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World Champs Digest

September 1960



2/-

The most envied careers in the country begin at Cranwell, where today's R.A.F. trains tomorrow's leaders

In any group of people there is usually one leader; the rest are followers. This natural order of things is upset at Cranwell. Here everybody is a leader; there are no followers. Nor is this any accident. Many of the R.A.F.'s future commanders will come from Cranwell. Every single cadet is hand-picked, whether he is to become a pilot, navigator or an expert in logistics or administration. To be a Cranwell cadet an applicant must be obviously cut out for success, a head-above-the-crowd man who is a leader and intends to go on that way. The cadet is trained to think objectively, to get to the nub of a problem and disregard the frills, to see his decisions are carried out with disciplined efficiency. There is no standardisation, no ironing out of personality: he is, and remains, an individual, with his own methods of achieving the right results.

The Cranwell Philosophy Because Cranwell is a Service academy, and exists for a Service purpose, one is not always aware of the remarkable academic job it does. Its task is to produce not merely trained officers but balanced personalities. Visiting headmasters are impressed by the emphasis on arts subjects and the fact that Cranwell's syllabus, although predominantly a scientific one, would not be complete without them.

Life at Cranwell The cadet's first year is the most challenging from the academic point of view: he learns under some of the very best instructors and lecturers but he alone is responsible for keeping up to the mark. In the second year, his specialised training takes up more of his syllabus but he does have a little more breathing space to enjoy the sports, activities and societies of the College. The Cranwell sports list reads like an Olympic programme and there are societies for anything from pot-holing to fine arts. Initiative is developed by encouraging cadets to organise their own expeditions—mountaineering, crossing the Sahara desert or touring America. In their third and final year cadets complete their training; pilots and navigators, for example, are awarded their wings.

The R.A.F. spares no pains to give the Cranwell cadet the finest training in the world—and no small part of this training is the encouragement at all times to develop and prove his own abilities. He, after all, is as big a part of the R.A.F.'s stake in the future as are aircraft and missiles. When the cadet leaves he takes with him the unmistakable stamp of his training and his assurance. He is a old Cranwellian.

Educational requirements Applicants must be 17½–19½, and hold G.C.E. (or equivalent) in English language and four other subjects (two at 'A' level) or (until October 1960) pass the Civil Service Commission written examination.

R.A.F. Scholarships are open to boys in the U.K. or at British Forces' schools in Germany over 15 years 8 months to help them to stay at school until they are qualified to enter Cranwell.

There are no fees at Cranwell. In fact, cadets are paid during training. For details of entry and of R.A.F. scholarships write, giving date of birth and educational qualifications, to

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3/16

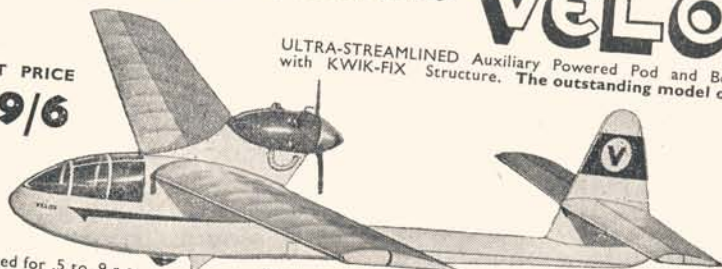
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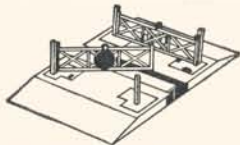
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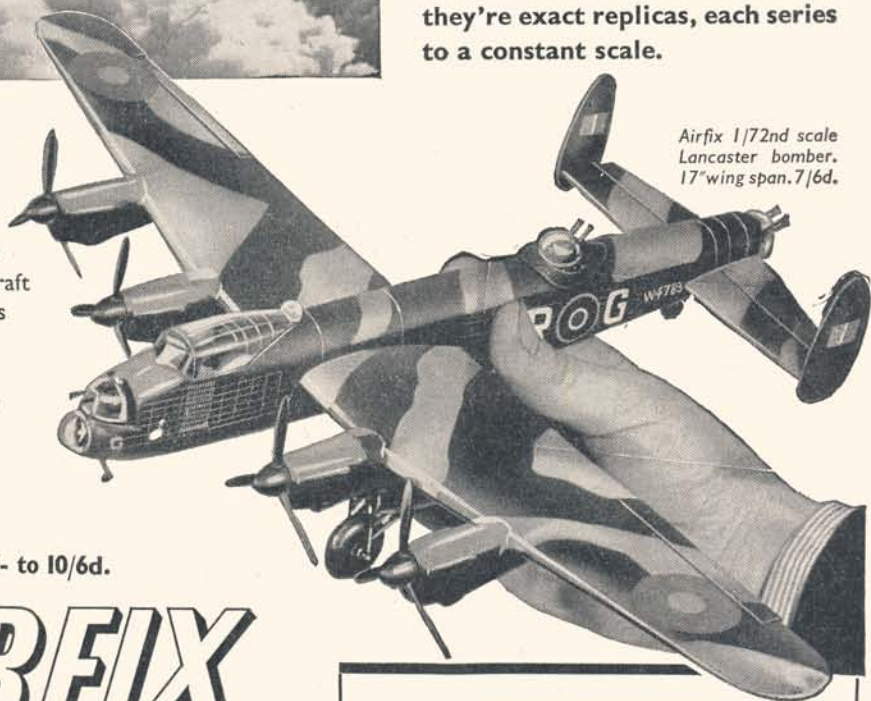
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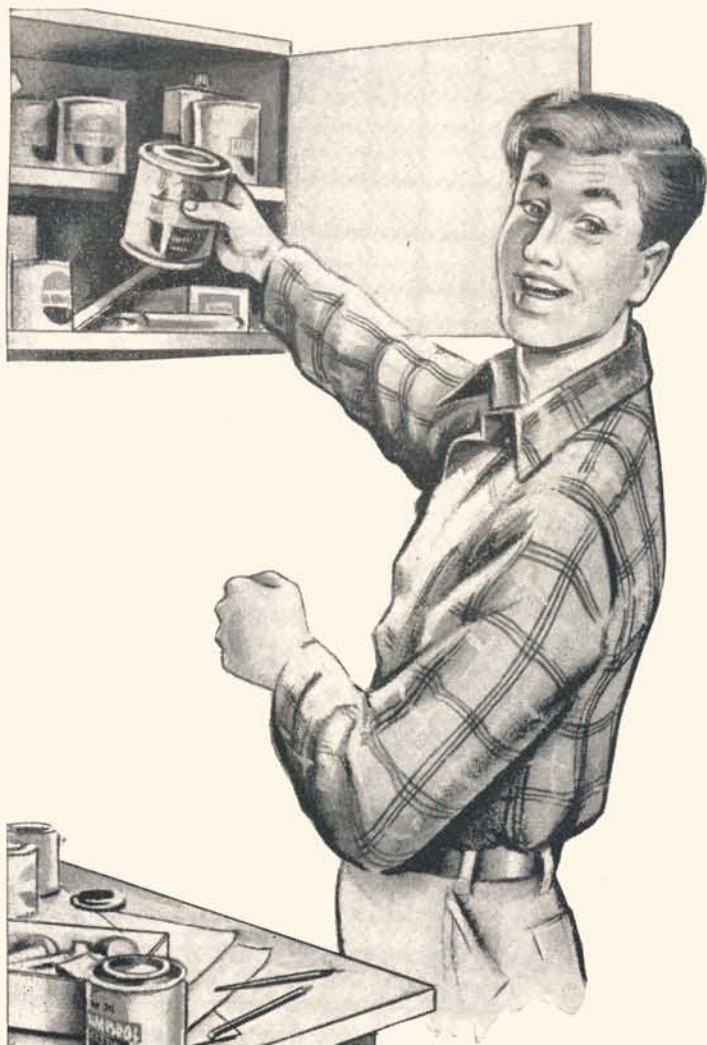


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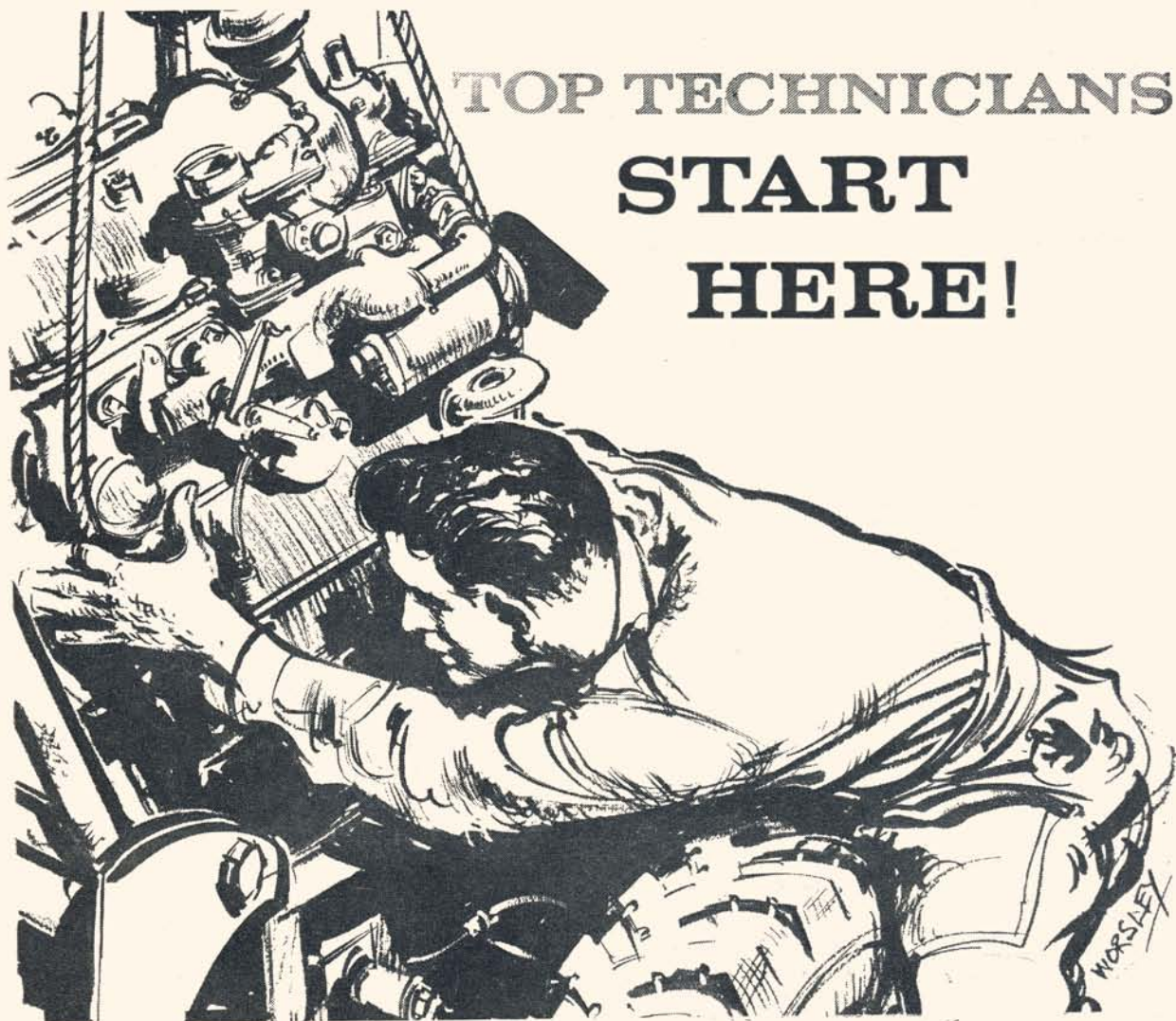


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Boy Killed When Model Plane Hits Power Line

A 16-year-old boy "piloting" a model plane was electrocuted, and another of 15 standing nearby was severely burnt, in a paddock at Earlwood yesterday when the plane struck a 132,000-volt overhead power cable.

Two other boys sitting on a log 20 yards away were badly shocked. The dead boy's pet kelpie dog was killed and scorched. The flash of electricity scorched the grass for a radius of 20 feet around. Killed was **John Butler**, For. Street, Canterbury. The injured boy is **Reginald Woodley**, of Amy Street, Campsie, who re-

led by two wires, struck the power line there was an explosion heard two miles distant. Parts of the model were hurled 150 yards. Eye-witnesses said a vivid flash was followed by a "deafening" explosion and then a dense pall of black smoke. Nearby residents ran from their homes. The dead boy was flying

wards, and his clothing set alight. One of the eye-witnesses, Mr John Evans, of Gornall Avenue, Earlwood, who lives about 100 yards from the scene, raced to the boys' aid. He smothered Woodley's burning clothing with a blanket, and then dragged off his jeans. Mr Evans said, "I knew that the other boy was beyond human aid."

THIS DISTRESSING THREE-column story, only a small part of which we are able to reproduce from an Australian newspaper, tells its own tale in a more dramatic way than any other warning we have published on this same subject. Regular readers will know how many times we have pointed out the horrible risks taken by control line fliers operating anywhere near overhead power lines. The model does not even have to come into contact with the cables (particularly in damp weather) for a high voltage discharge to take place and although rubber handles and thick soled shoes have saved some lives, the number of fatalities mounts steadily over the years at an alarming rate. To all aeromodellers we say "Take care, —fly safely,—avoid power lines." The little sketch we have restyled from the official AMA Journal cover published some years ago, should be adopted as the "safety first" sign by all who use steel wires.



**Model
safety
begins
right
here**

S.M.A.E Lottery

Promoted by Dave Posner (long before he qualified as a member of the 1960 British team, we might say) the S.M.A.E. Lottery in aid of the International Contest Fund will be drawn on November 12th. Ticket receipts for voluntary donations of 1s. each, are now on sale and entitle the holder to participate in the draw for 1st prize of £100, 2nd prize of £50, 3rd prize of £25 and 5 consolation prizes of £5 each. We have no need to emphasise the importance of this fund-raising scheme and urgently recommend affiliated clubs to play their part in selling as many tickets as possible.

Incidentally there seems to be some doubt in many of our readers' minds as to where the S.M.A.E. offices are actually located. When we reproduced a letter in our July edition, which quoted Ken Brookes' personal address in connection with a Society matter, the result was that Ken was inundated with enquiries for membership and letters on Society matters. All correspondence should be directed to the S.M.A.E., Londonderry House, 19 Park Lane, London, W.1.

Congratulations!

The F.A.I. have now ratified the claim for international record No. 21 (distance in a straight line for radio controlled models) made on May 8th this year by the team of Charles Dance and Wally Skeels. The story of this great cross country flight from Lympne Airport to Sidcup over a distance of 73.223 kilometres was told in full detail in our July issue, and we feel sure now the record is officially recognised, Charles, Wally and the North Kent Nomads M.F.C., can feel very happy at putting the name of Great Britain among the list of world records for one more category.

Successful negotiation

Last December we drew attention to a campaign by Mr. E. G. Cotton of Thames Ditton, Surrey, which he had conducted on behalf of local aeromodellers for the provision of adequate model flying facilities in the district of Esher. We are very happy to report that Mr. Cotton's efforts have met with success after a long fight with officialdom and that a new club has been formed in this district, known as the Esher and District M.F.C.,



The Federation of Model Aero Manufacturers and Wholesalers has prepared this blue/black/yellow poster measuring 18 in. by 28 in. for free issue to clubs. Local printers can add in the relevant details, or they can be added in poster colour by hand. A charge of 1s. per copy is made after supply of the first ten, and they can be obtained from the Hon. Secretary, F.M.A.M.W., 156 Marine Parade, Leigh on Sea, Essex

with their own permanent flying circles, pictures of which appear below left. It is impossible for us to convey the full story of Mr. Cotton's battle here but we quote from his letter telling us the good news, as follows:

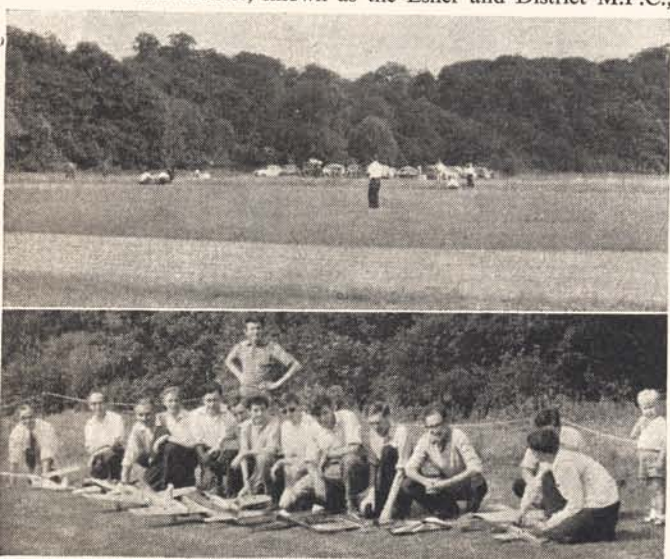
"A great deal of time was spent in corresponding and telephoning the Home Office. We visited various police stations many times and gleaned information on points of law. A private solicitor was consulted. The council solicitors tried to frighten us out of our lives on law but without success as we were forearmed. Seven or eight councillors were lobbied on numerous occasions and gradually educated on the subject of model aircraft. A local residents association was enlisted (the chairman of the club and myself were promptly co-opted onto their committee) and gave support to our campaign. We had good publicity in the local press. The chairman and myself went to Council meetings and after listening to the opposition ironed out their objections. The whole business lasted exactly twelve months, but we now have our first runway constructed and in use."

There is of course a lesson to be learned from this story and we hope that Mr. Cotton will be able to help others in a similar situation for undoubtedly his experience is invaluable to the model movement. We must congratulate him for standing so firm and refusing to be put off by arguments from official quarters.

On the cover

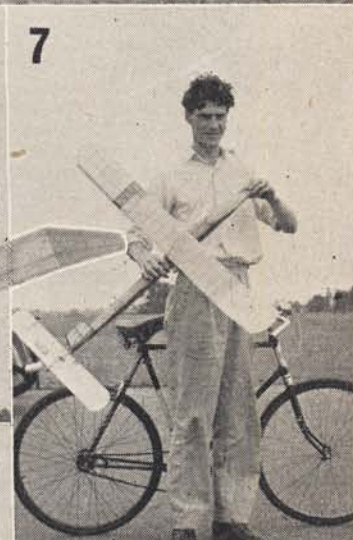
From the avourable comment we have received, it is obvious that our "Model" cover (July edition) met with the approval of a very large number of our readers. We follow now with a flash-back to the British Nationals, showing two of the many impressive free flight flying scale models entered in competition. R. Hackett of Chichester is seen with his 1/6th scale Bucker Jungmeister, resplendent in Swiss markings, powered by a Frog 80 and J. Simmance is standing with his finely detailed Sopwith Snipe, made to 1/4th scale for a Frog 150R. This model has an ingenious pendulum control stabilising system and is colourfully decorated as one of the aircraft operated by No. 4 squadron Royal Australian Air Force.

At left, the Esher club circuit, near the main London-Portsmouth road is very popular thanks to the efforts of E. G. Cotton (see "Successful negotiation"). New club has been formed, and a typical turn-out is seen in lower photograph





(1) P/O Geoff Byrd was in both F.A.I. and Open Power fly-offs. (2) Scale winner A. C. Fernyough with Mills 75 Mercury Tiger Moth. (3) Major Johnson's winning Class B racer (McCoy 29)



(4) Ten-year-old Thunderking launched for F/Lt. Peter Shrimpton. (5) F/Lt. Noel Falconer has turned to glow at last! (6) New A/I record was set by Sgt. Jackson. (7) Ex-Sgt. Norm Elliott continues '60 successes by winning Thurston Trophy. (8) S.A/C. Goodchild with A.M.15 Gasser, Babcock Esc., Cobb beep box. (9) Hunter pilot F/Lt. R. Lawrence failed to qualify well-made control-line Cierva C.30a with 52-in. rotor. (10) Scramble winner A. A. Funnell. (11) Open Power winner S.A/C. Sharp had snappy A.M.15f ast climber. (12) Class A (F.A.I.) T/R winner A/A Chappell and C.A/A Martin. (13) F.A.I. Power





R.A.F. Championships

THE ELEVENTH UNITED KINGDOM Championships for members of the R.A.F. M.A.A. were held on July 2nd/3rd at Debden by permission of the Officer Commanding, S/Ldr. W. L. Martin. This was probably the last of this series of meetings to be held at Debden and it was especially fitting that it should have been one of the happiest and best attended of all the Championships. Weather was superbly warm and still, loaded with thermal activity and in all events except radio, the standard of flying indicated a marked improvement.

Such were the conditions that when for example Sgt. B. Jackson of Yatesbury launched his Graupner Hobby A/1 glider into a thermal and then realised that his D/T was not set, he called for a timekeeper to observe what might be a record flight and 14 minutes, 5 secs. later (the model having been airborne 4 minutes before a watch could be spared) the model landed in the airfield! Undoubtedly, the most successful of all the many events was the one hour scramble, an innovation in the programme but one which will certainly now become a regular feature. The scramble was spectacular for the simultaneous launch of 21 models ranging from a McCutcheon helicopter to Geoff Byrd's original "Byrdie" A.P.S. design and for a long time it seemed to us, (trying hard to keep track of the multitude of models soaring

winner Sgt. Channon lets go. (14) S/T Andy Anderton, Open Rubber winner and one of his two recovery bikes. (15) S.A./C. C. Andrews, top in Concours with superb "Spectre" A/2. (16) PAA packet by S.A./C. Guppy did well in Scramble. (17) Contest Director and RAFMAA Secretary, S/Ldr. Bill Drinkell took time off for a spot of J.A. (18) Mrs. Grahame-White presents her Trophy to Cranwell. (19) Flying Training Command "pits". (20) Phillip Godfrey takes a close look at dad's detailed Proctor.

around in the still air for official flights ranging between 30 seconds and 2 minutes) that the unconventional models were leading the field. Certainly the McCutcheon helicopter has a great advantage. It does not drift, it can be set for a regulated flight period of 1:50 and its only disadvantage is the likelihood of mechanical failure, as actually happened to keep S.A./C Andrews on the ground for a handicap of almost 10 minutes, while he made repairs. Through the field came an old faithful *Tomboy* operated by one of the youngest competitors, Air Apprentice Funnell from Halton and when the final whistle went to give relief to everyone, timekeepers included, it was found that more than 330 flights had been made in the one hour period!

Pilot Officer Geoff Byrd took quite a share of the silverware at prize giving and showed that although operating those same models we saw him using five or six seasons ago, he is still a top class, all-rounder. Despite his stout efforts for Technical Training Command Station, Melksham, the newly introduced Claude Grahame-White Trophy, a fine cup which has been restored after its original presentation in 1909, went to R.A.F. Cranwell, which was well represented in all events. Mrs. Grahame-White came personally to present the trophy which bears her late husband's name and we are sure that this award for the top R.A.F. Station will be hotly contested each year. Serving modellers may not realise that it is no longer necessary to qualify for the Championships at Command level and that individual entries are acceptable on the field. We know that there are a lot of lone hands in the Service who still do not appear on the entry list and are sure that the organisers would like to see even more at the next event.

Results

Victor Ludorum: P/O Byrd.
Champion Station R.A.F. Cranwell.
Radio Control

1. F/Lt. D. Andrew (Edinburgh U.A.S.) 195 pts.
2. SAC Goodchild (Shawbury) 85 pts.

Free Flight Scale

1. AC Fernyhough (Weeton) 57 pts.

Combat

1. SAC Phin (Cranwell)

Team Race

(A) A. A. Chappell (Locking) 6:31

(B) Major G. Johnson (Feltwell) 11:16

F.A.I. Power

1. Sgt. Channon (Scampton) 360+3:30

2. P/O Byrd (Melksham) 360+2:14

Open Power

1. SAC Sharp (Marham) 360+4:56

2. LAC Colling (Norton) 360+2:07

3. P/O Byrd (Melksham) 360+1:51

A/2 Glider

1. SAC Everitt (Leconfield) 5:56

2. SAC Macmillan (Colerne) 5:45

Open Glider

1. P/O Byrd (Melksham) 5:56

2. J/T Gallagher (Cranwell) 5:15

Free flight Scramble (1 hour)

1. AA Funnell (Halton) 33:05

2. P/O Byrd (Melksham) 31:42

3. LAC Colling (Norton) 26:09

Wakefield (Thurston Trophy)

1. N. Elliott (C.M.) 360+6:16

2. G. Fuller (St Albans) 360+4:27

Open Rubber

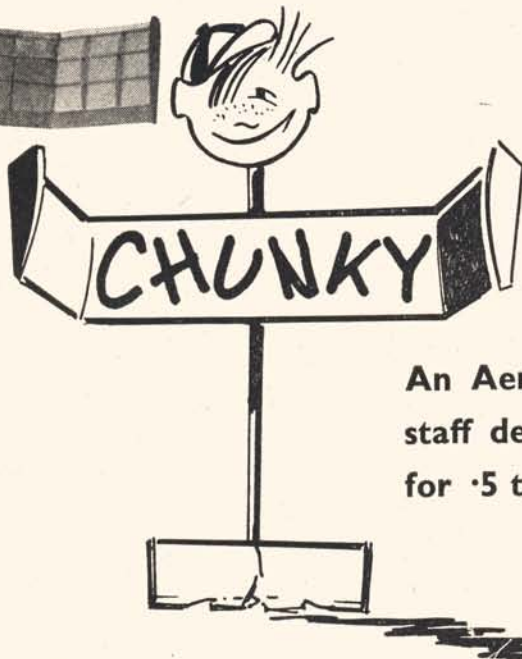
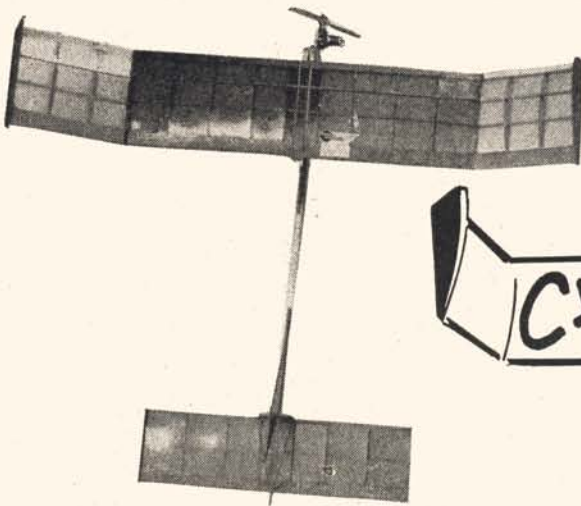
1. S/T Anderton (Swanton Marley) 360+5:04

2. SAC Sharp (Marham) 360+2:25

3. Flt/Lt. Parker (Lindholm) 360+2:15

Jetex

1. Flt/Lt. Franklin (Cranwell) 4:34



An Aeromodeller
staff design
for .5 to .8 c.c.

Cheap to build !

Easy to fly !

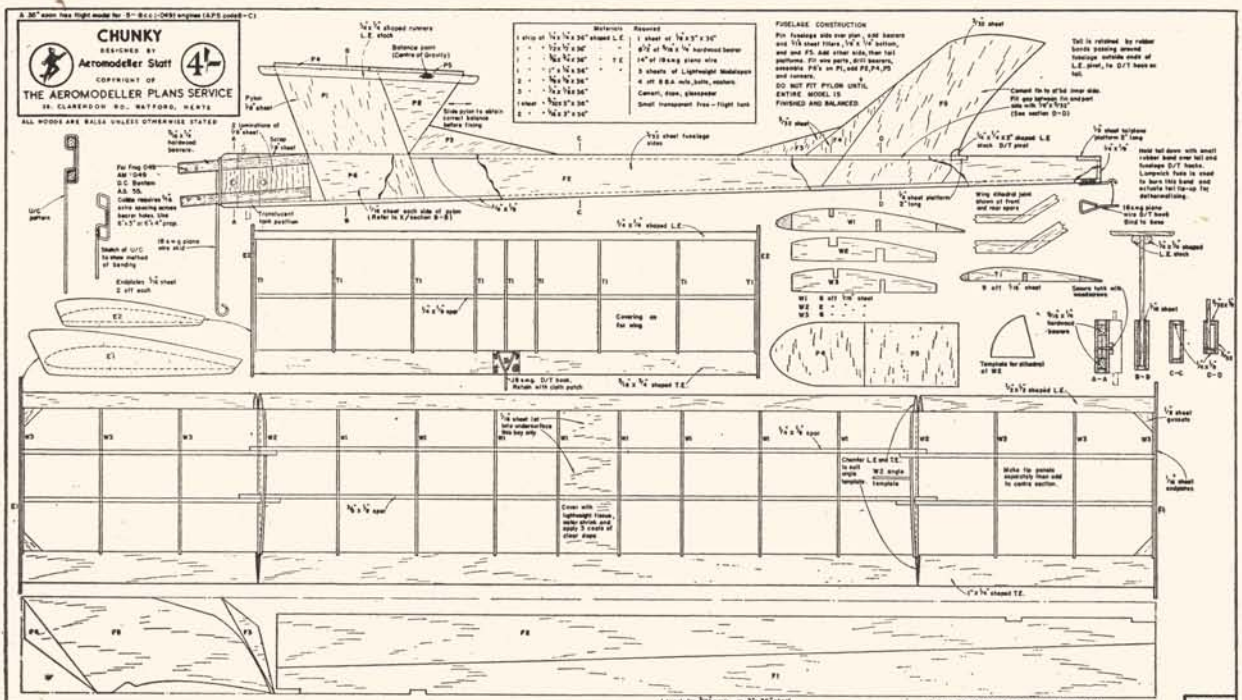
Perfect for the novice !

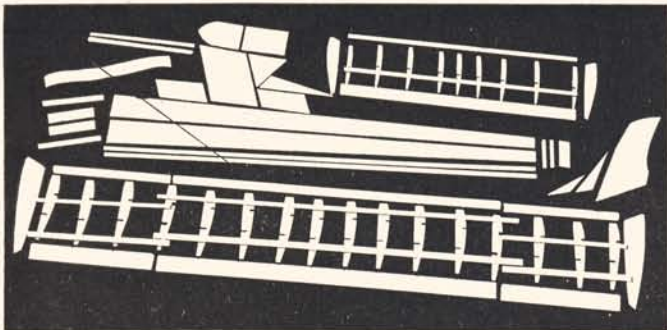
THE NEW .049 cu. in. engines are rapidly becoming popular with newcomers to our hobby, and many such novices have requested that we provide them with a special design to suit the new power units.

We realise that for real contest performance, any .049 powered model should weigh around 4-5 ounces, have light wings, and be trimmed for a near vertical climb. Let us state right at the beginning that *Chunky* is not of such a breed. Here we have a "toughie", easy to build very easy to fly, and still having good performance. We checked the prototype with the weakest of the .049's (no names—no pack drill!!!) and at a total weight of 8 ounces. By selecting such extremes we know that *Chunky* will fly well. The careful modeller can whittle the weight down to 6 oz. through use of medium/soft balsa and a "hot" motor will give best performances.

One must first study the plan thoroughly, with reference to these instructions to completely understand the method and sequence of construction. The model has been designed to be built on a standard schoolboy budget, so if you want to keep cost to a minimum follow the parts layout given on the plan. Fuselage sides F1., F2. are traced from the drawing using a straight steel edge and soft pencil. The tracing is turned over and placed on the 3/32 in. sheet and with a hard pencil this time, the outlines are followed, reproducing the fuselage sides on the wood. F1 and F2. are now cut out, again using the straight edge. Engine bearers should be cut to length from 5/16 in. x 1/4 in. hardwood. The right hand fuselage side is pinned over the plan and the bearers double cemented over this in their angled down position. Two layers of 1/8 in. sheet fill in the space between bearers, the outline for these being traced from the plan. Note that the wood grain here must be vertical. Once cemented the whole should be held in place with pins until quite dry. A length of 1/4 in. x 1/4 in. strip forms the bottom of the fuselage side, pins being placed either side to hold it vertical. The fin F5, should be traced and carefully drawn onto the 3/32nd. sheet as in the layout drawing, to economise on wood. F5. is cemented directly onto the *right hand* fuselage side, the bottom of the fin touching bottom of fuselage. A small length of 1/8 in. x 1/8 in.

FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN PET 768, PRICE 4s. PLUS 6d. POST FROM PLANS SERVICE.





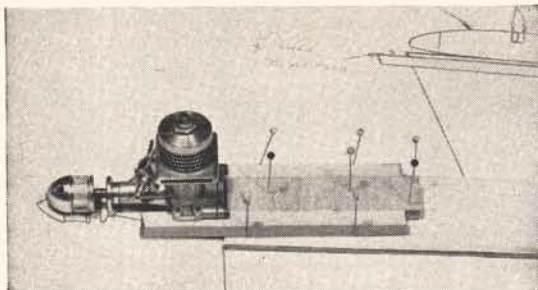
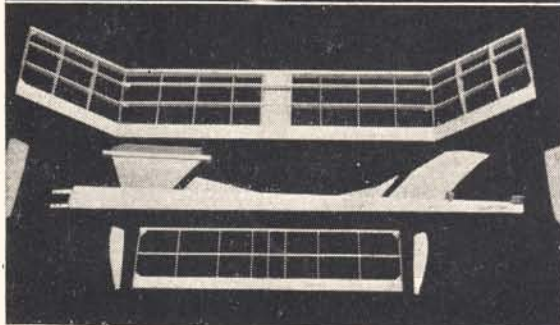
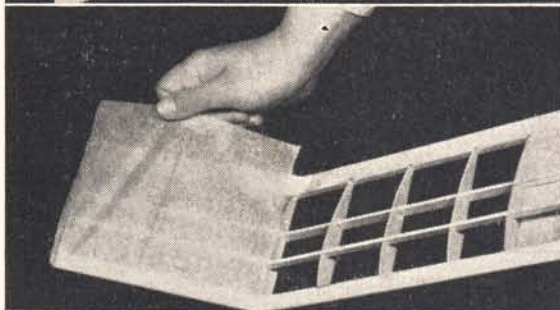
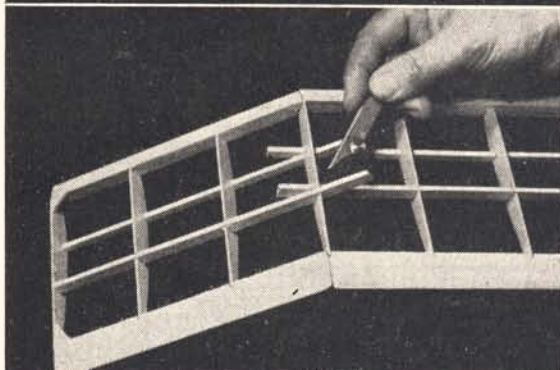
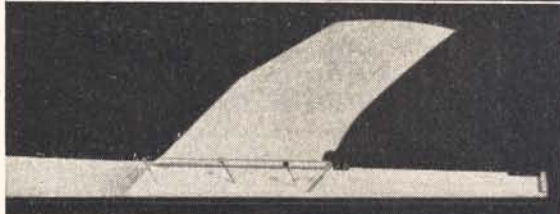
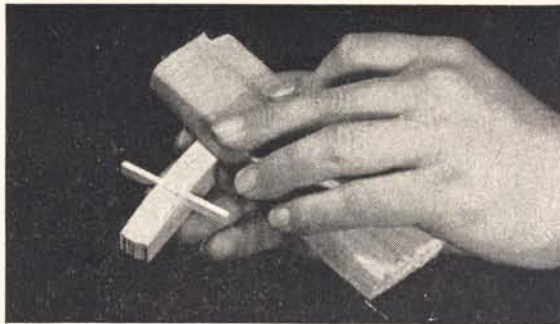
Above, the layout of all parts required to make Chunky. Right, top—glasspapering the wing ribs with abrasive wrapped around balsa block, and a length of $\frac{1}{4}$ by $\frac{1}{2}$ strip in spar slot to keep ribs in position. Next, fin being cemented onto starboard fuselage side and held until dry by pins. Base and stern pieces are already in position.

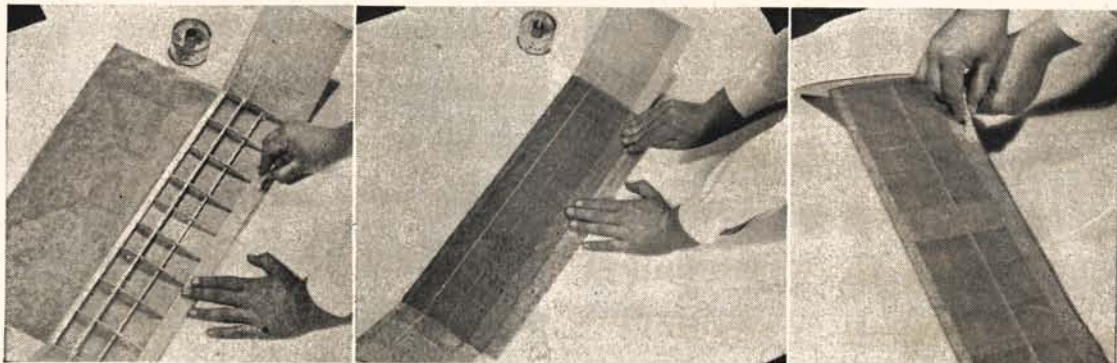
strip fits vertically at the extreme end of the fuselage. The left hand fuselage side can now be cemented in place. A $6\frac{1}{2}$ in. length of $\frac{1}{4}$ in. x $\frac{1}{2}$ in. strip is cemented between fuselage sides alongside and in front of the fin (trimmed to $5/32$ x $\frac{1}{2}$ at this part) providing a support for parts F3., F4. which are duly traced, cut, and cemented in place. The two platforms for the tailplane can be cut from scrap strip or $\frac{1}{8}$ in. sheet. They fit into two cutouts aft of the fin, and must be at right angles to the fuselage side. A short length of 18 s.w.g. piano wire is bent into the hook shape shown at the rear end of fuselage drawing, and then attached to fuselage with strips of thin cloth and plenty of cement.

It should be mentioned here that the pylon and fuselage top are *not* cemented in place until the centre of gravity has been accurately positioned and the pylon is slid along to correct this to that of the drawing. To build the pylon, all parts P.1-P.6 are traced and cut out. P.3 can be put to one side as this will not be needed yet. P.1 and P.2 are cemented together absolutely flat over the plan. Two pieces of 1/16 in. sheet P.6 fit, one either side, at the bottom of the pylon. Pieces P.5 and P.6 are similarly cemented together flat over the plan. When dry, a centre line is drawn lengthwise down the pylon top (P.4 and P.5) and this is cemented to the pylon upright with a match box on either side, until dry. Wing band retaining strips are cut from $\frac{1}{2}$ in. shaped excess tailplane leading edge stock and cemented in place either side of the pylon upright/top junction, with about $\frac{1}{2}$ in. extending at each end. While the $\frac{1}{2}$ in. shaped strip is being used another 2 in. length can be cut to fit in the cut-out at fin base and act as a tailplane stop and pivot. The fuselage and pylon are now complete but for a few details such as the wire skid which is made from 18 s.w.g. (or 16 s.w.g. if you have any) and requires a little skill in bending. It is held in place by strips of cloth and plenty of cement as before. The drilling of the engine bearers entails placing the engine squarely on the bearers with rear of crankcase just forward of landing skid. With a friend holding the engine and model firmly, two holes can be drilled and then bolts inserted to hold the engine while other holes are located. Forward of the pylon and above the upper bearer, can be filled in with scrap $\frac{1}{4}$ in. sheet, and sanded down to follow fuselage contours. A small free-flight tank of the Warneford or M.S. type can be fitted to the port side of fuselage nose, being held by small screws.

Before commencing wing construction, plywood wing rib templates must be made, three for the main wing. W1, W2, W3, are traced onto ply and cut out with a sharp modelling knife. The templates are sanded accurately to correspond with the outlines given on the plan, and are then cut or drawn round, on 1/16 in. sheet. Eight W1 ribs

Right, centre, cutting away excess spar at dihedral joint. Next, wrapping over tissue on one wing tip and pulling down onto pasted TE if tips are covered first. Bottom, completed parts before covering; note endplates, attached after covering. Below, bearers cemented in place, the space between is filled in with two layers of $\frac{1}{8}$ in sheet





Above, left, after covering lower wing surface, uppersurface TE/LE and outer ribs are pasted and tissue pulled down, centre, Far right shows pasting down of overlap

are required, two W2, and six W3. The ribs are cut out, and pinned together as shown in photo, making sure that bottoms of all ribs are level and the ends are lined up. A short length of $\frac{1}{8}$ in. x $\frac{1}{8}$ in. strip is placed in the spar slots to keep ribs in position; then with glasspaper wrapped around a block of balsa or matchbox, abrade to make all ribs identical with each other and one of the ply templates. The pieces of strip balsa are removed and an $\frac{1}{8}$ in. flat file inserted to square up slots.

The 1 in. x $\frac{1}{8}$ in. shaped trailing edge strip can now be cut to length for the centre section and notched to take ten ribs. Shaped $\frac{1}{8}$ in. x $\frac{1}{8}$ in. leading edge can also be cut to length. Greaseproof or tracing paper should be laid over the wing plan if it is wished to preserve this. Leading and trailing edges are pinned down together with a length of $\frac{1}{8}$ in. x $\frac{1}{8}$ in. strip, in the rear spar position; note here that both spars are longer than LE/TE and pins are placed either side of spar and not through. Eight ribs W1, fit over spar and must be vertical; a try-square or matchbox can be used to check this. Upper $\frac{1}{8}$ in. x $\frac{1}{8}$ in. spar cements into front slots. When quite dry the structure is removed from plan to make way for an outer panel. This follows the same procedure of cutting LE's, TE's and notching the latter. Spars are again longer than LE/TE to make dihedral joint. LE, TE and rear spar are pinned down and three W3 ribs cemented in position. Upper spar and two $\frac{1}{8}$ in. sheet sussets (to strengthen outermost rib) are added. The other wing panel is made in exactly the same way.

The Dihedral joints need an explanation for those not having experience of this type, and are illustrated well in the photo. Innermost ends of the outer wing panel TE's, LE's must first be chamfered to the dihedral angle, a template for which is given on the plan and can be cut out and pasted onto a piece of sheet balsa. Chamfering is best done with a modelling knife or razor blade rather than glasspaper, to obtain a flat edge. One of the outer wing panels is mated up to the centre section at 4 in. dihedral, and the excess spar is carefully trimmed away as shown in photo and drawing beneath rib outlines on plan. This is repeated for the other panel, and then centre section is pinned down and outer panels cemented permanently at 4 in. dihedral, using matchboxes to prop up panels. When completely dry, wing is removed from plan and undersurface between middle two ribs of the centre section is covered with 1/16 in. sheet; note grain direction.

Tailplane ribs are made in the same way as those of the main wing, except that the template is made from T1 outline, and there is only one spar slot.

Its construction is also the same as that of wing (centre section) but for the lack of an upper spar. When complete and removed from plan, an 18 s.w.g. wire hook of the type used on the fuselage is bent and held onto the trailing edge by cloth strips and plenty of cement.

Endplate outlines E.1, E.2 for wing and tailplane are traced onto 1/16 in. sheet and cut out, there being two off of each. The dotted lines indicate position of endplates on wing and tailplane ribs. Note that endplates are not attached until model has been covered. Before covering any surfaces they must all be lightly smoothed down with glasspaper.

Covering can be accomplished very quickly by "wrapping over" tissue on all flying surfaces. Lightweight Modelspan was used on our

original model; colours are red centre section/pylon/fin/tailplane, and yellow fus./wing tips/endplates, for easy sighting in the air and on ground. Centre section is dealt with first; cut a piece of tissue that will cover the undersurface and wrap over the uppersurface with a small overlap all round. The undersurface of the trailing edge is "Gripfixed" first and the tissue laid onto this with a $\frac{1}{8}$ in. overlap; if tissue has a dead straight edge, no overlap is necessary. The outermost centre section ribs and the leading edge are now pasted and tissue pulled down and wrinkles smoothed out. Uppersurface of trailing edge and outermost ribs are pasted and tissue pulled over and down as shown in photos. Again, wrinkles are smoothed out with spanwise and chordwise pulls of the overlapping tissue. This overlap is then trimmed down to $\frac{1}{8}$ in. width and the extreme edge of T.E. pasted. Overlap folds over onto pasted area. Overlapping tissue at outermost ribs is completely trimmed away. The wing tips and tailplane can be covered in exactly the same manner as all are parallel chord structures. Endplate outlines are cut out of tissue $\frac{1}{8}$ in. oversize all round and nicked at $\frac{1}{8}$ in. intervals, doped directly onto the endplates. Now fit the endplates in place with cement. Water spray all covering lightly to shrink the tissue before clear doping.

Fuselage outlines are cut from tissue with similar overlap to that of endplates, and doped on directly. Bottom of fus. covering does not have overlap, excess if any, being trimmed away with a very sharp razor blade. Each side of pylon can be covered with one piece of tissue, with $\frac{1}{8}$ in. overlap at front, back, and top. The extreme ends of wing rubber band retaining strips are not worth covering due to their odd shape, but brushed over with sanding sealer, as are the top of pylon platform, tailplane platform and engine bearers. Fin is covered with two pieces of tissue, and the overlap should be nicked to dope down round the curved outline.

When wing and tail are doped to satisfaction (about 3 coats) and the fuselage, fin and pylon are also finished, fit the engine and tank, then assemble the model by push fitting the pylon in place. Balance the model by suspending it on the finger tips at the point indicated as the Centre of Gravity.

Slide the pylon back and forth until the model will balance with the fuselage level. Then mark the pylon position and dismantle the model so that the pylon can be firmly cemented in place. Now fill the fuselage top with $\frac{1}{8}$ in. x $\frac{1}{8}$ in. and fit P.4 tissue cover and dope to finish the model.

We used 6 x 4 and 6 x 3 nylon props to test *Chunky* and following glide tests which called for no other alternations, made the first test flight in blustery conditions. The immediate impression is that *chunky* lives up to its intentions of being an all-weather flier. It will roll out of trouble, withstand a tumble into the ground or hawthorne bushes (our's is a rough ground) and with any .049 it will turn right (better) or left depending on your warps and rudder trim.

No claims are made for this design as a contest winner—but for the novice wanting to learn how to fly pylon type models, it's the ideal. Moreover, the cost of construction is only 8s. 5d. for all parts including nuts, bolts and tissue *less* dope, cement and tank. So for about 13s. (current British prices) plus your engine, you can get hours of fun flying *Chunky* on the local field.

Below, left, *Chunky* with A.S.55 and Warnford fuel tank. Centre, don't forget to light the dethermaliser fuse, otherwise you will not see the tailplane tip-up, or perhaps the model, ever again !!!





OUR BEGINNER—TRAINER for the .049 class of free flight power model "Chunky" is not claimed in any way to be a hot contest model, although we have no doubt that if fitted with one of those high power American engines, the Hornet or Thermal Hopper, it would be a match for many a lightweight. Our heading photograph shows A. Wisher of Croydon M.A.C. testing his "hot" .049 model which has already shown that it can just do 4 minutes from a 15 seconds engine run. All up weight is $4\frac{1}{2}$ ounces, including a clockwork timer. With a wing area of 270 sq. ins. it is lightly loaded and goes up like the proverbial rocket. Engine is a Cox Thermal Hopper.

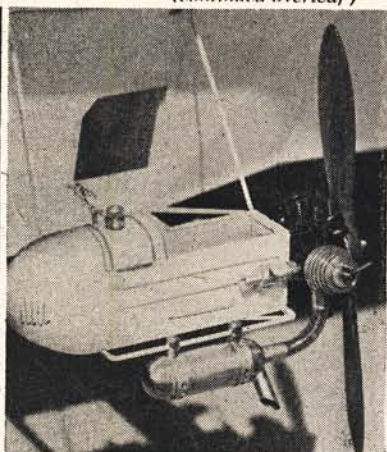
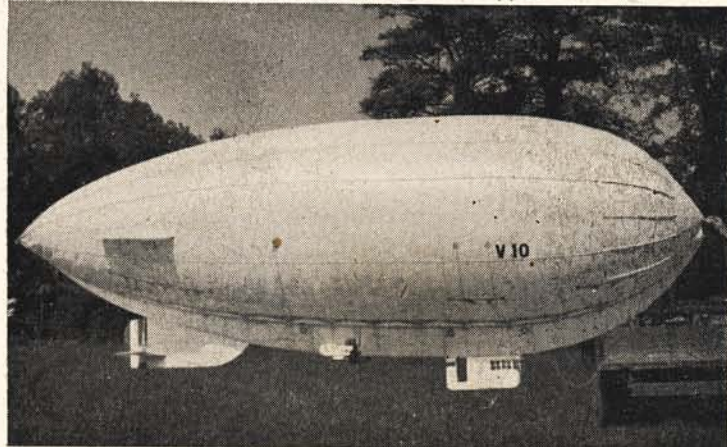
A model of quite a different character and certainly not likely to perform with such pyrotechnics is the scale model airship, seen below. Made after 11 months research and 13 months spare time construction by Raymond Morse, whose work was described in the AEROMODELLER Annual 1957/58, this is a 10 ft. long replica of the "Vedette" Class French semi-rigid V-10. The envelope diameter is 2 ft. 10 in. and hydrogen gas capacity 40 cu. ft. Information to produce this authentic model for 2 Mills .75 diesels was obtained from the Chief Designer as well as the Musee de L'Air in Paris. Keel structure is of balsa and in the close up view of the starboard engine car, one Mills can be seen inclined with an effective tinplate silencer, dummy radial engine, engineer's compartment and mahogany 8 x 4 airscrew. The speed, running on one engine is 8 m.p.h., and with two engines, 10 m.p.h. Tests have been made in an out building using 6 ozs. of ballast to obtain static equilibrium. Outdoor tests can only be made in conditions of flat calm, since 5 m.p.h. represents a scale speed of 60 m.p.h. so it is usually flying in a gale! Mr. Morse flies with a 30 ft. light nylon fishing line attached to the bow, directing the flight by an occasional pull. He has to be careful not to foul the propellers, otherwise the "Vedette" may free flight into the unknown!

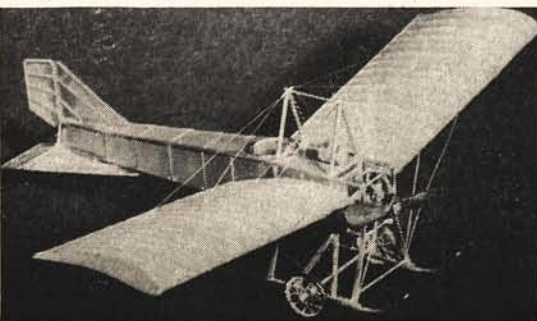
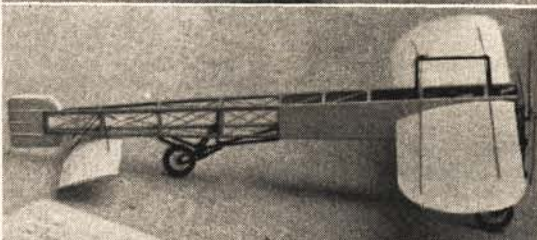
The skin is formed with .002 in. polythene treated with two coats of colloidal rubber paint. Note how the airship is holding itself nicely onto the hand "mast" in the left hand photograph.

Another unusual model appearing overleaf is Colin Read's twin rotor Autogyro with counter-rotating rotors and a little Cox .049 engine on the front of the fuselage. This type of model is always fascinating to fly and it is surprising that we see so few rotary wings at the model rallies. The rotor diameter in this case is 17 in. and fixed wing span, 24 in.

At the British Nationals, D. E. Thumpston created a lot of interest with one of his scale models, the Fokker E.IV which placed third in the radio control event. Dennis is a devotee of the New Zealand Wright radio equipment and our photo shows one of his semi-scale efforts using the same type of gear. This fighter type with tricycle undercarriage and invasion markings over camouflage weighs $3\frac{1}{2}$ lbs., is 54 in. span and powered by an AM 25. The relayator is modified to give selective left or right rudder and up or down elevator, and a specially made stick control pulse box synchronises with the model, which has already logged over an hour of flying time. Unfortunately Dennis tells us that the model

(continued overleaf)





Model News (continued)

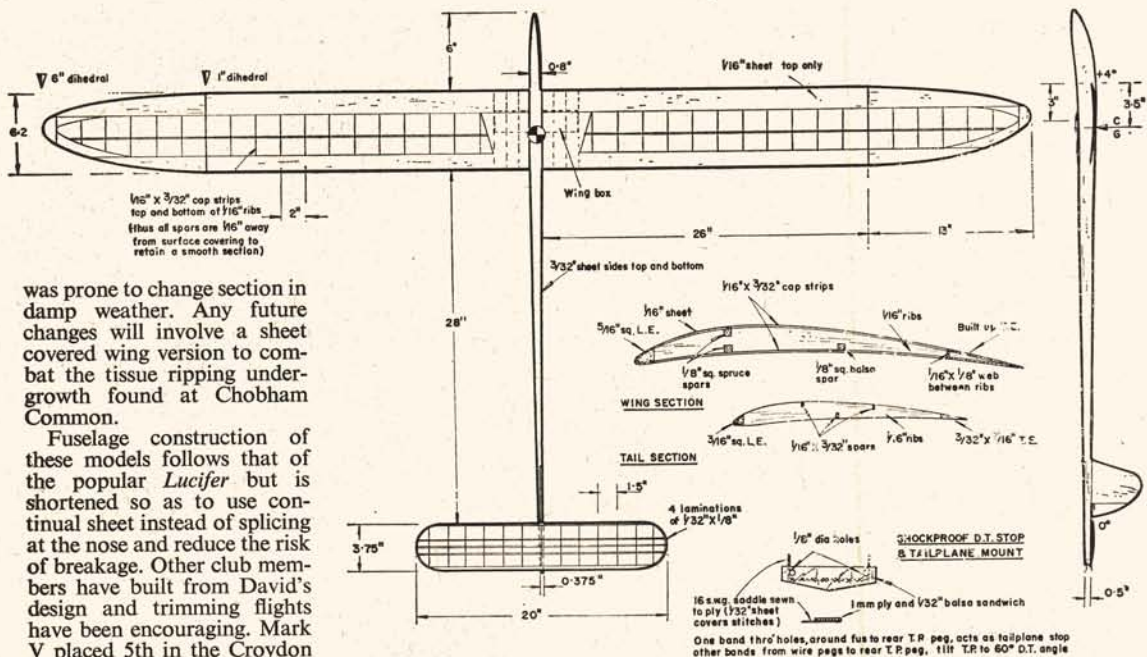
was rather a handful at first and so, more's the pity, attractive as it is, we cannot have it for Plans Service.

Hendon Aerodrome celebrates its 50th anniversary this year and a special exhibition of souvenirs reminiscent of earlier days has been on show at Church Farm House Museum, Church End, Hendon since May 1st and is still open until August 31st. A feature of this exhibition is the collection of four miniatures made by local modellers to depict pioneer aircraft which made their name on the famous aerodrome. Mill Hill and district M.A.C. have co-operated and our pictures do not really do justice to the fine workmanship. From top to bottom the models are a Henry Farman Pusher made by D. K. Randall, as used by Paulhan for the £10,000 Daily Mail Race of 1910 and also employed at the Grahame-White Flying School, Hendon. Next is a Bleriot type 11, by G. Dixey, as used for the famous Channel crossing, then a Valkyrie by A. W. Evans who also produced a much larger version which was so impressive at the British Nationals.

Finally, a model of an aircraft which did not fly, but nevertheless has the considerable distinction of being one of the first aircraft designed and made in this country, the Everett Grasshopper, as it was built in 1908, the first aircraft at Hendon, and modelled on this occasion by C. G. Crawley. Each of these four models measures about 8 in. wing span, metal construction is used extensively for accurate representation and every precaution has been made to see that detail is produced rib for rib, wire for wire.

It is not often that we are able to describe a series of models as distinct from an individual design but David A. Williamson of Beckenham, Kent has provided us with so much interesting information of his *Arun* series of A/2 gliders that we feel it will be of use to budding enthusiasts wanting to know how a model can progress through six stages to eventual near-perfection. Photographs and the drawing illustrate the series of models. First Mark I was built in July 1958, based on modern designs of that time. The model had a great deal of flying, during which it placed third at the 1958 South Coast Gala, 4th at the 1959 Northern Heights Gala and during the former contest it D/T'd into the River Arun, hence the name with which it was promptly christened! Mark II of the series was similar and actually made as a demonstration project during the Model Engineer and Model Aircraft Exhibition of 1958 and this provided a sound basis for the Mark III, David's contender for the 1959 team trials. On this model it was intended to cut down drag as much as possible and to this end, wing fixing and construction were altered. The new wing mounting with a dural tongue through the fuselage eliminated rubber bands. The result was a smooth, $4\frac{1}{2}$ oz. wing. Trimming showed that the changes had been for the good and the design placed 4th in the London area eliminators, but at the trials the Mark III disappeared, after 10 minutes out of sight (still with the tailplane tipped up) on the second round having made up till then, a perfect score of 6 minutes.

Mark IV had square wing tips and dihedral from the wing root. It was intended to be a really rough weather model and it placed 1st in the Northern Heights Concours d'Elegance and 7th in the South Coast Gala open Glider competition, even though that was a still air event. It tows very well and is now reserve to Marks V and VI which are even more sleek than the Mark III. For this model David has combined the desirable features of Continental and Scandinavian models with practical consideration in deference to British weather. The drawing shows Mark VI which differs only from Mark V in that an $\frac{1}{4}$ th sheet tailplane has been dropped as it

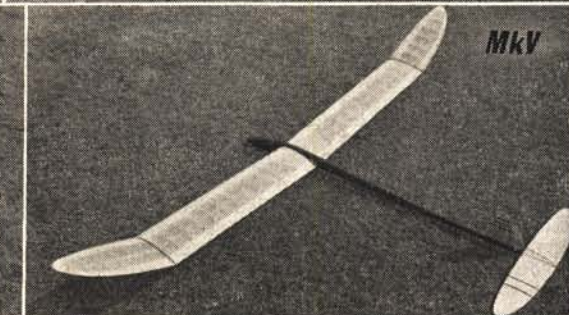
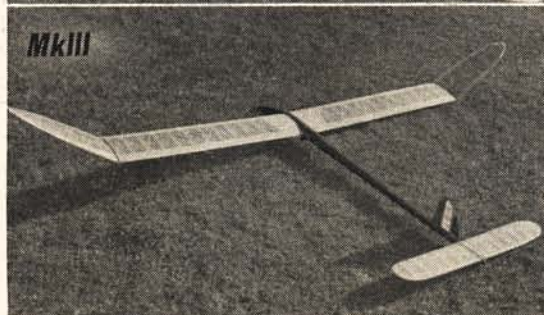
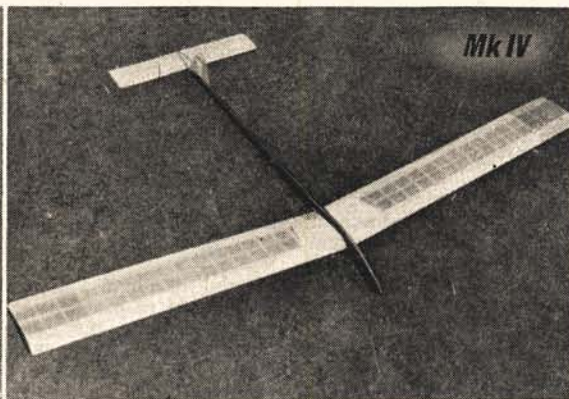
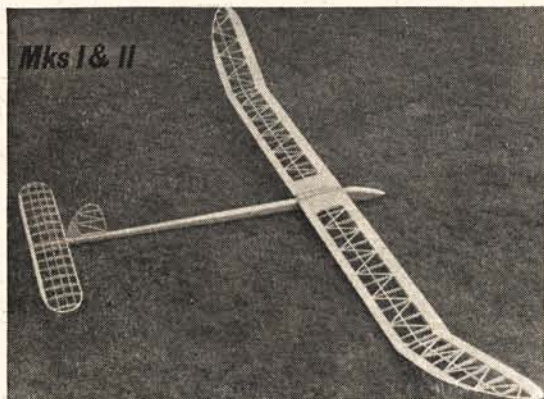


was prone to change section in damp weather. Any future changes will involve a sheet covered wing version to combat the tissue ripping undergrowth found at Chobham Common.

Fuselage construction of these models follows that of the popular *Lucifer* but is shortened so as to use continual sheet instead of splicing at the nose and reduce the risk of breakage. Other club members have built from David's design and trimming flights have been encouraging. Mark V placed 5th in the Croydon Winter competition and Mark IV 10th in the K. & M.A.A. cup. So one can see that these development efforts have not been in vain.

Finally David gives due credit to another important factor in successful operation of a contest model and that

is his confidence in his assistant, Brian Hugh. As David says "It is very comforting to *know* that the model will be well launched, to *know* that the dethermaliser is alight and to *know* that there are helpers downwind to retrieve".



TRADE NOTES

AS IS USUAL, most of the news this month concerns plastics, but there are a few changes and interesting developments in the use of moulded material. Notable is the *Jetex Lynx* which we are currently building. This kit for a 23-in. span semi-scale jet to take the *PAA-loader* motor introduces a novel covering method, using pre-formed panels of .003-in. silver acetate sheet of very high gloss, embossed with control surface outlines and rivets. The vacuum formed fuselage and integral fin fit over die-cut formers; but more about this 25s. fascinating kit next month.

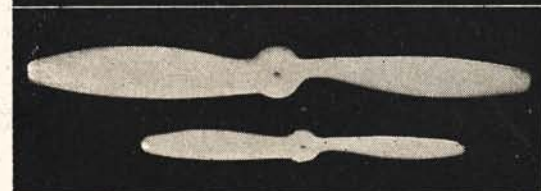
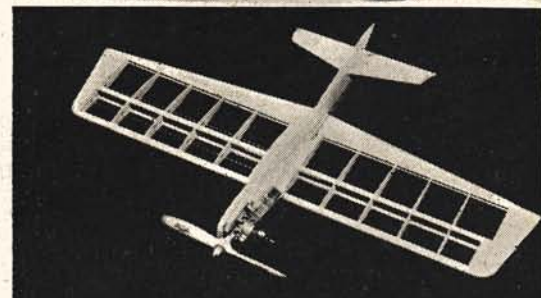
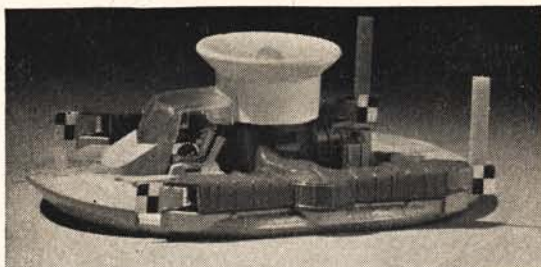
Keilcraft have at long last released the second of their 1/72nd scale plastics, the *Sopwith Camel*, which makes into a nice little model and is cheap at 2s. 11d., having the rotary motor connected to the airscrew. Discerning modellers will find a few points to clean up, but we find the model most attractive and realistic, even though the markings look strange to us. Also from Keilcraft we have the new nylon propellers, they are cleanly moulded and our tests have covered the 6 x 4 (1s. 6d.) and 9 x 6 (3s. 5d.) which will be very popular sizes. In shape, section and balance, these props. match the best we have seen. (*Props and Camel in pics at right*).

Not much is heard of Japanese plastic models, but our correspondent out there sent us one to show that they do exist. This is a 1/50th *Tony* fighter by **Marusan** and although, perhaps a little thick in the fin and rear fuselage, the mouldings are clean and easily assembled. (*see, right*).

The *Frog Talisman* 28-in. control line model for 1.5 c.c. makes into a nice model of familiar shape and if anybody happens to notice that our photograph of the framework seems a little strange, it will be because it has been made to circulate clockwise. With models like the *Talisman* it is all too easy to slide the fuselage over the wing upside down and get this effect, or one can do so intentionally if this way of flying is preferred for left handed pilots. For other photographs of the completed model, which we can commend as a stout performer, refer to page 478. The kit costs 17s. 6d.

Airfix have just introduced the *Blackburn NA. 39* for their series three kits for 4s. 6d. and this represents quite a novelty in their range with its folding wings, hinged nose, retractable hook and unusual rotating bomb bay, complete with bomb. From **Corgi Toys**, we have a sample of their very well made *Saro SN.1 Hovercraft*, very well die-cast in metal and complete with sprung ball supports and all for 8s. 6d. in authentic colours. (*Picture, top right*).

The model trade is always having its circulation of personalities and usually we allow these to pass by as they do not normally concern our readers, but one which we feel will be of great interest to many, is the recent change in the firm of **Arthur Mullett** of Brighton. This well known mail-order house, which has a clientele extending to every country in the world where aeromodelling is followed, has for many years since the death of its original proprietor, been under the direction of Manager, Ray Spence. Now Ray has joined the A. A. **Hales** organisation as a representative in the South and Ian Mullett has taken over the reins of the Brighton establishment. Those who depend on their supplies coming from reliable mail-order houses, can feel that they will be dealing with a person of some experience when they order from Ian Mullett, who is a practising radio control enthusiast and he tells us he will soon establish a speciality department for radio control gear, notably multi channel and is going to incorporate a service scheme for all commercial equipment. This will be welcomed we know by all R/C fans.



THE NINE-DAY National Championships in **Argentina** covered practically every class of aeromodelling one can think of, from indoors to Clipper Cargo. Results fill a six-page bulletin issued by the F.A.A. and in most categories, performances are well up to International standards. F.A.I. speed went to Juan Zorsoli at 105 m.p.h. (Super Tigre G-20), team race to A. Diaz with 6 : 25 for 10 kilometers (Oliver Tiger) and stunt to Pedro Favale, using a Fox 35 Thunderbird, Combat was used as a spectacle for public interest and from the account given us of a four-crash final for the eventual winner, Marcelo Leys, the crowd had its money's worth. Marcelo collected enough points in this and other events to be overall Champ.

In free-flight, Wakefield went to E. Colombo with a Clark Y winged own-design, using a 2-blade prop. and Pirelli. His time of 11 : 17 was low for the clear sky, low wind conditions. A/2 glider on the previous day had probably used up the thermals at Merlo airfield. One tailplane carried on up while the rest of the model d/t'd. Top three were all well over 14 minutes, with Julio Fontanex top, 13 secs. short of perfection.

Ram-Rods dominated power events. Jorge Honda used one with a Rivers Silver Streak to win F.A.I., and Oscar Meduri had a small one with a Fury .049 to top 1/2 A with a perfect 15 mins. score. Clipper Cargo was a tester, Jorge Offerman lifting a total weight of 3 lb. 10 1/2 oz. including 2 lb. 5 oz. ballast with a Holland Hornet powered Larry Conover *Pelican* design to win admirably. Later, he lifted a ballast load of 2 lb. 12 1/2 oz.! Not bad for a little .049!

Argentina is the place where Iriarte uses flapping wings for dihedral when inverted. He was beaten this time however, by a *Live Wire Cruiser*, flown by Jose Meduri (O.S. 15). The football club hall used for indoor flying had a few broken panes in its glass windows, one hole actually claiming Julio Martinez's model, which did not take to outdoor work at all. A pity this, for it was all set to win with over seven minutes. Top time in this first S. American indoor meeting was 6 : 19 by N. Beggiano.

Liem Gwan Tan writes to tell us of the 80-member model club in the town of Pasuran, **Indonesia**. Started last year with gliders and rubber driven models, since engines are not available, the club is run under the auspices of the Rotarians, and has interested the local Boma works in making two 2.5 c.c. diesels to a Russian design. Here's an opportunity for aeromodellers to show their good nature—why not dig out that old motor you no longer need and send it to us for forwarding to these lads?

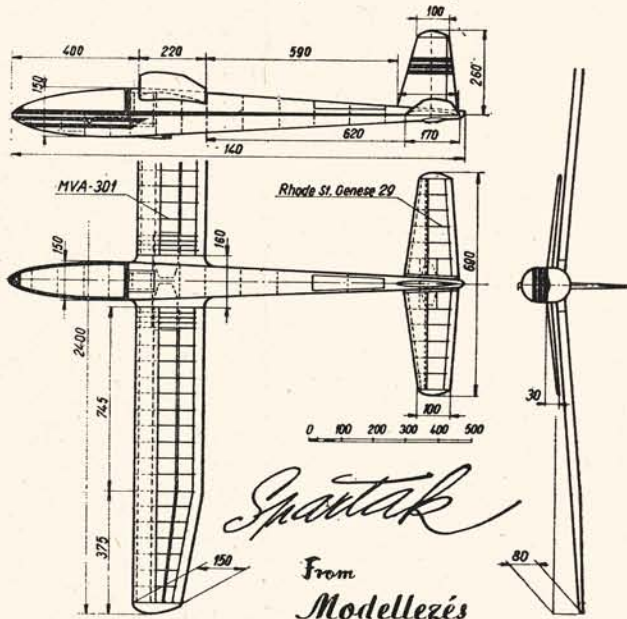
In **Australia**, the Queensland Championships saw a new motor used for F.A.I. team racing, the Cox Olympic. After many prop. tests, operator Jack Jorgenson of Newtown, finds the 7 x 6 best, but though he had the fastest model, bad luck put him out of the running. He made up for it by covering ten miles in Class C with an O.S. 35 at 7 : 26 which is really moving by any standards.

Several big meetings have taken place in **Germany** recently. Over Whitsun, 65 entrants in compass steered conventional class, and another 16 in the compass-tailless class shared the slopes of the Wasserkuppe with no less than 51 rudder-only R/C gliders. The compass swingers had five rounds of 5-minute max.'s to fly, and R/C had to circle markers, spot land and stay airborne for seven minutes to get full points. For once, the slopes were wind-free and thermally on the first day. Last year's winner, Helmut Schubert; Manfred Schnabel and Rudi Rattelmuller each collected 3 x 5's for perfect scores in compass flying, but all the R/C fliers could do was to glide to the foot and spot land. Winds came for the final rounds on the second day, to upset the three compass leaders and let Rolf Claas win with the still very



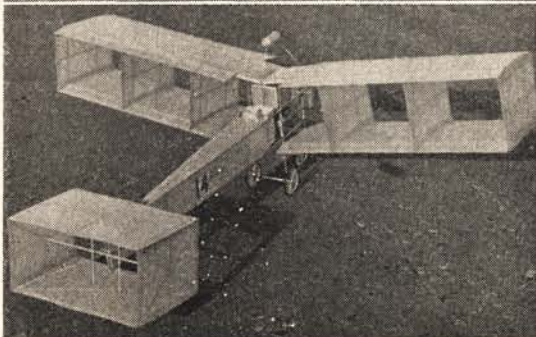
SINGAPORE aeromodellers in top pic favour A.P.S. designs, are keen on stunt and combat. The Corsair is Erich Heimann's winner in scale at the GERMAN Nats, flies at 65 m.p.h. on full-speed, 45 m.p.h. on slow high total of 24 : 13. Most used models were the Graupner *Cobra*, designed by Fred Militky and the Hans Meyer *Bergfalke*, though the winner used K-H Denzin's 1951 A/2, the *Sturmvogel*. Tailless leader was Hans Unger with 14 : 26. Radio men appreciated the wind

Elegant radio glider design by CZECH E. Haraste has had wide billing in East European Mags so we follow suit, from Hungarian "Modellezés". Has nice blend of scale with practical model design





Top, Old Master, John Tatone of San Francisco with aluminium fuselage and ventral fin. Keith Hearn, AUSTRALIA, with 6 ft. 5-channel R/C for O.S. 29 won the Victoria State Champs with loops, rolls off the top, etc.



WORLD NEWS (continued from page 471)

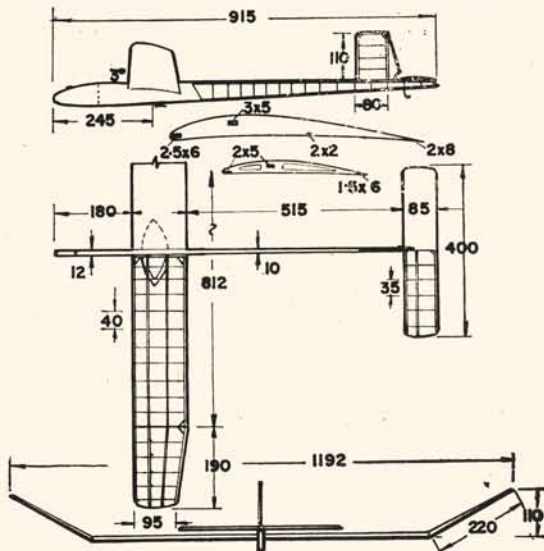
but most only managed three laps around the 1,000 ft. spaced markers. Franz Stapelfeld managed six, but did not spot land so lost on points. The contest was eclipsed by the Munich entry of A. Schua, K. Blauhorn and W. Schua, using Hans Schumacher gear, and the Schua Bros. also used the Schumacher H.S. 82 model design. In fourth place came Klaus Holighaus with his multi-control model flying on rudder only. The week previous, he made a 6-hour 11-minute flight, immediately after one of 2-hours 30-minutes, so it is obvious that the World Record is due for a change. This duration flying took place at Hirzenhain, where the German C/L Nats. and team selections were held on the large tarmac area laid last year for the R/C Internationals. Stunt was to a higher standard than ever before, top ten scoring more than last year's best with Klaus Seeger, Udo Doring and Gorge Oswald making the German team for Budapest. *Nobler* types were much in evidence. Best team race time was 4 : 56 by the Lenzen-Schnorrenberg team, who also led in the final with 5 : 03 (Oliver Tiger). Big surprise was a newcomer, Gerhard Ziegler of Stuttgart, with his first speed model (M.V.V.S. 25/59) which led the entry with 175 k.p.h. Two classes of combat, and control-line scale were also on the programme.

The Westfalenhalle at Dortmund with 85-ft. ceiling and 100 x 200-ft. floor proved ideal for the German Indoor Nats. Three new records, including the first over-30-minute flight in Europe made it memorable. Max Hacklinger set the time of 30 : 29 on his second flight in the contest, his other times were 11 : 42 and 19 : 51, which indicate the conditions in the hall. Gerry Weinkopf broke his underground record with 14 : 59, using the model detailed in June issue, he also won Helicopter and placed second to Gunter Maibaum in both paper covered classes. Gunter set up a new 10 : 45 record for the up to 13 3/4-in. span class with paper covering.

More record news, from the U.S.A. Jack Bentley and Bob Dunham have knocked the R/C speed figure to 114.5 m.p.h. with a 33-in. span (11-in. chord!). Super Tigre 5 c.c. missile that did 125 m.p.h. on one run. Model is known as the *Regulus X-29*, uses Orbit 4-channel and Bonner Duramites for a total weight of 56-oz.

Newsletters from all parts tell how teams have been picked for the World Power Champs., reported in the

Scale trio from Los Angeles, U.S.A., at left: Top, Wittman Tailwind by Vic Harden for Mills 75, Walt Mooney's latest is a Mirage for Cox Pee-Wee ducted fan, Santos-Dumont is a magnificent model by Harold Osborne, a bold man we might well add! Below is a RUMANIAN A/I glider by Stefan Benedek, called the "Pitic", for beginners. Made entirely of indigenous timber, one has already set a time of 16 minutes



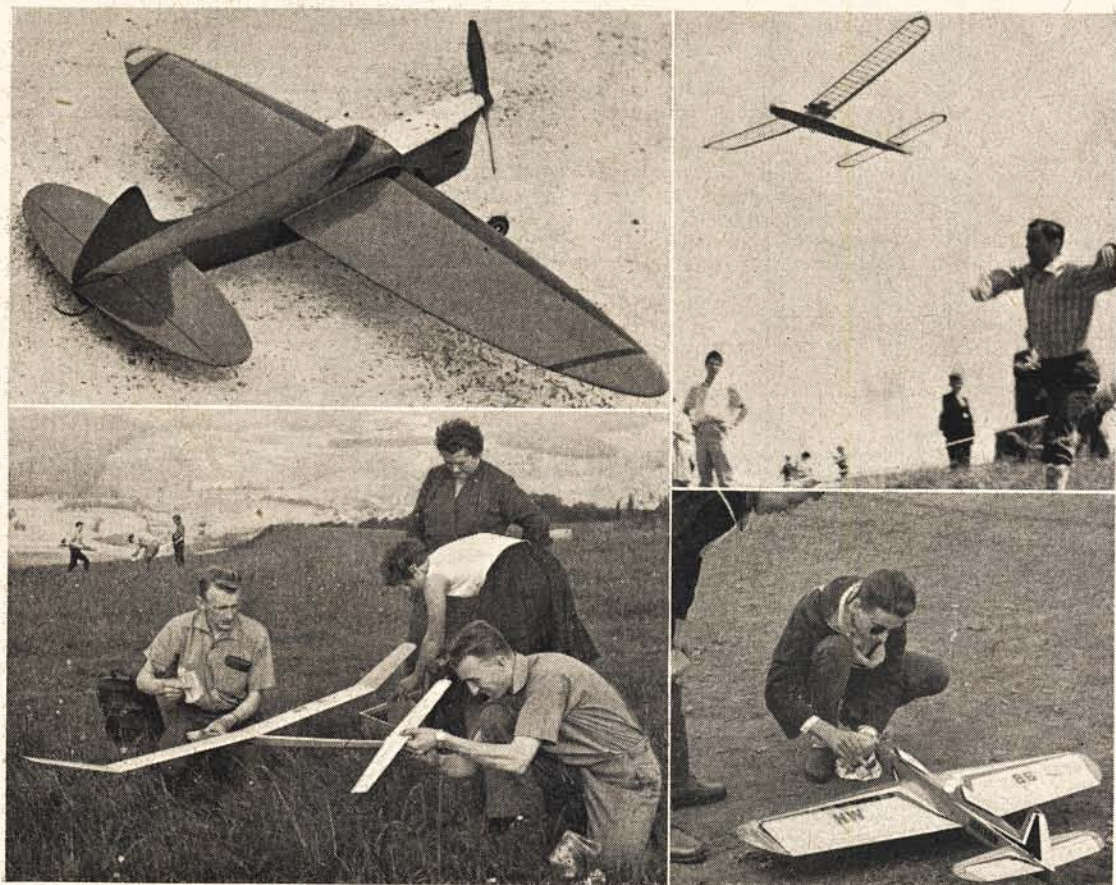


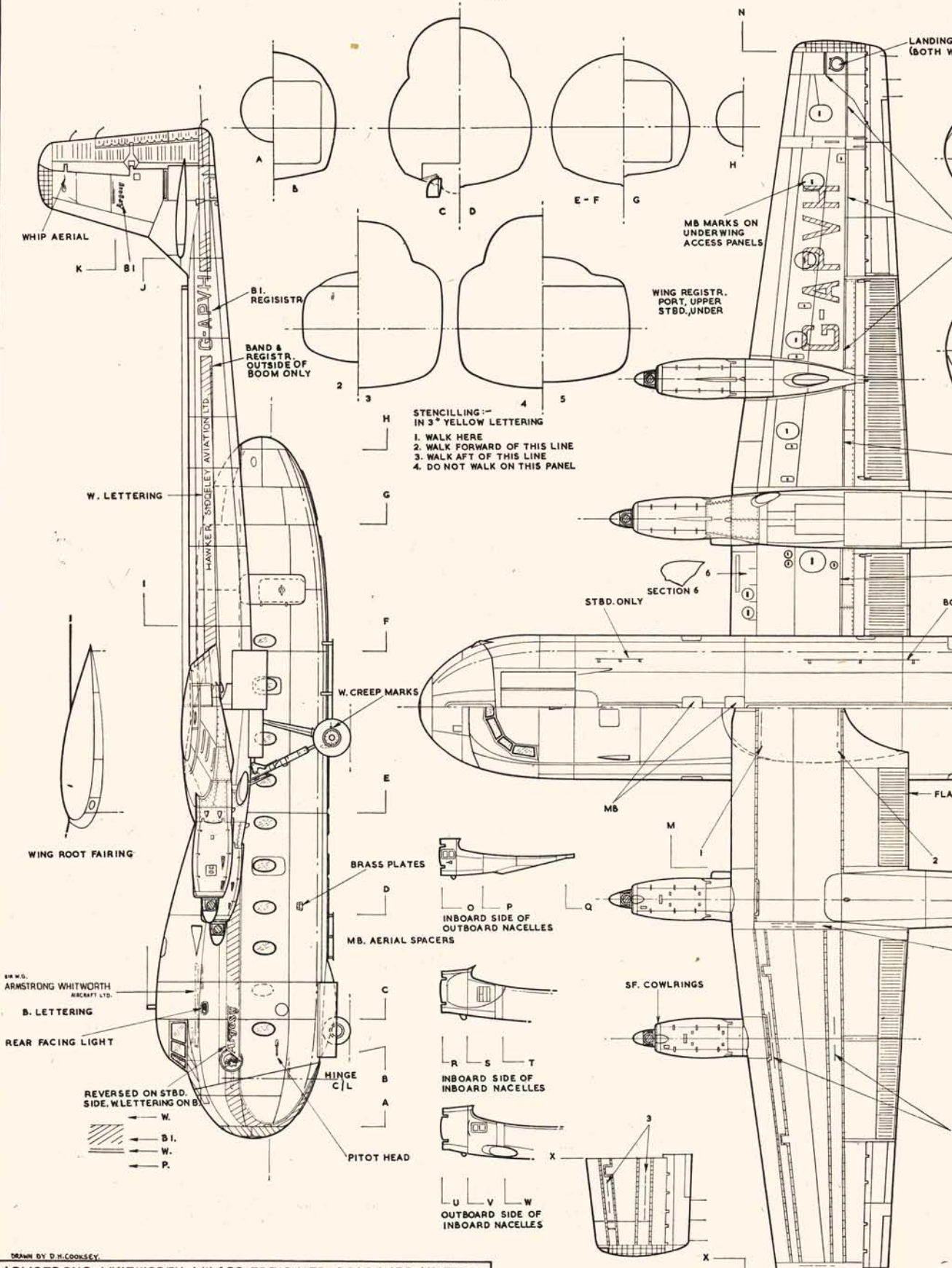
ARGENTINA has some nice models, left is 5 c.c. T/R winner by Aveino Diaz with an Oliver Tiger. Centre, a decorated A/2 in decorative grasp, looks like a B.G. 44 from A.P.S. Right, Marcelo Leys, combat winner and National Champion

special supplement included with this issue. Though but three fliers represent each of the 20 Nations in this year's event, it is obvious that team placings were hard fought everywhere; we read in the Illinois M.A.C. newsletter that six of their contestants qualified out of 17 Chicago area

GERMAN Nats picture below, top left, the glass-fibre fuselage, with metal pan for Oliver Tiger on Lenzen's fast winner. Right, W. Schua launches brother's H.S. 82 for winning R/C slope soaring flight. Same design also won last year. Below it is U. Doring, 2nd in stunt with smart Nobler. Bottom left, compass swinger Helmut Schubert and reserve was 6th. Best model was stolen by passing driver! Schubert won last year

entries in a first elims. These six travelled way south to Tulsa for the semi-finals and none of them appears on the team. Same story could be told for **Canada**, where the Balsa Beavers, the Toronto Sputterflys and Montreal M.F.C. all newsletter their trials experiences. Total time in ten flights through mixed weather was 27 : 25 for Canada's top man, John Scott. Mans Hagberg had to make 27 : 45 to hold top place in the **Swedish** team trials, and Zygfryd Sulisz amassed 29 : 21 for the **Polish** team leadership with W. Schier close behind at 29 : 07. By any standards, these team members really earned places.



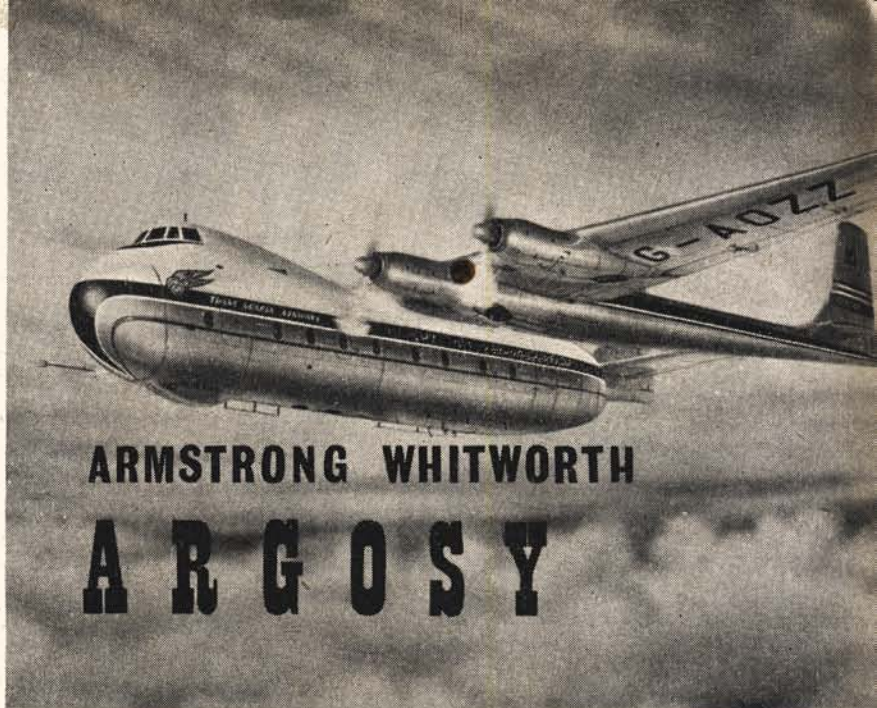


ARMSTRONG WHITWORTH A.W.650 FREIGHTER COACH 670 AIR FERRY

Plan continues behind centre pages

**AIRCRAFT
DESCRIBED
Number 103**

Artist's impression of Trans Arabia Airways Argosy, with registration of the prototype aircraft. Viscount nacelles for the Dart engines appear dwarfed by the voluminous fuselage



IN 1955 the Air Ministry announced the requirement for a transport to meet a specification calling for an aircraft smaller than the Beverley. Armstrong Whitworth made an immediate survey of sales prospects for a civilian variant, and the result was an original design study, the AW 66, an unusual twin engine type with the tailplane supported by close set booms from an otherwise conventional fuselage. This eventually became the type AW 65 when it was found that limitations on fuselage nose and tail opening doors precluded the "Pi-tail", and thus the Argosy family was born. Based upon the well-proved Shackleton wing, flying surfaces of the Argosy with specially wide-placed booms to accommodate a twin Tyne variation form the basis of a family of aeroplanes which are likely to be seen in service throughout the world in the next few years.

Six of the first AW 650 civilian Argosies are now flying and whilst the prototype is retained by the manufacturer, others are allocated to Trans Arabia Airways, Riddle Airlines, and British European Airways, who are to lease three next year. A contract for 40 of the beaver tail AW 660 military transport version with four Darts, has been placed by the Ministry, but the AW 670 Airferry has been less fortunate in obtaining customer interest.

The first Argosy was in fact a production prototype since jigs were set up from the start and only twenty-seven months after the first decision to proceed, G-AOZZ was rolled out. Such fast assembly was made all the more easy through use of established components, the major item of which being the Vickers Viscount engine nacelles. Glosters were responsible for the tail surfaces and flaps, Avro provided the wing, leaving A.W.A. to develop the new fuselage and tail booms.

With its straight-through loading system with swing doors at front and rear, the Argosy is unique and a very quick rate of loading is accomplished by use of a roller floor known as *Rolamat*. Motor transport is able to back up to the door and off-load directly into the capacious hold. The AW 617 Airbus which is to have the same fuselage as the Airferry, but with two deck accommodation for 126 passengers, is intended for short haul stages offering a lower cost per seat-mile than any other

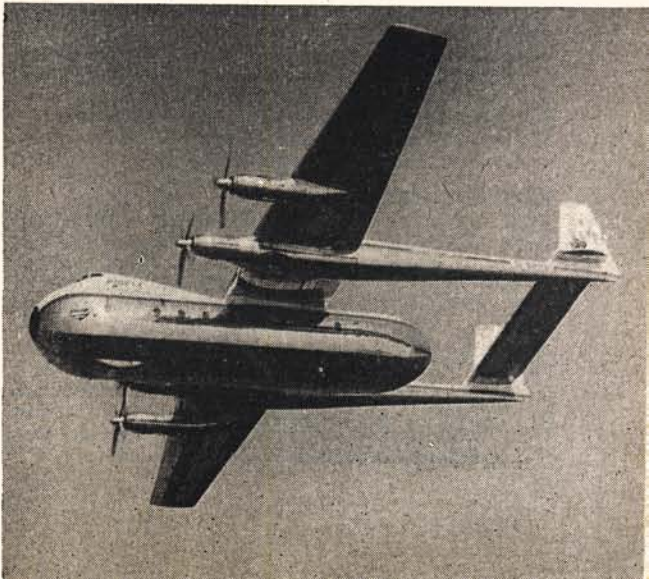
In Riddle livery, G-APRN which has been used for much of the route proving flights in Europe. Subsequent modifications to ailerons, having a horn balance are shown on our 1/72nd scale die-line drawing, though not included on 1/144th scale drawing opposite

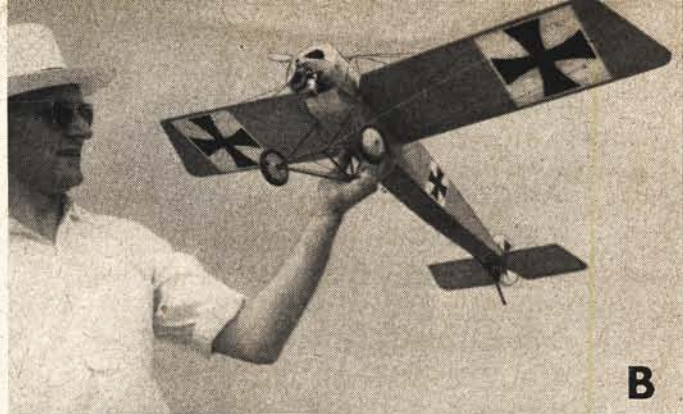
contemporary aeroplane. The cruising speed of 280 m.p.h. would bring air travel within the reach of a very large number of potential customers.

Not much has been said of the twin Tyne type 651 civilian freighter and 661 military transport, but, no doubt Armstrong Whitworth are fully investigating these projects, particularly in view of the successful application of the Tyne to the Vanguard and Canadair CL-44-6. The larger fuselages on the Airbus and Ferry versions are capable of accepting six cars on the lower deck with sufficient clearance for roof racks and extra luggage up to a height of 6 ft. 10 in. Thirty seats on the upper deck allow for a passenger complement of five per car. This aircraft is unpressurised, whereas other types are pressurised for higher altitude cruising. The military 660 version with the beaver tail differs in that it will not have the nose doors of the civilian version, though its rear doors will open up and down in flight to discharge parachuted supplies.

Many proving flights have been made throughout Europe and the Middle East, both to demonstrate Argosy capability and also hasten certification of the type for airline use.

Dimensions: Span 115 in.; Overall length 86 ft. 9 in.; Height 27 ft.; Engines: four 2,100 ehp Rolls Royce Dart 526 turbo props.





QUICKSTART at the Nationals

Organised by the S.M.A.E., the British Nationals at R.A.F. Station Scampton, Lincs. were favoured with good weather and a record attendance. And as ever at this aero-modelling event of the year, we of Davies-Charlton spent much time talking to competitors and visitors. Meeting Aero-modellers on the flying field, listening to their problems, always helps us to provide the range and type of products best suited to their needs. But this year, we were at the 'Nats.' with a difference . . . not only talking and listening but also taking camera shots which should be of interest to every Quickstart user.

Most popular mixture

Expert modellers like George Fuller (A) of St. Albans know that for extra power and performance Quickstart fuel really is unbeatable. He used Quickstart Glowfuel to haul his 33 oz. PAAload model aloft and win 1st Prize in the PAAload event. The 58 in. span model is based on George's well-known Dixielander layout. And it carried 16 oz. of cargo and 'pilot'. A careful blend of I.C.I. and Esso products, Quickstart fuel really packs power. Both the Glowfuel and the Diesel Fuel can be bought at 3/- a $\frac{1}{2}$ pint or 5/- a pint, so if you buy the 1-pint economy size you save a shilling on every can. (Trade supplies through A. A. Hales Ltd.)

Also in the picture

(B) Mr. D. E. Thumpston of Birmingham hit the high-spots with his 1/10th scale Fokker Eindekker. Powered by a 1 $\frac{1}{2}$ cc. Davies-Charlton Sabre, it flew beautifully into third place in the Radio Control-Rudder Only event—despite the fact that it was competing against specialised radio control designs.

(C) Mr. H. Yates of the Wharfedale Club also entered a Dart-powered model in that event. His Piper Commanche, a 1 in. to 1 ft. model replica of the popular American light plane, flew well despite a strong wind.

(D) Mr. D. Partridge of Redhill relaxed confidently on the tarmac while waiting his turn to fly. He later won a good third place in the free flight flying scale event with his neat Dart-powered Cessna Birdog.

(E) Flight Lt. Hawkins of R.A.F. Station Duxford, a member of the R.A.F. Model Aircraft Association, poses his Albatros D III control line model. Powered by a Davies-Charlton Merlin, this $\frac{3}{8}$ in. to 1 ft. scale model was flown in the Flying Scale Control Line event.



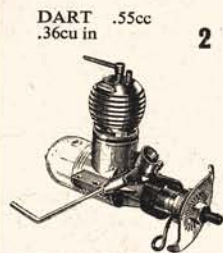
Are YOU this lucky Aero-Modeller?

*You've won a free trip by
Viscount to the Isle of Man*

Many people go to the Nationals for a week-end's flying without actually entering the contests. This enthusiast with his Bantam-powered Delta free flight model was one. He obviously knows that the Bantam is a superb low-cost easy-starting 'fly-for-fun' engine. But he may not be aware that it is also the ideal power unit for 1/4A Contest Free Flight work where its superior power gives prize-winning performance. We don't know his name. But if he writes to us at the address below, we will arrange a visit to the date of his choice when he will have the opportunity of seeing first hand the beautiful island scenery, the famous T.T. course and the home of Davies-Charlton engines.

Fuel - Engines - Accessories

Aero-modellers who have still to get a complete set of lists and leaflets on Davies-Charlton Quickstart products, and a copy of our 'MODEL DIESEL HANDBOOK' containing all you need to know about model diesel engines, are invited to write in now enclosing a shilling Postal Order.



for all that's best in power flying ←

DAVIES-CHARLTON LTD

Hills Meadow Douglas Isle-of-Man

AEROSOL SPRAYS

WITH THE INTRODUCTION of gas loaded instant spray cans in the "Pli" series by W. J. G. Stevenson Aerosol Products, British modellers are now able to use the advantageous techniques enjoyed for several years by our American counterparts. One's first reaction is not unnaturally that the Aerosol can appear to be more expensive than the equivalent jar or tin of dope for brushing application. This is undeniable, but on consideration of the many advantages, we are sure that the fastidious aeromodeller will take to Aerosol application, since the extra cost is more than justified. This is especially so in the case of the newly introduced series of colour dopes with which we have been experimenting, as can be seen in the photographs at right.

First, a few words on the actual use of "Pli" as was used. Hold the can 12 inches from the surface and press button firmly to apply a fine film. Allow to dry. Repeat this process until a high gloss is obtained. It is better to spray two light coats than one heavy coat. If the spray splutters, turn nozzle a $\frac{1}{4}$ turn or $\frac{1}{2}$ turn until the spray is corrected. After spraying, invert the container and press button for one second. To clean: pull off the button, clear orifice and surround, then store ready for next use. Keep away from naked flame, temperatures of 120F. and strong sunlight. Do *not* puncture the can or throw on fire or in a boiler. Always shake the can before use, it contains an agitator to stir the pigment.

The great point is that of repeated coat application as distinct from one heavy spray. It is very tempting to try to cover all at once but the result is far less pleasing and often slower in drying than repeated thin coats.

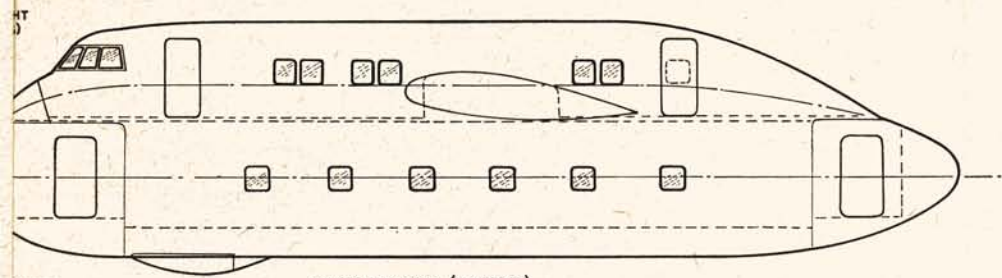
The photographs illustrate stage by stage decoration of a *Fræg Talisman* and to fully test the masking system we used all four colours available, i.e. white, red, yellow and blue. For masking one needs old magazine or newspaper pages and drafting tape. This tape has the advantage of forming easily around curves and due to its rubber adhesive is pressure sensitive, seals well and can be pulled off without fear of spoiling the surface. (See top picture)

The golden rule of spray painting is always to *apply the light colours first*. One can use two techniques, either to mask definite areas for light colours, or, to rough spray and rely upon the darker tones to obliterate the light. We show both cases. First we accurately masked off the area (having pre-planned the design in pencil) for white at the rear of the wing and tail. This was sprayed and allowed to dry, masking removed and replaced in the *reverse* direction to shield the applied colouring. Next, we used the rough spray system (3rd picture) for yellow by obliterating the area *between* proposed darker bands of red and blue, with no precaution taken other than masking areas already covered by white. Then one must mask off *accurately* the area rough sprayed by yellow and apply the darker tones. It is not necessary to mask blue area for example when spraying red as the covered yellow area forms a safety margin and a paper shield can be roughly placed to protect the area covered by blue.

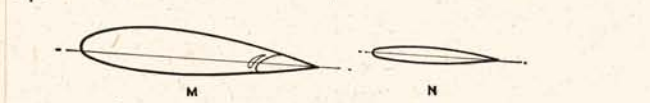
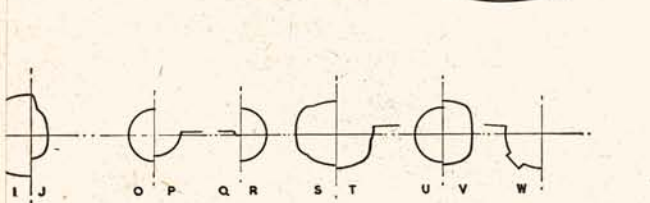
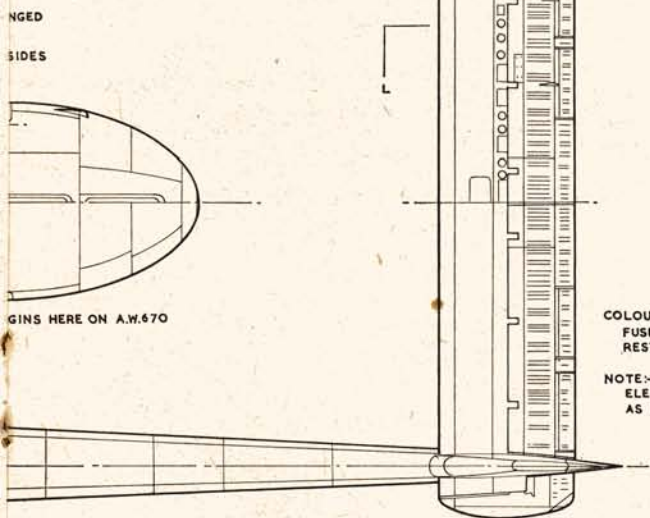
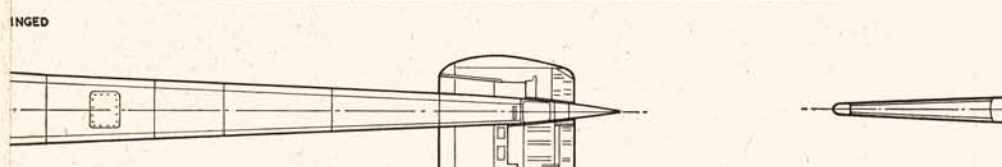
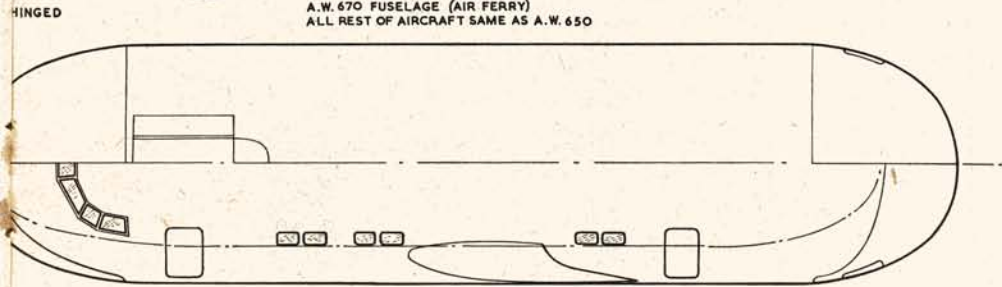
Finally, having done the wings, work on the fuselage by masking off the entire wing and tail surfaces.

The overall result can be seen, if a little garish in our particular example, at least it shows how curved and straight lines are easy to apply with all colours rendered in the same degree of high gloss and solidity in tone. Spray finish, with its special advantages will appeal to modellers working under restricted conditions in barrack rooms, hotels, etc. and is especially recommended for scale modellers.





A.W. 670 FUSELAGE (AIR FERRY)
ALL REST OF AIRCRAFT SAME AS A.W. 650



4° WING INCIDENCE
SECTION: N.A.C.A. 23018 MOD. (ROOT)
N.A.C.A. 23012 (TIP)



2° TAILPLANE INCIDENCE

- YELLOW (1/2 LINES)
 - DARK BLUE
 - MATT BLACK
 - FLOURESCENT ORANGE
- MB. MATT BLACK
 B.I. DARK BLUE
 W. WHITE
 S. SILVER PAINT
 P. POLISHED METAL
 S.F. FAWNISH SILVER
 Y. YELLOW

COLOUR SCHEME:-
FUSELAGE DECKING, WING ROOT FAIRING W.
REST OF AIRCRAFT P.

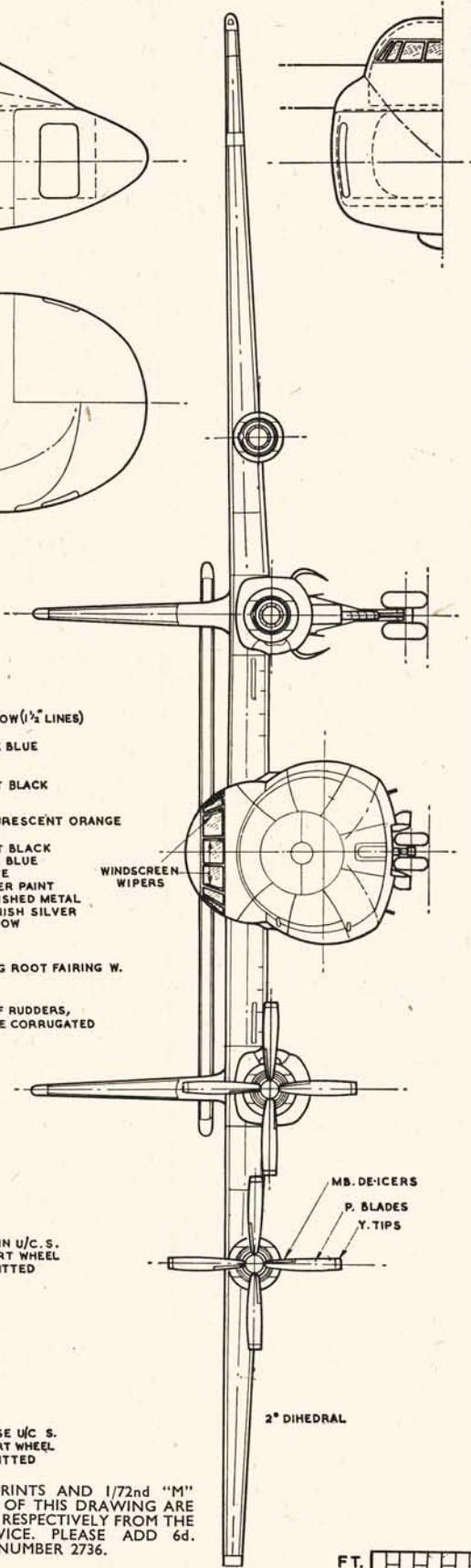
NOTE:- BOTH SURFACES OF RUDDERS,
ELEVATORS & FLAPS ARE CORRUGATED
AS INDICATED.



MAIN U/C S.
PORT WHEEL
OMITTED



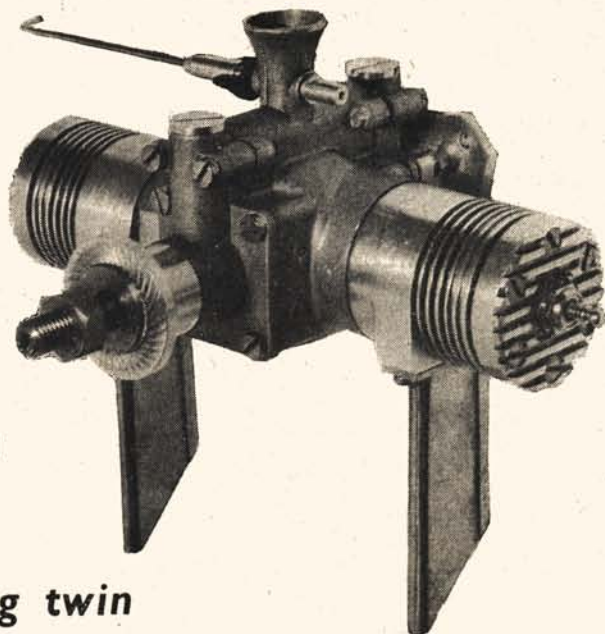
NOSE U/C S.
PORT WHEEL
OMITTED



1/144th TYPE "N" SCALE REPRINTS AND 1/72nd "M" TYPE SCALE DYE-LINE PRINTS OF THIS DRAWING ARE AVAILABLE PRICE 1/- AND 3/- RESPECTIVELY FROM THE AEROMODELLER PLANS SERVICE. PLEASE ADD 6d. POSTAGE AND QUOTE PLAN NUMBER 2736.

**Engine Analysis No. 75
by R. H. Warring**

**DAVIES-CHARLTON
TORNADO**



5 c.c. simultaneous-firing twin

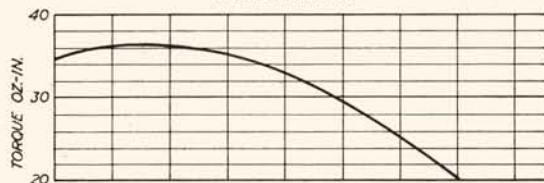
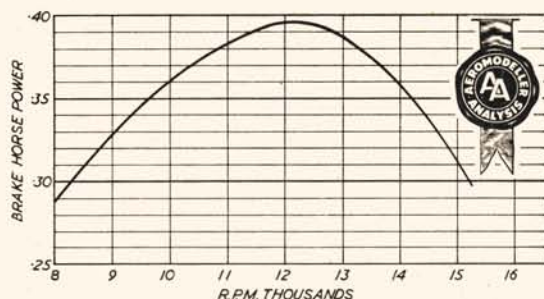
THE THEORETICAL ADVANTAGES of multi-cylinder designs are seldom fully realised on small engines. Even the simplest "multi"—a twin—means more complication, more friction, and a real production headache. To survive as a commercial project it must offer more than just novelty appear—and about the only practical advantage it can offer is smoother running.

Now this can be a real advantage. Modellers, by and large, seem to put up with engine vibration as an inescapable feature, which it usually is with single-cylinder engines. It is impossible to balance out the reciprocating weight over a complete revolution. The best that can be done is compromise. A "fully balanced" crank web which balances the whole weight of the piston and connecting rod produces a progressively more and more unbalanced system as the piston moves from top dead centre. A completely unbalanced shaft produces a system which becomes progressively more unbalanced approaching t.d.c. As engine designers have found to their frustration, "unbalance" is often better than

"balance" or smoothest performance—or it can equally well be the other way round!

Vibration, resulting from unbalance, is a power loss. It is tolerated, usually, because of the excess power available from model engines for most applications. But in radio control models, in particular, excessive vibration can cause skipping relays and control response troubles. Feeling, or just seeing, the vibration which is often present at the tail end when the motor is running often makes one wonder how one dare expect one hundred per cent. reliability from control equipment or shimmering control surfaces.

Single cylinder engine designers have even accepted the weight penalty of a separate driven flywheel to promote smoother running—whilst others have spent tens of hours of development lightening pistons and experimenting with balance to satisfy the radio boys (and anyone else who flies large models, since they cannot fail to appreciate the difference between a smooth running engine and one which vibrates badly).



Data

Bore: .567 in.
Stroke: .585 in.
Displacement: 4.972 in. (.303 cu. in.).
Weight: 10 ounces.
Max. power: .397 b.h.p. at 12,200 r.p.m.
Max. torque: 36.2 ounce-inches at 9,500 r.p.m.
Power rating: .08 B.H.P. per c.c.
Power/weight ratio: .04 B.H.P. per ounce.

Material specification:

Crankshaft: EN.351 steel.
Crankcase: L.M.2 light alloy die casting.
Crankcase end covers: L.M.2 light alloy die castings.
Piston: hardened steel.
Gudgeon pin: silver steel.
Cylinder liners: Leadloy (soft) steel.
Cylinder jackets: aluminium.
Cylinder heads: aluminium.
Radial mount: aluminium.
Propeller driver: aluminium.
Connecting rod: RR.56 forging.
Bearings: plain (in end covers).
Spraybar assembly: brass (steel jet needle and thimble with ratchet spring lock)
Spinner nut: aluminium.

This definitely promotes the case for the "twin"—alternate firing in the case of the in-line twin and simultaneous firing in the case of a horizontal twin. The higher production cost automatically delegates it as a specialised engine, with the most obvious appeal for radio control and large stunt control line models. That more or less fixes the size to compare with the performance of conventional 5 c.c. engines. Its commercial life will then depend very largely on how it succeeds in this latter respect.

In introducing the "Tornado" glow-ignition horizontal (simultaneous firing) twin we think that Davies-Charlton have come right up to the mark. In the first place the quality of "model engineering" production in the "Tornado" is outstanding and at the price it is offered it represents exceptional value. Further, its running and handling qualities are exceptionally good. It really is a smooth-running engine at all load speeds, consistent, easy to start and quite non-critical on needle valve control. And whilst not coming up to the top performance achieved with the best single-cylinder 5 c.c. glow engines, the peak B.H.P. figure achieved on test of just under .4 is no mean figure for any motor of this size, especially as it is realised at such a useful speed as 12,000 r.p.m. Possibly with more extended running-in, and the use of a more heavily doped fuel, a higher peak could be obtained, but the "Tornado" must be regarded as

essentially a "working" engine rather than a "racing" engine. Being a glow motor, too, it has that greater flexibility so desirable for accommodating changes of r.p.m. brought about by manoeuvres momentarily "unloading" the propeller which often causes a diesel to "miss" or run badly (and sometimes even stop).

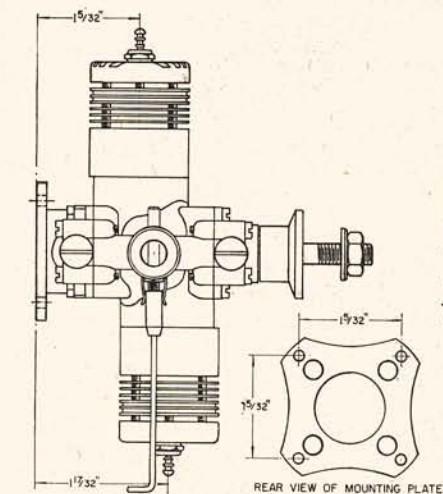
Davies-Charlton are wrong in one respect. They state on the instructions that the "Tornado" is "strictly an engine for the experienced modeller." Our own impressions were that it is such an easy engine to handle that even a beginner should have no real trouble with it, although again we beg to differ on their starting instructions. Connection of two 1.5 volt glow plugs in series via the "Twinpack" clips barely heats the elements enough for good starting. The "Tornado" floods very readily with finger choking and if the plugs get too wet starting is impossible. Shorting out one clip to "look for the glow" then almost invariably results in a burnt out plug.

We preferred using 2 volt glow plugs, individually connected to a 2 volt accumulator. It was only necessary then to finger choke until the fuel line was full, flick over a couple of times, connect the plugs, flick again and the engine was away nearly always first time. If the engine does not start *straight-away*, closing down the needle is recommended to avoid flooding, opening up gradually again once running. 1.5 volt plugs connected individually to a 1.5 volt dry battery should be equally effective. We found no worthwhile difference in performance between different plug types.

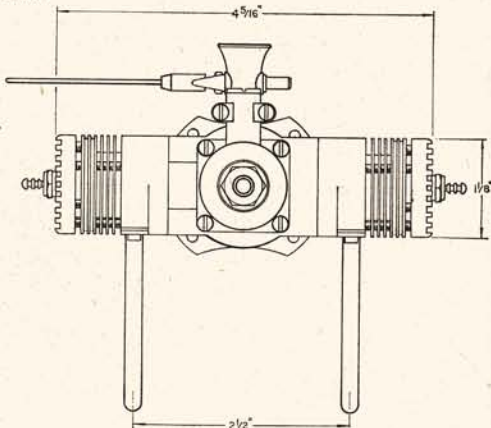
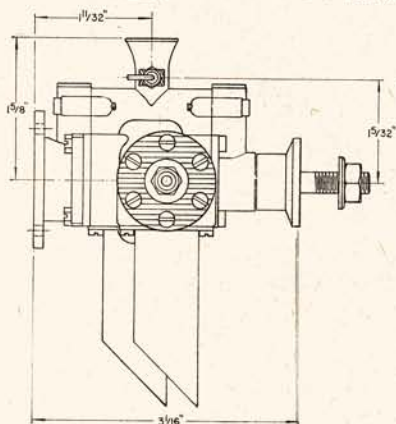
Needle valve control is not at all critical, so there is plenty of time to make adjustments. Two-stroke running is maintained over two turns approximately, with the maximum variation between "lean" and "rich" settings whilst maintaining two-stroking being about 500 r.p.m. Running was most consistent at all load speeds tested from 8,000 to 15,000 r.p.m. with an almost complete absence of vibration on the rig. Running was, however, rough at 7,000 r.p.m., although this could have resulted from a badly unbalanced propeller. Maximum torque was developed between 9,000 and 10,000 r.p.m. of the order of 36 ounce-inches. Torque output fell off steadily from this with increasing speed.

The design of the "Tornado" is essentially orthodox, although cleverly developed in detail. Induction is via crankshaft ports fed from a centrally mounted choke tube opening into a horizontal passage communicating with down tubes in each endplate casting. Transfer passages are cast in the crankcase unit and machined in

(Continued overleaf)



Sorry!
Actual size drawings of the Tornado will not fit our pages. Vital dimensions are given here for model installation.



**Propeller —
R.P.M. Figures**

dia. x pitch	r.p.m.
12 x 4 Trucut	8,000
11 x 4 Trucut	9,900
10 x 8 Trucut	7,500
10 x 6 Trucut	10,000
9 x 8 Trucut	7,000
9 x 6 Trucut	11,000
9 x 4 Trucut	12,800
10 x 6 Frog nylon	10,200
9 x 6 Frog nylon	12,500

Fuel used: D-C "Quickstart" Glowfuel.

Note: bench running performance was not consistent with high-pitch propellers (8 in. pitch or greater on diameters up to 10 in.: 6 in. pitch on 11-12 in. diameters). High-pitch propellers should therefore be avoided for running-in, nor are they recommended for flying.

ENGINE ANALYSIS (continued)

the side of the cylinder jacket with a slotted port in the cylinder liner, overlapping the diametrically opposed exhaust port by some 80 per cent. Each end of the crankshaft is separately ported for the respective cylinders (with identical timing). Pistons and cylinder are likewise identical, the former having a contoured head with deflector.

The crankcase unit is a relatively complex casting, subsequently faced to take the end covers and drilled and tapped to take the various fixing screws. The horizontal intake passage is also machined out, and the transfer passages. The complete unit is quite light, weighing 1½ ounces.

The crankshaft is machined from solid stock (E.N. 351 steel) as an integral unit complete with three circular discs and 3/16 in. diameter crankpins—the latter size appearing a little on the small size. All bearing surfaces were extremely well (and accurately) finished. The shaft is carried in plain (unbushed) bearings in each end cover, with precision alignment between the two ends. Shaft ports are ¼ in. diameter, also the hole through the shaft, stopped at the rear end with a screwed in aluminium plug. The dural prop driver locks on a brass split tapered collet on the ¼ in. diameter front shaft diameter terminating in a ¼ in. B.S.F. thread for the spinner nut. This thread has the appearance of having been ground.

Connecting rod assembly follows "full size" practice with split big ends assembled with high tensile steel 8 BA screws and "shakeproof" washers. The connecting rods themselves are forged in RR.56 alloy and are not bushed. Pistons are of hardened steel with fully floating silver steel 5/32 in. diameter gudgeon pins.

Cylinder liners are of conventional pattern, machined from Leadloy and not hardened. They locate in the machined aluminium cylinder jackets by a flange at the top. The jacket is held down by three 6 BA head screws entering the crankcase casting and sealing on a gasket. Three further short screws in the head hold the head onto the top of the cylinder jacket, again sealing on the

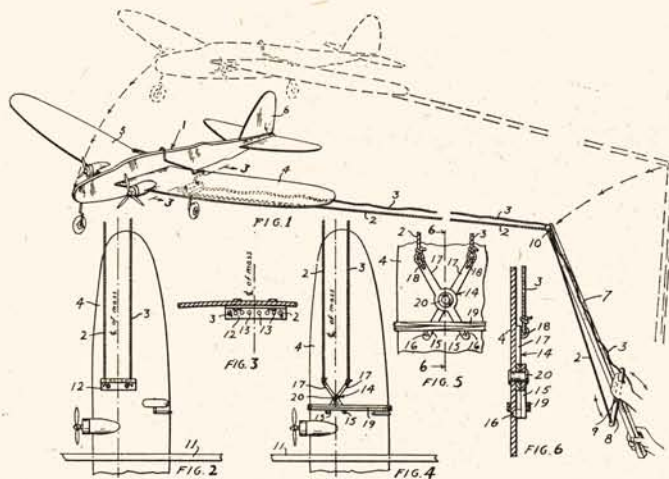
liner flange with a gasket. The finned heads are of aluminium and also machined from solid. Plated stub-exhaust assemblies are available as an extra for screwing directly to the cylinder jackets.

The crankcase end covers are identical die castings, faced, drilled, reamed and lightly honed on the bearings, drilled for fixing screws and tapped for the aluminium screw plugs at the top of the vertical passage. Each attaches to the crankcase with six screws, sealing with a gasket. The aluminium radial engine mount attaches to the rear crankcase cover with the same screws.

To judge from the amount of machining from solid carried out, the "Tornado" is intended for limited production. The method of machining the cylinder barrels and heads from solid, for example, is very expensive from a production point of view but avoids the tool cost involved in die castings—and also, of course, leaves the design more open to changes that might be introduced later, such as an increase in swept volume or modification of combustion chamber. The pistons and crankshaft are other major machining jobs and we are somewhat amazed that all this high quality work can be accommodated within the price. The standard throughout is excellent—which raises just one small point of criticism. How much more in keeping with a "quality" production it would have been to have employed Phillips head screws throughout!

Summarising, we rate the "Tornado" a fine buy for the radio control modeller, or for anyone who wants 5 c.c. power with smooth, practically vibration-free running. If you do get running vibration with the "Tornado" you can put it down to an unbalanced propeller or a loose mount. Equally, starting and handling should be similarly trouble-free (just watch that the engine does not get flooded through excessive choking) and performance consistent throughout a long life.

Maker's recommendations for propellers are 9 x 6 nylon, 10 x 4 or 6 nylon, or 11 x 4 nylon. Our own choice would be a 9 x 6 or 10 x 6 for radio, with a minimum of 10 per cent. nitromethane in the fuel for best performance.

Important PATENTS**2303965 (U.S.A.) N. E. WALKER****APPLICATION. DATE 1.12.42**

This invention is concerned with string propelled or "whip" models of a kind seldom seen today. The motive power is derived from the operator whipping the lines about a circle and the method of control again involves the use of two parallel control lines but instead of attaching to a bell crank they are attached to a bracket fixed beneath the inboard wing and offset, inwardly, from the centre of mass of the model. Differing dihedral and/or camber angles are employed to ensure that the aircraft tends to bank away from the operator and elevation and depression is again obtained by pulling on either one of the two control lines.

According to the invention pulling on the leading line which is attached to the aircraft ahead of its centre of gravity will cause descent while the opposite is equally true. One method of control employs a "joy-stick" pivotally mounted upon the whip mast and an adjustable line attachment bracket is also provided for varying the degree of sensitivity of the control

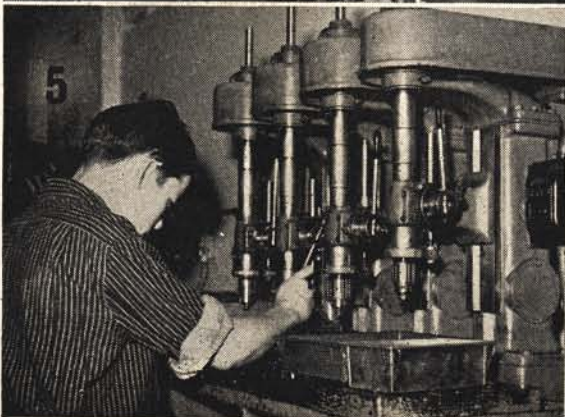
Behind the scenes at D. J. ALLEN Engineering Ltd.

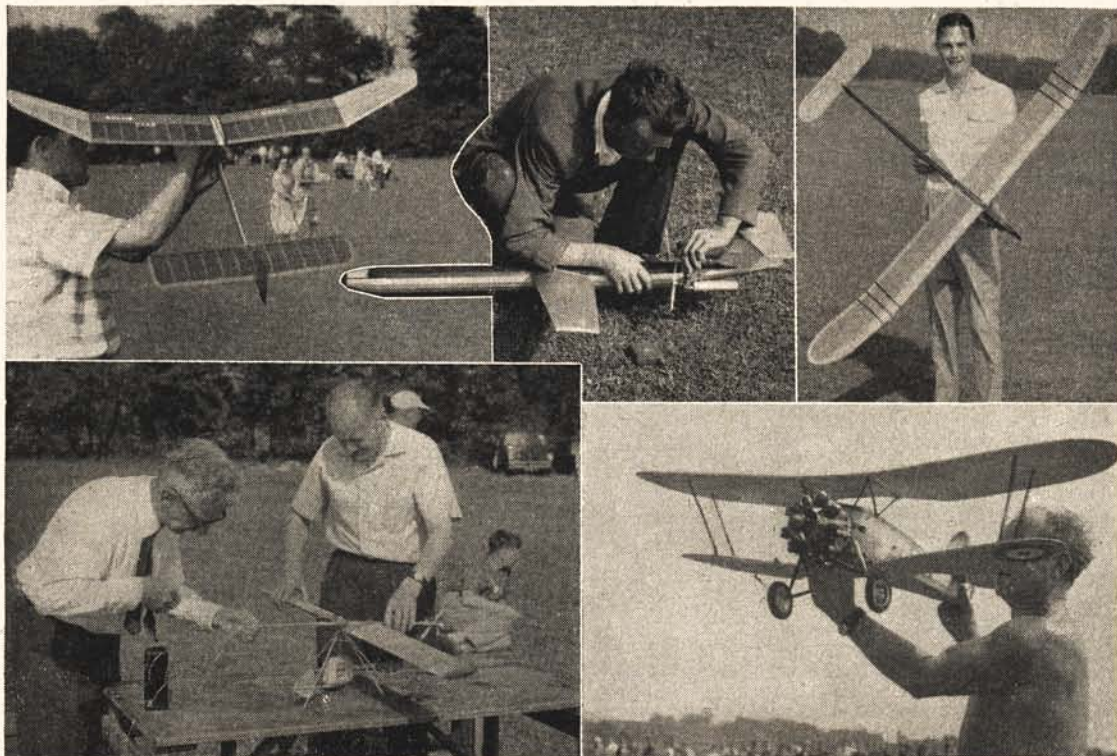
IN RECENT MONTHS, the little group of skilled engineers who produce the popular range of Allen-Mercury engines have made their second move into enlarged premises. This in itself is an indication of how a quality product has reaped success for its manufacturers, and deservedly so in the case of the A-M diesels for we know that staunch efforts have been made to see that quality has been maintained as production rate has increased. Partner proprietors Dennis Allen and Les Parker are skilled engineers with special experience of

small component manufacture. Among their staff are several aeromodellers, including Len Steward and Ron Ward whose expert prowess is of International repute. Len is responsible for the cylinder honing which is one key to the high performance of A-M engines, and Ron looks after the large automatic multi-operation lathes which churn out .049 parts faster than one can count. Glow plugs, diesels, glow motors (including a few still in the experimental stage) form an impressive flow from this clean and tidy factory at Edmonton where pride in workmanship is an obvious reason for its success.



1. Capstan section, used for small part production, including those for other manufacturers' engines,—such as D. J. Allen's Engineering's good reputation. 2. Fitting up cylinder heads on a final assembly stage for AM 10's. Engines are made in large batches, then at end of each week they are all thoroughly tested on the bench. 3. Lapping the shaft bearing in AM 35 crankcases is a skillful operation dependant on the 'feel' of the operator. 4. Dennis Allen working on the lathe which is only employed for experimental work. We can't tell you what he is making; but can assure readers that there is plenty a-brewing in the works. 5. Multiple drill presses, each set for a particular operation. 6. Len Steward in his honing department, working on cylinder bores for AM 15's to give them that extra good piston fit.





Round the Rallies

21st Clwyd Slope Soaring Contest

This Slope Soaring Contest was held on July 3rd 1960. With the exception of R/C the best time of four flights was taken in each class. Over the previous two weeks a North West wind had been blowing on the slope, which is situated on the western side of Moel Famau, making conditions perfect but on this particular day the wind changed to South, South West and the Southern Slope was used which is very good for flying but rather steep for retrieving. Visibility was very good and looking down the valley to the North, the Irish Sea could be seen.

A record entry of 26 was received in R/C, the entrants coming from all over England.

During the early part of the contest time keeping was fast and furious. Outside the control tent a blackboard carried the current best time in each class and it was a full-time job keeping it up to date with the recorders, times being changed so quickly. A time of 6:13 was set up early in the afternoon by A. Shenton of Ashton-under-Lyne in the Nordic class and immediately became a target. This time was beaten about two hours later by J. O'Donnell with 10:32 out of sight; a very impressive flight, at times one would think that the model was controlled remotely, the flight pattern being perfect.

From 12.30 until 5.30 a radio controlled model was airborne almost every second; as soon as one landed another was launched.

This event was run on a nominated time basis with 5 minutes as the fixed time and points being lost for seconds above and below this time. The flying in this event was excellent and the choice of radio equipment making little difference; skill of control being the advantage. Two flights were allowed and the better flight counting. A most creditable performance was given in this event by

J. Mountain of Kidderminster, who only recorded 13 points error in the 1st flight and 7 in the second. F. Knowles, the ultimate winner, would have scored a 100 per cent. score if a slight detour around two spectators had not been necessary.

After prizegiving an impromptu spot landing contest was organised by Dave McQue and quite a few radio fliers carried on with this contest long after many had departed to their homes. The "unofficial" winner was a small boy who landed a chuck glider spot on the target!

RESULTS

Gosling Trophy (Best time of the day)

J. O'Donnell (Whitefield) 10 min. 32 secs.

Open

1. J. O'Donnell (Whitefield) 10 mins. 32 secs.

2. J. Cole (Surbiton) 4 mins. 30 secs.

3. B. Henshall (Heswall) 3 mins. 57 secs.

Nordic

1. E. Shenton (Ashton) 6 mins. 13 secs.

2. J. Cole (Surbiton) 4 mins. 49 secs.

3. C. Wyatt (Ashton) 4 mins. 2 secs.

Junior

1. F. Hibbert (Chester) 3 mins. 47 secs.

2. A. White (Chester) 3 mins. 34 secs.

3. O. Ricketts (Chester) 2 mins. 11 secs.

Radio

1. F. Knowles (Reigate) 2 points error

2. C. King (Cambridge) 5 points error

3. J. Mountain (Kidderminster) 7 points error

Northern Heights Gala

Fortune again favoured this popular event on the aeromodelling calendar, for following some days of dull, wet weather, conditions at R.A.F. Halton were a pleasant change. Bright sun was the order of the day, though a rather stiff breeze hampered some of the high duration exponents.

AT NORTHERN HEIGHTS

Watford Wayfarer Chris Webb about to launch winning .049 free flight. Centre is H. E. Males with his remarkable *Coccinelle* prototype. Northwick Park's J. H. Foxall won glider last year, unluckily this time. Below left is Helicopter wizard F. G. Boreham with latest twin Bantam design, and right, P. E. Norman and R/C Bulldog, a beauty to see airborne

With events well and truly scattered around the airfield, it was difficult to keep track of all activities, but we were impressed by the good behaviour of the crowd around the R/C area, even if not by the average performance of the models on show. Having over-run his qualifying time in the comp., Ed. Johnson continued to give a polished display to the crowd, but could not match winner Dumble's spot landing score. We did witness one or two even closer but ruled out due to under or over run of the time limit.

George French made one of his periodic appearances to win the Queen Elizabeth Cup with his beautifully built and finished model, but probably the most interesting category was the newly introduced $\frac{1}{4}$ A power event. Chris Webb of Watford flew well with his Atwood Wasp powered lightweight, but the model was lost (pinched?) before the end of the day.

The windy weather probably accounted for the non-appearance of the many unorthodox models that seem to make their debut at this meeting, but there can be no doubting that everyone had a fine time in the usual free-and-easy atmosphere that dominates this annual outing.

NORTHERN HEIGHTS MODEL FLYING CLUB

GALA DAY RESULTS 1960

Queen Elizabeth Cup (F.A.I. Power)

1. G. French (Essex)	521 pts.
2. D. Knight (St. A) (bans)	450 pts.
3. B. Mack (C/M)	415 pts.

De Havilland (Open power)	
1. G. Fuller (St. Albans)	5.27
2. B. Eggleston (Baildon)	5.02
3. A. M. Miller (E.R.G.S.)	4.33
"flight" Cup (Open Glider)	
1. A. Simpkin	
(Mkt. Harborough)	
2. G. Cameron (Baildon)	5.06
3. E. Thorpe (Derby)	4.25
Fairey Cup (Open rubber)	
1. N. Elliott (Men of Kent)	6.00
2. H. Tubes (Baildon)	5.44
3. J. Berryman	5.29
Thurston Trophy (Helicopter)	
1. D. Poole (Birmingham)	260 pts.
2. R. E. A. Botting (St. Albans)	236 pts.
3. B. Dukes (Birmingham)	99 pts.
1/2 A Contest	
1. C. Webb	
(Watford Wayfarers)	
2. Pinckert	4.37
3. A. Wisher (Charlton)	3.22
	2.46
R.A.F. REVIEW CUP	
(R/C Spot landing)	
1. M. Dumble (A.R.C.C.)	15 ft. 4 in.
2. S. A. Miller (Luton)	28 ft. 6 in.
3. D. Neville	41 ft. 0 in.
AEROMODELLER Trophy	
(Gala Champion)	
E. Thorpe (Derby).	

3 secs. apart in one semi final, followed by a final won in 7:08.2, a time which has only ever been beaten once before.

Class A also provided several good times, particularly Ken Long's heat in 4:49.8. Noticeable however was the need for much clarification and publicising of the international rules in this country, as many of the competitors were quite unaware of many of the rule requirements, (one even turned up with no cockpit at all!) particularly in regard to fuselage blisters. A large number of the models were using these, despite the clause which quite clearly disallows them (Code Sportif 4.10.4).

Stunt did not have the expected entry, probably due to the tricky conditions, but speed showed a refreshing renewal of interest with 20 entries—and even more surprising, the majority of them actually recorded a time!

RESULTS

Class A T/R	
1. Smith (High Wycombe)	5:20.6
2. Yeldham (Belfaires)	5:21.9
3. Davy (Wharfdale)	6:34.8
4. Long (Wharfdale)	6:42.5
Class B T/R	
1. Lucas (West Essex)	7:8.2
2. Whitbread (West Essex)	8:9.8
3. Pasco (Thornaby)	8:46.1

Combat	
1. Tribe (Northwood)	+17 pts.
2. Johns (Weston Controliners)	+7 pts.
3. Copeman (Kenton)	=9 pts.

Stunt	
1. Brown (Lees Bees)	961 pts.
2. Day (Birmingham)	950 pts.
3. Falcolner (Montrose)	832 pts.

Speed (Handicap)	
1. Gibbs (Hornchurch) (class 2)	200.0 k.p.h. 113.6% Handicap
2. Stephens (Belfaires) (class 4)	220.8 k.p.h. 102.2% Handicap
3. Drexell (West Essex) (class 6)	250.0 k.p.h. 100.8% Handicap

1960 P.A.A. Rally

Report and Photographs by John O'Donnell
THE NOW WELL-ESTABLISHED Pan American Airways sponsored Rally held at R.N.A.S. Abbotsinch on June 25/26th, near Glasgow seems popular despite retrieving difficulties—and most of the usual racers from England made the long trip North.

The meeting was favoured by the weather on both days. Conditions, in fact, were such that many people present showed more interest in sun-bathing than in flying (or even spectating).

Organisation had been hampered due to loss of interest by intended officials—but the survivors coped with most aspects. Criticism must however be made of the late starts to contests, especially in view of the scheduled early finishes—and of the rules re identification markings (e.g. PAA) required on contest entries, which should be either enforced or scrapped.

Saturday's events opened to a flying (literally) start, with J. O'D. jamming 3 glider maxs into the first half hour with a conventionally proportioned A/2. Remaining glider scores were inexplicably low—second place going to local lad Ed Black, with 2 maxs and a downdraught, flying one of the models he took to Belgium last year.

The PAA load contests featured the "Pee-Wee" rules for the first time in the U.K. and results were surprising. Rate of climb achievable when the motor is adjusted just right was quite remarkable. Scores obtained in "PAA load Gas" included 2 maxs apiece by John Done and Bob Angells. Jetex PAA load appeared very tame in comparison—most competitors having very poor quality fuel, and consequently great difficulty in managing the mandatory R.O.G. flight. Winner Joe Barnes managed to contact two low altitude thermals.

The Cargo Clipper event saw no scores until the final hour of the contest when Dave Yates and John Done modified their PAA load entries to take the required cargo package and additional ballast to give an all-up-weight of 7 or 8 ozs. R.O.G. difficulties appeared to limit their allowable A.U.W.—but other fliers' lack of success with U.S.A.

Continued on p. 487

AT ENFIELD

Top, left: Chastell and Hackney Martians with fastest of the "B" racers (Eta 15c). Centre is 98 m.p.h. F.A.I. racer by Watford Allen-Cooper team after being knocked out through pilot interference (Eta 15). Right, Balch and Smith of Hayes repeated their Nats win with a Rivers Streak Mk II. Below left, Tribe, Razor Blade and Northwood mechs after Combat win. Bottom, Lambert's sleek Eta 15 racer with dural u/c and underbelly duct, was fastest in the air at Enfield

Enfield Control Line Rally

IN SPITE OF the lapse for one year, the C/L fiesta held on July 10th was even more popular than ever, although the unfortunate weather which turned the circles into mud baths and even washed away the sawdust put down to try to improve matters,—a record entry of over 150 was received. Particularly noteworthy was the keenness of the entrants who came just for the day from as far apart as the Isle of Wight and Glasgow and the chaps from Thornaby who came 250 miles on motorcycles and camped overnight ready for an early start!

In combat a few people put in some very good scores, but as seems to be the case in many comps recently, the standard of reliability was generally very poor, with one or two notable exceptions.

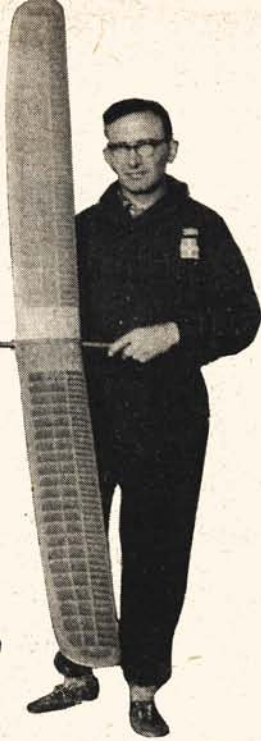
Class B provided some extremely good flying, with all three models finishing only



Defy those winds with Denmark's leading A/2

PJERRI

Tough structure on this rough weather design by Danish Champ Borge Hanson



"WHAT'S THE USE" say some of our readers, "if to get anywhere in A/2 competitions we have to build super-refined continental designs calling for jig construction and detail taking far too long to build and crashing all to quickly in typically British windy weather."

To answer these requests we sought the design used by leading Danish aeromodellers for a number of years, created by the well known Borge Hansen of Copenhagen. Here is a model which has proved in the years since 1956 that it can fly well in still air, matching performance of many more sophisticated creations but really comes into its own in thermal conditions and strong wind. Those

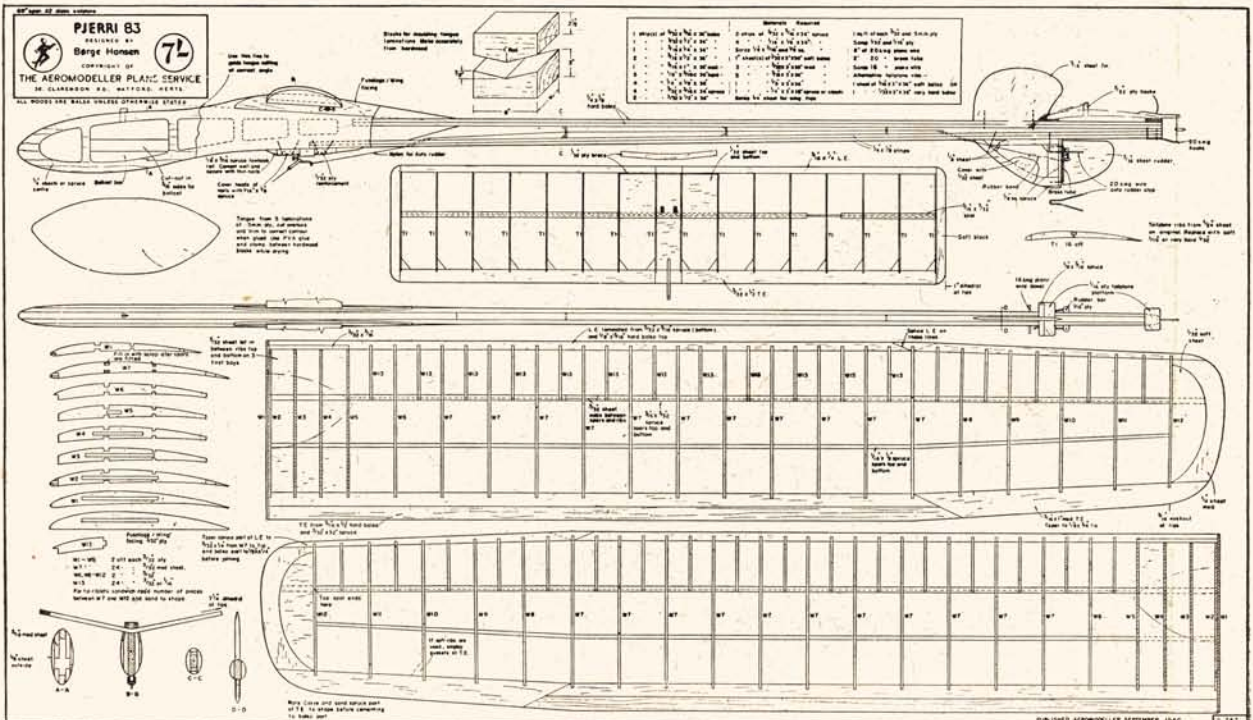
who know Denmark will appreciate Danish weather conditions which are, frankly, enough to deter all but the hardest of free flight enthusiasts. Models have to be strong, easy to trim, and to repair.

In consequence we can offer "Pjerri" (the name incidentally is an old Hansen family named "Peter" which has been handed down through generations) as just the type so many British modellers have been seeking. As a matter of interest designer Borge Hansen has been in 15 Danish national teams and has taken part in every A/2 World Championship since 1950. In 1951 he was 12th, in 1952 4th, in 1953 10th, and in 1956, with Pjerri, 4th. Three times he has been Danish glider champion and this year was second again with Pjerri.

An instance of the simplicity of this model which will appeal to the majority is Borge's instruction for trimming. "Make sure", he says, "that the tow hook and centre of gravity are exactly as positioned on the drawing and pack up the trailing edge of the tailplane with small pieces of paper to obtain the best glide. The model should turn to the right in a diameter of about 100 feet and in still air will average between 2 mins. 45 secs. and 3 mins. duration from a standard 164 feet tow line."

The fuselage is typically Scandinavian following the traditional pattern of a 1/4 in. spruce or obechi centre core and hard 1/8 x 1/8 longerons balsa covered on either side with 3/16 in. medium balsa sheet. The nylon auto-rudder line must be fitted before the final side is applied. Details

FULL SIZE COPIES OF THIS 1/7TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN G 767 PRICE 7/- PLUS 6d. POST FROM AEROMODELLER PLANS SERVICE.



are given on the plan for making the wing tongue of 5 laminations of .5 mm. plywood which are bent and glued to the right angle in blocks, shaped to the dimensions shown. Use of one of the Casein glues or PVA glues is advised so that when set, the laminated tongue is solid and set to the correct angles. The tongue is made from rough cut pieces and finally cut and trimmed to the right shape after glueing. Be sure to install it through the two root ribs and on top of the fuselage at the correct angle of incidence (note cross-section view). Borge uses pencil lines drawn down the side of the fuselage from lower edge of the wing leading edge, to the trailing edge as a guide for sand papering to the precise wing dihedral angle, along the wing root attachment area.

In the wing the leading edge and the trailing edge are laminated of balsa and spruce, which is a very strong, light and elastic construction. The leading edge is made of 5/16 in. x 3/32 in. spruce and 5/16 in. x 1/8 in. balsa tapered at the tip to 1/4 in. x 3/32 in. spruce and 1/4 in. x 1/24 in. balsa. Note that the spruce is tapered before it is joined to the balsa, it is difficult to sand both at the same time. When the leading edge and the trailing edges are prepared, they are placed over the plan in the right position, not forgetting to pack up the trailing edge 1/8 in. Plywood ribs in the centre of the wing are held in position by a false tongue made of a piece of 1/8 in. plywood and all other ribs pinned and cemented in place. There is little in *Pjerri* to worry any modeller with a little experience of glider construction and apart from its incorporated dihedral, the tailplane is most simple. Nose ballast is used to get the C.G. in the right place and also make *Pjerri* come out at the right weight of 14 1/2 ounces.

Cover with a good tissue and go out and defy those winds!



ROUND THE RALLIES (continued)

inspired models points to the necessity of being able to *reduce* (as well as increase) weight.

Meanwhile the combat entry had been working their way through the knockout system. Whilst some good flying was seen amid much broken balsa, the actual final proved a very tame affair—partly at least due to Barbour's model being handicapped by loose engine bearers, tank and spraybar, resulting in much time "on the ground".

Sunday's early cloudy period produced a surprising amount of downdraught—counterbalanced by strong thermals when the sun came out in the early afternoon. Treble maxs were managed by only 2 Power and 3 Rubber contestants—and flyoffs were held shortly after the end of the contest. Power was disappointing as both models stalled down from less than average climbs. Rubber was quite a different story—as Owston and Barnes launched straight into the same patch of strong lift, going vertically

out of sight at 5 minutes high up above the "recovery squad" a couple of mins. before being due to D.T. J. O'D., having more rubber to wind, launched about a minute later for a 6:25 flight timed down to tree-top height. The models varied considerably especially in prop-rubber combination, Owston having a 2 blade folder, Barnes a single blade featherer, and J. O'D. a 2 blade featherer.

Radio saw a clear win for Fraser flying a "Smog Hog" despite his manoeuvres being limited by lack of ailerons—one in particular of his spot landings using motor control looked very impressive.

The T/R events were run consecutively (first A then B) but even so were completed on time. The B race finished with a somewhat hectic 5 man final. Pasco of Thornaby won both events, with Wharfedale runners-up.

New style PAA loaders for Pee Wees, at left: Dave Yates' 1st place in Clipper Cargo, was 3rd in PAA gas. Right: John Done won PAA gas with his tiddler

P.A.A. LOAD JUNIOR JET

1. R. A. Parsons (Prestwick) 0:52

P.A.A. LOAD GAS

1. J. Done (Wallasey) 7:42

2. R. Angel (Wallasey) 7:09

P.A.A. CLIPPER CARGO

1. D. Yates (Wigan) 21 ozs.

2. R. Taylor (Glasgow S.A.) 8 ozs.

COMBAT

1. C. Blair (S.A.S.M.C.)

U/R GLIDER

1. J. O'Donnell (Whitefield) 9:00

2. E. Black (Glasgow) 6:44

U/R RUBBER

1. J. O'Donnell (Whitefield) 9:00+6:25

2. B. Owston (Glasgow) 9:00+5:10

3. J. E. Barnes (Liverpool) 9:00+4:56

U/R POWER

1. I. McPherson (Glasgow) 9:00+1:30

2. J. Carruthers (Glasgow) 9:00+0:00

CLASS "A" TEAM RACE

1. T. Pasco (Thornaby) 5:40

CLASS "B" TEAM RACE

1. T. Pasco (Thornaby) 8:54

RADIO CONTROL

1. R. Rraser (Kirkcaldy) 2359 pts.



Readers' Letters

Model Metrics

DEAR SIR,

Aeromodelling attracts a variety of characters, from the highly qualified "professional" man (who for all his qualifications may be clumsy with his fingers) to the lowly paid workman or youngster who may possess fine practical engineering qualities which building and flying models brings out. Whether regarded as hobby or sport, we have always thought of aeromodelling as something *exclusive*, commanding far more than most other hobby interests and offering far greater rewards.

Because it is such an important subject in its own rights, one thing that irks most is how many of its technicalities are tied to "full size" practice. Why do aeromodellers accept loading data, etc., related to square feet wing (or total area) when the logical model unit is ounces per sq. in.—or more conveniently, ounces per 100 sq. in.? This holds through a lot more formulas, etc., which involve decimal factors with lots of noughts or other equally awkward figures because they are quoted and applied in full size dimensions rather than in model units.

Take model engine power as another typical case. Measure torque in anything but ounce-inches (although gm-cm would probably be better, but we have enough metric conversions as it is) and you start dealing in fractions right away. But whatever the basic scale, the B.H.P. figure still comes out as a fraction because no production model engine as yet develops one horse power or more.

The electronics boys have more common-sense, at least. They soon get fed up with dealing with decimal fractions of amps in favour of milliamps and rationalised other figures with suitable prefixes. And since "milli" as a prefix is now so widely known as 1/1,000th, what more logical than to apply this to model horsepower ratings?

In other words, our larger, more powerful motors developing around .6 B.H.P. become 600 *milli H.P.*—which is a pretty fair "equivalent" for a large piston engine—

"milli" and "model" being almost synonymous—

Large (full size) piston engine—600 h.p.
Large (model) piston engine—600 (milli) h.p.

That makes the baby motors look a bit more respectable, too. .04 h.p. becomes 40 milli-horsepower—again an "ultra-light" equivalent figure, or not far off.

There would appear a lot of sense in adopting "millihorsepower" as a standard model unit, even if rationalisation of model units were not carried further. But it would be nicer still to regard this as just one step in the right direction—decide whether displacements were to be quoted in c.c. or cu. in. (not both)—accept that the modeller can more directly translate ozs. per c.c. (or cu. in.) than pounds per litre and that time in minutes and seconds means far more to him than in hours.

Aeromodelling is worth its own system of rationalised units—but before sticking our neck out any further, what do the aeromodellers think?

R. H. WARRING

Beckenham,
Kent.

Letters to the Editor should always be accompanied by a stamped and self-addressed envelope for the convenience of our reply. We regret that without this gesture we cannot undertake either to acknowledge correspondence or provide answers to readers' queries.

Manufacturer replies

DEAR SIR,

Further to your article headed "Balsakriticisms" in the July AEROMODELLER, with reference to the Performance Kits "Galaxy Racer". I should like to clear up the two points raised with regard to the "Galaxy" in your article.

In the first instance you mention that our

dihedral instructions, "will not work out". On the plan is a quite straightforward template for setting the root rib R1 to the correct angle. The template has two straight edges and one curved edge. If either of the straight edges are used for setting the rib the correct dihedral will be realised. It would seem that Mr. Dave Morton has decided to use the curved edge with consequent dire results. As a matter of interest his error should have been immediately apparent on building the wings, because if the root rib is not set at the correct angle, the 3/32 in. x 3/32 in. top main spar could not have been fitted. As a final check the actual tip dihedral as measured from the wing tip to a horizontal line through the wing root intersection is clearly marked on the plan, and mentioned in the instruction sheet as 2-4 in.

With regard to the second criticism, you say that a former is not shown on the plan. The former in question is F12. If you will look at the top right-hand corner of the plan, which shows a large three-dimensional view showing the location of the wings for the "Galaxy Racer", you will see F12 marked large and clear with an arrow pointing to the former in question. The reason the former is not also shown on the side elevation is clearly explained in the instruction sheet. The side elevation shown on the plan shows the location of the wings for the sailplane version, and on the instruction sheet under the heading: Fuselage-Sailplane Version you will see the following—"It is not necessary to fit F12 or F13 on the Sailplane Version".

On page 366 of the magazine you ask: "Why else are we lacking a strong R/C trainer?" I should like to point out that one of the first two kits which we produced some time ago fills this bill exactly. It is a very strong model designed expressly for this purpose. I am referring of course, to the "Apex".

In conclusion I should like to say that we welcome constructive criticism, if they are well founded, but we feel that in the case of the "Galaxy Racer" both of the faults mentioned are completely without foundation, and no difficulty would have been experienced if both the plan and the instruction sheet had been carefully followed.

O. F. W. FISHER,

Chief Designer.

Coventry.

ARMCHAIR AERONAUTICS

FIGHTER AIRCRAFT OF THE 1914-1918 WAR by W. W. Lambertson and E. F. Cheesman, 224 pages, 11 in. x 9 in., 784 illustrations, published by Harleyford Publications Ltd., Letchworth, Herts., England, price 45s.

AS THE TITLE suggests this book sets out to describe the main production—and not a few experimental—fighter machines produced during World War One, which aim is well fulfilled. The book is off to a good start with another beautifully executed dust jacket by Douglas Carrick, produced in full colour and repeated within as a frontispiece. The painting is technically accurate and is infused with atmosphere.

The main section of the book is devoted to a two-page format; the left hand page is divided into two columns the outer one containing some five or six photographs and the inner one the text: on the facing page appears the three-view G.A. Some 84 aircraft are featured in this way. This main section is followed by very useful sub-sections devoted to "Armament" and "Camouflage", which are extremely comprehensive for their size. These sections are followed by several pages of photographs of experimental aircraft and the book concludes with a tabulation of data and a good index.

So much for the layout, what of the book itself? First let it be said it represents good value for money and much time, research and effort must have gone into it.

The G.A.'s are marred to a certain extent by over thick outlines, which on the smaller machine appears out of all proportion and alters the appearance of narrow components such as struts. The D.H.5 seems to have come off worst in this respect. Wheels in all front elevations escape such attention. All drawings are to a uniform 1/72nd scale, but no scale is included on any of the G.A.'s. The chopping off of wings in plan views is always irksome to modellers and this has occurred, unfortunately, in some 25 instances. With the exception of the F.E.2b, all plan views could have been shown in full by the simple expedient of swinging through 90 degrees and lining up under the front elevation, there is ample room. It also makes for a more symmetrical layout and might with advantage be used in the future.

Drawings are neatly executed but there are detail inaccuracies and lapses which result in some "queer shapes" i.e. Dolphin fin, Camel wing tips, Salamander and Snipe sans engine in side view, Albatros D XI rudder, Hannover wings should be swept slightly etc. The Austrian Fokker B II needs the plan view re-drawing, the fuselage is too wide, being drawn the full diameter of the cowling instead of allowing for the rounding in of the cowling fairings. Trailing edges of the wings are not scalloped as they are in the front view and as mentioned in text. However, a brave attempt has been made to feature some G.A.'s of lesser-known types and there are quite a few to delight the enthusiast:—Junkers CL I, Brandenburg

KDW and W 12 (these two particularly well executed) Dornier D I, Spad A2, S.E.2, Phoenix D III, etc.

The text is interestingly written, a task more difficult than is apparent in this type of work, and maintains a good degree and accuracy and reasonable comprehensiveness. There are omissions, for instance attention could have been drawn to the revolutionary nature of the airfoil section of the Austrian Aviatik Berg D I, in which a reflex curve was introduced in the top surface camber. This airfoil is not correctly shown in the G.A.

Fokker Triplane production terminated in 1918 (and not 1916 as the "printers error" would have us believe), and the fuselage (likewise D VI) had the fabric covering applied over the plywood panels, a point not made exactly clear.

The selection of "Rare and Experimental Aircraft" photographs at the end of the book will doubtless whet a good many appetites. Some of the German aircraft have wrong engine designations; the DFW D I had 160 h.p. Mercedes D III and the AEG DJ I had 195 h.p. Benz Bz IIIb, a Vee eight engine. In the British section the A.D. Scout "The Sparrow" is a real find.

In conclusion it may be said that this book continues what has become a Harleyford tradition in, where possible, avoiding previously published photographs—there are literally hundreds of new ones in this book many of which have probably never been published before, and for this reason especially "Fighter Aircraft" becomes a "must" for the student of early aviation.

P.L.G.



The Keilkraft show

Big display by the Wickford Company

FOLLOWING THEIR POLICY of keeping to the forefront of the hobby industry, the well known firm of E. Keil & Co. staged a Hobby Trade Show in Manchester from June 27th—30th, a venture that proved an unqualified success.

It was our pleasure to attend this innovation (that we nearly did *not* is another story!), and we were surprised at the multiplicity of items on display, a credit to those entrusted with the task of displaying so varied a collection in the space available. The new K.K. Trade Catalogue (happily coinciding with the opening of the Show) was well received, and copies of the new Marine Catalogue were also available.

Many retailers travelled long distances to be present, the first being Mr. Bob Atkinson, Keilkraft's sole distributor in South Africa, seen being welcomed by Mr. Eddie Keil in our photo below.

Among many new lines shown were two new K.K. kits which immediately took our eye. "Conquest", a 30 inch span glider, is a well designed model that will appeal to the public for its pleasing yet practical layout, and the "Snipe" (free-flight cabin model for the 049 glow and .8 diesels) is a sure winner with its beautiful lines. The attractive packing of the Cobra 049 motor also caught our eye.



Boats and railway layouts were featured, the new range of Super-quick trackside buildings being very pleasing. In fact, the Keil Company would appear to have the hobby trade well and truly "buttoned up" if this Show is a yardstick, and we understand that the display will make its appearance in other centres from time to time.

There can be no doubt that retailer interest was widespread, and we foresee a great future for the hobby when such enterprise is spread far and wide.

Two views above show but part of this Keilkraft venture into the north to display their wares and new items to come. At left Eddie Keil personally conducts Bob Atkinson, his South African distributor, around the display, and Bob was obviously impressed!

GADGET REVIEW

More ideas
to help your
aeromodelling



HOW MANY TIMES have you gone out to the flying field and lost so many rubber bands, through heavy landings, as to make continued flying impossible! Never? Well, then you must have thought of this band saving gadget as did Brian Timmins of Belfast. Shown in **A**, it is simply a piece of 18 s.w.g. piano wire firmly attached to the trailing edge of the pylon by a Nylon patch, the upper end of the wire being looped to fit over rubber band peg. The wire is flexible enough to be pulled well back and bands slipped onto the peg. In a heavy landing the wing invariably slides forward and pushes the bands off the front peg, but instead of being lost are retained ready for reassembly of model and a next flight.

For radio fans and free fliers, **B** provides a simple form of aileron control suited to servos, neutral-left—neutral-right actuators, or pendulum control. Operation of the gadget is as follows: the crank is driven by motive force round, say, clockwise, which moves the wire loop, coupling and cranked 14 s.w.g. wire connected to aileron is moved downwards, pushing aileron upwards. The opposite aileron is automatically lowered if the opposite wire shaft is cranked in the same way. B. E. Newman of Lee, London, the "inventor", and winner of the f/f scale event at the Nats., suggests the use of an E.D. Wire Connector as a coupling. Make certain that 18 s.w.g. wire from aileron in neutral position has its looped end in the middle of the angled 14 s.w.g. wire shaft. Note the bushes in ribs which, like all other moving parts, should be well "Vaselined" before model is covered.

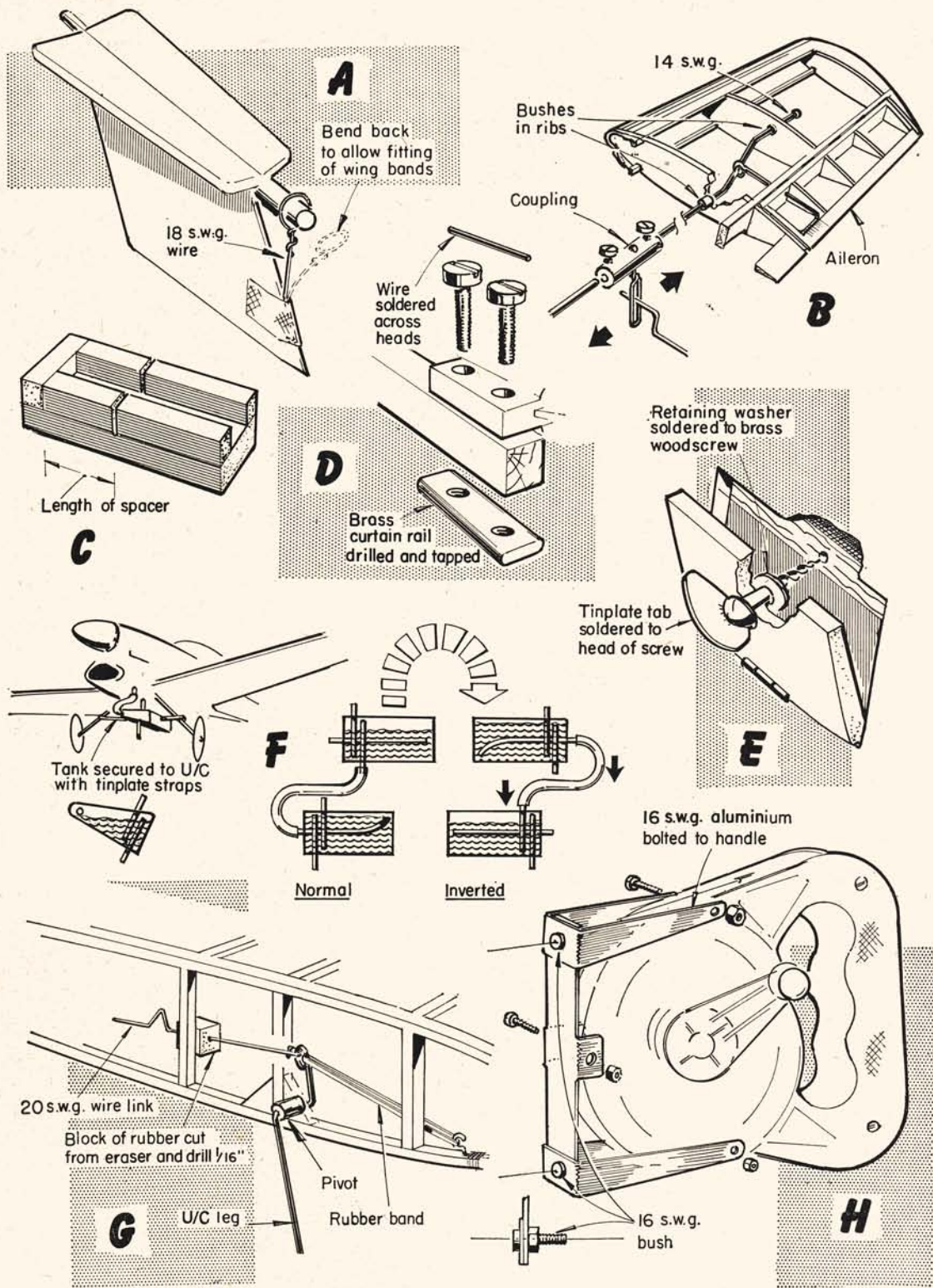
Cutting a large number of equal length spacers for perhaps a rubber model can become monotonous and seemingly never ending at the time, so why not speed up construction by making yourself gadget **C**? It has a hardwood base with $\frac{1}{2}$ in. sq. end and sidepieces cemented onto it, similarly from hardwood. A fine sawcut is made across the sidepieces, its position from end piece being governed by the length of spacers. We won't hesitate to say that the sawcut must be square to the base and end piece. When complete, simply insert a length of strip balsa into slot, pressing it firmly against the end piece and make a saw or knife cut using slots as a guide for the blade. The cut spacer is removed strip pushed along and another spacer cut, and so on. This idea is also from B. E. Newman and could be made more universal by an adjustable end piece for variation in spacer length. A semi-permanent method of attaching an engine to its bearers is something that will interest all power modellers, and has been submitted by M. J. Platt of Sheffield. The advantage of such a method, which can be seen in **D**, is that the engine just cannot

vibrate loose. To remove the engine requires the unsoldering of the wire across bolt heads. Mr. Platt uses $\frac{3}{8}$ in. wide brass curtain rail, drilled and tapped to receive bolts and suggests that each bolt be tightened up with as near an equal number of turns as is possible when lining up grooves in heads.

Designing a scale cowling that allows access to the controls of a running motor can be a problem; one can make a hinging panel for a scale in-line easily enough, but how can this be kept in closed position once the motor is running and then quickly opened for further adjustments? M. A. Kelly of Stow-on-the-Wold has found the answer in **E**. A brass roundhead woodscrew is taken and a tinplate tab soldered into groove. Screw then fits into a hole drilled at the top of hinging panel, and a retaining washer soldered on. To retain cowling panel in closed position, the woodscrew enters a small shallow hole drilled into the bearer.

Mr. Kelly has also suggested to us a system of arranging fuel tanks for long range experiments, particularly with C/L models, but can be tried on R/C types as well. Illustrated in **F**, the tank arrangement is also suited to aerobatic manoeuvres. Mounted between U/C legs, the supplementary "drop" tank, if of wedge pattern must have its tapered end angled up and out of the circle on a C/L model, to avoid fuel covering feed pipe in level flight. This is shown lower left of "F". In the sketch of tank in normal position, the fuel feed to engine comes from the internal tank and all feed and vent pipes should be arranged as shown, when inverted, the supplementary tank tops up the internal one.

Many free-flight rubber and scale models would benefit from a retractable undercarriage mainly from the scale point of view, but also to a small extent performance-wise. A delay mechanism is required in the retraction system to allow the model to complete takeoff run and gain height. A fuse method could be devised, but presents problems of gaining access into the fuselage or wings to "refuse" the system after each flight, and perhaps pre-retraction! Drawing **G** shows an excellent idea incorporating a troublefree delay. Once airborne when weight is taken off the legs, the rubber band pulls a 20 s.w.g. wire link through the block of rubber. A kink in the wire slows down the action and the U/C only snaps up when kink has passed completely through the block, taking some seconds. The rubber block has to be very firmly attached to some part of the model structure such as a reinforced spacer or former. The band hook should be bound onto a longeron and gussets cemented around pivot point. The idea comes from the editor of our companion magazine *Model Maker*, Vic Smeed.



Mr. V. Bottomley of Oldham writes to tell us that with the recent sale of Thimble-Drome C/L Handles at low prices, many modellers will be using these, and like himself may be experiencing a tendency for lines to wrap themselves around the handle while performing aerobatics, with obvious results. To prevent further

occurrence he has made a line guide from 16 s.w.g. aluminium that fits onto the handle without modification of same, by utilising the three forward bolts/nuts holding the two handle halves together as in **H**. Owners can obtain measurements from their own handle, our drawing being simply a guide as to the layout.

quickies

USE SOFT RAG

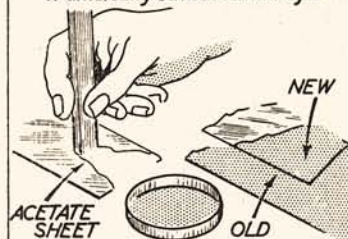


Silicone polish brings up metallic sheen on grey plastic mouldings

SPRAY GROUND COLOUR



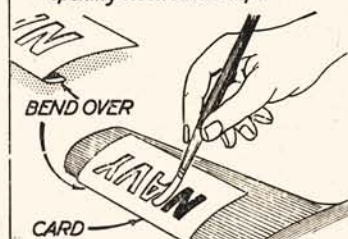
Spatter painting is good method of simulating German camouflage



Try new paint mix on transparent plastic sheet for direct match



Nutcrackers are a safe tool for opening stuck bottle caps



Card templates for lettering etc. can be cut from magazine plans

CLUB

E: N—S :W

FETE AND GARDEN PARTY displays are reported by many clubs this month, showing that the will to publicise our hobby and to get more into the fold, is a common thought. Most of the clubs appear at local events only; but one which is making a speciality of giving displays wherever requested is the COSMO A.C. based at Bexley, Kent.

They have an introductory letter which explains their purpose and what they are able to offer so that prospective Fete organisers are placed well in the picture and can arrange the demonstration team's show in their programme. Good show Cosmo!

Southern

SOUTHAMPTON M.A.C. members hired a coach for their annual trek to the Northern Heights Gala, having an enjoyable day. Only near placing in the contests was N. Worley's 4th in Glider, but all were glad to see ex member N. Elliott win the rubber event.

WORTHING BALD EAGLES M.A.C., have recently attended rallies at High Wycombe, Halton and Enfield, the Nationals. Although no significant contest successes have been made in major rallies this season there have been plenty of entries, mainly in combat events. Recently they put on a control-line display at Windlesham School, which met with great success, highlight of this being some very prolonged and twisty combat which included the full stunt schedule, and which the participants dearly wished they could reproduce on the contest field! Forthcoming events include a further C/L display, a club combat championship, and also a 1/2A champ. The club will be organising the combat event at the South Eastern Area's South Coast Gala at Tangmere on September 25th. This event is pre-entry, and as the number of entrants must be limited, entries should reach the Competition Secretary, 8 Gainsborough Avenue, Worthing, by September 15th at the latest (2s. 6d. each).

Radio Gliders have been coming to the front recently, in **REIGATE AND D.M.A.C.** Both Frank Knowles and Mike Endacott having a go at the spot landing comp. at the Northern Heights Gala. Inexperience at towing resulted in both entries failing by a matter of seconds to achieve the necessary duration, 5 seconds preventing Mike from walking away with first prize. To make up for this, Frank ventured to Clwyd for the slope soaring comp., to win as reported in Round the Rallies. These gliders are now being flown off 200 feet lines at the club field, attaining about 3 mins. duration, the multi radio linked to rudder and elevators being ideal for small field flying.

South Eastern

NORTH KENT NOMADS competition programme is now in full swing and those members who have recovered fully from those early morning jaunts with Charlie Dance and Wally Skeels during their World Record R/C distance attempts have shown themselves to be proficient free flight men. The C. H. Roberts Cup for flying boats is being held in Danson Park again this year on September 11th, and the Club invites all interested parties, with or without models, to attend this somewhat unusual competition.

John West, **BRIGHTON D.M.A.C.** Secretary, although placed eighth at the Power Trials, still took part in the Championships as a proxy fier following his near misses in the Thurston and Shelly Cups.

Due to the clash with the Sidcup Gala the **RAMSGATE C/L Rally** will now be held on **AUGUST 21st**. Pre-entry is requested, fee being 2s. 6d. per entrant, to be sent to the secretary (M. Robinson, 21 Winterstoke Crescent, Ramsgate) by August 18th.

ISLE OF THANET M.A.C. recently held a team-race comp. among its members which was won by Pete Barnard with his Startiger model. Combat also raged and during the third battle the secretary's model had its wing and tail units part in different directions in a mid-air collision. The Combat was so enjoyed that comps. are occurring regularly each week.

EAST GRINSTEAD M.F.C.'s Roy Payne and 8-channel O/D radio job, created a minor sensation one evening recently when the engine's "tickover" sounded rather odd, and subsequent examination on landing showed that the Veco 35 had shed its complete cylinder and head in flight! Worthy of mention is a very ambitious 9 ft. span glider by younger member, Tony Lovelace. Flight tests show great promise. Relations between the F/F and C/L sections of the club may well have suffered a blow when Les Fuzzard's glider collided with Clive Southgate, who happened to be flying his control-line stunter at the time.

ASHFORD M.A.C. C/L rally on Sunday, July 17th, was rained off in the morning but the afternoon proved fine and the rally was a success. Combat was hard fought (as usual) with Pratt of Northwood annually triumphing over clubmates Tribe and Perry.

Combat	Stunt
1. Pratt Northwood	1. R. Brown
2. P. Tribe and P. Perry	Lee Bees
	2. K. Day
	3. N. Falconer
	R.A.F.

The raffled Oliver Tiger was won by Mr. Craig of Dover.

South Western

The South Western Area Championships held on Woodbury Common on June 19th attracted a number of entries, the more notable of these being Australian Bond Baker who now resides at Torquay. A great deal of interest was shown by the Exmouth club in the 1958 World Championship Power and Wakefield models which Baker had with him. He used the power model for the Area event. The S.W. Area shield which is a team award went to Exmouth for the fifth successive year, with 16 points. Next came Plymouth with two points. Dennis Baudet (Exmouth) won the Area Glider Championship for the second year running, and club mates E. Mann and Alan Parker took the Power and Rubber titles.

Power.
E. C. Mann (Exmouth)
D. G. Baudet (Exmouth)
R. Baker (Torquay)

Rubber
A. A. Parker (Exmouth)
E. Drew (Honiton)
D. G. Baudet (Exmouth)

Glider.
D. G. Baudet (Exmouth)
G. Lynn (Plymouth)
P. M. Baudet (Exmouth)

Despite bad weather, a good deal of flying has been possible for **TAUNTON & DISTRICT M.A.C.** over the past few weeks. Akin with many other Clubs, they too are plagued with the question of noise. The Club's motive power consists mainly of E.D. Racers, but one or two Rivers 2.5's are in the offing.

Western

At Northern Heights, R. Dudley the **WESTON CONTROLINERS'** helicopter expert, had quite a time. His helicopter flew O.O.S. on its first flight!

North Western

LIVERPOOL AND D.M.A.S. have been having good attendances at their flying ground each Sunday during the last few weeks. Members attended the Nats., Joe

Barnes came 6th in rubber—not bad. An A/1 glider contest is to be organised for both senior and junior members. Winning junior will be refunded the cost of his model, by one of the richer members.

The lack of interest in the F.A.I. power in the North West was very evident at the Team Trials at Wigsley a few weeks ago. There were no more than a half dozen competitors from the area. The Rootes Trophy will be held on Sunday October 30th, at Stretton. There are four flights of three minutes maximum, the engine run, fifteen seconds and all events are open. The top two competitors in each club in each event to count (N.W. Area only).

Midland

The OUTLAWS (CANNOCK) M.A.C. pilgrimage to Enfield came to an abrupt end some 92 miles from home with a blown cylinder head gasket half-way down the M.1. One on-hire Consul and some £75 worth of modelling tackle were promptly deposited in the Buckinghamshire countryside and six dispirited bods began a six hour trek home, via taxi, train and various erratic Sunday bus services. Trials inspired mono-wheel team racers having really caught on. First payments were carried out on a beat-up relic in the process of being repaired—result, a genuine 10 m.p.h. increase in speed. New Eta 15's are arriving slowly and showing great promise.

LEICESTER M.A.C.'s "Blind Dog Rally" was a poor show as far as the Club was concerned; only five members turned up and four with models. The Glenfield Rally was a great success and more models were there than were required to fly. Yet another fete demonstration was made at the Carmel Boys' Home on Saturday July 16th.

London

A sprinkling of CRYSTAL PALACE M.A.C. members went to the Enfield Rally, one member had to appear in the first heat of Combat, during which about 1/2-in. of rain fell. Despite soggy streamers, soggy planes and soggy pit crew, four cuts were made then the model was pierced by a screaming McCoy 19. The organisation at Enfield was a bit disappointing since three in a circle combat was the rule.

HAYES AND DISTRICT M.A.C. recently held a display at the National Physical Laboratories Fete. The demonstration started at 8 m.p.h. with Roger Stone's, scale Saunders Roe Hovercraft and progressed through to F.A.I. team racers, and ended up at 120 m.p.h. with Dick McGladdery's speedship. Very favourable comments were voiced by both N.P.L. and the local Press. Team Race team of Mike Smith (High Wycombe) and Dave Balch (Hayes), have repeated their Nationals win with another victory in Class A at the Enfield Rally. Not to be outdone the Combat followers had a Gala Day at Halton, when John Brailsford took second place at Northern Heights. Robin Greenaway, the battling junior, reached the semi-finals.

Following a short lull after the Nationals, a contingent from the ENFIELD AND DISTRICT M.A.C. had a very pleasant but breezy outing to the Northern Heights Gala. The Club had entries in the combat and glider events. In glider it was a case of many repairs between comp. flights. The weekend of the control line rally was rather hectic for some of the members, as the first of the club's flying displays was put on for the local school occasion.

KENTON CLUB Combat entries at recent rallies have increased considerably. They had eleven entries at the Nationals when G. Copeman finished third equal. At Halton the boys managed to keep the Keil Kraft Trophy "in the family". G. Copeman came first and A. Clipstone third equal. Hasty repairs had to be made when these two were doing some practice flying before the event ("just to get the settings right; we won't break anything") and there was a mid-air collision. At Enfield, G. Copeman took third place after a hectic day

For Your Diary

August 13th

Ulster C/L Nats.—Maghaverry, Nr. Lisburn.

August 14th

1960 Devon Rally*
Woodbury Common, nr. Exmouth.
Scottish Gala, Abbotsinch.
K.L.M. Trophy (U/R Power)
C.M.A. Trophy (U/R Rubber)
Glider (U/R Glider)
Taplin Trophy (R/C Single)
Team Racing (Classes A & B)
Sidcup Gala,* Kenley Aerodrome, T/R stunt.

August 21st

I.R.C.M.S. Contest, R/C only, R.A.F. Wellesbourne, Mountford, Nr. Stratford-upon-Avon.
Ramsgate C/L Rally, Jackey Baker's Sports Ground, F.A.I. and B class T/R combat, stunt.

August 28th

South Midland Area Gala* (all classes). Cranfield.

September 4th

Irish F/F Nationals, on the Currágh. Southern Counties R/C Rally, Army Air Corps Station, Middle Wallop, Wiltshire, County Championship Prizes, Rudder only, intermediate, multi. Note: NEW DATE!!

NORTHERN GALA

PAALoad America class
Glider (U/R Glider) }
Hamley Trophy (U/R Power) } R.A.F.
Caton Trophy (U/R Rubber) } Rufforth
Aeromodeller Trophy (R/C Multi)
Team Racing (2A, A & B)
United Kingdom Challenge Match

September 11th

Croydon Gala*, Chobham Common, open glider.
C. H. Roberts Cup* Danson Park, Welling, Kent (organised by North Kent Nomads).

September 18th

Battle of Britain Combat/Stunt Rally,* Stapleford Park, Melton Mowbray (organised by Leicester M.A.C.).
Caledonia Shield, Lanark.
*Keil Trophy (Team Power) } Area
Frog Junior Trophy } Central-
(U/R Rubber/Glider) } ised
E. C. Muxlow trophy* (N. Area)—R.A.F. Rufforth

September 25th

South Coast Gala,*/R.A.F. Tangmere, Nr. Chichester, Sussex. Rubber/Power/Glider/1/2 A Power (up to .85 c.c.), Tailless Glider/R.C./Combat/Class A T.R./Chuck Glider.

October 3rd

Croydon Gala,* Chobham Common, open power (including separate 049 class).

October 9th

London Area C/L Champs*—R.A.F. Kenley (open to all but Champions decided from London Area only).
*Farrow Shield (Team Rubber) } Area
Team Racing } Central-
(Classes 1/2 A, A & B) } ised

October 16th

Frog Senior Cup (U/R Power) } Decentralised
C.M.A. Cup (U/R Glider) }

November 20th

Croydon Gala,* Chobham Common, open rubber.
* Signifies S.M.A.E. Sanction.

of three-in-a-circle Combat, high winds and intermittent heavy rain. This club would like to congratulate the Enfield club in a well-run contest.

On June 11th COSMO A.C. gave a demonstration at the "Hurst Community Centre" Fete, with line length limited to 30 feet by trees, 6-ft. difference in the ground level, and with most of the boys using 2.5's, things were hectic to say the least. In spite of these hazards all went well and was well received by the large crowd which included Edward Heath, M.P. Club visited the Northern Heights Gala in force, everybody thoroughly enjoying themselves. Only one Club member, Irvin Ella, was early enough to enter Combat and won his first heat in spite of an opponent, whose main object was to crash him, but was knocked out in the next round. Fred Andrews caused some amusement when his "Debutante" landed almost on the R/C spot at the height of the contest.

HORNCHURCH M.A.C. is still active in all classes of modelling. Despite adverse weather conditions, A. R. Wells flew in both A/2 eliminators. D. Finch has now reached 89 m.p.h. with a .8 c.c. speed job. Ever seen a pilot the shape of a corkscrew ? ! ! Interest in 1/2 A team racing is increasing and proves to be inexpensive and very good fun. It's just the job for some of the newer young members.

The best success CHINGFORD M.F.C. had in combat so far this season, was at High Wycombe, when J. Noe reached the quarter finals with an A.M.35 powered RAZOR BLADE. The club gave a flying and static display of models at the local fete. The static display included a working radio model exhibited by G. Curd. The control liners are now turning to stunt models, some of them taking their combat jobs on holiday and flying on the beach (one way to clear a space).

Northern

Eight members of the WHARFEDALE CLUB visited the Scottish P.A.A. rally on June 26th. In Class A the Baxter/Horton team were second with Davy/Long team third; in Class B, Tom Pasco again thrashed the Wharfedale entries with his ETA Mk. VIC model (ably assisted by Wharfedale club members, Horton and Baxter). Second place went to the Long/Davy/Horwarth team with their *Dalesman* racer. July 10th saw the club's staunch T/R enthusiasts battling their way through a mud bath at the Enfield C/L rally. In spite of the prevailing conditions, Ken Long succeeded in putting up the fastest Class A time of the day (5 : 7 Enfield say 4 : 49), when his ETA 15 model twice topped 50 laps per tank. Both Davy and Long succeeded in reaching the final. This presented a problem and it was decided that Les Davy could not be allowed to fly the final with a model in each hand! Luckily Bill Halley of Thornaby and Wharfedale club mate John Horton, agreed to fly Ken Long's model. The outcome was rather erratic but very encouraging with Davy's model taking third place closely followed by the Horton (Long) Halley model (both models were powered by ETA 15's).

CHESTERFIELD SKYLINERS M.A.C. recently held an open Glider competition for its Trophy, held at the time by B. Fearn. Conditions were difficult, with high winds and low cloud, and no one obtained good times. After many mishaps the fourteen entrants were reduced to five and later in the day only two flyers remaining were Mr. Wholly, the club chairman and the club secretary, who held the trophy. Mr. Wholly finally succeeded in winning when Mr. Fearn's plane disappeared O.O.S. for a 1 1/2 min. flight. The club was also invited recently to give a flying demonstration at a Fete and the combat models were dug out of the piles of dust. A successful display of balloon bursting was given by C. Harris and some lovely combat was supplied by Mr. Harrison, C. Harris, L. Wiltshire and Mr. Stringfellow.

North Eastern

The Sunday meets at Usworth for SUNDERLAND M.A.C. still continue, but interest seems to have dropped off; at the last meeting there were only four aircraft, all free flight. On July 10th an exhibition was held at the Seaburn Recreation Park, with control line flying also large free flight models were on show. Most of the N.E. Clubs were represented.

A club has been formed in South Shields, known as the ZHIGS. Membership is now fourteen and up to now all are over twenty-one. Interest centres around control line stunt, with large free-flight a close second. Club meetings are at: 25 Sunnyside Terrace, Cleadon Village, Co. Durham and flying ground is Temple Park, Tuesday, Thursday evenings and all day Sunday.

South Midland

For the past eighteen months the activities of AYLESBURY AND D.M.F.C. have been absolutely NIL, due to lack of interest by those who were supposed to be organising. However a general meeting was called of all those still in the club (on paper) and the club is now on a sound footing, meetings being held every Wednesday evening. A number of good control line members are going to train younger members and an active R/C section is gradually getting under way. Like so many other clubs, they are having difficulty in finding suitable flying space for free-flight activities, but are determined that they will and hope to be successful in the very near future. I should think so too, with all that open space and deserted airfields around them!

Six C/L enthusiasts of the WATFORD WAYFARERS M.A.C. made the long journey to Wigsley for the C/L trials. John Lambert placed sixth just missing a chance for the team, his fast ETA 15 racer putting up a time of 4 : 46 in practice which turned many a head. A C/L display was put on by

the club in conjunction with a Fete held at Rickmansworth Grammar School on June 25th. Stunt and combat flying was featured, but team racing was again to the fore, with the best times being a 4 : 59 (twice) by T. French, whose model was turning in a consistent 92 m.p.h. The following day a coach load of members made the trip to R.A.F. Halton for the annual Northern Heights Gala. The high wind and bad recovery area made flying a hazardous affair, but Chris Webb, who deserted the C/L circles for the afternoon, coped with the conditions to win $\frac{1}{4}$ A free flight power with 4 : 37, unfortunately losing his best in the process.

The NAPIER ENGLISH ELECTRIC M.A.S. has become much more active now that summer is here. Flying night is Tuesday at their sports ground and quite a few models circulate at each session. Main interest in the club is control-line flying. There is a 10-ft. span scale model of the Bristol Brabazon, powered by four engines. The undercarriage and flaps are retractable. Outside the company members will be made welcome on any Tuesday evening.

Scotland

ANGUS AND DISTRICT AEROMODELLING LEAGUE are enjoying a successful season, largely due to the very reasonable weather in their area so far. With more than half the free-flight contests over, MONTROSE are emerging as clear leaders with 7,943 points, followed by BUCKSBURN with 6,334 and ARBROATH with 710. The results of contests held recently are:

3rd Strathmore Glider: C. G. Campbell (Montrose) 6 min. 15 sec.

4th Strathmore Glider: D. L. Petrie (Montrose) 7 min. 20 sec.

1st Strathmore Rubber: C. M. Christie (Bucksburn) 8 min. 01 sec.

2nd Strathmore Power: D. L. Petrie (Montrose) 9 min. 00 sec.

Top individual in the League is David Petrie, who has got four Firsts, two Seconds and two Thirds to give him 3,329 points, flying in all three classes. The League has been running a series of C/L competitions this year. This is experimental, to see if the idea will catch on, but C/L secretary Gordon Bell, has been hard put to stir up enthusiasm and only Dundee and Arbroath have put in an appearance so far. A party went over to Abbotinch for the PAA Festival, a five-hour journey there and back. Charlie Christie lost his "Sunday Girl II" vertically upwards after 6 min. 10 sec., when his dethermaliser failed to work. Oh Charlie what will St. Alban's lads say?

Ireland

DUNLAOGHAIRE M.F.C. held its second contest on July 3rd at Raheny, Dublin, in the perfect setting of Newgrove House by kind permission of Mr. Rafter. The Harpur brothers, C. Clarke and T. Tafer seem to have collected all the places.

The latest news from the LARNE M.F.C. is that L. Blair has set up a new club record for R.C. slope-soaring, the time being 25 mins. 18 secs. on June 22nd, 1960, with his own design glider.

Pen Pal

Is wanted by Malcolm Eales, 16 Greatfields Road, Barking, Essex, age 13 just getting keen on power models after rubber driven experience.

THE CLUBMAN.

New Clubs

SOUTHEND M.F.C.,

J. L. Delmue, 11 Nayland Crescent, Prittlewell, Essex.

ESHER D.M.F.C.,

E. G. Cotton, 22 Bankside Drive, Thames Ditton, Surrey.

ZHIGS

25 Sunnyside Terrace, Cleadon Village, Co. Durham.

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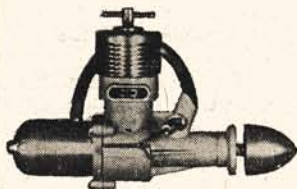
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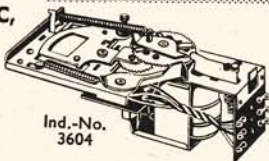
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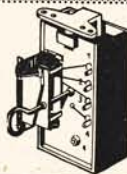
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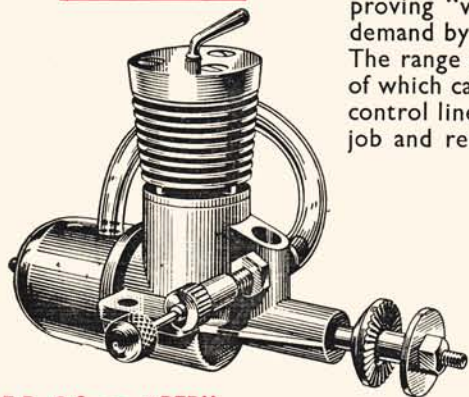


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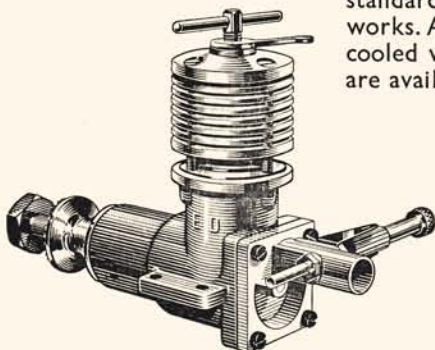
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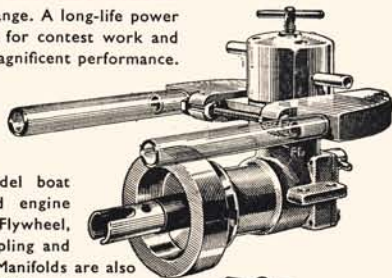
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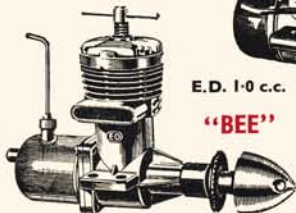
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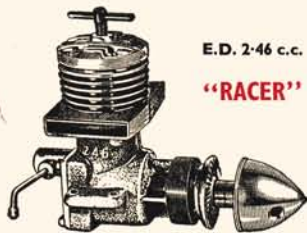


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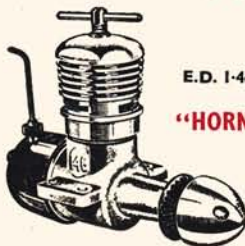
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"RACER"



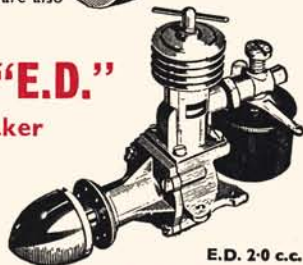
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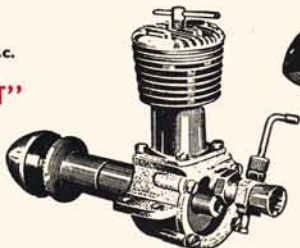
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