AERO MODELLER

SEPTEMBER 1951

FULL REPORT ON WAKEFIELD CONTEST AND FESTIVAL CONTROL-LINE CHAMPIONSHIPS AT WEMBLEY STADIUM
J. A. GORHAM'S 1951 POWER DURATION WINNER
FLYING SCALE FOKKER TRI-MOTOR "SOUTHERN CROSS"
HARRY HUNDLEBY'S 48 INCH SPAN R/C "SPARKY"

1'6

E.D HAS THE ANSWER
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DIESELS

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CARS

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BOATS

ED 2·46 Mark III (Series 2) RACING ENGINE.
Height 2¾ ins. Length 3½ ins. Width 1¾ ins.
E.D.'s latest success, specially designed for use as a Diesel, Glo-plug or Spark ignition engine the two-forty-six develops ¼ b.h.p. at 14,000 r.p.m. plus ! It has disc inlet valve induction, two ball-race crankshaft and exhausts as an integral part of the crankcase. Total weight 5 ozs. The diesel is already proving to be Britain's best racing engine.
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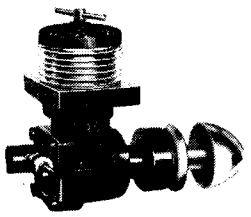

Mk. III 2·46 c.c.

E.D. RADIO CONTROL UNITS.
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E.D Mk. I R/C UNIT. Comprising 3 valve receiver, 2 valve transmitter and Clockwork servo. Range 3 miles !
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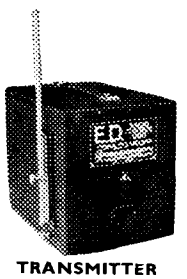
E.D. Mk. III MINIATURE R/C UNIT. One valve transmitter, one valve receiver and current saving escapement. Range 1,000 yds. plus. Price (less batteries) **£9.17.11**



TRANSMITTER

E.D. KIT SETS E.D RADIO QUEEN
This graceful and perfectly designed aircraft of 7 ft. wing span has been specially designed for remote control by the E.D. Mk. I. R/C Unit and powered by the E.D. 3·46 Mk. IV. Diesel **£4 · 5 · 0**
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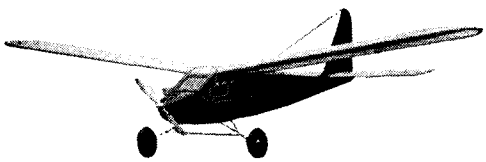
The majority of Kit Sets manufactured by the BIG FOUR namely :— "Keil Kraft", "Verons", "Mercury", "Skyleada" are designed to suit the E.D. Power Unit.



RADIO QUEEN.

E.D. TIMERS.
A Clockwork Timer, weighing under 1 oz. Total run 50-60 secs. 7 oz. pull. **12/6**

MI / E.D. MAGNETOS.
The ideal ignition system for 2-stroke or 4-stroke engines up to 30 c.c. Dispenses with the old coil and battery system.
Complete .. **£4 · 10 · 0**
In unit form **£2 · 15 · 0**

E.D. PLASTIC PROPELLERS.
Practically unbreakable. Do not flex in flight. Pitch can be altered by heating. From 6½ in. to 10 in. dia.

CLUTCH UNIT.
E.D. Mk. III and Mk. IV clutch unit, complete, with adapter and ball joint. **£2 · 10 · 0**
E.D. Mk. II C/S clutch unit. complete as above plus taper insert. **£2 · 15 · 0**

E.D. FUELS.
A balanced Fuel blended with the correct proportion of ether. Ready for use.
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E.D. Competition Diesel Fuel for speed work. Price **3/6**

MARINE ACCESSORIES.
Water screws for engines up to 3·5 c.c. From **5/6** to **6/6**
Also Driving Shafts, Flywheels, Silencers, Stern Tubes, etc.

All the above prices include Purchase Tax where applicable.

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DEVELOPMENT ENGINEERS
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Pete Russell

Sets up a wonderful record with his stock-built MONITOR

11 WINS & PLACES WITH THE SAME MODEL

(Including Eight Firsts)

Using the same Monitor model and Amco 3·5, Pete Russell's record of C/L Stunt contest wins is as follows—

Sept., '49. Rotherham Rally—**1st.**
Oct., '49. Doncaster Rally—**2nd.**
March, '50. Worksop Rally—**1st.**
May, '50. GOLD TROPHY (Nationals) —**6th.**
June, '50. N. Area S.M.A.E. Championship—**1st.**
June, '50. W. Essex Gala—**1st.**
Aug., '50. Eaton Bray International Contest—**1st.**
Sept., '50. Huddersfield Rally—**2nd.**
Oct., '50. Mansfield Rally—**1st.**
June, '51. W. Essex Gala—**1st.**
July, '51. **S.M.A.E. Festival of Britain National Championship, Wembley—1st.**

Photo by courtesy of "Aeromodeller."

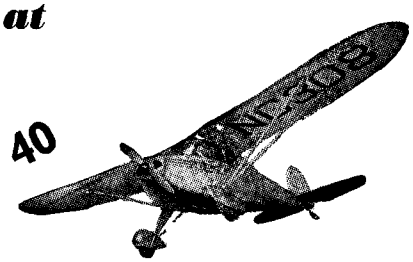
Did you know that Britain's No. 1 C/L stunt wizard is also proprietor of a flourishing business, Russell Models, Ryton Street, Worksop? In between running that, Pete has acquired an amazing record for wins and places in important contests up and down the country as the official list here shows. Too busy to build to his own designs, Pete chose a standard Monitor **and is still flying the same model** after acquiring a truly enviable list of successes with it, and he tells us that he has only just made his first major repair on this two-year-old model. Congratulations, Pete Russell, on making what must be the finest record of its type in the entire history of aeromodelling. We are indeed proud that a Mercury design helped you to do it.

The Mercury Monitor Kit as built by Pete Russell, complete with original Mercury keel-built fuselage, knock-off wing and interesting building and flying instructions costs— **22/4**

MERCURY — designs that win again and again

Modelling de luxe at popular prices

The introduction of Mercury Free-Flight Flying Scale models mark a stage that modellers have long waited for. To be able to build and fly realistic looking models that do not involve too much expense or trouble, brings true de-luxe modelling within reach of all. Watch Mercury's programme.

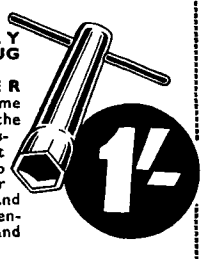


MONOCOUPE 40

As beautiful to build and fly as the original larger Mercury Monocoupe 64, but it costs you less. This accurately scaled model is for the Mills 0·75, Allbon Dart and similar small motors. Kit includes pre-cut, pre-shaped and printed Solarbo, wing strut fixtures, wire, tissue, acetate, sheet, etc., and full-size plan and separate instructions. Price **26/7**

It is regretted that Allbon motors unavoidably continue in short supply.

ANOTHER MERCURY VALUABLE ACCESSORY



MERCURY GLOW-PLUG BOX SPANNER is a welcome addition to the Mercury Accessories range. It puts an end to bent cylinder head fins and makes tightening certain and secure. **1/-**

OTHER NOTABLE MERCURY DESIGNS

MALLARD Semi-pylon Contest	... 22/4	MAGPIE Beginners' 24 in. Glider	... 4/11
Mallard Junior	14/4	... and soon	
MUSKETEER C/L Stunt	24/9	**THE CHRISLEA SKYJEEP**	
Musketeer Junior	20/10	*Another Mercury F/F Scale of a famous plane, which is right in line with the best Mercury standards.*	
MONOCOUPE 64 F/F Scale	66/-		

Trade Distributors: H. J. NICHOLLS, LTD., Wholesale, 308, HOLLOWAY ROAD, N.7
Export Agents: BUTLER, ROBERTS & CO., LTD., 4, DRAPERS GARDENS, E.C.2

MERCURY SAILPLANE SUCCESSES

GILLI-CHOPPER (15/-), 1st, 2nd, 3rd 1951 South African Junior Sailplane Championship.

NORSEMAN A.2 (24/9), South African Nationals 2nd, 3rd and 4th. Also 2nd in British 1951 Nordic Team.

Beam Power

The *SECRET* of The New FLIGHT CONTROL Mark 4 TRANSMITTER

★ ★ *The Most Efficient Radio Control Transmitter Yet Designed !* ★ ★

Using Special BEAM POWER TETRODE VALVES ! !

LOW BATTERY CONSUMPTION — MAXIMUM RADIO FREQUENCY OUTPUT ! ! !

You can build this transmitter in a few hours from the Flight Control Kit of Components and Specially Arranged Drawings and Instructions. Write for further details of this and other Flight Control Radio Control Equipment for Aeroplanes, Boats, etc. *Complete set of Components and Instructions* **£2 15s. 7d.**

Send a S.A.E. for details and prices of all—Flight Control—Radio Control—Equipment including the new Mark 4 R/C Receiver shortly to be released.

FLIGHT CONTROL (Dept. A.)
783, Romford Road, Manor Park,
LONDON, E.12

Components for the Mk. 3 Transmitter ...	£2	11 8
Components for the Mk. 3 Receiver (now including the external control resistor) ...	£2	6 7
Balanced " V " Aerial System for the Transmitter (including fittings)		5 6

A New Service!

CONSTRUCTION OF THE Mk. 3 & 4 FLIGHT CONTROL TRANSMITTERS

We undertake to construct for customers our Mk. 3 & 4 Transmitters complete and ready for working and set to a Frequency of 27·10 mc/s. Your only work is to fit the finished instrument into a suitable carrying case. The charge for assembling, wiring, testing, and setting to frequency is **25/–**.

Write for Terms—of this and

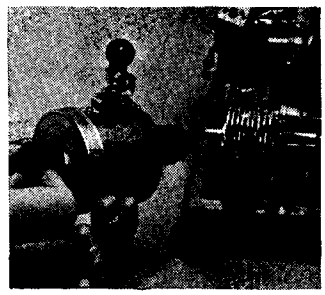
OUR FREQUENCY CHECKING AND CALIBRATION SERVICE

We undertake to calibrate Transmitters, Frequency Meters, Field Strength Meters for both 27 mc/s and 465 mc/s Model Control Bands. Write for further information on this unique service. The only one of its kind.

AVAILABLE FROM STOCK

The Type I Frequency Meter for 27 mc/s. Crystal checked and individually calibrated to 27·10 mc/s. Checks the Frequency of any R/C Transmitter and Receiver. Complete with instructions and ready for use. Postage 6d. **18/6**

(See illustration)



ALSO IN STOCK—XFG1 Valves **£1 . 1 . 4**; DCC90 valves, **35/10**; 0–5 milliamp meters **7/6**; E.D. and E.C.C. actuators in stock; Low current bulbs for Aerial Tuners **1/–**; ¾-in. dia. Coil Formers (base mounting) **9d.** each.

Specialists in ***Radio Control***

FLIGHT CONTROL

ESTABLISHED 1935

AERO MODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

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"Covers the World of Aeromodelling"

Managing Editor:
D·A·RUSSELL, M.I.Mech.E.

Editor:
C·S·RUSHBROOKE

Assistant Editor:
H·G·HUNDLEBY

Public Relations Officer:
D·J·LAIDLAW DICKSON

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CONTEST REFLECTIONS

YET another Wakefield Contest has been lost and won, with unexpected weather conditions playing havoc with preconceived ideas of the "standard" climate in Finland. May we congratulate Sweden's Sune Stark on his great effort in achieving his country's first victory, while sparing a word of sympathy for Arne Ellila, whose early misfortunes denied him even a sporting chance of the hat-trick! Nor must we forget our own near success in the well-flown second place of Tubbs, taking part in his first Wakefield contest. Indeed, the whole story of this event year by year is one of outstanding endeavour and fine sportsmanship, so that we should like to feel that triumphal music can be played at least symbolically for every single contestant.

At this time of the year the International Calendar offers a wide range of potential contests, and it is only natural that enthusiasts for some of the more recent aeromodelling developments should feel that old established events like this claim most of the glory and the larger part of the finance available for sending national teams abroad. They feel, as do many other radio control enthusiasts, that finance should be made available by the S.M.A.E. for sending radio control teams abroad or failing this that the finance available should be more equitably apportioned between the various branches of the sport.

Be that as it may, we can only congratulate the governing body on managing to cover the range of events that they do on a microscopic budget, always hovering on the red side of the ledger. By the time this flying season ends they will have sent official teams not only to the Wakefield but also to the International Glider Contest in Jugoslavia and to the World Speed Championships and European Stunt Control in Belgium. All of which costs money over and above the normal operating costs of the Society, and suggests that future finance of international events might well form an important subject for discussion at the annual general meeting later in the year. It might even be desirable to appoint an additional member of the council to be responsible only for fund raising measures.

Which brings us to consider an experiment that failed. Never before in the history of aeromodelling has so glorious an opportunity been offered to its supporters to propagate their hobby and raise a substantial sum for the Society than the recent Wembley Stadium Meeting. But it was heartbreaking to see that vast amphitheatre capable of housing a hundred thousand spectators empty and echoing with engine noises from its bare concrete tiers covered with a pitiful sprinkling of eleven hundred paying customers in all. What went wrong? The weather was glorious—the day was a Saturday—there was no outstanding rival sporting event to attract supporters. But they just did not come!

The meeting proved a competitive success but a financial fiasco, and merits the fullest possible investigation. We would only say, in passing, that on no occasion during the days and weeks before the event did we find notices in the National press, either in the editorial or advertisement columns, although more than one important daily is keenly interested in aviation and aeromodelling. Was this lack of publicity—a publicity that can be obtained, as past galas such as the St. Albans Rally would indicate—the basic cause of its failure? Or what? This we must leave until the whole episode has been fully discussed.

Cover Picture . . . .

The all scale 'circus' in action at Wembley Stadium featuring :— left to right, L. Gay of Ruislip, flying a twin Elfin powered Short Sturgeon, who emigrated that evening to Canada! P. Donavour Hickie hiking round with his D.H. Sea Hornet; Albert Briggs with his magnificent Flying Fortress, powered with four E.D. Mk. IV's; and Phil Smith who is in the process of diving his Focke Wulf 190 in mock attack on the Fortress.

Heard at the Hangar Doors

Return Match

The 1951 contest for the F.N.A. cup—a large and most magnificent trophy, will take place on September 2nd at the vast Dutch military airfield, Gilze-Rijen. The only International contest run on a team basis, the F.NA. cup was won last year by Holland, and as hosts to the competitors this year, they appear to be going all-out on the organisation. Housing is to be arranged at the airfield, special meteorological services laid on (perhaps they have control over the weather!) plus a radio-directed recovery system.

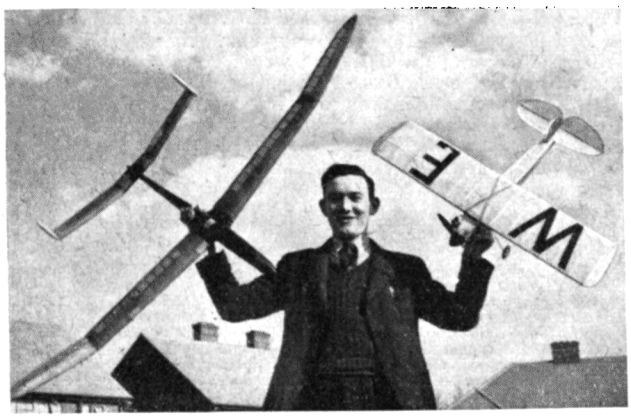
Full support of the Netherlands Air Forces and Dutch Civil Aviation Authorities should make the meeting extremely interesting from the organisation, as well as competition viewpoint.

A Great Loss

A TRAGIC head-on collision, at a speed approaching 60 m.p.h., has robbed the aeromodelling movement of one of its most advanced radio-control exponents: Bill " Funf " Taylor was only 23 years old. He had been a motor cyclist for over 2 years, and an aeromodeller for as long as we can remember. His untimely death is, therefore, a sudden, if awful surprise and lends authenticity to that little appreciated adage, " Here to-day and gone to-morrow ".

Bill Taylor was one of those rare acromodellers with advanced ideas, a chat with him would always provide a good viewpoint on the trend of events, and indeed, only a few hours before the accident, he was discussing radio-controlled slope-soaring with us, predicting great durations. Time will prove him to be right.

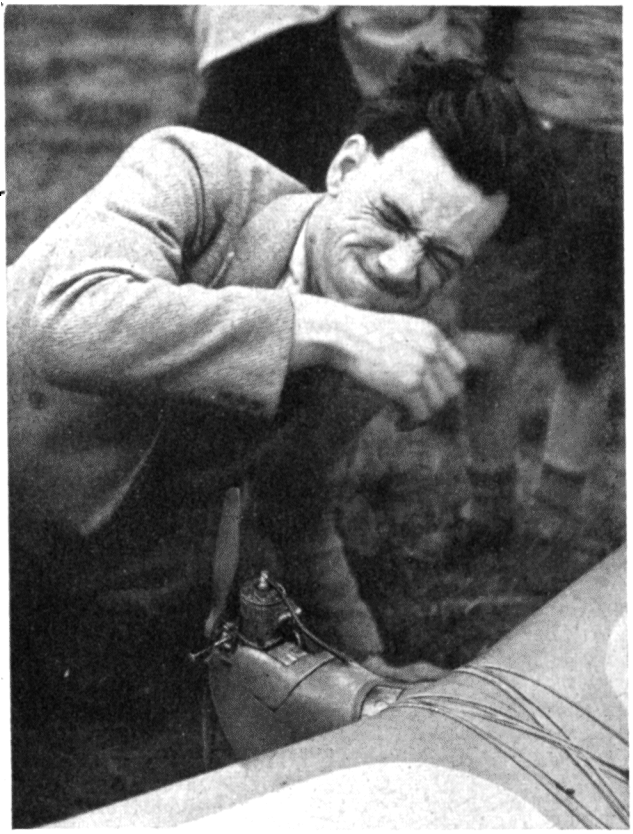
From short-trousered pre-war days, when a junior member of the old Woodford club, Bill was a popular, if at times argumentative flier, and one with a flair for organisation. A founder of West Essex Aeromodellers, which evolved from an amalgamation of the Walthamstow, Woodford, and subsequently other local clubs, he was P.R.O. for the first few years, and was the prime mover behind the first W.E.A. Gala. It was all control-line then, and " Funf " (a nickname bestowed upon him for his mimicry of the Tommy Handley character) was responsible for the donation of the large number of, then precious, American motors which were given as prizes. Later that year he introduced a now universally adopted idea for stunt design by being the first person to use wing-tip ballast weight. Beneath a large white heart on the outboard tip of his purple stunter were fitted the ignition batteries for the Super-Cyclone engine, and so heavy was this ballast, that " Funf " was able to tow the model, kite-fashion, until it landed softly, but sideways.



His prowess as a stunt flier extended to the Continent, when as interpreter of the party, and the only teetotaler, he accompanied the W.E.A. tour of France and Switzerland in 1949. Many are the tales that only he could recount of that hectic holiday.

At that time, " Funf " became absorbed in radio-control. He joined Park Radio Limited, and was manager of Flight Control, being responsible for their well-known Mk. III home-built outfits which have been the equipment of many a radio contest winner. Identified by the Vee aerials, his transmitter designs were continually being improved, and his latest, with only 1 watt output, enabled him to win the AEROMODELLER International Radio-Control Trophy this year. It is with particular regret, therefore, that we will not be able to see this trophy presented to him personally.

At the time of his accident, " Funf " was recuperating



OUCH!!! Johnny Clemmett Vs. Spitfire!
(no further comment necessary)

after an operation, which had kept him from his work at Plessey's radio department for over six weeks. We know that all his pals will miss that shining face, those blue overalls and the beret, and join us in regretting a most unfortunate loss.

British Team wins at Knokke

As we go to press, the victorious team of control-liners return from their most successful trip to Knokke, Belgium. With three new world's records to their credit and first places in Concours d'Elegance as well as speed and stunt events, they deserve every congratulation on a sweeping victory. Our full description of the contests, with complete photographic coverage, will appear in October issue.

RESULTS

Aerobatic.—A. Hewitt (G.B.).
Concours d'Elegance (*Aerobatic*) —A Hewitt (G B)

Speed.	*Average.*	*Record.* *
Jet—B. Dunn (G.B.)	133·5 m.p.h.	—
2.5 c.c.—A. Hewitt (G.B.)	93·88 m.p.h.	98·98 m.p.h.
5 c.c.—P. Wright (G.B.)	125·33 m.p.h.	125·68 m.p.h.
10 c.c.—R. Labardé (F.)	127·17 m.p.h.	—

Concours d'Elegance (*Speed*).—P. Wright (G.B.).

TEAM RESULTS.

1. G. Britain, 360 pts. 2. Holland, 520 pts. 3. Belgium, 660 pts. 4. France, 690 pts. 5. Switzerland, 950 pts.

* New British and World Records.

Another British Success

Following his first place win in the R/C contest at the W.E.A. Gala, Ted Hemsley of Bushy Park M.F.C. has won two important International radio-control contests, held in France. The first, in May, was at Buc, near Versailles, where Ted flew his o/d Forster 29 cabin model, and the second, in July at d'Evreux-Fauville, 70 miles from Paris. The latter contest was organised by the F.N.Ae. and attracted a Belgian team as well as a private British contingent. Ted's successful model is an American design, with distinct similarity to the Keil-Kraft Falcon. Both of his models use E.D. equipment and have two-speed petrol ignition engines.

Oh! Johnny!

Johnny Nunn's Dynajet powered Vampire is, or to be exact, *was* one of aeromodelling's most well-known models. It has been on " ops " for nigh on three years and has never failed to impress those fortunates who have seen it fly. It has given many demonstrations recently, at Wembley Stadium and at the " Daily Express " 50 Years of Flying Exhibition at Hendon where, as the pictures below indicate, it met its demise. The model was actually making its 73rd flight when we noticed a thin wisp of smoke coming from the rear end as the machine came in on the glide. As the wheels stopped rolling a small flicker of flame was seen and before the " ground crew " could reach the model it exploded into flames. This, all in front of the television newsreel cameras, much to the joy of the cameramen who were literally presented with red hot news! Our commiserations go to Johnny who is the most remarkably restrained aeromodeller we know, although we suspect he was somewhat numb from the loss of so many hours' work in so few seconds. Our brickbats to the R.A.F., who although quick on the scene with an extinguisher, failed to bring one that worked!

Trade List

Our invitation to the trade to send in their names and addresses for FREE insertion in our new edition of the popular Trade List has met with a surprisingly small response. Strangely enough, far more traders have sent in particulars and 5/- postal orders for inclusion in the classified section of the AEROMODELLER ANNUAL. In case we did not make it sufficiently clear in our announcement last month, we should like EVERY TRADER to confirm his name and address for inclusion in the free Trade List. This was last made up two or three years ago and there have been very many changes. It is not enough that an address appeared in the original list—it MUST be confirmed for inclusion in the current one. We always receive belated complaints from traders who have been omitted from these lists; we can only remind them that now is the time to get the information in—after publication will be too late! Just send in a sheet of your business paper with Trade List written across it—we will do the rest, and it costs nothing.

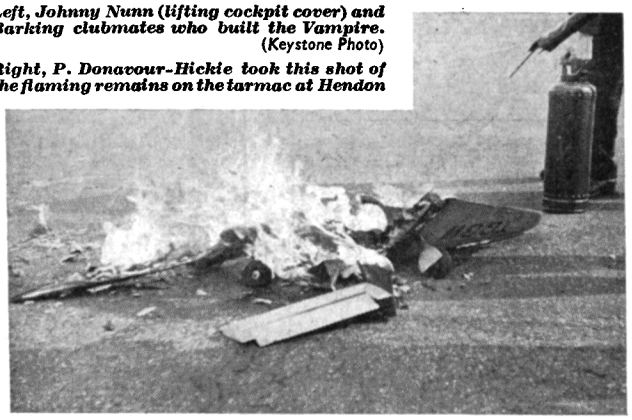
Lost Without Tracer

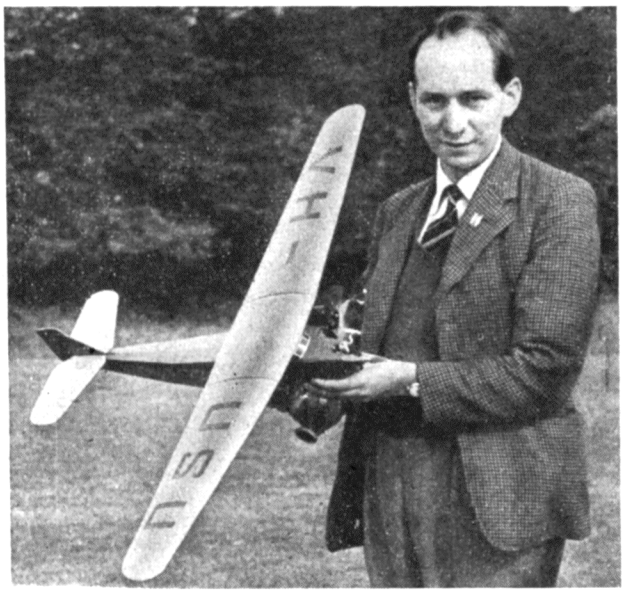
After ten years of painstaking service as the AEROMODELLER Staff Tracer, Miss K. M. Clifton is leaving us to get married on October 4th. During this period she has been responsible for the fine work that has contributed so much to the world-wide popularity of *Aeromodeller Plans Service* designs, produced the greater part of the many delicately detailed drawings that went into the seven volumes of *Aircraft of the Fighting Powers* and traced many of the drawings that have illustrated our articles and books since 1941. In addition to this she has mothered many a young girl starting her tracing career, and set her off on the right lines to secure more responsible work elsewhere.

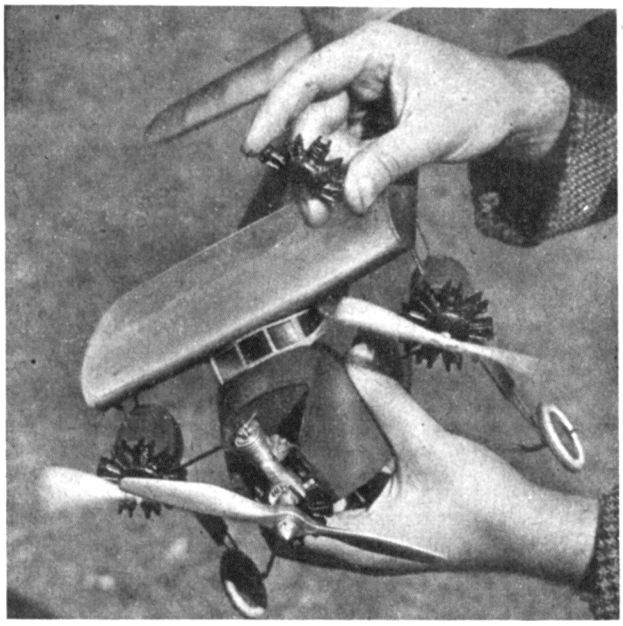
While felicitating her on her forthcoming marriage—those of us who have supped at her table know her wider capabilities in culinary fields, and her running repairs to torn garments after long model chases, and do most heartily congratulate her future husband on his treasure—we of the AEROMODELLER are conscious most of our own impending loss. Who is to replace her? That is indeed the problem. In our classified columns will be found our official invitation to would-be tracers to join our staff, may we add here that we are a jolly team, anxious to make a newcomer welcome and willing to spend no little time in helping him or her to settle into our own particular ways of doing things. There is a good job here for a competent worker who will find in that work very nearly as much fun as in their leisure hours.

Left, Johnny Nunn (lifting cockpit cover) and Barking clubmates who built the Vampire. (Keystone Photo)

Right, P. Donavour-Hickie took this shot of the flaming remains on the tarmac at Hendon







A 40 INCH VERSION OF THE 71 FEET 8½ INCHES SPAN

FOKKER F.VIIb 3M. "SOUTHERN CROSS"

FOR ·3 TO ·5 C.C. POWER

BY

H. PARRISH

Free-lance artist and designer . . . . aged 29 . . . . married . . . . has a collection of 140 1/72nd scale solid models . . . . pet aversion, control-line and pylon types . . . . keen on classical music and collecting gramophone records.

THE period of such machines as the Fokker and the Ford tri-motors seemed to me to be one of the most fascinating in aviation history. These types of machines have an abundancy of that elusive quality—character, and I thought a tri-motor would be rather novel, the Fokker having a special appeal.

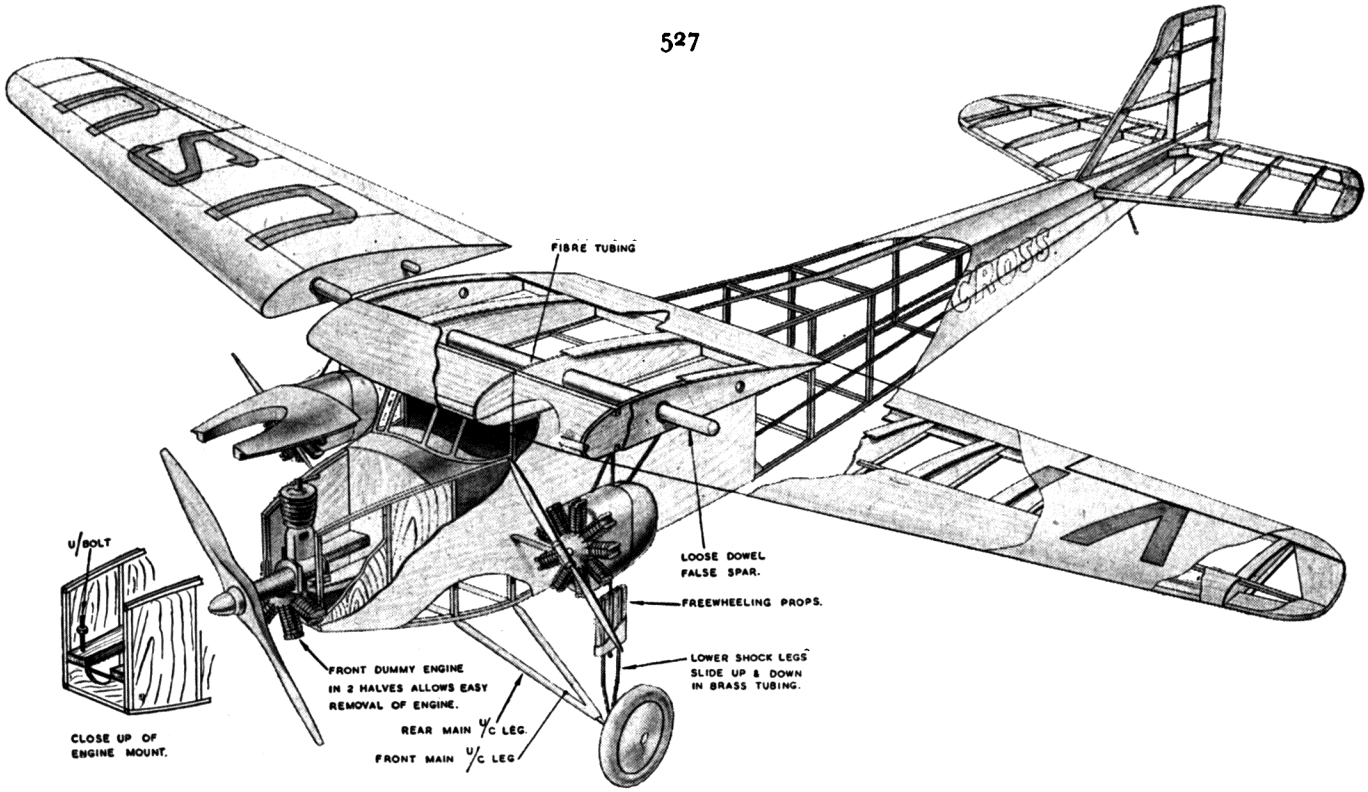
The "Southern Cross" has rather an interesting history in that it was a hybrid. It was originally built as a Fokker F.VII by the Fokker Company in America, and following a crash in Alaska in which its wing was badly wrecked, the wing of an FX was bolted to the original fuselage and hence the F.VIIb 3M. She was bought for £3,000 without motors or instruments by Sir Charles Kingsford Smith and C. P. T. Ulm, from Sir Hubert George Wilkins, the explorer.

After setting up an endurance record for multi-engined aircraft, Smith & Ulm established the record flight of 7,938 miles across the Pacific Ocean in three stages, flying from Oakland, California to Brisbane in Australia from May 31st to June 9th, 1928. The 3,144 miles stage from Hawaii to Suva Fiji, was the longest over-water flight made to that date.

"Southern Cross" was retired in 1935 and given a permanent home in the Canberra National Museum, but recently she was renovated and flown in the making of the film "Southern Cross".

During its career several mods were made, including the redesigning of the rudder and later, the enlargement of the cabin. Its colour scheme was dark blue fuselage and

Top photo shows designer Parrish and the prototype. Centre: a close-up of the nose, the two free-wheeling airscrews aid stability, whilst the Kalper is partly cowled with a two piece dummy motor. Below: the real aircraft is huge by comparison.



rudder with silver wings and elevator. The words "Southern Cross", written on the fuselage, were later made deeper, as was the registration lettering under the cabin windows. Later still, the registration letters under the wing were replaced by large letters "Southern Cross" spaced across the full span. The wing span was 71 feet 8½ inches and the power was supplied by three Wright Whirlwind engines of 220 h.p. each. The aircraft's top speed was 120 m.p.h. and cruising speed 94 m.p.h.

THE MODEL—History

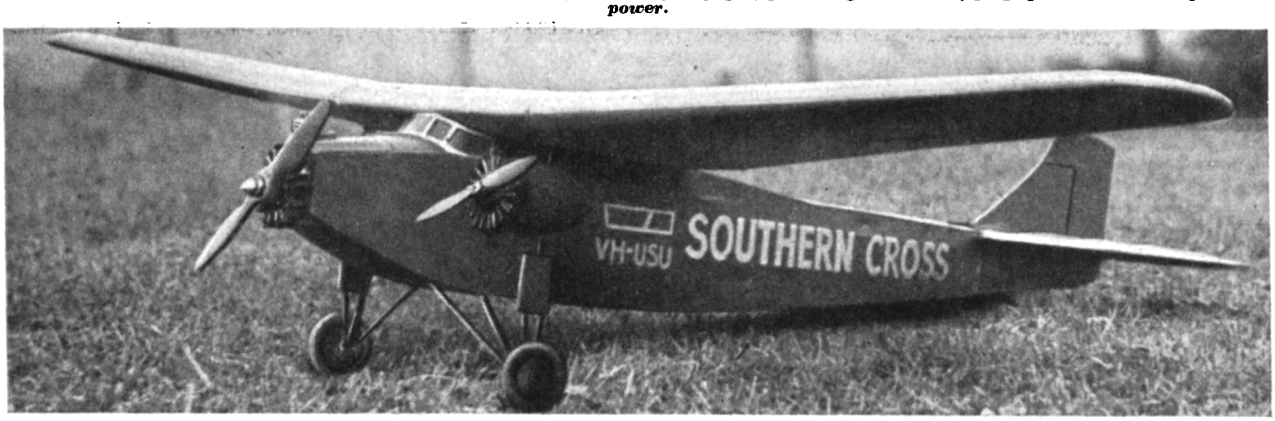
I believe I can safely say that the model, "Southern Cross", has given me more pleasure to build and fly than any other model I have made.

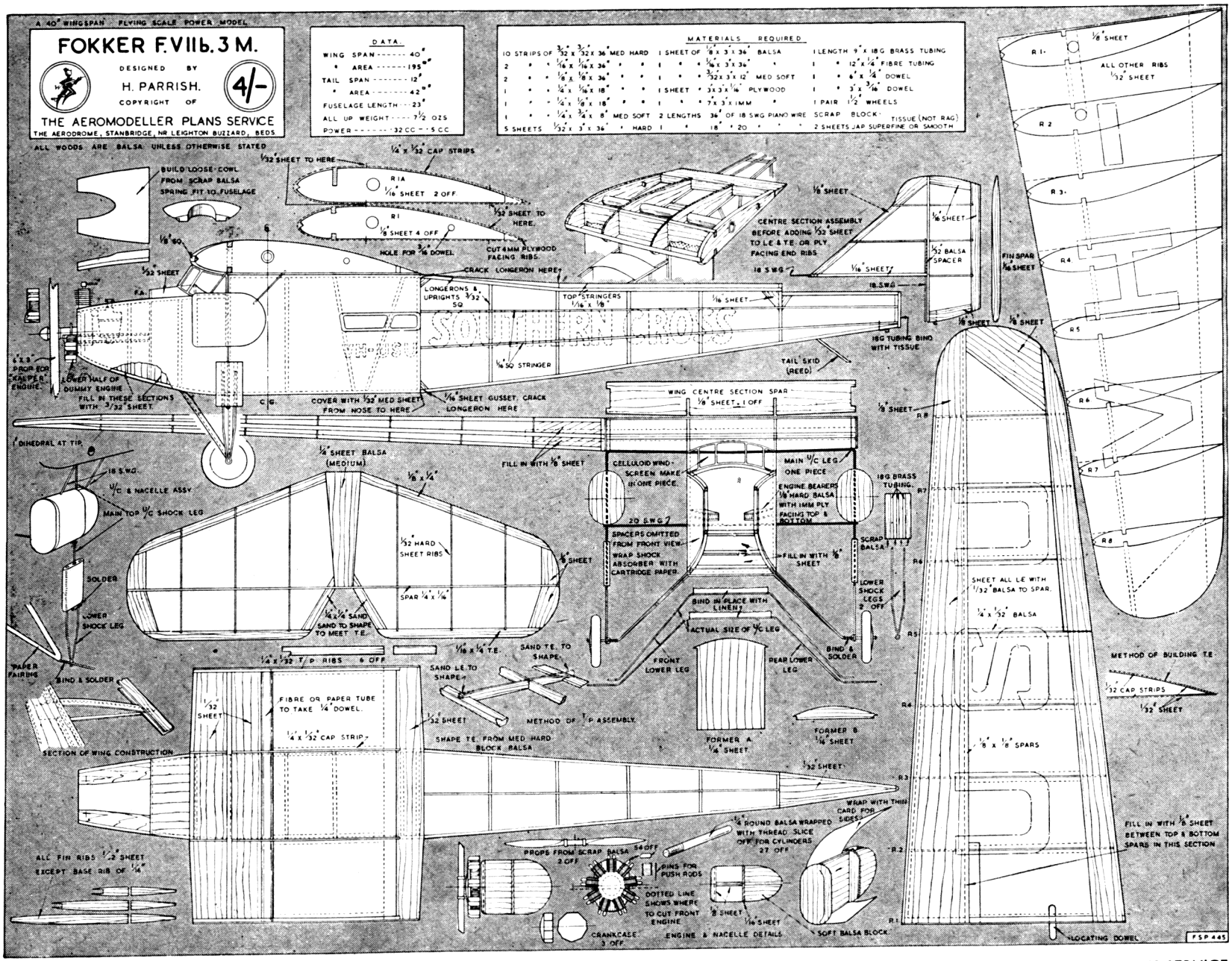
Its early career, however, was not too happy since, after its maiden flight, one which far exceeded expectations and without need of any trim whatsoever, an ill-tempered "pylon" job chose to terminate a power dive on the starboard wing. Fortunately, no other part of the model was touched. After careful repair, "Southern Cross" was ready for another outing and this time, after two perfectly good flights, the third ended on rather rough ground, causing several uncouth remarks when the fuselage was observed to have caved-in just below the cockpit. This, however, taught me a valuable lesson as on inspection it was noted that the longerons were saturated in fuel and their strength factor was about that of pulp wood. This was due to not having sealed the engine compartment sufficiently with banana oil and not having a drainage hole in the floor. Consequently, a new fuselage was built, and since then there has been no trouble at all.

The climb is perhaps slightly faster than should be, but the glide is remarkably flat and the free-wheeling props appear to have a stabilising effect.

Complete building instructions are issued with each APS drawing.

The unusual thick wing of the real F.V11b is a great help for scale free-flight, providing a realistic flying speed with the Kalper power.





THIS IS A ½ SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 4/– POST FREE, FROM THE AEROMODELLER PLANS SERVICE

"SPARKY"

A 48 INCH SPAN RADIO CONTROL STUNT MODEL FOR 1·5 c.c. MOTORS DESIGNED BY HARRY HUNDLEBY

The designer demonstrates the battery hatches, note also the actuator hatch in the open position on the fuselage topside.

THE designer's early experiences with Radio Control Flying were via the prototype "Rudder Bug", that splendid design of Walt Good's, which served as an AEROMODELLER test bed for the commercial R/C outfits available at the time. Many and varied were the adventures and misfortunes of that old faithful, and it says a lot for its construction that the original wings still decorate the author's office. Some of these misfortunes were due to vagaries of equipment, and a great deal more to the writer's ignorance of radio, and more still to what the types describe as "pilot trouble".

A few months of sundry prangs proved, as far as the writer is concerned, that large models have inherent disadvantages for R/C flying, particularly stunt work. Not the least of these being an inability to hit the ground hard without sustaining damage, due to their large mass and weight. As one's experience of R/C work increases, admittedly the prangs become fewer and wider spaced, but it is a daring man who will look you in the eye and refuse to admit the possibility of future misfortune.

All this being borne in mind, the writer decided that a compact yet practical model capable not only of "bouncing" but also of harbouring in comfort the necessary radio equipment, could be built around the 4-ft. span mark.

Other factors led to the size and type of model. Firstly there was that magnificent little Albon Javelin nestling in the editorial desk following its "Engine Analysis" test, which simply asked for incorporation in an R/C stunt job. Secondly, there was a visit from Geoff Fairbrass and Pete Wallace of E.C.C.'s with the new E.C.C. equipment for test and subsequent review. A sight of this miniature X.F.G.I. receiver with its low all-up weight and the cobwebs were dusted off the old workshop drawing board.

Simplicity of construction, accessibility of motor and radio equipment and above all the ability to "take it" were the design features that led to "SPARKY", who although oil-soaked and battle-scarred, still lives after 12 months of continuous flying to take second place at the West Essex Gala and perform demonstrations at the King's Cup.

The most important feature of "Sparky" is his ability to penetrate even 40 m.p.h. winds without climbing to more than 150 feet; this at Cranfield during the 1951 Ripmax, where he flew up-wind a distance of 200 yards to the first pylon. Penetration being an essential qualification of any radio job and other radio "bugs" will probably be interested in how it was achieved.

Original rigging set-up was wing at 1½°, generous downthrust and a flat plate tail-plane at 0°. This provided a very "stuntable" aircraft but no penetration. Increasing the downthrust beyond a certain point made the model so dangerous on the turn that a fresh approach to the rigging problem was very necessary.

Overtime on the old brain cogs produced the thought "Why not a lifting tail?" which was duly made and fitted. Re-trimming for this was an education as to the effectiveness of a lifting tail. The model was glide tested and naturally more negative incidence, 2° to be exact, was necessary on the tail. An attempt was then made to launch under power and the model dived in at the launcher's feet! No alteration had as yet been made to the amount of downthrust which was 8° under the original flat plate set-up. This was then reduced by half and still the model flew straight into the ground. It was not until the thrust line was at 0° that the model performed satisfactorily. The key to the whole problem, is of course, that the slipstream effect on the

Sparky is definitely an all-weather machine, as this photograph taken last winter amply demonstrates. It performed most successfully on skis but naturally had a reduced rate of climb.

This shot taken at the West Essex Gala shows the model fitted with a polyhedral wing as a temporary measure.

lifting tail is very considerable, so considerable in fact that it forces the nose down in no uncertain fashion during the powered part of the flight, but loses 75% of its effectiveness on the glide. Added to which the absence of downthrust makes for more efficient operation as the thrust line is almost parallel to the line of flight. In other words the resultant of our main forces Thrust and Lift is more in a forward direction than an upward direction, giving less drag, increased speed, and the desired penetration. When the model dives (following continued application of rudder) the speed obviously increases considerably. Here our old friend the lifting tail does its stuff again by further increasing the angle of dive and in turn the speed. So that the following zoom carries the model comfortably over the top in a loop. It is possible with "Sparky" to obtain a near vertical dive on the glide and such is the speed obtained that a definite whistle can be heard!

One feature not yet commented on is the moment-arm, or to be exact, the lack of it! As the writer's friend and critic Eric Smith puts it, "It looks as though it ought not to fly. But it does, so you can't argue!" It was certainly not without some trepidation that this was kept down to 10 inches, but stability is good and the reason for it, manœuvrability 100%.

At the risk of boring readers with a further design consideration, there is the question of weight, and in turn wing loading. "Sparky" when first built weighed 32 ounces, which gave a loading of 12·6, the maximum for this size of model as given in our "It's Designed for You" series. It was originally thought that this would be too much, bearing in mind the flying speed it would produce; the speed it would hit the ground, on occasions; and the fact that on normal flights the whole lot had to be brought back to the ground in one piece! However, these fears have proved groundless (no pun intended). The construction being sufficiently rugged to withstand vertical dives on to grass under power. For those who may still have doubts the designer would mention that the original "Sparky" now weighs 40 ounces, giving a wing loading of almost one pound per sq. foot, 15·8 to be exact! Here we must pay tribute to the type of undercarriage used, which beyond doubt is ideal for heavily loaded models. The idea was gained from one of the late Eddie Riding's scale models, the principle being modified and improved to take heavier loads. One excellent feature of this undercarriage design being, that the tension may be varied to suit the terrain one is flying over.

Simplicity of construction nullifies the necessity for building instructions, although a point to remember for those who are making this their first radio model, is to complete all wiring, installation of switches, etc., before sheet covering the fuselage.

Check that the C.G. position is correct, this is most important, and then test glide with the batteries in position but **without** the receiver. With a satisfactory glide achieved conduct the usual short power hops to obtain correct power trim. Make sure that the model flies dead straight, both under power and on the glide. It should fly straight on the glide without adjustment unless you have warps or a fin out of line. No sidethrust was necessary on the prototype, which if left to its own devices would bore steadily up wind.

Having achieved all the above then install your receiver, which besides being suspended by rubber bands should also, as an additional precaution, be encased in sorbo rubber. This is well worth doing in view of the small fuselage cross section as with a very heavy landing the receiver does tend to hit either the front bulkhead or sides of the fuselage.

Instal the small crank and you are ready for your first radio flight. The large crank is definitely for the more experienced radio flier and even he should apply rudder in small doses as the model has a surprisingly quick turn.

Remember the motto of all successful and consistent radio fliers in "CHECK" and "CHECK AGAIN" between each flight and under no circumstances fly if you have the slightest doubts as to the condition of your equipment.

One final note regarding suitable airscrews. For steady pleasure flying use a 9×5 or 9×6 and for stunt work either an 8×5 or 8×6. The former will give you a much longer run but is not suitable for stunt flying. The designer's favourite prop for the Javelin is the E.D. plastic $7\frac{3}{4} \times 6$ and definitely produces greater thrust than any other airscrew tried to date.

On the tarmac at Cranfield during the 1951 Ripmax. A picture that emphasises the short moment arm.

A 48" SPAN RADIO CONTROL MODEL

SPARKY

DESIGNED BY
H. G. HUNDLEBY
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THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

4/-

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

DATA

WING SPAN ------ 48"
AREA ------ 340 sq"
TAIL SPAN ------ 18"
AREA ------ 96 sq"
LENGTH ------ 30 INS
ALL UP WEIGHT ---- 32 OZS
POWER ---------- 1·5 CC
C.G. POSITION — 35% OF CHORD FROM L.E.

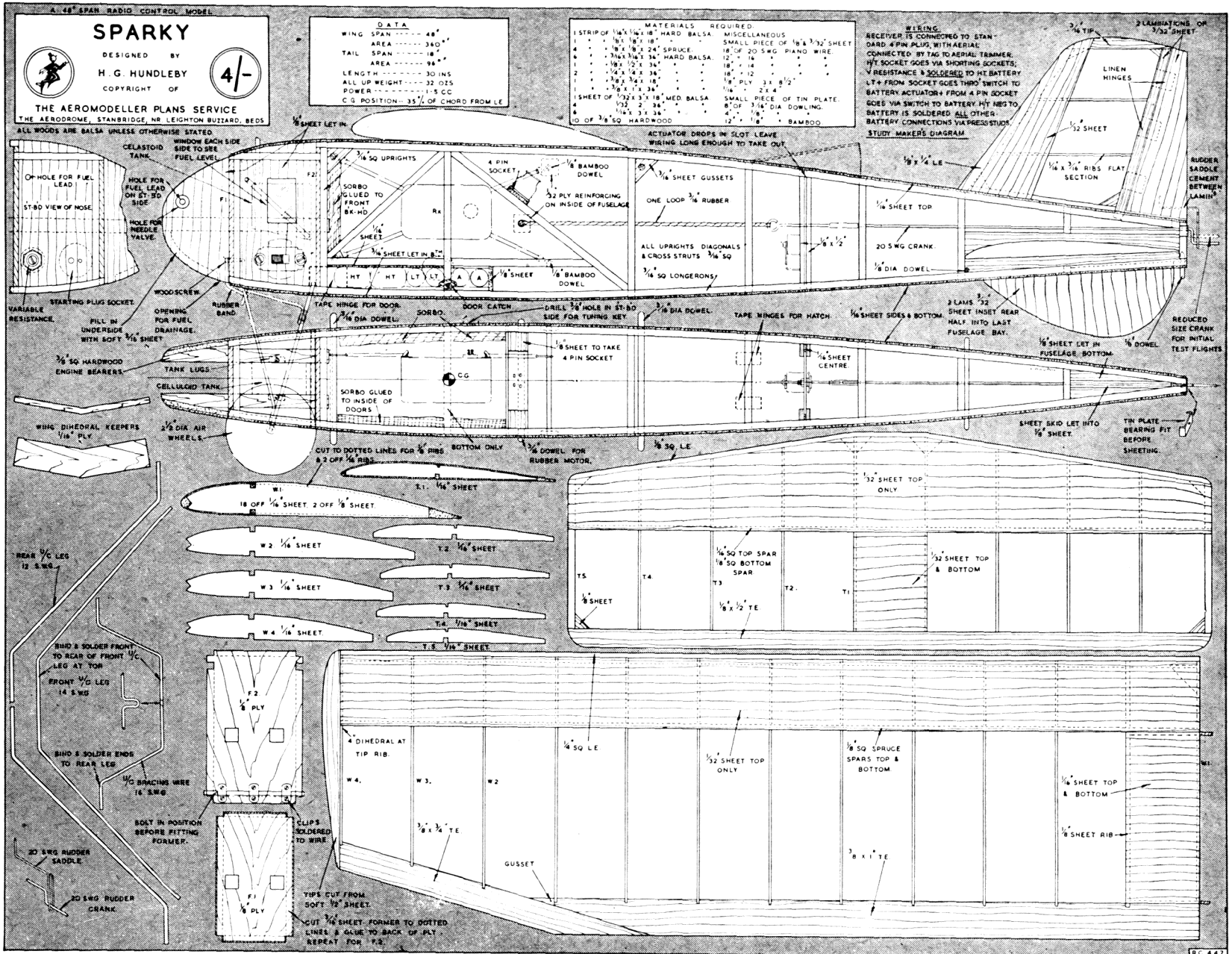
MATERIALS REQUIRED

1 STRIP OF 1/16" x 1/16" x 18" HARD BALSA.
1 " " 1/8" x 1/8" x 18" " "
4 " " 1/8" x 1/8" x 24" SPRUCE.
6 " " 3/16" x 3/16" x 36" HARD BALSA.
1 " " 1/8" x 1/2" x 36" " "
2 " " 1/4" x 1/4" x 36" " "
1 " " 3/8" x 3/4" x 18" " "
1 " " 3/8" x 1" x 36" " "
1 SHEET OF 1/32" x 3" x 18" MED. BALSA.
4 " 1/32" " 2" " 36" " "
6 " 1/16" x 3" x 36" " "
10 OF 3/8" SQ. HARDWOOD

MISCELLANEOUS
SMALL PIECE OF 1/8" & 3/32" SHEET
18" OF 20 S.W.G. PIANO WIRE.
12" " 16 " " "
18" " 14 " " "
18" " 12 " " "
1/8" PLY 3" x 8 1/2"
1/16" " 2" x 4"
SMALL PIECE OF TIN PLATE.
8" OF 3/16" DIA. DOWLING.
4" " 1/8" " BAMBOO.
12" " 1/8" " BAMBOO.

WIRING.
RECEIVER IS CONNECTED TO STANDARD 4 PIN PLUG WITH AERIAL CONNECTED BY TAG TO AERIAL TRIMMER. H.T. SOCKET GOES VIA SHORTING SOCKETS; V RESISTANCE IS SOLDERED TO H.T. BATTERY L.T.+ FROM SOCKET GOES THRO' SWITCH TO BATTERY. ACTUATOR+ FROM 4 PIN SOCKET GOES VIA SWITCH TO BATTERY. H.T. NEG TO BATTERY IS SOLDERED. ALL OTHER BATTERY CONNECTIONS VIA PRESS STUDS.

STUDY MAKER'S DIAGRAM



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

LIL' AUD

By J. A. GORHAM

★ THE F.A.I. INTERNATIONAL CLASS MODEL THAT COLLECTED *FIRST* AND *SECOND* IN THE 1·5 C.C. POWER CONTEST

DESIGNER'S DETAILS . . . British Champion 1950 . . . Secretary of Ipswich M.A.C. . . . a watchmaker . . . aged 28 . . . married, with three children . . . only hobby is aeromodelling . . . has won the Fairy & Weston cups plus the 1·5 c.c. contest this year—so far.

IT was only about one week before the International Power Contest at Radlett that the writer suddenly realised that normal power duration models were not performing really well, loaded up to 18 ozs. (minimum weight for 2·5 c.c.), and also that they sustained heavy damage in a bad landing at this weight, so it was decided to design a plane especially for 1·5 power and weight loading. The 1·5 c.c. engines produce good power for weight, and one of these was chosen, which produced a reasonable climb at the minimum weight of 10½ ozs.

Obviously so that the glide would not suffer, the area should be as much as possible and for 10½ ozs. (F.A.I. wing loading) one is allowed 380 sq. ins. of total area. To be on the safe side, 376 sq. ins. were plotted out (projected area) and as the writer normally uses about a 40 per cent. tail this proportioned 268 sq. ins. wing and 108 sq. ins. tail.

The fin has been built integral with the fuselage for obvious reasons—too many pylons have spun in through tailplane location wearing slightly, thereby moving the fin. This method was first tried on the author's Ghost Wakefield and will probably be used on all future machines. Another obvious advantage is that the tipping of the tailplane is so easily managed (this by the way, is over the generally accepted 30 degrees as so many machines have been lost with this amount of tip).

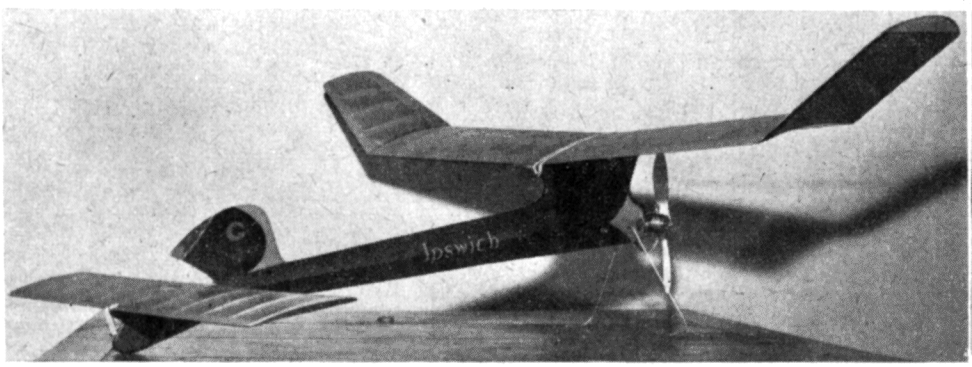
Building should present little difficulty to the type of flier who will build this design (it is a little tricky on high power) and the only point which might need elucidating is the tank arrangement. The fuselage should be completely finished up as far as F.2, then the piece of celluloid for the periphery of the tank should be rolled up and inserted between the bearers with the two tubes cemented in. F.1 should now be affixed to the sides of tank and sanded off until flush with the fuselage, after cleaning out, the two sides can be cemented in and soft block filled in around the tank to produce the correct outline. One very important point is that a pin hole must be made at the side of the tank at the top to facilitate filling and prevent siphoning of the fuel when the engine is running.

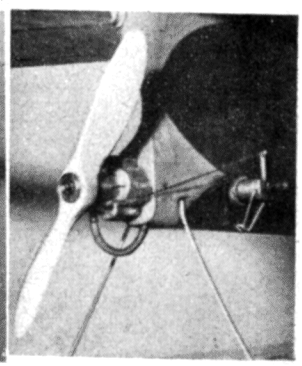
The engine should be set at about 3 degrees downthrust, this is important for without downthrust, the tail would have to be set at such an angle to prevent looping that there would be little or no longitudinal stability. The C.G. position must be adjusted with ballast and the tail packed positive or negative (actually about 3/32 positive should be correct), until the machine just avoids looping on straight trim, but don't forget the downthrust.

With regard to the turn on the climb and glide, this may be achieved in many ways. Right thrust and slight left rudder is a safe combination when climbing to the right but is not the most efficient. The most efficient trim (if it can be obtained) is usually, climb left and glide left—this trim is often " knife edge " (so go easy with the left thrust)—actually one must use at least 6 degrees combined with " wash-in " on the port tip and slight right rudder.

With a good engine the machine should reach about 450 ft. on 20 secs. and be good for a maximum in anything but down-draught conditions. Good luck and good flying !

Oblique trim tab angle, and cut away for tail tip-up are features of LIL' AUD, already adopted by other experts. Nose close-up shows timer detail. (Model is named after wife Audrey ! !)





A 40" SPAN F.A.I. POWER MODEL

LIL' AUD

DESIGNED BY
J. A. GORHAM
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THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

4/-

DATA	
WING SPAN	40"
" AREA	268 sq in
TAIL SPAN	22"
" AREA	108 sq in
FUSELAGE LENGTH	32"
" " X SECTION	5"
ALL UP WEIGHT	10·6 OZS
POWER	1·5 CC

MATERIALS REQUIRED

STRIP.
4 STRIPS OF 1/16" X 1/8" X 36" BALSA HARD
1 " " 1/16" X 1/4" X 36" " "
5 " " 1/8" X 1/4" X 36" " "
2 " " 3/16" X 3/4" X 36" " "
SHEET.
3 SHEETS OF 1/32" X 3" X 36" BALSA MED
3 " " 1/16" X 3" X 36" " HARD
1 " " 1/8" X 3" X 36" " "

MISCELLANEOUS.
SMALL SOFT BALSA BLOCK
2 STRIPS OF HARDWOOD 1/4" X 3/8" X 4"
4' OF 1/8" DIA DOWLING
18" OF 14 S.W.G. PIANO WIRE
6" X 3" OF 1/16" PLY
SMALL PIECE OF THIN CELLULOID
6" OF 3/32" SQ BIRCH
SMALL PIECE OF THIN ALUMINIUM

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

TANK 30/TH CELLULOID TUBES EMPTY BALL PEN REFILLS CEMENT WELL

AT A1 2&3 1/16" SHEET GUSSETS SLIGHTLY CONCAVE TO CLEAR COVERING

STREAMLINE FINS & CUT TRIM TAB AFTER SANDING

PUSH FIT IN 1/2C BOX

ACTUAL LENGTH PORT 4" STARBD 6"

1/2C 14 S.W.G. STEEL WIRE.

1/8" DOWEL
SOFT BLOCK
1/16" SHEET HARD
1/8" DOWEL
1/2C BOX
SOFT BLOCK
1/16" PLY
3/32" SQ BIRCH
BIND WITH THREAD & CEMENT
1/8" DOWEL
1/8" SHEET
SECTION X X
CENTRE OF FINS 1/16" SHEET GRAIN HORIZONTAL. OUTSIDE LAMINATIONS 1/32" SHEET GRAIN VERTICAL
ALUMINIUM HINGES
FILL IN WITH SCRAP SOFT BALSA AFTER FITTING TANK
1/8" x 1/16"
F1 F2 F3 F4
1/16" SHEET BACKBONE (HARD)
A1 A2 A3
1/8" x 1/16" CAP STRIPS
1/16" PLY
SOFT BLOCK
ENGINE MOUNTED WITH THRUST LINE ON ℄ OF FUSELAGE.
F6 F5
F7
1/8" DOWEL
1/16" PLY D.T. FITTINGS
LEAVE SIDES OF TANK FLUSH WITH FUSELAGE
1/16" PLY 1/2C BOX
1/16" SHEET PYLON TOP
3/8" x 1/4" HARDWOOD ENGINE BEARERS
CG
1/8" SHEET HARD
1/8" x 1/4" SUB SPAR ADDED AFTER COMPLETING WING
1/32" SHEETING
L.E. 1/8" x 3/8" MEDIUM HARD
WB1
WB2
W6 W1
MAIN SPAR 1/8" x 1/4" HARD
W1 W2 W3 W4 W5
TIP SPAR TAPERED FROM 1/4" x 1/8" TO 1/8" x 1/8"
SUB SPAR 1/8" x 1/4"
1/8" SHEET
1/8" SHEET
GAUZE BANDAGE CEMENT WELL
T.E. 3/4" x 3/16" MEDIUM HARD
L.E. 1/4" x 1/16" HARD
1/16" GUSSET TO SUPPORT PLY PEG
3/4" DIHEDRAL HERE.
T.E. TAPERED TO 1/2" x 1/8"
WB1 1/16" PLY 2 OFF.
WB2 1/16" PLY 2 OFF.
GAUZE BANDAGE CEMENT WELL
SPARS 1/8" x 1/16" HARD.
1/8" SHEET
1/8" SHEET
T.E. 1/2" x 1/8" MED. HARD.

THIS SLOT IN 6 RIBS ONLY
F7. 1/8" SHEET
W1
18 OFF 1/16" MEDIUM BALSA CEMENTED TOGETHER AT WING CENTRE
W5 W4 W3 W2
WING TIP RIBS. 2 OFF EACH, 1/16" SHEET
3/4" DIHEDRAL HERE (TOTAL)
WING TIP. CONTINUE SPAR TO MEET TIP AT CORRECT ANGLE. 1/32 SHEET CONTINUES RIGHT TO TIP.
F3 1/8" PLY
POSITION OF BEARERS TO SUIT ENGINE. POSITION SHOWN FOR 1·49 ELFIN
F2 1/16" PLY
WING TIPS. 1/16" HARD SHEET 2 OFF
TAILPLANE TIP 1/16" HARD SHEET 2 OFF.
TAILPLANE RIB. 3 OFF 1/16" BALSA. 10 OFF 1/32" "
F3 F3
1/16" BALSA
1/8" BALSA
F4 F4
F6 F6
F5 F5
PET 446

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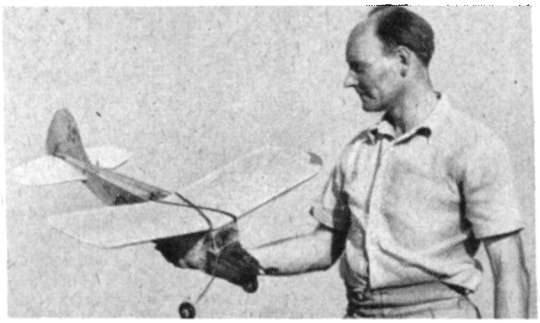
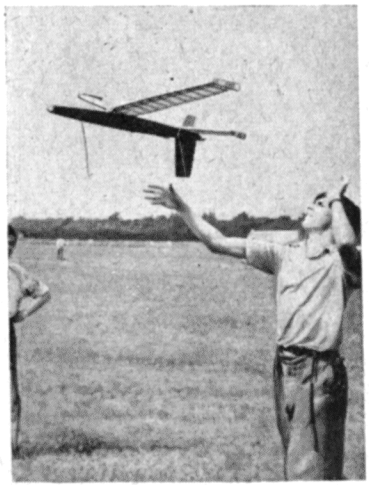
EATON BRAY NEWS

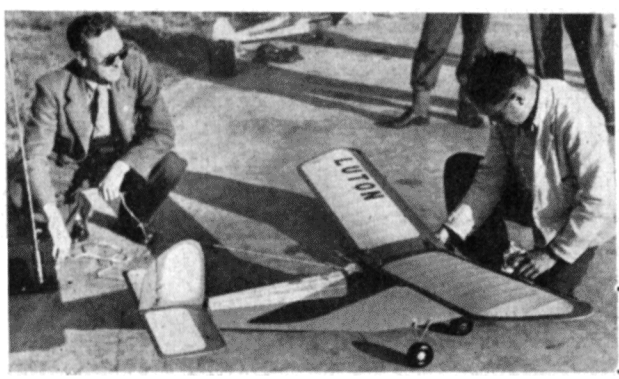




Seen at the 'Bray on July 1st. Left: Hasty dethermaliser fuse lighting, by Ron Young, for friend Miss P. Wakeling of High Wycombe in the Women's Cup. Centre: Howard Boys and his tiny Mills powered radio model with the waggling rudder. Right: Don Lines (N. Aluminium Club) lauches an unusual pusher.

THAT terrific flying day, July 1st, was a sign of excellent weather selection on the part of the S. Midland Area, when they decided to have their annual rally on that date at Eaton Bray. Thermals were bumping off the newly mown grass like bubbles in champagne, and just about anything that could be towed, thrown or aided by power into reach of the ever-present lift, was guaranteed a long flight. To one side of the aerodrome, long grass and local crops created safer down-draughts, so in reality few models were lost, though many an un-dethermalised maximum was recorded.

H. (Chalky) White of Icarians, who has been flying Wakefields since they were first thought of, and was a member of the 1938 British team that went to France, produced his '51 job with its old-style tip shape reminiscent of pre-war designs, and won the open rubber contest by a wide margin. Another local " character ", Peter Holland (Apsley), whose more regular occupation is to demonstrate the large model " Brabazon ", as reported elsewhere, flew well in power to win with a total of 10 mins. 43 secs. His model features a deep, almost profile fuselage of low C.L.A. layout. In the glider contest, last year's A/2 team member Ron Hinks (Luton), who had given up contest work, was persuaded by the weather, and presumably, family pressure to " have-a-go ", which he did to good effect by winning with a total of 11 mins. 19 secs. It was also the big day for the ladies, who were entering the area organised Women's Cup, Miss P. Wakeling of High Wycombe flying a rubber job, probably designed by friend Ron Young, ("Mercury" draughtman), and Betty Moulton towing an APS Lulu which she had made the week previous. A nicely placed thermal helped the latter into third place in the final results.



On Radio-control FFF day, Ken Wingrove 'keys' for Sid Miller's (Luton) radio check. Orange and White model is E.D. IV powered, has E.D. Mk. 1. radio, and is beautifully finished in the Miller tradition.

Radio Rally

The special FFF day organised for radio control fans attracted many top-line fliers to the Bray. Outstanding among the performers was C. Wallis of Surbiton, who put his red and yellow Junior 60 into the air for perfectly controlled smooth flying so many times during the day that it was a wonder the other exponents did not raise complaint. But they were equally content to settle and gossip on new ideas and developments in their complex phase of modelling, and were thoroughly pleased at the opportunity of such a get-together, which obviously bore much fruit for the learners. George Honnest-Redlich brought his 465 Mcs. equipment in yet another different model, known as the " Flying Test Bed " and showed the system of directing the transmitter beam to the short aerialled receiver. Howard Boys was there too, flying an amusing little tailless model, and also his out-of-the-rut, flapping rudder lightweights, as described in his Radio Control notes feature. It was a most interesting meeting, beneficial to both expert and novice, and proving the value of the FFF day.

Don't forget the next one, which is on August 26th, for experimental types, that's anything from the conventional to the ridiculous. We have something extra special up our sleeves for that day, and unless you're not really interested in model flying, you ought really to come along and have a look—and don't forget the odd model!

Camping Holidays

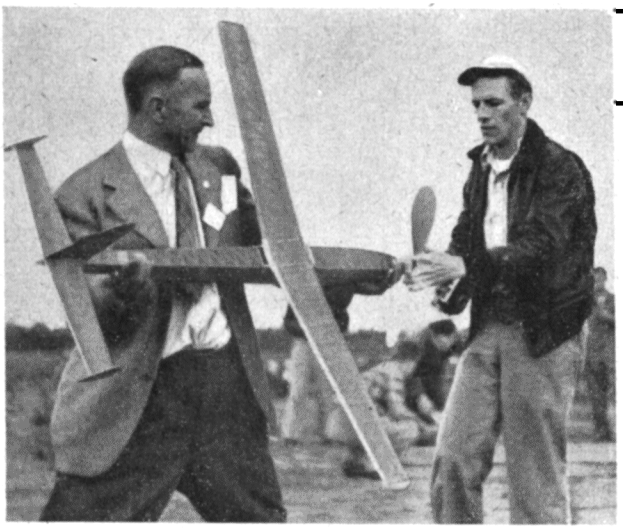
As you read this, there will be just less than two weeks left in August, and all of September for the rest of the 1951 model flying season. If you haven't already arranged this year's holiday, there is time yet for a booking to be made for accommodation at Britain's only aeromodelling holiday camp. Bright clean dormitories and private rooms await you ; but be quick, or it will be too late.

JAMI-JARVI
1951

A DESCRIPTION OF THE 1951 WAKEFIELD TROPHY CONTEST

By C. S. RUSHBROOKE

The six man team representing Great Britain at the Wakefield Finals, stand before the flag bedecked Jami-Jarvi headquarters. Left to right they are: F. Holland (9th), F. H. Boxall (36th), W. Rockell (32nd), H. Tubbs (2nd), I. Dowsett (11th) and R. Woodhouse (20th).



Anglo-American effort! Ted Evans, British team manager, assists D. Kneeland of the United States who finished 39th. Model has diagonal bracing throughout and is a version of the Everitt stick design.

FORECASTING the weather has always been an unprofitable occupation, and this year's Wakefield Contest—held for the second year in succession at Jami-Jarvi, Finland—emphasises the importance of allowing for the whims of the Clerk of the Weather at all times, and in all countries.

Experience in 1950 indicated that the event would be held under calm, non-thermal conditions, for Met. statistics show that such weather can usually be relied on at Jami-Jarvi in July. However, though the records show that the 1950 conditions have been certain for the past fifteen years, 1951 saw fit to confound all forecasts, and the event was held under dull and threatening skies, with very noticeable drift and occasional pockets of lift. Scheduled times had to be varied both on the Saturday evening and again on the Sunday morning, and the eagerly anticipated six hour break for sleep (?) between the second and third rounds was cut in half in an endeavour to beat the high wind and rain promised for the early part of the 8th July.

My first taste of the weather problem came with a very bumpy flight from Stockholm to Helsinki, and later in the day when flying from the capital of Finland to Tampere we ran into rainstorms and very heavy weather. (It was this "depression" that caused the plane flying the combined British and American Teams to delay its run at Stockholm, a factor that—fortunately for the Teams—gave them a night in the beautiful Swedish capital, much to everyone's delight!)

The final stage of my own journey was by car, and took place in heavy rain for most of the way, and the general lookout was far from encouraging. However, many interesting people had already arrived at the contest venue, and old and new acquaintances were met. Teams were arriving from all directions and by various means, but it was disappointing to find that some countries who have regularly supported the Wakefield in past years had not entered the 1951 event. Denmark, Norway, Monaco, New Zealand, Switzerland and Yugo-Slavia were non-starters this year, but the addition of South African entries brought the number of competing countries up to eleven, with a total of fifty-one competitors, a drop of twelve over the previous year's event.

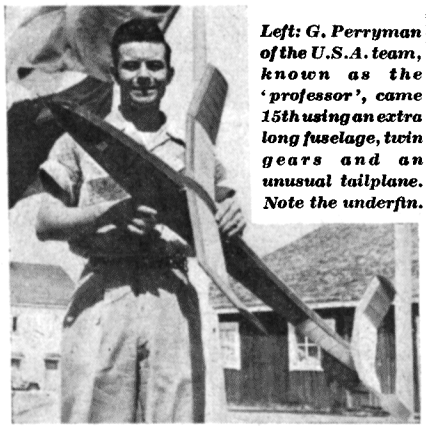
Certainly the farthest travelled personality was Adriane Bryant from Lismore, Australia, who had spent some months hitch-hiking his way from his homeland to Jami-Jarvi, preceding this by a trip twice round the continent of Australia! His experiences would make a book, and this lean, tough Aussie was a great favourite with everyone at the contest, and proved a hardworking ambassador for his country by proxy-flying one model, and managing the rest of the entry via various proxies. J. Royle of the Littleover club, winner of the first prize in the 1951 Wakefield Draw, had been offered a trip to Finland instead of the advertised French visit in view of the postponement of the Power Championships, and acted as a proxy for the entry of Jim Fullarton. His experience was welcome, and he proved the best of the proxy fliers called into service, and I have no doubt thoroughly enjoyed himself in the process.

Processing of models was again conducted country by country, each team manager being obliged to have his team and models on hand at specified times, whereupon an efficient team of slide-rule experts speedily checked all measurements, weighing being left until the check preceding each flight.

Generally, models were orthodox, with the exception of the outsize American machines sporting 60-inch fuselages, and naturally these came in for much attention and speculation, with everyone eagerly anticipating the test flying periods when these "flying sticks" could be seen in action.

Preference for the return-gear system appeared to be evenly divided, and the majority of models showed a preponderance of even chord wings and tailplanes, flat centre-sections and swept-up tips being the most popular layout. Both the American and Swedish machines were beautifully constructed, and Arne Ellila showed his usual fine workmanship on a machine that differed little in general layout from his 1950 winner. Fuselage had been lengthened and incidence settings of 7 degrees wing and 3 degrees tail were used, with a prop setting of considerable side thrust and UP thrust. A no-spar wing was featured this time, but this produced troubles when

A corner of the processing department, every model complied with the regulations.



Left: G. Perryman of the U.S.A. team, known as the 'professor', came 15th using an extra long fuselage, twin gears and an unusual tailplane. Note the underfin.

Left: Another American entry, J. Foster (29th) and 'Pogo Stick'. Joe was first man to fly in the contest.

Right: P. W. Seton, who placed 4th last year, flew proxy for countryman J. F. Thomas (Holland) and came 24th this year.

the machine was being photographed, for a strong gust broke the wing in three places, giving Ellila some hectic repairing to carry out.

The Belgian team were all using single motor jobs, and all featured a peculiar " spine " or built-up wing platform that looked anything but elegant, the conglomeration of ¼-in. square strips appearing to be an afterthought. Deschepper sported an ingenious variable pitch prop using threaded hubs contained in a tapped boss, the whole mechanism being locked by a thumbscrew.

Gerlaud of France used a tapered wing on his entry, but the most striking feature was the use of red and blue tissue strips along a white fuselage, giving a most patriotic effect! This entrant had a most complete model box, with tools and accessories neatly racked in clips under the lid.

The British machines were extremely varied, Boxall's being the centre of attention for its most unorthodox layout. As one American stated, " Waal, I guess it must have just happened! Perhaps he just didn't want to scrap all the fins from his other machines ". Holland was using his usual " Zombie " type of design, whilst the other members used more or less orthodox designs with slightly lengthened fuselages.

Other interesting items noticed were: the ugly looking built-up open cabin on A. Dijkstra's machine; the useful looking coil spring attached to the tailplane of Eliasson's model assuring positive tip-up to the tailplane when D/T'ing; the neat metal tube let into the fin T.E. on Andrade's models, this ensuring a safe housing for the D.T. fuse and preventing the loose end falling from the machine; the neat nipple produced by the Swedes for use on the propeller shaft, using offset holes drilled through, a pin engaging with a flat filed on the shaft; and the unusual—if somewhat queer-looking—polyhedralled tailplane used on " Professor " Perryman's twin-geared models. (Also seen on this model was the following label:—" I am a poor struggling scientist keeping a wife and three (not stated what!). The return of this model to the following address, etc., etc., etc." Probably quite effective!)

Much concern was expressed over the possibility or otherwise of carrying out test flying, and minds were not eased when it was learned that Ellila had been at Jami for over a week and had not been able to test fly once. However, the night prior to the contest produced a period of calm conditions during the very early hours, and I understand many were out trying the trim of their machines, and gaining knowledge of the surrounding country. I wouldn't know myself, for by midnight I was asleep on my feet and hit the hay (literally), the straw mattresses provided being surprisingly comfortable!

Saturday saw the late arrival of the Italian team, and model processing continued smoothly. (To the best of my knowledge no model was found outside the limits, though some had got very close to the mark on total area measurements.)

The contest Jury was announced as C. Stude (Finland), Carlo Tione (Italy) and E. W. Evans (Great Britain), and these gentlemen met during the afternoon to discuss all aspects of the contest and rules. Though the F.A.I. have adopted the modified rules regarding launching, the published programme contained the old wing-tip and prop ruling, and this was clarified by the Jury to allow a competitor to hold his machine as he wished, providing no assistance was given on take-off. (Experience at this event emphasises the necessity for the

Lucky J. Royle of Littleover M.A.C., won a free trip to the contest and flew proxy for Jim Fullarton of Australia. With a total of 453·1 secs. Royle was the top scoring proxy flier and placed 17th. The model featured a multi-sided fuselage, retracting undercart and folding prop.



Left: Anxious moments for H. L. F. de Kat of Holland as he finishes winding. He placed 26th. Centre: General factotum and Contest Director, C. Hagelstam, who made the organisation perfect. Fluent in French and English, as well as his native Finnish language, Hagelstam knew all the answers. Right: Carlo Tione, Italian team manager, wears a worried expression as he takes the strain for one of his men.

Wakefield Rules to be thoroughly vetted, for the current regulations as printed contain a number of contradictions. We suggest the S.M.A.E. Wakefield sub-committee get busy in this direction as early as possible.)

Having had the pleasure of nominating Ted Evans for the position of British Team Manager, it was good to see one's confidence confirmed, for he proved a most useful Jury member and managed his team admirably, proving that first-hand experience of the task is a prime requisite for such appointments.

C. Hagelstam, the hardworking and very astute Contest Chief, briefed all competitors three hours before the start of the contest, making his announcements in both English and French, and it was evident from the almost complete dearth of questions that he had adequately covered all points concerning the procedure, etc. Experienced timekeepers with guaranteed eyesight were available, and everything was now set for the starting signal.

As the scheduled hour of 7 p.m. drew near it was obvious that the weather was going to upset all calculations, for a fair breeze was blowing up the field towards the high ridge that cuts the Jami-Jarvi field in two, making it certain that long duration flights would be penalised by going out of sight over the ridge.

THE FIRST ROUND

A half hour delay was announced, and the honour of first man off in the 1951 Wakefield Contest fell to Joe Foster of the U.S.A., his lanky machine taking the air at 7.35 p.m. The general opinion being that conditions would get worse rather than improve, there were no signs of hanging back, and competitors came up to the line in a continuous stream, and in short order times were being announced over the public address system.

Although the Everitt type of American machine produced an almost phenomenal glide, the wind appeared to upset these machines during the power run, though this was not as apparent in the first round as later in the contest. Both Andrade and Foster secured good times, and even the bottom man in the U.S. team got over the three minute mark. Dave ("Kansas") Kneeland was employing a modified type of the long fuselage machine, whilst both Hofmeister and Perryman used twin-return gear jobs.

Rockell (G.B.) disappointed when his useful looking machine piled in after a torque dive, and had to fall back on his reserve model, which proved well below the capabilities of his No. 1 entry. It was obvious that many competitors had reserve machines that were almost untested, and no doubt the lesson has been well learned for future occasions.

Another forced to use a reserve, was the current holder of the Trophy, Aarne Ellila, for his machine barely staggered off the take-off board and touched down for a "false start". His subsequent 1st Round flight of 2 : 10 proved that Aarne was well below form this year—a fact complicated by the flier himself being far below par, having caught a severe chill which must have affected his abilities during the contest.

3½ minutes was calculated to be a fair estimate of flight possibilities under the drift conditions, and this figure was found to be a very close forecast, average of the top twenty durations for this round being 3 : 38. Both de Jong (Holland) and Tubbs (G.B.) bettered four minutes and a further eleven passed the 3½ minutes mark, but it was obvious that the much derided "5-minute flier" is still a matter for the future, and many a modeller revised his optimistic ideas in view of his experiences.

Top honours were well distributed in this round, with all the usual "strong" countries widely represented in this "feeler" round. America, Great Britain and Holland had the majority of their teams in the high placings, and one or two "lone hands" were up with the best.

Further down the list many tales of woe were being composed, and this year's contest was in direct contrast to the 1950 event, with many crashes and false starts being attributed to a variety of causes. Borjesson of Sweden had the tail-holding bands snap a few few seconds after the machine became airborne; and his team-mate Blomgren had the unusual experience of the twin rubber motors of his geared machine tangling, evidently owing to the loose ends behind a knot becoming caught up in the other motor. (Blomgren said he has been using twin gears for fifteen years, and this is the first time such a mishap has occurred.)

Frank Holland (G.B.) caused a few seconds anxiety when his machine made a peculiar swoop on take-off,

Dutchman in action, de Kat holding for de Vries who placed 6th, while Dijkstra watches the operation. The Dutch team did very well for themselves with 4th, 6th, 13th, 21st, 24th and 26th places.

but the model steadied out to make a good flight of 3 : 41·2, and Woodhouse and Dowsett clocked good durations that were to prove useful for their final scores. Boxall could only manage just under 2½ minutes, and with his second round time being almost identical, the opinion was confirmed that his model requires thermal assistance to put up the durations required for present day competition.

Proxy fliers were struggling hard with unfamiliar machines, Bryant, Royle and Seton securing very worthwhile results from the models entrusted to their care, but it was obvious that many far travelled machines would not place very high in the final results.

The closing hour of 9 p.m. rapidly drew near, and it was obvious that no-one was going to be caught short by the end of the round, always excepting those who had struck bad luck with crashes and the many other snags that dog every competition.

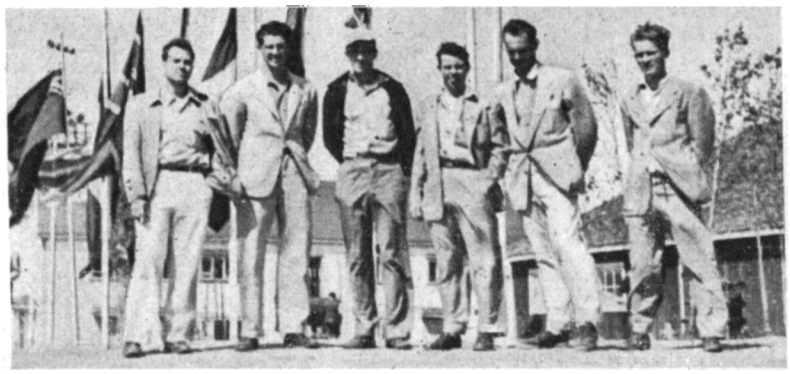
Twenty-three competitors returned scores of over 3 minutes for the initial round, and in view of the conditions it is surprising to find that the 3 : 38 average of the top twenty men is 33 seconds better than the similar round held in better conditions last year. (1950 top time for Round 1 was 3 : 58 as against de Jong's 4 : 18, whilst the 20th place was only 2 : 22 as against 3 : 10.)

POSITION AT END OF FIRST ROUND

1.	de Jong	Holland	258·1
2.	Tubbs	Great Britain	252·7
3.	Gilg	France	236·0
4.	STARK	Sweden	226·2
5.	Andrade	U.S.A.	226·0
	Lustrati	Italy	
6.	Woodhouse	Great Britain	224·0
7.	Ferber	Belgium	223·5
8.	Holland	Great Britain	221·2
9.	Pointel	France	218·0
10.	Dowsett	Great Britain	215·9
11.	Elgin	U.S.A.	212·1
12.	Foster	U.S.A.	211·7
13.	Wood	Canada	209·1
14.	Perryman	U.S.A.	208·5
15.	Deschepper	Belgium	202·2
16.	Hofmeister	U.S.A.	201·0
17.	Dijkstra, A.	Holland	197·4
18.	de Vries	Holland	194·8
19.	Leardi	Italy	192·5
20.	Kneeland	U.S.A.	190·3
21.	Sadorin	Italy	186·3
22.	Lim Joon	Australia	186·0
23.	Pelegi	Italy	177·0
24.	Cassola	Italy	172·0
25.	Lonergan	Australia	164·7
26.	de Kat	Holland	158·0
27.	Lippens	Belgium	157·1
28.	Walter	Canada	151·4
29.	Fullarton	Australia	151·1
30.	Boxall	Great Britain	149·2
31.	Johanson	Finland	132·5
32.	Ellila	Finland	130·0
33.	Eliasson	Sweden	122·8
34.	Thomas	Holland	122·0
35.	Dijkstra, G.	Holland	199·5
36.	Balasse	Belgium	118·1
37.	Rockell	Great Britain	115·6
38.	Huhtinen	Finland	115·0
39.	Silmunen	Finland	108·0
40.	Kivikataja	Finland	99·0
41.	van Rensburg	South Africa	70·0
42.	Ford	Canada	61·3
43.	Morris	South Africa	37·3
44.	Blomgren	Sweden	21·0
45.	Gerlaud	France	12·5
46.	King	Australia	6·0
47.	Borjesson	Sweden	5·7
48.	Tahkapaa	Finland	1·0
49.	Faiola	Italy	—
50.	Holmes	Australia	—

With no break, and with all wishing to get on with the contest and beat the weather, Round 2 proceeded immediately. With conditions anticipated to worsen, and with the light obviously going, little time was wasted by anyone who thought he had a chance, and again the flights were rapid —and in some cases exciting.

Three jolly Frenchmen, Gilg (14th), Gerlaud (38th) and Pointel (40th), who formed the three man team for France, are seen at right. Below: The American team, with representatives from all parts of the U.S.A. Left to right, they are —J. Foster (29th), M. Andrade (7th), D. Kneeland (39th), G. Perryman (15th), J. Elgin (12th) and Hofmeister (5th).



Tense moment as Aarne Ellila releases his 1951 Wakefield for his first flight. Bad weather had delayed his test flights, and an unlucky gust broke the wing before the contest started. Despite quick repairs, the subsequent performance was considerably affected.
Below: Ted Evans reviews with an air of incredulity, the monstrous outsize fuselage, built as a skit on the new rules by P. Deschepper of Belgium. Over 8 ft. long, the fuselage was made overnight and uses normal Wakefield wings and tail.

POSITION AT END OF SECOND ROUND

			2nd Flight	Total
1.	Tubbs	Great Britain	236·9	489·6
2.	de Jong	Holland	206·0	464·1
3.	STARK	Sweden	232·5	458·7
4.	Lustrati	Italy	229·1	455·1
5.	Deschepper	Belgium	243·4	445·6
6.	Hofmeister	U.S.A.	223·6	424·6
7.	Leardi	Italy	228·3	420·8
8.	Holland	Great Britain	190·0	411·2
9.	Cassola	Italy	236·0	408·0
	Woodhouse	Great Britain	184·0	
10.	Andrade	U.S.A.	180·5	406·5
11.	Elgin	U.S.A.	192·0	404·1
12.	Dowsett	Great Britain	184·2	400·1
13.	de Kat	Holland	236·0	394·0
14.	Pelegri	Italy	211·7	388·7
15.	Sadorin	Italy	195·0	381·3
16.	Perryman	U.S.A.	170·0	378·5
17.	Gilg	France	137·6	373·6
18.	de Vries	Holland	170·3	365·1
19.	Foster	U.S.A.	152·6	364·3
20.	Dijkstra, A.	Holland	153·8	351·2
21.	Ferber	Belgium	127·0	350·5
22.	Fullarton	Australia	185·0	336·1
23.	Dijkstra, G.	Holland	215·1	334·6
24.	Lonergan	Australia	169·0	333·7
25.	Wood	Canada	105·2	314·3
26.	Balasse	Belgium	182·0	300·1
27.	Boxall	Great Britain	143·4	292·6
28.	Thomas	Holland	150·0	272·0
29.	Lippens	Belgium	108·3	265·4
30.	Johanson	Finland	126·2	258·7
31.	Eliasson	Sweden	129·5	252·3
32.	Rockell	Great Britain	136·5	252·1
33.	Lim Joon	Australia	64·1	250·1
34.	Pointel	France	28·8	246·8
35.	Huhtinen	Finland	121·5	236·5
36.	Borjesson	Sweden	217·5	223·2
37.	Kneeland	U.S.A.	11·4	201·7
38.	Faiola	Italy	183·0	183·0
39.	Blomgren	Sweden	153·0	174·0
40.	Walter	Canada	20·0	171·4
41.	Kivikataja	Finland	59·3	158·3
42.	Gerlaud	France	140·9	153·4
43.	Ellila	Finland	6·9	136·9
44.	Silmunen	Finland	20·8	128·8
45.	van Rensburg	South Africa	46·2	116·2
46.	Morris	South Africa	61·0	98·3
47.	Tahkapaa	Finland	89·0	90·0
48.	Ford	Canada	—	61·3
49.	Holmes	Australia	46·0	46·0
50.	King	Australia	—	6·0

THE SECOND ROUND

Probably the most unusual sight yet witnessed in a major contest was the occasion when the machines of Frank Holland (G.B.) and Deschepper (Belgium) collided in mid-air. Contrary to normal, this did not take place on take-off, but after the machines had been flying for some time and at a considerable height. With both machines meeting practically head-on, Holland's propeller almost severed the tail of the Belgian machine to send it spinning down in an almost vertical dive. The British machine meantime staggered for a few seconds, and then commenced to stall badly, but this smoothed out after a short time and the machine continued to end a good flight, though with a much reduced duration. Both competitors were awarded a fresh start, and Deschepper proceeded to return the top time of the 2nd Round with a reserve machine, the duration being 4 : 03·4 as against Ellila's 1950 time of 4 : 31.

The Finnish champion was dogged by ill luck, and in this round repeated his 1st Round feat of barely getting away. The machine touched down after a low altitude circle, and though awarded a false start, the machine bounced off and proceeded to.make a long flight, which terminated in the model being lost in the forest in the gathering dark. Though found the next day, it was not recovered in time for the 3rd Round, and this completed Ellila's attempt to retain the Trophy.

Tubbs again made second best time, and his total placed him at the top of the list, the displaced de Jong being 25½ seconds behind the leading Englishman. British hopes were now running high, but the wily Evans counselled against undue optimism—" a comp. is never over till the last flight has been made ".

Cassola and de Kat both considerably improved their positions with flights of 3 : 56, and it is interesting to record that no less than 21 competitors scored over 3 minutes in spite of deteriorating visibility, the top section average falling by only 7 seconds to 3 : 31.

This question of deepening dusk penalised not a few competitors, for once a machine had sunk below the skyline of the ridge it was almost impossible to see the model, particularly if the colour scheme was dark. This applied particularly to Woodhouse, whose black and dark brown model was quite invisible once it left the sky background, with an official duration thus reduced to 3 : 04.

It was during this Round that the Americans began to find troubles, the unstable conditions obviously not suiting the long fuselage machines. More than one piled into the deck in vertical dives, and much repair work was on hand. (Manny Andrade did a fine piece of work, grafting the rear of one fuselage to the front of another, and producing a machine that scored a very useful duration.) Hofmeister and Perryman, using twin gear machines, improved in the list, and Elgin, flying a more orthodox type of model remained steadily in 11th place.

Nearly 50 per cent. of the entry had improved on their 1st Round times, but the crop of repairs was steadily

increasing, and the proxy flown entries of Ford (Canada) and King (Australia) had been withdrawn. Nearly all the British team had improved their placings, but it still appeared to be anybody's contest, with Tubbs in a strong position with a 25-second lead.

A Met. report received towards the close of this round indicated that conditions were due to get worse, and high winds and rain were promised by 8 a.m. the following morning. Knowing the accuracy of Jami-Jarvi forecasts, the Jury decided to advance the starting time of Round 3 by two hours, and competitors were warned to be on hand for a start at 3 a.m., the round to close at 4.30 a.m.

The contest area was by this time being steadily deserted, and by the time 11 p.m. had been reached there was a bare handful of officials and competitors on the field, all others having returned for coffee and an attempt at sleep. With misgivings for the following morning, most got down to rest with the fervent hope that rain would not come before the closing of the contest.

THE LAST ROUND

A somewhat subdued assembly gathered on the field by 3 a.m., and one could not call the proceedings exactly hilarious! With interest centred on the few top men, it was difficult to know just which tactics would pay dividends. Though the light was quite good, it would obviously improve as the time advanced, with consequent better chances of the model being kept in sight for longer periods. Against this was the threat of poorer conditions, and it was therefore no surprise to find most competitors anxious to conclude their flying in good time.

All-out efforts were now the order of the day, and naturally all eyes were on Tubbs when he made his last attempt. It is probable that inexperience and/or competition nerves got him at this stage, for he allowed his attention to become diverted from the job in hand when winding for the last time, and with model-holder Evans trying to keep his attention on the job he became agitated about the position of the take-off board. When looking round to ensure that this factor was to his requirements, he allowed the winding hook to slip, and had many anxious seconds getting the nosepiece right.

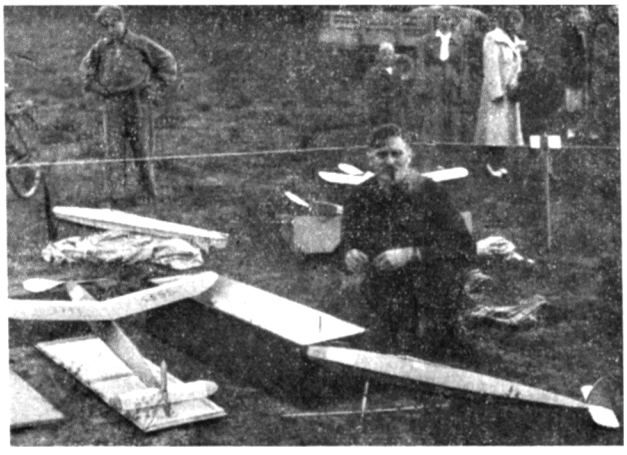
It was obvious that something was not quite correct on launching, for the model did not get away as cleanly as on previous flights, and there were moments when it seemed that it would stall out. However, after some seconds the job steadied down, but it was certain that much headway had been lost, and his score of 3 : 06·6 confirmed this. However, with his 2nd Round lead of 25½ secs. it meant his nearest rival would have to pull in well over 3½ minutes to head him, and it was now just a case of wait and see.

We did not have long to wait, for Stark (Sweden) had also decided that the earlier the better, and with a fine flight of 4 : 06·5 came up to top place.

Could de Jong, Lustrati or Deschepper also pull that little extra out of the bag? Tension was increasing by this time, and very few competitors left the area when their last attempts had been completed. (But what of three members of the Italian team who had gone back to sleep after being called for the 3rd Round!!! I wish I could understand Italian and had been around when team-manager Tione learnt the position!)

A. Leardi (23rd) of the Italian team is given some advice by team-mate Kannenworf before releasing his model. Below: Ted Evans holds for Henry Tubbs on the last wind-up. A few moments later, Tubbs delayed the launch when checking take-off position and so lost valuable duration with a tired and probably bunched motor.

Below: The Belgian corner with Deschepper and pipe, in centre. Diamond fuselages, with unusual built-up 'spine' wing mounting platforms were features of the Belgian models. Deschepper used a variable pitch prop on his entry.



Top table at the final dinner shows evidence of a happy repast. Left to right, Colonel Winter, Secretary-General of the Finnish Aeronautical Association, Sune Stark the Wakefield winner, Professor Ylinen the President of F.A.A. and Henry Tubbs who came second for Britain.

Immediately the round was declared closed a dash was made for Sune Stark, and he was tossed into the air with many Scandinavian "Rahs" in typical Swedish manner. His was a well deserved win, for in contrast to many his times had steadily improved as the contest proceeded, and in his quiet, steady manner he had gone on to win the premier trophy in the world of aeromodelling with a complete lack of fuss. So unnoticed was his flying that it came as a surprise to many of us when his name was announced as having headed Tubbs for the lead.

In spite of a fine 3 : 09·1 Lustrati could not head the Swedish and British leaders, and it was left to de Vries, the young Hollander, to return the best time of the concluding round with 4 : 16·5, bringing him from 18th to 6th place. de Jong's times, as did Tubbs', became less with each round, and so the contest wound to its close, all eyes on the clock and many minds on a good solid sleep.

Average times for the final round were, as was to be expected, lower (by some 34 seconds) and only nine competitors were successful in bettering the 3 minute mark. However, in view of the fairly considerable drift encountered this year, the standard of flying was excellent with the majority of the competitors, though we have yet to realise the "three maximum" contest we are so regularly threatened with by the armchair experts.

FINAL RESULTS

			3rd Flight	Total
1.	STARK, S.	Sweden	246·5	705·2
2.	TUBBS, H.	Great Britain	186·6	676·2
3.	LUSTRATI,	Italy	209·1	664·2
4.	de Jong, J.	Holland	189·8	653·9
5.	Hofmeister,	U.S.A.	204·8	629·4
6.	de Vries,	Holland	256·5	621·6
7.	Andrade, M.	U.S.A.	208·3	614·8
8.	Deschepper,	Belgium	164·0	609·6
9.	Holland, F.	Great Britain	187·4	598·6
10.	Cassola, F.	Italy	190·2	598·2
11.	Dowsett, I.	Great Britain	166·7	566·8
12.	Elgin, J.	U.S.A.	156·0	560·1
13.	Dijkstra, G.	Holland	170·8	505·4
14.	Gilg, P.	France	113·5	487·1
15.	Perryman, G.	U.S.A.	85·2	463·7
16.	Ferber, M.	Belgium	106·3	456·8
17.	Fullarton, J.	Australia	117·0	453·1
18.	Lonergan, A.	Australia	103·0	436·7
19.	Lippens, C.	Belgium	168·0	433·4
20.	Woodhouse	Great Britain	23·4	431·4
21.	Dijkstra, A.	Holland	79·4	430·6
22.	Balasse, E.	Belgium	124·0	424·1
23.	Leardi, A.	Italy	1·3	422·1
24.	Thomas, J. F.	Holland	126·0	398·0
25.	Lim Joon, A.	Australia	146·3	396·4
26.	de Kat,	Holland	1·5	395·5
27.	Pelegi, G.	Italy	—	388·7
28.	Sadorin, E.	Italy	—	381·3
29.	Foster, J.	U.S.A.	—	364·3
30.	Eliasson, H.	Sweden	110·2	362·5
31.	Borjesson, B.	Sweden	133·5	356·7
32.	Rockell,	Great Britain	101·2	353·3
33.	Blomgren, A.	Sweden	164·0	338·0
34.	Huhtinen, P.	Finland	85·7	322·2
35.	Wood, J. H.	Canada	—	314·3
36.	Boxall, F. H.	Great Britain	16·0	308·6
37.	Johanson, A.	Finland	41·0	299·7
38.	Gerlaud, E.	France	140·6	294·0
39.	Kneeland, D.	U.S.A.	70·6	272·3
40.	Pointel, B.	France	—	246·8
41.	Silmunen, T.	Finland	92·0	220·8
42.	Tahkapaa, M.	Finlnad	105·5	195·5
43.	Morris, C.	South Africa	86·0	184·3
44.	Faiola, D.	Italy	—	183·0
45.	Walter, J.	Canada	—	171·4
46.	Kivikataja,	Finland	—	158·3
47.	Ellila, A.	Finland	—	136·9
48.	van Rensburg, S.	South Africa	—	116·2
49.	Ford, A.	Canada	—	61·3
50.	Holmes, J.	Australia	—	46·0
51.	King, A.	Australia	—	6·0

DETAILED RESULTS

AUSTRALIA

Fullarton, J.	(Royle)	151·1	185·0	117·0	453·1
Lonergan, A.	(Bryant)	164·7	169·0	103·0	436·7
Lim Joon, A.	(Santala)	186·0	64·1	146·3	396·4
Holmes, J.	(L. Santala)	—	46·0	—	46·0
King, A.	(Sandin)	6·0	—	—	6·0

BELGIUM

Deschepper, P.	202·2	243·4	164·0	609·6
Ferber, M.	223·5	127·0	106·3	456·8
Lippens, C.	157·1	108·3	168·0	433·4
Balasse, E.	118·1	182·0	124·0	424·1

CANADA

Wood, J. H.	(Helenius)	209·1	105·2	—	314·3
Walter, J.	(Relander)	151·4	20·0	—	171·4
Ford, A.	(Kauhanen)	61·3	—	—	61·3

FINLAND

Huhtinen, P.	115·0	121·5	85·7	322·2
Johanson, A.	132·5	126·2	41·0	299·7
Silmunen, T.	108·0	20·8	92·0	220·8
Tahkapaa, M.	1·0	89·0	105·5	195·5
Kivikataja, A.	99·0	59·3	—	158·3
Ellila, A.	130·0	6·9	—	136·9

FRANCE

Gilg, P.	236·0	137·6	113·5	487·1
Gerlaud, E.	12·5	140·9	140·6	294·0
Pointel, B.	218·0	28·8	—	246·9

GREAT BRITAIN

Tubbs, H.	252·7	236·9	186·6	676·2
Holland, F.	221·2	190·0	187·4	598·6
Dowsett, I.	215·9	184·2	166·7	566·8
Woodhouse, R.	224·0	184·0	23·4	431·4
Rockell, F. W.	115·6	136·5	101·2	353·3
Boxall, F. H.	149·2	143·4	16·0	308·6

HOLLAND

de Jong, J.	258·1	206·0	189·8	653·9
de Vries, C. R.	194·8	170·3	256·5	621·6
Dijkstra, G.	119·5	215·1	170·8	505·4
Dijkstra, A.	197·4	153·8	79·4	430·6
Thomas, J. F. (Seton)	122·0	150·0	126·0	398·0
de Kat, H. L. F.	158·0	236·0	1·5	395·5

ITALY

Lustrati, S.	226·0	229·1	209·1	664·2
Cassola, F.	172·0	236·0	190·2	598·2
Leardi, A.	192·5	228·3	1·3	422·1
Pelegi, G.	177·0	211·7	—	388·7
Sadorin, E.	186·3	195·0	—	381·3
Faiola, D. (Kannenworf)	—	183·0	—	183·0

SOUTH AFRICA

Morris, C. (Viherialehto)	37·3	61·0	86·0	184·3
van Rensburg (Sarrinen)	70·0	46·2	—	116·2

SWEDEN

Stark, S.	226·2	232·5	246·5	705·2
Eliasson, H.	122·8	129·5	110·2	362·5
Borjesson, B.	5·7	217·5	133·5	356·7
Blomgren, A.	21·0	153·0	164·0	338·0

UNITED STATES

Hofmeister, A.	201·0	223·6	204·8	629·4
Andrade, M.	226·0	180·5	208·3	614·8
Elgin, J.	212·1	192·0	156·0	560·1
Perryman, G.	208·5	170·0	85·2	463·7
Foster, J.	211·7	152·6	—	364·3
Kneeland, D.	190·3	11·4	70·6	272·3

It is interesting to note that the Wakefield Contest has now been won by the twin-return gear system for three years in succession, but I forecast some very interesting developments during the next twelve months now that the potentialities of the "Everitt" type machine have been demonstrated. In fact, the phrase "What we want is longer and lighter fuselages!" became a password at Jami-Jarvi, though as Andrade said, "having been ribbed by experts" they weren't worried. (Best joke of the day was perpetrated by Paul Deschepper, who spent many night hours producing an enormously long fuselage fitted up with wing and tail from a normal Wakefield, the job being at least 8 feet long!)

And so ended another Wakefield event, and the name of Sweden is added to the long list of British and American wins and the double entry of Finland and that of France on this premier and well respected Trophy donated so many years ago by Lord Wakefield. Could he have witnessed the fine spirit of sportsmanship and international friendliness engendered by the Trophy that bears his name, his action in creating this world-wide contest would be amply rewarded.

Proceedings were completed with an enjoyable dinner, before which the Trophy and other awards were

Above: Vice-President of the Finnish Aeronautical Association, Mr. Wegelius, congratulates Henry Tubbs on his placing. To the right of the coveted Wakefield trophy are memento Goblets, and the Scandinavian Cup which was won this year by the Swedish team.

Left: Paul (the 'Clown') Deschepper after his decoration for efforts unmentionable during the contest. His eight placing in the results and brilliant 'speech' at the dinner made him the character of the 1951 Wakefield contest.

presented to the top men by the Vice-President of the Finnish Aeronautical Association, Mr. Wegelius—following a speech by the President, Arvo Ylinen.

The Swedish team were also presented with the Scandinavian Cup, having beaten their only rivals this year, Finland. Denmark and Norway, the other members of the group, were not represented.

Fun waxed fast and furious as the evening wore on, and that aeromodelling "clown" Deschepper brought the house down with his "speech" ("I know so many languages, I cannot understand me, myself!") and his annointment with a jug of milk!!

With sincere appreciation of Finnish hospitality, we said goodbye in the early hours of Monday to Jami-Jarvi, and now look with confidence to the 1952 Contest in Sweden. With memories of the 1950 A/2 event in that country, we can assure all Wakefield aspirants that it is worth a lot of hard work to get into the team for next year.

Right: All packed up and ready to go home-at 6 a.m.!!! The British contingent had done well for themselves and came very close to victory, no wonder they are smiling at such an early hour.

The 1951

WAKEFIELD WINNER

Sune Stark of Sweden

THE first man to win the coveted Wakefield trophy for Sweden is a veteran at this class of model, and a pioneer in aeromodelling in his country. Sune Stark, who is an aeronautical engineer by profession, has been an aeromodeller for over 17 years, and has competed in five Wakefield contests. His first was that held at Fairey's in 1937, when Fillon took the honours for France. Sune was placed eighth in the results.

Twice winner of the Swedish Wakefield championships, he is a member of the famous Vingarna (The Wings) Club in Stockholm, which was founded 15 years ago and has in fact been chairman of the club for the past eight years. Incidentally, the Vingarna Club is quite unique in that the preponderance of its members are Wakefield fliers, and almost every year, with few exceptions, the Swedish Wakefield team has included a member of Vingarna.

Sune is 32 years of age, married, and has one small daughter aged three. He comes of a family which has been prominent in Swedish aviation circles for many years. His father, Tyko Stark, has been Chairman of the Model Aviation Section of the K.S.A.K. (Royal Swedish Aero Club) for some considerable time, and both Sune and his brother, Borje Stark, are members of this model committee.

We first encountered Sune at the 1949 Wakefield at Cranfield Aerodrome, where this tall blonde Swede flew a model which is obviously an ancestor of this year's winning model. At the 1950 contest at Jami Jarvi he showed remarkably consistent flying, placing 11th in the first round, 11th in the second and 12th in the final list.

His victory is no flash in the pan effort but the result of steadily improving flying technique and model design over a period of many years.

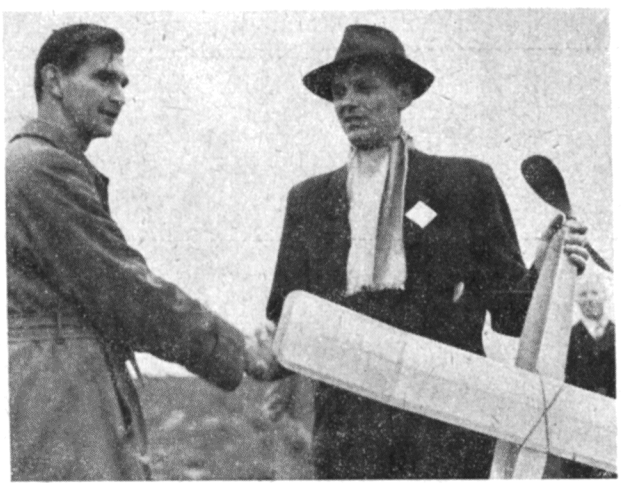
Congratulations, Sune, on a well-earned win!

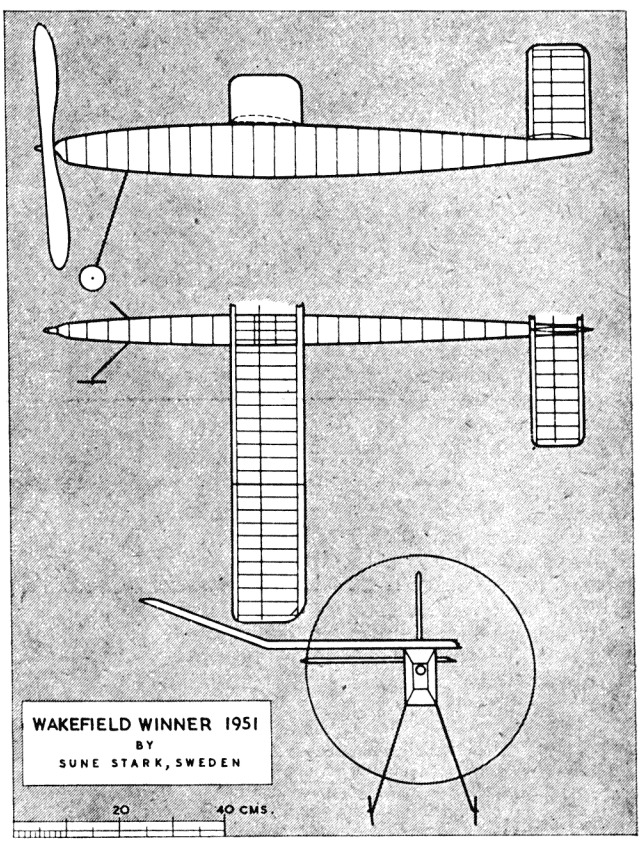
HIS MODEL

WING :	41¾ in. span ; 5⅝ in. chord, untapered.
TAIL :	19 in. span ; 3⅞ in. chord, untapered.
FIN :	8½ in. high ; 3⅞ in. chord, untapered.
FUSELAGE :	41 in. long ; 31½ in. between hooks.
PROPELLER :	19¼ in diameter by 26 in. pitch.

Airframe weight: 4 ounces. Rubber weight: 4½ ounces.
The motor is arranged in a return gear system.

Tubbs of Leeds, second place man congratulates the winner.





Left: Joe Mansour's twinJetex 350 Helicopter begins its vertical ascent. Right: Nachtmann's superb 54" version of the D. H. Beaver won its class, is Elfin 1·8 powered. Fortress below has 4 E.D. IV diesels, weighs 10 lb and was made by A. Briggs at left.

14TH NORTHERN HEIGHTS GALA

IN keeping with their accepted outstanding luck, the Northern Heights had almost perfect weather for their Gala at Langley on June 24th, although it must first be admitted that patches of haze toned down some of the high flights. This was particularly so in the rubber powered and Queen's Cup events, and although we are happy to record at long last a win in the latter contest for Bob Copland, we nevertheless commiserate with Howard of Kentish Nomads (last year's winner) who lost his machine on its first flight when scoring a maximum.

The usual crowd was in evidence, although we very much doubt the figure of 15,000 published in another journal! Nevertheless, everybody seemed to be having a good time and although there were certain criticisms made against the organisation of certain sections, nobody seemed to be all that worried. One criticism we feel we cannot allow to pass is that levelled against the extortionate charges for refreshments, for it must be remembered that the majority of visitors had already incurred considerable expense in the shape of coach fares, etc., and then to be stung 1/- for a sandwich, and 4d. (reported as 6d. from some quarters) for a cup of tea is somewhat galling.

As expected, some beautiful machines were on view in the concours class, but our opinion is strengthened that in future all models entered in a concours section should be required to make a qualifying flight, for it seems rather futile to display an alleged free flight model beautifully decked out but never to take the air.

Results of the contests are to be found in Club News.

Right: Youngster Norman Peterson peering over the wing of S. Bradshaw's giant 12' sailplane. Below left: Irwin Polk & Reg Parham. Bottom, left: Josh Marshall (Hayes) & Mills ·75 Autogiro, weight 8 oz., 30" rotor dia. Centre: M. Harrop holds A. G. Turnbull's Amco 3·5 multi-spar "Sliver". Right: Swept class A racer by R. Pledge.

AT a recent Gala day, Consus noted with great satisfaction, that at least three of the gadgets published in this feature last November, were used in winning models. The novel trick of fitting a cycle valve to a Valvespout filler can, and using bicycle pump pressure to fill team racer tanks in minimum time, has caught on with extraordinary popularity.

Perhaps some of the eight new ideas presented this month will find equal interest. At least there is something for everybody, whether your favourite is Power, Rubber or Glider.

No. 1 on the list is the best match and fag saving device for non-smokers we have yet seen at Eaton Bray. A product of W. P. Holland, who only just missed a place on the 1951 A/2 Glider team, it has already proved itself in F/F power and glider types in the Apsley club. Here's Mr. Holland's own description of this dethermaliser unit that needs no " fire ".

" Feeling rather fed up with damp fuses, loss of matches, no fags, old clocks, and temperamental air-draulics ; out came the back of an envelope again, and the " Hurdy-Gurdy " timer was born. Here's how it goes—a 7-in. loop of ¼-in. flat rubber pulls a piece of Nylon line, 11-in. long, which is wound on an 18 s.w.g. shaft. A belt driven fan, running on a couple of pins slows things up, till all the nylon is unwound. At this point the remaining energy in the rubber is released to operate the dethermaliser.

An engine cut-out can also be operated from the same timer by a second piece of nylon, rigged to come off the outside part of the shaft, after the first few turns.

The duration of the timer is, of course, dependant on the number of turns of the winding handle (40 for 5 mins.) and for trimming gliders for towline stability, two or three turns on the handle will save a long trek back to base after each test 328 ft. tow.

Get it ?—It's that last second flick of the release arm that puts all the pull on the release pin, and up pops the tail, or out goes the 'chute, as the case may be.

Have you ever had a job that is suited to an assortment of motors, and you would like to give each a try to see which is best ? D. G. Taylor of Mansfield suggests idea No. 2, which he has already employed in his Mercury Mk. 1 team racer to test the Dooling 29, McCoy 29 and Frog 500 for speed and duration. By using a set of ordinary engine bearers slightly wider apart than normal, the Dural mounting plates can be used as adaptors so that any engine may be fitted. Thus the wooden bearers are drilled only four times for the plate mounting, and by making separate Dural plates for each type of engine, the wooden bearers remain strong as ever, without being weakened by the usual mass of holes.

All free-flighters, Power, Rubber or Glider, will appreciate idea No. 3 from K. Watts, secretary of the Broughton & D.M.C. at Preston. By fitting a simple hinged platform for the tail unit it is possible to add packing to one's heart's content and still have a rigid tailplane. The same idea could easily be applied to wings, with the hinge at the trailing edge end of the platform. And why not attach another extra elastic band from the tail to the platform so that the hinge is used to give d/t action ?

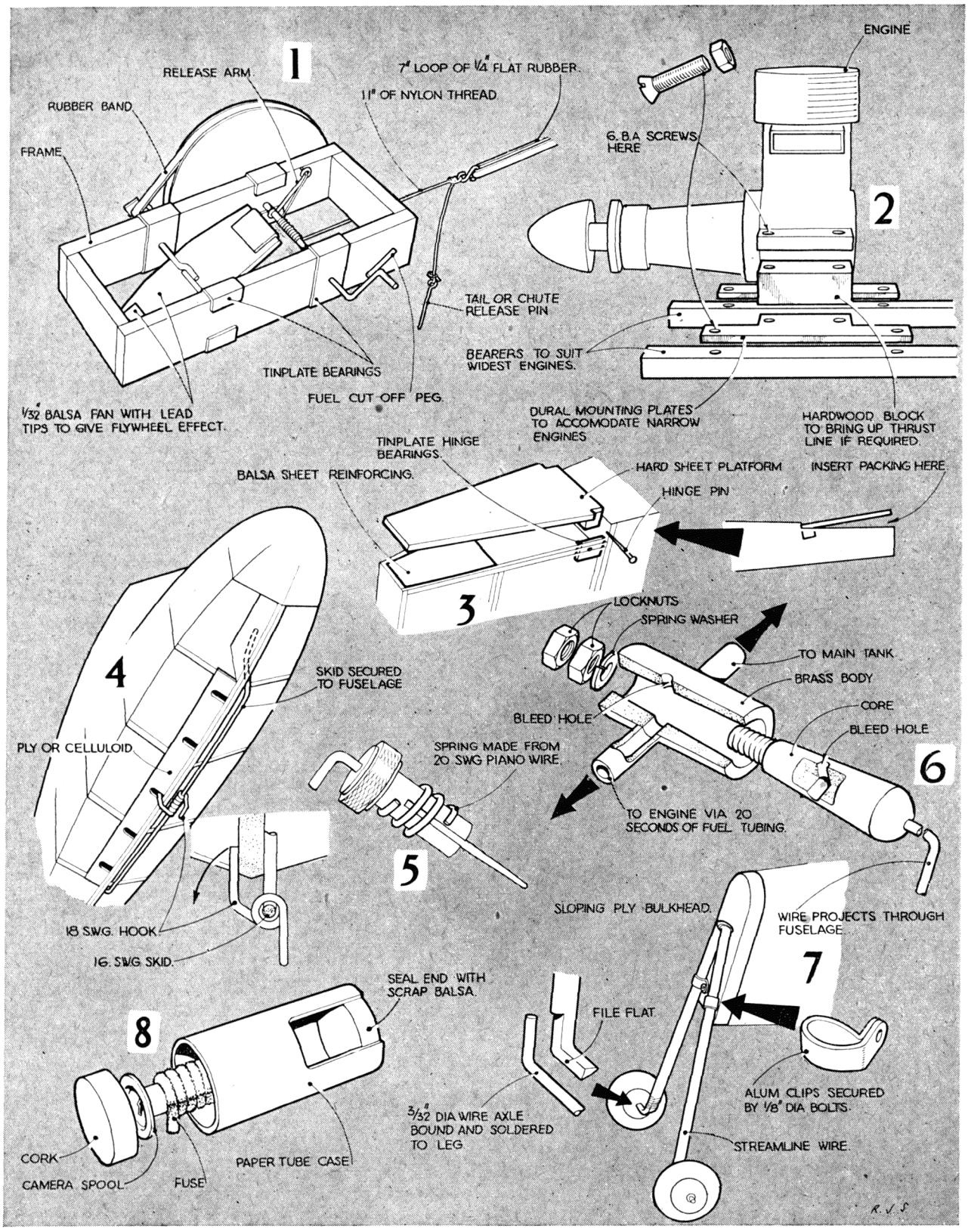
Yet another simple brainwave for adjustable towhooks appears in No. 4. Our file on towhooks now rivals that of retracting undercarriages ! A. J. Longstaffe of the Belfairs (Westcliff) Club thought this one up. The drawing is self explanatory, and shows how easy it is to shift the hook position quickly by merely twisting it about the fixed skid, and sliding it to the desired slot position. The 18 s.w.g. hooks should be a reasonable fit on the 16 s.w.g. skid ; but for clarity, our sketch shows a loose fit. Though best suited to a diamond fuselage, the idea can be adapted for application to any other cross-section fuselage.

Simplicity is a keynote of sketch 5, sent by J. Jolley of Flixton, near Manchester. It's a cure for those unfortunate sufferers of needle-valvitis, or in other words, the disease of the unscrewing needle-valve. A small coil spring can be made by winding three or four turns of 20 s.w.g. piano wire around a ¼-in. rod. This is pushed on the split tube needle body, and being a tight fit, always compresses the needle body into the actual valve. Only severe vibration will shift this arrangement, once the needle has been set.

For anyone with small workshop facilities, the simple fuel shut-off valve shown as No. 6, will offer no difficulties. The original, by E. J. Upton of Hadlow, Kent, was made with a brass body. Attached by fuel line to a main tank, there is a straight through feed to the engine when the tap is set " open ". On a F/F contest model, a length of fuel tube for the desired run can be fitted twixt tap and engine, so that, when twisted 90 degrees just before the launch, the tap disconnects the main tank and opens the fuel tube end to the air-bleed. Holes in the tap core form a " tee " junction.

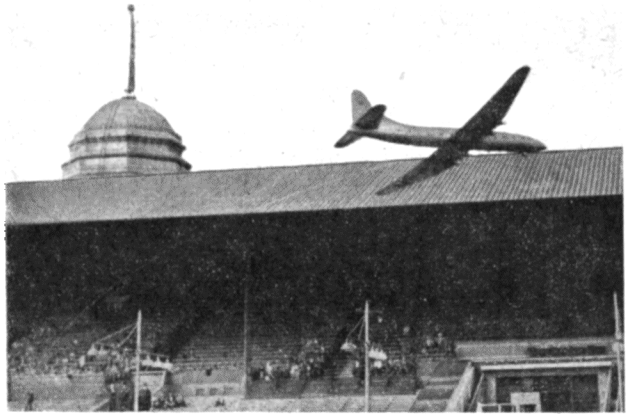
From far off Australia comes No. 7 by Jim Fullarton. It's a neat application of disused aircraft streamline brace wire as undercarriage wire on F/F or C/L models. If you happen to know of any old biplane wrecks, get scrounging for this useful material, its streamline section will boost both appearance and speed.

An excellent wheeze for keeping one's powder dry, or should we say d/t fuse ?, is the use by W. F. Moule of Lanark, in No. 8, of an ordinary camera spool, with a special card tube made to fit. Any chemist will be pleased to hand out an old unwanted spool, so why not try this gadget and get rid of that salpetre'd feeling in the old jacket pocket ? The fuse will keep fresh forever if the tube is airtight.


1
RELEASE ARM
7" LOOP OF 1/4" FLAT RUBBER
11" OF NYLON THREAD
RUBBER BAND
FRAME
TAIL OR CHUTE RELEASE PIN
TINPLATE BEARINGS
FUEL CUT OFF PEG
1/32" BALSA FAN WITH LEAD TIPS TO GIVE FLYWHEEL EFFECT
2
ENGINE
6 B.A SCREWS HERE
BEARERS TO SUIT WIDEST ENGINES
DURAL MOUNTING PLATES TO ACCOMODATE NARROW ENGINES
HARDWOOD BLOCK TO BRING UP THRUST LINE IF REQUIRED
3
TINPLATE HINGE BEARINGS
BALSA SHEET REINFORCING
HARD SHEET PLATFORM
HINGE PIN
INSERT PACKING HERE
4
SKID SECURED TO FUSELAGE
PLY OR CELLULOID
18 SWG HOOK
16 SWG SKID
5
SPRING MADE FROM 20 SWG PIANO WIRE
6
LOCKNUTS
SPRING WASHER
TO MAIN TANK
BRASS BODY
CORE
BLEED HOLE
BLEED HOLE
TO ENGINE VIA 20 SECONDS OF FUEL TUBING
7
SLOPING PLY BULKHEAD
WIRE PROJECTS THROUGH FUSELAGE
FILE FLAT
ALUM CLIPS SECURED BY 1/8" DIA BOLTS
3/32" DIA WIRE AXLE BOUND AND SOLDERED TO LEG
STREAMLINE WIRE
8
SEAL END WITH SCRAP BALSA
CORK
CAMERA SPOOL
FUSE
PAPER TUBE CASE
R.J.S

FESTIVAL CONTROL LINE

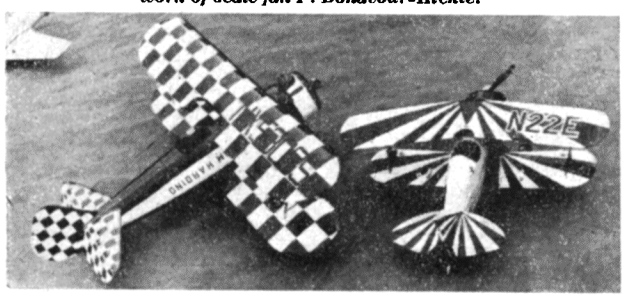
HELD AT WEMBLEY STADIUM DES



Brabazon inside Wembley Stadium. Peter Holland's 10 ft. span version of the full-size giant made several demonstration flights.

Aided by clubman and 5 c.c. winner, P. Wright, M. Billinton prepares one of his 10 c.c. models. He placed 2nd with 124·9 m.p.h.

Above: Mac Macmess prepares to swipe at a McCoy, with the moral support of E. London clubsters. Below: Two scarlet and white scale stunters. Stearman P.T. 17 at left belongs to Sam Harding, has Atwood Champion motor. Pitt's Special, "Little Stinker," is the work of scale fan P. Donavour-Hickie.



TO most control line fans "Wembley" day was to be THE day of the year. The opportunity to fly over the superb turf, comparatively sheltered no matter how fierce the wind blew, the chance to compete in the finest conditions possible with entries from all parts of Britain—and the promise of well-planned organization, made July 14th a day for control-liners to look forward to with utmost anticipation.

It was the largest all-control-line meeting yet held, despite the waning interest in speed and stunt. The attendance, and moreover, the standard of flying exceeded both the Brighton and Dover meetings by a recognizable margin. Three new records were established in the speed circles, which were unusually continuously active, and the stunt event drew a succession of outstanding flights, each of which was rewarded by a round of applause from the appreciative crowd.

The attending public had as good a display as any group of aeromodellers could possibly provide under the conditions prevailing. The contests were unfortunately cramped with the time limitation, and the competitors frequently cramped by their own kin in the queue to get into the air. All credit to Capt. S. D. Taylor, and Malcolm Young on the mike for getting so much done in far too little time.

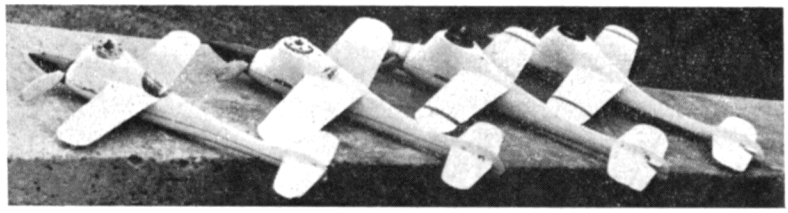
Team racers operated under restricted conditions to one side of the field. Part of the circle was 3 ins. lower than the rest, and the ridge division accounted for three of the day's unfortunate prangs. However, the finals provided some of the most exciting flying of the day, the Class A finishers were only a few laps apart when R. Edmunds of High Wycombe (E.D. 2·46 O/D model) completed his 200th lap in a final that appeared to be almost entirely between junior modellers.

Class B finalists gave a spectacular finale to the meeting when all five plopped-in with the lines wrapped like barbed wire entanglements. From this mêlée, which involved four very fast racers and one long-distance job, three managed to sort themselves into flying condition to continue the ten mile race. Wily Johnny Jones of Birmingham M.A.C. won by a short lead over Harry Bohling of Bushey Park. Though at times the latter's McCoy 29 job was obviously the faster of the two, Jones used all the tricks, and a surprising lappage of 76 laps at 75 m.p.h. with an ancient Hurricane "24" and a tank of only 26 c.c.

At the speed circles, a host of brand new models, presumably prepared for the occasion, queued to fly. Among them were the all alloy jobs built by Ted Martin, equipped with high revving motors, and which travel in the now unusual clockwise direction. Fred Guest established the fastest time of the day with 133 m.p.h. in Class VI using a Dooling 61 and so makes a new British record for that class. The same make of motor, Dooling, (29), enabled Peter Wright to do 124·54 m.p.h. in Class IV, making another record which we trust he will repeat in Belgium, while A. Coles (Bristol and West) raised the Class II figure to 85·7 with his E.D. 2·46. By his flight of 130·56 m.p.h. in the Jet Class, B. Hopkins of Bristol Phoenix completed the picture, for all the F.A.I. control-line speed records were broken, though the 5 c.c. and 10 c.c. did not exceed the standing record

CHAMPIONSHIPS

CRIBED BY R. G. MOULTON



Right: J. Batchellor's collection of 'Hell-Razors' with McCoy 19, 49 and 60 and Dooling 29. Next: R. Mitchell, J. Jones and L. Lawrence with 'cheer' leader at rear, winners of the Class B race, pose with Jones' pretty racer.

by the required 10 k.p.h. However, once ratified by the F.A.I. the performances by Bristolians Coles and Hopkins will become world records for Class 1 and Jet.

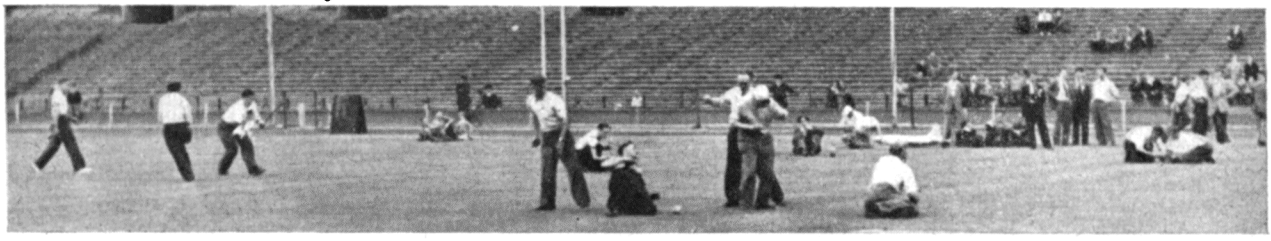
Of far greater interest to the crowd, the demonstrations of scale models were always well applauded. Peter (the beard) Holland of Apsley did his party turn with the hard-wearing four-Elfined "Brab" and obliged with a most realistic long take-off, and equally realistic landing, having retracted and lowered the undercart during the flight. He was followed by some masterly flying on the part of Johnny Nunn, making the 71st and 72nd flights of his beautiful Dynajet powered De H. Vampire, and showing up other jet starters in the process.

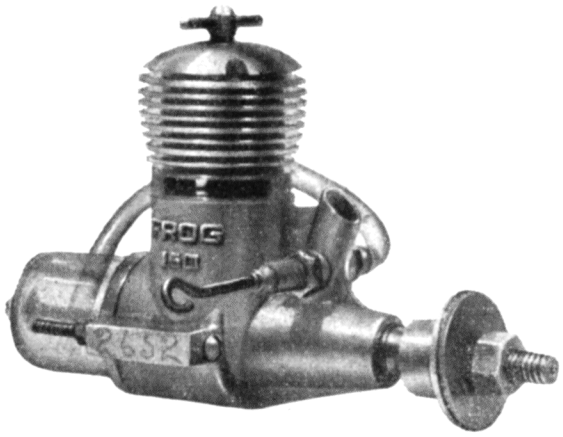
But the spectacle of the afternoon was a four-in-a-circle "battle" between Peter Donavour-Hickie's two-Mills powered Sea Hornet, Phil Smith's Focke-Wulf 190, Albert Brigg's Flying Fort and a Short Sturgeon. These scale models circled in circus fashion for a few laps, then Phil let loose with the F.W. 190, making diving passes at each of the other planes. He was still buzzing the Fort when the other two had landed, and even got into the inverted attack stage when a momentary diversion (or perhaps retaliation from the Fort) sent the 190 into the deck like a pile of matchwood.

Throughout the afternoon, interspersed with the demonstration flights, stunt entrants did their best for judges Harry Hundleby and Dicki Dickson. Conspicuous by their absence were the Macclesfield experts and the two British reps for Knokke, Ken Marsh being abroad, and Alan Hewitt, like so many more unfortunates unable to attend because of Saturday work.

Pete Russell of Worksop stood out as the winner as he piloted his Amco powered Monitor through very smooth manoeuvres for what must be his umpteenth first place with this same model in two season's contests. It might well be the model with the largest number of first places to its credit. Even Russell did not complete his square loops in four corners, a fault common to every competitor; but by far the greatest single fault of the stunt men was the tendency to wander through consecutive eights and loops. Some finished their last loop at 90 degrees to their first, while others mangled eights into what might have been cottage loaves!

Right, Centre: Study of concentration as Class A pilots dice for positions, and lap counters check performance. Right: First to fly in Wembley Stadium, I. Blenkinsop adjusts the spinner of his Atwood Champion powered 500 sq. in. model. Below: Consternation in the middle of the Class B final, 10 lines tangled, all five models pranged and four of the pilots unravelling the knitting—yet three models were airborne again within minutes.





The

FROG 150

IN last month's *Engine Analysis* I spoke of the interest which attaches to the new products of old-established manufacturers, and the Frog " 150 " forms another excellent example. At the last *Model Aircraft Exhibition* in 1946, I remember seeing on the Frog stand, the prototype of a small diesel engine about to be put into production. This did, in fact, appear on the market shortly afterwards as the Frog " 100," which for some years was so popular, especially as a beginner's engine. This old timer, together with the later " 160 " and " 180 " engines, has now been superseded by this latest Frog effort.

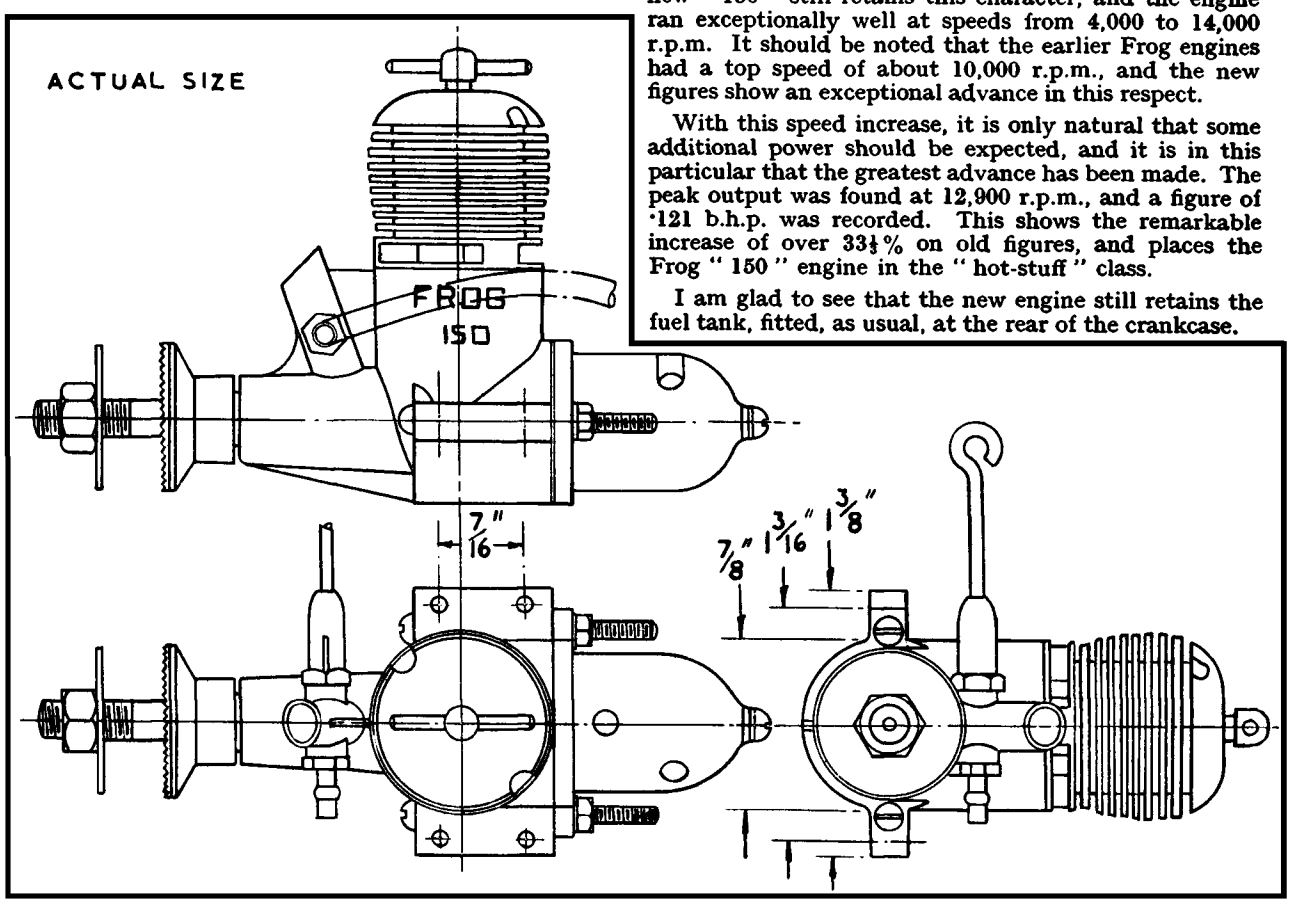
It must be said that the latest Frog engine bears little resemblance to its predecessors, in type, appearance or performance, because whereas the earlier engines were chiefly noteworthy for their reliability, and fair output at moderate speeds, the new " 150 " has been lifted into the super class in all these respects.

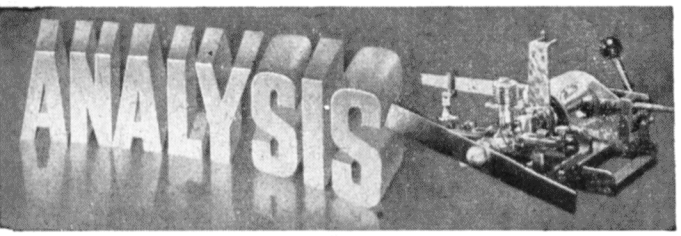
In appearance, it must be confessed, the new " Frog " engine has lost some of its individuality, as it follows closely the lines of some units already on the market. At the same time, the quality and finish of the die-castings seem to have been greatly improved, so that the engine has a cleaner and neater appearance than of yore.

I have had reason before to speak of the good running qualities of the Frog range, because the even running at all reasonable speeds simplifies the engine testing. The new " 150 " still retains this character, and the engine ran exceptionally well at speeds from 4,000 to 14,000 r.p.m. It should be noted that the earlier Frog engines had a top speed of about 10,000 r.p.m., and the new figures show an exceptional advance in this respect.

With this speed increase, it is only natural that some additional power should be expected, and it is in this particular that the greatest advance has been made. The peak output was found at 12,900 r.p.m., and a figure of ·121 b.h.p. was recorded. This shows the remarkable increase of over 33⅓% on old figures, and places the Frog " 150 " engine in the " hot-stuff " class.

I am glad to see that the new engine still retains the fuel tank, fitted, as usual, at the rear of the crankcase.

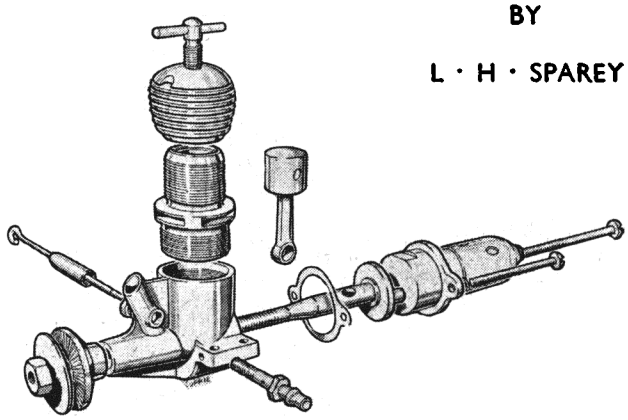




NUMBER 39

BY

L · H · SPAREY



TEST

Engine : The Frog " 150 " Diesel, 1·49 c.c.

Fuel : Frog " Powa-Mix."

Starting : When cold the engine was primed for starting in accordance with the makers' recommendation. This was not necessary with a warm engine, and starting was excellent at all times.

Running : In spite of its advanced design, this engine was remarkably flexible, and ran well and evenly at all tested speeds. At the higher ranges the needle setting appeared to be rather critical.

B.H.P.: Starting at ·058 b.h.p. at 4,500 r.p.m. the curve shows a steady rise in power to a maximum of ·121 b.h.p. at 12,900 r.p.m., with a steep drop above this speed. At 10,000 r.p.m. the power was shown as ·107 b.h.p., so that it is advisable to run as near the 13,000 mark as possible for best results.

Checked Weight : 3·1 ozs. including fuel tank.

Power/Weight Ratio : ·625 b.h.p./lb.

Remarks : In assessing the power/weight ratios, it must be remembered that this takes into account the fuel tank ; most engines of this modern type are supplied less tank. The power/weight ratio of the Frog engine may, therefore, appear lower than some other published figures. At the high end of the speed range, fuel consumption was fairly rapid. But running at 11,000 r.p.m. on an 8 in. × 5 in. prop. the consumption was favourably measured when 15 c.c. of fuel was consumed in 5 mins. 32 secs. This was repeated before and after the main test, always giving the same results. Team race enthusiasts will recognise the economy on fuel. The time to consume fuel in the tank supplied was 1 min. 38 secs.

GENERAL CONSTRUCTION DATA

Name : Frog " 150."

Manufacturers : International Model Aircraft Ltd., Morden Road, Merton, S.W.19.

Retail Price : 49/6 including Purchase Tax.

Delivery : Immediate.

Spares : Immediate.

Type : Compression Ignition.

Specified Fuel : Frog " Powa-Mix " or equal parts by volume of Ether, Paraffin and Castor Oil.

Bore : ·5 in. **Stoke :** ·460 in.

Capacity : 1·49 c.c. ·091 cu. ins.

Advertised Weight, complete with tank : 3·125 ozs.

Compression Ratio : Infinitely variable.

Mounting : Beam or radial, upright, inverted or "side-winder."

Recommended Airscrews : Free Flight, 8 in. × 5 in. Control Line, 8 in. × 6 in.

Recommended Flywheel : 2½ ozs.

Cylinder : Steel, hardened, ground and honed. Screwed into crankcase.

Cylinder Head : Duralumin, turned and screwed to cylinder.

Piston and Contra Piston : Meehanite, ground and lapped.

Crankcase : Aluminium alloy, die-cast.

Connecting Rod : Forged Hiduminium RR56.

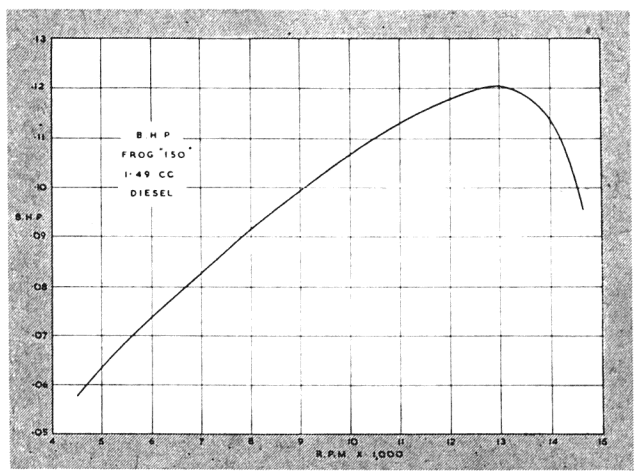
Crankpin Bearing : Plain.

Little End Bearing : Plain.

Crankshaft : Steel hardened and ground.

Induction : Crankshaft rotary valve.

Special Features : Although of different construction to the earlier engines in the Frog range, all the well tried and proven basic design features, including the original internal transfer passages with bevelled tops, are retained, to give high power coupled with compactness and light weight.



Our regular Radio Control Notes contributor, Howard Boys, is caught bending in this photo, taken at Eaton Bray radio-control FFF day. Seen adjusting the wiring of the lightweight receiver in one of his equally lightweight models, Howard continues to display a pair of lean knees—no matter what the weather!

RADIO CONTROL

REFERENCE has been made again recently to people misbehaving themselves by operating their transmitters out of the frequency band we are allowed. As a change from this the writer was pleased to note how many people were up in arms, defending themselves when told their transmitters were off frequency, at the AEROMODELLER Trophy Contest. A number of people reluctantly re-tuned, only to find that the official check had gone wrong and they had been right all the time. The writer had hoped to get a wide range frequency meter calibrated by the official checkers, but under the circumstances this proved impossible.

The only way then, to calibrate this frequency meter, was to fix up the necessary equipment. The frequency standard suggested by Mr. Birden in these notes for June was wired-up using an ex-Gov. VR91 (EF50). Two crystals were available, 2,090 K/c's and 6,780 K/c's, both of them ex-Government. The first one, using the 12th, 13th and 14th harmonics, gave 25·08, 27·17 and 29·26 megacycles respectively. The second one, on the fourth harmonic, gave 27·12 M/c's, which is spot in the middle of our band. From this it was a simple matter to calibrate the meter and also a low power transmitter that was made to tune from 25 to 30 M/c's over 170 degrees on the dial.

This equipment was then used to check the " Flight Control " wavemeter sent to the AEROMODELLER for review. This proved to be right on tune, and therefore, if used as stated in the instructions, a transmitter can be tuned to the correct frequency with confidence. This wavemeter has been designed by a reliable man, but since it is in quantity production, the writer felt it ought to be given a second check. It is gratifying to know that such a useful aid is available to the home constructor.

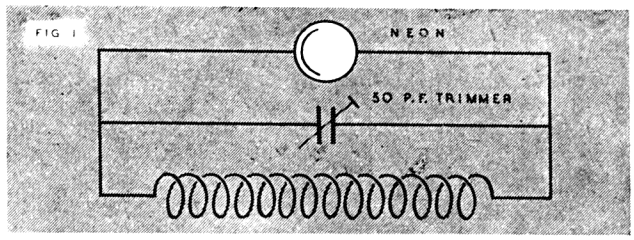
While on the subject of wavemeters, here is a simple design sent in by reader S. W. Rees of West Hartlepool. He says :—

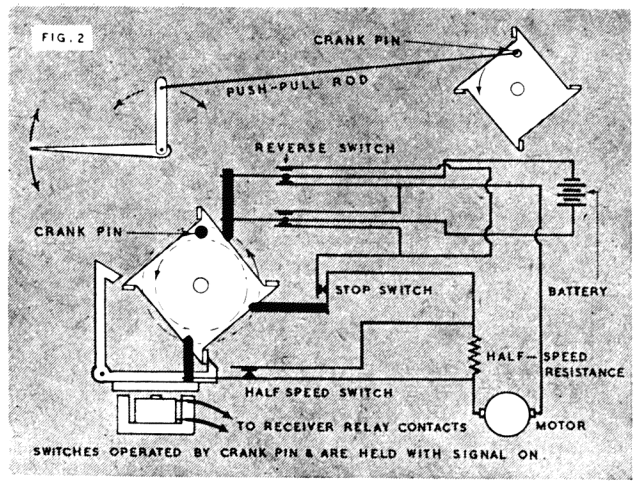
A wavemeter is a boon to anyone for tuning a radio control transmitter. When once set it need not be altered and any number of transmitters can be tuned to it. Any good radio repairer should be able to set it accurately for you, after which it should be sealed. Beware of sharks, however ; a friend of mine was charged 6/– for tuning his transmitter and later found that it was well off frequency !

All that is needed for the wavemeter is a tuned (rejection) circuit with a small neon across it as an indicator. My neon came from the local government surplus junkery and cost 1/–. It strikes at about 80 volts, is 1 inch long by ⅛ inch diameter. There are, I believe, plenty of them about ; but a neon from a spark plug tester will not do. The coil is comprised of 18 SWG ¾ inch dia. and 2 inches long, while for the tuning condenser any 50 pf. trimmer will do. Mount the coil rigidly, preferably on a former so that a severe shock will not distort it, and affect the inductance. The whole should be housed in a small box of thin insulation material, with apertures for trimming and observation of the neon.

The method of tuning the transmitter to a previously set wavemeter is as follows :—

Switch on the transmitter and allow to warm up. Set to oscillate continuously.





NOTES BY HOWARD BOYS

Hold wavemeter close to anode coil of transmitter with the axes of the coils parallel (there must be no metal in between). Adjust the tuning of the transmitter until the neon strikes. Adjust the tuning while the wavemeter is moved progressively away, until the maximum distance is reached where the neon continues just to glow. Your transmitter should now be set to the correct frequency. Incidentally, the aerial should be connected while tuning, as this can affect the frequency. Fig. 1 shows the circuit.

Mr. Rees' remark about his friend's transmitter being off frequency after tuning by the local radio dealer may not have been the fault of the dealer. There are two possibilities. The transmitter may have received a bump in transit that put it off tune, or it may have been tuned to a wrong frequency that was at one time quoted in dealers' instructions. The writer once had an argument with a dealer about it because the dealer had tuned someone's transmitter wrongly, and the instructions were produced. The instructions were later corrected.

Regarding the possibility of transmitters going off tune after being correctly set, hear what Mr. Sinfield has to say on the subject :—

In view of the increasing number of radio control transmitters which are now being observed off frequency I would like to point out the general causes of drift and instability.

In order of importance, the chief troubles are :—

(a) *Low mechanical rigidity.*

(b) *Variations in circuit loading with changing aerial conditions.*

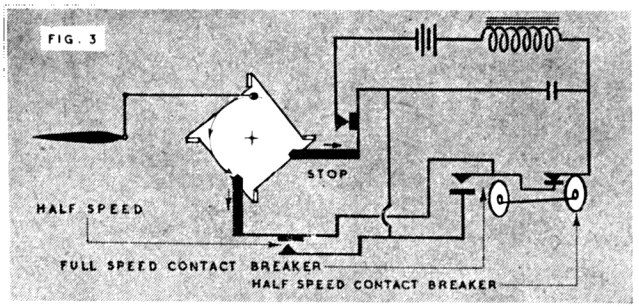
(c) *Poor screening and filtering.*

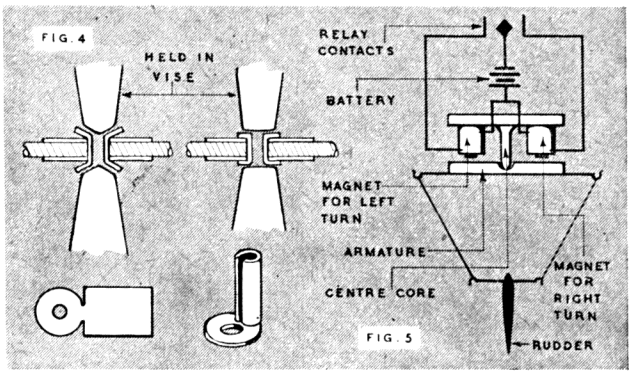
(d) *Large warm-up drift due to bad choice of valve or inadequate ventilation.*

Now for the most suitable methods of avoiding these faults :—

(a) *This is, of course, obvious. Construct the transmitter on a heavy gauge, rigid, chassis (aluminium preferably). The coils should be of very heavy gauge wire, and away from metal chassis, panels, etc., by at least the diameter of the coil. The tuning condensers should be of the miniature air spaced type. The Phillips type concentric trimmer will be suitable if sealed, but mica compression type should not be used. The aerial coupling coil should be rigidly fixed relative to the coil feeding it.*

(b) *This is caused by variations in aerial length, surroundings, people moving about in the vicinity of the aerial and even by the use of an absorption wavemeter if coupled tightly to the aerial. The aerial coupling should be mounted slightly further away from the feed coil than the position which gives maximum output, in order to give less than optimum coupling. The aerial should preferably* not *be coupled to the coil which controls the frequency. (This is accomplished in the tuned grid-tuned plate type of transmitter recommended, as the grid tuned circuit is the main frequency controlling factor and this is virtually isolated from the output loading variations.)*





(c) *The frequency controlling circuit should be individually screened and the whole transmitter enclosed in a metal box. If mains or vibrator supply is used, adequate R.F. and hum smoothing must be used. External control switch leads should be well filtered as should be any power supply leads (if external power supply is used.*

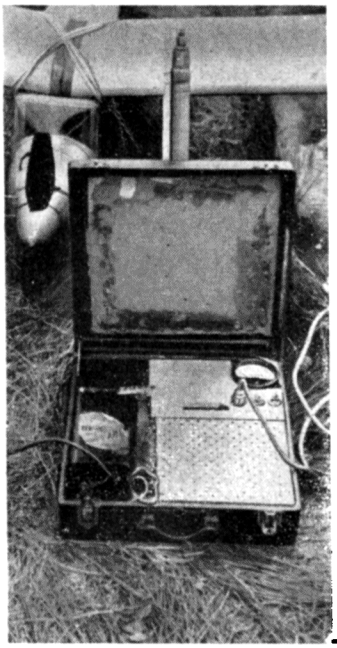
(d) *This is best remedied by use of miniature valves having physically small electrode structure and low inter-electrode capacities,* e.g., *3A5 (DCC 90) and 6J6 (ECC 91). On the grounds of efficiency and mechanical strength the 6 volt valve (6J6) is personally preferred.*

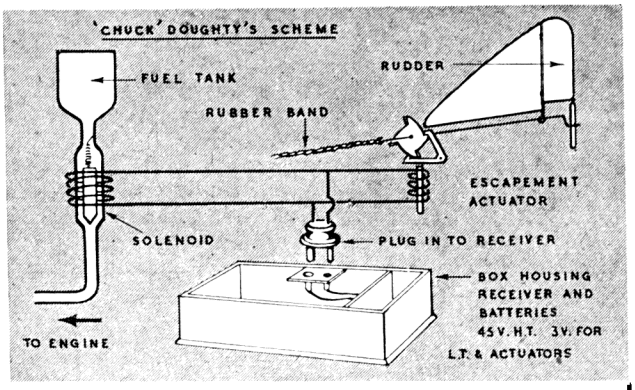
The drift test mentioned in the AEROMODELLER *possibly referred to warm-up drift or perhaps stability after initial warm up. In the single tuned circuit transmitter the variations due to moving about near the aerial or over-coupling an absorption wavemeter are very considerably in excess of this figure.*

When using such a wavemeter, keep as far away as possible and keep the maximum indication as low as possible. The rectifier type of wavemeter using a 500 μA or 1 ma. meter is infinitely better in this respect than the flash lamp bulb type as its greater sensitivity enables it to be used much further from the aerial, for a usable indication, with negligible loading effect.

It should be ruled that the transmitters are either sealed and supplied with a calibration certificate, or accompanied by measuring equipment of certified accuracy. It is a great pity to have this great concession endangered due either to lack of care of ignorance of a few operators."

Mr. Sinfield, like most radio amateurs, seems very worried about a little bit of frequency drift, and most radio amateurs appear to be so concerned with similar





'Chuck' Doughty's simple device for fuel cut-off is shown above and at extreme left. The Solenoid cut-out is operated every time the actuator is tripped; and when a signal is held 'on', the fuel flow is stopped completely. The momentary operation for a normal signal has no effect on the engine performance. With the Tx arranged to be on all the time, and a signal received each time it is keyed off, then the cut-off valve will automatically operate should the model go out of range or transmission fail. Right hand photo shows R. J. Goodman's Attache Case Tx, containing a 2 volt vibrator pack with 2 volt accumulator and DCC 90 valve.

technicalities that few do much practical radio controlling. There is, however, a lot of good sense in what Mr. Sinfield says, and some useful information. Such knowledge makes a very good background to the building of a transmitter. From a practical point of view, however, a bit of frequency drift is not very harmful, providing it does not drift right out of the band, and with normal equipment this is not very likely, though a check with a wavemeter ought to be made occasionally. The amount of drift likely to occur during a flight, or during an afternoon out, is not likely to lead to trouble. Using a single valve super-regenerative receiver it is possible to take a model out flying at odd times for a matter of weeks without checking the tuning. These particular receivers are quite broadly tuned, and at short range at least will answer a transmitter when a bit out of tune.

After calibrating a wavemeter, as stated previously, the writer carried out a brief test in view of various people's claims to be able to operate two separate receivers at the same time without interference within the allowed band width. A conventional XFG1 receiver was tuned to the extreme limit on one side of the band, and a transmitter with only ¼ watt input was tuned to the limit at the other end of the band. The receiver was operable up to a distance of about 30 yards. It would be most interesting to know details of equipment used by people who do control two receivers at the same time. A little such information is given in the following letter from Mr. Lyth of Hull. He is putting his trust in commercial receivers, and it is not his fault if one is off the frequency. Here then is Mr. Lyth's letter :—

I am always interested in your articles on radio control, and in view of your remarks about the use of two transmitters on the small band which is allowed us, I think you may be interested in my experience.

Practically all my experience of R/C has been confined to boats, but I have been able to control two successfully using transmitters of different makes. The receivers in each case were Mercury–Cossor with modified relays, and the first transmitter was a Mercury–Cossor, the second being E.C.C. I found that these transmitters were not tuned exactly to the same frequency and by turning the Phillips beehive tuning condenser about one third of a turn I was able to tune from one transmitter to the other. Even at the distance of a few feet I was able to get independent control of each receiver. I think this is a freak case, because I have tried other E.C.C. transmitters but found that they were tuned almost spot-on the Mercury.

I have acquired a Flight Control wavemeter, which proves that my Mercury–Cossor transmitter is O.K., but I have not yet had a chance to test the E.C.C. because it now belongs to a client of mine. It is as sent out by the makers, and has not been tampered with at all.

I have evolved a clockwork actuator by means of which I am able to turn to port and starboard, and to stop the electric motor, put it into half speed, and reverse. It has been made from one of those trains of gears which are obtainable from surplus stores for a shilling or two, including the D.P.–D.T. switch for reversing. This is shown in the diagram, Fig. 2, and I think you will see how it works. Momentary pressure on the control switch causes the rudder to move to the next position in the sequence, but if it is held down the motor may be stopped or put half speed when centering after port or starboard, or stopped when nearing turn from the half speed centre position. You will note that the escapement is designed so that the rotor moves almost the full 90 degrees when the armature is held down, completing the balance when the button is released. In this way the rudder is almost central when the boat is either half speed, or in reverse.

I realise that this type of actuator has defects, such as that the motor is reversed momentarily as the rotor passes the reverse switch on each revolution, and that the steering is either straight or full turn, but it does work, and shows what can be done with the radio control of boats."

It is hoped that readers will not object to a little mention of boats, as in a number of cases equipment for

boats and aircraft is similar. For instance, the above actuator could be modified to give two speed and engine-stop control with electric ignition. See Fig. 3.

With regard to the Mercury-Cossor tuning, the writer has made a test on one of these receivers, and one third of a turn on the tuning condenser altered the frequency from 27 M/c's to 28·8 M/c's. This indicates that one of the transmitters used by Mr. Lyth must have been well out of the allotted band.

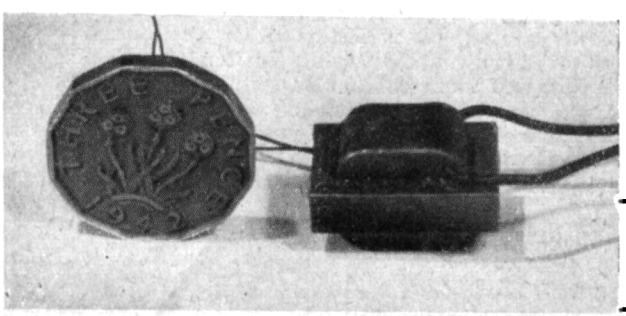
Mr. P. Barlow of Nantwich, when sending in a query about his home-made receiver, adds :—

You may be interested in one or two ideas I have used. The base is 1/8 inch perspex and for lightness I made tags and washers from thin brass sheet, fixing these with rivets of 20 gauge brass tubing, annealed first, then riveted over, using centre punches and finally nail punches. For the tags holding the coil and tuning condenser I used a modification of an earlier idea in Radio Control Notes, and cut specially shaped tags, bending them up and round 16 gauge wire, after riveting. (See Fig. 4.) All tags were pre-tinned and, where necessary, soldered to the rivet heads to make a good connection from one side of the baseboard to the other. The relay was a weighty specimen of the SCR 522 layout. I drilled out a lot of the core with 3/32 inch holes, cut and filed off as much as possible of the mounting bracket, and scrapped the old contact system, making up a new mounting and integral contact bracket of 1/8 inch perspex. This butchery does not seem to have done any harm, as I have set the relay to operate around 1 ma. with less than ·1 ma. between the in and out points without any trouble, and the receiver weighs 3½ ozs.

To finish this month's notes, here is a report on the radio side of the Walsall rally.

As seems usual for radio control competitions the wind blew hard, so that most entrants either did not turn up, or kept their models in their boxes. However, Mr. Thornhill from Loughborough was determined to do everything possible to win. Had it not been for this, there would probably not have been any R/C flying. He said his model was reliable and he would " have a go ". The model was a Wildcat powered Junior 60, with E.C.C. receiver and self-centering escapement on the rudder. Transmitter was Mercury-Cossor. From a hand launch the model went steadily upwards and backwards, under good control. About all that could be done in such conditions was to keep the nose into wind. When the model had drifted about 300 yards down wind one full circle was made and when the engine cut out the model was brought in to an excellent landing. It was a very good effort.

One other fellow decided to fly and he was our " Notes " contributor, D. E. Bolton from West Bridgford. He and co-constructor Jimmy Walton had built all the equipment



Whoops ! ! ! A near miss at Fairlop, when an interested sightseer positioned himself too close to the landing spot. This scale A.B.C. Robin, with apt registration G-AECC (actually the registration of S/Ldr. J. Rush's racing Miles Falcon Six) was made by F. C. Saunders of the Battersea club. Equipment is E.C.C. 950A.

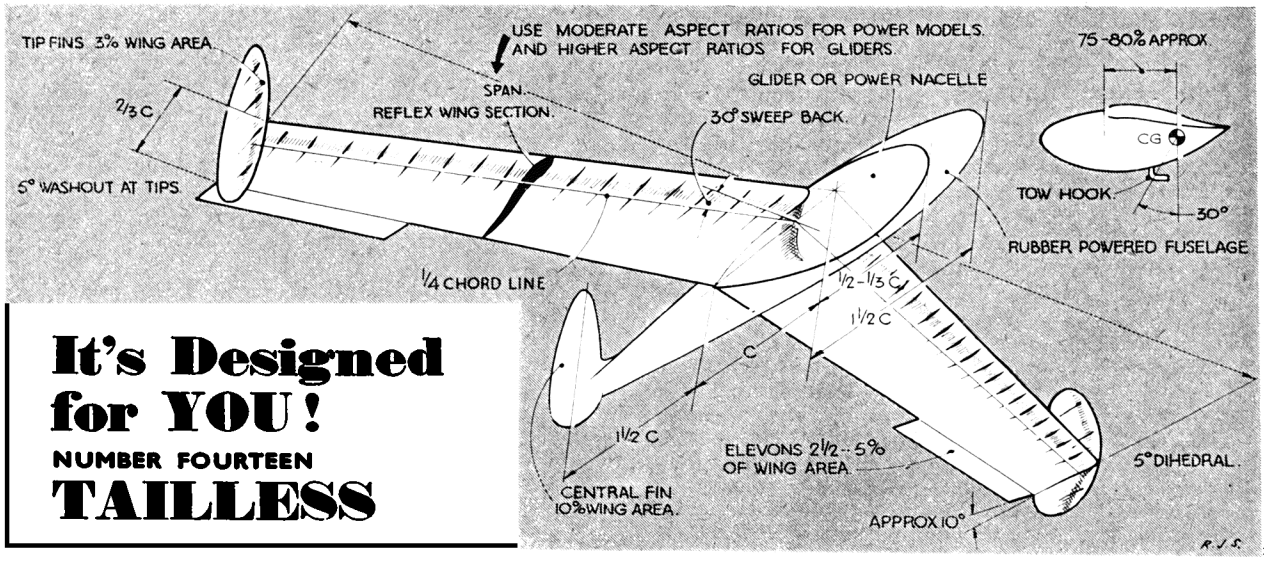
between them. The model was only four feet span and Elfin 1·49 c.c. powered. The receiver was the No. 1 described in the May " Notes ", built into a tube. This construction had meant sacrificing a little of the receiver performance, but was considered worth while. Cotton wool padding in the fuselage reduced the risk in a crash. Control was by means of a single acting Ruddevator type, described by him last month. The transmitter used two 3A4 valves in a cross connected circuit, and the H.T. was supplied from a Type 21 Vibrator pack with renewed smoothing condensers. Mr. Bolton's flight was much the same as Mr. Thornhill's, but at the end of the flight the model stalled and zoomed, possibly due to the wind, and crashed before it could be straightened up. Unfortunately, the fuselage was badly damaged. It was, however, a very plucky attempt, and one felt that it deserved a greater success.

Mr. Thornhill then flew again, much like the first flight, but the model went across to the same spot as Mr. Bolton's and did a stall and zoom. The engine faltered and the model landed across wind, the engine picking up and taking the model off again. At that moment a turn in the wrong direction caused a crash. The only damage was broken wing dowels, and after replacement Mr. Thornhill was prepared to fly again !

Of the other people there, Mr. Birden had his Scorpion with asymmetrical actuator, described in the June " Notes ", and Mr. Orton from Hinckley had a Falcon with a double acting actuator of the magnetic type running off 4½ volts, 100 ma. The system is shown in Fig. 5. Both these, of course, would give proportional control from Mr. Birden's " Rudder Waggler ", also described in the June " Notes ".

As usual, there was much discussion of radio, and one man had been getting very good results with Mr. Bolton's No. 2 receiver (May " Notes "), using a 3A5 valve, and someone else had made good use of the Type 21 Vibrator pack, which is a 6 volt type, selling at 15s. 6d. on the surplus market.

The tiny Bell & Croydon Transformer, left, is used in a new miniature three valve receiver by E.D. It is suitable for any light receiver using Audio modulation for obtaining positive feedback. Can be supplied in a ratio of 50 : 1, or as an auto transformer at 6 : 1. The price is 13/6.



It's Designed for YOU!

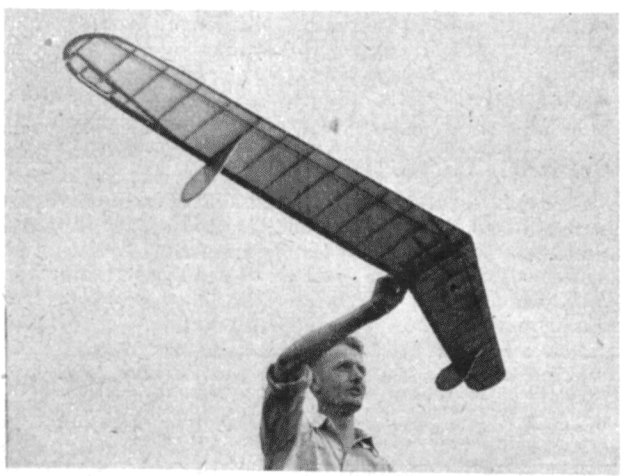
NUMBER FOURTEEN

TAILLESS

THIS month we are embarking on the unorthodox—Tailless Models. They are interesting as a type, for on certain theoretical grounds they should be more efficient than an orthodox aeroplane. The true flying wing aeroplane—the ultimate in tailless design—dispenses with fuselage and tail unit and should therefore have a lower overall drag and consequently a higher aerodynamic efficiency, provided that inefficiency is not introduced by the various means necessary to gain stability. This " proviso " is generally the snag !

Very few tailless models can be considered to be completed satisfactory. Even fewer have a performance comparable with that of an orthodox machine. Part of the reason for this is that the type, as such, is relatively undeveloped. The number of modellers who concentrate on tailless designs are virtually negligible. The other reason is that tailless models are not easy to design and fly. They introduce specialised problems of their own which are not readily overcome and with very little data available as a guide, design is very much a matter of trial and error.

Yet a tailless model can fly well. A. H. Wilson of the Hayes club is probably the country's leading exponent of the type at the present time and the stability and general " flyability " of his designs are well known. The radio-controlled " Manx Monarch " featured in the August, 1950, issue of the AEROMODELLER is a typical example. The machine is both stable and efficient. The latter is well demonstrated by the fact that a 10 c.c. Ohlsson 60 motor operating far from flat-out is adequate power for the 10 sq. ft. wing area and seven pounds total weight. An orthodox 9 ft. 6 in. span model of the same weight would undoubtedly be underpowered.



Roy Yeabsley is currently flying a 7-ft. tailless sailplane in Rallies and contests. Seen here at the Northern Heights Gala, the lightweight structure, moderate sweepback and usual underslung fins are points to note.

Considering the tailless aeroplane on the basic principle of being a flying wing—to which later the power unit and other appendages found necessary can be added—let us examine the various problems involved. Stability, not performance, will be the major problem, for once we have found a *stable* layout we can set about making it as *efficient* as possible. Starting with an efficient lay-out and then trying to make it stable is putting the cart before the horse. To simplify the problem as far as possible we must also consider stability separately under the three main headings of ; longitudinal stability, lateral stability and directional (and spiral) stability. Longitudinal stability presents the first major problem.

Now an ordinary wing of the type shown in Fig. 1 is not stable. This is just the wing off a conventional aeroplane and it needs a tailplane to stabilise it. The reason for this is as follows.

If the wing is balanced so that the centre of lift coincides with the centre of gravity, the wing can be momentarily stable in a particular gliding attitude. The resultant aerodynamic force balances out the weight. If, however, the wing is disturbed for any reason—noses up or down—it changes its attitude relative to the airflow and immediately the centre of lift shifts. The actual centre of lift depends on the attitude of a wing—or its angle of attack. It is a characteristic of most normal wings that the centre of lift shift—or centre of pressure movement, as it is called—is an unstable one ;

in that any deviation from its original position produces a change in the centre of pressure tending to upset the wing even more. Thus, in our simple example, if the wing noses up slightly from its original momentarily balanced position, the lift force will shift forwards making the wing nose up even more steeply. Conversely, if the wing nosed down the lift force would shift back and make the wing nose down even more.

On a conventional aeroplane this unstable property of the wings is suitable damped out by the action of a tailplane. It is obvious, therefore, that the flying wing aeroplane has to have a wing which is not only balanced with respect to the C.G. but one which is self-damping or stable on its own.

Airfoil Selection

In model sizes about the only section which can be said to have stable characteristics (*i.e.*, reverse centre of pressure movement as compared with an orthodox section) is a flat plate--Fig. 2. The flat plate aerofoil does tend to correct any displacement, but is a very inefficient form of aerofoil. The lift it can generate for a given area is small, by comparison, and furthermore it has an early stall. Some of these properties of the flat plate aerofoil, however, have led to confusing results.

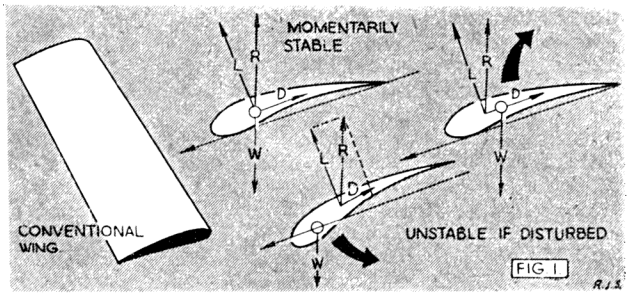
Small solid model tailless gliders—say up to 12 ins. span or so, can perform really well. Various people have used them from time to time to investigate wing planforms and layouts for projected tailless designs. The wings are generally constructed of sheet and virtually true flat plate, or camber is sanded on, when, on account of their small size, aerodynamically at least they are still flat plate aerofoils.

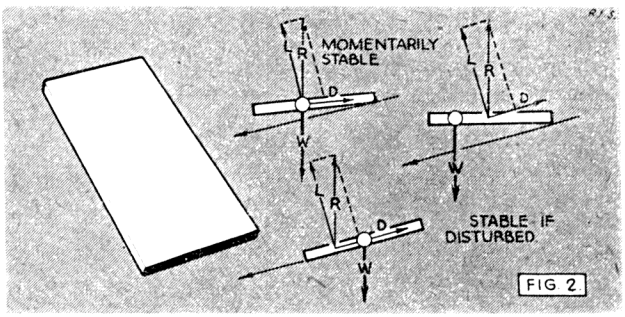
Now these models fly very well. They are stable and have quite a reasonable gliding angle. This has mis-led many designers into thinking that a particular layout which they have " proved " on a small scale model will be equally successful in a larger size. Seldom, however, does this work out in practice for these small models are working in a region where the aerofoils are giving flat plate characteristics and therefore stability re-action is unduly favourable. Whether such " scale " test models have any value at all is debatable.

Possibly the nearest approach to the flat plate aerofoil is the symmetrical one. The camber line is still straight but now the section has given depth to accommodate spars and obtain adequate strength in larger sizes. On full-size aircraft, such as a sailplane, a symmetrical section is not all that bad as regards efficiency, providing it is operating at a reasonable angle of attack. This angle of attack will be higher than that of a comparable cambered section for the same lift. Drag, therefore, is likely to be higher for the same lift.

In model sizes the position is far worse. Models are operating at speeds and with sizes where aerodynamic efficiency is rather low in any case. To get reasonable lift values it has been found that cambered aerofoils are essential, the more camber the better. Adequate camber is far more important than thickness. The latter is largely dictated by the spar sizes to be accommodated.

However it is just this camber which makes an aerofoil section unstable. As a generalisation, the more camber that it used the more unstable is the section likely to be (*i.e.*, the greater the centre of pressure movement). Hence we have more or less got to use a cambered aerofoil for our flying wing and see what other means can be adopted to stabilise it.

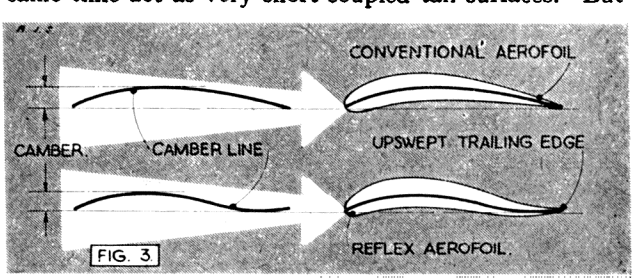




The first point is that the centre of pressure movement of a cambered aerofoil can be reduced by modifying the camber line—Fig. 3. If the camber line is swept up towards the trailing edge centre of pressure movement can be minimised, or even held stationary. The result is an aerofoil with what we term a *reflex trailing edge*. However, this stability (or more truly, less instability) has only been achieved at the expense of reducing the aerodynamic efficiency of the section. The reflexed aerofoil does not give so much lift per area as a comparable conventional aerofoil, whilst drag values may still remain similar. Hence to get comparable lift we must either operate this section at a higher angle of attack, or add more wing area. Both will increase drag of the reflex-section wing and, as a general rule, (especially in model sizes) the conventional aeroplane usually works out more efficient than the flying wing. " Usually ", not " necessarily ". The larger the model the better chance has the tailless designer of producing a more efficient aeroplane.

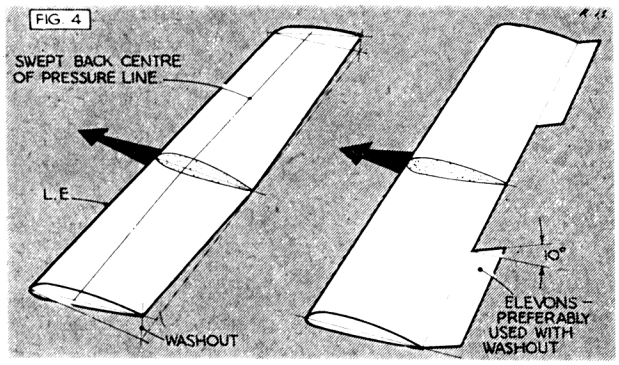
Stability Devices

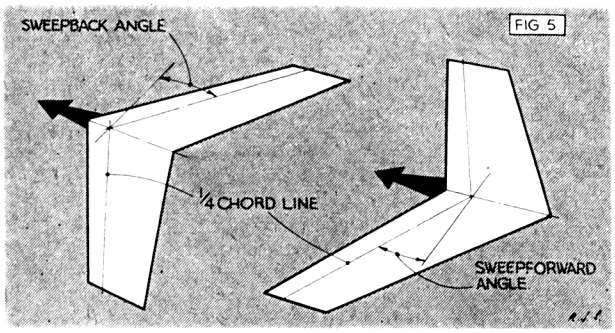
A flying plank with a normal reflex wing section can, however, be given a fair degree of stability by washing out the wing tips, that is, decreasing the incidence of the wings from root to tip by sweeping up the trailing edge. An alternative method is to use controlling surfaces at the tip set at some negative angle—Fig. 4). These give a somewhat similar effect to washout and at the same time act as very short-coupled tail surfaces. But

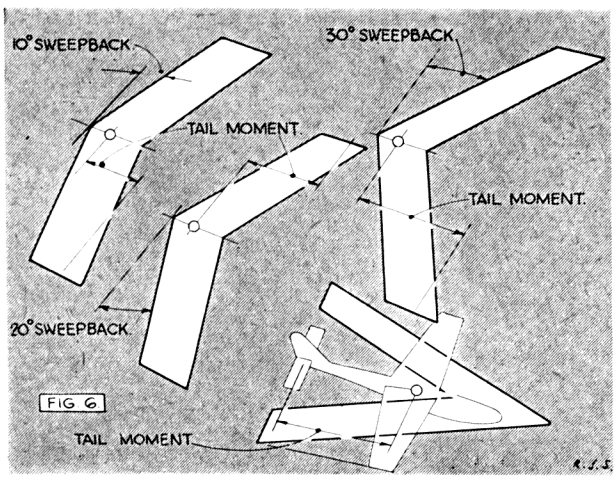


in both cases the reserve of stability which can be obtained is small and achieved only by reducing the overall efficiency of the wing. The degree of washout required may be such that at normal flight attitudes the wing tips are not generating any lift at all, or even producing a slight downward lift. The flying plank at best, then, is going to be a tricky model to trim and handle if the stability margin has been cut to such fine limits in order to get reasonable efficiency, or extremely inefficient if enough washout is used to give fair stability. We must look elsewhere, therefore, for the solution to our problems.

Fortunately, there is a fairly easy solution if the wing is swept back (or forwards) we can make the wing tips operate somewhat similarly to the tailplane of a conventional aeroplane, whilst still retaining the flying wing layout. The reason for this can be explained fairly simply without going into technical details—Fig. 5.







A simple flying wing of the type shown may not necessarily be stable. It is a characteristic of tapered wings that the tips tend to stall before the centre section and so the layout shown would tend to have a catastrophic stall, *i.e.*, the centre still lifting after the tips had stalled tending to nose the model up even more rapidly. If, however, we incorporate washout in the tips so that these stall after the centre of the wing the tips will always be operating at a lower angle of attack. Now if the model is caused to nose up the centre portion of the wing will stall first, with the tips still lifting. The tips, being located aft of the centre of gravity, will correct the model.

The same is true of a layout with sweptforward wings, only this time we can leave the tips straight, or even give them wash-*in* to increase the stabilising effect of the trailing portion of the wing (now the centre section). Both types of wing layout are satisfactory, although the swept-forward wing has certain other undesirable stability characteristics which are against its adoption. The swept-back wing, however, is the basis of almost all successful model tailless design. It is used still with a reflex section, and with washout. Elevons can be added at the tips to increase the washout effect and also act as controlling surfaces. Being as far removed aft as possible from the centre of gravity on such a layout they can be expected to have a reasonable effect.

The question now is, how much sweepback to employ ? The more sweepback we use, the farther aft are the tips carried (and elevon controlling surfaces, if used), and therefore the more marked their stabilising action. Taken to extremes, by employing enough sweepback we could bring the tip portions as far back as the tailplane position on a conventional layout—Fig. 6.

Sweepback Effects

However, the use of sweepback has other effects not so desirable. According to modern theory the airflow over a wing is perpendicular to the leading edge. This means that on a wing with a sweep angle the speed of the airflow over the wings is less than the airspeed of the machine. The greater the degree of sweepback, the greater this difference. Full size designers make use of this fact in designing high speed aircraft to reduce the speed of the airflow over the wings whilst keeping the airspeed of the whole machine high. In the model sizes, however, we want to *increase* the airflow speed over the wings for greater efficiency. With a swept wing the model has now got to fly faster to get the same airspeed over the wings.

Quite apart from that there is the effect that a swept wing is not so stable in a yaw. If displaced to one side the advancing wing generates more and more lift tending to increase the angle of yaw and roll the model in that direction at the same time—Fig. 7. Directional, and possibly spiral, stability will suffer as a result. The logical answer, then, is to use as much sweepback as desirable for longitudinal stability, and no more.

Minimum value of sweepback for satisfactory results appears to be 25 degrees, measured on the aerodynamic centre line of the wing (to all intents and purposes a line adjoining the ¼-chord positions of the root and tip sections) Fig. 8. There is, of course, no maximum as regards longitudinal stability, only the desirability to limit sweepback to avoid complicating spiral and directional stability problems. A very good figure for design work, therefore, appears to be 30 degrees sweepback on the aerodynamic centre line. This, allied to a

suitable taper ratio will give a slightly higher value on the wing leading edge. Associated with this will be required some 4–5 degrees minimum washout from root to tip. It is difficult, or even impossible, to predetermine the exact amount of washout required, hence the value of adjustable control surfaces at the tips, such as elevons. It must be remembered, however, that such controlling surfaces will be very sensitive and will need adjustment with extreme care.

Having thus established a satisfactory layout for the major stability problem—longitudinal stability—we can now investigate what will be required to produce adequate directional, spiral and lateral stability. As regards the latter we can say that moderate dihedral will take care of this, although the dihedral angle required will be less than that for orthodox aircraft. Sweepback has a certain " dihedral " effect and a swept wing always requires less dihedral. Too much dihedral will result in a wallowing type of flight called " Dutch Roll ". An adequate dihedral for the layout specified would be 4–5 degrees, roughly one half that of a conventional straight wing.

Directional Stability

Directional stability will only be obtained by the addition of vertical surfaces to the basic flying wing layout, which need also to be located as far behind the centre of gravity as possible. A fin stuck on the end of the fuselage, for example, will have relatively little effect, whereas wing tip fins can be expected to have maximum effect. Wing tip fins appear to be the logical solution, although their adjustment can be critical, unless the ultimate design is to have a fairly lengthy fuselage, such as might be used on a rubber-powered version.

Adjustment for turn on wing tip fins will be different from that on a central fin. Wing tip fins will turn the model by the drag force they create. Offsetting both fins to the right (or left) an exactly similar amount would have little or no effect. Offsetting one fin (or trim tab) will create drag at that tip and cause the model to turn in that direction. In a similar manner turn adjustment can be obtained by differential setting of the elevons, which is the better method, leaving the tip fins dead true.

Spiral stability is far more complicated and here no definite solution can be given since relatively little is known on the subject. The washed-out wing tips will assist spiral stability, provided they are true and balanced. Unequal washout will *produce* spiral instability. Wing tip fins should, theoretically, be bad, whilst there would appear to be a definite need for some sort of central " keel " under the wing. An underslung nacelle, therefore, of fairly deep section may not only be necessary, but desirable.

The basic proportions of what should prove a satisfactory layout are summarised in the heading drawing, incorporating the various features discussed and adaptable directly to either a glider or power-driven model. It must be emphasised however, that adjustment of the elevons will be critical and in the case of the power model only a moderate power should be used. Some suggested proportions are summarised in the table when it will be seen that the loading, expressed as wing area per c.c. is much higher than for conventional free flight models and consequently such a model cannot be expected to have " duration " performance. It is adaptable

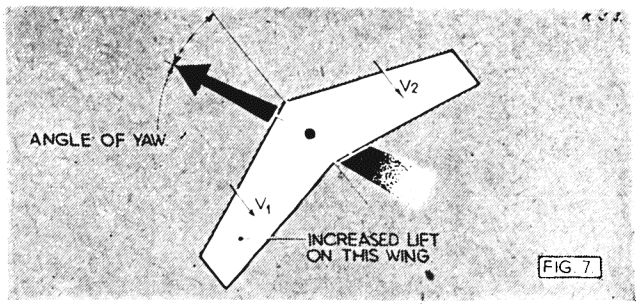


FIG 7

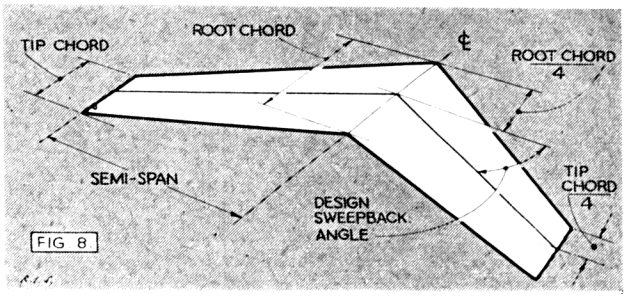


FIG 8

to either pusher or tractor layout, although we would definitely prefer the latter.

Rubber Driven Tailless

The rubber driven model will need a considerably longer fuselage when advantage might be taken of this fact to dispense with the tip fins and locate a large central fin on the extreme rear of the fuselage. Again we would prefer the tractor layout. Reasonably light construction should be used in this case when a fairly small cross section rubber motor can be employed to boost the number of turns possible. Power/glide ratio should then be approximately 1 with a normal freewheeling propeller (*i.e.*, duration of power run equal to glide duration). With a folding propeller somewhat higher times should be obtained. Both models should readily be capable of beating the existing British record if the type is built to approximately 200 sq. ins. wing area.

The standing record was established in 1939 by Howard Boys with a flight of 1 minute 24·5 seconds.

GENERAL CHARACTERISTICS

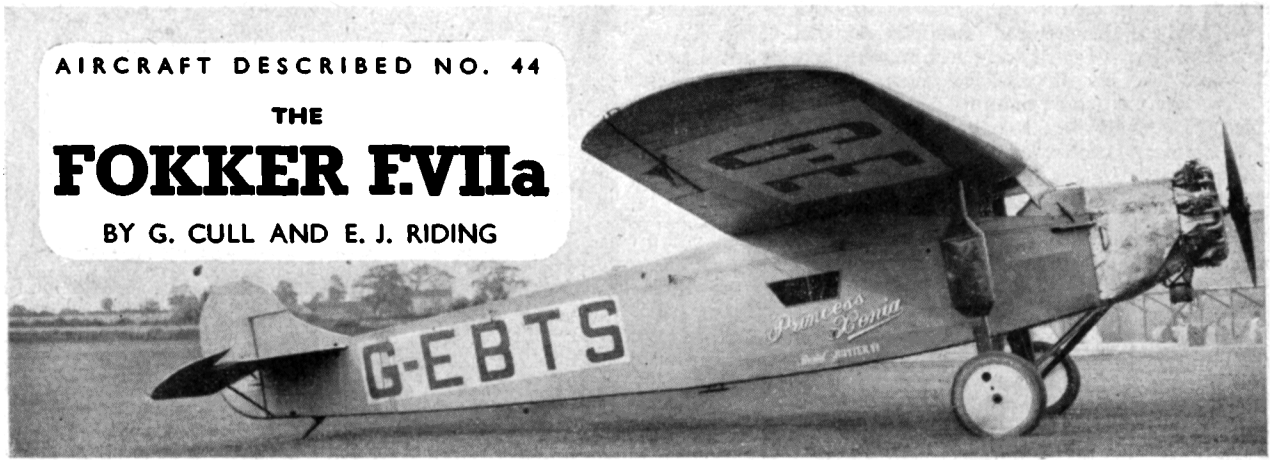
Wing Area (sq. ins.)	Power	Weight (ozs.)	Loading			Remarks
			oz./100 sq. in.	oz/ c.c.	sq. in. c.c.	
200	Glider or Rubber	6	3	—	—	—
300	Glider or Rubber	10	3·3	—	—	Optimum size for rubber power.
400	1–1·5 c.c.	16	4	11–16	270–400	Best size for experiment.
500	2–2·5 c.c.	24	4·8	10–12	200–25e	Optimum size unit for tow-line gliders.
600	2·5–3 c.c.	30	50	10–12	200–240	—
750	3·5–5 c.c.	40	5·3	8–12	150–200	—
1,000	5–7·5 c.c.	60	6	8–12	150–200	Suitable for radio-control.
1,500	10 c.c.	100	6·7	10	150	Suitable for radio-control.

AIRCRAFT DESCRIBED NO. 44

THE

FOKKER F.VIIa

BY G. CULL AND E. J. RIDING



As mentioned in the July 1950 AEROMODELLER, the late E. J. Riding left unfinished work which would appear in due course, and this feature commenced by him has been completed to accompany the flying scale model of the three-engined Fokker F.VIIb included in this issue.

THE Fokker F. VII was the logical development of the types F. II and III commercial monoplanes used by the Dutch airline K.L.M. during the early days of civil aviation immediately following the 1914-18 war. They went into regular service with K.L.M. during 1925 and were in turn superseded by the three-engined F.VII/3M's early in 1927. Most of the F.VII's belonging to K.L.M. were sold to a Swiss firm, but one or two examples found their way to England, and it is one of these, H-NADK, which forms the subject of our series this month. In those days the Dutch nationality symbol was the letter " H ", followed, as in Great Britain and France, by a hyphen and four letters, this system being changed some years later to the now familiar " PH " followed by three letters.

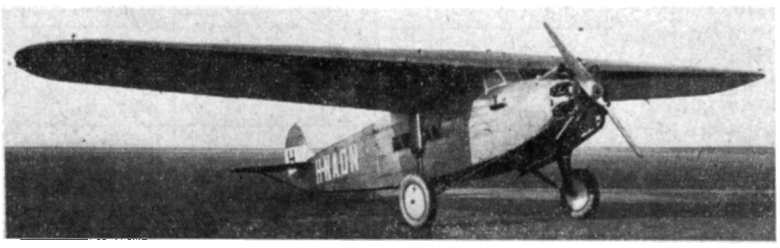
H-NADK was brought over to this country and re-registered G-EBTS on September 1st, 1927, the owner being Capt. R. H. McIntosh—that same " All Weather " McIntosh who used to race the trams up the Edgware Road, to Cricklewood aerodrome in every sort of dirty weather when flying on the Handley-Page 0/400 services to Paris in 1920.

Here it was christened " Princess Xenia " and was used on an attempt to fly the Atlantic from East to West by Capt. McIntosh in partnership with Colonel J. Fitzmaurice of the Irish Free State Air Force. They set off from Baldonnel aerodrome for New York at 13:30 hours on September 16th, 1927, passing seaward over the cost of Galway at 15.30 hours. After flying for a distance of 300 miles out into the Atlantic they were met by gales of such a force that their ground speed was reduced to about 40 m.p.h., and calculations showed that with the amount of fuel available they would never reach their objective. A decision was made to return at once, and the machine was brought down onto the sands near Ballybunnion at the mouth of the Shannon in driving rain at 19.30 hours on the same day, the crew retiring to the shelter and warmth of a nearby hostel, presumably to help them to forget their recent buffeting ! The sensibility of the decision is shown by the very fact that Capt. McIntosh is still with us to-day, and Col. Fitzmaurice, with the valuable experience of having tried and failed, was able at a later date to put his knowledge of Atlantic weather conditions to good use when he accompanied Kohl and von Huenefeld on the first East-West crossing during the following year.

On November 15th, 1927, G-EBTS piloted by Messrs. McIntosh and the late Bert Hinkler, left Upavon, Wilts., in an attempt to beat the existing World's long distance record held by Chamberlain and Levine on a Bellanca monoplane (New York to Kottbus, Germany).

With 800 gallons of fuel on board, and at an all-up weight of 6,400 lbs., the Fokker became airborne after a run of half a mile against a fresh westerly wind. No news of the machine's progress was received until the morning of November 18th—some 24 hours after their petrol supply was due to run out. It was then announced that a landing had been made at Bialokrynica in Eastern Galicia on the afternoon of the 16th, after the machine had been airborne for 24 hours 42 minutes. The machine was damaged and the crew slightly injured as the result of landing on rough ground.

In a later account of the journey, McIntosh said that they had flown in fog and low cloud for 22 hours after leaving France, reaching, as far as they could estimate, a point in the region of Astrakan on the shores of the Caspian sea, before being turned back by the weather.



On August 3rd 'TS was re-registered to Air Communications Ltd., having previously, on June 10th, made an abortive attempt to fly to India and back in eight days. On this occasion she was flown by Messrs. C. D. Barnard and E. H. Alliott with her Grace the late Duchess of Bedford as passenger. After making good time as far as Bushire, the engine started to give trouble owing to the unsuitable fuel

Opposite page top. ***"Princess Xenia" at Filton after being re-registered and fitted with a wooden propeller. Previously her name was just "Xenia" when registered H-NADK.*** (Bristol Photo)

Opposite page, bottom. ***An F.VIIa operated by Royal Dutch Airlines and fitted with a French built Jupiter engine and metal propeller.*** (Photo by courtesy of K.L.M.)

Right. ***'The Spider' with the geared Jupiter engine and modified undercarriage.*** (Bristol Photo)

Below. ***In the role of a 'joy rider' 'The Spider' is seen here with long cabin windows and exhaust collector ring.*** (Photo by courtesy of 'Flight')

supplied en route and the flight was abandoned, the machine being shipped to Karachi where a new engine was fitted.

At dawn on September 2nd Barnard and Alliott left Karachi, and with stops for refuelling at Bushire, Aleppo, and Sofia, arrived at Croydon late on the evening of September 6th, having flown from India in the record time of 4½ days.

On August 2nd, 1929, G-EBTS, re-fitted with a geared Bristol Jupiter VIII engine driving a four-bladed airscrew, took off from Lympne on a further attempt to fly to India and back in eight days. The machine had been re-christened "The Spider", presumably in honour of Robert Bruce's persevering friend. The crew consisted of Capt. C. D. Barnard, the Duchess of Bedford, and R. F. Little. This time everything went off without a hitch, the 4,350-mile journey was accomplished in 3 days 9 hours, with stops at Sofia, Aleppo and Bushire. The Spider left Karachi on the following day, and following the same route as before, landed at Croydon just under eight days after leaving Lympne.

In 1930 yet one more record flight was logged—to Capetown and back in 21 days. With the same crew as before, 'TS left Lympne at 5.30 a.m. on April 10th, arriving back at Croydon on April 30th. Both these pioneer flights, carried out in a somewhat aged single-engined machine contributed a great deal towards improving the Imperial Mail Routes to India and the Cape in subsequent years.

In 1931 Captain Barnard inaugurated C. D. Barnard's Air Displays (sometimes known as Barnum's Circus), and fitted out to carry 12 passengers, "The Spider" went on a 6½ months' tour of England, Scotland and Wales. The tour started on April 1st and lasted until October 11th, during which time the machines in the display visited 118 towns in 50 different counties.

In 1932 "The Spider", still piloted by Captain Barnard, went on long term charter to the British Air Navigation Co. Ltd., of Heston, having been fitted out with a bar and accommodation for eight passengers and a steward. During that year and part of 1933, "The Spider" was a familiar sight at Heston, clearing customs nearly every day for Le Touquet, Berck, Deauville or Paris. For a week during July, 1932, it inaugurated the Bristol-Cardiff air ferry, making over 40 return trips and carrying 199 fare-paying passengers.

In November, 1933, 'TS (re-fitted with a Bristol Jupiter XIa engine) again went off with a travelling Air Display—this time to India with Captain Barnard's Indian Tour. The intention was to carry out a series of displays in India during the British Winter, returning to this country in April, 1934, but in July of that year 'TS was sold to an Indian potentate—Sir Dossabhor Hormusje Bhumandwella, Kt., J.P., of Bombay.

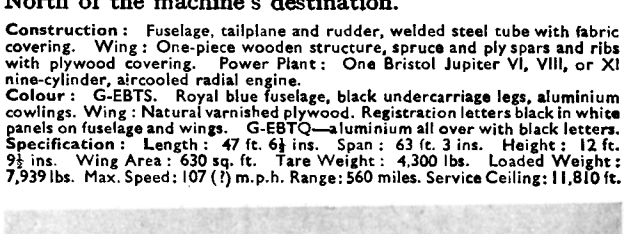
Another F.VIIa registered in this country was G-EBTQ and was of interest because it was the last British machine to have a registration bearing the letter "Q". This honour was short lived, however, for ten days after it had been registered in this country it disappeared in an attempt to fly the Atlantic from East to West.

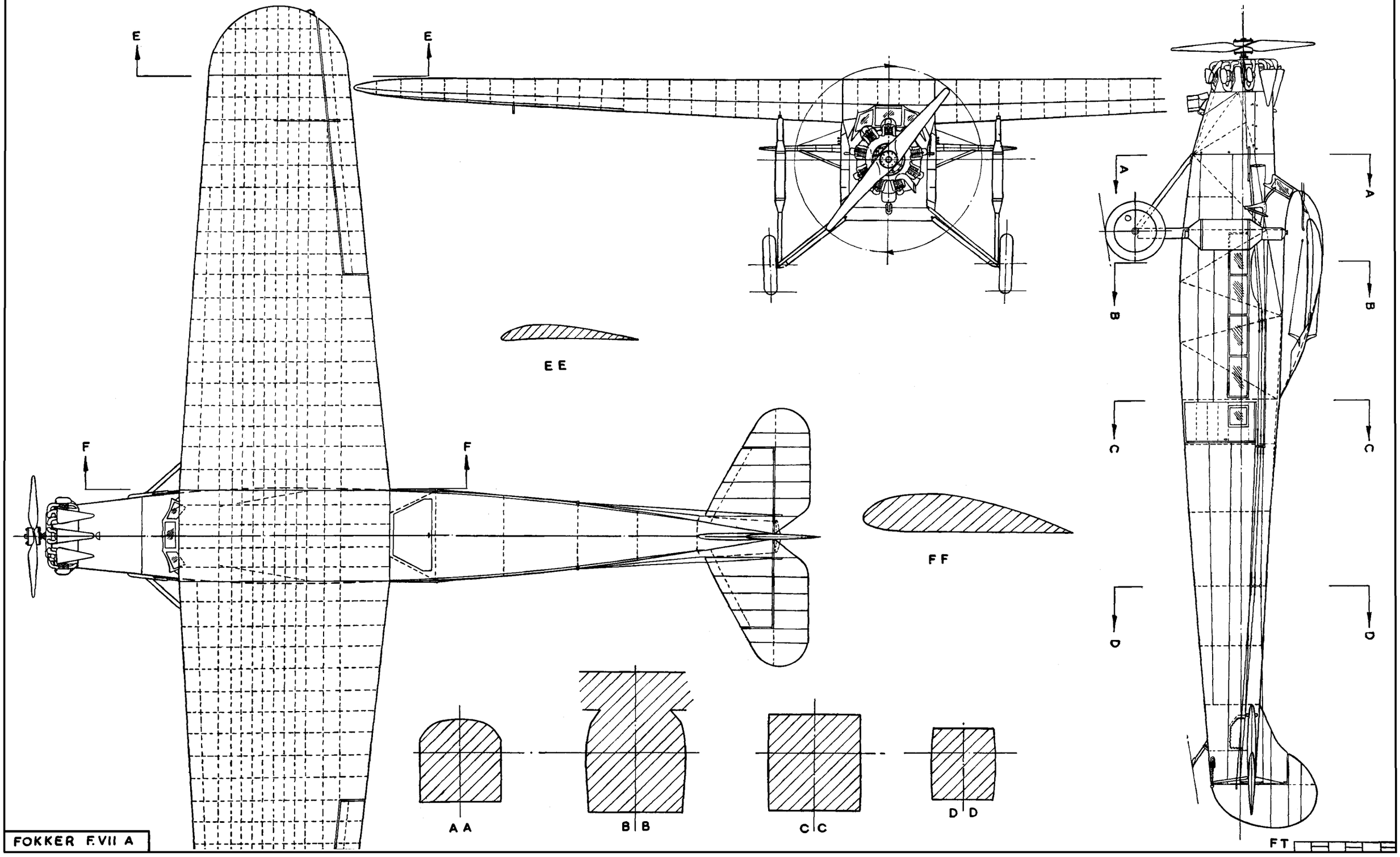
This Fokker operated as H-NAEC on the Amsterdam-Croydon route for two years, and it was re-registered G-EBTQ on August 22nd, 1927. At 07.30 hours on the morning of August 31st the "St. Raphael", as it had been named, after being blessed and sprinkled with Holy Water by the R.C. Bishop of Cardiff and two assistants, left Upavon for Ottawa.

The crew consisted of Col. F. F. Minchin, Captain Leslie Hamilton and Princess Lowenstein Wertheim, and the machine was reported by an Irish observer as having passed over Thurles, Co. Galway, at 10.40 hours, flying low owing to the great load of fuel it was carrying. It was later reported as crossing the coast of Connemara at midday, since when nothing further was heard until a Standard Oil Co.'s steamer, "Josiah Macy" radioed that it had sighted a white monoplane flying westwards at 21.44 hours on the night of August 31st. The position was given as Lat. 53° 15'W, Long. 29° 45'S—about halfway across the Atlantic, a position which agreed with the known speed of the aircraft.

Although in the case of other Atlantic failures wreckage has been recovered from the sea months afterwards, nothing further was ever seen or heard of the "St. Raphael", whose structure incidentally was 50% wood. At one time, after wreckage had been discovered in a remote part of Labrador, it was assumed that the Fokker had got across but had become lost in the Newfoundland fogs and crashed, but no further evidence was forthcoming to connect the wreckage with the fate of the "St. Raphael". It is significant, however, that a line connecting Upavon with Thurles, Connemara, and the position given by the "Josiah Macy", if projected along a great circle course, passes through the Northern part of Labrador and into Hudson Bay—700 miles or so North of the machine's destination.

Construction: Fuselage, tailplane and rudder, welded steel tube with fabric covering. Wing: One-piece wooden structure, spruce and ply spars and ribs with plywood covering. Power Plant: One Bristol Jupiter VI, VIII, or XI nine-cylinder, aircooled radial engine.
Colour: G-EBTS. Royal blue fuselage, black undercarriage legs, aluminium cowlings. Wing: Natural varnished plywood. Registration letters black in white panels on fuselage and wings. G-EBTQ—aluminium all over with black letters.
Specification: Length: 47 ft. 6½ ins. Span: 63 ft. 3 ins. Height: 12 ft. 9⅔ ins. Wing Area: 630 sq. ft. Tare Weight: 4,300 lbs. Loaded Weight: 7,939 lbs. Max. Speed: 107 (?) m.p.h. Range: 560 miles. Service Ceiling: 11,810 ft.

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Yorkshire Evening News

First National

Model Flying Festival

SHERBURN-IN-ELMET AERODROME, YORKS.

(BY KIND PERMISSION OF THE YORKSHIRE AEROPLANE CLUB)

9th September 1951

Organised by the Yorkshire Evening News and The Society of Model Aeronautical Engineers Northern Area Committee

OPEN TO ALL CLUBS AND INDIVIDUAL MODELLERS

The Events and Prizes will be :—

GLIDER TOW LAUNCH

1st Prize : Yorkshire Evening News Model Soaring Trophy (perpetual) held one year with Souvenir Trophy.
2nd Prize : Souvenir Trophy and Prize value £4.
3rd Prize : Value £3.
4th Prize : Value £2.
5th Prize : Value £1.

RUBBER POWERED MODELS

1st Prize : Rubber-driven model Trophy (perpetual) with Souvenir Trophy and Prize value £4.
2nd Prize : Souvenir Trophy and Prize value £3.
3rd Prize : Prize value £2.
4th Prize : Prize value £1.

CHUCK GLIDER

1st Prize : Value £3 and Souvenir Trophy.
2nd Prize : Value £2.
3rd Prize : Value £1.

CONCOURS D'ELEGANCE

1st Prize : Value £3 and Souvenir Trophy.
2nd Prize : Value £2.
3rd Prize : Value £1.

POWER MODELS

1st Prize : Power Model Trophy (perpetual) with Souvenir Trophy and prize value £4.
2nd Prize : Souvenir Trophy and Prize value £3.
3rd Prize : Prize value £2.
4th Prize : Prize value £1.
5th Prize : Prize value 10/–.

ADDITIONAL PRIZES IN THE GLIDER TOW LAUNCH, POWER MODELS AND RUBBER POWERED MODELS CONTESTS

(*a*) To Best Woman Competitor.
(*b*) To Best Junior not placed.

RADIO CONTROL

1st Prize : Value £3 and Souvenir Trophy.
2nd Prize : Value £2.
3rd Prize : Value £1.

TEAM RACE

CLASS A

1st Prize : Value £2 to builder. Small Souvenir Trophy to each of three members of team.
2nd Prize : Value £1.

CLASS B

1st Prize : Value £2 to builder. Small Souvenir Trophy to each of the three members of the team.
2nd Prize : Value £1.

Normal entry fees of 1s. 6d. *will be charged and are fully detailed on Entrance forms obtainable from—*
MODEL FLYING, YORKSHIRE EVENING NEWS, 13/17, TRINITY STREET, LEEDS, 1.

— Special arrangements for catering for the public —

APPLY FOR ENTRANCE FORMS AT ONCE

CLUB NEWS

WITH the Swedish Wakefield win this year, plans for holiday-making abroad in 1952 can now be made by modellers with the means to enjoy a week in Sweden and at the same time watch the famous Wakefield event. The trip to Finland attracted few, if any, British spectators, other than those already on the spot or those fortunate enough to have expenses paid. Sweden is a very different case with lower travelling expenses and a greater attraction for sight-seeing and holiday-making. We know that the Swedes will make a fine job of the contest organization, so why not plan your Swedish trip for next year, now ?

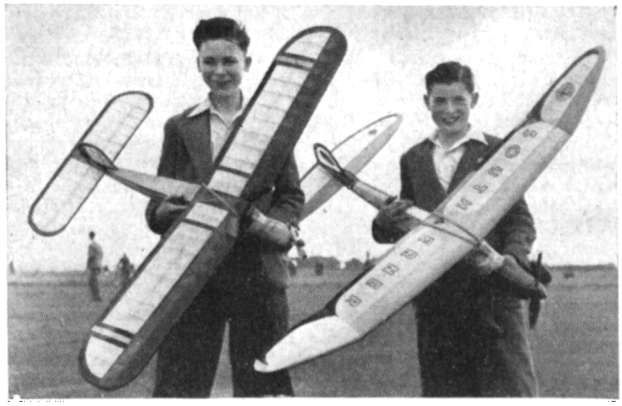
Having lost two models within the last year, and despite advertising in the local newspaper, had no news of their whereabouts, F. C. Nixon of Chorley, Lancs., suggests a "lost and found" department to be included in future Club News. His suggestion is that people who have lost a model should pay for a small advert., and those lucky enough to find unidentified models could have notices inserted free. The wide circulation of the AEROMODELLER ensures a maximum chance of recovery. We know already, and indeed have mentioned in these columns, that unidentified models have been located by other modellers and the owners have by chance heard of the lucky find and have been able to recover the lost model. Readers are invited to submit their own lost and found notices, and should the response be large enough to warrant inclusion, a Lost and Found column might become a regular AEROMODELLER feature. Mr. Nixon's "sample" announcement is as follows :—

"Lost from Silstock, July 1st, 72 in. span glider, mauve fuselage, yellow wing and tail; notify 46, Ashfield Road, Chorley, Lancs."

J. W. Rodgers of 70, Crown Dale, Upper Norwood, had an Allbon "Dart" engine No. 589 stolen at Northern Heights Gala, and would be pleased to have news if this has been offered to any modeller. (Frankly, the way things were left about the field at Langley just asked for pinching. Nevertheless, it is a great pity the chaps cannot keep their hands off engines in this way.) Another case of light-fingered gentry at work during this Gala is reported by A. W. Cox of Maidenhead. Having decided to brew a cup of tea over his primus stove, Mr. Cox was concentrating on the primus when it suddenly exploded, unfortunately severely burning his arm and face plus four power jobs, two pairs of wings, and one rubber model that happened to be nearby. While clubmates and willing helpers were busy sorting out the confusion, the aforesaid light-fingered person decided to walk off with Mr. Cox's haversack containing two cans of fuel, three propellers, tools, and all the necessary accessories for the day's flying. He would willingly donate his Ohlsson 23 and E.D. 2·49 to the thief, so that he might be able to try out the stolen prop and fuel—that is if he is man enough to submit his name and address.

CONTEST CALENDAR

August	12th.	South Coast Gala. Brighton ; Bolton M.A.S. Annual Rally. Affetside, Bolton.
	15–20th.	A/2 Glider Finals. Yugoslavia.
	18th.	INDOOR NATIONALS. Manchester ;
	19th.	"Daily Dispatch" Rally. Woodford Aerodrome.
	19th.	All Herts. Rally. Radlett.
	26th.	London Area F/F Championships. Fairlop.
August to September	21st 1st	Model Engineer Exhibition. Royal Horticultural Hall.
	2nd.	F.N.A. Cup. Holland; FARROW SHIELD; JETEX CONTEST ; FLYING SCALE (Power) (Area). S. Eastern Area Rally Battle of Britain Gala, Halton.
	9th.	Yorkshire Evening News Model Flying Festival
	16th.	BRITISH CHAMPIONSHIPS and TAPLIN TROPHY ; Southern Counties Rally. Thorney Island, Hants.
	29th.	I.C.I. Challenge Trophy Finals for "Jetex" Models. Fairlop.
	30th.	DAVIS CUP FINALS. Fairlop.
October	7th.	UNITED KINGDOM CHALLENGE MATCH. Heathfield, Scotland.
	14th.	FLIGHT CUP & FROG JUNIOR CUP. (Decentralised.)
	28th.	HAMLEY TROPHY. (Decentralised.)
November	17th.	S.M.A.E. Annual Dinner and Prizegiving.
	18th.	S.M.A.E. Annual General Meeting.



Two happy juniors; John Rebbeck with his "Sportswagon", powered with an E.D. Comp. Special, and Roy Wall with his Elfin 2·49 "Southerner" seen at Fairlop.

Entries in the **SLOPE-SOARING MEETING** at **CLWYD** were made by clubs from far and near, including Cheadle, Crosby, Chester, Liverpool, New Brighton, North Wirral, Southport, Wallasey, Wrexham and, of course, organizing Merseyside itself—not to mention numerous unattached fliers.

Contest flying commenced at 11 a.m.—not before the usual two or three models had been lost on "test" flights. No records were actually broken, but Roland Scott was thought to have probably *established* an International Record. He made a flight of over four minutes, hand-launched, with his radio-controlled sailplane, only bringing the model to earth (a few yards from the starting point) when the actuator ran out of turns ! (Sorry, chaps—Cyril Mayes has beaten that figure on the Ivinghoe slopes.)

As a result of John Done's double win last year with a dorsal-finned model, there were many of this type to be seen, but the dorsal does not appear to be the answer, as this year none of the first places were gained by such models. Hector Banner, the winner of the Nordic Medal, in fact, used an extremely small fin, and Roy Alexander made his winning 3½ minute flight with a standard "Leprechaun" (A.P.S. Plan).

Various other attempts were seen to have been made to develop the perfect slope-soarer. One machine had R.A.F. 32 section *tailplane*, while others were fitted with drogues or streamers, but no real improvement was observed.

The Bronze Medals were awarded at the venue this year—preparations having been a little more extensive. The meeting was so well received that the majority were in favour of another one to be held this year. The provisional date for this is September 23rd.

RESULTS

Open	1. R. A. Alexander	Merseyside	3 : 32
	2. M. Platt	N. Wirral	1 : 57
	3. R. F. L. Gosling	Merseyside	1 : 33
Nordic	1. H. Banner	Liverpool	1 : 36
	2. C. Calkin	Wallasey	1 : 28
	3. B. Williams	N. Wirral	1 : 27
Junior	1. R. Rohrer	New Brighton S.M. Sch.	1 : 41
	2. N. Williams	N. Wirral	1 : 2
	3. A. McKechnie	Crosby	: 53

Disappointing attendance at the **WESTERN AREA** June general meeting handicapped official decisions for that area's co-operation in the organization of the Nationals. However, the visit by Mr. R. J. Conley, Hon. Sec. of the **SOUTH WALES AREA**, gave the Western Area boys some idea of their duties. The Western Area are to be responsible for running the Model Aircraft Trophy (rubber)

on the 5th, and the Thurston Cup (glider) on the 6th. The remaining four events were to be handled by South Wales.

Western Area ran off the M.E. Cup at Lulsgate and the South Bristol team placed top in the area with a total of 26 mins. 55 secs. It was an all-Bristol contest with Bristol Aces second and the only other competitors, Bristol and West, third. Only two entries flew in the 1·5 c.c. power event, Colin Smith (junior) of South Bristol totalling 9 mins. with his two flights. D. A. Wilson flew a Nordic glider with a 1·49 Elfin mounted on a pylon about three inches in front of the C.G. and R. Hillman took off his airscrew to convert a power job into a glider, and on the second flight lost the lot with a 9 mins. 40 secs. flight. Afterwards he checked the dethermaliser fuse and found that he had fitted enough for 12½ mins ! ! ! Must be a moral there somewhere.

With twelve clubs participating in the **LONDON AREA** Team Race League that area appears to be well ahead with its organization in the team race field. West Essex lead with the total of 82 points collected in six matches, but the tables may yet be turned since Barking have raised 73 points in five matches. The recent spate of motor-cycle accidents may have serious effect on the West Essex team race contingent.

NORTH-WESTERN AREA men were very pleased to have representatives in both the Wakefield and A.2 team. With Bob Woodhouse (Whitefield) in the team that went to Finland and Mike Thomas (Blackpool) all set to go to Yugoslavia with his sailplane, the area has two good representatives. Thoughts and reflections on the trials at Digby were included in the area news letter, and might bring a nostalgic note to the others who endured that hard concrete floor. In particular they remembered the length of some well-known faces when the Wakefield team was announced, they noted several assisted take-offs and a number of 2-point supported models. Of models, they give special mention to Copland's streamliner and Jim Tangney's folding prop job with the wonderful glide. Of characters, they noted Captain Taylor radiating good cheer and a certain Naafi corporal who remains unidentified, except as a " yob " ! ! !

SOUTH MIDLAND AREA converged on Eaton Bray Sportsdrome for their Annual Gala on July 1st. Magnificent flying weather with thermals bumping off endlessly provided many maximums during the day and lost several undethermalised jobs. H. (Chalky) White of Icarians massed 11 mins. 45 secs. with his Wakefield, to win the rubber event and was a clear 90 secs. ahead of the second man, R. Brown of Luton. In the power event Peter (The Beard) Holland of Apsley, clocked 10 mins. 43 secs. with Pete Sullivan of Luton close behind at 10 mins. 19 secs. 1950 team member, Ron Hinks, flew his A.2 to win the glider with 11 mins. 19 secs. Around mid-day, thermals were so profuse that almost anything capable of flight soared away until it reached the down draughts over long grass in surrounding fields. A low-flying Hastings of R.A.F. Transport Command, and several sailplanes, unwittingly provided an impromptu flying display, one of the latter performing a perfect loop over the centre of the field.

Roy Alexander (Merseyside), winner of the Open class at the Slope-Soaring Meeting, Clwyd, proudly displays his medal, and winning A.P.S. " Leprechaun ".

Plans for September 9th, the date scheduled for the " Yorkshire Evening News " First National Model Flying Festival, have been made by the **NORTHERN AREA**. This event will take the place of the former Northern Area Rally, and through the generosity of the " Yorkshire Evening News " the meeting is raised to a standard matching other major events in the aeromodelling calendar. Co-operation of the Yorkshire Aeroplane Club and the Air Ministry has provided the 1½ mile by 1 mile aerodrome at Sherburn-in-Elmet, nr. Leeds and it is estimated that this will be one of the North's best meetings yet. Full details are given in the " Yorkshire Evening News " advert on page 564.

The **SOUTH-EASTERN AREA** Rally, scheduled for Sunday, September 2nd, is, as yet, still at an unspecified venue. The events will include the finals of the area championships, radio control, team rubber, Jetex and scale power. Grahame Gates and Keith Donald diced their 12 ft. gliders in a recent club contest and managed to finish within 1·1 secs. of each other. The energetic pair then set about the area championships and recorded 5 maximums and 4 mins. 53 secs. consecutively ! Sounds like the giant-size glider had the advantage of the day !

Old man weather provided a perfect day for the **MIDLAND AREA** at Pershore on July 1st. Members of the 16 odd clubs attending were in good spirits and with pre-entries down to a manageable number (some 70 glider, 30 power, and about 4 for the Women's Challenge Cup), the events were run off without undue pressure. First man off was L. W. Whittall of Birmingham, with a glider flight of 2 mins. 3 secs., which was a low time for the magnificent day. A sudden diversion came when a cry went up that the measured length of the tow-line was, in fact, some 25 ft. short of that stipulated in the rules ! Argument and delay were very neatly nipped in the bud by prompt action of Ken Thomas (Controller) and Comp. Secretary A. J. Barr, with a surveyor's tape. The early boys were allowed to fly again. Both E. A. Blundell of Loughborough College, and R. Averill of Solihull tied for first place in the glider with triple maximums. Flying off for the fourth time Blundell led with 4 mins. 54 secs., whilst Averill raised a creditable 4 mins. 15 secs. G. J. Rae of Malvern placed top in the power event, with only two flights, totalling 8 mins. 54 secs.

Now in its second year, the **VICTORIA M.F.C.** progresses well, in spite of the lack of a clubroom. Fairlop is the regular club venue, and with a little more attention to timely trimming it is hoped to break into the big comp. results. High times set up outside contests gives scope for optimism in this direction. We understand that the club transfer of an Indian's Head is the latest to decorate the ever-welcome yellow tea-wagon that is one of the most pleasing features of the London stamping ground.

Had quite a task recently judging the aircraft entries at the annual exhibition of the **TAMWORTH & D.E.M.S.** As the Mayor said in his speech, the model aircraft made a fine show, and I have no doubt that the boys will be chasing him for membership following his admission that the aircraft models always attracted him more than other types of exhibit ! Exhibits were varied, but the best section was undoubtedly the scale class, models by H. J. Carter, R. Lakin and S. M. L. Kennaugh being outstanding. Carter was top man with the best model on show, a well-tried " Sopwith Camel " that has seen much flying on the end of wires.

Successes in the Wakefield and A.2 Eliminators by members R. Dowdeswell and K. Sanson have given the **RUGBY M.E.S.** encouragement, and with a little thermal activity in recent weeks good flights have been recorded. Interest in C/L has given way to free-flight and R/C, Howard Boys having some very successful flights in the latter field. Bill Eales has lost two Wakefields in the last few weeks of the

thermal flying, the same happening to Sydenham's Jetex-powered job on a trimming flight.

WINCHESTER CLUB have been very active lately, with attendance at three Rallies. They found the Northern Heights Gala so well attended by so many interesting jobs, that they spent the day model gazing instead of flying. The club recently ran a 100 second contest which, apparently, caught the favourites off form. It is a difficult figure to hit when you have to, try it yourself and see. The club donated 10 per cent. of its capital in hand towards the Wakefield and International Fund, a sound example which should be followed by others.

WHITEFIELD M.A.C. boys are very proud of Bob Woodhouse's success in gaining a place on the Wakefield team. In the M.E. Cup contest the club had a total of 34 mins. 29 secs., the team consisting of J. O'Donnell, who was top individual in the N.W. area with 11 mins. 58 secs., P. R. Criddle, S. A. Ward and A. D. Bennett. Knocking up 8 maximums and losing 5 models, only two of which have been found, it would appear that they found their fair share of thermals on that day. Claims have been submitted by J. O'Donnell for 2 more British Records, these being light-weight rubber monoplane and biplane, with times of 10 : 12·5 and 4 : 14·5.

The first success in an outside event by members of **DAGENHAM M.A.C.** was the win by R. Stubbs, flying an Elfin 1·49 powered Keil Kraft Ranger in the Class A team race at West Essex Gala. The club also attended the Northern Heights day, and we hope will secure success in future events. The club glider record is now 12 mins. 58 secs., held by H. Pulham, and the power record, a ratio of 21 : 1 by D. Adams.

Barry Venville gained fourth place in the Astral Trophy and second place in the area's Halfax contest with his Grenville Special for **SOLIHULL M.F.C.** The club has also had its successes at the Walsall Rally and the Pershore Area centralised contest when R. Averill raised three maximums, as mentioned in the Midland Area report.

The **RYDE & DISTRICT M.F.C.** staged a mid-season Rally at Ryde airport on July 1st. Well attended by visiting island clubs, the events included a novelty contest, which required a flight of between 40 and 70 secs. Two flights were allowed each contestant, in which to record the required time, then raffle tickets numbered between 40 and 70 were put into a hat, the winner being the competitor whose flight time was nearest the lucky number. Sounds like a good event to encourage the junior and sports fliers, which might well be taken up at other club gatherings.

The **OUTLAWS (CANNOCK) M.A.C.** have been gaining successes in the control-line field of late, with first and third in stunt at Stourbridge, a close second at West Essex, and a very fast win in the Class B team race at Northern Heights by the Ohlsson 29 powered club entry at 65 m.p.h., including several very quick pit stops. They also did very well for themselves in the Stunt Contest at Wembley by gaining second and fifth places.

The **SCOTTISH NATIONAL CONTROL-LINE RALLY** at Montrose, attracted a large crowd of spectators and so impressed members of the Montrose Town Council, that they offered to make the event an annual occasion. Ian Dunn proved himself the best stunt flier among a field claimed to be well up to Gold Cup standard, and B. Greig won the Class B team race with his Frog 500 racer despite the high speed opposition of 87 m.p.h. Dooling-powered models.

Most spectacular event of the day was when Noel Falconer's lightweight " Stunt Queen " broke away from the lines and spiralled upwards for nine minutes. Only a first-class power model could have equalled its climb, yet it was back at the field within the hour to fly again ! Spectacular though that may have been, the most outstanding figure in the results is B. Henderson's (Blairgowrie) Class A team race win at the amazing speed of 67 m.p.h., including pit stops. Time for the ten miles was 8 mins. 56 secs., a figure which has not yet been reached elsewhere in the country in either Class A or the usually faster Class B, despite the high rate of development in the London and Midland Areas. His actual airspeed with the E.D. 2.46 racer was 72 m.p.h. and total time for 6 pit stops, only 35 seconds !

With two possible new world records to their credit, the Bristol boys have been doing very well of late. **SOUTH BRISTOL M.A.C.** gave a one-hour display at a recent Festival Exhibition with non-stop control-line entertainment.

S.M.A.E. CONTEST RESULTS

WOMEN'S CHALLENGE CUP (July 1st.)

Area Centralised

1.	Miss O. Hathaway	St. Albans	8 : 48
2.	J. Holt	Upton	8 : 39
3.	Mrs. B. Moulton	W. Essex	8 : 11
4.	Miss D. Knight	Kentish Nomads	7 : 54

MODEL ENGINEER CUP (July 1st.)

Area Centralised

1.	Solihull	53 : 38
2.	Birmingham	48 : 07
3.	Croydon	47 : 38
4.	Brighton	45 : 11
5.	Surbiton	45 : 05
6.	Loughborough College	42 : 29

1·5 c.c POWER DURATION (July 1st.)

Area Centralised

1.	J. Gorham	Ipswich	14 : 50
2.	P. Wyatt	Ipswich	12 : 05
3.	D. Willmott	Belfairs	11 : 53
4.	W. Grasmeder	West Essex	10 : 57

WEMBLEY; SPEED (July 14th.)

				m.p.h.
Class 1	1.	W. Kelsey	E. London	75·3
	2.	P. Stovell	E. London	74·55
	3.	R. Scott	St. Helens	72·15
Class 2	1.	A. Coles	Bristol & West	85·796*
	2.	G. Rae	Malvern	74·55
	3.	P. O'Sullivan	E. London	73·35
Class 3	1.	J. Claydon	E. London	75·82
Class 4	1.	P. Wright	St. Albans	124·54*
	2.	R. Scott	St. Helens	111·4
	3.	M. Billinton	Brixton	108·5
Class 6	1.	F. Guest	C.M.	133·1*
	2.	M. Billinton	Brixton	124·9
	3.	R. Taylor (Billinton)	Brixton	109·25
Class 7	1.	B. Hopkins	Bristol Phœnix	130·56
	2.	J. Claydon	E. London	130·44
	3.	R. Connell	E. London	122·4

Results marked thus * are New Records subject to ratification.

WEMBLEY; TEAM RACE

Class A	1.	R. Edmunds	High Wycombe
	2.	D. Hayford	Tottenham
	3.	R. Marsh	Salisbury
Class B	1.	J. Jones	Birmingham
	2.	H. Bohling	Bushy Park
	3.	P. Morrell	Battersea

WEMBLEY; STUNT

1.	P. Russell	Worksop	358
2.	B. Harper	Outlaws	338
3.	P. Smith	Chingford	328
4.	C. Bates	R.A.F.	311
5.	J. Jarvis	Outlaws	306

KEIL TROPHY (July 15th.)

Decentralised

1.	N. Butcher	Croydon	84 : 5	Ratio
2.	G. Perkins	Croydon	80 : 6	,,
3.	R. Ward	Croydon	74 : 9	,,
4.	R. Ladd	Croydon	69 : 5	,,
5.	J. Chinn	Norwich	69 : 2	,,

LADY SHELLEY CUP (July 15th.)

Decentralised

1.	W. Gravett	Southern Cross	9 : 24
2.	L. Harris	Croydon	8 : 34
3.	R. Yeabsley	Croydon	7 : 47
4.	C. Puzzey Jr.	Ipswich	6 : 31

LATEST PLUGGE CUP POSITION

1.	Birmingham	1096·742
2.	Croydon	1048·38

Two and three in a circle, stunt, jets, balloon bursting and streamer cutting, thrilled the crowd, and an unexpected collision with the balloon stick instead of balloon, lost an outboard wing for Terry Smith, making an impromptu display of asymmetrical flight!

Club members of the **HUDDERSFIELD AIR LEAGUE M.A.C.** visited Clifton Aerodrome to take part in the Model Engineer Cup. D. Earnshaw, R. Lobley, C. Naylor and C. Paxman, amassed 24 mins. 3 secs. during the afternoon. The club is arranging an International Inter-Club contest with the Syracuse (New York, U.S.A.) M.A.C., who are their correspondents.

Pete Smith of **CHINGFORD M.F.C.**, continues with his stunt successes, having won the R.A.F. Stunt contest at Little Wallop and is now in the All-England R.A.F. Stunt Championships. He also placed third in the Wembley meeting. On July 7th the club took part in the "Chingford Day" celebrations with an exhibition of over fifty models and a control-line display lasting for one hour in the evening.

The fifth annual open day of the **WAKEFIELD (Yorks.) M.F.C.** was held on Heath Common, Wakefield, on July 22nd, and proved itself one of the highlights of the Yorkshire aeromodellers' year.

A. M. Piacentini, R. Marsh and T. Pearce have been doing very well for the **SALISBURY & DISTRICT M.E.S.** at recent rallies and control-line contests. The teams sent to compete in the team race events atWembley managed to win their heats in both A and B Classes; but unfortunately they did not place in the Class B final though a third was gained in A. The new club record of 10 mins. 52 secs. o.o.s. has been established by J. A. Lang, when he lost his sailplane on its very first flight. Incidentally, this club has a very smart idea for identification at team events, where they wear yellow sweaters, and can be picked out in the most confusing of crowds.

9 minutes o.o.s. from a 50 foot line by Twomey's Canute II is one of the many long duration flights reported by **AMPLEFORTH COLLEGE M.A.C.** the flight actually lasted over the hour and finished some nine miles away. The college club has also managed to put up good durations with high thrust line layouts which are replacing pylons.

Bad luck accompanied the trip by **STOCKTON & D.M.A.C.** to Clifton for the M.E. Cup. One of the gliders suffered from a mauling by an intruding dog and another had the unusual embarrassment of being wrapped by the tow-line pennant and refusing to come off the line! They also lost one of their entries during the 1·5 c.c. power contest, and would welcome news from the Clifton area of the model which was powered by Elfin 1·49, with radial mounting. Red fuselage, white wings and tail identify the rest. Surely another item in support of a future "Club News Lost and Found Section"?

I know that the many hundreds of club men who have met and competed with the late W. H. C. (Funf) Taylor of **WEST ESSEX AEROMODELLERS** will join me in offering deepest sympathy to his mother, and brother Charles. This tragic loss has already put the damper on club activity, notably at the recent Wembley meeting, on which day Funf was put to rest near to his favourite flying field, Fairlop. He will be missed by us at all future contests, and particularly by the radio-control enthusiasts, many of whom regarded him as a guiding light.

LEICESTER M.A.C. have been ousted from their Stoughton Aerodrome by what appears to be a combined attack from other users, and hope to be able to obtain Braunstone or Rearsby for the future. This has clamped down on their previously publicised Gala Day, but they hope to re-arrange something during September.

A pen pal is requested by Bill G. Adair, Kimmswick, Route 2, Missouri, U.S.A., who is 14 years old and just beginning to get moving with his aeromodelling. Matale Chinca, C. B. Ayres, 59, Milano, Italy, also wishes to correspond with an English modeller.

That's all for this time folks. Hope that you went to the Nationals at Swansea, though at the time of writing, support doesn't appear to be as keen as it should. Travel expenses hit hard these days!

The CLUBMAN.

NORTHERN HEIGHTS GALA RESULTS

QUEEN'S CUP

Copland	(Northern Heights)	10 : 08
Allbone	(Croydon)	5 : 13
Parnham	(Worcester)	5 : 09

RUBBER (FAIREY CUP).

Gorham	(Ipswich)	10 : 0	Flown off for 1st place.
Evans	(Northampton)	10 : 0	

POWER (DE HAVILAND TROPHY).

Trow	(Dudley)	6 : 24
Wyatt	(Ipswich)	5 : 34
Worsnop	(Odiham)	4 : 28

GLIDER (FLIGHT CUP).

J. Clark	(Surbiton)	9 : 42
Woollams	(Wayfarers)	8 : 30
Jones	(Streatham)	7 : 26

HELICOPTER.

Dowsett	(Pharos)	4 : 51
Ward	(Jetex)	2 : 52
King	(Pharos)	2 : 26

CORONATION CUP TEAM RACE "A" (20 entries).

1. Edmunds (H.Wycombe) 6 mins 26 secs. for 5 miles
2. Neill (Tottenham)
3. Kennard (S. Birmingham)
4. Stabbs (Slough)

MODEL ENGINEER CUP CLASS "B" (29 entries).

1. Harper (Outlaws) 9 mins. 4 secs. for 10 miles
2. Mason (Bushy Park)
3. Bourne (Godalming)
4. Norman (Berkhampsted)

CONCOURS D'ELEGANCE.

Power:	Haggard, Swindon—Semi-scale Biplane.
General Flying:	W. Manuel, St. Geo's Hts.
Flying Scale:	Nachtmann—Polish Air Force Assn. (D. H. Beaver).
Unorthodox:	A. Briggs—P.M.A.L.—Flying Fortress.
Control Line:	Lovall, Bedford—Gloster Biplane (extra class added).

"AEROMODELLER" CHALLENGE CUP.

J. Gorham (Ipswich)

NEW CLUBS

CARPENTERS PARK M.A.C.
T. Rose, 75, Rudolph Road, Bushey, Herts.
HORNCHURCH & D.M.ASSOC.
D. G. Ruff, 130, High Street, Hornchurch, Essex.
HANWELL EAGLES M.F.C. (formerly Ealing & D.M.A.C.).
A. J. Starkey, 2, Princes Avenue, Greenford, Middlesex.
WOKING COUNTY SCHOOL FOR BOYS A.C.
G. P. Gilbert, One Oak, Brent Moor, West End, Woking, Surrey.
MID-NORFOLK AEROMODELLERS.
R. H. Nunn, 57, Dereham Road, Watton, Thetford, Norfolk.
SWALLOWNEST & DIST.M.A.C.
E. S. Wilson, 41, Park Street, Swallownest, nr. Sheffield, Yorks.
COWLEY (MIDDLESEX) M.F.C.
A. J. Benson, 2, Hamilton Road, Cowley, Middlesex.

SECRETARIAL CHANGES

HALL BOWER M.F.C.
J. Roberts, 62, Hall Bower Lane, Newsome, Huddersfield.
HARROGATE M.A.C.
M. K. Robinson, 29, Hambleton Road, Harrogate.
SKYSCRAPERS (ROSSENDALE) M.F.C.
L. Rothwell, 52, Deardengate, Haslingden, Lancs.
SHEFFIELD SOC. OF AEROMODELLERS.
G. H. Wilkin, 206, Heeley Bank Road, Sheffield.
MONIFIETH MONARCHS.
D. White, Dalhousie Road, Barnhill.
ILKESTON M.A.C.
K. W. Tatham, 57, Graham Street, Ilkeston, Derbyshire.
ST. GEORGES HEIGHTS CLUB.
E. E. U. Rogers, 56–60, High Street, Weybridge.
PHOENIX M.F.C.
F. A. Powell, 23, North Street, Downend, Bristol.
SALISBURY & DIS.M.E.S.
R. A. Read, 90, Woodside Road, Salisbury.
NEWBURY & DIS.M.A.C.
J. Bailey, 78, Northbrook Street, Newbury.
KINGS LYNN M.C.
L. F. Smith, 8, Rivers Way, North Lynn, Kings Lynn.
GLEVUM M.C.
J. Walling, 110, Alfred Street, Gloucester.
NORTH BIRMINGHAM.
R. Manns, 117, Turfpitts Lane, Birmingham 23.
NORTH SHIELDS M.F.C.
N. G. Peacock, 5, Eastlands, High Heaton, Newcastle-on-Tyne 7.
READING & DIS.M.F.C.
F. Butcher, 146, Lambfields, Theale, near Reading.

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Mills Diesel, Mark I. Perfect, bench-run only one minute, 30/-. Also ·5 diesel, make unknown, needs adjustment, 15/-. Both, 40/-. Andrew, Waggs Road, Congleton, Cheshire.

Arden ·099, 40/-; Amco 3·5, sell 55/- or exchange E.D. 2·46. Downes, Lavengro Houses, Norwich Road, Dereham, Norfolk.

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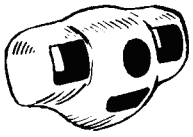

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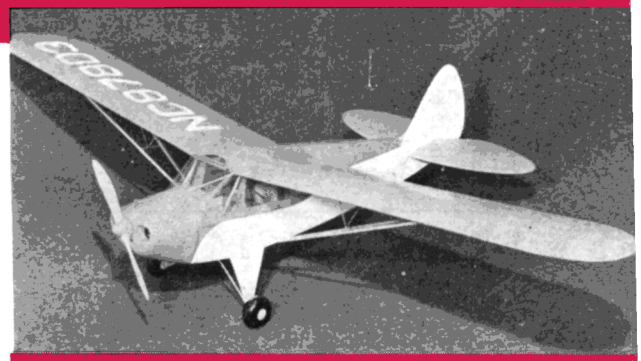

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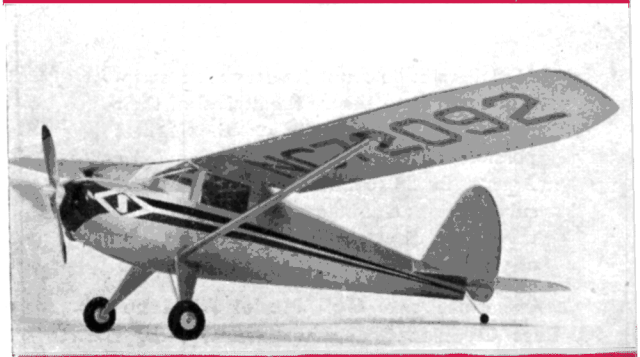

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