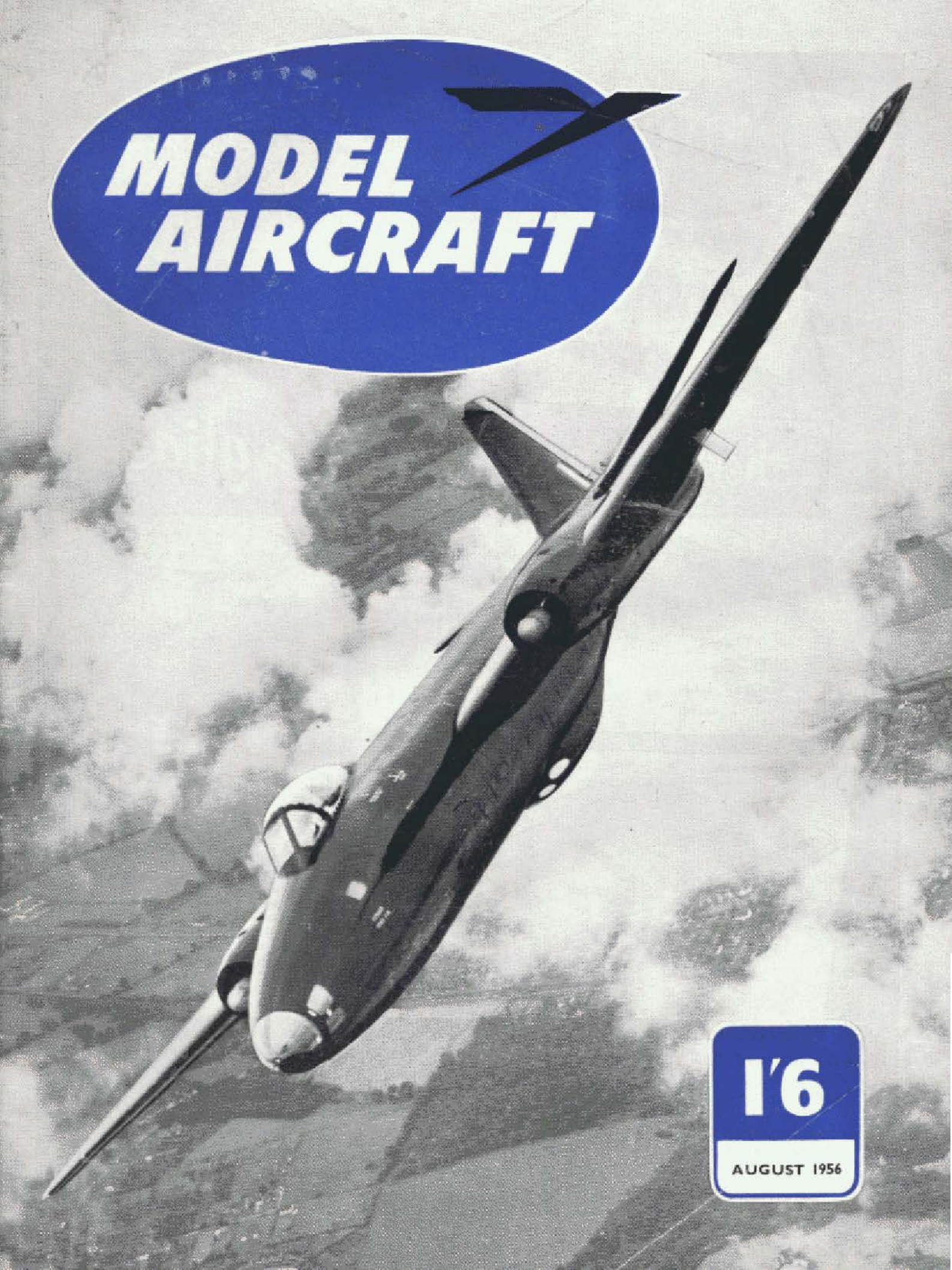
MODEL AIRCRAFT

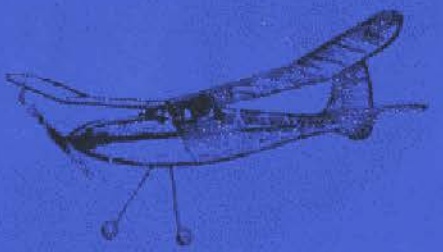


1'6

AUGUST 1956

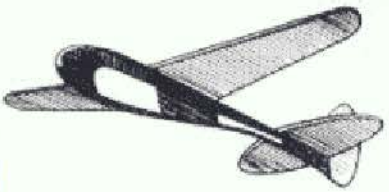
for fun for leisure or competitive pleasure...

Talking of competition models . . . the Husky, rubber powered duration model, is easy to build, easy to trim and has an exceptional performance. Complete unit, including finished 14 in. balsa propeller, price 12s. 9d. inc. P.T.



Husky 36 in. span

...there's a fine Skyleada glider



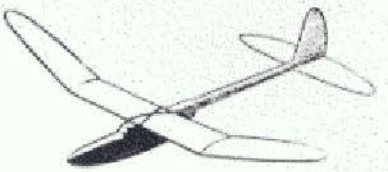
MIDGE

12 in. span, all balsa, prefabricated.
Price ... ... 1s. 5d.

SWIFT

20 in. span model, prefabricated, all balsa wood.
Price ... ... 3s. 0d.

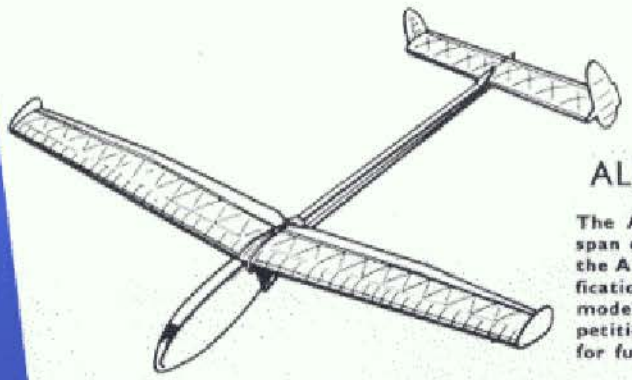
WIZARD



THREE-FOOTER

Kits have all balsa wings machined to aerofoil section and die-cut tailplane. The only high performance gliders available today which are really easy to build.

WIZARD—price ... 3s. 8d.
THREE FOOTER—price 6s.



ALBATROSS

The Albatross, 48 in. span contest glider to the A1 (Nordic) specification, is a first class model for open competition or for flying for fun. Price 11s. 3d.

Ask your retailer for a copy of the NEW detailed illustrated leaflet or send us a stamped addressed envelope.
Note to Retailers: If you have not already received a supply send a post card direct to us.

Say Skyleada

—first for quality
—first for performance

BRITISH MODEL AIRCRAFT MFG. CO. LTD.
180, LONDON ROAD, MITCHAM, SURREY

Britfix Colour Dopes — clean and bright, smooth and easy to work with. Quick drying, they provide the perfect finish which all good craftsmen expect. Available in a wide range of colours. ¼-oz. jar 8d., 2-oz. jar 1/6, ¼-pt. tin 2/10, ¼-pt. tin 5/-. Also in a new handy can 1/-.

and... BRITFIX COLOUR DOPES

finish THE JOB!

Britfix Cement - a fine all-purpose adhesive. Transparent water and heat proof. Combines rapid drying with utmost tenacity. ¼-oz. tube 6d., 1-oz. 10d.. 2½-oz. 1/6

HUMBROL ART OIL ENAMEL

extremely durable 4 hour drying. TINLETS: ¼-oz 8d. 2½-oz. 1/6.

Also in the Britfix range:-Clear Dope, Sanding Sealer, Banana Oil, Glider Dope, Solvent Remover, Cellulose Thinners, Plastic Wood, Adhesive Paste, Transfer Varnish, Fuel Proofer, Diesel Fuel.

HOC

THE HUMBER OIL COMPANY LTD · MARFLEET · HULL

MODEL AIRCRAFT

Managing Editor E. F. H. COSH

Assistant Editors
R. WESSON
N. J. BUTCHER

Consulting Editor
A. F. HOULBERG

Advertisement Manager
J. V. FORBES-BUCKINGHAM

AUGUST 1956 No. 182. VOL. 15

Contents

Cover Story

One of the most versatile jet aircraft in the world, the English Electric Canberra, is in service in a variety of roles. One of the latest marks is the B(I)8, which is the subject of our cover this month. The pilot is seated under the fighter-type canopy offset to port, while the navigator is forward of this position. Four 20 mm. cannon are mounted in a removable gun pack beneath the fuselage, while various weapons can be carried internally and also beneath the wings on pylons. No. 88 Squadron is now operating Canberra B.8s with the 2nd T.A.F. in Germany.

Crown Copyright Reserved Photo

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Published on the 20th of each month prior to the date of issue by PERCIVAL MARSHALL & CO. LTD., 19-20 NOEL ST., LONDON, W.1. Telephone: GERrard 8811. Annual Subscription 20s. 0d. post paid.

Letters TO THE EDITOR

A late beginner

DEAR SIR,—I was very interested in the letter from Mr. Wells and the replies from the trade. I hadn't the slightest interest in model aircraft until I found my son, age 12, making a scale model. He made a mess of the construction so obviously it didn't fly and consequently he lost interest.

By this time I had got bitten by the bug, so I bought a medium priced rubber duration kit. I took a great deal of time and trouble constructing it, following carefully the instructions, checking and rechecking and buying as many gen books on the subject as possible to trace any snags or adjustments. Well, I suppose it did fly, but in any way except nose first. One could never expect a youngster to take all this trouble, and it must take a genius to get some of these things to fly.

I think a youngster is far better off with a glider, but to adult beginners I advise them to do as I did—buy a small engine and a control-line trainer. Once a few fundamentals have been grasped you will get all the fun you need. Of course, as Mr. Nicholls says, a club is the thing to join, but we haven't one near us, worse luck.

However, as far as I can see, the point still remains: what model should a young beginner start with?—his first attempt may mean his becoming a champion or lost to the hobby for ever.

I myself think it is a wonderful pastime and don't know why I didn't start years ago.

Every success to MODEL AIRCRAFT.

Yours faithfully,

Tunbridge Wells, Kent. C. E. ATHERALL.

Drop Speed?—Never!

DEAR SIR,—Re your editorial "Drop World Speed Championships," there are, of course, two ways of looking at this question—may I give the other view?

Regarding "works entries and professionally-tuned" engines destroying the amateur status of the event—I agree, but what can one do about it? Dropping the event is no solution—for, after all, we have not dropped class "B" team racing in this country, although the tuned engines are the only ones standing a chance. This tendency is also affecting F/F (even more so if the proposed F.A.I. rules are eventually adopted) and it will only be a matter of time before "A"

(*Continued on page 278*)

Wise Decision by F.A.I.

RULE CHANGES TO BE RECONSIDERED

AS was to be expected, the F.A.I. received several protests from National Aero Clubs concerning the rule changes decided upon at the last meeting of the Model Committee and these were dealt with at the recent General Conference. The committee has now been requested to reconsider the matter and, when it has reached its decisions, to inform all aero clubs of the proposed new rule changes. It has also been requested to arrange for a postal ballot to be held on these proposals.

The rules adopted by the F.A.I. Model Committee in 1955 will *not* therefore come into force on January 1st, 1957, and it is unlikely that any new rules decided upon by the postal ballot will come into effect before January, 1958.

We compliment the F.A.I. General Conference on its prompt and effective action, and for its realistic appreciation of the strong feeling which existed against the decisions made at the last Model Committee Meeting.

REGIONAL WORLD CHAMPS?

THE F.A.I. Model Committee is to again discuss the holding of the World Championships as a combined event in future. An alternative suggestion has been put forward that annual championships are held in the following regions: Europe, Africa, North and South America, Near East, Far East and Australasia. The combined World Championships meeting would then be held only once every four years.

The last-mentioned suggestion would appear to have little merit and regional contests on the lines proposed would, in our opinion, undoubtedly kill international model flying stone dead.

Air Scouts are Modellers too

THE appointment, a few months ago, of Air Vice-Marshal J. G. W. Weston, C.B., O.B.E., as Headquarters Commissioner for Air Scouts, underlines the increasing growth of this side of the Scouting movement.

A group of Scouts at work on their models in their club room.

Air Scouting was instituted in 1941, and in its 15 years' existence has done much to encourage air mindedness among boys of all types and ages. Visits to R.A.F. stations, flights in service aircraft, gliding, aircraft identification, making model aircraft—all help to create a diversity of interest for the air minded boy.

As with all Scout activities, emphasis is laid on practical work, and the badges worn by Scouts all denote an intimate knowledge of the particular subject. During a chat with Laurie Bittlestone of the Air Scouts' Training Department recently, he outlined for us the new conditions that are expected to come into force early next year for obtaining the two model aircraft badges. The under 15's can qualify for the Aircraft Modeller badge, while the older Scouts aim for the Aircraft Constructor badge, both of which are shown below. That on the left is the Aircraft Modeller, and on the right its counterpart, the Aircraft Constructor.

Even the current requirements for either of these badges demand a fair knowledge of the subject, but the new rules, while being a little more difficult, give added scope to the boy who is beginning to specialise in a particular branch of the hobby.

Apart from the building and flying of the models, the youngster will have to prove that he understands the basic principles of flight, including the three axes and their effect on stability and control. An Air Scout over 15 years will have to build two models, and after puting them through their paces, discuss them with the examiner with special reference to the methods of construction. Also he must understand aerodynamic principles and explain how lift is obtained, the causes and effects of drag, the stall and its cure, and so on. In all, quite a task!

C/L Flier Wanted

WE often receive letters from readers who wish to contact pen pals, but this time our search is rather different. Sixteen year old Noel Robinson of 3, Meadowfield Road, Faverdale, Darlington, wants

STOP PRESS

News has just been received that a Russian team will compete in the World Power Championship at Cranfield.

to find a fellow C/L enthusiast to go flying with him.

He tells us that since his last flying companion went into the R.A.F. he has been unable to contact another 'lone wolf,' so just keeps on building models in the hope of being able to fly them one day.

Well, any offers?

1956 American Teams

IN a recent letter, Peter J. Sotich, chairman of the American 1956 International Competition Committee, gave us the following list of fliers who constitute the American teams. Cliff Montplaisir, Jerry Kolb, Joe Bilgri and Herbert Koethe will make up the Wakefield team, while the power team will comprise Bill Hartill, Lawrence Conover, Dick Sladek and W. F. Huffman. Glider representatives are Bill Hartill, Bob Moulton, Joe Bilgri and Carl Hermes.

Many of these names will be known to readers who follow international events and it is interesting to note that Hartill and Bilgri have managed a double.

At the moment, as no sponsor has been forthcoming, there is no assurance that these modellers will be able to compete in person, but we hope that a sponsor will materialise so that we may again have an opportunity of seeing these fine fliers in action.

Revised Elims. Essential

WAITING in the tea queue at Spitalgate we overheard one competitor ask another what qualifying time he had made to reach the trials, and upon being told about 25 min., he replied "I only had just over 5 min."

This spotlights a very real problem which must be solved before next year and the North Western Area have already suggested a scheme whereby competitors in any area who have exceeded a certain minimum time shall be eligible for the trials irrespective of their actual placing in the area.

Some well-known fliers have suggested that just one centralised trial that is open to all be held. We are not too happy with this idea, but one thing is certain: the whole matter must be sorted out at once, with but one thought in mind—to select the BEST team.

THE OLD 'UNS ARE BEST

GEORGE UPSON'S top place in the power team with his veteran machine lends yet more weight to the view held by many experts that an old and well tried model is the best under all conditions, and we noted that in addition to Upson, most of our foremost fliers, including Gaster, Posner, Buskell, Copland, the O'Donnells and many others, were all using machines that they have tested and developed over a long period. None the less, all team members were required to sign a declaration that they would fly the same or very similar machines to those with which they qualified, in the World Championship Contests. A wise precaution, as even the most seasoned contest flier has been known to let enthusiasm overcome his better judgment and turn up at the Championships with a new design, which *if* it had been properly tested and developed, *might* have been a world beater.

U.S.A.F. Elims. at Wiesbaden

THE N.A.T.O. Air Base at Wiesbaden, Western Germany, was on June 1st-4th once again the venue for the U.S.A.F.E. Model Aircraft Championships. Competition was keen to become one of the twelve lucky modellers who would be flown back to the States to compete in the U.S. Air Force Championships and the American Nationals.

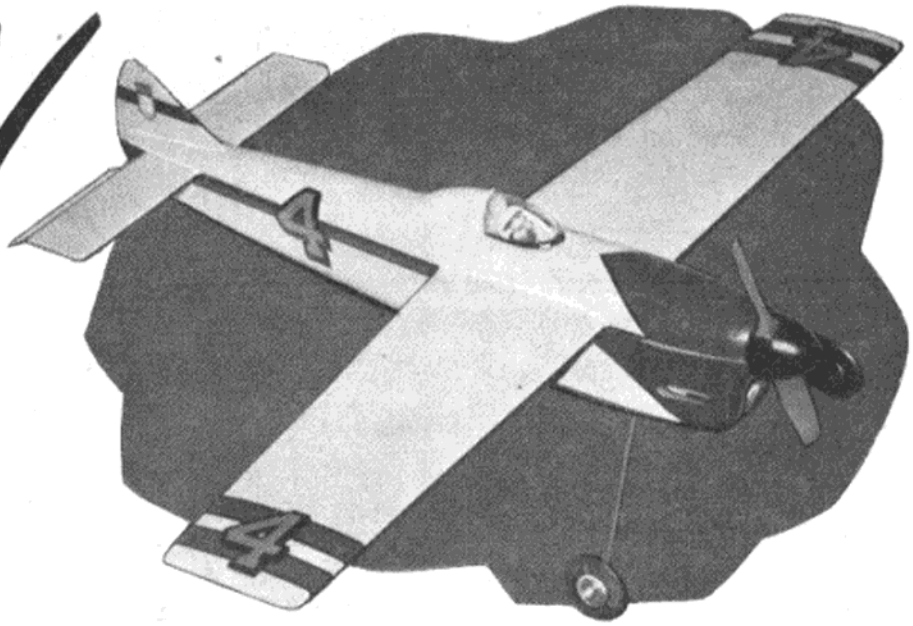
The flier who really "cleaned-up the hardware" was Staff Sgt. Glen C. Howard of Rhein/Main Air Base who entered eight of the sixteen contests, gaining five first, two second and one third places to become the Victor Ludorum. The meeting was very well organised and was the first A.M.A. sponsored event to be held in Europe. The Contest Director was C.W.O. Henry Brewer and H. J. Nicholls, H. G. Hundleby, E. F. H. Cosh and R. L. Yates again flew from England to act as judges.

Top: Joe Pettit, from Dreux in France, won C/L Scale with this "N.A. T-20." Centre: 2nd Lt. Park, from Stuttgart, launches his A½ F/F entry. Below: Stunt competitors Howard and Vollwen prepare their models.

ALIEN

by

W. P. WOODROW



DESIGNED to conform with latest practice by using the "split" fuselage type of construction, the *Alien* is a good looking and eminently practical Class A team racer which, because of its design features, has all the "works" readily accessible for running repairs or adjustments.

Wing

Make the wing from $\frac{1}{4}$ in. hard sheet and shape to the section shown. Let the line guide into the port tip and the $\frac{1}{2}$ oz. lead weight into the starboard tip. Do not omit this weight. Recess into the top upper surface of the wing the $\frac{1}{16}$ in. ply bellcrank mount, and cement the $\frac{1}{8}$ in. ply mount to the under-surface.

Fuselage

Make the tank as shown, using 12 S.W.G. bore brass tubing, bending the tubing by heating to a cherry red in a gas jet and bending to the required shape whilst still in the jet. Cut out the two fuselage sides, but at this stage do not cut out the exhaust ports or the needle valve hole. Now fit the tank to the port side, sandwiching the soft block between the tank and the side. Finally, box the tank in with $\frac{1}{8}$ in. sheet. Form the undercarriage from 12 S.W.G. piano wire; cut F2 from $\frac{1}{8}$ in. ply, and bind the undercarriage to it with strong thread then cement well. Cut the nose block from hard balsa and also the $\frac{1}{8}$ in. sheet spacer at the tail. Now cement the sides to F2 and add the nose block and spacer and allow to dry. It is advisable to ensure that the top edges of the sides are absolutely in line with each other, then the whole assembly should be fixed down to the building board until set.

Cut out the $\frac{1}{2}$ in. hard sheet crutch and rebate to accommodate the bearers, insert the 6 B.A. engine mounting screws, and solder wire across the screw head slots to prevent them from turning. Cut the slots in the bearers to take the anchor nut mount. Now glue the bearers to the $\frac{1}{2}$ in. sheet and make up the anchor nut mount and cement in position. Cement the $\frac{3}{8}$ in. sheet on top of this assembly and allow to dry. By this time the lower assembly should be set, so cement into place the base and attach the skid, which is mounted in a $\frac{5}{16}$ in. hardwood mount. Fit formers F3 and F4.

Mark out the position of the wing on the top section and carve out to suit. Also slot tail end to take the tailplane, and recess the top to receive the pilot. Drill the dowel locating holes in the top section and then cement $\frac{1}{8}$ in. dowels to the lower section in the corresponding position. In the top section at the tail end, use brass tube for the dowel location. It should be noted that one of the locating points is the spigot formed by the top of F2 sliding between the front anchor nut mount and the $\frac{1}{8}$ in. sheet.

It can now be seen that we have four positive locating points, all making for a strong but light alignment. Now mate the two halves together, sand to the shape shown in the various sections, and cut out the exhaust ports and the needle valve hole in the port side only. Cut the cylinder head hole in the underside of the nose. Make up F1 and cement into place. Cement celluloid over the line outlets. Separate the two halves, screw the 6 B.A. bellcrank pivot into the wing and cement the wing into place.

Tailplane

Make up the tailplane from $\frac{1}{8}$ in. hard sheet, shape the elevator to the section shown, and join by tape hinges. Make up the elevator hinge from 18 S.W.G. piano wire and the horn from 20 S.W.G. piano wire and solder the horn to the hinge. Cement and tape the assembly to the elevators. Cut out the indicated portion in the tailplane and let in a piece of $\frac{1}{8}$ in. ply for mounting the anchor nut.

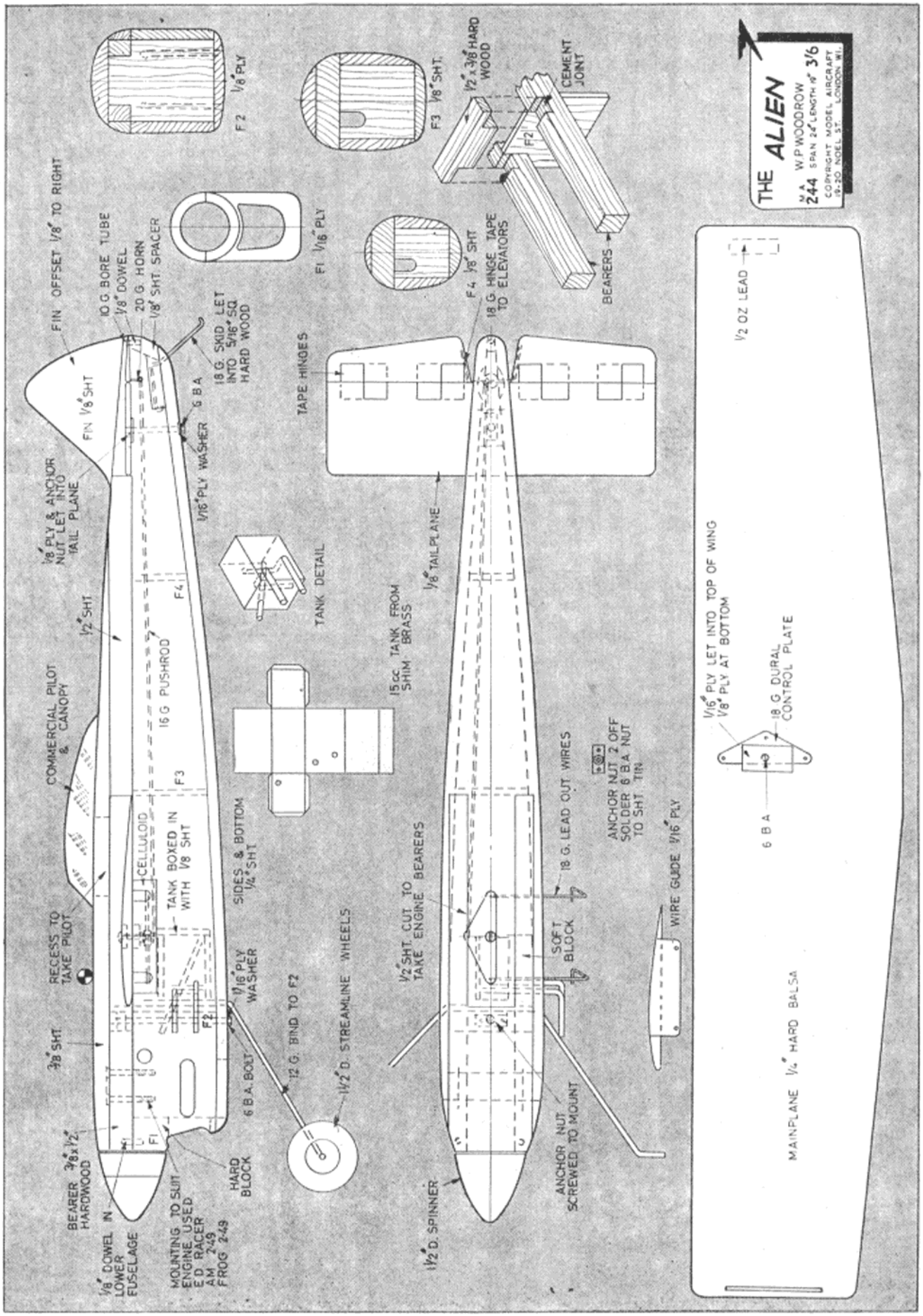
Final Assembly

Make up the bellcrank from 18 S.W.G. dural and attach the push rod and lead outs in the usual manner. Attach to the wing, and solder the retaining nut in place. Hold the tailplane and elevators in the neutral position with bulldog clips and with the bellcrank in the neutral position also, bend the end of the push rod to locate into the elevator horn, and secure with a cup washer, soldered into position. Relieve the tail end of the lower section of the fuselage to allow free movement of the elevator horn.

Drill the base of the fuselage to allow the 6 B.A. securing bolts to go through and align with the anchor nuts. Slightly relieve the underside at these points and cement into place the $\frac{1}{16}$ in. ply washers. Assemble the complete model and check for alignment, freedom of controls, and also the c.g.

Finishing

Cover the whole model with lightweight Modelspan and give the cowling three coverings of tissue. Two coats of sanding sealer should be applied and sanded smooth. Now colour and finish the model as required. It should be noted that the model is separated whilst the finishing process is going on. Give the model a coating of fuelproofer, both inside and out.



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1, 3s. 6d., POST FREE

Letters

Continued from page 273

racing and international class team racing, come to this " reworked motor " stage.

This is the golden rule:

Any power contest, where time or speed is the deciding factor, is dependent on power output of the engine and the hottest motor MUST win, all other things being equal.

Another reason for keeping the speed event is that these " works entries " find out more about engines, and eventually the customers are the ones who benefit.

Let us, then, accept what is happening, for cutting contests out of the calendar is not going to make anyone any happier.

Incidentally, congratulations on your *Bulldog* feature—not so much for the aircraft concerned—but for the standard of the drawing and article. Top notch.

Yours faithfully,

DAVE PLATT,
Wanstead. Sec., Wanstead A.C.

Speed to support T/R

DEAR SIR,—The proposal in your July Editorial to drop speed flying as an international event seems rather ill-considered.

We feel that F.A.I. Team Racing merits international recognition as the premier C/L event, with stunt, speed and combat as supporting events.

Your proposal that the only World Championship C/L event be dropped seems extremely unfair to the many C/L enthusiasts. Further, to consider R/C as a substitute for C/L speed seems beyond our imagination.

It appears that F.A.I. power and Wakefield may also be heading for the big chopper within 12 months.

Yours faithfully,

MICHAEL G. SMITH.
High Wycombe M.A.C. R. J. EDMONDS.

One of the first

DEAR SIR,—It may interest your paper to know that a model aeroplane club was formed in Keighley in 1910. I was the president, my brother, Phil Taylor (now deceased), was secretary, W. Mann (now deceased), treasurer. Members' names were Sydney Clapham, Geoff. Clapham, Iain Moffat (now in Melbourne), Pierre Ducornet (a French boy at school in England at the time) and several other boys, names forgotten; all except Ducornet were Keighley boys. The workshop and H.Q. was our house (a room set apart), a badge was made for us by Fattorini's of Bradford and the club was sponsored by the different fathers of the members.

The club was disbanded by the 1914 war and not re-formed after. I should imagine that it was the first of its kind in Yorkshire if not in the North of England.

Planes were made and flew roughly about 200/300 yards. Drawings, I believe, were published by Messrs. Percival Marshall in a handbook and people like Twinings, who sold a kit of parts for a biplane and also one for a tail-first monoplane. A good many designs were made by our members, but not all of them flew.

I have been a regular reader of MODEL AIRCRAFT for some considerable time and I wish it every success.

Yours faithfully,

Keighley, Yorks. SYDNEY TAYLOR.

More Bulldog Gen

DEAR SIR,—I wonder whether the following extra details on the Bristol *Bulldog* might be of interest?

The *Bulldog* Mk.2 was used by Nos. 17, 19, 23, 32 and 54 Squadrons. The Mk.2a equipped Nos. 3, 17, 29, 41, 56 and 111 Squadrons. Serial numbers were carried *on the fuselages* of all of these units except No. 111 with the black bar marking. Black deckings to the fuselages were common to all of the units except Nos. 29, 32, 41 and 56 and, of course, the machines were silver overall. Each of these units had the squadron markings painted on the top of the upper wings and on the fuselage sides.

The skeleton photograph of the machine with the enlarged fin is of a Mk.2a. The photo of J9480 shows the first production type Mk.2; J9576 is one of the first Mk.2s of No. 3 Squadron and K1085 Mk.2 has the improved, built-up rivetless rear portion to its fuselage.

Yours faithfully,

South Benfleet. P. M. H. LEWIS.

DEAR SIR,—Perhaps the following additional notes may be of assistance to would-be modellers of the Bristol *Bulldog*.

Bulldogs were invariably doped aluminium on all fabric covered surfaces and the upper decking was often painted matt black as two of your photographs show. Metal panelling was bright, struts were painted black and the airscrew (usually) canvas covered and grey painted.

The aircraft depicted in the cover photograph, incidentally, were those of 32 Sqdn., the fuselage and wing markings being in ultramarine blue; the serials were black, narrowly outlined in aluminium. It may also be noted that the nearest and farthest aircraft have the coloured fin and tailplane denoting Flight Commanders.

Although a whole article could easily be written on the subject, brief details of other *Bulldog* squadrons were as follows:—

Sqdn. No. 3; *Sqdn. Marking*, green stripe; *Specimen Serial*, K 2220; No. 17, double black zig-zag, K 1661; No. 19, blue and white checkerboard, K 2155; No. 23, red and blue squares, K 1678; No. 29, red lattice between two thin stripes, J 9587; No. 41, red stripe, K 2184; No. 54, yellow stripe, K 2868; No. 56, red and white checkerboard, K 2227; No. 111, black stripe, K 1683; Sqdn./Ldrs.' aircraft often had a checked fin and tailplane.

The (W)(T) markings did not necessarily indicate that " wireless telephone " was installed at that location. On nearly all new aircraft these initials could be seen at various points, i.e. fin/rudder, aileron hinge, etc., and merely indicated that the machine was electrically bonded for wireless telegraphy.

Yours faithfully,

Luton, Beds. P. L. GRAY.

Seeing Double ?

DEAR SIR,—Whilst your article on the Bristol *Bulldog* in the July issue is of purely academic interest to me as a contest modeller, I should dearly like an explanation of the fact that the aircraft nearest the camera in your cover photograph has a totally different serial number on its rudder to the one carried on its fuselage!

Yours faithfully,

Menston-in-Wharfedale.

J. A. B. PANNETT.

[Well, the editorial eyes must have been rather bleary to miss this one! Quite frankly we didn't spot it until reader Pannett pointed it out. Evidently even in the years between wars, spares were always a problem and we think the most likely explanation is that K-1619's rudder went U/S so the maintenance types just slapped on another *Bulldog*'s rudder—as easy as that!—Ed.]

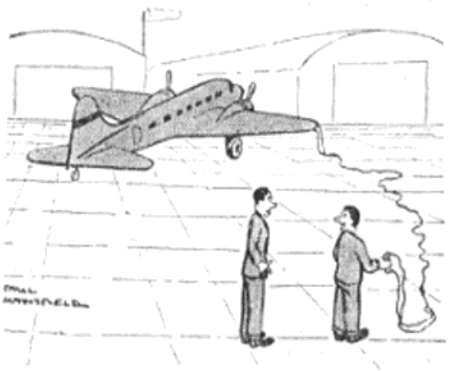
Pen Pal Wanted

DEAR SIR,—Can you help me to find a pen pal? I am in the second class of the evening school, where we learn English, and now I would like to exchange correspondence.

I am sixteen years old and my hobby is to build and fly control-liners, especially stunt C/L models. I am a member of the K.N.V.v.L. in The Netherlands.

Yours faithfully,

Blijhamsterstraat 2, H. DE BOER.
Winschoten, Netherlands.



Who says I can't ?

THE 1956 INTERNATIONAL TEAM

TRIALS

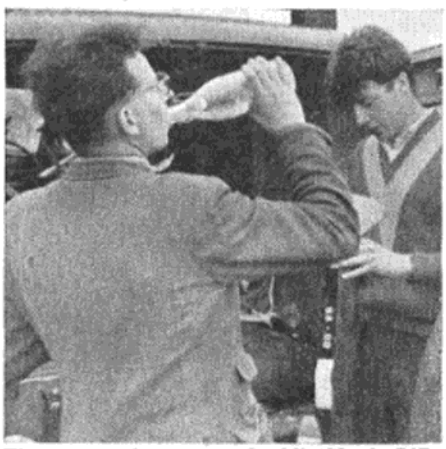
held at

R.A.F. Spitalgate

A VERY appropriate name for a model meeting in view of the weather that prevailed—cold and gusty on the Saturday afternoon for the glider, and the same on the Sunday for the Wakefield and Power, with the addition of rain later in the day.

Spitalgate Aerodrome lies on a plateau just outside Grantham, and is one of the few all-grass 'dromes still in use. The lack of tarmac caused some embarrassment on the Sunday, when it was realised that there was no provision for r.o.g. However, in view of the prevailing conditions, it was wisely decided to hand launch.

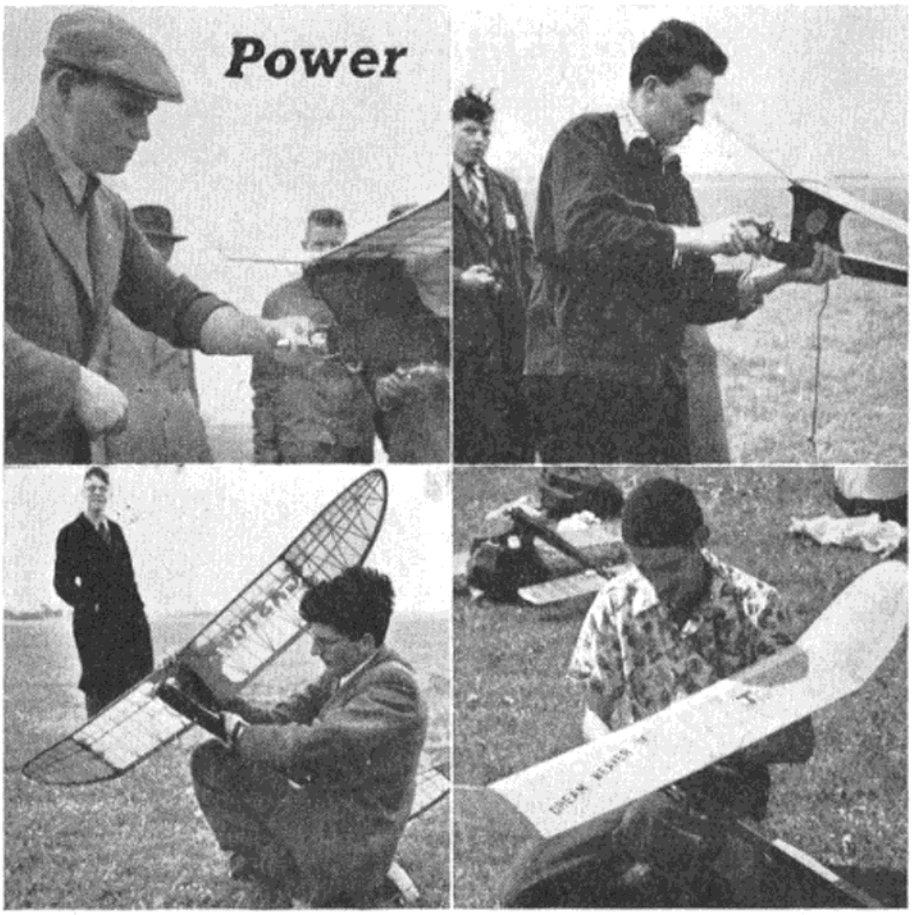
Glider flying proceeded with few delays (if one excludes the hour's tea break) and at the end of the first round several max's had been recorded. The end of the second round saw a smaller number of double max's, but it was obvious that with the worsening conditions, a fly-off would be most unlikely. For the most part, models were well trimmed and tow-line technique was adequate to cope with the gusty wind. We observed very few cases of wings collapsing under tow, and we wonder whether



The contest is over, and while Hugh O'D. dissembles his model, John partakes of some welcome refreshment.

The Power Team: Top man was George Upson, who flew his veteran Elfin 2.49 powered machine, for the only maximum score of the meeting. Second place went to R. Draper of Coventry, who was using a glo-plug Super-Tigre. Mike Gaster was third with his "Gastove" design, and Dave Posner's fantastically fast climbing "Dream Weaver" earned him a well deserved fourth.

George French of Laindon was highly placed at the end of the 4th round.



Above: Miss M. A. Cartwright and Mrs. M. French wielded stop watches to good effect. Centre: Arthur Collinson assists Silvio Lanfranchi with his power model. Right: John Palmer of Croydon makes a clean launch with his beautifully built Wakefield.

those that did belonged to the competitors mentioned in "Here and There."

At 10 a.m. on the Sunday, the time scheduled for the start of both power and Wakefield Contests, the wind was biting cold with gusts up to 45 m.p.h., and with the aerodrome almost at cloud base, visibility was only about 300 yards. However, flying was soon under way and as visibility improved, so the maximums started to roll in. At the end of the fourth round in both contests it was by no means certain of whom the teams would comprise. Upson set the ball rolling with his veteran Elfin 2.49 machine, with a final max. which put him in an unassailable position in the power with the only perfect score of the weekend. George French of Laindon, who was on the leader board, fluffed his 5th launch, and in spite of a rapid repair job on a fractured fuselage, had to be content with 7th place. Our old friend Silvio Lanfranchi was comfortably placed third with 12.23, but as he is not a British National, was ineligible for the team; this let Mike Gaster—who had been plagued all day with an erratic motor—into 3rd place, and Dave Posner, who narrowly missed the team last year, into 4th.

Pete Buskell, who has been in every British team since the inauguration of this contest, crashed his No. 1 model after a V.T.O. on his first flight, and was finally 5th—only 9 sec. behind Posner.

The finish of the Wakefield was

The Wakefield Team: Geoff Lefever placed top though the model's wing shows signs of a hasty repair. Second and third places went to the O'Donnell brothers—(John winding and Hugh launching) while fourth man was H. Revell of Northampton.

Mavis Pepper prepares to launch for Pete Giggle of Southampton.

The A/2 Glider Team: Top left: G. Roberts of Five Towns (first) seen here re-assembling his model after the contest for the benefit of our photographer. Top Right: Second place went to Fred Boxall of Brighton, who has been a regular finalist for several years, and flew in the 1951 Wakefield Team. N. Willis of Anglia flew consistently to place third with 12 : 28, while only 8 seconds behind him was Country Member Bob Amor, to complete the quartet.

equally close. Both O'Donnells came up out of the ruck on their last flights to place 2nd and 3rd, while veteran flier H. Revell of Northampton flew most consistently throughout the meeting to place 4th. Top man was Geoff Lefever, who last year topped the glider trials.

At one time Bop Copland was well placed, but lost his best model in a cornfield, and flying his reserve for his last flight stacked it, and in spite of hasty repair work eventually placed 8th.

Apart from the weather, it was an enjoyable meeting. Sam Messom is to be congratulated on his management of the contest, his first since he was appointed Competition Secretary. There were very few delays and at no time were there more than a few competitors waiting to be timed.

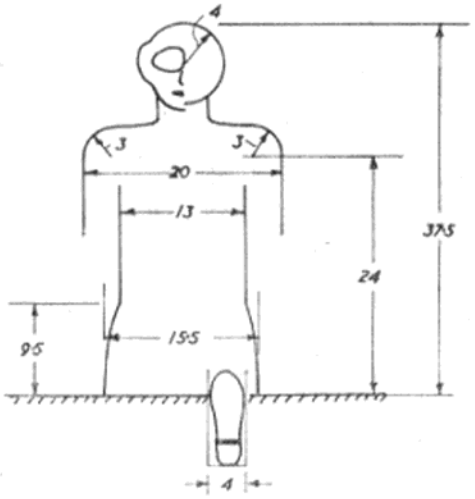
Make the Pilot Fit . . .

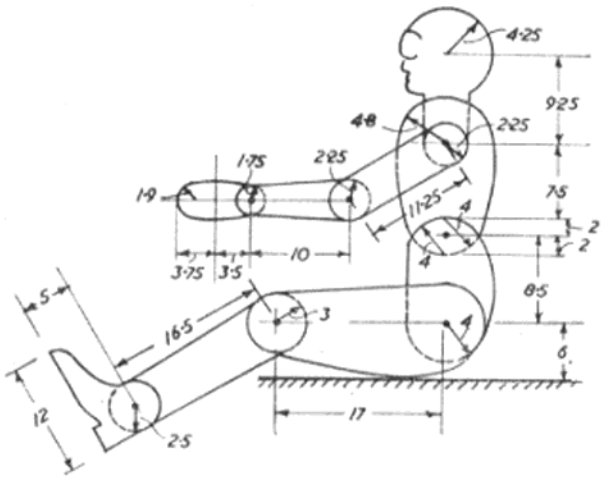
A pilot adds that finishing touch of realism to a scale or near-scale model, yet the whole effect is spoilt if the occupant is oddly out of scale to the cockpit or cabin he occupies. Incidentally, we have seen many a near-scale cabin model, complete with interior fittings, marred by the fact that no scale pilot of human proportions could ever sit on the seat *and* reach the controls.

The moral is to scale your "crew" in proportion to the finished model, and if you want to add interior detail, make sure that this is in keeping with the scale *and proportions* of a proper figure.

The diagram gives the mechanical layout of an average man. All the dimensions given are in inches, corresponding to a man of 5 ft. 10 in. height. The figure is split up into a number of pivot points corresponding to natural movement of the limbs and torso, and thus give the correct radii of action for arms and legs.

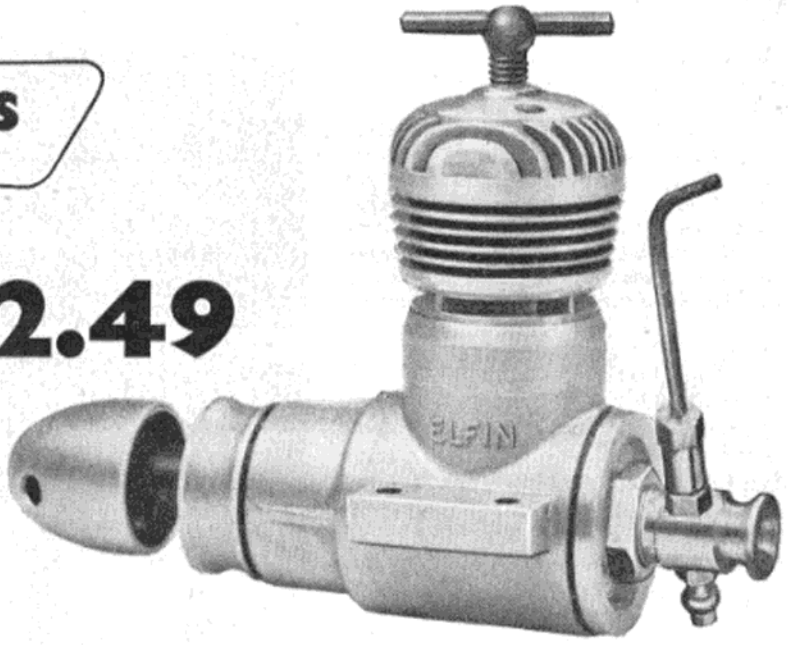
For really accurate scale work it would be a simple enough matter to make up such a figure to the scale required in card or balsa sheet and pivot each part correctly. Such a dummy would give positive "practical" positioning for scale controls, etc. In this case, of course, you would use a "profile" figure only. The layout dimensions will, of course, be equally useful if you want to plot out and "sculpt" a solid figure from block balsa.





ENGINE TESTS

THE ELFIN BR. 2.49



AS most readers will be aware, the Elfin BR. series of engines are, in many respects, unique in the world of diesels, featuring, as they do, a number of interesting design innovations. First seen a little over 18 months ago in the Elfin BR. 1.49, these innovations re-established the name of Elfin as that of a leader of diesel design trends.

It was eight years ago when the very first Elfin engine, the 1.8, arrived on the market to completely revise previous conceptions of diesel design and performance. There followed, during the next two years, two more outstanding engines, the original radial-mount 2.49 and the beam mount 1.49; after which there was a four year lapse until the BR. 1.49 arrived.

As our Engine Test report on this motor showed (February 1955 issue) the BR. 1.49 is the most powerful engine of its capacity in current production. The BR. 1.8 model, of essentially similar design but longer stroke, is, again, an exceptional performer (September 1955 "M.A.").

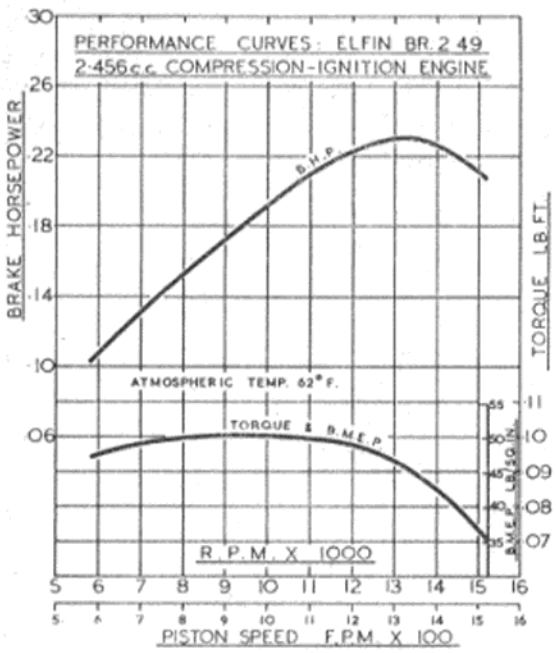
In common with the BR. 1.49 and BR. 1.8, the BR. 2.49, which is the subject of this month's test, has reed-valve induction, twin ball bearings, a very rigid crankcase and an unusual form of cylinder barrel construction.

The BR. 2.49 was first announced early last year and regular readers may recall, from an interim report published in this journal, that it did not, at that time, come up to the standards of performance suggested by the capabilities of the BR. 1.49 and 1.8 models, nor even, in fact, with previous levels of performance associated with Elfin models, the actual output being in the region of 0.20 b.h.p. only.

A new version of the BR. 2.49 has now been introduced and while this still does not quite equal the specific output figures realised by the smaller BR. models, the model tested does show improvement. Having previously encountered the exceptional capabilities of the BR. 1.49 and 1.8 models, one is, perhaps, apt to expect too much of the 2.5 c.c. class version, whereas, in actual fact, its performance is well up to average and is a good deal better than most plain bearing 2.5 c.c. diesels.

Structurally, the BR. 2.49, in common with its smaller brothers, must be one of the strongest diesels currently available—as regards freedom from risk of shaft and crankcase damage in crash landings. The short diecast crankcase is an extremely robust component with really heavy mounting lugs. Overhang is kept to a minimum, crankshaft journal length being only $\frac{3}{4}$ in. The shaft itself has a disc web with machined-in counterbalance and is carried in two ball journal bearings. The forward end of the shaft is standard $\frac{1}{4}$ in. dia. and the propeller driver is on a tapered split sleeve.

The reed valve induction unit is similar to that on the small models except that two overlapping berrylium copper reeds are used instead of a single reed. As before, the reeds are retained by a coil spring and circlip. The cylinder liner, which was secured by an external clamp ring on the earlier production model, is now screwed into the crankcase and located axially by a flange and fibre washer. Internal (Arden type) transfer grooves are used. The stroke of the engine is now reduced from 0.618 in. to 0.600 in.



Specification

Type: Single-cylinder, air-cooled, two-stroke cycle, compression-ignition engine. Reed-valve induction with sub-piston supplementary air induction. Reverse-flow scavenged cylinder with conical piston crown.

Swept Volume: 0.1499 cu. in. = 2.456 c.c.

Bore: 0.564 in. Stroke: 0.600 in.

Compression Ratio: Variable.

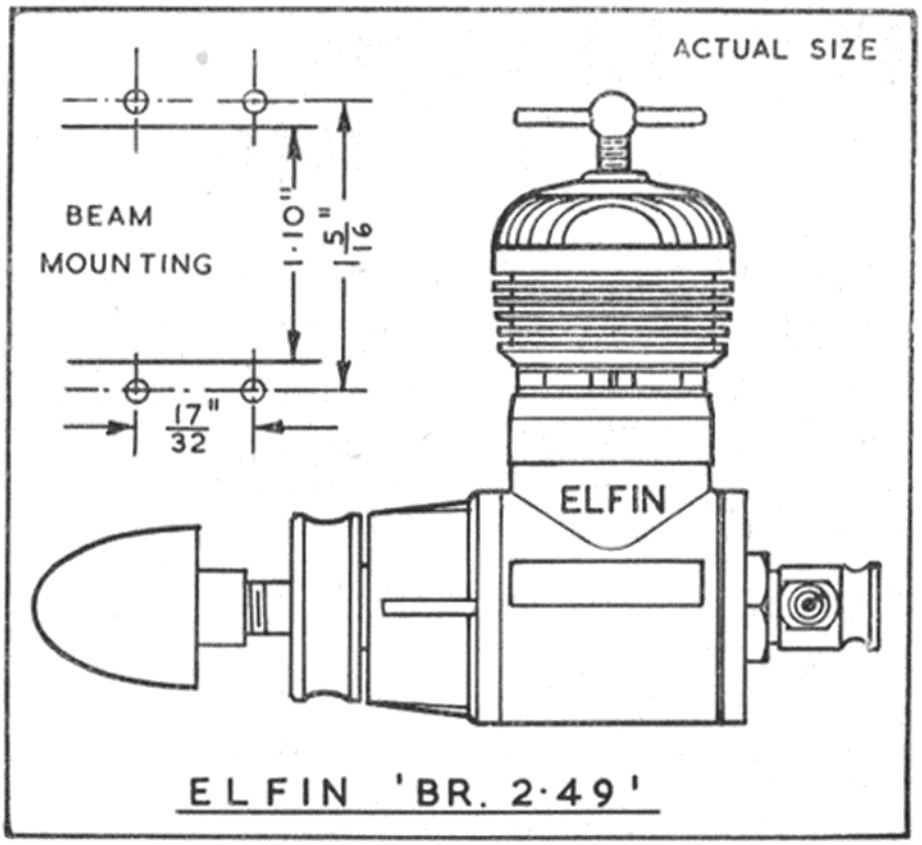
Stroke/Bore Ratio: 1.065 : 1.

Weight: 5.25 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase and main bearing housing.

Hardened Nitralloy steel cylinder liner with four radial exhaust ports and four internal transfer grooves. Cylinder screw-threaded into crankcase with fibre washer under flange. Lightweight piston with pressed-in gudgeon pin. Machined duralumin connecting-rod. Nitralloy steel counterbalanced crankshaft running in two ball journal bearings. Large diameter propeller driver fitted on tapered duralumin split sleeve collet. Screw-in crankcase backplate in unit with reed-valve induction assembly. Carburettor screw-threaded into backplate, with lock-nut. Brass spraybar type needle-valve assembly. Beam mounting lugs.



Test Engine Data

Running time prior to test: two hours.

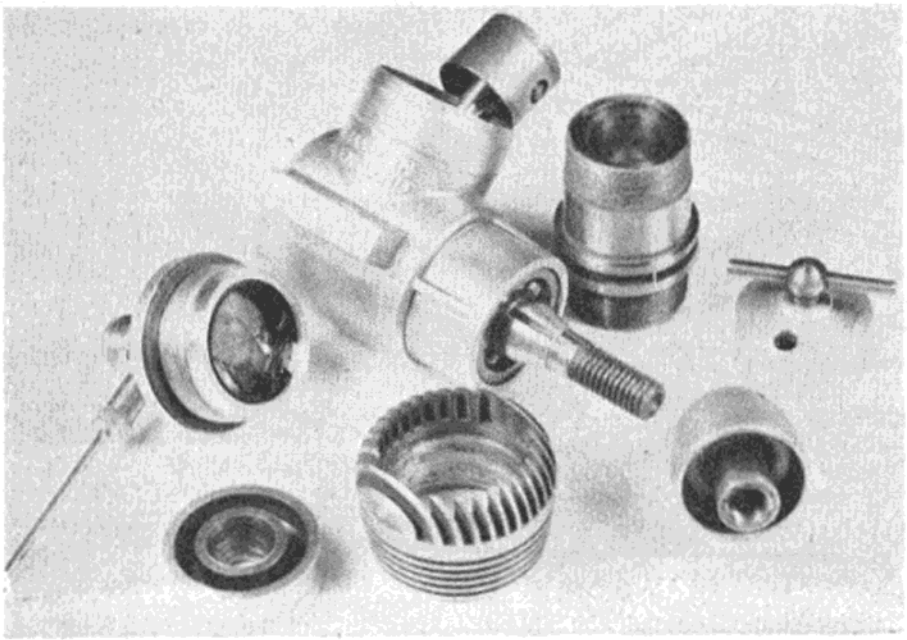
Fuel used: 40 per cent. technical ether BSS.579, 30 per cent. Shell Royal Standard Kerosene, 28 per cent. Castrol M, 2 per cent. Amyl-Nitrate.

Performance

As on the smaller models, the carburettor, the choke of which is concentric with the centre-line of the engine, can be rotated and locked in any position. This facilitates installation and permits a convenient and safe position for the needle-valve adjusting stem to be adopted. The engine sits solidly on its substantial beam mounting lugs, which, unlike the 1.49 and 1.8, are disposed to bring the crankshaft axis level with the top face of the bearers when mounted upright—the most generally acceptable arrangement.

Hand starting was found to be very easy. This applied more or less irrespective of the size of prop fitted and at no time did we find priming through the ports to be necessary, choking the intake being all that was required to secure a quick start.

Running qualities were generally good, the engine being a good deal smoother in operation than the earlier beam mount, shaft-valve 2.49. Needle-valve response was good and the needle held its settings firmly after the threaded split-sleeve thimble had been closed up somewhat. Compression adjustment was not critical and there was a fair measure of speed control by means of the compression lever. The contra-piston fit appeared to be good at the top of the bore and no difficulty was experienced in getting the contra-piston to move either down or up again when the engine was hot. The only trouble experienced, in fact, was when r.p.m. were pushed up to 14,000 and the compression would not then hold its setting but gradually ran back. This trouble might not, however, appear in a model, where vibration might be transmitted through the airframe and, in any case, occurred slightly above the peak output speed.



On the reaction dynamometer, torque rose to a maximum of 19 oz. in. (equivalent to a b.m.e.p. of just over 50 lb./sq. in.) at between 9,000 and 10,000 r.p.m. and declined fairly rapidly beyond 12,000 r.p.m. Maximum power output was realised at approximately 13,300 r.p.m. where a figure of 0.23 b.h.p. was recorded.

Power/Weight Ratio (as tested): 0.70 b.h.p./lb.

Specific Output (as tested): 93.6 b.h.p./litre.

TOWLINE STABILITY

IAN WHITE explains his new auto-rudder and an instant d.t. for towing practice

A GREAT deal has been written in the past on towline stability and I think it is agreed that the characteristics of a glider that give it good towline stability do not necessarily contribute to a good performance off the line.

If the form of towhook I am suggesting is used, the designer is free to concentrate on flight performance, as a controlled tow to the top of the line is assured. This form of towhook also incorporates what I consider to be a perfect auto-rudder system.

The disadvantages of present auto-rudder systems are well known. The pendulum type can easily be damaged by a de-thermalised landing and the rudder tends to go on if the line goes slack—the ring sometimes being ejected off the hook.

The ring type has to be carefully adjusted to ensure the correct tension of the rudder-operating line, and as atmospheric conditions may change this, there is the danger of early or non-release. In the case of the towline breaking, the flight is straight downwind. The pin method also possesses this last disadvantage.

An off-set towhook is effective during the early part of the tow, but operates in the opposite direction at the top of the line by causing the model to bank in the direction of its turn.

The laterally pivoted towhook I have designed gives the flier complete control of the model to the top of the line. If the model turns off right, the line will pull the hook left to give the model left rudder, and if the model turns left, the hook will be turned to the right to give correcting right rudder. When released from the line the model will be given the required turn for its flight by the light rubber band.

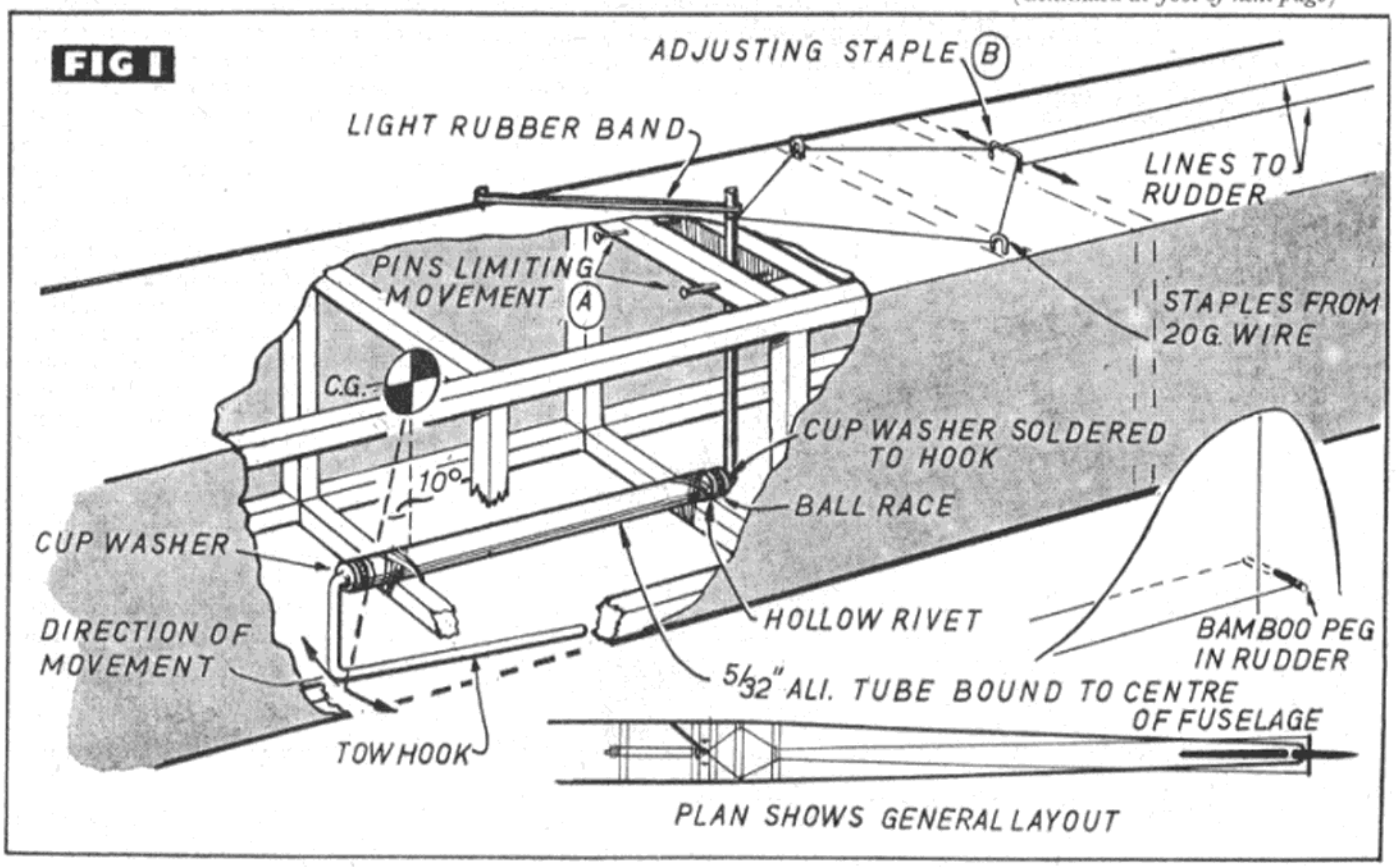
Fig. 1 shows one way in which the towhook and auto-rudder can be installed in a model. It can readily be adapted to suit other types of fuselages.

To adjust it, the following procedure should be followed:—

1. Position the pins at *A* to lock the towhook in the central position.
2. Position the staple at *B* until model flies straight. (This staple, by loosening one line and tightening the other, will alter the rudder position.)
3. Free towhook by spacing pins at *A* an equal distance either side of the central position to give rudder 10 deg. movement either way.
4. Tow up the glider and adjust pins at *A* until the desired control on the line and turn in flight is achieved.

When flying in a strong wind the model may turn and bank away until the wings are at 90 deg. to the line. In this position the hook is neutral and so not effective. However, it only requires the flier to move towards the model or pay out line until

(*Continued at foot of next page*)



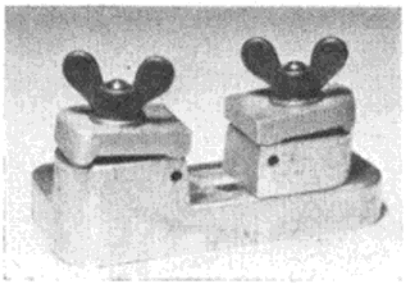
MA Model Quiz

Test your knowledge of model aircraft matters with this interesting quiz. Score 10 points for each complete answer. A total of 20-30 is fair; 30-40 is good; 40-50, very good; over 50 excellent. Answers on page 308.

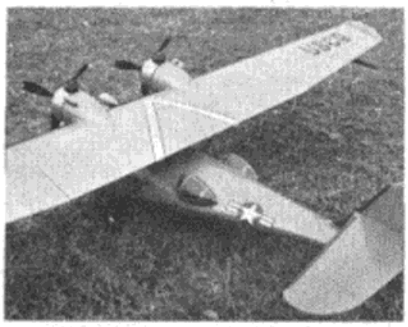
1. (a) Seen after setting a class winning speed of 106.5 m.p.h. at the 1953 British Nationals is:
(i) Peter Wright. (iii) Alan Hewitt.
(ii) Fred Deudney. (iv) Gadget Gibbs.
(b) The engine he used was a:
(i) Dooling 29 (iii) Glowplugged ED 2.46.
(ii) McCoy 19. (iv) Glowplugged Mach-1.
(5 points each question)

2. With which engines do you associate the following manufacturers?
(a) Cheminol Corp.
(b) Aerol Engineering.
(c) Henry Engineering Co.
(d) Johannes Graupner.
(2½ points each question)

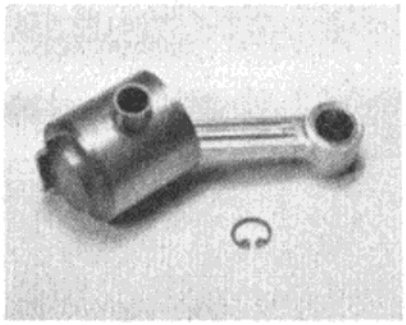
3. (a) Who was the first Wakefield Trophy winner to use a folding prop?
(b) Which year was this?
(5 points each question)



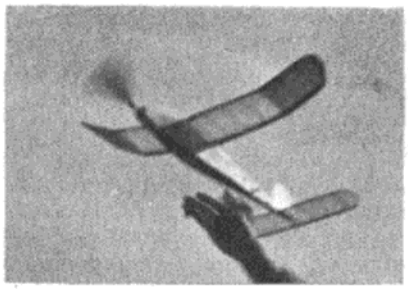
4. (a) What is this?
(b) Who makes it?
(5 points each question)



5. This fine model is of a famous American amphibian which gave sterling service in the R.A.F. Coastal Command during the war. Can you name it?



6. Ten points for the engine enthusiasts who can identify the motor from which this fine piston and con-rod assembly was taken.



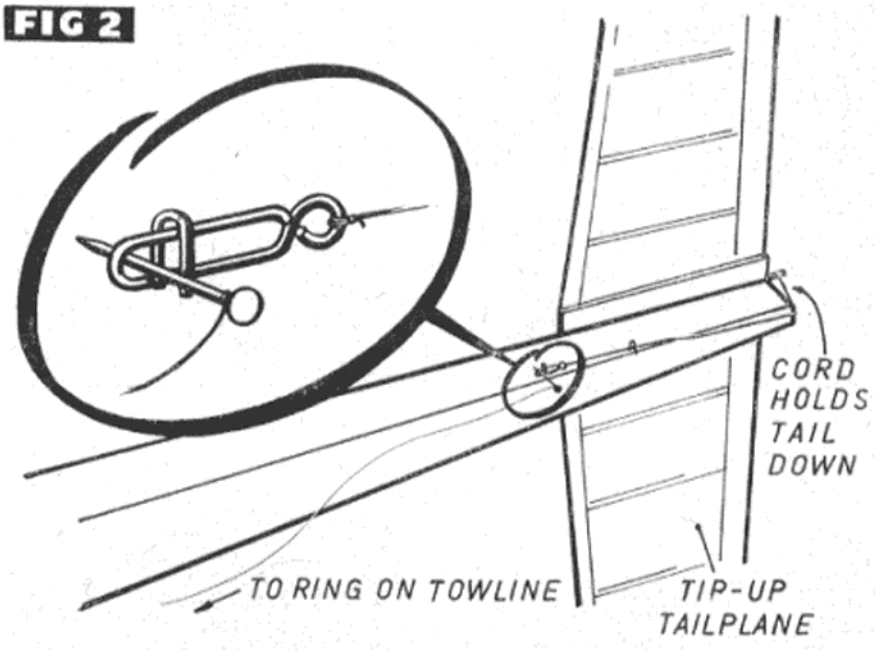
7. Popular some years ago was the lightweight rubber model of about 28-30 in. span. Which of the following were characteristics of this type of model?
(a) Thick high-lift section wings.
(b) Single leg undercarriage.
(c) Small diameter feathering prop.
(d) Weight of around 2 oz.

the model slightly corrects this bank, to bring it back. It is surprising with what ease this can be achieved.

It has been found in practice that only a small rudder movement is required to maintain control, even in the strongest winds. The auto-rudder is efficient and simple in operation.

I should also like to pass on a suggestion to those who have not yet mastered towing technique and to those who, because of restricted flying space, are not able to keep their hand in. If a steel pin is tied onto a piece of thread, the other end of which is attached to the ring on the towline, your glider can be made to D.T. as soon as it is released from the line. Fig. 2 shows how this can be arranged. It enables the enthusiast to get in plenty of towing practice in the smallest of flying fields, in every kind of weather conditions, ready for the contest day.

FIG 2



Aviation NEWSPAGE

by J. W. R. Taylor

Although the **MIGHTY MOUSE MISSILES** fired from the F-94C *Starfire* in our title picture seem to have different ideas of where the target might be, these 2.75 in. folding fin unguided rockets may still prove more accurate at times than the costly, complex guided variety. U.S. reports say that homing air-to-air weapons like the Hughes GAR-1 *Falcon* tend to lose their way in thick cloud, and present plans are to adapt all launchers to carry either type of missile, as required.

Photographs of McDonnell F-101 *Voodoo* interceptors have shown them with three *Falcons* and two packs of six spin-stabilised unguided rockets under their fuselage. This type of mixed armament may well become standard for both U.S.A.F. and R.A.F. all-weather fighters.

* * *

FIGHTER COMMAND SPEARHEAD until the supersonic P.1 and SR.53 are in service will be the *Hunter* F.Mk.6, shown in the first in-flight picture below. Although externally similar to earlier Marks, it is a much more potent weapon. Engine and airframe "mods" have got rid of the early gun-firing problems, including compressor stalling caused by pressure build-up in the air intakes, and a "flying tail" has been introduced to maintain elevator control at transonic speed. With its superb manoeuvrability, the tremendous fire-power of four 30 mm. Aden guns, and guided air-to-air weapons to come, the *Hunter* 6 is well able to deal with any potential raiders at present in service, without needing the 9,000 ft. runways and sophisticated ground control that are essential to most of its U.S. counterparts.

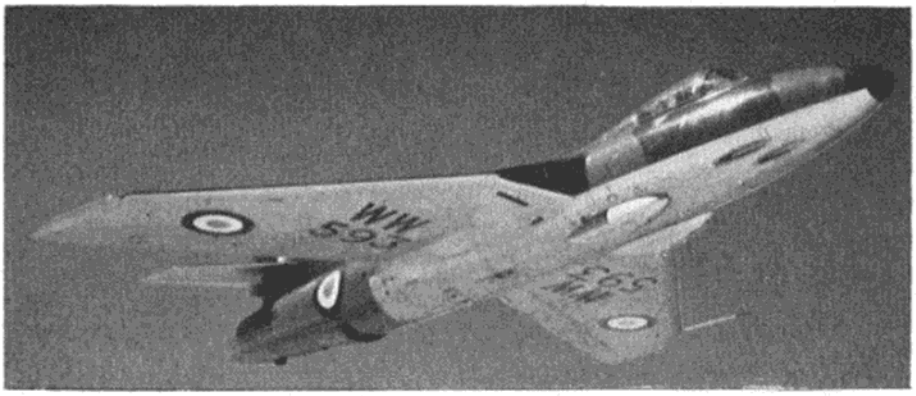
* * *

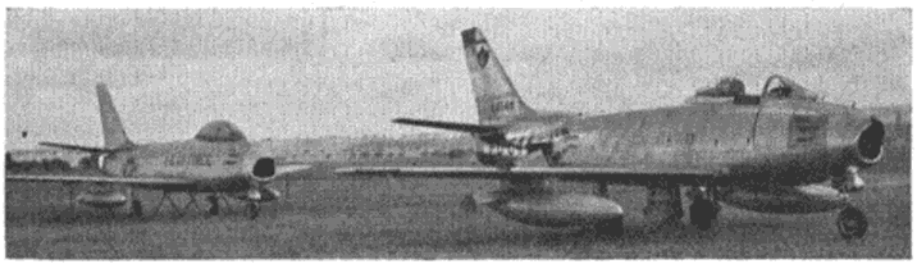
Details of **JAPANESE AIR POWER** released recently show that the Air Self-Defence Force has 350 aircraft, made up of 30 F-86F *Sabres*, 130 T-6G *Harvards*, 1 KAL-2 liaison aircraft, 68 T-33A *Shooting Star* advanced trainers, 95 T-34 *Mentor* basic trainers and 26 C-46 *Commando* transports. The Ground Self-Defence Force has 221 aircraft, including 39 L-5 *Sentinels*, 62 L-21 *Super Cubs*, 107 L-19 *Bird-dogs*, 1 KAL-1 liaison aircraft, 6 Bell H-13 and 6 Sikorsky H-19 helicopters. The Maritime Self-Defence Force has 70 aircraft, made of 20 TBM *Avengers*, 16 PV2 *Harpoons*, 6 P2V-7 *Neptunes*, 11 SNJ *Texans*, 5 H-13, 3 S-51 and 3 S-55 helicopters, 4 JRF *Goose* amphibians, one T-34 and one KAL-2.

New deliveries in 1956-7 will include 66 F-86F's, 25 T-6G's, 20 C-46's, 10 P2V-7's and possibly 30 Grumman S2F anti-submarine aircraft from the U.S.A., plus 22 home-produced T-34's, four S-55's and 24 LM-1 liaison aircraft developed from the T-34.

* * *

Which twin has **THE PILOT ?** Rearmost of the two F-86F *Sabres* in the picture (left) is less airworthy than it looks, being in fact a prefabricated, partially pneumatic decoy, made by the Schempp-Hirth OHG in West Germany. Designed to withstand a





wind velocity of 30 m.p.h., the fuselage is constructed of two-ply rubberised balloon fabric, while the wings and tail unit have rigid ribbed structures covered with one-ply rubberised fabric.

Full-size and accurate in every detail, the decoys have been developed to attract and divert the fire of attacking enemy aircraft, and to deceive enemy observers as to the strength and disposition of U.S. forces in time of war. At the U.S.A.F. Operational Test Center at Elgin Air Force Base, Florida, they were assembled, disassembled and tested for durability in the Climatic Hangar in temperatures ranging from minus 65 to plus 165 deg. F. A photo-reconnaissance aircraft then photographed a mixture of real F-86F's and decoys from a height of 1,500 ft., proving them practically indistinguishable by visual, photographic or radar detection.

* * *

GOOD NEWS for web-footed flyers is that, since the introduction of the angled deck and mirror landing aid on carriers of the Royal Navy, the deck landing accident rate due to pilot error has been cut to less than one-fifth of the previous figure.

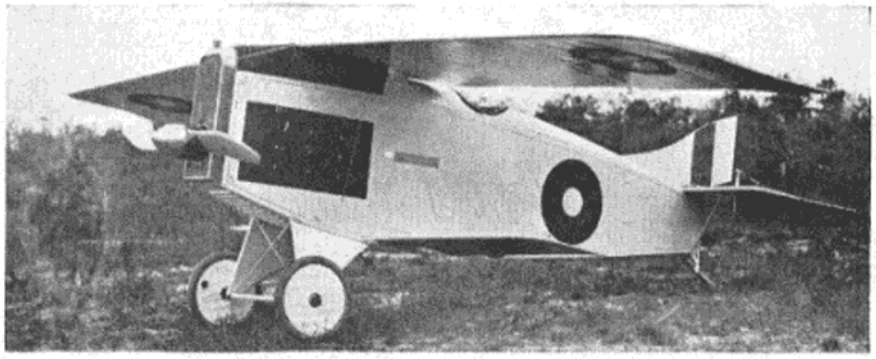
* * *

Following the announcement of the **TWO-SEAT F-104B** version of the *Starfighter* comes news that the U.S.A.F. have given North American a multi-million-dollar order for a two-seat *Super Sabre*. Designated F-100F, it will be suitable for use as a fighter-bomber, interceptor or trainer, with supersonic performance in level or climbing flight.

Another new two-seat conversion is the Grumman F9F-8T *Cougar*, of which more than 100 have been ordered by the U.S. Navy for dual-purpose trainer-fighter duties.

New transonic trainer is the "Cougar" conversion, with complete new forward cockpit

FROM THE PAST . . . . . No. 4



THE CHRISTMAS BULLET

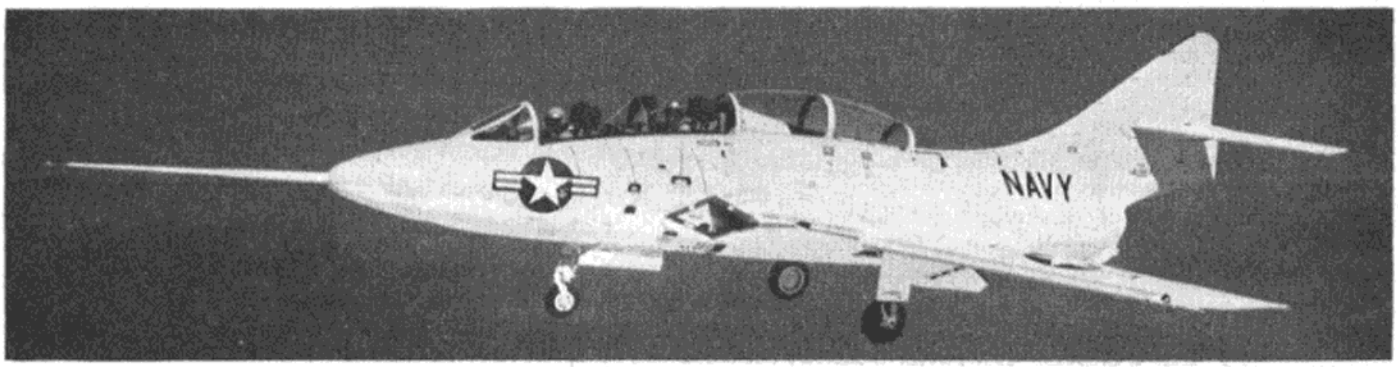
The Christmas Bullet fighter of 1918 was described by its designer, Dr.Wm. W. Christmas, as "the only machine in the world built on the principle of true bird flight," with wings that flexed both laterally and chordwise. The upper wing section was 5 in. deep between the spars, but tapered to a flat and thin trailing edge. The idea was to maintain a high angle of incidence and fair camber for max. lift at low speeds, with a lower angle and flatter camber at high speeds to reduce drag. The tips flexed through 3 ft. in flight "to absorb gusts." It can therefore claim to have pioneered the aero-isoclinic wing, and had other "modern" features such as a one-piece all-moving tailplane-cum-elevator.

Powered by a 185 h.p. Liberty "6" engine, the Bullet was tested at the U.S. Government Experimental Field No. 1 in December 1918, and was reported to have reached 175 m.p.h. on ¾ throttle, despite the rather frightening behaviour of the wings. Its makers, the Cantilever Aero Company of 1269 Broadway, New York, claimed that it had a safety factor of 7, but refused to submit it to a sandbag loading test under Air Service supervision. Few people were surprised when the prototype shed a wing in flight, killing its pilot.

Powered by a Pratt & Whitney J48, the F9F-8T has a 34-in. longer nose than the single-seat F9F-8, with a complete new cockpit forward of the original one, full dual controls and instruments, and only two 20 mm. cannon instead of the usual four. Under-wing bombs and rockets can be carried and flight refuelling equipment is installed for comprehensive operational training. The *Cougar's* performance is claimed to be transonic.

* * *

Small Skis, named **BEAR-PAWS** after the snow-shoes used by Canadian woodsmen, can be fitted to the wheels of the Kaman HOK-1 helicopters used by the U.S. Marine Corps, to permit operation from snow, sand or mud. Small in size and weight, the "bear-paws" can be carried inside the cabin when not in use, and are attached by simply laying the individual skis ahead of each wheel, running the helicopter forward on to them, and snapping the bungee harness in place over the tyres. Their small size is sufficient to prevent the 5,800 lb. HOK-1 sinking into soft surfaces, increasing still further the versatility of this four-seat helicopter, which is intended for cargo-carrying, ambulance, search and rescue, reconnaissance and liaison duties. Flotation gear can also be fitted

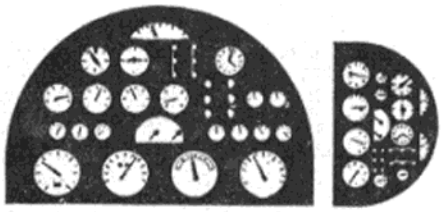


OVER THE COUNTER

Radio control news from Ripmax is that a lot of development work has gone into a new single-valve receiver which will replace the gap left by the cessation of E.C.C. productions. This set will have the largest current change achieved on any commercial single-valve receiver. Rumour has it, too, that transistor receivers may also be forthcoming from the same source —presumably for 465 megacycles where an all-transistor set is a practical possibility.

* * *

Many modellers experience difficulty in producing a realistic dashboard for their models, so the ready made types produced by Glassford's, 89, Cambridge Street, Glasgow, C.3, should prove popular. They are printed on stiff card, with the instruments raised,and measure 2 $\frac{9}{16}$ in. and 1 $\frac{3}{8}$ in. long by 1 $\frac{1}{8}$ in. and 1 in. high respectively.



The retail price is 6d. per card of two dashboards, and shops can obtain their supplies from the above address.

* * *

Newest additions to the Keilkraft 3s. 9d. flying scale range of models are the *Lysander* and *Mustang*. Follow-normal K.K. procedure, both of the machines were extensively flight tested before being put into production. They should now be available from your local modelshop. Following shortly will be a semi-prefabricated duration design of 26 in. wingspan. Called the *Gemini*, it will sell at approximately 6s.

* * *

Same quality, new dressing, from the Humber Oil Co., who now have a completely new label design for their Humbrol and Britfix products.

Our illustration shows the $\frac{1}{2}$ oz. and 2$\frac{1}{2}$ oz. tins which retail at 8d. and 1s. 6d. each respectively.

The Humber Oil Co's. new catalogue—which retailers will receive shortly—is a lavish production with many pages in full colour.

* * *

E.D.'s are now well settled into their new factory and are working hard on their new transistor R/C receiver, whose appearance on the market should coincide with the publication of this issue. This receiver can be used with the normal transmitters and will cost approximately £5 7s. 6d. plus P.T.

In about two months' time we can expect a new engine from this factory. It will be a 1$\frac{1}{2}$ c.c. twin ball race motor with reed valve induction, and prototype tests indicate that we can expect a worthy small brother for the long established E.D. 2.46.

* * *

Further news from Keilkraft is that their Senior Scale series of kits are now reduced to 9s. Only one model is available at present—the *Seamew*—but the *Tiger Moth* is next in line.

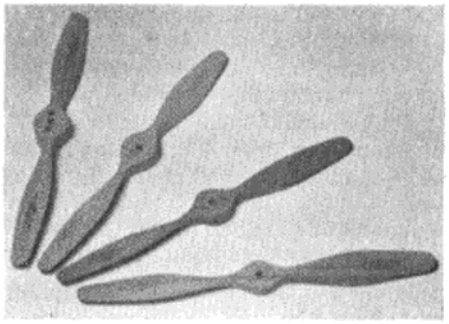
The introduction seven years ago of the Tru-flex propellers gave a tremendous boost to C/L flying, and now Keil's are introducing power propellers moulded in polystyrene. The blades incorporate a generous amount of undercamber which tends to pull the revs down as compared with wooden propellers of nominally the same diameter and pitch. Thrust values, however, should be better. Only one size is available at present (8 × 4), although others are to follow, and the price is right down—only 1s. 6d. for the 8 × 4.

* * *

Latest addition to the Frog range of plastic solids is the *Venom* FB4 moulded, like the others, in grey polystyrene plastic, and equally authentic in detail. One difference noted, however, is that the stand arm has been strengthened by a web, giving a far more rigid mount for the finished model.

* * *

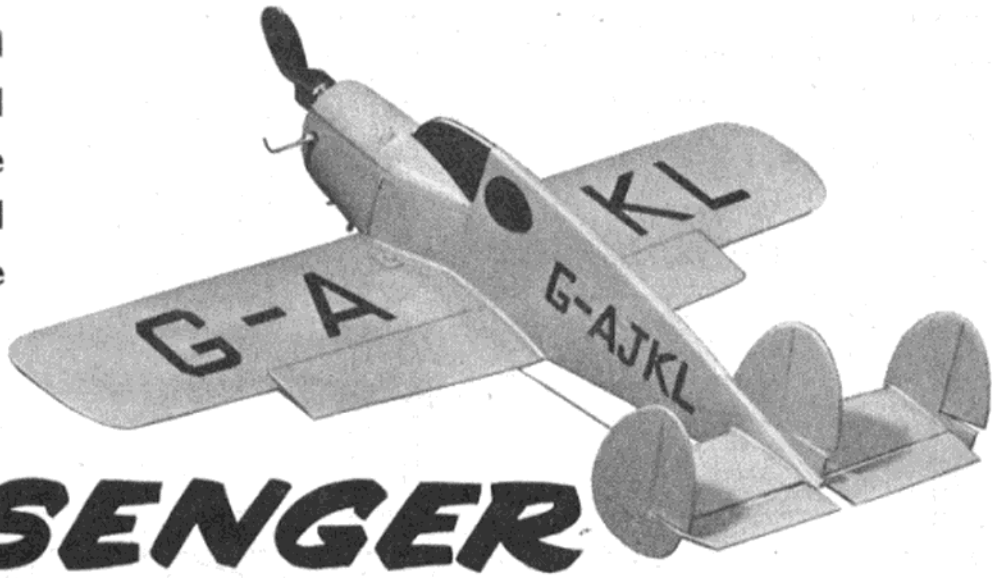
A new look for the long established Tru-Cut propellers is evident from the samples sent us by Henry J. Nicholls Ltd., who are one of the trade distributors. This latest type has a much thinner and more "rounded" blade and is available at no increase in price.



* * *

Aiming to enter the kit market in the autumn is a firm whose name is already a household word amongst modellers and home craftsmen. They plan to launch three basic models for a start—rubber, power and glider, and will follow with others in 1957.

Ray Malmstrom invites you to build this attractive little point five powered profile control line model of a



MILES MESSENGER

SHORT of time? Not a lot of space for flying a C/L job? Yet you would like something new and snappy for that next club meeting. Well, what about carving up some sheet and getting this little craft into the air? Time? Just *two* evenings and the job's done. Lines? Perfectly at home on anything between 15 and 25 ft. Looks? Well, most scale merchants agree that Mr. Miles has an eye for a nice line in aircraft.

The plan and diagrams explain the very simple construction, which is entirely of balsa and ply, but one or two points may need a little emphasis. Dimensions are given for a fuel tank from sheet celluloid, fitted with neoprene tubes. Herewith a tip. Useful tanks can be cut from the celluloid cases that contain toothbrushes, so why not treat yourself to a new peg-polisher and solve the tank problem in one go?

A word on the alternative tank arrangement shown on the plan Diagram 1. Some of us find an inverted engine a bit of a brute to start, being used to the upright installations. This is easily solved by fitting a ½ A Mercury stunt tank, as shown in Diagram 1, and by recessing the fuselage blocks about ⅜ in. and cutting a slot in the engine mount. Make the tank a tight fit in this recess. Any gaps can be filled in with scrap sheet. All you do, with this installation, is to turn the model upside down and start on your usual settings. When the engine is running, turn the model the right way up.

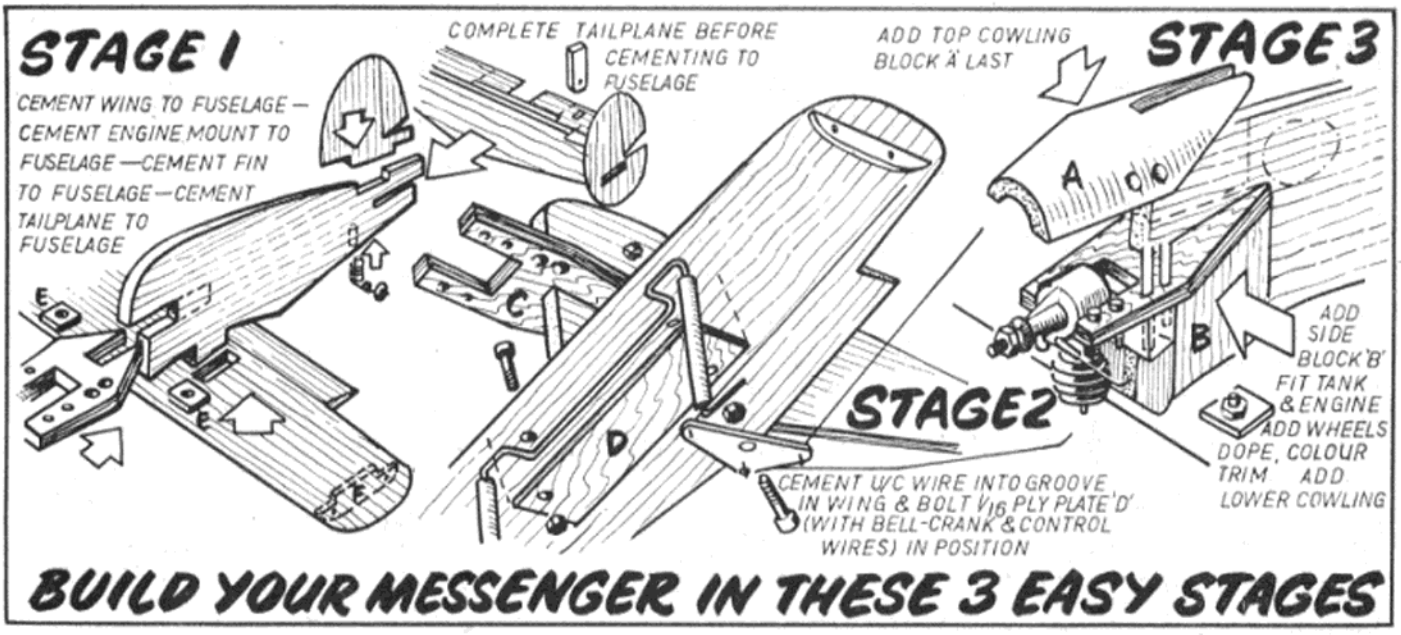
Finish

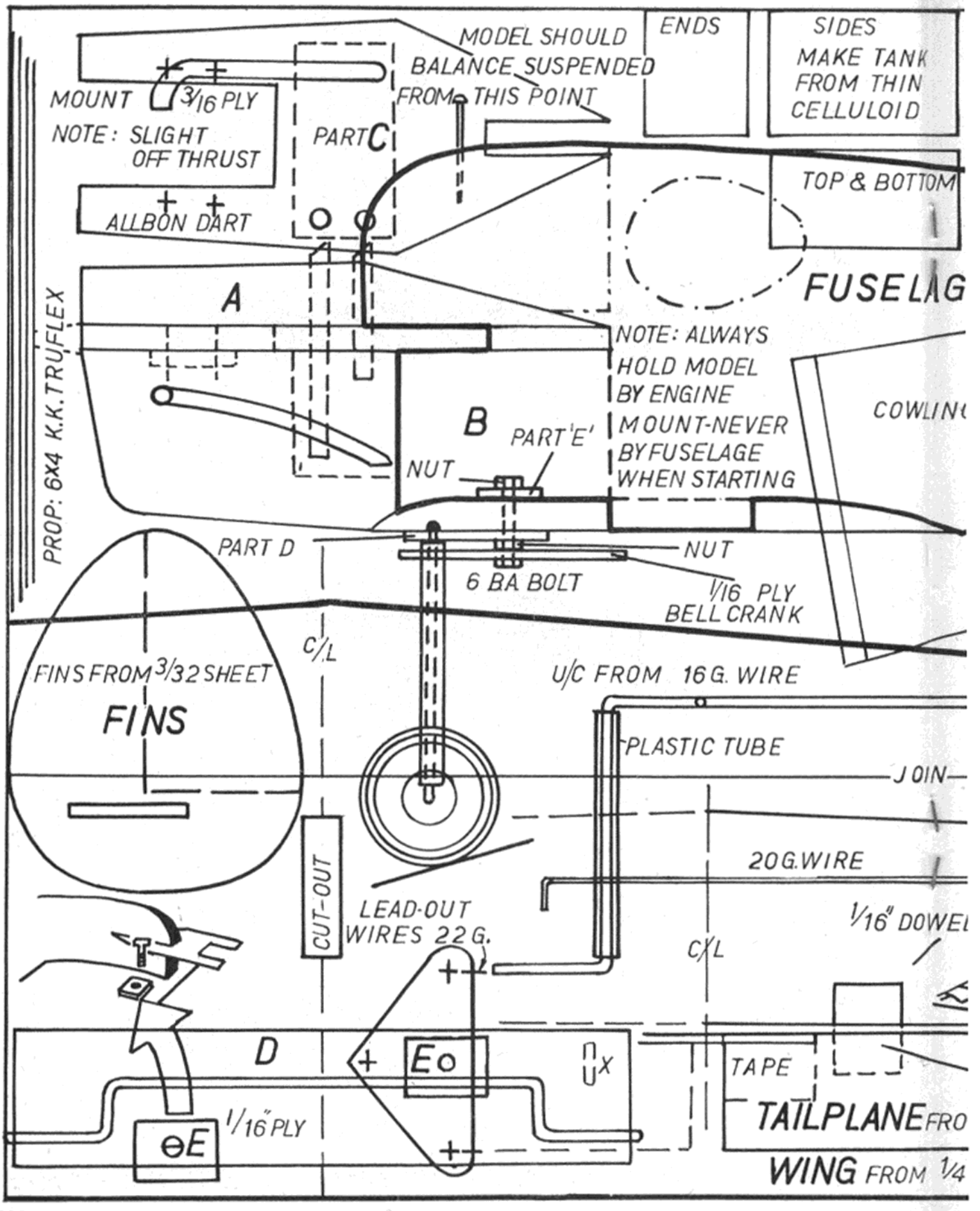
Two coats of clear dope lightly rubbed down, and pick out the cabin in black. Give entire model a coat of fuel proofer. For a really good-looking job, finish with a coat of Starlon plastic enamel, which, incidentally, saves the application of fuel-proofer. Check the c.g. position from plan. Weight should be 4½-4¾ oz. The original model is pale blue with maroon lettering.

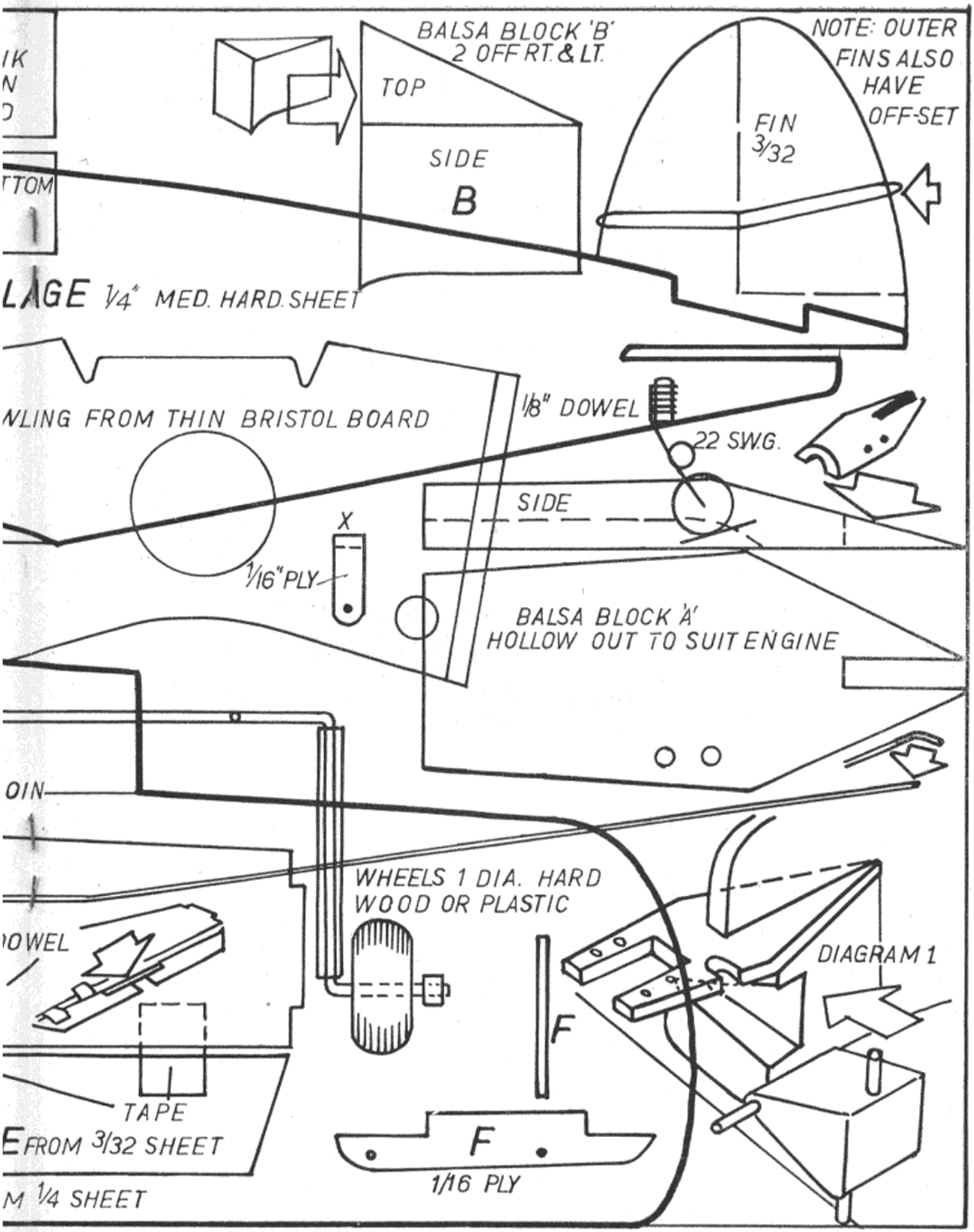
Flying

Always hold the model by the engine mount when starting and *never* by the fuselage. The original was flown with the Allbon Dart and E.D. 0.46, both of which power units gave it a really enjoyable "sports-flying" performance on 20-25 ft. lines in calm conditions. However, by altering the location of the mounting holes, almost any 0.5 c.c. motor can be used.

Full size plans overleaf




MODEL SHOULD
BALANCE SUSPENDED
FROM THIS POINT
ENDS
SIDES
MAKE TANK
FROM THIN
CELLULOID
MOUNT 3/16 PLY
NOTE: SLIGHT
OFF THRUST
PART C
ALLBON DART
TOP & BOTTOM
FUSELAG
A
PROP: 6X4 K.K. TRUFLEX
NOTE: ALWAYS
HOLD MODEL
BY ENGINE
MOUNT-NEVER
BY FUSELAGE
WHEN STARTING
B
PART 'E'
NUT
COWLIN
PART D
NUT
6 BA BOLT
1/16 PLY
BELL CRANK
C/L
FINS FROM 3/32 SHEET
FINS
U/C FROM 16 G. WIRE
PLASTIC TUBE
JOIN
20 G. WIRE
CUT-OUT
LEAD-OUT
WIRES 22 G.
1/16" DOWEL
C/L
D
Eo
X
TAPE
1/16" PLY
⊖E
TAILPLANE FRO
WING FROM 1/4


BALSA BLOCK 'B'
2 OFF RT. & LT.
TOP
SIDE
B
NOTE: OUTER
FINS ALSO
HAVE
OFF-SET
FIN
3/32
LAGE 1/4" MED. HARD. SHEET
NLING FROM THIN BRISTOL BOARD
1/8" DOWEL
22 SW.G.
SIDE
X
1/16" PLY
BALSA BLOCK 'A'
HOLLOW OUT TO SUIT ENGINE
WHEELS 1 DIA. HARD
WOOD OR PLASTIC
DIAGRAM 1
F
TAPE
E FROM 3/32 SHEET
F
1/16 PLY
M 1/4 SHEET

Topical Twists

by PYLONIUS

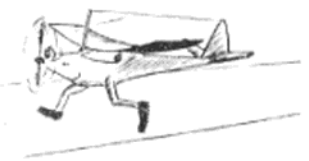
Automation

The West Middlesex boys seem to be threatening us with a foretaste of automation, for they report that most members are busily building monsters. Whether these fearsome products will take the form of oversize specimens of crude model life, or a topical sort of robot able to clank through the whole wearisome business of comp. flying whilst their demon creators enjoy a quiet snooze in bed, we are not told, but at least we hope that any new press button era will be more progressive than the last.

The earlier press button age, you may remember, was heralded by the advent of an outsize in super knobs. It had, I believe, eight positions: dive, climb, neutral, left bank, and so on. Crouched in smug immobility by the super knob would be an equally outsize flying machine. Were you able to elbow your way through the besieging crowds you might have heard the august Knob Turner in Chief explaining to a few favoured dignitaries the wonderful simplicity of operation. You merely set the knob to any desired manoeuvre and the eight point escapement did the rest.

What fate overtook these acrobatic masterpieces is known only to a few dustmen, but there are witnesses of unimpeachable character prepared to solemnly testify to having heard a rumour that one such model taxied round a football field in a state of semi-control.

The next phase in the first press button era was the abandonment of the eight point policy in favour of bang-bang rudders and cocoa tin transmitters. The new and flightier model had a take off run of less than a hundred yards—in spiked shoes—and was limited to three manoeuvres, two of which abruptly terminated the day's flying, while the other, that of level, down wind flying, was certain to earn high placing in any contest. There was, however, a deep and steadfast belief among devout radio followers that radio man would one day fly through the loop barrier. After ten years of spiralling endeavour some of the faithful lost heart, but a few resolute believers still look forward to the golden age of the loop, now pinning their hopes on the new multi channel machines appearing on our airfields.



The only trouble with these models is that, for all their large and formidable size, they are unusually coy, performing only when no one is looking, not even their owners—they daren't.

Chink in the Curtain

A peep into the inscrutable mysteries of the East comes a bit shattering to some of our romantic beliefs. Take the Chinese Kite, for example. It is not, sad to say, a delicate, whimsy creation of bamboo and rice paper, covered with fiery dragons and unmentionable hieroglyphics. To the modern Chinaman a "kite" is just another model aircraft, built of nothing more exotic than balsa and tissue. Instead of a dragons breathing fire there is a diesel coughing oil, and in place of the unmentionable hieroglyphics there is an equally mysterious legend like "Snatzee," although a few colourful hieroglyphics might well be audible were the oriental masterpiece occidentally to come to grief—or, in other words, go west (very inscrutable pun).

All this makes you wonder why the modeller is so singularly devoid of any trace of national culture. In nearly all other activities some flavour of nationalism creeps in. At the slightest provocation gentlemen in flowered skirts will execute a traditional pirouette, while others, dressed in full war paint, put in a few hectic laps round a totem pole. Even the sleek Russian jet liner manages to introduce a whiff of good old russki culture, for report has it that the internal decor is on the lines of a Tsarist banqueting hall.

But modellers! Were it not for a clinging odour of diesel fumes you couldn't tell a British cement squeezer from an American balsa butcher, and as for the Japanese, they are so exclusively absorbed in the mass production of four engine, American bomber models, that they no longer use their very own Jap tissue. Perhaps the only touch of native culture they display is the sporting of flowery kimonos, and this only because they make a good substitute for the American free flapping shirt.

Model Weather

The most outstanding feature of any British outdoor meeting is our national standard, the umbrella, dripping wetly down the unprotected necks of those blithe, weather-forecast hopefuls, who, with sunglasses at the ready, stoically await the promised heatwave. When, on rare occasion, the sun puts in a brief, week end appearance, there follow wild scenes of national rejoicing. Cars in their thousands go dashing off to the seaside, at five miles per hour; officials utter solemn warnings of impending drought; and happy families stay up all night with baby's sunburn. The only ones not sharing in the general gaiety are model fliers.

I got this impression after reading through harrowing reports of a decentralised comp. held on one such sun drenched week end. Here was meteorological treachery at its most foul. Howling tempests raged over the face of the land and airfields staggered under the massive pressure of colossal downdraughts. What sort of opinion these weather idealists have of a typical wet and draughty summer day is whispered only behind shuttered windows and locked doors. Woe betide any new club member who comes into the clubroom expressing surprise that he should be the only flier to turn up to fly in the 5 m.p.h. wind on the previous Sunday—his action would be regarded as even more treacherous than the treacherous weather.

Firm Offer

I see that a balsa firm have given an open invite to any visitor from abroad to visit their factory, and see what happens to the raw material before it gets into the hands of the raw beginner. The only qualifications required, apparently, are a good appetite (for both food and balsa) and a flair for telling funny stories in pidgin-English.

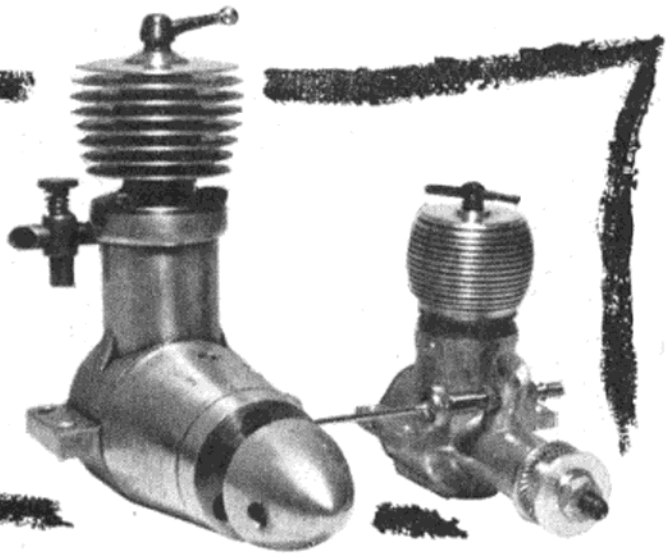
This seems a golden opportunity for a beeg look-see by El Pylonius, ostensibly travelling from a South American republic in search of some revolutionary kit designs (you zay eet goes like zee bomb, yes?). My chief point of interest would be to see just how sumptuously the other half live. I say, half although statistics prove that the proportion of people engaged in the cutting up and kitting of balsa is twenty times greater than those who heave it into the skies (See the Pylonius survey: "The Fly and the Fliers"). As for the qualifications, I have been known to take a quick snack between building and flying, although I have doubts whether my breadline digestion will cope with the richness of the caviar and champagne canteen fare. And I think I can tell a funny story, even if such a claim is hotly disputed by 99 per cent. of my readers. (What's 99 per cent. of four?)

The only problem arising is what I would do with a thousand kits. At least 999 would suffer the usual fate of remaining unbuilt, while I'd give the remaining one to my little nephew —never could stand the little blighter, anyway.

ALI DID THE SKETCHES

PETER CHINN reviews

TEN YEARS OF DIESEL PROGRESS



JUST ten years have now elapsed since a British manufacturer (Mills Bros.) began producing what is now acknowledged to have been the first commercially successful British model diesel motor.

Prior to this, of course, numerous different makes of diesels had appeared on the Continent from 1943 onwards in small numbers, but most of us were then occupied with sterner things, and it was not until the end of the war that British model enthusiasts learned of this new type of miniature internal combustion engine, and prospective manufacturers were able to study the type and begin the development of suitable designs. It is encouraging to note, however, that most of the progress in model diesel design during the last seven years has originated in Great Britain.

In 1946, plans were begun for the manufacture of several British model diesels, among which may be noted the Owat, the Leesil, the Mills 1.3 and the Frog 100. Only the Mills and Frog remain with us today. The Owat was a fixed compression, shaft-valve 5 c.c. engine and a virtual copy of the French Micron. The Leesil was an orthodox, longstroke, three-port engine of 2.4 c.c.

The Mills was, in many respects, in a class of its own. Beautifully made, reliable, and easy to handle, it was the engine primarily responsible for introducing thousands of British enthusiasts to power modelling. Early Mills 1.3's were not so hard wearing as later models and were of quite modest power output, but their neat, square lines and excellent finish were almost unique at a time when many diesels were of a distinctly "scruffy" general appearance.

The 1 c.c. Frog 100 followed in 1947 and was generally similar in layout to the Frog 175 petrol engine of that time. Having shaft rotary valve induction, but of simplified structural design, the Frog, later selling at only 60s., was another step towards bringing power models within the reach of the average modeller.

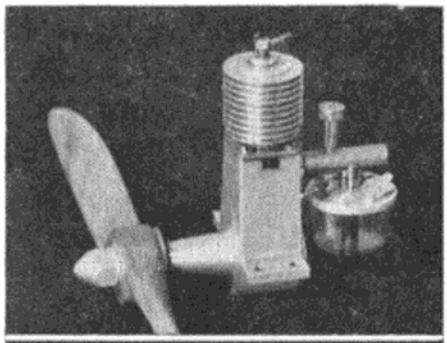
At the same time, but at the other end of the price scale, the Eta 5 c.c., selling at nearly £9, was introduced. Of excellent finish, this engine was noted for the multiplicity of controls which sprouted from its carburettor, there being, in addition to the usual needle-valve, a cut-out unit and a choke control.

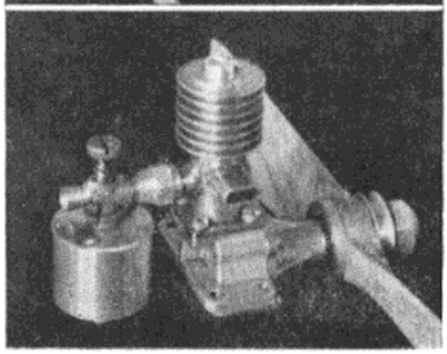
About this time, too, the first of a new series of quantity produced engines, the E.D. Mk.II, was put on the market. This 2 c.c. model had the usual contra-piston, but dispensed with a compression lever, using instead the screwed-on finned barrel as a means of adjusting compression. A slot was provided in the cylinder head by which it could be turned with a coin or screwdriver. Of equally doubtful merit was the pulley mounted in front of the prop, by which means the engine was supposed to be started. Fortunately, it started well enough by hand. Incidentally, these early models of the Mk. II were also accompanied by quite the worst "instruction leaflet" we have ever seen.

The Mk. II continued in production for a number of years, a somewhat ugly but hard wearing engine and was also the basis of the slightly later Competition-Special engine. The Competition Special won the Gold Aerobatics Trophy the following year and was one of the most widely used 2 c.c. engines built. Able to withstand a good deal of ill-treatment, it was almost impossible to wear out with normal use.

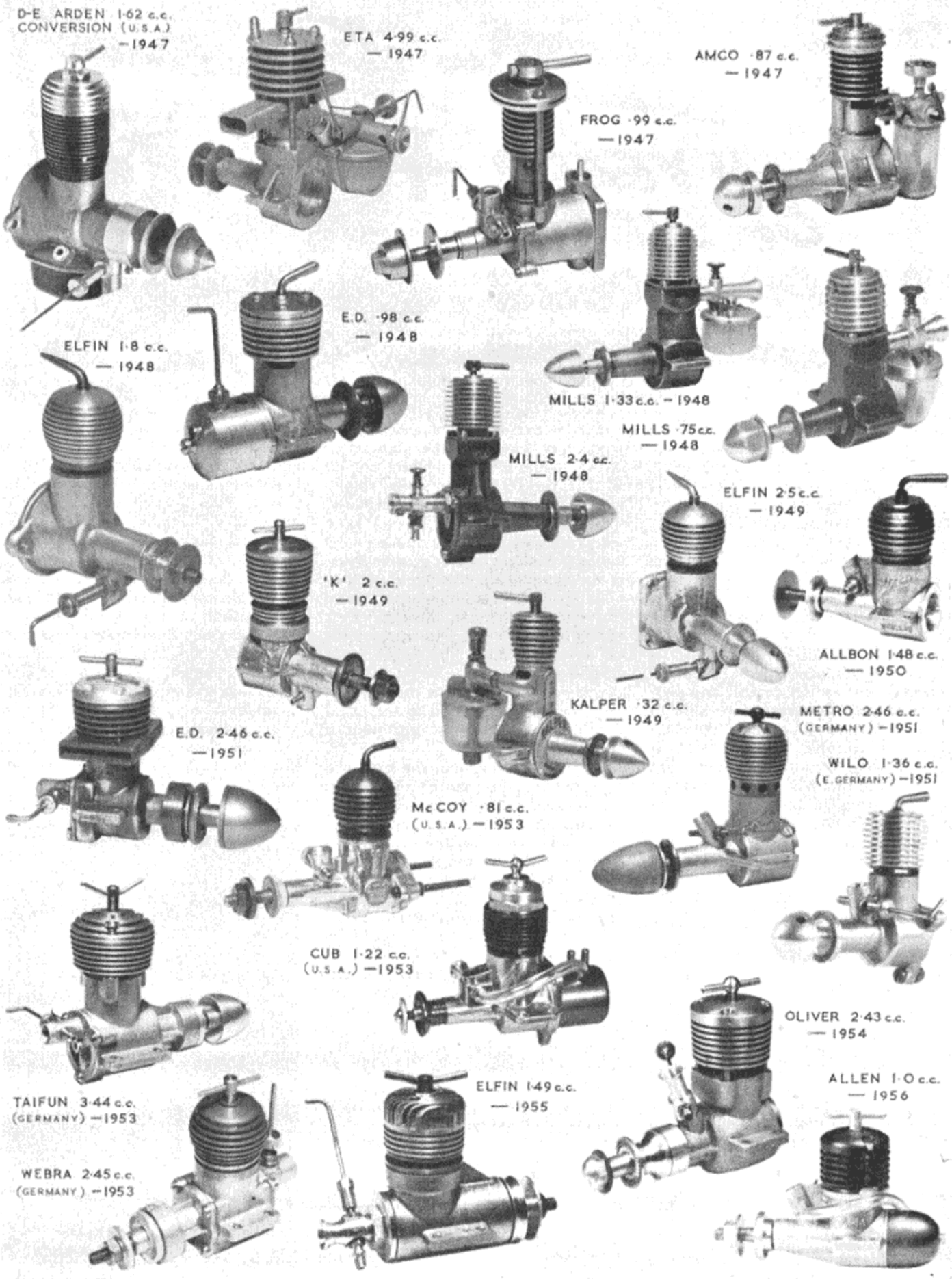
Another new name appearing at this time which was also to gain recognition was Amco. Perhaps the first really successful quantity-built engine of under 1 c.c., the Amco 0.87 was another pleasing little engine of the orthodox three-port type. Somewhat prone to break things, its saving grace was its delightful handling.

Several really well made diesels





Two pioneer British production diesels. Top: the 1946 model Mills 1.3, the very first successful British diesel to go into quantity production. Below: the first E.D. engine, of 1947, the 2 c.c. Mk. II, from which the popular Competition Special was subsequently developed

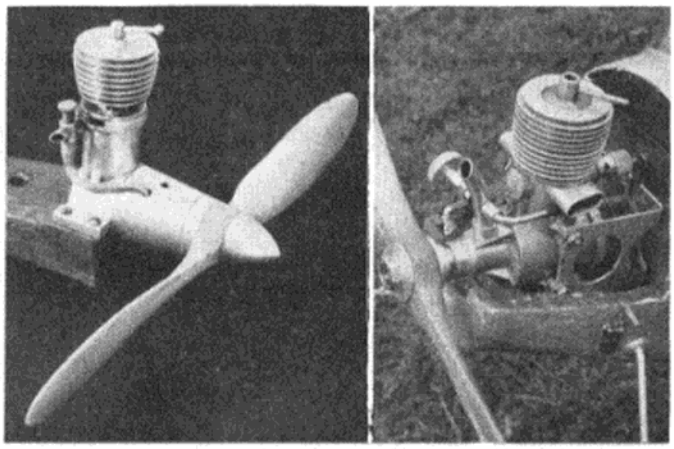

D-E ARDEN 1·62 c.c. CONVERSION (U.S.A.) — 1947
ETA 4·99 c.c. — 1947
FROG ·99 c.c. — 1947
AMCO ·87 c.c. — 1947
E.D. ·98 c.c. — 1948
ELFIN 1·8 c.c. — 1948
MILLS 1·33 c.c. — 1948
MILLS ·75 c.c. — 1948
MILLS 2·4 c.c. — 1948
ELFIN 2·5 c.c. — 1949
'K' 2 c.c. — 1949
ALLBON 1·48 c.c. — 1950
KALPER ·32 c.c. — 1949
METRO 2·46 c.c. (GERMANY) — 1951
E.D. 2·46 c.c. — 1951
WILO 1·36 c.c. (E. GERMANY) — 1951
McCOY ·81 c.c. (U.S.A.) — 1953
CUB 1·22 c.c. (U.S.A.) — 1953
OLIVER 2·43 c.c. — 1954
TAIFUN 3·44 c.c. (GERMANY) — 1953
ELFIN 1·49 c.c. — 1955
ALLEN 1·0 c.c. — 1956
WEBRA 2·45 c.c. (GERMANY) — 1953

had also appeared in America, but, in general, were unable to make any substantial impression on the popularity of the high-performance spark ignition engines made there, and these diesels were finally killed off when Ray Arden introduced glowplug ignition in 1947. One interesting item which came our way from the U.S., however, was Joe Dale's ingenious and finely made diesel conversion set for the Arden 0.099.

The opening of the 1948 season saw the arrival of several more new makes, while established manufacturers improved their existing models and brought out one or two new additions. Mills Brothers replaced their 1.3 with a new and lighter Mk. II model and the first Allbon engine appeared, the three-port 2.8 c.c. model. E.D. introduced the Mk. III shaft-valve 2.43 c.c. model with interchangeable glowplug head, which, however (although it remained on the market for three years), was, to us, a singularly unimpressive engine, contrasting markedly with the 1 c.c. Bee introduced a few months later which was to enjoy such universal and well-deserved acceptance.

Early in 1948, however, it was becoming obvious that the diesel was in danger of losing ground among serious enthusiasts. The superb high-speed performance of the better American spark-ignition engines was making itself evident to competition minded enthusiasts and, with the advent of glowplug ignition, it was realised that some very considerable changes would have to be made to the traditional layout if the diesel was to survive. A drastic change did, in fact, come in the shape of the Elfin 1.8.

The general layout of the Elfin, as is well known, followed that of the outstanding American Arden engines and utilised the same radial porting system. The engine was lighter than any other diesel of equivalent size, yet was about 50 per cent. more powerful—due mainly to the fact that its peak speed was up to 5,000 r.p.m. above that of conventional diesels. The diesel now had promise of a new span of life and this was further consolidated within the next 12 months by the introduction of the Amco 3.5 and Elfin 2.49 of similar design.



Two of a number of diesels acquired by the author in Italy in 1945-46. Engine No. 1 (left) was a one-off design made to order. On the right is a (modified) Super-Tigre G.14, the second production engine from this manufacturer.

The Amco, of 3.42 c.c. capacity, weighed only a little over 4 oz.—a record which has never been equalled —and this, added to its willingness to function evenly throughout the most violent manoeuvres, soon made it a first choice among stunt enthusiasts. Its one failing was that it was apt to break crankshafts, crankpins and gudgeon-pins with rather disconcerting frequency, although this was, perhaps, as much due to certain manufacturing weaknesses (particularly hardening) as to any fundamental design weakness due to the paring of weight.

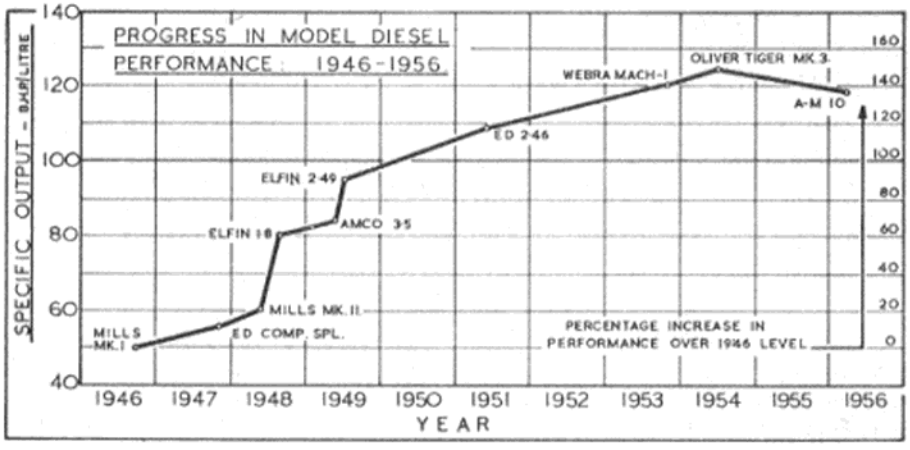
The Elfin 2.49 (actually of slightly over 2.5 c.c.) proved to be an even better engine than the 1.8 and we cannot help but express the opinion that the manufacturers would have done well to retain this original design, instead of replacing it with the beam mount version the following year.

Mention must be made of the "K" range of engines, the smallest of which, the 0.2 c.c. Hawk, was the smallest British model i.c. engine until the advent of the Allbon 0.15 c.c. Bambi in 1954. The "K" company also produced 2 c.c., 2.5 c.c. and 5 c.c. class diesels, all using shaft induction and radial porting. Two other notable British engines of the period were the Mills 2.4 and the Mills 0.75. The original production 0.75 was virtually a scaled down Mk. II, while the 2.4 was a disc-valve model, but retained the familiar Mills long-stroke cylinder.

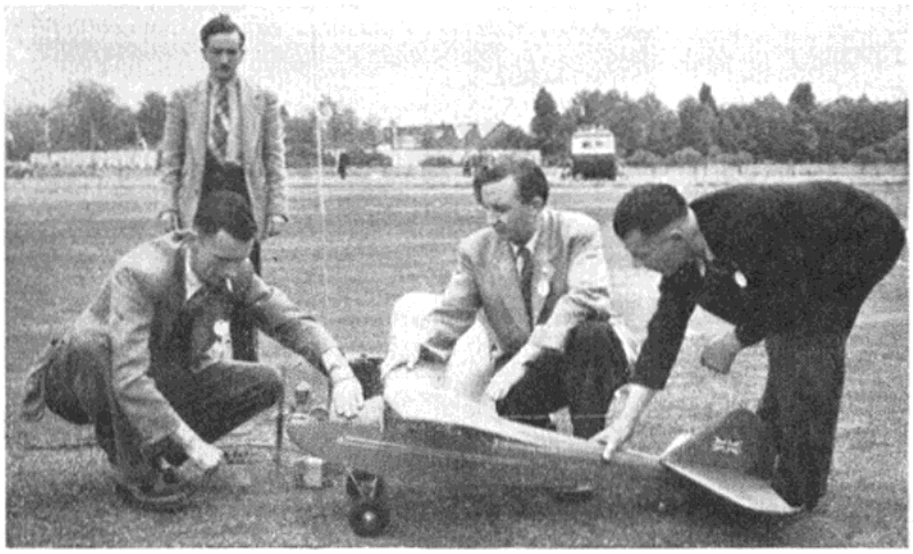
With the original Elfin 2.49 of 1949, the specific output of the diesel moved to within sight of the 100 b.h.p./litre mark, but two years were to elapse before this level was exceeded.

During this time, the number of firms manufacturing diesels was whittled down somewhat and fewer new engines appeared. Among the more notable, however, were the E.D. 3.46 c.c. with its disc valve and single ball bearing and, a little later, the first Allbon Javelin which had been adapted from the not too successful Arrow glowplug motor. The name of Davies Charlton, later to take over the manufacture of Allbon engines, was also now becoming known for its moderately priced Wildcat 5 c.c. diesel and, later, for its D.C. 350, 3.5 c.c. model.

Late in 1950 we heard news of a new twin ball bearing disc-valve 2.5 c.c. engine under test at E.D.'s and in the spring of 1951, the E.D. 2.46 appeared. Today, five years later, this engine remains one of the classic diesel designs and is still capable of competing with the best in its class. Its specific output is nearly 120 per cent. better than the original Mk. II.



(*Continued on page 308*)



Ted Hemsley and his helpers prepare for the third flight, which gained him 3rd place

King of the Belgians'

Int. Radio Control Contest

THE contest for the King of the Belgians' Cup has rapidly achieved the distinction of being the most important radio contest in the European continent, if not in the world, firstly by reason of its Royal patronage and secondly because of the excellence of its organisation. In the latter respect the fourth contest, held on the Antwerp-Deurne Aerodrome on June 16th and 17th, proved to be well up to the high standard set by the preceding contests and was a complete success in spite of the changeable weather conditions which prevailed.

Following recent trends, the contest was divided into three classes: multi-controlled models which competed for the King of the Belgians' Cup; mono-controlled models which competed for a prize given by the Minister of Communications; and gliders which competed for a prize given by the Minister of Public Health. As was to be expected the mono-controlled class drew the largest entry—eighteen—the gliders coming next with an entry of nine.

The principal event proved to be a tussle between those two great exponents of radio piloting, Gobeaux of Belgium and Stegmaier of Germany, both of whom are outstanding performers, with Hemsley of Great Britain making a valiant effort to gain 3rd place.

In the draw Gobeaux was the first out of the hat and he opened the flying with one of his typical displays of clean and precise flying, which gained him 1st place. He carried out all his listed manoeuvres with apparent ease—looping, inverted flying, rolls, stalls, spirals, and Immelman turns, being executed smoothly and accurately.

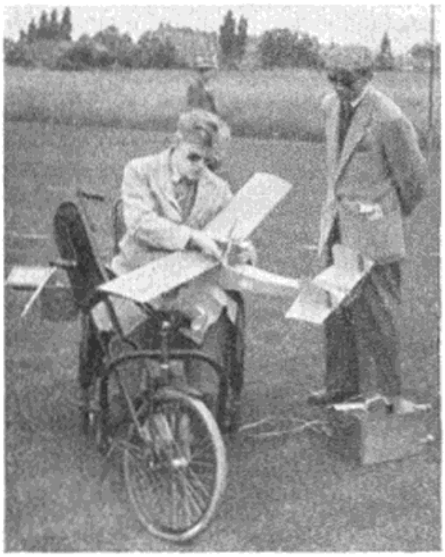
He was followed later by Stegmaier (2nd) who again showed the capabilities of his amazing model, but his manoeuvres lacked the cleanness of execution exhibited by Gobeaux.

Hemsley made good, sound flights but failed to approach the spectacular standard set by the first and second place winners.

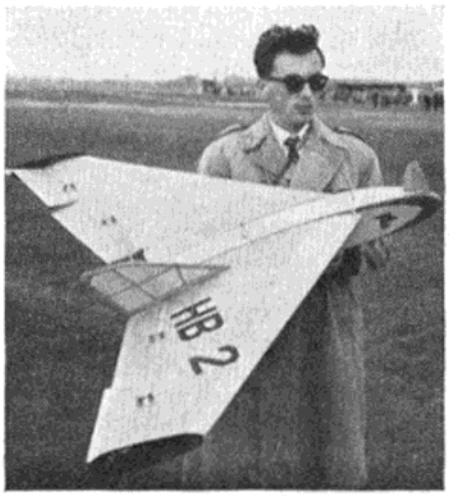
Lichius of Germany again entered his beautifully constructed near-scale Cessna model and at one period it appeared that he would give the two leaders a run for their money, but while executing his inverted flight the model made a sudden vertical dive from which he was unable to pull out with the result that the flight terminated in a spectacular and heartbreaking crash.

Higham of Great Britain lost control of his model in the middle of his first flight and lost it in consequence. It was not found until the next morning when an examination proved it to be unfit for any further attempt.

The remaining two events turned out to be triumphs for Switzerland, Bickel winning the mono-controlled event with a delta model reminiscent of the Avro *Vulcan,* which displayed outstanding flying characteristics and a high degree of manoeuvrability—



In spite of his physical handicap Brinkman of Holland handled his machine very well and placed 6th in the mono control section



Bickel of Switzerland came first in the mono control section with this unusual delta model.

he made one of the best spot landings of the contest.

Second place in this event was also taken by Switzerland with a neat and well made cabin type model flown by Setz.

Thanks to the hard work put into the launching of the Swiss gliders by team manager, Arnold Degen, and to the excellent behaviour of the models, all the Swiss team made excellent starts and achieved maximum possible starting height. As a result all first three places in the glider section were taken by Swiss machines, the winner being decided by Klauser's second flight which culminated in an excellent spot landing.

A Genuine Bleriot

JOHN W. R. TAYLOR

tells how an American enthusiast spent two years and $500 rebuilding this historic aircraft

UNLIKE the Blériot replicas which flew the Channel last year, the aircraft illustrated on this page is a genuine Blériot-built monoplane, which has been restored to an airworthy condition by Cole Palen of Wappingers Falls, New York.

The original manufacturer's plate in its cockpit shows that it is a Type 11, similar to that in which its designer made the first Channel flight, Series No. 56, built by Aeroplanes L. Blériot, 14-16 rue Duret, Paris. So far as Palen can discover, it was exhibited and flown at a meeting in Squantum, Massachusetts, in 1910, where it crashed. The wreckage was carted off to a local junk yard, then bought by a gentleman named Bill Chaplin, who gave it to Palen a few years ago, together with a contemporary book entitled "How to Build an Aeroplane."

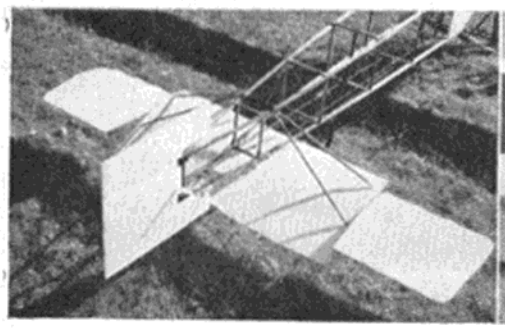
Two years of spare time and $500 went into the rebuild and the result is a credit to Palen's patience. Being a licensed aircraft and engine mechanic as well as a pilot, he went about the job with an eye on safety, hoping the result would be flyable. He was able to use quite a lot of the original airframe, including the "bedstead" engine mounting, the entire rudder, fuselage longerons from tail-wheel back, fuselage uprights and cross-members, tail-wheel, control stick and rudder bar and the cockpit coaming.

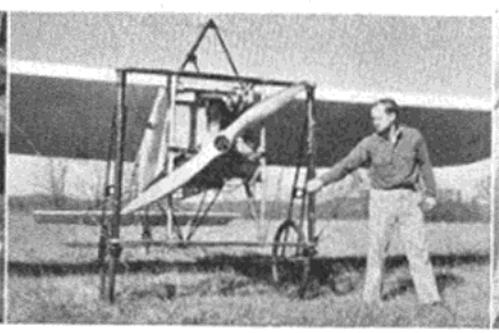
The wings are made of new ash wood spars and ribs, and the tailplane and tip-elevators have been completely rebuilt. The original type of castering main wheels, which overcame the aircraft's tendency to ground-loop and preceded modern cross-wind gears by about 40 years, have been retained; and the engine is a 1925 three-cylinder Anzani, developing 35 h.p. at 1,750 r.p.m., which cost Palen $50. In its original form the Blériot had no instruments whatsoever, but Palen has installed an oil pressure gauge.

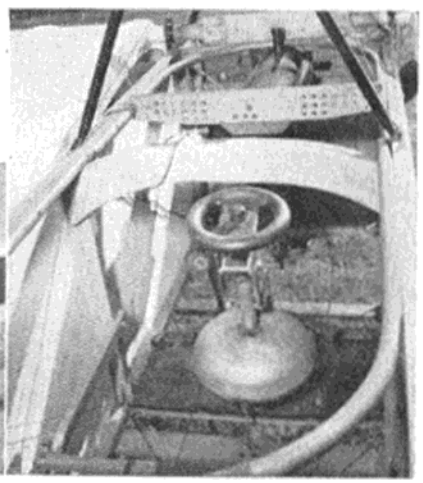
Dimensions and weight have worked out accurately, with a span of 28 ft., length of 24 ft. and gross weight of 480 lb. When, and if, it flies, top speed should be about 40 m.p.h.

When Palen can find the time and cash, Blériot 11 No. 56 will be only one of a collection of rebuilt antiques in his hangar. He managed to acquire seven other aircraft from the museum at old Roosevelt Field, including a Spad, Avro *Tutor*, Standard J-1 *Canuck*, Aeromarine 39B and a Sopwith *Snipe*, all of which he hopes to put back in the air one day.

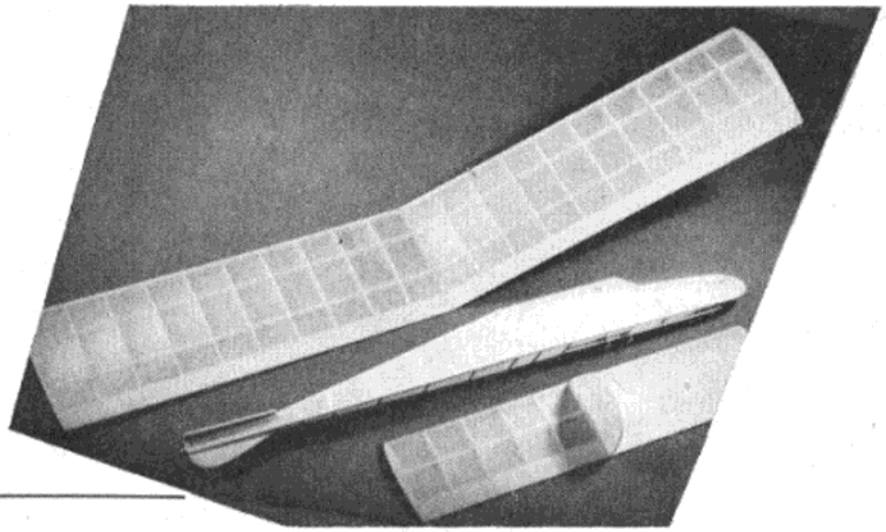
Builders of SMA. plan No. 41 will find plenty of helpful detail in these photos. Below is the simple cockpit, while top left is the original manufacturer's plate.







Covering and Doping



IN scarcely any field of human endeavour does one expect to start off by doing a new and strange job perfectly, at the very first try, and the hobby of building and flying model aircraft is no exception to this rule.

Perhaps, so far, you have made a good job of the framework of your model and are duly encouraged and ready for the last stage: covering and doping. In this case, let us add a warning not to relax your efforts to make an equally good job of the final stage. Covering a model really well at the first try is not an easy matter, and the fact that the model is now nearly finished should be accepted as an added incentive to take extra care, rather than as an encouragement to rush through the job in order to see what it looks like.

The NEW M.A. BEGINNERS' COURSE PART VI

When you have built two or three models you will find that covering a model neatly is quite a simple and straightforward business. If your first attempt does not turn out to your liking *don't*, therefore, be discouraged. Most of us were by no means satisfied with our first attempts, but if you persevere you will soon find yourself producing neat and satisfactory jobs.

Fortunately, nowadays, we are aided in our efforts by the availability of covering materials with which it is much easier to make a good job, than with those used in earlier years. Modelspan and Silkspan covering tissues are easier to apply and generally shrink evenly over the framework with a single coat of dope. In the past, preliminary water shrinking was necessary and, due to a pronounced "grain" formation, tightening occurred very much more in one direction than in the other.

These improved covering materials are sold in a variety of colours, although white only is included in most kits and it is therefore worthwhile to consider spending a few pence on obtaining fresh tissue for the desired colour scheme. A most effective colour scheme, incidentally, is yellow and red; yellow being for the fuselage and red for the wing and tailplane.

This scheme has the advantage that the red flying surfaces can be most clearly seen when the model is well up overhead, while the light coloured body enables it to be seen against a dark background if the model should drift

Fig. 1. A selection of dopes. Shrinking dope, thinners, banana-oil and coloured dopes.

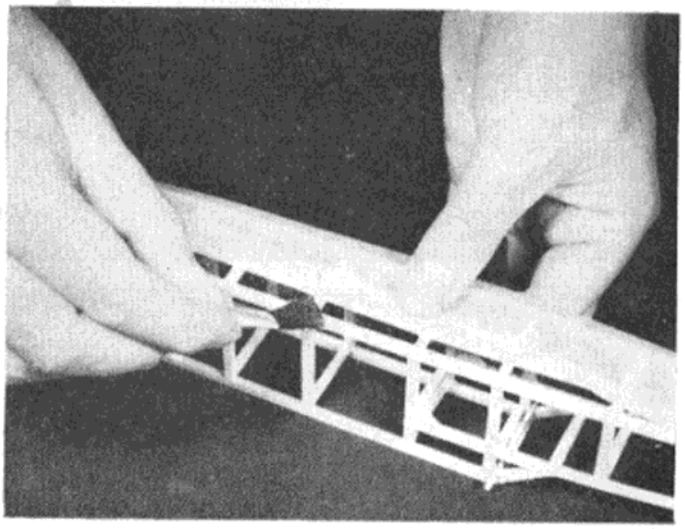


Fig. 2. Apply adhesive to the longerons after attaching the covering to the nose and tail.

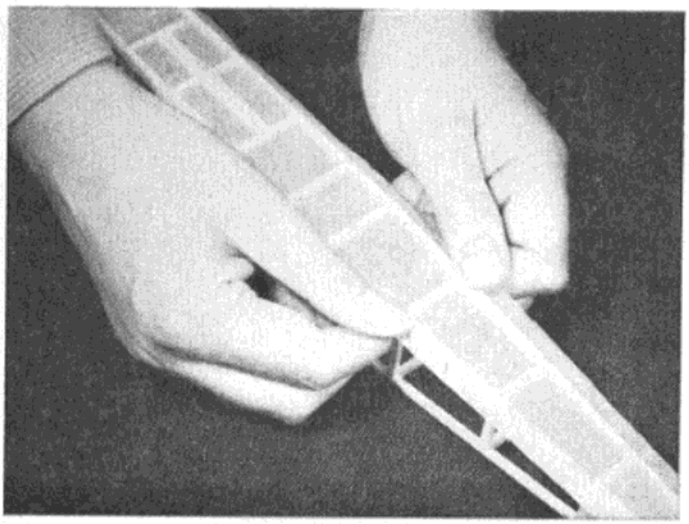


Fig. 3. Drawing the tissue down onto the longerons with a steady even pressure on both sides.

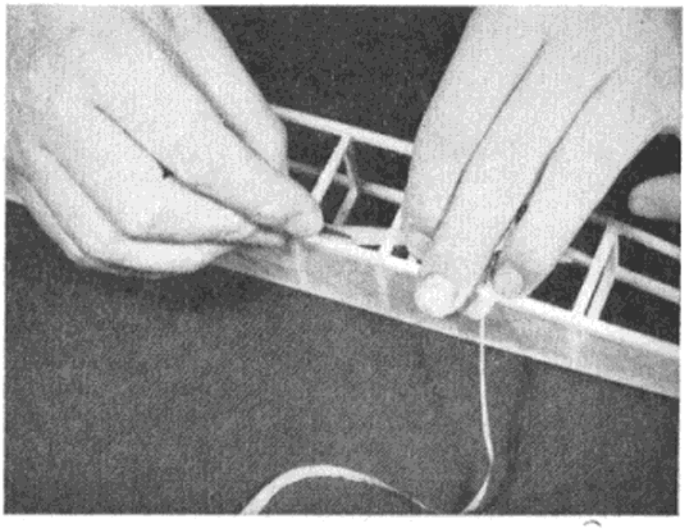


Fig. 4. Trimming the tissue, leaving a small overlap, which can be doped down afterwards to seal the edges.

a fair distance before landing. (If, at this stage, we appear to be unduly optimistic about the long-flying qualities of our finished model, it is worthwhile remembering that, during the summer months, even a model of quite modest performance may easily have its flight extended by a thermal up-current, and so it is as well to be prepared.)

In addition to the covering tissue, you will also require some adhesive, dope and brush. Various types of adhesive are used for covering. Most American modellers, for example, use ordinary model dope which has been thickened with balsa cement. Many British builders, on the other hand, use a hard dextrine paste, of the " Grip-fix," " Dex " or " Kodak " type and we would suggest this latter as being more suitable to the beginner as it does not dry quite so rapidly and thus allows more time to get the covering positioned properly.

The dope required is of the clear, shrinking dope type and a 2-oz. bottle will be ample for our needs. You can obtain ready thinned " model " dope, or a " full-strength " dope. In any case, however, it is worthwhile to buy a bottle of cellulose thinners with which to dilute the dope to a reasonable brushing consistency and to clean your brushes. As regards brushes, a ½in. wide soft brush, obtainable at a model shop, is all that is required, plus a small, cheap artists' brush for sealing the edges of the tissue when covering. You may, of course, use a super-soft sable doping brush if you wish, but these, generally, can be reserved for applying coloured cellulose lacquers for decorative purposes, which need not concern us at the moment.

Before starting on the actual covering, it is advisable to go over the framework with a sandpaper block to smooth out any roughness and to remove any blobs of dried cement, etc. At the same time, check all joints to see whether any have become broken and, if so, carefully cement them up again. It does not greatly matter which part of the model is covered first, but we suggest either the tailplane or fuselage so that if you are dissatisfied with your initial attempt at applying the covering, it is not too much trouble to strip it off and repeat the process and very little material will have been wasted. Let us assume that the fuselage is to be covered, starting with the bottom.

Clear your work table, giving yourself plenty of elbow room. Lay out the various items you will need: tissue, adhesive, small artists' brush and a new razor blade or *sharp* modelling knife. (Generally, a razor blade is to be preferred, but we have found that an X-acto blade, such

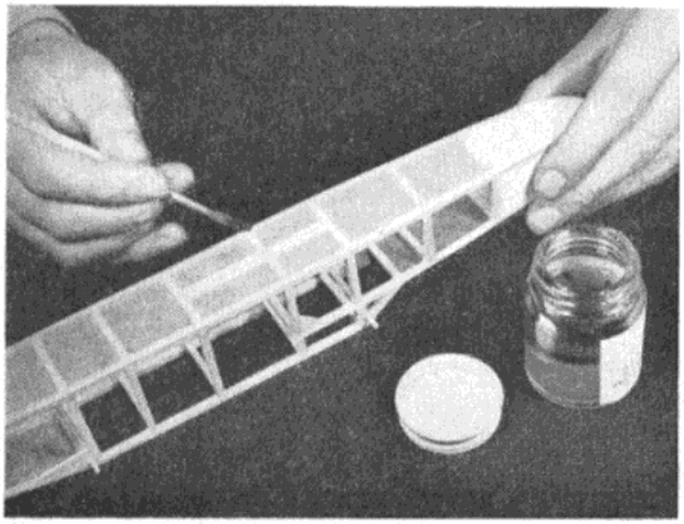


Fig. 5. Sealing the edges of the tissue with dope.

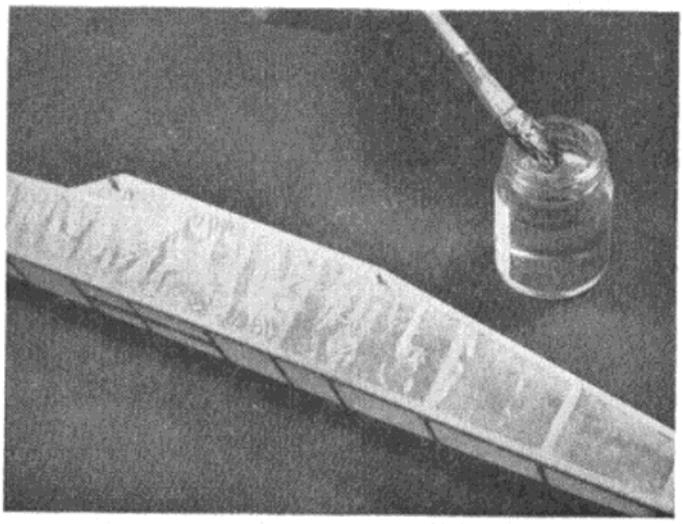


Fig. 6. When newly doped, the covering goes slack, as shown.

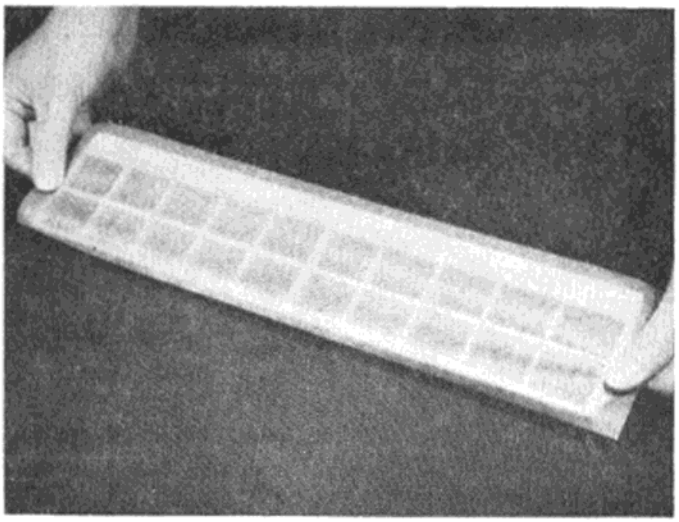


Fig. 7. The first stage in covering a tailplane.

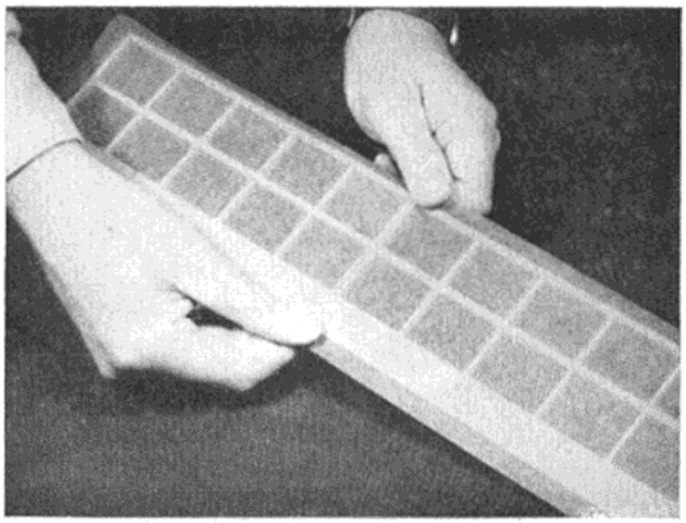


Fig. 8. Second stage: stretching across the chord at the centre.

as the straight edged No. 11, is also satisfactory.)

First cut a piece of tissue to the required size, allowing about ½ in. overlap all round. Apply paste to the nose and tail of the fuselage. Take up the tissue, holding it lengthwise and lay it squarely on the bottom of the fuselage, stretching it from nose to tail and gently pressing it down on the pasted wood.

Now, with the edge of the tissue folded back, apply paste along the two longerons, as in Fig. 2. (You could, of course, have applied the paste all over the framework in the first place. The only reason for doing the pasting in two stages is to simplify matters and avoid the possibility of the tissue adhering to the longerons before being properly positioned.)

Gently stretch the tissue across the fuselage at the centre (Fig. 3) then work towards the nose and tail, carefully working out the wrinkles. Set the work aside for a few minutes, then, with the fuselage on its side, and the surplus tissue drawn around the longeron, carefully trim off, as in Fig. 4, so that a margin about 3/32 in. wide is left which can be doped down onto the longeron. This latter operation can be performed with the small brush and some unthinned dope.

Cover the top in the same manner. Usually it is unnecessary to cover that section of the fuselage upon which the wing rests. The side panels complete the job. Once again, a small overlap should be left after trimming, which is sealed down with dope, as before. (Fig. 5.)

The entire unit can now be doped. Do not attempt to use dope which is too thick. It is better, and just as economical, to dilute with cellulose thinners and to apply two coats rather than one thick coat. The pores of the tissue will then be more evenly filled and the finished apearance will be better. As the surface of the tissue is doped, it will take on a translucent appearance, and will slacken (Fig. 6). After it has dried, however (about half an hour), it will become drum tight, adding considerable rigidity to the component.

Let us now go over the procedure, briefly, once again; this time referring to the covering of the wing and tail surfaces. The tailplane can be covered with two pieces of tissue; one on each of the two surfaces, top and bottom. The wing is best covered with four pieces; top and bottom, left and right.

Fig. 7. (Tailplane.) Paste the bottom of the framework. (Trailing edge first, as this has the greatest area and allows the longest time for the paste to dry, followed by the tips and the leading edge last.) Lay the tissue out

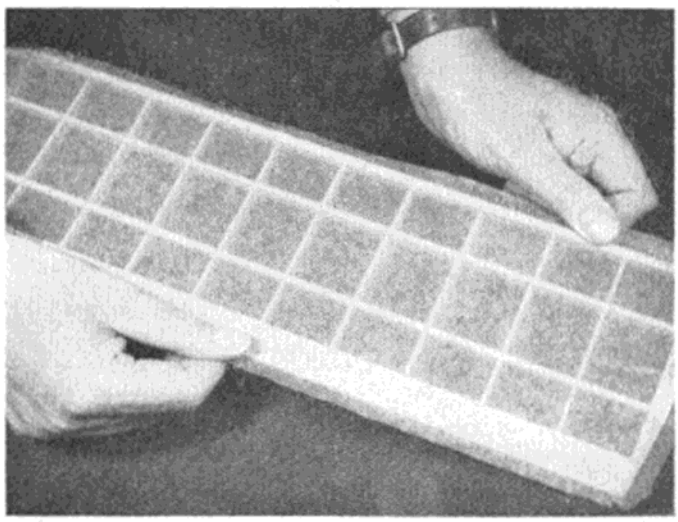


Fig. 9. Third stage (this time shown on wing). Drawing out the tissue towards the tips.

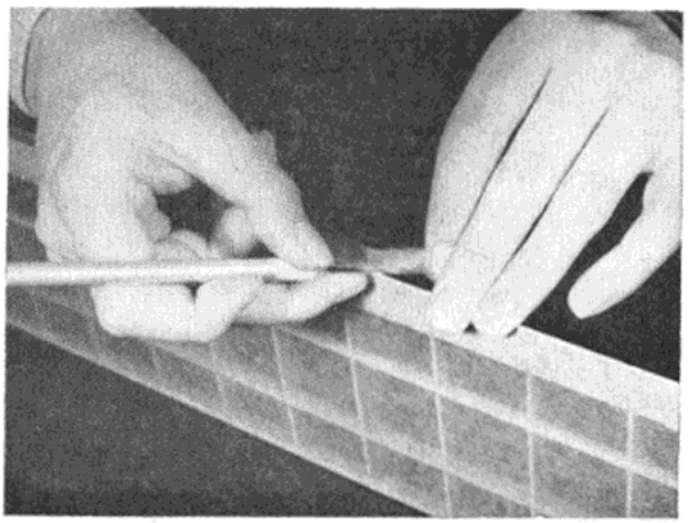


Fig. 10. Trimming off the trailing edge; be careful not to cut into the wood with the knife edge.

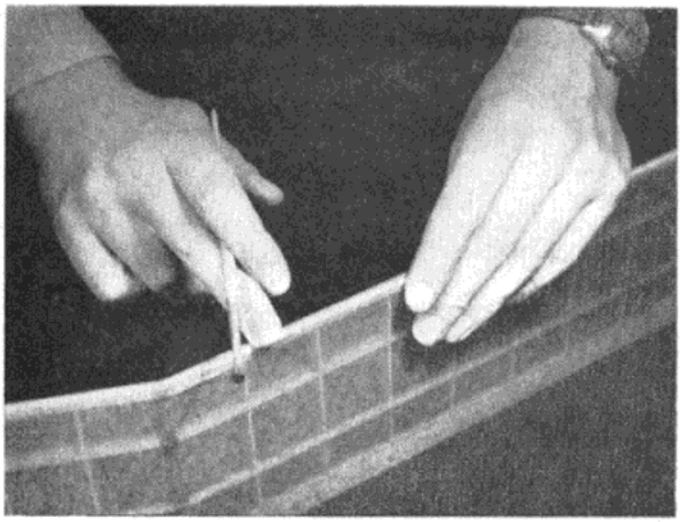


Fig. 11. Sealing down the edges of the tissue with dope by rubbing along them with the finger.

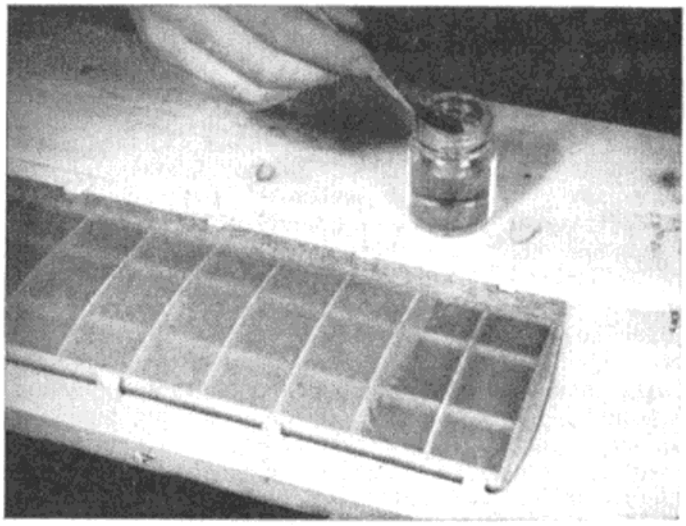


Fig. 12. Wing and tail surfaces should be pinned down when doped to prevent them from warping.

flat and drop the pasted bottom surface of the frame on it. Holding the component in both hands, stretch the tissue lengthwise.

Fig. 8. Now pull out across the chord at the centre.

Fig. 9. (Wing.) Work diagonally out towards the corners. Do not attempt to get the tissue exceptionally tight: you will only succeed in producing wrinkles across a section you have previously stuck down and you will have to keep raising the covering again to pull these out.

Fig. 10. Trim off with a razor blade or *sharp* modelling knife. (It is unnecessary to fold over the trailing edges, incidentally.)

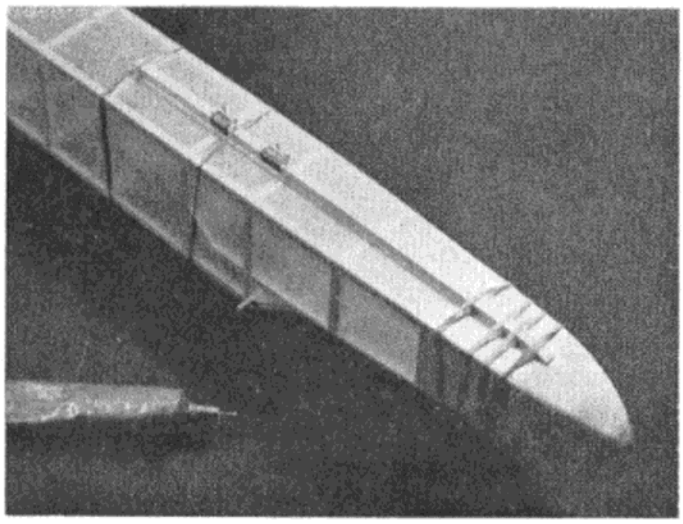
Fig. 11. Seal the edges with dope.

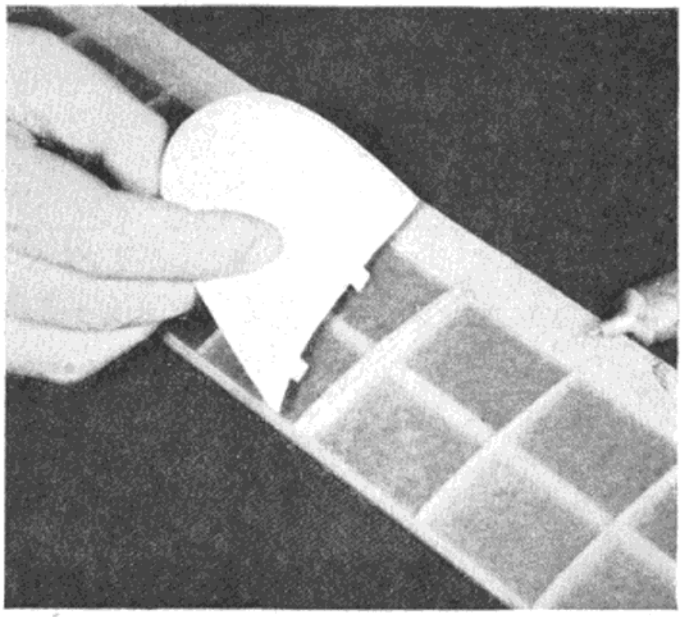
Fig. 12. It is most important to pin down flying surfaces while they are drying in order to prevent warping Dope the underside first, then, supporting it on a number of scraps of $\frac{1}{16}$ in. sheet balsa, pin it down with drawing pins or scraps of balsa and household pins as shown. Then dope the top surface while it is in this position. Leave the surface pinned down as long as you can. It is a fact that any new structure takes some time to settle into shape and the first few days after covering and doping are especially critical and it is worth while to keep your flying surfaces pinned down while they become duly " inoculated " against the effects of atmospheric changes while held true.

It will be noticed that only the outline frame of any component is treated with adhesive—never the cross-members or ribs. It is necessary that the covering is eventually stuck to the entire framework in order to brace the complete structure, but the dope will do this, later, by soaking through the tissue and bonding it to the wood. To have adhesive over the entire framework when actually applying the covering will only hinder operations. The sole exception to this rule concerns wings with a concave undersurface. It is then necessary to use glue or cement on the bottoms of the ribs to ensure that the tissue follows the required curve and does not pull away when shrunk.

Exposed wood parts of the model may be treated with two or three coats of clear dope or, alternatively, a non-shrinking dope, such as " banana-oil," which also gives a pleasant gloss, may be used. This banana-oil may also be used as a final coat on tissue covered surfaces.

Below. On the " Tutor " glider, the nose skid, with towhooks, is cemented on after covering and can be held in place with rubber bands until dry. Right. Fitting the " Tutor " fin to the completed tailplane.





CHECK YOUR PROP PITCH

An easy method described by Henry J. Nicholls

THE keen modeller who appreciates the importance of propeller efficiency chooses his commercial airscrew with care, and in doing so he matches the diameter and pitch of the airscrew to the engine performance and air-speed of his model.

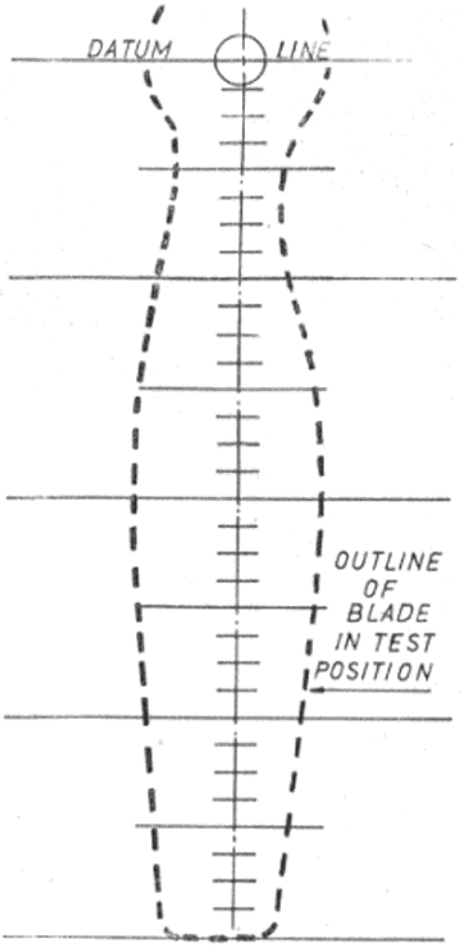
Despite this careful selection, however, few modellers have a ready method of checking that the pitch of a given airscrew is in fact that which it is claimed to be by the makers. The following method enables you to check pitches in a few seconds :—

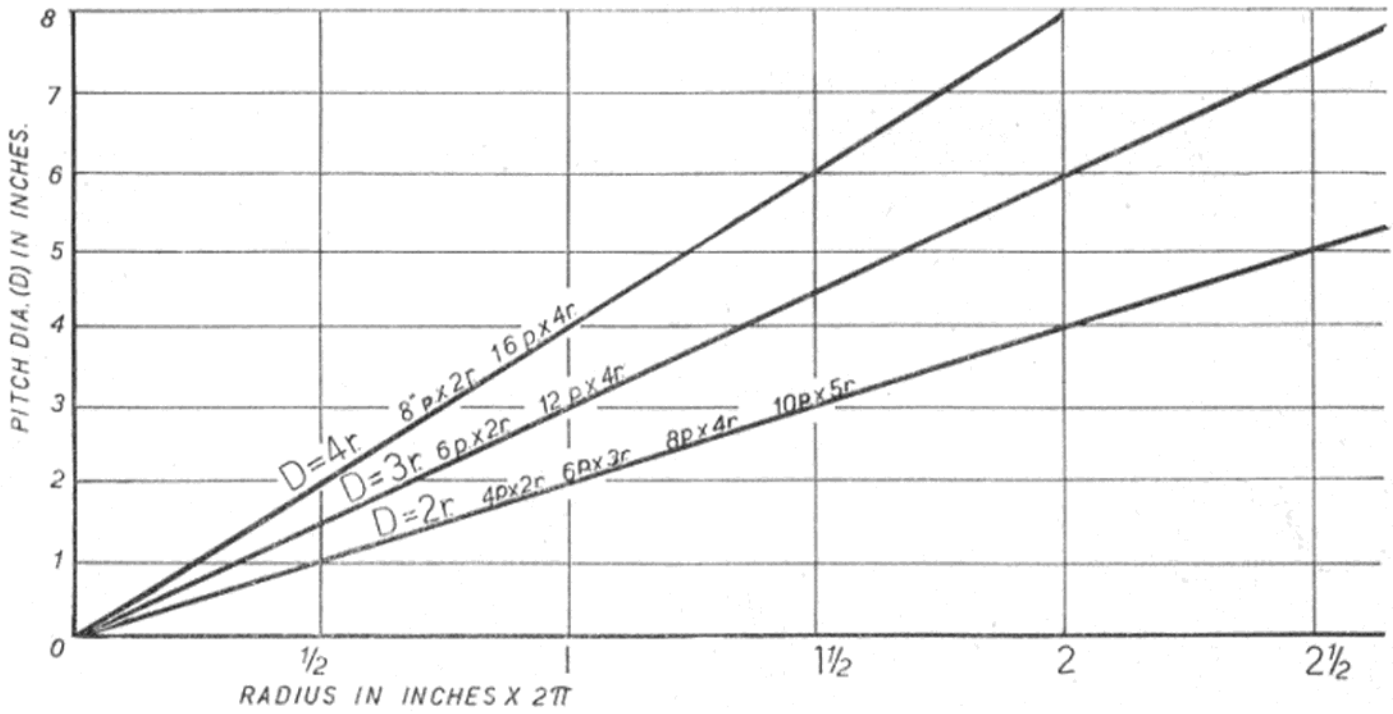
The diagram at the bottom of the page shows the relationship between pitch diameter and the angle of the prop blade at any given station along the blade. Three examples have been chosen of blade angles at which the relationship between the pitch diameter and radius is D = 2r, D = 3r and D = 4r respectively.

Make cardboard or plywood templates to those angles, and mark out on a second card, distances in $\frac{1}{8}$ in., as on the full size diagram (right). Hold the airscrew firmly over the radius template so that the centre line of the prop is over the datum line of the template, and then fit the angle template under the blade, until the station is found at which the blade angle exactly equals the angle on the template. The pitch diameter of the prop is then two, three or four times the radius measured off on the radius template, according to the card being used.

Make sure that the radius measuring template is put down on a flat surface before checking the airscrew and also that the boss of the airscrew is held firmly down by the finger before checking the blade angle. Remember, too, that the angle thus measured gives the pitch of an airscrew without any allowance having been made for blade incidence to the theoretical helical path.

If you wish to make such an allowance, add the required angle of incidence of the prop blade to the angle on your template. A good average figure would be 3 deg. By checking both blades of an airscrew, you can determine if it is symmetrical as far as pitch is concerned. Check the prop with all three cards so as to determine the pitch at various stations along the blade.





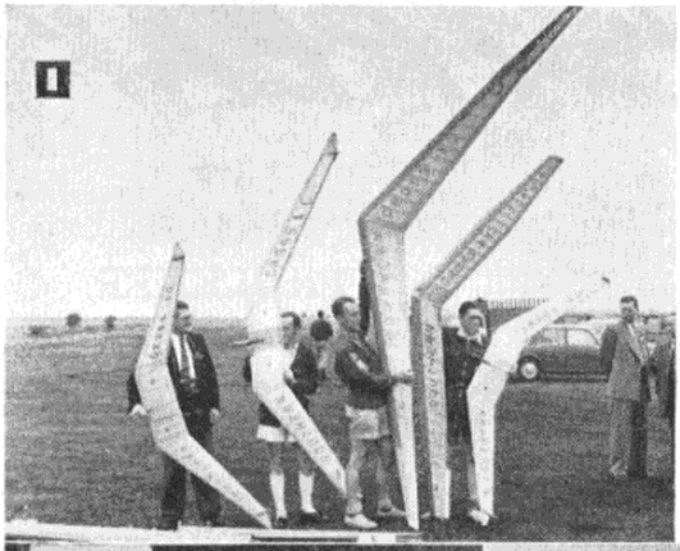
FLYING WING COMP.

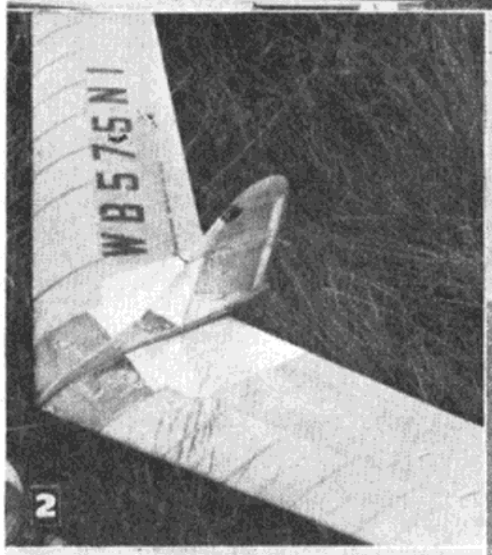
A resounding success was scored by the Southern Cross "private enterprise" team who, by individually placing 1st, 4th and 5th won the team award for Great Britain at this annual international contest—held at Terlet, near Arnhem, Holland.

In all, three contests were held for flying wing designs—rubber, glider and power—and many interesting and original models were flown.

The Model Section of the Royal Netherlands Aero Club, who organised the meeting this year, were gratified by the number of entries, there being 32 from six countries.

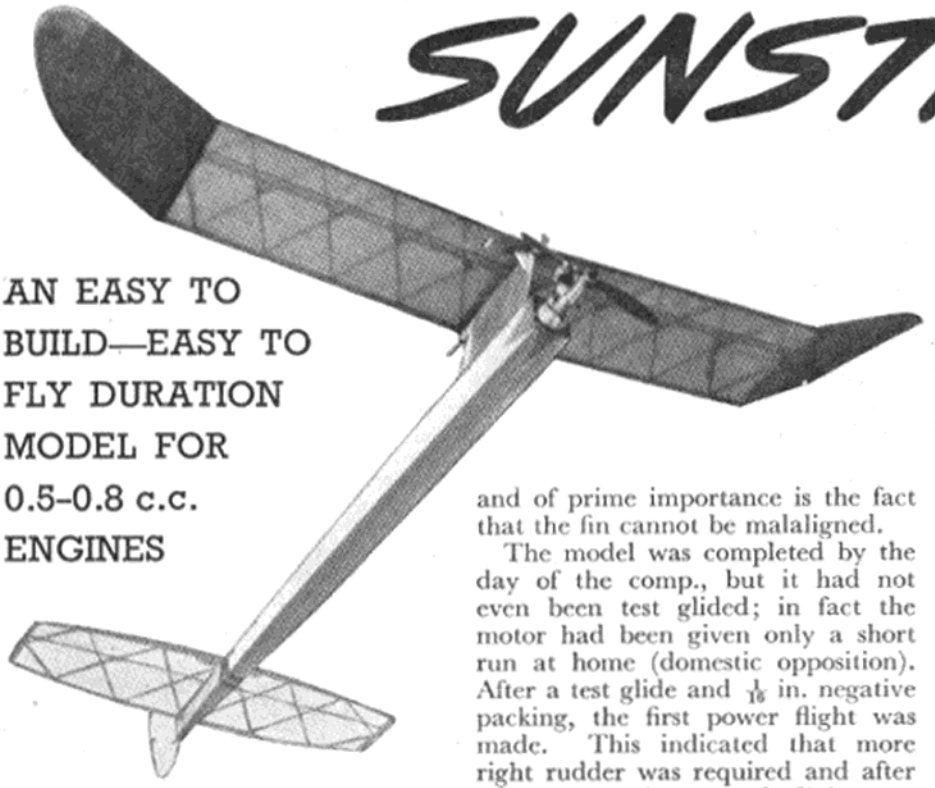
Results (aggregate of five flights): *Glider*: 1st. F. Smith, G.B., 550 secs. (proxy flown by Delves); 2nd. W. Groft, Switzerland, 544 secs.; 3rd. G. Weber, Germany, 526 secs; 4th. G. Gates, G.B., 519 secs.; 5th. K. Donald, G.B., 510 secs. *Rubber*: D. Herman, Germany, 532 secs. *Power*: Zwilling, Germany, 295 secs.





1. Winning British Team. Left to right: Team manager, C. S. Rushbrooke, Delves who flew Smith's model to victory, Gates and Donald.
2. German entry showing novel dethermaliser consisting of split brakes on fin, actuated by a fuse.
3. Kron of Germany entered a very simple and efficient powered flying wing, but was handicapped by faulty motor-timer.
4. Dutch team member, Osborne, flew this interesting multi-sweptback entry with incidence twist in the outer panels.
5. German power-driven model with pylon-mounted pusher Webra. Note sharply upturned elevators cum trimmers and fuselage tail shaped to act as fin.
6. Power driven flying wing by Sivilling, Germany. Elevators are carried far behind by outriggers. Very stable—took first place.
7. Gates with Smith's model which took first place. Swedish models, which almost look like scale models, on the ground at right.

SUNSTREAK



AN EASY TO BUILD—EASY TO FLY DURATION MODEL FOR 0.5-0.8 c.c. ENGINES

by BRIAN FAULKNER

THIS little ½A F/F model was built in a rush and trimmed in a rush—not a good procedure perhaps, but necessary in view of an invitation to participate in a competition. The invitation came from the U.S.A.F., Burtonwood, Lancs, where each year they hold a model competition. Having acquired a Wasp 0.49, I decided to build a scaled down *Mangled Worzel*, an F.A.I. power design for the E.D. 2.46, with which I have made many flights. *Sunstreak* was the result.

Simplicity is the big feature of the *Sunstreak*, with its all sheet fuselage and fin. The latter being behind the tailplane, the model has a longer moment arm than is usual and the fin has a remarkable stabilising action. When tried on a chuck glider it was found that by moving the fin to this rearward position the pull out from the end of the climb was amazing. The model would recover into the glide with no loss of height; this has a direct application to power models, and at the end of the power run the recovery of the *Sunstreak* will be found to be perfect. A second advantage is power stability, and of prime importance is the fact that the fin cannot be malaligned.

The model was completed by the day of the comp., but it had not even been test glided; in fact the motor had been given only a short run at home (domestic opposition). After a test glide and $\frac{1}{16}$ in. negative packing, the first power flight was made. This indicated that more right rudder was required and after adjustment, the second flight was perfect. Flights three and four were in the contest and were good enough to win first place. Incidentally, the second flight was a 3 min. maximum, and would have been a goodbye flight except for the dethermaliser, which is essential. The model will easily rise off ground by resting it on its tail at 70 deg., when it will climb away in a sharp spiral climb.

Wings

Start first with the wings; they may look complicated but in fact this type of construction, known as geodetic, is quite easy to build, and pays off big dividends in being warp free under all wet or hot conditions. The inboard right hand wing panel has $\frac{1}{4}$ in. wash-in built into it, to stabilise the climb by holding up the right hand wing in a right climb. It is essential to build this into the wing as it cannot be warped in afterwards.

After cutting out the ribs, lay one set out diagonally and cement to the leading and trailing edges. The other ribs running crosswise will have to be cut at the centre and cemented in place to the existing ribs as well as the leading and trailing edges. The slot for the main spar is best cut out with the ribs in position, by carefully laying a ruler over the top of the wing and nicking the ribs with a sharp razor blade. Cover with jap or similar tissue and give two coats of thin clear dope. The wing should weigh $\frac{5}{8}$ oz.

Fuselage

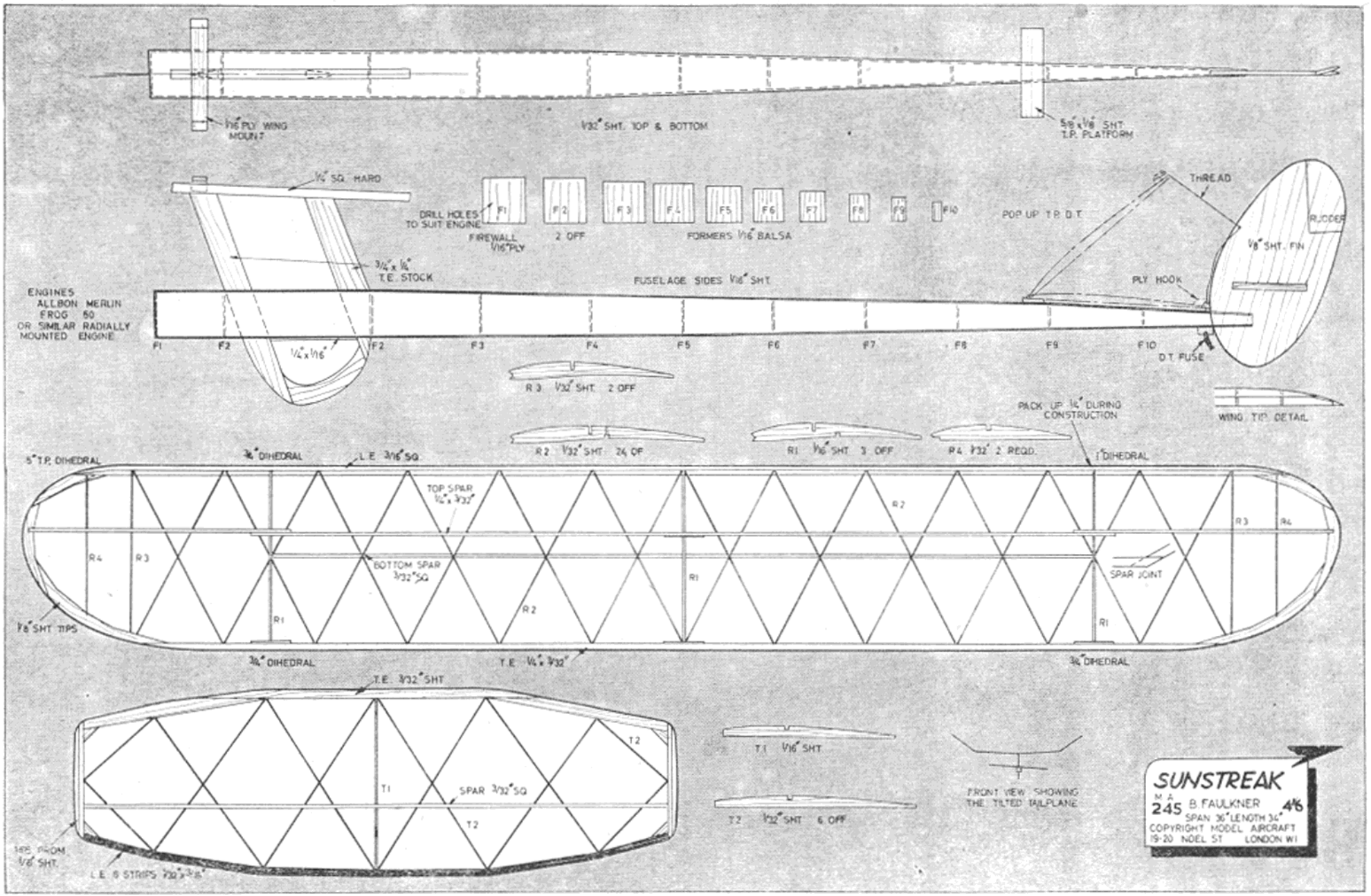
The two sides are cut from hard $\frac{1}{16}$ in. sheet and the formers cemented to them. Make the pylon from trailing edge stock. The front former is cut from $\frac{1}{16}$ in. ply and cemented in position with the engine bolts already in place. Add the 1/32 in. sheet top and bottom, sand up smooth, and then cover with lightweight tissue, doped on. Finally, apply a coat of fuel proofer.

Tailplane

The tailplane is a little unusual. The leading and trailing edges are laminated, i.e. made up from strips cemented together to form the curve. Cement the geodetic ribs in place and add the $\frac{1}{16}$ in. spars as with the wing. Cover with jap tissue and give one thin coat of dope and one of fuel proofer. This tail construction is really warp proof. The model was once in a tree for three days—and it rained—but the tail did not warp at all.

Trimming

The motor should have $\frac{1}{16}$ in. sidethrust. Add right rudder for right glide. The power climb is also to the right, thus giving perfect recovery. Although originally powered with an 0.49 Wasp, the 0.8 c.c. Allbon Merlin or any 0.5 c.c. motor that can be radially mounted would be suitable.



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1, 4s. 6d., POST FREE

CLUB NEWS AND NEWS FROM THE S.M.A.E.

WEST OF SCOTLAND AREA

The West of Scotland Area has had a comparatively quiet period in recent months, the only event being the Nationals, for which there was quite a large Scottish attendance. The boys got there in rather an assortment of vehicles: Dormobiles, private cars, while Prestwick club staggered down in an ex scrap-yard ambulance. The area was well represented in team racing, the Prestwick, J. Muir, B. Harris, R. Cunningham team, eventually placing second in "A." This team has been making its mark in Scottish Racing, placing second in the Glasgow Indoor Championships and equal first in the team racing heats. Q. Wilson won the Super Scale Trophy, with his model of the Prestwick Pioneer. Mr. Wilson works on the full size machine as was obvious by the wealth of detail on the model. The P.A.A. Festival, to be held at R.N.A.S. Abbotsinch (very near Glasgow) comprises F/F, power, rubber, glider, P.A.A.-Load, team racing, etc., with the usual P.A.A. provided prizes.

MONTROSE M.A.C.

We went back into production just recently. First to use the facilities at the new hut was junior W. Petrie, who repaired his phenomenal o/d *Lynx* rubber duration model. Cousin D. Petrie also made some repairs, after a long time fitting the ceiling and painting the hut. After wiring the whole place K. B. Whyte completed a smart new-rule F.A.I. power model of the smaller type. Others still continue work on the hut. Smell of fresh paint mingles with that of old leather as sporrans open unusually wide to pay the expenses. The contractor who shifted the hut from its original site helped by giving a stove. Cost price only was asked for plasterboard asbestos, and much other material. We have a garden with beans, potatoes and flowers. Have any other clubs gardens?

Thus we are getting quickly into normal building after our six-month "holiday."

We held a gala at Montrose Aerodrome on Sunday, June 10th, as a "house-warmer" (although not as indicated by "Pylonius" in the MODEL AIRCRAFT for June). It was the biggest turnout here for 12 years. Clan Inversnecky was represented in force, their chieftain Roy Yule winning both events, open glider and power, for Bucksburn Air Team. He had a double max. in the glider comp.

As part of the gala, entrants who had not already done so, were given time and keepers, to put in qualifying flights for S.M.A.E. certificates. Yule walked through his "A."

Junior W. Petrie of Montrose—who was second in glider event—had an evening of excellent flying with *Lynx*, easily taking "A." He recorded one time of 7 min. 10 sec. K. B. Whyte had an interesting disintegration of his vertical descending Frog 500-powered *Swiss Miss*, and lost his best A/2 9 min. o.o.s. on a trimmer. If d/t had not been used by the others, there would have been very little to carry home.

There was also some good slope-soaring afterwards on the sand dunes.

Four juniors and D. D. Edward competed for Arbroath while four seniors represented Aberdeen and were promptly drafted into Angus and District A.L.

The public were not admitted to this gala.

ARBROATH M.A.C.

Perfect weather prevailed for their first comp. of the season at H.M.S. *Condor* on a recent Sunday. It was a two-hour glider scramble. R. Stewart was 1st with 1,192 sec. (20 flights); 2nd, J. Foster, 805 sec. (11 flights). Foster also had best flight, 173 sec. Best average was made by D. D. Edward. Winner flew D.D.E's locally famous A/2Y-*Furno II*.

This club has taken the A/1 specification seriously and is making a big bid to get neighbouring clubs interested too.

Yet another exhibition is to be run ar Arbroath; planned for the summer of next year, it is going to be the biggest ever supported by Angus and District.

Five Arbroath members went up the coast to take part in the Montrose Gala on Sunday June 10th.

ST. ALBANS M.A.C.

Only member to appear on results lists of Gamage and Pilcher cups for this year is junior, Paul Fynn, who, despite the gusty weather, placed 64th in the Pilcher, 6th Junior. Paul also hits the news with his 14 min. flight on Easter Monday. This is the junior record for gliders, and was made with a *Lulu*.

Bruce Rowe scored an aggregate of 14 min. 8 sec. at the Wakefield Elims. to place 3rd for the London Area. This secures him a place in the Trials, the only St. Albans member this year to do so. He lost his first model in his fourth flight and used his reserve on the last one. This was the model which he had lost early the day before when his d/t failed for a spectacular 11 min. flight. He got it returned, luckily, in the afternoon.

Chris Marsh wasn't so lucky, losing both his models in the power event, for an aggregate of something like 10 min. Chris has been having a run of bad luck lately; he had his new power model run over by a car not long ago!

HUDDERSFIELD & D.M.A.C.

Ten members of the club attended the Nationals at Hemswell.

Having had no previous experience of camping, we had a few mishaps: one tent pole left behind on Huddersfield Station, amateur cooking, and a freezing temperature on Saturday night. In spite of this, we all enjoyed ourselves, and are now looking forward to a visit to Radlett.

We are grateful to some members of the club from Scotland, who came to our rescue when we were unable to get on the bus to Gainsborough.

Our annual rally, announced previously, has unfortunately had to be cancelled, owing to a factory being built on the airfield, and at present, we have no suitable airfield available.

WIGAN M.A.C.

We were well represented at the Nats. but without success, T. Rhead putting up the best club performance in all three F/F events. Repair work on their smashed power jobs till three in the morning did not bring success for B. Talbot and C. Ryder.

The club ran the glider event which had a larger entry than last year. (Wonder where the keen types hide when timekeepers are wanted.)

We have been evicted from our flying field, so we are now again on the look out for open spaces.

WEST BROMWICH M.A.C.

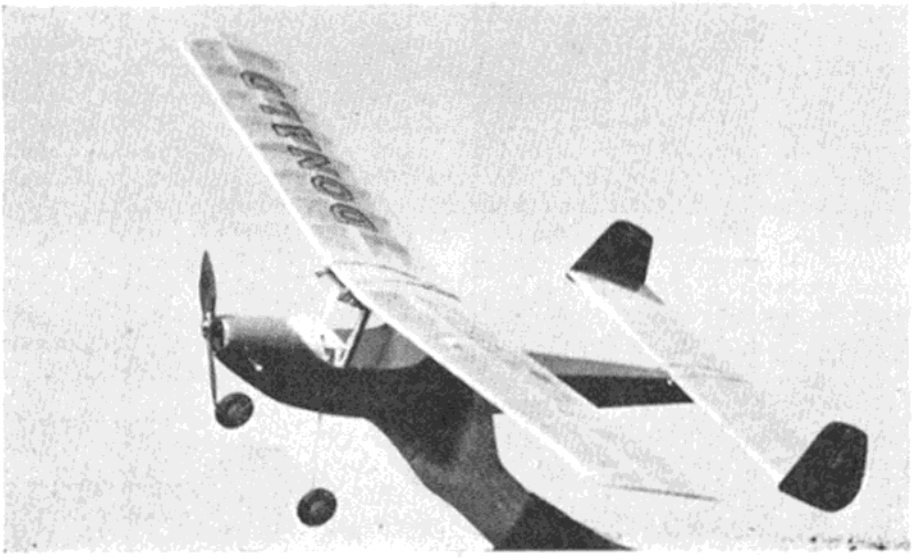
The club are concentrating on C/L events this year although we have had no success in T/R. Club secretary Mac Grimmett came second in the combat at High Wycombe, let's hope he repeats his success of last year when he won first in combat at Heanor, All Britain Rally and South Midlands Rally. On the team race side some one-off engines were soon snapped up by the lads and we hope to see them performing soon at the Midland Area Rally; from bench testing we really think we have something hot.

One of our members visiting Dartford T/R rally had a combat job stolen, it had a blue-grey finish and blue silk covered wings and it was powered by an Elfin 1.8 (radial-type). The bod who pinched it also took a set of 50-ft. lines, three 8 × 6 props, three "King Dick" spanners and a can containing 3-in-1 oil. Anyone in the Dartford area who sees the model please contact R. HADLEY, 11, Ida Road, West Bromwich.

BRADFORD M.A.C. AND LEEDS M.F.C.

Ron Calvert made a welcome return to contest fiying this year by winning the first club open glider event with 9 : 35, over 2 min. ahead of the runner-up, whilst on the same day J. A. B. Pannett topped the list in power (more by good luck than management).

In the second Wakefield and Power elims., although C. P. Miller placed highest amongst us in the Weston with 10 : 14, he failed to qualify; however, by the end of the Astral Messrs. Eckersley, Lanfranchi, Collinson, McNulty and



A fine example of the M.A. plans design "Donald;" this one being built by K. Chapman of Enfield. Photo by B. Downhorn

S. Pimenoff making a few adjustments in front of the camera at the 1956 Plymouth competition held in Helsinki.

Pannett were sure of a place in the Power Trials and attended at Grantham in force—but a series of disasters put our main hopes, Arthur Collinson and Stan Eckersley, out of the running. Both lost their models after maxes. in the first round; and, whilst Arthur's was returned, he missed the second through still being out looking for it. Then, after another max. in the fourth, he d/t'd into an unscalable tree and missed the fifth too! Frank McNulty, however, put up a very creditable 10 : 23 in his first trials and kept the flag flying.

Bradford deservedly lost to Halifax in the first round of the Area Knock-Out competition after the entire team had messed up their first flights with foolish mistakes (rectified too late; no further comment!)—but at least Leeds beat N. Sheffield. At the Nats., however, we acquitted ourselves reasonably well and had a very enjoyable weekend.

CARDIFF M.A.C.

We have been invited to attend five displays, so far this year. We have already flown two. The fee we charged last year was one guinea and following the great success of the displays we have now raised the fee to two guineas. So far, no complaints!

The crowd really enjoyed our efforts to burst balloons and pick up windsocks. This was first tried with Oliver team racers, but this proved to be a little difficult, so we ended up with a very ancient *Thunderbird* powered by an E.D. 3.46, which was able to do it first time.

V. Kmoch (centre) placed 3rd in the Yugoslav national T/R, but why look so happy about it!

The balloon bursting was a trifle dangerous. It was accomplished by tying the balloon via thread on to a 6-ft. bamboo. The balloon was then taken upwind and allowed to drift into the circle. The poor pilot would then try his hardest to burst the elusive balloon. More often than not the lines would hit the balloon, a loud bang followed and the model would hit the ground with a lovely sickening crunch.

SOUTH WALES AREA

An Area meeting was held at Merthyr on June 9th. The most important item on the agenda was the forthcoming Model Engineer Exhibition, to be held at the Sophia Gardens Pavilion, Cardiff, from September 9th to September 16th.

There are approximately 300 models needed for exhibition so we are hoping that the nine clubs in the area will "do their bit." All types of models which are in a reasonable condition are welcome. Enquiries should be addressed to: K. Horlock, 33, Conway Road, Canton, Cardiff.

A most important date for Welsh clubs is July 22nd. This is the date of the Welsh Rally to be held at Fairwood Common, Swansea. The competitions, which start at 10.30 a.m., are for open power, rubber and glider, class "A" and class "B" team racing and stunt. Sorry no ½A but we simply have not time to get it in. There will also be a public address system at the rally.

WOLVES M.A.C.

Most recent event in the calendar was, of course, the annual pilgrimage to the Nationals. Twelve members attended, travelling by coach, arriving Saturday and leaving Tuesday morning. A camping site was provided on the Monday night through the good offices of a local farmer.

We had a good sprinkling of entries in F/F power and glider and one sole representative in class "A" T/R.

J. Hartley achieved the highest placing with his 3rd in the Sir John Shelley totalling 11 : 19, next from the club being K. Trumper with 9 : 22. D. Mountney led the club glider entry with 9 min. the others making only sporadic contact with the patches of lift.

All things considered, this was probably the best Nationals we have yet attended and we would like to record our appreciation for the use of the aerodrome.

CHINGFORD M.F.C.

With the lack of good flying grounds near at hand most of the boys are concentrating on C/L flying this season. The only flying that gets done nowadays is in preparation for rallies and contests and we have been supporting various meetings during the opening of the season.

Ray Furguson won the combat event at Wycombe, flying his A.M. 35 powered o.d. control liner. Jim and Wally Martin won the Davies Trophy at the Nationals with their o.d. Carter McCoy 29 racer. The others who attended the Nats. just went for the ride as pre-flight trimming fly aways and crashes eliminated them all. The Martin brothers got in the "B" T/R semi finals at Dartford, even with a plug change during their heat, but similar trouble in the semi's defeated them.

Three R/C models have been completed and are awaiting their first flights. Radio tests on the ground have been satisfactory.

We hope to make a few trips to one of the deserted flying fields in Essex for some Sunday flying sessions and get the juniors to do some flying instead of watching for a change.

SUNDERLAND & DISTRICT M.A.C.

The club has been increasingly active since the introduction of Summer Time and membership is rising. At the last meeting-cum-flying session, there were more models than bods. Mr. McIlroy, our chairman, had his old but recently re-covered glider *The Marsden Rattlerr* in their calm and rough weather versions. Mr. Garside had a *Southerner* and two *Swiss Miss's* which were all flying well despite the strong wind. Mr. Summers, one of our keener contest types, has tried his hand at 0.5 c.c. all sheet sports models and is getting the same vertical climb and hanging glide, it must come naturally. A junior member had a scale *Piper Super Cub*, but it was unfortunately damaged. Mr. Clarke, who has been building boats of late, rejoined, and is once more a very active member with his numerous Kalper and Mills 0.75 planes. Mr. Ripon, the unorthodox fan has a semi-scale Boeing XL-15 and has been building flying saucers with limited success. Mr. Sparker the treasurer/secretary, would welcome any newcomer to our meetings held on the first Friday of the month, usually at R.A.F. Useworth. Details are posted up in the local model shop.

CAMBRIDGE M.A.C.

The following rules have been adopted for the combat events at the Cambridge Team Race Rally on August 12th at the Pye Radio Sports Field, Cambridge.

1. Max motor capacity to be 3.5 c.c. 2. Line length to be 52 ft. 6 in. 3. Five minutes per "joust." 4. This 5 min. period to start after both models are airborne and whistle is blown. 5. Model must take off. 6. One assistant allowed. 7. Streamers to be 15 ft. long attached by 3 ft. of thread—all supplied by Cambridge. 8. Five extra points awarded if motor is started in 1 min. or less. 9. One point awarded for every foot of opponent's streamer cut (at end of flight check). 10. One point deducted for every 10 sec. spent on the ground (refuelling, etc.). 11. All models to undergo 15G line pull test. 12. No flying below 6 ft. for more than two consecutive laps in any one "joust" or period. 13. Two fliers per "joust"—names drawn from hat. 14. Streamers to be affixed to centre of tail. 15. Contest Marshal's decision is final.

The "A" and "B" team race classes will be run according to S.M.A.E. rules. The general competition rules will apply throughout the event where relevant.

AEROBODS OF NOTE

R. F. L. GOSLING

Without doubt Bob is a great exponent of model gliders—Combines active modelling with office of vice-chairman of the S.M.A.E.

Deservedly popular with the sport enthusiasts is the Mercury Aeronca Sedan—this R/C version was built and photographed by G. Massey-Collier of Pinner, Middx.

Entry fee—all non returnable—will be 2s. 6d. in each class.

The organisers wish to point out that there will be no "½A" class at this rally.

Further information can be obtained from CLIVE KING, "Red Roofs Garage," Ely Road, Waterbeach, Cambridge. Lists of contest rules, etc., will be supplied to competitors on the field.

ENFIELD & D.M.A.C.

Following High Wycombe, we were still more bucked that Ray Tuthill should come second in the class "B" racing at the Nats. Don Walker was not so fortunate this time, in that, after acquiring some Tornado plasticotes, the speed of his model went up to 106 m.p.h. but the Eta con-rod gave up after about 15 laps and went straight through the liner and piston, and then mangled the disc. But for this we have a feeling that Chingford would have had a real run for their money.

Much sweat and toil on the old treadle lathe by Ray Tuthill resulted in the motor being back together for Dartford, where Don took 3rd, and but for a mis-direction by a lapcounter would have been 2nd. Ray Tuthill's model was also involved in this final, but did not finish, following a fire caused by the booster plug, which we didn't find until the model burst into flames as it came in for the last pit stop.

CONTEST CALENDAR

July 29th	Epsom Slope Soaring Meeting, Box Hill, Surrey.
Aug. 4-6th	**WORLD POWER CHAMPIONSHIP**—Cranfield.
,, 5th	I.R.C.M.S. Int. R/C Meeting.
,, 12th	Cambridge T/R Rally, Pye Sports Field, St. Andrews Road.
,, 19th	London Area C/L Meeting, Heston.
Aug. 19th	**C. H. Roberts Cup.** Rubber powered flying boats. Blackheath Pond.
,, 25-26th	Scottish P.A.A. Rally, R.N.A.S. Station, Abbotsinch, nr. Glasgow.
,, 26th	South Midland Area Rally, Cranfield, Beds.
	Devon Rally, Woodbury Common, nr. Exeter.
Sept. 2nd	Northern Area Gala.
,, 9th	***K.M.A.A. CUP.** A/2 Glider. **HALFAX TROPHY.** F.A.I. Power.
,, 16th	All Brit. Rally, Radlett, Herts.
,, 23rd	***MODEL ENGINEER CUP.** Team Glider. **GUTTERIDGE TROPHY.** Wakefield.

*Plugge Cup Events Area.

The F/F boys were also busy at the Nats, but were not very lucky, particularly Jim Moseley, who had the Webra Mach 1 ripped from his model just when it was beginning to perform. We would like to get our hands on whoever was responsible for this.

NORTH KENT NOMADS M.C.

The C. H. Roberts' Cup for the rubber driven flying boats will be competed for on August 19th from 10.30 a.m. to 12.30 p.m. This is open to all. Venue: Pond on Blackheath, London, S.E.3; which is about 200 yards south of the snack bar near Greenwich Park. Pre-entry is required; fee 1s. 6d.

Rules

1. Rubber drive or drives to be enclosed.
2. The hull to constitute the main flotation support and to be similar to full-size machine in appearance.
3. Minimum wing area 150 sq. in.
4. Minimum loading, 1 oz. per 50 sq. in.
5. Total of three flights to count.
6. Model to rise from water unassisted.
7. Flotation test of 2 min., line may be attached to prevent drifting.

Entries to: C. F. COOPER, 29, Lion Road, Bexleyheath, Kent.

SOUTHERN CROSS A.C.

All members will wish to congratulate Graham Gates, Keith Donald and Ray Delves, who competed so successfully in the International Flying Wings Contest. Keith and Graham flew their own models, and also those of Paul Wilkins and Rodney Way, by proxy—Ray Delves, of course, was responsible for Fred Smith's winning machine. This, we think, is the first time that one club has fielded a complete British team.

HAYES M.A.C.

The main feature of the club's activities recently has been the tremendous rise of interest in C/L flying, particularly in team racing and combat. Two members entered class "B" team racing at the Nationals, but were defeated by an unfortunate propeller breakage in one case, and a blown head gasket in the other. Entries were also made at the Dartford C/L Rally but unfortunately the trouble recurred. We were represented in the combat event too. Chris Hearn, mechanic for Tom Taylor, became a little over enthusiastic and tried to smash the opposition out of the sky with his head. This rather put an end to the competition while every one attended to the casualty. Apart from this mishap all our members enjoyed themselves. The C/L section also staged a half hour display at a Garden Party in Ealing recently, including a ½A team race and a combat event which was very well received.

READING & D.M.A.C.

The club is now very active after a period of total non activity due to everybody leaving the organisation to somebody else. The club held a very successful exhibition in the Reading Art Gallery in conjunction with other local engineering clubs at which over 25 models displaying a high degree of skill were displayed and no less than 80 membership forms were taken. The club flying for the last two years since the loss of our airfield has been carried out in a large field amid dense fir woods—a tremendous amount of acquired skill in retrieving has thus appeared. The club has now obtained the use of Booker airfield for the monthly flying meetings. The strength of the club now stands at around 30 but new members will always be welcome at G. SLEEPS, 22, Kings Road, Reading.

SECRETARIAL CHANGES

INTERNATIONAL RADIO CONTROL MODEL SOCIETY. C. Doughty, 128, Arthur Street, Small Heath, Birmingham, 10.

TIMPERLEY & DIST. M.F.C. G. J. Hankinson, 6, Hillcroft Road, Altringham, Cheshire.

CHANGES OF ADDRESSES

NORTH WEST MIDDLESEX MODEL FLYING CLUB (THERMALEERS). Hon. Secretary: D. S. Posner, 24, Narcissus Road, West Hampstead, London, N.W.6.

LEIGH M.A.C. A. Priddey, 7, Birch Road, Leigh, Lancs.

NEW CLUBS

BRENTWOOD M.A.C. R. Landymore, 6, Rochford Avenue, Shenfield, Essex.

MERSEYSIDE M.A.C. R. Thomson, 62a, Ashbourne Road, Aigburth, Liverpool, 17.

QUIZ ANSWERS

1. (a) Peter Wright, (b) glowplugged ED 2.46. 2. (a) O. & R., (b) Elfin, (c) Veco, (d) Taifun. 3. (a) Jim Cahill, (b) 1938. 4. (a) Engine test mount, (b) Davies-Charlton Ltd. 5. Convair (or Consolidated) Catalina. 6. Forster 29. 7. (b) single-leg u/c and (d) weight of around 2 oz.

TEN YEARS OF DIESEL PROGRESS

(*Continued from page* 295)

After the introduction of the 2.46, the tempo of development once again slowed down. French diesels, which, in 1946, had been well to the fore, had virtually dropped out of the picture, while the Italians—notably Super-Tigre—were devoting more attention to glowplug. Thus it was that the Continental challenge was taken up by Germany, first in such engines as the Metro and R.G.U., and later by Webra and Taifun, culminating in the outstanding Webra Mach-1 introduced in 1953. During this time, too, the Americans re-entered the market with ingenious new designs from the McCoy and Herkimer (O.K. Cub) factories, although the expected follow up by other manufacturers has not materialised.

Since then, British designers have responded with the Oliver Tiger Mk. 3 (highest specific output of any diesel yet) the reed-valve Elfin 1.49 (the most powerful of its class) and the recent and quite surprising Allen-Mercury 10 (most powerful of the 1 c.c. class).

So we return to the present; acutely conscious that it is impossible to cover the ten years' interesting history of the diesel in one article, but hoping that the next ten years will produce as much earnest endeavour on the part of designers and manufacturers as the past has done.

MODEL AIRCRAFT GUIDE TO your best Model Shops

Retailers ADVERTISE ON THESE PAGES TO REACH THE LIVE MODELLERS IN YOUR TOWN

Readers YOU CAN DEAL WITH THESE MODEL SHOPS WITH COMPLETE CONFIDENCE

BIRMINGHAM

Tel.: Midland 0972

Hornton's

32, STEPHENSON STREET, BIRMINGHAM, 2
(Facing stage door Theatre Royal) and
1, NAVIGATION STREET, BIRMINGHAM 2
(Adioining Queens Hotel)
Stockists of Model Aircraft, Railways and Ships

BIRMINGHAM

Model Aerodrome Ltd.

43, TEMPLE ROW Central 1223
141 STRATFORD ROAD Victoria 0824
Ships, Railways, Aircraft, etc.

BRIGHTON

Tel. Brighton 26790

Model Aerodrome Ltd.

37, WEST STREET
Ships, Railways, Aircraft, etc.

BRISTOL

The Model Airport

51, COLSTON STREET
Get your supplies from the leading M.A. shop in the town

CARDIFF

Tel.: 29065

Bud Morgan

THE MODEL AIRCRAFT SPECIALIST
22/22a CASTLE ARCADE
SEND 4d. IN STAMPS FOR MY 1956 PRICE-LIST

CHATHAM

Le-Core Bros.

373, HIGH STREET, CHATHAM
Model Aircraft—Railways—Boats, etc.
Large stocks of kits, engines and accessories. By: Keil, Veron, Frog, Mercury, Skyleada, Jetex, ecc. Return Postal Service. Lists S.A.E.

DARTFORD

Modern Models

49-51, LOWFIELD STREET, DARTFORD, KENT
Whether you call or whether you post, we claim we've got more stock than most

GLASGOW

Tel.: Centre 5630

Caledonia Model Co.

5, PITT STREET, C.2
THE engine repair specialists. EVERYTHING for the enthusiast, with personal attention from GEORGE LEASK, A.M.I.B.E.

HOUNSLOW

Tel.: Hounslow 0041

Poulton's Model Shop

79, HIGH STREET
HOUNSLOW, MIDDX.
Model aircraft, boats and trains. No charge for technical advice engine runs or radio checks

HULL

Hobbies Ltd.

10, PARAGON SQUARE
A branch of the firm which is known to Modellers throughout the world. All M.A. requirements stocked

IPSWICH

Tel.: 51159

East Anglian Model Supplies

37, UPPER ORWELL STREET, IPSWICH

Wakefield gears: 3s. each, post 2½d. Contest "Avenger" sailplane Nordic A/2 design. Plans and cut ribs 10s. Kit, 23s. 6d., both post free

LIVERPOOL

Tel.: Central 4209

Precision Model Engineering Co. Ltd.

53, WHITECHAPEL, LIVERPOOL, 1
Liverpool's premier rendezvous for all modellers. The shop where experienced modellers offer you the benefit of their experience. North of England's leading MAIL ORDER HOUSE

When replying to Advertisers be sure to mention MODEL AIRCRAFT

LIVERPOOL

Tel.: Allerton 1124

Universal Hobbies Ltd.

174 Allerton Road, Liverpool, 18.

MERSEYSIDE'S NEWEST MODEL SHOP

All main Aeromodelling, boat, and trains accs. stocked, Keil Kraft, Veron, Mercury, Jasco. E. D. Avian. Agents for — Trix, Rivarossi, Gem, Peco. 24 Hour Mail Order Service.

LONDON

Hobbies Ltd.

81, STREATHAM HILL, S.W.2

A branch of the firm which is known to Modellers throughout the world. All M.A. requirements stocked

LONDON

Tel.: Battersea 4890

C. P. Dyne Ltd.

178, FALCON RD., CLAPHAM JUNCTION, S.W.11

The local modellers' Mecca. Service and Courtesy from an EXPERT

LONDON

Tel.: Chiswick 0858

Jones Bros. of Chiswick

56, TURNHAM GREEN TERRACE, W.4

1 min. Turnham Green Station (Dist. Line)

THE SHOP WITH THE STOCK

OPEN SATURDAYS 9 a.m.-6.30 p.m.

LONDON

Tel.: Hop 3482

Model Aircraft Supplies Ltd.

171, NEW KENT ROAD, S.E.1

The oldest established model aircraft shop in London. Service with satisfaction from **Harry York**

LONDON

Tel.: North 4272

Henry J. Nicholls Ltd.

308, HOLLOWAY ROAD, N.7

M.A. enthusiasts' complete stockist. Britain's No. 1 Model Shop. H.J.N. will be pleased to see you

LONDON

Tel.: GULliver 1818

Ripmax Limited

39, PARKWAY, CAMDEN TOWN, N.W.1

THE RADIO CONTROL SPECIALISTS

All Requirements stocked PLUS Personal Mail Order Service

MANCHESTER

Tel.: Blackfriars 3972

The Model Shop

13, BOOTLE STREET, DEANSGATE

We have **EVERYTHING** *in stock for the aeromodeller Kits, Engines and Accessories*

NEW ZEALAND

THE

Tel.: 2305 (all depts.)

'Betta' Model Aeroplane Supply Co.

P.O. BOX 260, NEW PLYMOUTH

N.Z's largest model supply house with 100 % coverage of New Zealand. Our 200-page catalogue for 2s. 6d. is posted anywhere

PADDINGTON

Tel.: 8827-8-9

Burleigh's

303, EDGWARE ROAD, W.2

The model makers' paradise. Send 6d. for lists

BURLEIGH, OF EDGWARE ROAD, LTD.

SHEFFIELD

Tel.: 26071

Hobbies Ltd.

4, ST. PAUL'S PARADE

A branch of the firm which is known to Modellers throughout the world. All M.A. requirements stocked

SOUTH AFRICA

A. W. Yardley (Pty) Ltd.

31, KERK STREET, JOHANNESBURG

Model plane, model ship and model railway supplies from the leading British and American factories

SOUTH AFRICA

The Hobby Centre

The Modellers' Mecca

133, COMMISSIONER STREET, JOHANNESBURG

Large stockists of British, American and European supplies. Sole distributors Super Tigre and Taifun engines.

SOUTH AFRICA

Greenacres

WEST STREET, DURBAN

You can obtain all your Model Aircraft requirements from Natal's Hobby Centre

SOUTHAMPTON

Hobbies Ltd.

25, BERNARD STREET

A branch of the firm which is known to Modellers throughout the world. All M.A. requirements stocked

SUTTON

Tel.: Vigilant 8292

E. L. S. Model Supplies

272, HIGH STREET, SUTTON, SURREY

Surrey's Hobby Centre. By return Postal Service

Complete stock of all M.A. requirements

CLASSIFIED ADVERTISEMENTS

AVIATION BOOKS, OLD AND NEW. Send 2½d. stamp for latest catalogue. (Similar items purchased.)—NORMAN KERR, Bookseller, Cartmel, Lancashire, Grange-over-Sands.

WANTED. MODEL AIRCRAFT, January, March and May, 1956. *Aeromodellers*, January, February, March, May, 1956, will pay 4s. 6d. the lot.

FOR SALE. Allbon Merlin 0.76 c.c., bench run only 45 min., 42s. 6d. Will exchange for Mills 1.3.—R. TAPP, Kincraig, Sevenoaks, Kent.

WATCHES, any make, repaired (with guarantee), post confidently to YOUNG & SON, 133, London Road, Chippenham, Wilts.

FOR SALE. A few E.C.C. 951A and 951B receivers with instruction leaflets, £2 and £2 5s., respectively. All as new. Guaranteed.—Box No. 2656, MODEL AIRCRAFT, 19-20, Noel Street, London, W.1.

MA AUGUST 1956

Printed in Great Britain for the Proprietors by ELECTRICAL PRESS LTD., Cordwallis Works, Maidenhead, Berks, and published by PERCIVAL MARSHALL & CO. LTD., 19-20, Noel Street, London, W.1.
Registered for transmission by Magazine Post to Canada including Newfoundland.

See what you get for only 3/9!

. . . in a KK rubber powered FLYING SCALE KIT

- *Full size plan*
- *Building and flying instructions*
- *Plastic propeller and noseplug*
- *Plastic wheels*
- *All wing ribs, formers, etc., clearly printed on high-grade sheet*
- *Ample best quality strip balsa*
- *Covering tissue*
- *Sheet celluloid*
- *Cement and Wire*
- *Rubber motor*

JUNIOR FLYING SCALE SERIES — **ALL 3/9 EACH**

With full size plans and building and flying instructions

15½" Nieuport

16" span S.E.5

16" Sopwith Camel

21" Piper Family Cruiser · 20" Hurricane · 18" Spitfire · 18" Piper Super Cruiser · 20" Ercoupe · 20" Chipmunk · 21" Auster Arrow

NEW!
SHORT SEAMEW
28 inch span
First of the K.K. large rubber powered "STAR" SERIES
A kit for the connoisseur. Price 9/- inc. tax

Also in the JUNIOR SERIES are:

18" Fairey Junior	19" Stinson
20" Fairey Gannet	19" Cessna 140
16" Fokker D-8	18" Focke Wulf 190
20" Globe Swift	18" Messerschmitt
19" Percival Provost	20" Bonanza
18" Lysander	18½" Mustang

The finest range of inexpensive rubber powered scale models in the world!

BUY KEILKRAFT AT YOUR NEAREST MODEL SHOP

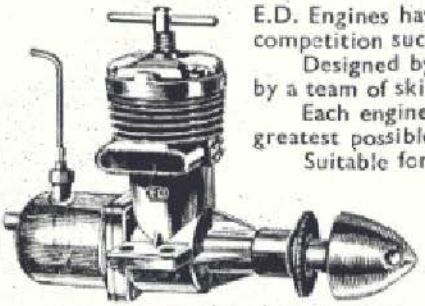
If no model shop convenient, order direct from KEILKRAFT. Please add 6d. extra packing and postage.

Sole distributors in U.K. for
ALLBON & D.C. Engines
ELMIC Timers and D/Ts.
ELFIN Engines
AEROKITS boat kits
Also distributors for
E.D., E.C.C., BRITFIX, and AMCO.

KEILKRAFT
THE GREATEST NAME IN MODEL KITS

Manufactured by E. KEIL & CO. LTD., Wickford, Essex. *Phone: Wickford 2316*

ED TRADE MARK diesels — the "WORTH MORE" engines with a wonderful record



E.D. Engines have attained a very high standard of performance which is evident in their consistent competition successes.

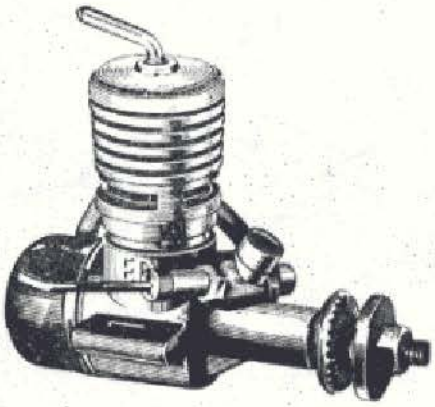
Designed by experts with a specialised knowledge of miniature diesel engines and manufactured by a team of skilled aircraft engineers.

Each engine is individually tested for accuracy and reliability up to a standard that ensures the greatest possible speed and performance for your models.

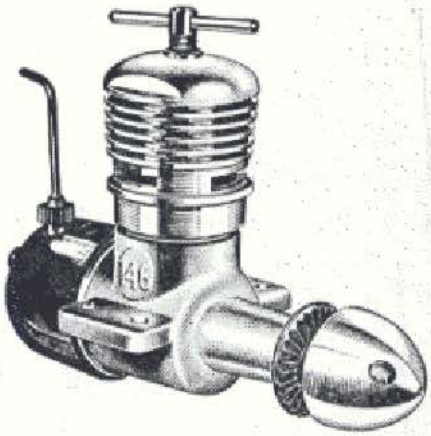
Suitable for use by the beginner or the expert in model planes, cars and boats.

E.D. 1 c.c. BEE

An improved version of the original "BEE." "The engine with a sting!" Britains most popular diesel—over 300,000 sold. Gives an astonishingly high efficiency and power for weight ratio.
Price **£2 16 1.**
Water cooled model **£3 17 10.**



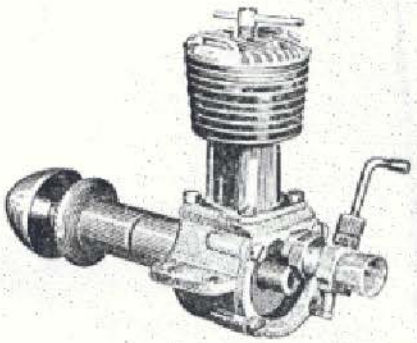
E.D. 1.46 c.c. HORNET



A very popular Diesel suitable for all types of models, including control line.
Price **£2 8 4.**
Water cooled model **£4 0 11.**

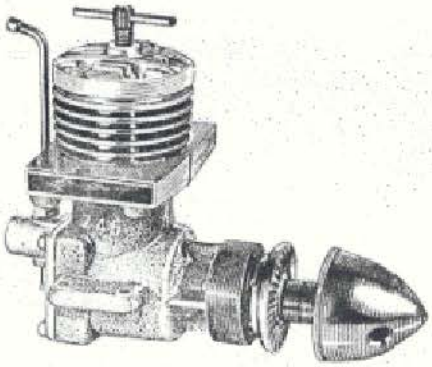
E.D. 0.46 c.c. BABY

The smallest E.D. Diesel with a mighty performance. Just the engine to encourage newcomers to this highly educative and instructive study of modelling.
Price. **£2 15 11.**



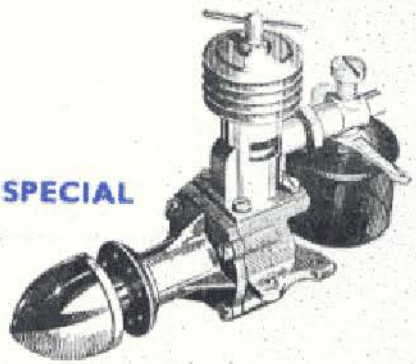
E.D. 3.46 c.c. HUNTER

A powerful Diesel, well known for its speed and endurance.
Price **£4 0 11.**
Water cooled model **£5 7 1.**



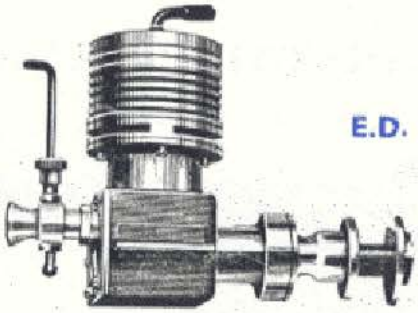
E.D. 2.46 c.c. RACER

The holder of many world records and numerous competition successes. Particularly suitable when exceptional speeds are vital to success.
Price **£4 0 11.**
Water cooled model **£5 7 1.**



E.D. 2 c.c. COMPETITION SPECIAL

A veteran of the E.D. range and one that is held in respect wherever competitions are held.
Price **£3 3 11.**
Water cooled model **£4 5 7.**



E.D. 5 c.c. MILES SPECIAL

Gives a terrific performance and is suitable for the larger types of radio control models, including control line.
Price **£5 10 4.**
Water cooled model **£10 4 4.**

Ask to see the range of E.D. products at your nearest model shop or write to us for our New Illustrated List giving full details of E.D. ENGINES, RADIO CONTROL UNITS, SPARE PARTS, ACCESSORIES, etc., free on request.

ED ELECTRONIC DEVELOPMENTS (SURREY) LTD
DEVELOPMENT ENGINEERS
ISLAND FARM RD. WEST MOLESEY. (SURREY) ENGLAND.