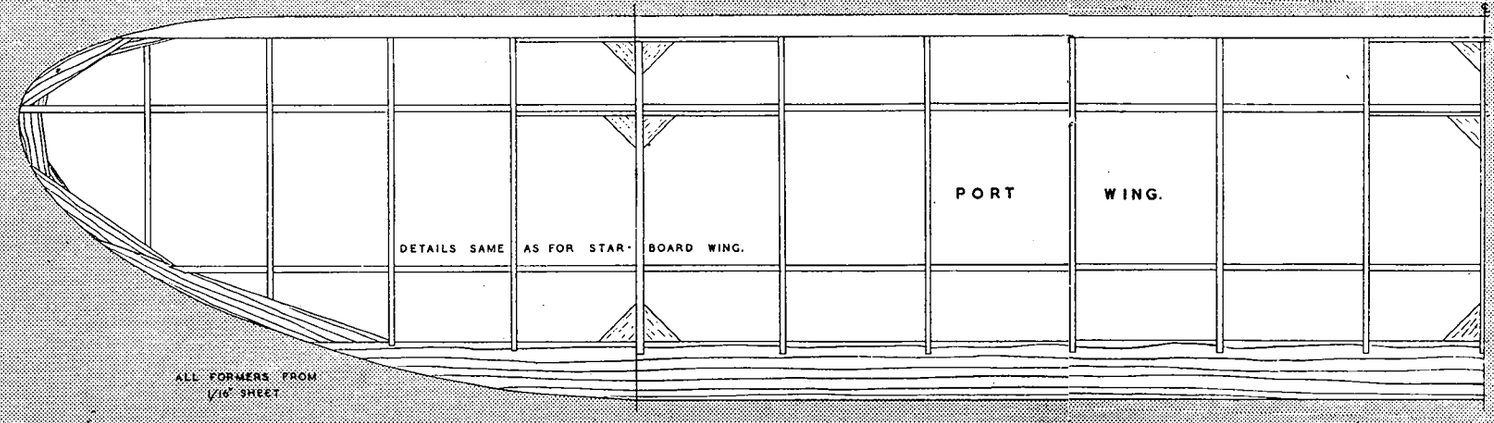



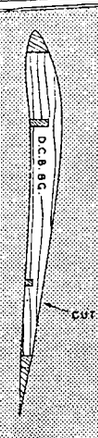


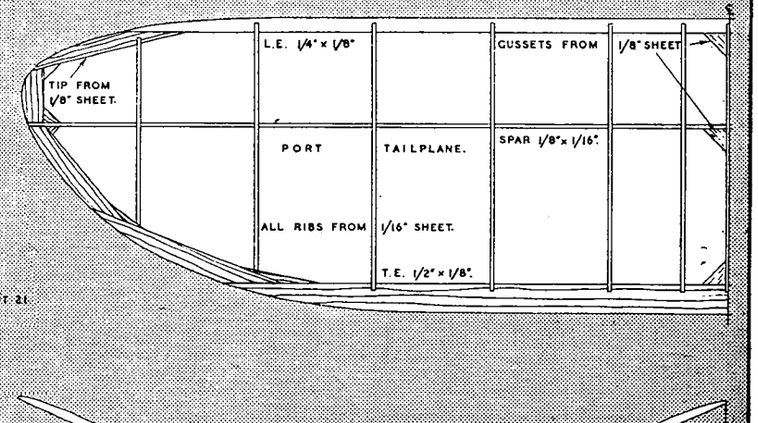


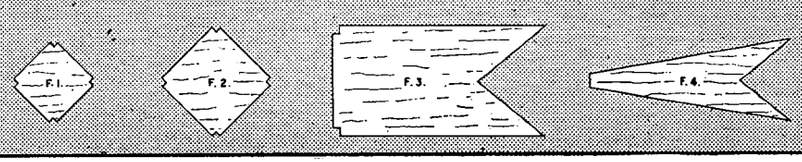
ALL WOOD SPECIFIED IS BALSA UNLESS OTHERWISE STATED
TOTAL WEIGHT IN FLYING TRIM IS 4 OZS.

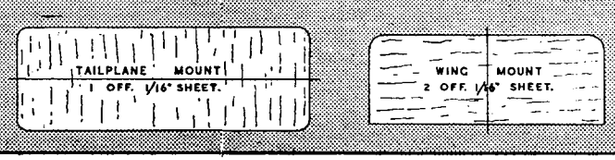


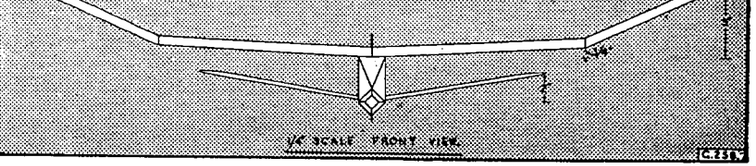




C.251

# AERODYNAMIC DESIGN PART X

BY JOHN HALIFAX

**Wing Aspect Ratio.**

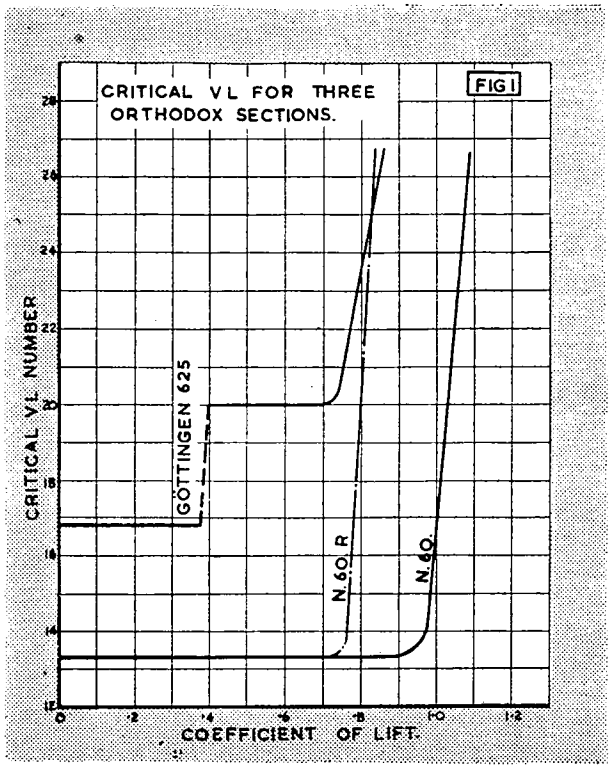
A glance at the accompanying *Nomogram* (*not* "Nomograph") shows that if airspeed, wing area, and "critical VL" are known, the optimum A.R. follows automatically. So the procedure for obtaining the best wing setting is as follows:—

1. Having made in the first place a provisional estimate as to the probable weight of the projected model and knowing its general size, estimate its flying speed. This is by no means as difficult as it sounds for a designer with any experience at all, and even if the guess is in error, it will not materially affect the final result.

2. Choose an aerofoil section. Since there is no transition ("jump up" in performance) with laminar flow sections there can be no critical "VL" (*i.e.*, that VL at which the jump occurs), and therefore this method is not suitable for wings of these sections. Laminar and turbulent flow sections will be dealt with separately next month.

3. Obtain $C_L$ for maximum performance and the critical VL for this value from Fig. 1. A golden rule which theorists have been muttering to themselves for many years, and finally vindicated by N. K. Walker, B.Sc., and Frank Ziac (quite independently) says:—

*For medium-sized models (i.e., 100 sq. ins. to 400 sq. ins. wing area) the maximum power factor occurs at the stall. Thus, any calculation is quite superfluous.*




Bearing this in mind, it is obvious that optimum $C_L$ occurs just as the line begins to curve upwards for section N.60 (Fig. 1) for ordinary models, and is equal to 0·9. For larger machines where VL is greater, the optimum $C_L$ occurs in the curved section of the graph: in both cases the wing should be so rigged on the actual model that the $C_L$ for normal horizontal flight is from 0·15 to 0·2 less than this, for obvious reasons.

4. Determine the optimum Aspect Ratio for the wing. If the Nomogram is used, the actual flying speed must first be obtained from the formula:

$$V = \sqrt{\frac{7{,}500\ W}{C_L\ S}} \quad \text{..... equation 1}$$

Where W = weigh of model in ounces (already decided upon)
$C_L$ = coefficient of lift of wing (also decided)
S = wing area in square inches.

A quicker method is provided by the use of an alternative form to the formula on which the A.R. Nomogram is based, which gives:

$$AR = \frac{W}{\cdot 019\ C_L\ (VL)^2} \quad \text{..... equa ion 2}$$

Where W = model's weight in ounces
$C_L$ = coefficient of lift
(VL) = critical VL number. (Fig. 1.)

**Example.**

Before going any further into this subject, let us apply our newly-won knowledge to a practical example. Suppose we wish to construct a sailplane of 400 sq. ins. wing area whose total weight is to be 12 ozs. Following the steps given above:—

1. From the two values given, it is obvious that the wing loading is something a little over 4 ozs./sq. ft.—a fairly low figure when one considers that the value for a Wakefield model is approximately 6 ozs./sq. ft. So, as a provisional estimate, we will take the flying speed as 20 ft./sec.

2 and 3. For a machine of the size we are considering, the section N.60 should prove suitable. From Fig. 1 we see that the critical VL over the working range is 13·3, and that the maximum coefficient of lift for this figure is 0·9. Thus a safe value for our machine should be $C_L = 0{\cdot}75$. (*Note*—If we wished to lay the emphasis on stability we should take an even lower value; as it is, 0·75 is a compromise between stability and maximum performance.)

4. Using equation 2 to find optimum Aspect Ratio, we get:

$$A.R. = \frac{12}{\cdot 019 \times 0{\cdot}75 \times (13{\cdot}3)^2}$$

$$= \frac{12}{2{\cdot}6}$$

$$A.R. = 4{\cdot}62$$

Checking the flying speed from the Nomogram, we find it must be 17·5 ft./sec.

As a matter of interest, notice the effect of increasing the weight by 50 per cent.

$$A.R. = \frac{18}{2{\cdot}6}$$

$$= 6{\cdot}92$$

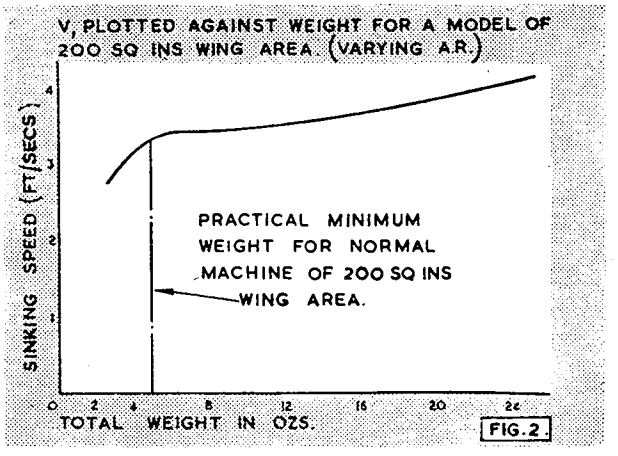
from which it is obvious that A.R. increases linearly as the weight. Notice also that the overall efficiency of the second machine will be greater because of the reduction in induced drag.

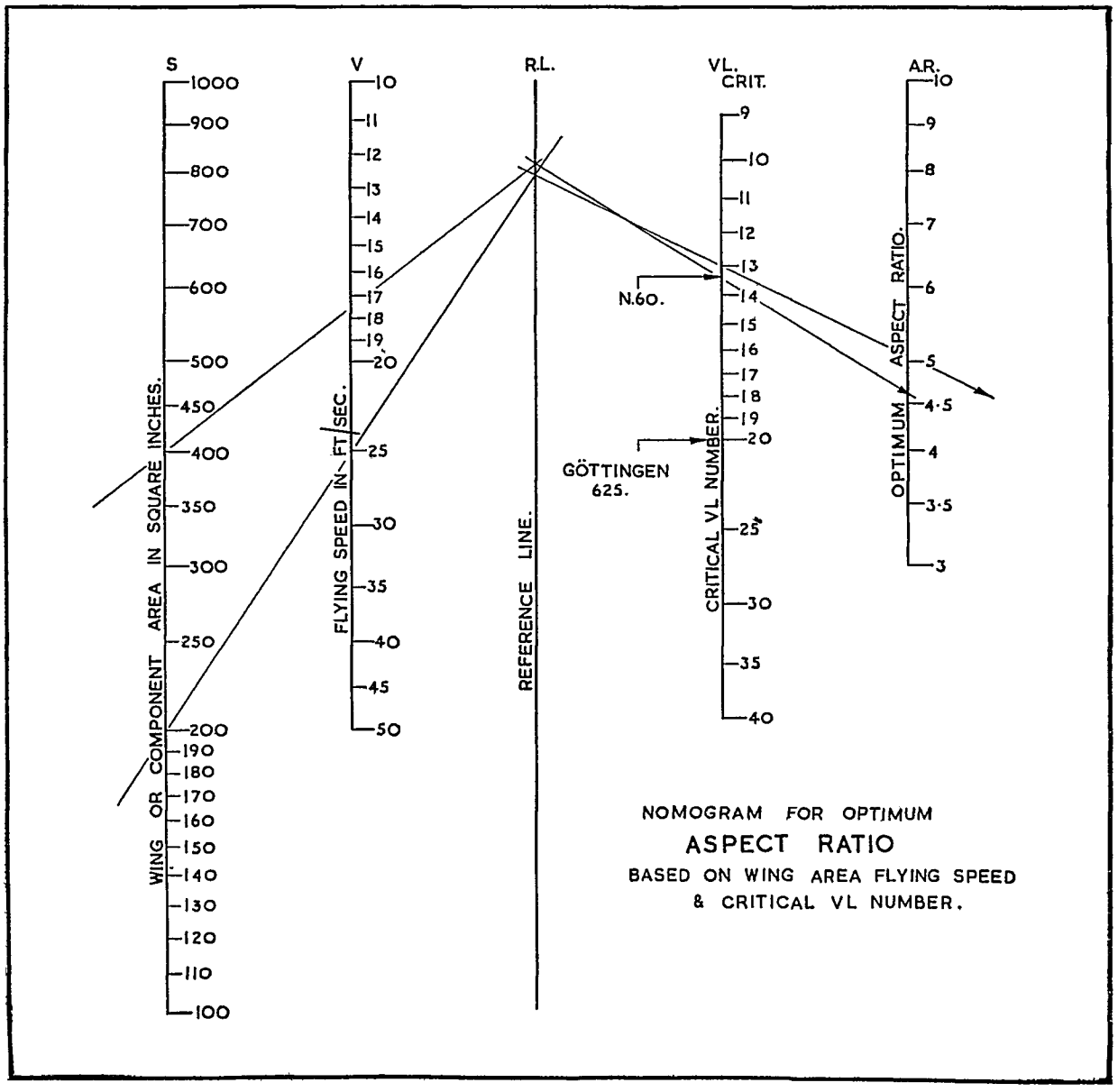
This increase of efficiency with weight is a very interesting point, and one that will bear further investigation. Fig. 2, which refers to a machine of fairly high drag, shows that *doubling the weight results in only a small increase in sinking speed, providing the Aspect Ratio is altered in accordance with equation* 2.

Suppose, for instance, the machine for which Fig. 2 was drawn weighs 6 ozs. Then the sinking speed $V_8$ will be 3·45 ft./sec., and in *still air* it will take 29 seconds to reach the ground if released from a tow-line 100 feet up. If the weight is doubled it will take 28 seconds, a sacrifice of one second for greatly increased strength and robustness. Moreover, since the finish of the heavier model would be considerably better, it is quite possible that the performance would be improved in practice.

So don't worry about the total weight of your sailplane.

In conclusion, notice that the A.R. Nomogram may be used for tailplanes, fins, and unorthodox models, where equation 2 is not applicable.



# TENSIONING OF RUBBER MOTORS

By R · H · WARRING

AS a general rule, best results are obtained from rubber-driven models when the length of the motor is approximately equal to the wing span. Where the model concerned has an unusually high or low aspect ratio a better definition is given by :—

Length of motor = 8 to 9 times the average chord.

Such a length of motor as defined above has been found to give an optimum performance, but this length is always considerably longer than the fuselage. The actual distance between the front hook and rear anchorage in a fuselage is usually not much more than one-half the wing span—*i.e.*, about one-half the length of the motor. This does not matter when the motor is wound up, for the turns on the motor will keep it taut between hooks, but some method *must* be used to prevent the rubber from laying about unevenly in the fuselage when the motor is unwound.

There are two basic methods of tensioning a motor, both working on the principle that the motor must never be allowed to unwind fully in the model. Sufficient turns are thus retained to keep the motor taut between front and rear anchorages, so that the trim is not upset on the glide.

Although a tensioned motor does not give out all its turns, this method is not wasteful. The power output from a rubber motor drops off from the very beginning and the latter portion of the power run is, in any case, " useless," for the thrust developed via the propeller is then insufficient to maintain height. In tensioning, some of the " useless " turns are made to do useful work. Rubber tensioning, originated in this country, and no-one to date has improved on British practice.

### Mechanical Tensioner.

The original method of tensioning was mechanical, the principle of the action being shown in Fig. 1. It will be seen that the propeller shaft is fitted with a *stop* which engages a pin on the rear face of the noseblock in the forward position. A *spring* is used to move the shaft to this forward position.

When the motor is wound up the tension in the motor itself overcomes the action of the spring, so that the propeller shaft is pulled to its rearward position, where it remains until the motor tension has slackened right off and the spring comes into action again (*i.e.*, when the motor is nearly unwound). In its rearward position the *stop* is clear of the *pin* and hence the shaft revolves freely.

The strength of the spring must be adjusted so that the stop engages with the pin at the correct time—not too soon, when a certain amount of " useful " turns might be lost ; and not too late, when there is insufficient tension left in the motor to keep it taut. The usual method is to use a spring of approximately the right strength and make final adjustments by altering the length of the pin.

Chief advantages of the mechanical tensioner are :—

(i) Optimum performance—the minimum amount of turns lost in tensioning.

(ii) Positive performance—once correctly adjusted it will always cut-in at the right time.

(iii) Adaptability—this method is ideal for use with a folding propeller when the propeller may be locked to the shaft and thus stops with it. This means that the propeller always stops in that position best for folding (usually alongside the fuselage), once this has been adjusted. Mechanical tensioners are almost invariably used when a folding propeller is employed.

(iv) Motor size—with a mechanical tensioner it is relatively easy to add an extra one or two strands as may be required, or make up a motor with an odd number of strands.

Main disadvantages are the extra work involved—the chief points to observe being detailed below—and the fact that the motor must always be stretch-wound since tension is required on the motor to disengage the stop.

### Detail Design.

### The Stop and Pin.

Where a relatively weak motor is employed an 18 s.w.g. wire stop can be employed, soldered securely to the propeller shaft. The pin can also be of 18 s.w.g. wire, bent as shown in Fig. 2 and pushed through the noseblock and well cemented. Adjustment is given by trimming off the pin as necessary.

With a motor equivalent to 8 strands of $\frac{1}{4} \times 1/30$ strip, and upwards, something more rigid is required. The more powerful the motor the more strain on the stop and pin during engagement. Where insufficient attention is paid to this detail it will be found that the pin itself works loose. The stop, too, may tend to come unsoldered, but a well-soldered stop of 18 or 16 s.w.g. wire will accommodate a motor of 12 strands of $\frac{1}{4}$ strip. Above this it is recommended that the stop be bent integral with the shaft and provision made to bind or lock this to prevent flexing under load—*see* Fig. 2.

A countersunk wood screw should be used for the pin on the more powerful motors—adjustment being given by screwing in or out as required. This screw should locate in *hardwood* or *ply* and be set at an angle to " trap " to stop.

### Spring.

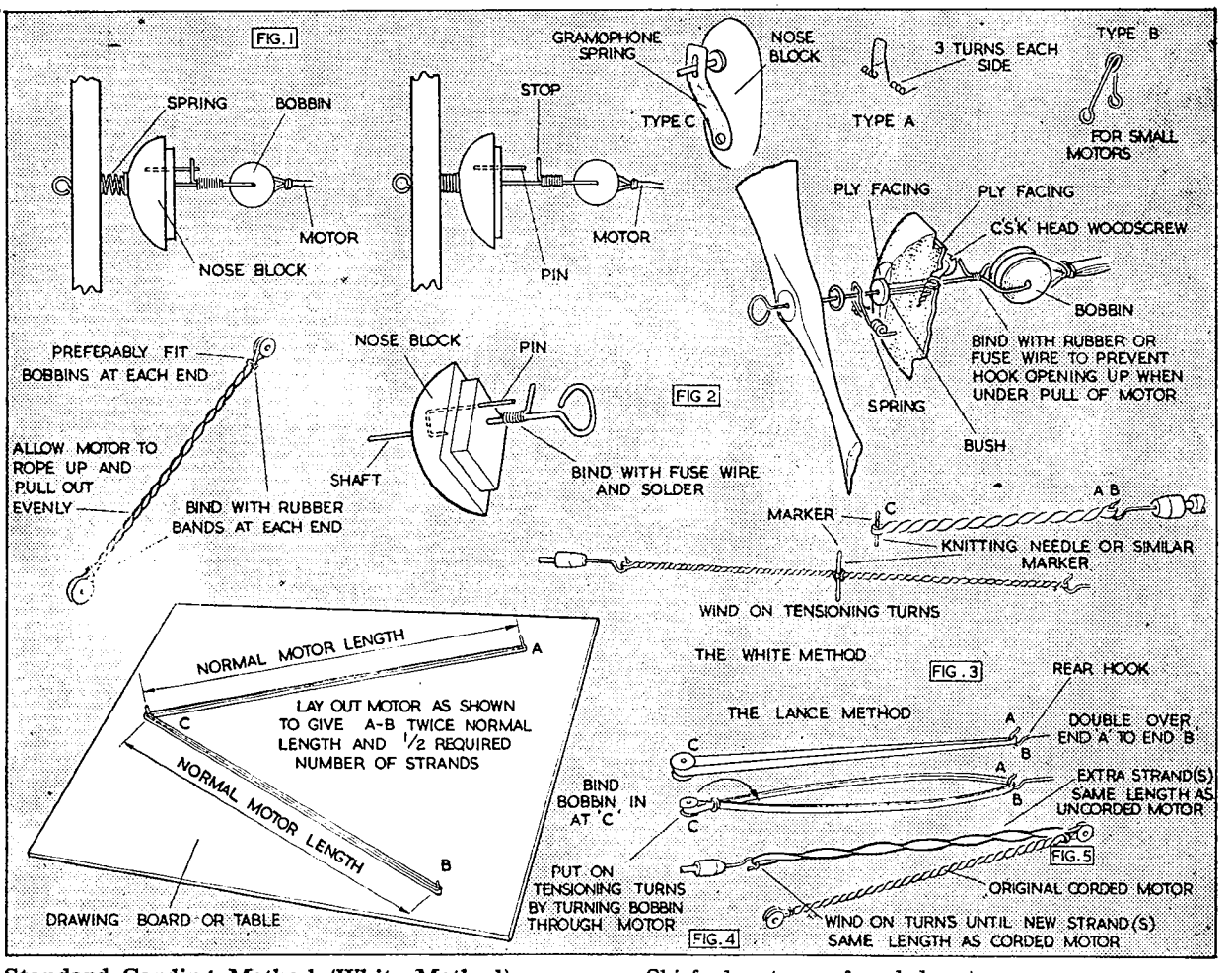
Types and specifications for suitable springs are given in Fig. 2. The simple coil spring is not recommended as it tends to tire more readily than the others and its length of action is unnecessarily long.

### Cording or Roping.

The most commonly used method of tensioning is the " White " method, known also as " cording," " roping," etc. In this tensioning turns are wound on to the motor itself in such a way that they are retained. Hence no mechanical system is needed. Where a free-wheeling propeller is used this method is to be preferred—if only on account of its simplicity—and it has the additional advantage that the motor can be hand wound for short test flights.

There are many variations of the basic method, but straightforward " cording " is almost invariably used. The " Lance " method will also be described as being preferred by some as using less turns in tensioning.

The principle of cording a motor is simply that of taking a motor of *twice* the required length with *one* half the required number of strands and winding a number of turns on this. The motor is then doubled over and allowed to cord or rope itself up—giving the required motor size with tensioning turns already wound in.




**Standard Cording Method (White Method).**

Lay out the motor *twice the required length and with one-half the required number of strands.* It will be seen at once that the number of strands should be divisible by *four* if the two ends are to be knotted together. If the number of strands are divisible by two only, then a separate loop will have to be tied at each end. If an odd number of strands are required the motor can still be corded—one of the loops will have to be bound to the middle during cording—but in such cases it is best to choose an equivalent motor in another size of strip so that the number of strands will be divisible by four, or two.

Fig. 3 illustrates the method. Wind on about three turns for every inch of the *normal* motor length in the same direction as for normal winding. Then bring the two ends together and let the whole motor twist up. Pull out smoothly, the marker being used to determine one end of the corded motor and also to ensure that each plait is of equal length. Bind the two ends of the corded motor with rubber bands.

Once corded, the motor can be pulled out to a length longer than the distance between front and rear hooks in the fuselage, so it can be inserted quite easily without the necessity of tying a string and weight to one end. On running out after being wound, it will tension itself to the required length, provided enough cording turns have been applied. After several windings, however, tension may be lost and the motor must be re-corded with slightly more turns.

Chief advantages of corded motors are :—

(i) Simplicity—no extra weight, no mechanical parts.

(ii) Reliability—no mechanical parts to fail.

Apart from the fact that cording calls for an even number of strands for ease of working, the other disadvantages are : slightly greater loss of energy from motor and reduced maximum turns (compared with mechanically-tensioned motor), and the fact that a motor should not be left in its corded state for more than about a week, otherwise the rubber may be harmed.

**Lance Method.**

This is illustrated in Fig. 4. The motor is made up twice normal length and with one-half the required number of strands, as before, but doubled over as shown *without winding any turns on.* A bobbin is then bound in place.

Tensioning turns are now applied by twisting the bobbin as indicated, applying a sufficient number of turns to obtain the required shortening (tensioning). The motor will tend to form a " rope " as before, having similar properties.

**Corded Motors—Additional Strands.**

Additional strand(s) can be added to a corded motor, as shown in Fig. 5, sufficient turns being wound on to the extra strand(s) to prevent its falling loose. It is then bound in with the original motor. This should only be adopted as a temporary measure when required—*e.g.*, on the flying field—and the motor should be re-made and corded as a whole with the extra strands incorporated at the earliest convenient opportunity.


# THE D.H. 89A DRAGON RAPIDE

By

E. J. RIDING

THE Dragon Rapide was produced in 1934 as the result of experience gained in the successful airline operation of the Dragon and Diana class airliners. Broadly speaking the 89 was a " dragonised " version of the earlier four-engined Diana or D.H. 86. With the addition of small trailing edge flaps extending outboard as far as the first pair of inter-plane struts, the Rapide became known as the Type 89A, and the design has remained the same with few minor alterations to this day. The first D.H. 89 was supplied to Herr R. Herzig, of the Ostschweig Aero Ges, in Switzerland, and the succeeding five machines were registered in Great Britain as G-ACPM to G-ACPR inclusive. Of these the first three went to Hillman Airways and the rest to Railway Air Services.

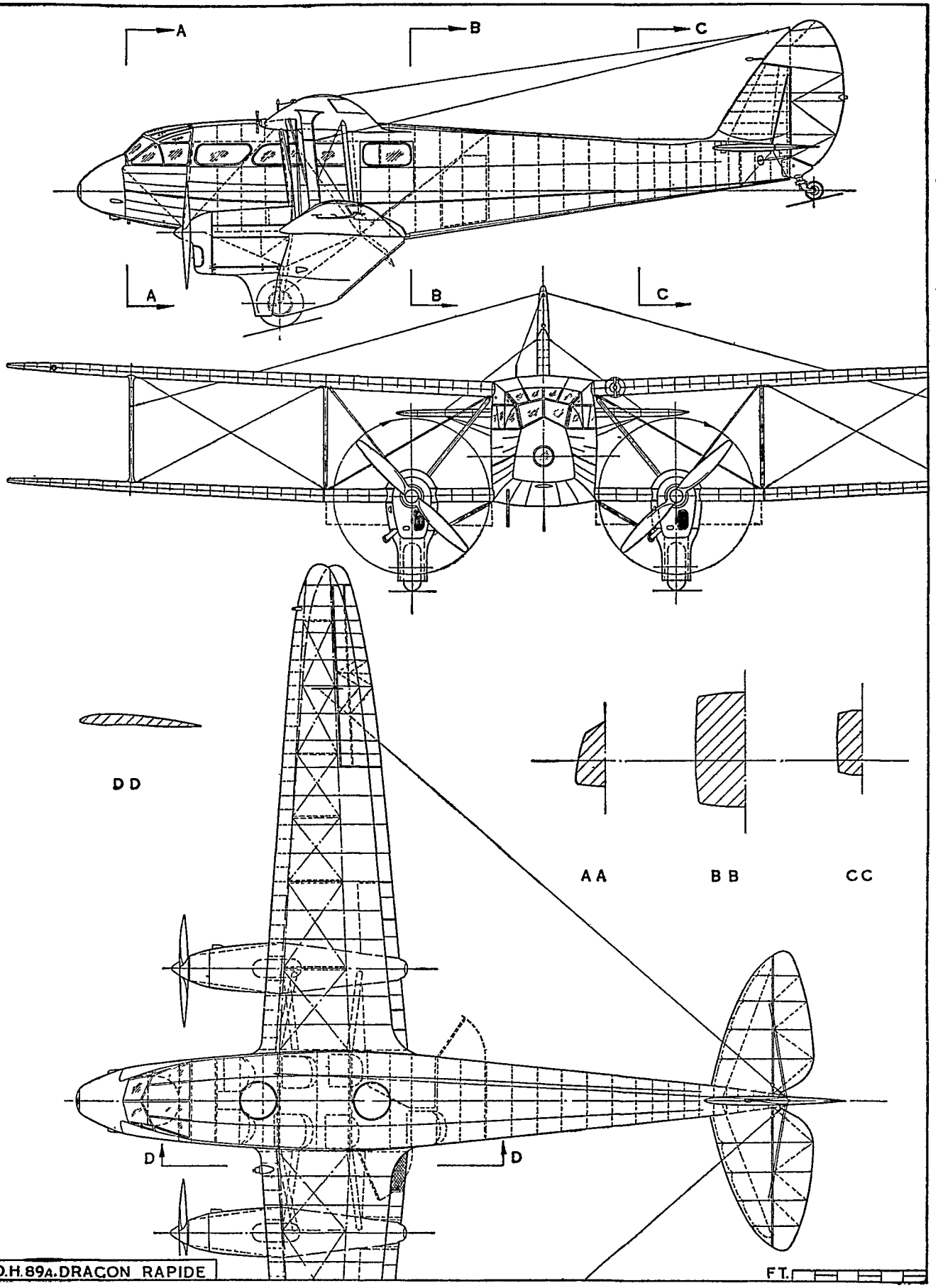
## Specification.

Span : 48 ft. 0 ins. Length : 34 ft. 6 ins. Height : 11.ft. 7 ins. Tare Weight : 3,589 lbs. Max. Weight 5,550 lbs. Max. Speed : 165 m.p.h. Cruising Speed : 140 m p.h. Landing Speed : 63 m.p.h.
Wing Area : 336 sq. ft. Service Ceiling : 19,500 ft.
Price (1934) £3,750
Price (1947) £5,500

The Dragon Rapide can be supplied in three forms—(*a*) with accommodation for pilot, five passengers and 76 gallons of fuel. (*b*) With special crews quarters for pilot and radio operator, cabin for five or six passengers, depending upon whether a toilet is fitted, and 36 gallons of fuel for distances up to 130 miles. (*c*) Pilot, eight passengers (seven with toilet) and 36 gallons of petrol for short distances only. Another version can be fitted with two extra tanks each of nine gallons capacity beneath the rear seats, thus increasing the range to about 700 miles. With full load the Rapide can maintain a height of 4,000 ft. on one engine. Fuel is carried in two 38 gallon tanks situated one behind each engine. Power Plants : Two 220 h.p. six cylinder inverted in-line aircooled D.H. Gipsy V1.

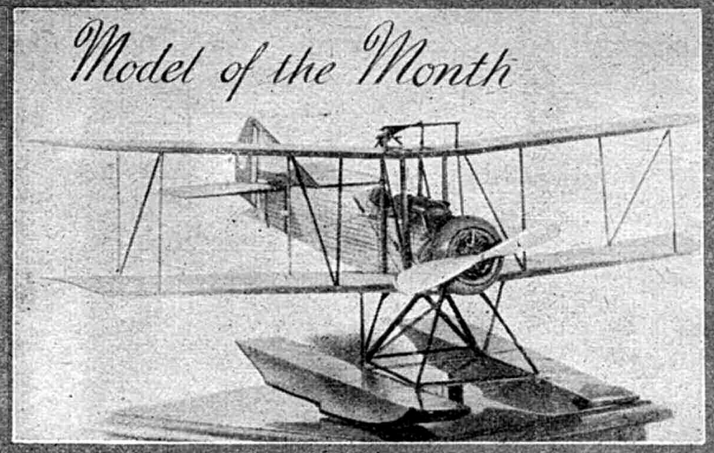
## Colour.

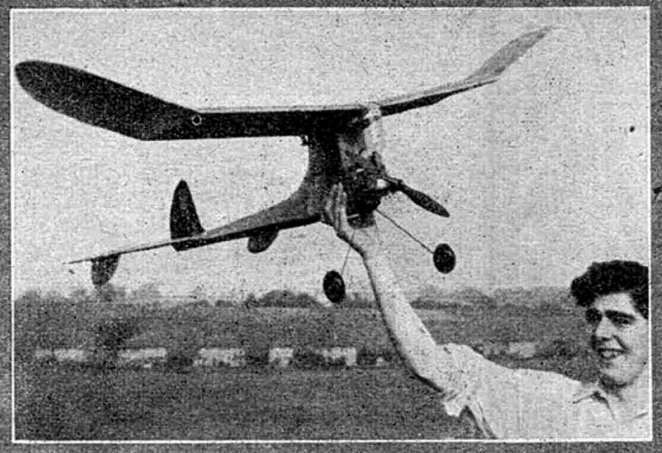
The machine in the lower photograph, taken above 10/10ths cloud near Reading, belongs to North Sea Air Transport Ltd. and is finished in their house colours—maroon and cream, the scheme being amply illustrated in our cover painting this month by C. Rupert Moore, A.R.C.A. The heading photograph shows a Rapide recently supplied to Island Air Charters Ltd.; the colour scheme is aluminium with dark blue letters.

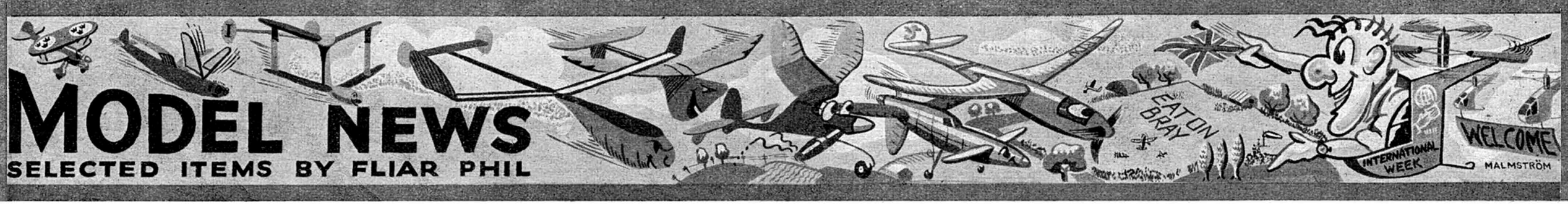



D.H.89A. DRAGON RAPIDE

FT.






FLIAR Phil leaves off practising his only foreign phrase of very dubious meaning to give another issue of gen on the photos picked from the pile for this month's Model News. Although the accent is again on the Continental side (pun unintentional) we have a fair sprinkling of models from the old country.

True blue and British is our Model of the Month, a delightful piece of flying scale modelling by R. D. Chapman, of Southend. Old-timer Westland N.17 is the subject, built to 38 in. span with a weight of only six ounces. Very creditable effort, Mr. Chapman, especially as the model has a detailed cockpit, motor, and Vickers and Lewis guns. Some idea of the quality of both finish and construction is provided by the builder's revelation that the above photo was taken after the model had suffered a severe soaking through water tests with an undersize propeller. Tests are now under way with a larger prop, and Fliar Phil hopes to see some flying shots of the model soon.

Familiar visitor is Pete Brown, of the St. Albans Cement Squeezers, as the club use Eaton Bray most week ends for the advantages of ordinary flying for prizes that "The Bray" offers. The hatchet pylon effort he is holding (top left centre) is a 60 in. job weighing 2¼ lbs. powered by a " Rocket " American petrol engine of 7½ c.c. The semi-cowled engine is interesting, as is the hatchet pylon which is claimed to reduce parasitic drag. What do you say, Mr. Halifax ? The model flew straight off the 18 year old designer's drawing board, consistently clocking 2½ minutes from 15 second motor runs on evening flights. Good work, Pete. Here's luck in International Week.

International Week last year opened many people's eyes to the fact that flying qualities were not tied up with orthodox or even pleasant appearance. Our foreign friends love of unorthodoxy is again reflected in the photo top centre right, showing a scene at an Italian contest with a large model just after launching for a slope soaring flight. Ideal country for the job, it will be noticed. The extended fin on this particular model is quite common Continental device, although of doubtful advantages.

Another breath of yesteryear in the photo top right, where our old friendly enemy Fillon is seen winding up for the Wakefield event at last year's International. We look forward to seeing him again this year, and our being able to put forward some much stiffer opposition. There are enough good British modelbods now to turn the tables—Fliar Phil will be there to see them do it.

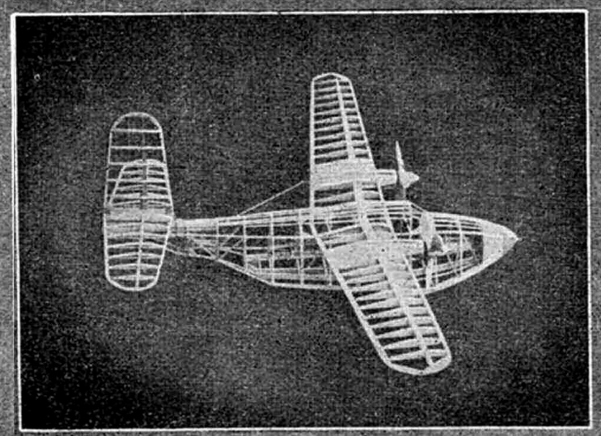
Visitors to Dorland Hall may have observed the model in the bottom left photo in its place of honour in the waterplanes showcase, with its laurels—in this case a label saying Second Prize—hanging round its neck. F. N. Chiffey of Dartford is the designer and builder, and we hope that by now the model will have passed its flying tests satisfactorily. The drive is rather original, being steel wire shafts driving through a gear-box and universal joints, which despite its somewhat peculiar appearance appeared to function quite well. Fliar Phil hopes we may see some interesting water models during International Week, many foreign modellers being fond of these out of the ordinary types.

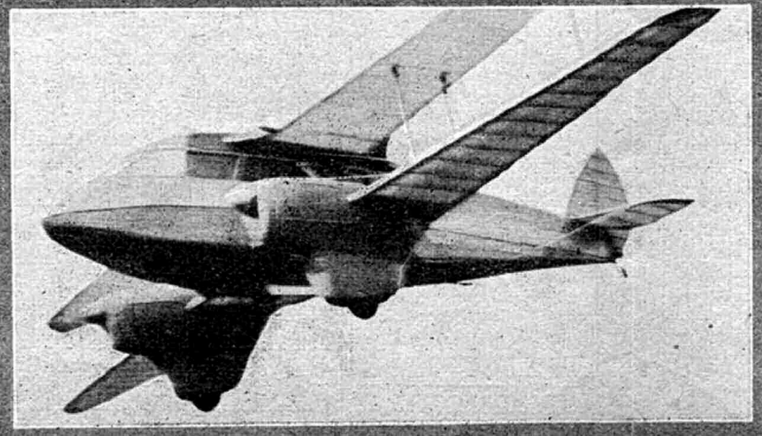
Hats off to the solid modellers, who certainly seem to be excelling themselves in the photography line lately. How about it, you flying types ? Look at the left centre photo below, and once again we have a very nice solid, this time a " Rapide " by G. Taylor of Menston-in-Wharfedale, cunningly photographed with just enough movement to make the model really " fly ". One of the most interesting points about this model is the amount of scale lighting equipment fitted. Two cabin lights, instrument panel light, landing light and full navigation lights are worked from two flat batteries housed in the fuselage, accessible through the floor of the fuselage, which like the rest of the structure is built on flying model lines. Good snap, Mr. Taylor, send some more.

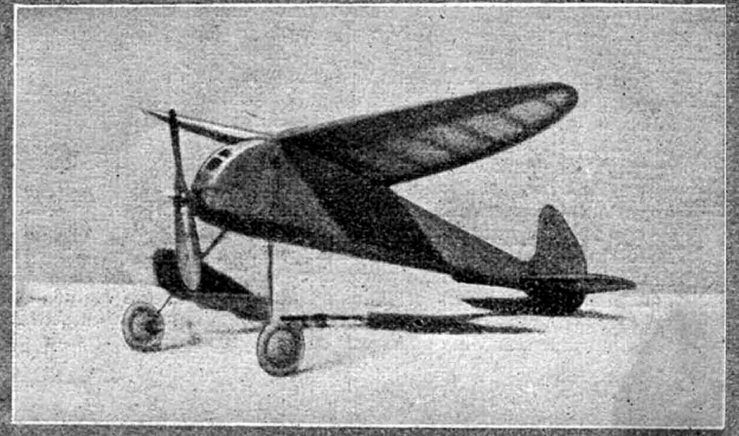
Borrowing from the Boffin for a while, Fliar Phil turns attention to overseas, and produces the photo (bottom centre right), taken in Australia last year, at a big model meeting in the South. We don't know the name of the gentleman, but the flying wing model is certainly unusual in that it has curved leading and trailing edges and dihedral. Washout is obtained by fairly large elevons at the tips. According to our correspondent, the model flies very stably and well, having made consistent placings in many of the contests.

Again from far away is our last photo (bottom right), from W. G. Reed, serving in Italy with the R.E.s. The little diesel model illustrated was built in odd moments out in Naples, where the weather is perfect for flying. Of 26 in. span, it weighs 7½ ozs. and is powered by a little 0·6 c.c. diesel of Italian make which gives no trouble at all.

The wheel turns full circle, and Fliar Phil dashes back to his text books . . . *au revoir, mes amis !*







# AIRCRAFT in MINIATURE

## PART V

By J · E · DOYLEND

THE procedure to be followed in shaping wings whether for monoplanes or biplanes may be summarised as follows :—

1. Cut block slightly larger than finished wing size.
2. True-up block and plane down to the maximum thickness of the wing root.
3. Mark the fore and aft centre line and the wing datum line on top and bottom and set out the plan of the wing.
4. Cut wing to shape either with saw or plane.
5. In the case of monoplane wings, taper the wing in thickness from the root to the tips by plane or chisel.
6. Carve the camber on the upper and lower surfaces using a plane, chisel or file.
7. Finish off wing tips with chisel, file or sandpaper.
8. Mark out the ailerons, trimming tabs, flaps (if any), centre section etc., and carefully score the lines.
9. Obtain the dihedral angle by steam bending.
10. Cut out fuselage seating if one is required.

It should be noted that in nearly every case the wing of a model is best made in one piece, that is, the port and starboard sides and the centre section cut and shaped in one block. In biplanes, the complete upper and complete lower main planes will be two distinct parts.

The monoplane type of wing has already been dealt with in detail and it will not be necessary to enlarge on it here, but it will be helpful to note one or two additional features which concern only biplane wings.

### Centre section cut-out.

In most biplane types we find that the trailing edge of the centre section of the upper mainplane is cut away in order to give a better view for the pilot and also to make it easier to enter and leave the forward cockpit. Examples of this can be seen in the Hawker " Hind," the De-Havilland " Tiger Moth," Blackburn " Shark " and Fairey " Swordfish." A typical cut-out is shown in Fig. 1.

This cut-out should be made during Stage 4 of the work, and for this a fret-saw will be essential in nearly all cases. The edges of the cut-out are finished off after the camber has been carved on the wing. They are usually brought down to a knife edge, but in some cases where the cut-out coincides with the rear spar, the edge of the cut-out is left the same as the depth of the wing spar. This is a point that would not be clearly shown on scale drawings and is one instance where a study of suitable photographs would prove of value.

In many early types of British fighter used in the 1914–1918 war, the whole of the centre section between the front and rear wing spars was cut away to improve the pilot's view. This occurs in the Sopwith " Camel," Westland " Wagtail," etc. In such cases this cutting out will have to be done with fret-saw, a small hole being drilled for the first insertion of the blade. The cut-out is finally cleaned up with a small file.

### Camber.

Particular attention should be paid to obtaining the correct wing camber. There are a number of different wing sections used in aircraft construction, the choice depending upon the particular aeroplane and the use for which it is designed. The most commonly used sections are illustrated in Fig. 2.

It should be noted that the maximum thickness of the wing section occurs at approximately one third of the wing chord (or width) measured from the leading edge. If wing sections are given in the scale drawings, templates should be made as for the fuselage and used to check the shape at frequent intervals during construction. When dealing with biplane wings and also tail surfaces, never be satisfied with your work until these parts are as thin in section as the drawings show. Do not be tempted to leave them $\frac{1}{16}$ of an inch thicker just because it's a tedious job to plane or file them down any further. It is no excuse to say that they will be stronger that way, the whole appearance of the model will be spoiled.

The trailing edges of the wings should always be brought to a fine knife edge. Nothing looks worse than to see a model with an obviously too thick trailing edge on the wings. Don't forget that an error of $\frac{1}{32}$ of an inch on the model represents a measurement of 3 inches on the actual aeroplane. The shape of the leading edges should also be carefully copied as this too will affect the general appearance of the model.

From Fig. 2 it will be observed that in wings of thick section the camber on the top surface forms a pronounced curve, whilst that on the under surface is more gradual and in some cases may be almost flat.

Wing sections for biplane wings have as a rule a slightly concave under surface. In early types of biplanes this is most marked. This shaping can be done with a half round file worked spanwise, finishing off with sandpaper. A strip rolled round a section of broom handle is useful for finishing.

### Raked wings.

No difficulty should be experienced in cutting out or shaping wings which have straight leading and trailing edges nor those whose edges are tapered from root to tip, and most of the work can be done with a small plane.

Wings that are raked back from the centre section to tips on both leading and trailing edges will have to be tackled in a different way. The leading edges may still be shaped with a tenon saw or plane, but the trailing edges will have to be cut with a fret-saw and the cambering must be carried out with a chisel or a file. In the case of large models with raked-back wings it may be found

easier to construct each wing in three separate parts, the centre section and port and starboard sides, fitting them together during the assembling of the model.

**Thickness taper.**

The thickness taper of monoplane wings must always be made on the *under surface.* All cuts, whether by plane or chisel must be made from the centre section towards the tips. When a file is used it should be worked chordwise. Also, this thickness taper *must* be carried out before either the upper or lower surface of the wing is cambered.

**Wing tips.**

The tips of wings can usually be finished off with a sanding block or a file, though in some cases it will be easier to take off most of the wood first with a chisel. In a few instances we may find that the wing is not rounded at the tips, but may be cut off square in plan and with flat end section or alternatively they may be cut off square in plan with the ends bluntly rounded over. Examples of the former are the Glenny and Henderson "Gadfly," a single seat ultra light monoplane built in 1928, and the more recent Consolidated "Catalina" flying boat where the wing tip floats fold up to form the wing tips in flight.

**Wing scoring.**

The scoring of wings to represent ailerons, trimming tabs, flaps and wing panels should always be carried out before the wing is bent to its dihedral angle. The lines should be scored with a chisel or a penknife.

Although seemingly simple in itself, scoring can become a source of trouble and if not carried out carefully may cause disastrous results to the wing.

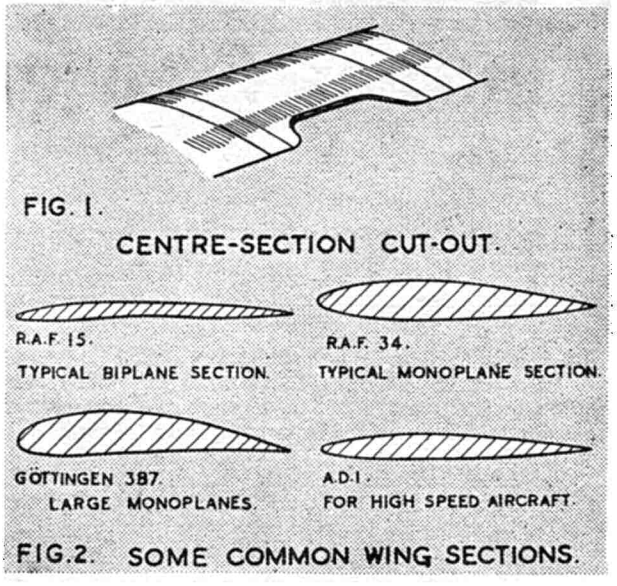
The line to be scored to represent the various surfaces must be marked out accurately from the scale drawings and all measurements of the markings should be checked at least once to ensure that they are absolutely correct.

When the surfaces have been marked out and checked, score the lines very carefully taking care not to split the wood especially when working along the grain of very thin surfaces such as tail planes. Care must also be taken not to chip out bits of the trailing edge when scoring the ends of ailerons or centre section panel lines. The possibility of causing damage will be minimised if the scoring is done by drawing the chisel or knife from the trailing edge towards the leading edge of the wing.

Where the wings have a tapered trailing edge, the scoring for ailerons and flaps will be slightly across the grain of the wood. If the grain is not too fine, small ridges of hard wood will run along the wing interspersed by strips of softer wood. In these cases, do not attempt to "draw" the lines with your tool, or each ridge of hard wood will tend to divert the scoring from the desired line. A better method is to use a wide chisel, the blade being placed along the marked line and pressed gently until the mark is sufficiently deep. The chisel is then moved along one blade's width and the process repeated until the whole line has been scored. Notice also that the harder strips of wood will require more pressure than the soft if an undulating effect is to be avoided.

Some types of control surfaces have a larger area on the underside of the wing than on top. Examples of this are the Frise type ailerons fitted on many biplanes and the Gouge type flaps found on most of the Short monoplane flying boats such as the "Sunderland" and "Empire" types.

Handley Page automatic leading edge slats can also be represented by scoring, but a better effect is obtained if the slat is cut from a thin sheet of cartridge paper and glued in place on the leading edge of the wing.




**Steam bending dihedral.**

Steam bending of wings to obtain a dihedral angle must also be carried out with care. The chordwise scoring of the lines at which the bend will be made should be fairly deep especially on the upper wing surface, and the steam jet should be played liberally on these cuts before any attempt is made to bend the wing. With thin section biplane wings, the wood will be found to bend quite easily after a few seconds steaming and a little practice will enable the modeller to feel exactly when the wood is softened sufficiently to start bending. The operation must never be forced or the modeller will suddenly find himself holding two broken pieces!

When dealing with wings of thick section as for models of heavy bomber types where the thickness may be anything in the region of half an inch, ordinary scoring will be insufficient and saw cuts must be made with a tenon saw along the line of the bend on both upper and lower surfaces. The cut made on the upper surface will close up as the wing is bent, but that on the lower surface will, of course, open out to a considerable extent and must be plugged with a thin strip of wood or metal which is then filed down flush with the wing surface.

*Below is a Vickers "Vildebeest" by the author and our heading photograph is a beautifully detailed model of the Fokker G-VE with Swiss markings.*

# PETROL VAPOUR

BY C. E. BOWDEN

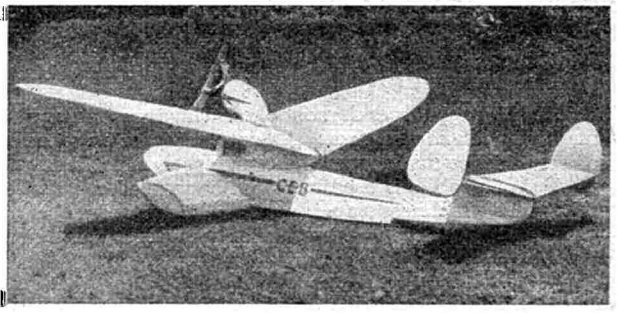


*Fig. 1. The author's medium size flying boat. This model is flown by a 3·5 c.c. diesel engine and weighs 3 lbs. complete. It flies frequently over Poole Water.*

IN my last article we discussed baby diesels and diesel matters in general. This month we will review larger engines, and I will also answer a few selected questions I have received from readers by " Quiz Post " on diesels.

One reader required full-size drawings of the little 1 c.c. flying boat that I showed in my last " Petrol Vapour," but he also wanted me to enlarge it by scaling up. Much as I would like to help him, I do not think he and some other people realise what an immense amount of work is involved in producing plans. That is one of the reasons why a designer only puts on the market an occasional plan of the many machines he produces. In my case there are only three plans at present available of the many successful flying models I have produced. Also it should be appreciated that not all models are suitable for the average aeromodeller. I personally am always most keen to only release a model that I think will give general satisfaction in the hands of the average modeller, and I take great trouble trying to foresee the snags of construction and flying that he may meet with. The little flying boat shown, that our friend wanted to build, would be most unsuitable except in the hands of an expert, because it requires very careful adjustment as it is flying very near the limit of its power for take off, and stability in the air can be touchy due to the fact that the boat is very small and, therefore, fast.

The type of flying boat that would give success and pleasure to the average fairly capable modeller is that shown in Fig. 1 of these notes. This model has the necessary power reserve for take off, being powered by a 3·5 c.c. diesel engine. The wing span is 4 ft. 8 ins. with a central wing chord of 12 ins. The sponsons are 23 ins. span, 5 ins. being hull width. The maximum chord is 8½ ins. tapered to 6¾ ins. The whole boat weighs 3 lbs. complete, including engine weight, on its mounting of nearly ¾ lb. The sponsons and hull are completely covered with 1/16 in. sheet balsa and are therefore able to stand up to the rough and tumble of seawater. The wings, tail and hull are covered with nylon, which also adds to the strength of the boat. The hull is " monocoque " and planked on top. This boat floats nearly on top of the water because the water loading is light, and the engine does not have to do a great deal of work to get her up on to the planing surfaces for the take off. Even with this arrangement it is surprising the amount of power that is required to get a boat off the water. Furthermore, this boat is most stable in the air and alights on its large sponsons and hull with no tendency to dig in. This is the sort of model that one could recommend to a fairly advanced modelling enthusiast, and perhaps the details I have given will be sufficient for modellers to build such a machine if they so desire. The " Contest " design was rather similar for medium-sized engines and is obtainable from the Aeromodeller Plans Service and very suitable for diesels of 3·5 c.c. to 6 c.c.

*Fig.2. Col. Bowden's latest flying boat—36" span, suitable for all the smaller engines of 1-1½ c.c. The planked monocoque hull and the flying surfaces are covered with nylon.*

Before we leave this modeller's request for designs, let us look at a type of diesel-driven model that is " different," yet would make a suitable general purpose model for anyone whether he be novice or old-hand. (Fig. 4) shows a simple low-wing model of mine that is flown by a 2 c.c. diesel engine. It is quite foolproof, and, in fact, more foolproof in its flying characteristics than many high-wings, and certainly more foolproof than most of the difficult pylon type so much beloved in America for their special type of duration competition work. It is a common belief that a low wing must be unstable. That well-known modeller Mr. Knight, who writes for the AEROMODELLER, has completely disproved this fallacy by this little beginner's rubber-driven series of models that were so popular and stable—some of my most stable power models have been low-wing models. If properly designed and proportioned, a low-wing can be a first class model, and I would remind readers that Mr. Coxall won the " Bowden Trophy " one year with an 8 ft. span low-wing petrol model, and R. N. Bullock won an early " Wakefield " Cup with a very stable low-wing rubber model. It is surprising that modellers in this country do not take the low-wing power-driven model more to heart because it looks nearer the real thing in the air. It is understandable that the high wing shall be used for rubber-driven contests where maximum climb is desired in the shortest space of time in order to contact a thermal. The high-wing and pylon job has a great tendency to rear up on its nose due to the low thrust-line pulling the model round the high set resistance of the high wing. It is also understandable why the power fan seeking excessive climb to compete with the American type of duration rules with a very limited engine run that we used in this year's Sir John Shelley Cup uses the unstable set-up of a pylon job. For general purposes flying like the real thing, the low-wing does

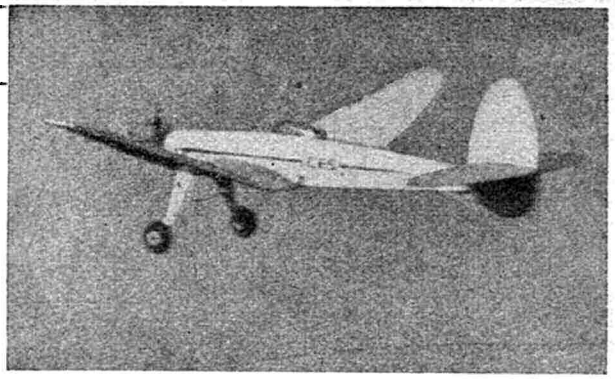


*Fig. 3. The author's 2 c.c. engined low wing model which flies very steadily and stably yet has a sound climb.*

not have to have excessive down-thrust and other aids to prevent a stall under power, because the thrust-line passes approximately through the resistance of the wing.

I have rather spread myself over this low-wing problem because another reader asks for more gen on the trim of diesel models. I can think of no more simple set-up than the trim of a well-designed low-wing with its thrust-line set straight ahead and then only given a little offset of thrust to prevent undue turn due to propeller torque. This same modeller asks for information of sizes of models that varying capacities of diesel engines will fly. Here is one further example of the 2 c.c. class. (Fig. 3) shows the same 2 c.c. diesel-engined model flying.

Further " Diesel Quiz Questions " by readers demand knowledge as under :

(1) On the construction of small model aircraft to take diesels.
(2) Peculiarities over starting and running.
(3) Have you any preference for these babies compared with their big brothers.

Well, that is enough to get on with, especially when I had intended talking about big diesels.

Now to return to my " Quiz " questioners.

(1) *Notes on the construction of small model aircraft to take diesels.*

This is a very wide question to be answered briefly—the very small models of around ½ c.c. can definitely be made upon " Wakefield " rubber model lines of the balsa longeron and paper-covered type, so that the whole affair complete with engine weighs around 8 ozs. Some months ago I described a very good flying model on these lines that Mr. Colyer has made, flown by his little 0·7 c.c. 1½ oz. diesel engine. Being a lover of robust construction that will withstand ill-treatment, I have experimented quite a lot with my usual balsa sheet-covered fuselages with wings covered with either bamboo paper or even nylon. This puts up the weight of such small models a few ounces, but I find that the little 1½ oz. 0·7 c.c. diesel referred to will fly a crash-proof model on these lines almost as high as the lighter tissue affair. I give a few more inches of wing area, on an elliptical wing of 34 ins. and 7 ins. chord—one model I made on these lines has a span of only 23 ins. with a 7 ins. central chord and it flies quite well, not being too fast. So there we are; you can take your choice. Either the converted tissue-covered rubber type of model for maximum climb or my more robust balsa sheet fuselage from 1/16 in. sheet. With a little skill in designing, both work. (Fig. 6) shows my 34 ins. span latest midget on the sheet balsa lines with its little 1½ oz. diesel clapped onto its nose. This model has even got its wings covered with nylon. It has a very quick climb, too. The fin is built from a piece of solid sheet balsa.

(2) *Peculiarities over starting and running of model diesels.*

This next quiz question is also a wide one, but I must be brief and try to give you the fundamentals of the answer.

The first point I want to drive home above all others is that the compression ignition engine diesel is a very high-compression engine and should you accidentally get the cylinder head too full of oil when choking or doping for the start, and the engine becomes really hard to turn, you must remember not to persist in turning the engine until you have cleared that oil, because oil is practically incompressible and if you persist in turning the engine either the connecting rod or the cylinder head are likely to give way. It is quite simple to get rid of this surplus oil in the fuel by turning back the contra piston adjustment when the engine is fitted with one. The lever will allow the contra piston to rise in the cylinder, thus making more space between the piston and contra piston. When the engine is turned over a few times the oil will be blown out of the head and the contra piston lever can be screwed back to the " best start position." Always remember how much you turn back the contra piston lever, *so that it can be screwed up again to the same position.* This is very important because it cannot be too often repeated that if an owner runs his engine continuously on too high a compression he will surely ruin it. How can he tell if he is running on too high a compression ? There is an irregular note—the engine sounds dead and it pulls up. It will not run fast because the over-high compression acts as a brake—sometimes the engine stops altogether. It may also knock badly. The latter is usually due to too high a compression allied to a weak mixture. If the mixture is too rich a diesel runs with bursts of power up and down the scale of revolutions.

If an engine is not fitted with a contra piston and is of the fixed head type, and it becomes " overhard " to turn because of too much oil in the head, how can one give it relief ? The quickest way is to turn it upside down, turn the engine backwards until the exhaust port opens and dribble out the excess fuel until it turns easily.

Remember that on hot days particularly the ether is liable to evaporate in the fuel that a tiny diesel sucks into its minute crankcase, and before the mixture is pumped to the cylinder head the ether has gone, leaving only oil to get up there. This is often a reason for bad starting of the midgets.


*Fig. 4. Another view of the author's 4'4" span low wing model. An idea of its relative size can be obtained from the car in the background.*

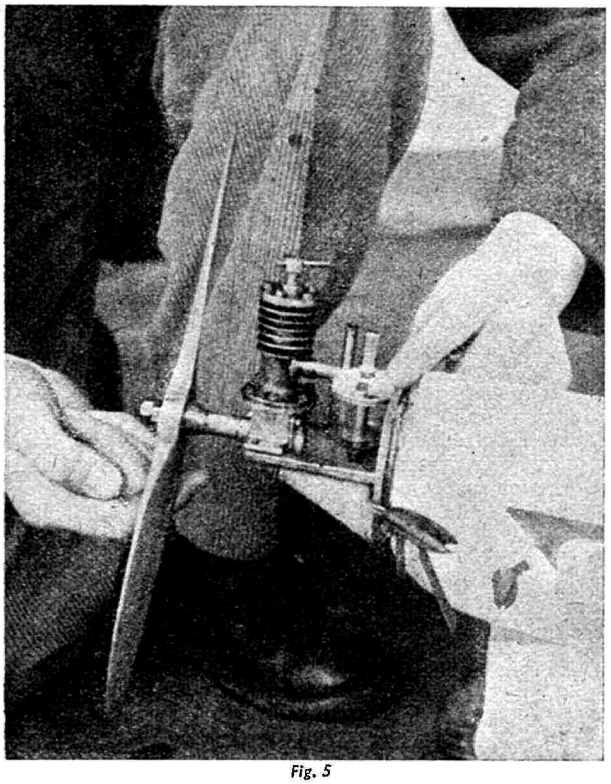


Fig. 5

One great advantage of the engine fitted with a contra piston is that one can always try screwing back the lever a little as the engine warms up. This lowers the compression a little and ensures that one is not running on too high a compression and over straining the bearings, for as an engine becomes hot, the fuel vaporises better and the gasses expand, thus automatically raising the compression. Certain fuels suffer from this effect more than others. I was recently watching a competitor in a competition who was much mystified by the fact that at the three take-offs allowed, on each occasion his engine died out with a dead note and stopped shortly after release. This was a fixed head engine. The reason, of course, was that the engine warmed up, the gasses expanded and raised the compression too much. It might also have happened to an engine fitted with a contra piston. The remedy in the latter case would have been simple, provided the competitor had realised his trouble. He would have started up his engine, run it for a few seconds until warm, and then lowered the compression, so that it started to misfire, and then slightly raised it so that it just did not misfire. He would have then known in these circumstances he would have a trouble-free run provided his mixture strength was correct and the fuel line clear.

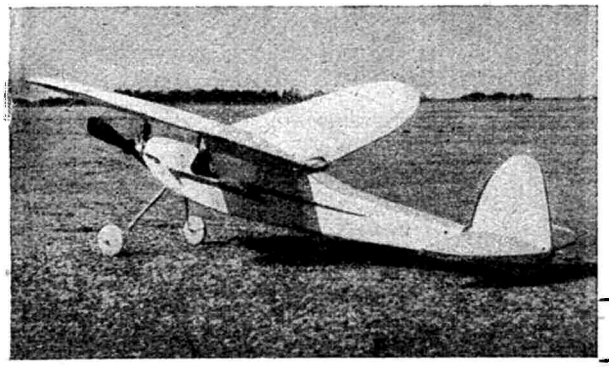
Starting is quite simple on a good diesel. Refer to Fig. 5. Here you see the operator putting his finger over the induction pipe and swinging the engine. This draws in fuel (rich mixture) to start, and a few sharp flips will usually do the trick on a good engine. Notice that the starting fingers are near the centre of the propeller, where the swing flip can be quick and smart. If the fingers are further out it takes longer to swing the prop around because they have to travel further. *A quick flip is what is required,* particularly after the rich fuel has been sucked in and the choking finger removed. The reason is really quite obvious when one pauses to consider the matter. It is the quick " squeeze " of the gasses under the extra high compression between piston and contra piston or cylinder head that creates the heat that is necessary to fire the charge. The quicker the " squeeze " the greater the frictional heat. The greater the heat the more quickly the gasses are fired. Q.E.D. *So flick the propeller over really viciously.* One very good tip for engines that will not readily start by the choking method shown in Fig. 5 is to open the exhaust port by turning the engine over. Drop two or three drops only of fuel from the fuel can into the cylinder and then start up with these viciously quick " flipping swings " (I beg " Lord Waterlog's " pardon). Don't overdo the doping or you will get the full cylinder head and overhard engine that I have warned you about.

(3) Time is up and I must end with a very brief answer to the quiz query " Have you any preference for these babies compared with their big brothers ? " Mine is naturally only a personal opinion, and I will qualify it by saying that these are early days and I may modify my opinion later. *At the present state of diesel development* I like the diesel babies better than the bigger diesels. The babies run at higher r.p.m. and more smoothly. They are so light for their power output because they eliminate the electrical gear weight and therefore allow us to build smaller models than the baby petrol engines do, and as I have already remarked, they give us a lower wing loading, which in turn gives us a slow flying little model, a thing that is so difficult to obtain with petrol, due to the battery and coil which are entirely out of all proportion to the weight of the midget petrol engine. Little diesels also wear well.

The big diesel is a rough chap to handle and a bit vicious when it kicks back. I personally like the sharp staccato howl of the larger size petrol engine, and the larger engine is obviously fitted to a large model that does not mind carrying the weight of the battery and coil for ignition. On the other side of the picture I recently saw a really large 20 c.c. diesel engine made by Mr. Court the diesel expert builder. He has fitted this large engine to a full-sized 10 ft. long dinghy hull which takes two people on the water at about 3 knots. That makes one think. Again, what about larger diesels being built up as multi-cylinders to obtain the smooth and speedy characteristics of the little-cylinder diesel ?

If my readers have any further " quiz " questions, send them in to me c/o the AEROMODELLER, and I will try to answer them reasonably intelligently providing a S.A.E. is enclosed.

Fig. 6



*Above shows the starting procedure mentioned in the text. Left is a 34" span 'baby' powered by a 1½ oz. diesel. It is built on the Bowden slab-side method, using sheet balsa.*

# FACTUALITIES

PART I BY J. HALIFAX

*Aeromodelling has made great strides in the last few years, due especially to the research and experiments of the growing band of "practical theorists." Owing to the semi-technical nature of published accounts of the results obtained, it is apparent that many modellers are ignorant of their true meaning. We therefore publish this article by our technical writer, John Halifax, to provide all readers with some of the* known facts, *set out in general and untechnical terms.* [ED.]

*Power model by R. Aubertin of Monaco, seen at the Swiss Internationals. Note large spinner, another example of Continental practice in step with contemporary thought.*

THIS is essentially a summary of known *facts*; where a subject is still under investigation, I shall describe it as a probable future development.

**ASPECT RATIO.** Whilst the aerofoil sections in general use today are still popular, a high wing Aspect Ratio can only lead to high drag, and often instability, in all but the largest models. For a Wakefield the best value is about 5* and this optimum figure increases as the size of the model.

The calculation of the exact value for minimum drag has now been reduced to a simple formula and this month I give a chart in the "Aerodynamic Design" series giving the correct value for a model of any reasonable weight. Thus it is clear that we know all we need to about this subject and future work need only be concerned with reducing the answers to terms readily understandable by the newest recruit to the hobby.

When a wing has one of the new L.S.A.R.A. "Laminar flow" sections, a *high* Aspect Ratio is more efficient within certain limits. The most efficient value for the average model is about 8—but only—and I must emphasise this point, *only for Laminar flow sections.*

**WING SECTIONS.** The sections in general use today are out-dated by the Laminar ones mentioned above. These are approximately twice as efficient, chiefly because of the very great reductions in drag achieved.

They have been developed, by the Low Speed Aerodynamics Research Association and details can be obtained from the Director of Research, N. K. Walker, B.Sc., 9, Alexandra Road, Farnborough, Hants. All aeromodellers can become Associates, or Associate Members of this body, by the way, and the privileges thus obtained are a tremendous aid to enlightened modelling.

In the future a wide range of the sections suitable for all classes of models can be expected, whilst for specialised uses the "turbulent flow" profiles which I have mentioned from time to time in my series should come into their own. Present day ("old-fashioned"!) sections may still be used in very large machines, especially if a high maximum lift is desired.

*On models using a large motor, this may be too low to give adequate torque control.

**DIHEDRAL.** The belief that elliptical dihedral is far and away the best form is pure fallacy. In English weather it is very prone to tip stalling with subsequent spinning and should be avoided on these grounds alone.

Plain (straight) dihedral from the fuselage, or from a short horizontal centre section is best for all-round efficiency.

**Plan Form.** For small and medium sized models, constant chord with rounded tips whose section is a flat or curved plate.

For large models, moderately tapered wings with elliptical tips or a completely elliptical shape.

For Laminar flow sections, constant chord with washed-out tips.

**THE FUSELAGE.** The great bugbear in fuselage design is skin friction and thus we have the "pod and boom" type in increasing use because of the reduction in "wetted area" which it offers. Barring constructional considerations, the cross section should always be a circle for power models, and a deep ellipse with "pod and boom" layout for gliders.

Continued efforts to reduce skin friction will probably lead to "laminar flow" fuselages in the very near future.

**The Tail Unit.** The best section for these components is the flat plate, although a thin symmetrical section must be used in large models to obtain sufficient spar depth.

A horizontal tailplane with tip fins, mounted on a low, strongly built central fin is the most efficient way of mounting the components. The top of this central fin should never come below a line drawn from the highest point of the wing section and parallel to the direction of flight, and preferably ¼ chord to ½ chord higher. Dihedral must be taken into account, of course, because the wing is higher in front of the tailplane tip than at the fuselage, but an excessively high position can be avoided by building in a dihedral angle equal to that of the wing.

**The Airscrew.** This should be faired into the fuselage with a large spinner, but apart from this, no generalisations are possible, I regret to say. "Aerodynamic Design" parts 2-6 deal with the subject fairly comprehensively and I must refer all would-be airscrew designers to those articles.

I hope later to write another "Factualities" on airscrews alone, using Nomograms to give answers to the various calculations needed.

# VIBRATING WINGS

## A NEW METHOD OF PROPULSION

A VIBRATING wing may be described as a wing actuated by an alternating rapid movement of small breadth, during which no mechanical variation of the wing incidence takes place. This variation may be obtained either by a crankshaft located in the interior of the wing (Fig. 1) or by an exterior control device equipped with an eccentric (Fig. 2).

First experiments took place in water with a biconvex symmetrical section of 20 per cent. thickness. They showed that such a section set at 0° is self-propulsive, even at a fixed point, if subjected to an alternating movement.

Fig. 3 is a diagram of a photograph taken during wing beats and reveals the existence of propulsive eddies at the rear of the wing.

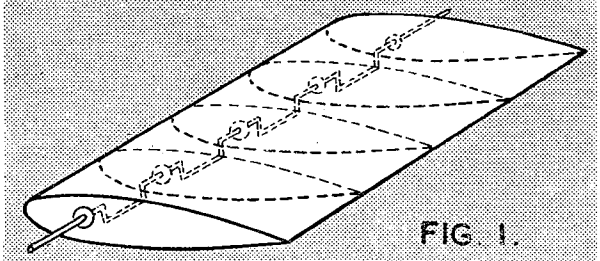


FIG. 1.

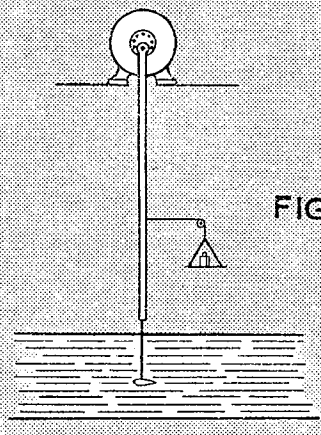


FIG. 2.

FIG. 3.

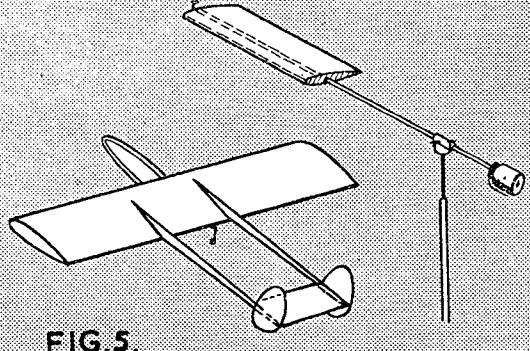


FIG. 5.

FIG. 4.

### Experiments in the air.

A very light biconvex symmetrical wing (with tubular balsa main spar and balsa ribs and standard covering) of 24½ in. span and 4¾ in. chord was carried by a small rod, at the end of which its weight was counterbalanced by a small electric engine. An engine shaft located inside the spar traversed the wing and caused a small lead-weighted shaft, located at the wing tip, to turn (Fig. 4).

In the initial experiments, the circle described had a radius of 27½ ins. The wing weighed ·78 ozs., the leaden shaft weighed ·78 ozs. for a 1½ in. radius and made about 600 revs. per minute. 1·06 ozs. lift was obtained with an airscrew making 30 revs. per minute.

A second series of experiments, with the radius extended to 30 ins. gave 38 revs. per minute and sustention of 1·58 ozs. Meanwhile a second wing of 29½ in. span, 6 in. chord and 1-3/16 in. thickness had been constructed. A sewing machine engine operated a crank causing vibrations of 13/32 in.–19/32 in. breadth and frequencies of 1,500–2,000; the radius of the described circle was 3 ft. 3 ins. With a speed of 40–60 revs. per minute the sustention was 4·2 ozs.–5·5 ozs.

### Experiments with a small glider.

The first biconvex symmetrical wing of 24½ ins. span was converted into a glider by adding two booms to carry the tailplane (Fig. 5). A rubber motor actuated a small lead weight of ·53 ozs. revolving with a radius of 1·6 in., located just behind the wing's trailing edge.

When flown with the crankshaft in motion, horizontal flights were obtained.

### Further Points.

1. The vibrating wing's propulsive force is not greatly varied by small incidences.
2. For a given incidence, the lift obtained is always better for the vibrating wing than the rigid wing.
3. The incidence can be very high (30°).
4. There is no torque.

In the course of flight experiments it was often noticed that the wing shifted forward along the fuselage which gives an indication of the thrust developed

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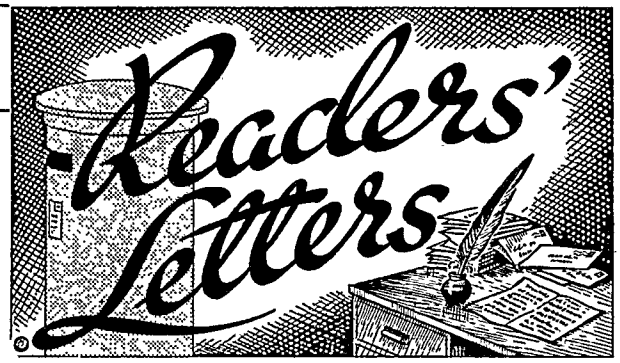
*This system of propulsion originates from experiments in France. We should be very interested to hear of any positive results by English experimenters.* [*Ed.*]

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




DEAR SIR,

Reference to Mr. Payne's letter in the June AEROMODELLER, in connection with my article upon "The Construction of Elliptical Wings", Mr. Payne has completely confused my article with some other material or matter—he refers to my articles as "being on the construction of wings with elliptical dihedral." He goes on to say that it would be "hard to think of a form of dihedral which is more unsuitable for a model."

(*a*) My article was not on wings with elliptical dihedral. It was on the construction of elliptical wings—a very different thing! I did not even mention elliptical dihedral.

(*b*) His second remark therefore has no meaning in connection with my article.

Apart from the confusion created, Mr. Payne does raise an interesting point that I did not deal with—namely his condemnation of elliptical dihedral for models. I personally do not use it, because I use the normal straight dihedral or very occasionally polyhedral for some special purpose such as for the American type of pylon model. The normal dihedral is perfectly stable if the rest of the design fits into it, and it looks more realistic—however, it is a mistake to condemn elliptical dihedral out of hand as being unsuitable for models. It has been used in practice by a number of people in America and over here with success, its chief difficulty being to produce an even curve upwards for both wings. I am assuming that Mr. Payne means by elliptical dihedral a half-moon shape with the wing tips curving upwards as in the case of the Old Bragg Smith biplane's lower wing.

I have, however, never recommended elliptical dihedral nor even discussed it in an article before.

Bournemouth. C. E. BOWDEN.

DEAR SIR,

I should like to take this opportunity to congratulate you on a fine magazine. I have been a steady reader of your publication for a number of years and have noticed its steady improvement over the last few years. My particular interest is solid scale models and of course all the data that goes with this particular phase of model work. Your magazine provides me with considerable information along these lines which is either unobtainable or hard to locate elsewhere. Being a draughtsman myself, I want to compliment you on your fine 1/72 scale drawings. Like a lot of others, my model work was held up the last few years by the war, but I hope to get back at it shortly.

Before the war I corresponded for a couple of years with Tony Barnwell, son of the late Capt. Frank Barnwell. Tony was killed during the war. We exchanged 1/72 scale plans and other information relating to scale model aircraft. I have been wondering if you could put me in touch with an English modeller who would care to correspond with me in a like manner. I should like to correspond with someone near my own age, I'm 32, and with like model interests. I have built up a small library of books and magazines. These I have indexed by means of file cards on the pictures and plans contained in each one. Roughly, I have 3,000 different plans, so you can see I should like to exchange with someone having an extensive collection. As I mentioned before, my occupation is a draughtsman, but not connected with aviation. Will glady answer anyone who writes, but I have only enough spare time to correspond with one in the manner I have described.

228, Bay 35 Street, Brooklyn 14, N.Y. DOUGLAS H. GILMOUR.

DEAR SIR,

I feel bound to offer some small word of appreciation and congratulation on the production of the magazine AEROMODELLER. Having had reason at various times to study the make-up of similar type publications, and having had occasion to compile one myself—as well as to initiate and edit odd articles—I am aware of the difficulties you must often meet in maintaining such a continued standard of work. The design of the magazine is attractive, the articles substantial, the information and news on the top line, the whole clearly and cleverly planned; this publication surely does more to foster the spirit and enthusiasm of aeromodelling each month than a dozen contests.

R.A.F., N. Ireland. F/LT. D. R. SMYTH, D.F.C.

DEAR SIR,

May I, through the pages of your very excellent journal urge the English firms catering for model flying to push their "goods" in Australia. There is almost unlimited scope for building and flying models there—before the war "The Model Flying Club of Australia" was a really excellent one, but the trend now is for designs and supplies to come from the other side of the Atlantic. I myself am returning shortly and intend to take two engines—one petrol and one diesel—to "show the flag".

Cobham. J. D. ALLCROFT.

DEAR SIR,

I was very surprised to see a statement made in your current issue by such an experienced modeller as Col. Bowden which appears to flout all known laws of aerodynamics, and I feel that attention should be drawn to the matter since I have found the mistake made by Col. Bowden a very common one.

In his remarks concerning the necessity—or otherwise—of obtaining a good surface finish on power models, Col. Bowden states:—"But the diesel or petrol model does not normally require a very high finish other than to please, because there is plenty of spare power, and one actually does not want it to slip through the air like a hot knife through butter, for the idea is to keep its flying speed low". It would appear from the above the writer considers that an increase in speed results if the drag of a model is reduced by means of a good finish. This appears to me to be a complete fallacy, as I hope to show.

Let us consider the equation:—

$$L\ C_L = \tfrac{1}{2}\ P.S.V.^2.$$

Where L=lift of wing, weight of model $C_L$=lift coeff. P = air density. S = wing area. V = forward speed of model.

Now for a given model L, S and P are constants and are not in any way functions of the surface finish. The speed will therefore be seen to depend solely upon the value of $C_L$ which can depend only on the shape of the wings and the trim of the model. I therefore argue that surface finish cannot affect the forward speed of the model.

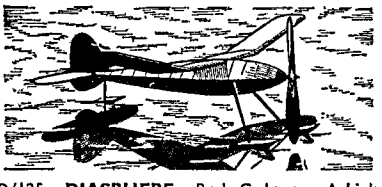
All that happens is that the drag coeff. $C_D$ will be reduced and hence the drag D reduced as in the formula $D = C_D\ \tfrac{1}{2}\ PSV^2$, PS and V being constants for a given model.

Hence the L/D ratio will be increased, and the result on the model's performance will be a reduction in power required for level flight, and hence an increase in rate of climb when under power; and a flatter glide at the SAME SPEED as previously. I trust that the above remarks will make my point clear and also show that a good finish is desirable if the best performance is to be obtained from a given combination of model and motor. I would point out that the way to obtain the desired low forward speed is to design the model to fly stably at the highest possible value of $C_L$ and to keep the wing-loading as low as possible.

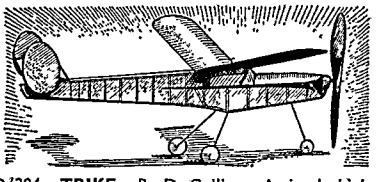
Upminster. D. E. CHANDLER.


★ Here are but a few of nearly 200 plans of every type of model available through the Aeromodeller Plans Service. For the complete range send for our illustrated magazine catalogue, price 1/- post free.

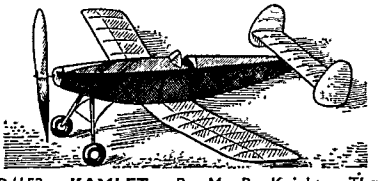
## Rubber-driven DURATION Type Plans



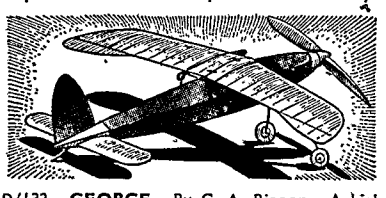
*D/125.* **DIASPHERE.** By I. C. Lucas. A high performance model with dual purpose land/seaplane details. 36 inch span. 1/3



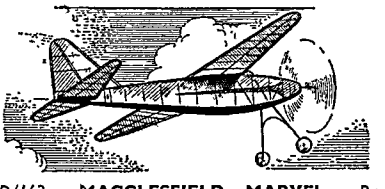
*D/204.* **TRIKE.** By D. Collier. A simple high-wing design, employing tricycle undercarriage. 28½ inch span. 1/3



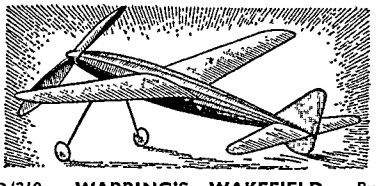
*D/153.* **KAMLET.** By M. R. Knight. The model for a beginner's first attempt at low-wing types. 31 inch span. 1/3



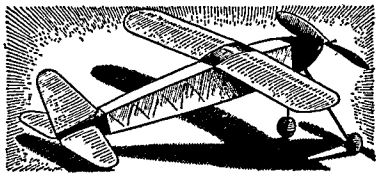
*D/132.* **GEORGE.** By C. A. Rippon. A high performance parasol wing model. 34 inch span. 2/3



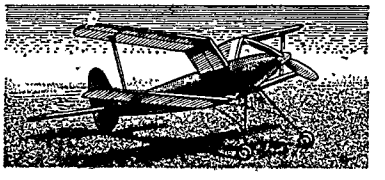
*D/163.* **MACCLESFIELD MARVEL.** By K. W. S. Turner. Lightweight model of proven capabilities, and well tested in numerous contests. 37 inch span. 2/3



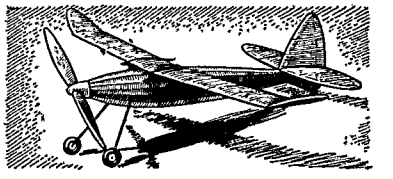
*D/210.* **WARRING'S WAKEFIELD.** By R. H. Warring. Streamline type, holder of British record. 45 inch span. 3/-



*D/146.* **ISIS.** By A. F. Houlberg. A well-tested Wakefield machine, winner of many contests. 44 inch span. 3/-



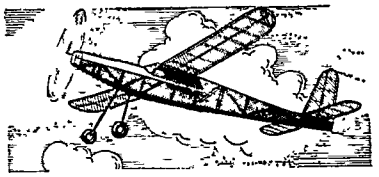
*D/166.* **MINERVA.** By J. E. Fraser. Streamlined biplane model with a high performance. 36 inch span. 1/3



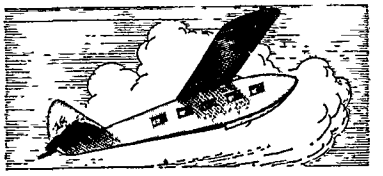
*D/186.* **STABILITY BABY.** By W. A. Dean. A beginner's streamline model that lives up to its name. 26½ inch span. 1/3

***Please Quote the Code Number of the Plan when ordering—it saves time.***

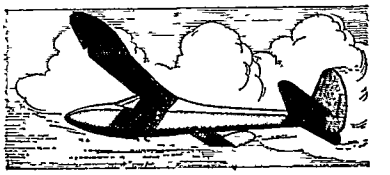
# Gliders, Flying-scale & Semi-scale Plans



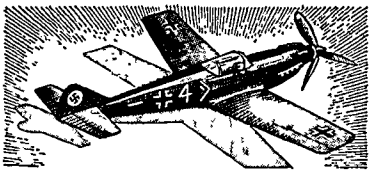
*D/184.* **SUNSTAR.** By A. H. Smith. The writer of "Simple Aerodynamics" puts theory into practice. 28 inch span. 1/3



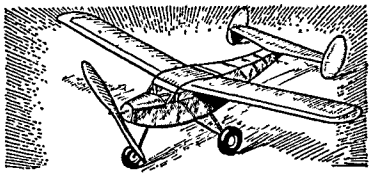
*G/263.* **ARNHEM GLIDER.** Designed by the *Aeromodeller* staff for the Gaumont British Competition. It is the beginner's ideal primary trainer. 30 inch span. 1/6



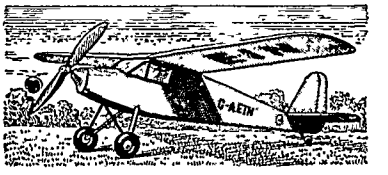
*G/148.* **IVORY GULL.** By R. F. L. Gosling. One of the most popular designs in the A.P.S. range, with a first-class performance. 50 inch span. 2/3



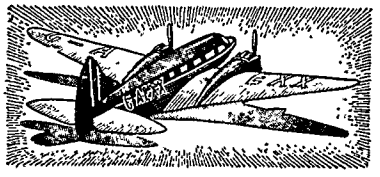
*FSR/164.* **MESSERSCHMITT 109E.** By C. H. Pollitt. Small replica of a well-known German fighter. 19½ inch span. 1/3



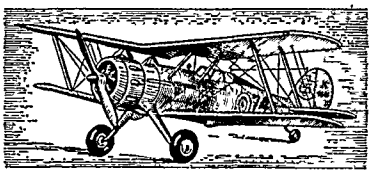
*RSS/248.* **DORLAND.** By the *Aeromodeller* Staff for the Third Aeromodeller Exhibition. High performance with extremely pleasing looks. 35 inch span. 3/-



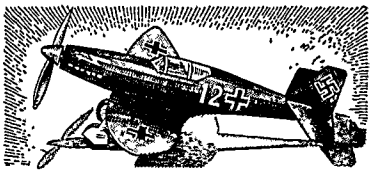
*RSS/150.* **JACKDAW II.** By C. R. Moore. An exceptionally well-designed model. 35 inch span. 2/-



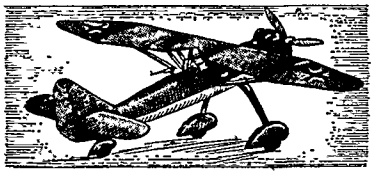
*FSR/126.* **AIRSPEED ENVOY.** By H. J Towner. A well-proven model by a recognised expert. 52 inch span. 3/-



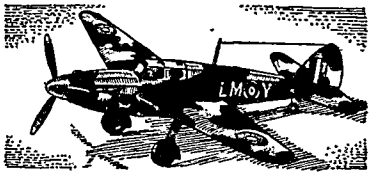
*FSR/133.* **GLOSTER GLADIATOR.** Build this famous Battle of Malta biplane. 28 inch span. 1/3



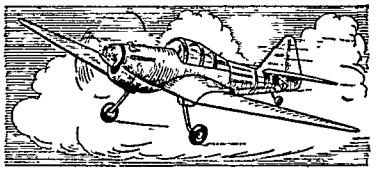
*FSR/142.* **HEINKEL 112.** By C. H. Pollitt. A small model of the well-known low-wing fighter. 18 inch span. 1/-



*FSR/143.* **HENSCHEL 126.** By D. J. Miller. A very interesting type with parasol wing. Scale ¾ inch to 1 foot. 35 inch span. 3/-



*D/185.* **SKYRANGER.** By C. A. Shaw. A snappy semi-scale type, low-wing model. 19½ inch span. 1/-



*FSR/165.* **MILES KESTREL.** By H. J. Towner. Fine type of low-wing model, of tip-top design. 39 inch span 3/-

*FSR/161.* **WESTLAND LYSANDER.** By H. Boyes. The famous 'Lizzie' makes a tip-top flying scale model. 50 inch span. 4/-

*FSR/189.* **SOPWITH CAMEL** By C. F. Compson. How about a model of the famous fighter of '14-18 War? 14 inch span 1/-

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# MONTHLY MEMORANDA


BY O. G. THETFORD

**Squadron Markings Again.**

Heading this article this month is an artist's impression of a De Havilland Hornet single-seat fighter of the famous No. 19 (Fighter) Squadron which is, we gather, reviving the pre-war practice of brightly-coloured identification markings for fighters. Although final decisions have not yet been reached, it is understood that Air Ministry has requested fighter squadrons to work out their own ideas for the revival of fighter markings and No. 19 has promptly revived the well-known blue and white dice of Grebe, Bulldog and Gauntlet days. On most aircraft of the squadron, the dice insignia is restricted to the sides of the fuselage in the position indicated in the sketch, but at least one aircraft is flying with the dicing on the wings. Normal code identification letters are retained in addition to the coloured insignia.

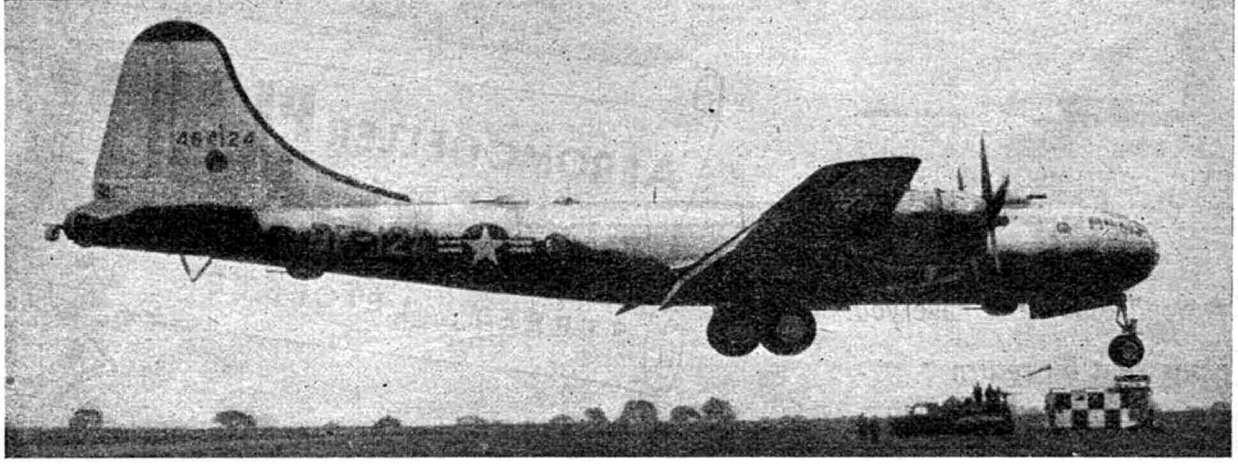
The Hornets of No. 19 Squadron are doped silver on all surfaces, with the exception of the nacelles which are bright blue. Another Hornet of No. 19 Squadron is " QV-K " which is numbered PX 233.

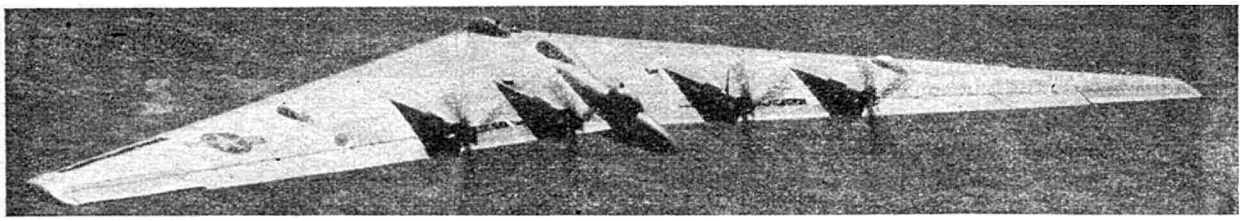
Another revival is the use of squadron crests on fighter aircraft, either with or without the formal background of a spearhead which was used before the war. Hornets of No. 65 (Fighter) Squadron carry their crest reproduced to six inches diameter either on the fin, just above the " flash " or beneath the pilot's cockpit. Hornets of No. 65 Squadron include PX 280 (" YT-A "); PX 282 (" YT-B "); PX 225 (" YT-D "); PX 252 (" YT-H "); PX 240 (" YT-L "); PX 231 (" YT-P "); PX 232 (" YT-R ") and PX 226 (" YT-S ").

Spitfire 21 fighters of No. 41 (Fighter) Squadron are carrying a spearhead background in pale yellow on either side of the cowling, just beneath the exhausts. Framed by the spearhead is the crest of the squadron, which was formerly painted on the fin of their Hawker Demons. Two Spitfire 21 fighters of No. 41 Squadron are " EB-F," numbered LA 226, and " EB-V," numbered LA 260.

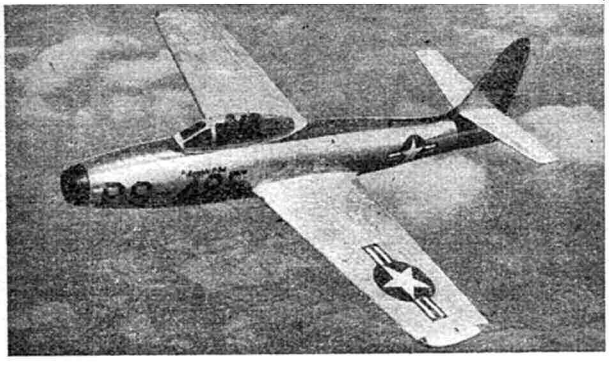
We are sure that aircraft model-builders will be immensely interested in this new development in fighter markings, and we invite readers who observe further developments in this direction to write to us, so that the details can be made available to other readers.

*340TH BOMBARDMENT : One of the nine U.S.A.A.F. B-29 Superfortresses which visited Britain in June. B-29 " BF-124," illustrated, belongs to the 340th Bombardment Squadron and has a red top to the fin. Note the black belly and the new national insignia.* (*Central Press.*)





*MIXED BAG : Above is the Northrop all-wing bomber, the XB-35, which spans 172 ft. and is to be produced in quantity for the U.S. Army. The P-84 Thunder jet (below left) is of the 14th Fighter Group, and exhibits the new American national marking with the red centre strip. Below, right, is one of the Globe Swift lightplanes now flying in Britain which is to be built under licence by Messrs. Helliwells.*
*(Martin and Kelman.)*



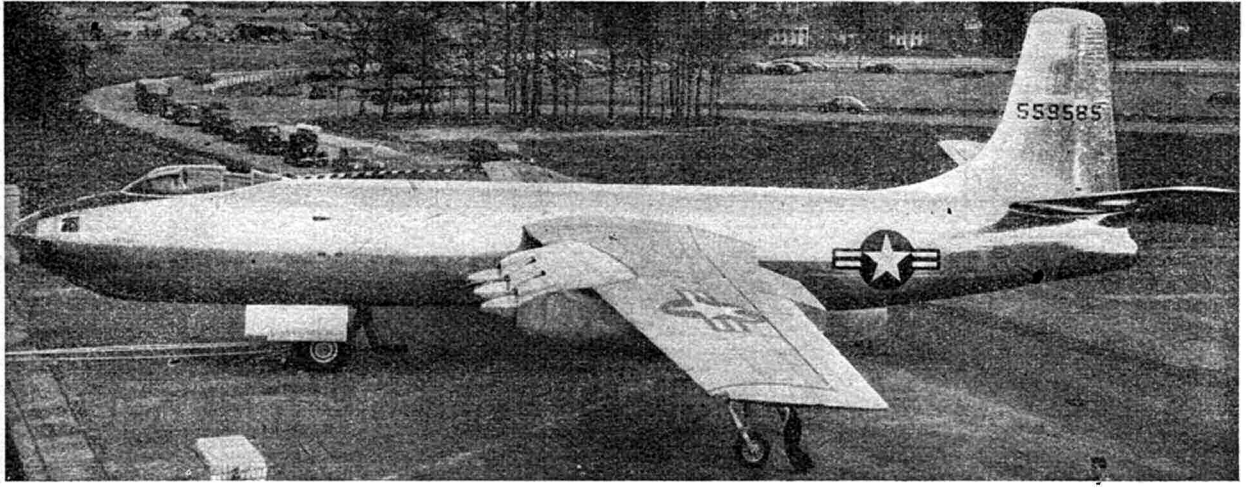
**Swissair Fleet.**

Swissair announced in mid-May that they then operated a fleet of twenty-one aircraft. Apart from three special charter and Alpine aircraft, these machines are all of the Douglas type. Swissair first introduced three Douglas DC-2 airliners in 1935. The Douglas aircraft on regular routes include four DC-4 forty-four seaters (HB-ILA, HB-ILE, HB-ILI and HB-ILO); two C-47B freighters (HB-IRD and HB-IRG); four C-47B twenty-one seaters (HB-IRF, HB-IRL, HB-IRM AND HB-IRN); two DC-3D twenty-one seaters (HB-IRB and HB-IRC); four DC-3 twenty-one seaters (HB-IRA, HB-IRE, HB-IRI and HB-IRO) and two DC-2 fourteen-seaters (HB-ITE and HB-ITO). The charter fleet includes one De Havilland Dragon Rapide, HB-APA; one Fokker F-VII, HB-LBO, and one Comte AC-4, HB-IKO.

**Civil Registrations.**

The four Sikorsky S-51 helicopters now in this country have been registered G-AJHW, G-AJON, G-AJOO and G-AJOR. Other recently imported types include a KZ VII Lark, G-AJHM and a Republic Seabee, G-AJNM. New prototypes include the Fairey FB-2 Gyrodyne, G-AJJP; the Tudor III, G-AJKC; the Tudor VII (Hercules), G-AGRX; and the second Miles Marathon, G-AILH. The first ten Tudor II aircraft for B.O.A.C. will be registered G-AJJS, G-AJJT, G-AJJU, G-AJJV, G-AJJW, G-AJJX, G-AJJY, G-AJJZ, G-AJKA and G-AJKB.

*TRICYCLES AND TANDEMS : The first Percival Merganser, above, made its initial flight on the 9th May last. All silver; is shortly to be sprayed steel-blue. Below is Glenn Martin XB-48 six-jet heavy bomber which spans 108 ft., has six 4,000 lb. S.T. G.E.C. TG-180 jet units and a maximum speed over 500 m.p.h. Tandem main wheels represent a new departure.*
*(Martin and Kelman.)*



# CLUB NEWS

BY CLUBMAN

*This "rogues gallery" of the Blackheath M.F.C. includes Eddie Cash, Harry York, Sam Crow, Len Hawking, Old Uncle Tom Cobley 'an all.*

I HAVE word from America this month regarding the resumption of the Wakefield Trophy contests, and efforts are being made to obtain sponsorship for the meeting for 1948. Current plans call for entries from Latin American countries, and a planeload from England and the Continent. Provision by the sponsors of such means of transport would be both appropriate and welcome, and seems the ideal means of facilitating team entries for such contests. Whilst modellers may be dead keen to compete in such important competitions, it is not everyone who can afford (or obtain) the necessary time off from business affairs to undertake an extended trip.

Talking of winnings—congratulations to the lads who cleaned up the Irish Nationals. Also to those who put up a good show in Switzerland, even though they did not sweep the board to the same extent as the Irish contingent.

Those of you who took the trouble to read my article last month on my American trip will be interested in some of the statistics contained in a report from our American contemporary, "Model Airplane News." Following a survey of trade, it was elicited that 36 per cent. of the sales of model power kits were control-line types, whilst 57 per cent. reported increasing interest in the diesel motor. An interesting feature was the reply to one leading question—"Do customers feel there are sufficient instructions in kits?" 57 per cent. replied with a decided No. English manufacturers please note!!

Jimmy Wingate, of the Streatham club, is the claimant to a new British record flight of 31 : 32·2, the flight being made from Epsom Downs, and landing within sight of the timekeepers. Though not stated, I take it that this record applies to the Outdoor Fuselage Monoplane, R.O.G., and thus handsomely beats the figure set up by Bob Copland some time ago.

N. Peck, of the St. Albans club, must have found some healthy thermals to collect such a large margin over the next man in the K. & M.A.A. Cup contest. Times were good according to the list printed herewith, and it is good to note that honours went around the country a bit better than in some of the earlier events.

Birmingham modellers should have a good show to take their friends to see when the **LEWIS'S EXHIBITION** takes place during August. Clubs and individuals are invited to enter for the various classes of events, for which cups and medals will be awarded, with a special £10 cheque for the best club exhibit. Commencing on the 28th August, the show will run for a week, and those interested are asked to contact the organiser c/o the Birmingham Branch.

**K. & M.A.A. CUP**

**(Decentralised—15/6/47)**

| | | | |
|---|---|---|---|
| 1 | N. Peck | St. Albans | 821·0 |
| 2 | J. Bowerman | Kingsbury | 560·7 |
| 3 | A. W. Green | West Essex | 484·7 |
| 4 | V. Attfield | Springpark | 437·2 |
| 5 | C. M. Holden | Farnworth | 419·9 |
| 6 | G. Fare | Preston | 418·2 |
| 7 | J. Hessle | York | 412·6 |
| 8 | J. Wingate | Streatham | 408·2 |
| 9 | E. North | Halifax | 400·5 |
| 10 | J. Phillips | Cardiff | 382·0 |
| 11 | B. Barnard | St. Albans | 379·0 |
| 12 | D. Dickenson | York | 369·0 |

(137 entries)

Welcome to the new Area, this baby being the **NORTHERN AREA**—not to be confused with the North Western or North Eastern. Formed to cover the whole of Yorkshire, this group operates under the Secretaryship of B. A. Messom of 5, Lower Darnboro Street, York, to whom all applications for membership, etc., should be sent. It should be noted that non-affiliation to the S.M.A.E. is no bar to becoming members of the group. Mr. Lanfranchi was elected S.M.A.E. delegate, and the next meeting will be held in Bradford on August 16th.

On August 10th the "Daily Dispatch" National Model Aircraft Rally will take place at Woodford Aerodrome, thanks to the co-operation of Messrs. A. V. Roe & Co. Ltd. Organised by the **MANCHESTER & DISTRICT COUNCIL of M.A.C.'s**, the events will commence at 11 a.m. and will continue until approximately 6 p.m. Competitions will include Concours, Open Glider, Open Rubber, Power Duration and Open Tailless classes, and refreshments will be available. Full particulars can be obtained from Mr. R. Lawton, 10, Dalton Avenue, Whitefield, Manchester, or Mr. W. Titterington, 17, Brownlea Avenue, Dukinfield, Cheshire. (Remember the old Northern Rallies? I certainly do, if only for the work entailed in organisation, so on that score alone I trust all will rally round and make this event even better than pre-war standards.)

The first Rally for Manchester and District Clubs only was held on the 22nd June on the Whitefield club ground. About two hundred enthusiasts turned up with loads of models, and some good flying was witnessed. Best flights of the day were made by Mr. Clarke, of Bolton (15 : 15), and R. Baron (11 : 57), both made during the contest for the "Gilbert Trophy." Full results were :

| | | | |
|---|---|---|---|
| "Gilbert Trophy" (Senior) : | — Clarke | Bolton | 16 : 17 |
| | — Hodgkinson | Farnworth | 8 : 18 |
| | R. Woodhouse | Whitefield | 5 : 30 |
| "Gilbert Trophy" (Junior) : | R. Baron | Farnworth | 13 : 04 |
| | J. Harrison | Cheadle | 6 : 21 |
| | O. Wright | Cheadle | 3 : 02 |
| Power Duration : | Bailey | Cheadle | 2 : 24 |
| | Faulkner | Cheadle | 1 : 54 |
| | Brandwood | Cheadle | :43·5 |
| F.A.I. Glider : | H. Ward | Ashton | 3 : 12 |
| | — Wyatt | Ashton | 3 : 03 |
| | O. Donnell | Whitefield | 2 : 41 |

Seems the Ebbw Vale club tried putting a spoke into the works in the **SOUTH WALES AREA**, though why any one club will go out of its way to upset group formation and co-operation is beyond me! T. Horseman, of the Mountain Ash club, won the Tod Lewis Cup with an aggregate of 3 : 31·5, followed up by D. Bucknill, of Bridgend, and Bud Morgan, of Cardiff. A further contest for Open Glider was won by another Bridgendite, E. Davies, who totalled 1 : 51.

The second **ALL HERTS. RALLY**, organised by the St. Albans club (Cement Squeezers, boogie woogie!) will take place on the 24th August, again at Handley Page's Aerodrome, Radlett, by kind permission of Sir Frederick Handley Page. Flying commences at 11 a.m., and programmes containing full particulars can be obtained from the St. Albans Comp. Secretary, Mr. P. Brown, 6, Abbey Mill Lane, St. Albans, Herts, price 7½d., post free.

**PEGASUS POWER CLUB** members have been clocking some good flights during the past month. Flying from Fairlop,

E. Blackburn copped a thermal with his E.D. powered model and achieved 6 : 30 with a ten-second motor run. V. Devis successfully attacked the Class A record with a flight of 5 : 20, and the mascot "Gremlin" lost his Oregon-powered model in a terrific thermal after a six second engine run and was last seen chasing a bird, fondly imagining it to be his model!

Records in the **SOUTHAMPTON M.A.C.** climbed steadily at a recent meeting, the R.O.G. record starting off with 2 : 13, and after being bettered four times, finished at 6 : 55·8 o.o.s. M. Coxon, the culprit, also raised the H.L. figure to 6 : 50, again o.o.s. (Incidentally, a number of new readers are asking the meanings of certain abbreviations used in this section. For their information, O O.S. means "out of sight," R.T.P. stands for "round the pole," and 6 : 50 is an abbreviated method of saying "6 minutes, 50 seconds")

Whilst Mr. Pitcher was doing his stuff in the Irish Nationals, other members of the **CROYDON & D.M.A.C.** were putting in some good flights at Epsom. N. Marcus clocked over six minutes, o.o.s., to win the "Pitcher Wakefield Cup," followed by N. Standing and J. North. The last chap had a spot of hard luck, losing his model on a trimming flight after changing the motor for his third official flight!

The **PORTSMOUTH & D.M.A.C.** have secured a fine new trophy in the shape of the "Hobart Challenge Trophy;" donated for annual competition between the Portsmouth and Southampton clubs. First fly-off takes place at Stonycross Aerodrome on August 18th.

After a series of poor weather meetings, the **PRESTON & D.M.A.C.** struck good conditions for their "Welbeck Cup" event and some fine flights were obtained in spite of high winds. E. Vonslow won with an aggregate of 7 : 10·6, with G. Fore second with 7 : 07·6. Close finishing that! This club has a good scheme whereby coaches to various meetings are shared with the Blackpool chaps, thus ensuring one good load instead of two halves. Other clubs please note.

Members of the Hinckley club visited their close neighbours, the **COVENTRY & D.M.A.C.** at Bramcote (where the National Gliding contests took place recently). R. Powers, of the former club, made the best flight of the day with his glider, time 4 : 15·2. Full results of the meeting were:

| | | | |
|---|---|---|---|
| **Open Power :** | **A. J. Barr** | **Coventry** | **7·15 pts.** |
| | **M. Green** | **Hinckley** | **6·54 ,,** |
| **Open Glider :** | **R. Powers** | **Hinckley** | **5 : 11** |
| | **J. Barrell** | **Coventry** | **4 : 56·9** |
| | **I. Coplin** | **Coventry** | **4 : 30** |
| **Open Rubber :** | **A. J. Barr** | **Coventry** | **3 : 3·84** |
| | **J. Barrell** | **Coventry** | **2 : 3·65** |
| | **M. Green** | **Hinckley** | **2 : 2·72** |

The **BRISTOL & WEST M.A.C.** biplane contest was flown off under good conditions on June 1st, and a battle royal developed between A. G. Taig and G. Woolls. Rules were that the rubber motor should not exceed 25 per cent. of the total model weight ready to fly. Woolls finally placed first with a three-flight aggregate of 3 : 44·3, Taig totalling 3 : 37·6 and M. Garnett taking third place with 2 : 37·4. The flying of powered models on Durdham Downs has been banned by the Downs Committee, and anyone flying such models on this site render themselves liable to prosecution. (See last month's AEROMODELLER on this subject.)

As a contrast to the Bristol club's luck, the **LUTON & D.M.A.S.** had a howling gale for their round in the London Area Challenge Cup, flying against the Valkyries M.A.C. Valkyries finished up 42 seconds behind Luton with every one of their models smashed, whilst Luton had two models lost, one smashed and one "bodged up" sailplane. Best flight was S. Miller's "Ajax," which flew o.o.s. in 1 : 07.

**KINGSBURY M.F.C.** met the Brentford & Chiswick boys in the London Area Challenge event, and chalked up a loser. R. Stowards put up the best Kingsbury time with 9 : 30 from a lightweight. Aside from the competition, better times were put up, H. S. Clewes getting 12 : 6, P. Haley 6 : 40, and J. Hill 5 : 30, all models being lightweight gliders.

All clubs within a 50 miles radius of Reading are cordially invited to the Gala Day staged by the **READING & D.M.A.C.** at Theale on the 24th August next. Events will take place from 11 a.m. to 7 p.m., and full details may be obtained from the Hon. Secretary, Mr. H. W. Jackson, 1a, Victoria Road, Reading. E. Beeson has just raised the club sailplane record to 4 : 12 with a typical "bitzer."

Another record to go by the board is the H.L. figure of the **HATFIELD M.A.C.**, D. Middleton clocking 9 : 21·2.

**ENFIELD & D.M.A.C.** spent Whitsun at Fairlop instead of the British Nationals, and the same wonderful weather. A. Whalley lost his own-design lightweight sailplane after 4 mins. o.o.s., to be followed by B. R. Wildman's semi-streamlined rubber job which disappeared after 4 : 13·5 o.o.s. This is the model that took first prize in the Senior Rubber Driven Section at the last Dorland Hall exhibition.

A competition and demonstration staged by the **WOLVERHAMPTON M.A.S.** at the local Aero Club " At Home " produced some good times, as follows :

| | | |
|---|---|---|
| **Gliders :** | **E. Thompson** | **8 : 43** |
| | **W. A. Griffiths** | **7 : 34·5** |
| | **D. V. Bate** | **7 : 24** |
| **Rubber :** | **W. R. Ormerod** | **7 : 02 (one flight only)** |
| | **S. Ward** | **4 : 23·5** |
| | **H. Dolan** | **3 : 47** |
| **Power :** | **E. Hickman** | **5 : 58** |
| | **M. Smith** | **2 : 16·4** |
| | **T. Guy** | **1 : 37** |

Owing to call-up, the **WEMBLEY A.C.** is getting sadly short of members and anyone in the area interested is asked to contact Mr. K. N. Harris, of 99, District Road, Wembley. A visit to the Percival Aircraft factory at Luton proved extremely interesting to the chaps, the day finishing with buckshee flights in a Dominie. Club records at present are : Glider, 10 : 05 o.o.s. ; Duration, 1 : 25 ; and R.T.P., 1 : 32.

Over 3,000 people paid to see the exhibition put on by the **TORQUAY M.A.C.**, where all types of models were on view, including electric r.t.p. jobs. Good publicity from the Press and B.B.C. has put this club really on the map in the West Country.

From an extensive report received from the **AINTREE M.A.C.** I find that indoor flying had a lot of attention during the past winter, while the record attacks seem to be well under way outdoors. E. Cross holds the glider record with a flight of 5 : 26·3 o.o.s. with a " Dabchick," the general duration figure being held by A. Grethe's " Mick Farthing " at 1 : 10·9.

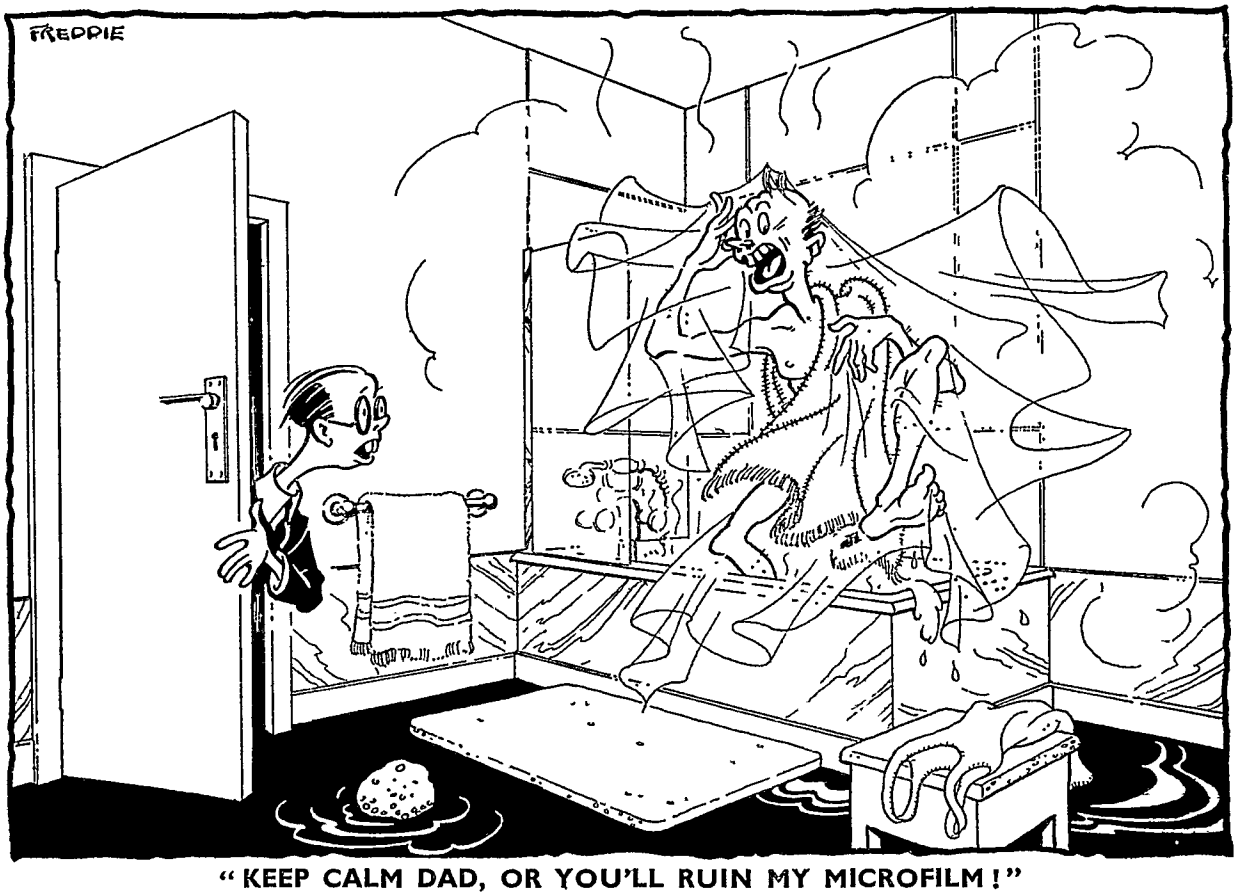
The **SPRINGPARK M.A.C.** wish to announce a Kent Rally, organised by themselves, and to take place on the 10th August. Open and team events will be held for glider, rubber and power models.

**BLACKPOOL & FYLDE M.A.S.** seem to be finding all the wind they don't want these days, if contest reports are anything to judge by. Flying his veteran " Stella Maris," R. F. Brownson aggregated 1 : 52·9 to win the Stevenson Cup, with C. J. Davey placing second. T. Howard won the Robinson Cup for juniors, aggregating 1 : 49. During the afternoon C. Davey broke the tailless glider record of 1 : 05 established by himself last year. The new figure is 1 : 38·7.

The **PETERBOROUGH M.A.C.** has just got back on its feet once more, after a more or less dead period during the war years. Many old members have rallied round, and new members are coming in every week. At a recent power contest V. Holley won with 88·3 points, second, N. H. Slade, 66 points. Later in the day Slade lost his plane when it struck a thermal following a 20-second engine run and went o.o.s. in about eight minutes. The job was recovered three weeks later from a tree, none the worse for its airing.

A well-produced bulletin is now put out by the **ASHTON & D.M.A.C.** The first issue deals mainly with historical matters respecting the club, but indications are that this club will soon be making itself felt in the contest world to the same extent that obtained before the war.

The younger members of the **PARK M.A.L.** have swung over almost *en bloc* to lightweights, this evidently paying dividends, as juniors took the first four club placings on Gamage Cup day. The " greybeards " made a comeback in Wakefield classes. A. Briggs' diesel-powered model flew from Epsom to Victoria in approximately two hours, and J. V. Brain's glider turned in a nice flip of 10 : 30. Another member




**" KEEP CALM DAD, OR YOU'LL RUIN MY MICROFILM ! "**

lost his " Mick Farthing Sailplane " from Mitcham Common, following it for an hour on his cycle before giving it up.

On the 11th May, G. Salt, of the **BIRMINGHAM M.A.C.**, made an unofficial flight of over 12 minutes with his Wakefield model, while, on the same day, B. Perry broke the club lightweight r.o.g. record with a flight of 10 : 12·5, also clocking 4 : 46 with a Wakefield. A contingent went to the Nationals, and though doing nothing spectacular the first day, showed their mettle when Salt won the Weston Cup on the Monday. During a visit to the Leicester club, P. Ashen won the glider contest with 4 : 27·5, Chuck Doughty cleared the board in the power event with 2 : 03·5, and R. J. Perry clocked 4 : 09 to win the open rubber class. Perry also broke the club lightweight glider record with a flight of 5 : 36·5 o.o.s.

Readers in the Harrogate area will be interested to learn of an exhibition to be staged by the **HARROGATE M.E.S.** from the 22nd to 25th October inclusive. All intending entrants should contact Mr. K. G. M. Temple of 43, Valley Drive, Harrogate, for full particulars.

In some eighteen months, the **UPLANDS M.F.C.** has increased its membership from half a dozen to forty-five. Who said aeromodelling was losing its grip ? This club's glider record now stands at 3 : 47.

The Isleworth Youth Club is to start an aeromodelling section in September, with membership open to all ages between 14 and 21. Please get in touch with A. W. Barrett at Marlborough S.G. School, London Road, Isleworth, for further details. This also applies to the Tonbridge & D.M.E.S. the chap to contact in this case being Mr. C. C. Langer, The Warren, Brenchley, Kent.

A. H. Stenning, 19, Durban Road, Patchway, Bristol, wishes to contact enthusiasts interested in jet drive with a view to exchanging ideas, etc. Any takers ?

And that brings me to the end of this month's batch of reports. Things are humming in the aeromodelling world, and from all accounts the movement is spreading to all parts of the country. Keep up the good work, but above all, fly with care ! We don't want the local bobbies issued with orders to " keep those pesky flying bods. under control." Wishing you bags of thermals—and the models returned, of course.

The CLUBMAN.

## CLASSIFIED ADVERTISEMENTS

**PRESS DATE for October issue—September 1st.**
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### DISPOSAL

Buccaneer 48, test glided only, Caton air wheels, timer, Ohlson 23. Bench run only. £10 or best offer over.—Lucas, Hillside, Tongdean Road, Hove.

Atlas 3 c.c. engine, prop., 2 coils, condensers, timers, plugs, perfect. £6.—Herbert, 22, Dunleigh Road, Bridgwater.

68-in. span petrol model, complete ready to fly, 6 c.c. petrol engine (bench tested only), timer, airwheels, etc.—£15.—Box 72.

Mills diesel, bench run only, also 5 c.c. Kestrel petrol engine, self starter for petrol engines. £10 or sell separately.—Knapp, 87, Cornwallis Avenue, Aylesham, Kent.

3·5 c.c. Atlas engine, bench tested only, price £4. 10s.—Culley, 9, Wimborne Avenue, Norwood Green, Southall, Middlesex.

Clansman 5 c.c. diesel and prop., test run only ; Reeves 6 c.c. petrol, 2 Nife batteries, coil and condenser. £12 or will sell separately.—Corke, 7, Popes Grove, Shirley, Croydon.

AEROMODELLERS from December, 42–June, 47, 32/– ; Ivory Gull, almost finished, 15/6.—D. Smith, 18, Glenville Avenue, Blaby, Leicester.

5 c.c. Owat diesel and propeller. Bench run only. £9 or nearest.—Dabnor, 8, Ryewood Cottages, Rye Lane, Dunton Green, Sevenoaks.

3.5 c.c. " Dyne " petrol engine, unused and new, £3. Vol. VII " Aircraft," new, £1. 5s. 0d. AEROMODELLERS, Vols. IX–XII, excellent condition. " Aeronautics," Vols. XII–XVI, excellent condition. £2. 5s. 0d.—Box No. 73.

3 c.c. Atlas petrol motor, as new, complete prop., coil, condenser. £6. 6s. Test run only.—Greenslade, Sunnyhome, Park Street, Torquay.

42 AEROMODELLERS, 44 A.T.C. " Gazettes," 99 " Flights," 100 " Spotters," all 1942–47. Offers.—Tothill, 19, Westheath Villas, Bodmin.

AEROMODELLERS, October, 1942–February, 1947, in perfect condition, best offer accepted.—J. Mawby, 18, L.N.W. Terrace, Netherfield, Nottingham.

Every AEROMODELLER except two, well handled ; " A.F.P." Vol. I ; and two 17 Constructors. Offers.—Palmer, Whaddon Avenue, Cheltenham.

10 ft. " Celestial Horseman " glider. Good workmanship. £10. S.A.E. for particulars.—3092512 Mobre, W/T Workshops (Signals), 39 M.U., Colerne, Wilts.

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Mills diesel with prop., run 5 mins., £4. 10s. Write.—Britcher, 6, Tower-Hamlets Road, Dover, Kent.

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AEROMODELLERS, June, 1943–July, 1946, good condition.—Offers over 25/– to E. R. L. Walker, Cuilfail, Glenlockhart Bank, Edinburgh, 11.

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### WANTED

Wanted—1928, 1938 issues Jane's " All the World's Aircraft." Good prices paid.—Write R. D. Hadley, " Cedars," Warlingham, Surrey.

Vol. II " A.F.P." in good condition, required.—Write, stating price.—Clarkson, 27, Westminster Drive, Westcliff, Essex.

AEROMODELLERS, 36–47, " Model Airplane News," " Model Engineer," " Motor Sport."—14888725 Tpr. Hobbs, M.E.R.A.C. Schools, M.E.L.F.

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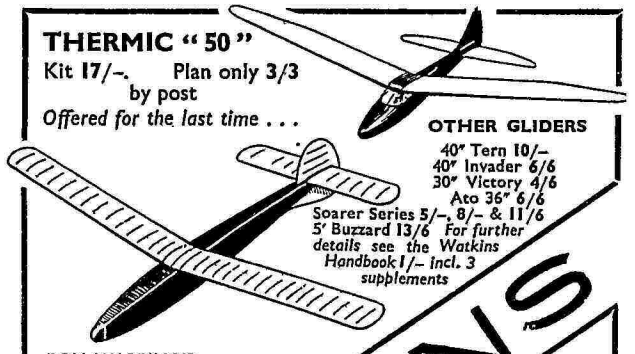

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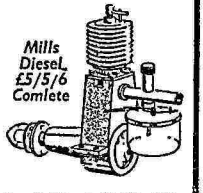

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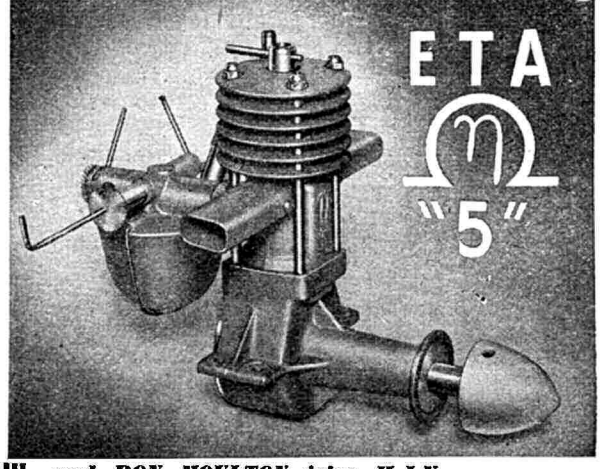


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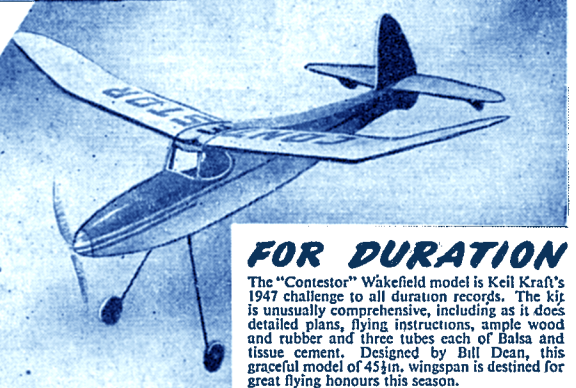

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