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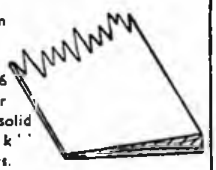

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AEROMODELLER

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Following a lull after the last war, aeromodelling in Australia is now once again on the up-grade. Here is a mass launch of rubber models photographed at Como Park, Melbourne.

CONTENTS

VOL. XIII No. 154 NOVEMBER, 1948

EDITORIAL

FLYING IN THE PARKS

SAFELY returned from attending the Wakefield Trophy Contest at Akron Airport, Ohio, one of my first jobs has been to deal with a number of letters received from readers on the vexed question—is a Public Park for the use of all members of the public, or only for the (privileged) few ! ! ?

These letters have, of course, been consequential on the first part of my " Chairborne " Editorial published in the September issue of this Journal. Mr. C. W. Meeks of East Sheen, reports that towards the end of August he was prevented by a keeper from flying a small glider and small model plane in Richmond Park. Both these models weighed under 4 ozs. and were, of course, built of tissue and balsa wood. Mr. Meeks has taken a good deal of trouble to bring this matter before the appropriate Authorities. He wrote to the Commissioner of Royal Parks, c/o Ministry of Works and Buildings, from whom he received a reply to the effect that the department " does not raise any objection to the flying of models by children, except in such circumstances as may be inconvenient and dangerous to other park users ".

The Ministry added that the question of model flying, and whether any rules relating thereto should be laid down for the direction of the park keepers—" is at present under consideration".

I understand that Mr. Meeks communicated this Ministry of Works statement to the Superintendent's office of Richmond Park, from whom in due course he received a letter in which he stated that " In accordance with the rules of my department, the flying of small model planes (toy planes) by children has never been banned here. It is only when the models become more substantial and are flown by adults, that we have to take a hand and restrict the flying in the interest of other park users, who may be caused anxiety by the flying of model planes".

Here, it seems necessary to draw attention to the discrimination made by the Park Superintendent between aircraft flown by *children* and those flown by *adults*. The Superintendent is not very logical in his attitude. Children in their well-meaning ignorance, might well fly model aircraft under conditions which would be judged as unwise by adults ; but he appears to be under the impression that as soon as adults fly models, they automatically become lethal weapons ! ! However, the tone of the Superintendent's letter was certainly friendly, and he was at pains to emphasise " that the flying of toy aeroplanes and the flying of small children's models may proceed, providing the park keeper in charge does not foresee any danger to the comfort of other park users."

From Mr. Miners, P.R.O. of the Regent's Park Club, I have received a letter in which he confirms that the Regent's Park authorities have banned all power flying consequent " on so much indiscriminate flying".

Mr. Miners seems to think that most of the trouble has been caused by the individual flying of control-line models under conditions which were not suitable, and in that opinion we are inclined to concur. He maintains the opinion that it is up to all club officials to make every effort to " educate " local authorities by suitable propaganda, so that they will not take an exaggerated view of the alleged danger to the public by flying of power driven model aircraft.

Then from Mr. O'Brien of Gidea Park, Essex, I have had a letter saying that he has had a " brush " with the Borough Surveyor of Romford, whilst control-line flying on Gidea Park.

Apparently the Borough Surveyor was concerned that the lines might snap. The Surveyor was observed to engage a passing police officer in conversation, who in due course stated to Mr. O'Brien that he (O'Brien) could have continued.

Once again we see the difficulties in which the various parties are placed, as no one really knows just what is the legal position affecting the flying of model aircraft in Public Parks.

Once again I can only advise all aeromodellers to " Fly with Care ", to protect themselves against third-party claims by joining the N.G.A. ; and to advise me of any undue restrictions of which they may become aware.

GAS TURBINE

PART I. By L. G. CRAMP.

ONE seems to hear little or nothing nowadays on the subject of model jet propulsion, and the writer having carried out some research in this field over the last four years, would like to contribute a little toward reviving some interest among modellers.

No doubt among the readers of the AEROMODELLER there are those who will sympathise with the writer, who is often painfully reminded of the fact that the airscrew power driven model has a disadvantage. Engine power units may be made knock-offable and the undercarriage pushed forward until it practically nurses the airscrew and engine. A layout which although practical is a sight to look at, and despite these precautions a broken prop is sometimes unavoidable.

Now the idea of a little power unit buried snugly in the fuselage of a nicely streamlined model, without the projecting fan like pieces in the nose or rear, has often appealed to many as the ultimate in the design of model aircraft, but while the advantages of a small jet reaction unit are well appreciated by most modellers, it must also be borne in mind, that with the application of this method of propulsion the disadvantages are by no means small. Most prominent among these being perhaps, that the efficiency of the jet falls off at low speeds, and it was with these things in mind that the writer began the following experiments.

It is pointed out that the formula used here while giving a fairly accurate result, is limited to the basic principles only, and that should a reader require to go more deeply into the design of compressors and turbines, a good book on the subject is recommended. Experiments were carried out in the beginning with the simple impulse duct type of jet-reaction unit, which although having a good power-weight ratio are inclined to vibrate. This it would seem is due to the intermittent explosions and therefore is not as smooth as the constant pressure gas turbine cycle.

After some very interesting trial and error experiments, the writer decided that it may be possible to build a small gas turbine which, should it be successful, may be used to power the larger type of model aircraft.

The first thing that seemed to be indicated was a small test bed which could be used for combustion chamber experiments. This was built as shown mainly with scrap from the junk box and needs no further description. Briefly, the main object of combustion chamber experiments was :—

(*a*) To find the best method of burning the fuel, i.e. vaporised or atomised.
(*b*) The designing of suitable small scale burners.
(*c*) To establish, if possible, a means of cooling down the products of combustion to a workable temperature.
(*d*) To find the means of keeping the flame length as short as possible.

A small combustion chamber was fabricated from mild steel comprising a flame tube and burner. To the inlet end of the combustion chamber a short length of tubing was secured, within which, accommodation was made for a small axial flow type fan (this served as a source of air supply). Owing to the small dimensions of the fan, it was found necessary to turn it at high revs and it was mounted on an extended shaft, which ran in two ball race bearings, see Fig. 1. The extended end of this shaft was coupled up to the rear wheel of an old cycle, which it was found gave the high revs required. In the first test the fuel was gravity fed from the tank to the burner, the latter being of the venturi type as shown in the illustrations. As the writer did not possess a pyrometer for the temperature readings, use was made of some scrap aluminium, which having a melting point of 664 C would give a rough idea of the working temperature.

The ignition system was rather inadequate, so that it was found necessary to pre-heat the chamber by burning some preliminary fuel and then to bring the fan into operation.

EXPERIMENTS

This was found to be quite successful. The chamber was heated and while the preliminary fuel was still burning, the fuel valve was opened a little and at the same time the cycle crank was started up. The little fan screamed around at something like 25,000 r.p.m. and the unit gave forth that very pleasing blow torch roar, emitting a flame several feet in length. This became blue in colour and shorter in length as the fuel valve was operated, permitting a more correct air-fuel mixture and within a few seconds it seemed the scrap aluminium was melting. Combustion was continued and the exit end of the conbustion chamber was soon glowing with a bright red heat and as the experiment was carried out in daylight, again this indicated a temperature in the region of 660°C. By this time the only flame visible was that inside the combustion chamber, this being viewed from the inspection hole provided. It was interesting to note that the flame started several inches down stream from the burner. Now as flame length is one of the many troubles with gas turbine design, it was readily seen that more turbulence was called for in the region of the burner and this was remedied by installing swirl vanes at the entrance to the flame tube. This definitely brought about a shorter flame and after many other experiments it was found that a practical flame length could be obtained by careful fuel adjustment, while still obtaining a high temperature.

After many setbacks it seemed that enough information was gained at least to allow the writer to begin work on the design of the first turbine layout, but before this could be done however it was necessary to have some idea of the working efficiency of the small type turbine and compressor which would be used. A centrifugal compressor was decided upon (as the use of a small axial flow type is impracticable in the writers opinion owing to the high rotational speed required). Again this called for test rigs and for the measurement of the air flow a U type manometer was constructed which was found to give a fairly accurate reading. Now in order to obtain a measure of efficiency for the compressor a rig was required. This was constructed and consisted of a simple train of gears which gave a gear ratio of 4–1 and was powered by an electric motor. The high speed gear had an extended shaft upon which was mounted the compressor under test. A small centrifugal compressor of 4 in. dia., was built of aluminium and assembled to the rig, see Fig. 2, and when started up was found to have a speed of 8,000 r.p.m. The pitot head of the manometer was fixed into position a short distance from the blade tips and when the compressor was running was manoeuvred about a little until the maximum reading was obtained. This position then was the tip exit angle and the approximate angle at which the diffuser blades would have to be fixed and when measured was found to be 44°56, the air velocity being 146 ft. per sec.

Now the theoretical pressure head of water that will be produced by a centrifugal compressor is dependent on the tip speed and the blade efficiency and is given by the expression:—

$$Ht. = \frac{U^2}{g}$$

$$Ha = Hty$$

$$V = \sqrt{Ha\ 2g}.$$

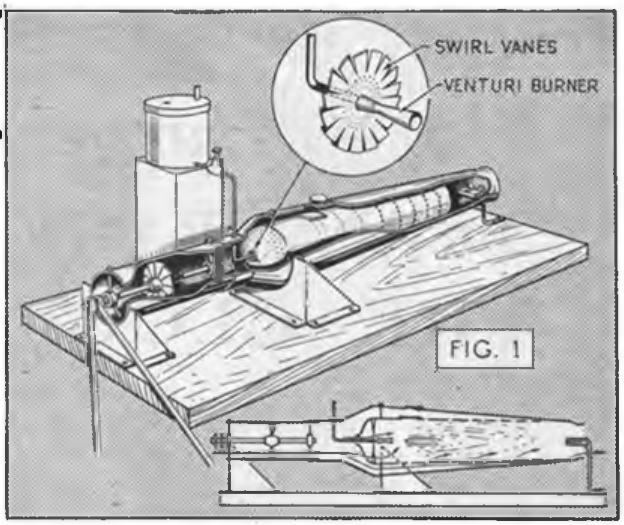
where Ht = Theoretical pressure head. U = Tip speed in feet per sec. g = gravity 32·2 ft. per sec. y = efficiency. V = Absolute air velocity at exit in ft. per sec.

Now as the r.p.m. was 8,000 and the dia. 4 ins. i.e. ·333 ft. the tip speed (U)

$$= \frac{\text{r.p.m.} \times \pi \times \text{dia. in ft.}}{60}$$

$$= \frac{8{,}000 \times 3{\cdot}142 \times {\cdot}333}{60} = 139{\cdot}5 \text{ ft. per sec.}$$

And $Ht = \frac{139{\cdot}5^2}{32{\cdot}2} = 604{\cdot}3$



Now the velocity measured was 146 ft. per sec. and as $V = \sqrt{Ha\ 2g}$.

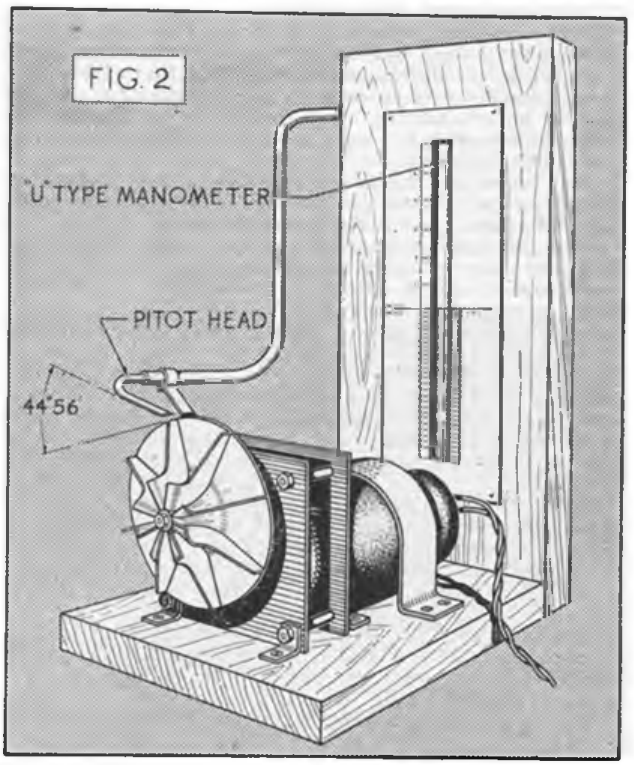
$$Ha = \frac{V^2}{2g} = \frac{146 \times 146}{2 \times 32{\cdot}2} = 330{\cdot}9$$

$$\text{efficiency} = \frac{Ha}{Ht.} = \frac{330{\cdot}9 \times 100}{604.3} = 54{\cdot}7\%$$

Now an efficiency of 54% whilst not an exciting figure is a good deal better than some sceptics would have us believe possible with a small compressor of this type, and having received this encouragement the writer built another compressor which gave an efficiency of 56·5%

The next step was the design of a small turbine which would give an equally encouraging efficiency.

(To be continued)



Harry Harper TURNS BACK THE CLOCK

Harry Harper, first air reporter and author of more than 20 books on aviation, has devoted 50 years of his life to aviation. He gives in this article a fascinating tale of Britain's first model aeroplane contest which featured many names, now famous in the History of Aeronautics

MANY, many years ago now, Lord Northcliffe appointed me as the first of all British Air Correspondents, or air reporters and, having watched a whole half-century of aerial progress, it is many a strange and thrilling tale I can tell.

It is 14th April, 1907. And what building is this? It seems oddly familiar. It is the famous Agricultural Hall at Islington, London, and we have arrived just on the eve of the first model aeroplane competition ever organised in England.

Held under the ægis of the " Daily Mail," and organised by the Aero Club (not yet " Royal ") the moving spirit of the whole affair was my old air friend Harold Perrin, secretary of the Club, who later became a Lieut.-Commander and who died not long ago at the age of 70. " Harold the Hearty " we called him, and he had a never-failing fund of energy and organising ability.

What had really inspired this first competition was the fact that inventors from all over the country had begun to write to the " Daily Mail " describing the model air machines they had been building, and this led Lord Northcliffe—who was personally so keen on everything aeronautical—to the idea of an officially-organised competition in London, for which he was ready to put up prizes, and which he asked the Aero Club to organise.

It was decided that there should be a first display of models in the Agricultural Hall and that after this there should be flying trials at the Alexandra Palace.

Some 130 entrants sent their machines to the Agricultural Hall, but many of them, unfortunately for those who had spent so much time and trouble on them, were quite hopeless from anything like a practical view-point, and in the end only 30 were thought good enough to undergo the Alexandra Palace trials.

Well do I remember going round those exhibits in the Agricultural Hall, my companion being none other than the late Hon. C. S. Rolls, pioneer motorist and famous early balloonist and aeroplane pilot, whose death at the aviation meeting at Bournemouth in 1910 was such a blow to British aviation.

There were some 3,000 people in the hall at the time we were there, and quite an animated scene it was. Spencer Bros., the well-known pioneer balloon firm, were selling small rubber balloons as souvenirs, and every now and then paper gliders would come flitting across the hall, these being launched from the stand of Jose Weiss, who had already earned fame with his big gliding models fashioned on the lines of the albatross and which, when weighted with adjustable pieces of lead, had flown distances, out-of-doors, of up to a quarter of a mile.

It was a truly remarkable collection of machines which Rolls and I inspected. One humble inventor, failing to raise the necessary railway fare to London, told us he had tramped all the way from Suffolk with a clockwork model which, alas, showed on the briefest scrutiny that it could never be expected to fly a yard.

Clockwork-driven models, many of them on the ornithopter or flapping-wing principle, played a large part among the competing machines. So, too, did models of the box-kite type, with airscrews, either pusher or tractor, operated by elastic ; while one or two of the bigger models had small petrol motors. And one should not forget the multi-plane machine entered by a competitor named Thomas. This had the distinction of using two small rocket devices as its motive-power. My friend Perrin used to say—and in fact reminded me only shortly before his death—that this was the first time he could remember ever having seen any heavier-than-air machine, in either model or full-scale form, actually driven by any kind of rocket propulsion. Unfortunately, when it came to the flying trials at the Alexandra Palace, this Thomas model was found to be seriously unstable, and when it was launched by its inventor, with smoke and flame belching from its rockets, all it did was to make a wild leap upward and then plunge into the ground, scattering nearby spectators in a brief and erratic flight which ended in its complete destruction.

As I toured the stands with Rolls, noting his comments on the various machines, we came eventually upon one model which impressed both of us considerably. Its designer and constructor was a modest young man whose name was A. V. Roe, and he told us how, as a marine engineer, he had been led while on long sea voyages to make a study of the wonderful effortless flying of the big albatross birds which had followed the ships in which he had been sailing. At first he had built models on the lines of the albatross, but after this, coming more to grips with problems of design and construction, he had turned to a bi-plane type of model, with front elevators and a pusher airscrew driven by elastic. It was the latest of these models that he had with him at the Agricultural Hall, and a thoroughly workmanlike job it was, even to the provision of an ingenious skid under-carriage to prevent the machine from damaging itself when landing.

There is one story about A. V. Roe's early experimental work which I really must tell you. At the time in question he was busy with paper gliders in a house where he was living at the time, and quite near which there happened to be a mental home or hospital.

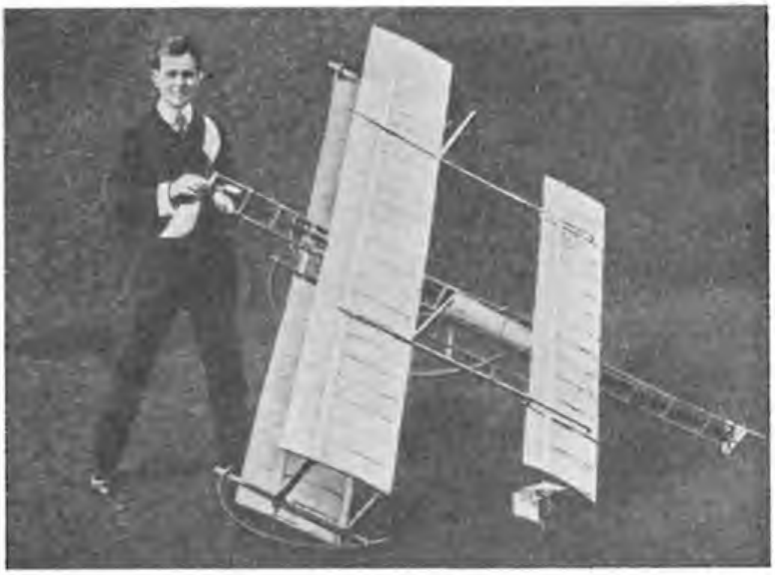
One day, while the doctor at this institution was going his rounds, he was surprised when one of his patients pointed to the house where young Roe was living and said :

" I'm afraid, doctor, there's another one like us over there."

" You're making a mistake," replied the doctor. "That's a private house."

"Oh! no, I'm not," insisted the patient. "I've been watching that house, doctor. There's a man in it who opens a top window and throws a lot of bits of paper out. Then he runs down into the garden and picks them all up. And then he just throws them all out of that window again. And he keeps on doing the same thing over and over again. There must be something wrong with him, mustn't there?"

Well, that's the story. And those "bits of paper" the patient had seen were, of course, young A. V. Roe's gliders, each fashioned and flown to throw light on some idea as to the shape and size of wings, or the position of control surfaces.



I can recall some of the other models to which Rolls drew my attention at the Agricultural Hall. One was a rather small but well-built little monoplane with a big dihedral angle on its wings, and which was driven by an ingenious lightweight clockwork motor operating a two-bladed airscrew. This was the entry of Mr. W. F. Howard. Then there was Mr. T. W. Clarke's biplane model with control surfaces fore and aft. The Piffard model took the form of a double biplane with a tractor airscrew driven by elastic. Major R. F. Moore's entry was a bird-like flapping-wing machine with springs functioning like the muscles of a bird, and with a clockwork power-plant. Mr. R. M. Balston, well-known kite expert, also exhibited a bird-like model—a big and imposing twin airscrew machine, 17 feet across the wings, and fitted with a small petrol engine. Another petrol-motored model was the Montague Kay multiplane. Major Baden-Powell's entries were some helicopter and wing-flapping models, while Mr. Cochrane had an admirably constructed bird model in aluminium, the wing beats of which could be made long or short by a clever control device.

Among those we saw touring the Agricultural Hall, while we ourselves were making our inspection, were Col. J. E. Capper, well-known Commandant of the Government Balloon School and factory, and that picturesque kite, airship, and aeroplane pioneer, the burly, bearded S. F. Cody.

The interest taken in model 'planes, even in those days, was shown by the fact, when we came to the actual flying trials at the Alexandra Palace, between 6,000 and 7,000 people paid a shilling entrance fee to watch these tests.

The competitors had to toe a chalk line as they launched their models. Mr. Clarke, I remember, was the first to make a test with his elastic-driven machine which, however, did not succeed in flying more than about 40 feet.

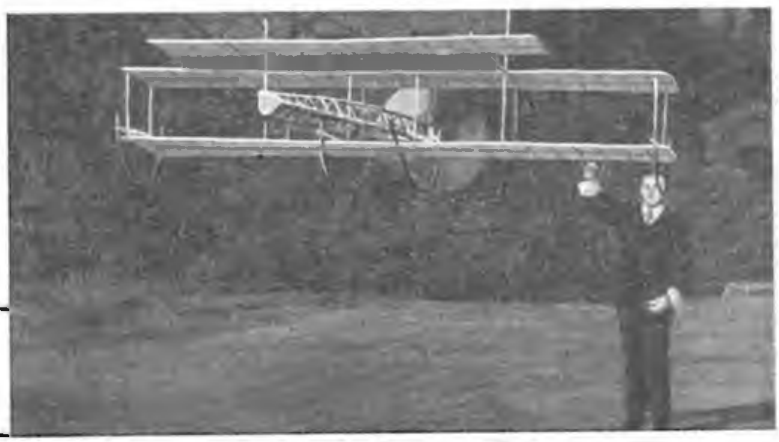
Next came Mr. Howard with his small clockwork driven monoplane. Making a loud humming noise, this little machine flew quite well for a distance of about 75 feet. But on a second attempt this model, after flying a little farther, made a bad landing and became a write-off.

The Piffard box-kite model, elastic-driven, failed to fly more than a few yards and was withdrawn after it had broken its airscrew. Mr. Balston's twin-screw model also had the misfortune to damage one of its propellers while being launched and did not cover more than 12 feet. As for the Thomas rocket-driven machine this, as already mentioned, just made a spectacular upward leap, to be followed by a pell-mell dive—and that was that!

Mr. Montague Kay's little petrol engine could not be made to develop enough power to get his multiplane off the ground. This model, after taxying here and there, suddenly swerved among a throng of spectators, scattering them in all directions after which it plunged down a slope, overturned, and sustained damage which put it out of action.

When it came to young A. V. Roe's turn we felt we need look no farther than this to find the winner. In his first test his biplane model flew about 60 feet, moving through the air quite steadily and without any inclination either to swerve or dive, and alighting safely on its skid under-carriage. In a second test, flying with equal steadiness, and without losing height or gaining altitude, the model flew just on 100 feet, being very warmly cheered as it alighted again, smoothly and without damage, after which the judges—who included that famous pioneer, Mr. Patrick Alexander—had no hesitation in awarding Mr. Roe the premier award of £75, a second prize of £50 going to Mr. Howard for his little monoplane model.

If this first historic competition did nothing else, it served to start A. V. Roe on his memorable air career. For it was with that £75 prize, and in a stable put at his disposal by a brother, who was a doctor, that he began building his first full-scale, power-driven machine. This was the famous little triplane, powered with a 9 h.p. Jap motorcycle engine, in which subsequently I watched him make gallant "hops" on the Lea Marshes. And it was from that modest beginning, stage by stage, that he evolved the breed of "Avro" planes which became famous throughout the world, while he himself has grown to be one of the best-known and most honoured figures in our whole great realm of the air.

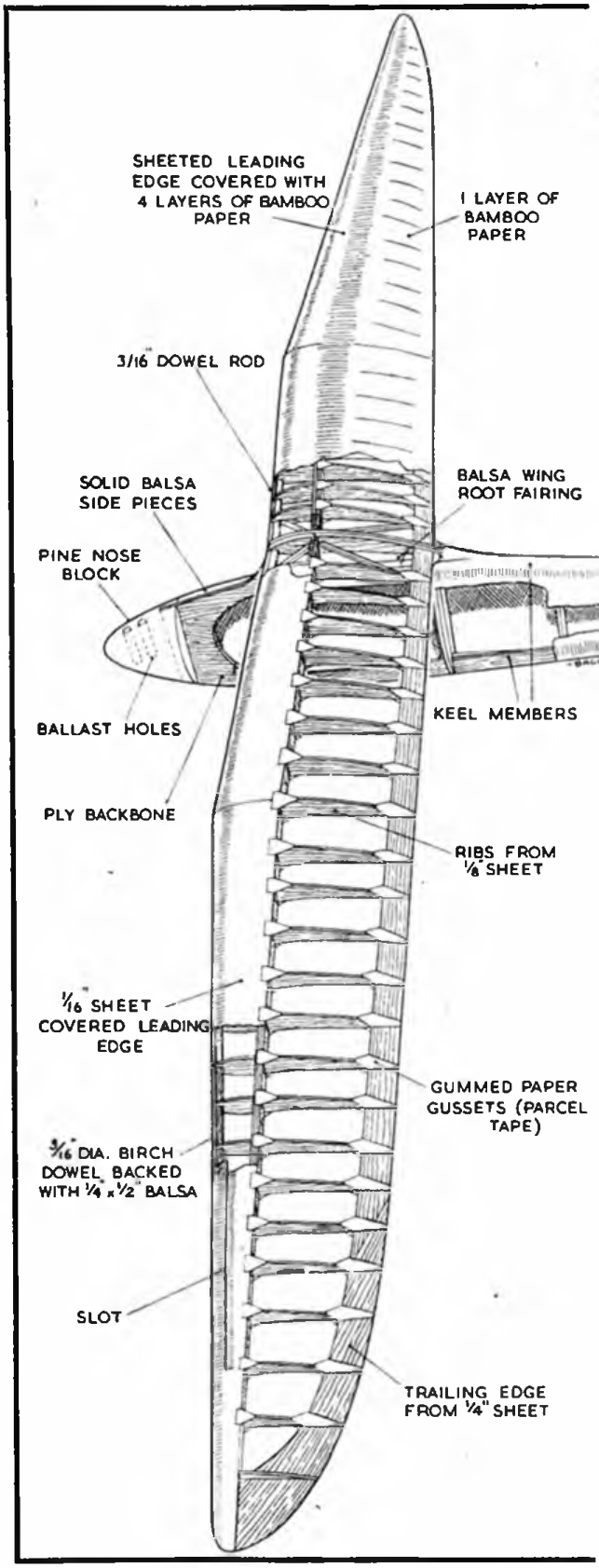


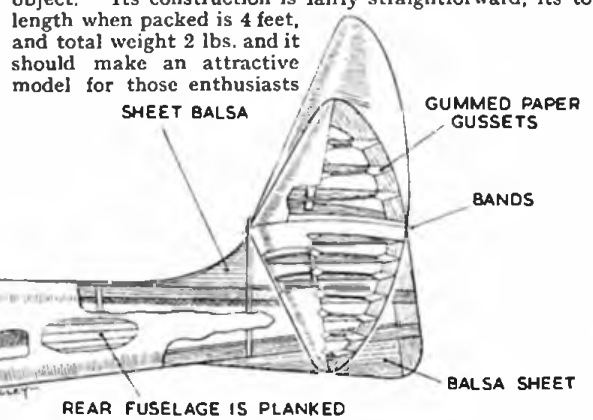
The photographs on this page show Mr. A. V. Roe, now Sir Alliott Verdon-Roe, with the rubber driven biplane with which he won the contest at Alexandra Palace in 1907.

NIMBUS

AN 8 FT. SPAN HIGH PERFORMANCE SAILPLANE

DESIGNED BY P · E · NORMAN





IN designing and building this model, I was concerned not only with its performance, but also with a mind to beauty and grace of line, and most people who have seen the model in flight agree that the appearance of the model, with its cream fuselage and cream edge wings and tail, has achieved this object. Its construction is fairly straightforward, its total length when packed is 4 feet, and total weight 2 lbs. and it should make an attractive model for those enthusiasts who require a reliable stable model, capable of consistent flights.

The Fuselage.

Commence by cutting out former A in 1/16 in. plywood. Add two strips of 1/16 in. plywood on each side at the bottom, trim and glue. The towing hook may now be cut in the three jointed pieces.

Cut a length of 16 gauge steel wire and glue and sew, with strong thread, in the position shown in the sketch (this forms the means for attaching the mainplanes and must be a really strong and rigid fixing).

Next take two blocks of light balsa 12 ins. × 4½ × 1½ ins. and glue them lightly on each side of former A (see sketch). Now shape them with a sharp knife and varying grades of sandpaper, until they form a smooth streamlined shape, the end section of which is the section No. 1.

Carefully prise them off the plywood former and carve away a portion of the inside up to the inside shape of the former. (Do not be too concerned with getting them very light. I left mine nearly half an inch thick in my machine.)

Now re-glue them firmly onto the plywood former A and allow to dry thoroughly. Next cut two strips of medium balsa, ½ × ½ in. and bind and glue them to the projecting lugs of Former A (I use strip gummed paper for binding and it is immensely strong).

Cut out formers No. 2, 3, 4 and 5 from ⅛ in. sheet balsa, place in position and glue. Cut out stern post from 1/16 in. hard sheet balsa, and glue in position. Check up for alignment and allow to set.

Now with a sharp knife, cut a slit in the top longeron just behind Former No. 5. Cut a strip of hard 1/16 × ⅜ in. balsa and force through this slot, allow to set.

Next cut a length of cane or bamboo, 1/16 × ½ in. and to the top end of it glue and bind securely a hook (shaped as in drawing). Make a small hole in front of the balsa strip slot and force the cane into it, now glue and bind with strip gummed paper to the balsa strip. Make the same sort of hook and cane for the rear stern post, and glue and bind into position in the same way (these hooks form the tailplane and fin attachments). Cut a length of block balsa, 1½ × ⅜ in. to fit between these two hooks. Cut slots at the front and rear, and cement securely into position. When dry, cut away surplus

wood so as to leave a streamlined fairing and platform on which the tailplane rests.

Fair in the top longeron with the front tail upright piece with ⅛ in. balsa sheet.

Cut a piece of ¼ in. medium balsa and glue securely to the bottom longeron and bottom extension of stern post, edging the bottom with thin cane.

Check the whole for final alignment. Now take four 3×¼ in. sheets of light balsa, glue two of them edge to edge to make sheets 6 in. wide, and allow these joints to set thoroughly. Sand the sheets down smoothly.

Carefully bend this one sheet round till it conforms to the section at the end of the solid balsa part and trim. Glue into position in the recess cut in the solid balsa and hold in if necessary with elastic bands.

Bend the sheet around each of the formers and pin and glue into position until you reach the stern post.

Cut away surplus sheet at top and bottom and glue and pin to top and bottom longerons and allow to set.

When it is set, trim off the edge at top and bottom, so that sheet is lapping over half of the width of the top and bottom longerons. Repeat the same with the other sheet for the opposite side and allow to dry.

Sand off smooth.

You now have a smooth streamlined fuselage, which is extremely light but strong.

Cut two more pieces of block balsa to shape shown and carefully fit and glue them to the top centre section, forming a nice streamlined fairing which the wings rest on. Leave the top of this platform until the wings are completed so that it can be faired perfectly into the lower surface of the wing.

Cut the nose block from solid pine, and make a saw cut vertically down the back deep enough to fit the projecting piece of the plywood former A.

Bore two ⅛ in. holes in the position shown to take ballast weights (mine needed ½ lb.). Glue the nose block securely in position, allow to set, and then carve and file off, until it forms a streamlined nose fairing into the balsa wood section.

Check the fuselage all over, sandpaper thoroughly smooth, give two coats of clear dope and sand down again. Cover with two layers of tissue or one of bamboo paper, all over, give two more coats of clear dope, then colour (fuselage weight without ballast 12 ozs.).

The Wings.

These are made in two halves which are bound together with thread round steel hooks for flights. Each half has a span of 4 feet.

Commence with the mainspar.

This is cut from 1/16 in. hardwood (one layer stripped off birch 3 ply) and two layers of ⅛ in. hard balsa, glued and bound on each side with strip gummed paper.

Cut the shallow notches in the top edge to take the ribs.

Make the leading edge from 3/16 in. birch dowel which is glued and bound to ¼×⅛ in. hard balsa (dowel being outermost forming a hard leading edge). The bend is put into the dowels and plywood first by wetting at those points and coaxing into position with thumbs and forefingers.

The trailing edge is cut from ¼ in. medium sheet, and is 1½ in. wide, the curved tip is cut the same and spliced, glued and bound. The ribs are cut from ⅛ in. and 1/16 in. sheet. The two centre ribs are cut from ¼ in. hardsheet. To assemble the wings, place the mainspar over the drawing and tack into position. Drop the ribs onto the mainspar and align them up. Cement thoroughly. Insert the leading edge—cement. Place the trailing edge in position and cement. The wing tip slots are now constructed (the drawing should make this perfectly clear).

Next add the leading edge covering which is 1/16 in. balsa, glue, and pin till set.

The wing hooks are made from 16 gauge steel wire, which are glued and sewn with strong thread to 1/16 in. plywood, which in turn is glued and bound with strip gum to the mainspar leading edge and trailing edge.

The rib fillets are now added and these are cut from strip gummed paper. They enhance the appearance and increase the strength of the wing.

Note that the centre ribs are set at the required angle to give the dihedral angle, which is approximately 1 in. per foot span. Sandpaper the wings all over and give one coat of clear dope.

Cover the leading edges up to the mainspar with four layers of bamboo paper and the rest of the wings with one layer of bamboo paper. Cover the undersides first and make sure that the paper is stuck with dope or waterproof adhesive to the under camber of the ribs.

Water shrink the covering and give two coats of full size dope. Pin wings down while drying to prevent warping.

They can now be bound together and put into their position on the centre section. Attach with strong elastic bands stretched from front to rear prong, and the centre section may be built up and completed.

The Tailplane.

This is in one piece and is quite straightforward. The mainspar is cut from ¼ in. sheet (2 pieces) and the correct dihedral angle formed. Bind with glue a strengthening piece of hard balsa at the centre.

The leading edge is made from ⅛ in. birch dowel and the trailing edge is cut from two pieces of ⅛ in. sheet, which are joined at the centre. Ribs are cut from 1/16 in. balsa and made up in the same manner as the mainplanes. The leading edge up to the mainspar is covered with strip gummed paper layers glued spanwise, allowed to dry and doped. Cover the centre section with 1/32 in. sheet balsa.

Cover completed tail with layer of bamboo paper, water shrunk and doped, pin down while drying.

The Fin

Make like the tail—¼×⅛ in. main spar, ⅛ in. birch dowel, ⅛ in. trailing edge, attachment hooks of 18 s.w.g. steel wire bound and glued in position. Fin is covered with bamboo paper and doped.

Assemble complete machine and check up for true alignment.

Add trimming weight (lead shot to bring trim of model to balance exactly at point shown).

Test glide model over long grass to begin with. Turning tendencies corrected by off setting top fin a fraction to left or right.

Full size plans of Nimbus are available (see ¼ scale reproduction overleaf). Price 7/– post free from the Aeromodeller Plans Service, The Aerodrome, Stanbridge, Beds.

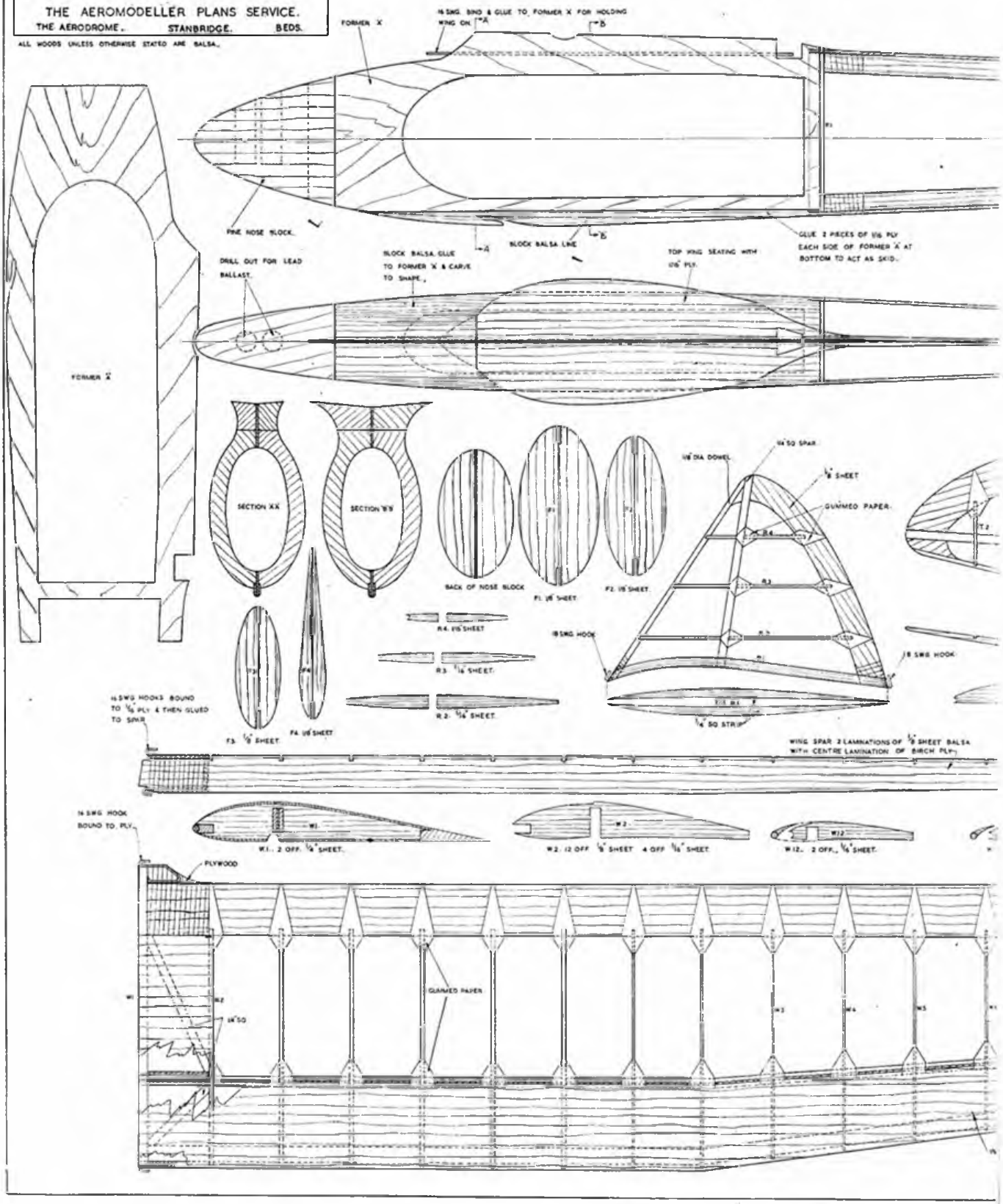
8FT. WING SPAN HIGH PERFORMANCE SAILPLANE.

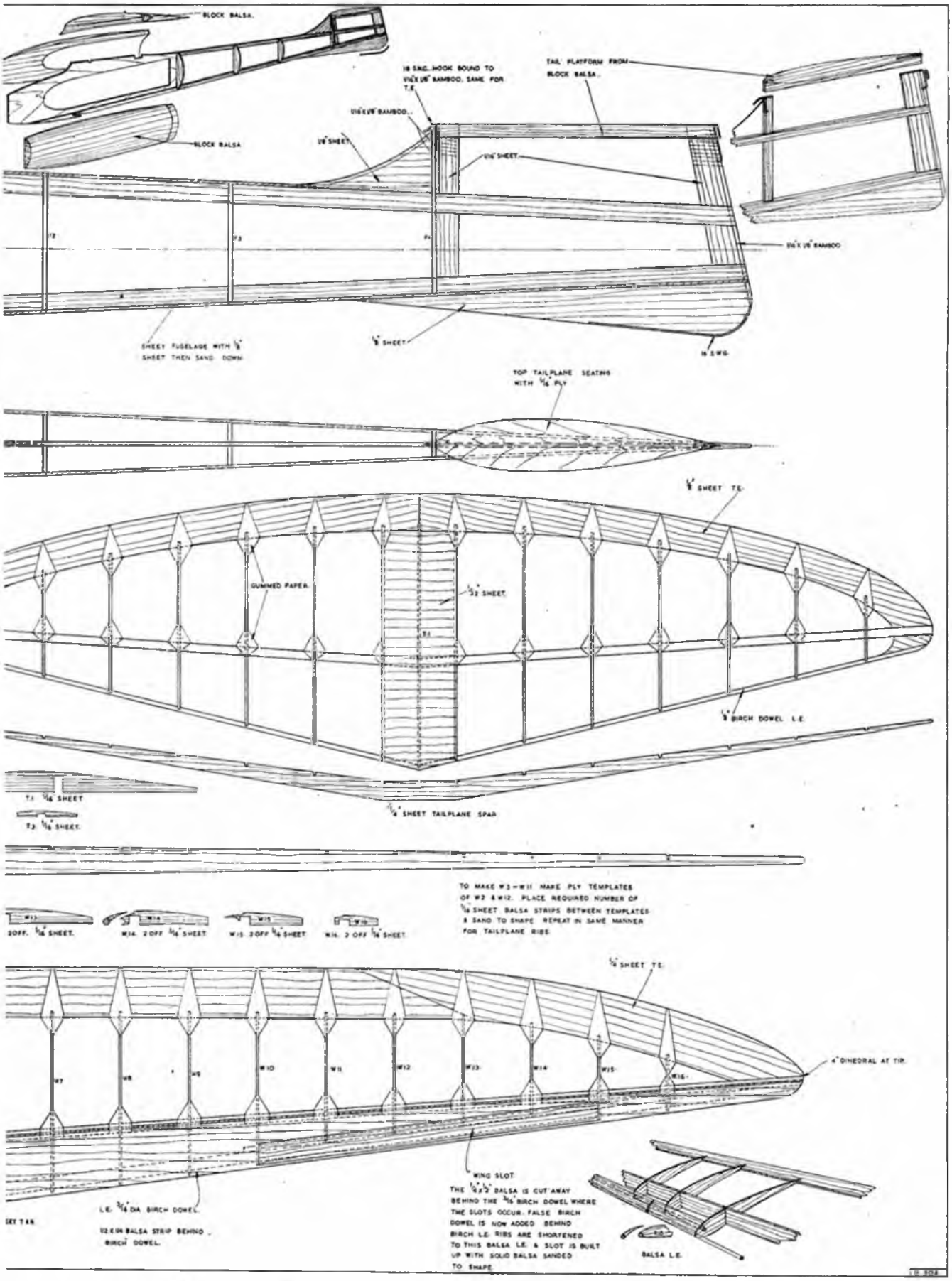
NIMBUS

DESIGNED BY
P. E. NORMAN.

7/-

ALL WOODS UNLESS OTHERWISE STATED ARE BALSA.





NO TROJAN HORSE!

The unusual title of this article is taken from a leading feature in a German club magazine. Its allegorical implication is the sincerity of the German model movement and the claim that it is no cloak for the slow resumption of full size activity.

A SURVEY OF GERMAN AEROMODELLING

MODELLERS in this country, poor in quantity and quality though supplies may seem in comparison with the Elysium of America, can have little idea of the difficulties besetting the aeromodeller in Germany, unless it be the few who modelled while in the forces in the Far East. Most materials are practically unobtainable, supplies of balsa are shorter even than food, and the German traditions of *ersatz* of the last war have been carried on in a different measure into the peace. German model magazines are duplicated on poor paper, with no illustrations, carrying such articles as one in "Modellflug Post" which devotes pages to a detailed description of the cutting of reeds and their uses—not in thatching but as a greatly sought after model material. Rubber is hopeless. What little supplies remain are the long hoarded stocks of the more ardent enthusiasts, but as they readily admit most of the stretch has long since departed. Gliders, in which the Germans always excelled, have shown the greatest increase as might be expected in a country where a dearth of orthodox model material is the least of the population's worries. The pre-war fascination for tailless machines has never departed and even with the substitute materials that have had to be used the German tailless gliders, some examples of which are illustrated in this article, are probably the finest in the world.

Power models, long in sad decline, received a new impetus after the war in the United States sector, no doubt through contact with enthusiasts of the American occupation forces, pleased to lend a hand to the less fortunate modellers amongst whom they were cast through the confusion of victory. The Germans had never possessed any miniature internal combustion engines of any outstanding prowess although the Eisfeldt firm did produce a small number of well made 5 c.c. diesels.

The power contests, recommenced in the various occupied sectors throughout the last two years, have shown the real absence of anything comparable with American petrol engines and the competition diesels of Western Europe, including Britain. Some idea of the exuberance of enthusiasts when at last they were given permission to resuscitate power flying under the auspices of the United States Government in a first National contest near Stuttgart, can be gathered from the fact that normal rules were practically abandoned and petrol and diesel models were allowed unlimited engine runs. Unfortunately due to a misunderstanding the ban on power flying was reapplied after the contest but has since been lifted, though only for certain contests when the flying is under the control of clubs registered with the Military Government.

The over enthusiasm at this meeting even spread to the glider regulations where unlimited length of line was allowed.

Mainly from the U.S. sector an improved trend in contest flying is noticeable which must be due largely to the American influence and the probable influx of American petrol engines. Meanwhile most power jobs are equipped with home made engines of the diesel type—a typical example of which is illustrated in this article.

Licences have been issued to German clubs only in British and American zones although model flying is also permitted in the French Zone. As might be expected there is no mention of any such activity in the Russian Zone, where the "Iron Hand" and "Iron Curtain" combine to restrain would-be enthusiasts both from inside activity and outside contact. So far news is to hand of only three major post war contests, but these with all conditions considered met with remarkable success. The first post-war contest was held at Schwaebisch Hall at the beginning of Autumn, 1947. Though on a much smaller scale than the later contest it gave some indication of

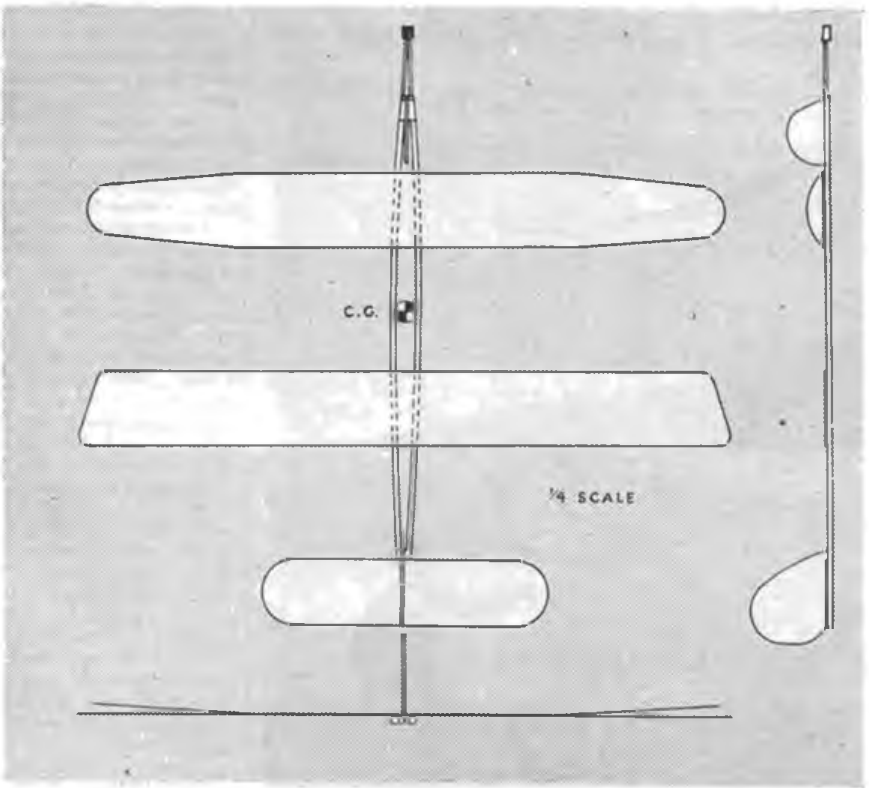
Below left shows Richard Eppler with a diamond fuselage balsa rubber-driven model with a one-blade folding prop. Centre, two interesting tailless models—note the very small sweep back but large washout. Right, is another simple rubber model by Hugo Lippert.

Heading photo shows a 10 c.c. Kratmo petrol-powered model by the Goeppingen club—note the battery stowage! Above, a neat little diesel model, made from precious balsa wood, from the Schwaebisch Hall district.

Above, Goeppingen member Fritz Ulmer with his successful 2 c.c. diesel powered Pylon model. Below, another 10 c.c. Kratmo power. "No competitor for diesels" says our correspondent.

the rapidly growing interest in the country and the possible growth and real usefulness of the movement. Many of our German correspondents have voiced the feeling that through aeromodelling and similar pastimes, where so friendly an atmosphere prevails, lies the ultimate hope for complete de-Nazification of the country. Following on this first attempt at leading the hobby towards a National basis, a second meeting as previously mentioned was held at Stuttgart on September 28/29 of last year. This was a much bigger meeting than at Schwaebisch-Hall and being favoured with very fine weather and strong thermals proved a great success. As a result of the unusual rules already described, out of sight flights were far from uncommon. Modellers came from the British and American zones from which some people travelled some 400 miles in order to attend the meeting. The photographs on these pages were all taken at this contest. Although there was nothing spectacular in the rubber model line, the gliders were especially outstanding, in particular a tailless glider which employed the popular M-form wing featuring anhedralled tips. This was remarkable for an extremely low sinking speed and perfect stability. At this contest a little diesel powered job with a dihedralled tail and home-made 2 c.c. diesel gave one of the best performances in its class.

Following this meeting, the next of which details are to hand occurred at Dortmund. Here, on the 30th May, 1948, were modellers from 33 clubs from all of the Western zones of Germany, competing with some 180 models in various classes, and in most unfavourable weather conditions withal. The contest was divided up into various classes—class A for gliders up to 3 ft. span, class B gliders over 3 ft., class C gliders own design unrestricted, class D rubber models, class E petrol models, class F unorthodox models. As there were no entries in the latter class it would appear that earlier activities of German modellers in the ornithopter line died what would probably have been a natural death even without the effect of war. Repre-



Drawing on right shows a baby Tandem glider with a forward fin. Made out of straw and tissue paper, a correspondent says this is the only type of model that can be made in many parts of Germany owing to lack of materials. The forward fin, a common Continental practice, helps the model with its good stability. The model also has a very flat gliding angle.

sentatives from the clubs concerned represented a total of around three or four thousand modellers in all the Western zones.

The cup of the Oberbügermeister of Dortmund was won by an out of sight flight (it being a wooden cup, it was suggested by the wags that after all the winner at least got his materials back!). The competitors from the United States zone seem to have the wings on the others perhaps for reasons already suggested and their models were magnificently built and flew exceptionally well in spite of rain and gusty wind. In the class C flying a very nice looking mid-wing glider design of about 7 ft. span made consistent flights of over 5 minutes.

Except for the U.S. zone entries the general standard of the contest was little better than a pre-war contest in say, 1935. Obviously lots of old models of obsolete design that made history in their day had been rejuvenated for the occasion. One noticeable point was that most of the competitors were in age groups above the 20's and junior classes were far less popular than in this country. The most advanced models were undoubtedly the tailless gliders though there were several canards on show some of which possessed good flying qualities. Special exemption for this contest from the ban on power flying was granted by KRO for the benefit of United States zone entries, who had come all the way from the South of Germany in order to fly. Most of their models were usual modern pylon efforts averaging 2-3 minutes on 20–30 seconds engine run. The increasing response to such gatherings has resulted in fresh rallies on a smaller scale put on round the country—the latest contest, of which details are not yet to hand, was held at Hambourg about the beginning of last month. We agree with our German correspondent's belief that in the resurrection of a companionable hobby like aeromodelling there lies hope for the future friendliness of nations and it is to be hoped that relaxing of some of the travel rules in the future may result in full contact between countries now at peace and the betterment of International relations. With this in mind we publish below the addresses of three of our German correspondents who are anxious to obtain British contacts.

Hans Justus Meier, 23. Bremen, Kirchweg 33, US-Enclave/Germany. H. Brass, 216. Richstein Post Arfeld, Uber Berlebrug, British Zone Germany. Hans Pfeil, (21a) Bad Pyrmont, 2 Seiptstrasses, Haus Hesse, British Zone Germany.

Two members of the Pyrmont Club, with (top) a 4' tailless glider capable of 3 minutes, and a 5' span experimental sailplane.

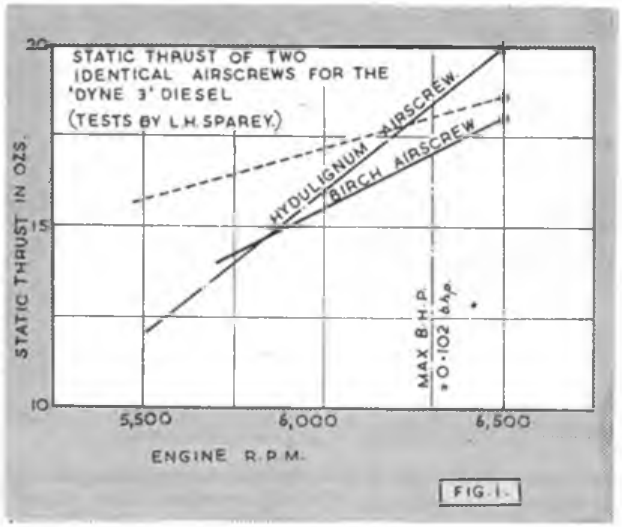


FIG. 1.

TECHNICAL TOPICS

BY P · R · PAYNE

Plastic Airscrews.—A suitable plastic can be moulded into a perfect airscrew blade in a few seconds.

Unfortunately no suitable plastics have so far been produced, and we have to choose between efficiency and ease of manufacture. The alternatives are these :—

Resin-bonded materials.—"Hydulignum" is of course the classic example, but experiments are proceeding in other quarters with fabric base plastics.

The relative strength of Hydulignum is given in Table I. It should be remembered that such figures vary considerably in practice, and the ones given are the minimum permissible. But it is at once obvious that a considerable improvement in static strength has been effected.

Under flight conditions, however, the reduction in airscrew breakages due to using this material is not particularly noticeable. Possibly this is due to the fact that the type supplied (12/T/60) has the grain of all its veneers running in the same direction, to facilitate carving: or it may be the very strength of the material which causes it to be brittle and break under impact instead of flexing (a la high carbon steel). Whichever it is, a broken Hydulignum airscrew is a broken airscrew, and as such, much harder to stick together again than the ordinary category.

In passing, Fig. 1 shows the static thrust of two identical Payne airscrews, one of which was carved in Hydulignum. The writer offers no solution to the conundrum here set, but it must be obvious to anyone who has seen Mr. Sparey at work that the fault cannot lie in the tests. The remaining causes possible are :—

(1) Inaccuracy in carving.
(2) The greater weight of the Hydulignum airscrew.
(3) Distortion of the more flexible beech blades.

No. 1 is quite possible—even probable, perhaps, although there is no apparent difference between the two—but as against that we have the E.D. Competition Special airscrew (shown dotted) which delivers very slightly more thrust than the Dyne Birch prototype at the same r.p.m. and slightly higher b.h.p. The actual static efficiencies of the three airscrews are as follows :—

E.D. (Birch) .. .. 47·3 per cent.

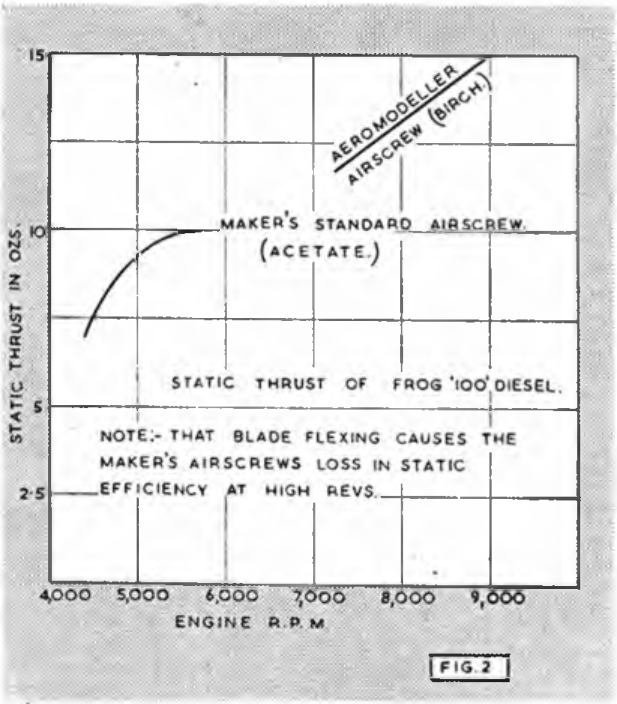


FIG. 2

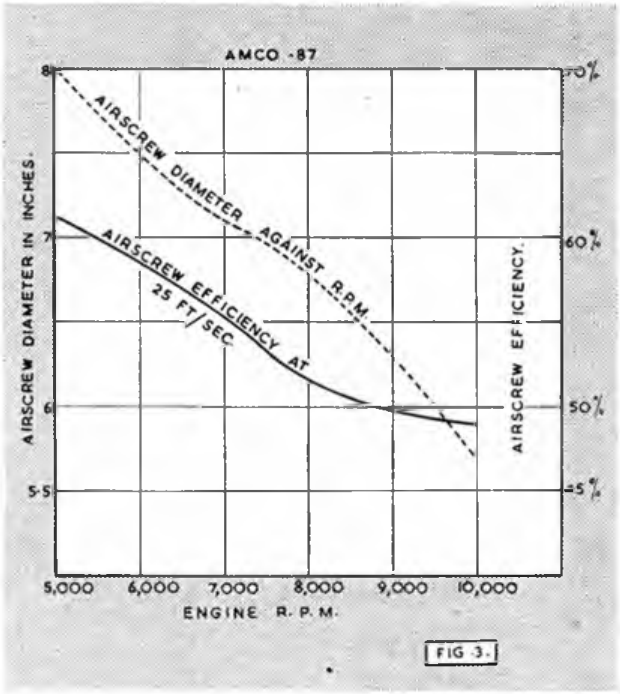


FIG 3.

Dyne 3 (Birch) .. .. .. 46·0 per cent.
Dyne 3 (Hydulignum) .. .. 54·0 per cent.

On the face of things, and despite the fact that the torque factor of the E.D. design is slightly higher than the Dyne, it would appear that hydulignum rigidity and weight is responsible. The writer would be very glad to hear from other modellers who may have had the same experience : perhaps in this way the problem may be cleared up.

Summing up, then, we may say of this material that it is strong and has the great advantage of being heavy. For control line work its life is not noticeably longer, and under impact it is rather prone to " shatter " where a birch airscrew would simply break, thus making repair difficult. From the point of view of flight efficiency, however, it is definitely an improvement on ordinary woods.

Fabric laminated plastics.—Generally speaking, these usually consist of layers of fabric impregnated with a suitable plastic, and they constitute a half-way-house between that described above, which has to be carved and the Bakelite type which has to be moulded. Either method may here be used, but moulding is usually cheaper, and has the advantage that the blade may be " cooked ", giving a very hard smooth finish. Like most compromises, it combines the advantages and disadvantages of the plastic extremes to some extent, but it is more flexible than Hydulignum, whilst retaining sufficient rigidity, and is extremely durable. At the moment this plastic appears to have a big future before it in the model world, and at least one manufacturer is known to be experimenting with it.

Un-reinforced plastics.—The best known example is Acetate, used by International Model Aircraft. When moulding can be carried out on the scale used by this firm, airscrews can be produced very easily.

Acetate as an airscrew material is rather too weak for general use, and such blades almost invariably flex under load unless a prohibitively thick blade section is used. However, with proper design there is no reason why adequate performance should not be achieved, and at a very low price.

Fig. 2 gives the static thrust of the standard Frog " free-flight " airscrew and the corresponding N.H.P. design, for the " Frog 100 ". The falling off in thrust due to flexing under load is most noticeable with the former, whereas the latter is quite rigid and preserves a linear increase.

The three applications mentioned are of course only a drop in the plastic ocean. Furfuraldehyde and similar products may be found far superior to those in use at present, and following various manufacturers' solutions, promises to be a very absorbing study. *(Continued overleaf)*

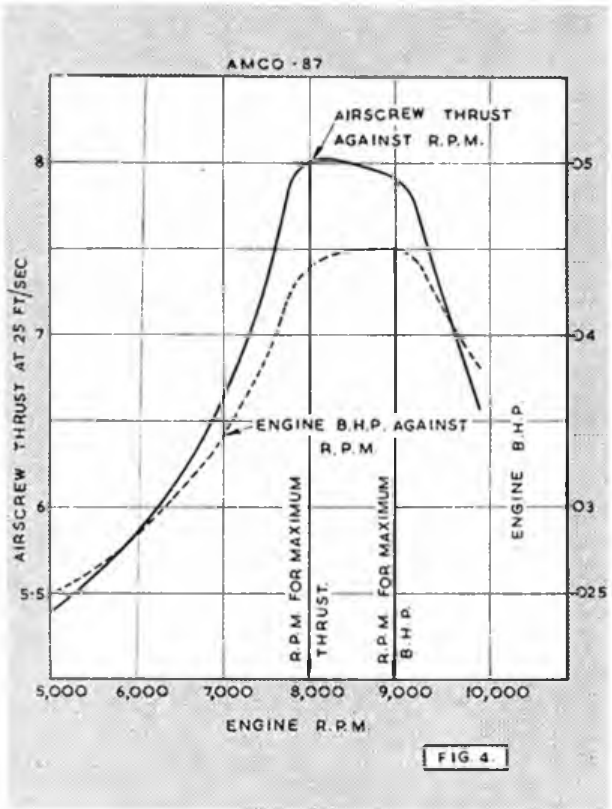
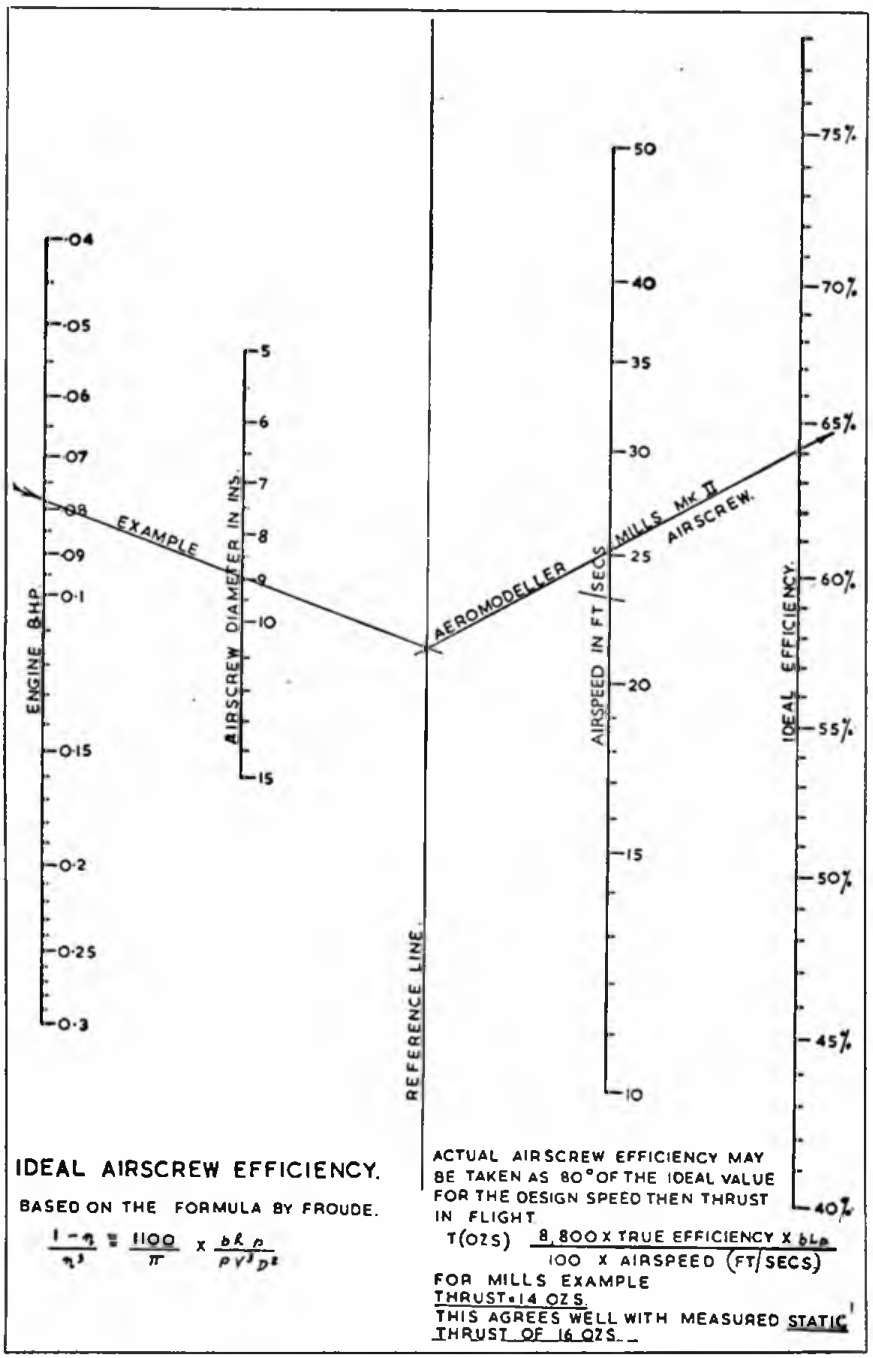


FIG 4.



"JAGUAR".—It is probable that very few theorists will have the bad grace to crow over this year's successes with Mr. Evans "Jaguar" design. Thus, the theorist feels it incumbent upon him to point out a few home truths about the design.

The first and most noticeable virtue is the machine's excellent lateral stability under all conditions. As just one example in many, a "Jaguar" won the Eaton Bray Wakefield contest under very bad conditions, putting up three faultless flights when practically every other machine crashed or wafted about in a most alarming manner.

Now this theorist submits the large "forward fin" as the chief reason, allied as it is with the practical experience of the designer in getting fin area and dihedral just right. Possibly the writer is once again sticking his neck out, but he feels other modellers would do well to give this a serious tryout before once again reverting to the 1938 pattern streamliners. Admittedly they perform well in the hands of experts, but it is possible that a more inherently stable model which can be relied upon for four minutes in fair or foul would leave more time for juggling with gadgets and permit the re-introduction of such refinements as folding airscrews and lower aspect ratio wings.

IDEAL EFFICIENCY.—The subject of this month's nomogram may seem rather obstruse at first sight, but actually it is surprisingly useful. For instance, the average slipstream velocity can be calculated by the formula :—

$$\text{velocity} = \left(\frac{200 \times \text{airspeed of model}}{\text{Ideal Efficiency}} - 1\right) \text{ft./sec.}$$

and the average velocity through the airscrew disc by the formula :—

$$\text{Inflow Velocity} = \frac{100 \times \text{airspeed of model}}{\text{Ideal Efficiency}}$$

In the absence of more accurate information, the true efficiency may be taken as 80 per cent. of the ideal value, and thrust calculated in the manner described on the Nomogram.

Lastly, it is extremely useful when deciding the correct airscrew diameter for an engine whose b.h.p. curve is "flat topped". Fig. 4 well illustrates the fact that maximum airscrew thrust may in this case be obtained at a lower r.p.m. than maximum b.h.p. due to the important effect of diameter on efficiency.

Briefly the method is as follows:—

(1) Using the formula given in the August issue, plot airscrew diameter against r.p.m. and from this, efficiency (Fig. 3).

(A Nomogram for airscrew diameter will be appearing in the AEROMODELLER Annual—Ed.)

(2) From efficiency, calculate thrust and plot against r.p.m. as shown in Fig. 4. Then find the diameter for the optimum r.p.m. from the first graph.

The optimum value for the case dealt with in Figs. 3 and 4 is 6·8 inches. For a normal airscrew, with $Q_s = 0{\cdot}2$, this becomes 7·5 inches and agrees well with tests carried out by L. H. Sparey and the writer, where it was found to be 7·6 inches.

TABLE I. COMPARATIVE STRENGTHS

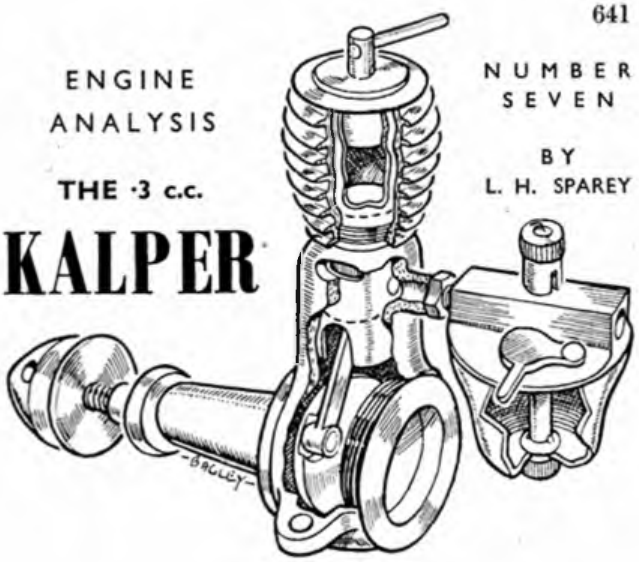
	Spruce	Birch Plywood	Hydulignum
Weight		0·4 ozs./ins.	0·555 ozs./ins.
Tension	1	1·5	2·9
Compression	1	—	3·1
Shear	1	3·5	3·6

ENGINE ANALYSIS NUMBER SEVEN

THE ·3 c.c.

KALPER

BY L. H. SPAREY



THE little "Kalper" diesel engine, of ·3 c.c. capacity, which forms the subject of this month's test, is particularly interesting as being the smallest engine yet tested, and it was a great source of interest to the writer to see if it would conform in characteristics with other diesels in the smaller range. It has been found, so far, that the smaller the engine capacity the higher the r.p.m. necessary to develop peak horse-power, and a glance at the accompanying graph will show that the "Kalper" bears out these findings.

Readers will note that the peak horse-power on the ·3 c.c. engine is reached at a point about twice the r.p.m. of a recently tested 5 c.c. engine, and that figures obtained for other engines of intermediate capacity all show a gradual rise in the r.p.m. necessary for full output. Were it possible to carry out tests indefinitely with engines of rising and falling capacities, there must, of course, come a time when these apparent characteristics cannot hold good, because, carried to its logical conclusion, a compression ignition engine of extremely large capacity would develop maximum horse-power at about 10 r.p.m.! Nevertheless, within the range of the usual commercial diesels, the finding seems to be correct.

TEST

Engine : "Kalper" ·3 c.c. capacity.

Fuel : 1 part "Mills" diesel fuel, 1 part ethyl ether, with addition of 10 per cent. of medium engine oil.

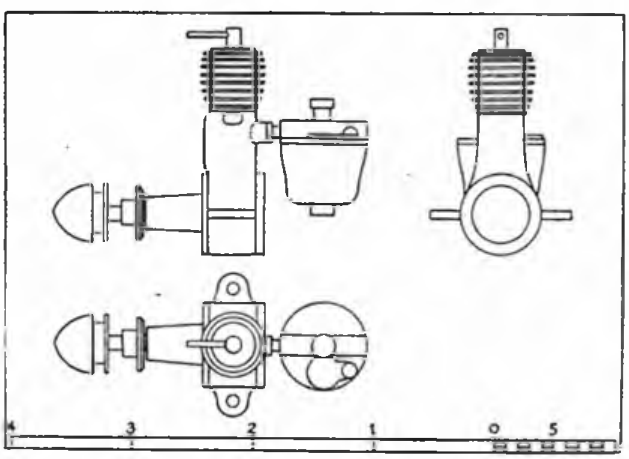
Starting : Hand starting was used throughout. Considering its small size, a marked absence of "fussiness" in the controls was evident. No cut-out is incorporated.

Running : On a plain fuel mixture of 1 part Mills and 1 part ether the running above about 7,000 r.p.m. was inclined to be erratic, and the engine died out after a short burst of speed. After a little experiment with various fuels, it was found that the addition of 10 per cent. of medium engine oil removed this trouble. It is not often appreciated that considerable trouble is encountered during these tests in making the various engines perform satisfactorily over a wide range of speeds, because small diesels are notoriously "one speed" engines, and are usually extremely inflexible. Especially is this so with the small sizes.

B.H.P. : Once again the curve is characteristic of diesel engines : that is, a steep rise to maximum efficiency and a decline after the peak has been reached. At the lowest tested speed, 5,600 r.p.m., it was found that ·0048 b.h.p. was registered, rising in a fairly straight line to a maximum of ·0099 b.h.p. at 10,250 r.p.m. This may be considered to be about what might be expected from an engine of this tiny size, as it has been found that the h.p./capacity ratio is slightly against the very small sizes.

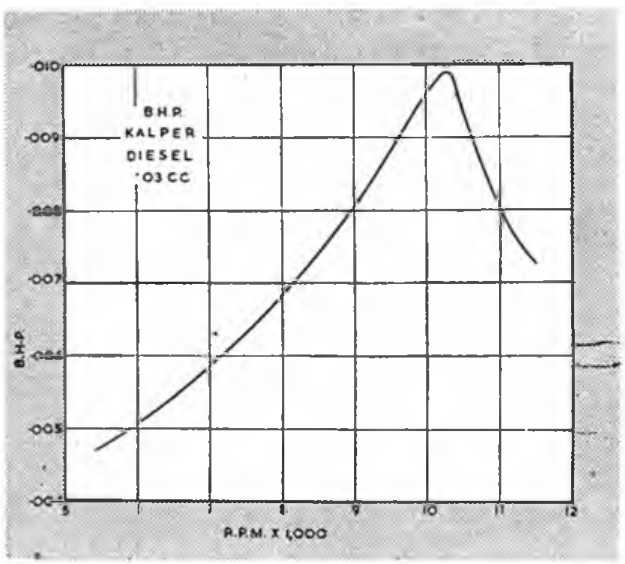
Power Weight Ratio : ·169 b.h.p./lb.

Static Thrust : Pending the completion of the new AEROMODELLER apparatus for testing airscrew thrust under actual flying conditions, static thrust tests have been discontinued, because, as was pointed out in our last issue, they serve no useful purpose, and may, indeed, be misleading.



GENERAL CONSTRUCTIONAL DATA

Manufacturers : Seymour Hylda and Co.
Sole Distributors : Arthur Mullett, 16, Meetinghouse Lane, Brighton.
Retail Price: 52/6. **Delivery:** Ex stock. **Spares:** Ex stock.
Type : Compression Ignition.
Specified Fuel : Ether 6 parts, petrol 5 parts, castrol 4 parts, or Mills and Ether equal parts.
Capacity : 0·32 cubic centimetres. ·0196 cubic inches.
Weight : 410 grains.
Compression Ratio : Not disclosed.
Mounting : Beam upright and inverted.
Recommended Airscrew : 6 in. diameter, 4 in. pitch.
Recommended Flywheel : 1¼ in. by ⅜ in.
Tank : Celluloid Pressing.
Bore : ·2510 in. **Stroke :** ·402 in.
No. of Ports : 1 inlet, 1 transfer, two exhaust.
Cylinder Head : Diecast, Screwed to liner.
Contra Piston : Special alloy, friction adjustment.
Crankcase : Diecast.
Piston : Cast steel, hardened, ground and lapped, flat top.
Connecting Rod : High tensile steel machined from bar.
Crankpin Bearing : Cast steel, hardened, ground and lapped.
Crankshaft : "Nicrome".
Main Bearing : Bushed, cast steel, hardened, ground and lapped.
Little End Bearing : Plain.
Cylinder Liner : "C" Ubas, hardened, ground and lapped.



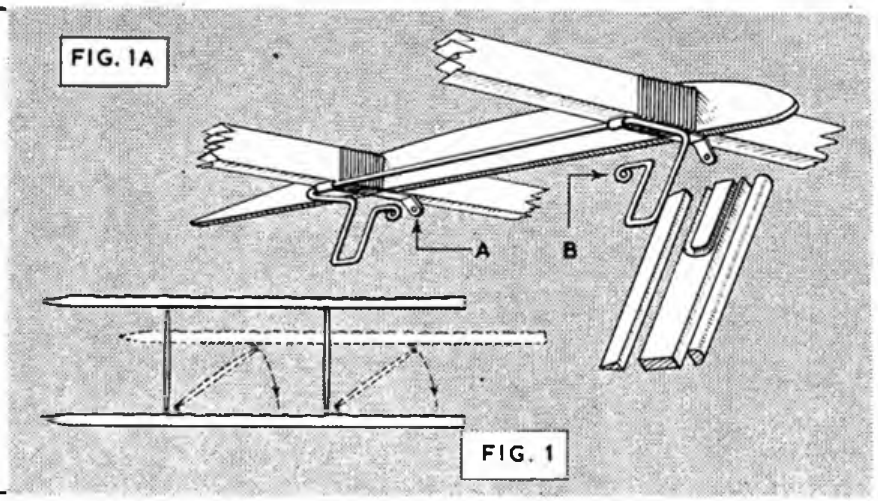
THE

FLYING SCALE MODEL

PART SEVEN

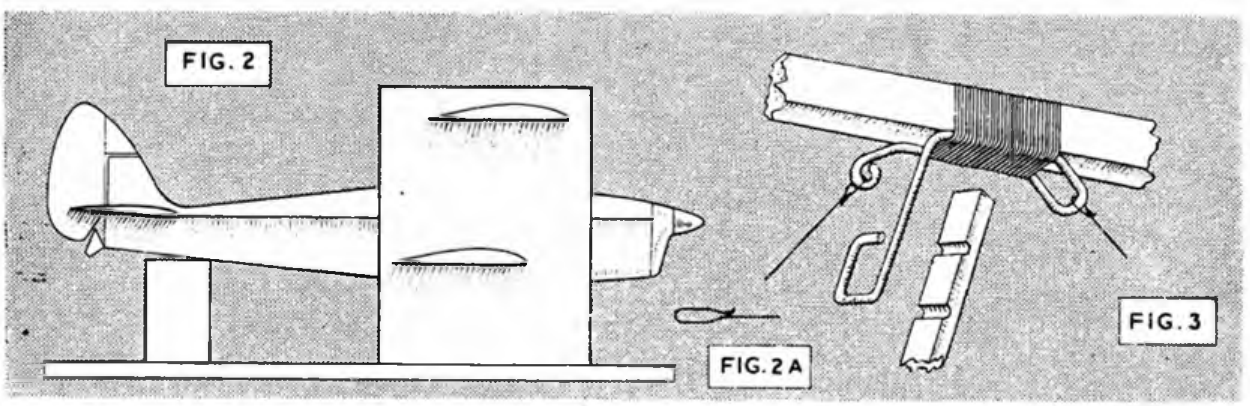
by

C. RUPERT MOORE, A.R.C.A.

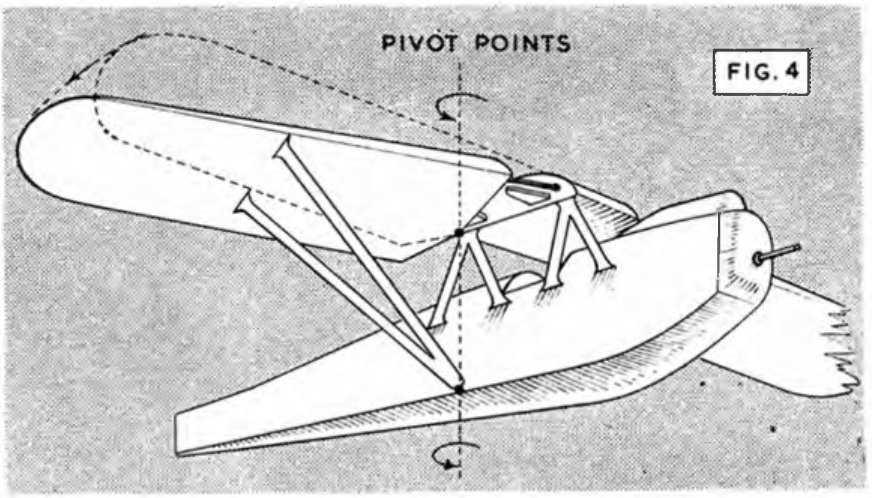


IT is the silly little things which nearly always cause a model to be grounded and I propose to continue from last month on the subject of biplanes. I described various methods of bracing for early wire-braced monoplanes, two-bay and single-bay biplanes. One of the most infuriating details which can make a model unreliable is the interplane strut fixings. If one owns a car and transport is no difficulty there is a great advantage in having each pair of wings non-collapsible, that is built as a single unit and attached at the top and bottom roots in such a way that the pair of wings act together as a single monoplane wing would when knocked off. Where "collapsability" is required for transport I have found it far better to hinge the struts so that the wings close like a parallel ruler, Fig. 1. It will be seen in Fig. 1a how the top hinge is constructed. The hinge itself is made of 20 s.w.g. piano wire and the hinge plates from ¼ in. wide strip tin. Note the right angle bend on the hinge, this is so that the struts lock themselves against lifting loads just in case a flying wire comes adrift. The tin hinge plates turn down at the end and are pierced to locate the flying wires at (A). Both ends of the hinge wire are bent in a double right angle and finish in a tiny loop (B) to which the incidence wires are attached. The struts are cut from square ash, grooved to take the wire and cemented and bound in place. The bottom strut hinge is similar to the top, but is in reverse. Whether the struts are fixed before or after covering the wings depends on the model in question, but after fixing, the struts are faired with balsa. The fitting of the incidence wires can be a tricky job but I have found the easiest method is to put the wings in place (when the root fixings are complete and true of course). The model is then stood in flying position on a flat board. Two exactly similar templates should be cut to stand on the ground with slots to take the wing tips, Fig. 2. The incidence wires should then be cut and bent to fit into the appropriate eyes. It is far wiser to bind the ends of the wires with two turns of fuse wire and solder, if this is done nothing will ever displace these struts. I use a slightly heavier gauge wire for the incidence wires in order that rubber tensioning can be avoided. On eighth scale models I have used 25 s.w.g. piano wire for this purpose, the comparatively short length of these wires plus the extra thickness making this possible. The incidence bracing should be absolutely rigid, all shock being taken by the rubber loaded flying wires. This rigidity is the secret of accurate rigging, the wings automatically line themselves up when pushed into place if this is so. A non-collapsible wing simplifies everything, the "sockets" are made from 20 s.w.g. piano wire and bound to the spar, Fig. 3. The double end is bent down to take the flying wire at (A) and a loop is made at (B) to take the incidence wire. Assembly is exactly the same as the hinge type. Both these wire strut fixings make starboard and port pairs of wings single units, handling on the flying field with little more trouble than the common cantilever monoplane. Plug-in struts are things to be avoided because they are subject to dislocation, frequently piercing the wings and they are also prone to partial dislocation causing unreliable rigging. The piano wire fixing gives just the right compromise between rigidity and flexibility. To reassure those who doubt, my last Tiger Moth has been flying for four years and the wings have not been re-rigged or re-adjusted in any way.

Strut braced monoplanes such as the "Auster" deserve some mention. By using the strut to take the flying and landing loads as on the real aircraft, possibly the most efficient anti-crash wing can be made. I refer you to E. J. Riding's "Westland Widgeon" featured in the April, 1943,



issue. The lower strut anchorage being directly below the T.E. of the root rib, it is fixed to a simple hinge. The wings are held in place by two weak rubber bands, through and behind the dummy petrol tank and the root ribs are located on two tongues. The wings are rock firm against flying loads, but resistance to collision is a minimum, the wing simply hinges back and returns to its position, Fig. 4. Practically all strut-braced high wing models can have variations of this method. Where the lower strut attachments are not directly below the T.E. of the root ribs as in the Auster, both ends of these struts can be held together by a rubber band passing through the fuselage.



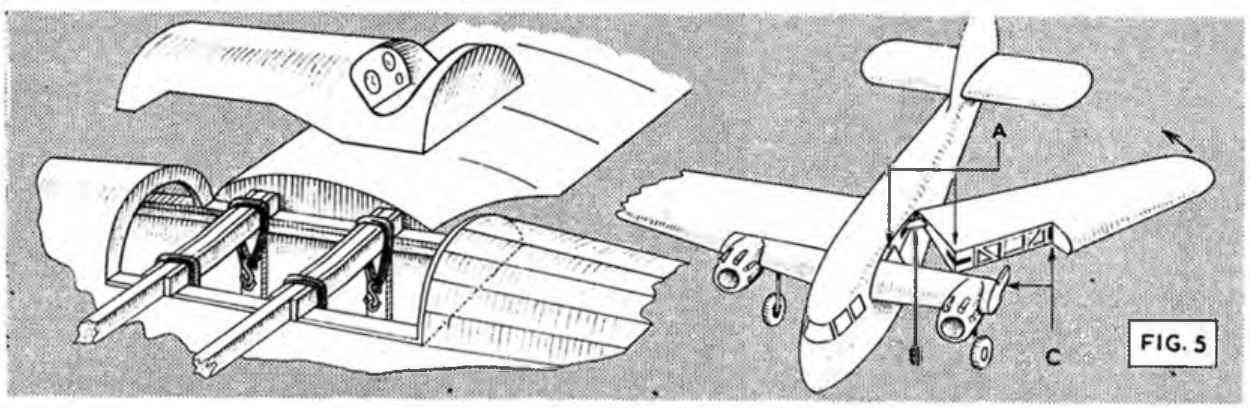
For shoulder wing models such as the " Barracuda " another wing fixing can be used. Above the centre section the fuselage is cut away and a hatch is built to clip over this opening, Fig. 5. The top longerons are reinforced underneath and horizontally with balsa. If the longerons are made of balsa then a strip of hardwood must be cemented on top to form a hard surface. Tight fitting bamboo wing pegs are made to fit the peg boxes in the wing, these are sandwiched between well cemented 1 m.m. plywood, two layers each side. The dihedral is built into the pegs and sweep back (if any) steam bent into the plywood. A loop is attached to the inside of a bulkhead immediately below each peg position. Strong rubber bands are passed round the pegs and attached to S hooks which are hooked on to the loops mentioned. This is the method used on my Viper which is still flying after thirteen years, the wing fixings like most of the model, being original. The reason this arrangement is so successful is because the wing pegs are not fixed either to the fuselage or each other. When the wings are in place the pegs are kept parallel by the peg boxes but when a wing is dislocated pegs are free to take whatever angle is required of them individually. This method has several advantages over many more modern methods, it is almost indestructible, it allows easy incidence adjustment without a major operation and everything is hidden under the hatch!

The final method of wing attachment I wish to describe is illustrated in Fig. 6. This was evolved to suit my Short " Scion " model. The problem was as follows :—The nacelles must be rigidly fixed to the fuselage in order that the " Moore Drive " could be incorporated, also the drive had to be accessible for servicing, it was very desirable that the wing incidence could be adjusted to a limited degree and finally the undercarriage had to be anchored to the nacelles. This was overcome by having the leading edge from engine to engine built separate from the rest of the wing. The spar was an open girder at the back and sheeted over the front to form a rigid unit containing the drive. Oiling was done through the rear of the spar.

The wing was anchored at three points, just behind the root of the leading edge spar in the form of a plywood triangle placed horizontally to engage a slot in the end of the spar (A) at the T.E. of the root rib (B) by means of a tongue and slot and outboard of the nacelle by means of a long slightly-tapered peg projecting backwards and located between the specially reinforced wing spar (C). This was a wedge fit and required no spring clips of any kind.

A variation of this wing form was used on the " Typhoon," partly to allow for trim of incidence and servicing the retracting and detracting gear through the back of the stub spar, but chiefly to make an anti-crash undercarriage. The legs of the undercarriage are hinged rigidly to the wing panel which is so adapted that it can swing the whole trailing edge upwards using the stub spar as a fulcrum. In order that this hinging is possible the supporting peg at (C) has had to be removed and replaced by a circular peg projecting from the end of the stub spar. This peg is located in a socket in the end of the shortened wing spar of the outer panel. When the wheel is forced back the wing anchorage acts itself as the shock absorber. This will be explained in the instalment on undercarriages at a later date.

The ideal to be aimed at when designing wing fixings is minimum resistance to impact, maximum resistance to flying loads and ease of rigging and adjustment. The most complicated rigging problems can be reduced to simple units if enough thought is given to the matter in the early stages of design.



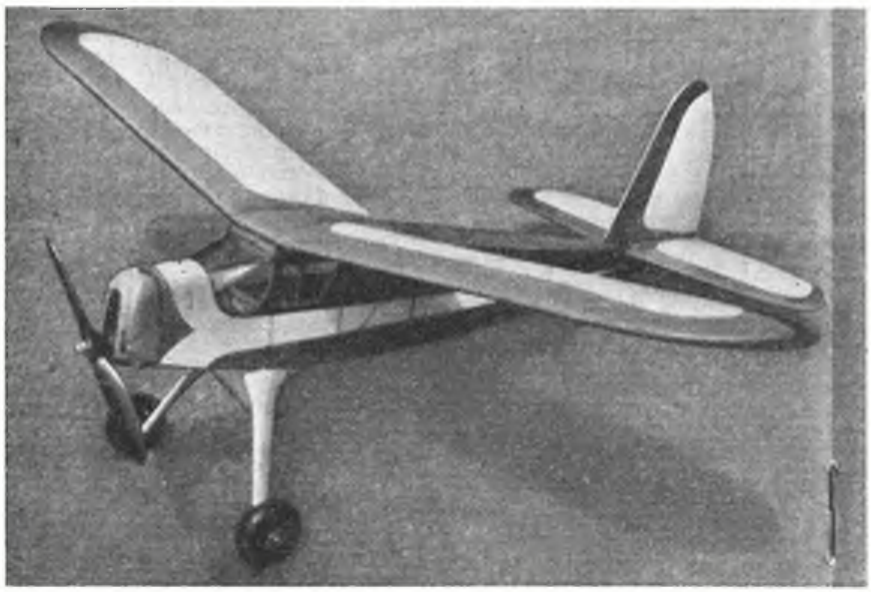
WORN by anxiety and weary from the chasing of his latest masterpiece, Fliar Phil seeks a little light relief by describing the ever pleasing efforts of his long suffering contributors.

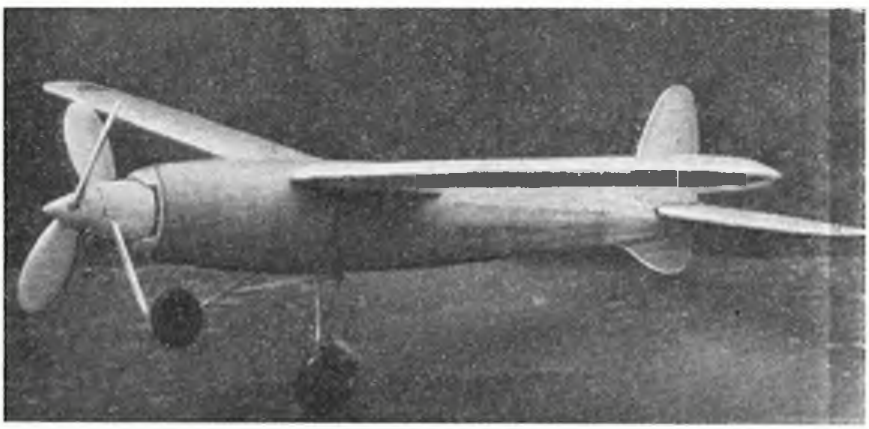
The gentleman who features in our Model of the Month, is none other than Mick Guest of Bushey Park renowned for his efforts with jet powered control-line models. It was Mick who first started making really fast times in this country when he reached 90 m.p.h. in the 1947 All Herts Rally. R. Connell sends this excellent photograph of Mick and his Dynajet powered speed model.

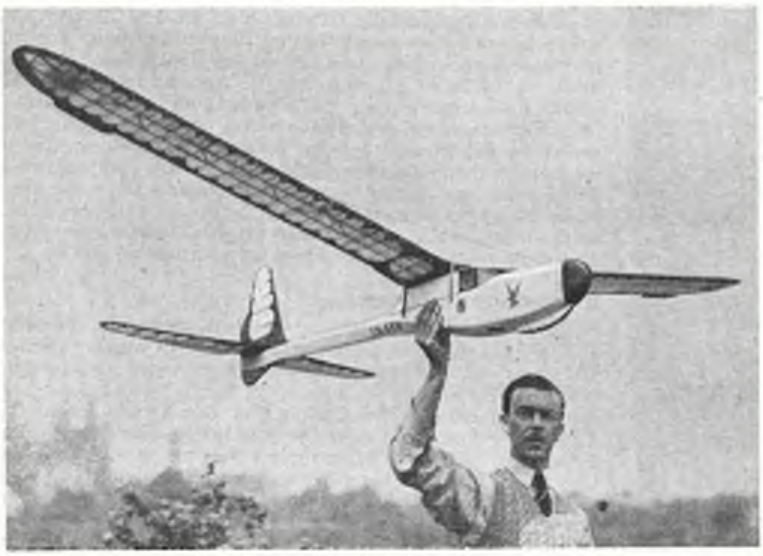
On the right is a nifty looking bunch Scorpion built by Don Beatty, that popular aeromodelbod from the Bedford District. Built from a kit that Don acquired in America during the war, the model is powered with a Baby Cyclone and attractively finished in blue and white. To date, it has won him first place in both a Concours and a Duration Contest. Fliar Phil happens to know that Don works at the College of Aeronautics and as might be expected, there is a very healthy model club centred in and around the college.

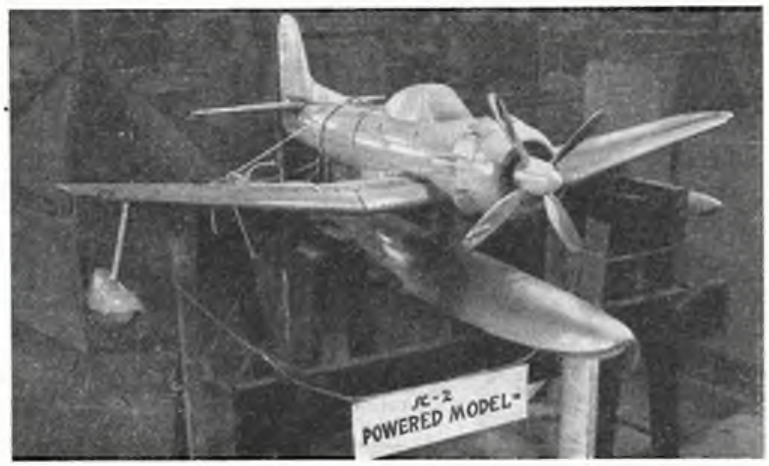
As Consus has been quietly banging Fliar Phil on the head to publish a photo for him, bottom right is the result. This is of a model by D. Thorpe, of Ventnor, which was described in last month's Gadget Review. The contra prop unit is the main item of interest and the sleek lines of the job have probably already allowed readers to guess that it is intended as a rubber driven speed model. Flying reports are not yet to hand, but the design certainly looks promising and we look forward to hearing the results of the flight test.

Next on the list is an outsize in scale models held aloft by its owner and builder, Mr. Bristow. This quarter scale Tiger Moth occupied Mr. Bristow's time for two years which is hardly surprising and is accurate to the last detail. Powered with a 10 c.c. petrol engine, fed in the correct manner from the scale tank, the model has moveable control surfaces. The designer's next task is the perfection of a suitable radio control unit and a stowage hatch









aft of the cockpit which will accommodate the batteries and receiver. Fliar Phil hopes that Mr. Bristow will keep us posted regarding flying tests as he knows that readers will be more than interested.

Mirror Features who took the photograph gave a piece of rather amusing publicity in that the model will be controllable for speeds up to 70 m.p.h. Fliar Phil would shut his eyes if ever he saw the model performing at this rather optimistic figure, for he could only imagine it in one direction—downwards! He would also have slight doubts as to whether any ordinary 10 c.c. engine would really swing that rather hefty prop to satisfaction. However, he waits with interest.

Centre left is an excellent example of modelling and photography combined featuring Mr. G. B. Willett with his 8 ft. span pod and boom sailplane. Mr. Willett evidently believes in a fairly high aspect ratio and his construction leaves nothing to be desired. The model weighs 38 ozs. and to quote the designer's modest claim " performs satisfactorily ".

Wind tunnel models by the full scale people are always intriguing and this Curtiss S.C. 2 Seahawk shown bottom left is no exception. It is powered by an electric motor and was built by the Curtiss Aircraft Company in America. Coming to the last on our list we have the well-known Frog Stratosphere and this example was built by A. D. Dawson of the St. Edward's School M.A.C. The photograph was taken by S. J. W. Davies using a 200th of a second exposure at f/4·5. It was suggested in the letter enclosed with this photograph that Fliar Phil gives more details of the photographic side of the pictures he publishes and this he will endeavour to do providing readers send along the details. It will probably help a number of would-be photographers—not forgetting Fliar Phil himself, who by pawning most of his worldly possessions has at last managed to acquire a Leica.

BOFFIN ABROAD

Photo. Sven Salonius.

EACH year, in common with birds of more orthodox layout, the Boffin feels an irresistible urge to wing his way abroad to see for himself how the other half enjoys its aeromodelling. Here then, are some of the highlights of a lightning passage across Europe when friends old and new contributed much to his enjoyment and instruction.

French without Tears

First call was on Monsieur Maurice Bayet—Editor-Proprietor of "Modele Reduit d'Avion"—only French journal devoted entirely to aeromodelling. Here we were able to make exchange arrangements, whereby any French readers who would like the AEROMODELLER can pay Monsieur Bayet the subscription, while on our part British readers can obtain the French magazine by applying to us. We have yet to find a happier way of reaching "matric standard" than a few copies of M.R.A. Incidentally, if that high level is beyond any would-be reader, we would hasten to add that there are lots of pictures and plans—at least one a month being fullsize. Write to the Boffin for more details. Another interesting call was to French model-shop "Source of Inventions" in Paris—and indeed it was! A veritable treasurehouse of diesels, kits, materials and what have you, with an iron mesh shutter to discourage shopping after dark. Incidentally, while British diesel prices are coming down, French figures are going up—about 10–20 per cent. increase on Christmas, '47 prices. Even so the best French 5 c.c. engines are available at from £4 to £5 10s. 0d.—still under our figure for comparable goods.

Aeromodeller Photo.

Brave Show in Brussels

The Harborough agent in Brussels, Monsieur Fernand Stockmans offered items to make the mouth water. Though dollars are scarcer than they were he was still able to offer "McCoy Sportsman" engines, "Xacto" tool kits and assorted American kits including their famous CO_2 motors—though of course these are now on the British market. Belgian enthusiasts have not fallen for control line to any extent—they are doing well enough with their free flight jobs!

Most instructive was a visit to the Model Aircraft Association's Headquarters in Rue Montoyer. Full-time assistant secretary is Maurice Verbinnen who has visited us at Eaton Bray: other committee members are voluntary as in S.M.A.E. These new headquarters comprise a very pleasant suite of rooms in the Belgian Aero Club building, and include a club-room for the use of the Brussels section, magnificently equipped with drawing implements galore, small wind tunnel and other research equipment. We can understand how Monsieur Joostens and his research team have developed Belgian aeromodelling to so high a standard. In spite of their many international successes we understand that numerically Belgian enthusiasts are quite weak. Which goes to show that a few really keen men, with sympathetic government backing, can go a very long way. Next year's Belgian Wakefield team

Planet News.

Planet News.

Heading: Bjorn Karlstrom with his whip power scale model—light attire due to weather, not effort of whipping! Belgian Power Prototype—"Gran' pappy" of Belgian standard contest model is this Joostens/Balasse effort of circa 1942 snapped by the Boffin in 1946. Up She Goes! Russian glider flown by Ildus Mavlyutov starts flight of nearly 15 miles at Tatar meeting. Russian Research: Model expert Skobeltsyn explains wind tunnel to enthusiasts at Leningrad Palace of Young Pioneers.

should want watching if all that's cooking proves as good as previous Belgian aeromodelling dishes.

Dutch Treat

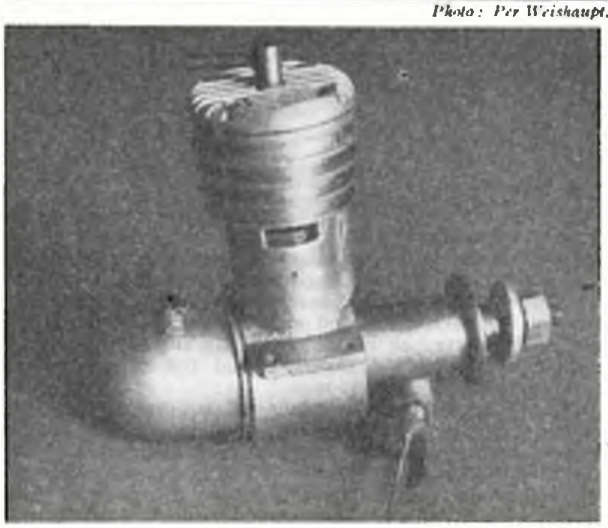
Thanks to Mr. Van Hattum's efforts the Boffin found a roof over his head in The Hague—no mean feat in the height of the holiday season. A long awaited visit to the Royal Dutch Aero Club which houses the Aeromodelling Section proved illuminating. They occupy a period house in the old part of the city, and include a suite of offices and a really homely attic workshop. The clubs are very well looked after for their affiliation, with Mr. Van Hattum as head of the technical section, designing club models, organising regular contests and generally keeping in touch, whilst the personal element is contributed by a full-time travelling instructor and inspector who works round the clubs with lectures and instruction, reporting back in due course on local progress. They rightly claim that hardly a model is built or a new enthusiast gathered in, but news of it appears on Van's table sooner or later! Work in hand when we dropped in included a sailplane to the new continental formula for the Maurice Daumerie trophy, which it is hoped to build into a kind of "Glider Wakefield". It looked pretty good to us, but we gather it would receive many more weeks of testing and pushing around until it was passed for general publication.

Swedish Drill

Stockholm was just as lovely as the posters said, and K.S.A.K. (Swedish Royal Aero Club) Model Section Secretary Darentz a traditional Swedish host. We shall long remember the seemingly endless-supply of dishes at lunch, and schnapps ("Drink it down in one gulp—traditional way") and aeromodelling gossip of this and that, taken at Skansen—Stockholm's outdoor museum, zoo and park, high over the city. Then arrangements made to enjoy a spot of aeromodelling with the local club. Star performer was Bjorn Karlstrom—well-known Swedish modeller and designer—with his whip-power model of the latest Swedish jet plane. In his hands it looked just too easy, but the Botfin's spirit proved more willing than his flesh when he had a try. It must have been the lunchtime schnapps. Also in the air was a tiny twelve-inch span scale model powered with a Campus CO_2 motor—brought over from the States by our old friend Lennart Sundstrom, who was our host on this occasion. Once trimmed it flew like a dream—getting half a dozen or more flights from one sparklet bulb. The usual Swedish "Sunnanvind" type of glider was to the fore, doing as well as ever; together with the world's laziest—or most trusting modeller—who quietly watched his model fly o.o.s. with the confident remark "Someone always brings it back!"

Most of the model materials are handled by the governing body, but we did find time to visit Stockholm's only model shop—Wentzel's. It made up in quality for lack of quantity, being quite the most elaborately laid out model shop we remember. Interior reminiscent of one of the best corners of a Dorland Hall exhibition—three or four dozen superbly finished flying models, all adequately ticketed, and a number of showcases with "exhibition finish" solids, mainly to the usual continental 1/100th scale. They still do a lot of solid modelling over there, both civil, military and old-timers. On the book side they had all the expected Harborough range, plus latest American publications, and continental oddments we had never heard of before.

Photo: Per Weishaupt.



Dupey-Perey.

Top right: Leading Danish modeller Kurt Rechnagel with his successful glider "Super Diogenes," while overhead flies protype "Diogenes". Dutch Diesel: Typhoon engine being made in a small way in Holland—main difficulty getting price within reach of £2 3 local modellers can afford to pay. Swiss Sensation: Free flight, reaction jet powered glider seen at Swiss Nationals at Thoune.

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

DEAR SIR,

Regarding T. F. Rowdy's letter. May I as a founder member of the S.M.A.E. have a say ?

Just after the "Great War" a handful of us, mostly professionals, got together and organised the start of what is now the S.M.A.E. We did this for love, we certainly got more kicks than ha'pence. Most of the trophies were and still are given by professionals. Mr. Rowdy and those holding his views should bear this in mind and but for the efforts of the Pro's. they would today probably know nothing whatever about aeromodelling ! Regarding the allegation that the professional has an unfair advantage over the amateur in competitions, suppose that a professional produced two identical models and invited an amateur to take his choice and one fly against the other. There is little doubt that the pro. would prove the better man. More than half the battle in competitions is knowing how, therefore the pros. head the list because largely due to their skill they deserve to do so.

London, S.W.18. D. A. PAVELY.

DEAR SIR,

In reply to the letter published in the September issue of the AEROMODELLER under the title of "Shamateurs" this reader complained that experts with American motors were spoiling the hobby by sweeping the contest boards. So far it seems to me that the contest honours this year have been held more by British Engines and more by the so-called novice than we "experts" as we are styled. In any case plenty of modellers besides the "experts" and the manufacturers seem to possess American motors.

Mr. Rowdy goes on to complain of kits being designed by manufacturers for British engines, yet flown by the manufacturers themselves with American power plants. As both Bill Dean and myself fly Slicker 50's fitted with Arden ·199 engines, this dig is probably intended for us especially, but one thing Mr. Rowdy has lost sight of is the fact that in all our Slicker kits, even the Slicker 42 (which is designed primarily round the Mills Engine) installations are given for mounting the Arden Engines.

Before Mr. Rowdy puts his pen to paper he should be armed with the facts. Perhaps he has never seen a Slicker kit, otherwise the letter may never have been written. If Mr. Rowdy thinks that the Arden is one of the best engines available he should set his mind on getting one for himself instead of just moaning about how unfair it is. I, personally, can remember some pretty hard struggling in my very early days on engines and materials but I was keen and I eventually did obtain my first Brown Junior, in fact did not feel too happy in informing Mrs. Keil in those days that I had wasted my money to the extent of £6. 10. 0d.—this was in the good old days.

Besides, are we the only Aeromodellers that fly with American motors ? Why pick us out ? Another point, Mr. Rowdy, is that I myself have never won a S.M.A.E. Contest in my life, believe me—I have tried and I am still hoping. Just as keen to have a crack at winning that contest as any other keen aeromodeller. Let's forget that I am a manufacturer when I am on the field.

As a manufacturer I am naturally bent on selling as many kits as possible. Contest flying undoubtedly helps but first and foremost my own interest does lie in flying for the fun of it. I fly one of my own kit models simply because I have confidence in it. A manufacturer, in my opinion, should appear on the flying field with his products and prove that it lives up to his advertising claims.

I wonder if our young friend realises just how much the hobby owes to the commercial side of modelling. Vast numbers of aeromodellers are introduced to aeromodelling through kits. The rapid expansion of modelling in recent years owes much to the kit (and engine) manufacturers who help to set the design and trends. I hate to say this—but it's the trade which supplies the bulk of all the prizes at the main contests.

Are we really such a terrible lot ?

London, E.2. EDDIE KEIL.

We understand from a fellow aeromodeller living in the same district as Mr. Rowdy that the latter gentleman has now become the proud possessor of a new Ohlsson 23 and imagine this closes the correspondence ! (Ed.)

DEAR SIR,

As you may or may not know, the local Model Club are 100 per cent. control line and as such we rather pride our efforts, and at the same time appreciate advances in this field performed by other control line fans.

In our speed section we have got quite a few of the accepted HOT engines, i.e., McCoys, Hornet, Fox, Ohlsons, etc. We have built these engines into super streamlined models with all the trimmings such as flywheel propellors and dolly take-off and pressure cowling. After all this we have just been able to smash the 100 m.p.h. mark and have been severely shaken to find that Mr. Taplin with his 2 c.c. motor has nearly touched the 90 mark.

Now without going into the mathematical side of things we have worked it out roughly that his engine using a ten-inch pitch propellor working 100 per cent. efficient, plus no drag whatsoever from the airframe, etc., had to turn at approximately 9,500 r.p.m. and this takes some doing.

Our club will pay the fare for Mr. Taplin to come to Weston at a time of his choosing and pay £5 to any named charity if he can come and repeat his performance.

Weston-super-Mare, Somerset. D. W. EVANS,
Hon. Sec. Weston Control liners.

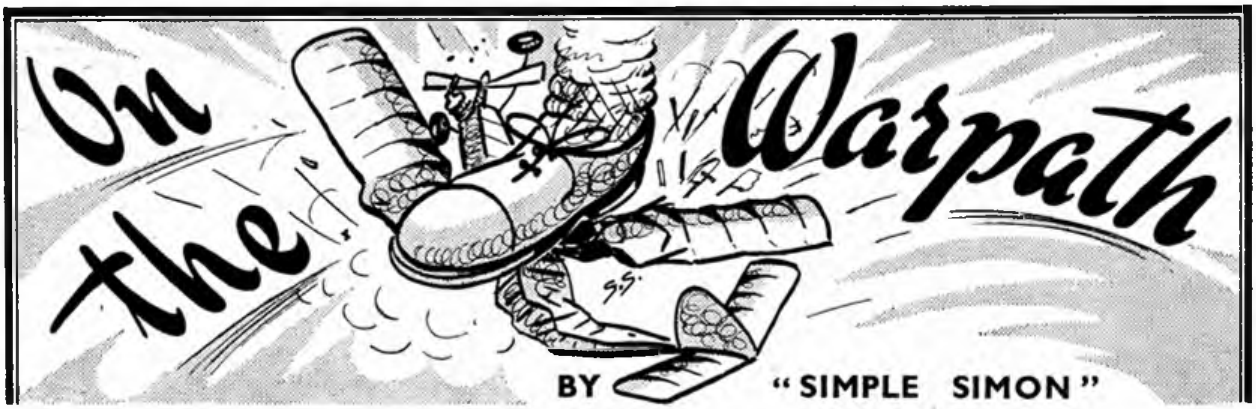
DEAR SIR,

May I use the medium of your columns to express my concern over the growing use in the AEROMODELLER of pointless catch-phrases from the un-written American dictionary. Mr. Ted Buxton described the "All Herts Rally" using such naive phrases as "neat winner" when referring to Norman Peck, and "Reg. Parham held down third." Are we to assume that friend Peck came immaculately dressed, or Reginald Parham was exhibiting a feat of strength ?

With due apologies to Edward Buxton, surely the AEROMODELLER can veto or discourage the further use of such phrases ;—obviously taken parrot-fashion from the American model magazines.

We can afford to leave the idolizing of our American friends to female bobby-soxers.

P. T. GUILMANT
London, S.W.7. ("Butch" Nickelburger ! !)



MODELS are just utterly senseless compositions of wood and paper; they appear in untold shapes, sizes and forms which are argued as sound by their designers. They make the most fantastic flights on the club ground, but fail miserably in contests when I dare to look. The worst model always wins by a fluke; the nicest and best designed cracks up or a child steps on it.

Excuse me if I take my notebook to look up one or two jottings I made. In this recalcitrant mood and with a pneumatic hammer complex some of them please me more than they should. Now, when I publish these notes the one friend I have in the world will turn away from me. They are unfriendly notes but they are honestly intended for the best. They attack many worthy people and most worthy readers will often be able to spot the victim. Yet, I do not set myself up as a judge of the experts. I know full well that I know nothing. I feel exceedingly angry but also exceedingly humble. Would that this were always so with the experts. Maybe that is why I have finally decided to pass on these notes and lose that one friend. Just to humble the experts.

But first: why do I always have to suffer from the dreariness of the articles I read? Why is everything so serious, so respectful and respectable? Why could only Freddie be funny and the Moving Finger both witty and intriguing? Sure, I am an old timer and I have seen the ways and whys of modelling for more years than I can remember. It is getting more serious every day—no, not on the flying field, but in print. On the field or what passes for it, there is always a giant crack-up or a funny hat to make you laugh your head off, and now they will say what a disgusting type, bet you he is an organiser—but I'm not telling.

But did I ever tell you of my great pal 'Orrible 'Obbs? I cannot give you his true name because all characters in this story are supposed to be untrue, but we will call him that meanwhile. Well "O.O." writes soundly and wisely on constructional methods. Everything he says is according to book and his advice lines up with the best wood-working practice. He gives detailed instructions on how to lay out drawings, design templates, clamp down, nail down, keep the board clean. When I looked him up the other day he was building on a not too straight plank, on his bed; books held the sides of his fuselage in place, the remainder he supported with one hand; a cup of cocoa in the other. I dare say I like him better now and I like the cocoa touch.

But "O.O." is a fine friend. I cannot tell you how much we have enjoyed ourselves picking a good article to pieces and throwing the pieces under a bus. This guy has prophet-like qualities, too; discussing various lay-outs he suddenly sat up stark straight and discoursed as follows:—"Funny", said he, "how one gases about superiority of pylons, shoulder wingers, anti- and pro- spin-fins, streamliners and slabsiders. But practice seems to be one step ahead of theory and all discussions. People seem to feel that they have discovered something in the layout of the Belgian piston-engined models that were a bit of a sensation last year. It would be better and more fair", quoth he, still discoursing, "to use this as simple proof, if that were needed, that perfect results can be obtained with any layout, provided you take care of certain essentials. And I wonder," he concluded, "whether the Belgians deduced this type from theoretical study or just found it had possibilities and developed it systematically and courageously."

On the other hand, whatever my pal may say, there are designs sprung from the fertile brain.

New Look.

A brilliant idea is the hatchet,
Make a wing and a body to match it,
It's sound, so they say,
And will carry the day,
With its New Look,
But I fail to catch it.

Some people say: "I use theory, yes, but when my feeling says something is wrong I follow my intuition". What kind of crystal gazing, metaphysical witch-doctoring is this? One step further and we will use that much abused word instinct.

"Which reminds me", said 'Orrible 'Obbs, "of the man's answer when someone told him that his son was a born pilot. 'Oh no', replied he, 'he was born just a baby like his brother'."

It is now time to turn the pages and arrive at the chapter full of invective against mine enemies. Those bores who rattle their typewriters, turning out reams of articles with formulas and diagrams complete, dry oases in a desert of dust. The reader cannot always know that their interpolations and extrapolations, deductions and inductions are well-meant falsehoods, based on a slight and superficial acquaintance with facts. I doubt whether they actually use these dreary articles on their own models and I wish they were so honest to tell us the truth.

And there is such a thing as the source, where knowledge is found, springing from the crack in the rock like a cool and

clear stream. Why is it so difficult to find out how data and conclusions were obtained ? Surely the writer could name the reports and test he used as a basis for his article. A list of these would greatly raise the status of the treatise and would often be most enlightening. For the scientist is a humble man : he will not readily make categorical statements. He makes reservations, he knows that there are exceptions to laws. He is prepared to find his life's work destroyed overnight. But he would not call it lost : every truth gained is ground gained and he will be one of the first to follow the new road. He is not one for dogmas.

" Heard someone say," said " O.O," " or it may have been I saw someone write, that there is one combination of wing and fuselage shapes resulting in what he called optimum interference." " Why," he roared, " only one ? Gentlemen, you make me laugh, how simple it all seems. Yet it is even possible to design for negative interference drag ". And he began to sing softly and with emphasis in all the right places :

Twist a curve,
Turn a line,
Make a plus and minus sign,
Never mind the truth my dear,
Or whether what you say is clear.

From a trembling falsetto he rapidly increased until the last lines made the drawing board rattle on its pins.

Cook a curve,
Bake a line,
Conjure up a minus sign.
How fascinating is this game,
Amongst the young how great my fame !

Subsiding into silence once more, this entirely untrue character gave vent to his still surging feelings in the following cryptic message to the World : Simple explanations may be dangerously attractive and especially dangerous when they are contradictory to known facts.

Upon being closely but entirely humanely questioned by the author he admitted his statement was somewhat vague. When he got up the second time, however, he pointed out that he had seen, in a dream he supposed, some flying people on a field. There had been some trouble with a model and a conclave of brains had put forward solutions. He had formed the impression that the suggestions offered were of two kinds : the complicated and the simple. The latter he first discarded as simple and no more and presumably worthless. The other kind he carefully absorbed. He was struck by the thought that many of those present gave their opinion not from sound and wise founts but to their own intense surprise with cleverness or otherwise. The brains were not so much in contradiction to each other so much as arguing on entirely different planes. They were stacked like airliners round an aerodrome in GBI. As this seemed to me a story, though rich in adventure, yet lacking in purpose, I finally gathered that one of the two simple explanations proved to be right. The carefully selected straw, ensuring the correct angle of incidence had been lost just before the start.

TIME SAVING GRAPHS FOR POWER MODELS

BY F · LINDSLEY, A.R.Ae.S.

WHILE the majority of modellers are still content to build up kits of proved efficiency, an increasing number, either in reaction to present stereotyped designs or because of a natural flair for originality, are designing their own models.

This aspect of modelling can only be beneficial to the movement as a whole ; almost every improvement to date has been initiated by men who have designed their own machines or made individual improvements or innovations to various componenets. It is interesting to note, in both Britain and the States, that model manufacturers take up new ideas much more quickly than they produce original developments themselves.

While design can be just as interesting as construction and flying, the most confirmed disciple of the slide-rule will cheerfully avoid an hour's work with calculus if a short cut is available. There are also hundreds, perhaps thousands, of modellers with sound engineering ideas whose mathematics are not yet fully developed—or perhaps they have no slide rules and don't care for a lot of involved arithmetic.

The graphs have been prepared for just such people who, like myself, would sooner look up something in a chart quickly and get on with the model than spend a whole evening doing calculations without getting round to fixing the wing shape.

The original idea of the graphs was developed when we* were considering the impact of the revised AMA power loading. It was reckoned that the best duration for a given motor run will always be produced by the lightest practical wing-loading giving acceptable structural strength. The lightly loaded jobs require small horse-power for level flight, despite their size, because the airspeed is low ; they therefore have more reserve power available to be converted into climb. They also have a lower sinking speed which prolongs the duration after motor cut. (Incidentally it isn't always appreciated by modellers that the lowest sinking speed usually occurs at a lower airspeed than that which gives the best gliding angle or L/D ratio. Designers of full size sailplanes, acutely interested in best glide and lowest sinking speed, will confirm this.)

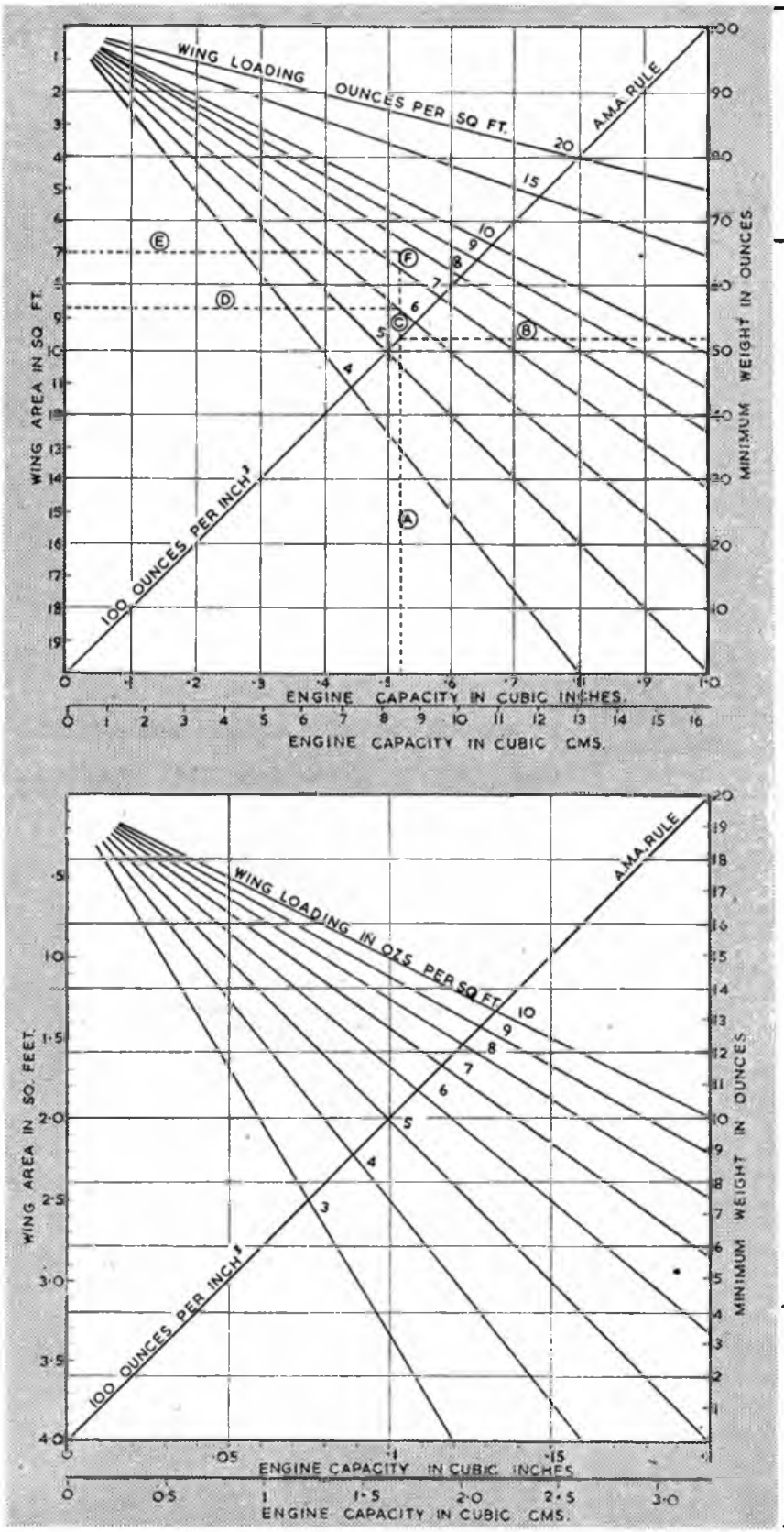
Starting with any motor we might initially work to the AMA minimum weight rule, but we can still design an infinite number of models to that weight due to variations in selected wing area. The graphs have been drawn up to simplify the calculations for wing area and loading. You can either decide on a suitable wing loading and find the required area or *vice versa*.

The graphs cover all motors up to 1·0 cubic inch and, to give greater precision, a similar special graph has been drawn for the smaller engines up to 0·2 cubic inch. As a number of readers may have motors calibrated for capacity in cubic centimetres provision has been made for this also.

The Large Engine Graph shows, in dotted lines, a typical example of using the graph. Say you have a motor of 8·5 c.c.'s capacity. First draw a vertical line, " A " from the base upwards (starting at 8·5 c.c.) until it intersects the diagonal line marked " AMA Rule ". From that point draw a line, " B ", to the " Minimum Weight " scale on the right and read off minimum weight at 51.8 ounces.

If you have an old model lying around, weigh it (making an

* *" We " means Macbean, Wylie and the writer, who, living in Damascus, can study American publications in addition to the " Aeromodeller."*



LARGE ENGINE GRAPH

FOR MOTORS UP TO 1·0 CUBIC IN. (16·37 c.c.)

approximate addition for the weight of motor if it hasn't got one fitted) and from the total weight reverse the above process. This will show the suitable capacity for a new motor which will revamp the model to comply with the revised regulations.

The next step is to decide on a suitable wing loading, either from experience or otherwise. The series of diagonal lines running from top left to bottom right represent various wing loadings. For our example, 6 ounces per square foot has been chosen. Continue the original vertical "A" upwards by drawing line "C" until it intersects the 6 ounces per square foot diagonal. Then draw line "D" to the "Wing Area" scale on the left. Read off wing area required as 8·65 square feet.

Alternatively you can decide on a provisional wing area, say 7 square foot, and wish to know the wing loading this will give. Draw line "E" from the "Wing Area" scale and continue the original vertical "A" by drawing line "F" until it intersects "E". The two lines meet somewhere between the 7 and 8 ounces per square feet diagonals. By interpolation (same thing as guestimation!) the required wing loading is established as 7·4 ounces per sq. foot.

Should anyone also be interested in conforming to F.A.I. rules with a view to breaking world records it should be remembered that the F.A.I. deal in *total area* of wing and tailplane for loading purposes. They also stipulate a minimum loading, on this basis, of 3·93 ounces per square foot. In such a case the "Wing Area" scale must be regarded as F.A.I. total area and when you finalise the design it is necessary to allocate about 75 per cent. of this total area to the mainplane and the rest to the tailplane. But the graphs still hold good for the loading diagonals by both AMA and F.A.I. standards.

SMALL ENGINE GRAPH

FOR MOTORS UP TO 0·2 CUBIC IN. (3·26 c.c.)

FARNBORO

IN accordance with our usual practice, we present here a selection of photographs taken by our Chief Photographer, E. J. Riding, at the air display organised by the Society of British Aircraft Constructors at Farnborough on September 7th—12th.

In view of the large number of aircraft on show this year, it is naturally impossible with the space available, to illustrate every one of them. The accompanying photographs have been selected either because they feature entirely new types or because they form a pictorial record of certain highlights of the flying part of the programme.

The Cierva W.11 Air Horse, a machine which probably caused more comment than any other aircraft present, the Cierva Skeeter and the Planet Satellite were brought to Farnborough and assembled without having been test flown, whilst the Avro Tudor VIII had been hard pressed to get the requisite number of flying hours in to qualify it for inclusion in the flying programme.

1 *Handley-Page Hermes IV (4 Bristol Hercules 763).*
2 *Avro Tudor VIII (4 Rolls-Royce Nenes).*
3 *Hawker P. 1040 (Rolls-Royce Nene).*
4 *Hawker N7/46 (Rolls-Royce Nene).*
5 *Vickers-Supermarine Seagull (Rolls-Royce Griffon).*
6 *Cierva C. 11 Air Horse (Rolls-Royce Merlin 24).*
7 *Percival Prince (2 Alvis Leonides).*
8 *Armstrong-Whitworth AW. 52 (2 Rolls-Royce Nenes).*
9 *Cierva C.14 Skeeter (Jameson)*

Photo sizes and prices are (*a*) 4×6" 2/- each, or selection of any twelve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UGH 1948

Both the Tudor VIII and the Nene Viking, fitted as they are with " underslung " jet units caused a certain amount of amusement amongst the spectators when they were enveloped in a cloud of smoke at the start of the take-off run caused by the scorching of the tarred runway.

The sight of a large flying boat, low down, many miles from its native element is always an attraction at any air display. Our photo shows the Solent " Scarborough " in the hands of Capt. Alcock flying past the enclosures with both starboard airscrews feathered. Unfortunately we were unable to catch Geoffrey Tyson flying inverted in the Saro A/1, but our picture here, taken when the machine was doing 450 m.p.h. plus, gives some idea of what the spectators saw.

Copies of any of these photographs, and of most of the aircraft attending the display, may be obtained at our usual rates from Eaton Bray Studios.

Boulton-Paul Balliol (Rolls-Royce Merlin). 10
Short S. 45 Solent (4 Bristol Hurcules 637). 11
Bristol 171 Helicopter Mk. 11 (Alvis Leonides). 12
Avro Athena Mk. 1 (Armstrong-Siddeley Mamba turboprop). 13
Vickers-Armstrongs Viscount (4 Rolls-Royce Darts). 14
Saunders-Roe A/1 (2 metro-Vick. Beryls). 15
Planet Satellite (D. H. Gipsy Queen 31 or Gipsy Major X). 16
Vickers-Armstrongs Viking (2 Rolls-Royce Nenes). 17
De Havilland 98 Mosquito T.T. Mk. 39 (2 Rolls-Royce Merlins). 18

20/- post free. (b) 6 x 8" 3/- each, or selection of any twelve 30/- post free.


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DESCRIBED BY THE EDITOR

THE MANX RALLY

His Excellency the Governor presents A. H. Wilson with the "Governor's Trophy", on the right are Mr. and Mrs. Rushbrooke.

RUNNING to an extremely tight schedule following my Wakefield-cum-American trip, I was in England just long enough to change planes for the Isle of Man, picking up the long suffering family *en route* for the annual holiday. This time it was combined business with pleasure, we having planned months before that we would make our vacation coincide with the Manx Rally, which I was happy to assist on its way earlier in the year.

The meeting opened on the Monday morning with bright but windy weather, though this did not deter a large number of people attending the opening ceremony conducted by His Excellency, the Governor of the Island. This gentleman proved most enthusiastic throughout the meeting, and took a lively interest in all that happened, culminating in the presentation of prizes to the lucky winners at the weekend.

Following the opening ceremonies, models were judged for the Concours sections, and some very fine examples of aeromodelling art were on exhibition. Outstanding were Marshall's tailless machine and a beautifully finished canard type sailplane by J. E. Lovett of Liverpool. W. Poile proved the winner in the power section against stiff opposition.

The rest of the day was taken up by the free flight power contest for the Travis Cup. Hand launching was adopted in view of the high wind, and some hectic flying was witnessed from time to time. Competition was fairly close among a handful of the more experienced modellers, though J. T. Walker of Darlington spoiled his chances by overrunning the engine limit on his third flight, having put up the best duration of the contest on his first flight with 1 : 46. Wilson of Hayes (the eventual Champion) proved the winner with three very consistent flights of 1 : 35·4, 1 : 24·8 and 1 : 24·5.

Tuesday, the day of the Junior Grand Prix, proved shocking with the result that the race authorities postponed the race meeting to the next day—the second day scheduled for the model rally. In view of this, and the poor weather forecast, the organisers decided to delete the mid week flying, and try to get in the remaining contests on the Friday. This was all the more unfortunate as the weather cleared up to a beautiful afternoon once the races were over.

Friday therefore saw no less than six contests concluded, and both organisers and competitors had a very busy day. I was kept busy timing the outdoor flying, whilst the control line events were conducted inside a very large hangar.

Though making certain manœuvres impossible, this factor did not disturb the boys overmuch, and some pretty performances were witnessed. But you can imagine the racket when J. B. Wood flew his Nordec powered speed jobs inside the "tin shed". His speed of 62·2 m.p.h. was probably affected by having to fly on shorter lines than he is used to, but K. G. Wright of Blackpool is to be congratulated in coming so close to the winner with a small capacity engine. (Incidentally the Blackpool boys arrived *en masse* via a D.H. Rapide—door to door service.)

The outdoor events were progressing steadily in spite of a wind that just about ripped the clothes off your back, and some very pretty work was put in by Wilson and Marshall of Hayes, who between them won five firsts, one second, and two thirds, plus the Team prize and the Governor's Cup.

These two chaps were right on top in the tailless categories, with Poile struggling manfully in the face of badly damaged machines. Wilson was extremely unlucky not to win the President's Cup from his team mate, as he lost his model on the second round of the Tailless contest following the best flight of 2 : 31 o.o.s.

Fun was furious if not fast in the Jet event! Some of the Liverpool contingent had purchased units and kits on their arrival in the Island, and proceeded to build in the evenings in readiness for the contest. Though flying was at times erratic, Ralph Goodfellow of Blackpool got in some good flights, best 52 seconds, and a contest of this nature under calmer conditions should prove well worth while.

Events drew to a close with the organisers getting more and more worried as they watched the clock fingers move round, and a hectic dash was made back to Douglas in readiness for the final prize-giving at the famous Palaise. Participants were most enthusiastic over the range of prizes awarded, and heartily agreed that they had had a fine time, plus plenty of excitement witnessing the two days of racing, and promised a return to next year's Rally, together with many more of their clubmates. All in all, a very pleasant meeting in the real old comfortable and friendly style. It's a "must" for me from now onwards!

Contest Results are given in Club News.

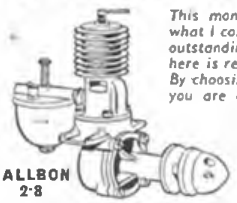
Must have been a good one! Prize-winners look as though they have heard one of "Rushy's" Specials!

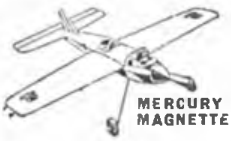
H.J.N.'s POWER POLICY

1. A PROGRAMME OF TOP-LINE KITS AND ENGINES.
2. A SENSATIONAL RADIO-CONTROL OUTFIT.
3. DEPENDABLE ACCESSORIES.
4. ENGINES BY EASY PAYMENT.

1. KITS and ENGINES

This month I am giving a selection of what I consider to be kits and engines of outstanding value. Every item mentioned here is renowned in one way or another. By choosing one of these kits and engines, you are doubly assured of satisfaction.





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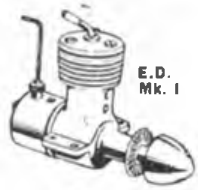

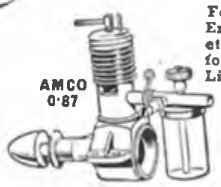

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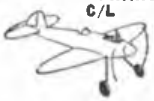

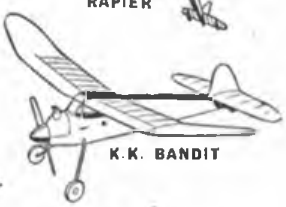

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The NEWBURY EON

AIRCRAFT DESCRIBED Nº 13 BY E. J. RIDING.

Aeromodeller Photographs

THE Newbury Eon is the British counterpart of a formula which has become extremely popular on the Continent—the four seater low-wing monoplane with tricycle undercarriage.

The manufacturers, Elliotts of Newbury, Ltd., are perhaps the latest new-comers to the field of aircraft construction, and who, like F. Hill and Sons of Manchester, have behind them many years of experience in woodworking with which to back up the new venture.

The Eon first appeared in public at the S.B.A.C. Display at Radlett last year, having made its first flight on August 8th, 1947.

The initial design work was executed by Aviation and Engineering Projects Ltd., of Feltham, Middlesex, whilst the construction work was completed in the Elliott factory at Newbury.

At first the Eon was fitted with a 100 h.p. Blackburn Cirrus Minor II engine, but this has now been replaced by a De Havilland Gipsy Major of 145 h.p.

It is understood that plans for the quantity production of the Eon have been shelved, the machine being used for business purposes and glider towing.

From the occupant's point of view, the one piece windshield and generous windows offer an excellent view, and the machine appears to have no vices of any sort. The instrument panel at the moment is still in a state of flux, and I have shown it on the General Arrangement drawing complete with test rig, as used in connection with the Gipsy Major X performance tests.

Apart from the engine change, the only other external modifications which appear to have been made since the machine's inception are a slight increase in the areas of the ailerons and rudder.

During this year the Eon, piloted by Mr. Norman Antill, has attended most of the Air Displays and meetings up and down the Country, and it has received much favourable comment from the ranks of both commercial users and private owners.

Construction. All wood. The fuselage consists of a series of laminated spruce formers with four spruce longerons augmented by stringers running down the top and bottom surfaces, the whole being plywood covered. The cantilever wing has one main spruce and plywood box spar and an auxiliary spar situated a short distance aft of the leading edge. The plywood covering extends aft to the main spar, the remainder being fabric covered. The tailplane is of similar construction, and the fin is built integral with the fuselage.

The elevators, ailerons and rudder are all fabric covered with the exception of plywood covered nose portions.

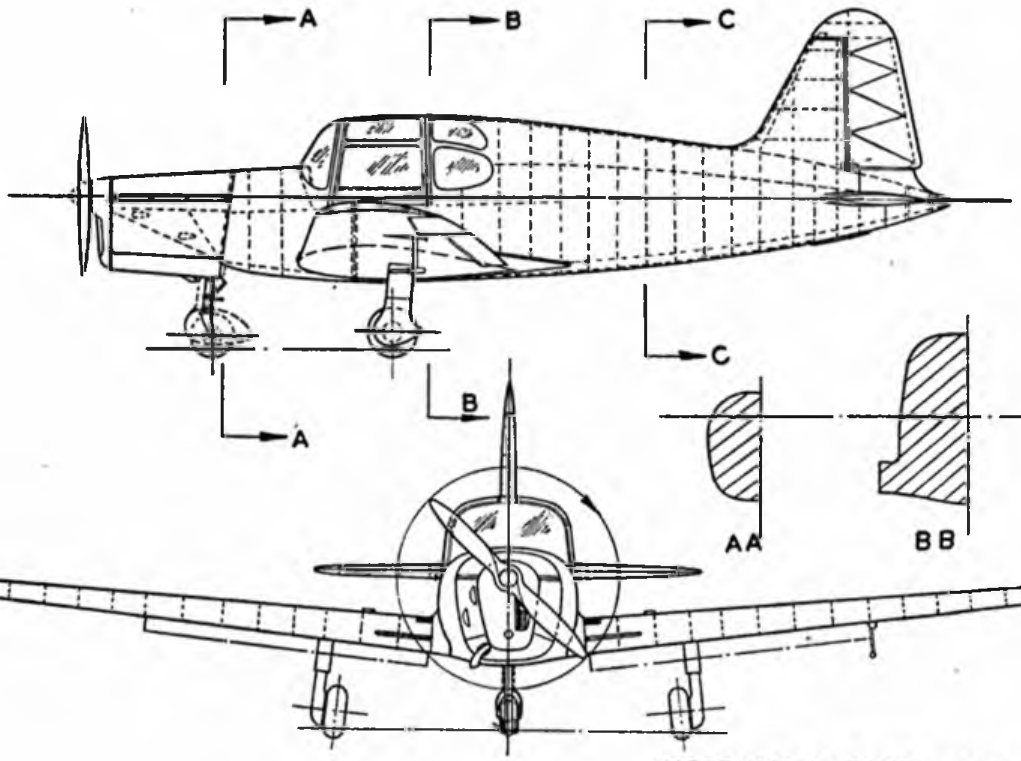
The undercarriage legs are both bolted to the rear face of the main spar, and the nose wheel oleo leg is of the castoring pattern, bolted to brackets situated on the engine bulkhead.

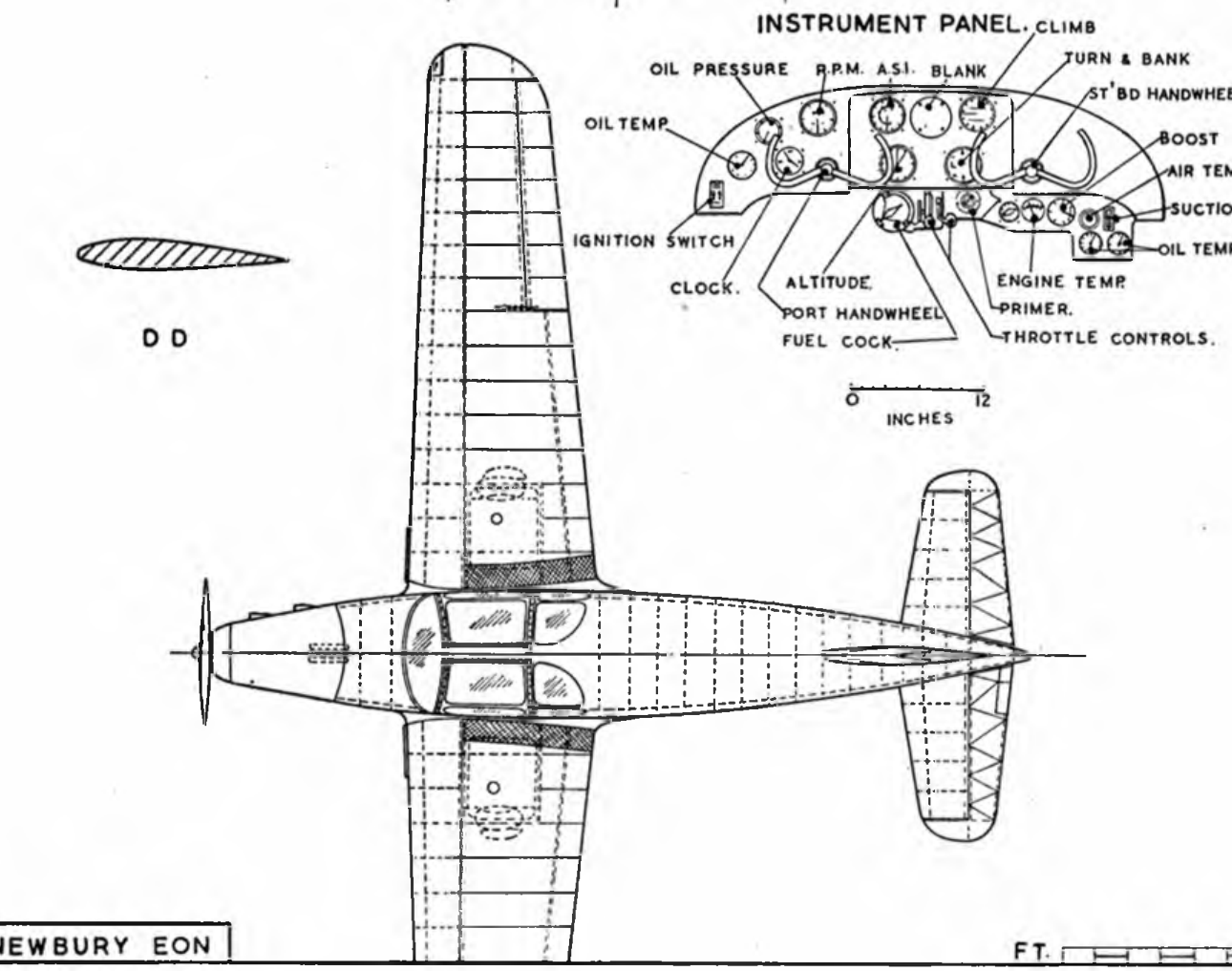
Colour. Shown in Mr. Moore's cover painting this month—duck egg blue all over with dark blue registration letters, fuselage flash and manufacturer's trade mark.

SPECIFICATION: Span, 37 ft. 0 ins.: length, 25 ft. 6 ins.: height, 9 ft. 9 ins.: wing area, 173 sq. ft.: total loaded weight, 2,350 lbs.: tare weight, 1,714 lbs.: maximum speed, 136 m.p.h.: cruising speed, 116 m.p.h.: landing speed, 48 m.p.h.: range, 350 miles: ceiling, 13,400 ft.

Fuel is carried in two tanks each of 9 gallons capacity situated in each wing root.

¼ in. to 1 ft. reproductions of the G.A. drawing, price 1/–, and photographs (6 ins. by 4 ins.) flying and static views, price 2/– each, or 6/– per set of four are obtainable from Eaton Bray Studios.





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CLUB NEWS

BY

CLUBMAN

The indoor season is with us once again and here is the Grimsby M.A.C. enjoying a session with a model doing its stuff round the pole.

WELL, well, it seems I was something of a prophet regarding the Wakefield Cup event, and some think it more than a fluke that Roy Chesterton was top feature in the "personalities" article I wrote in the September issue. Nothing of the sort—just a hunch that came off, but naturally I am as bucked as the next man that we have the old Trophy back in the country of its origin. And . . . yes, thank you, I had a grand trip; met all the old and a lot of new fellow aeromodellists, and am now all out to prepare a little of the necessary hospitality that will be meted out next year when we see probably the biggest International invasion to these shores in the history of aeromodelling.

Whilst we were across the Atlantic another International contest was taking place at Arnhem, this being the Anglo-Dutch affair flown off on the 29th August. Our team, chosen from the Glider contests held at the Sywell Nationals, met a Dutch team in almost too good conditions for a glider competition, and though losing to the Hollanders by a substantial margin, showed that we have some good stuff. The almost total lack of breeze meant that at least one of our chaps could not get his model aloft as required (running with a heavily wingloaded job is not easy), but a very good time was spent by the boys. Results :—

Dutch	Koorn	108	English	Yeabsley R.	310·8
	Luxemburg	397·4		Wilson	230·2
	Vriend	402		Teasell	259
	Torkens	240		Gosling	115
		1147·4			915

Congratulations once again to **CROYDON & D.M.A.C.** on winning for the third year in succession the club championship, the "Plugge Cup", also to H. W. Revell of Northampton on his success in collaring the "Caton Trophy". With other National trophies going to such widely separated places as London, Bolton and Whitefield, the top events have spread around a bit better this year, which is to the good in national affairs.

Combining S.M.A.E. with open events, the **EAST MIDLAND AREA** held a meeting at R.A.F. Spitalgate on 15th August, but the weather did not play ball, and times were low in consequence. Results :—

Power	G. Moorby	Grimsby	1 : 10
	H. Hookham	Scunthorpe	42
	R. Gerard	Grantham	39
Rubber	T. Bootland	Scunthorpe	2 : 31
	L. Trotter	Scunthorpe	2 : 24
	J. Barker	Grantham	2 : 13
Glider	J. Barker	Grantham	4 : 02
	J. Storer	Newark	2 : 51
	P. Spalding	Grantham	2 : 22

The **LONDON AREA** inter-club finals were won by Park M.A.L. with an aggregate of 2493·5. Entries for the Junior Rally were low this year, winners being D. Reid (Hayes) glider; V. Howe (Upton) power; and J. Higgins (Brentford) rubber. Junior champion of the Rally was R. Kreeger of Brentford, who placed third in glider, fourth in rubber and fifth in the power event.

Despite a strong wind that prevented all but the hardiest modellers from competing, this year's **WELSH RALLY** held at Clyne Common was a very successful affair. Best time of the day went to Swansea member, R. Michael with a time of 4 : 21, his club also taking the club championship. Full results :—

Rubber	M. Vicary	Swansea	4 : 13
	R. Cole	Swansea	2 : 21·8
	T. Horseman	Mountain Ash	2 : 07
Glider	D. Bicknell	Bridgend	2 : 45·5
	D. R. Lyons	Port Talbot	2 : 13·5
	R. Benyon	Port Talbot	1 : 18·5
Power	R. Michael	Swansea	4 : 21
	R. J. Riding	Swansea	2 : 12
	D. A. Williams	Swansea	1 : 47·2

Anybody round Morecambe way lost a power model? Mr. J. Ockleshaw of 125, Tarbock Road, Huyton, near Liverpool rescued a very wet model from the incoming tide in Morecambe Bay on the 4th September, and would like the job claimed. Would-be aspirants are asked to provide a sketch and description of their model in order to identify.

A rather queer story is told of the cow that ate a model aeroplane found in a field, and after some time was found dead. A post-mortem was held, and it was discovered that a piece of wire from the machine had pierced the stomach and heart of the unlucky animal. Hard luck on the farmer in my opinion, cows being somewhat valuable animals these days.

A new club power record has been set in the **ENFIELD & D.M.A.C.** by Johnny Warren's "Frog" powered model, time 7 : 24 from a 20 second engine run. Latest indoor craze is for Jetex powered r.t.p. speedsters, top speed so far being 66 m.p.h.

The exhibition recently staged in Liverpool was well supported by the **MERSEYSIDE M.A.S.**, Messrs. Gosling and Hughes both collecting prizes. John Dutton won the junior championship, while senior honours were taken by I. S. Cameron of the Liverpool M.A.S.

The **BRIGHTON D.M.A.C.** had a couple of successes in the Southern Counties Rally, F. H. Boxall placing first, and S. Ridge second in the sailplane event. Good weather has been experienced that way, which enabled Isaacs to win a club event with his "King Falcon", time over 8 minutes.

The only decent flying day the **FIVE TOWNS M.A.C.**

HALFAX TROPHY (110 competitors)

1.	Dean, W.	Zombies	444
2.	Warring, R. H.	Zombies	303·2
3.	Kendall, J. W.	North Birmingham	302
4.	Watson, T.	Regents Park	290·1
5.	Knight, J. S.	North Kent	283
6.	Chester, H.	Hackney	276·6
7.	Tubbs, H.	Leeds	254·8
8.	Peters	Leeds	254·2
9.	Askew, R.	Merseyside	254·15
10.	Benson	Hull Pegasus	253·6
11.	Paul, G. A.	Bushy Park	246·4
12.	Foster, K.	Sale	235

TAILLESS CONTEST (14 competitors)

1.	Holden, C. M.	Bolton	294·5
2.	Farthing, L.	Plymouth	282·5
3.	Marshall, J.	Hayes	245·8
4.	Teasell, R.	Northern Heights	142·2
5.	Thomas, A. R.	Blackheath	127·5

FARROW SHIELD (36 clubs competed)

1.	Croydon & D.M.A.C.	1,118.2
2.	Belfairs M.A.C.	609·9
3.	Hayes & D.M.A.S.	596·3
4.	North Kent M.A.C.	542·2
5.	Whitefield M.A.S.	515·6
6.	Durham City M.A.C.	426·6
7.	Bradford M.A.S.	395·75
8.	Chelmsford M.A.C.	388·2
9.	Worcester M.A.C.	358
10.	Luton & D.M.A.C.	339·5
11.	Pharos M.A.C.	321·7
12.	Northampton M.A.C.	306·1

CIVIL SERVICE CUP (279 competitors)

1.	Bennett, D.	Whitefield	601·8
2.	Posner, D.	Kingsbury	525·5
3.	Sayer, H. S.	Dartford	458·8
4.	Fitch, W. K.	Northern Heights	444
5.	Agutter, J. H.	West Kent	412·1
6.	Kendall, R.	Surbiton	405·2
7.	Yeabsley, R. N.	Croydon	389
8.	Groves, N.	Surbiton	348·1
9.	Bolton, J. H.	Potters Bar	347·6
10.	Silver, R.	Regents Park	339
11.	Harris, L.	Croydon	300
	Latham, H.	Park M.A.L.	300
12.	Woollam, B.E.	Watford	289·8

CATON TROPHY

1.	Revell, H. W.	Northampton	1,480·6
2.	Haisman, B. V.	Wallasey	1,353·4
3.	Woodhouse, R.	Whitefield	1,337

PLUGGE CUP (91 clubs competed)

1.	Croydon & D.M.A.C.	1,091·61
2.	Whitefield M.A.S.	882·17
3.	Hayes & D.M.A.S.	862·58
4.	Luton & D.M.A.C.	801·12
5.	North Kent M.A.S.	778·8
6.	Belfairs M.A.C.	768·9
7.	Surbiton M.A.C.	748·49
8.	Birmingham M.A.C.	730·93
9.	Bushy Park M.A.C.	712·74
10.	Bristol & West M.A.S.	707·57
11.	Park M.A.L.	667·78
12.	Worcester M.A.C.	664·2

have had for some time was August 1st, when the club glider record "went for a burton" twice. D. Griffin, flying a "Tern" started the ball rolling with a flight of 12 : 41·2, but was followed shortly after by G. J. Roberts whose model clocked 14 : 27.

The same date saw the first contest of the newly formed **FOLKESTONE & D.M.A.C.**, the club record going with a bang first flight. R. Barlow's "Skyrocket" followed its namesake, and cleared off after 7 : 01. In the Wakefield class D. Francis' "Flying Minutes" won with a nice flight of 2 : 39.

The **NORTH KENT M.A.S.** glider record was unexpectedly boosted by J. Howard, whose model made a flight of 20 : 00·1 at the West London Rally, ending up at East Molesey some 11 miles away. J. B. Knight polished off the rubber contest at the Croydon Gala, and, teamed up with Howard—who flew a massive 10 ft. span glider—took second place in the team event. Several o.o.s. flights of 2–5 minutes were made by other members.

The first all control line event to be staged in the Midlands was put on by the **WALSALL M.A.C.**, many thousands of spectators seeing this type of flying for the first time. Highlight of the day was B. Hewitt's (South Birmingham) show in winning the stunt event, totalling 860 out of a possible 1,100 points. Speed events were won as follows :—

Class I	J. Jones	Birmingham	45 m.p.h.
Class II	Mitchell	Tipton	53·6 m.p.h.
Class III	B. Hewitt	South Birmingham	65·2 m.p.h.

A power rally, staged by the **MERSEYSIDE REGIONAL COUNCIL** of M.A.C.'s was held at Woodvale, when four events were scheduled. B. Litherland of Mersey won the power event with his Arden powered "Slicker", second place going to his clubmate N. Hampson. Other winners were—Precision, R. J. Ree (Wallasey); Control line, D. Jones (Moreton); and Concours, D. Marsh (Crosby).

L. Farthing of the **PLYMOUTH M.F.C.** was unfortunate to lose his tailless model on its second flight in the National contest. He finished second, and it is quite likely he would have won had his model been recovered to make a third flight. At an inter-club meet with the Torbay club, results were as follows :—

Glider	Blatchford	Torbay	3 : 42
	Gill	Torbay	3 : 40
	Crute	Torbay	3 : 04
Rubber	M. Richards	Plymouth	2 : 31·7
	P. Ash	Plymouth	2 : 09·2
	W. Squires	Plymouth	2 : 03·7
Power ratio	L. Long	Torbay	4·3
	L. Long	Torbay	4·05
	E. Godwin	Torbay	3·25

Members of the **READING & D.M.A.C.** covered themselves with glory at the Southern Counties Rally, winning the power, rubber and Wakefield classes. Frampton broke two club records, clocking 4 : 29 for the open duration figure, and 2 : 35 for the Wakefield class.

The **LEICESTER M.A.C.** have been going great guns lately in outside events. K. Stotherstook top honours at the Langar Rally, whilst Jack Marsh collared second place in the power competition at Leamington. Club control line event goes to Geoff Dunmore, Stothers being top man in the engine starting contest.

Flying scale power models are catching on with members of the **SALE A.C.**, G. Barnes now constructing a 5 ft. span "Miles Aerovan", whilst one hears rumours of a 12 ft. span "Brabazon" with eight coupled E.D. Competition Specials! Wait and see!!

The **AIR LEAGUE of the BRITISH EMPIRE** (Southampton Branch) are holding static exhibition of model aircraft at the Drill Hall, Highfield Lane, Southampton from the 1st to 6th November. Full details from J. Dynan, c/o Folland Aircraft Ltd., Hamble.

The Southern Counties Rally staged by the **PORTSMOUTH & D.M.A.C.** was well attended, and blessed with fine weather. One sailplane was reported going strong over the middle of the Solent—and this in an area well known for lack of thermals. Some fine flying was witnessed, detailed results being :—

Sailplane	F. H. Boxall	Brighton	7 : 23·2
	S. A. Ridge	Brighton	5 : 40·4
	P. J. Morrell	Worthing	5 : 38·4
Rubber	R. J. Jefferey	Reading	2 : 13·2
	Lewis	Southern Cross	1 : 53·1
	E. D. Gordon	Southampton	1 : 40·7
Power	H. L. Vincent	Bournemouth	89 points
Precision	A. H. Curtiss	Lymington	
Power	Wadhams	Reading	3 : 49·8
Duration	G. Stalkart	Gosport	3 : 31·5
	J. J. Mountain	Portsmouth	2 : 24·9
Control line	W. Taylor	West Essex	804 points
Stunt	R. Prentice	West Essex	802 ,,
	P. Cook	Southampton	749 ,,

Record bashing has been taking place in the **HAYES & D.M.A.C.**, the glider figure being broken twice in seven days. "Blondie" Brayshaw set a figure of 10 : 36, only to have the record taken away from him a week later by P. Flower with a flight of 15 : 42·6, made at the West London Gala.

Taking time off from official duties, **BLACKHEATH M.F.C.** secretary Bill Bishop, and press secretary P. Bell had a scratch competition between themselves! The fun ended with the loss of both machines, Bill clocking 4 : 53 and Pete 5 : 27. The club tailless event was won by A. R. Thomas with an aggregate of 2 : 51, followed by Holmes and Dyball with 2 : 47 and 2 : 30 respectively. Junior member Davidson has claimed a new club tailless record of 2 : 50.

Indoor r.t.p. speed is the current craze of the power boys in the **ST. GEORGES HEIGHTS M.F.C.**, and they've even had an Arden speed job on a 7 ft. line making spare rings

Another "rogues gallery" from Clubland This time the Enfield and District M.A.C

for Saturn! Exits become in great demand when the laps exceed two per second!!!

Complete with 1948 season wind, the Annual Rally of the **NOTTINGHAM AERO COUNCIL OF AERO-MODELLERS** was held at Langar on 19th September. 245 competitors took part in the four contests, and nearly 3,000 spectators watched the show. P. Russell delighted the crowd with his control line flying, and some pretty "angling" was seen with some gliders. An especial welcome was extended to Wakefield winner Chesterton, who helped his club mates clean up the rubber event. Full results :—

Rubber	E. W. Evans	Northampton	7 : 00·5
	H. W. Revell	Northampton	6 : 00·5
	R. B. Chesterton	Northampton	4 : 42·3
Glider	K. L. Stothers	Leicester	3 : 15·4
	J. Barker	Grantham	2 : 58
	M. Wilkington	Northampton	2 : 36
Power	K. L. Stothers	Leicester	3 : 59·6
	Marshall	Boston	3 : 06·2
	Barry	Northampton	3 : 03
Control line	P. Russell	Worksop	167 points
	Bridget McCann	Worksop	70 "
	Barry	Northampton	54 "

Rally Champion K. L. Stothers, Leicester.

Over 100 entries were received from 12 clubs for the **HUDDERSFIELD AIR LEAGUE M.A.C.** Annual Rally on 5th September, when bright but windy weather prevailed. Honours went around a bit as follows :—

Glider	J. W. Arden	Ashton	8 : 01
	M. O'Donnell	Whitefield	7 : 00·6
	R. Askew	Cheadle	6 : 06·3
Rubber	S. Eckersley	Bradford	6 : 17
	H. Tubbs	Leeds	5 : 51·4
	V. R. Dubery	Leeds	5 : 32·8
Power	J. W. Arden	Ashton	4 : 44·6
	J. Hagan	West Yorks	4 : 07·4
	H. Barnforth	Cheadle	3 : 51
Control line	B. Whittingham	West Yorks	

The **CHEADLE & D.M.A.S.** have secured the use of a bowling green behind the "George" for control line flying (11·3 seconds to the bar) and plenty of stunt work has been seen. No wonder! A display given at Ringway during Battle of Britain week was rather spoilt by being put smack in front of the gate—with no ropes. The Scotch Piper band marched straight through the circle amid loud cries of "mind the lines".

With lousy weather for the second time running the **SEVENOAKS & D.M.A.C.** gala meeting had a good attendance, and good times returned in spite of conditions. J. Agutter of West Kent won both the glider and power events, N. G. Marcus of Croydon taking the rubber class.

The R.A.F. Benevolent Fund will benefit by £40 as a result of the well attended **WEST LONDON RALLY** held under ideal conditions at Langley on 5th September. The glider event produced a glut of thermals and many flyaways, three competitors recording maximum (5 minute) flights in each round. The final placing was decided on a fly-off. Three competitors record flights of over 1,000 seconds, best being R. Mead (Northern Heights) 20 : 24·2. Programme prizes still unclaimed are Nos. 797 and 939. Results :—

Glider	E. Penyar	Croydon	10 : 03
	D. Jones	Watford	10 : 00
	D. Posner	Kingsbury	10 : 03

(Decided by fly-off).

One distinguished visitor at the Southern Counties Rally was Sir A'lio: Verdon Roe who took a lively interest in proceedings. In view of the reference to Sir Alliot in Harry Harper's article in this issue the picture is of particular interest. Once an aeromodeller, always an aeromodeller!

Rubber	N. Marcus	Croydon	9 : 38·2
	R. Copland	Northern Heights	8 : 15·5
	McPherson	Northern Heights	7 : 10·8
Power	B. J. Knight	North Kent	10·4 ratio
	S. Collins	Northern Heights	9·97
	N. Marcus	Croydon	9·79

Gala Champion N. Marcus, Croydon.

The **WIMBLEDON & D.M.A.C.**, now reformed for just over a year, has a membership of 55 keen fliers. Like many clubs these days, control line prevails, but some other types of flying are witnessed, hence the new club glider record of 11 : 58 to the credit of R. E. Altham.

The **LITTLEOVER M.A.C.** had a session on 15th August, when W. Brunson clocked 9 : 12 o.o.s. with a Mick Farthing. Not seen since!

Another gala report is from the **BELFAST M.F.C.** who held a show at Nutts Corner 'drome on August 15th. Over 50 competitors came from all parts of Ireland, with the following results :—

Rubber	N. Osbourn	2 : 26·6
	G. W. Drew	1 : 59
	J. B. Millar	1 : 44·7
Power	M. Stuart	1 : 10·3
	C. Austin	1 : 03·75
	H. McCourt	54
Control line Stunt	G. V. McDowell	

Helicopters and free flight (indoor) seem to be the rage at present with the **EWELL M.C.** and even rotorplanes are being built. The Helicopters range from good looking scalish

I.O.M. CONTEST RESULTS

TRAVIS TROPHY (Power)	Wilson, A. H.	Hayes	4 : 24·7
	Exley, D.	Barnsley	2 : 53·9
	Poile, W.		2 : 53·2
PASCOE CUP (Rubber)	Marshall, J. D.	Hayes	1 : 54·9
	Goodfellow, S.	Blackpool	1 : 51
	Wilson, A. H.	Hayes	1 : 10·3
PHILLIPS CUP (Glider)	Marshall, J. D.	Hayes	2 : 46·1
	Goodfellow, R.	Blackpool	2 : 27·9
	Wilson, A. H.	Hayes	1 : 51
CUBBON CUP (C/L Speed)	Wood, J. B.	Croydon	62·2 m.p.h.
	Wright, K. G.	Blackpool	56·2 ,,
	Walker, S. F.	,,	52· ,,
AEROBATIC C/L	Walker, S. F.	Blackpool	118 points
	Teare, D.	Manx	85 ,,
	Sheard, T.	Manx	83 ,,
PRESIDENT'S CUP (Tailless)	Marshall, J. D.	Hayes	2 : 48
	Wilson, A. H.	Hayes	2 : 42
	Poile, W.		1 : 18
JET	Goodfellow, R.	Blackpool	1 : 42·9
	Wood, J. B.	Croydon	1 : 16·2
	Comber, T.	Liverpool	1 : 14.5
CONCOURS	Poile, W.	Power	
	Lovett, J. E.	Glider	
	Marshall, J. D.	Tailless	
TEAM CONTEST	Hayes & D.M.A.C.	1,687 points	
	Blackpool & Fylde	1,154 ,,	
	Manx M.A.C.	749 ,,	
GOVERNOR'S CUP CHAMPIONSHIP	Wilson, A. H.	Hayes	928 points

types to horrible stick jobs with large, flapping rotors, but even these have set up times of 40 seconds plus. Club records stand as follows :—

Glider	**H. Bromley**	**4 : 28**
Rubber	**A. Armstrong**	**1 : 18**
Power	**L. Clement**	**9·28 ratio**
Control line Speed	**M. Struik**	**44 m.p.h.**
Indoor r.t.p.	**W. Tinker**	**1 : 18·5**

Anyone want to take up correspondence with overseas enthusiasts ? If so, write to either Dennis C. Boyd of Paraparaumu Beach, Paraparaumu, New Zealand, or John Ditton, Box 508, Red Cliffs, Victoria, Australia. Both lads are around the 16 mark. Same goes for Neville Elphick of 60, Beach Road, Bondi Beach, Sydney, Australia.

And for those nearer home, A. R. Williams of "Treffgarne", Robeston, Wathen, Narbeth, Pens., and M. Staples, 11, Townsend Road, Chislehurst, Kent, wish to form model clubs in their district, so anyone interested—get the pen out and write.

Well chaps, that's the lot for this month, and thank goodness I have caught up on the conglomeration of reports that awaited my return. But what a job it's been getting down to work once again . . . that's the trouble of gallivanting around, it puts you right off your stroke ! Keep 'em flying.

The CLUBMAN.

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(Continued on page 672).

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