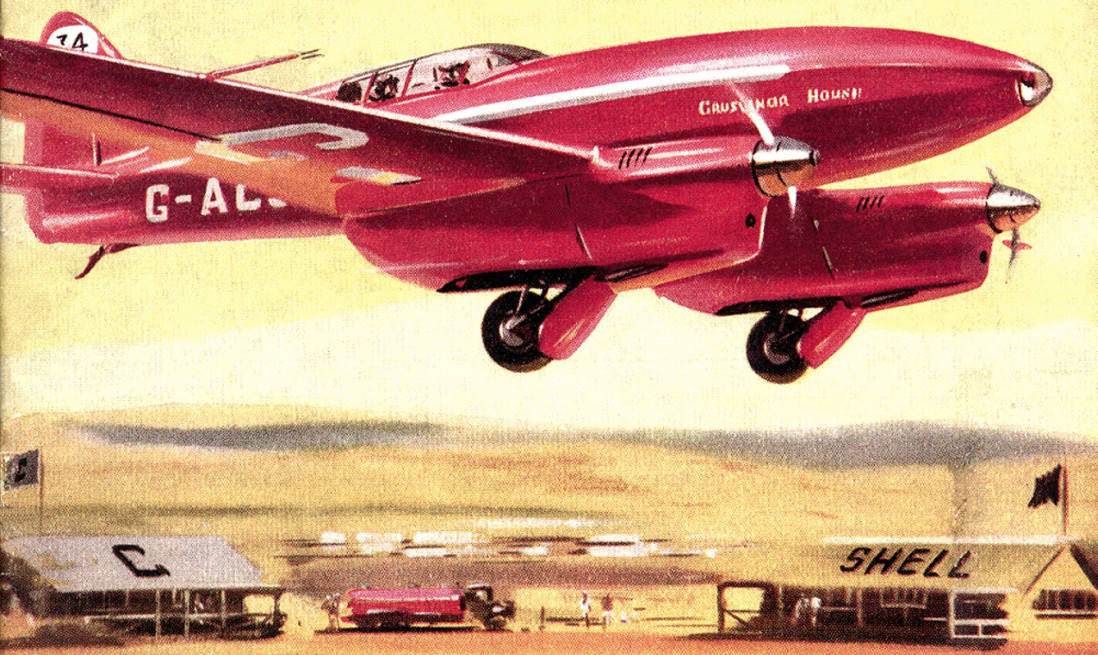
AERO MODELLER

MAY 1958



The Racing COMETS

1'6

BACLEY

BAMBI

The World's smallest production diesel engine. This has been developed for the experienced Modeller and is ideal for small scale models. Complete with metal propeller blank.

Bore—.218"
Stroke—.250"
Capacity—.15 c.c.
—.009 cu. ins.
Weight—¼ oz.
Propeller—4½ dia.

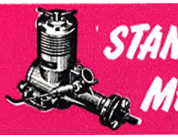
Price £3 . 5 . 0
P. Tax 12 . 6
Total £3 . 17 . 6

DART

Undisputed champion of the 'point fives', it is built like a watch and has a performance that would not disgrace many larger engines.

Bore—.350"
Stroke—.350"
Capacity—.5 c.c.
—.03 cu. in.
Weight—1¼ ozs.
Propeller—C/L 6" x 4"
—F/F 7" x 4"

Price £2 . 14 . 0
P. Tax 10 . 5
Total £3 . 4 . 5



STANDARD MERLIN

For those with a tight budget this is the ideal engine. All the virtues of the Super Merlin, but without the extra fittings. Positive lock needle valve.

Bore—.375"
Stroke—.420"
Capacity—.76 c.c.
—.46 cu. ins.
Weight—1¼ ozs.
Propeller—C/L 6" x 6"
—F/F 7" x 4"

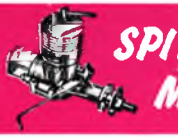
Price £1 . 16 . 9
P. Tax 7 . 1
Total £2 . 3 . 10

SUPER MERLIN

Performance is as good as it looks, and it really is easy to start and operate. Complete with propeller, spinner and tommy bar.

Bore—.375"
Stroke—.420"
Capacity—.76 c.c.
—.046 cu. ins.
Weight—1¼ ozs.
Propeller—C/L 6" x 6"
—F/F 7" x 4"

Price £2 . 4 . 1
P. Tax 8 . 6
Total £2 . 12 . 7



SPITFIRE Mk. II

The perfect engine for the beginner. Combines easy starting, flexibility and long life with sparkling performance. A limit stop ensures that the compression setting can be found without difficulty.

Bore—.425"
Stroke—.470"
Capacity—1 c.c.
—.06 cu. ins.
Weight—3 ozs.
Propeller—C/L 7" x 4"
—F/F 8" x 4"

Price £2 . 4 . 1
P. Tax 8 . 6
Total £2 . 12 . 7

SABRE

This powerful motor is ideal for the smaller radio control model as well as free-flight and control line. Complete with propeller, spinner, tommy bar and plastic fuel tank.

Bore—.525"
Stroke—.420"
Capacity—1.49 c.c.
—.09 cu. ins.
Weight—3½ ozs.
Propeller—C/L 7" x 6"
—F/F 8" x 4"

Price £2 . 4 . 1
P. Tax 8 . 6
Total £2 . 12 . 7

RAPIER

A high performance engine with twin ball races, downdraught carburettor and rear rotary valve. Provision for a two-speed fitting or choke assembly makes it ideal for contest work and radio control.

Bore—.580"
Stroke—.575"
Capacity—2.49 c.c.
—.15 cu. ins.
Weight—5½ ozs.
Propeller—C/L 9" x 6"
—F/F 9" x 4"

Price £3 . 7 . 0
P. Tax 12 . 11
Total £3 . 19 . 11

MANXMAN

A powerful, rugged motor suitable for the larger model especially for radio control work. Complete with spinner, tommy bar, and integral plastic tank.

Bore—.687"
Stroke—.562"
Capacity—3.5 c.c.
—.21 cu. ins.
Weight—5½ ozs.
Propeller—C/L 9" x 8"
—F/F 10" x 6"

Price £3 . 5 . 0
P. Tax 12 . 6
Total £3 . 17 . 6

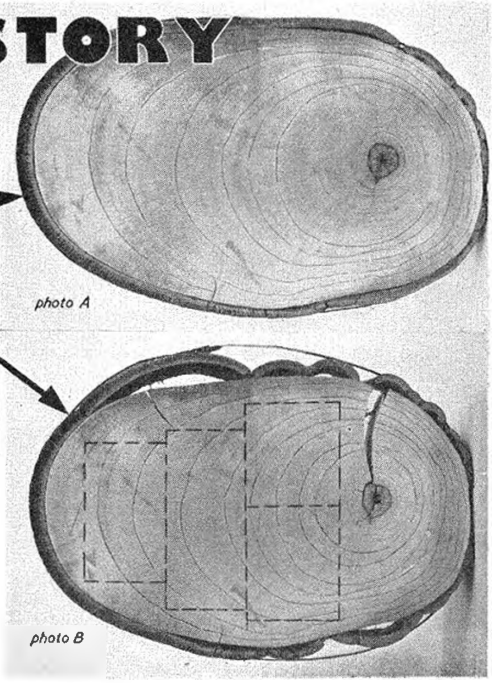
Engineered to last a modelling lifetime by

DAVIES CHARLTON LTD.

HILL'S MEADOWS DOUGLAS, ISLE OF MAN

BALSA STORY

PART 12



One of a series of articles written by John Paterson, Managing Director of Solarbo Ltd.

AFTER ALL my talk about Balsa trees, I thought it would be more complete if readers could see a section of a Balsa tree, so I have specially imported some logs from Ecuador and by the time this goes to print most of our Accredited Dealers should have a section of these logs to show you.

If you will look at the photograph taken of a pile of these logs you will notice the very great variation in shape and size. If you look carefully you will be able to see the pith heart of the tree and how it varies in position in the different logs.

In the other two pictures, I have drawn in ink the growth rings on a section of a Balsa log and also indicated on photo B, by dotted lines, the kind of planks of wood that might be cut from a tree like this.

I have deliberately chosen a log with the pith core, which is the growth centre of the tree, very much to one side. You will notice how year by year the tree has put on much more wood on one side than the other and, as you would expect, the wood on this side is much lighter than on the other.

You will, therefore, see that pieces of lumber cut from this tree must have a great variation in the density of the wood, both in the different pieces and from side to side of the individual piece.

The reason I have shown two pictures of this section of a log is so that you can see how a log splits as it dries and why, therefore, we cannot import Balsawood in log form. Photo B was taken twelve days after photo A.

The section had been cut off a log which was still green and banded tightly with steel strapping and put in my office. You can judge from the gap between the steel strapping and the wood just how much it has shrunk and you will also see what big cracks can occur.

You can also realise why it is necessary to cut relatively small pieces of Balsawood when the logs are sawn, otherwise they would just split in the drying process.

You will, no doubt, wonder why this particular tree has grown so lop-sided. I cannot, of course, give an exact reason, but it would probably be because it had a more effective root run on one side than the other. It might have been a tree on the edge of a clump with less competition on one side than the other, or there might have been a big rock on the side which has grown less.

The feed system of a tree, that is from root to branches, is relatively localised in a vertical plane. If you put a dye by the roots on one side of a tree it will colour the branches immediately above it. If you ring-bark a tree, leaving a gap on one side, the branches on that side will continue growing whilst the others die.

MODEL AERO ENGINE ENCYCLOPAEDIA

- **Novices** *need it! As essential to every new aero engine operator as fuel in the tank!*
- **Control Line Fans** *whether Stunt, Combat, Team Race or Speed addicts will find fascinating facts on fuels, tuning, tanks, tricks of the trade in its pages.*
- **Power Duration Types** *must not let it out of sight—expert advice on their particular angle plus lots of exclusive gen on comparative r.p.m. checks make it a must.*
- **R/C Operators** *will devour its speed control advice and learn enough about their engines to have time to get the radio side really under control.*
- **Engine Builders** *will lap up the nine chapters on engine building and accessories and cannot fail to profit from Fred Carter's, Pete Buskell's and Dave Sugden's words of wisdom.*
- **Sport Fliers** *who want to really enjoy their hobby can leave all the headaches at home when they have digested these invaluable 208 pages.*
- **Jet Men** *will relish the details of how to make a 22-in. Brauner pulse jet.*

CHAPTERS ON . . .

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208 pages size 8¼ by 5¼ in., cloth bound, with three colour dust jacket, over 300 sketches, photos, data tables.

12/6

(Post Free Price 13/6)

TO SPEAK of this latest MAP book as the most significant event for power modellers since the Brown Junior was invented is about the least we can say for it. Its 75,000 words and over 300 illustrations could only have been produced by the grand team whose work is gratefully acknowledged, and the wealth of their wisdom has been carefully edited and arranged with additional matter by our own Ron Moulton, who enjoys unrivalled opportunities to try the best of the world's model products. There is no member of our aeromodelling community who will not benefit from reading this new work, which contains in book form so much of the power gen that has appeared in article form in past "Aeromodellers" with the addition of every useful fact on aero engines needed to complete the picture.

MAP

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An open letter

From: Air Marshal Sir John Whitley, K.B.E., C.B., D.S.O., A.F.C.

AIR MINISTRY (AM16),
ADASTRAL HOUSE,
THEOBALDS ROAD,
LONDON, WC1

Dear Sir,

Suggesting a career is always a big responsibility—not least for parents with a son growing up. In the final analysis, the choice must lie with your son himself. But you can help him in his choice.

Here, therefore, are some facts about one career which is particularly attractive to an ambitious young man. I refer to a flying career in the Royal Air Force, about which there seems to be some misconceptions at present.

First, let me assure you that flying will continue in the Royal Air Force for as far ahead as can be foreseen. The Royal Air Force has the prime responsibility for the air defence of this country. For young men therefore who are trained to tackle the problems of the air in the air, there will be more—not fewer—opportunities in the missile age. This is especially true of those who qualify now for a permanent or short service commission and come successfully through their Pilot's, Navigator's or Air Electronics Officer's training. In a service as complex and as forward-looking as the Royal Air Force, there is always a constant demand for the right kind of senior officers.

The new increases in pay and allowances effective from the 5th April mean that a Flight Lieutenant of 25 can, with full allowances, earn more than £1,500 a year. It is a job of high responsibility. Quite apart from flying and its fascinating skills, there are the manifold duties of an officer; to men under him; in staff, liaison or training jobs; and, perhaps, in high command.

You know yourself if your son has the character, intelligence and fitness for this magnificent (but exacting) life. If he is over 17½ and has G.C.E. or equivalent to the required standard, you may be doing him a service if you write to the Air Ministry for fuller information.

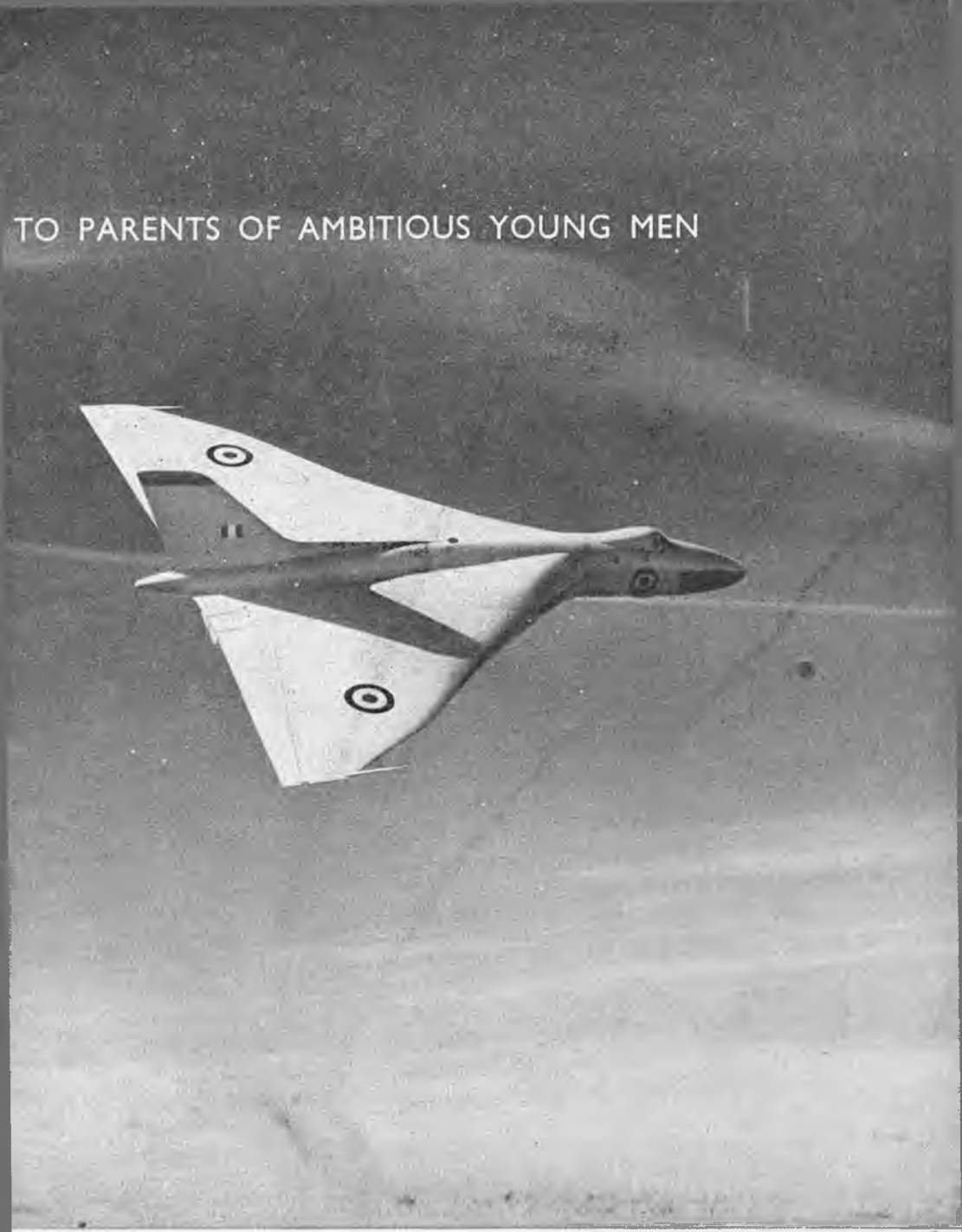
Let me add that the country needs the right kind of young men for this vitally important job, and it needs them now.

Yours faithfully,

Air Member for Personnel

To any young man who wants to fly...

TO PARENTS OF AMBITIOUS YOUNG MEN



For further information write, stating age and educational qualifications to : Air Ministry (AM18), Adastral House, London, WC1

VOLUME XXIII
NUMBER 268
MAY 1958

Managing Editor — C. S. RUSHBROOKE
Editor — H. G. HUNDLEBY
Assistant Editor — R. G. MOULTON

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Our thanks are due . . .

. . . to the many readers who sent completed Readers' Survey Forms from the March issue, in particular those sufficiently interested to write accompanying letters. Although it will be some time before the momentous task of categorising the information has been completed we emphasise that each and every one of the accompanying letters has been read. Our only regret is that time does not permit individual answers, and trust that the readers concerned will look upon these few words as a hearty appreciation of their interest.

It was invigorating to read the constructive suggestions and forthright comments expressed on the contents of the magazine. Particularly praiseworthy was the unbiased attitude of so many correspondents, who did not allow their own particular interests to prevent them commenting favourably on features catering for other aspects of the hobby.

One or two contest fliers for instance, mentioned that they enjoyed the old-time flying stories and appreciated "your magnificent scale drawings". In this latter respect George Cox received many bouquets, and taking the risk of singling out a particular contributor, we do feel that George has done a terrific job. Certainly his drawings set a standard of aeronautical draughtsmanship unequalled for quantity as well as quality of detail, and have a reputation now internationally established.

Another opinion, to which we have given some thought, expressed the wish that we should cater not only for popular taste, but also educate our readers by publishing more technical articles on the aerodynamic aspects of model flying. The recent article by Hansheiri Thomann on A/2 design being singled out as a good example.

One young reader enclosed with his form a plaintive note requesting we should find he and his schoolmates a flying field, enclosing a list of local bus routes so that we could lay on one suitable for public transport! As much as we would like to help we trust he will realise that this type of service is outside our scope, and best dealt with by the S.M.A.E. who we are sure will be pleased to put him in touch with his nearest club.

A number of letters came from people describing themselves as "armchair modellers" who wrote expressing their gratitude to AEROMODELLER for keeping them in touch with the hobby, now that for one reason or another they were unable to actively participate. We only hope that continual study of our pages will eventually lure them back to the building board.

Sputniks were not appreciated, and it would appear that "A/M" readers prefer their humour, not in the form of flying gimmicks, but in the more fleshlike guise of maestro McGillicuddy. It seems, that of all those who have come and gone from our pages, he is the most missed character. Providing certain delicate negotiations can be concluded satisfactorily, and here the maestro has mentioned the penurious state of Auchengargle Club funds and other sundry items of expense such as complimentary supplies of haggis at Hogmanay, then his return can be assured.

One reader took us to task for not including in the Survey the question "Which section of AEROMODELLER do you read first?" and then goes on to say that he turns straight to the classified advertisements. This, it can be imagined, has caused strained relations between the Editor and the Advertisement Manager.

In more serious vein we mention that all of the letters received confirm our long-held view that AEROMODELLER is fortunate in enjoying a live and intelligent readership of which we are justly proud. We value your opinions, and for this reason hope that many more readers will be sending in a completed Survey Form before the closing date of April 30th. Blank forms are still available for those who need them and the "Popularity Pick" contest with its £25 cash prize is open until the same date.

Escadrille Lafayette

Vintage aircraft enthusiasts will prick up their ears when they see this famous squadron name from the 1914-18 war. We certainly did when we heard that a film of this squadron was on its way, but having seen the film in question feel that its present title "Hell Bent for Glory" is far more in keeping with the script. The only thing that baffles us is how the Director, William Wellman, who won a Croix de Guerre with the original Escadrille Lafayette ever came to make such a picture.

To compensate for the somewhat dreary plot there are, however, one or two excellent flying scenes, and although history has been stretched by the inclusion of Stearman trainers and Nieuport 28's in combat scenes, the air to air cinematography is good. We particularly liked the many excellent shots of Bleriots being used for pilot training one of which is shown right. Just distinguishable in the background are Bleriot "Penguin" trainers, a SPAD, a Fokker D VII, the Nieuport 28 mentioned before, and a Camel.

Cover Story

Desperately lost, twelve hours out non-stop from Mildenhall, Charles Scott and Tom Campbell-Black had almost given up every hope of being able to continue beyond the first stage of the great MacRobertson England/Australia Air Race in October, 1934, when they descended through dense cloud to find a welcome oasis in the midst of utter desolation. Their haven was the R.A.F. emergency aerodrome at Kirkuk, and once safely down, they took on twenty gallons of precious petrol and refreshed anew, flew on to Baghdad.

The dramatic moment of take-off is captured by cover artist Laurie Bagley as the graceful D.H.88 Comet leaves the dusty landing ground. The full story of the Comets and this great race together with a flying replica will be found on pages 236 and 238.

Missing Name

There is one name missing from our story of the racing Comets on the following pages—that of the late Sir Charles Kingsford-Smith, the Australian hero of so many record flights in the Fokker F. VII 3m "Southern Cross" detailed as a scale model in our March issue. "Smithy" set his heart on winning the England-Australia race, and as soon as de Havillands announced the projected Comet, he booked an order and asked for construction and performance specifications.

All that D.H.s would guarantee was a cruising speed in excess of 200 m.p.h., and that was not enough for Smithy, who had enough money from a National Fund, and personal backing of Sir Macpherson Robertson, to buy what he considered the very best machine. He chose a low-wing Lockheed Altair, and in May '34 tested it as the *Anzac* in California. It was shipped to Australia, and re-christened *Lady Southern Cross* before establishing itself as the fastest and most efficient aircraft in the Southern Hemisphere by making many record flights across the Australian Continent. But Sir Charles left his departure for England rather late, and a fractured cowling prevented him from leaving for Singapore on what was to be his first leg of a record flight to Mildenhall.

Bitterly disappointed at missing the opportunity to compete after six months of concentrated preparation, and much criticised in the Australian press, he became the Nation's whipping boy and sought any means of justifying his choice of 'plane. When the MacRobertson race was on, "Smithy" and Capt. Taylor left for California in the Altair to make a reverse journey of his *Southern Cross* epic, crossing the 7,000 miles of Pacific in three stages, a magnificent achievement that was somewhat overshadowed by the race news.

Unable to sell the Altair again in the U.S.A., "Smithy" shipped it to England and attempted to break Scott and Black's record flight to Australia. Within days the world was to mourn the passing of this great aviator, for the fated *Lady Southern Cross* was lost for ever in the Burmese jungle.

Engine know-how

208 pages of gen for all model engine enthusiasts, including all the notable features published in AEROMODELLER on making your own racing 2·5 c.c. diesel, pulse jet, revolution indicator, fuel blending, etc., etc., plus invaluable tabulated data on British and American engine tests, will make the "Model Aero Engine Encyclopaedia" indispensable for every practising aeromodeller. Beginners are given instructive introduction to the diesel, glowplug or petrol engine, experts can draw on its wealth of comparative data and sketches ranging from torque absorption curves to the chicken-hopper tank. For 12s. 6d. this handsomely bound volume provides a complete reference work on model aero engines.

Obituary

The aeromodelling movement, and in particular the North Western Area, lost a stalwart enthusiast on February 16th, 1958, with the passing of Mr. Donald Salloway. This 54-year-old Lancashire lad was noted for his outspokenness, and was for many years a leading light in the North Country, where his guidance as Area auditor provided a financial position that is envied throughout the S.M.A.E.

Don first became known in the aeromodelling fraternity about 1944, and was a very keen participant in the affairs of the original "Northern Area", later sub-divided geographically into the present Areas. He was at that time associated with the aeromodelling activities of the Rochdale A.T.C., and played a major part in organising the first post-war Northern Rally at Springfield Park. At various times Don was Press Sec., Comp. Sec., Area Delegate, and Auditor, the last two positions being held by him for the past eight or nine years.

Don carried on his business of timber merchant and manufacturer in Rochdale, and was very well known to aeromodellers through his activities both on the field and in Council. We shall miss his breezy personality and unmistakable figure, and tender our sincere sympathies to his family.

Gliding holidays

A gliding club offering holiday courses, and not included in our survey last month is that at Detling, near Maidstone. Ideally situated for London area and people in the South-East, the Kent Gliding Club has a number of practising aeromodellers among its members, notably the inventive George Court, responsible for some of the first ever model diesel engines, and radio controller Charlie Dance. Courses are open for beginners in June and September.

Record-holding indoor design

The one-third fullsize plan on page 242 of this issue represents the very latest development in microfilm covered indoor model design. Ernest Kopecky of New Jersey, U.S.A., is the designer, and on June 29th last he flew it for the very high time of 33 minutes 9·4 seconds to break the U.S. Class D record. The model was test flown on 1,000 turns, calling for no adjustments, and then on1,800 turns it made a 26½-minute flight. Next time, 2,400 turns were piled on and it climbed rapidly to the top of the 192-ft. hangar in about 5½ minutes, then began the long cruise down after levelling off. The motor was completely unwound for a "deadstick" landing at 30 minutes, then came the record.

Use the wing!

We were looking at a couple of radio models the other day, wondering how the 16 oz./sq. ft. loaded wings could possibly cope with the situation. Covering sag reduced an already thin section to about 8 per cent. and the camber over the vital first 30 per cent. chord was so far distant from the desired section that the builder might just as well have made it by eye instead of by design. Why? A sheeted leading edge—especially on the upper surface can make all the difference to a weighty model particularly for radio control, one need only go to the maximum camber point, for beyond that, it is common aerodynamic practice today to continue the airfoil in straight lines to the T.E. Incidentally a blunt trailing edge makes no difference to any model where duration is not the aim, so why not keep it thick and warp resistant?

One airfoil which is most popular with American Radio Control designers, e.g. *Smog Hog, Astro-Hog, Breezy Sr. Ascender*, is the 2400 series, either 15 or 12 per cent. thick. Ordinates are as follows:

Above the late Don Salloway, known affectionately to his fellow modellers of the contest field as "Sally"

NACA 2412

	Upper Surface	Lower Surface
Station	Ordinate	Ordinate
0		0
1·25	2·15	—1·65
2·5	2·99	—2·27
5·0	4·13	—3·01
7·5	4·96	—3·46
10	5·63	—3·75
15	6·61	—4·10
20	7·26	—4·23
25	7·67	—4·22
30	7·88	—4·12
40	7·80	—3·80
50	7·24	—3·34
60	6·36	—2·76
70	5·18	—2·14
80	3·75	—1·50
90	2·08	—0·82
95	1·14	—0·48
100	(0·13)	(—0·13)
100		0
L.E. Radius: 1·58		

NACA 2415

	Upper Surface	Lower Surface
Station	Ordinate	Ordinate
0		0
1·25	2·71	—2·06
2·5	3·71	—2·86
5·0	5·07	—3·84
7·5	6·06	—4·47
10	6·83	—4·90
15	7·97	—5·42
20	8·70	—5·66
25	9·17	—5·70
30	9·38	—5·62
40	9·25	—5·25
50	8·57	—4·67
60	7·50	—3·90
70	6·10	—3·05
80	4·41	—2·15
90	2·45	—1·17
95	1·34	—0·68
100	(0·16)	(—0·16)
100		0
L.E. radius: 2·48		

The Racing COMETS

by R. G. Moulton

IN THE EARLY months of 1933 that great Australian philanthropist Sir Macpherson Robertson announced that he would award £15,000 prize money and bear the £5,000 organising expenses for an Air Race from England to Australia. Sir "MacRobertson" intended that the 12,314 mile race should commemorate the Victoria State Centenary, and for that reason Melbourne was to be the terminal. The month of October, 1934, was chosen to take advantage of a full moon. Already renowned for his Antarctic exploration backing, the 75-year-old confectioner was not to know that his brilliant idea was to produce the genesis of the war-winning Mosquito or to launch the Douglas Commercial series of airliners on their well-deserved path of success.

It was said that a state of universal apathy existed in aviation during 1932/3. Pilots were profuse, new designs stagnant and, although long distance records were being established to the remote extremities of the Empire by the few wayfaring pioneers of the air routes, it was only in the U.S.A. that the aviation industry could provide a MacRobertson winner straight from the assembly line. All eyes looked to Boeing, Bellanca, Douglas, Granville, Lambert, Lockheed and Northrop with their powerful radials, flush rivetting . . . and high cost, a Northrop Delta being $36,000.

This American threat of a MacRobertson walkover perturbed the de Havilland directors, so much so, that in January, 1934, allowing themselves only nine months at the most for development, they announced that they would build a special racer provided orders were placed before the end of February. The price was a nominal £5,000, and the only guaranteed detail was that the racer would exceed 200 m.p.h.

At once Jim Mollison cabled his wife Amy (still in America after their epic "Seafarer" trans-Atlantic crossing and attempts on the long-distance record with "Seafarer II", both de Havilland Dragons) and they booked the first of the D.H. 88's with a £1,000 deposit. In quick succession, Bernard Rubin the racing motorist, and Mr. A. O. Edwards, Chairman and Managing Director of Grosvenor House Hotel, made the order up to three, and the spirit of enterprise which has so typified de Havilland activity in all its years, reached a new zenith. With three airframes to build, and ten special engines to prepare, D.H.'s were committed to approximately £30,000 expenditure on a project that would have to be completed in eight months—in triplicate —and had to meet a specification hitherto considered the prerogative of 750 h.p. or more American racers of the Bendix Trophy category. For this they could expect £15,000 payment, while the Race winner had the opportunity of a £10,000 first prize plus a £500 Gold Cup.

Financially a loss and aerodynamically so demanding, the D.H.88 was born of the incentive of the MacRobertson Rules and was to offer the Hatfield design staff data so providently valuable five years later when the 98 "Mosquito" left the drawing boards. For that alone the gamble was a success. For prestige and advertising the name of Comet became synonymous with de Havilland (and a new streamlined Benskin's Hostelry adjacent to the airfield) and will be forever perpetuated by the 106 jet airliner.

There were two possible approaches to the D.H.88 design. Either it could be a 260 m.p.h. high-speed type with a 1,700 mile range, or a 220 m.p.h. 2,800 mile range design taking full advantage of variable pitch propellers. The route stages defined the latter approach. Hamilton propellers proved to be lacking in root efficiency for the air-cooled in-line engine, as their blade shape was created for radials, so the two-position French Ratier props were chosen, and although a source of trouble in later flights, their simple pressure plate actuated pneumatic system was the key to Comet range and take-off performance. (In brief, the prop was held in fine pitch by an 80 lb./sq. in. air reservoir inflated on the ground by a bicycle pump. When the Comet reached 150 m.p.h. the flat disc on the spinner pushed back, releasing the air pressure, and the props changed to coarse pitch—permanently).

Just as the power units needed a new approach, the Comet airframe was entirely radical. A retractable u/c and split flaps were new refinements and the stressed skin wing torsion box with diagonal spruce surface laminations for the elegantly tapered R.A.F. 34 section cantilever wing was a design introduction which established the construction system of many subsequent types. With so many new ideas in one new airframe, it was only natural that the February to October period of 1934 should be filled with excitement.

Mr. A. O. Edwards engaged two of the finest pilots available for his aircraft in C. W. A. Scott, who had flown the route three times solo in Moths and had an intimate knowledge of trans-Australian routes, and Tom Campbell Black, of long-distance flight to Kenya fame.

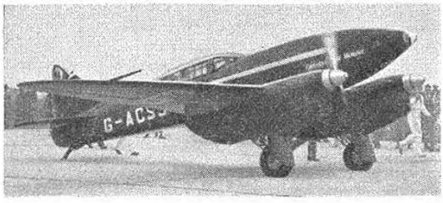
Bernard Rubin engaged Ken Waller, a Cinque Ports flying instructor as his co-pilot, then fell ill and at first F/Lt. Fielden (now A/Commodore) the Prince of Wales' pilot, was nominated to take his place. Such was not to be, and after persistent application, Owen Cathcart-Jones, who had been chasing sponsors for a Northrop Delta entry with Miss Marsinah Nelson as co-pilot over the past year, managed to team up with Waller in Rubin's plane. Cathcart-Jones had great F.A.A experience in the Far East and was a pilot of considerable ability.

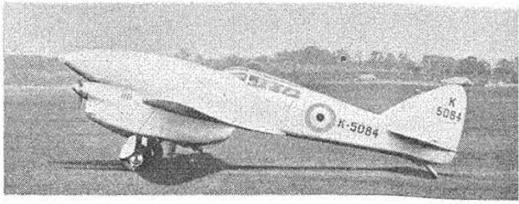
On September 8th, only six weeks prior to the actual start of the great race, Captain Hubert Broad flew the first of the Comets —undecorated G-ACSR– from Hatfield. It was a tremendous structural achievement to have flight tested so new a design barely six months after the initial design stage, but there was still much to be completed in those final weeks. The six pilots were given a quick briefing on the new features around G-ACSP, resplendent in Amy's favourite shade of black with gold trim, the first Comet to be handed over.

Only eight days before the race date the Red and White G-ACSS and dark Green and White G-ACSR were finally passed ready to fly and completed the trio. It was then a question of practice and all went well until the 18th, when the undercarriage collapsed as CSR was making its fourth landing of the day. Quick action saved all but the props, and as only one spare was available, Fairey's were asked if they could straighten the other bent blades. Eventually, after a time chasing night, when a propeller specialist was sent by Ratier's from France, the last prop was set right and the Comet given a final test only 12 hours before the start of the race.

The estimated performance of the Comet had been confirmed in the all too few test flights, but the range was still a "paper" figure. When Jim Mollison left Mildenhall at 6.30 a.m. on Oct. 20 in "Black Magic",

Left: The race-winning "Grosvenor House" in Red and White decor, taxying at Mildenhall. Right: In R.A.F. Silver as K 5084 the same Comet now has enlarged cooling intakes, seen at Hendon, 1936. Photographs by courtesy of "The Aeroplane"



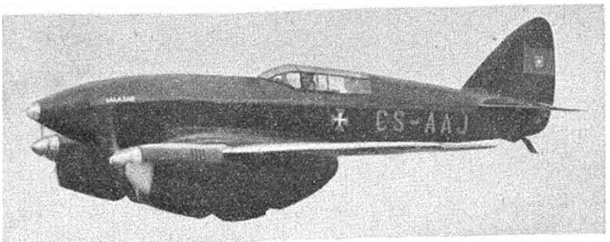


his was the first Comet to leave the ground with a full load, yet he was airborne in 600 yards, and soon headed for a 2,330 miles non-stop trip to Baghdad. Cathcart-Jones and Waller were fourth away and after a bad swing to starboard, had to abandon the first attempt and lost a few minutes while Scott and Campbell Black left in the "Grosvenor House". For most of Europe there was a heavy overcast and visual map reading impossible. Both Scott and Cathcart-Jones were virtually lost until they crossed the Black Sea and headed into Asia. Clearly the Mollisons were well ahead. They made Baghdad, taking time off for a quick bath, and left the 'drome in a flurry of dust as the Red Comet CSS arrived to refuel. Scott and Black had been lucky to find the R.A.F. emergency field at Kirkuk and twenty gallons of precious fuel taken on had saved a tricky situation for them in this first important leg.

Cathcart-Jones and Waller were much less fortunate. Heavy storms over the Taurus mountains and impending darkness had put them off course and a really desperate situation, even of contemplated suicide, developed when all seemed lost over the vast desert expanse. Fortuitously, they found some lights and brought off a miraculous landing at Dizful in Persia, slept the night and crept into Baghdad in the early morning light. Refuelled, they headed for Bushire, but after take-off the starboard engine failed and dense smoke called for emergency action. Fuel was dumped; but a fire risk was obvious, so the green Comet came in with a dangerous 100 m.p.h. touchdown speed. Six hours later, after all cylinders had been removed and one replaced (all in the oppressive heat of the airfield centre) they were off once more to catch up with the Mollisons at Karachi. This "equal third" position was to be short-lived, for a petrol leak delay held back CSR while "Black Magic" just beat the rolling sea-mist as it swept across the field. Yet more delay was to come for the unfortunate green Comet and it was not until the early morning of the next day that the mist cleared sufficiently to permit a take-off for Allahabad—where Cathcart-Jones and Waller caught up once more with the inexplicably retired Mollisons.

By now Scott and Black were well ahead. First in the race to Allahabad and fastest on the next 2,210 mile stage to Singapore (in 12 hours), their situation seemed unassailable. But they had a terrible time battling with all four feet on the rudder bars and all hands to the dual control-columns through a storm over Malaya and a down wind landing at Singapore almost put paid to all their hopes. With no mechanical troubles, "Grosvenor House" had only Parmentier and Moll in the passenger carrying KLM Douglas DC-2 to challenge their lead, and after quick refuelling, Scott and Black set course for Port Darwin and an Australian landfall. Both were exhausted, Scott was captain and flew in the front seat to make each landing and take-off, while Campbell-Black took over for the long haul south, over Borneo and the dreaded Timor Sea. Low clouds forced them to 1,000 ft. and then quite suddenly the port engine lost all oil pressure. They were halfway across the 590 mile stretch of sea, and only had one course of action to follow—to keep close to the series of Islands and fly on one engine to Darwin. Once there, they tried to locate the fault—to no avail. They had everything to lose, including their own lives if the port engine failed when opened up to risky full revs. for the loaded take-off, but so much was at stake, they risked all and left for Charleville, half-way across the Australian Continent. After five hours of compass flying across the barren wastes of Northern Territory, both pilots were exhausted to the limits of human endurance

Continued on page 249

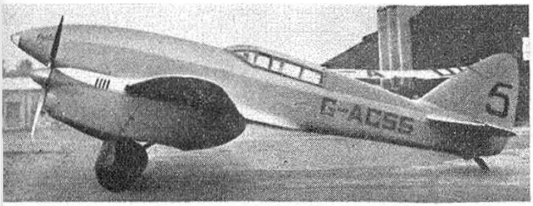


Heading opposite shows "Grosvenor House" as now preserved, with DH props and central cooling intake. Above is "Black Magic" under Portuguese colours as "Salazar". ("Flight" photo)

The Hamilton props and E.1 experimental marking indicate this to be the prototype, yet it has the solid nose of the fourth Comet, sold to France as F-ANPZ. ("Flight" photo)

Mildenhall line-up with "Black Magic" in the foreground and Jacqueline Cochran's Granville "Q.E.D." in the background which retired at Bucharest and had a fantastic stall approach to landing. Photograph by courtesy of "The Aeroplane"

In Pale Blue decor for the 1937 races as the "Orphan", flown by F/O Clouston or Ken Waller (G. J. Jackson photo) and at right, the unnamed Green Comet owned by Bernard Rubin, flown by Owen Cathcart-Jones and Ken Waller. ("Flight" photo)



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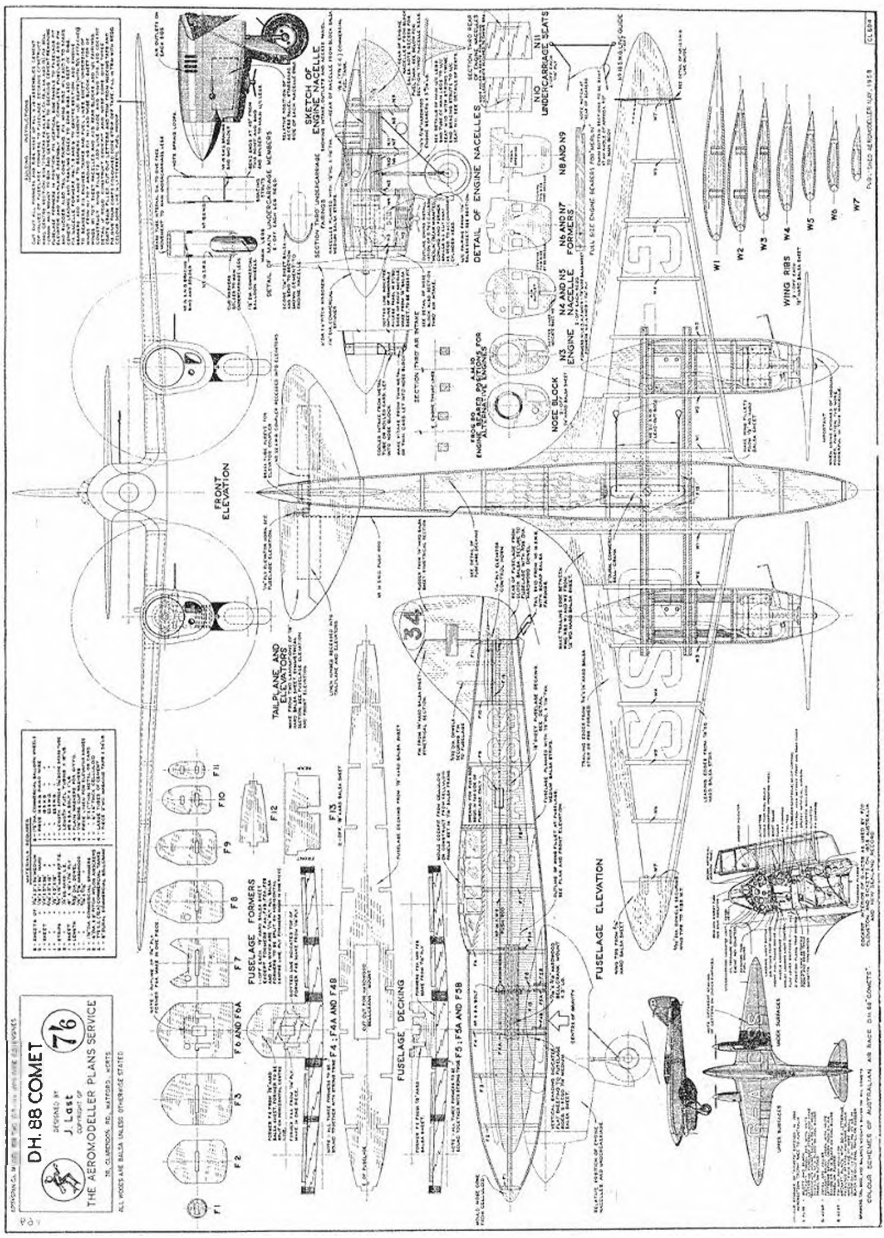

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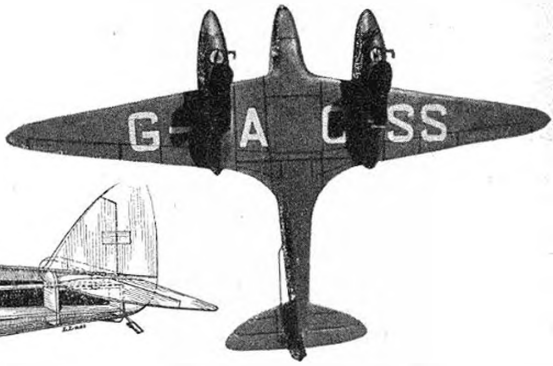
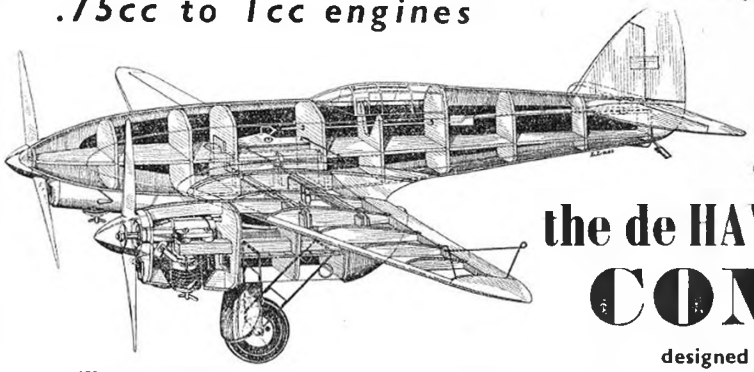




the de HAVILLAND 88 COMET

designed by L. Last

WHO CAN RESIST this 29-in. span controline scale model of the famous England-Australia air racer for two ·75 to 1 c.c. engines? The original weighs 19 ounces and flies at approximately 45 m.p.h. on 35-ft. lines with a pair of Allbon Merlin ·8 c.c. diesels. Construction has been specifically arranged for a very high degree of strength combined with simplicity and provided the builder has the experience of making at least one control-line model, he should find absolutely no trouble whatsoever in producing a perfect replica.

Exact colour and cockpit details are incorporated on the plan and alternate engine bearer positions quoted for the popular Frog 80 and A.M. 10 engines.

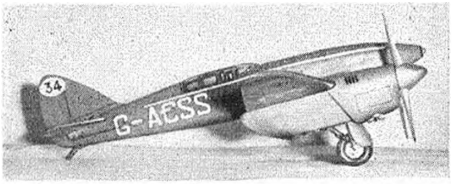
Construction is commenced by adding the top halves of all fuselage formers bisected on the horizontal reference line to the fuselage decking. Make up the bellcrank assembly and the wing centre section box of formers F4, 4A, 4B, 5, 5A, F6, 6A and two F13's. Fit bellcrank mount into the wing section box, firmly attaching the assembly to fuselage decking. Now add the remaining bottom halves of the fuselage formers and attach the push rod complete with elevator control horn and leadout wires to the bellcrank. Add the vertical side panels to the fuselage formers and attach the completed tailplane-elevator assembly, connecting the horn to the elevator. Now complete the fuselage sheeting. Add the fin and rudder, tail skid and the rear fuselage cone.

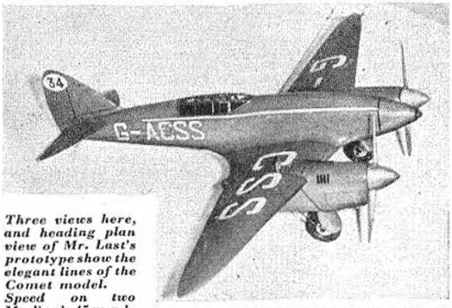
Fit ribs W1, 2, 3 to the spars and leading and trailing edges and then fill in with the remaining ribs. Add engine nacelle formers N6, 7, N8 and 9 to the spars and ribs, cement the bearers in position and coat liberally with shellac and knotting.

Now fix the engines and tanks, add the undercarriage and sheet the undersurfaces of the wings. Fix nacelle nose blocks and N3 in position by means of N1, N2 and two strips of $\frac{1}{16}$-in. sheet.

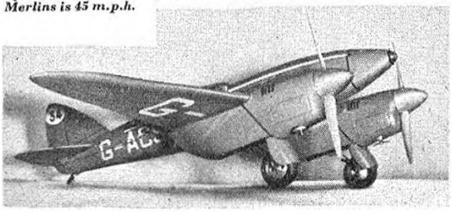
Cover top surfaces of the wings with sheet, then complete the engine nacelle sheeting and wing root fillets. All that remains are the cockpit details and wingtip guide, covering, colouring and decorations.

Be sure to check engines thoroughly before attempting that first flight. Providing the outer engine is started first and the inner tank is full at launching, one should have no "single-engine" troubles, for the Comet performs well on the port engine alone—once airborne.





Three views here, and heading plan view of Mr. Last's prototype show the elegant lines of the Comet model. Speed on two Merlins is 45 m.p.h.



INDOOR NATIONALS

The O'Donnell Brothers in cheerful mood as they wind John's model for its best flight of 8 : 05

In words and pictures by "Rushy"

OFFICIAL recognition was given this year to the series of Indoor Flying Meetings organised by the North Western Area of the S.M.A.E., and for the first time this popular meeting merited the title of British Indoor Nationals. For many years now the Manchester Corn Exchange has been the scene of this specialised form of aeromodelling, and it was hoped that enthusiasts from both North and South would do battle on February 23rd, but as it turned out, although good support was received from many Northern and Midland centres, the Southern contingent failed to put in an appearance.

The afternoon of the preceding Saturday was devoted to test flying, and, in the nature of things, many fine models we e hung up in the various hazards attendant on this class of model flying. However, the heavy-handed brigade flying ultra-light models were not daunted, and much repair work saw a good entry the next morning for the contests proper. The usual strong Birmingham group was there in force, also keen types from Tees-side, Sheffield, Leeds, Lincoln and, of course, many clubs within the Area.

Models in general followed the usual pattern of parasol-wing layout, but it was noticed that more and more machines featured the disc type fin situated at the extreme rear of the fuselage stick, instead of the underslung fin that was standard until quite recently. "Uncle" Bob Gosling produced a twenty-year old tissue-covered model (though we were assured that new rubber *had* been fitted) and proceeded to enjoy himself hugely, his day being made when he succeeded in breaking two minutes on the clock!

Reg Parham had his usual crop of models, including a very promising ornithopter, which fluttered around the hall to the delight of the spectators. But for hitting the various pillars surrounding the Exchange, it is certain a new record for this class of model would have been set. Mike Grimmett trotted out his record-breaking tailless job, but could not match his times of last year. Most eye-catching was a super-light Keil-Kraft Auster Arrow built by W. Nelson of Sheffield, which circled merrily for a series of quite remarkable duration flights. The framework had been lightened to the limit and the whole covered with condenser paper, and much speculation was heard on the possibilities of a pukka free-flight scale contest at some future date. Certainly the ability of this little kit job made some people think a bit, and I predict some interesting competition flying in the future.

Conditions for test flying were not conducive to good times, for considerable drift was present in the hall, and many models got "treed" or hit the sides of the building. A cold, sleeting storm outside found many points of entry, and flying was frustrating as a result. Contest day was not much better at first, but conditions improved as the day wore on, and an unexpected burst of welcome sunshine about midday warmed the dome up a bit, and thermals made themselves apparent!

This caught many fliers on the wrong foot and proved that the old adage in aeromodelling that "a flight is never finished until it is down" was still true even with indoor activities. Many fine flights were clocked off prematurely, for models were almost on the deck when height was regained, and minutes later the misguided modeller would be bemoaning the fact that he thought the model was nearly down! A case in point was Reg Parham's 11 : 10, which I timed personally. After a normal getaway, the model drifted to one end of the hall and gradually sank until with some 5 minutes on the stopwatch the model was only about six feet above the floor. Then the model started to climb, and travelled right along one side of the hall gaining height until well above the gallery level. Another spot of drift maintained the machine in a good position, just missing the balcony railings, and the model finally came in to a dead-stick landing to place second to Phil Read's winning flight of 11 : 23.

The microfilm class was one of the closest-fought indoor contests yet witnessed, for only 13 seconds separated first and second men, with a new man, George Walker of Birmingham, in third place only two seconds behind. Think—only 15 seconds separating the top three in a contest where flights are counted in large numbers of minutes! Ron Draper of Coventry (World Power Champ.) made a surprise appearance, and pipped John O'Donnell by one second for fourth place.

Better supported this year was the tissue covered class, and here J. O'D. had his revenge. Phil Read's 7 : 11 stood for some time as the leading flight in this class, but after a number of close attempts by John, he passed the Birmingham chap's time and finally produced a fine 9 : 07 to place top in this section, with Parham pipping Read into second place by seven seconds.

Free-flight sessions were interspersed with bouts of chuck glider activities, and it was obvious that this break from the hushed-and-slow free flight work was welcomed by all and sundry. Unfortunately, a number of irresponsible types were more interested in playing the fool than in serious flying and the organisers had difficulty in holding them back until it was time for them to fly their misguided missiles; and even greater trouble in stopping them when it was the turn of the lightweight models once again. More than one microfilm model was hopelessly wrecked as a result, and it is obvious that stricter measures will have to be taken in the future. Trouble was also experienced with the flying of some tissue-covered models, which, although within the weight limits as required for the class, were obviously free-flighting r.t.p. models, and proved a danger to the more delicate models entered in the contests. Good sense prevailed here, and a special session was set aside for the testing of these models, and microfilm followers breathed more freely.

Hugh O'Donnell was streets ahead of the field with his finely-built glider of American influence, and was obviously the possessor of a very strong right arm! He led all the way, and when others neared his time of 34 seconds, pulled a better flight of 37 seconds out of the bag, to claim a new British record for the category.

Reg Parham also claims a new Class A (under 30 sq. in.) record in the microfilm class with a time of 5 : 36, and John O'Donnell's 9 : 07 in the tissue-covered class is being submitted as the basis for recognition of a new class of British record.

The Area is to be congratulated on staging a meeting notable for its lack of "bull" and we hope that future events of this nature will encourage wider support for a class of flying which demands a lot from the flier . . . but even more from the time-keeper! Anyone got a bottle of Sloan's Liniament?

MICROFILM CLASS (16 entries)

						Best:
1.	Read, P.	Birmingham	5:29	9:11	11:23	11:23
2.	Parham, R. T.	Worcester	* 5:36	3:51	11-10	11:10
3.	Walker, G.	Birmingham	11:08	10:14		11:08
4.	Draper, R.	Coventry	6:13	8:06	6:07	8:06
5.	O'Donnell, J.	Whitefield	8:05	3:38	3:13	8:05
6.	Monks, R. C.	Birmingham	6:32	6:54	7:43	7:43
7.	Grimmett, M.	W. Bromwich	2:41	3:45	7:30	7:30
8.	Poole, D.	Birmingham	6:11	5:51	7:25	7:25
9.	Jukes, B.	W. Bromwich	5:42	6:59		6:59
10.	Greaves, D.	Leamington	3:50	4:52	6:09	6:09
11.	Barnacle, E.	Leamington	3:28	3:42	6:09	6:09
12.	Robson, A. M.	Tees Group	3-43	5:07	4:35	5:07

(* *Class A record*)

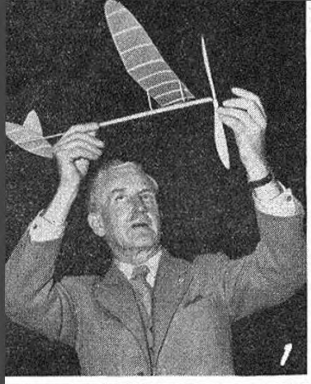
TISSUE COVERED CLASS (11 entries)

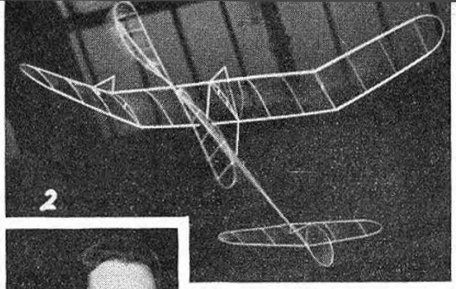
						Best:
1.	O'Donnell, J.	Whitefield	3:09	8:11	9:07	9:07
2.	Parham, R. T.	Worcester	4:03	6:06	7:18	7:18
3.	Read, P.	Birmingham	4:53	7:11		7:11
4.	Spurr, A. W.	Tees Group	3:02	6:16	5:12	6:16
5.	Walker, G.	Birmingham	4:52	6:03	4:47	6:03
6.	Roberts, G.	Lincoln	2:15	5:55	4:32	5:55
7.	Poole, D.	Birmingham	4:40	5:52		5:52
8.	Robson, A. M.	Tees Group	3:30	4:52	4:55	4:55
9.	Barnacle, E.	Leamington	4:43	3:44		4:43
10.	Gosling, R. F. L.	Liverpool	1:48	1:39	2:03	2:03
11.	Monks, R. C.	Birmingham	—	—	—	—

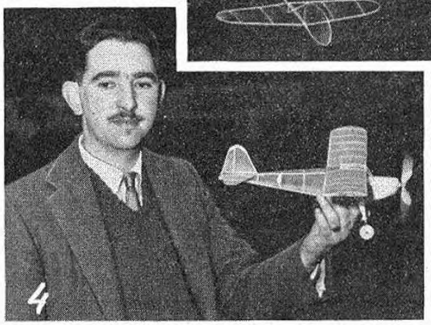
CHUCK GLIDER (28 entries)

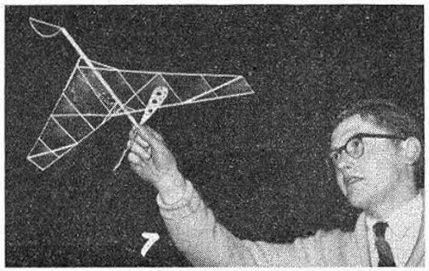
					Best:
1.	O'Donnell, H.	Whitefield	34.0	*37.0	34.0	37.0
2.	Greaves, D.	Leamington	27.0	34.7	31.5	34.7
3.	O'Donnell, J.	Whitefield	32.8	29.8	31.0	32.8
4.	Monks, R. C.	Birmingham	30.0	32.6	29.4	32.6
5.	Ward, A.	Whitefield	16.0	17.4	28.0	28.0
6.	Faulkner, B.	Cheadle	27.5	27.0	27.9	27.9
7.	Yates, D.	Wigan	27.0	27.8	22.0	27.8
8.	Picken, B.	Wigan	25.0	25.2	25.5	25.5
9.	Hosker, M.	Wigan	13.5	24.6	13.0	24.6
10.	Talbot, B.	Wigan	23.4	20.0	24.5	24.5
11.	Grimmett, M.	W. Bromwich	21.6	24.0	23.0	24.0
12.	Done, J.	Wallasey	22.0	23.5	23.2	23.5

(* *New British record*



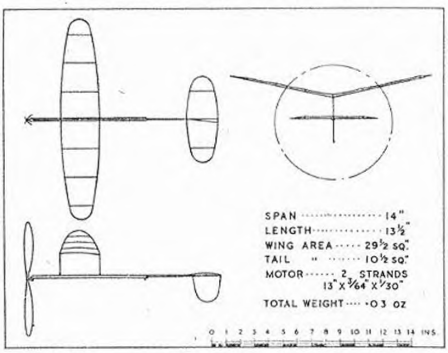


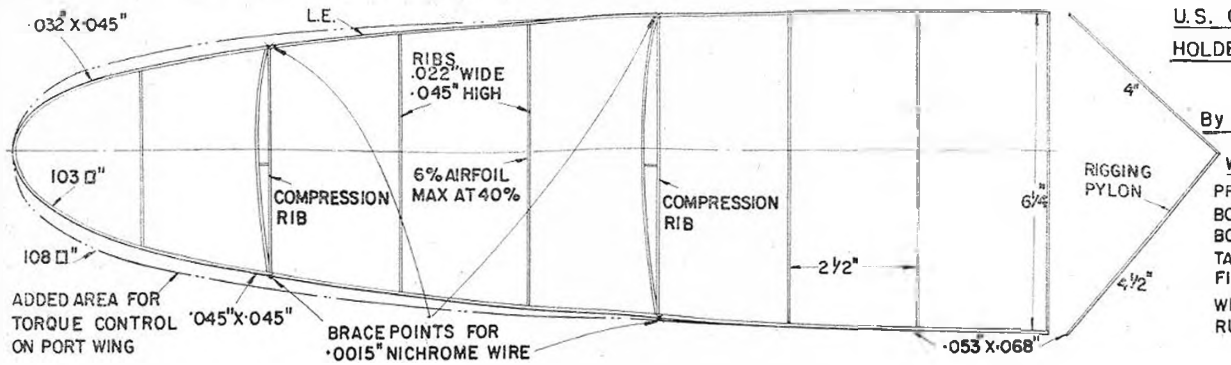




(1) Bob Gosling dusted the cobwebs from his 20-year-old model to join the boys. (2) Typical of the new-look microfilm model, with built-up prop, braced wings and disc fin. (3) World Power Champ. Ron Draper (Coventry) was a surprise entry. (4) An example of what can be done with a standard kit. W. Nelson (Sheffield) put the 'fluence on this Keil-Kraft Auster to good effect. (5) Reg Parham (Worcester) did not have quite his usual number of unorthodox models, but caused plenty of interest with his flapper (9). (6) Ray Monks of Birmingham again demonstrated his versatility. (7) Mike Grimmett (West Bromwich) and his record-holding tailless model. (8) G. Roberts came up from Lincoln to enter the tissue-covered class. (10) Hughie O'D. showed fine form when winning the chuck glider event. (11) Robson (Tees Group) looks pensive as his model is wound by a clubmate. (12) E. E. Barnacle (left) helps Junior Champ. D. Greaves (Leamington) wind his well-constructed model

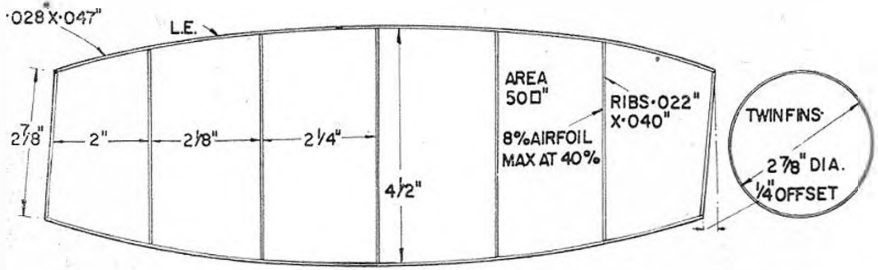
(Right: Three-view of R. T. Parham's Class A microfilm model for which a new British record is claimed.)

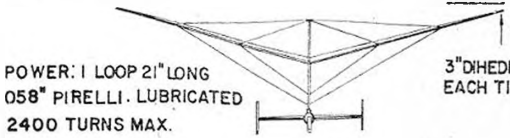


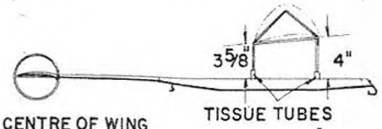


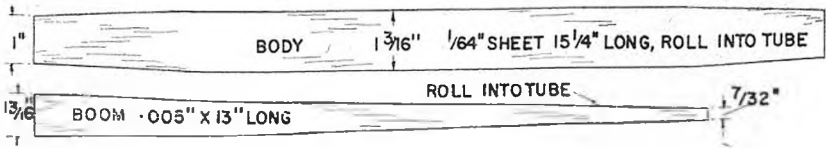
U.S. CLASS D RECORD
HOLDER JUNE 29th.1957
33min. 9·4 sec.
By ERNEST KOPECKY

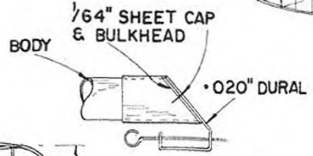
WEIGHTS:	OZ.
PROP.	·011
BODY. BOOM	·019
TAILPLANE FINS	·004
WING	·023
RUBBER	·050
	·107

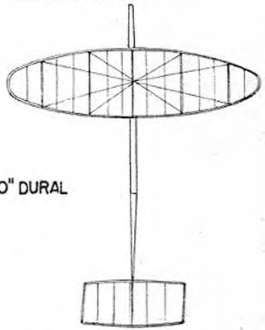


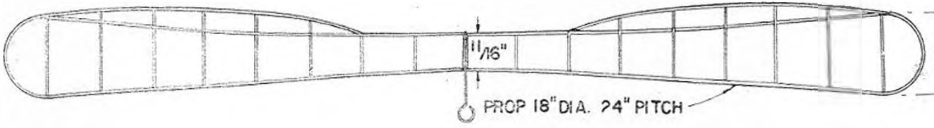












⅓rd. FULL SIZE

Radio at Chalgrove

The Editor visits the first contest of the season organised by the A.R.C.C. at Chalgrove Aerodrome

SUNDAY, MARCH 2ND, saw the opening gambit of the radio control birds when the Aircraft Radio Control Club held nomination and triangular course speed events at Chalgrove, Berkshire, for both single and multi classes. The weather was kind, a light wind providing ideal conditions for R/C flying. Judging was carried out by George Honnest Redlich, and a distinguished visitor from Belgium, Jean Pierre Gobeaux, current holder of F.A.I. radio records for height, distance, duration and speed.

Flying showed great improvement over anything yet seen, demonstrating the advantages of a specialist non-territorial club such as the A.R.C.C. which recently celebrated its first birthday. Membership now exceeds 80 and technical advancement through the interchange of ideas on the flying field is beginning to bear fruit.

Messrs. Uwins and Olsen, flying similar Fox powered multi jobs of 6-ft. span with symetrical 15 per cent. wings, gave an encouraging display of high speed aerobatics, including loops, inverted loops, wing-overs, etc. Their most impressive manoeuvre being a true spin with dead engine, the model fluttering down like a sycamore seed rotating rapidly around its own axis.

Uwins won both contests, and although he has yet to perfect the flying technique necessary for these high speed machines, we have no doubt that both he and Olsen will provide stiff opposition at this year's Nationals. Their equipment, built by Olsen, consists of tone operated 6 reed units on Orbit lines, with Mighty Midget motors for rudder, elevator, and engine controls. Simultaneous operation was possible on two channels.

Charles Riall of Brixton probably provided the greatest surprise of the day when he demonstrated just what can be done by an enthusiast with home-built equipment. He gave a most convincing demonstration of the Galloping Ghost system with a 1-scale "Smog Hog", using an Aeromodeller Transistor Receiver and G.G. pulse box exactly as published. He would have won the speed/course event had he not run out of fuel before completing the circuit,

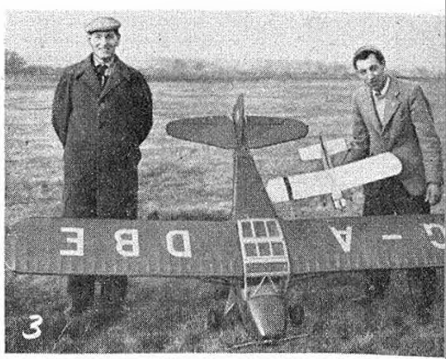
Top left, Uwins' winning model which is high-powered with a loading of only 14 ounces, coming in for a near spot landing. Top right, Olsen cranks his Fox 29 with Payne flying a Waveguide in middle ground and Soper complete with Rebo Jodel using an A/M transistor receiver in the background

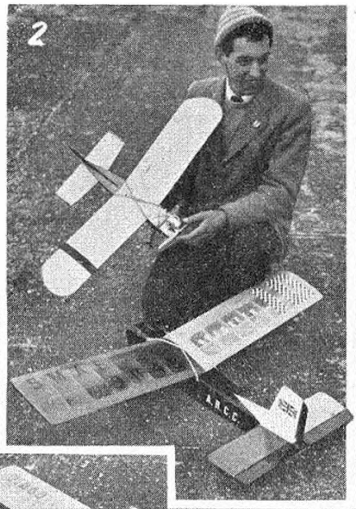
and as it was placed second in the stunt event performing a perfect loop at 50 feet which alone gained several supporters for the G.G. system.

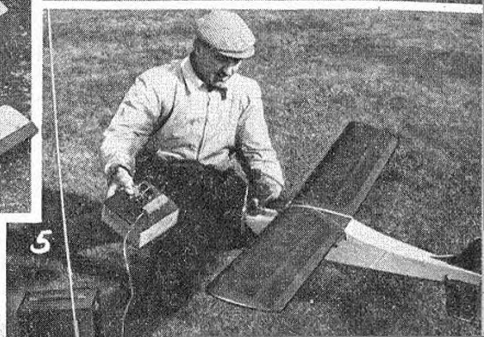
An interesting innovation was the use of a monitor throughout the day, in the form of a standard U.S. aircraft receiver complete with amplifier, operated from a twelve volt battery. It was possible to hear the "shush" of carrier waves, the varying "beeps" of the different reed frequencies, and the peculiar overlay of tones when Olsen's simultaneous tone unit was in operation.

With some twenty entries of which 15 recorded scores we can safely say that this was a most promising radio contest with which to start the 1957 flying season.

(2) Denis Crocott of Salisbury with smallest model, a 28 ounce "Traveller" complete with Ripmax Rx and Frog 80. Other model was new and untried and built for Oliver Tiger Cub. (3) Smallest and largest! The A.P.S. "Goliath", belonging to Rex Franklin which did a stately tour of the airfield perimeter. Rex is on left. (4) R. Marsh of Salisbury with his Virgo-Powered with an Oliver Tiger it uses the A/M transistor Rx, weighs 4 lb. and has a wing loading of 16 ounces. Cockpit removes for access to switch panel. Note S.M.A.E. numbers already in sight on most entries. (5) Charles Riall with his Mills 1.3 powered 56-in. span "Smog Hog" which weighs 3 lb. and has slightly lighter loading than original design. He holds home built pulse box in right hand which is made up with pots and Meccano gear wheels for control operation. A standard E.D. transmitter is used.







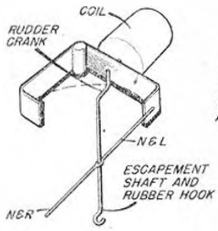


FIG. 1 2P-2N

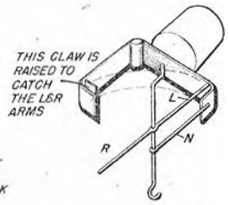


FIG. 2 2P-1N

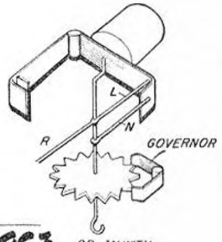


FIG. 3 2P-1N WITH GOVERNOR

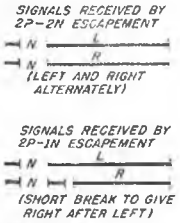


FIG. 4

SELECTIVE ESCAPEMENTS & CASCADE SYSTEMS

Part 1. A review of current trends in escapement development and an explanation of the working of selective systems.

By C. C. BADGER

THERE IS NO real competition incentive in Great Britain at present to develop multiple escapement systems, there being only two distinct classes recognised by the S.M.A.E.: "Multi" and "Rudder only". In the Multi class there is no restriction on the number of controls or channels used so that the obvious thing to do is use multiple channel equipment, that is tuned reeds or filters, whilst the rudder only class caters for the escapement flier with a not-so-deep pocket.

Between these two classes there is a third, "Intermediate" class which is already a competition class in the U.S.A. This class includes aircraft which have any number of controls operated by a single radio link which may be of the continuously pulsed type or of the more usual hand keyed type. Systems flying in this class are the "Galloping Ghost", Dr. Good's dual proportional and multiple escapement systems. For several years in the U.S.A. the multiple escapements have been winning over the pulse equipment in the Intermediate class. During the last year, however, the pulse jobs have come to the fore and are winning regularly.

Although the pulse-operated equipment does finally give a better degree of control it does have the added complication of a pulser at the transmitter and there is probably no simpler way of obtaining multiple controls, especially for the "weekend flier" than with multiple escapements. For example, with the addition of one extra escapement to a rudder only model the elevators may be controlled and with a total of three escapements engine speed control may also be selected.

Early systems used compounded escapements and had the serious drawback of still working in sequence; it was necessary to remember which control was used last. The more recently developed "Cascade" systems have the advantage of always starting from the same neutral whichever control is required. Control selection is governed by the number of pulses sent out in quick succession from the hand button, the final one being held on to give the appropriate control action.

To understand the working of a cascade system complete, say one with rudder, elevator, engine and aileron control, it will be best to consider the system divided into its component units. The rudder escapement may be considered the master escapement and will be dealt with first.

The type of escapement commonly used, i.e. E.D. Standard, is described as 2P-2N: two positions and two neutrals, and is unsuitable for use in escapement cascade systems. The arrangement of a 2P-2N escapement is represented in *Fig.* 1.

With this type Left and Right rudder are given alternately and it must be remembered which was used last. To make rudder selection easier and *selective* the escapement is given only one neutral, i.e. 2P-1N. There being only one neutral, when the transmitter button is pressed the rudder will always go to the same turn (depending on the linkage arrangement) say left, and when the button is released the rudder will return to the same neutral. To obtain the opposite rudder it is

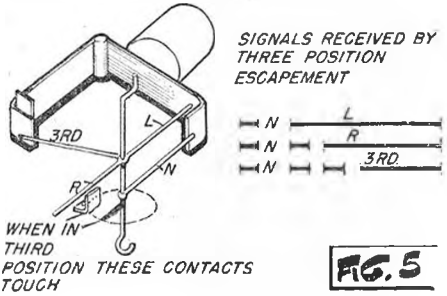


FIG. 5

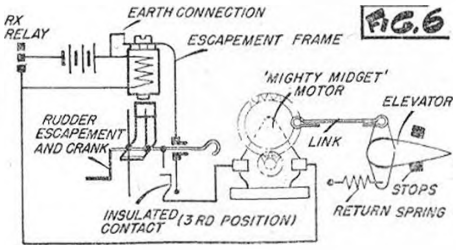


FIG. 6

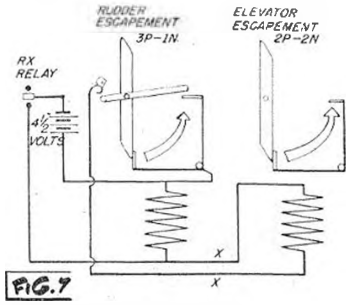


FIG. 7

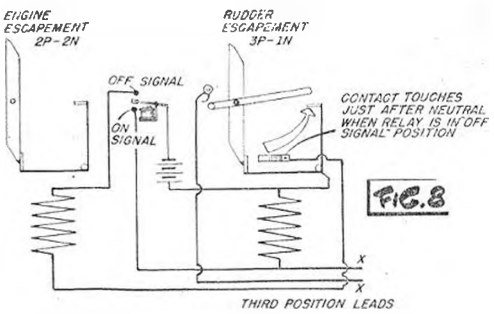


FIG. 8

necessary to give a short signal to clear the unwanted position and then quickly hold on the signal again that the second arm of the escapement is caught before it returns to neutral. *Fig.* 2 shows such an arrangement of escapement arms.

Unfortunately with normal button pressing techniques it is almost impossible to catch the second position on the escapement shown in *Fig.* 2 because the second arm would have gone past before the button could be pressed again. In order that the second position can be caught it is usual to slow down the escapement shaft with some form of speed governor; this may be as shown in *Fig.* 3. Alternatively, or as well, a quick-action switch may be used at the transmitter.

Fig. 4 shows a convenient method of illustrating the actual control signals received by 2P-2N and 2P-1N escapements.

Once the basic selective escapement has been constructed it is a simple matter to make it 3P-1N (*see Fig.* 5). This third position may be used to energise another escapement or actuator if some contacts on the selective escapement are arranged to shut only in the third position. Probably the simplest system to install at this stage is that shown in *Fig.* 6 which incorporates a Mighty Midget motor as elevator actuator. This arrangement gives rudder (Left and Right) and Up elevator.

Another arrangement is to use a normal 2P-2N escapement on the elevator and feed it from the third position on the rudder escapement. This will give selectively Left, Right and elevator, alternately Up and Down. Wire the circuit up as shown in *Fig.* 7.

To bring in independent engine control on this simple cascade system it is only necessary to use the "Off Signal" relay contact and a contact on the rudder escapement which makes momentarily just after the neutral has been passed; this contact is connected to the engine escapement as shown in *Fig.* 8.

The engine speed is changed whenever a very short signal is given after neutral. It will be seen that normally when the third arm touches the engine contact the relay is in the "On Signal" position so that the engine escapement is out of circuit and the motor does not change speed.

The system can be worked with a normal push-button keying switch provided that the escapement shaft is governed to a relatively slow speed. Better and quicker selection can be obtained if the escapement works quickly and is controlled by an appropriate switch system at the transmitter. The easiest type to construct is a three-button system as shown in *Fig.* 9. Switches 1 and 2 are normal micro-switches wired up as shown and hand held; Switch 3 is a relay controlled by a micro-switch and should be mounted in the transmitter case.

Switch 1 gives the normal continuous signal when pressed while 2 gives a short break in the signal if it is pressed after 1. With the escapement so far described (3P-1N) the operation of the switches is as follows: Left rudder—hold switch 1; Right rudder—hold switch 1 and then also hold switch 2; Third position—hold switch 1, press and release switch 2; Neutral—release all buttons.

It will be seen that switch 3 gives a very short signal to operate the engine escapement and should have an obvious and large push button so that it can be found easily and quickly. Adjust the relay setting and the condenser value so that the relay just flicks down when the button is pressed.

The arrangement described so far to obtain engine, elevator and rudder control is a modified cascade system; the rudder control is selective but the elevator still works in sequence. To give the true cascade system

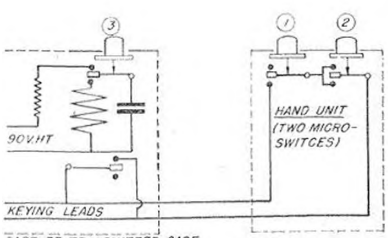


FIG. 9

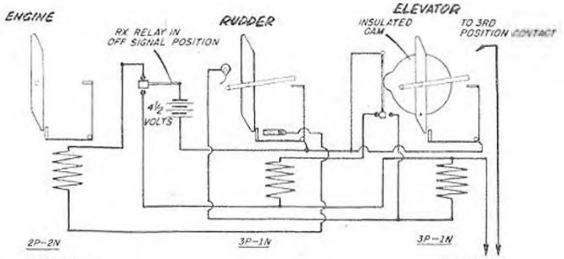


FIG. 10

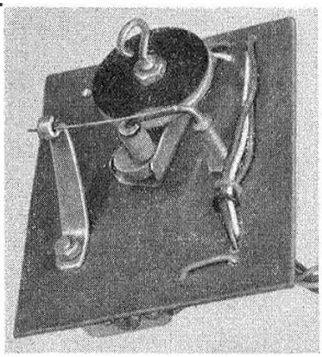
wherein all controls are selective requires the use of at least a 2P-1N on the elevator and preferably a 3P-1N. The elevator escapement must also include a switch which makes only in the neutral position. This switch ensures that the rudder escapement returns to its neutral position while the elevator escapement goes through its cycle; otherwise the rudder would respond to the second signal sent to the elevator. The whole system is wired up as shown in *Fig.* 10. An aileron actuator may be connected to the elevator escapement as shown in the sketch and should be of the single acting type such as the Mighty Midget motor shown in *Fig.* 6.

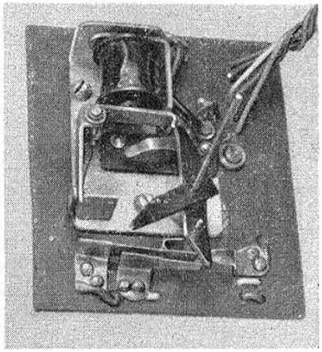
Signals received by the system would be:

Left ——————————hold——————————
Right ——— ——————————hold——————————
Down ——— ——— ——————————hold——————————
Up ——— ——— ——— ——————————hold——————————
Roll ——— ——— ——— ——— ———hold———

Change speed: -

Now build this
SELECTIVE ESCAPEMENT
—By C. C. BADGER





Here are stage-by-stage instructions for modifying the E.D. Standard Escapement so that it will give selective positions and be suitable for operation in a cascade system. Each stage is complete in itself and may be operated in conjunction with the previous stages—construction can stop at stage 1 if only a selective rudder control is required.

Stage 1: 2P-1N

Governor: *Fig.* 1 and photographs.

1. Dismantle the shaft and arm assembly by melting the soldered joint.

2. Fix the escapement to the paxolin panel as shown in the photograph with 6B.A. screws and nuts.

3. Cut a piece of brass tubing to fit the E.D. shaft bush which protrudes through the rear of the panel and solder on to it the tinplate rocker arm.

4. Cut the friction wheel from ¼-in. plywood and sand carefully to shape. Preferably the wheel should be held by a 4B.A. bolt in the chuck of a drill and trued up by holding a pad of garnet paper against it as it rotates.

5. Mount the friction drive wheel on a short length of screwed brass bush which is soldered on the escapement shaft close up to the rubber hook.

6. Drill the panel and mount the roller arm bush and also the retaining hook for the roller pressure spring.

7. Make up the roller arm from 16 s.w.g. wire and solder on to it the pressure spring of 30 s.w.g. wire.

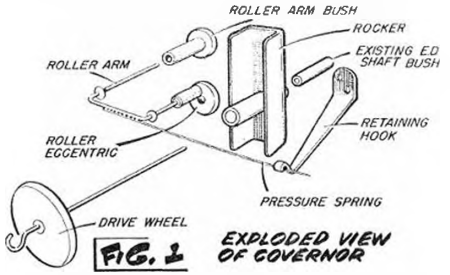


FIG. 1 EXPLODED VIEW OF GOVERNOR

8. Solder the roller bearing tube into the eccentric (one roller from a curtain rail runner) and build up the tube by forcing on to it a piece of fuel tubing. To complete the roller a layer of fine garnet paper is stuck around it with Pliobond.

9. Fix the roller on to its arm between soldered washers and assemble the whole on the panel with the escapement shaft.

10. Adjust the roller spring pressure by bending the spring retaining hook so that the roller just grips the wheel properly.

Escapement:

11. Solder the arm back into position and bend up one end so that it just clears the "OFF" lever. The escapement now has only one neutral.

12. Extend the "ON" lever upwards by soldering on to it a small rectange of tinplate so that this lever catches both ends of the arm. This gives the escapement two positions.

13. Remove the red covered wire from the current saving contact and resolder it to the earth tag near to the retaining screw for the electro-magnet.

The current-saving device is now out of circuit so that a 4½-volt flat torch battery should be used to power the escapement.

The escapement may now be used as a 2P-1N unit provided that the following adjustment is carried out. If the escapement is to be controlled by a normal single push-button at the transmitter solder must be added to both ends of the rocker arm, always keeping it balanced, until the operation of the escapement is slow enough to enable the second position to be caught. If the escapement is to be controlled by the quick action twin micro-switch, as previously described there will be no need to add so much solder.

Always mount the escapement well forward, near the receiver, so eliminating long wires to it and the radio interference which goes with them. Operate the rudder

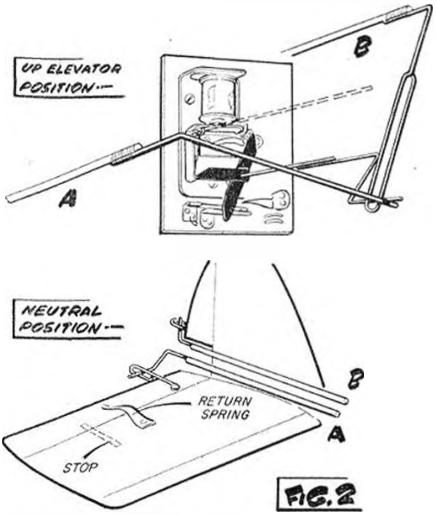


FIG. 2

via a balsa or dowel torque rod.

The pattern of signals for this escapement is, of course, as follows (Left or Right depending on the shape of crank used):

Right ———————— Hold as required.
Left — ———————— Press and hold as required.

Stage II: 3P-1N

1. Make up another single-sided arm as shown, part from an old escapement will do.

2. Solder this arm into the position shown, approximately 60° behind the second position arm.

The escapement is now of the 3P-1N type and may be used with a "kick up" elevator as shown in *Fig.* 2. Signal for the third position is:

— — ———— Press, press and hold as required.

Stage III:

1. Drill $\frac{1}{16}$ in. down through the second position arm halfway out to its tip.

2. Solder a $\frac{1}{16}$-in. diameter wire in this hole so that it projects $\frac{1}{4}$ in. below the arm.

3. Make up the change-over type switch shown from brass shim and rivet it to the paxolin base so that it operates in the third position.

The escapement may now be used to operate another escapement when in the third position, to give alternately Up or Down in that position, and neutral in all other positions. If a motor driven servo is used to give Up and Neutral it may be controlled through the change-over contacts.

Stage IV:

Bend up the original current-saving spring blade so that the first position arm just touches it after leaving the neutral position. This contact may be used to operate a normal 2P-2N escapement for engine control. The escapement receives a short pulse from the 3P-1N and turns through 180° for each one. Wiring up should be as in the earlier part of this article.

The escapement shown in the sketches and photographs is the Stage IV type.

Stage V:—Full cascade system.

1. Make up the same switch gear as described in Stage III 3. but fit it to the panel so that it operates in the neutral position.

2. Make a second switch unit which has just a "make" contact and position this so that it closes in the third position.

3. Insulate the switch-operating striker pin.

The escapement is now finished and may be used in a full cascade system as detailed earlier.

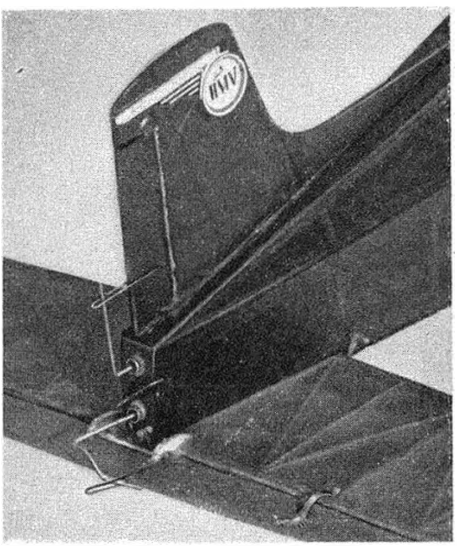


Photo above shows kick-up elevator system installed externally. Linkage could alternatively be at the escapement end of the model. Note leaf return spring which keeps elevator against stop on underside. It will be seen from Fig. 2 that elevator is only raised when escapement is in its third position as per Fig. 3. Rear bearings for control shafts on above model are made from Woolworth's curtain runners as described in last month's Gadget Review

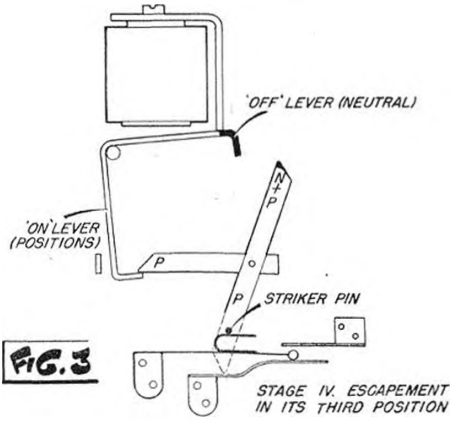
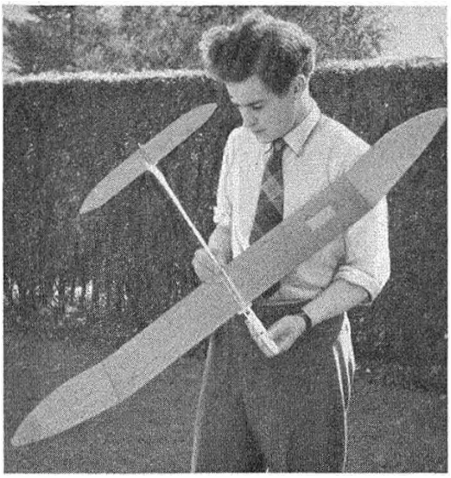


FIG. 3

STAGE IV. ESCAPEMENT IN ITS THIRD POSITION



SIESTA . . . or

AN ALL-SHEET TOWLINE GLIDER TO A.1 SPECIFICATION BY P. GASSON

FOR THE YOUNGER modeller the A.1 glider provides a stepping-stone from the elementary kit model to the contest A.2. Whilst an A.1 does not embody the advanced ideas current in A.2 gliders, it does step well ahead of the many kit models available and is well capable of putting up flights in excess of two minutes from a 50-metre line, it is in fact particularly suitable for the young modeller who has little cash to spare, but who wants to get the very best for his money.

In spite of its simplicity and size, the A.1 has won great popularity on the Continent where many contests are held each year, not only for the tyro but also for the top glider enthusiasts.

It is our experience that when a beginner selects a model he looks for one of two things:

(1) A model with a phenominal contest record; *or*

(2) A model which can be built in very little time.

In either case he usually builds the model in too little time, with the result that the finished product is often warped or badly finished. It is therefore my intention to put forward a model which although not coming into the first category is capable of giving a good account of itself. At the same time the major consideration has been to produce a model which can be built almost before the materials have been bought (the actual building time being only five hours).

The model described here is entirely of solid construction making it robust and particularly suitable for the beginner. It can be built for as little as 8s., and takes no more than a Saturday afternoon to complete.

Construction

If a rapid programme of construction is to be followed the wing should be started first. Cut sheet to correct lengths and slightly chamfer both sides so that the leading and trailing edges may be added to form the curved wing section (chamfering is best achieved by using a long sanding block). Having pinned the strips together leave to dry for about one hour. Attention should now be turned to the fuselage, cut the pod to the shape shown on the plan taking care to make the slot carrying the boom as neatly as possible, next drill end of slot with a $\frac{1}{8}$-in. diameter hole to take wing retaining dowel, cut slot in front of wing rest and sand smooth, also cut circular hole in nose for weight box. Cut the $\frac{3}{8}$-in. diameter dowel to length (24 in.) and add $\frac{1}{8}$-in. diameter dowel to each end. Cement $\frac{3}{8}$-in. diameter dowel into pod making sure that both are perfectly aligned (it is a good plan to pre-cement the slot first, i.e. allow a coat of cement to dry on before finally fixing). Stand the fuselage in a vertical position and allow to dry for half an hour, in the meantime cut tailplane and fins to size and sand to streamlined section, also cut out the pod sides and, after adding tow hook, assemble with fuselage. Allow to stand for a further hour before shaping pod to a good section. After finally shaping the tailplane and fins cut away rudder and join again with hinge tapes, cover with lightweight tissue (doped on).

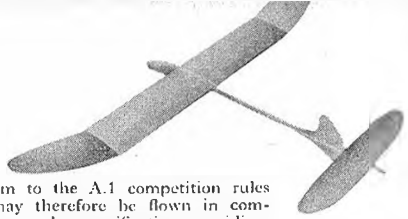
You may now return to the wings which may be shaped to plan form and sanded to the section shown. At this stage it pays to make a stiff cardboard template so that the section may be true and accurately formed, extra dope on the under-surface helps to hold the undercambers. Having shaped the tip section, chamfer ends to provide $2\frac{1}{2}$-in. dihedral at tips and after "pre-cementing" both pieces, join together and block up to set. By this time the fuselage will have dried and may be sanded to an oval section (here again a template is most useful). At this stage cement fins to fuselage in a truly vertical position. When quite dry the wing should again be lightly sanded and the whole covered with tissue. Cut wing rest from $\frac{1}{16}$-in. ply (note direction of grain) and cement to fuselage together with tail supports. The auto rudder and dethermaliser fittings may now be added and the job is done in just over five hours.

Trimming

Using small pieces of lead or lead shot balance the model at the position shown on the plan. Check that the wing leading edge is $\frac{1}{4}$ in. above the trailing edge (relative to the boom).

Wait for a calm day before test flying and see that the wings and tail units are well strapped down and perfectly square with the fuselage.

Hand launch into wind and watch carefully (from shoulder height the model should glide steadily down to earth and cover a distance of about 50 feet). When this is achieved towing may be attempted, but if the model stalls or dives, correct as follows: A stall may be corrected by adding a piece of $\frac{1}{32}$-in. packing under the leading edge of the tailplane, while a dive may be corrected by packing up the trailing edge. When a steady glide has been obtained adjust the rudder stop to give a wide circle (about 75 ft. diameter). At first two up steadily on a 75-ft. line and try to give the model a good start off, coach the model round when on top of the line so that it sets off in its correct circular flight. Watch out for stalls or any tendency for the nose to drop. After seeing that all is well you may now start to tune the flights (from 75 ft. a duration of about 50 seconds should be obtained). If not, alter the trim slightly by adding or removing a few pieces of lead shot from the nose (about $\frac{1}{8}$-oz. to start with), test fly again and again, each time reducing the amount of lead shot added or removed until maximum duration is obtained. Under good trim, flights of two minutes can be obtained from a 50-metre (165-ft.) line.



Conclusion

The modeller who has built two or three models should find no difficulty with this project and it is necessary only to remark on a few points which need special attention.

(1) If you find you are dropping behind schedule, don't rush things, but take another hour to make a good job, it will be well worth it when you eventually get on the flying field.

(2) Wing tips should be well thinned down (a max. of $\frac{3}{32}$-in. thick at extreme tip) excess weight here will lead to inconsistent and often poor performance.

(3) Materials have been reduced to a minimum, so be careful how you cut up the precious balsa.

(4) The size of this model has been made to conform to the A.1 competition rules and may therefore be flown in competitions to that specification, providing, of course, that the overall weight is more than 5·08 ozs.

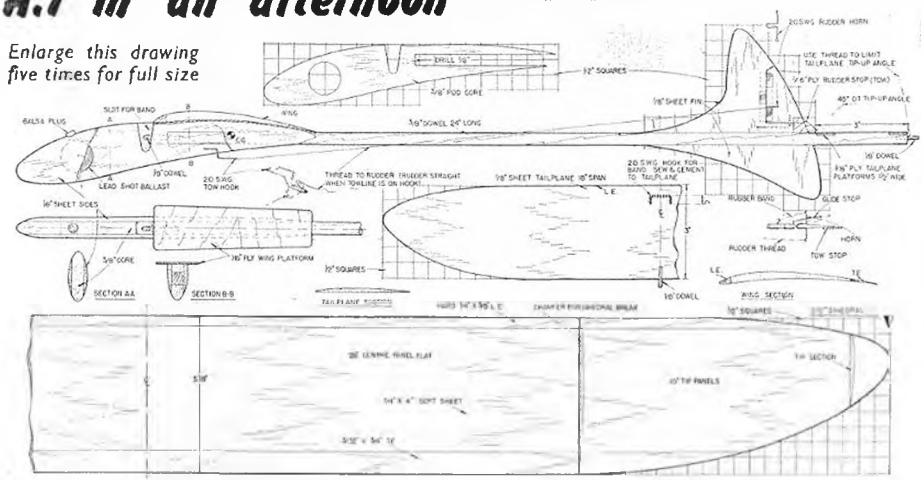
MATERIALS REQUIRED:

1 sheet 4 in. x $\frac{1}{4}$ in. x 48 in. medium balsa
or 2 sheets 3 in. x $\frac{1}{4}$ in. x 36 in.
1 sheet 3 in. x $\frac{1}{4}$ in. x 36 in. medium balsa.
1 sheet 3 in. x $\frac{1}{32}$ in. x 36 in. medium balsa.
1 block 2 in. x $\frac{3}{4}$ in. x 12 in. hard balsa.
1 dowel $\frac{3}{4}$ in. diameter x 24 in. spruce, or birch.
1 L.E. $\frac{3}{8}$ in. x $\frac{1}{4}$ in. x 48 in. medium balsa.
or 2 $\frac{3}{8}$ in. x $\frac{1}{4}$ in. x 36 in. medium balsa.
1 piece 5 in. x 2$\frac{1}{2}$ in. x $\frac{1}{16}$ in. ply (note grain).
2 sheets lightweight tissue.
1 jar of clear dope.
1 length of 20 S.W.G. piano wire.
1 short length of $\frac{1}{4}$ in. dia. dowel.

For those who prefer to work to full-size plans, Siesta is obtainable as G 696 price 3/6 plus 6d. post from A.P.S.

an A.1 in an afternoon

Enlarge this drawing five times for full size



THE RACING COMETS

continued from page 237

and it was Scott's intimate knowledge of the locality that saved the situation for a single engined landing at Mount Isa just before dawn. They had only 1,000 miles to do, and the spontaneous enthusiasm of the Australian people spurred them on under tortuous conditions. At Charleville, Scott phoned Major Halford the Gipsy engine designer in London for advice on the port motor, and then with eight hours lead over the DC-2, they flew for six desperate hours in half-an-hour and ten minute shifts to reach the Victorian State Capital in pouring rain, 70 hours and 54 minutes after departing Mildenhall. They were first in both speed and handicap sections of the race, had broken all records and though more dead than alive, had shown the World that de Havilland, and their superb piloting could bring the farthermost corners of the globe within three days from London. They were not to know that their "engine fault" was only a dud pressure gauge.

Meantime, Jones and Waller were clear of Allahabad and were having a trouble-free run to Singapore, where they stopped for a brief 30 minutes to refuel and recharge the props. Off for Darwin, they were in the same position as Scott and Black, when they too noticed oil pressure failure, this time on the starboard engine! A deviation to Batavia enabled KLM mechanics to sort out the fault, and after an interim stop at Koepang, they reached Australia at last, about 500 miles behind the famous Roscoe Turner in his Boeing 247, a position which remained unchanged to the end of the race at Melbourne. Their flight had taken 4½ days and they were fourth to arrive, yet they decided to turn round immediately for an "out and back" record.

Sir Macpherson and Lady Robertson saw them off at Laverton airfield, laden with newsreels and photos of the race winners, plus the last chapter of "Scott's Book". From there they went trouble-free to Allahabad, where two cylinders failed on the run-up, but "Black Magic" was there and Jim Mollison sportingly gave permission for a swap with his engine parts.

After 61 hours 46 mins. flying time, over a period of 13½ days, they were greeted on arrival at Lympne by their sponsor, Bernard Rubin.

The following notes cove subsequent events in the story of this magnificent aircraft.

1935 G-ACSP Sold as CS-AAJ to Portugal (last heard of in 1937).
G-ACSR Sold as F-ANPY.
G-ACSS Acquired as K5084.
F-ANPZ 4th Comet built.
G-ADEF 5th Comet "Boomerang" built for Cyril Nicholson, abandoned over Sudan by Tom Campbell-Black and J. C. McArthur, through prop. trouble.

1936 K5084 Displayed at Hendon.

1937 K5084 Reverted to G-ACSS by Essex Aero Ltd. for Gipsy Six Series II engines, D.H. props., etc., called "The Orphan", finished in pale blue, placed 4th in Marseilles—Damascus—Paris race, flown by F/O Clouston. Handicapped out of King's Cup, placing 12th at 214 m.p.h., pilot Ken Waller.
Renamed "The Burberry", established Croydon—Cape—Croydon records, F/O Clouston and Mrs. Kirby Green.

1938 G-ACSS Established London — Wellington — London records (F/O Clouston and V. Ricketts).

1939 G-ACSS Stored at Gravesend.

1951 G-ACSS Redecorated and rebuilt by D.H. Technical School, Chester, in original "Grosvenor House" red and white, with one engine, D.H. props., spinners and revised cowls, exhibited at "Festival of Britain", thereafter suspended in D.H. Engine Co. showrooms, Leavesden, Herts.

AIRCRAFT IN SERVICE

Number 5

Drawn by **G. A. G. COX**

Described by R. G. Moulton

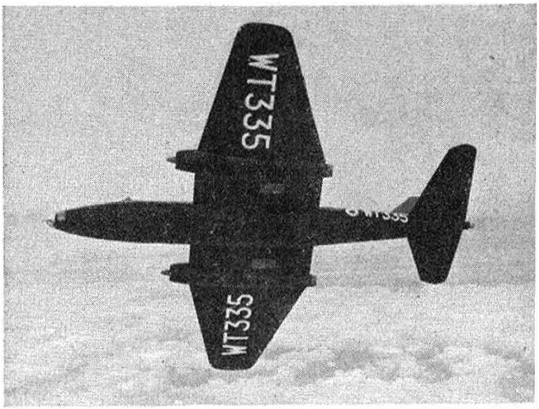
FOR MANY YEARS the Royal Air Force Canberra force has enjoyed a situation whereby they could more than "cock a snook" at their fighter contemporaries. Capable of turning inside or even accelerating away from some of the most advanced of swept-wing interceptors in service the "Cranberry" has upheld its high reputation for high altitude performance, and in so doing has established an enviable list of high speed records.

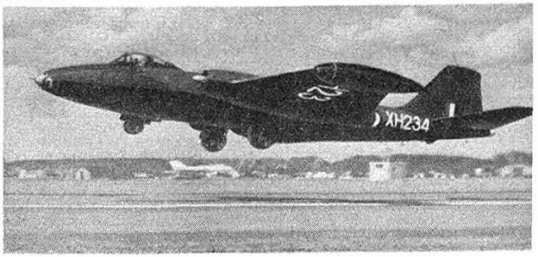
Now in the Interdictor Mk. 8 (and the PRU Mk. 9 soon to follow from the Queen's Island factory of Short Bros. and Harland Ltd. at Belfast) the Canberra has entered a new phase—and a new duty of "nuclear capacity". LABS or loop bombing will be part of its low-level attack technique and with photo reconnaisance still one of the most important aspects of defence, the future of the Canberra is now even more assured although in fact it is already nine years since the first blue prototype VN 799 flew on May 13th, 1949.

More than ordinary credit is due to the design team led by W. E. W. Petter (responsible for the Lysander, Whirlwind and subsequently the P.1 and Gnat) who joined English Electric in 1944 and produced the original Canberra to meet M.O.S. specification B.3/45. A contract for four prototype A.1's as they were known was awarded in January, 1946, and total production to date amounts to some 750 aircraft in the United Kingdom many of which have been exported to the air forces of Ecuador, India, Peru and Venezuela, plus 400 licence-built Martin B-57's with U.S.A.F. and more than 50 B.20 versions made for the R.A.A.F. at Fisherman's Bend, Melbourne. In all, an impressive total and one which will ensure a place in the forefront of outstanding aircraft for the Canberra.

The B(I)8 is a comparatively rare bird in British skies, but has now firmly established itself with Second T.A.F. Germany where 88 Sqdn. at Wildenrath have been operating this low altitude variant with the four-cannon Boulton Paul gun-pack for some time.

Originating as an English Electric development of the sole B.5 prototype for ground attack work, though still retaining its high altitude potency, VX 185 was converted in 1954 at Preston and became the first of the fighter-hood B.8's. This was two years after the same aircraft with standard pressurised nose and goldfish bowl coupe hood had double-crossed the Atlantic in 10 hours 3½ minutes, the return trip from Gander to Aldergrove being



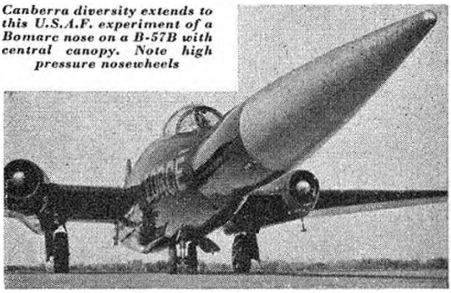


made at an average of 605.5 m.p.h. The later 100 series Avons (distinguished by the larger triple-charge starter bullet) provide even higher performance in the production B(1)8, for, unlike its Martin-built B57B and C equivalent it is able to utilise extra power without any weight penalty.

The new nose, with fixed pilot hood giving a wide field of vision and prone or two-seat (one for take-off) navigator positions gives the Canberra an air of improvisation. Navigator mobility for low-level visual map reading precludes the possibility of a second Martin Baker IC ejector seat, so for the bomb-aiming and navigating crew member the only way out is via the starboard entry hatch. The pilot is able to detonate the rear section of his hood prior to ejection, or to go through the perspex.

The long weapons-bay of the Canberra fuselage forms a capacious receptacle for a variety of weapons (and experimental rockets). In the B(1)8 the rear section carries a four-20 mm. cannon pack with a greater ammunition store than hitherto fitted on any fixed gun aircraft and forward bomb doors have had to be stiffened against the formidable effect of gun blast. Other armament can be carried on underwing pylons, and in the forward bomb bay, an Avro triple carrier can load three 1,000-lb. bombs, or sixteen 4.5-inch flares can be fitted for night action.

It is for nocturnal activity that the B(1)8 is finished in polished Dockers Gloss Black on its undersides, and although the prototype was black on all surfaces, standard Dark Green and Dark Sea Grey camouflage (polished for high speed flight) is used on the topsides of production aircraft. Tip-tanks are not always fitted, and are in any case jettisonable. Their combined 488 gallons capacity would provide sufficient extra range for the Canberra to fly non-stop across the Atlantic from



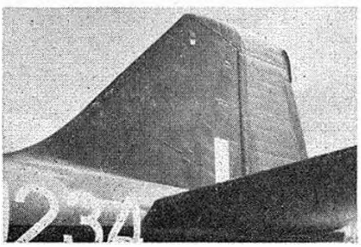
Canberra diversity extends to this U.S.A.F. experiment of a Bomarc nose on a B-57B with central canopy. Note high pressure noseweheels

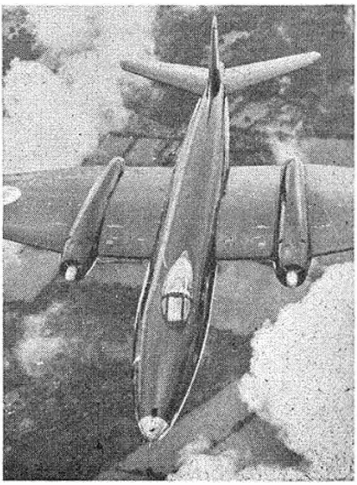
bases in Germany on the difficult East-West route. Normal tankage in the large centre fuselage area over the weapon bays is increased in both Mk. 8 and the PR.7 with unspecified wing fuel capacity.

For such a fast service aircraft the manual push-pull operation of the balanced rudder, elevator and ailerons is somewhat out of phase in this era of electronics and servos: but convention has obviously played a strong hand in prolonging the Canberra's excellent service record and apart from early tail jack troubles, the control system enjoys an excellent reputation. In fact, on reflection, any analysis of the Canberra can only result in the conclusion that it is a thoroughly conventional aircraft, designed to the logical engineering requirements of the pre-swept wing era; yet quite equal to many of its ten-year-younger counterparts.

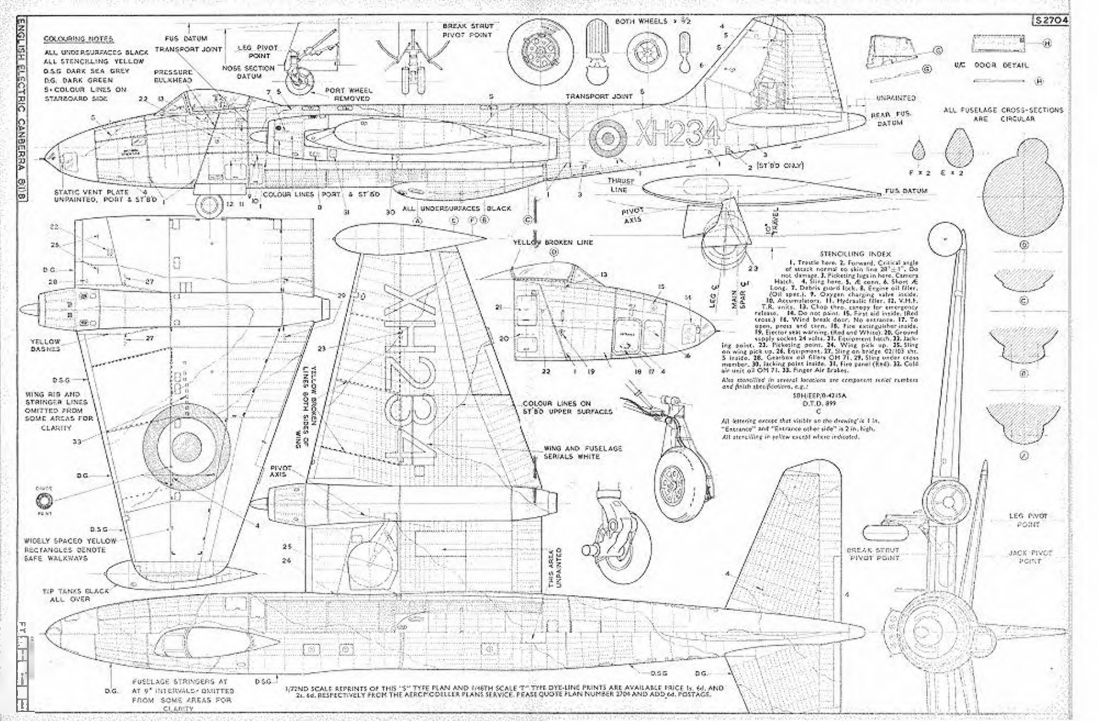
Span 64 ft., *Length* 65 ft. 6 ins., *Height* 15 ft. 7 ins. A detailed description and 1/72nd scale drawings of the Canberra development up to the B2 appeared in AEROMODELLER August, 1953, and is available as reprint L 2171, price 1s. plus 6d. postage from Aeromodeller Plans Service.

Heading opposite: Roly Beamont brings the modified B.5 record holder close to the camera to display the first B.8 nose. External difference is the bar in the nose side windows, and the all-black colouring. At left the unphotogenic colour scheme hides the belly cannon pack but shows the white serial of an 88 Squadron aircraft to good advantage. Below we see a late production version as drawn overleaf, and displayed at the 1957, S.B.A.C. show, Farnborough. Right: two close-ups of XH234 at Farnborough showing rivet dimpling on the thinner gauge rudder skin, the drag plate on the trailing edge and nose detail. All-black prototype shows offset canopy, and interesting reflection of a Fairchild Packet on the nosecap





ENGLISH ELECTRIC CANBERRA B(I)8



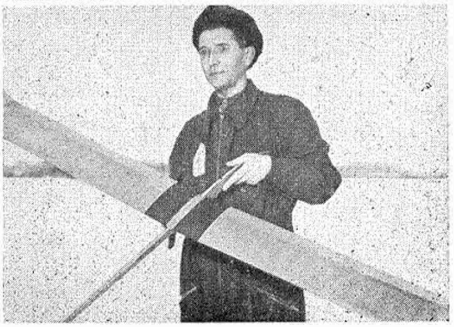
1/32ND SCALE REPRINTS OF THIS "S" TYPE PLAN AND 1/48TH SCALE "T" TYPE DYE-LINE PRINTS ARE AVAILABLE PRICE 1s. 6d. AND 2s. 6d. RESPECTIVELY FROM THE AEROPLANE SERVICE. PLEASE QUOTE PLAN NUMBER 2704 AND ADD 6d. POSTAGE.

WORLD NEWS

INTERNATIONAL CONTEST FEVER has begun to take a grip and the latest news is that both **Japan** and **New Zealand** will definitely be sending models for proxy flying in the free-flight championship at Cranfield. The European Controline Championships in Barcelona, **Spain,** which unfortunately coincides with the British Nationals on May 24th, 25th, 26th, promise to be extremely well organised although not quite so heavily supported as the normal meeting in Belgium which for this year is delayed until September. This meeting in **Belgium** will be run in special conjunction with the International Exposition in Brussels and will run to the new rules of team racing and, presumably, for team constitution, meaning three modellers for each of the newly recognised classes, Speed, Team Race and Aerobatic.

One club in **Canada** which appears to be the centre for a number of ex-S.M.A.E. members is the Toronto Gas-Hoppers. This club is particularly fortunate in having indoor facilities of flying at the R.C.A.F. Drill Hall, Eglington, Toronto, and though a 35 ft. ceiling limits the amount of power one can use, times of more than ten minutes have already been recorded. Bill Etherington and Mike Thomas have been flying helicopters, Bill setting a new Canadian record of 1 : 33·2 and to complete the ex-S.M.A.E. picture, Dave Sugden and Bill Henderson are expected to join the microfilmies soon.

A new type model jet described in the **Czecho-**



From the International reported last month we now have pictures of the Leningrad team from Russia which visited Finland. At top, Simonov is lighting his d/t fuse, he was 4th in power with 849.4 secs. Model has a Tu.104 picture on the fin. Centre, the team, L. to R., Captain. Lissitski; Trainer, Sterbuk; Fliers, Enin (A/2), Simonov (Power), Kolegov (A/2) and Abramov (Power). Bottom: Kolegov with his A/2 placed 2nd. Below, in considerably warmer climes at Singapore, Mrs. Robin Wee and hubby's A.P.S. "Shorty"

169.58 m.p.h. was the official U.S. Nationals winning time for B. Randall-Cullin in Class C Open last year, flying this Monoline McCoy 60 model

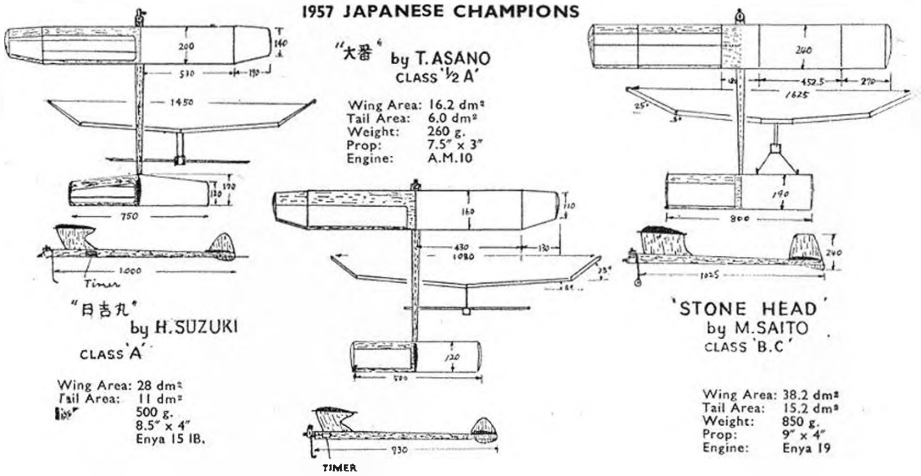
Everything works on this PWS-26 built by Kuzsilek of Cracow, including illuminated instrument panel and medicine chest. Is 36-in. span for a Zeiss Aktivist 2.5 c.c.

slovakian modelling magazine is credited to Alfred Prill of **East Germany.** Basically like a conventional pulse jet of the Dynajet type, it has a needle valve control for petrol feed, and the jet pipe is jacketed by a container holding "Kaliumpermanganate". This is fed forwards to the combustion chamber via an open tube and presumably reacts to the heat of the jet pipe. Thrust claimed is 5 lb.

There is good news of modelling in **Poland** following changes of policy in that country. Whereas it was considered a bad thing to model a pre-war Polish aircraft, and restrictions were placed on information for flying scale models, the movement is now encouraged by the Aeroclub of Poland throughout its many branches. A recent Air Force week exhibition provided a wealth of information for the scale enthusiasts and in September last, a National flying scale contest was held in Warsaw attracting no less than 36 entries.

Polish modellers are particularly adept at scale work as we know so well in England through the P.A.F.A. club activities and the standard is extremely high despite lack of materials and any engines of less than 2·5 c.c. Mostly they are C/L, boasting working controls, lights, flaps and retractable undercarriages.

Here's a tip from Grish Bros., who produce the Internationally famous Tornado props in the **U.S.A.** It concerns Nylon, as used for moulded props, where the very process of manufacture sets up internal stresses in the Nylon, rendering the prop liable to break until relieved by ageing or heat treatment. The ageing time fluctuates from six weeks to eight months, so the quick way to ensure that your prop stands up to high revs and loading is to immerse it in boiling water for 15 minutes. Allow to cool naturally. You can at the same time dye the prop with a Nylon fabric dye in the water.



A 28½" SPAN SPORT MODEL FOR .5-1.0 CC (APS, GGE, E-D) MOTORS

ROARING 20

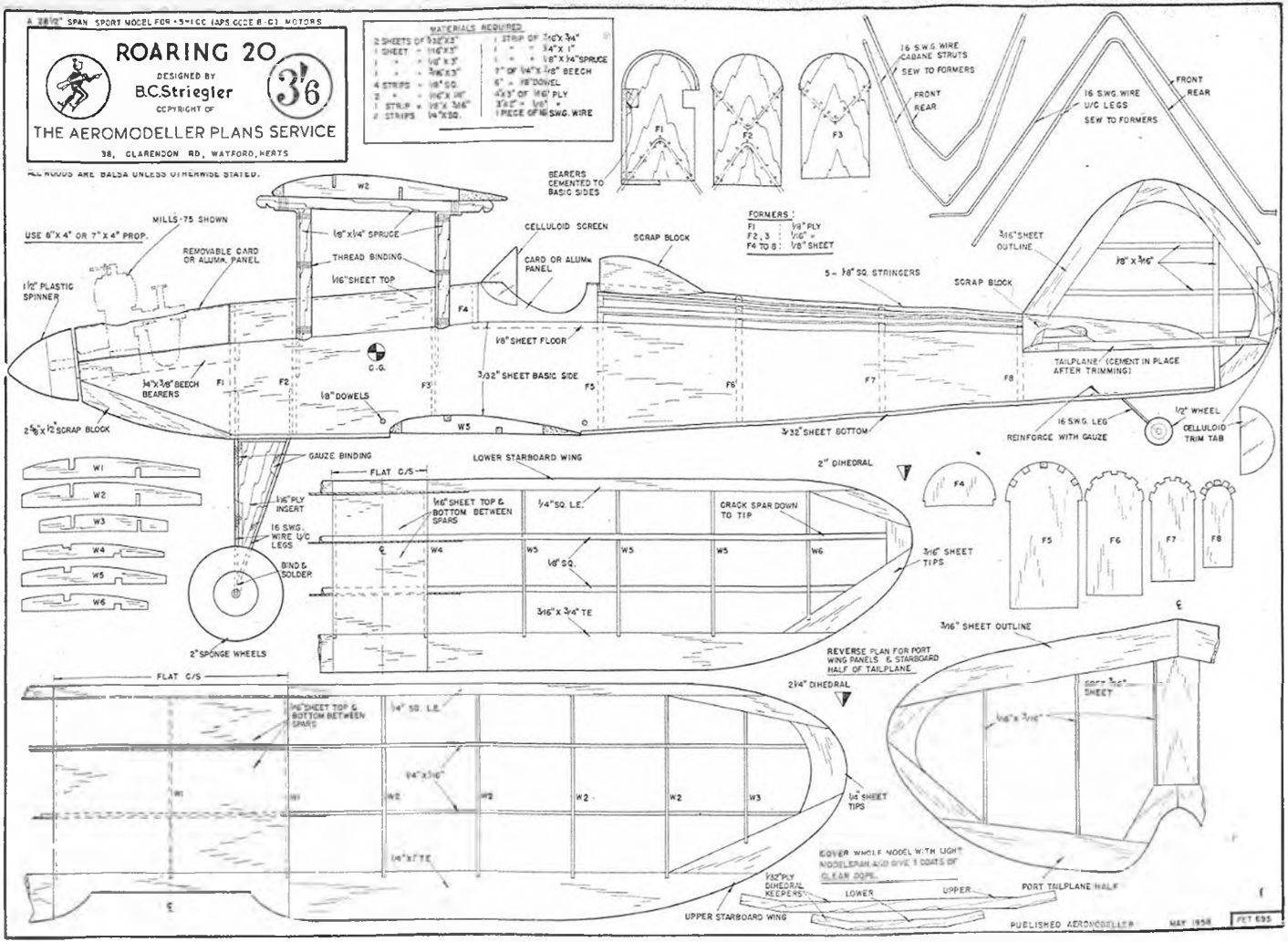
DESIGNED BY
B.C.Striegler
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
38, CLARENDON RD, WATFORD, HERTS

3/6

MATERIALS REQUIRED

2 SHEETS OF 3/32"X3"	1 STRIP OF 3/16"X 3/4"
1 SHEET " 1/16"X3"	1 " " " 3/4"X 1"
1 " " 1/8"X3"	1 " " " 1/8"X 1/4" SPRUCE
1 " " 3/16"X3"	7" OF 1/4"X 1/8" BEECH
4 STRIPS " 1/8" SQ.	6" " 1/8" DOWEL
2 " " 1/16"X 1/8"	4"X3" OF 1/16" PLY
1 STRIP " 1/8"X 3/16"	3"X2" " 1/16" "
2 STRIPS 1/4"X SQ.	1 PIECE OF 16 S.W.G. WIRE

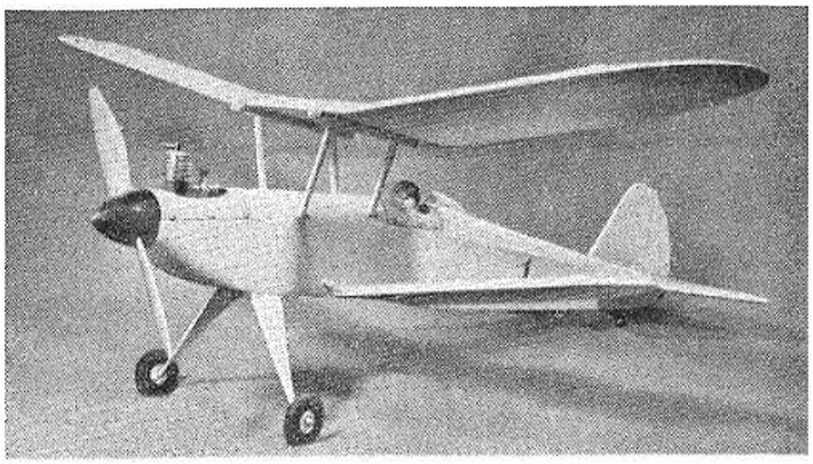
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.



Full size copies of this 1/3 scale reproduction are available as plan PET/695 from Aeromodeller Plans Service, price 3/6, plus 6d. postage

ROARING 20

A nifty sport biplane for small engines by B. C. Striegler from Houston, Texas



THE PERIOD AFTER World War I is now known as the Roaring '20s in the United States. During this time of prohibition and prosperity women daringly exposed their ankles for all to see, and men wore raccoon coats (complete with pocket flask of gin). Many small biplanes flitted through the peaceful skies of the 1920's and it is from this period that the "Roaring 20" gets its name.

This small sport model was developed out of a desire to have a model that performed realistically without danger of thermal flights. Another requirement was that the model must be easy to transport.

With these specifications in mind, a biplane configuration was chosen for the following reasons:

1. Biplanes are realistic in flight, and have a universal appeal among modellers.
2. Biplanes are relatively poor soarers because of interference drag between the wings and around the necessary struts.
3. Biplanes are usually more compact than monoplanes of the same wing area, and are therefore easier to transport.

The result is not only pleasing to the eye; but also boasts the type of sport performance that will endear it to all "week-end" fliers for Roaring 20 is easy to build, very easy to fly and will give years of service.

Cut out two fuselage sides from firm $\frac{3}{16}$-in. sheet balsa. Glue on the two motor mounts, making sure that they are of the proper width for the engine you intend to use. The mounts shown on the plans are suitable for the Mills ·75. Then bind the front and rear wire cabane struts to their respective plywood formers with thread and glue firmly in place. Also bind the landing gear struts in place to the proper formers in a similar manner.

Assemble the fuselage sides to all the formers back to the rear of the cockpit, making sure that the sides and formers are in correct alignment. Allow the fuselage to dry overnight, then add the additional formers. Be sure the fuselage is straight before the two sides are glued together at the tail.

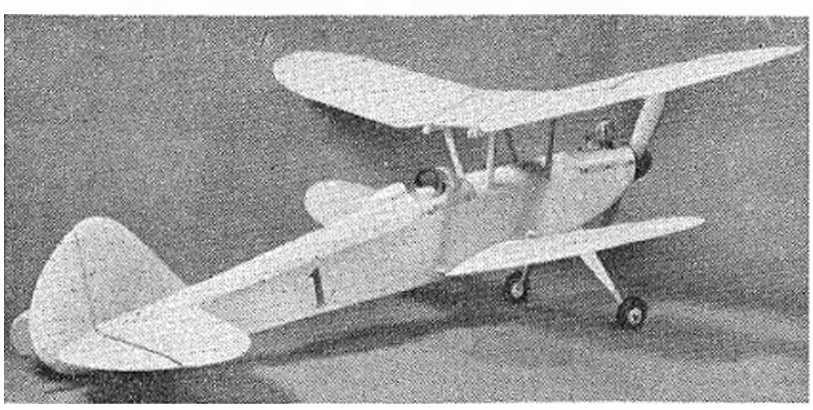
Plank the forward deck of the fuselage with soft $\frac{1}{16}$-in. sheet and add the $\frac{1}{8}$-in. square stringers to the rear deck. Finally, plank the bottom with soft $\frac{3}{32}$-in. sheet and add the scrap block nose fairing. The cowling and cockpit cover can be made of card or light aluminium. The cabane strut fairings are bound in place with thread.

The wings are quite simple and no instructions should be necessary, except that one should avoid warps and ensure that each half is true to its opposite side.

The rudder and tailplane outlines are made from light $\frac{3}{32}$-in. sheet balsa. Cover both the rudder and the stabiliser with medium weight tissue, and fit temporarily in place on the fuselage. Then add the soft balsa fairing blocks on either side of the rudder and cement the tail assembly together as a detachable unit which can be fixed permanently after test flights are concluded.

Cover the entire model, except for the tail, with heavyweight tissue. Add the soft balsa head rest, and give the entire model five coats of clear dope thinned 50 per cent. Sand lightly between each coat of dope and finish the model with three coats of colour dope. The original is cream with black trim. Now glue on the acetate windscreen, bolt the engine in place, and the "Roaring 20" is ready to go!

Balance the model as shown on the plans and test glide. Any tendency to stall or dive should be corrected with weight in the nose, or tail, respectively, as the correct incidence is built-in; but tail movement can be used, limiting the packing to a maximum of $\frac{1}{16}$ in. Make the first flights under low power, and adjust the rudder tab for a gentle turn to the left. The original "Roaring 20" is powered with a Mills ·75 turning an 8 x 4 Tornado prop. All-up weight should be around 13 ounces. Good flying!



AERO MODELLER

AIRCRAFT DESCRIBED No. 92

Albatros CIII

—by P. L. GRAY

ALBATROS WERKE, founded before the first World War by Dr. Walter Huth was one of the most prolific builders of aircraft for the German Army. Its famous single-seaters from DI to DVa held an almost complete monopoly for equipping the Jagdstaffeln from 1916 until superseded by the Fokker DVII in 1918. What is not quite so well-known is that the firm produced an even longer sequence of 2-seater General Purpose aircraft in the series CI to CXV from 1915 to 1918, many of which were produced in considerable numbers.

The 160 h.p. Mercedes powered CIII (150 Benz version was not widely used operationally) was produced in far greater numbers than any other Albatros 2-seater, being built by the parent firm at Johannisthal, its subsidiary at Schneidermuhl and by many sub-contractors.

The majority of Germany offensive work was undertaken by the 2-seaters on bombing and photographic sorties over allied territory (the single-seaters being mainly used as interceptors over their own terrain) and their crews attained a high degree of combat efficiency commanding no little respect from the pilots of the R.F.C. who tried to shoot them down. Both Mannock and McCudden testify as to what wily birds these two-seaters were and how difficult it was to record a decisive victory over them.

The hallmark of all Albatros aircraft was the three-ply covered fuselage which dispensed with any internal bracing yet produced an extremely strong and rugged structure. In the CIII the fuselage was of normal slabsided shape with a slightly rounded top decking and tapered to a horizontal knife-edge aft. The nose was unspinnered of streamlined with somewhat bulbous metal cowlings retained by spring clips.

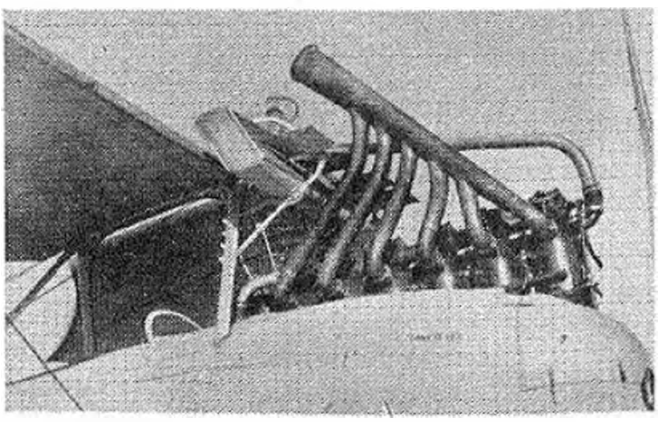
Wings were or orthodox fabric-covered wooden construction, built on two hollow spars, with a false rib reaching aft to the second spar between each of the main ribs. The forward position of the spars imparted a liberal degree of flexibility to the rear half of the wings which considerably improved lateral stability.

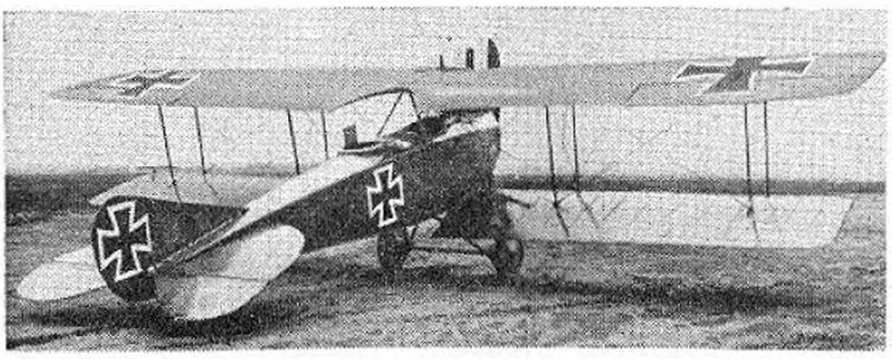
All struts were of streamlined steel tube which included the trestle type centre section and the normal Vee type undercarriage struts. An Albatros "hockey stick" tailskid was mounted externally on an inverted pylon of four small struts. Wheels were sprung with elastic shock cord round the axle.

Complete empennage was a steel tube structure of fabric-covered flat plate section. Two lift struts braced the underside of the tailplane and a single cable the top side.

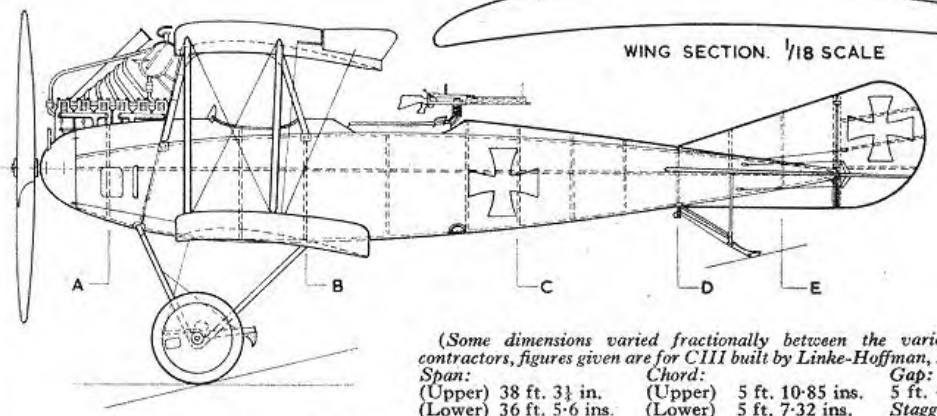
Flying Controls were in the form of a standard short leverage stirrupped rudder-bar and a three-spoked control wheel. Throttle ratchet was on port side of cockpit and was so arranged that on failure the engine went to full throttle and did not stop, as on British types. Some degree of control with the magneto switch was then still possible. Altimeter revolution counter, fuel pressure, and temperature gauges as well as the Bosche magneto switches were part of the cockpit equipment. The compass was usually inverted in the centre section or buried in the starboard lower wing root. A fixed forward firing machine gun, mounted alongside the cylinders on the starboard side did not become standard equipment until well into 1916.

The CIII was operational against the R.F.C. until the close of 1916 by which time it was being replaced with the CV and later, the CVII. It was still widely used for training up to the end of the war—and relegated to lesser theatres of war.

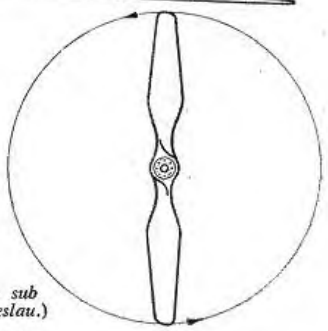




Heading shows a CIII without wheel covers and claw brakes, and with natural finish colouring. Above: the exhaust ducting of a Linke-Hofmann built CIII, and the radiator situation hardly provide a good outlook for the pilot. Left: a losenge fabric covered CIII, S/N CIII 4003/17. All photographs by courtesy of A. R. Weyl



WING SECTION. 1/18 SCALE



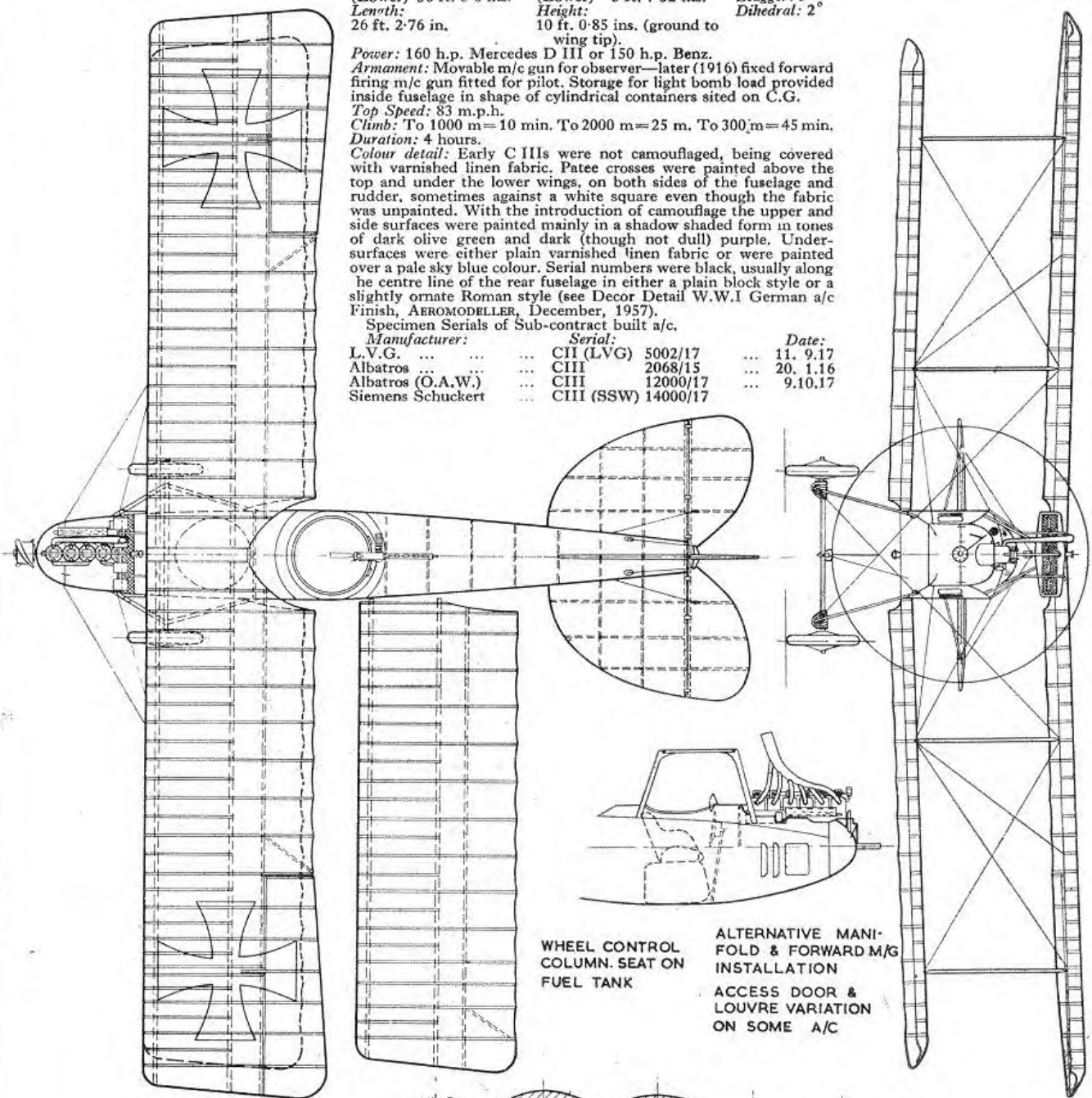
(*Some dimensions varied fractionally between the various sub contractors, figures given are for C III built by Linke-Hoffman, Breslau.*)

Span:	*Chord:*	*Gap:*
(Upper) 38 ft. 3½ in.	(Upper) 5 ft. 10·85 ins.	5 ft. 4·17 ins.
(Lower) 36 ft. 5·6 ins.	(Lower) 5 ft. 7·32 ins.	*Stagger:* 0°
Length:	*Height:*	*Dihedral:* 2°
26 ft. 2·76 in.	10 ft. 0·85 ins. (ground to wing tip).	

Power: 160 h.p. Mercedes D III or 150 h.p. Benz.
Armament: Movable m/c gun for observer—later (1916) fixed forward firing m/c gun fitted for pilot. Storage for light bomb load provided inside fuselage in shape of cylindrical containers sited on C.G.
Top Speed: 83 m.p.h.
Climb: To 1000 m = 10 min. To 2000 m = 25 m. To 300 m = 45 min.
Duration: 4 hours.
Colour detail: Early C IIIs were not camouflaged, being covered with varnished linen fabric. Patee crosses were painted above the top and under the lower wings, on both sides of the fuselage and rudder, sometimes against a white square even though the fabric was unpainted. With the introduction of camouflage the upper and side surfaces were painted mainly in a shadow shaded form in tones of dark olive green and dark (though not dull) purple. Under-surfaces were either plain varnished linen fabric or were painted over a pale sky blue colour. Serial numbers were black, usually along he centre line of the rear fuselage in either a plain block style or a slightly ornate Roman style (see Decor Detail W.W.I German a/c Finish, AEROMODELLER, December, 1957).

Specimen Serials of Sub-contract built a/c.

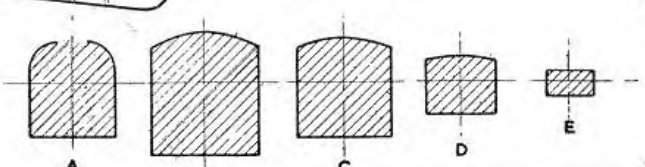
Manufacturer:	*Serial:*		*Date:*
L.V.G.	C II (LVG)	5002/17	... 11. 9.17
Albatros	C III	2068/15	... 20. 1.16
Albatros (O.A.W.) ...	C III	12000/17	... 9.10.17
Siemens Schuckert ...	C III (SSW)	14000/17	



WHEEL CONTROL COLUMN. SEAT ON FUEL TANK

ALTERNATIVE MANIFOLD & FORWARD M/G INSTALLATION

ACCESS DOOR & LOUVRE VARIATION ON SOME A/C



ALBATROS C III MERCEDES

FT.

what's the answer?

"IT VIBRATES A LITTLE UNDER LOAD"

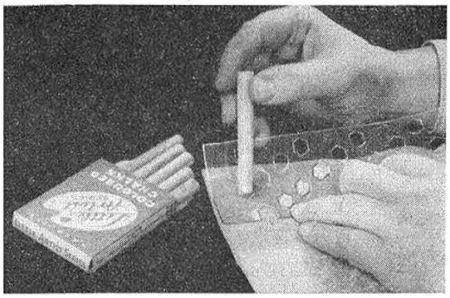
Norman Blake writes us that he started bench tests with ducted fans and ran up against a very puzzling feature. He first ran the motor on a bench rig with the impeller and measured the r.p.m. as 14,000. He then took an open cylinder, rolled to give a small clearance around the impeller and very carefully advanced this over the impeller, when running, to observe the effect. The result—as soon as the end of the tube completely covered the rotating impeller the revs went up by some 3,000 and the "draught" (through the end of the tube) fell right off. The same thing happened with parallel, divergent and convergent tailpipes. Yet why should exhausting the slipstream through a tube raise the engine speed and reduce the thrust?

What would you do in a case like this? Turn the page for the solution to the problem, printed below.

"THE THRUST JUST FELL OFF"

ANSWER: The reason is quite simple. When the impeller or fan is running in free air on a static rig it draws air radially inwards, *i.e.* from the tips of the blades inwards. Shroud this region off by putting the end of a tube over the impeller and it can only now draw air from inside the tube, *i.e.* virtually from its own slipstream. Hence it is "unloading" itself, with the result that the engine speeds up. Also the fact that it is working against its own slipstream, as it were, reduces the strength of the slipstream. Look of adequate "breathing" facilities is a primary reason why ducted fans behave very poorly under static running conditions.

"SUCCESS"



Hexagonal Camouflage

A simple method of obtaining realistic effect devised by W. I. BARRETT

ONE OF THE difficulties encountered in building flying scale models of certain German aircraft of the 1914-1918 War has been the reproduction of the hexagonal pattern camouflage system.

The method used on the full-size aircraft was to dope in place fabric which had been printed previously. A similar scheme may be used on models by following the instructions outlined as follows.

Pre-painted tissue—with chalk!

The first step is to determine the size of the hexagons to be used on the model under construction. This is best done by studying photographs of the machine concerned.

A start can then be made on the stencil, which is marked out from a sheet of paper on which has been drawn a honeycomb of hexagons of the required size. Every fourth hexagon is marked on to the stencil in the sequence indicated in the sketch (*Fig.* 1). The most suitable stencil material was found to be ·010-in. thick acetate. A piece at least 6 ins. square should be used, as smaller pieces tend to make matching of the pattern difficult.

The hexagons marked on the stencil are then cut out with a sharp knife. It is preferable to make

Heading shows the simplicity of application, and below, a D.VII with lower wing covered by pre-chalked tissue. Built to 1/18th scale by Brian Smithies, it has a most realistic appearance

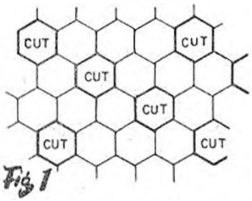


Fig 1


CUT OUT HEXAGONS APPROX 1/32" LARGER ALL ROUND THAN NOMINAL SIZE

Fig 2

these slightly larger than as drawn (*Fig.* 2) as this prevents plain borders around each hexagon on completion of the pattern, due to the difficulty in getting the colouring material right to the edges of the hexagon.

This completes the stencil, the preparation of which may be considered the most tedious of the whole job, but care spent here will be repaid with the accuracy of the finished camouflage scheme.

The next stage is the application of the pattern to the covering material, which is of either heavyweight or lightweight tissue, depending on the size of model.

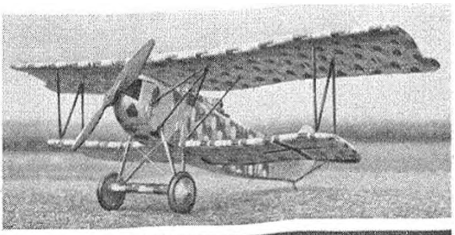
With the tissue paper laid on a smooth flat surface, the stencil is placed at the top left-hand corner, and the colour applied to the hexagonal holes. For the irregular pattern use stencils as below.

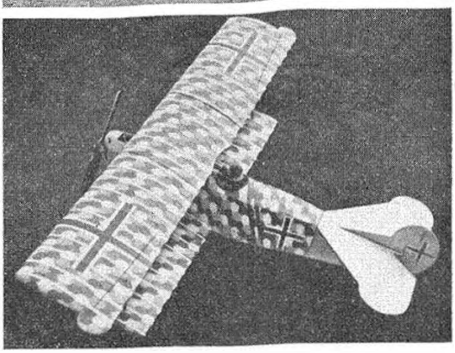
The colouring agent is a stick of chalk of the correct shade, which can be found in most packets of children's chalks obtainable at toy shops. The actual shades used on any particular type of aircraft may be found in the "Decor Detail" articles in the November 1957 issue.

By rubbing the chalk over the holes in the stencil, colour is applied to the tissue. A fine dust gathers at the edges of the holes and this is rubbed into the tissue with the tip of a finger, using a circular motion. Alternatively one can grind chalk into powder and dust on with a piece of cotton wool to avoid roughing the surface.

Repetition of the pattern is obtained by moving the stencil to the right, using previously marked hexagons for positioning.

When a sufficient area of tissue has been covered, excess chalk should be dusted off, and the stencil washed and dried.



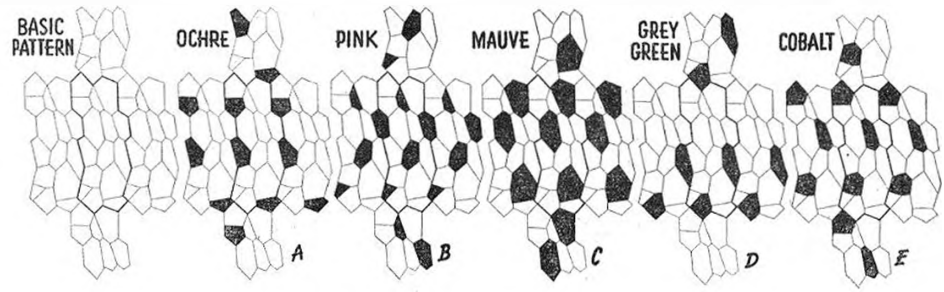


Hand-painted (bless his patience!) by Brian Downham of Enfield, this 1/10 scale D.VII has an Albon Javelin, is a 22-oz. fly in spite of the paint weight. Mr. Barrett's idea, using authentic stencil pattern below, could save ounces on such a model

The next colour in the sequence can then be applied with the stencil placed in its new position relative to the original coloured hexagons. By following the same procedure as above, the camouflage scheme can be completed in a short time on the tissue in the four colour stages.

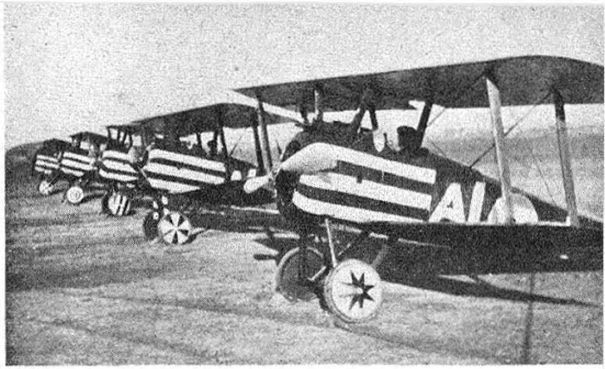
The model is then ready for covering.

It should be noted that the scrubbing action of the chalk tends to roughen the surface of the tissue, which should therefore be doped on to the model with the chalked surface on the inside. Applications of clear dope on the smooth side of the tissue renders it transparent, and allows the pattern to show through, needless to relate saving considerable weight and trouble in painting inaccessible areas.

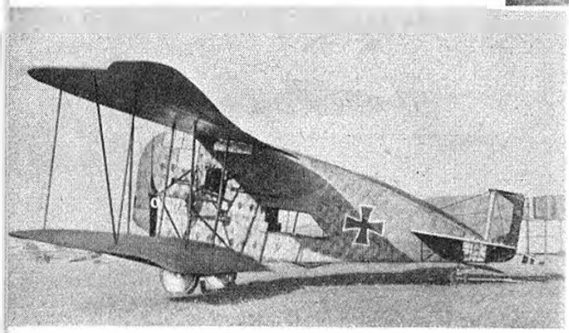


Decor Detail

Frank Cheesman has unearthed this rare gem showing 10 R.N.A.S. Squadron lined up. Each is lettered "A" for the flight, and the distinction for individual a/c left to the wheel covers. Stripes are Black and White



From the Chas. Donald Collection, a rare bird with a wide expanse of lozenge fabric covering. It is a Linke Hofmann R-1 bomber with a pilot position not unlike that of the present-day Beverly transport



FRANK CHEESMAN AT the College of Aeronautics has some very interesting comments on the notes given by Peter Gray and adds some information from notes not available to Peter at the time of writing the Camel feature in March.

1. "The photograph heading page 142 (March issue) depicts Camels of 45 Sqdn. in Italy and not as stated 210 Sqdn. R.A.F. This error seems to have been caused by an incorrect caption at source—since amended, I understand.

2. "The correct colours of the 'nose' stripes on the various 10 (R.N.A.S.) sqdn. Camels were as follows:—

'A' Flight Black and White (F/Com. Carter)
'B' Flight Red and White (Alexander)
'C' Flight Pale Blue and White (Manuel, KIA 10/6/18 and Coombes)

Photographs available show all three flights with this system of marking.

3. "The letters on the fuselage were *Flight* and not *individual a/c* markings.

4. "This letter took the form of distinctive designs on the *canvas wheel discs* shown in the photo above.

5. "It seems that the nose stripe marking of 10 (R.N.A.S.) Sqdn. was unofficial, but permitted by the R.N.A.S. authorities. However, at about the time of the formation of the R.A.F., the squadron was told to remove these markings which they seem to have done somewhat tardily as they still wore them as late as June, 1918. They were finally reverted to the official markings of *single white vertical bars fore and aft of the roundel*, and this in turn was replaced by *a single white disc aft of the roundel*.

"Later still the individual a/c letter system was introduced and presumably the wheel markings no longer employed.

"In connection with the removal of the nose stripes a pilot of the squadron at that time has said 'We became very busy'. Presumably the staffels considered that they could now assert themselves with this 'new' squadron—something not possible with their 'late' opponents!"

That "plain" aircraft

Our reference to the Douglas A-26 Invader as a singularly plain aircraft was intended to prompt informative comment and no sooner had the February issue hit the news-stands than the letters started rolling in. Many readers described the same aircraft, and it is to P. Rowlings of Cotteridge, Birmingham, that we are indebted for the information sketched on this page. These Invaders were seen at Ringway during August, 1956. There was a line-up of six, and only one of them was "plain", being Midnite Blue overall with yellow serial, buzz number and insignia: but the other schemes were far from drab.

139278 had matt silver as a basic colour and 435271 was Midnite Blue—quite a shot in the eye for the shiny aluminium wallpaper enthusiasts but each a nice scheme for the paintbrush brigade making the popular Aeromodeller Plans Service control-line Invader from Plan CL 520.

R.A.F. Changes

Trainers are to have yet more conspicuous markings so that they can be given a wide berth by other pilots in this jet age. Fluorescent orange paint is to replace the well-known "Trainer Yellow" for the bands around the fuselage and wings and in addition, the outer 18 in. of wingtips and 12 in. of tail tips are to have the same treatment. Display missiles, tanks, etc., were painted this colour for the S.B.A.C. display at Farnborough last year, and the Slingsby Skylark high performance sailplanes have a distinctive "Flame" tone, perhaps the visibility of these experiments has prompted the Air Ministry into making the change.

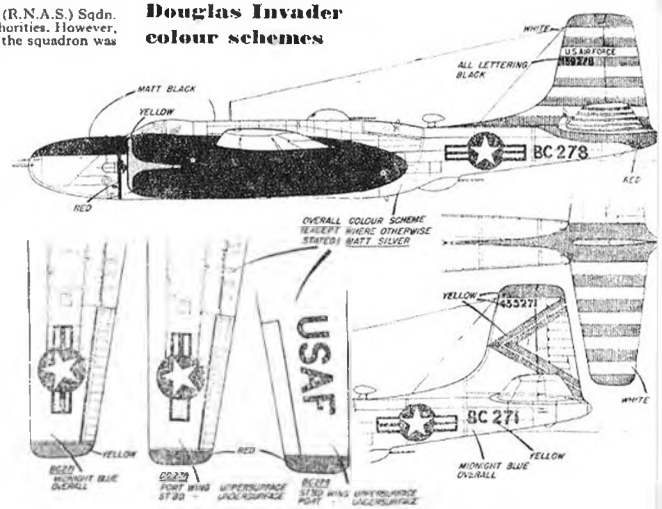
"Harry Tate"

Bruce Robertson has given us an interesting sidelight on the R.E.8 drawing published last month. George Cox depicted F.3556, with the "A PADDY BIRD FROM CEYLON" Note on the nose, and Mr. Robertson explains the origin as follows:

"The name originated in a scheme sponsored by the Overseas Club in 1915 for contributions to enable aircraft to be presented to the R.F.C. and R.N.A.S. Supporters in Ceylon, in response to an appeal through the good offices of 'The Times of Ceylon' raised initially the sum of £1,500 to cover the cost of a B.E.2c to be known as 'Ceylon No. 1—A Paddy Bird from Ceylon'. Funds continued to come in and three Vickers F.B.5s at a cost each of £2,250 were further presented as Ceylon Nos. 2 to 4 with the respective names 'A Devil Bird from Ceylon', 'A Nightjar from Ceylon' and 'Flying Fox'.

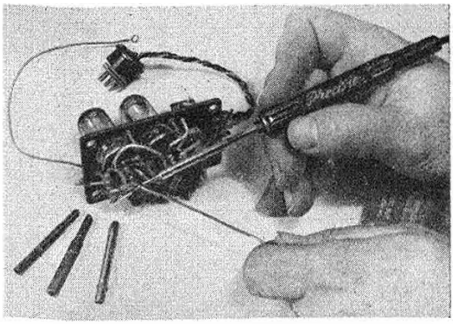
"The British Government had announced that for each aircraft presented and subsequently struck off charge, they would replace it by a new aircraft. In practice this merely meant giving the name to a new machine awaiting acceptance. Thus it came about, that when the original B.E.2c was lost, the name 'Paddy Bird from Ceylon' passed to a late production R.E.8. towards the end of 1918'

Douglas Invader colour schemes

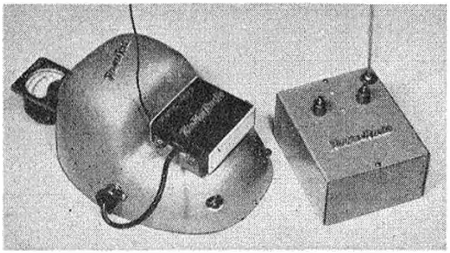


Trade Notes

NINE NEW PLASTICS in a 3s. range, all about 7-in. span, have been launched by **Frog** and are to a very fine high standard. We are particularly attracted by the de Havilland Beaver (misnomered Type 20, actually the D.H.C-2), moulded in pale blue and with demonstrator registration G-ALOW. Others immediately available are the Short Sealand, Douglas Invader, N.A. Tornado, and to come, the B-47, B-52, B-66, Neptune and Packet. All are original mouldings by International Model Aircraft. Also added to the other, more detailed Frog range of 1/72nd types is a super Fairey Delta 2 kit, with droop snoot too, at 6s. 6d.



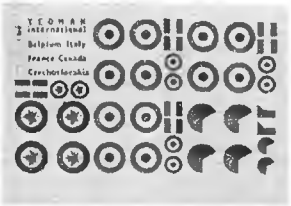
Right: Precision soldering iron with 3 spare bits in foreground, at work on miniaturised Hill Rx Iron weighs only 1 ounce



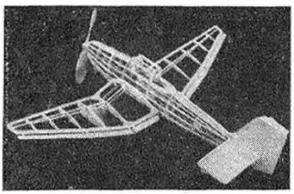
Left: Ripmax R/C equipment as it should be displayed for dealer demonstration. The Rx is gaining great popularity, being easy to tune and very reliable R.D.A. Unit contains batteries and has red indicator lights showing switching of relay

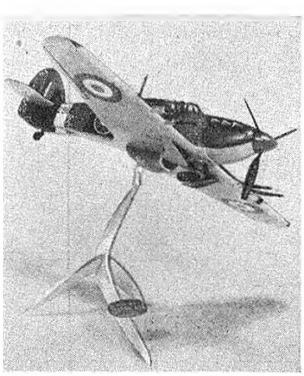
There can hardly be a club in these isles that does not have at least one member with a home-built Hill 2-valver receiver, and now that the kit by **Dockerty** of the new miniaturised Hill, weighing less than three ounces with an E.D. Polarised relay, is becoming equally popular, there is a definite need for lightweight, pencil point soldering irons.

We have just completed our Hill Mk. II using the **Precision** C.220 (number refers to mains voltage) iron as seen in the photo, and the difference in both time taken and joint neatness provides ample justification for having one of these units for radio work. Made by A.N.T.E.X. of 3 Tower Hill, London, E.C.3, there are no less than 11 different types of iron to suit practically any voltage, plus five spare bits of various shapes, and two transformers for the 6- or 12-volt irons when used off mains. It is certainly an advantage to have the latter, giving the facility of using the iron on the field off a car battery, or at home off mains. Irons are 25s. or 29s. 6d., according to type, bits 3s. or 3s. 6d., and transformers 29s. 6d. or 37s. 6d.



Above, latest transfer sheet by A. A. Hales includes five National Insignia—ideal for flying scale. Below: the KK Stuka 4ft. plastic Hurricane and the Airfix Tiger Moth all make up very nicely



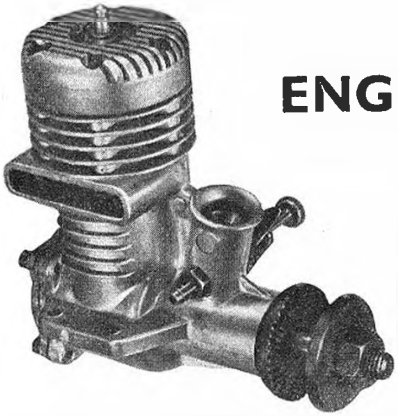


We have been asked to point out that the notice contained in the Betta Model Aeroplane Supply Company's advertisement in our April issue to the effect that the H.M.V. Wright system radio control units are out of production is completely untrue. We confirm that they are very much in production and apologise for any inconvenience caused by this irresponsible statement.

These well-known units continue to be produced by Les Wright and Frank Bethwaite trading as **Wright Radio Control Ltd.**, and are being distributed by Messrs. **Scale Model Supplies** of Auckland, N. Zealand.

We have checked out the **Ripmax Pathfinder** radio control unit including the special R.D.A. (Receiver Demonstrating Aid) which is supplied to all appointed dealers. As will be seen from the photo this unit is neatly moulded in Fibreglass and has a special recess for accommodating the receiver under test.

Range tests on a standard receiver were very satisfactory, the standing current of 4·4 m/a dropping to just under 1 m/a at 500 to 600 yards ground range. Providing the tuning instructions are carefully followed there should be no trouble with sensitivity adjustment as has occurred on earlier single valve receivers of this type.



ENGINE ANALYSIS No. 47

The latest engine from one of America's leading manufacturers for Team racing, stunt or combat flying

FOX 29X

by R. H. WARRING

BASICALLY THE FOX 29X has been evolved from the 29R and the Combat 35 engines, all parts being interchangeable with one or other of these models, with the exception of the cylinder head. Unlike the 29R, however, the 29X adopts a conventional layout with normal induction.

The 29X is a sturdy, rugged engine with excellent smooth running characteristics and plenty of power. Despite its high output it is an easy engine to handle, is free from marked vibration except at very high speeds, and is also easy to start.

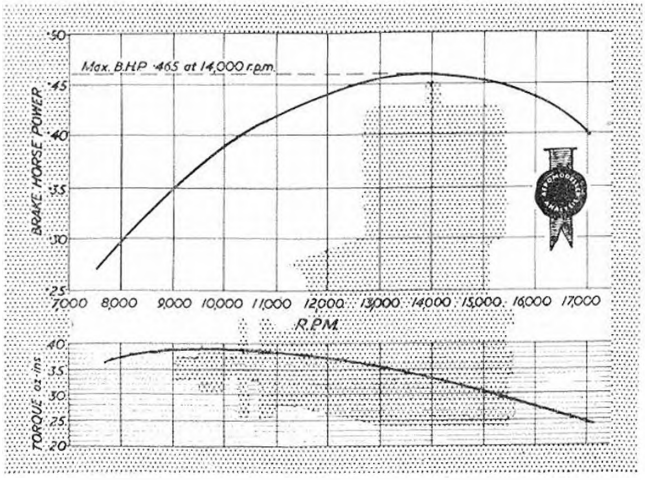
The compression ratio appears fairly high and using a doped fuel there is a marked tendency for the engine to kick back when hand starting, with increasing nitromethane content. With 20 per cent. nitromethane the kick-back is quite noticeable, demanding a powerful flick for starting. A maximum of 10 per cent. nitromethane would appear about the limit for normal operation with easy hand-starting without decreasing the compression ratio.

Starting characteristics are exceptionally good, there being no tendency to falter once running. Starting when hot deteriorates with straight fuel, but is again easy with a doped fuel. Due to the good suction, little or no choking is required for starting—except for an initial choke when cold, if only to "degum" and free the engine. *All the handling tests were conducted in particularly cold March weather and may not be typical because of this.* It is a flattering point, however, that despite near-freezing temperature no trouble at all was experienced in getting the Fox 29X to hand-start on any size of propeller.

Good torque is developed at low speeds, without the engine showing any signs of exceptional power output. Running is quite steady and consistent but the Fox sounds happier at higher speeds (10,000 r.p.m. and above). At speeds above 16,000 r.p.m. the performance was very steady, although there was a noticeable tendency to vibration. At all speeds the needle valve control is exceptionally non-sensitive, allowing plenty of time for adjustment.

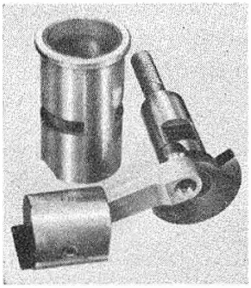
Useful power peak

Maximum power output on test was developed at 14,000 r.p.m., and maximum torque at 10,000 r.p.m. The 29X tends to run quite hot and unless properly cooled with an airstream performance is affected by overheating (e.g. as could occur in a close cowl without adequate venting for airflow through). Fuel consumption is quite high, without being excessively so for an engine of this size.



SPECIFICATION

Displacement: 4·896 c.c. (·2955 cu. in.)
Bore: ·738 in.
Stroke: ·697 in.
Bore/stroke ratio: 1·06
Bare weight: 7¼ ounces
Max. B.H.P.: ·465 B.H.P. at 14,000 r.p.m.
Max. torque: 39 ounce-inches at 10,000 r.p.m.
Power output: ·095 B.H.P. per c.c.
Power/weight ratio: ·062 B.H.P. per ounce
Material specification:
Crankcase unit: light alloy pressure die casting
Cylinder liner: alloy steel
Piston: Meehanite
Connecting rod: machined from 24 ST aluminium alloy
Main bearing: Bearing bronze
Crankshaft: alloy steel, surface hardened to Rockwell "C" 58
Head: light alloy
Sprayhar: brass
Manufacturers:
Fox Mfg. Co. Inc.,
5305 Towson Ave., Ft. Smith,
Arkansas, U.S.A.



Basic components of the 29X show remarkably little out of the ordinary, yet the plain appearance belies the high performance obtainable. Piston and cylinder are interchangeable with the 29R, but connecting rod and crankshaft are longer on the racing engine

Fuel used: 20% Nitromethane, 50% Methanol, 30% castor.

PROPELLER—R.P.M. FIGURES

Propeller dia. x pitch	*r.p.m.*
10 x 6 (Topflite)	12,500
12 x 4 (Trucut)	8,200
10 x 4 (Trucut)	10,000
11 x 4 (Trucut)	9,800
9 x 4 (Trucut)	13,700
8 x 8 (Trucut)	12,200
8 x 6 (Trucut)	14,500
8 x 4 (Trucut)	16,000
10 x 4 (Stant)	12,500
9 x 4 (Stant)	13,300
9 x 9 (Stant)	10,400
8 x 4 (Stant)	16,100
8 x 8 (Stant)	13,500
7 x 4 (Stant)	17,500

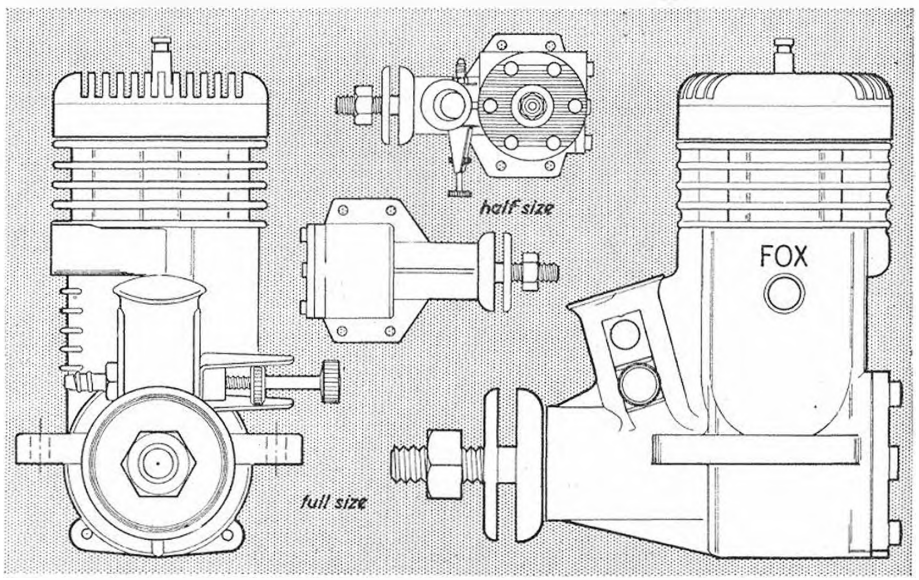
Constructionally the Fox 29X employs a light alloy crankcase casting incorporating the cylinder barrel, exhaust stub and induction tube, into which fits the liner capped by a light alloy head. The only machining operations on the casting are drilling through the induction tube (and inserted main bearing shell), reaming the main bearing for the bronze bearing shell, and the barrel reamed to fit the liner and the top faced, drilled and tapped for the head screws.

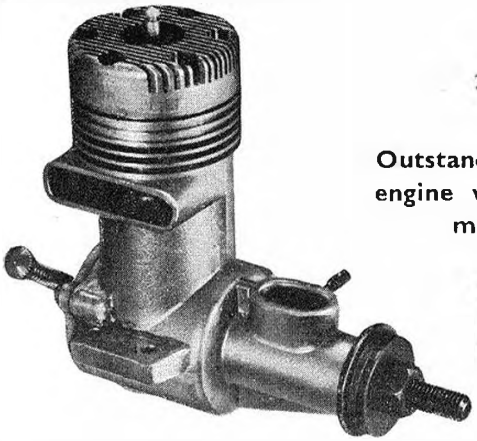
The liner is fully machined from leaded steel, turned, reamed and honed internally and ground externally to a plug fit in the crankcase casting. The top of the liner is flanged and seats on top of the cast barrel with a thin aluminium gasket under the flange. Ports are rectangular, of large area and depth, and milled in the liner walls. The bottom of the liner is ground away in a half-moon shape on the transfer side, presumably for con. rod clearance since the cylinder is slightly de Saxe.

The piston is fully machined from a Meehanite billet, ground externally, and is a beautiful job lightened to logical limits. The gudgeon pin is $\frac{5}{32}$-in. in diameter, drilled to take brass end pads. To dismantle, the liner must first be withdrawn and the gudgeon pin "fiddled" out through the hole in the rear of the crankcase casting, when the piston falls free and the con rod can also be removed. The latter is machined from light alloy stock and is of substantial proportions.

The head has an annular recess to fit the liner flange, into which is fitted an aluminium gasket. Compression ratio can be adjusted by removing this gasket, or adding another, if required. The head is contoured with a cross slot to match the straight deflector on the top of the piston, and is of substantial proportions to eliminate warping or distortion.

The crankshaft is a massive unit, although relatively short in length. It is machined from alloy steel hardened and ground to $\frac{1}{2}$-in. diameter stepping down abruptly at the end of the bearing length to a $\frac{1}{4}$-in. diameter threaded length. The port is rectangular, approx $\frac{3}{8}$ in. x $\frac{1}{4}$ in., drilled, milled and possibly finished by broaching. The central hole through the crankshaft is $\frac{11}{32}$-in. diameter. The crank web is machined away to provide counterbalance and the $\frac{5}{8}$-in. crankpin ground to finish





Outstanding plain-bearing, pressure-fed racing engine with a potential performance above most other engines of similar size

FOX 29R

THE 29R IS a unique design of racing engine which you will either drool over if you are an out-and-out speed control-line fan, or regard as an extremely irritating and highly unnecessary piece of machinery. This racing Fox is undoubtedly a very powerful engine—with a potential performance probably far and above most other engines of its size.

We say "potential" because in our experience, operating this engine can be a tricky—even frustrating—business. Starting is not a particularly difficult job, only everything has to be just right, and whilst this can be set up quite satisfactorily for bench-running tests, operating the engine in a model could be quite another question. Consistent starting, we found, was a two-man operation—one to flick over the propeller and one looking after the fuel control. This engine is no toy and, whilst not exactly being frightening, is one which you treat with a certain amount of respect. It demands much more in technique than the average pen bladder pressure fed engine. Yet having mastered the starting technique we had no particular troubles—or qualms—about hand-starting on a 7-inch diameter propeller.

The basic difference between the Fox 29R and other engines is this method of fuel induction. The engine is of the crankshaft rotary valve type, but the shaft opening and intake is so enormous that the conventional method of sucking in a spray of fuel-air mixture is no longer effective. Instead, liquid fuel is poured into the intake through a small tube located in the normal jet position, the rate of flow controlled by a needle valve mounted on the back of the crankcase.

To get a satisfactory fuel flow the supply must be pressurised—either by locating the tank well above the engine (about two feet is adequate) so that it flows under gravity; or by using some form of pressurised tank, like a pen bladder.

Fox recommends a mixture with a very high proportion of nitromethane. We found a 50 per cent. nitromethane proportion the maximum miscible with methanol and castor (without the addition of a mixing agent, like ether) and used this for our tests. This mixture appears very hard on glow plugs, so another very necessary technique would appear to be the selection, by practical tests, of a suitable plug for the actual mixture employed.

No detailed tests were undertaken with the Fox because of the somewhat limited appeal of this specialised design but rough measurements of torque and speed over the range 14,000-18,000 r.p.m. indicated at maximum B.H.P. output somewhat in excess of .6 at around 17,500 r.p.m. which figure is probably pessimistic as regards the maximum potential of the design.

Duke Fox himself makes the point that the people who buy this class of engine will want to rework it, polishing the interior surfaces, etc., so he has concen-

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FOX 29X *(continued)*

(unusual in American engines). The crankpin is also drilled out .120 in. dia. The main bearing is a bronze sleeve force fitted into the crankcase casting.

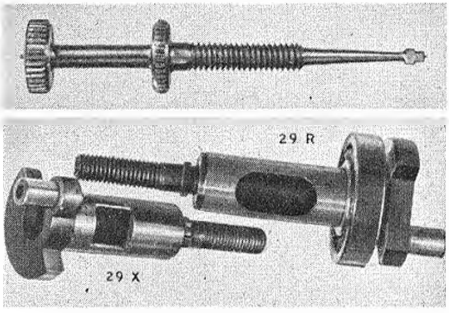
All the running fits are exceptionally good. It is obvious, in fact, that considerable attention has been given to all the parts that really matter. There was also far less evidence of roughness on the other parts than in some other Fox engines examined.

The intake tube is fitted with a sleeve, considerably restricting the diameter, which would appear to indicate that this model is intended for "stunt", "combat", team race (or radio) application. A somewhat enhanced performance could probably be realised for racing work with the sleeve removed, although no tests were made.

Provision is also made for the fitting of a second spraybar assembly for two-speed operation, by drilling through the casting at the appropriate point. The needle valve itself is ingenious in having a "spade" on flat near the end of the taper—presumably to bear against the inner diameter of the spraybar and eliminate any possibility of the needle point vibrating and possibly upsetting the fuel mixture. In view of the extreme non-sensitivity of the needle valve as a control, however, this refinement hardly appears necessary—or may possibly be a major reason for the insensitivity.

Summarising we rate the Fox 29X as an easy engine to handle, one without any apparent vices, sturdy and with an above-average performance for a plain bearing engine of this size. From the engineering point of view, too, it is exceptionally well fitted and a credit to the manufacturer's techniques.

Larger than life Fox needle shows the bearing end, also used to atomise fuel. Crankshaft comparison shows port differences between Stunt and Racing engines



trated on the highest standard running fits. Certainly the engine "feels" very nice, with general freeness all round and excellent compression seal. It is one of the few glow motors, for instance, which you can effectively "hydraulic" like a diesel.

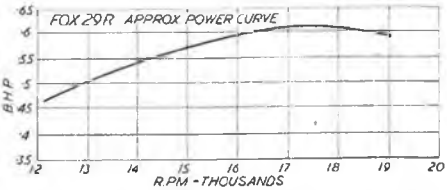
The overall size of the Fox is quite massive, particularly cylinder height. The design layout follows conventional "glow" practice, with transfer and exhaust diametrically opposed, the die-cast crankcase unit incorporating lower cylinder, exhaust and transfer and cooling fins. The cylinder liner is of leaded steel alloy and a plug fit in the casting when cold. The cylinder is heavily de Saxe or offset relative to the crankshaft to relative the piston of side loading. The piston is of cast iron, ground with a "matt" finish for oil retention with the appearance of a scratchy surface, but actually very fine and smooth. It is different in this respect of appearance from the more expected "cross hatch" pattern associated with micro-honing.

After withdrawing the liner, the piston can be removed only by withdrawing the gudgeon pin first, which is done through a hole in the cylinder jacket.

The crankshaft is a huge affair, $\frac{1}{2}$-in. diameter stepping down at the front to a $\frac{1}{4}$-in. N.F. thread. The crank pin, turned integral with the web, is 25-in. diameter. A tough connecting rod is machined from flat alloy bar.

The crankcase bore (intake) is ·360 in. and the inlet port cut in the wall $\frac{11}{32}$ in. long by $\frac{13}{32}$ in. wide. The timing of the intake port is quite normal, in fact it closes somewhat earlier than most engines of racing type.

We found the grip provided by the shallow knurling on the prop driver marginal. Even when tightened the very high torque generated on starting tends to accelerate the shaft away from the propeller and the knurling



then grinds through the propeller hub face as soon as any such movement takes place the serrations are filled and grip destroyed. As a consequence the shaft accelerates away from the propeller and unwinds the prop nut.

Summarising, a lot of practical "know-how" has undoubtedly gone into the development of this engine with the achieved object of producing a really "hot" racing engine. As we said at the beginning, if you are a speed fan you will almost certainly fall for it, and get a lot of satisfaction in experimenting with different compression ratios and fuels, and internal polishing.

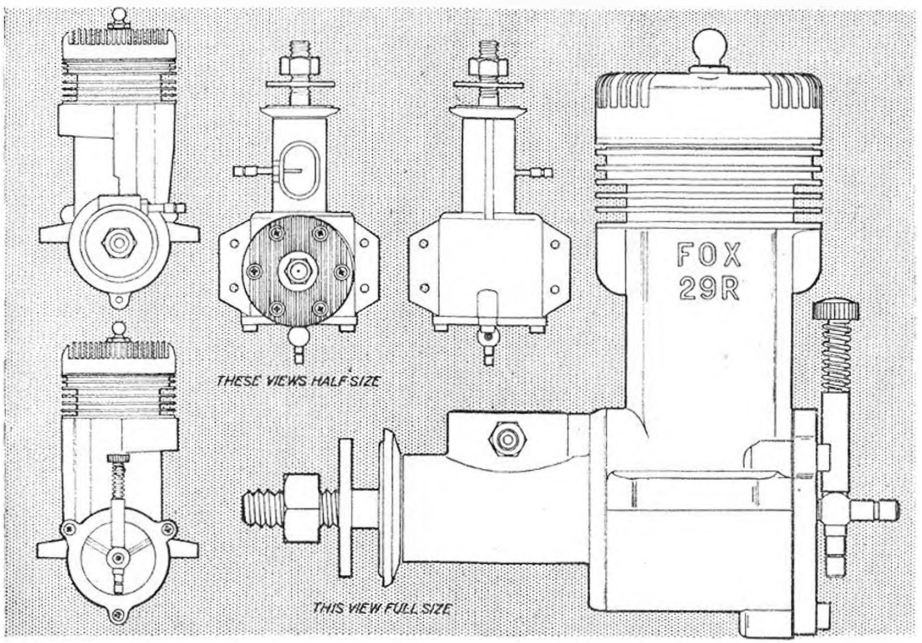
FOX 29R

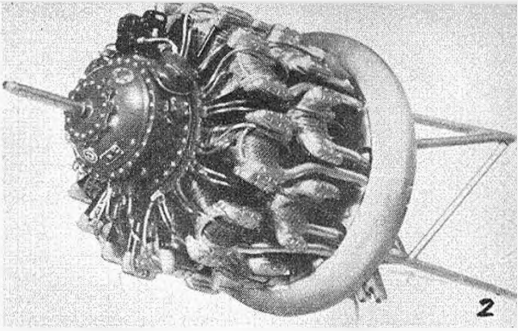
PROPELLER—R.P.M. FIGURES	
Propeller dia. x pitch	*r.p.m.*
8 x 5 (Stant)	16,500
8 x 4 (Stant)	18,000
8 x 6 (Stant)	14,800
8 x 8 (Stant TR)	14,500
9 x 6 (Stant)	13,700
7 x 6 (Stant)	18,400

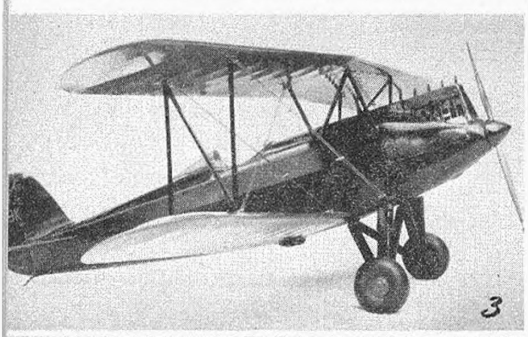
Fuel: 50% nitromethane, 25% methanol, 25% castor.

SPECIFICATION

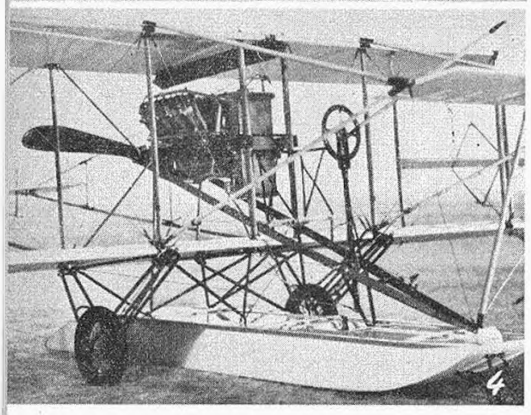
Bore: ·733 in.
Stroke: ·697 in.
Displacement: 4·896 c.c. ·298 cu. in.
Bore/Stroke ratio: 1·06.
Max. B.H.P.: approximate figure 0·61 at 17,500 r.p.m.
Bare weight: 9 ounces.
Power output: approximate figure ·125 B.H.P. per c.c.
Power/weight ratio: approximate figure ·068 B.H.P. per ounce.





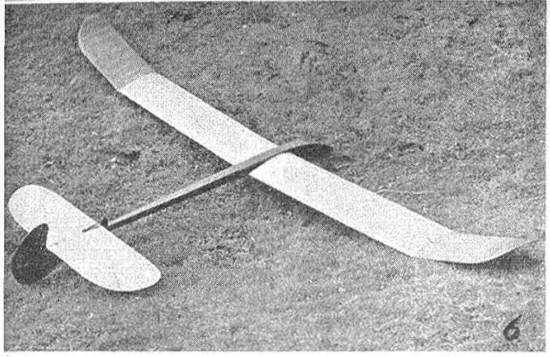


MODEL NEWS



THE NON-FLYING SCALE model is a rare bird these days, but fortunately, a few adherents to this branch of the hobby maintain their characteristic high standard of workmanship. Rarely do we see such magnificent examples as our "Models of the Month" on this page, all made by Frederick Howard of *Custom Craft*, Denver, Colorado, U.S.A. Mr. Howard's enthusiasm knows no bounds, and as he builds to comparatively large scales of ¾ in. or 1 in. to the foot, he is able to pile on the detail as these photos display. In Picture **1** we see his $\frac{1}{16}$th Curtiss JN-4D Jenny. Between 1917 and 1919, over 5,000 of the training machines were built in the U.S.A. and many of them are still flying, some with the original engines, others with more modern power plants. Time taken to construct this model was no less than 1,100 hours. **2** is a Pratt and Whitney Double Wasp CA15, 2,000 h.p. engine of World War II fame. The actual engine is 3·03 inches diameter and 3·55 inches long, which gives one an appreciation of the extremely fine work involved in reproducing the engine cylinders. No. **3** is a 1/12th scale Great Lakes 2T-1A trainer produced during 1930 and powered with the American version of the British Cirrus IV in-line engine. Many of these aircraft are still flying with various engines and are much sought after by home builders who like them for sport flying and aerobatics. The model took 800 hours to complete.

No. **4** is one of Mr. Howard's collection of early aircraft, a $\frac{1}{16}$th scale Curtiss Triad built in March, 1911. This pusher was the first successful amphibian, the first machine using a retractable undercarriage and among the first of the practical hydroplanes. 1,400 hours went into this detailed model. Lastly in picture **5** we have a model to Mr. Howard's own design of projected home built biplane, showing the cockpit detail and other work which took 1,000 hours to complete. Altogether this is a very fine



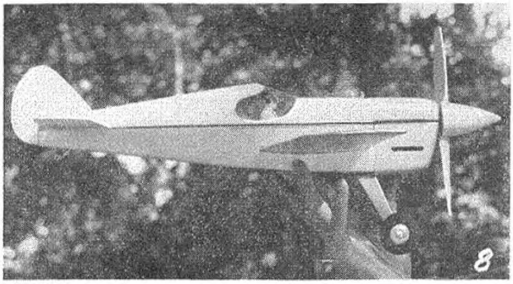
collection and bearing in mind that this represents only a small part of Mr. Howard's work, we must acknowledge him to be one of the world's most fastidious aeromodellers.

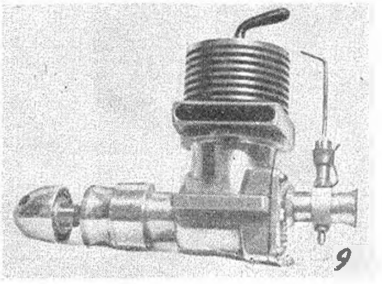
Photo **6** is of Maurice Doyle's 108-in. span Sailplane which he made for the 1956 Ulster Glider Championships. Soon after this picture was taken the model landed with the dethermaliser fuse still burning and by the time its owner could reach the model all that was left was a charred and smouldering wreckage. Take note you non-snuffing types! Apparently Maurice's next model was to be entitled "Snuff Said". The remarkable thing was that although the accident is a comparative rarity, this was no less than the third occasion on which such a model was extensively destroyed by fire in the Belfast Model Flying Club—could it be the little people at work?

Without the benefit of the National Health and Pensions Service, unfortunate people in the U.S.A. afflicted with some disability or other are often hard put to making ends meet, and whilst it is neither the policy of AEROMODELLER or this Model News feature to emphasise such matters, we mention same because in picture **7** we see Jay Frank Dial, a victim of poliomyelitis. Crippled by infantile paralysis when he was nine years old, Jay is now twenty-three, and spends his daytime working on models of the Chance Vought Crusader, Cutlass and Regulus, which he is able to sell to the employees of the Chance Vought Company in Dallas, Texas. Jay's enthusiasm for models and his avid reading of aviation magazines has given him an encyclopaedic knowledge of aviation affairs and his present collection ranges from a 1-in. scale model of the Stits Junior to a 28-in. Convair XC-99. This is not the first time we have heard of polio victims, making life considerably easier as aeromodellers and we hope that this photo will give encouragement to other unfortunates. Incidentally, Jay turns out a model a day and that includes ten thin coats of paint on each model to give a superb professional finish.

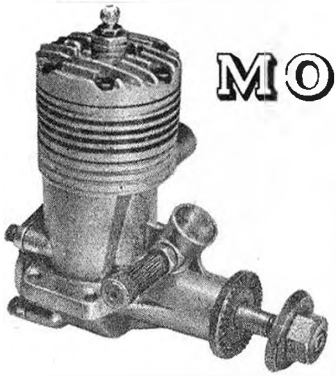
Team racing has been the subject of considerable office correspondence in recent months ranging from the eligibility of the Delta to the more common basic query "is it scale or semi-scale?". This latter point is a very hard nut to crack, and we must admit that rate of degeneration in team race model design reached a new low during the 1957 season. We are all the more pleased therefore to show in picture **8** Mr. F. Turner's Class A design from Street, Somerset. This is one model we would have no hesitation in accepting as eligible to compete. The pilot has forward vision and is realistically situated, the vertical tail surfaces are of full size proportion and the undercarriage of reasonable appearance and length. Moreover, it is of a reasonable aspect ratio and has a completely cowled engine with no external fuel leads. How we wish that even 60 per cent. of the team race entries at the Nationals could boast the same features!

The Sugden Special diesel has inspired many aeromodellers to making their own internal combustion engines and J. Denning of Dursley, Gloucester, has gone one stage further and designed his own 5 c.c. diesel which we see in picture **9**. One of the outstanding features of this engine is the bore of the venturi which is 11/32 in., and although at times rather tricky to start, it has good performance, notably 110 m.p.h. in a Class B team racer which weighs no less than 36 ounces.





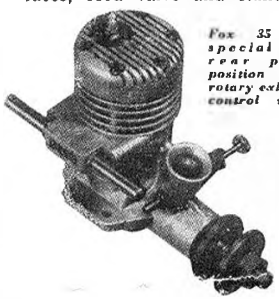
MOTOR MART



IT HAS BEEN said, and certainly in the case of one manufacturer quite truthfully, that all the British model engine industry has produced in recent years is a finger stall. That situation is now relieved by the unheralded introduction to the model shops of the **E.D. 1·49 Fury** during March, and prospects of other 1·5 c.c. units from elsewhere, including the blue-topped **A.M.15** at 61s. 6d.

Manufacturers have been in a tough spot trying to improve on existing designs to be able to market an engine that could show an advantage either in price or performance.

The **Taifun Hobby,** followed by the **A.M.10** with performance equal to one-and-a-half times its capacity, led to new standards, and the **Taifun Hurrikan** has done little to help the situation as far as British trade is concerned. We were therefore a trifle disappointed to find the particular Fury we tested turning 11,500 on a 7 x 4 even allowing for its tight converging bore as yet to be thoroughly run-in. With two races, reed valve and standard E.D. porting it should by rights improve with age.



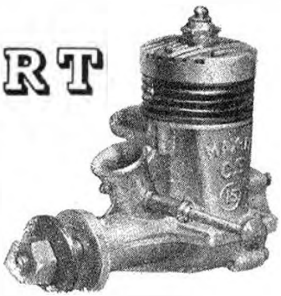
Fox 35 r/c special has rear plug position and rotary exhaust control valve

For price, the Japanese have labour cost advantage and the **O.S. Pet** ·099 1·6 c.c. at 33s. in Germany, 35s. in the U.S.A., 49s. in Canada and slightly more in Australia will be a stern glow-plug competitor for the world market. The only glowplug challenge to the diesel in this capacity has been the **K & B** ·09, but the Osaka Company has shown before that it can match the U.S.A. product and with radial or beam mounting, small stature, light weight, the Pet is likely to live up to its nomenclature. Also from O.S. is the **Max II-15,** a new extra gulping carburettor is the most obvious change for 1958.

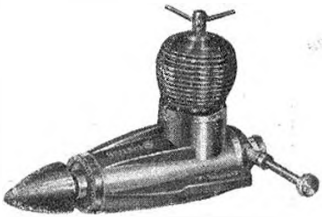
Henry J. Nicholls loaned us one of the **Fox 35** R/C Specials with rotary exhaust control which he has been importing. Tests now concluded have proved to us that exhaust area control is safer, impler and more effective than all the throttles on engines with standard porting. A **K & B 35** with Bob Robert's Vari-Speed modification will go down to 2,800 r.p.m. and open suddenly to 12,000 without quibble. Same engine with a throttle goes down to 4,800 on throttle and tends to stall when suddenly opened—more of this later.

In Germany the Ruppert twin is to be made by **Webra** and sold for approximately £20. Gunter Bodemann, Webra designer, is now with Taifun, making an alliance with designer Hoernlein, the outcome of which can only lead to even better things than the new-twin race, reed valve **Blizzard** 2·5 c.c. by Hoernlein just released at £4.1s. in Germany and which must surely take all honours for eye-appeal.

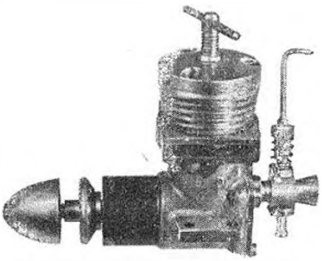
Lastly, for the second month running, we reproduce a picture of the 5 c.c. Stunt **"Glow Chief"** engine (*see* heading) which cannot be produced fast enough by Gordon Burford in Australia to meet the heavy demand—surely an example to the many bigger firms in Britain that a little enterprise can be made to pay-off.



1958 version of World fff Championship winning engine, the O.S. Max-II 2.5 c.c. has enlarged carb intake and minor internal modifications.

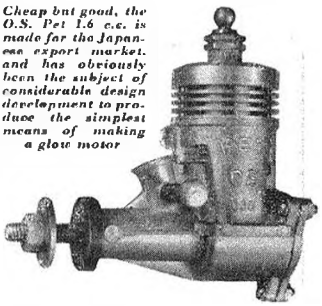


The Taifun Blizzard introduces streamlining after the style of the Italian Atomatic of ten years ago. Belled exhaust ports, twin races and rear reed induction give it high performance



Electronic Developments Ltd. have been hatching the Fury 149 for many months. Has a cased-in reed valve, twin races and maintains family appearance

Cheap but good, the O.S. Pet 1.6 c.c. is made for the Japanese export market, and has obviously been the subject of considerable design development to produce the simplest means of making a glow motor



Club News

A SAD ITEM of news for the majority of Home Counties modellers is that there will be no "All Britain" Rally this year at the Handley Page Aerodrome, Radlett. The official explanation is that "it is only through extreme pressure of intensive test flying commitments that Messrs. Handley Page have most reluctantly been obliged to withdraw permission for use of the airfield this year". Naturally the organising St. Albans Club are not dropping the matter altogether—after all there are other aerodromes in Hertfordshire, but, of course, none of them offer the accessibility or facilities of Radlett.

South Western

EXMOUTH AND D.M.A.C. are taking up P.A.A. Load and hope to send a few members along to the Nationals. Anyone seeking information on the 1958 Devon Rally should write to Dennis Baudet, 80 Moorfield Road, Withycombe, Exmouth, Devon.

Western

Everyone in the CHELTENHAM M.A.C. are looking forward to the Annual Easter Team Race meeting. The Club's annual social was a great success and meetings are attracting greater attendance thanks to the more luxurious premises recently obtained. SOUTH BRISTOL M.A.C. got a 50 per cent. turn-out on Sunday flying meetings and in order to recruit members and give helpful advice a senior member is in attendance at the local model shop each Saturday to help and advise. BRISTOL R/C M.A.C. gained its first success in the Southern Area Competition at Beaulieu when D. Cole placed first with his A.P.S. *Waveguide* using the Hill receiver. There is a revival of interest in the BATH M.A.C. and new members would be welcome at this club, one of the oldest of British clubs which dates back to 1909.

London

HAYES M.A.C. recently had a talk by one of their older members, Josh Marshall, on the history of the club. It was Josh who pointed out to me the little black shed near the central control area at London Airport which was once a wind break for club fliers in pre-war years. The shed still stands after all these years—almost as a memorial to those good old Fairey days. Club power champion is J. Baguley, Josh Marshall is rubber and senior champion, and B. Chapman holds the glider and junior championship. BLACKHEATH M.F.C. announce that the Bill White Cup is to be run on October 5th in conjunction with the usual glider contest at Chobham Common. Entries will be taken on the field and flying starts at 11 a.m. EPSOM AND D.M.F.C. tell me that their address for club meetings should read The Depot, Hook Road, Epsom, and I advise unattached modellers to go along and join up. One recent indoor meeting was the scene of a Concours D'Elegance first three places going to the Chairman, Secretary and Competition Secretary (!!!). ENFIELD AND D.M.A.C. have their exhibition planned for April 11th and 12th, and will be running a film show of controline and indoor flying in the programme. Compressed air indoor R.T.P. models will be displayed. During a recent club visit to the Beaulieu meeting, Jim Moseley left a Webra Mach 1 free-flight pylon model out on the briny and to crown it, packed his other model parts in the car and drove off leaving his wings on the aerodrome! Ray Tuthill managed to carry off the Class B team race in the rather slow time of 8½ mins. Date for Enfield Controline Rally is almost certain to be June 13th, but until confirmed, we will leave this one out of the notes "For your Diary".

Southern

Results of the Beaulieu Rally are as follows:

Open Rubber

1. M. Fuller (Bristol & West)	...	9 : 00
2. A. Alexander (Cowley) ...	...	8 : 55
3. K. Horry (Bristol) ...	...	8 : 50

Open Glider

1. A. Wisher (Surbiton) ...	...	8 : 01
2. I. Harding (Oxford) ...	...	7 : 20
3. F. Giggle (Southampton)	...	7 : 18

Open Power

1. P. Manville (Bournemouth)		9 : 00+3 : 42
2. Searbrow (Croydon) ...		9 : 00+2 : 22
3. Straker (Springpark) ...		9 : 00+2 : 06

Class A. T/R

1. J. Templeman (Sidcup)
2. S. McGoun (W. Essex)
3. Wells (W. Essex)

Class B. Team Race

1. R. Tuthill (Enfield)
2. Whitebread (W. Essex)
3. J. McNess (W. Essex)

LANCING AND D.M.A.C. members attended the meeting with one of those Spanish Car Control models taking advantage of the wide open spaces and runways. Apparently they were most successful. The club walking record has gone to one member and his sister who missed the bus at Brocklehurst and walked to Beaulieu, leaving Shoreham at 6.30 a.m. arriving on the airfield 7½ hours later! P. Giggle was third in open glider as the results show, for SOUTHAMPTON M.A.C., and this club hopes to field as many as fourteen members in the forthcoming Nationals. Miss Mavis Pepper has now taken over the Secretaryship.

Scale R.T.P. events have now come to an end in READING AND D.M.A.C. Overall winner is G. Bravey, and outdoor activities start at R.A.F. Benson, everyone concentrating on team racing. An exhibition is to be held at the local Odeon for two weeks beginning April 7th with a view to recruitment. Weather was as ever of the "damage" variety for Gamage date and winds won the battle at the BRIGHTON D.M.A.C. club flying ground, broken wings being a true sign that any attempt to get airborne was hopeless. This club has a wide variety of interests from speed controline to radio control and enquiries would be welcome at J. Watts, 11A Lyndhurst Road, Hove,

For Your Diary

April 13th
Slope Soaring Rally. St. Albans M.A.C., Ivinghoe Beacon.

April 20th
Surbiton Gala, Open Rubber, Glider and Power, Chobham Common.

April 27th
High Wycombe C/L Rally. Team Race A, B, Combat. R.A.F. Booker.

May 4th
Midland Area Rally, R.A.F. Wymeswold, Loughborough. F/F All Classes, Class A Team Race. C/L Stunt, Combat, Chuck Gliders.

May 11th
Stockport Express Rally. All Classes F/F Scale, Team Race, Combat A. V. Roe Aerodrome, Woodford, Manchester.

June 15th
Godalming C/L Rally, Team Race. All Classes. Combat. Godalming, Surrey.

June 22nd
Clwyd Slope Soaring, Open, A/2, Tailless Junior, R/C.

June 21-22
PAA Festival. Scotland, R.N.A.S., Abbotsinch.

June 29th
Northern Heights Gala, All Classes F/F, Combat, Concours d'Elegance, Queens Cup, A/2. R.A.F. Station, Halton, Bucks

August 17th
Devon Rally. All Classes F/F, Combat, R/C. Woodbury Common.

August 24th
S. Midland Area Rally, All Classes F/F, Combat, R/C, T/R A & B. Cranfield.

October 5th
Bill White Rubber and Glider. Chobham Common.

October 19th
South Coast Gala. Ashdown Forest.

S.M.A.E. Contests

April 27th
*Keil Trophy; Team Power *Area*
K.M.A.A. Cup; U/R Glider.

THE BRITISH NATIONALS

May 25th R.A.F. Waterbeach.
Thurston Cup; U/R Glider.
Short Cup; International Class PAA-Load.
Gold Trophy; Control Line Stunt.
S.M.A.E. Trophy; R/C "Multi"-Stunt and Course.
Davies Trophy Team Race Class "A"
Speed: Classes 1, 2 and 3.
Combat: Heats.

May 26th R.A.F. Waterbeach.
Sir John Shelley Cup: U/R Power.
Model Aircraft Trophy: U/R Rubber.
Super Scale Trophy: Free Flight Power Scale.
Knokke Trophy: Control Line Power Scale.
Ripmax Trophy: R/C "Rudder only"
Davies Trophy Team Race "B".
Speed: Classes 1, 2 and 3.
Combat: Final Rounds.

* *Plugge Cup* [illegible].

ON

Sussex. There is talk of amalgamation between **BRIGHTON** and **SOUTHERN CROSS**, but I hope this does not come to pass since local club rivalry always stimulates progress providing inter-club events are held.

South Midland

Eighty-seven laps at 84 m.p.h. is claimed by M. Reeves of the **OXFORD METEOR M.C.** in Class A team race, and he hopes for improvement. We shall see how well he performs in the rallies and major contests. The A.P.S. *Thermalist* and *Leprechaun* are being prepared by other Oxford fliers for slope soaring showing trends towards bigger gliders. **STEVENAGE M.F.C.** in the new town is a growing club with sections for free-flight and controline, having a local field for the combateers which provides a good attraction for bystanders. **DE HAVILLAND (HATFIELD) M.A.C.** ran a film show in January and for those who are interested, the current list of B.P. films available from Shell Mex & B.P. Ltd., Shell Mex House, Strand, London, W.1, offers a fine programme for a club show. Winner of last year's club championship was W. G. Winder, and the latest interest is in a 8 ft. 4 in. radio control slope soarer. **WAYFARERS** accepted a challenge by **KENTON M.A.C.** for a Combat tourney and the results was very well deserved, a draw five-all. In the final deciding battle the Kenton visitors came out top and Copeman with his *Peacemaker* and flying wing is definitely a man to watch in the combat circles this year. No less than seven cuts were recorded in one five-minute period.

East Anglia

CAMBRIDGE M.A.C. gave a demonstration of R.T.P. flying with diesel scale models in the local Engineering Exhibition, highlight being a "Baby" powered Provost with a wide speed range, and outside the circle control. In the club outdoor events John King came out top in the usual Cambridge contest weather with strong cold winds at R.A.F. Oakington. **NORWICH M.A.C.** have the use of an old airfield in place of their usual flying ground at Horsham St. Faith, and have been enjoying themselves in spite of strong winds. F. Robinson is the monthly winner with an A.P.S. *Shorty*.

Midland

Details are now finalised for the Midland Area Rally on May 4th at R.A.F. Wyneswold and is for all classes of free flight, class A, C/L T/R, chuck gliding, stunt and combat. Pre-entry is definitely required for combat, send 1s. 6d. to B. Salder, 28 Walnut Avenue, Alvaston, Derbys. For Class A, T/R pre-entry, send to R. Crofts, 12 Vicarage Road, Swadlincote, Near Burton on Trent. Free-flight pre-entries to A. Pench, 104 Elmdale Crescent, Birmingham 31. **LEICESTER M.A.C.** are like most other clubs, fully cognisant of the Hill Receiver virtues and a recent talk by Tom Comway and Fred Haxton enlivened the members further, pointing out how easy it is to make this receiver and how to trouble-shoot the usual modeller's errors. When one can get a matter of 9 m/A rising current with 45 volts, who can possibly complain about the reliability or sensitivity? I see in the Leicester M.A.C. Club Bulletin there is a "for sale" notice regarding two substantial high geared glider winches on model supports standing 4 ft. 6 ins. high. Anyone want one for a Leprechaun or Thermalist? The two **LEAMINGTON** clubs, and **EVESHAM D.M.A.C.** also unattached modellers from **SUTTON COLDFIELD** visited **STRATFORD UPON AVON AND D.M.A.C.** for their Nationals film show on March 3rd. This will be known as the show that only just managed to take place, for the film arrived a scant half an hour before the show was due to commence. **LITTLEOVER M.A.C.** held their winter controline contest at Burnaston Aerodrome, being a tri-cornered affair with **DERBY M.A.C.** and **ASHBOURNE** also taking part, the latter lads carrying off the team race prize and Littleover the first three places in Combat. A six-course dinner was enjoyed by fifty Littleover members and guests at the Sherwood Foresters Hotel, and plans are already made for activities in the forthcoming season including a full bus for both the Woodford and Nationals. Combat is the main interest in **DUFFIELD AND D.M.A. AND E.C.**, but they would like to have more senior members. Local unattached modellers are requested to contact J. M. Orme, Merrivale, 13 Wirksworth Road, Duffield, Derbys. A new club in Birmingham in the Hall Green area is known as **"THE MIDLANDERS"**. It is exclusively for seniors, sixteen years and over, and major interest is contest flying.

Northern

BAILDON M.F.C. had their annual dinner and prize-giving at the end of February. Silvio Lanfranchi collected the Northern area knock-out trophy as Captain of the victorious team, Junior Championship went to P. Rennison, Senior Championship to G. Cameron, and Arthur Collinson collected the power trophy for overall best performance in the club and national events.

North Western

Formed on the first day of this year, the **LIVERPOOL AND D.M.A.S.** now meet fortnightly at the Liverpool Y.M.C.A. premises, Mount Pleasant, Liverpool, and have a healthy membership of forty-two, but there is plenty of room for more. Interesting lectures have been given on controline and radio, plus, of course, National films during the winter meetings and on the contest field K. Cain placed second in the Area Winter Rally and Allen Carter narrowly missed placing first in open power, whilst Dave Thomas was also placed in radio control, so we shall be hearing more of Liverpool in the future. The big day of the year in this quarter is the Clwyd Slope Soaring contest organised by the **CHESTER M.F.C.**, to be held on June 22nd at the South West Slope of Moel Ffammau, reached by turning off the Mold-Ruthin Road. A494, about half a mile past the Loggerheads. This turning will be clearly marked. The best time of four flights is the scoring time. All members must have S.M.A.E. insurance. Fuse type d/t's will not be permitted and the classes are for Open, A/2 Tailless, Junior and Radio Control. **CHEADLE D.M.A.S.** had their first club event on March 2nd for open and A/1 gliders, where tubby junior Paul Gibson did very well, especially as he used an A/1 in both events as the results show below. Some idea of the excellent conditions can be made by the fact that N. Garner lost his model 23 minutes out of sight whilst test flying.

Open

1. L. Whalley (A.P.S. Lucifer) ...	7 : 35
2. G. Jones (O.D. Lightweight) ...	7 : 01
3. P. Gibson, Jr. (Club A/1 design)	6 : 53

A/1 Event

1. B. T. Faulkner (O.S. ex Wakefield)	5 : 01
2. P. Gibson, Jr. (Club A/1 design)	4 : 17
3. J. Grellin (Club A/1)	4 : 14

Ireland

LARNE M.F.C. have great radio activities when their three models, a *Waveguide*, *Junior* 60 and *R.6B*, perform with great regularity. **BELFAST M.F.C.** had a combined film show and prize giving at the end of February, which was enjoyed by thirty club members and friends. Their contest season starts on the Saturday following Easter Sunday with a scramble event which is cut to 30 minutes to save those who are out of training. Several F.A.I. power models are "rarin' to go" with the new rule types and J. Thompson has been elected as a member of the Irish power team as he is reported as averaging 4 mins. with an Oliver Tiger, flying in Italy, where he has distinct weather advantages over the lads at home. The **MODEL AERONAUTICS COUNCIL OF IRELAND** have pointed out that the limit of insurance coverage mentioned last month, should be £5,000 and not £500 and further contests dates are as follows:—

May 11th: Irish Eliminators, 2nd round.
May 17th: Class A and B team races and combat, College Park, Dublin.
June 22nd: Controline Rally, Butlin's, Mosney.
June 29th: Controline Rally, Butlin's, Mosney.
July 6th: Power and Glider, Phoenix Park.
July 19th: Class A and B Team Racers, Baldonnel.

Scotland

The Scottish P.A.A. M.F. Festival will take place on June 21st and 22nd at The Royal Navy Air Station at Abbotsinch, Paisley, with the usual superb prizes by courtesy of the P.A.A. and the festival will be well worth attending. On Saturday there will be 1 c.c. America Class and 2·5 c.c. International class, plus the Clipper Cargo for up to 1 c.c. P.A.A. events on the programme as well as unrestricted glider events and up to 3·5 c.c. combat. Sunday is reserved for radio control, open power and rubber, Class A and B team racing. Further details can be obtained from Bob Parsons, 8 Cunninghome Road, Prestwick, Scotland.

Pen Pals

M. J. Edden of 3 Goodman Cottages, Smithy Lane, Lower Kingswood, Tadworth Surrey, would like an American or Australian pen pal interested in free-flight power and contest gliders, about 15 years of age.

P. Walker of 426 Magill Road, Kensington Gardens, Adelaide, South Australia, would like to correspond with a pen pal on free-flight sport flying, at or at 15 years of age.

Eighteen year old Trevor Yeador of 12 New Park Row, New Park, Harrogate, Yorks, would like to correspond with an American or Australian pen pal with views on exchanging information and scale controline kits.

Frank T. DeAngelo of 774 N.W. 52nd Street, Miami, Florida, a very enthusiastic scale modeller of considerable experience, would like to correspond with an enthusiastic British scale modeller.

Michael Rubin, who is an extremely keen R/C flier, having six models all with a sub-miniaturised Hill receiver, would like to exchange correspondence, engines, kits, tape messages with his British equivalent. He lives at 602 East Avenue, Elyria, Ohio, U.S.A. Michael strikes me as being a red hot keen r/c man.

Pavel Linek of Hloubetinska 20, Prague 9 Czechoslovakia, who can correspond in French, would like to contact a French or British modeller

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G. Mealing, Redsills,
Northend, Batheaston, Bath

BRIERLEY HILL.
J. Clegg, 116 Brettell Lane,
Brierley Hill, Staffs.

GLASGOW REBELS M.F.C.
I. Findlay, 50 White Street,
Glasgow, W.1.

GOATSHEAD KNIGHTS (GATESHEAD) M.F.C.
A. Dempsey, 88 Claremont Street,
Gateshead, Co. Durham.

LOWESTOFT & D.M.A.C.
B. M. Baldwin, 12 Rotterdam Road,
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B. F. Gallagher, 7 Bulmer Place,
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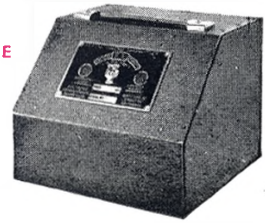

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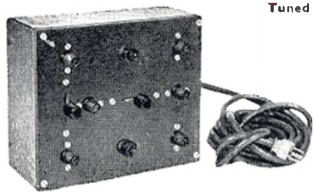

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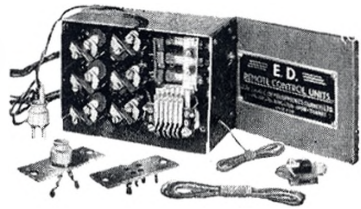

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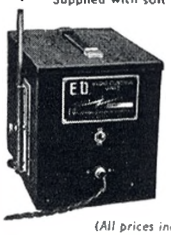

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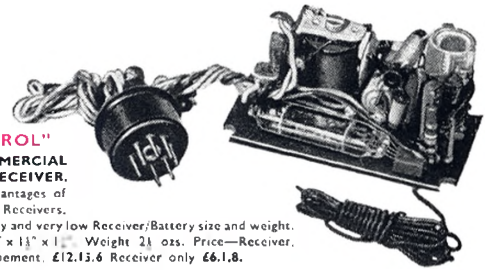

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