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AERO MODELLER

MAP HOBBY MAGAZINE

August 1962

VOLUME XXVII No. 319

contents

other modelling angles . . .

Report from the British Nationals with latest information for the data seeking reader and complete summaries of all the equipment used are contained in August issue of *Radio Control Models & Electronics*. Revealing inside story on the world famous *Orbit* equipment takes the reader behind the scenes with the manufacturer. This starts a series of features designed to show just what goes into successful commercial equipment.
Performance of R/C gear under test is of special interest. R.E.P. Twin Triple equipment is J. H. Brunt's first review, opening a new series of super tests. Constructional features include the building of a kitted Tx Converter and a Field Strength Meter for 465 Mc/s. waveband. Part Two of the Selectatone filter receiver deals with multi control. Commercial Developments shows the latest in the ready-made field, Gadgets and Gimmickry provides thought for the experimenter.
Drawings of the 1962 *B.R.M.* will be the big car feature, in August *Model Maker & Model Cars* supported by the 1932/33 *Alfa Romeo* in the vintage model series, notes and pictures on the 1962 version of the 1961 *Fl Ferrari*, electric *Minis*, etc. Warship fans will like the 44 In. *Prinz Eugen*, and a special round-up of many of the season's regattas to date will provide food for thought for the competition enthusiast. All the regular ship drawings and other features, including part two of "Porpoising" and *Beaver* continued, will make another month of interest for all readers.

cover

Canadair CF-104 on test over mountainous terrain of California. The CF-104 and Lockheed F-104G will form the equipment of seven air forces and is in current production in many European aircraft factories. A feature is the small wing area, with knife edges and extreme thinness of section.

next month...

Rotary wings always have a special fascination. September AEROMODELLER will be a special rotary wing edition, carrying colour pictures of the latest American Autogyro, the *Umbaugh 18A Fly-Mobil* and the *Bristol Sycamore* helicopter in colour on the cover. Plans for "*Copter Couple*", two power driven model helicopters of diverse design and attractive simplicity will bring the helicopter within the reach of a lot of enthusiasts who have always wanted to try their hand at this type of subject. Scale drawing of the month will be for the famous *Cierva Autogyro* type C.30, also known as the *Avro Rota* with hitherto unrevealed details taken direct from the aircraft recently overhauled at R.A.F. Halton. Back to conventional shapes and a very popular subject, *Rat Racing*. We shall have two sizes of an extraordinarily simple and easy to build racer for the clubsters to take up with any engine from 2.5 c.c. upwards. Further details on models at the British Nationals, model 3-views, all the gen on latest trends will be included along with AEROMODELLER'S regular features to make this an outstanding issue.
On sale August 17th.

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38 in. SPAN STUNT MODEL
Super detailed Control-line model suitable for 2.5-3.5 cc engines. **33/-**

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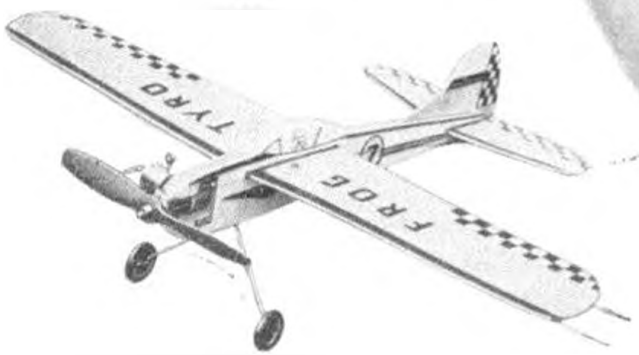

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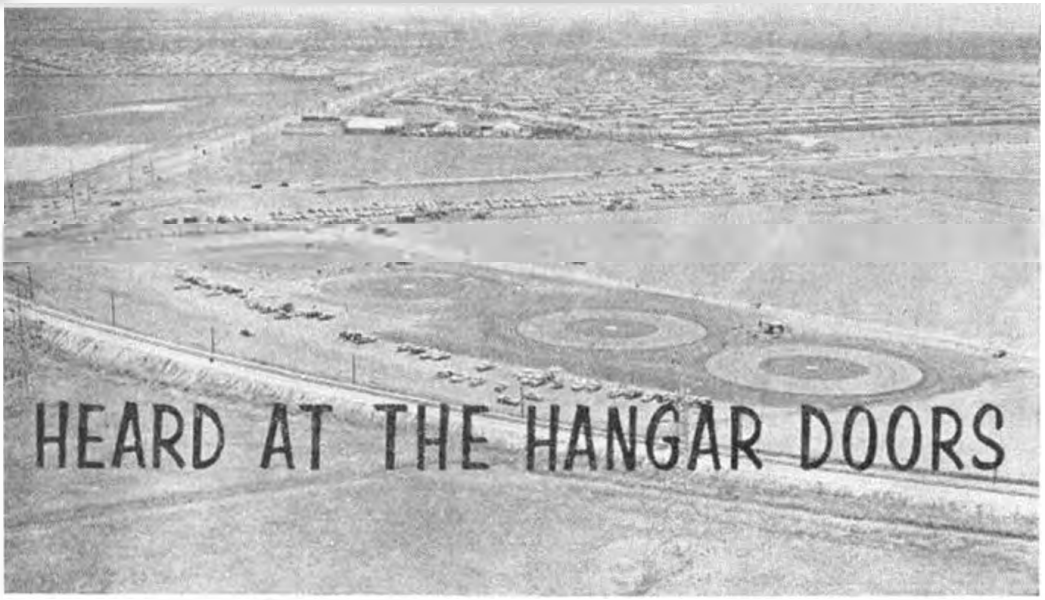


HEARD AT THE HANGAR DOORS

Aerial view of the Dallas Hobby Park in Texas, U.S.A., clearly illustrates what can be done for aeromodelling by any community where land is available. A radio control circle is located out of the picture to the right, whilst four permanent circles, car park and pit areas can be seen in the foreground. The photograph was taken on the occasion of the 1961 South Western Championship

Balsa Flies Better!

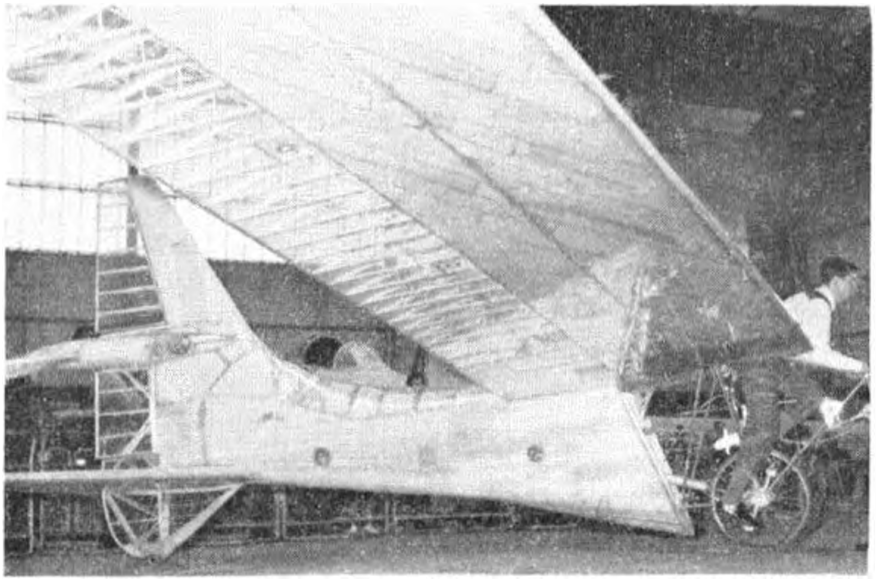
A LARGE NUMBER of readers have expressed interest in the attempts being made for the £5,000 prize to be awarded by Mr. Henry Kremer for the first successful flight of a man powered aircraft designed, built and flown within the British Commonwealth. Conditions for the prize are that the flight should be made in wind not exceeding 10 knots, the course to be a figure of 8 with two turning points not less than half a mile apart and the height at the start and finish of the course to be not less than 10 ft. above the ground. There have been many projects for this prize, some of them coming from well known aeromodellers and all of them employing similar techniques to those used for aeromodelling, including extensive application of balsa. Leading the race for the prize on present performance is the Hatfield group "Puffin". On 2nd May, it was successfully flown over a distance of 993 yards by the designer J. C. Wimpenny.

Along with the University of Southampton man-powered aircraft, the "Puffin" was displayed for inspection at Hatfield when we had an opportunity of examining the general structure and we were specially pleased to see that the St. Albans M.A.C. is given full credit for its work in producing the fuselage frames and some of the ribs. The "Puffin" fuselage is, in fact, an astounding piece of construction, the frames are only of 1/16 in. balsa and the weight of individual components seems ridiculously light, even by our accepted standards. The total aircraft, which is 84 ft. wingspan weighs only 118 lbs., the 9 ft. propeller complete with drive shaft and spinner 2½ lbs., while the ailerons and elevator are a matter of ounces. We hope to go into further detail on the constructional approaches at a later date, but most impressive of all on the occasion of our visit was the use of Melanex sheeting, which covers the entire airframe. This transparent material, which is normally supplied for protection of inked drawings etc., is manufactured by I.C.I. and has completely eliminated the use of shrinking dopes and fillers, at the same time providing a non-porous surface of admirable smoothness. As may be expected over the large planked areas of the "Puffin" wing and fuselage, the bare Solarbo balsa, which was down to as low as 3 lbs. per cubic ft., buckled according to humidity conditions. The covering of Melanex smoothed out all the bumps and by clever use of plastic foam on the wing top surfaces, the Melanex is suspended above the balsa, so maintaining the critical aerofoil section.

We wish every success to *all* competitors in the attempts for the Kremer prize.

Coupe d'Hiver Results

Details through from the *Federation Nationale Aeronautique Francaise* concerning the French modellers entries in the AEROMODELLER—*Model Reduit D'Avion* challenge match for models to the *Coupe d'Hiver* specification clearly indicate that our friends across the channel have the advantage. The contest results were to be based upon the first event entered by any participant in a winter season *Coupe d'Hiver* local event in France, with



Some detail of the Hatfield man-powered aircraft club "Puffin" can be seen in this view where club chairman and aircraft designer, J. C. Wimpenny, is in position and pedalling. Gear and shaft drive from the single wheel is taken to the 9 ft. diameter pusher propeller. Entire aircraft is covered with transparent Melanex. "Solid" areas to be seen in this view are all balsa surfaced, including diagonal planking over the forward part of the flat based wing aerofoil. Incredible lightness has been achieved in this 84 ft. span design, soon to attempt the one mile figure of 8 course for the £5,000 Kremer prize. All balsa used in this project was supplied by Plantation Wood Company to a special low lb./cu. ft. requirement. St. Albans M.A.C. co-operated in making ribs and fuselage frames

Air Scouts celebrate their coming of age this year and here are the 1st Herne Bay group at their 1962 Scout Show with an enterprising finale with a Spitfire Mark VIII background. "Model" is two thirds full size, made from hardboard as a silhouette, suspended against a blue back cloth with appropriate seating for one of the Rover scouts to occupy the cockpit whilst rendering a suitable solo.

British modellers permitted to submit flight times made on any single day in the month of March.

Bad weather influenced the British results which we announced in June issue, G. Kent of Watford Wayfarers placing highest with a total of 326 seconds and the British team total amounting to 868.6 seconds.

Details were sent to us of 14 local events in France. Six modellers achieved a perfect triple maximum flight total of 360 seconds, but two of them had flown in previous events with an inferior time total. Thus there are four French finalists each with 360 seconds to their credit, as below:—

Andre Paul ...	*A P T.*	360	3.12.61
de Grivel	*Doubs*	360	10.12.61
Rene Barbier ...	*Chateauroux*	360	25. 3.62.
Lucine Braire ...	*Bourges*	360	1. 4.62

Total of best three 1080 seconds

de Grivel's model was actually sketched in our April issue and on present information it would seem that he is leading individual. We hope to organise a second Anglo-French challenge contest for the coming winter.

Fly Safely — Avoid Power Lines

The Chief Safety Official for the Electricity Council reminds us that over the past two years four accidents occurred resulting in shock and burns to the operators when control lines came into contact with high voltage conductors. Fortunately none of these cases were fatal but the risk is considerable.

If you are ever tempted to use open ground adjacent to overhead power lines be sure that you allow a wide air gap between the radius of operation so that the model goes no nearer than 100 ft. to any high voltage conductors. In damp air a voltage discharge can easily jump an air gap and several serious accidents have occurred without the model lines actually touching any part of the overhead electricity lines.

Air Scouts

The Air Scout branch of the Boy Scouts Association is 21 years old in 1962 and to mark the occasion a celebration camp was held at Aldershot over Whitsun holidays with over 1,000 Air Scouts in attendance. Flying and gliding displays took place and naturally enough there was a very strong interest in aeromodelling. We congratulate the movement on its increasing success and wish it many more years of continued activity.

Southend Display

A feature of the 1962 Southend Show will be control-line demonstrations in the main display arena on August 17/18/19 and what better subject could be chosen for display than a 96 in. wingspan replica of the locally produced Douglas D.C.4 conversion, the *Carvair*, which is making news with its regular flights loaded with passengers and vehicles from nearby Rochford airport to Strasbourg in Eastern France. Four E.D. racer diesels will power the large model which has third line control working on the throttles. Other scale multi engined control-liners will be flown and the anticipated crowd of summer holiday visitors are sure to be impressed with this effort to put aeromodelling on the map.

Indoor Information

We are indebted to to the N.I.M.A.S. newsletter for news of the elimination to select F.A.I. indoor team members to represent the U.S.A. At the West Coast semi-finals, held at Moffet Field, June 3rd, Carl Redlin made flights of 35 : 15 and 35 : 28 (how's that for consistency?) to qualify as leader from that area of the country, while several thousand miles away on the East Coast, Lakehurst, on the same day, Julius Rudy and Bill Bigge came as close as possible to one another with only 12.8 seconds, difference Actual times were as follows :—

Julius Rudy	30;57	34;09	total 65;06
Bill Bigge	30;48.2	34;05	total 64;53.2

Rudy's second flight was permitted on a re-start and depends on a ruling by the Indoor Committee Chairman as to whether or not it will be allowed. Apparently on the official second flight, Rudy's model struck a balloon string, which was being used to retrieve another model. If the re-start is sanctioned under these circumstances, Rudy becomes the East Coast team member, otherwise Bigge will, like Redlin from the West Coast, represent the U.S.A. for a second time. The central area semi-finals were postponed until June 16th/17th. Incidentally, top time thus far in the series of eliminators is 37 : 15 for Bill Atwood, *not* 39 minutes as reported last month.

Pilots, Man Your Pistes!

Our French friends across the channel are more than upset by the invasion of the Go-Kart fraternity on some of their treasured control-line *pistes*. This *is* an unexpected hazard. We are pleased to see that the French magazines have made an appeal to the High Commission for Sports and Youth to view aeromodelling in a more favourable light than Go-Karting.

Well Done!

Thanks to a quick round-up from members of the trade who gladly provided prizes and to an enthusiastic group of ticket sellers, including a number who are not members of the S.M.A.E., the first stage of a fund raising campaign to meet the cost of sending a British team to the control-line championships, got off to a flying start with no less than £100 raised during the two days at the British Nationals. This generous response from the thousands of visitors and competitors at the Nats. is indicative of our keenness to see the British flag flying at Kiev in September. We wish the fund every success.

PROJECT PARASOL

by Ron Moulton

YES! — it flies! 6 hours to make this fascinating flexible parawing as a glider, power or rubber model. No ribs, no tail and no trailing edge! The talk of the NATS.

RUBBER POWER

10 STRANDS OF 1/8"x1/4"x30" LONG TENSIONED TO 20" LONG.

RUBBER

7 1/4"
10"
6 13/16"
COVER PLATE
BALANCE POINT (HORIZONTAL)
3/16"x5/8" (TWO EACH) (ONE ONLY)
BALANCE POINT (VERTICAL)
9"
3/16"x5/8"
7 7/32"
PLY REINFORCEMENT FOR MOTOR PEG
CUT 1/2"x1 1/4" HOLE FOR RUBBER MOTOR ACCESS
SOFT PIN
2 1/2"
1 3/4"
KEILKRAFT 12" PLASTIC PROP
PEG FOR GLIDER OR POWER VERSIONS
PIN
GLIDER TOWHOOK

6"
1 1/2"
3"
3/16"
CUT FOUR FROM 3/32" SHEET
TAIL CONE

TYPICAL TAIL CONE SECTION

GLIDER

CONTROL LINE LEADING EDGES WITH 1/8" SQ. REBATE AND 3/16"x1/8" REBATE
C
C
2 7/8"
B-B
C-C
13 5/8"
90° FLAT PARASOL
80° WITH CAMBER
A
B
B
A
18"
24" PARASOL CENTRE STRIP
18 1/8"
SCRAP L.E. FILLER
1/4" SQ. SPRUCE CROSSBRACE

6"
1 1/2"
3"
CUT 4 TAIL FINS FROM 3/32" SHEET

3/32" COVER PLATE
CONTROL LINE WIRE BRACING

TYPICAL FUSELAGE CROSS-SECTION
3/32" x 1 1/2" x 18" SIDES
1/8" SQ.

1/8" SQ. ONE EDGE
18"
3/32" SHEET SIDES. 4 OFF.
1/2"

POWER

1/6th FULL SIZE
SCALE INCHES

CREDIT FOR THE origination of the Flexible Wing should go to Francis M. Rogallo of the National Aeronautics and Space Administration (N.A.S.A.), Hampton, Virginia. An exploratory study of the "Parawing" as it is officially christened, was made in the wind tunnels at N.A.S.A. and following research with free flight radio controlled models, gliders released from a helicopter and power models taking off ground, technical notes were produced by N.A.S.A. on the investigations.

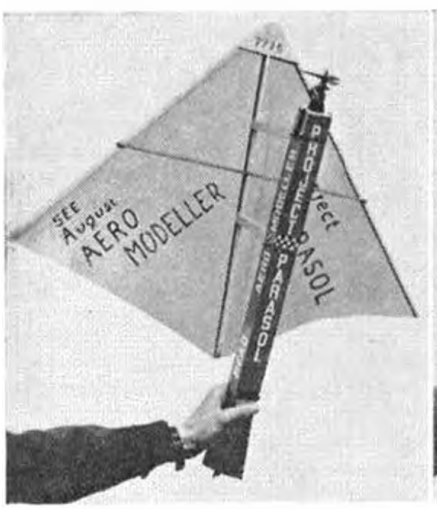
It was with these experiments in mind that we first visualised a free flight model which would teach enthusiasts a new approach to the hobby. Francis M. Rogallo was kind enough to send us copies of the N.A.S.A. technical reports and with the co-operation of Fight Dynamics, Dornier System and others, PROJECT PARASOL began.

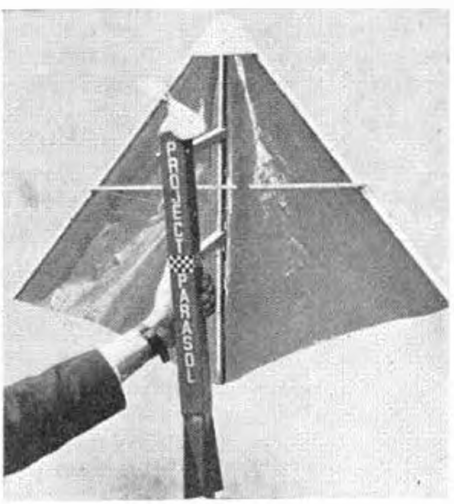
The final result was demonstrated on many occasions at the recent British Nationals and evoked much comment. It seemed significant to us that all of the experienced competition fliers asked one question, "How do you make it fly?", while all of the sport fliers came out with the bland statement, "Just proves *anything* will fly!" Between these two remarks there lays a long story of trial and error. Considering that the original conception was for something made only to offer safe *descent* and that the powered research models require radio control for stability, we think that we have no small achievement . . . but not without some surprises and frustration.

The principle of the Parawing is to take a sheet of non-porous flexible material, fit it with a centre boom and two outer edges, reduce the angle of edge sweep by 5 degrees, from 45 degrees to 50 degrees, and so produce a camber in the two segments. N.A.S.A. technical notes clearly indicated that the prime factors for success would be 50 degrees sweep back, 15 degrees angle of attack, about 45 per cent. centre of gravity position with the centre of gravity located about 33 per cent. chord *below* the Parawing or Parasol. This last factor cannot be over emphasised in the case of a model.

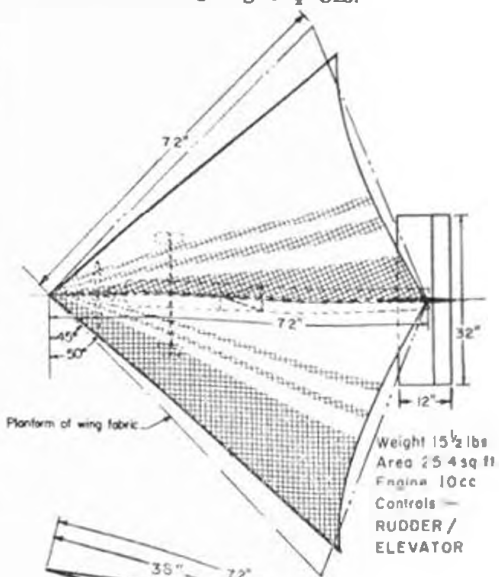
First thoughts were to take the radio controlled research model details from the N.A.S.A. report and produce a wing with 36 in. aluminium tube booms, using green polythene sheeting sold as "Fablothene" in 10 x 8 ft. sheets at 7s. 6d. This was heat sealed around the three tubes and made a wing which weighed 10 ozs. for an area of 840 sq. ins. We decided to use low power and adopted a Mills .75 c.c. diesel with 8 x 4 in. prop. on profile fuselage, suspended by 16 and 14 s.w.g. piano wire. In all respects except for weight and power, the model was half the size of the N.A.S.A. project.

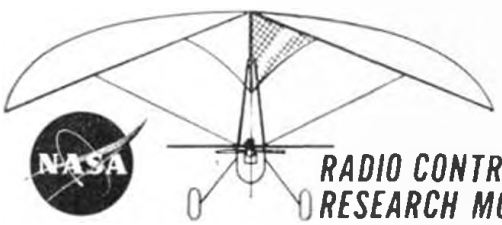
It would be a gross understatement to say that the first flights were anything but spectacular. The need for the low C.G. position was never more apparent and not until we had loaded the fuselage with half the tool kit as ballast did we achieve anywhere near success, although the manoeuvres were literally indescribable. The engine was changed to an AM 15 and solid ballast added so that now the C.G. was near to design position. The ballast amounted to a solid block of lead weighing 19½ ozs.

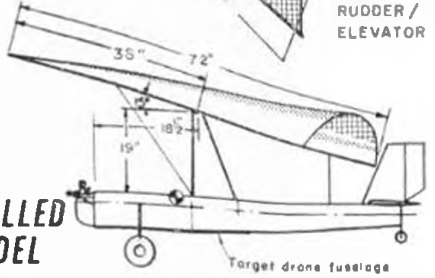




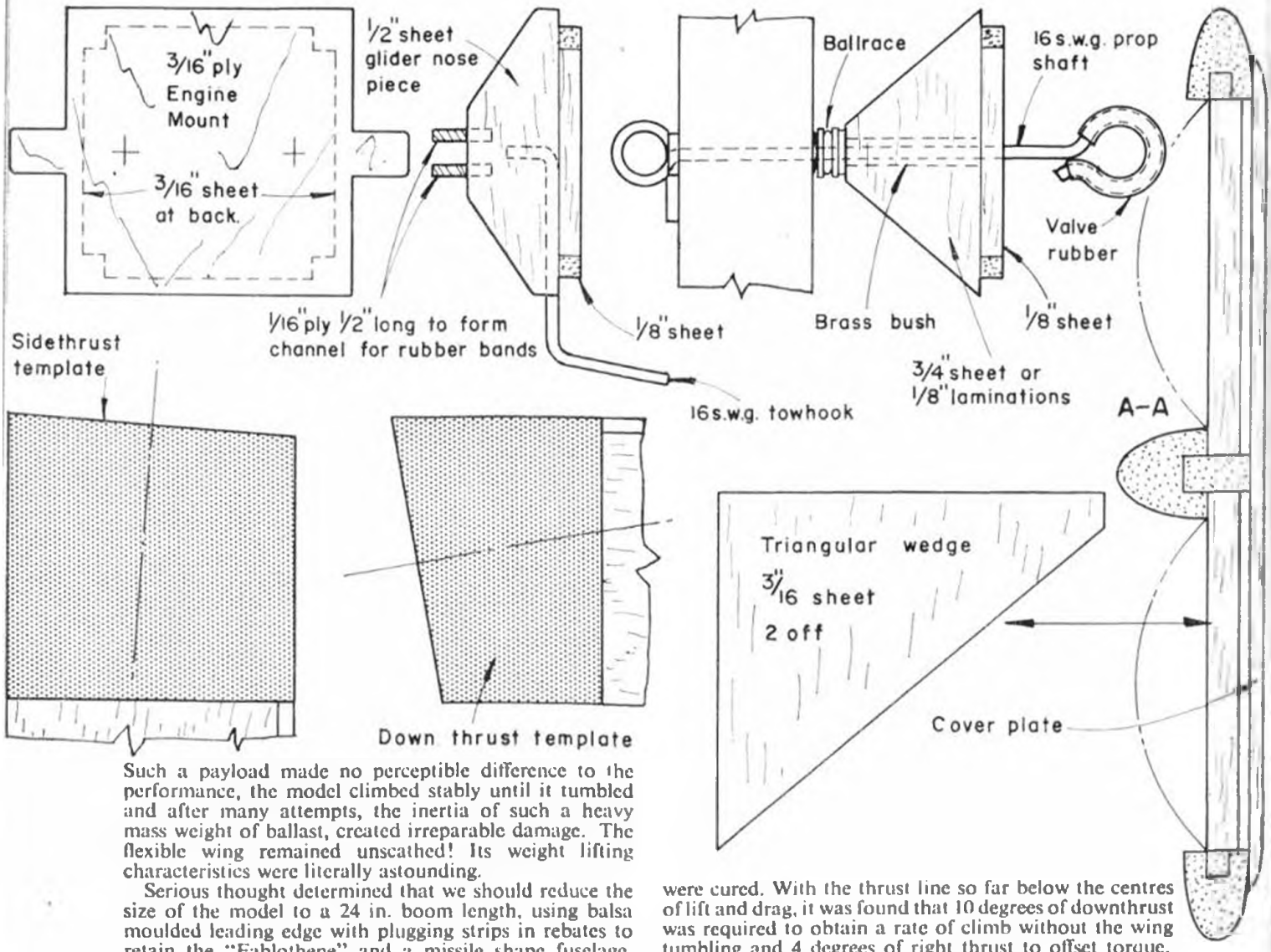
Top, Mills .75 first version after launch by Editor, indicates wing form of Fablothene sheet. Above, the Cox .020 power version compared with rubber drive at right using KK 12 in. prop. Model was demonstrated frequently at Nats., creating much interest. Drawing illustrates the N.A.S.A. research model with conventional tail controls.





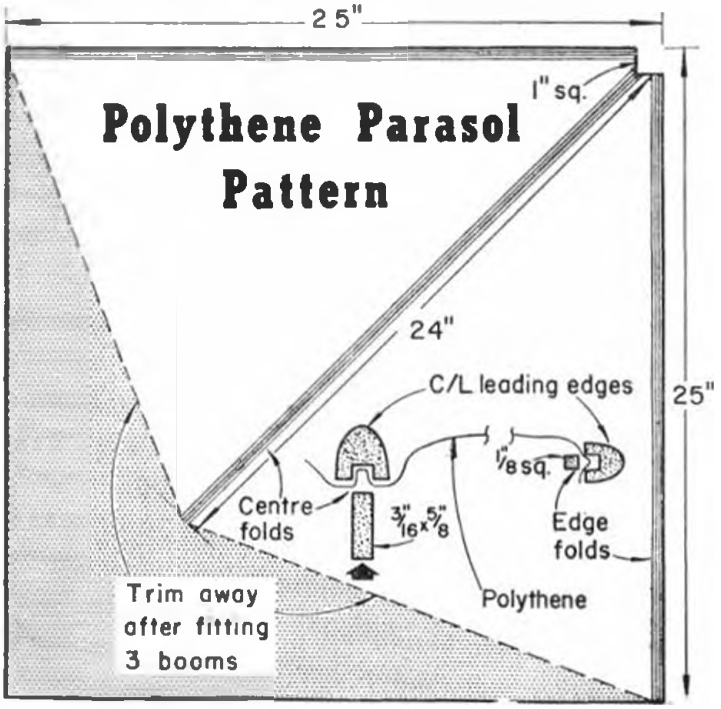


RADIO CONTROLLED
RESEARCH MODEL



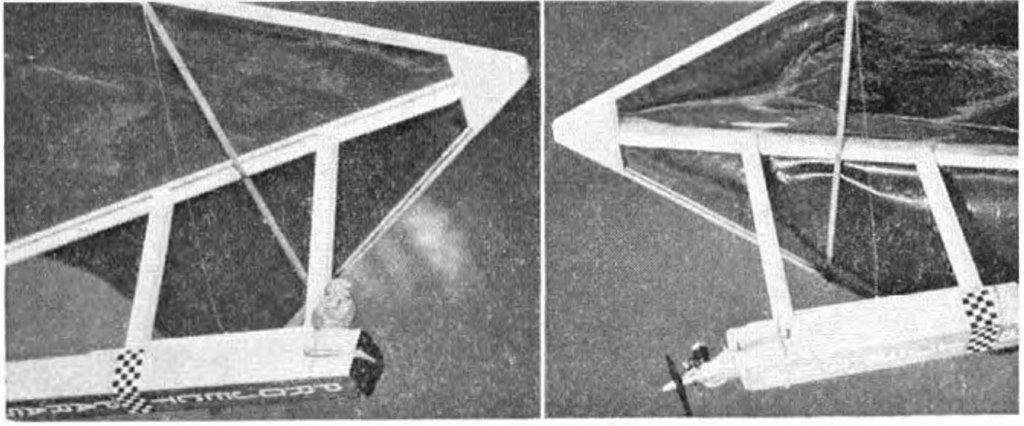
Such a payload made no perceptible difference to the performance, the model climbed stably until it tumbled and after many attempts, the inertia of such a heavy mass weight of ballast, created irreparable damage. The flexible wing remained unscathed! Its weight lifting characteristics were literally astounding.

Serious thought determined that we should reduce the size of the model to a 24 in. boom length, using balsa moulded leading edge with plugging strips in rebates to retain the "Fablothene" and a missile shape fuselage, which could be used first for rubber power then subsequently as a glider or power model with alternative noses. It is this successful three-way model which is presented here. The application of rubber power proved to be a salvation for by adjustment of side and dowthrust the undesirable affects of a low suspended power unit were cured. With the thrust line so far below the centres of lift and drag, it was found that 10 degrees of downthrust was required to obtain a rate of climb without the wing tumbling and 4 degrees of right thrust to offset torque. The same settings are also required for power with a Cox .020 engine. Such settings produce a right-hand spiral climb and the glide turn is determined by any assymetrical camber in the wing. In our case, it is a wide sweeping left-hand turn. Any excess of power can be further cured by the addition of ballast, all three of our versions of PROJECT PARASOL carry about 3½ cu. in. of Plasticine, internally in the case of the glider and the power model, externally in the shape of moulded "Yogi Bear" for rubber. Should the model ever reach a stage of overpowering or be stalled by a gust, we have no excuse for denying that the result will be absolutely no recovery from a most impressive vertical dive. This happened at the Nationals when we tried some hot fuel and achieved something like 500 ft. altitude. When the Cox .020 leaned out at the end of a two-minute run, it caused a tumble and down came PROJECT PARASOL like a dart. *However*, the result is as spectacular as the climb and the damage insignificant. It is quite amazing how the PARASOL remains intact and the vertical strutting only has to be glued and pinned back in place.



Construction

Simplicity is the keynote. All one needs to make the fuselage is a sheet of 3/32 medium grade, cut into four 18 x 1½ in. strips. 18 in. lengths of ¼ square are added along one edge of each piece and the four pieces assembled into a square section tube. Make holes for the dowels at the rear for rubber anchorage, at the front for motor or glider nose anchorage, insert ply reinforcements, then cut two 3/32 x 3 x 6 in. sheets as indicated to make up the tail cone and fins. Trim nose angles,



The Glider variant (with Plasticine "Yogi Bear" aboard), and Cox .020 powered version show the simple construction of mounting pylon—held to fuselage with rubber bands over base platform. Model flies in steady right spiral under power, tows up like a kite.

using templates. The Cox engine fits on a ply bulkhead with "ears" so that rubber bands can retain it as a knock off mount, same goes for glider nose, which should be block balsa with towhook incorporated, whilst the rubber power nose should carry a bush and preferably, thrust-race bearing for the 12 in. KeilKraft plastic prop. The fuselage can be tissue covered and decorated like a rocket. Pins should be inserted so that a rubber band retainer for the rubber power nose block can be fitted.

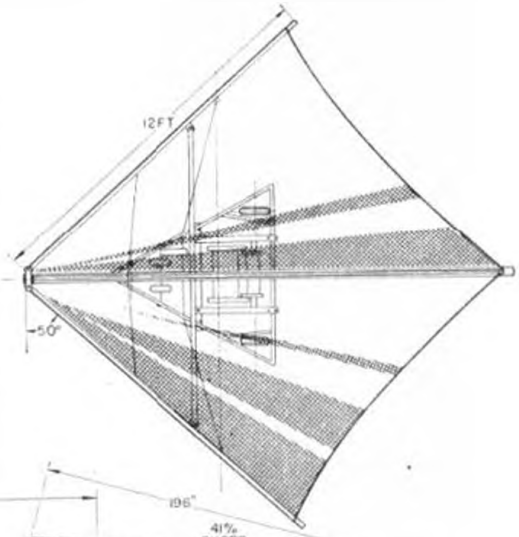
Now for the PARASOL. Take any non-porous flexible sheeting. Polythene is most convenient and inexpensive, but you could also use the bathroom curtains if the decorations are sufficiently attractive. Light weight is advisable. For the edges and centre boom, one can use practically anything. Our advice for simplicity is the symmetrical sectioned control line leading edge with ¼ in. square rebates, and another, larger, leading edge for the centre with $\frac{3}{16}$ in. wide rebate. Otherwise there is a good range of plastic curtain rail available, similarly channelled. This channelling is to be advised rather than heat sealing the polythene to the booms. Use "Pac" adhesive to hold the polythene in place.

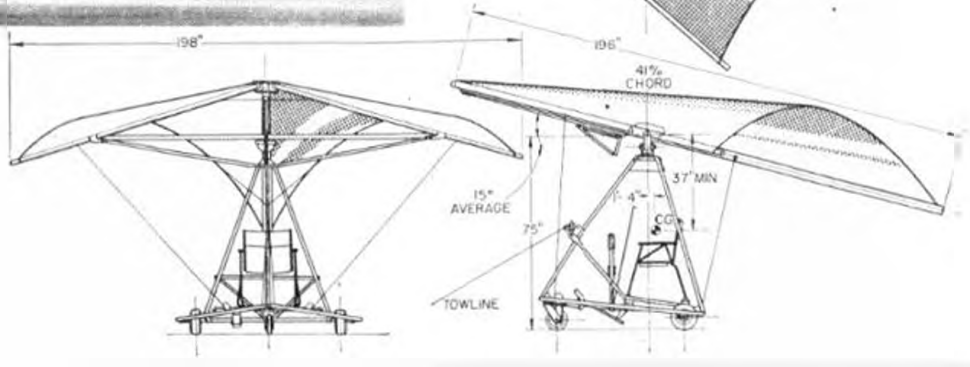
Start by cutting out a 25 in. square, removing a 1 in. square corner then sticking the polythene to the "leading" edges, pushing into the rebate and holding it there with a ¼ in. square balsa filler strip. Use plenty of "Pac" cement. Polythene has no effective solvent, but this adhesive, coupled with rebate lock arrangement has worked very well.

Mark a diagonal across the square and repeat the operation for the centre boom, but be careful to see that the moulding is applied to the correct side (refer to actual size cross-section drawing). Having fitted the centre boom with $\frac{3}{16}$ in. x ¼ in. strip wedging into the rebate, trim off the excess polythene by cutting in straight lines from the outer edges to the centre at the extremities of the booms. Now arrange the 50 degrees sweep by fitting two triangle wedges at the nose, gluing them to the packing strips, pinning securely and setting aside to dry. Subsequently, fit the 3/32 in. sheet overlay right across the nose and the scrap leading edge filler at the front. Having done this and checked the sweep angle, fit the spruce cross-brace from boom to boom at the dimensions indicated on the plan. the PARASOL is now complete.

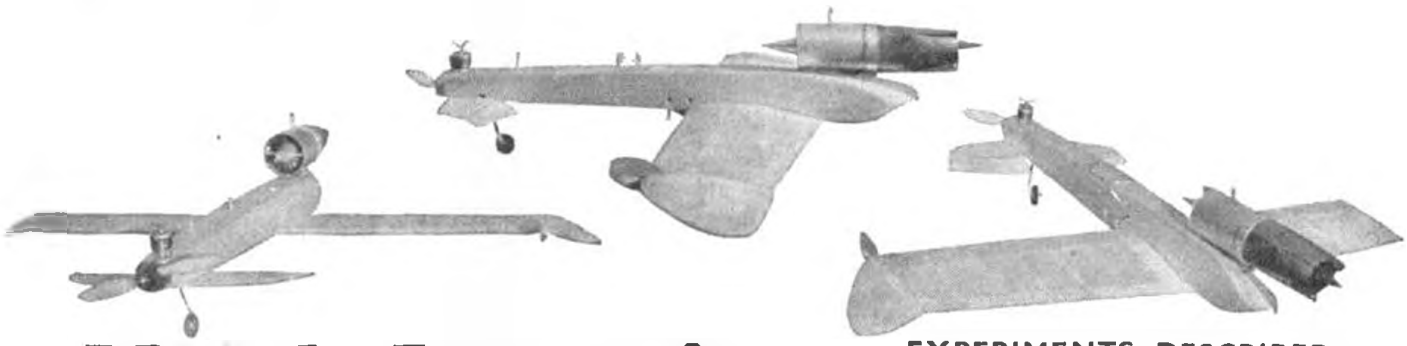
$\frac{3}{16}$ in. x ¼ in. strip is used for the pylon to set the Parawing at a 15 degrees angle of attack. First laminate $\frac{3}{16}$ x 3 x 9 in. to a similar sized piece of thin ply. This makes the base and offers extensions to retain the pylon to the fuselage by rubber bands for movement in trim and shock absorption. The pylon is simply an assembly of five pieces of $\frac{3}{16}$ x ¼ in., one on its edge down the centre line of the base, 7½ in. long, with two verticals either side of it at front and rear, each permanently glued to the centre boom filler strip at the dimensions indicated. Stick a pin (bent into a loop) in the centre base strip of the pylon, rig with control line wire, attached to this pin and extremities of spruce crossbrace so that the pylon is 90 degrees to the PARASOL and we are ready to assemble for the first flight. Attach nose and pylon to fuselage with rubber bands. Check the vertical C.G. first by adding ballast to the fuselage. Then shift the pylon on the fuselage until the horizontal balance is correct. Be sure that the vertical C.G. is no higher than shown.

Trim is much the same as for any delta, the horizontal C.G. location is tolerant; but any tendency to zoom means a need for a *lower* C.G. or in extreme cases, more downthrust. A right spiral, created by offset, cures a stall. Launch as with a conventional type; but be sure that you have wind in the sails!





Tom Purcell of Flight Dynamics Inc., P.O. Box 5443 Raleigh, N. Carolina, U.S.A., offers complete plans, pictures and instructions for his man-carrying car towed "Flightsail" at eight dollars incl. airmail. Tows at 35 m.p.h., altitude limited only by length of line. Can also be released for free descent. Is controlled by shifting C.G. relative to wing.



Model Jet engines

EXPERIMENTS DESCRIBED BY Flt. Lt. R. J. LAWRENCE

ANY MODELLER EXPERIMENTING with the model jet engine is bound to have come across the very real problem of efficient fuel injection.

Throughout, the greatest problem has always been to mix the fuel easily and efficiently with the air flowing through the unit. The two methods in general use have serious drawbacks which are enough to deter the would be experimenter from the very beginning.

The first and most popular system vaporizes the fuel in pre-heating coils in the way of the plumbers blowlamp. (Fig. 1). This may seem simple and efficient

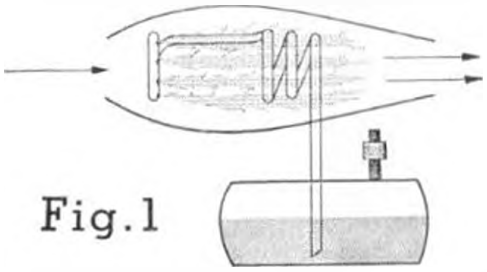


Fig.1

but in fact when scaled down to model sizes the jet holes are far too small to be drilled (I punched mine with a needle point) and being so small were constantly subject to blocking. The coils, in addition, must be pre-heated before starting and when buried in the heart of a jet unit, this is all but impossible, to say nothing of the fire hazard.

The second method relies on a highly pressurised fuel tank to eject the fuel through a very small hole, upstream on to a sprayplate where it spreads in small droplets into the passing air stream (Fig 2.).

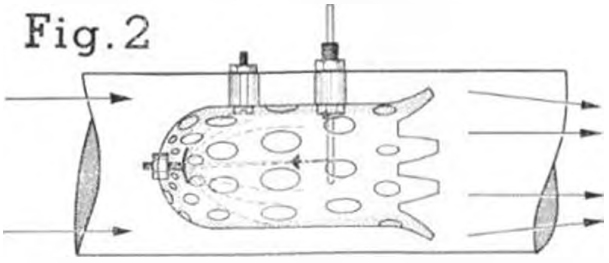


Fig.2

This policy of delivering high pressure fuel to the combustion chambers of course, follows full sized practice where pressures of some 3,000 lbs. per sq. inch, are used in conjunction with highly complex and accurately machined spray nozzles. All this is quite unsuitable for model use. We need a device that is simple, and is easily manufactured, something that gives us a good mixture under all airflow conditions and is ready

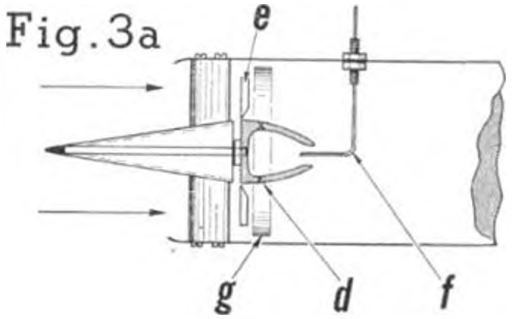


Fig.3a

for instant ignition without the need for pre-heating, or prodding with a blowlamp pricker. The device detailed in (Fig. 3), does just this. It was designed into the latest unit and since the first trial, I found complete release from all fuel problems. The mixture is so uniformly scattered, that the only ignition required on any individual run, is one old fashioned match. The unit burns without the usual tongue of fire from the jet pipe which though impressive, merely told a tale of incomplete combustion

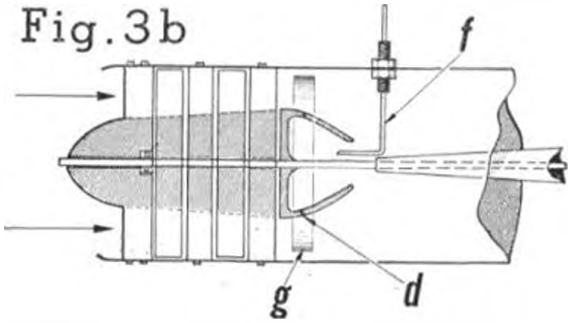
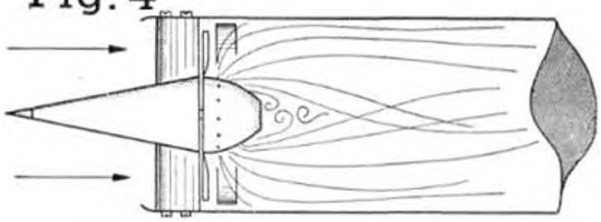


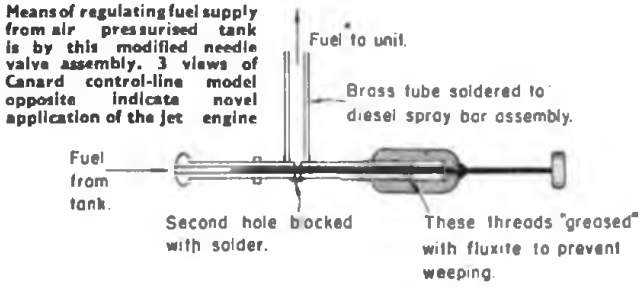
Fig.3b

within the engine. The absence of pre-heating coils incidentally, gives a much clearer airflow through the duct.

The main feature of the device is a hollow dural cone suitably streamlined on the outer surface to blend with the intake centrebody in the case of the ram jet, or with the compressor drum on a gas turbine (Fig. 3a and b). This cone revolves at high r.p.m. on a suitable shaft, driven, in the case of the ram jet, by a small turbine "e" attached to the forward face of the cone. Around the circumference of the cone at point "d", are arranged a series of eight small holes equally spaced. The fuel is supplied from a tank (pressurised with a cycle pump) through a needle valve (diesel modified) to the small bore brass delivery tube (f). Here it flows and even drips at a weak mixture setting, into the hollow cone. Once in

Fig. 4





the cone of course, it is accelerated out of the holes in a fine spray. The actual flow pattern under average conditions is shown at (Fig. 4).

The annular ring situated at (g) was added in a later experiment, as some of the heavier droplets were finding their way onto the chamber wall. The ring serves two important functions. Firstly it catches these heavy drops which run back to the trailing edge of the ring and are carried away by the slipstream. Secondly, though unintentional in the original design, it provides a cool boundary layer of air between the flame and the combustion chamber. This cool layer enables the unit to run at full throttle with the forward half of the combustion chamber only just too hot to touch with the naked hand. Talking of heat, I am sure it is unnecessary to use the almost unworkable heat resisting alloys for our components. The experimental model need run no longer than sixty seconds to prove a valuable point.

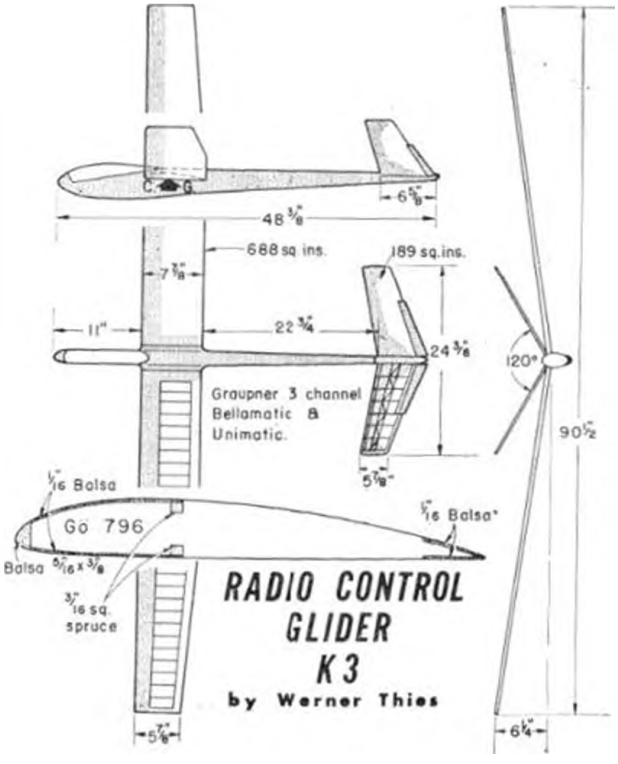
The control line model shown is a Canard jet engine test bed. The pressurised fuel tank for the jet unit is mounted in the fuselage. The engine on the front is an E.D.246. This is to provide some airflow through the unit on the ground for light-up, and to get the model up to speed. The model is quite docile provided the Centre of Gravity is correctly positioned. The first trial with the jet running resulted in a half loop on take-off and half a circle inverted before bunting out! It was found later that ballast was left out of the engine bay! It is not possible of course, to measure actual jet thrust in ounces when airborne but timed runs with diesel only, compared with both engines give some indication of any useful thrust from the jet unit.

Novelty advantage only

In conclusion, the author would forecast that the model jet engine (pulse jets excluded) will never realise the efficiency of the two stroke engine. The jet motor has little to offer the average modeller as he already has all the power he can use at his fingertips. The air density problem at high altitudes does not affect the model world so once again the jet engine takes a back seat, but for the modeller who is excited by the prospect of something new, something with a real challenge, let him turn his hand to this very knotty problem. Though difficult, I am sure the results will come with the old cut and try methods and not so much the complicated formulae. Why not have a try? Yours might be the idea we've all been waiting for.

Vee tail R/C sailplane

Novel application of three channel radio control to a Butterfly tail of 120 deg. form is by Werner Thies of Germany. Graupner 3 channel gear operates a Bellamatic connected to the independent "ruddervators". This selects left or right turn with opposite action of the surfaces. In addition, a Unimatic selective actuator is connected to the Bellamatic and will move the Bellamatic servo plus push-rods fore and aft. This moves the ruddervators in unison for elevator control to climb or dive. Note too that Werner Thies adheres to the flat based airfoil Go 796 on which he reported in February 1962 AEROMODELLER. An earlier feature on his Vee tailed sailplane appeared in AEROMODELLER for May 1960.



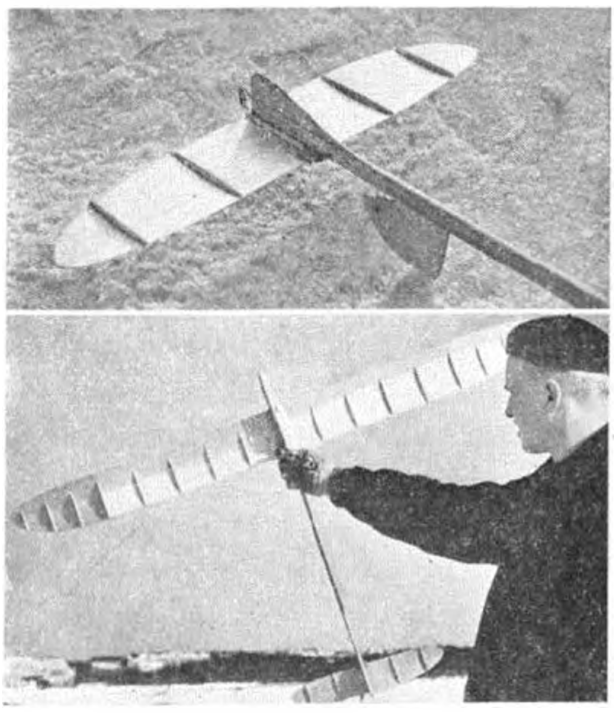
High performance A/1 glider with sheet wing structure

by Reino Hyvarinen

DESIGNING A HIGH performance, yet easy to build A/1 glider is difficult. Using common construction methods, the wing of relatively high aspect ratio having a thin modern section demands careful construction, and many hours of work. "Standard-Bauweise" developed by Austrians Jedelsky, Czepa etc. is an astonishing way of cutting down building time. Trying this method of construction, and checking the numerous claims of flying performance of these sheet wings led to the design of MINI-EGAL.

Due to the fairly long span of 55½" (A/R of 12.8) and the bending strength of this sheet wing, the halves are joined together with one piece of 12 s.w.g. piano wire. This gives the already flexible wing extra safety during the tow in gusty and windy conditions. By bending this wire, dihedral angle can be changed, as well as the angles of attack on different wing halves. Yet another advantage of this system is that MINI-EGAL can be packed in a box of only 34 in. length.

One ¼ in. by 4 in. by 36 in. and two 1/16 in. by 3 in. by 36 in. medium weight, quarter grain balsa sheets are needed. Quarter grain sawn sheets are essential, because most of the strength against flutter at higher than usual speeds (for example after a bad tow release) depends on stiffness. The sheet weights on the original were 2 oz. for ¼ in., and ½ oz. for each of the 1/16 in. sheets.



First step in building the wing is to cut the 4 in. broad ¼ in. sheet into two strips of 2 in. each. One is used in the centre panels, the other can be used for the wing tips and the sheeting of the fuselage nose. Then the 3/32 in. by 3/16 in. spruce "buffers" are cemented to one edge of these centre panel ¼ in. sheets. The pieces of 3/16 in. by ¼ in. spruce spar enclosing the thin walled 5/32 in. I.D. metal tubes for the wire are prepared according to the plan. The tubes and the ply strengthener are cemented on their places using Araldite. When completed, they are accurately set in and cemented to the roots of centre panel ¼ in. sheets.

Meanwhile the tips may be assembled. The elliptical shape is carved first after assembly, so the ready-bent (by moistening and drying) buffer spar can be cemented first after L.E. has been carved to correct lines. Before assembling the still rectangular pieces of ¼ in. and 1/16 in. sheets the underside of the ¼ in. sheet has to be carved and sanded according to the plan to give a smaller angle at the sheet joint, and thus also smaller relative under-camber at the outermost tip section. Because the wing parts are assembled upside down on work bench, the angle between ¼ in. and 1/16 in. sheets, and the airfoil countours, too, depend largely on the accuracy of 3/8 in. by 3/16 in. triangle carved away on the upper side of ¼ in. sheet. A strip of wax paper is laid below the joint to prevent cementing the sheets to the bench.

After cementing the sheets together, the rib positions are marked, and the ready carved and sanded (underside is rounded except at dihedral ribs) ribs from very hard ¼ in. sheet are double cemented at their respective positions after lifting T.E. by ½ in. All the wing panels are assembled likewise. Note the tilt at dihedral ribs. When all panels are assembled, and wing root fillets added, the correct wing section is carved and sanded on the ¼ in. sheet. One must be careful not to spoil the section. The undersides of dihedral ribs are rounded and the "bubble" at 1/16 in. ply root ribs above the wire is to strengthen the tube fastening and also to prevent rubber bands from slipping between the wing halves.

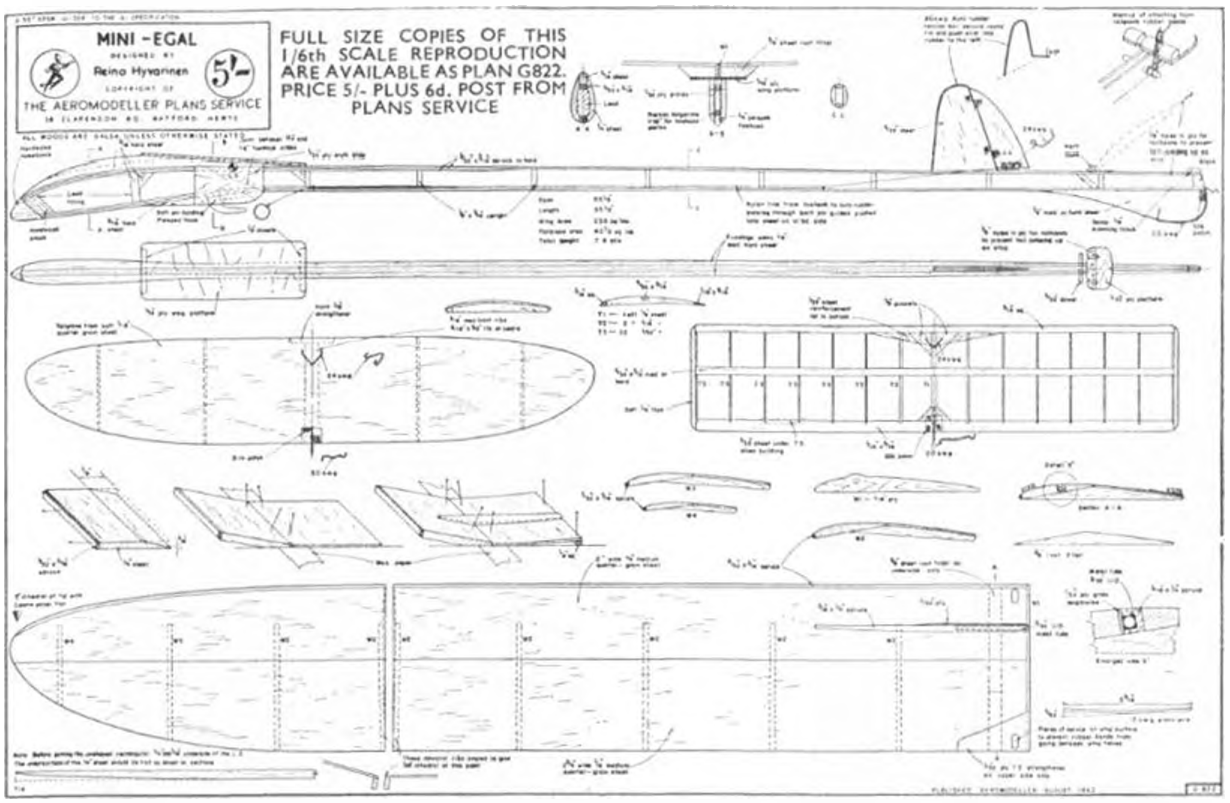
The completed wing needs no tissue covering, nor grain filling, because this section prefers turbulent flow on the upper surface. An extra layer of shrinking dope on the under surface *only* is preferable to hold the wing section. Wings of the original prototypes have weighed (well doped) around 3 oz.

There are two different tailplanes for this glider. The sheet one is easy to make, more beautiful and works well under good conditions, but in gusts the "old-fashioned" tailplane gives better longitudinal stability, due partly to more decalage.

The sheet tailplane uses the full width of 3 in. sheet, which ought to be quarter grain, and light, too. After shaping the outline the upper side is moistened, and the ribs are cemented on the concave side. Another possibility is to bind the moistened sheet loosely on an old sheeted wing or some other suitable form, and when dry, cement the ribs.

The built-up tailplane follows usual construction. Materials must be chosen carefully to avoid extra weight.

Left shows the undersurface ribs which maintain the camber of the airfoil section. At far right is designer Reino Hyvarinen with his two Egals, Mini and Sans Egal, the latter already a popular A.P.S. design plan G/725 price 7/6d.



Covering is of Jap tissue and doping must be limited to a minimum for the same reason.

Due to elasticity and strength, spruce longerons are recommended for the fuselage. If, however, it is impossible to obtain these, hard balsa longerons of $\frac{1}{8}$ in. by $\frac{1}{4}$ in. are suitable substitutes. The longerons are tapered at rear end (optional), and for this operation they are lightly cemented together and carved or planed to shape.

Commence fuselage construction by cementing starboard sides (inner sides at same level) together at the joint. They can be preliminarily shaped to outline. Then the $\frac{1}{32}$ in. ply towhook rail, the longerons, (not forgetting the $\frac{1}{32}$ in. deep recess for towhook rails), together with uprights and the noseblock are fitted on starboard side. After this the $\frac{1}{8}$ in. port side is cemented but the $\frac{1}{4}$ in. side sheet at nose is still left open for ballast to be added. Tailplane and wing are fastened with rubber bands and noseweight, preferably in sheet form is added to the ballast compartment until the C.G. of the model in *this* form is $\frac{1}{4}$ in. ahead of the C.G. on the drawing. Then the remaining part of fuselage side is cemented on. After sanding the fuselage to its correct form, all the little details are added and the whole assembly well doped. Leave the $\frac{1}{16}$ in. ply wing platform off for the moment.

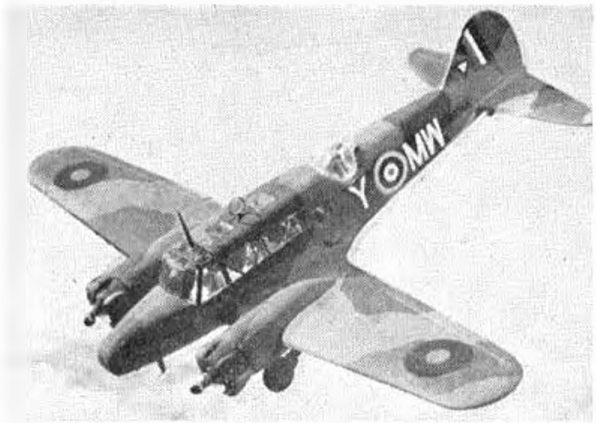
MINI-EGAL has been designed around the 12 grammes/sq. dm. (3.95 oz/sq. ft.) F.A.I. loading rule which is used in most countries. Some countries still use the 8 grammes rule, but this loading difference has little effect in sinking speed of this glider, so it can well be loaded up to 215 grammes (7.6 oz.). If extra weight is needed, it can be added below the wing platform which, after weight check, is cemented on its place.

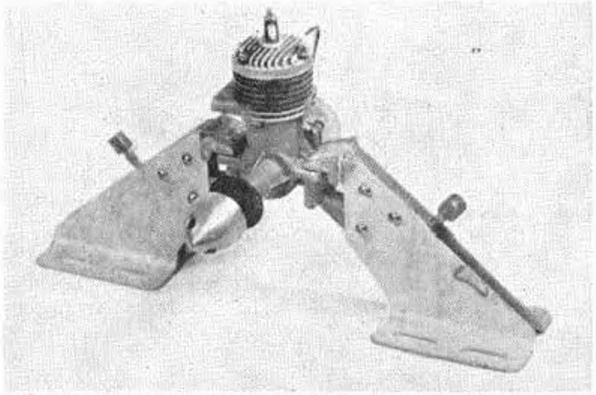
After preliminary hand launches, towing tests with short line lengths can be commenced. Glide turn should be about 35-40 ft. diameter, to the left. Auto-rudder movement is limited with two pins. The towhook can be moved on its rails to find the best position.

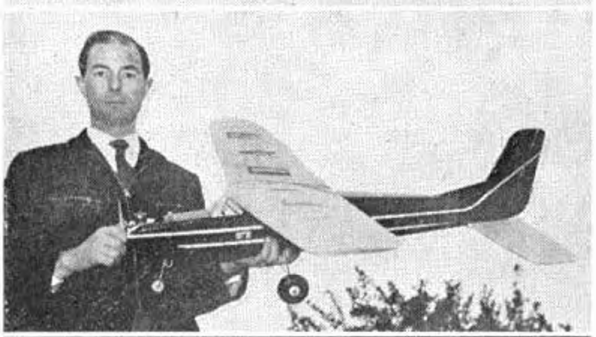
During the test flights one interesting thing was noticed. One prototype having only slightly different wing section from the other one did not fly properly until a thread turbulator was cemented $\frac{1}{4}$ in. from L.E. on upper surface. The other prototype had no faults, and it flew regularly for over 2 minutes. Fast glide, "heavy" stalling tendencies and flying times around 90 seconds from 164 ft. line length are clear indicators of the need of anturbulator. A thread turbulator of around 12 in.—18 in. diameter cemented $\frac{3}{16}$ in.—$\frac{3}{8}$ in. from L.E. on upper surface will improve the flights to 2 minutes plus class improving also longitudinal stability. The best position, and diameter of the turbulator must be tried separately, because they depend very much on the foremost part of the wing section. Another way of testing the turbulator need is to add it *only* on the inner wing half. If the turning radius increases, the turbulator is good, but if the radius decreases, the turbulator causes more drag than lift and it must be changed to another place or to be taken entirely away.

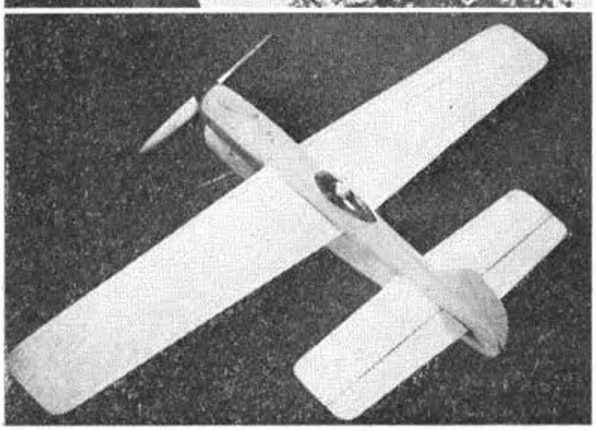
Do not forget to light the D.T. fuse even on apparently non-thermal days. The designer did so once, and ski'ed after the model for more than half an hour! Fortunately MINI-EGAL was found—now he lights the fuse every time!!

Trade Notes









ANOTHER NEW RADIO kit on the market from **Model Aircraft (Bournemouth) Ltd.** Visitors to the Nationals were able to see the *Veron Robot* covered and in bare frame on display. With span at 45 in. it makes a compact trainer and will take 1.5 c.c. to 2.5 c.c. Many of the *Viscount* design features are incorporated, in fact the wing is a reduced version of the *Viscount*. Pre-cut fuselage sides and ply parts, spindle edged cowlings and lots of other ready shaping go to make a compact kit, which we are sure will become a favourite Price 79s. 6d. We look forward to making up a test model. The **Aviomodelli** *I-Radar* has turned out very nicely indeed in black and white. Preliminary tests are being made with R.E.P. Unitone. Another radio design just off our Watford boards is the **Graupner** *Bolkow Junior*, scale model which has made up quite well, but we replaced the wood for some of the bulkheads and had to watch carefully on the sequence of assembly, otherwise the builder is likely to find he cannot fit part 11 for example when part 4 is already in position.

A visit to **Ripmax,** distributors of Graupner in the United Kingdom, rewarded us with first sight of many very interesting accessories. The 5s. *Perlon Towline*, suitable for smaller gliders; also the accessory pack at 16s. 6d. for a set of three *Tri-Pacer wheel spats*, three *winking lights*, red, white and green at 10s. 8d. for navigation equipment on any model. These are connected direct to either a 2-volt miniature accumulator or 1.5-3v. cell, take about 45 secs. to warm up and then blink most effectively. We checked for electrical interference and they did not appear to affect our radio gear, so they might be a good idea to install in a model for dusk flying or in any spot where there is a risk of loss. The winking light should always serve to locate the model! Ripmax also showed us their fine range of *Litesold* soldering irons, available in many combinations of voltages and watts from 6-volts to 240-volts, conveniently balanced and perfect for radio construction, prices ranging 21s. 6d. to 25s. 6d. Another line which caught our eyes was the Graupner tanks, including the 10 c.c. tank we illustrate here and the 100 and 200 c.c. polythene *Klunk tanks* at 8s. 6d. and 9s. 6d. for radio control. These have screwed in filler connections, a swivel feed, large sealing cap and well made metal parts. One other small line which we thought most useful was the new Ripmax 1s. pack of twelve assorted fine, medium and coarse sandpapers, a convenient accessory for all modellers. It should not be long before the first *Variton/ Variophon* radio units arrive at Ripmax from Graupner. We have seen the English translations of the copious literature and it seems very much like that ideal sealed

An "Annie" for 3s.1 Airfix's latest 1/72nd scale is the 49 part Avro Anson Mk. I, with transfers for 217 Squadron. This is a kit for the nostalgic—and will be a favourite for all A.T.C. cadets who had their aerial baptism in the faithful "Annie". Next, work clamps by E.D. at 9s. per set have many useful applications. Keith Stanley is seen next, with A/M test I-Radar by Aviomodelli, which has turned out to be a very smart model. Bottom is the Mercury F.A.I. racer, showing small canopy. Below, the KeilKraft Phantom Mk. II in camouflage and invasion markings—first of the C/L trainers and still one of the most attractive.

box a lot of modellers have been seeking for a long time. Emphasis is made of the fact that positively *no* tuning is required with these new *Graupner/Grundig* outfits.

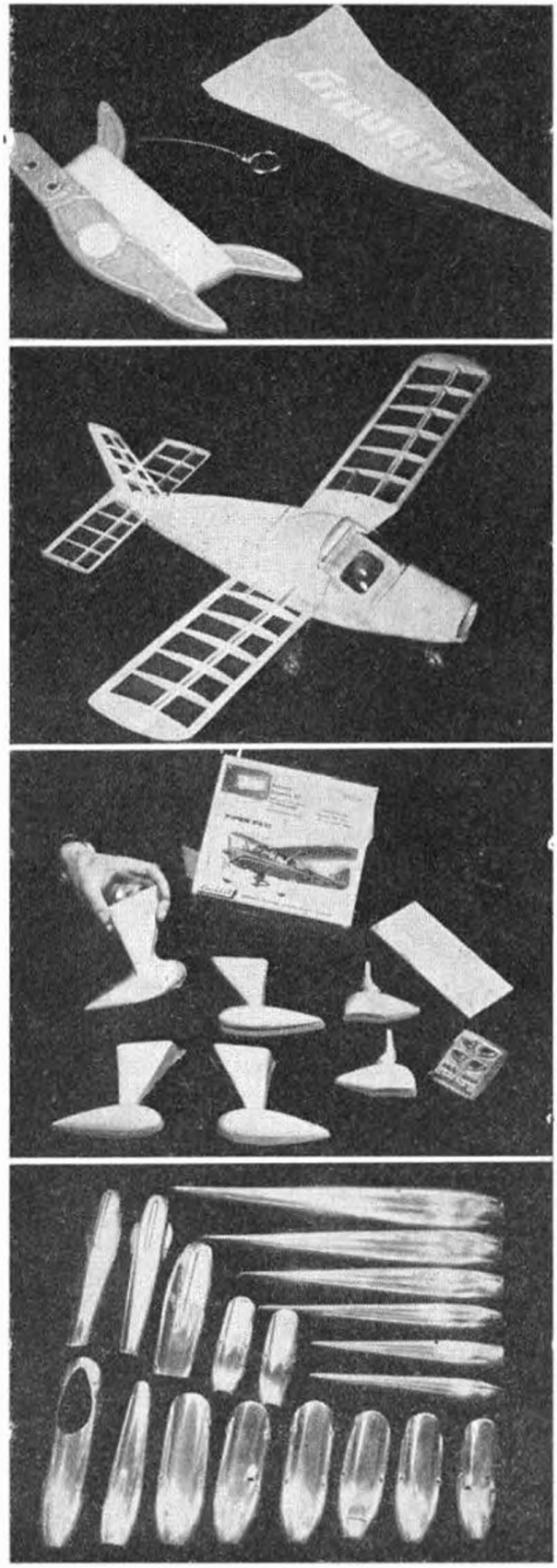
The **Mercury** *F.A.I. team racer* distributed by **KeilKraft** has made up well, though we should warn intending competitors that it is necessary to build up the fuselage in width and with a bigger canopy in order to meet the required dimensions. We used the canopy supplied and as can be seen in the photograph, it is obviously on the small side. We have also strengthened the tailplane, which was rather thin and whippy for vibration resistance at speed. This design forms an adequate introduction to the F.A.I. racing class for anyone seeking an easy to build model and it would also make a good mount for club Rat Racing, where no specification has to be met. Incidentally, watch the bellcrank size, which in our case was not the same as for which the model was designed, calling for alteration in the lead-out holes.

Roland Scott sent us down a square yard of his new *nylon* from a source he had just discovered, at the reasonable price of 6s. per square yard in red, blue, yellow and white. We back up Roly's statement that dope does not run through for this is very close weave material and one with more than adequate strength and density of colour. A duplicated sheet is supplied with orders, giving helpful notes on covering with silk or nylon. We cannot help but reflect however, that modellers would *never* have dreamt of using this weight of covering material, even a few years ago. It just goes to show how we have all become used to application of heavier and stronger covering mediums.

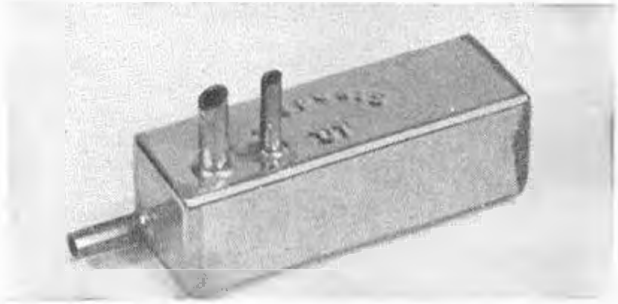
Paul Pomadi of Nuneaton, is now renowned among speed enthusiasts in this country for his range of *engine pans*, numbering at least 24 different types and covering practically every possibility. Available plain or polished for an extra 2s., a typical example is his type TR4, to suit "Miss F.A.I.", at 20s. polished. Price lists are available and we would be pleased to forward enquiries.

Those engraved name and address labels were mentioned in "Hangar Doors" last month, produced by Mr. George of Liskard, are not made of Formica as we stated, but are laminated plastic, known as *Traffolyte*, produced specifically for engraving purposes. Modellers who saw the one we had on our PROJECT PARASOL at the Nats., admired this permanent label which costs only 1/-.

We should also mention once more the *Universal Cleaner* sold in 1s. 9d. bottles by **Humbrol**. Recently we had occasion to remove glass fibre resin from clothing—and we were pleasantly surprised to find this cleaner did the job perfectly. Anyone who has worked with glass fibre will appreciate the value of the cleaner!

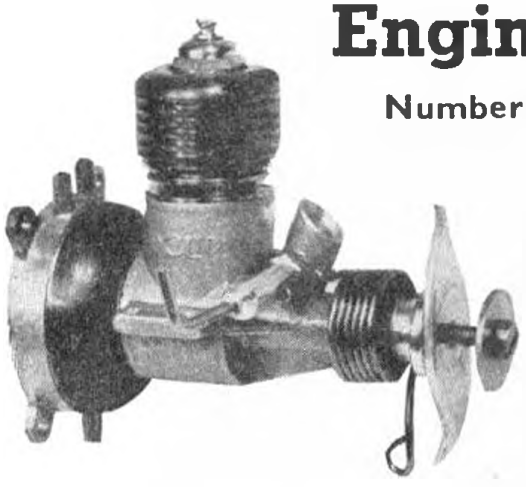


Top, handy 165 ft. Perlon line, complete with tow ring pennant integral pulley on plastic handle for 5s. by Graupner. Next is A/M test airframe of Graupner Bolkow Junior, showing unusual spar arrangement for swept forward wings. Capacious fuselage takes Radio easily. Span is 32½ and price £2 19s. 6d. Accessory kit for the Graupner Piper Tri-Pacer is a triple wheel spat set and navigation light covers. Vacuum formed, they assemble easily, cost 16s. 6d. Set of blinking lights is available. Bottom, part of the large range of beautifully cast and polished light alloy engine mounting pans produced by Paul Pomadi. Below, the Graupner 10 c.c. tank for F.A.I. team racing is particularly robust, sells at 6s.



Engine Analysis

Number 98 by R. H. Warring



DAVIES-CHARLTON Bantam DeLuxe ·76 c.c.

SPECIFICATION

Displacement: .762 c.c. (.0465 cu. in.)
Bore: .410 in.
Stroke: .352 in.
Bore/stroke ratio: 1.17
Bare weight: 2 ounces (with tank)
Max. B.H.P. .053 at 14,500 r.p.m.
Max torque: 3.3 oz.-in. at 12,000 r.p.m.
Power rating: .07 B.H.P. per c.c.
Power/weight ratio: .026 B.H.P. per oz.
Material specification
Crankcase: light alloy pressure die casting
Cylinder: leaded steel
Cylinder jacket and head: turned dural
Piston: hardened steel
Crankshaft: hardened steel, 6BA propeller shaft (bolt)
Connecting rod: light alloy forging
Bearings: all plain
Plug: KLG Quick Start, short reach, 1.5 volt
Spraybar assembly: light alloy
Propeller driver: dural
Manufacturers: Davies-Charlton, Ltd., Hills Meadows, Douglas, Isle of Man

WITH ANY PRODUCTION run of mass-produced engines, particularly in the smaller sizes, the odd engine in a batch often comes out a little better in performance and shows up that much higher on the test prop. during the proving run. Due to considerable improvements both in design and production technique the difference between typical "average" engines is usually small, with just the occasional "rogue" and the occasional "hot" performer. The former ends up in the junk bin and the latter is usually put aside for the manufacturer's own personal use! Way back in the early 1940's we can remember doing the same when a certain 3.5 c.c. spark-ignition motor was produced in batches of 25. Any engine that did more than 4,000 r.p.m. on the test prop. was put aside for our own models—with the boss having first pick from the 4,000 plus specimens! In those days, however, with relatively crude manufacturing equipment and pouring our own sand castings from melted down car pistons, considerable variation in batch performance was the rule rather than the exception. The main thing was to market an engine which would start and run consistently. Nobody had heard of B.H.P. curves then!

The Bantam is one of the most heavily mass-produced engines in this country, if not the most numerous as a production line, backed by the very considerable resources of the Davies-Charlton engineering factory. It was one of the first low-priced British glow motors, achieved without any sacrifice in quality. It suffered few initial troubles—about the only one we can recall being that the metal gasket originally employed as a cylinder head seal could leak and cause difficult starting, but this was quickly ironed out by replacing with a fibre gasket.

During the whole of its run it has continued to give excellent service as a sports motor and, with the "Quick-start" spring, has always been an easy starter for beginners, following the exact sequence laid down in the instruction sheet. Provided the engine is not initially completely flooded (or the glow plug burnt out or battery flat) this is a sure-fire cure for starting troubles—just do it the way the manufacturers say!

About a year or so ago there was a demand for the Bantam fitted with an integral tank for radially mounting in Continental ready-to-fly models, notably the Dux Test Pilot. Many thousands were produced for this purpose, utilising a die cast tank backplate and mount and turned dural tank fitting in place of the original crankcase back cover—the remainder of the engine being perfectly standard "Bantam". At the same time it was obvious that such an alternative form of engine with its own tank and radial mount would be most attractive to sports flyers as a separate power unit, and only heavy committments on full scale engineering production delayed the appearance of the Bantam de Luxe on the British market.

In point of fact the Bantam de luxe customer gets more than just a Bantam with an integral tank, 6 by 4 plastic propeller and universal wrench and distinguishing red anodising on the finned cylinder head. The de luxe version starts with the picking out of the best specimens in the standard Bantam production run—those individual specimens which show that extra promise in performance—from where on finishing, assembly and testing is given an individual attention in order to ensure that performance will be noticeably up on average. No specific modifications as such are attempted, for the Bantam design layout has been developed about as far as it will go.

The net result is an engine with the same easy starting and handling qualities which characterise the Bantam but one which is usually a thousand r.p.m. or more up on any particular propeller size, compared with a standard Bantam. The propeller rp.m. figures extracted on test, using "Quickstart" fuel, summarise these typical differences. Both the standard Bantam and Bantam de Luxe used were typical specimens, neither given any special treatment in the way of running in and both using the same perfectly standard fuel.

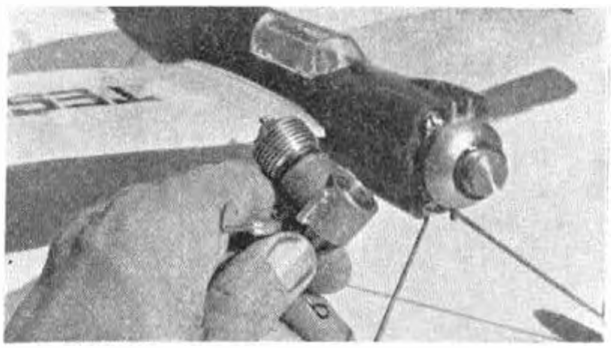
A power curve was subsequently extracted for the Bantam de Luxe by separate test, which showed a peak B.H.P. of a little over .05 at 14,000 r.p.m. plus. This is, in fact, directly comparable with the original Bantam test figure which appeared in AEROMODELLER January 1960. The reasons why the present de Luxe version shows no gain in this respect is that the original engine tested was an extremely good one (a "hot" performer of the type mentioned in the opening paragraph) and particular care was taken in running in to peak performance.

Since originally reported on the Bantam has undergone one or two detail changes, notably the standardisation on two large transfer ports, one on each side of the cylinder set back slightly from the centre and a slightly

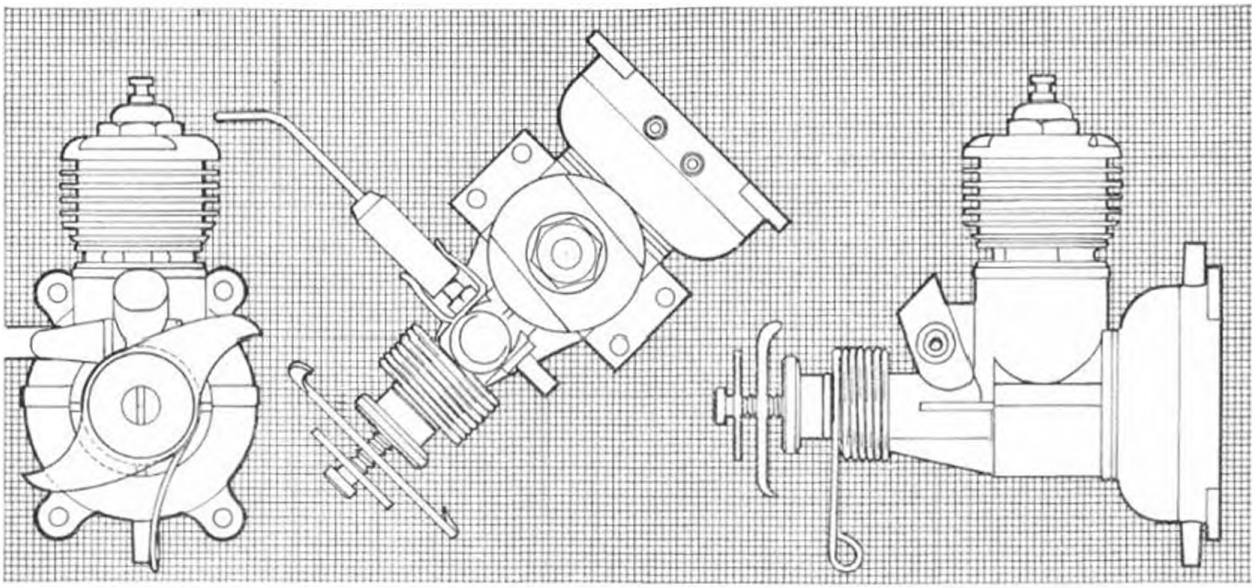
different specification for the "Quickstart" spring. The brass spraybar is also "waisted" with the two jet holes located fore and aft (and thus invisible from the top) in the optimum position.

Additional modifications on the Bantam de Luxe include a red anodised cylinder jacket and the combined radial mount and integral tank replacing the standard back cover. The tank backplate is a pressure die casting with integral vent (two) and feed (one) pipes. The light alloy tank of "bicycle bell" shape screws into the crankcase and the tank cover is located by a single screw, sealing without a gasket.

The four radial mounting lugs cast integral with the tank backplate appeared at first sight to be a little on the thin side, but thousands of such radially mounted engines have been used on ready-to-fly models without any failures reported to the manufacturers. It can therefore be assumed that they are more than man enough for the job. The crankcase, of course, still



Origination of the selected Bantam de Luxe engine with radial mount was for the German produced Dux Test Pilot ready-to-fly plastic model one of which is seen above with the engine removed from the tank mount

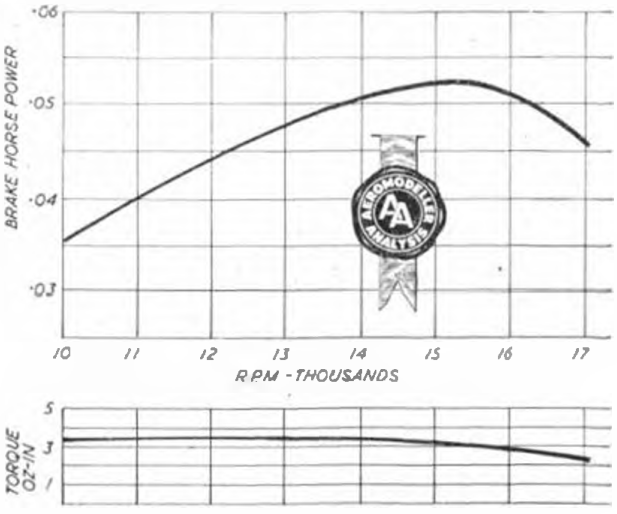


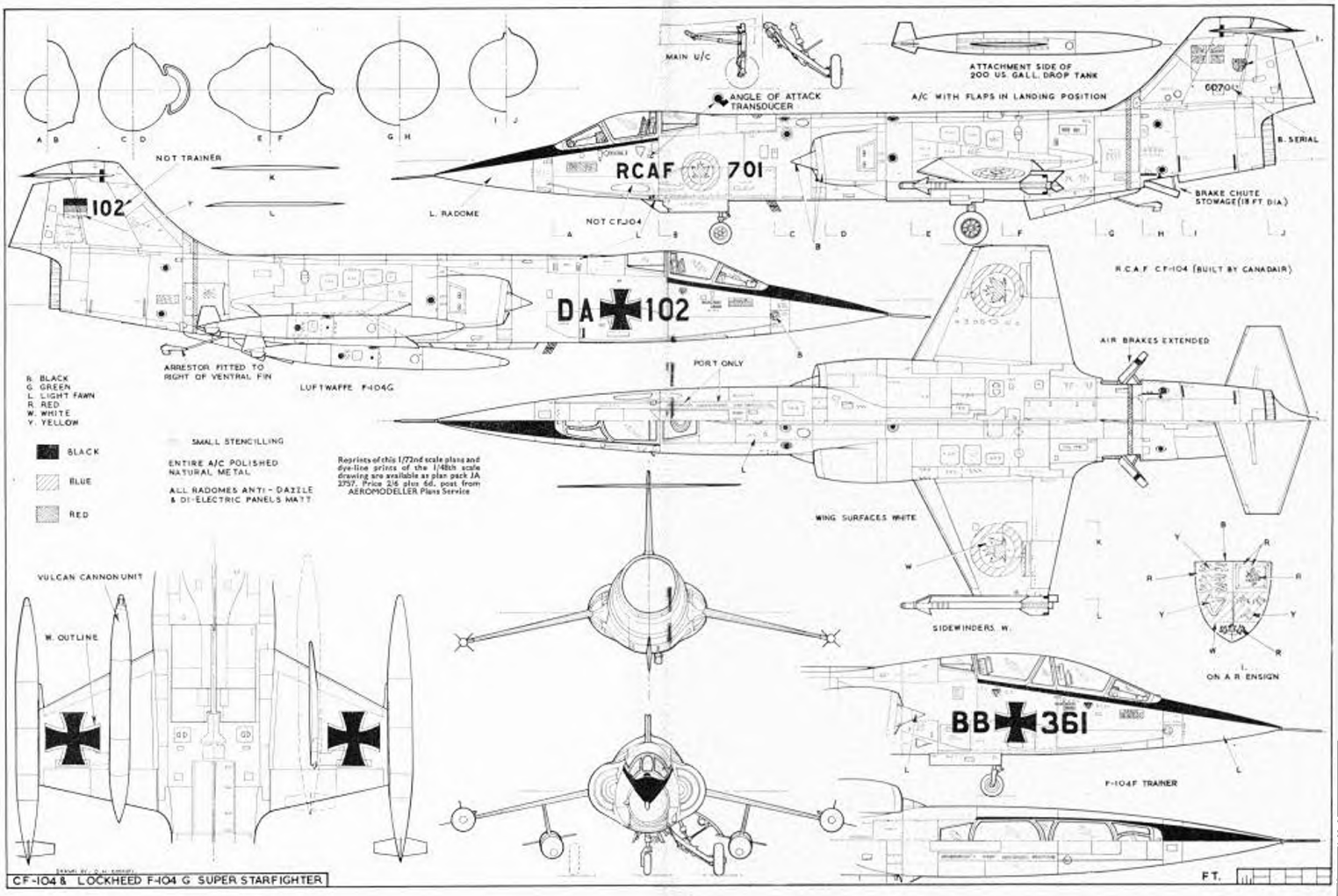
retains the original Bantam beam mounting lugs but it is impossible to beam-mount the engine except on a cut-out plate since the overall width (and thus clearance required) by the tank is greater than the width over the lugs. Our own feeling on this score is that since the Bantam de Luxe has both a radial mounting and beam-mounting lugs it would have been a happy thought to have included a spare back cover with the engine. Then any modeller who wants to take advantage of the increased performance of the Bantam de Luxe but still prefers to beam mount it can do so by removing the tank and fitting the standard back cover without having to negotiate this latter item as a separate purchase (which the retailer might not have in stock anyway).

Specific points we noted on the Bantam de Luxe supplied for test were—a very good crankshaft fit, good piston-cylinder fit, generally excellent workmanship throughout and particularly clean, attractive external appearance. It represents excellent value for money and, in our experience, the Bantam is a particular "long laster" in the "049" glow motor field—where others may wear out the Bantam seems to go on and on like a diesel. And the Bantam de Luxe definitely offers a performance advantage over the standard Bantam. It would not be checked out of the works as a "de Luxe" model if it did not!

PROPELLER—R.P.M. FIGURES

Dia x Pitch		*Stand. Bantam*	*Bantam De Luxe*	*Fuel, D-C Quick start glowfuel.*			
6 x 3	Topflite nylon	11,500	12,500	6 x 4	D-C nylon	11,500	12,700
6 x 4	Topflite nylon	9,700	10,800	5½ x 3½	D-C nylon		15,600
5½ x 3	Topflite nylon	12,000	14,600	5 x 3	K-K nylon	11,500	12,800
5½ x 4	Topflite nylon	12,000	13,400	52 x 4	K-K nylon	11,500	12,700





CF-104 & LOCKHEED F-104 G SUPER STARFIGHTER

AEROPLANES IN OUTLINE No. 63

Lockheed F-104G

drawn by D. H. Cooksey

BY ANY STANDARDS the Lockheed F-104 is a formidable aircraft. The original contract for two XF-104's was placed in March 1953 and the first flew on 7.2.54. Following an increase in fuselage length, and a change in engine from the Sapphire to the J79, the F-104A followed and first flew on 17.2.56. Initially the type was destined for a very large production programme, but following early troubles largely connected with "roughness condition" in the engine and cuts in the defence programme, only 294 aircraft were produced. Beside the engine problems a major difficulty which had to be overcome was the condition at extreme speed and altitude where the aircraft entered a super-stalled state leading to uncontrollable pitch-up. To counter this, an angle of attack transducer unit was installed, which first creates stick shake as a pilot warning and then reverses the movement of the all-moving elevator.

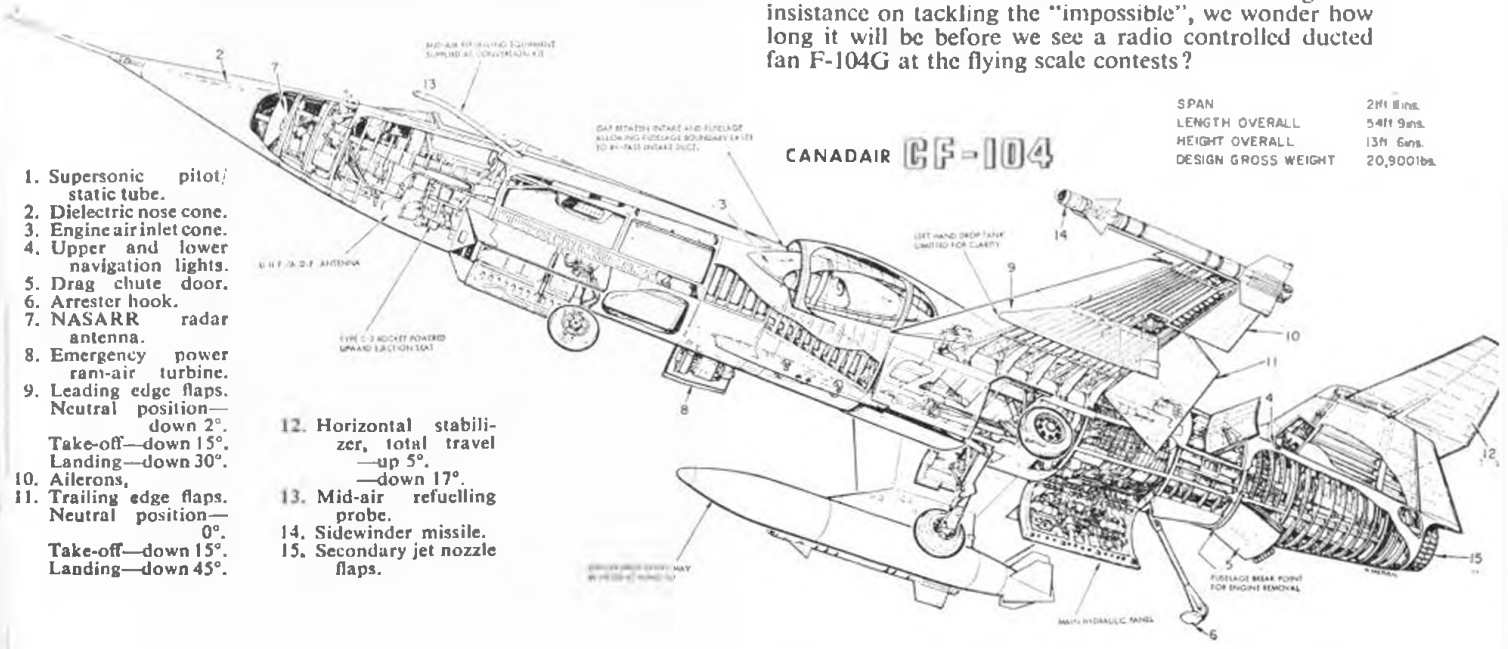
A total of 949 F-104Gs are scheduled for equipment of European Air Forces and there is a possibility of this figure being extended, while 180 F-104Js are being built by Mitsubishi and Kawasaki in Japan. In Canada the aircraft is produced as the CF-104 to replace Canadair Sabre 6's in Service with the R.C.A.F. in Europe. Meanwhile, the type has only been ordered by the U.S.A.F. for the mutual aid programme and is unlikely to see Service in U.S.A.F. colours. Constructionally the most interesting general feature is the virtually insignificant wing area of only 3.4 per cent. thickness/chord ratio. Practically all of the loads are carried within the fuselage including some of the most comprehensive electronic equipment for automatic all-weather navigation and bombing, fire control computor and radar search gear. The F-104G can undertake any of four types of bomb attacks, as well as adopting an intercepter roll, in which case it will carry two or four Sidewinder infra-red homing missiles and a Vulcan M61 cannon capable of firing up to 6,000 rounds per minute.

The F-104G differs from its predecessors by having a 25 per cent. increase in area of the vertical tail surfaces, a fully power operated rudder and manoeuvring flaps, which reduce the turn radius by one third. It also has an upward ejection seat instead of the earlier downward

THE SAME TYPE IN SEVERAL COLOURS. Top, first Belgian assembled (from Lockheed parts) F-104G on test with wing tip tanks. Next, F-104J showing wing pylon followed by side-view of Dutch assembled F-104G flying clean, without external tanks but showing arrestor hook, and bottom, the CF-104. Common to all colour schemes is the use of white paint on wing surfaces.

system. The wings have boundary layer control which reduces landing speed by 20 m.p.h. over the original figure, air bleed from the jet engine is taken to the upper surface of the wing flaps to increase lift as the flap passes the 15 deg. mark of deflection.

Aeromodellers are renowned for their dogmatic insistance on tackling the "impossible", we wonder how long it will be before we see a radio controlled ducted fan F-104G at the flying scale contests?



1. Supersonic pitot/static tube.
2. Dielectric nose cone.
3. Engine air inlet cone.
4. Upper and lower navigation lights.
5. Drag chute door.
6. Arrester hook.
7. NASARR radar antenna.
8. Emergency power ram-air turbine.
9. Leading edge flaps. Neutral position—down 2°. Take-off—down 15°. Landing—down 30°.
10. Ailerons.
11. Trailing edge flaps. Neutral position—0°. Take-off—down 15°. Landing—down 45°.
12. Horizontal stabilizer, total travel —up 5°. —down 17°.
13. Mid-air refuelling probe.
14. Sidewinder missile.
15. Secondary jet nozzle flaps.

1962 NATIONAL CHAMPS

R.A.F. Barkston Heath, Nr. Grantham June 9-10th

THE 1962 NATIONALS were outstanding on many counts; but lasting impressions of what was a memorable meeting could well be summarised as follows:— *First* the sheer enormity of the camp site—and its cleanliness. Stretching for ¾ mile around the perimeter track, it included a record collection of over 1000 tents. *Secondly*, those fabulous fly-offs—especially for Rubber with 14 models airborne in but a gentle breeze and lowest time still well over a max. *Thirdly*, the dependence of S.M.A.E. members on a few stalwart workers and a lot of non-member helpers including many of the fair sex, for the successful administration of this annual jamboree. *Fourthly*, those scale radio models—surely the beginning of very thrilling events in the future calendar.

Sunday's Contests

Establishment of the Lincoln Division Civil Defence staff with mobile walky-talky apparatus, and S.M.A.E. Comp. Sec. Sam Messom and Treasurer Harry Barker in charge, soon set matters in order. **Combat** started first, the sporting girl friends of the Northwood—Kenton Kombo setting a standard for others to follow. We might also add that after fifteen hours of continuous battle, the combat arena was left clean and tidy with not a scrap of streamer in sight—well done Kombos and Komboesses! During those 15 hrs., we saw the coming and going of several remarkable models. Screeching .19 glow engines in short coupled unstable models, almost quiet 3.5 c.c. diesels in rock-steady wings. Diminutive tails, extended tails, team uniforms with orange, black yellow and red jerseys, total destructions, clever flying, desperate flying and above all, a tremendous enjoyment by all, including the losers. It is a participant sport, and to have the wing reduced to a nylon bag of shattered ribs and spars is all part of the honour and glory. As the pyramid of results approached its pinnacle, the event became a Leicester/Kombo inter-club challenge.

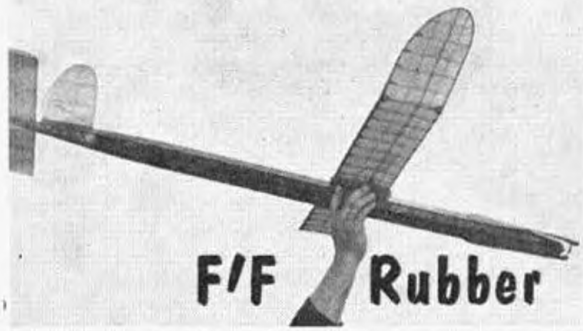
Another event quick off the mark was the **Davies "A" Trophy** contest for F.A.I. spec. team racers under the able direction of the Hayes & D.M.A.C. The air was ideally cool and fast times were the order of the day. Run strictly to the F.A.I. system as had been circulated, with best three going forward to the final instead of top nine having semi finals as will be instituted for domestic events with circulation of the new rule book, this placed the Davy/Long team in a spot as they held both first *and* second placings with each of their models at 4:37. Gordon Yeldham qualified at third with 4:41 and with the withdrawal from the final of Les Davy's entry, this let in Alan Wallace with a 4:42. There were three other teams with under five minutes to their credit, Hector Rey of Nuneaton at 4:49, H. Ewen of Enfield at 4:58 and T. French of Watford at 4:59, four Eta 15D's and three Oliver Tigers taking the honours.

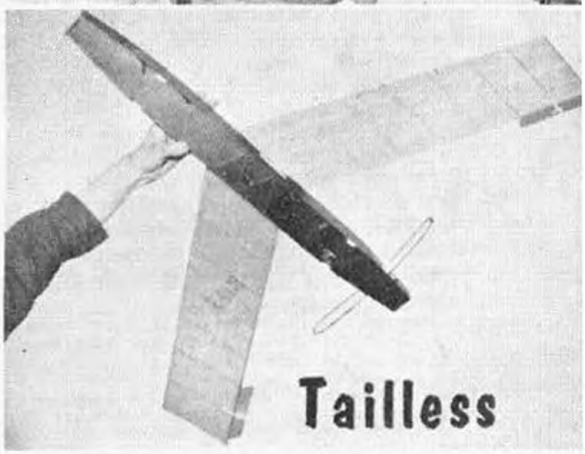
Long's efficiency at pit stops was outstanding in the final, making up for loss of airspeed for some inexplicable reason but it was not enough to prevent a complete reversal of the heat times. The Novocastrians Wallace and Laurie had the fastest model (three-year old Oliver) and won decisively. It was a pity that their piloting was unnecessarily questionable, certainly it did not match the Internationalist standard of the others in the centre, the old master John Hall, and Les Davy. Only 15 seconds separated the three, with Wallace/Laurie at 4:48.5, Yeldham/Hall at 5:00.5 and Long/Davy at 5:03.4. Immediately after the race the Wharfedale lads had a second run with borrowed fuel, returned 4:29 for the 10 kilometres and made 76 laps on one tankful!

Peter Russell and David Day, each experienced **Gold Trophy** fliers with many successes to their credit, judged the control line aerobatic event through two flights by each entrant. Only difficulty they encountered was location of next man to fly, some went into hiding! Main source of lost points was through not observing line angle limits. Not one Hourglass was performed within the meaning of the act says Pete,; but then we've always wondered how to make the top equal the base length when the lines are at 85 degrees. Large jobs appeared with 790 sq. ins. by Ray Brown and 835 sq. ins. by Dave Platt, each named "Goldrush" for Merco 49's. Dave Christopher had a really beautiful twin boomer for Merco 35 and American J(ee)P. Newman excelled with superb shine on his new "Rumbler" 590 sq. ins. 40 ouncer for Fox 35. Jeep is now with Kenton club and really "had a ball" as they say in his native Texas, trying out the British contestant's models. Geoff Higgs had a Royal Navy fighter type decor which looked different and for appearance, Frank Warburton's semi-scale Kawasaki 'Hien' Tony fighter caught the eye both in the air and on the ground. Whether the contest had been run over one or two rounds, this was the winner, though Newman's first flight which ended with a motor cut could have rivalled the leading score.

WINNERS ALL! Walking out to 12 man fly-off in Thurston Glider Trophy is Geoff Dallimer (Stevenage), the eventual winner with a deciding flight of 3:16. Model flew quite differently to others with fast, tight circle. Same model has also won the K & MAA Cup 1961 and similar design won Thurston Trophy, 1960. Full details were published in "Contest Designs" AEROMODELLER October 1961. Variable towhook position again paid off. Combateers who fought through round after round to an indecisive final were Pete Freebrey of Northwood (at right) and Jerry Mushett of Leicester (in centre, below) gained equal points for a draw. Freebrey made cuts but Mushett had longer air time. Orange pullovers of Mart Sibson, Geoff Howes, G. Mushett, Mick Tierman and Rod Bamford (left to right below) were predominant in the combat circle. Their Leicester models featured small tail surfaces

ALL THE WINNERS! *C/L stunt* went to Frank Warburton and his semi-scale Japanese "Tony" fighter with Merco 35. Winner of 20 man fly-off in *F/F power* was John West (Brighton) with Cox Tee Dee 15 in Yeoman Dixielander, model has been in no less than 17 contest fly-offs. Note windsock for calm conditions at close of contest. *Payload* went to Tony Young's (St. Albans) specially built 48 in. Conover sectioned load lifter, 12¼ ozs. all up for Dynamic 049 diesel with KK 5 x 3 prop. *R/C scale* went to finely detailed Sopwith 1½ strutter by D. Thumpston (Sutton Coldfield) with N.Z. Wright gear. *C/L scale* to Bruce Randle's beautiful Fairey Gannet with O.S. 15, O.S. 35 driving contra props, wheel brakes, interior equipment etc. A superb effort re-worked from model on our April 1962 cover. *R/C single* winner, John Dumble (ARCC) "Six Gun" using R.E.P. Sextone with two servos on rudder, one on motor. *F/F rubber* winner out of 14 man fly-off was R. Lennox's lightweight, 21¼ x 28 prop., 44 x 4½ wing, 12 strands Pirelli rubber. *F/F scale* went to *John Simmance's* (Wharfedale) well worn Sopwith Swallow from A.P.S. plans. *Women's Cup* winner was Mrs. Nan Stott (English Electric) with perfect 9 min. score by 36 in. lightweight, using 12 strands ¼ in. rubber, 54 in. long in 48 in. fuselage, free wheeling prop. *Tailless* went to Pool (Halifax). Prop removed in this picture but D/T flaps shown. "B" *T/R* winners, Ron Lucas and C. J. Adams (WEA) with their remarkable fuel store. *Speed* winners, Major Gus Johnson after 166 m.p.h. flight. *F.A.I. T/R* winners A. Wallace and A. Laurie of Novacastria.





A trivial protest by T. Jolley that Warburton's S.M.A.E. number was not on the upper surface of the wing (it was placed on the underside to improve the semi scale appearance) had to be upheld according to the rule book; but we are pleased to say that the protest has since been quashed by the S.M.A.E. Council, and the Gold Trophy still goes to Warburton.

On the runway upwind, and a l-o-o-o-o-ng way from the control line circuits, was **Payload**, under the direction of Surbiton club. Rules allow a .82 c.c. engine with 4 oz. dummy and 1 oz. cargo or up to 1 c.c. with dummy and 2 oz. block of cargo. Most favoured the .049 American engines and they were beaten by the Dynamic .049 diesel, which only had a short production run. Tony Young's specially built model used much of his A.P.S. *Dynamo* features with 5½ x 48 in. wing and Dynamo tail. He finds the KeilKraft three blade 5 x 3 prop best with this type of model which weighed 12½ oz. with load.

Meanwhile, and a l-o-o-o-o-ng way further off across the large airfield, first flights were being made by **Scale** entrants prior to workmanship and scale judging on the following day. **Radio** started first with a really thrilling effort by Lowe and his 10 channel *Hurricane*. Anyone who remained unthrilled at the sight and sound of this first of the multi-scale parade could not possibly be considered normal. When the spin was nominated at about 200 ft. and after three magnificent turns, the Hurricane eased out at scarcely 20 ft. there was audible relief from all of the large crowd. Alas, the motor had cut and the model landed well away from base. Two *Spitfires* were less well behaved. Franklin's fought a wing warp and Bryant's broke the 12 x 6 on take off then had insufficient thrust on a 4 in. pitch replacement. On the other hand Jack Morton's albino *Mustang* went round like a scalded cat, did a vertical eight, loop and roll for good measure and had the uninitiated all agasp at the piloting skill. The fine pattern made up for some of the scale points loss. Which brings one to the burning question which is the more important, the *Scale* or the *Flying*? Enthusiasts will never agree on this. Den Thumpston showed how a very fine scale *Sopwith* 1½ *Strutter* effort can win even though it does not complete all possible flight manoeuvres. At least he made the correct approach to landing, even though at distance! P. Anderson's superb *Cessna* 172 was similarly a scale beauty with flight limitations.

We were frankly disappointed in numbers of entries in **Free Flight and Control Line Scale** classes. Perhaps the new rule that models must fly before acceptance for scale judging frightened away some of the "groundlings" —though only the usual regulars seemed to have the slightest idea of how to get their models airborne or even start their motors. A lot of flick and very little fly must be the verdict.

As usual some of the most interesting prototypes never showed in final placing. We liked the *Airspeed Ferry* with its two dummy and one working engine (Thermal Hopper) by G. F. Fergusson of Glasgow S.A. Dud battery and awkward glow connection kept it on the ground. A *Longster Wimpy* by D. Neal of Leicester was promising—but what a launching technique Mr. Neal! I. G. Birch, also of Leicester M.A.C. had *Corsair* in Salvadorian colours and markings—a most refreshing change of colour scheme. Clive Hall was flying a Veco powered *Bucker Jungmeister* with radial engine—but Veco reluctant to keep cool enshrouded in cowl. Most exciting C/L non-winner was *Junker* 88/*Me.* 109G, composite by C. Crawley and A. Blunt, Mill Hill. Pick-a-back plane should have come apart and flown separately but did not—so spare pilot Blunt got no flying. Power was two Frog 500s plus K & B 15 and all up weight 8½ lbs. Maurice Bodey, Heswall, Cheshire was unlucky to hit someone else's accumulator pack at take-off with his *Piaggio P.*166 (but he should have looked!) No argument about winners whose models are described in the captions. But next year more *flying* models please! One certain change is that the judging load will have to be shared with three separate teams. Ken McDonough, Norman Butcher and Eric Coates were "at it" for the whole week-end. Also, a better upwind location of free flight and R/C classes should be used.

Weather conditions for the Sunday were decidedly colder than normal for June, and a 10-15 m.p.h. breeze persisted to make **Glider** flights a fair run downwind throughout the morning. But by mid afternoon, the wind abated and many were able to practise their talents with wandering towlines to try and trap thermals. There were in fact, a lot of max's so that by the time of the fly-off to decide the eventual winner, no less than twelve qualified with perfect scores of nine minutes.

The sock was drooping when the signal to launch was given for the top twelve. There was so little drift that after 3 minutes, the winning model had only travelled 200 yards, and victory was gained largely by know-how on the line. The sight of all models circling within close proximity simultaneously was most impressive and gave one a clear insight as to which were the best. Perry's *appeared* to have slowest descent yet it was down at 2:13 whilst Wisher's still circled widely and the faster flying Stevenage model by Dallimer seemed to be holding gentle lift. Al Wisher slowly followed his model around by bike, the time of 2:47 being a genuine calm air performance while Dallimers still circled fast, holding whatever lift was going for a 3:16 flight. Same model, described as a rough weather type, went to the last F/F World Champs, won the K & MAA Trophy and is a variation of the '60 Nats winner. Can't keep a good'un down! While the gliders had been flying throughout the day, a smaller and quite fascinating contest was going on from the same take-off area to settle the **Women's Cup.** Entrants have the option of rubber or glider to fly, and while the glider types are always more popular with the ladies (*Caprices* and *Inchworms* again) invariably one of the few rubber jobs comes out on top. It was Mrs. Nan Stott's turn from English Electric Club and how she showed the way with a perfect triple maximum performance. Her 36 in. lightweight with loads of rubber to drive the fixed blade freewheeler prop did well, and might have returned a repeat success against the boys on the next day had she not suffered the misfortune of going O.O.S. into cloud at 2:13 on one flight! Good for Nan!

Yet another simultaneous event from the same base was **Tailless**: but oh how small an entry! Can it be that the challenge of tailless has lost its fascination? John Pool, that "*Northern Area News*" rubber addict, certainly got to grips with the subject in the last year or so and his corkscrew flyer topped the bill with a large lead. We liked his practical approach to C.G. searching. Rails at least 3 chords long on the fuselage top allow for plenty of trim changes, and those "Elephants ears" dethermaliser flaps have a definite Blackburn Buccaneer touch John! Seriously though, why not more?

All day long the **Speed** pylon had been intermittently busy. As ever, the "fastest" event was slowest off the mark and not until well into the afternoon of the Sunday were any high speeds returned. Then, as ever, throughout the second day, there were many fast runs. Altogether 97 models were entered and these made 127 recorded attempts at speed flights. As results show, all classes produced most respectable speeds especially in 10 c.c. speed where a fraction under 160 m.p.h. was only good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Scale
and
Rudder
only R/C

enough for 4th. Peter Drewell's nonchalant release of the control button once he had set his 126 m.p.h. open class 2.5 c.c. model "in the groove" was open proof of the value of the Monoline system in a properly set-up design. Facts and figures also give an interesting break-down on operating efficiencies. Of the 1.5 c.c. entries, 1/6th of *possible* flights were recorded runs, for Open 2.5 the figure is 1/4th, for F.A.I., 1/3th, for 5 c.c., 2/5ths and for 10 c.c. as much as half.

Monday's Contests

First off the mark on the second day was the most efficiently run event of the lot. The Royal Air Force had offered to run their own Trophy event for **Half-A Class team racing**, and right on time, "Penny" Farthing set the first heat going, continuing to maintain the time programme throughout the contest right up to the final. Tannoy technique counts for a lot and "Penny" certainly has that. Non-stop comment, harrassing of the laggards, explanations as the whys and wherefores, results, announcements on top of keeping the paperwork all came within his able administration. He even had one well known Squadron Leader jumping around for him! But like ourselves, "Penny" was disappointed in the turn out. Entry had been limited and was oversubscribed yet two thirds of the way through the heats, it was clear that less than one quarter of the entrants actually returned a heat time. So sad after last year's encouraging start, and nothing to do with rule changes, for this was sheer lack of model efficiency. The experts came through to the top and out of the three semi-finals, just as with F.A.I. racing on the previous day we had the same pair qualifying twice for the final. Nixon/Ellis made 4:34 and Ellis/Nixon 4:59. Dick Place qualified with 4:55 using the very attractive spatted monowheel model he won with at the Woodford Rally, and Bellamy of Wharfedale came into the final to replace one of the Hinkley entries with a 5:12 heat.

The final was a double distance run where once more the Nixon/Ellis team showed the way home. Place's "*Countdown*" got held up and Bellamy overtook for second. It was a clean show, and every bit as exciting as the bigger classes. One wonders if these experts with 1.5 c.c. Oliver Tigers knocking close to 100 m.p.h. at times are going to stem the novice interest in ½/A racing that was so apparent in '61.

Similar situation applies to the diminishing entry in **Class B Racing**, and the FASTE Club who nobly stepped in to run the event at the last moment have a point when they suggest compulsory minimum number of stops. This may sound hard on "Fuel Baron" Ron Lucas after his simply stupendous achievement of 78 laps non-stop at 105.5 m.p.h. to return a 5 mile heat time of only 2:55. Whatever Ron has discovered is likely to remain his secret and deservedly so after years of research. We hope he'll be able to do the same for his glow 2.5 F.A.I. model in the World Champs. After this surprise, anything over 3 minutes for a heat seemed unrewardingly slow. This is not to discredit the other notable effort by Chorlton clubsters Kevin McGee and John Bowden who shattered a lot of specialists with their 50s. O.S. hybrid using an old Mk. I Piston and Cylinder in a Max-II case, all bought second hand and doing well at 40 laps per tank for 102 m.p.h.! They deserved their spot in the final along with West Essex's Whitebread and Lucas but the anticipated bombshell of a ten mile race fizzled out. Lucas made 76 laps at slower pace before the first stop, got away very smartly only to have the engine cut a lap later. What would have been a record time of less than 6½ minutes became a 6:58, while the others spent a long time on the ground for 8:24 by McGee and 9:22 by Whitebread.

Up at the other end of the field, **Mono-Command Radio Control** was notable for the amount of multi channel equipment used, the first five places being taken by fliers using such equipment. Flown in strong wind, freshening as the day progressed, it limited flying ability to an extent in that the enforced, under elevation of trim to make headway into wind, diminished manoeuvrability. Many could still show the way round the aerobatic schedule however and fine stunts were displayed by R. Donahue of Manchester flying a *Graupner Sattelit*. Eventual winner, and top scorer in both first and second rounds was John Dumble of Richmond whose approach to this event was a 48 ins. span, 480 sq. in. area, shoulder wing machine that weighed just 3½ lbs. and had the mighty power of a Merco 35 R/C up in front which took it away like a rocket on take-off. He used 6 channel R.E.P. Sextone equipment with four channels on rudder to provide fine and coarse action for course and aerobatic manoeuvres respectively. A full and detailed report on both radio control competitions including specifications of *every* model will appear in the August edition of *Radio Control Models & Electronics*.

Wind backed 90 degrees during the Sunday night so that free flight had a better field distance to the boundary for Rubber and Power flights on Monday. Still they went out of the field, and any of the many max's was an hour away from base, on foot. In **Rubber**, the Birmingham contingent soon showed their prowess by having first pair of the eventual fourteen triple max's recorded, and they went on to place first and fourth. If anything, Bob Leppard was the loser of this event, for he cautiously set the d/t at 8½ minutes in the breeze at the launch, then the sock drooped and he d/t'd at considerable height, still within the field and well able to beat Lennox's 10:16 leading time. But by any standards the rubber fly-off was spectacular. 14 models climbing high, all in the same spot and drifting slowly in the falling wind. Times reflected capability and all exceeded the four minute max by handsome margin.

We deliberately transpose the order of fly-offs to emphasise the difference between the equality of conditions for rubber, and the varied atmosphere for Power, which preceeded it by twenty minutes or so.

Power had been relatively easy with 10 secs engine run and 3 minute max's for Open models with light loading. Twenty qualified with triple max's, and a long line up

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SCALE AND RUDDER ONLY R/C. — 1. W.H.D. Lowe of Bromley with his 7½ lb. Hawker Hurricane, powered by Super Tigre 56, resplendent in markings of 71 Eagle Squadron, as flown in Battle of Britain. 2. John Simmance (Wharfedale) with B-17 Flying Fort, retracting u/c, working flaps, lights, four Cox Babe Bees, crashed through pilot error. 3. D. Bryant (Bromley) with 7 lb. Spitfire II, K. and B. 45 in 66 Squadron colours. 4. Down from Glasgow, G. Fergusson with unique Airspeed Ferry free flight, using single Cox 049 and wind-milling props. Dud battery caused two false attempts. 5. Tony Day's second placing C/L scale Fokker D VII now re-vamped with overall authentic camouflage, Taplin Twin. Very realistic. 6. Roy Norris of Bristol with Mustang in bright red, white, blue decor, full 10-channel Orbit gear, McCoy 60, weighed 10 lbs. 7. B. E. Newman entered neat Stinson Reliant SR-6. Brilliant in Union Carbide (Ever-Ready, U.S.A.) executive decor. 8. Few would believe this three-year-old Cessna 172 from A.P.S. plans had flown before. Immaculately finished, it flew realistically with SB. 305 single-channel tone Rx, AM. 35 pulling 6½ lbs. model by P. J. Anderson (Wigsley). 9. Adventurous C/L scale entry, 1/12th ME 109/JU 88 composite. Flown by J. Crawley (left) and A. Blunt (right). 109 has K. and B. 15, JU 88, two Frog 500's. Total weight 8½ lbs. 10. I. Dowsett (Esher) entered expanded polystyrene filled wing, Merco 35 60 in. "Radio Active" with Kraft Rx, Elmic Commander/Corporal. 11. Curtiss XP 31 by Dr. M. F. Hawkins for control-line, placed fifth, with E.D. 346 throttle controlled. Will now be converted to an OS 35 for stunting. 12. Much admired was workmanship of 22-year-old veteran 72 in. model, originally built by late Bill White for Brown Junior, flown by Silvio Lanfranchi with K. and B. Torpedo engine. Glide astounded even experts. 13. V. K. "Compact" Kit model, 60 in. with O.S. 35, Johnson 10 channel relayless, using four channels by R. March (Salisbury). Placed eighth in "Mono Command". 14. A. G. Noble of Leicester entered this 1/12th C/L Texan with Merco 35

Full Results 1962 NATIONAL CHAMPIONSHIPS

R/F Scale (*Super Scale Trophy*)

			pts.
1. J. Simmance	(Wharfedale)	*Sopwith Snipe*	495
2. Dr. M. Hawkins	(C.M.)	*Fokker DVIII*	471
3. D. W. Bateman	(Luton)	*Bucker* 133	370
4. J. Archbold	(Leicester)	*Heinkel He* 113	254
5. A. Noble	(Leicester)	*Fokker E* 111	198

R/C Scale

1. D. F. Thumpston	(S. Coldfield)	*Sopwith 1½ Strutter*	656
2. J. Morton	(Bristol)	*N. A. Mustang*	510
3. W. H. Lowe	(Bromley)	*Hawker Hurricane*	419
4. P. Anderson	(Wigsley)	*Cessna* 172	409
5. G. Franklin	(Leicester)	*V. A. Spitfire IX*	387
6. G. Goldsmith	(Bromley)	*Fairchild PT.*19	316

C/L Scale (*Knokke No. 2 Trophy*)

1. B. Randle	(Coventry)	*Fairey Gannet AEW3*	591
2. A. C. Day	(W. Bromwich)	*Fokker DVII*	429
3. C. B. Hall	(Cambridge)	*Bucker* 133	424
4. S. B. Perry	(Glevum)	*Hawker Henley*	404
5. Dr. M. Hawkins	(C.M.)	*Curtiss XP*31	358
6. C. P. Wheldon	(B'heath & H'owen)	*Ta* 154	298

Speed

Class 0 (1.5 *c.c.*) 12 *entries* 7 *attempts.*

		m.p.h.
1. D. Sizmur	(Sidcup)	77.65
2. B. Lawrence	(Tolworth)	73.7

Class 1 (2.5 *c.c. unrestricted*) 20 *entries* 32 *attempts*

1. P. Drewell	(WEA)	126.3
2. G. Copeman	(Northwood)	117.5
3. K. Lindsey	(Hayes)	106.5

F.A.I. (2.5 *c.c.*) 23 *entries* 17 *attempts*

1. P. Drewell	(WEA)	123
2. K. Lindsey	(Hayes)	103.5
3. B. Firbank	(Worksop)	86.7

Class 2 (5 *c.c.*) 26 *entries* 41 *attempts*

1. J. Hall	(WEA)	144.3
2. G. Johnson	(FASTE)	138
3. H. Nixon	(FASTE)	137.2

Class 3 (10 *c.c.*) 16 *entries* 30 *attempts*

1. G. Johnson	(FASTE)	166.9
2. M. Billinston	(Brixton)	163.2
3. R. Gibbs	(Brixton)	162.1
4. D. Pinkert	(FASTE)	159.7

Total 97 *entries* 127 *attempts.*

Davies "A" Trophy (*F.A.I. class T/R* 2.5 *c.c.*)

1. Wallace Laurie	(Novocastria)	4:48.5
2. Yeldham Hall	(Belfairs)	5:00.5
3. K. Long L. Davy	(Wharfedale)	5:03.4

Davies "B" Trophy (*Class B T/R* 5 *c.c.*)

1. R. Lucas	(WEA)	6:58.5
2. K. McGee	(Chorlton)	8:24.6
3. R. Whitebread	(WEA)	9:22

R.A.F.M.A.A. Trophy (*Class ½A T/R* 1.5 *c.c.*)

1. M. Ellis Nixon	(Hinkley)	9:26.2
2. M. Bellamy	(Wharfedale)	10:07.6
3. R. Place	(R.A.F.M.A.A.)	11:03

Lady Shelley Cup. (*Tailless*).

1. J. B. Pool	(Halifax)	6:52
2. P. Hedgman	(Hayes)	5:14
3. B. F. Bow	(Bristol Aces)	5:07
4. L. E. Moore		5:00
5. C. Strachan	(Exmouth)	3:53
6. B. Jukes	(Birmingham)	3:34

Ripmax Trophy (*R/C Single Control*)

1. J. Dumble	(Richmond)	883 5
2. R. Donahue	(LARCAS)	672.5
3. R. Scott	(LARCAS)	539.5
4. J. Singleton	(Bristol R/C)	485
5. C. Thomas (U.S.A.F. Lakenheath)		452.5
6. C. Dowsett	(Esher)	407

Gold Trophy (*C/L Aerobatics*)

1. F. Warburton	(Bolton)	1220.5
2. J. Newman	(Northwood)	1198
3. T. Jolley	(Whitefield)	1095
4. G. Higgs	(Bolton)	1056.5
5. R. Brown	(H. Wycombe)	1039.5
6. D. Christopher	(Weston)	1016.5

Womens Cup (*Rubber or Glider*)

1. Mrs. N. Stott	(English Elec.)	9:00
2. Miss Y. Mosedale	(Essex)	8:15
3. Mrs. B. Picken	(Wigan)	8:08
4. Mrs. B. Barr	(Hayes)	7:02
5. Miss S. Allsop	(Cambridge)	6:43
6. Mrs. S. Willis	(Essex)	5:39

Payload 1 *c.c. maximum*)

1. A. Young	(St. Albans)	7:56
2. A. W. Bunney	(Bristol Aces)	7:35
3. G. Fuller	(St. Albans)	6:47
4. D. Posner	(Surbiton)	6:17
5. E. Lord	(E. Lancs)	5:12
6. D. Yates	(Wigan)	4:24

Sir John Shelley Cup (*Unrestricted Power*)
Following made 9 *minutes*

			Fly-off times
1. J. West	(Brighton)	*Cox T.D.*15	5:48
2. D. Posner	(Surbiton)	*Cox Special*	4:44
3. M. Gaster	(Surbiton)	*O/Tiger*	4:14
4. B. Eggleston	(Baildon)	*ETA* 29	3:42
5. G. Fuller	(St. Albans)	*Cox T.D.*15	3:34
6. M. Doyle	(Belfast)	*Cox T.D.*15	3:24
7. G. French	(Essex)	*Fox Combat Special*	3:06
8. V. Jays	(Surbiton)	*K & B* 29*R*	3:05
9. A. Parker	(Exmouth)	*Cox T.D.* 049	3:03
10. R. Siggers	(Coventry)	*Cox T.D.* 049	3:00
11. J. Riley	(Bristol Aces)	*H/Hornet* 049	2:54
12. D. Yates	(Wigan)	*O.S. II*—15	2:48
13. J. Woolnough	(Teeside)	*O.S. II*—15	2:39
14. W. Johnson	(Norwich)	*P.A.W.* 249	2:28
15. J. Hanson		*P.A.W.* 249	2:15
16. S. Allsop	(Cambridge)	*O.S. I*—15	2:11
17. P. Manville	(Bournemouth)	*Rossi S/T* 20	2:09
18. M. Brown	(Reading)	*Cox T.D.* 15	2:05
19. J. Harris	(B'heath)	*Fox* 19	2:00
20. E. Lord	(E. Lancs)	*Enya* 29	1:46

Model Aircraft Trophy
(*Unrestricted Rubber*).
Following made 12 *minutes* *Fly-off time*

1. R. Lennox	(Birmingham)	10:16
2. N. Elliott	(Croydon)	10:06
3. D. Paveley	(Hornchurch)	10:01
4. R. Monks	(Birmingham)	8:41
5. R. Leppard	(Croydon)	8:18
6. U. Wannop	(C.M.)	7:54
7. T. Garner	(Brighton)	7:51
8. D. Greaves	(Leamington)	7:30
9. T. Stokes	(Baildon)	7:25
10. J. Turner	(Whitefield)	7:16
11. R. Jackson	(Littleover)	6:25
12. D. Wostenholme	(E. Lancs)	6:08
13. Strachem	(Exmouth)	4:46
14. D. Morley	(Lincoln)	4:38

Thurston Cup. *Unrestricted Glider*
Following made 9 *minutes* *Fly-off times*

1. G. Dallimer	(Stevenage)	3:16
2. A. Wisher	(Croydon)	2:47
3. P. Perry	(Birmingham)	2:13
4. D. Rose	(Leicester)	2:01
5. P. Liddell	(Novocastria)	1:58
6. D. Wiseman	(York)	1:47
7. B. D. Jones	(Northwood)	1:44
8. M. A. Turner	(Chorlton)	1:28
9. P. Giggle	(Stevenage)	1:16
10. B. Jones	(Cardiff)	1:13
11. C. Rider	(Wigan)	1:10
12. J. Allen	(Ashton)	1:02

Combat
tie between:—
G. Mushett (Leicester) and P. Freebrey (Northwood).

readied itself with innumerable timekeepers to await the "off". When a single flight determines the Trophy, one must be prepared to either fly with the herd and hope that by comparison you have the better model to stay up longest in conditions common to all, *or* one can delay a while, *or* get away very quickly on the chance that your effort catches something you wouldn't wish on anyone else. Thus it was that wily ones like Mike Gaster, who was airborne as the Chief Timekeeper was asking his minions if they were ready, and John West and Dave Posner took a full minute break to launch while the other 17 went straight into the same bad patch. As everyone expected, Brian Eggleston's sizzling 18½ ounces (including screaming Eta VIc) proved highest climber of the herd: but it was not enough to compensate for the better air which those three long experienced fly-off experts enjoyed. Results give engine details.

Thank You's!

To the All-Ranks Junior Leaders Regt. under Sgt. Bott for crowd control, Tannoy comments, fund raising and smart turn-out, they did a grand job. To the Lincoln Div. of Civil Defence, handy with first aid and valuable communication. To R.A.F.M.A.A. and all the Royal Air Force personnel—especially the water cart driver. To the ladies. To the often maligned, seldom appreciated S.M.A.E. Council Officers. To all who helped make this so successful a Nats. . . not forgetting Sid on the gate and "Spring Park's" camp site.

FREE FLIGHT AND CONTROL LINE.—1. George French with Ramrod 750, one of the largest power models in fly-off, used Fox Combat Special. Contrasts with 2, Brian Eggleston's Eta 29, 18½ ozs. model with amazing rocket climb. 3. Sue Allsop (Cambridge) prepares her OS 15 power model for fly-off. 4. One of many A.P.S. "Sans Egal's" was Peter Liddell's placed fifth in fly-off, from Novocastria. 5. Over from Belfast, Maurice Doyle with 108 in. Phoenix glider. 6. Visitor from U.S.A., Major John Rice (U.S.A.F., Sculthorpe), entered Rubber with long-run design. 7. Gliding to land is P. Perry's (Birmingham), third place A/2. 8. Both Dave Platt and Ray Brown arrived with new models for Merco 49 of quite different designs, each named "Gold Rush"! This is Brown's, designed and made in exactly seven days. 9. Change in shape for Lou Roberts (Lincoln), seen with new Wakefield, using elliptical surfaces, being tube wound. 10. Pete Drewell's Mono-line CCS powered, open class 2.5 speed winner auto stable, did not need controlling in flight. 11. Tiny tail, power P.A.W. 19D on G. Hawes (Leicester) combat design contrasts with Neil Tidey's (Worthing), Oliver Tiger wing, extended elevator in 12. Silencer on K. and B. 23 in 13 was made by Dave Roberts (Kenton), works most effectively, welded aluminium. 14. New engine in speed circles is Yellow Jacket 61. Produced by Bruce Underwood, Colombus, Ohio, with Dooling 61 type components in new strengthened crankcase. Chrome liner, three rings, roller bearing Con-Rod, other interesting features, did not return a time for owner Ivor Roffey (Brixton) due to leaning out. 15. New look in mono-wheels by Dick Place's ½A, third place model (Oliver Tiger Cub), with balsa spat for streamling and tip bullets. Attractively decorated red/white and known as the "Countdown".

HIPS

ly-off times
5:48
4:44
4:14
3:42
3:34
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ly-off time
) 10:16
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7.25
7:16
6:25
6:08
4:46
4:38

-off times
3:16
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OVER THE WAVES

FIRST ENTRIES FOR the Radio Control World Championship to be held at R.A.F. Kenley August 17th—19th came from Japan, naming Hiroyuki Oki, President of the Sanko Co. who uses Chimitron 10 in his "*Royal Grace*" and Mashiro Kato with his all O.S. equipped "*Thunderchief*". Mechanic will be Shigeo Ogawa of O.S. engines.

The Canadians held their trials at St. Catherines Municipal Airport, handy for Hamilton and Toronto modellers, near Niagara Falls on May 27th. In such a large country one has to travel great distances to participate in this type of event, a point which is emphasised by the Montreal R/C club M.A.R.S. newsletter,—quote:—

"We have no entrants for the F.A.I. team trials, and with St. Catherines some 450 miles from Montreal it is doubtful if any M.A.R.S. members will be going down just to watch".

We wonder what they'll be doing about the Canadian Centralised R/C Nats over at Calgary in Alberta on July 7/8th!

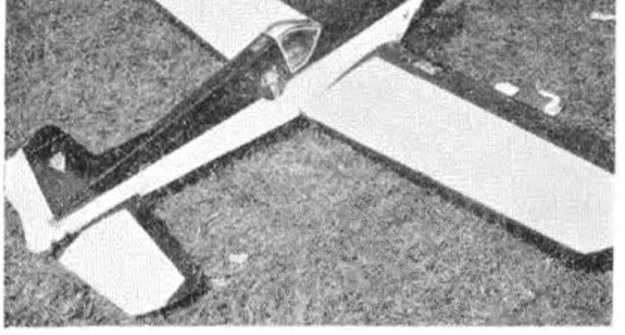
British team selection trials, with best flight on April 29th added to best two on May 27th determined the trio of Chris Olsen, Frank Van den Bergh and Harry Brooks, all well known and competent fliers. Never has there been such a variety of R/C design approaches in one team! Frank Van den Bergh has revised *Sweeper* to have thicker wings with double taper instead of delta planform, and a new approach to elevator control which is described in August "R.C.M. & E." Chris Olsen uses a new *Uproar*—complete with old prototype Remtrol servos and is the only teamster to master the tailslide, while Harry Brooks flies "*Reb*" which is *Orion* based, with revised structures. First two use *Merco* 49 engines, Brooks a *Super Tigre* 56. Gear is Orbit, R.E.P./Olsen and CG respectively. At least 15 Nations have entered the Championships, including Belgium, Eire, Finland, France, Great Britain, W. Germany, Holland, Italy, Japan, Norway, S. Africa, Sweden, Switzerland, U.S.A. and U.S.S.R.

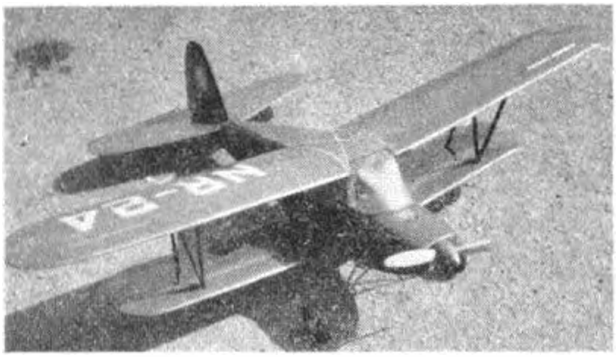
Ridge Soaring

All the rage out in California with the Los Angeles Radio Controllers is Ridge Soaring (Slope Soaring) which takes place at "Hughes Hill" overlooking the airfield operated by the Howard Hughes Aircraft Corporation.

The only difficulty (only!) with ridge soaring these days, especially on Sunday afternoons is that too many gliders are in the air together. Seven simultaneously soaring over the ridge makes for hazardous flying, there being at least four mid-air collisions to date. Arvi Rautianinen apparently tired of his Fox kit Buzzard when he flew a Modelcraft Barnacle. This resulted in a combination machine called the "*Buzzacle*", 12 ft. span 15 ins. chord, 1620 sq. in. area. The Orbit 4 receiver and two Bonner Duramites were "lost" somewhere in approximately 8 in. by 6 in. section fuselage scaled up from the lines of the Barnacle, the whole weighed 8 lbs. It had a trimmable elevator which called for flying skill. Bill Winans fitted a neat power rod over the C.G. position of his 120 in. Mu—118 soarer, mounted an O.S. 15 motor and took it to a Sepulveda Basin (LARK flying site) with a wheel on the underside of the fuselage, just ahead of the C.G. position, using out-riggers on each wing at half span, a-la-Lockheed U-2 for R.O.G.'s. Spoilers were added to the wings measuring approximately 3½ in. by 1 in., placed about 12 ins. either

At top is German modeller, Wilfred Klinger, displaying the internals of his scale "Picchio" now featured as a WIK kit, for the equivalent of about £9. Fuselage is constructed as a balsa box, and expanded polystyrene is glued to the outside to make up the curved profile. Radio equipment is a Bellaphon Polyton 10, with Graupner Bellamatic servos. Note the rubber bonded U/C mounts with dural legs. Left, is a very smart Japanese low wing. Another German model below is B. Lauhorn's (Munich) "Miniature HS-82", A/2 size slope soarer.

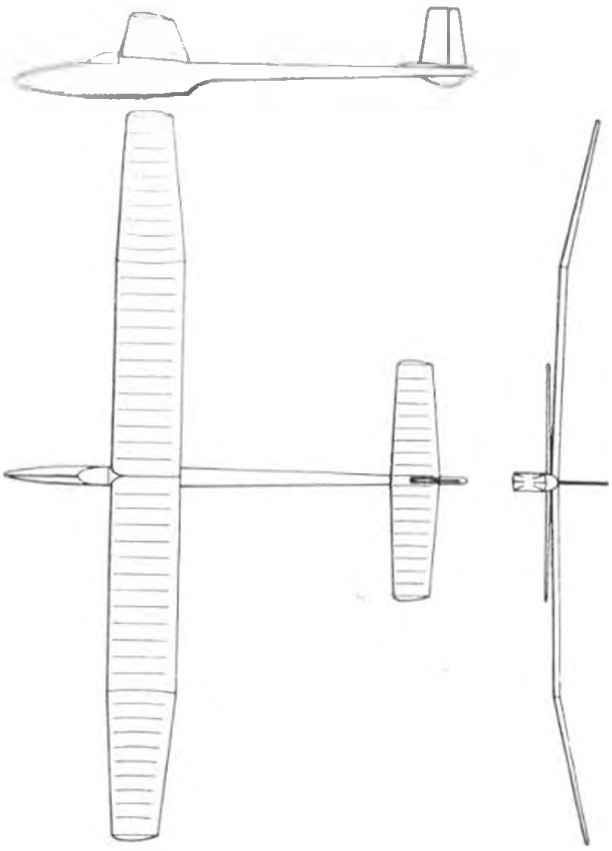




side of the fuselage centre line. Operating together they are most effective spoilers, but independently provide most effective rudder type control! R/C glider interest is on the increase, with multi channel application.

deBolt Livewire Viscount

Roland Scott announces that he expects delivery of *deBolt Livewire Viscount* multi channel low wing kit in July, to cost £9/10/0. We published a picture in *Over the Waves* February last, but here is a general description of this model. It has a low, even chord wing featuring full span strip ailerons. The undercarriage is the nose-wheel type. The tailplane fits on the top of the fuselage to be an integral part with the moderately swept fin. At 60 ins. wing span, the Viscount is for little more than 35 size engines. It is slightly smaller than most multi models but represents an effort on the part of the designer Hal deBolt to drastically cut building time. To this end, the structure is simple, hence the even chord "board" wings and strip ailerons, made from stock trailing edge strips added to the wing trailing edge. The prototype was built for Space Control fully proportional radio equipment, but the design is equally suitable for reed sets.

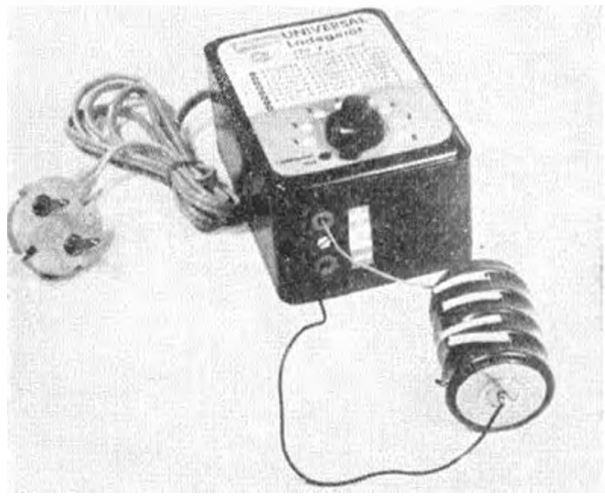


Above left, is pretty Japanese multi-channel biplane with O.S. radio gear. Above, from Singapore, Mrs. Charlie Choong holds red and yellow decored Livewire Champion, Elfin 2.49 powered with O.S. Minitron single-channel, all transistor Rx. and O.S. compound escapement.

Distance Record

It seems like that great achievement of Charles Dance and Wally Skeels, covering 45 miles from Lympe, along the main A20 road to Sidcup in one hour 22 minutes on May 8th, 1960, has now been challenged as a world record by a nine-man team, headed by John Marquette of Pymble, Australia. On Monday, June 11th, they flew an 11 lb. R/C model from Girilambone to Nevertire, a total of 63.25 miles along the Western Highway at an average speed of 42 miles per hour. Model was flown at about 300 ft. altitude and was chased by a station wagon. We congratulate the Aussies on their claim for a new world record and remain sure that this will not in any way diminish the magnificent effort by Dance/Skeels, as anyone who has travelled the road to the Kent ports will appreciate. A report of the British record flight was carried in our issue for July, 1960.

More Slope Soarer interest at left, is three view general arrangement o the Graupner "Amigo" A/2 specification type, of 70 ins. wing span. Will take single channel or even three channel sets (miniature German types). Ed. Johnson offers Graupner Universal chargers as below. It charges all types of accumulator, from 225 DK up to 6.7 A/H and that covers Rx, Tx and servo batteries, plus starter batteries for Glow plug motors. Price is £4 7s. 6d.



CLUB NEWS

IT IS WITH REGRET that we announce the cancellation of this years' P.A.A. Festival. Too bad! Let's hope next year will see its revival.

We have always made it a rule never to publish loss of models in *Club News* for the obvious reason that we could probably fill two pages a month with such notices. On the other hand, we *do* publicise "Finds" in the hope that the owner of the lost model will be able to reclaim it. For just once though, we have decided to break our rule, because the model in question is of unusual interest. It is a 1936 (!) *Miss America*—design spanning 7 ft. It has a McCoy .35 motor and is equipped with Ripmax Pathfinder radio and Rising Compound escapement. The whole is nylon covered, wings and tail-plane are orange and the fuselage and fin blue. On its port wing in white letters is its title and on each side of the fuselage "St. Annes M.A.C.," while the owners name and address, D. S. F. Ridgway, 21 Fairview Avenue, St. Annes-on-Sea, Lancs., was detailed on the starboard fuselage side. *Miss America* was last seen landing *in the sea off* St. Annes. Has anyone seen her since?

Down **SOUTH**, 115 entries were received for the six events of **Woking M.A.C.'s** Rally. In the strong winds it became impossible to record a three-minute flight and remain in sight or even within the confines of Chobham common and the wind carried models in the direction of some trees surrounding a railway line. Al Wisher (glider winner) and Martin Dilly (½-A power winner) being among several treed here. John O'Donnell succeeded in flying over these trees to win Rubber, but lost his model in doing so and it was in these conditions that no competitor returned a perfect score. R. Fleetwood and B. Mack, first and second placers in Chuck Glider, were lucky to find lift in otherwise rather dead conditions, but recorded 4 : 35 and 3 : 41 respectively.

Coupe d'Hiver brought forth several untried models, the top placers, P. Binks, Hornchurch (first, 3 : 17); G. Wilson, Woking (second, 3 : 07); G. F. Kent, Watford Wayfarers (third, 2 : 58), showing that with good weather for trimming, high times are possible in this class and so should make a first-class contest category for the less experienced who wish to try their hand at competition work.

At Ashdown on May 13th, **Brighton D.M.A.C.'s** John West topped the **SOUTH EASTERN AREA'S** placing in the Gutteridge Trophy with 7 : 57 closely followed by Dennis Latter, who scored 7 : 27. These two also placed first and second in the C.M.A. Cup with 8 : 47 and 8 : 29. On the 27th John West was again on form at Ashdown, topping A/2 results for the Cup in the East Anglia F.A.I. Contest with 13 : 09. John was on form again at the Nationals to top the twenty-man Power Fly-off with his Veteran modified *Dixielander*, *Cox Tee Dee* .15 powered, with a time of 5 : 48.

Move now to the **LONDON AREA**, to hear from **Cosmo A.C.** Stan Robinson was forced to fly his *Oliver Tiger* powered *Kentish Orbe* stunter at the Esher Rally on May 20th, after demolishing his *Merco* 35 *Coy Cat* while practicing, but proved that a 2.5 c.c. diesel stunter could hold its own against the big glow motor powered jobs. On Stan's retirement as Hon. Secretary, C. Wadlow and A. Tick were elected to a joint secretaryship. The round of cups and trophies won by **St. Albans M.A.C.** have been on display at their local model shop, a move to attract new members. Three super large Open Gliders of the 10 to 12 ft. wing span range have appeared of late as the result of an outbreak of Giantitus. One is a scaled-up 96*A*, the others are own designs. Also to add to the list are two, twice-size *Dixielanders* and a 2.5 c.c. version of the Charles McCutcheon flying machine. (*Off* with his head sir!). Ten stalwarts spent the Nats week-end under canvas, while the more well-to-do types found less hardy accommodation. Those who made use of the camp sight express their appreciation of this and of the general Nats. organisation. Tony Young was top placer in PAA Load, while George Fuller had 3rd place and 5th in Open Power. Recent success at **Croydon & D.M.A.C.** was Bob Leppard's win at Woodford, which unfortunately cost him his model after an abortive chase across the airfield. This performance prompted caution at the Nats, where, in the Open Rubber fly-off, he D/T'ed after 8 minutes from 700 ft. to take fifth place, but Norman Elliott did ten minutes plus and came second. Al. Wisher was second in the Glider fly-off (when will he take a first place?) and Martin Dilly won— . . . four large R/C propellers. Any offers? Norman Butcher has secured a place in the C/L speed team for the World Champs when he recorded 122 m.p.h. at the Team Trials.

Leicester M.A.C. in the **MIDLAND AREA** show their customary enterprise if a short note in their May Bulletin is any judge. Now faced with the loss of their flying ground, Braunstone Aerodrome when taken over by British Shoe Corporation. They have certainly gone to the most likely place for a replacement by advertising in the *Farmer's Weekly* magazine for a flying field. **Gee Dee M.A.C.** are holding Combat competitions to familiarise members with S.M.A.E. rules and give the confidence necessary for open contests. Other Summer activities scheduled include Free Flight Sport and an extremely simplified C/L aerobatic comp., the Competitor obtaining the highest aggregate to be awarded a Shield to be held for one year. Designs are being submitted for a club control line trainer, to help beginners over those first flights without bent crankshafts. Membership of **Bilston M.A.C.** has now reached 30, of whom 10 are seniors. Though this number is the limit of accommodation in the existing premises, an old house provided by the Town Council, anyone interested will not be turned away. A training scheme for new-comers to the hobby is in operation, the senior and experienced members roped in as tutors. The Combat enthusiasts had little luck at the Woodford Rally, where they were all defeated by the end of the second round, and at the Nationals none of their Combat entrants reached further than the third round.

This year's Nationals resulted in a host of near misses for **WESTERN AREA's Glevum M.A.C.**, where in Power, G. Wickstead missed the fly-off by 13 secs., A. Crisp by 8 secs, and D. Harper by just 3 miserable seconds.

Stan Perry placed 4th in the Knokke Trophy, the same position as last year. His model, a *Hawker Henley* was only just completed in time and was not so complete as originally intended. However on its maiden flight the model flew well, its ancient *Nordec* 10 c.c. engine providing adequate power for its 5 lbs. weight.

Dennis Rattle provided the club's best tall story for some time. In 1961 he built a *B.E.*2 scale biplane which flew extremely well, so well in fact that one evening after a long motor run in the air, it thermalised and disappeared. Searches proved fruitless and a second *B.E.*2 was commenced to be completed only recently, flying even better than the first. Another long motor run, another thermal and the second B.E. was lost without trace. In desperation the searching owner knocked on a farmhouse door and enquired after his model, and the farmer produced one. Yeah, . . . the original *B.E.*2.!

Bridlington & D.M.F.C. was recently reformed in the **NORTHERN AREA** after a lapse of several years. Interest is mainly C/L Team Race and Combat, although several members dabble in R/C and F/F Power. Flying is fun on ground made available by the helpful local council so contact P. E. Robinson, 21 Haslemere Avenue, Bridlington, for gen on how to join up. **York M.A.C.** members are becoming more contest minded so they say. P. Kazer and D. Wiseman (Glider) and D. White (Rubber) have been chosen for the area team. J. Taylor won Junior Power at Woodford and became Junior Champion with 7:03 total. The **Wharfedale** boys had a good time at the same rally, Ken Long placing first in F.A.I. Team Race, and John Simmance winning the E. J. Riding Memorial Trophy with his well tried *Sopwith Snipe*. John also took the only Wharfedale, Nats 1st place when he won Super scale Trophy for the second year with his *A.P.S. Sopwith Swallow*, now in its fourth year of flying.

New group in the **NORTH WESTERN AREA** is **Culcheth M.A.C.** where quite spacious flying grounds are available. Fifteen keen members have interests ranging from control line to free flight power. All modellers in the area are welcome to join and should contact. J. Johnson, 5 Kaye Avenue, Culcheth, Warrington, Yorks.

Story from the **NORTH EAST** and **Jarrow M.A.C.** is of the club advertisement displayed in the window of the local model shop. This attracted such a rush of new junior members, that the ad. had to be removed after just three days. With so many recruits, serious club room overcrowding resulted, so much so that there was nowhere to sit down. Twelve enthusiasts visited the Nationals, their only entries being in Glider. Two days before the event, R. Croucher had discovered that his *A.P.S. Patches* weighed 2 pounds. A hastily built second fuselage saved 2 ozs. This model flies quite well, but developed a bad stall during the contest.

The **North Norfolk Aeromodellers** have revived the title of the old club which lapsed in the **EAST ANGLIA AREA** some ten years ago. Interests range from R.T.P. to Multi R/C so there's plenty of scope. Present flying ground is Langham airfield but when crops become more advanced, it is likely that activities will take place at Kelling Heath. Anyone interested in joining, contact A. A. C. Jordan, The School House, Colby, Norwich, Norfolk. The **East Anglia Area's** *National Decentralised F.A.I. Contest*, held on 27th May was well supported, so much so it has been possible to donate 6 guineas to the S.M.A.E. International Contest Fund. 101 entries, returned 62 scores made up of 38 A/2, 14 Power, and 10 Wakefields. The winner must be congratulated on reaching a second fly-off with a Wakefield, the type few had reckoned as a winner. Weather conditions throughout the country on May 27th varied a great deal, but were generally flyable.

Results:—

1st. G. L. Roberts	*Lincoln*	15:00 + 6:34		*Wakefield*
2nd G. French ...	*Essex*	14:50		*Power*
3rd D. Cook ...	*Pilgrims*	14:22		*A/2*
Top Junior				
A. Adds ...	*Norwich*	10:14		*A/2*

Full results may be obtained from the organisers price 6d. per copy.

Eleven members of **SOUTH MIDLAND AREA's Hatfield M.A.C.** made the trip to the Nationals, R. Bowyer-Lowe managing to reach the third round of Combat with his *Oliver* powered *Rip-Saw* design. Two local displays in connection with the Duke of Edinburgh Award Scheme gained some useful publicity and consequent was shown by the press in further articles covering the club. Tests have been carried out on *I.C.I. Melanex* covered F/F structures and have proved it to be very strong, a 6 oz. weight dropped from a height of 3 ft. onto G. Cresswell's *A.P.S. Aiglet* wing had *no effect at all* and tests for control line application are continuing. **Stevenage M.A.C.'s** newsletter is one of the best in the country and the April/May edition even has advanced news and results of a *Mouse Race* competition (How about that then). What's a mouse race? Well you must have heard of Rat Racing and if you take a model with engine capacity limited to a maximum of 2 c.c., fly it on 35 ft. lines for 100 laps with one compulsory pit stop, then you have a *Mouse Racer*—Get it?

Well thats all the news this month. Some of you chaps have really turned out those Nats reports quickly Thanks Lads.

THE CLUBMAN.

TEAM TRIALS

FOLLOWING THE SECOND of the team selection trials at R.A.F. Barkston Heath, Nr. Grantham, on May 27th, teams to represent Great Britain at the forthcoming World Championships for radio control at R.A.F. Kenley, August 17th-19th, and for control line at Kiev, U.S.S.R., September 1st-7th, are now officially announced as follows:—

Radio Control

	Best of two Flights 2nd Trial			*Best of 1st Trial*		*Grand Total*
1. C. Olsen	1646	1683.5	+	1594.7	=	4924.2
2. F. Van den Bergh	1571.5	1521	+	1558	=	4650.5
3. H. Brooks	1548	1535.5	+	1510	=	4593.5
4. E. Johnson (reserve)	1414.5	1483.5	+	1689	=	4587

The team is determined, as previously announced by the S.M.A.E., by the addition of the best flight from the first trial to the total of the better two flights out of three in the second trial. This provided a change-over in 1st and 4th places between Olsen and Johnson (who led the first trial). Whereas on April 29th, Olsen lost manoeuvres through engine stoppage, in the second trial Johnson had similar misfortune through loss of simultaneous transmission. Only Olsen and Rogers (5th) were able to execute the tail slide. Diversity in design among the top four is the most interesting aspect of the result apart from the fact that Frank Van den Bergh now has to push ahead with a new model, having written off his Sweeper Mark II in a subsequent flight due to control linkage fracture.

In control line, team racing results served to confirm the consistency and reliability of the Long/Davy team. In third place, after the reliable Dick Edmonds the Adams/Lucas team from West Essex have a fascinating entry using one of the Carter Special C.C.S. glow-plug engines, capable of very high speeds. Fuel research is continuing and it might yet be possible that this very successful team with their outstanding record in Class B racing, will be the hidden ace in our pack.

Team Race

1. K. Long/L. Davy	4 : 47.3	*(Average of 3 heats)*
2. R. Edmonds/M. Smith	4 : 52.7	"
3. C. J. Adams/R. Lucas	5 : 29	"
4. T. French/J. Lambert	5 : 51.6	"

In stunt, the order was clearly defined but performances at the second trial were generally not as good as those at the April meeting. Geoff Higgs of Bolton, steps into second place with accepted regulars Warburton and Brown, all three using the British Merco 35.

AT THE TEAM TRIALS, left Ron Lucas (WEA) and his Carter CCS powered F.A.I. race "Comet IV". Model follows Rosenlund's "Miss F.A.I." construction, using a metal pan to mount the finless engine. Fuel has yet to be developed but so far this fast model is knocking on the five minute mark for heats. At right Ray "Gadget" Gibbs used his early, one time record holding Carter engine in an unusual and simple flying wing design, which incorporated two line control with lines held tight together at tip.

Control Line Aerobatics		*Trial 1*	*Trial 2*	*Total*
1. F. Warburton	Bolton	2372	2041	4413
2. G. Higgs	Bolton	2058	2081	4139
3. R. Brown	H. Wycombe	2074	1445	3419
4. D. Day	Wolverhampton	1932	846	2778

Carter C.C.S. 2.5 engines also showed their paces in speed, equipping the models flown by Butcher, Drewell and Wright. The speeds achieved reflect on the considerable effort made by these modellers in attaining a high standard equal to, if not better than, many other National efforts and we can confidently report that the first three in each event will go to make up a very strong team under the managership of H. J. Nicholls, which will show the flag in the U.S.S.R.

Control Line Speed	*Best four Flight Speeds*				*Average m.p.h.*
1. N. Butcher	114.2	117.1	120.4	122.4	118.5
2. P. Drewell	120.4	113	115.4	118.3	116.75
3. G. Copeman	114.7	117.1	115.3	117.5	116.75
4. P. Wright	111.9	110.2	111.3	110.7	111

Contest Calendar

July 15th — *Clwyd Slope Soaring Contest.* Moel Ffamau, Nr. Mold, North Wales. Open. A/2, Radio. Pre-entry by July 1st to C. R. Filtness, 26 Raymond Street, Chester. Fees 2s. senior, 1s. junior.

July 29th — *Surbiton Gala.* Open Glider, Rubber, Power, ½A Power. Chobham Common. 10.30 a.m.

August 12th — *Devon Rally.* Rubber, Glider, Power, ½A Power, Combat. Woodbury Common, Nr. Exeter.

August 12th — *Rush Trophy Gala.* Thornaby Aerodrome, Thornaby-on-Tees. Open Power, Rubber, Glider. C/L Team Races, ½A, F.A.I., "B". Pre-entry, 2/6 per event to T. W. Liddel, 58 Beatty Avenue, Jesmond Newcastle-on-Tyne.

August 19th — *Irish Control Line Nationals.* English modellers welcome. Details from P. Brennan, c/o Royal Bank of Ireland Ltd., Dundalk, Co. Louth, Eire.

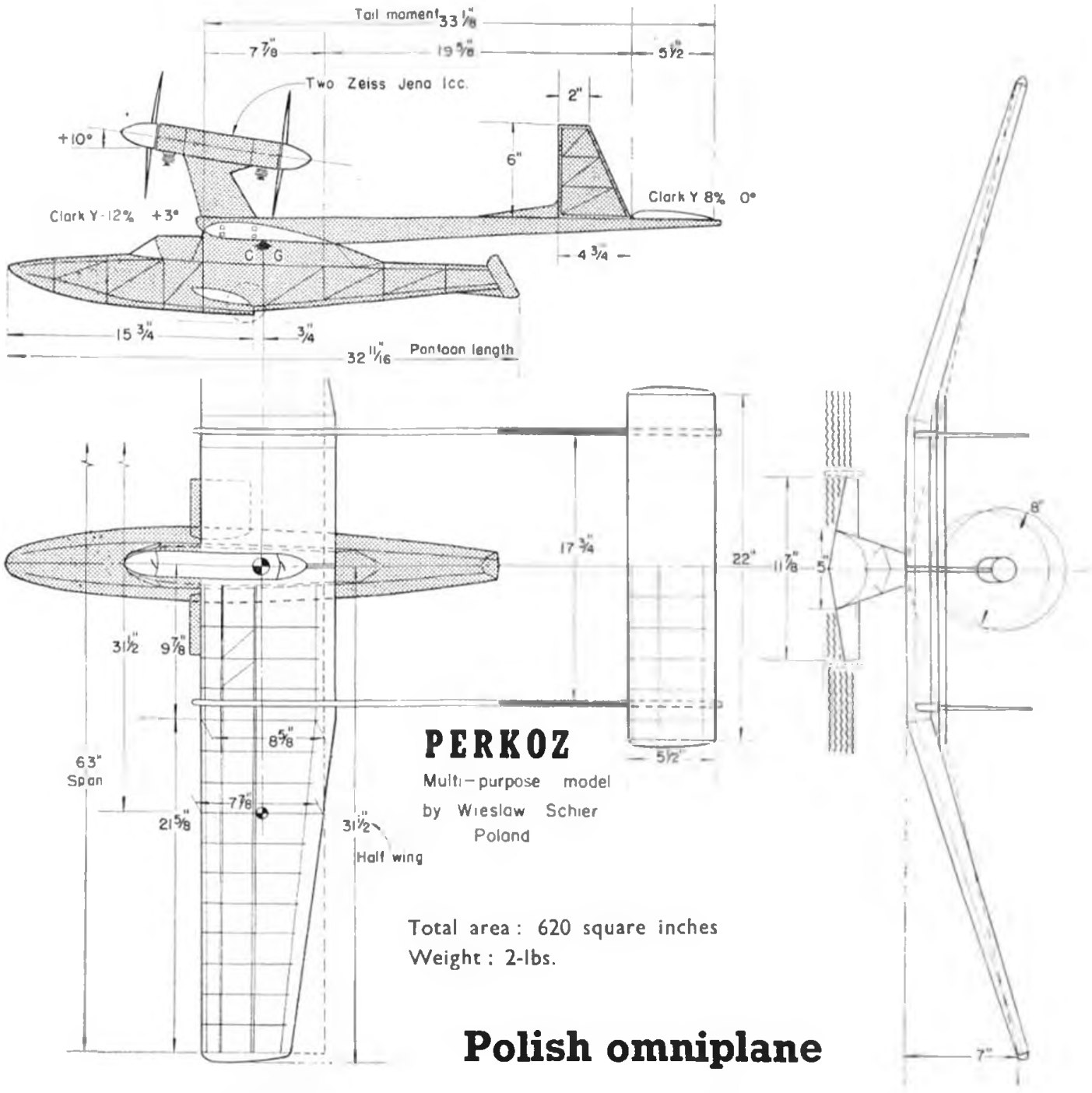
September 2nd — *Hornchurch M.A.C. Rally.* Open Glider, Rubber, Power, Chuck Glider. Details 207 High Street, Hornchurch—Venue, Chobham.

September 16th — *South Midlands Area Rally.* All Classes, Cranfield.

September 19th — *Irish Free Flight Nationals.* English modellers welcome. Details from P. Brennan, c/o Royal Bank of Ireland Ltd., Dundalk, Co. Louth, Eire.

September 23rd — *Northern Area "Air League Rally."*

September 23rd — *Crawley M.A.C. Rally.* Open Glider, Rubber, Power, ½A Power, Chuck Glider, Combat, Pre-entry Combat 2s. 6d., P. Cameron, 31 Slafford Road, Crawley, Sussex. Venue, Great Buckswood Farm on A264, turning off A23.



Polish omniplane

A suggestion for those who like to make unusual models

HERE IS A MODEL which should satisfy a large number of our readers who regularly request information on sport type flying boats and twin engined free flight models. International team member Wieslaw Schier of Poland, created this multi purpose model to meet a specific need in his own country. The idea underlying the design is to provide a model which will offer the builder all the possibilities of free flight, together with easy transportation. No component of the model is longer than 35 in. The model uses one central hull and two tail booms, which should incorporate a laminated ply centre core. It can be powered by two engines mounted in tandem as illustrated, by one engine as a pusher *or* tractor according to engine type and weight, without power as a glider with wheels fitted for taking off a runway, as a hydro model, and also to be flown over snow. We might dare add that with ingenious adaptation, radio control could be fitted within the hull for rudder-only operation. Basic dimensions are quoted for plan enlargement, we regret that full size drawings are not available.

CLASSIFIED ADVERTISEMENTS

ADVERTISEMENT RATES:

Private **Minimum 18 words 6/- and 4d. per extra word.**
Trade **Minimum 18 words 12/- and 8d. per extra word.**

Box Numbers to count as six words when costing.

All replies to be sent care of Advertisement Department, Model Aeronautical Press Ltd., 38 Clarendon Road, Watford, Herts.

Copy received after first post on the 18th will be held over until the next issue, unless cancelled in writing before 10th of following month.

PRESS DATE for issue SEPTEMBER, 1962, JULY 23rd, 1962

FOR SALE

E.D. Fury powered Mercury Galahad, Hill receiver, Rising actuator, P.C. transmitter, meters, batteries—ready to fly; 74 AEROMODELLERS/*Model Aircrafts*, 1957-'61; fast Eiffelaender 2.49D. Lot £18 o.n.o. Will separate. Betney, 216 Goddard Avenue, Hull, Yorks.

Frog "150", 25/-; New A.M.10, £2; Bantam, £1; Accessories including set midget screwdrivers and spanners, £4. 10s. 0d. lot o.n.o. Dingwall, East Grange, Kinloss, Forres, Moray.

Racer, A.M.25, both unrun, 45/- each; Frog 349 BB, 40/-; Veco 29, 50/-; A.M.25, Gloracer, both without spraybars, 10/- each. P. Symons, 15 Valley Road, Wellingborough, Northants.

AEROMODELLERS: 1958-1962, clean, 2s. 6d. each including postage. S.A.E. please. D. Northcott, 12 York Street, Penzance, Cornwall.

Over £100 worth of engines and accessories, £45 o.n.o. S.A.E. for full list to: Biddick, 13 Barclay St., Leicester.

E.D. P.C.1. Tx., Airtrol Rx., Mk III escapement, £8 10s. 0d. o.n.o. Untouched 18 in. Whippet kit, 12/-. 90 Ipswich Road, Colchester.

E.T.A. 29, £5; Cobra, 30/-; both new. Enya 19, £3; Racer, £2; R.E.P. servo, F.R. Compound and E.D. Escapements; Unitone Rx.; Offers. Hosking, Anchorage, Grand Parade, Plymouth.

Delong 30, in excellent condition, £5. Mr. D. L. Russel (Seven Kings 3997), 107 Applegarth Drive, Ilford, Essex.

All in excellent condition. Silver Streak Mk. I, modified, 72s. 6d.; Thermal Hopper and Spare Glow, 60/-; Frog 149 Vibramatic, 32/6; Unused Pee Wee, 30/-; Tatone Timer, 20/-; Schuco Glider winch, 40/-; Dempsey, 88 Claremont St., Gateshead, Co. Durham.

Rivers Silver Arrow, £5; E.D. Racer, £4; A.M.15, £2; D.C. Bantam, £1; Newbury, 22 Ashgrove Avenue, West Hartlepool, Durham.

Best offers take, will split. Complete models: Mk II Oliver "Beatnik", Enya 15D open, Elfin 2.49 open, Elfin 1.49 open, Thermal Hopper ½A, 10 ft. glider, 5 A2's, contest winning 8 ft. "Max Maker". Also: 5 c.c. open minus engine, 2.5 c.c. open minus engine and timer. All in good flying condition. Further details: J. Baguley, 29 Adelphi Crescent, Hayes, Middlesex.

Rivers 3.5, almost new, 115/-; P.A.W. 1.49 70/-; K & B 19, 70/-; Mills, .75, 10/-; R. Dandy, 8 Ramsgate Street, Pellon, Halifax.

A.M. 25, as new, 45/-; E.D. 3.46 c.c., 30/-; "Adjustalyne" handle, 50 ft. "Laystrate" lines, assorted props., 10/-; Devonald, "Sunnyside", Broad Haven, Haverfordwest, Pembs.

All unused: A.M.35, 50/-; A.M.25, 50/-; Frog modified 2.49 BB, 60/-; Allbon Dart, 45/-; Proton SM.03, 50/-; Frog 100 Mk II, 40/-; Veron "D" impeller, 5/-; E.D. 2.46 exhaust manifold, 10/-; K.K. pneumatic airwheels, 2 in., 8/6. pr., or exchange for good "00" locos etc. Moffey, 3 Princes Court, Shoreham, Sussex.

Rivers Silver Streak Mk. II. Good condition. £5/5/0d. o.n.o. Francis, 41 Eastern Avenue, Reading, Berks.

A.M.15, seldom used, perfect condition. 45/-. M. Balmforth, 103 Westbury Rd., Northwood, Middx. Phone: Northwood 22146.

1 good Cobra, with 1 hr. running, with propeller. 27/6. M. Walker, Doune Manse, Banff, Scotland.

Ivy carrier Tx. case aerial., Ivy Rx. Built by radio man. £8. L. Davison, 30 Little Green Lane, Farnham, Surrey.

Selling up! McCoy .19 cu. ins., £5/-/-. McCoy, .098, 10/-. D. A. Drabant R/C, brand new, never run, £5/-/-. Frog 150R, needs rebore, 10/-. M. Sledziewski, 25 Redmore Road, London, W.6.

New Mills, .75, Jetex 50B, Celspray, many extras, £2; J. Taylor, Sunnydale, Marsh Road, Hesketh Bank, nr. Preston.

Good Rivers Arrow in fast nylon-covered Combat Wing, 90/-; Good Merco 35 with 100 m.p.h. manoeuvrable nylon-covered combat plane—needs new bearers, 90/-. Stemp, 68 Jenkins Grove, Copnor, Portsmouth.

Sextone complete with batteries. Tx. modified by R.E.P. for alternative use with single channel Rx., £20. Knight, Queen's Flight, R.A.F. Benson, Oxon.

For Sale: new E.D. Black Arrow Rx., and R.E.P. Unitone Rx., £5/10/-; each guaranteed unused. Box No. 671.

E.D.8, Black Prince crystal simultaneous Tx, and Rx., 4 Duramites. 4.8 DK2 DEAC, all only one season old, and O.S. Max. 49 R/C engine, approx. 3½ hours running, £55. All in perfect condition, owner giving up aeromodelling. R. T. Wray, 12 Marlborough Ave., Hessle, E. Yorks.

E.D. Bee (Series 2), bench run only, 30/- o.n.o. Hartley, 202 Aldridge Road, Streetly, Sutton Coldfield, Warwicks.

Glow Super Tigre—pressure fed—flown once—perfect. £4/15/-. Officer Cadet Gladwin, Officer's Mess, R.A.F. South Cerney, Glos.

Orbit 10 channel relay receiver, £30 or near offer. P. A. Leach, 63 Corkscrew Hill, West Wickham, Kent. Springpark 7473.

E.D. Hornet, only once run, 40/- o.n.o.; Scruffy D.C. Spitfire, 10/- o.n.o. AEROMODELLERS 1961/62. 2 Havard Road, Llanelly.

Brand new: E.D. six channel crystal controlled Tx., Rx., complete Black Prince/Black Arrow. Unused. Boxed. £25. Box No. 670.

Tritone Tx., £5; New R.E.P. 3-reed unit, 15/-; new OC.76 transistors, 7/-; Powertrol servo, £2; Single channel Rx. (Unitone circuit), £3; Kenneth, 58 Sqn., R.A.F. Wyton, Hunts.

Bargain: Veco 19RC, Junior 60 kit, 3½ in. airwheels, Terrytone receiver, Transmitter working, Elmic Corporal, Commander escapements, all new. Also D.C. Bantam Deluxe, Caby Multimeter, Antex Soldering iron, test mount, useful oddments. First £20 secures, buyer collects. Ring Pollards 3523 business hours.

Selling up—engines, planes, books, etc., very cheap, space needed. Wren, 12 Villiers Avenue, Surbiton, Surrey. Elm 6131.

WANTED

Has anyone a copy of "Modern Mechanix and Inventions" 1936, or M.A.N. around 1949 that contained working drawings of American racing plane "Miss Los Angeles". C. Baites. 22 Upland Rd., London, S.E.22.

BOOKS

Sailplane and Gliding—published every month. Send stamped addressed envelope for descriptive leaflet; or 3/4 for current copy; or £1 for a year's subscription to British Gliding Association, Dept. "A" 19 Park Lane, London, W.1.

American Magazines. Year's subscription *Model Airplane News*, 39/-. Full catalogue free. Willen Ltd., (Dept 1), 9 Drapers Gardens, London, E.C.2.

Competition modellers read "Northern Area News" published monthly, 9/- per year ($1 U.S.A. and Canada) from John Pool, 3 Rothwell Drive, Halifax, Yorkshire.

Model-Avia, the model magazine that covers the world of model flying. Edited in French. Send for free specimen and subscription details: Model-Avia, 31 rue du Printemps, Bruxelles 5, Belgium.

Model News (Australia)—published every month 12/- per year sterling posted direct, covers all Australasian Aeromodelling in pictures, features and plans. 206 High Street, Coffs Harbour, N.S.W., Australia.

TRADE

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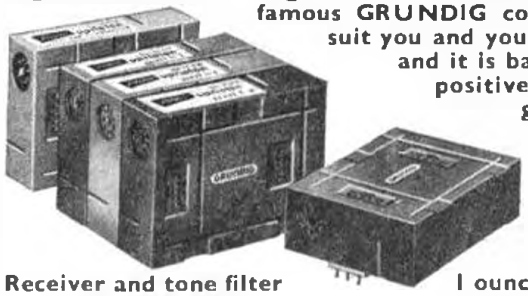

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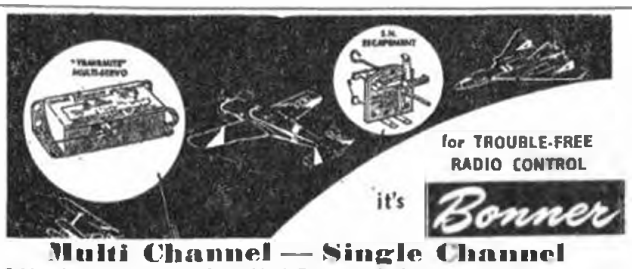

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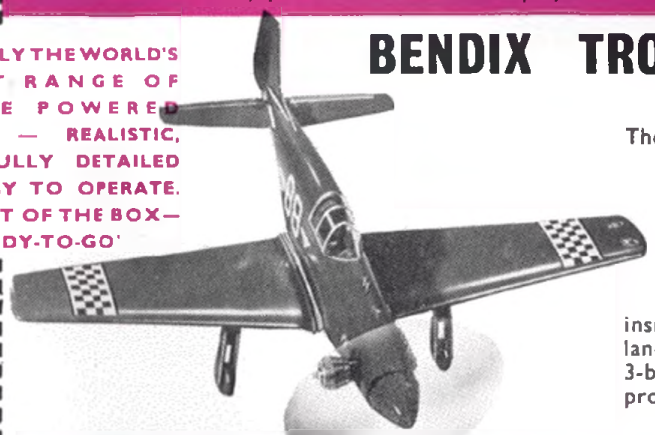

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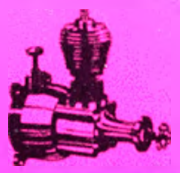

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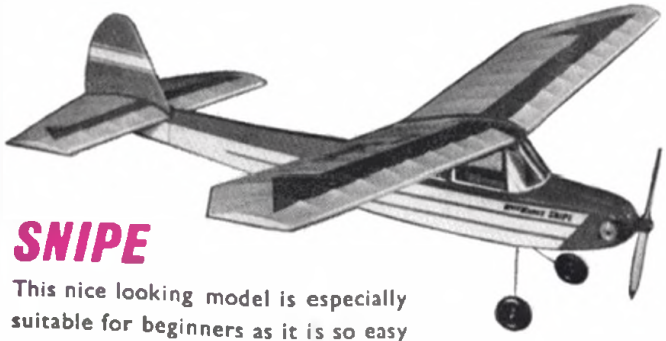

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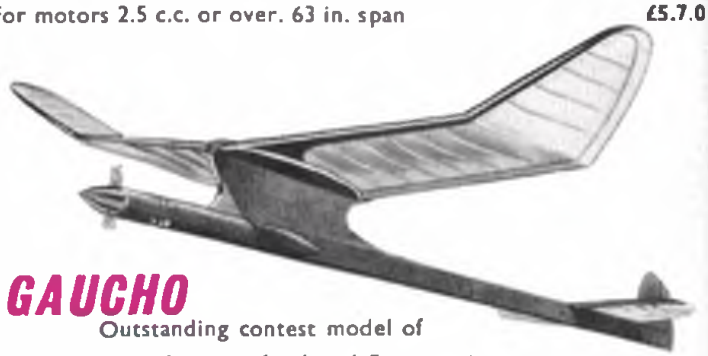

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