MODEL AIRCRAFT

Christmas Number

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DECEMBER 1953

1'6

Digital Edition Magazines.

This issue magazine after the initial original scanning, has been digitally processing for better results and lower capacity Pdf file from me.

The plans and the articles that exist within, you can find published at full dimensions to build a model at the following websites.

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

http://www.rcgroups.com/forums/member.php?u=107085

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AeroFred Gallery Free Plans.

http://aerofred.com/index.php

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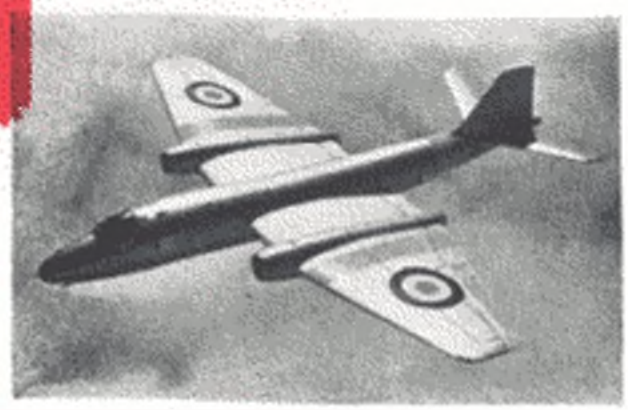

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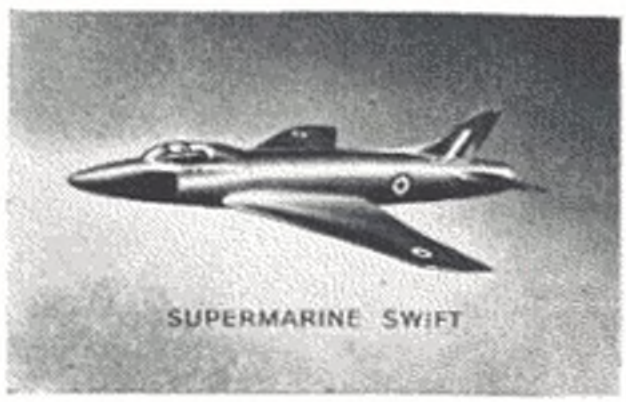

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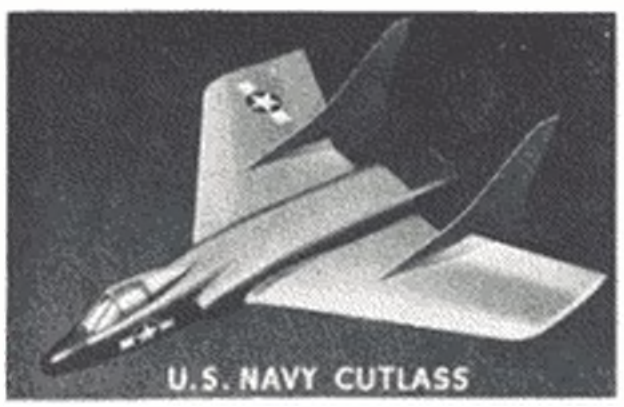

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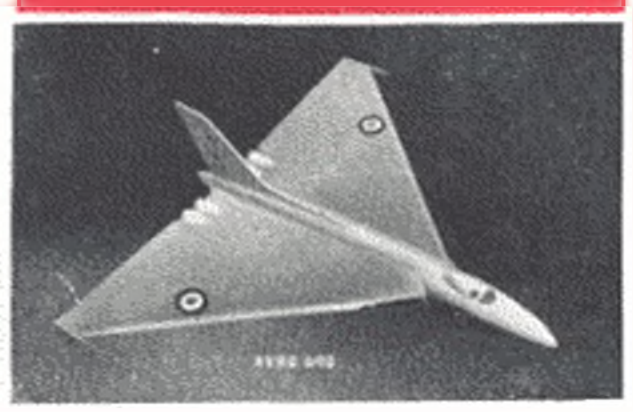

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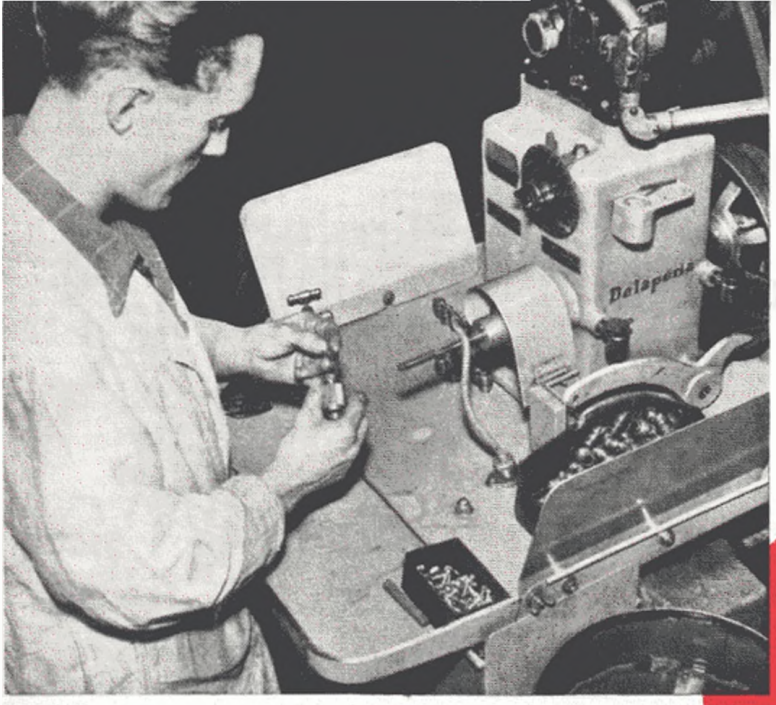
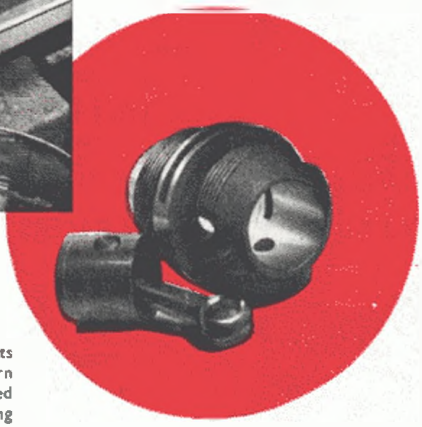


Inside Your Engine



No. 1 Honing the Bore

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This is the first of a series of advertisements which give you inside information on modern engine production. Above you see a skilled operator using the latest Delapena honing machine on the cylinder liner of a Spitfire. The liners, made from high tensile nickel-chrome steel are drilled, reamed, hardened and ground before the final honing, which ensures that each piston is a dead fit in its accompanying bore. The operator, holding the liner in a special chuck, is here "feeling" the fit by means of the piston, a job he does many times before a perfect compression seal is ensured. Note the absolute cleanliness of the machine platform, vital for precision honing, and the flexible pipe above the hone itself from which soluble oil continuously flows the whole time the job is in progress.

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Yes it was ours! The mystery engine featured in last month's "Aeromodeller" was the latest from our stable. We regret that owing to the many thousands of postcards received we cannot announce the name of the winner until next month. An announcement as to when the new point one will be available will be made in the same issue. Meantime place an order with your local model shop.

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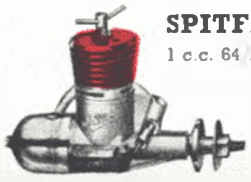

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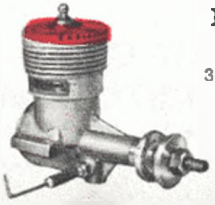

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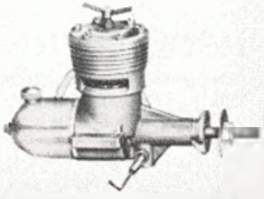

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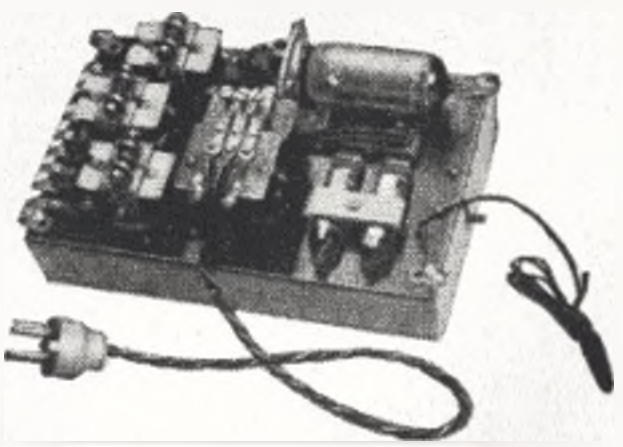

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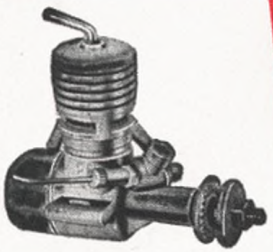

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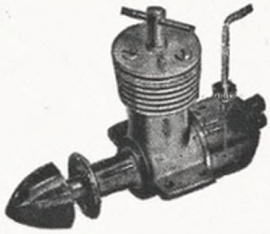

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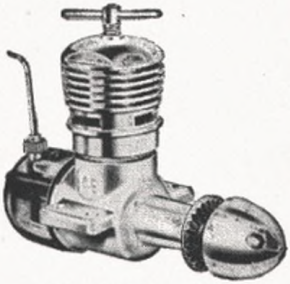

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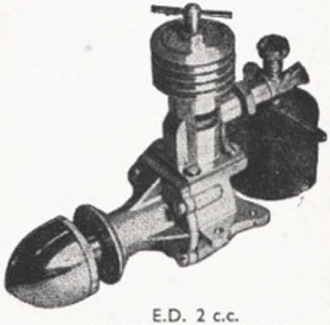

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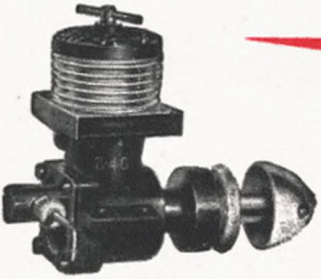

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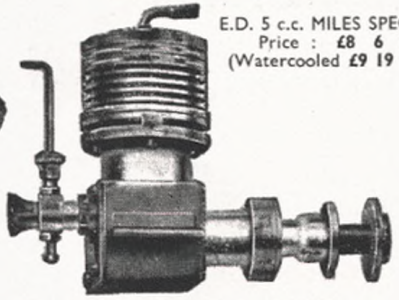

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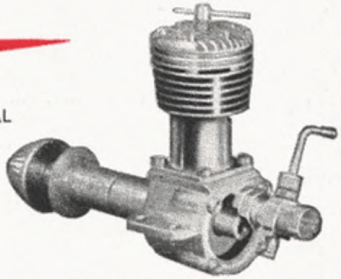

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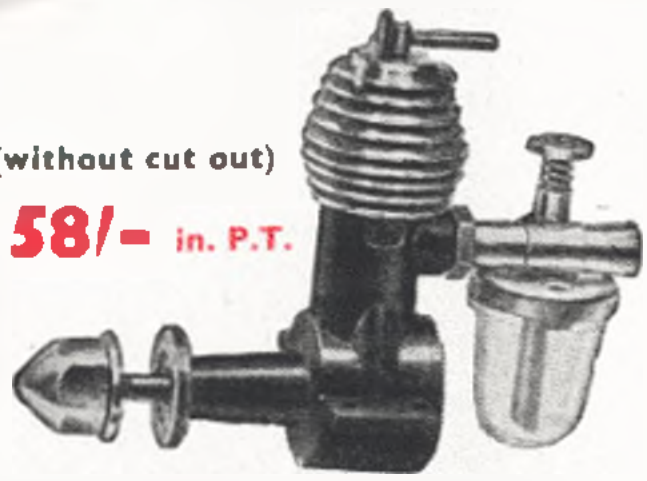

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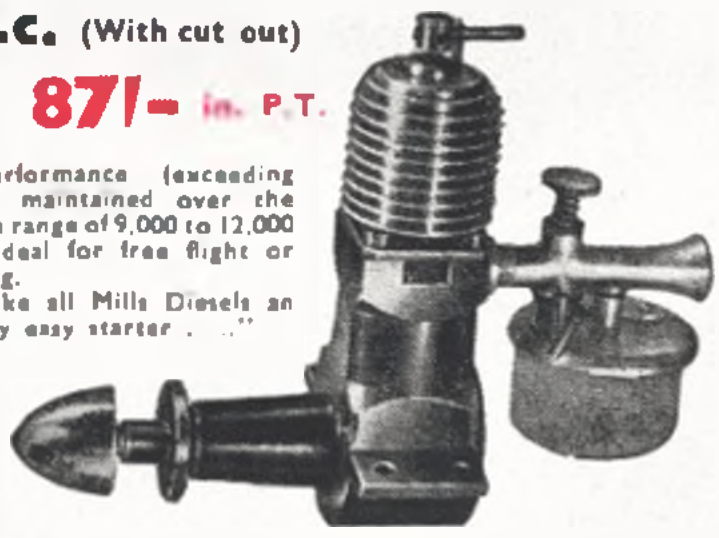

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DECEMBER 1953 VOL. 12 No. 12.

Contents

EDITORIAL

"Is there sufficient international interest in control line speed flying at the present time to justify the holding of the World Speed Championships?" This question was put to us by a correspondent recently and, frankly, we found it difficult to give a straight answer.

This "M.A." reader pointed out that as a World Championship event, the 1953 meeting held in Milan in June was a complete flop. It is a fact, of course, that only three full teams (Italy, France and Great Britain) entered, but this is considered by the London Area speed fans, at any rate, to have been due to the event being confined to 10 c.c. powered models. They have suggested that "in future the World C/L Championships should be decided on the performance of a team of three, one flying in each class, the top country to be the champion; the individual C/L championship should be abandoned."

This resolution has now been approved by the S.M.A.E. Council and will be discussed at the next meeting of the F.A.I. Model Commission. If it is accepted by the F.A.I., it may provide the stimulus and encouragement which C/L speed flying seems to urgently need, for the fact must be faced that interest in this branch of our hobby has greatly diminished throughout the world in recent years.

In some European countries this interest appears to have died altogether and over here there were only six competitors in the elimination trials to choose the team to go to Italy. Surely this was not entirely due to the championships being restricted to 10 c.c. models? Our correspondent pointed out that while it must be admitted that C/L speed enthusiasts, although comparatively small in numbers, are extremely keen, so are the team racing and R/C fliers.

The question remains: Should the World C/L Speed Championships be continued in an effort to put C/L speed flying back on the map? What do other readers think?

Cover Story

Photographed at Cranfield this year, Lederer of Austria had a most unusual power model flying in the Championships. The design showed a strong Oskar Czepa influence, for Lederer is a member of the same club. "Stick" fuselage, anhedral tailplane, all-sheet wings and single-blade prop are as unconventional as the launch: vertically, on three points of the tail unit.

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

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Here and There

COMMENTS ON CURRENT TOPICS

LAST CHANCE

As we announced last month, the Annual Dinner and Prize-giving of the S.M.A.E. is to be held on December 5th, at the Horse Shoe Hotel, London. Tickets are fast disappearing, as those who heard about previous Dinners are making sure they will not miss it this time. It certainly is an occasion not to be missed and hesitant types should make up their minds and send in right away to the S.M.A.E. for their tickets. The price is one guinea each.

A VICIOUS CIRCLE

From a docile sportster to a guided missile . . . such has been the evolution of the team racer over the past few years. With pit stops reduced to a split second pump and flick, the long range "goat" is no tow match for its modern high speed counterpart. So, with the emphasis now firmly set upon absolute speed, life in the pilots' circle has become more than a trifle hectic. Keeping up with the pace of the models requires something in the nature of a superman and it is a noticeable fact that very few of the top pilots are less that six foot in height!

This problem of speed fast outstripping manoeuvrability took an acute, and we might add, disastrous turn at the Halton Rally when the first of the 100 m.p.h., racers made its debut. A product of the famous East London speed stable, it clearly demonstrated the inability of its pilot to maintain quite the same rate of circulation of the model. The result was most disconcerting both to that particular event, and possibly to the whole future of team racing under existing rules.

It seems that a 100 m.p.h. model is almost unmanageable on the present 52 ft. line length. One answer is to increase the line length to say, 70 ft., and thus slow down the rate of gyration to a controllable pace. This, however, introduces other problems. Slower models will still be competing against the faster machines, and a 70 ft. line would make them rather uncontrollable, especially in a high wind. Again, the greater circuit area required would make the selection of suitable tarmac stretches even more difficult than it is at present.

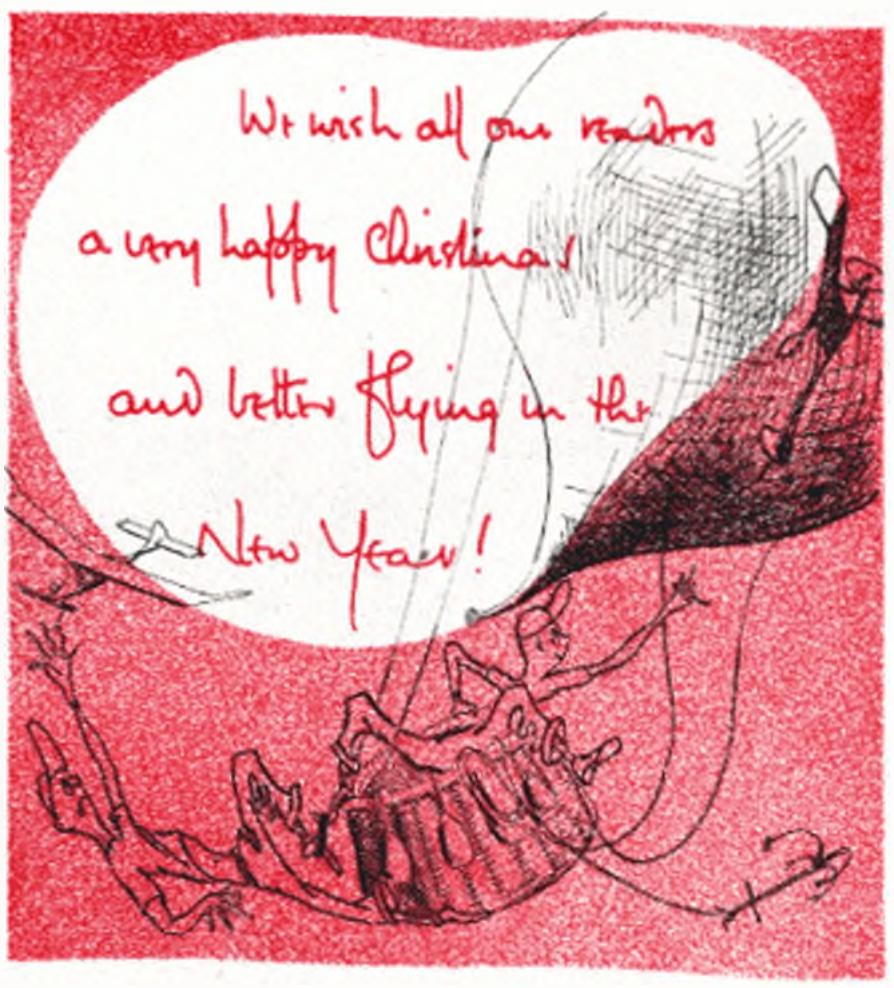
Possibly a decrease in engine capacity will provide a favourable solution, but, in any case, a survey of the existing team race rules seems to be desirable.

THE D C DILEMMA

Touching once more upon the thorny subject of S.M.A.E. de-centralised contests, someone has now suggested that, rather than abandon this most worthwhile form of contest, a system of pre-entry should be introduced as a means of ensuring a greater measure of official control. Such a system, it is argued, would put an end to the pernicious practice of clubs declaring only their top entries—or none at all; and also provide the necessary incentive for the prospective entrant to make his flights in spite of adverse weather and other dissuading factors.

In favour of the idea, we would say that, since introduced for the Nationals, the pre-entry system has met with a surprisingly good response from the model clubs. So much so, in fact, that the practice has now been adopted by many rally organisers as a means of boosting up the entry figures, despite the extra burden of paper-work which "advance booking" involves.

Possibly there are two main reasons for the undoubted success of the



pre-entry arrangement. One, that it encourages the "ditherer" to make up his mind in advance, and the other, that it hints at the presence of an efficient organisation—a quality lacking in many recent events.

NO LITTER, PLEASE The S.M.A.E. recently received a letter from the Conservators of Epsom and Walton Downs, a popular South London flying area at week-ends, and we quote it in full:

"I beg to inform you that the trainers and owners of bloodstock using the Downs are very much concerned about the litter, particularly bottles, which is left by fliers of model aircraft and the friends accompanying them at weekends. The deposit of litter is, of course, an offence under the Byelaws, but the matter goes much further than that when the safety of valuable horses is jeopardised. If you can bring this matter to the notice of your members by including reference to it in any bulletin or circular it would be much appreciated, not only by the trainers and owners, but also by the Conservators who are concerned with the appearance of the Downs."

While we realise that the model fliers are not entirely responsible for the litter on the Downs, we strongly recommend that all bottles of liquid fuel (for models and modellers) when emptied, should be taken home and not left lying around to cause accidents.

LOOK OUT! Look out during the next month for a new book that will be appearing on the shelves of your favourite hobby shop and newsagent. It is called "How to Make Model Aircraft" and the title tells you just what it is about. Published by MODEL AIRCRAFT, it contains all the wealth of practical knowledge that has appeared in the popular "M.A." feature, "Beginners' Course," all collected together into one volume—nearly a hundred pages that will set untold numbers of new recruits to the hobby, on the road to successful flying, and teach the old hands a thing or two as well. Every stage of building, finishing and flying the basic types of model are explained simply and clearly, and lavishly illustrated with dozens of photographs.

With its striking cover and a pocket-saving price of only 3s. 0d., there is sure to be a huge demand, so don't miss your copy. Look out for it!

HOW'S IT GOING? "Aviation Newspage" the new feature by J. W. R. Taylor, which commenced last month, has been well received by our readers, many of whom have written to say how much they appreciate this new venture. We feel that the recent enormous increase of interest in scale models justifies the "full-size" angle, and that interest will be stimulated by being kept up-to-date with what is going on.

MODEL AIRCRAFT is *your* magazine, of course, and as we are always endeavouring to please you, the readers, we like to hear from you to know which features you look forward to most, not to mention those (if any) you regard as a waste of space!

SMASHING REDUCTION When the drawings of *Fantasm* (M.A. 164) were published in the October issue of M.A., the price of the plan was printed by mistake as 5s. 6d. The price of this attractive little design is in fact only 3s. 6d. It has already shown itself to be popular and quite a number of people who sent us 5s. 6d. postal orders have had 2s. returned. At its new "reduced" price it could be a best-seller! Potential purchasers, please note.

TRIPLE CROWN West Essex is a well-known name in the list of active model flying clubs, and has produced a number of outstanding modellers. Sid Allen is one of these who has had an exceptional record of success in the tricky field of R/C. He has won the Ripmax Trophy for the third successive time, won the international contest at Southend, and won the radio event at the All Britain Rally—all in one year. At the latter event he was also presented with the Bill Taylor Memorial Trophy for the best R/C performance over the year 1952. Quite a record!

As many readers will know, Sid has recently turned his experience to good use and joined the staff of E.D.'s on the radio side, and, in fact, all these contests were won with his veteran *Radio Quern*, using E.D. equipment and an E.D. 3.46 motor.

Sid Allen, photographed at Long Marston, after winning the Ripmax Trophy for the third consecutive year.

STOP PRESS

Well, we didn't actually have to stop printing, because this page is printed after the one on the left, but since *that* page was printed the S.M.A.E. has sold all the dinner tickets mentioned in the paragraph headed "Last Chance." Perhaps it should now be "Lost Chance."!

WILLIE and the MAGIC KIT

by L. Ranson

A fairy tale or pantomime
Should start with "Once upon a time,"
But with our silly Christmas play
The timers sort of lost their way;
Giving up in wild distress
When they saw the plot go o.o.s.

The curtain rises on a typical aeromodeller's workshop. Beneath a thick layer of balsa chippings and sundry debris can be discerned a dining table and other signs of a once normal habitation. Seated in the corner is a lady, prematurely aged by a greyish covering of balsa dust. She is the Widow Modbound. On the table is an object which might be called a sports model—it looks as if somebody had been playing football with it. Staring glumly at same is Widow Modbound's son, Willy.

WIDOW: Where's me purse? Oh, woe is me!
The family stock of l.s.d.
Has, overnight, completely fled—
Like British gliders bound for Bled.
Someone's gone and pinched the lot;
Now half-a-crown is all we've got.

WILLY: Not my fault. I had to pay
My monthly sub. And, anyway,
You promised me a handsome sum
As soon as I was twenty-one.

WIDOW: But that was thirty years ago!
You pick up things so very slow—
Except for money. And you get worse. . . .
Hey! Come back with that blinkin' purse!

The scene changes to an average model shop. To the left is a glass showcase; the contents of which, it is rumoured, are sometimes visible on a clear day. Centre is the counter; the top of which was last seen between a book on *A-Frame Pushers* and a leaflet on "How to Build the Pinaud Monoplane." To the right is a row of shelves containing a number of obsolescent kits. Enter Willy, clutching a half-crown piece in cement-caked paw. The model shop proprietor peers over the counter—he happens to be rather tall.

SHOP PROP.: What! Paying cash for the first time ever?
No easy terms? Well, I never—never.
Just browse around, I'll be right back—
Half-crown kits on the upper rack.

Left alone, Willy climbs up on the counter. But there is something queer in the air, apart from Willy. Suddenly a small squeaking noise breaks the silence.

WILLY: What was that? A mouse's wheeze?
His balsa always was like cheese.
No, it's not—it's from that shelf:
A sort of chlorophylly elf!

VOICE: I'm the Genie of the magic kit!

WILLY: Well, you look like Jetex Jim a bit.

GENIE: I was once a Gremlin—a merry scamp—
Who dwelt inside a Sultan's lamp.
But came an end to my harem capers
The day I got my call-up papers.
They drafted me, an impish thing,
To aircraft duties model wing,
Where I gained promotion quick
By many a dark and dirty trick.
Until as O.C. Weather Fleet
At the Cranfield model meet,
I supped too well—there's no excuse—
Of a potent brew call glow-plug juice.
And while I did in sleep recline
The weather turned out ghastly fine.
So now I've been condemned to sit
Upon this silly model kit;
To linger here until I find a
Bigger clot than its designer.

WILLY: And when you meet this foolish lout,
You'll be his humble slave, no doubt?

GENIE: Yes, O Master. It's most absurd,
But I dote upon your every word.
So take me down, and let's away
To sabotage this crummy play.

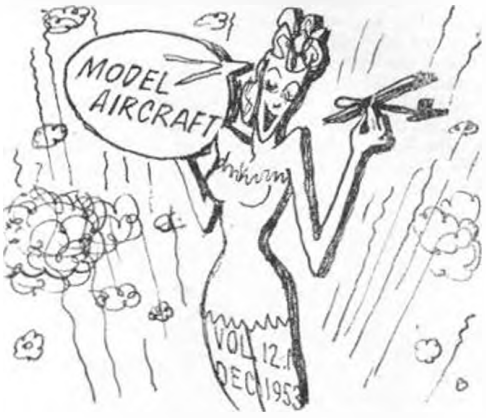
A month later. We are again in Widow Modbound's living room. It is much the same, except that the balsa chippings have now completely covered the dining table, and, for that matter, the greater part of the Widow, herself. The Genie has just transformed the magic kit into a super Wakefield model, but, gremlin-like has got the formula rather mixed, and 294 square yards of wing have had a rather damaging effect on the Modbound residence.

WIDOW: Oh, woe is me! That horrid gnome
Is breaking up the happy home.
It's enough to make a body cry—
More nuisance than the F.A.I.
WILLY: Now, look here, Genie, that's enough
Of this phoney magic stuff.
When I asked the other week
For a jet, both fast and sleek,
I had to beg the neighbour's pardon
For a full size Comet in their garden.
Now you've built a Wakefield that's
Bigger than a block of flats.
GENIE: Yes, O Master. But what the heck!
It'll pass an Area model check.
WILLY: That may be so, but what about
The cover girl I'm taking out?
GENIE: A thousand pardons, Master Willy.
I'll now produce the front page filly.
WIDOW: Glory me! An apparition
With date and number of edition
Stamped across her blinking knees—
Must be some latest fashion wheeze.
WILLY: Well, blow me down! You didn't mention
She'd come without her third dimension.
I could hardly take a girl to town
With a model ad. on her sit-me-down.
Oh, what's the use—remove that horror,
And build a power job for tomorrer.

The scene now shifts to Chobham Common, where an area power comp is due to start. Willy and the Genie cause a mild sensation by arriving on a magic carpet, but more amazing to the windswept multitude is the appearance of a tea van on the horizon. This, however, turns out to be a mirage.

WILLY: It's all your fault we're rather late—
Going to the Gobi by mistake.
Looks pretty quiet. The comp must be
All over now—it's after three.
GENIE: Pardon, O Master, you're talking wet,
It hasn't even started yet.
WILLY: Well, let's away and make a flight—
If we ever find the take-off site.

Willy eventually arrives at the take-off site, which is a composite affair, seeming to consist of a model box top, two pieces of soggy cardboard and a small dog. Everyone is awestruck at the sight of Willy's sleek projectile.



1ST TIMER: Well! Stap me down with a second-hand!
That grisly weapon should be banned.
2ND TIMER: We'd disqualify the cheeky lad
If we knew the rules, by Gad!

Willy starts the engine with such a slow, easy flick that several colonels are seen to be frantically tearing up letters.

1ST TIMER: Woosh! It's gone off like a rocket:
Too fast for me to even clock it.
2ND TIMER: Same with me—although I reckoned
It was out of sight in half a second.
WILLY: Half a second! That demon pranger
Has dropped a supersonic clanger.
Spoilt my chance. . . . And now what's up?
I think the Genie's run amok!

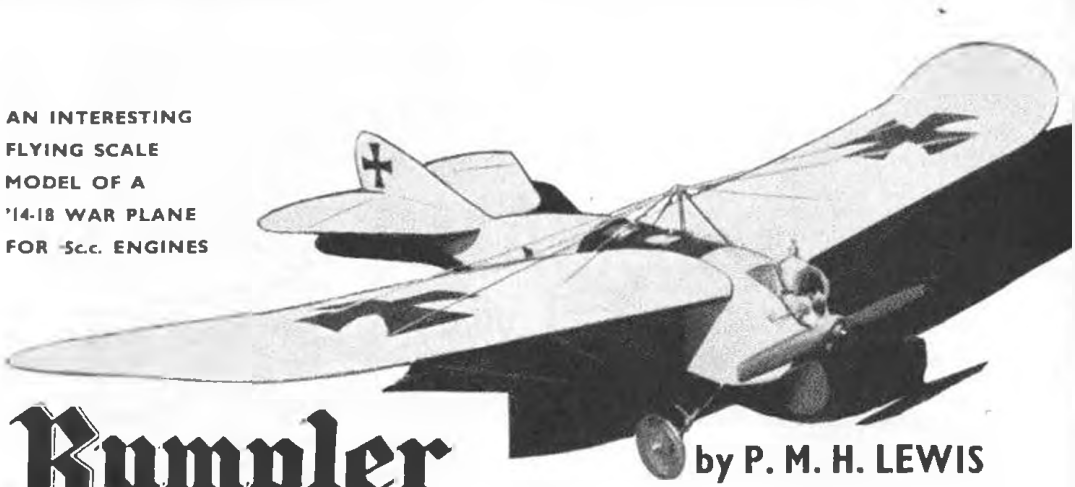
The scene ends with the Genie whooping with delight as model after model comes crashing in, and others, with timers sticking, climb out of sight. Willy beats a retreat in the general confusion.

Back in the Modbound residence a few days later. On the sideboard lies the magic kit, with lid secured by a hefty chain and padlock. From inside come the strangled cries of the trapped Genie.

WIDOW: Pay no heed. Don't let him out—
It's had enough with you about.
WILLY: Don't worry, Ma. I've had my fill
Of his brand of spoofy skill:
I've done less building since December
Than many an average Junior member.
But, by a lucky stroke, Mama,
I found an ancient formula
Which still, I'm told, holds good today
For keeping Gremlin bugs away.
So, both together:
WILLY and WIDOW: "Build 'em straight:
More of lightness, less of weight.
Build 'em flat, and build 'em flush:
More of patience, less of rush.
Trim 'em well, and trim 'em true:
Fit D.T's and timers, too.
So charm the Gremlins all away
For the job to fly another day."

Suddenly there is a loud explosion. The magic kit flies open, and the Genie is last seen executing a fast spiral climb through the ceiling.

AN INTERESTING FLYING SCALE MODEL OF A '14-18 WAR PLANE FOR 5c.c. ENGINES



Rumpler Taube

by P. M. H. LEWIS

THE Rumpler Taube makes a pleasant change, for it is one of the earliest full size aircraft that is adaptable to a flying scale model. It became prominent during the early days of the 1914-18 war. Used by the Germans for reconnaissance, the Taube also took part in some of the earliest armed combats in the air and in primitive bombing. Wooden construction was used and a speed of 75 m.p.h. was achieved with the 100 h.p. Daimler motor.

Fuselage

Select hard $\frac{1}{4}$ in. sq. balsa and make a pair of fuselage sides on the plan, one above the other. When dry, cement in place the cross braces. The undercarriage frame is shaped from 18 g. wire in one length and bound and glued in place to the cross pieces. The same procedure is used with the 20 g. wire cabane frames above and below the fuselage. Each of these is made with a front and rear triangular shaped piece of wire and joined at the apex with a small hook soldered on. The 18 g. undercarriage axle is bound and soldered in place.

Formers 1-6 are cut from $\frac{1}{16}$ in. sheet and fitted. Cover the whole of the fuselage forward of the cockpits with $\frac{1}{16}$ in. sheet after fitting the $\frac{1}{16}$ in. sheet wing fixing box at the angle of incidence shown. The 20 g. wire tailskid and strut are bound and glued to the lower longerons and the $\frac{1}{16}$ in. sq. hard balsa stringers cemented to the rear formers to complete the decking: $\frac{1}{4}$ in. × $\frac{3}{8}$ in. hardwood motor bearers are glued and secured to the $\frac{1}{16}$ in. ply bulkhead with small woodscrews. Cement a 3/32 in. balsa backing plate of the same size to the rear of the bulkhead. When dry, cement securely in place in the fuselage. The motor bearers should, of course, be spaced and drilled to accommodate the particular .5 c.c. motor to be used. Fill the sides of the nose with soft block balsa and shape to fit flush with the rest of the fuselage.

Wings

Each wing half is built on the plan and is commenced with pinning down of the $\frac{3}{16}$ in. sq. leading edge and $\frac{1}{4}$ in. × 3/32 in. trailing edge and the lower $\frac{1}{8}$ in. sq. spars. Cut the wing ribs R2-R8 from $\frac{1}{16}$ in. sheet and R1 from 3/32 in. sheet. Note the cutouts in the first three ribs on each side for the wing tongues. Fit the curved tip cut from 3/32 in. sheet and the $\frac{1}{4}$ in. sq. spar. Make the fixing tongues from $\frac{1}{16}$ in. plywood between $\frac{1}{16}$ in. sheet balsa and glue into the rib slots. The $\frac{1}{16}$ in. sheet ailerons are now cut and glued in place with $\frac{1}{16}$ in. sq. braces glued above and below. Strengthen the wing where shown with $\frac{1}{16}$ in. sheet gussets and also fit them at the bracing wire locations. Ensure that the tongues are a tight fit in the box. Rib R1 is set at an angle against the fuselage top deck.

Tail Surfaces

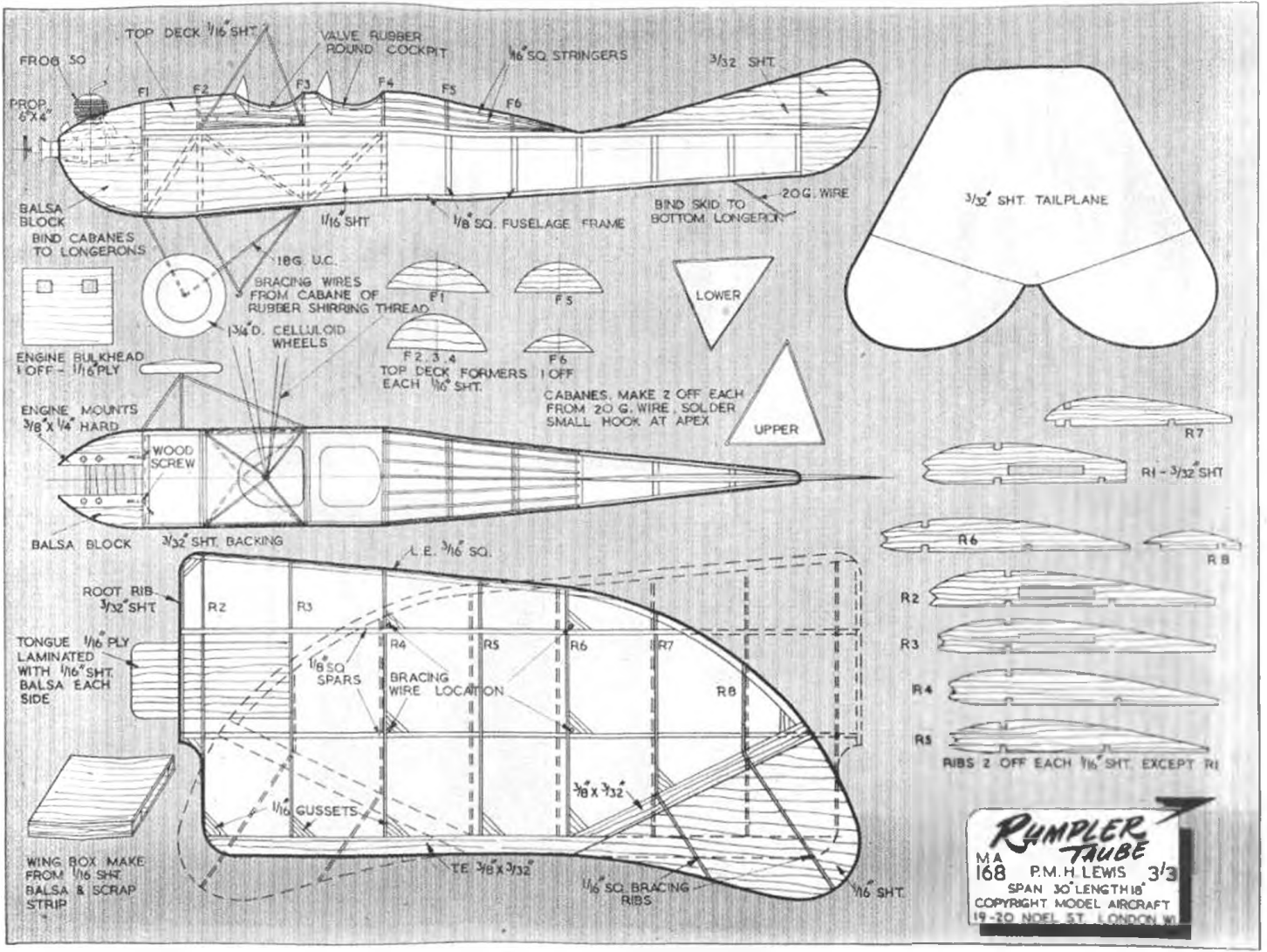
Cut the fin and tailplane from 3/32 in. sheet with the grain running in directions shown and sand to streamline section.

Covering

The entire model is covered with medium weight tissue and given three coats of clear dope. It is left in the natural finish which is correct for this aircraft. The nose is silver to represent the metal cowling and black crosses are doped above and below the wings, on the fuselage sides and on the rudder. To complete the model fit 1¾ in. diameter celluloid wheels. Valve rubber tubing is cemented around the edge of each cockpit and celluloid windshields fitted. The bracing wires below and above the wing consist of rubber shirring thread, suitably tensioned, passing through the cabane hooks so that the wings are easily removed. The complete tail unit is cemented in place.

Flying

The usual gliding tests are made over long grass, weight being added as necessary to the nose or tail. When the glide is satisfactory, power flights may be made, down thrust and right side-thrust being incorporated until the desired flight pattern is achieved.



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. 3d. POST FREE

OVER THE COUNTER

Christmas is coming, and this month we have two pages of possible presents. We suggest you leave it about and—who knows . . ?

British Model Aircraft

Latest additions to the *Skyleada* Star series of flying scale models are the *Canberra* (single Jetex 100 or Jetmaster), and the *Swift*, *Hunter* and *Cutlass* (all Jetex 50). Low priced kits in the traditional sheet and strip form, *Skyleada* and *Skyrova* models are designed essentially for flying, whilst preserving that true scale appearance. Present list includes nine rubber flying scale in the *Skyrova* range, five in *Skyleada* range, eight "Star" Jetex flying scale plus two *Skyleada* Jetex scale and two C/L scale. Other models include a Class "A" team racer, a neat cabin free flight power design and two C/L scale.

A particularly attractive feature at "Christmas present" time is the up-to-date prototypes available in the flying scale range—*Comet*, *Javelin*, *Vulcan* and 707*A*, *Hunter*, *Swift*, *Canberra*, *Cutlass*, etc. World War I and World War II models are also well represented in the propeller driven designs.

Frog Senior Series

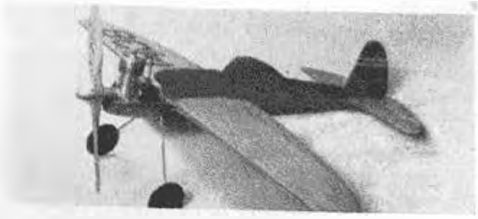
Priced at 4s. 6d., these models are among the best value for money in the model aircraft trade today. Built-up construction is employed in each design, but fuselage sides are sheet, and also the tail surfaces. All the balsa parts are die cut, including the necessary strip wood for stringers and wing spars. Propeller assembly, in moulded plastic, is complete, undercarriage wire shaped, etc. Construction time should average about an hour for the airframe, which then requires sanding down and covering. All of the models have good flight capabilities in calm weather conditions. Our personal tip would be to strengthen the undercarriage fitting (bind the top of the wire to a piece of balsa cemented across the fuselage), otherwise you may find it working loose after a few rough landings. Go easy on coloured dope trim, too. These models are quite heavy enough for good flying.

Range includes two low wing and two mid-wing monoplanes, a high wing monoplane and a biplane. All 18 in. wingspan, and all semi-scale in appearance.

Keil Kraft

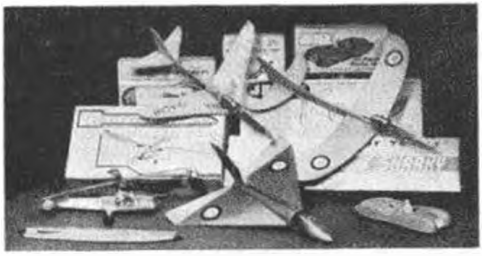
From the well-known Keil stable come two models that fit in well with the theme of these pages, the Eezebilt *Champ* and the *Sportster*. The *Champ* is a new C/L trainer for engines up to 1.5 c.c. complete with all parts ready cut, wire parts bent, parts ready coloured, and fool-proof step-by-step instructions. Price 12s. 3d. and shown below.

The *Sportster* is an 8 in. span rubber powered model, again with ready cut and coloured parts complete with plastic prop and rubber motor. This three-and-sixpenny model can be assembled in less than one hour, and is ideal for the youngster who is not yet ready to tackle a more elaborate kit.



JETEX "READY MADES"

This is for the lazy modeller—a model which comes out of the box ready to fly. Personal choice would be the new "Interceptor" delta—a really brilliant job of production engineering in wood, paper, metal and plastic—complete with Jetex 50. *Sharky* (50) and *Wren* (35) have real flying ability, too. Try the *Wren* on a "50" for a "duration" climb. The helicopter obliged on test with several consistent flights of around the 25 to 30 sec. mark and we could not omit the race car (complete with pylon and tether) from our list of good things. *Jetex* make a 50-powered plastic speedboat, too. With their products having an appeal to all age groups we cannot help thinking that Jetex might well adopt a slogan like "Every mother should learn how to operate a Jetex!" Every parent or relative is on to a winner if they pick one of these models as a present.



VERON QUICKIES

A range of semi-scale rubber models, employing a unique form of built-up construction. Fuselage sides are printed with detail markings on die-cut balsa sheet. Assembly consists of joining these sides with $\frac{1}{8} \times \frac{1}{4}$ strip to form a narrow box fuselage. A little care is needed to trim and shape the strip (steaming is necessary in some cases to conform to the curves of the fuselage profile), but after that the rest of the model cements together is less than a minute. Total building time should average about half an hour.

Completed, these models are robust, attractive and quite good fliers. Semi-silhouette construction should become very popular with the younger model builders. A tip to pass on is—make the hole for the nose plug with a piece of metal tube of the right diameter, sharpened at the end. If you try to drill it, the balsa will split.

Kit price is 3s. 6d. Models in the range are: *Cessna*, *Provost*, *Wyvern*, *Auster*, *Firefly* and *Fairey Junior*—all 11¼ in. span. All sheet parts die cut and printed in colour. Moulded plastic propeller, wheels and nose plug; shaped wire undercarriage and propeller shaft; and a rubber band motor.

WILMOT MANSOUR

Jetex "Tailored" kits set probably the highest standard in the world for accuracy and, especially the cleanness of their die-cut sheet. Quickies we would suggest for the holiday are the *Swift* and *Javelin*—silhouette type semi-scale models for the Jetex 50 motor. Little to do but stick the parts together and go out and fly them. We checked, and they fly almost as well on the Atom 35 unit. No plans are given with these kits. They are not necessary. Assembly is so straightforward that all necessary instructions can be given on an exploded drawing printed on the box.

For the man who wants to spend a little more time on the job, then the *Hunter* or *Swift* would be hard to beat. Made up with care, these are real exhibition class models with all the hard work done in the "tailoring" of the kit. The *Swift* should be on sale just before Christmas. If no relative takes the hint, spend some of that present money yourself.

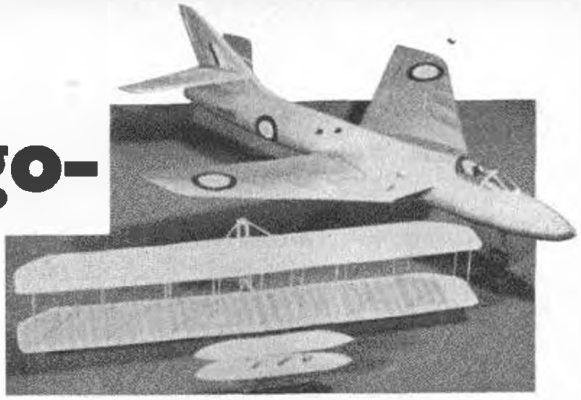
TRIX TWIN RAILWAY BOOK & CATALOGUE. 2s. 6d.

This unique pocket size publication is divided into two parts, the first and by far the larger part is concerned with a wealth of facts and interesting information on the railways and their operation, with special chapters on the hobby of model railways. The latter half of this book is a complete catalogue of Trix engines, coaches and accessories. Altogether it makes an interesting and useful little book for the railway modeller or for those that are just interested in "Trains."

THE KEIL KRAFT HANDBOOK, 1953-54. 1s. 3d.

For seven years this popular little handbook has been welcomed by modellers everywhere and the latest edition is well up to standard. There are over a dozen articles written by experts on a wide variety of modelling subjects from first beginnings to R/C and T/R. Then there is the usual useful and comprehensive catalogue of Keil Kraft kits and other products. A handy reference booklet at a modest price.

50 Years Ago-



the first power-driven man-carrying aeroplane took the air. Here RON WARRING shows you how to make a scale model of the WRIGHT BIPLANE

FIFTY years ago, on December 17th, 1903, a wood, fabric and wire biplane staggered into the air for a flight of twelve seconds, covering a distance of 120 feet—the first time man had successfully flown in a power-driven aeroplane of any description. Later that day the Wright brothers managed a "record" flight of 59 seconds—and 852 feet distance—ending with a crash landing which damaged the front frame.

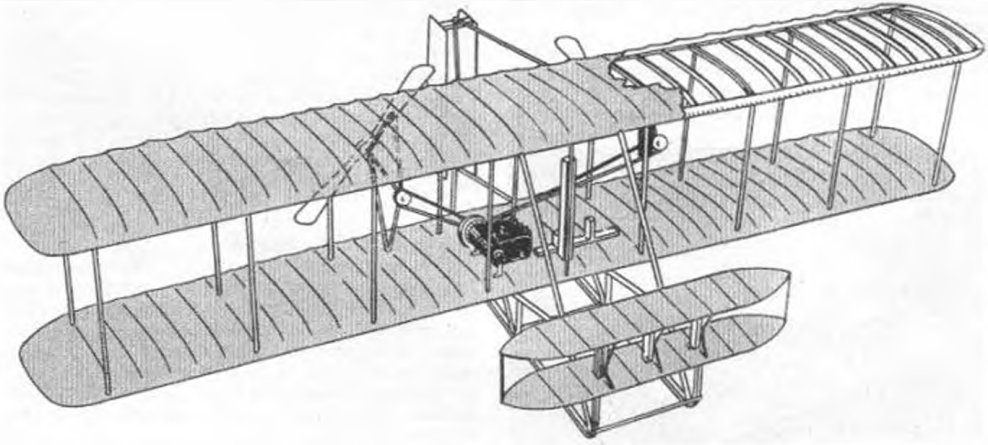
Today those performances are poor, even for model aircraft. Looking back, too, it is hard to realise that the streamlined modern aircraft, both model and full size, are great-grandchildren, as it were of the queer looking Wright biplane—queer to present-day eyes because design layouts and constructional methods have changed so much. Striking evidence of this change is afforded by the photograph of our Wright model alongside a Jetex-powered Hawker *Hunter*. Both models are to approximately the same scale.

The Wright model is one of those unusual projects which makes a most interesting change from more serious work. It is not a model from which any remarkable performance can be expected—in fact, possibly the most remarkable thing about it is that it does fly at all! With a little care, however, it can be made to duplicate, or better, that world-first flight of twelve seconds.

For flying model purposes, a few liberties have been taken with the original design. Outlines and proportions are true to scale and the number of ribs in the wings is also correct (except for the omission of one rib in the outer section). It did not prove feasible, however, to employ a single rubber motor driving the two contra-rotating propellers of scale diameter via belts or shafts. On the original machine a 12 h.p. engine mounted on the lower wing drove the two propeller shafts via chains. Anhedral is also abandoned in favour of a straight wing.

Whilst the model itself, therefore, retains an essentially "scale" appearance, for flying, detachable motor sticks are fitted between the wings, slightly outboard of the true scale position. This enables scale-position shafts to be mounted, on which scale propellers can be slipped for exhibition purposes. For flying the scale propellers are removed and the separate motor sticks fitted, each with its own propeller and rubber motor. To simplify installation and removal of these motor sticks, and to reduce the complexity of the model, all bracing wires have also been omitted. If these further scale details are required, reference to the scale drawing in "Prototypes worth Modelling" will supply the missing data.

Start construction of the model by building two identical wings. The plans are exactly one third full size, with all the leading dimensions given. Draw a full size outline of the wing with the main rib positions marked in. Notch the $\frac{1}{8} \times 3/32$ leading edge and $\frac{1}{4} \times \frac{1}{8}$ in. trailing edge to accommodate 3/32 in. thick ribs at these positions and pin the



spars down over the plan. Note that the back of the leading edge is blocked up 1/32 in. to conform to the camber of the ribs.

Nine main ribs are cut carefully from 3/32 in. sheet, using a ply template in the same manner as cutting indoor model ribs. Cement the seven centre ribs in place and then fit the tip pieces. When these have set, trim the end ribs to correct length and cement in place. Using the same template as before, now cut 26 ribs of 1/32 in. sheet, but slightly shorter than the main ribs, to cement between the spars, i.e. the 1/32 in. ribs are not slotted into the leading or trailing edge.

When set, remove the whole wing from the building board, taper off the trailing edge and round the leading edge and sand down lightly. Sand scallops between the rib positions along the trailing edge. Repeat in building the second wing and then cover both wings both sides with lightweight Jap tissue. The tissue must be stuck to the underside of each rib with dope. Water-spray carefully and leave to dry, when the tissue should come up nice and tight. On the original machine the fabric covering was undoped, but since plain tissue is very weak and easily damaged in handling a single coat of thin clear dope is advisable.

Now make a careful note of the strut positions. These stations correspond to the main rib positions and require holes piercing through the wings at each of these points—18 in all. Front strut holes are actually made through the leading edge. Rear strut holes through the 3/32 in. ribs exactly one inch in from the trailing edge. The interplane struts are round section bamboo, roughly 3/64 in. diameter, cut from the hardest part of a bamboo split, i.e. near the shiny outer surface. Cut 18 struts to an identical length of 2¾ in.

The wings are assembled on these struts, mounting the struts first in the holes pierced in the lower wing, sharpening the end of each strut slightly and dipping in cement before inserting into the wing hole. The top wing is then added, the wing rested on two sheet jig pieces and trued up before the cement has set—Fig. 1. Assembling on the jig pieces ensures that the wing assembly will have the correct incidence and match up with the frame.

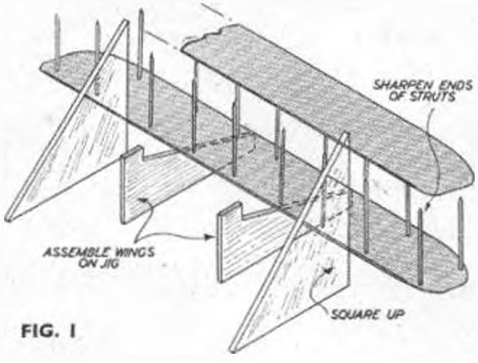


FIG. 1

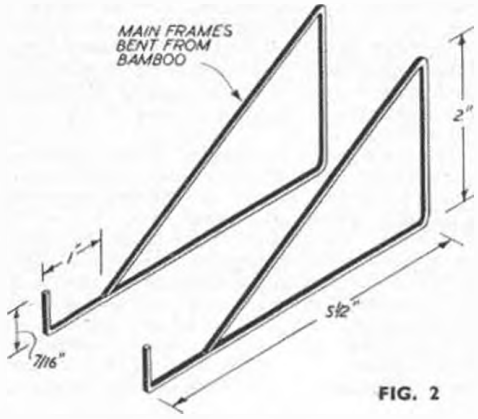


FIG. 2

Whilst the wing assembly is setting, the main frame sides can be bent from bamboo. A 14 in. length of bamboo should be stripped down to roughly ⅛ × 1/16 in. and then heat-bent to the pattern shown in Fig. 2. Heat-bending consists of heating the part of the bamboo to be bent over a small flame, e.g. a candle, waiting for the wood to soften and then bending to shape. This frame must be made accurately, so be prepared to have four or five goes with different lengths of bamboo to get it right. When satisfied, split the bamboo down the centre and you should have two identical frames of 1/16 in. square section.

If you have difficulty in obtaining a long enough length of bamboo, or have trouble with bending the bamboo, the frame can be made of reed cane which is more readily bent, but not so tough. For a non-flying model the frame can be bent from wire.

Cut the two leader planes from 1/32 in. sheet balsa. Slot the bottom one to slip over the bamboo frame and then proceed to cement the wing assembly to the main frame. The jig pieces again will be a help at this stage. The long strut from the bottom (front) of the frame to the leading edge of the upper wing should be of bamboo, sharpened and pushed into the wing leading edge. The other small frame members can be of bamboo or 1/16 in. square balsa, cemented in place individually. The leader planes are assembled on three ⅛ × 1/16 struts, cementing lightly to the main frame. The smaller struts (three pairs "X" shaped and single end struts) can be very thin slivers of bamboo.

The two rudders are cut from 1/32 in. sheet balsa and joined with three ⅛ × 1/16 in. balsa struts ⅝ in. long. The rudders are mounted on V-shaped bamboo struts, the upper struts pushing into the upper wing trailing edge and the lower struts cementing just inside the main frame.

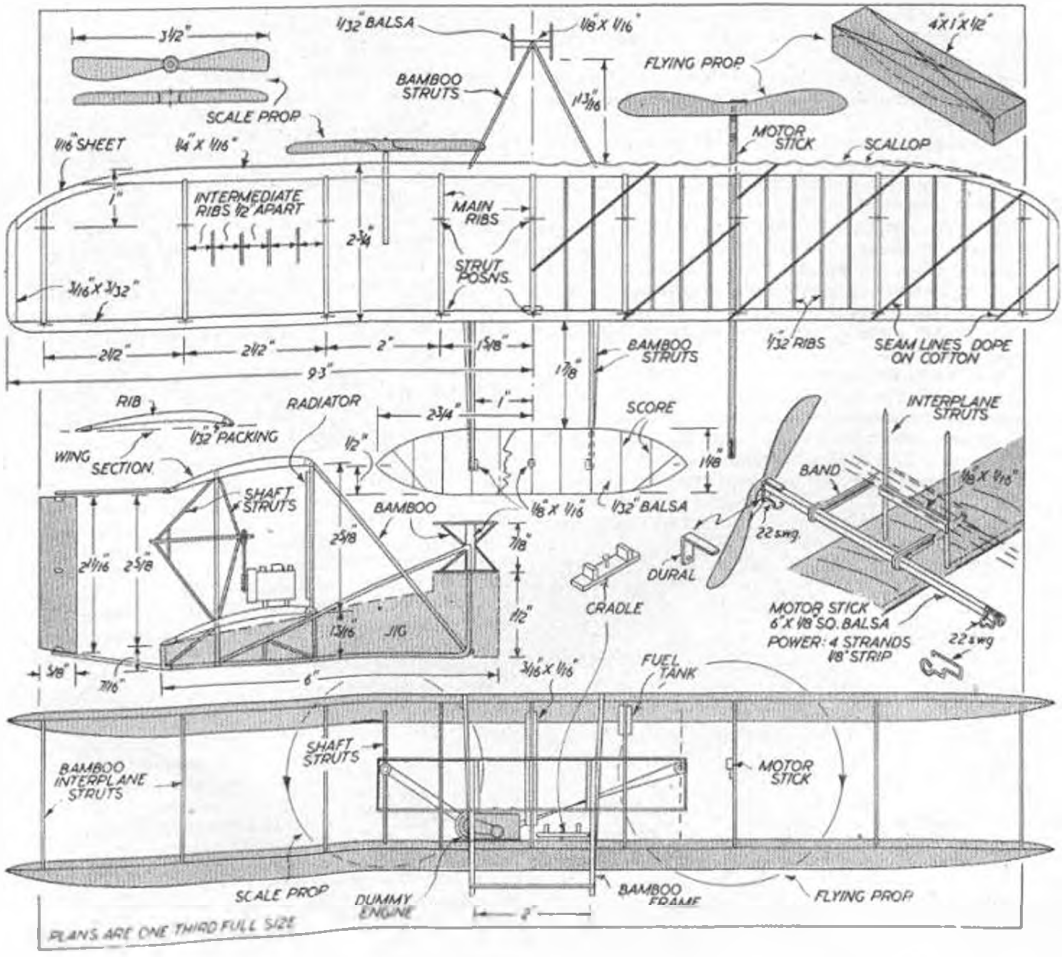
A number of detail fittings can then be added to the model. The scale shaft drive can consist of a length of bamboo (or wire) mounted on thin bamboo struts cemented between the wings. The side elevation drawing gives the shape of these struts. An engine, carved from scrap balsa and cemented to

the lower wing, can be connected to balsa "pulleys" and cotton "chains." The pilot's hip cradle of $\frac{3}{16}$ × $\frac{1}{16}$ in. balsa should be pivoted to the lower wing. A radiator of $\frac{1}{16}$ × $\frac{1}{16}$ in. balsa is cemented behind the front centre interplane strut and a $\frac{3}{4}$ in. length of $\frac{1}{4}$ in. square balsa sanded to a round section forms the fuel tank.

The flying motor units should be clear from the plan. These consist of a 6 in. length of hard $\frac{1}{4}$ in. square balsa with suitable end fittings, mounting 4 in. dia. propellers, carved from 4 × 1 × $\frac{1}{2}$ balsa blocks. Note that both are pusher propellers and one is carved right-handed and the other left-handed. The motors (approximately 4 strands of $\frac{1}{8}$ × 1/30 strip, or equivalent) and wound independently, and in opposite directions. Each motor stick is strapped to the appropriate interplane struts by means of a rubber band, a $\frac{1}{4}$ × 1/16 balsa spacer between these struts both locating the motor stick and relieving the struts of the strain of the band.

Balance for trim is found by sliding the motor sticks forwards or backwards until the correct centre of gravity position is established, as checked by hand-launched glides. Note, also, that it will probably be necessary to alter the setting of the leader plane assembly to obtain stable flight. Find the best position by trial and error and, once established, cement the leader planes permanently to the main frame.

Once again we would emphasise that this is a model "for fun," rather than for flying ability—but trimming it out for satisfactory flight is quite fascinating. Fly only in calm weather, and preferably over a carpet of soft grass to minimise the risk of damage. Carefully built, this little Wright biplane is actually quite robust—far more so than the original, in fact!—and can take quite a few crash landings.



Topical Twists

And So To Bed

Since the British Glider Team's journey to Bled was fraught with sabotage and skullduggery all along the line, it is a pity that none of the reports of same added just that little dramatic touch to transform it into a first class (or was it third?) trans continental express thriller.

Imagine the scene as the train, groaning under a payload of plot and counterplot, is about to leave the station. Suddenly events take a dramatic turn with the last minute arrival of a sinister group of coffin bearers, emerging from the gloom of the platform with their macabre burden. Can they make it? Even as they reach the compartment the train is beginning to move. Tension mounts to breaking point—something must crack. A voice cries out: "All right, keep your hair on. We'll pay for the flipping window!"

Unaffected by all the confusion, the little old lady in the corner seat calmly continues with the knitting of a long sleeved secret formula. The suspicious looking gentleman opposite her tugs thoughtfully at his false beard and addresses the intruders:

"Hist! I am a secret agent of M.I 4. 79832."

"Don't you mean M.I.5?"

"No. M.I.4. 79832. We've been taken over by the F.A.I."

The old lady looks up quickly, startled out of her composure. In doing so she drops a stitch and there is a loud explosion. . . .

And so on, and so on.

But what about a suitable title for this supercharged thriller? The most promising one I could think of was "Night Train to Gunic."

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The Middle Way

The way certain correspondents seem to be jostling Cambridge all over the map must be most unsettling to the quiet dignity of that cloistered city. Latest report on its global location is some 300 miles from Glasgow and 220 from Plymouth. But even this near central position appears much too far south for the spokesman of the new Scottish "Nationals-ist" movement.

Obviously the only possible remedy to this centralisation deadlock is to use a flying ground which, in aeromodelling terms, is the exact Centre of Lateral Area of the British Isles. After the most exhaustive research this was found to be Farmer Modhater's mangelwurzel field, on the outskirts of the little village of Chipping Balsa.

One particularly favourable aspect of this location, from the organisers' point of view, is its immense distance from the railway station—even more than Digby. Only accessible by car or oxcart the officials would not be embarrassed by all the rank and file model rabble who do not own cars or oxcarts.

A special amenity on the field is a small hut. This would come in useful as a control point or something. However, experience of present day organisation methods would lead one to believe that it would be more suitably employed in the "or something" capacity.

There is only one snag: Farmer Modhater threatens to shoot all aeromodellers on sight. Now where is Cambridge . . . ?

● ● ●

Through the Barrier

There was only one regrettable omission from the extensive All Britain Rally prize list: an award in the retrieving section for the best time over the famous Radlett assault course.

Tougher than in previous years, the obstacles included two speed circuits, hundreds of wayward C/L fanatics crying bloody vengeance on all who venture near their cunningly concealed lines, a ten-foot-deep barbed wire entanglement a main railway line, a few odd ditches and sundry irate farmers.

On second thoughts it would have been sufficient to share the prize among the survivors.

Referring to the commercial jet contest held in conjunction with the All Britain Rally, the amount of solid fuel that went up outside the tent was nothing to the quantities of liquid fuel that went down inside it.

● ● ●

Fifth Time Lucky

Club "scrambles" have now become so popular that the idea has been, more or less, adopted by the F.A.I., for all future International events.

As applied to Area Eliminators, the ability to find a model is secondary to the still greater test of finding a timekeeper. But here, unfortunately, is where the luck bogy creeps in. If the timekeeper happens to be a special crony of yours, you will naturally be given that very vital head-of-the-queue priority. If not, you'll have the dickens of a job getting that fifth flight in.

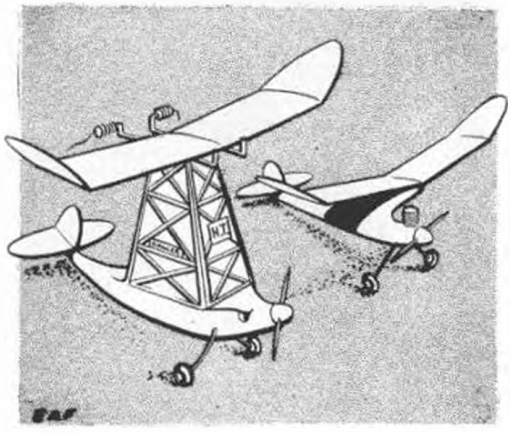
On the whole this is a reasonably fair system; giving everyone who matters an equal chance. Trouble is, the "wide boys" have found a loophole. A tame timekeeper is now considered an essential item of their contest equipment.

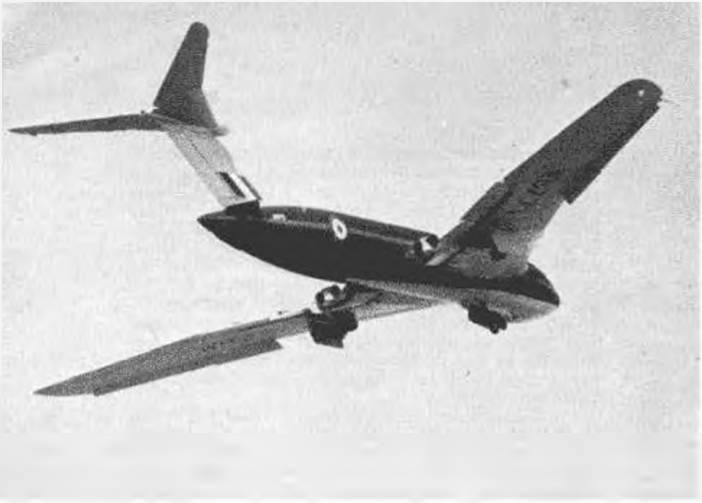
Incidentally, if, in the future, you see a power fiend frantically counting a handful of digits, he will not be checking on the possible mutilating effects of a back firing prop., but on the number of flights he has made.

● ● ●

A well-known kit designer was observed actually flying a model in an area contest. An act which can only be regarded as grossly unfair to this column.

Pylonius





Aviation NEWSPAGE

by J. W. R. Taylor

The Handley Page "crescent wing" Victor bomber, fitted with four Armstrong Siddeley Sapphire jet engines.

Competition for the **WORLD AIR SPEED RECORD** should be more exciting still in the next 12 months, with both Britain and America producing fighters able to fly faster than sound in level flight.

Most of the aerodynamic and control problems of high speed flight have been licked ; so the key to higher performance is more and more engine power. Use of reheat gave Lithgow and Duke around 9,500 lb. thrust from the Avon RA.7R engines of their *Swift* and *Hunter* fighters. Rolls-Royce's new RA.14 Avon starts off at that power without reheat ; the thrust of de Havilland's Gyron is higher still, and Britain has a new generation of rocket motors on the way. America too has turbojets in the 12,000-15,000 lb. class ; so watch out for some sensational new records.

The latest crop of air speed records is, in any case, phoney ! The true measure of a modern jet-fighter's performance is in the Mach Number* that it can reach, not the speed. Unfortunately, the speed of sound varies with height and temperature and, although international regulations get over the first by insisting that record runs are made below about 300 ft., no account is taken of temperature.

As a result, Mike Lithgow was able to raise Duke's record by nearly 10 m.p.h. by making his runs in the heat of North Africa instead of England, although the Mach Number he achieved (.934) was actually *lower* than Duke's (.944). Similarly, Lt. Cdr. Verdin of the U.S. Navy was able to choose near ideal conditions for his attempt in the *Skyray* delta. His course at Salton Sea, California, was below sea level and the temperature so high that the estimated speed of sound was 792 m.p.h. In terms of Mach Number, his record speed of 753.4 m.p.h. represents Mach .951, which means that Duke might still hold the record if his attempt had been made at Salton Sea !

Difficulty of flying at the speed of sound may prevent records between Mach .96 and 1.05. So the best bet for the next record is an RA.14-powered *Hunter* or the U.S.A.F.'s F-100 *Sabre* 45—a larger, more powerfull version of our old friend the F-86 *Sabre* with 45 degree swept wings, which is flying supersonic regularly in level flight.

▶ ▶ ▶

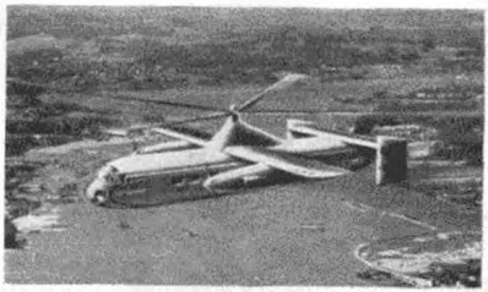
ODDS AND MODS—The shapes of many of our new 'planes have been changing so rapidly in recent months that most model plans and silhouettes are pretty useless. For example :—the Supermarine *Swift* F.4 is very different from the old F.1 prototype. The wing leading edges have followed the air intakes forward, and there is now a much increased sweep-forward on the inner half of each wing. Armament of four 30 mm. cannon is double that of the F.1, and additional ammunition boxes are probably housed in the swept-forward wing roots. Two of the four wing fences fitted for the *Swift's* record dash to Paris in July have disappeared.

Both *Swift* F.3 and F.4 have reheat, and the only

One of the first flying photographs of the Swift F.4, piloted here by Supermarine's Mike Lithgow.

**Mach Number is the ratio of an aircraft's speed to the speed of sound. Speed of sound (Mach 1) at sea level and in moderate temperatures is 760 m.p.h. An aircraft flying 694 m.p.h. at sea level is thus doing Mach .9 (i.e. nine-tenths of 760 m.p.h.).*

external difference seems to be the F.4's " all-flying " tail, with the tailplane geared to move through several degrees in proportion to elevator movement. This " new invention," which goes back at least as far as the Morane Parasol of 1914, helps to give a smooth ride through the sonic barrier.



An artist's impression of the 40-50 seat Fairey Rotodyne helicopter, mentioned below

IT WAS BOUND TO HAPPEN . . . Following the lead of aircraft designers who have started to put tailplanes on " tailless " deltas, the rotating wing boys are now putting fixed wings on helicopters—but it is not as silly as it sounds.

Fairey's started the fashion with their *Rotodyne* projects, which are " convertaplanes " rather than helicopters, designed to combine the advantages of fixed wing and rotating wing aircraft.

For take-off, the *Rotodyne*'s two wing-mounted 3,000 h.p. Eland turboprops drive auxiliary compressors which supply compressed air to pressure-jet burners at each rotor tip, and the aircraft rises vertically like a helicopter. Then, still like a helicopter, the rotor is tilted slightly, and the *Rotodyne* moves forward. At about 100 knots, the auxiliary compressors are de-clutched and the pressure-jets cut out ; the rotor auto-rotates and all the power of the Elands is diverted to the propellers to ensure high forward speed. The result is very like an autogiro, but with half the lift coming from the fixed wings. This off-loads the rotor, making the whole thing safer, more economical and faster than a pure helicopter.

Already the Bristol 173 Mk. 2 (G-AMJI) has sprouted a pair of tandem fixed wings to off-load its rotor in cruising flight, and the habit will almost certainly spread.

The production-type **FAIREY GANNET** has a smaller rear sliding hood than the pre-production prototype WE488. Wing fences are no longer fitted ; but the auxiliary fins are still there, the bomb-bay is longer, radome further back and the fuselage under-skin flattened around the radome. Windows in the " waist " between the forward cockpits are also larger.

STUB WINGS are also the fashion for America's latest bomber designs. The rocket-powered Douglas *Skyrocket* research 'plane set the slide rules clicking when it hit speeds up to 1,238 m.p.h. and a height of 83,235 ft. after being launched at 35,000 ft. from a *Superfort* mother-plane. Its fuselage length is nearly twice its wing span, and designers calculated that a hedge-hopping atom-bomber on the same lines, but with even smaller wings—about the size of the tail-plane of an orthodox aircraft—would be able to skim along supersonically with a turbojet of only some 7,000 lb. thrust.

Practicability of the idea is being tested with the fantastic Douglas X-3 research 'plane, which is so hush that no pictures have been released, although it has been flying many months. Some idea of its handling qualities is given by test pilot Bill Bridgeman's remark to the pilot of an escorting *Sabre* that " it doesn't seem to want to stay in the air." The *Sabre* acted as Bridgeman's eyes during the very hot landing approach, as forward view from the X-3's cockpit is virtually nil. Bridgeman has described the X-3 as " a nasty little beast "—despite which the U.S.A.F. has ordered prototype stub-wing bombers.

New version of the **CANBERRA** is the P.M. Mk.7 (prototype WH773), designed for long-range photo-reconnaissance. Fuselage has been lengthened to make room for additional operational equipment and probably extra fuel ; while the starter fairings at the front of each RA.7 Avon engine are longer than on earlier Marks.

THE VICKERS VALIANT B.2, otherwise known as the *Pathfinder*, hides most of its new features inside a shiny black exterior. It has a longer nose, complete with chin radome, and bogie main wheels which retract back into long, pointed fairings under and behind the wing trailing edge. The second *Valiant* B.1 (WB215) is flying with big fuel tanks slung under its wings like B-17 engine pods.

The prototype Valiant B2 Pathfinder in flight, showing the new undercarriage fairings.

MODEL AIRCRAFT

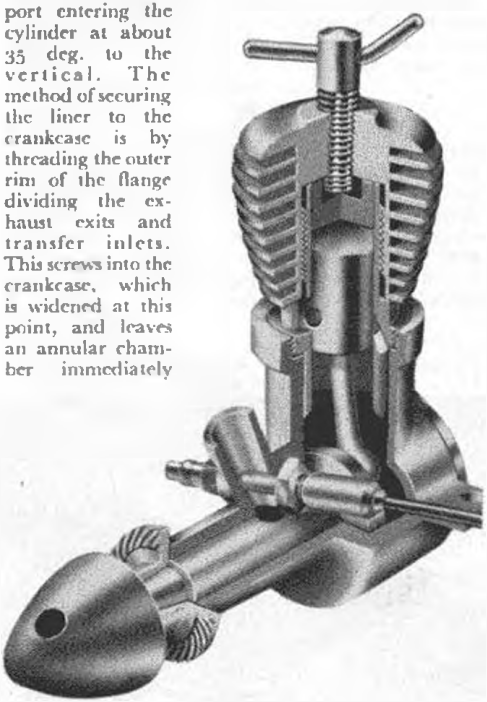
ENGINE TESTS

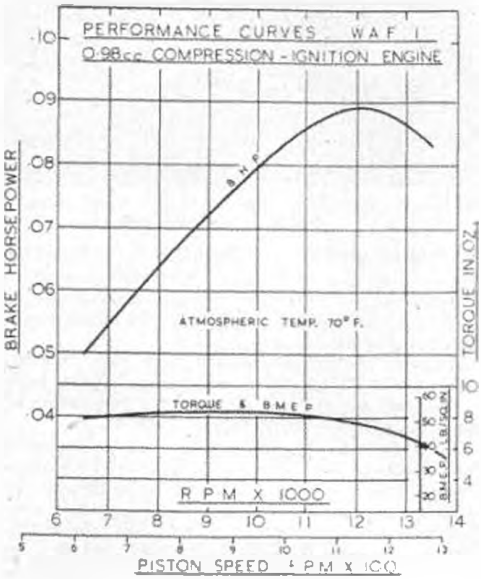
No. 54. The WAF 1 0.98 c.c.

THE WAF 1 is a recent addition to the growing list of German made model diesels, and is produced by Walter Fritsch of Berlin-Lubars. It is a nicely finished unit, easy to handle and surprisingly powerful.

In June of this year we had cause to praise a then new British motor, the Allbon Spitfire. The WAF 1, of practically identical capacity, is, in many respects, similar to the Spitfire, for it has the same good qualities of easy, "primeless" starting, good performance over a useful speed range, smooth working and positive controls and sound construction.

Although both engines are of the shaft-valve, circumferential port layout, the WAF differs appreciably in general design. Firstly, it has an unusual cylinder design in which six square exhaust ports are used and between each of which is a circular transfer port entering the cylinder at about 35 deg. to the vertical. The method of securing the liner to the crankcase is by threading the outer rim of the flange dividing the exhaust exits and transfer inlets. This screws into the crankcase, which is widened at this point, and leaves an annular chamber immediately below the transfer ports. This chamber is then fed by six transfer passages milled in the inside wall of the case. A "square" type shaft valve port is used, such as is often found on American engines.





Whereas the Spitfire has a stroke bore ratio of slightly less than unity, the WAF 1 adheres to a somewhat higher stroke bore ratio of a little less than 1.2 to 1. As a result of this, the engine looks rather tall by present standards, but its weight is not excessive and is, in fact, slightly less than that of the Spitfire.

Specification

Type: Single-cylinder, air-cooled, two-stroke cycle, compression-ignition. Shaft type rotary-valve induction with "square" valve port. Special annular porting system with flat top piston.

Swept Volume: 0.9805 c.c.
Bore: 10.2 mm. Stroke: 12 mm.
Stroke Bore Ratio: 1.176 : 1.
Compression Ratio: variable.
Weight: 2.6 oz.

General Structural Data: Die-cast aluminium alloy crankcase. Screw-in rear cover. Flanged cylinder liner screwed into crankcase, with six exhaust and six transfer ports. Fully machined cylinder barrel screwed on to cylinder liner. Dural connecting-rod with gudgeon-pin pressed into piston. Full-disc (non-counterbalanced) crankshaft. Spray-bar type needle-valve inclined backward and upward. Beam type mounting lugs.

Test Engine Data

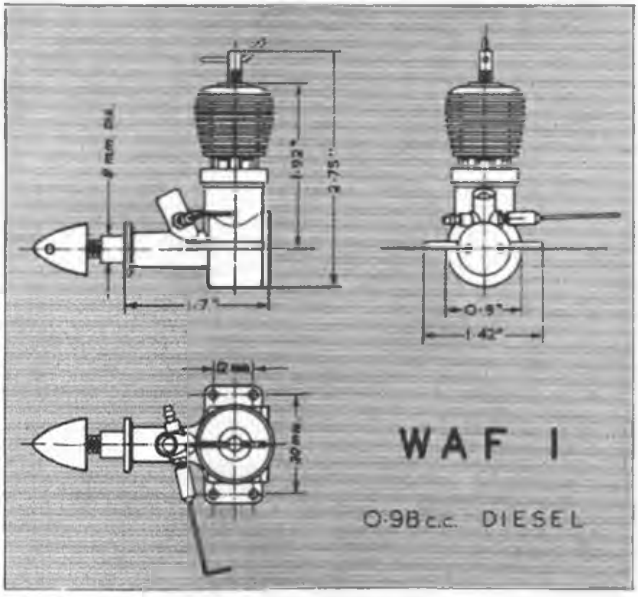
Running time prior to test: Approx. ¾ hr.

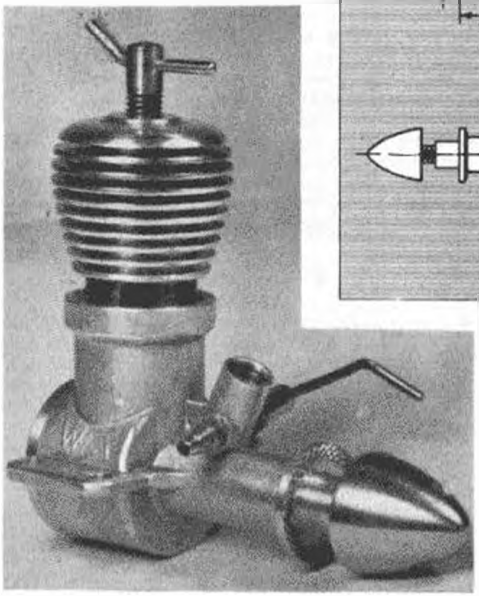
Fuel used: 35 per cent. Ether S.G. .720. 35 per cent. Shell "Royal Standard" kerosene. 30 per cent. Castrol "R." Plus 2 per cent. iso-amyl-nitrite.

Performance

When one is testing so many different engines and thus becomes familiar with all the idiosyncrasies of all kinds and conditions of model aeroplane motors, it becomes all too easy to slip into the error of dismissing any engine which gives one no trouble in starting as "an easy starter" and leaving it at that.

The tester must, however, bear in mind that any engine which is of a type likely to be bought by newcomers to the hobby (and 1 c.c. engines, such as the WAF, are a very popular size for beginners) will not always be treated with the same instinctively correct treatment which he bestows upon it.





Therefore, what really matters is whether the engine remains reasonably easy to start after the needle-valve or compression-lever has been wrongly set, or when too much fuel has entered the crankcase. There are some, otherwise easy-starting, engines which, under such conditions, become extremely critical. On the other hand, there are a few which will stand a certain amount of abuse without becoming impossible to start.

The WAF 1, we are glad to report, belongs to the latter group. Properly handled, it starts easily and quickly after two or three choked turns of the prop. Priming through the exhaust ports is at no time necessary, and a not too severely flooded engine can still be started without delay by slackening off compression until the engine begins to fire. Hand starting (as is usual with a diesel) on a very small prop is a little more difficult, but loading for speeds of up to 10,000 r.p.m. produced no complications.

We found that control response, on the fuel used and on good commercial blends, was good. The contra-piston moves fairly smoothly under the action of the compression lever and there is no tendency to seize in any one position as the engine warms up. The needle-valve is of the ordinary split-sleeve type but holds its settings satisfactorily and, being inclined backwards and slightly upward, keeps one's fingers clear of the prop.—a sensible arrangement which is still found all too infrequently on small shaft-valve motors.

On the torque-reaction dynamometer, the WAF performed very well. Torque developed was well

(*Continued on page* 581)

Model Talk

by Bill Dean

B. H. Coombes (Reading) and his 53 in. span cabin F/F. Powered with inverted Mills 1.3 diesel.

● IN THE October MODEL AIRCRAFT, we put forward a suggestion for the carrying of payload by *all* types of F/F contest models—as a partial solution to the "thermal luck" problem of competition flying. We noted that Northern Area P.R.O. Ken Rutter also came up with a similar idea—specifically for Wakefields—in the very same issue. Most of the modellers with whom we have since discussed this payload scheme are in favour of the general principle, although opinions vary regarding the actual weight percentage to be carried. Bill Farrance likes the idea of ballasting A.2s—his own particular stamping ground—and thinks it would definitely make for fairer glider contests.

★ ★ ★

● AMONG THE many hundreds of models flown at the All Britain Rally at Radlett on September 20th, was a very modest little "flying saucer." Nothing particularly unusual in that of course, but this particular model claimed to be a "reconstruction of a genuine Venusian space-ship." Its builder was Desmond Leslie, who told us that he was the co-author of a new book entitled *Flying Saucers Have Landed*—which has since been published by Werner & Laurie at 12/6. This slim volume is enough to shake even the most hardened sceptic, since it is illustrated with many telephoto pictures of "saucers" and other "space craft." Included in its pages is an exhaustive survey of saucer sightings going back for over three centuries, as well as an account of the work of the U.S. Air Corps "Project Flying Saucer" organisation which has investigated several thousand cases. The highlight of this book consists of an account by George Adamski of a Venusian "saucer" which landed a couple of times near his home in the Californian desert!

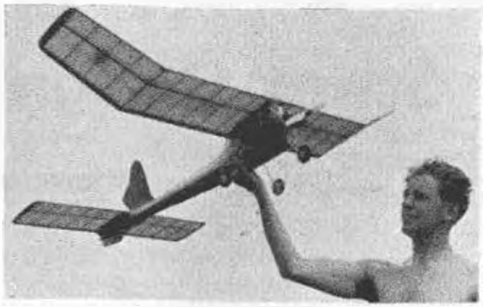
Sid Allen's latest R/C model is equipped with a six reed E.D. receiver—has engine, elevator and rudder control.

★ ★ ★

● MODEL SHOP proprietor Norman Fletcher tells us that C/L interest is flourishing in the West Bromwich area, now that a space has been set aside in one of the local parks especially for the "wing-and-a-string" boys. However, local club activity could be a lot better and from Norman's vantage point behind the counter, he has noted that there are about fifty free-lancers to every club member. Norman is an avid C/L fan himself—his latest being an Amco 3.5 (BB) powered Fairey *Gannett* of 44 in. span.

★ ★ ★

● R. J. COOK has a simple method of operating R/C models singlehanded—he just anchors his *Junior* 60 to the transmitter by a length of cord hooked on to the tailskid, while he checks rudder movement. . . Talking of R/C, that wizard of the beep-box, Sid Allen, now works for the E.D. concern. On a visit to the E.D. factory at Kingston-on-Thames the other day, we learnt that their present production of R/C units exceeds 500 a month—of which no less than 85 per cent. are exported. E.D.'s current engine production figures are equally impressive, totalling 2,400 a month—a third of which go to overseas markets.



Les Hayward (Chingford) and his original PAA load design. E.D. 2.46.

● F/LT. DAVE DAVIDSON tells us that his friend S/Ldr. Eric Cable (former Secretary of the R.A.F.M.A.A.) has returned to this country after a spell of overseas duty. Their reunion has been very brief however—since Dave was due for a Middle East posting this month! We had the pleasure of meeting S/Ldr. R. B. Lord (the man who had the idea of forming the R.A.F.M.A.A. four years ago) at this year's R.A.F. Championships. Until early 1953, this leading R.A.F. modeller had been serving out in Malaya—where he was O.C. Flying at Kuala Lumpur. In which part of the world, he told us, the model fuel bubbles as soon as its uncorked and fly-aways into the surrounding jungle are standard procedure unless ultra-short D T fuses are used!

★ ★ ★

● AN ENGLISHMAN in Paris usually follows the same old sightseeing pattern—the Moulin Rouge, the Eiffel Tower, and so on. We decided to be different when we spent a few days there this summer. Idea was to look up the magazine and kit people and get some news of French modelling activities for "Model Talk." However, after stepping out of the plane, we soon forgot all about our original plans and y'know what—the Moulin Rouge is quite a place! And it wouldn't surprise us if the matchstick chuck-glider we launched from the top of the Eiffel Tower is still going strong!

★ ★ ★

● HAD A letter from old speed-man Shaw out in Toronto—says that he's thinking about taking up R/C, believe it or not! Cyril plans a trip back to England with his wife Heather—early in '54. . . . Jack Hearn of Melbourne was over in this country recently—combining business with pleasure. He told us that "Hearns Hobbies" are soon to start production of their own range of C/L kits in Australia.

★ ★ ★

● IF R.O.G. flights are to be the rule at the remaining 1954 power eliminator, adequate take-off facilities *must* be provided—or failing this, hand launching allowed. At the London area eliminator at Chobham on September 27th, the so-called take-off board consisted of a few all too-narrow pieces of plywood. Also, wasn't it being a little *too* trusting not to check towline lengths at the A.2 eliminator at Chobham? As for holding both the A.2 *and* power eliminators on the same day (five flights in each!)—at least this mistake can be avoided next time.

★ ★ ★

● BILL TICKNER—one of the brightest sparks in the West Essex R/C circus—is now fully recovered from the serious road accident he had in '52 and is back again at his job with Keilkraft. Eddie Keil is also quite fit again after his serious illness. Tells us that although he mainly concentrates on R/C boats nowadays, he still flies model planes occasionally, including pylon types of course!

★ ★ ★

● RUMOUR HAS it that N.H. clubsters are on the look out for a new set of witch doctors to handle their weather next year—after their washed-out '53 Gala Day! . . . There seems to be a tendency towards bigger and better ducted fan jobs of late—a good example being Basil Brooks' 25 oz., Elfin 2.49 powered *Lavochkin*, which he flew at the All Britain Rally.

★ ★ ★

● WITH THIS December helping of "Model Talk," goes our sincere wishes for a Happy Christmas and good flying in '54—to modelling friends everywhere.

New Aspects of Stunt Design

Part 2

Bob Palmer's "Mars" set for take-off on a winning flight at a Californian contest

THE "standard size" stunt model as now produced in the U.S.A. is about 50 in. span, 500 sq. in. wing area and weighs around 40 oz., these dimensions being chosen to suit an engine of approximately 5 c.c. (.29-.35 cu. in.) swept volume. It can be safely said that the number of designs coming within this approximate specification now exceed all other American types combined.

One of the reasons for the popularity of this size model, is to be found in the fact that there are many engines which are particularly well suited to stunt work, within this capacity group. The most outstanding of these is the Fox 35 which was, in fact, expressly developed for stunt use and has a number of design features which render it better suited to stunt work than other engines intended for wider and less specialised applications. There is also a .29 version of this engine. Other U.S. engines which have proved well adapted to stunt work include the K. & B. Torpedo .29 and .31 and the Veco .29 and .31 models.

ACCENT ON POWER
by
P. G. F. CHINN

We thus find that it is in models belonging to this capacity class that the new trends are most pronounced. Formerly, most of the leading U.S. stunt exponents used .60 cu. in. (10 c.c.) engines, but very few motors of this capacity, now in production, are at all well suited to stunt work and the later, stunt, version of the Fox 59 is about the only example still favoured. Again, at the opposite end of the scale, there seems to be little enthusiasm for stunters in the .19 cu. in. and smaller capacities.

In Australia, the situation appears to be much the same and, despite the availability there of smaller (diesel) motors suitable for stunt work, much emphasis is still on the 5-10 c.c. classes. In fact, there has been sufficient demand for a good engine coming within this capacity group to prompt Gordon Burford (manufacturer of the well-known "Gee-Bee" and Sabre engines) to embark on the production of a .49 cu. in. (8.2 c.c.) glow-plug motor specifically intended for stunt use. We have lately received one of these engines from Australia, incidentally, and it appears fully to justify the enthusiastic reception which it is reported to have had in Australia.

Although the new stunt trends have been mainly confined to the United States and Australia, however, they are beginning to spread elsewhere and one country where their influence is now obvious is Germany.

The Germans now have an appreciable number of good engines in the under 3.5 c.c. classes and even while these were being developed, the engines which they imported (mostly British) were almost exclusively in these capacity classes. It is not surprising, therefore, to find that their stunt model designs have been developed primarily for 3.5 c.c. and 2.5 c.c. engines.

The trend towards larger models for these engine sizes was noted in Germany some time ago. For example, *Delphin*, an otherwise conventional, non-flapped stunt model designed, by Gunther Bodemann, for 2-2.5 c.c. engines and the Webra 2.46 in particular, spanned 37 in. and had about 260 sq. in. wing area. More recently, Biesterfeld's *Champion* and *Panther* designs have shown an obvious acceptance of transatlantic ideas in regard to model sizes for a given engine capacity and in regard to the use of full-span flaps, while still retaining some distinctive features of their own. We therefore felt justified in including these two designs in Table II, particularly as they cover the hitherto neglected 2.5-5.0 c.c. group.

In this table we have assembled data for eight recent stunt designs. No attempt has been made to select only those which seem to follow any set pattern of characteristics, for the design characteristics of some of the leading stunters still reveal a certain conflict of opinion among stunt model designers. Most of these differences concern only details, but there are also one or two differences which are of a more basic nature.

Some Stunt Designs Analysed

Table II, therefore, shows what might be termed "variations on a theme." Firstly, we have Bob Palmer's well-known *Smoothie* which, as this designer has been responsible for many leading developments in stunt model layout and has contributed so much to recent trends, can be taken as our starting point.

Of the same span (51 in.) and almost identical area, is Howard Johnson's *Cougar*. The big difference between these two models is in the flap area used, although both originate from what was once

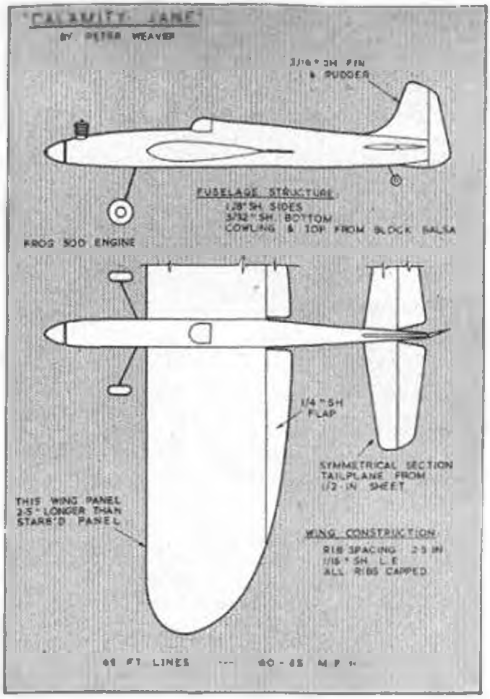
the same school of design. Palmer, it will be seen, uses a flap area of only 8.8 per cent. of the total wing area. Johnson's model has almost three times this amount with a 25 per cent. flap area. His model is also heavier, giving a wing loading of 1-1½ oz./sq. ft. more. Both models, however, have considerably heavier wing loadings than Peter Weaver's *Calamity Jane*. Weaver appears to have adopted the ultra light loadings featured by Palmer's earlier *Chief* design, although, in most other respects —as one might expect from the close co-operation in which these two designers have worked—*Jane* and *Smoothie* are very similar.

The Australian model is a mid-wing rather than a low-wing layout, but uses exactly the same proportion of flap area. It is fractionally smaller than the American model but, examining the structure of the two models, it is frankly, a little difficult to account for a ten ounce difference in the quoted weights. Both machines use symmetrical section tailplanes cut from thick sheet balsa but with the centres cut out and ribs inserted for lightness.

One of Bob Palmer's latest designs is *Mars*. This model goes a stage further in the pursuit of realism, and has a number of features which, while they do not affect the basic Palmer design concept, are somewhat unusual. It has, for example, a tricycle undercarriage, this having been adopted to permit a smoother and more realistic (and thus point-gaining) take-off and landing technique. The Fox 35 motor is side-mounted (few American stunt models have motors so disposed) in a "horizontally-opposed" or "applecheek" type enclosed cowling and, most unusual in a stunt job, it has twin fins.

The total effect is an attractive model along *Ercoupe* lines. The seeming emphasis on what we might call a "lateral" treatment ("flat" engine and twin fins), rather than the "longitudinal" or "vertical" (thin fuselage, vertical engine and central fin) disguises the short tail moment which is the appearance bugbear of all stunt models.

In other respects the model follows current trends and has, of course, the longer inboard wing panel and same basic trim setup. It does differ from Palmer's other design in one important respect, however, and that is in the flaps, the area of which is now increased to approximately 15.7 per cent. If we may quote from Palmer's published comments



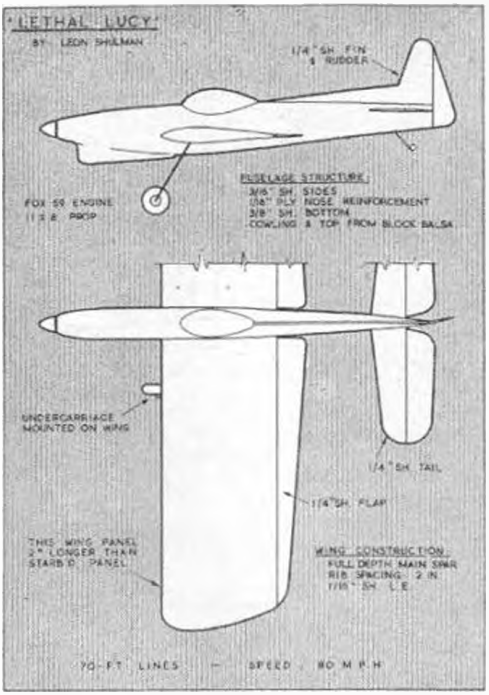
in *Model Airplane News*, these flaps are the "ideal size and should move 30-35 degrees, with the elevator moving 40-45 degrees."

While Palmer has succeeded, with *Mars*, in creating a high performance model of near-scale appearance from an entirely original design, Johnson's *Mustang* uses an existing full size prototype (the North American *Mustang* fighter, of course) suitably modified to achieve a similar result. This model is put out in kit form, and while some of the constructional methods appear a little unusual, the departures from scale dimensions which have, of course, been necessary in the interests of performance, have been particularly well carried out. The finished product, while it will deceive no one familiar with the full-size *Mustang*, is suitably

TABLE II—FLAP-EQUIPPED STUNT MODELS

Model	*Smoothie*	*Mars*	*Calamity Jane*	*Lethal Lucy*	*Cougar*	*Mustang*	*Panther*	*Champion*
Designer	R. Palmer (U.S.A.)	R. Palmer (U.S.A.)	P. Weaver (Australia)	L. Shulman (U.S.A.)	H. Johnson (U.S.A.)	H. Johnson (U.S.A.)	F. Biesterfeld (Germany)	F. Biesterfeld (Germany)
Wingspan, in.	51	49	50	52	51	48	63	55.4
Wing Area, sq. in.	495	404	465	500	412.5	372	466	329
Flap area, sq. in.	48	75	45	77	137.5	84	64	65
Total wing area, sq. in. ...	543	479	510	577	550	456	530	394
Flap area, per cent. of total	8.8	15.7	8.8	13.3	25	18.4	12.1	16.5
Overall length, in.	35.5	33.25	35.5	36	36.5	36.25	30.3	27.4
Total weight, oz.	38-40	—	28	—	44	40	30-32	20.5
Recommended max. cu. in. & min. engine capacities c.c.	0.29-0.35 5.0-6.0	0.19-0.35 3.5-6.0	0.20-0.30 3.5-5.0	0.49-0.60 8.0-10.0	0.29-0.35 5.0-6.0	0.29-0.35 5.0-6.0	0.15-0.30 2.5-5.0	0.15 2.5
Usual engine employed ...	Veco 29311	Fox 35	Frog 500	Fox 59	Fox 35	Fox 35	Amco 88 3.5	Taifun 2.47
Wing loading, oz./sq. ft. ...	10.0-10.6	9-10*	7.9	12-13*	11.55	12.63	8.1-8.7	7.5

* — Estimated figures



impressive and the considerably enlarged flying surfaces do not look unduly out of place.

The wing area of this model is slightly below average and since the finished weight is in the region of 2½ lb., the wing loading is about 10 per cent. up on that of the same designer's *Cougar* but is still by no means excessive. Flaps are, of course, used. An inverted engine installation is featured, which the *Mustang* cowling hides quite effectively. Incidentally, in Johnson's *Cougar* (one of the best-looking stunters yet produced) the *Mustang* influence is clearly discernible, particularly in the square cut, tapered wing and tail surfaces and wing-mounted undercarriage. It has, however, the advantage of 20 per cent. greater wing area and a cleaner fuselage design.

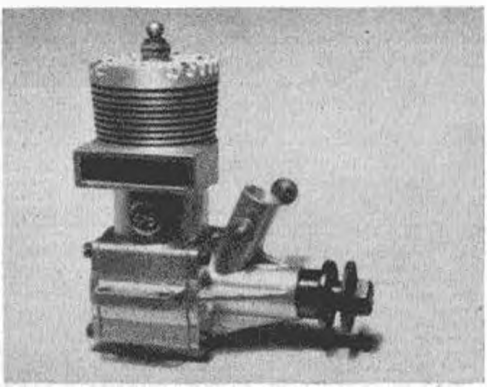
The most noticeable feature of the two German models by F. W. Biesterfeld is their exceptionally high aspect ratio. The 2.5 c.c. model has a span of no less than 55 in., while the 3.5 c.c. design spans 63 in., equalling aspect ratios of approximately 7.5 and 7.8 respectively, as compared with the usual figure of about 5 : 1.

Actually, of course, the areas used by these models are very large and, in this respect, they go a stage further than current U.S. trends. The *Panther* is primarily intended for 3.5 c.c. motors—the original had a BB 3.5 Amco (although anything between an E.D. 2.46 and a Frog " 500 " is specified) yet it has as much area as the average American 5-6 c.c. model. The smaller *Champion* is in proportion to this, being 400 sq. in. for a 2.5 c.c. motor. As befits lower-powered models, the wing-loadings are somewhat lower, but whether this slight exaggeration of current trends is entirely justified seems to be a debatable point. They do, however, support the views expressed by Peter Weaver (see Part I) regarding wing-loadings and the ability of a large, flapped-equipped model to stunt on motors of relatively moderate power. On the other hand, the level flight speeds quoted by the designer for these two models are somewhat low: 70-80 km.p.h. (43.5-49.7 m.p.h.) for the *Panther* and 60-70 km.p.h. (37.2-43.5 m.p.h.) for the *Champion*, and we would imagine that both are a good deal happier in calm conditions than in the windy weather which is all too frequently a feature of British contests.

At the extreme opposite end of the scale we have Leon Shulman's *Lethal Lucy*. Shulman who was well known to British enthusiasts for his free-flight designs and, in particular, the *Banshee* which was so successful in British contest during the first two or three post-war seasons, has, in this new stunt model, compromised old ideas of loadings with current ideas of layout and trim. The model has the full-span flaps, larger inboard wing, offset rudder and c.g. pivot-point position and relationship of the typical " modern " stunter, the only exception being the lack of sweepback on the lead-out wires.

Although the model is only very slightly above average size, however, Shulman has elected to use a Fox .59 for power. This, turning an 11 × 8 prop instead of the usual 9 × 6 (.29 engine) or 10 × 6 (Fox .35) takes the model round at 80 m.p.h. and would, no doubt, fly it a good deal faster, but for the fact that the model is trimmed to exert a considerable line-pull—enough, on one occasion, Shulman writes, to necessitate, after two seven-minute contest flights, a massage to his " flying-arm " !

The model is reported to be unusually steady in a wind, but it will have been noted that the use of such high power (the Fox 59 is rated at approximately 1.00 b.h.p., and probably delivers around .8 b.h.p. on the prop used), is at some variance with the



A new engine designed especially for stunt work, the 8 c.c Australian " Sabre 49 "

opinions expressed by other leading designers. Notions as to what constitutes a " moderate speed " as opposed to a " high speed " for stunting, seem to vary a good deal, but Shulman admits that it is only a really good pilot who can win with a model capable of 80 m.p.h. or more.

Summary of Design Requirements

To end this brief review, we will summarise the design characteristics of our modern stunt model, taking those requirements which appear to be generally agreed upon.

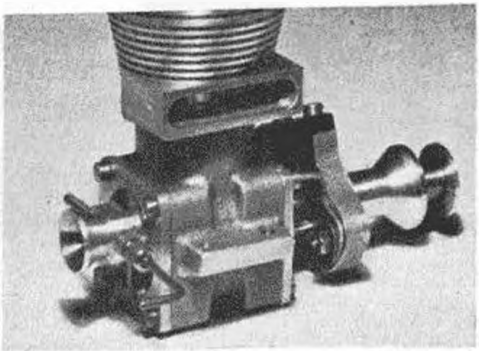
Size and Engine. For .29-.35 cu. in. (5-6 c.c.) engines, use 500 sq. in. total wing area. For .19 cu. in. or 3.5 c.c. engines, use 400 sq. in. For .15 cu. in. or 2.5 c.c., use 300 sq. in.

Wing Loading and Weight. This can range from 8 oz./sq. ft. for a 2.5 c.c. model to about 10 oz. sq. ft. for a 5 c.c. model. Respective weights for 300, 400 and 500 sq. in. wing areas will, therefore, be around 17 oz., 25 oz. and 36 oz.

Flaps. Flap areas of approximately 15 per cent. of the wing area, with standard short-coupled layouts using elevator areas of 40-45 per cent. are adequate. Use a 15 per cent. thick wing section and a 10 per cent. symmetrical section tailplane rather than a plain flat-plate tail.

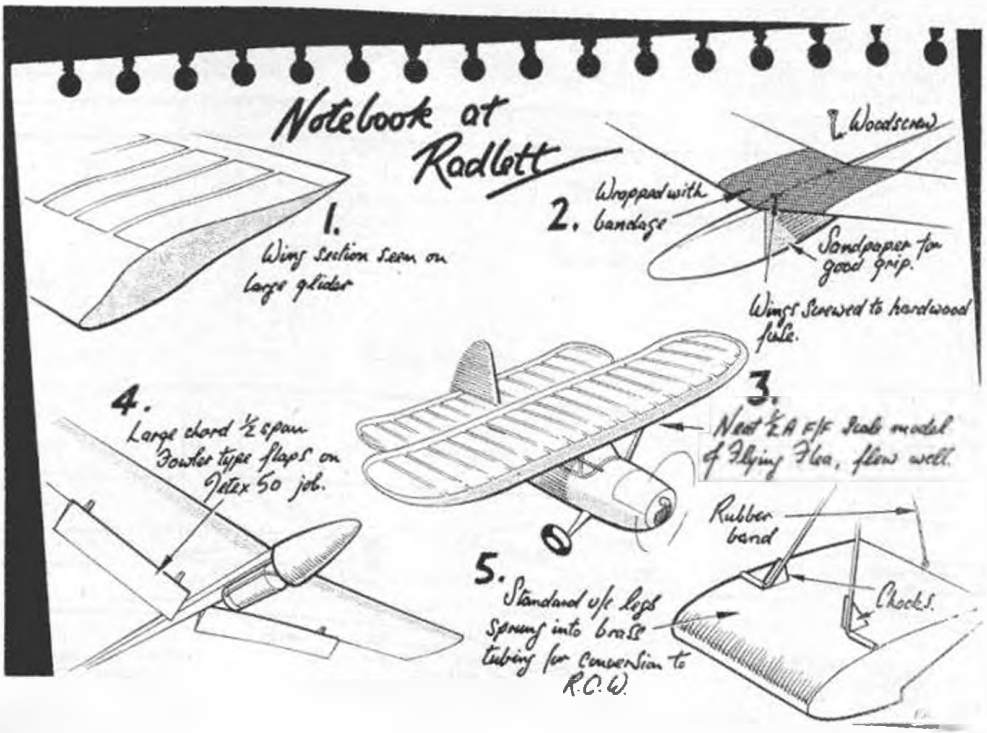
Offsets. To lift the weight of the control-lines, the inner wing should be made approximately 8 per cent. greater area than the outer panel. Add sufficient ballast to the outer wing tip to restore the c.g. to the centre of the fuselage. To maintain line tension, a rudder offset of about 10 deg., plus 2 deg. backward rake to the leadout wires, should be used. Do not use motor offset.

C.G. and Pivot-Point Location. This is most important. The pivot point should be located at between 26 and 30 per cent. chord. The c.g. should then be kept within the boundary of 20 to 23 per cent. chord.



Engine Quiz . . . . . No. 1

Answer to Quiz No. 3 : D.C. 350 diesel.



TOM

TOM & JERRY

TWO BEGINNER'S MODELS

by VIC DUBERY

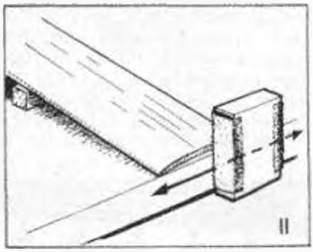
& JERRY

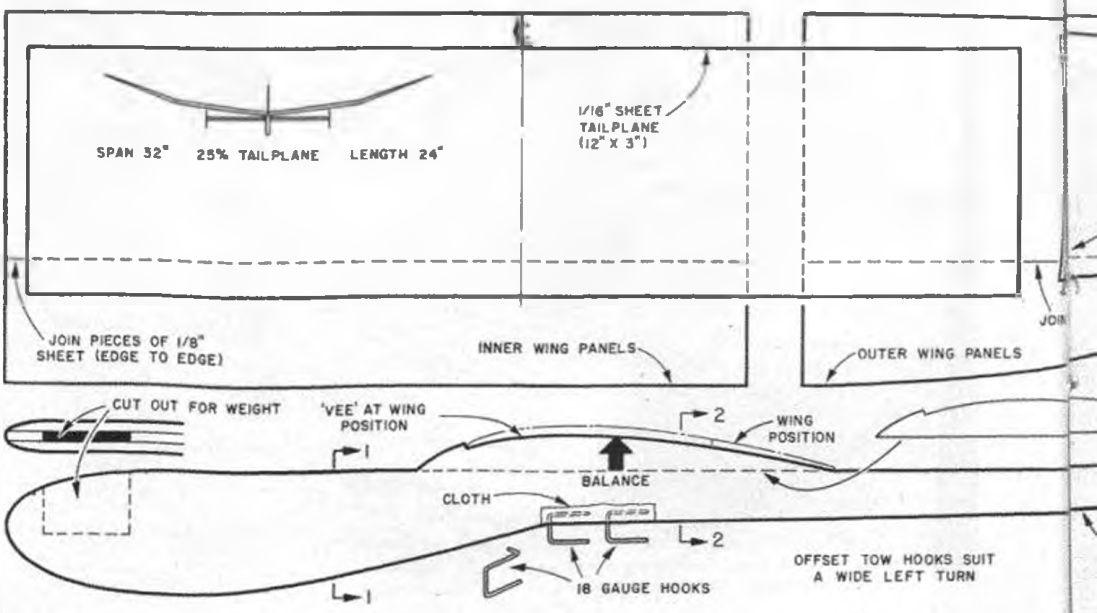
(by courtesy M.G.M. Pictures Ltd).

THESE two models are not only "easy-build" subjects, they are meant to introduce the sport flier without much experience to the technique of contest flying without the expense and elaboration of the usual type of contest model. Although small they are suitable for contests. The glider for instance, was entered in the Pilcher Cup and made flights of 1 : 25, 1 : 35 and 1 : 45. These non-thermal times off a 50-metre line are not to be sneezed at!

Build the glider first; it is much easier than the rubber model, and it flies even if badly adjusted. It can be made on a Saturday afternoon, if you follow these stage-by-stage instructions.

1. Sand all sheet balsa smooth.
2. Cut a 30 in. length of ⅛ in. × 3 in. and a 30 in. length of ⅛ in. × 1½ in. and join, making sure that the joining edges are perfectly true.
3. Mark off, and cut out the four wing panels as shown on the plan.
4. Carve, and sand each to a thin airfoil section—be sure you make left and right outer panels, not two left ones!
5. Cut from scrap ⅛ in. the dummy ribs for wing shaping.
6. Dope a strip on the under-side of each panel and wet a similar strip on top as shown. Pin down over dummy ribs to dry.
7. While wing panels are drying cut out tailplane and fins from ⅛ in. sheet. Round off leading and trailing edges.
8. Cut tailplane dummy ribs from scrap.
9. Dope and wet tailplane as for wing and pin down over dummy ribs to dry.
10. Coat end-grain with cement, also bottom edges of central fin.
11. When the wing is dry take it, a panel at a time and prop up





one end of panel one inch. The other end projecting over table edge as shown. Sand the projecting edge with a sanding block held strictly vertical, to produce "straight" end as viewed from above.

12. Continue as in step 11 for outer panels and both ends of inner panels.

13. Coat end-grain of these panels with cement and leave to dry.

14. Cut out the fuselage pieces as shown and cement the laminations together. Leave to dry.

15. Cement the central and tip fins to the tailplane if it is now properly dried in its airfoil curve. Add dethermaliser pin with plenty of cement.

16. If wing pre-cementing is now dry place one inner panel flat on the bench. Coat end of one outer panel with cement and join the two together, propping outer panel up 2 in. at the tip. Adjust with fingers, so that airfoil sections at joint match together properly.

17. Repeat 16 for other half-wing. Leave both to dry.

18. Trim up and sand fuselage. Round edges, except wing and tail saddle. Make sure top of wing saddle is a neat vee depression by using sandpaper. Fit tow-hooks (left hand side), tail pin, and 2 in. of cotton attached to extreme rear of fuselage with a loop at the end for the D/T hold-down.

19. Strap on tailplane with rubber bands round fuselage over fin, and on to fin pin, trapping cotton loop. This is the "dethermalised" position. Now use a small rubber band to hold down. A fuse goes through this.

20. If dry, bring wing halves together with a liberal coat of cement at centre-section, propping up 1 in. at polyhedral breaks. Leave to dry.

21. Add lead to the weight box in fuselage nose until the fuselage and tail assembly balances at point indicated. Seal in with cement and scrap balsa, finishing with sandpaper.

22. Give whole model a coat of banana oil. If strictly for flying just give a light sanding with worn fine sandpaper to smooth. This will be quite adequate aerodynamically, *not* waterproof. If you don't want maximum performance finish any way you like. Do not use *shrinking dope* as it will undo your wing camber. Cellulose tape at wing leading edges and joints (and especially at wing leading and trailing edges at the centre section) improves the strength.

23. Check for warps and steam out any that have appeared.

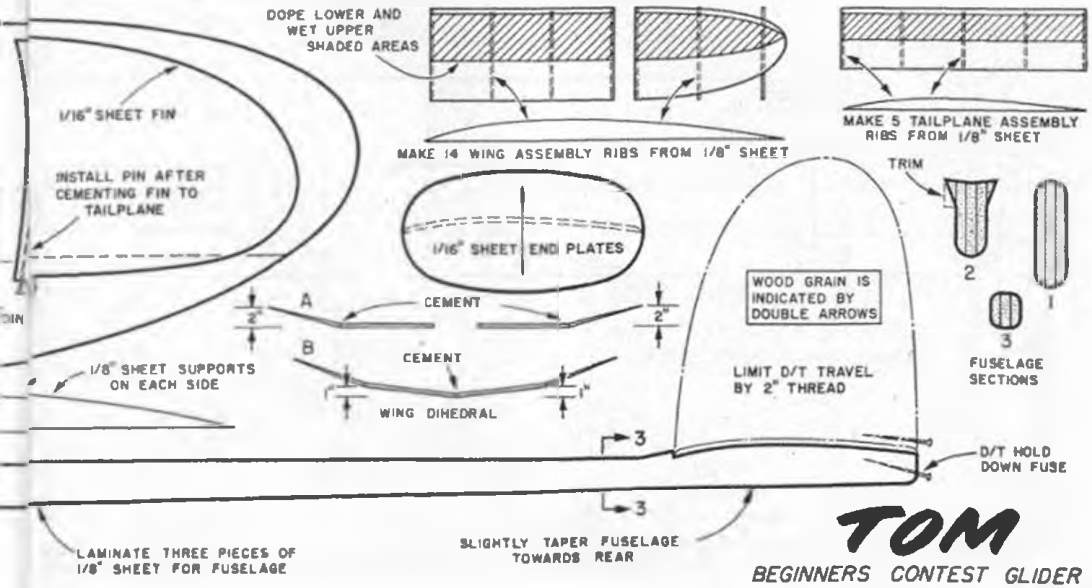
24. Wait for calm weather and then test glide. Cement little pieces of paper under the trailing edge of the tailplane until it flies in a series of gentle stalls. Now offset whole tail unit about ¼ in. to give left turn (i.e. leading edge of fin to the right). If it glides in a wide circle mark the position of tailplane on fuselage.

25. Try towing up using a *light* thread line, and *take it easy*.

26. Read everything you can find about the finer points of trimming, and the best of luck! If you launch on 50 metres on a fine day and lose your model because of no D/T, don't blame me!

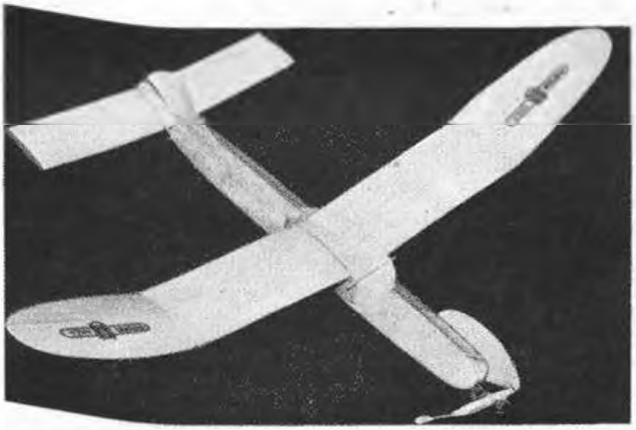
Materials Required

Two sheets of 36 in. × 3 in. × ¼ in. One of 18 in. × 3 in. × ⅛ in. balsa. Small bottle of banana oil, tube of cement, cellulose tape. Two in. of 18-s.w.g. wire. Scrap linen, thread and lead.



TOM

BEGINNERS CONTEST GLIDER



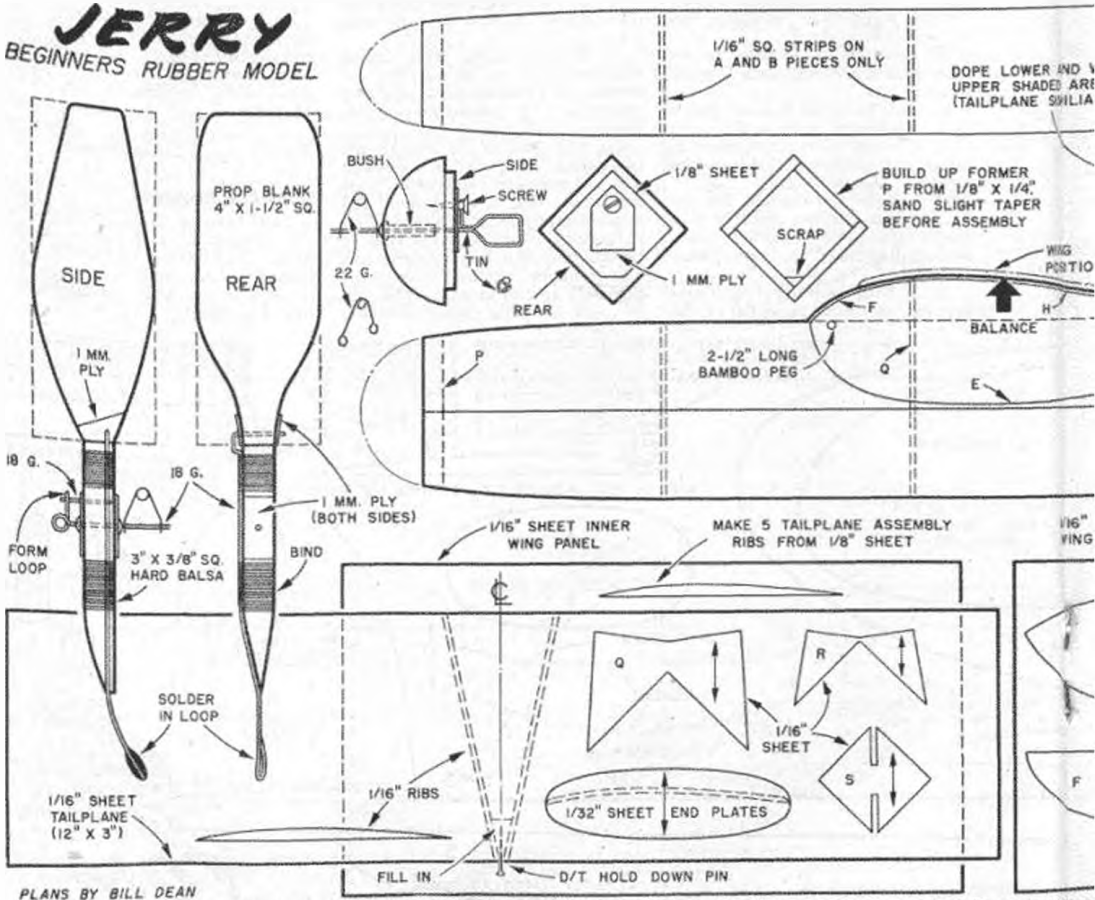
HOW TO MAKE THE RUBBER MODEL

1. The wing and tail is produced in a similar manner to the glider, but there is no carving on the wing.

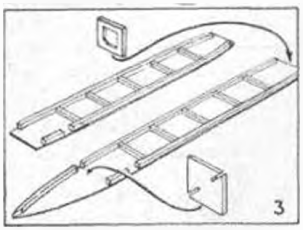
2. Construct the nose former *P*, and cut out tail former *S*.

3. Cut out two of each type of fuselage side, and cement $\frac{1}{4}$ in. square pieces to one of each type *A* and *B*. Join these by $\frac{1}{4}$ in. square spacers and leave to dry.

4. Cut out top and bottom fin, and pylon formers *Q* and *R* from $\frac{1}{4}$ in. sheet, pylon covering pieces *E* to *H* from 1/32 in. sheet. *Note direction of grain* before tracing any pattern on the balsa.



FULL SIZE PLANS OF THESE TWO MODELS ON ONE SHEET ARE OBTAINABLE FROM YOUR DEALER, OR BY POST

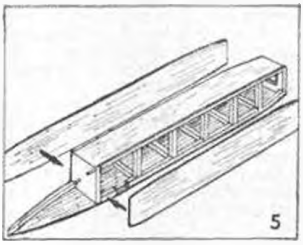


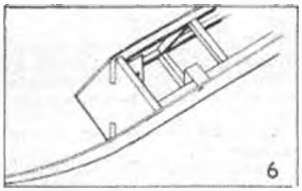
5. Join nose of fuselage with nose former *P*, tail with tail former *S* and hold these parts with rubber bands while drying.

6. Make rear peg blocks as shown on plan. Hold fuselage as a "diamond" with short side uppermost to understand how to fit these pieces. When you are sure cement them in place. Identify which "side" to put the other fuselage short piece *D*.

7. Smear cement on nose former edge and edges of fuselage sides to first spacer, and carefully put in place this short fuselage side, holding with rubber bands at nose and first spacer.

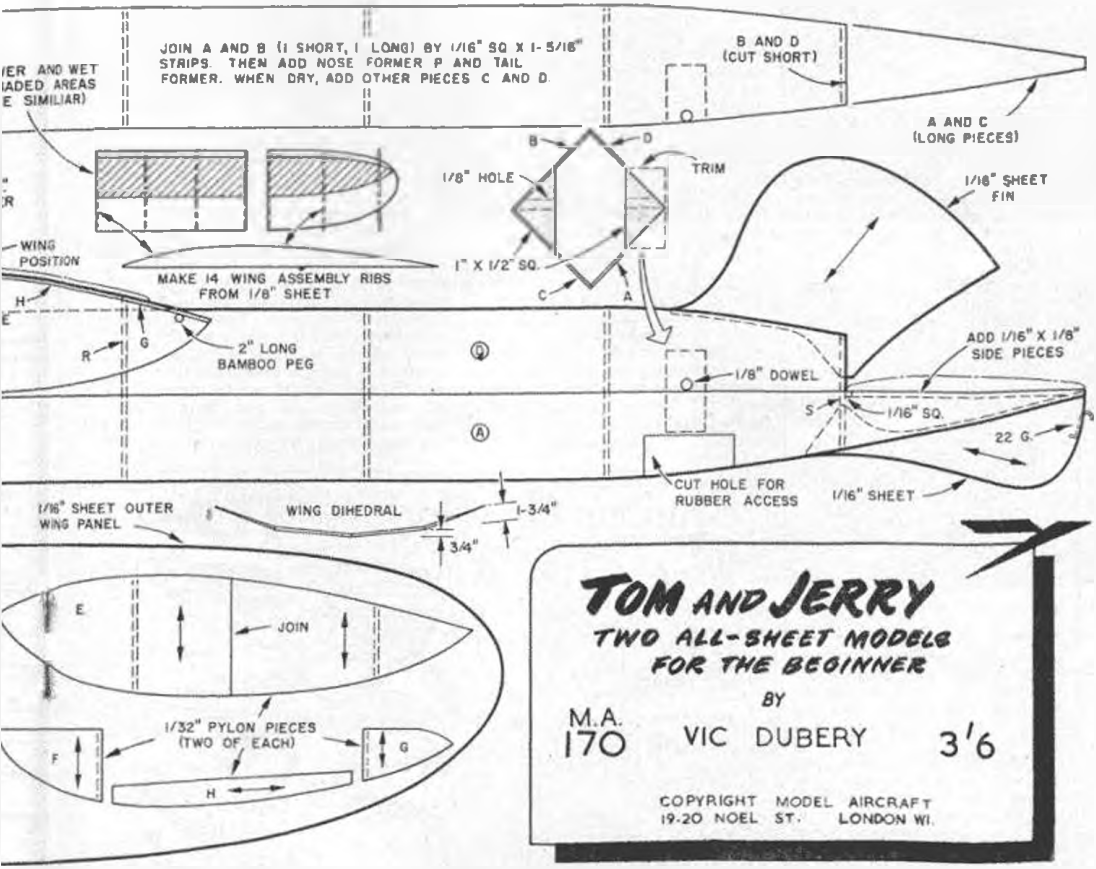
(*continued overleaf*)





Materials Required

Balsa: 36 in. × 4 in. × $\frac{1}{8}$ in., 36 in. × 3 in. × $\frac{1}{8}$ in., 36 in. × 3 in. × 1/32 in. 18 in. × 3 in. × 1/32 in., 3 in. × $\frac{1}{2}$ in. × $\frac{1}{2}$ in., 6 in. 1$\frac{1}{2}$ in. × 1$\frac{1}{2}$ in. Scraps $\frac{1}{8}$ in. balsa, 1 mm. ply, tinplate, solder, washers, 18-S.W.G. wire 12 in. long, 22-S.W.G. for spring bamboo, 2 in. × $\frac{1}{8}$ in. (rear peg,) 4$\frac{1}{2}$ in. × $\frac{1}{8}$ in. (wing pegs).



TOM AND JERRY

TWO ALL-SHEET MODELS FOR THE BEGINNER

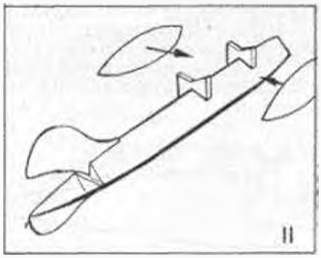
BY

M.A. 170 VIC DUBERY 3'6

8. When dry, remove second rubber band and add cement all along the edges and spacers to secure this side, holding down with rubber bands.

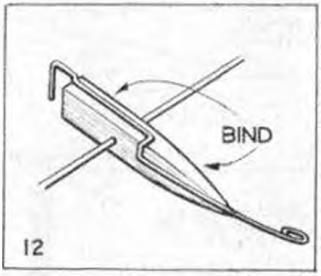
9. Repeat for the long side remaining.

10. Cut $\frac{1}{8}$ in. slots carefully on edge of "diamond" where fins are fixed. Cement fins in place. Pierce through at rear peg positions, clean up and cut hole to get at rubber. Add tail seat, reinforcing side pieces and D/T pin.



11. Add pylon formers *Q* and *R* and side pieces *E*. Curve front of side pieces round, trimming if necessary and cement in place. Treat rear of pylon similarly, then add top pieces *F*, *G* and *H*. Pierce through and cement $\frac{1}{8}$ in. round bamboo wing pegs.

12. Cut out airscrew hub as shown, bend wire hinge-cum-counterbalance to shape and bind to left side of hub. Add 1 mm. ply front and back bearing plates and bush with brass tube.



13. Cut out prop blank accurately and add 1 mm. ply hinge pieces. While these are drying make the nose block, and add 1 mm. ply backing, then the stop screw and bush.

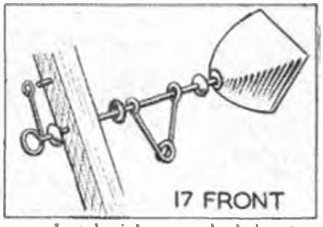
14. Bore 18-S.W.G. hole in prop hinge pieces at point shown. You can now carve the prop. Identify the "underside" and carve a "flat" across from corner to corner to make a right-hand leading edge when viewed from the tip.

15. Carve the top side now, so that the result is a thin "Clark Y" section like the wing of the glider. Sand smooth, give two coats of banana oil sanding between and slip on to hub. No collar is necessary as the blade stays on under power and when stopped.

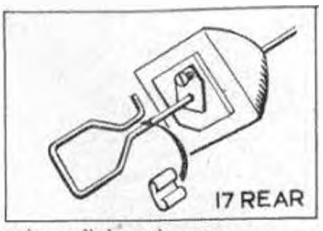
16. Using a temporary prop-shaft balance the prop by adding solder to the loop of wire at the extremity of the counterbalance.

17. Bend the prop-shaft starting at the winding loop, add a cup washer, then the hub, then the thrust washer, tensioner spring, another washer and the nose block, finally bending hook to shape shown. The securing piece is made as shown on the plan from tinplate. This piece is essential otherwise the stop does not work.

18. Adjust the stop position first of all by holding both winding and rubber hooks with pliers and twisting so that the hub lies horizontal, blade on left when stop arm is on left of screw.



19. Instal eight strands $\frac{1}{4}$ in. × 1/24 in. rubber 2 ft. long (600 turns safe maximum) and wind on a few turns. Allow to unwind until stop works. "Bounce" fuselage lightly in the hand to check that rubber is not slack. If it is open out tensioner



spring a little and repeat.

20. As with the glider, a coat of banana oil can be given, with a light sanding. Reinforce wing centre section leading and trailing edges with cellulose tape.

21. With prop folded and rubber tensioned check that c.g. is where shown if not, add weight to nose block.

23. Test glide as for glider, but warp fin to obtain gentle right turn when you have obtained the "slight stall" in straight flight.

24. Give 100 turns by winder and launch. If the model turns left, or goes straight, add 1/32 right sidethrust, regardless of whether it stalls. As soon as a right turn appears, then start correcting the power-stall with 1/32 downthrust at a time. Now try 200 turns. If the model turns in to the right, or does not climb steeply take off a little downthrust. Now work up gradually to about 500 turns. Remember that a model trimmed to make the most of full turns is quite likely to stall when flown on a few turns. The correct technique with this model is a quick spiral *upwards* in about 40-50 sec., to 200 feet giving a total flight time of 2½ min. if it weighs about 2¾ oz. all-up. If you have a light model increase rubber length to not more than 2½ ft. (750 turns).

England wins the

U.K. Challenge Match

REPORTED BY NORMAN MARCUS

ON October 11th the third of the United Kingdom Challenge Match series was held. This year Northern Ireland acted as host, and the event was flown off at Toome aerodrome, which is about 30 miles north-west of Belfast. The weather was dull, with a strong wind blowing, which carried models about a mile in 3 min.

The Scottish team was picked from three elimination contests; the Irish team consisted of members from the Belfast and Strabane clubs, and the English team, intended to be made up of the World Championship's fliers, had to be supplemented (about 50 per cent.) by reserves. Wales was not represented.

In the rubber event, the O'Donnells performed with their usual skill. J. O'Donnell actually made two attempts at his first flight before swopping models, the reserve job doing three maximums. H. O'Donnell unfortunately, lost one model, but completed his flights with a reserve—and then we nearly lost Hughie ! ! Dave Waters had a considerable amount of repair work to do to his fuselage. Both he and J. Blackmore well supported the O'Donnell's triple maxes to give England an easy win. The Irish team were very consistent excepting P. McCauley, who had the misfortune to break a wing, and in spite of three attempts he failed to record a first flight. W. Shanks, of Scotland, lost his model, and the rest of the Scottish team were unlucky.

The power gave England another easy win, thanks to G. Upson and S. Lanfranchi. Upson overran on his first flight, the model being lost; so he flew his small reserve model to make a time. Fortunately, the Elfin 2.49 model was returned for his 1st two flights. N. Marcus found his Elfin crankcase cracked when trying to start for his first flight. An Irish lad came to the rescue with a new engine, but this had a stuck contra piston, and would only run at half speed. The Scottish and Irish lads performed steadily, but with the exception of J. Bell, the times were rather low.

The glider event was a real tussle; there was not much more than a minute between England and Ireland in any round. Thanks to Tony Brooks, the British A.2 team sailed home by a short towline ! L. Gray and G. Drew (Ireland), and P. Russell (Scotland) flew very well, but lacked support. Of all the events, however, the individual times in the glider were definitely the most consistent.

Thus England won all three classes and hence retained the Whitney-Straight Cup. Ireland came second in rubber and glider, and third in the power, and Scotland placed second in the power, and third in both rubber and glider events.

The match was reported in several of the local daily papers, one calling the models "weekend buzz planes." It was stated that with "England winning for the third consecutive year, they have strengthened their grip on the triple crown !" "Must have their sports mixed up somewhere ! !

★

TEAM TOTALS

Rubber

England	28 : 25
Ireland	20 : 36
Scotland	10 : 41

Power

England	23 : 40
Scotland	15 : 39
Ireland	13 : 35

Glider

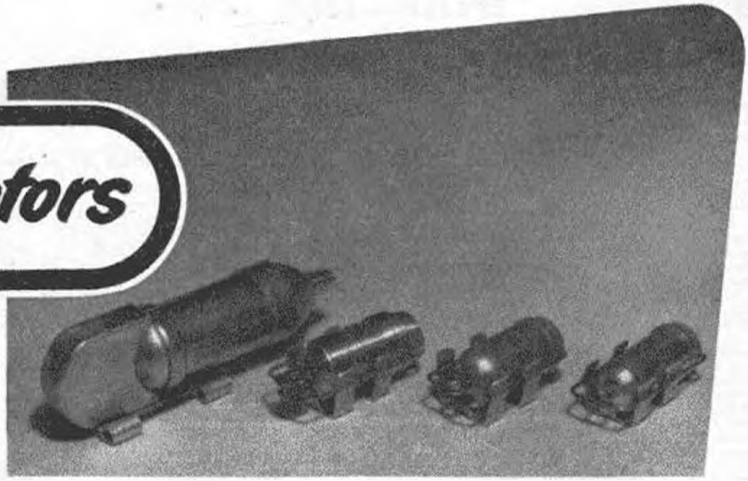
England	21 : 33
Ireland	20 : 44
Scotland	16 : 17

FINAL POSITIONS

1st.	England	15 points
2nd.	Ireland	8 points
3rd.	Scotland	7 points

1. Tony Brooks scored the best glider aggregate for England.
2. Gordon Drew launching for L. Gray, who made the best Irish glider time.
3. John O'Donnell winding for his first maximum while George Upson holds. The latter made the best power aggregate and the only max. in this category.
4. Silvio Lanfranchi prepares for his third flight.
5. W. McConachie, of Scotland, launches his Wakefield.

Jetex motors



Four popular Jetex units. The "Jetmaster," 50, 50B, and "Atom 35," These units have a simplified safety-clip system to speed reloading.

The MA Beginners Course Part 17

WITH the advent of jet propelled full-scale aircraft, it became obvious that models having a similar method of propulsion would soon be in demand by sections of the aero-modelling fraternity —particularly by those interested in flying scale models of modern military aircraft.

While piston-engined aircraft could have their counterpart in miniature piston-engined models, however, the problem of duplicating the modern turbojet engine for model use, even in a most simplified form, is much more complex and, at the present time at least, the possibility of any manufacturer introducing a cheap, easy to-operate, small gas turbine motor for model aircraft, seems very remote.

Until 1948, the only really successful type of miniature jet engine was the petrol-driven pulse-jet of which the American "Dynajet" became the outstanding example. These engines operate on the same principle as the pulse-jet motors which powered the German V.1 "Buzz-bombs." They are, unfortunately, too large, too powerful and too noisy for most free-flight applications and, in fact, are restricted to C/L use only by the S.M.A.E. rules for safety reasons. Their main use is for speed work and, with static thrust figures in excess of 4 lb., speeds of more than 150 m.p.h. have been reached.

On the other hand, the Jetex motor has held an unrivalled position since its introduction more than five years ago. It is unique among model propulsion systems and nothing like it has been produced even in America, where so much attention has been given to model power units. The secret of the Jetex motor is in its fuel, which is in the form of a solid pellet and is produced especially for the Jetex motor by Messrs. Imperial Chemical Industries. The result is a safe, quiet, easy-to-operate model power unit which is efficient in quite small sizes and can be used to power free-flight models of the most popular types and sizes.

The Jetex motor is a very simple affair and consists, basically, of a cylindrical aluminium case or body into which the fuel pellet is loaded. A length of fuse, or igniter-wick as it is called, is then partly coiled up and is maintained in contact with the fuel charge by means of a small disc of wire gauze pressed down upon it. The motor has a spring-loaded end cap with a jet hole in the centre, through which the gases generated by the burning fuel are emitted and which, in turn, provide the thrust.

A number of different types of Jetex units are now available. Supplementing the "100," "200" and "350" models which were the original Jetex design, are a number of more recent introductions: the ultra-lightweight "50" and "Atom 35" models, the "Jetmaster" unit and the new "Scorpion" competition motor, which should be available by the time these words appear in print. All Jetex motors work on exactly the same principle but some of the more recent additions to the range, notably the "Jetmaster," "50B" and "Scorpion," have been designed to operate with "augmenter tubes." The augmenter tube is, in effect, a large diameter tail-pipe of thin aluminium into which the gases from the jet are discharged. The mouth of the tube is, however, bell shaped so that the Jetex unit positioned there does not restrict the passage of air into the tube from the front. On the "Jetmaster" unit, the augmenter tube is responsible for increasing the thrust from approximately 1¾ oz. to 2¼ oz. It is ideal for scale type installations such as those found on single engined fighters of the *Sabre, Hunter* and *Swift* type and, in fact, Messrs. Wilmot, Mansour & Co., the makers of Jetex, are marketing very fine kits of the latter two aircraft especially for use with the "Jetmaster" motor and augmenter tube.

Jetex motors, like any other type of power unit, need a certain amount of care and attention and it

is the primary purpose of this article to deal with this question of operation and maintenance.

Firstly, let us look at the standard Jetex unit dismantled. Fig. 2 shows a "350" unit. Illustrated are the mounting clip which is fitted permanently to the model (an alternative method of mounting is by means of a single bolt on to which the Jetex unit is screwed), the case with its five safety spring clips, the end cap with jet fitted, the igniter wick and (just visible) the gauze disc. Also shown are the three fuel pellets which is the maximum charge that can be accommodated by the "350" unit.

The purpose of the spring clips is not only to hold the end cap in position, but to act as a safety-valve. The gas generated by the burning charge accumulates in the free space behind the end cap and acquires considerable pressure. Release of this pressure takes place, of course, through the jet, but should the jet become blocked while the charge is burning, the resultant pressure would tend to burst the casing, unless some kind of relief valve were used and this is achieved by means of the spring clips, which allow the end cap to lift if the pressure becomes excessive.

The "safety-valve" arrangement on the "35," "50," "Jetmaster" and "Scorpion" models is just the same in principle but differs a little in design. As can be seen in Fig. 3 a single clip is used (the "Scorpion" has two, however) which greatly speeds re-loading and, instead of coil springs, small leaf springs are used at the top of the clip.

Absolute cleanliness is of the utmost importance with all Jetex units. The jet and interior of the case and end cap must be kept clean of deposits at all times and the end cap seals must be kept clean and in good condition and replaced at adequate intervals.

The manufacturers are most emphatic on this question of cleanliness and comment as follows: "It is absolutely essential to remove any form of carbon from the ends of the main cases in order to ensure that the end caps will seal properly. Any reverse of thrust due to faulty sealing of the motor will result in a loss of power, especially when the motor is used in conjunction with an augmenter tube. The action of the fuel causes a form of corrosion which should be washed off with hot soapy water at the conclusion of each day's flying. If the motor is not cleaned and is left for some considerable period, the corrosion set up will make the motor very difficult to dismantle."

It is also necessary to keep the motor clean between flights. The fuel pellets are a fairly close fit in the case and if the black deposit left on the case walls by the combustion of the previous charges is allowed to build up, difficulty will be experienced in inserting fresh pellets. There is no need to clean the walls down to the bare metal, but sufficient deposit should be removed to enable the charge to slide in easily. The tool to use is the wood scraper provided with each motor. (Fig. 4).

About every three firings, the jet should also be cleaned by passing a pipe cleaner (preferably wet) through the jet. (Fig. 5). With the new type units, however, it should be noted that the jet must be cleaned after *every* flight. With the "Jetmaster" this is especially important and a specially shaped double-ended reamer is supplied with which the jet

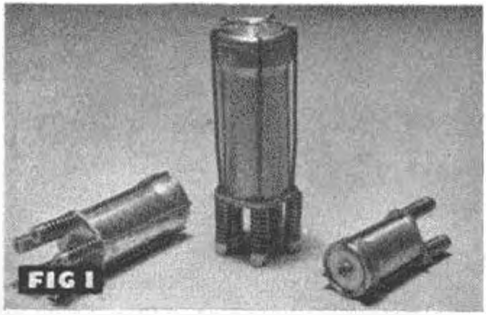


FIG 1

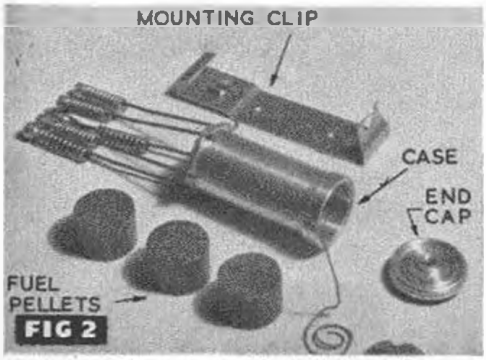


FIG 2

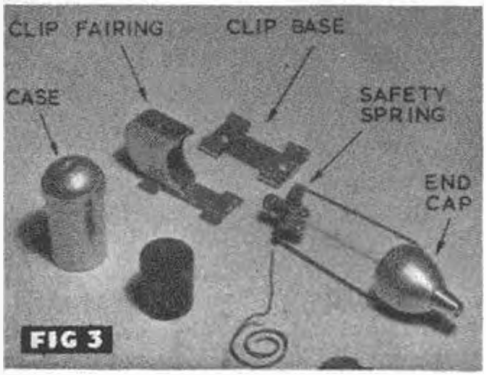


FIG 3

1. *Jetex 200, 350 and 100 units, showing the coil-spring safety clips which are a feature of these models.*
2. *The 350 unit dismantled, showing the main component parts.*
3. *The "Jetmaster" unit dismantled. This unit can also be used with the Jetex augmenter tube.*

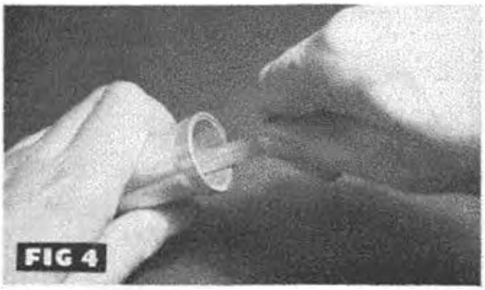


FIG 4

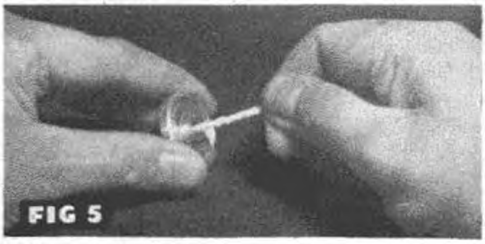


FIG 5

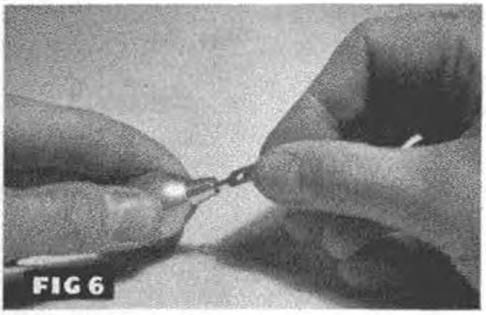


FIG 6


FIG 7

4. *Clearing the inside of the motor casing with a wood scraper*

5. *Cleaning the jet by means of a pipe cleaner.*

6. *For the "Jetmaster" a special jet reamer is provided and must be used after every flight.*

7. *It is vitally important to keep the end cap rim clean and the sealing washer in good condition.*

must be cleaned from both sides. (Fig. 6). With the simple "35" and "50" models, a wire rod of the correct diameter is supplied for this purpose.

The end caps of the "100," "200" and "350" type motors must be kept free of deposit around the flanges (Fig. 7) and these should be regularly inspected and cleaned. If only a small amount of carbon is allowed to remain between the flange faces, this will allow an escape of gas which will be made worse with each subsequent firing.

With the new type units, it is most important to follow the maker's recommendations regarding the removal of the cap from the case. After releasing the spring clip, the case and cap should be rotated against each other before being taken apart. (Fig. 8). This has a dual function. Firstly, if there is any tendency for the two components to adhere together, there is less likelihood of damaging the asbestos seal fitted to the cap. Secondly, rotating the edge of the case against the sealing washer will help to maintain a good gas-tight joint with the end cap.

In this latter connection, it is most important to see that this edge (which is chamfered on some units) is kept perfectly clean. It is recommended that the edge be examined after each firing and that any black deposit found thereon is carefully removed with a piece of fine sandpaper. (Fig. 9).

Every Jetex motor outfit includes a set of spare asbestos sealing washers. After a number of firings, the asbestos washer on the end cap will deteriorate and a new one should be fitted. Leakage due to the deterioration of the washer is easily detected by the presence of black marks around the edges of the cap or casing.

With the "Jetmaster" unit, a different type of washer is used after the first half-dozen or so firings. A thin, white asbestos washer is first used (the motor is supplied with this fitted) but after the parts have become bedded in with use, this is replaced by one of the thicker graphited asbestos washers provided. When the motor is used again with the new washer, there will be a tendency for the chamfered edge to bond itself to the graphited surface. Remember, therefore, to rotate the two parts together as previously described. (Fig. 8). This should then ensure a period of trouble-free operation.

There is one other point which needs emphasising with the "Jetmaster." This concerns the top shield or flange which locates the sealing washer. (Fig. 10). It is recommended that this is removed and cleaned off after *every other* flight, otherwise there is a tendency for this to stick to the cap lining, thus making it difficult or even impossible to replace the all-important cap sealing washer.

Giving any Jetex motor a really thorough clean after each flying session is likely to pay dividends. By a "thorough" clean we mean dismantling and removing all sealing washers (and, in the case of the larger motors, removing the detachable jets as well) and scrubbing all metal parts in hot water using a soap or detergent. It is absolutely essential to do this if you are putting the motor aside for any length of time. Failure to do so may result in your finding the motor badly corroded, with the jet

impossible to remove and washers impossible to replace. We have seen a Jetex motor completely ruined in a remarkably short space of time by this sort of neglect.

Some modellers give insufficient attention to the reloading of a Jetex motor. It is important to coil the igniter-wick so that it is distributed as evenly as possible over the surface of the fuel pellet. Two turns are sufficient provided that the coils do not touch each other. The wick must be in close contact with the charge to ignite it properly and should therefore be pressed down firmly—but taking care not to chip or break the wick compound away from its copper wire core.

The standard method of ignition, as described in the maker's leaflets, is to lead the free end of the wick through the jet, where about ¼ in. is left protruding for subsequent ignition. However, the latest method (which is approved by the makers) is to coil the free end on *top* of the gauze (i.e., in addition to being coiled *underneath* the gauze). After replacing the end cap, a short length of wick is then inserted through the jet from the outside so that it touches the coils inside. (Fig. 11).

This method ensures that the wick is quickly ejected through the jet and it thus reduces the possibility of a partly choked jet due to the copper core not being initially burnt through and ejected. An additional advantage is that should the short length of wick fail to ignite the coiled wick inside, it is a much simpler matter to insert another short length, instead of having to remove and dismantle the motor.

Jetex motors have made a very worthwhile contribution to model progress. There is a wide variety of interesting model types which can be powered by these motors. Your Jetex is well worth a little care and attention. Properly maintained it will last almost indefinitely since all the wearing parts can be replaced easily and cheaply.

In conclusion, a word about augmenter tubes. These are in two types: the original one-piece tube, as made for the Jetmaster, and the new sectional pattern in which short, interlocking lengths of seamless tube are fitted together.

When building a model for one of these, the possibility of using the actual tube as the main structural member of the after part of the fuselage should not be overlooked. Formers can be slid into position on the tube and stringers added. Most important, however, is the nose section and particular attention should be paid to mounting and intake design.

The motor should be positively located, as described in the leaflet issued with the tube, but should, of course, be readily accessible for cleaning, etc. Regarding intake design, complicated ducting of the air to the tube is not essential but the area of the intake opening and passage should be greater than the unrestricted entry area at the mouth of the tube.

Ignition of these ducted type units is best performed via the tailpipe. Jetmaster units are supplied with a wire rod for applying fuse or a cigarette to the wick, while the 50 outfit has special wood igniter sticks for this purpose.

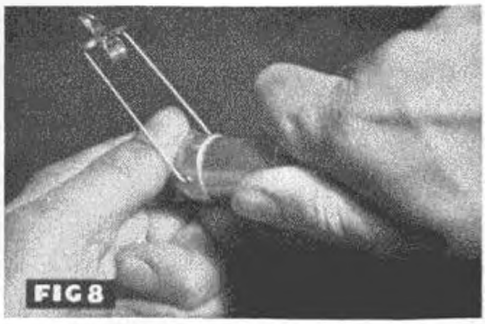


FIG 8

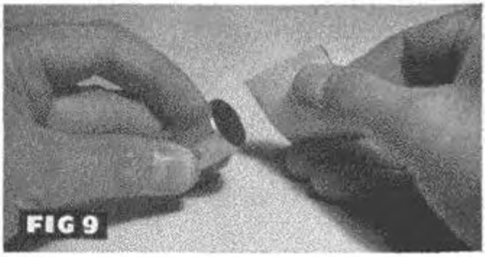


FIG 9

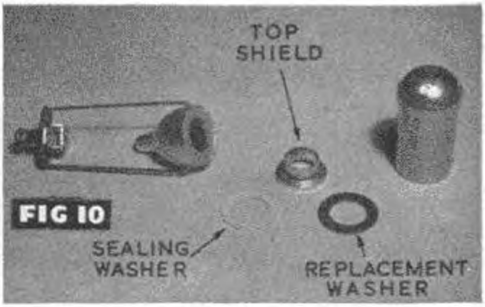


FIG 10


FIG 11

8. *A rotating movement is used to separate case and end-cap to ensure that a good joint is maintained.*

9. *Cleaning off the chamfered edge of the Jetmaster main case.*

10. *After every other flight, the top shield of the "Jetmaster" should be removed and cleaned.*

11. *The latest method of ignition is to insert a separate length of igniter wick through the jet from the outside.*

Just for a change, take a look at —

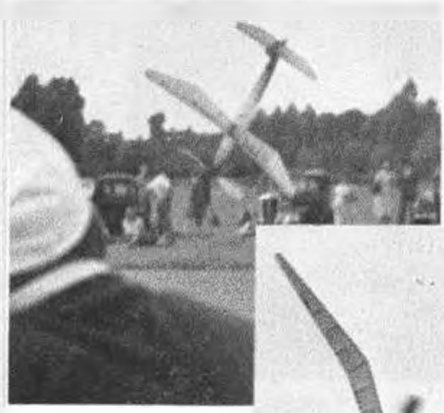
the ones that

Throughout the flying season we publish photographs of the contest highlights, but what of the many pictures we take that (for one reason or another) never get into print ! Sorting through these poor outcasts recently we selected a few taken during the past year and decided to let them stand on their own feet. Here they are, presented for no other reason than that we like them. We hope you do, too.

Photographs by Stuart Seager, Geoff Lewis, E. F. H. Cosh and A. F. Houlberg. Cameras used (for those who are interested) were a Leica, two Super-Ikontas and a Microcord.

International Corridor. At Cranfield, modellers from all over the world lost no time in getting to know one another

Conference. Wakefield exponents Ted Evans and Ray Chesterton squat on the Digby tarmac at the Trials.



Heads ! Sandham of Argentina had bad luck at Cranfield with his unusual Wakefield. Following a dive after take-off the wreckage rose again like a helicopter, and hovered long enough for another photograph !

Power Duration. Caught at the Nationals, R Kendall sends a surging power model toward the clouds

got away . .

Contrast. A young model retriever at the A.2 trials at Kidlington, finds the full-size article worth watching

U/S. "Hank" Hundleby, at Wiesbaden U.S.A.F. base, makes himself at home with American cap and cigar. The large dark gentleman seems unconcerned

Statuesque. Roberto Bacchi of Italy awaits his turn at the Cranfield processing table

The Long Watches of the Night. . . . Hour after hour, lap after lap—team races often go on long after the sun has set, though rarely as dramatically as this

No Comment. The time: presentation of souvenirs at Cranfield. The lady: Mme. Adele Lefort of France. The gentlemen: three of the American team. Their expressions. . . . !

Choir Practice. Maxie Coote, standing on a convenient table, conducts community singing at the Cranfield post-contest party.

Books for Christmas

ACROSS THE SPACE FRONTIER. *Edited by Cornelius Ryan.* Sidgewick & Jackson Ltd. 21s.

Interplanetary travel has arrived! There's no doubt about it; it's just a matter of time—and money! We have been convinced by this fascinating book that the technical problems involved have been overcome and journeys into space are now a practical possibility.

The book is an expansion of a series of articles which appeared in the American *Collier's* magazine, and is the work of nearly a dozen experts in the various specialised sciences involved in the vast project. The basic scheme is to establish a "space-station"—an artificial satellite moving in an orbit around the earth, 1,075 miles above its surface. How this objective is to be achieved and how the space-station can be used as a base for further celestial exploration, forms one of the most absorbing pieces of semi-scientific literature we have read for some time. We say "semi-scientific" deliberately, for it is certainly not a dry technical thesis, clogged with calculus and confusion. It was written originally for a popular magazine and is therefore written so that most laymen (and certainly all modellers!) will have no difficulty in following the wealth of logical reasoning it contains. Indeed, nothing seems to have been forgotten or glossed over; every possible aspect and problem has been clearly thought out and solution evolved.

The presentation, too, is most attractive. There are several full-colour plates and numerous line drawings to illustrate the points raised and really bring the whole project to life. In all, a first-class book on a very topical subject.

S.P.S.

EAGLE BOOK OF AIRCRAFT. *By John W. R. Taylor.* Hulton Press Ltd., London. 10s. 6d.

There have been many books which, like this one, tell the story of flight—from the legendary Daedalus to the present day. Very few have the instant appeal of John Taylor's latest volume and the high standard of technical accuracy.

The book is divided into three main sections. The first deals with the general history of aviation in all its forms—from wax wings to V.2 rockets—and makes exciting reading. The stories of pioneers such as A. V. Roe, whose rubber powered models of 1907 have led directly to the "Vulcan" 4-jet delta of today, cannot but appeal to all.

Part two, "The 'How and Why' of Flying," describes the modern way of things. The creation—yes, creation—of a modern jet, how it is built, tested and developed into a safe, efficient machine and operated by Air Force or air line—all this and much more is covered. Of particular value is a clear, well diagrammed section on how an aircraft works—a chapter which could well be classed as "compulsory study" for all young model designers.

The third and final section of the book is a comprehensive review of modern practice. It contains a brief (to a model enthusiast) chapter on model aircraft in which particular emphasis is placed on the part which models can—and do—play in full-size development.

All in all this volume is a "must" for the bookcase—for aircraft fiends from 8 to 80! J.R.V.

FEATHERED WINGS. *By Anthony Jack.* Methuen & Co. 15s.

As a town dweller it is only on rare occasions that the opportunity occurs to watch birds in flight. But there are few experiences to beat the wonderment of watching a hawk maintaining a steady position by the subtle movements, of, it seems, almost individual feathers in a current of air sweeping up a hillside.

A great many books have been published about species of birds and their habits but very little has been written on how birds fly. In "Feathered Wings" Anthony Jack adds some useful notes in this little explored field. As an ex-R.A.F. pilot it is easy to see how the author, also an ex-R.A.F. pilot, makes use of this training in theory of flight and meteorology, but as the training was sound and as he is selective in applying his knowledge to his subject the results are good.

The impression is given, however, that although the book reaches to the extents of the author's knowledge, it hardly more than scratches the surface of its subject. This impression is upheld when the author writes on certain topics in a quaintly naive fashion, "but why, I do not know?"

The book is generally easy to read and well illustrated with bold line drawings and reproductions of first class bird photographs. G.M.L.

ABC MILITARY AIRCRAFT RECOGNITION, ABC CIVIL AIRCRAFT RECOGNITION and ABC CIVIL AIRCRAFT MARKINGS *By John W. R. Taylor.* Ian Allen Ltd. 2s. 6d.

A hundred military aeroplanes, both British and American are illustrated in a profusion of photographs and silhouettes in the first of these practical booklets; and over this number are presented in "ABC Civil Aircraft Recognition."

In these two handbooks aircraft specifications and recognition features are produced with a clarity not often found in this type of publication. The comments which the author devotes to each plane, show clear cut knowledge and are notable for their lack of the hackneyed terms so frequently seen.

In "Civil Aircraft Markings," a hundred and two aircraft are presented in the same efficient style. The identification insignias of all important airlines throughout the world with the registration numbers of their aircraft are added to an imposing list of civilian registered planes in this country.

All three books are alphabetically indexed with a view to streamlined reference. T.M.J.

GREMLINS...

OR WHY YOU CLOCK 1:47

by P. Sayers

I HEARD two aeromodellers talking at a club meeting. Leaving out the swearwords, it went something like this.

"That modified *Lawnmower* of yours doesn't seem to go very well, old man, does it?"

"Oh, I don't know, old man, I reckon I can count on a steady three and a half minutes every time. That's not on full turns, of course."

"I don't want to seem to carp, old man, but three and a half minutes isn't a very edifying aggregate, is it, old man?"

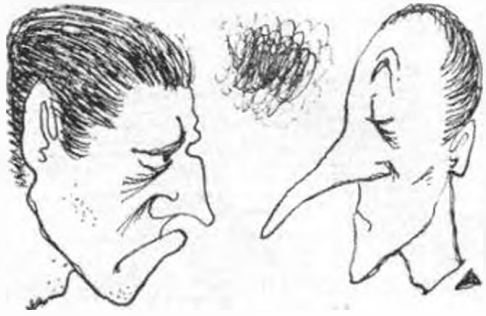
"I meant three and a half minutes per flight, old man, not per aggregate. Since I improved the design by making a new-section wing there's no holding it. You just bash on a few turns, let it loose and wait for the D/T to drop it at three minutes. Child's play."

"That isn't exactly the impression I got at the last Area do, old man. If I remember rightly you got one forty-seven in the first round—"

"I don't think anybody except you thought that flight was a fair representation of performance, old man. It was the biggest downdraught ever seen in these parts, as several people—"

"And on the second flight you were so livid with rage you broke your motor, old man."

"Not at all, old man. Just struggling against circumstances. I have not yet completely ruled out the possibility of sabotage and am having my lubricant analysed at the chemists for traces of mineral oil. No doubt that's a shock to some people, old man, although—"



"Are you by any chance making any particular allegations, old man? Because if you think—"

"Nobody mentioned any names, old man. But if there is any mineral oil in that bottle somebody is going to find boot-marks on his longerons, old man."

As they say in parliamentary reports, the debate continued. The chairman eventually separated them with the heavy end of an A2 fuselage and silence reigned once more. Broken only by the high-pitched chatter of about fifty other aeromodellers that is.

Was there anything in this conversation? You've all heard it so often before, or something similar. Your acquaintance in the middle of a contest comes up with a face as long as a toothpick. It turns out he did a short trim flight just before the contest and got a max. And the subsequent contest flight? One forty-seven.

Some people really do seem to be haunted by malevolent gremlins who scotch all their efforts. If they fly power models, they do wonderful flights the day before the contest, while the gremlins, leering cynically, sit swinging their little red legs on the model box. In the contest itself the gremlins form up in threes on the starboard wing and—timber!

Or they get a grip on the timer trigger so that the unfortunate aeromodeller does a series of maximum flights with one-second excess engine runs. After two fruitless journeys to the far side of the airfield in rapid succession he's so stupefied with fatigue and rage that the gremlins leave him alone on the third attempt. He tampers with the timer himself and promptly gets an engine run of either three seconds or two minutes.

In rubber flying the gremlins are more subtle. Occasionally, of course, they get brutal, particularly in Wakefield-type contests where r.o.g. is necessary. Little tricks like hanging from the starboard wingtip on take-off, or gnawing with their sharp pointed teeth through the prop blade which the aeromodeller is holding, produce hilarious results. But usually, as I said, they're more subtle.

They know, with their inquisitive prying little dispositions, that rubber fliers are often rather studious characters, given to pondering on the more

mysterious aspects of model flight. They have seen in print (because they read the model magazines with their three beady little eyes) comprehensive charts and diagrams and graphs showing still air performance and the effect of thermals and so on. They deal with the rubber flier psychologically. They know that if they use skyhooks on his model once in a while, even in damp evening air, he will not be so naive as to be bamboozled. They can hear the tick of his stopwatch and they know his methods. So they attach skyhooks to the model not just once, but consistently, over a whole evening's flying.

The luckless victim, his pulse racing and his head reeling, sees his model do consecutive flights of 4 : 49, 5 : 01, 4 : 58, 5 : 07 and 5 : 11 in still air and can hardly believe his senses. Moving in a series of jerks, he goes home and writes a conservative article about five-minute rubber models for the model magazines (not this one, of course). This is published and the day it appears in black and white he gets 1 : 47, 1 : 47 and 1 : 47 in a widely attended and well-reported contest. The mental hospitals are full of people like this.

It's quite evident from the overall contest results over a period that if the ordinary aeromodeller concentrates on one type and develops it and trims it and really gets to know it, in two or three years he can reach a pretty high standard. All he needs then for real success is to get rid of his gremlins, and if he does that he can't go wrong.

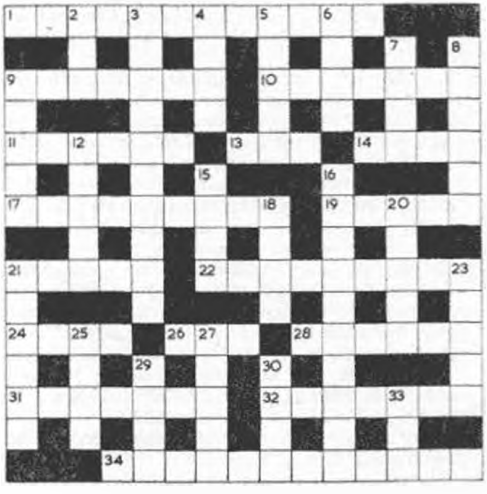
I've seen this happen often. An aeromodeller rises from obscurity like a shooting star and wins contest after contest. For a season, or sometimes two seasons, he wins so many cups that his wife uses them to cook the vegetables in. He leaves screwdrivers on the back of his model and still gets maximums. He forgets his D/T and birds peck his tail fixing hand off at maximum time. He even falls down ditches during recovery and emerges smelling of violets.

Then—zonk ! ! He starts getting one-forty seven again. The gremlins have moved back in and he's had it.

"And how" I can hear you asking yourselves; "How is it possible for a mere aeromodeller to know all this ? " It isn't. I'm a gremlin.

Christmas Crossword

BY S. C. PHILLIPS



ACROSS

1. This M.A. model must thunder round ! (3, 9).
9. Streamlined modeller ? (7).
10. Lateral control (7).
11 and 13. Sounds like a cool method of propulsion ! (6, 3).
14. Aeromodellers' parent body (4).
17. Gives longitudinal stability (9).
19. Does yours accelerate on a fast take-off ? (5).
21. Should not be an aeromodeller's complaint (5).
22. If unsuccessful, this M.A. model might be followed by the bailiff ! (9).
24. If your boss won't give it, a thermal might ! (4).
26. A measuring unit for the R/C modeller (3).
28. And this must be a current interest for all R/C fans (6).
31. Necessary decoration for models of R.A.F. aircraft (7).
32. Few aircraft have more than two (7).
34. Inebriated ecclesiastic ? (M.A. model) (8, 4).

DOWN

2. With insufficient dihedral a wing will sometimes—— (3).
3. Angry eye the farmer reserves for corn-trampling aeromod ? (5, 5).
4. Fine covering material for a cow, but rather heavy for models ! (4).
5. African lake (5).
6. African river (4).
7. The aeromodelling hairdresser must find this easy to achieve ! (4).
8. Would tickling a cat's whisker cause the R/C fan to————(6).
9. Well-known training glider (5).
12. Accent on him for a change ! (5).
15. Mix with dope for a sealer (4).
16. M.A. plan 89 is one (5, 5).
18. Would a tailor measure wingspan in these units ? (4).
20. Most modellers would like to own one (5).
21. There is no room for these in designing or building (6).
23. Marsh vegetation used in R/C equipment ? (5).
25. Airman's fog (4).
27. Landing in trees may lead to wings being———— (5).
29. Birth of a new design (4).
30. Fuel for M.A. plan 82 ? (4).
33. He has feathers, but he's no flier (3).

Solution on page 586

Letters to the Editor

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

METRIC MAZE

DEAR SIR,—I am sure that most, if not all aeromodellers on the Continent—which, believe me, ranges from Lapland to Turkey and quite some way inland, will have chortled with amusement or frowned deeply when reading item one in your October "Here and There" pages.

We can all imagine the almost astounding effort it will take the people who use inches and ounces to find the equivalent unit value for 80 grammes. But even WE can calculate that this equals just 2 oz. and 13 drams and that will leave one 0.3 gramme short—on the barely safe side, in fact. Of course, if one uses a spring scale one is asking for trouble. The only way to obtain accurate weights is by weighing not guessing.

Most astonishing—to me—is your fourth paragraph in which you bemoan "the prevailing attitude to turn model specification over to metric units, which probably works to the disadvantage of the bulk of the world's modellers . . . etc."

Point one: What you call attitude—I would say tendency or inclination—is only the application of the standard scientific method of measuring things in mass and size as used by practically all countries except the Anglo-Saxon nations, the United States amongst these. It would be unreasonable to expect an international body like the F.A.I. to use inches, ounces, m.p.h., etc., for aeromodelling while the entire British, American and Commonwealth industry and sporting aviation have accepted their use of the metric system without protest.

Point two: Your statement that the majority of aeromodellers all over the world are at a disadvantage through this procedure is probably based on the fact that, in your view, the Anglo-Saxon countries—see above—constitute a majority, against a smaller number in the other aeromodelling countries. This statement I cannot check, but please remember that whereas the inch-ounce people may enter six teams, the others enter thirteen . . . And it is likely that the entrants for the eliminating contests stand in quite a different ratio than the actual numbers of modellers, the greater part of which may care little about international specifications.

Point three: You seem to have overlooked the fact that computing areas and ascertaining weights to any maximum allowable value entails just the same amount of work, whether the maximum is a "round" number or an odd number or a number containing—oh horror—a half of a square inch or a dram. But this argument should not be twisted around so as to support your "attitude" towards a medieval system of measurements. . . . The successes on the field by the Anglo-Saxon teams hardly indicate that any metric specification puts them at a disadvantage. It is up to the national organising bodies to publish standard equivalents for the use of all and not let them muddle with their own calculations.

Have not we "continentals" had to work for years to British units for the Wakefield and, be honest, have we ever complained in such a childish manner?

Yours faithfully,

The Hague, Holland. J. VAN HARTUM,
Royal Netherlands Aero Club.

MODEL AIRCRAFT

Engine Tests

(Continued from page 559)

up to the level expected of small high-performance diesels and was remarkably well maintained as r.p.m. were increased. The result of this is shown in a b.h.p. nearing .09 at 12,000 r.p.m. which is just about the best recorded for a 1 c.c. unit in these tests.

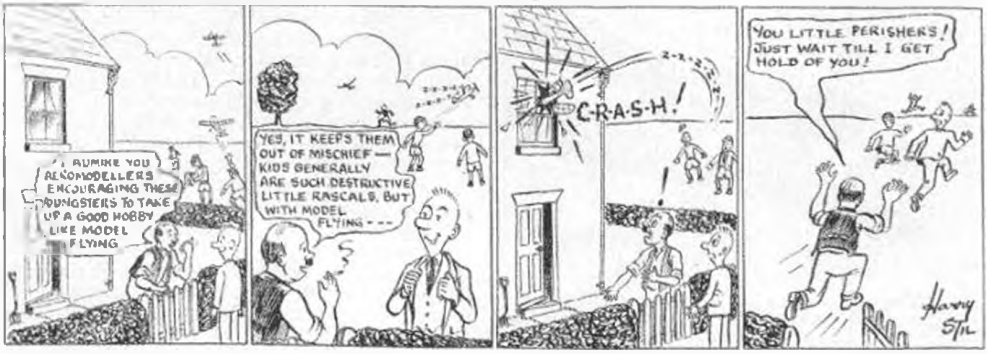
There was a slight power loss, as is common to most diesels, as the engine reached its working temperature from cold and this did not alter measurably between the initial few runs and the end of the nominal running-in period, but was not excessive. General running was reasonably smooth, having regard to the fact that, like most small diesels, this engine has a full disc (unbalanced) crank web.

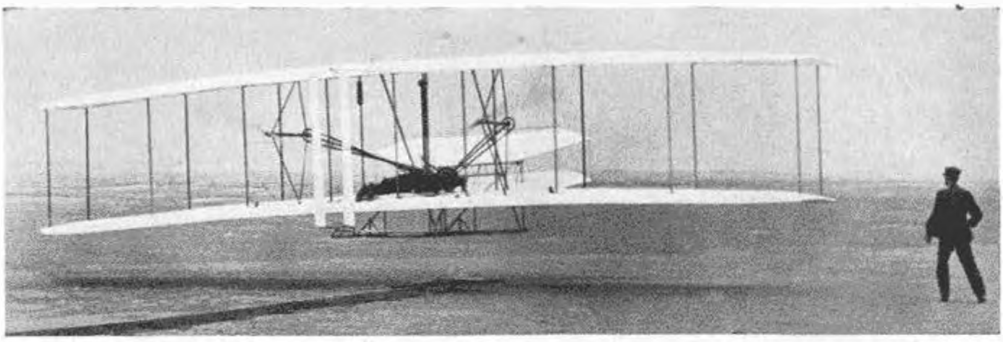
No troubles of any description were encountered in the test of the WAF 1.

Power/Weight Ratio: (as tested) 0.548 b.h.p./lb.

Specific Output: (as tested) 90 b.h.p./litre.

OVER THE GARDEN WALL **by Harry Stil**





Prototypes Worth Modelling

No. 37—The WRIGHT BIPLANE - by C. B. MAYCOCK

ON December the 17th this year falls the fiftieth anniversary of the first mechanical flight. No doubt the urge to make a model of the original Wright biplane will make itself felt amongst enthusiasts, and thanks to the modern lightweight diesel engine, a flying scale model is now a practical proposition.

The Wright brothers were nothing if not methodical. They carefully weighed every known factor against the vast unknown as far as the problems of flight were concerned. They patiently took every problem each step of the way ; they even made their own wind tunnel and test apparatus. After experiments with biplane gliders at Kill Devil Hill, Kitty Hawk, North Carolina, from September 1900 to 1902 they amassed sufficient data and confidence to build the first man-carrying flier as the Wrights called it.

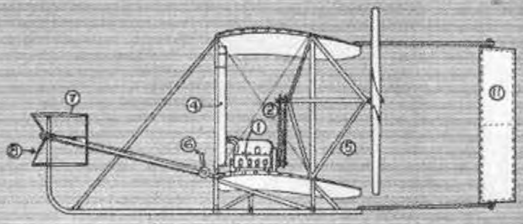
The engine was their chief problem and as there was nothing suitable they could buy, they built it themselves. This engine had four cylinders in line, each having a bore of 4 in. and stroke of 4 in. ; they were of cast iron fitted to a single-piece aluminium crankcase extending up the lower portions of the cylinders to form the water jacket. A chain-driven camshaft drove the exhaust valves and also operated the individual contact breaker arms for ignition. The intake valves were closed by a spring and opened by the breathing of the engine. A flat pan "carburettor" was fed by gravity from a cylindrical copper fuel tank fixed to the head of the port innermost leading strut. Ignition was by a horseshoe magnet type of generator driven by friction disc from the after face of the 15 in. diameter flywheel.

The heading picture shows the first flight in 1903. Wilbur Wright is running at the wing tip. The smaller picture is of a 1/72 scale model by the author.

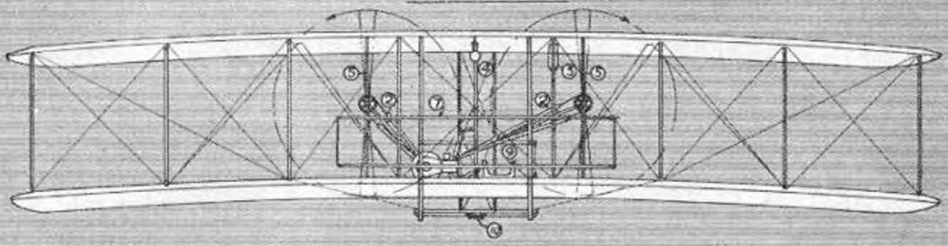
The engine lay on its side and counterbalanced the weight of the pilot who lay face downwards on the centre-section. His hips rested in a cradle which on being moved from side to side warped the wings for lateral control and also worked the rudder by means of interconnecting cables. Fore and aft control was effected by a biplane front elevator which not only changed the angle of attack but changed the camber as well, positive camber for nose up and negative camber for nose down. The main planes were double covered, i.e. upper surface and lower surface, in finest quality French sateen. The wooden structure had both ribs and spars of spruce with spruce interplane struts, and ash skids and runners. The two airscrews were carved from spruce boards approximately 8 ft. in diameter. They were counter rotating. This was simply effected by crossing the drive of the port airscrew driving chains. The driving chains were encased for most of their length in bicycle tubing and were connected to a double sprocket on the crankshaft behind the flywheel. Viewed directly from the front the machine had a marked droop to the wings, as much as 10 in. at the tips which was equivalent to a negative dihedral of 2¼ deg. The span was 40 ft. 4 in. and the chord 6 ft. 6 in. The overall length was approximately twenty feet.

The machine was launched from a dolly running along a 60 ft. monorail. On December 17th, 1903 Orville Wright was at the controls and was airborne for 12 seconds and covered about 120 ft. from the end of the launching rail. It must be borne in mind that the flight was made in the teeth of a twenty-seven mile per hour wind. Years were to pass before aircraft could take off in a wind as strong as this. Another flight of a little longer duration was made by Wilbur Wright, then the machine was severely damaged by being blown over and over. Nearly all the Wright brothers' photos and data were lost in the Daytona floods in 1913, but the only authentic picture of this historic first flight remains and we reproduce it herewith.

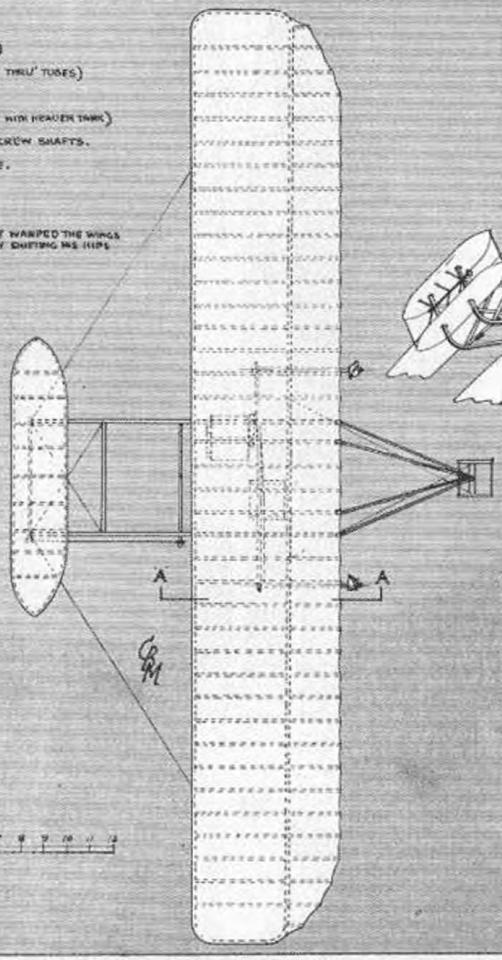
THE WRIGHT KITTY HAWK BIPLANE 1903.

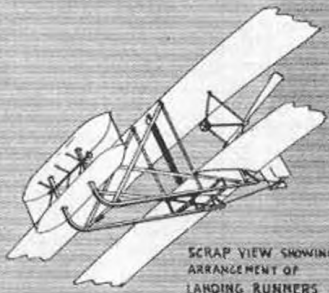


SECTION ON 'A-A'

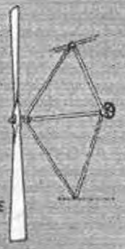


1. ENGINE (LYING ON IT'S SIDE)
2. TRANSMISSION (CHAINS OUTED THRU' TUBES)
3. FUEL TANK (CYLINDRICAL)
4. VERTICAL RADIATOR (FLAT BOX WITH HEADER TANK)
5. DIAMOND FRAMES FOR AIRSCREW SHAFTS.
6. ELEVATOR CONTROL HANDLE.
7. BIPLANE ELEVATOR
8. 'K' STRUTS (THREE)
9. CONTROL CRADLE (THE PILOT WARPED THE WINGS AND TURNED THE RUDDER BY SHIFTING HIS HIPS FROM SIDE TO SIDE)
10. LAUNCHING SPOOL.
11. TWIN RUDDER.





SCRAP VIEW SHOWING ARRANGEMENT OF LANDING RUNNERS



AIRSCREW & STEEL-TUBE DIA-MOND FRAME

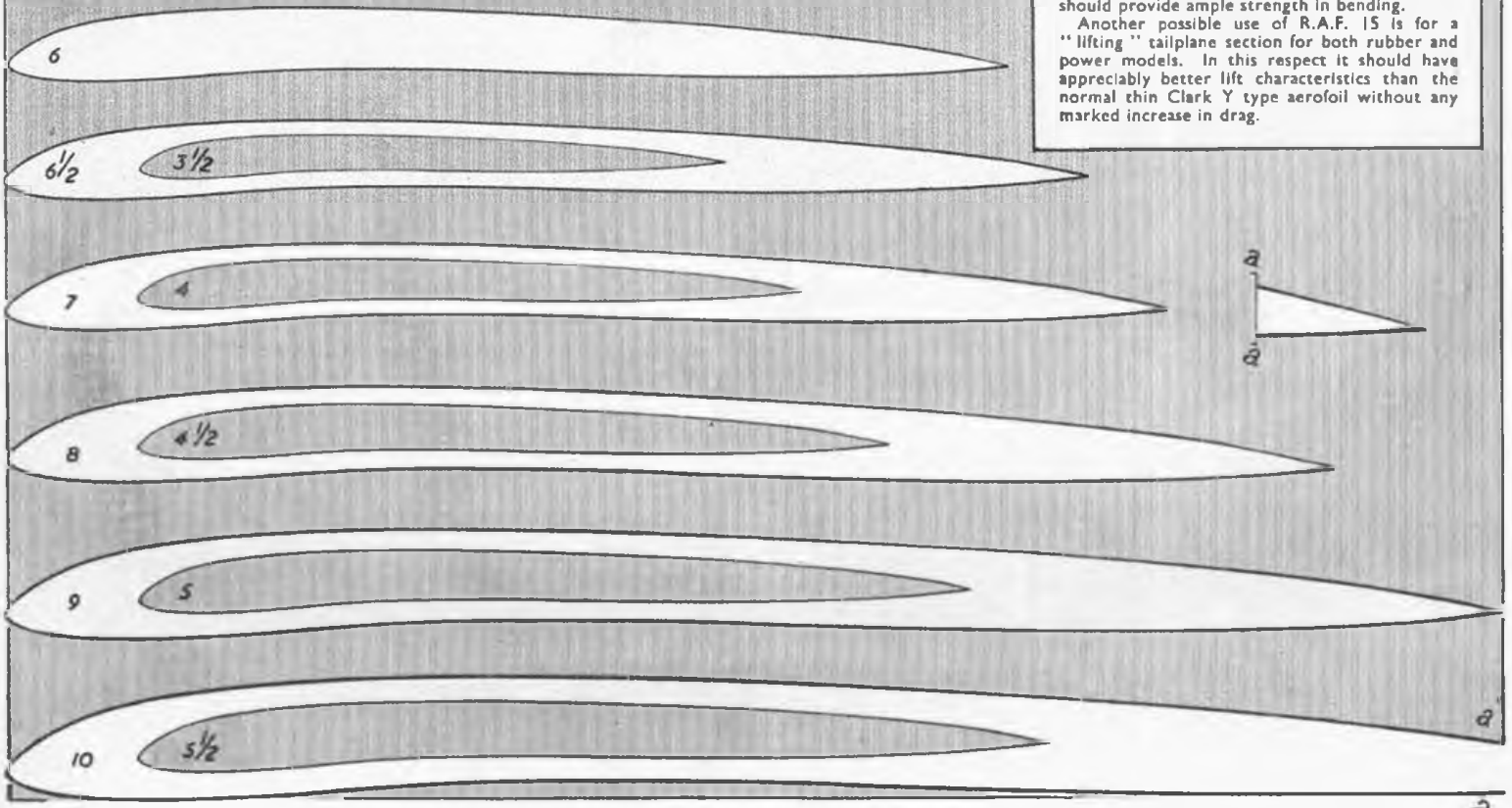
SCALE OF FEET.

R.A.F. 15

Strictly speaking, R.A.F. 15 is an old-time biplane section, characterised by good lift characteristics at low speeds coupled with very low drag values and a reasonably small centre of pressure movement. It should prove excellent for model biplane wings, especially those of semi-scale layout. The modern "flat" spar arrangement should provide ample strength in bending.

Another possible use of R.A.F. 15 is for a "lifting" tailplane section for both rubber and power models. In this respect it should have appreciably better lift characteristics than the normal thin Clark Y type aerofoil without any marked increase in drag.

STATION	0	2·5	5	10	20	30	40	50	60	70	80	90	100
UPPER	1·56	3·9	5·0	6·1	7·0	7·0	6·6	6·1	5·5	4·8	3·9	2·8	·94
LOWER	1·56	5	2	0·0	5	1·0	1·0	7	3·3	·06	·09	·2	·94



SOUTH WALES AREA

The Cardiff M.A.C. will be exhibiting at a "Coronation Year Hobbies Model Exhibition" to be held at the Sophia Gardens Pavilion, Cardiff, from November 30th to December 5th opening at 2 p.m. each day. The exhibition is to be organised by the Cardiff Federation of Model Clubs, on behalf of the City Council.

Indoor C/L flying will be held at 7 and 8.30 p.m. each night, and at 4.0 p.m. on the Saturday in addition.

SOUTH MIDLAND AREA

At the September 13th meeting held at R.A.F. Henlow in excellent flying conditions, the contests for the Gutteridge Trophy and "M.E." Cup attracted only a small entry in each class. In the Gutteridge event top man was Cooke (Henley) with 12 : 09, closely followed by Thomas (Slough) 12 : 06 with 1949 Wakefield, team member Roy Clements (Luton) in third place with 11 : 27. Top model was single-bladed folder with second and third place models using free-wheelers. Top individuals in the "M.E." Cup were Cripps (West Herts) with 7 : 33 from a *Tadpole* A.2 glider, with clubmate Garney second with 5 : 48 from his own design A.2, Cooke (Henley) placed third with his 6 ft. lightweight, scoring 5 : 27.

The same good flying conditions were again in evidence at the September 27th meeting also held at R.A.F., Henlow and this time entries were a little higher. Top man in the A.2 was J. Lamble (West Herts) with 13 : 30 scored with his streamlined short nose (5 in.) A.2, with heavily cambered "home-brewed" wing section, this model averaging 2 : 30-2 : 45 in evening air. Second was Cooke (Henley) with 11 : 35 and third place went to Sutton (W. Herts) with 11 : 02, both flying short-nose models. In the Hamley event, Ron Moulton (West Herts) placed first with his Elfin 2.49 c.c. *Komet*, second place design in '52 World Champs., scoring 14 : 18. Painter (Henley) was second with 13 : 02 from his Elfin 1.49 c.c. "Bethwaite" inspired model and third place went to Lamble (W. Herts) with 9 : 36, flying his small Elfin 1.49 c.c. high thrust-line model.

NORWICH M.A.C.

The "Battle of Britain" Exhibition held at R.A.F. station St. Faiths on September 19th, was a great success; the static exhibition of some 90 aircraft was very popular with the considerable crowd present.

On Sunday September 20th, the club had their annual outing, a visit to Radlet by coach. A large proportion of the club attended despite the early start at 6 a.m. from Norwich.

Flying during the month has been rather restricted by bad weather, but most of the club can be seen at week-ends practising Team Racing for the coming club competitions.

A new club badge has been adopted by ballot from several designs submitted and it is hoped shortly to have badges and transfers available at a moderate price.

A Xmas raffle is under way to raise funds to equip the clubroom with workbenches.

HENLEY MODEL CLUB

Our members fared very well in the first of the 1954 eliminators, A. W. M. Cooke, our only entrant, gaining first place in the South Midland Area Gutteridge results with a score of 12 : 09 from the five flights.

At the September 27th meeting, D. C. Painter took second place in the S. Midland Area Hamley results, with a score of 13 : 02 from his Elfin 1.49 c.c. International class model which follows New Zealander Bethwaite's layout with mid-thrust and forward under-fin. Cooke took sixth place with his Elfin 1.49 c.c. reserve model, pranging his first-line model whilst trimming, and J. G. Waldron placed eighth with his Elfin 1.8 c.c. *Contender*, although he ended with a prang in the third round.

In the A.2 event on the same day Cooke took second place in the S. Midland Area results with 11 : 35, Waldron placed fifth with 10 : 00, and Painter took eighth place with 9 : 16. Cooke flew an own-design short nose A.2 with 100 sq. in. tail and turned up tip dihedral, Waldron flew a "normal" A.2, and Painter flew a *Quickie*, but all models featured an overhead tow.

REGENTS PARK M.F.C.

At Radlett our worst piece of luck was the total loss o.o.s. of R. Bennett's new and very promising flying wing glider (60 in. span, section Clark YH).

All our glider fliers like the new line lengths. We should like to express our pleasure at the general organisation of the rally.

But, there was some evidence that models were stolen or deliberately smashed after landing on the far-side of the railway line. In particular one of our A.2 gliders was found broken in most improbable places, and at least one power model was seen with its engine ripped out. Did other fliers have similar experiences, and what can be done for future? (e.g. official lookouts at key-points suggested).

Club is small, but active, and would welcome new members. Two radio-controlled models (50 in. power and 90 in. slope-soarer) will be ready soon, and a small power-driven helicopter with unusual rotor mount is undergoing initial tests.

WHITEFIELD M.A.C.

The above club attended the 1954 area Wakefield Eliminator at Tilstock. B. V. Hainsman was placed first in the area only dropping 10 sec. out of a possible total of 15 min. (five flights). H. O'Donnell was second in the area and A. Bagnell third. On the same day the Northern Power Champs. was also held, coming out of retirement, A. D. Bennett gained top honours with 6 : 27.

In the area eliminator for the Davies Trophies, P. Criddle flying J. Harrison's E.D. 2.46 *Comrade* gained second place, completing the 10 miles in 11 min. 52 sec.

A fortnight later the Power and Nordic Elminators were held. Junior member A. Crane was placed top in the Nordic with 12 : 09, J. Parrott second and J. O'Donnell third. In the Power E. Mordin (another Junior) was top in the club with 12 : 34. Full marks to J. O'D. on winning the area Rubber Champs. with three maximums, not to be outdone H. O'D. collected first Junior place in the International Jetex contest.

A bouquet ought to be given to a fanatically keen member J. Trainer who cycled 50 miles to hunt down his Elfin 1.49 job, which he lost the previous week at Tilstock.

CHINGFORD M.F.C.

Chingford wishes all aeromodellers the compliments of the season. Everyone is now well into the swing of the winter session which started in October, and as usual r.t.p. Jetex speed, microfilm models and helicopters have made their bow again.

More interest than ever has been aroused in Class "A" team racing since we got George Sharp's and Les Hayward's T.R.'s into the final at Radlett (3rd and 4th places), and every Sunday Hackney Marshes is a scene of great activity with two or three in a circle flying until it gets dark. During the 1953 season only two regular Class "A" teams were used and then one pilot flew for both teams, unless two models were in the same heat, but we've had a reshuffle now and have three full teams in training to fly "A" and "B" machines. Nobody in the club tried seriously with Class "B" in the past season, but there are already three on the board for next year, so we hope to join the "big fast stuff" with some success, as there are some hot McCoy's and Eta's ready for these aircraft.

Anyone who would like to join us should come along to Wellington Road School at the top of Chingford Mount on any Friday evening and they will be welcomed, whatever branch of our hobby they are interested in.

FORESTERS (Nottingham) M.F.C.

The Foresters radio section is booming. Geoff Pike heard of the World duration record being only 1 hour plus, and decided to have a go. His model is a 7 ft. *Windjammer* glider with the addition of a tiny undercarriage and an even tinier Amco .87 on top. The fuel is stored in a 10 oz. pressurised tank and is fed through a Jim Walker fuel regulator. It is so arranged that if no signal is received for a minute, the fuel is shut off. The complete model weighs 3½ lb., and the Amco had no difficulty in taking the weight skywards after a 50 yard take-off run. Geoff had a preliminary 22 min. flight and then tanked up. After a 26 min. motor run, he decided it was getting too dark, so he cut the engine and brought the model to earth after a 38 min. total. The model was about 2,000 ft. high, and it looked a little odd to see an R.A.F. *Meteor* passing underneath. The next Sunday, we all lined up for the expected two hour flight, and camp-beds were unfurled in anticipation. However, it was not to be, for after 15 min. the poor little overworked Amco gave a tired moan and seized solid.

CHEADLE AND D.M.A.S.

"Those happy few," the contest section of the club, have had limited success in the game of chance, known as contest flying. Hooley (R.A.F. Cosford and Cheadle) topped our rubber entry at the Bolton Rally with two maxes., unfortunately losing the model and could not fly off against Hughie O'Donnell. Two hours elapsed before he arrived back at 7.30 p.m. from the upwind direction, whilst all the boys were craning their necks downwind—but no model! Brian Faulkner got a max and an o.o.s. into low cloud. Ian Harrison only one max.: the winder slipped and blew up his fuselage on number 2, however, the total effect gave us the Greenhalgh Trophy—'bout time too.

Honours go to the R.A.F. Cheadle detachment who comprised 75 per cent. of the R.A.F. entry at the Area Championships; unfortunate sequel to this was that Eddie Taylor lost his coffin containing both his Wakefields on British Railways (shades of the A.2 team) consequently no entry from this potent rubber man at Sherburn.

Old new rule Wakefields made their appearance for the trials on September 13th, and a reasonable score resulted, the chance to add masses of ironmongery resulted in Anderton appearing with a retracting wot-is-it and folding thing-a-ma-jig all of which worked very well.

In the team glider event the " string and ring " boys, Messrs. Jenyon, Faulkner, Neild and Seymour (R.A.F. Cheadle) managed a reasonable total of 24 : 09, which was good enough to top the Area results, all flew A.2's with the exception of Neild, who had his 10-footer in the mill

HYDE (CHESHIRE) M.A.C.

Our Rally was a success. Twenty-five clubs came to compete, and we were specially pleased with the presence of the " B-59ers," the American Model Club of the U.S.A.F., stationed at Burtonwood. One of its members G. Blum won a 1st in our Concours with a beautiful Hawker *Hunter* complete with ejection seat, etc.

At first the weather threatened. During the night, all but three of 200 notices and signs were washed away by a gale. By 11.0 o'clock the clerk of weather held back the rain, but not the wind. Slowly the weather improved till by 5.30 p.m. it was perfect. Our Rally was broadcast in the B.B.C. " Week Ahead " programme on Thursday September 17th, and given a good write-up in the local papers. A crowd of 1,200 came during the day. Flying was very good (in the wind) and everyone enjoyed themselves.

The very excellent job of work by Sparston M.A.C. with control assistance and glider management is bringing them a gift. Also " Well done " Tame M.A.C. with their Team Race—it was perfect. And hats off to H. Platt of Macclesfield who when his motor cut in the Team Race, to save a violent smash up by crossed lines, he threw his lines and handle out of the circle.

CROYDON AND D.M.A.C.

Fine weather greeted us for the Area events on September 13th. John Palmer took full advantage of this to win the Gutteridge Trophy with his " 2.8 " special —an old-rule model that was no good ! ! Archie Albone placed second. Both models had folding propellers. The glider fliers won the " Model Engineer " Cup, Bob Gatland doing three maxes.

At the All Britain Rally, Roy Yeabsley won the Rally Championship, placing first in the rubber and second in the glider events. N. Marcus won the power with *Eureka*, and G. Perkins came 2nd in the seaplane power.

The last area meeting, September 27th, was nearly " fogged-off." Fortunately it cleared about 1.0 p.m., and the boys performed in dull, but dead calm weather. This weather was perfect for the gas models, but rather disheartening for the 50 metre line Nordic gliders. Gavin Perkins dusted-off his Oliver Tiger 2.5 c.c. *Burning Fright*, and also cleaned up the Halfax Trophy with five maxes, and a fly-off time of 5 min. 58 sec. (off 15 sec. run, incidentally). J. Blount also did five maxes.

Some of the boys flew in both eliminators, and managed 10 flights in spite of the fog and rain—from 4.0 o'clock onwards. Heaven help them on a windy day !

Congratulations to Jack North and Nella on their recent marriage. They went to Scotland on their honeymoon.

CAMBRIDGE M.A.C.

After ten—yes, ten—hectic club contests, the Nationals and the Cambridge Team Race Rally things of the past, members are now settling down to the less hectic occupation of building. At the moment interest is spread evenly over nearly all types —with the exception of seaplanes.

The Scale event held recently attracted a great diversity of models ranging from a Hawker *Hunter* to a Chrislea *Skyjeep*. What is even more amazing is the fact that all the entries flew well . . . and for the most part went home virtually intact !

If you are still wondering about all the contests held during the year—yes, there is a cup for the winner of each event. The Cambridge M.A.C. must have the biggest selection of " pots " in the whole country !

BLACKHEATH M.F.C.

January, 10th 1954 is the date for the " Bill White Memorial Cup " (open rubber) and the Winter Glider Contest, to be held on Epsom Downs.

Pre-entry is requested. Fee 1s. per contest or 1s. 6d. for both.

Full details and entry forms may be obtained from the secretary, J. Snewin, 249, Eltham High Street, London, S.E.9

The 13th IRISH NATIONALS

Held at Baldonnel Aerodrome, Dublin on September 5-6th, the 13th Irish Nationals proved to be one of the finest on record.

Starting on the Saturday with the Glider event which had an entry of 32 competitors from all over Ireland, the first round had four maximum flights one of which went to International Power team member, Johnny Carroll, and another to Wakefield team member Gordon Drew. By the end of the second round, however, it was plain to see that the main fight would be between Johnny Carroll and John Thompson, both of the Dublin S.M.E.E., who although getting off to a bad start gained a maximum in the second round, and a 4 : 20 flight on his last round. Into third place came '49 Wakefield team member Denis Browne who incidentally was last year's winner of the Nationals Glider event.

Final Results—Glider Event:

	Total
1. J. J. Carroll (Dublin S.M.E.E.),	12 : 1.5
2. J. Thompson (Dublin S.M.E.E.),	11 : 7.5
3. D. Browne (Drimnagh A.M.),	9 : 50.9
4. L. Murtagh (Phoenix A.C.),	9 : 38.0
5. T. Noonan (Shankill M.F.C.),	9 : 35.7
6. G. Drew (Belfast M.F.C.),	9 : 14.0

The C/L Stunt even held on the same day attracted very few entrants and after a number of crashes had wiped out most of the competitors Johnny Carroll went on to gain more laurels by winning this event about 20 points ahead of his nearest rival.

Final Results—Stunt Event:

	Points
1. J. J. Carroll (Dublin S.M.E.E.)	156.5
2. J. J. Carroll (Dublin S.M.E.E.), *(2nd model)*	143.5
3. J. Thompson (Dublin S.M.E.E.),	136.0
4. T. Noonan (Shankill M.F.C.),	109.0

Maximum points possible 230.

Sunday's events opened in magnificent weather once more with the Dublin S.M.E.E. well in the lead for the Inter-Club Championship Trophy having gained 22 points on the previous day.

First event under way was the Wakefield event, but the standard of flying in this event was very poor and the best flight in the first round was only 2 : 52 ! However, things picked up in the second round when Gordon Drew of Belfast M.F.C. got a max. which was followed by a 4 : 16 flight by club-mate Norman Osbourn, who just beat Alec Gordon of the Phoenix A.C., last year's Nationals Wakefield winner, into second place by 0 : 20.

Final Results—Wakefield Event:

	Total
1. G. Drew (Belfast M.F.C.),	9 : 54.0
2. N. Osbourn (Belfast M.F.C.),	8 : 16.3
3. A. Gordon (Phoenix A.C.),	7 : 56.2
4. J. Thompson (Dublin S.M.E.E.),	6 : 42.9
5. W. Redmond (Phoenix A.C.),	4 : 20.6
6. J. J. Carroll (Dublin S.M.E.E.),	3 : 32.2

In complete contrast to the Wakefield event the Free Flight Power event was really well contested, but even here it was painful to see the number of competitors who were unable to get their engines started in the three minute period allowed, as a result quite a large amount of the competitors lost first or second round flights, and so did not stand a chance in the final results.

First man away was Geoff Woodworth of Dublin M.F.C. who finished 7th in the World Power event at Cranfield, flying his Oliver Tiger 2.5 c.c. powered *Snuff*, he put up the first max. of the event, but Phoenix member Mick O'Regan stayed very close to him getting a flight of 4 : 36.4. Meantime Des Woods having run out of Glo-Fuel, drove the 24 miles to his home and back, finding time to mix the fuel and arrive back before the end of the first round ! With the second round under way Woodworth put up another max., but due to a fault on the part of the timekeepers he was only credited with 3 : 40, this, however, did not disturb him, and he went on to get a third max. and win the Aer Rianta Power Trophy by over 3 : 0 from his nearest rival, O'Regan.

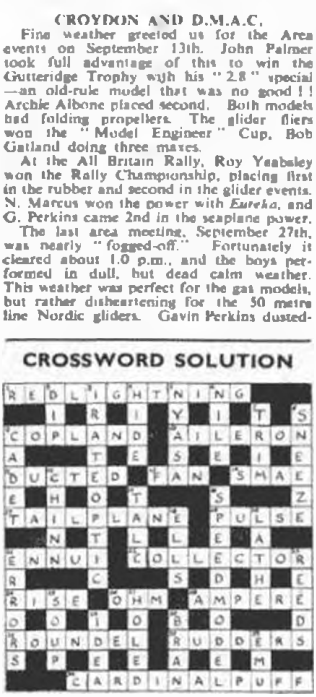
Only difference between this year's and previous Nationals was the fact that all models both Wakefield and Power jobs had to r.o.g., and it was here that a lot of entrants met disaster.

Final Results—Free-Flight Power Event:

	Total
1. G. Woodworth (Dublin M.F.C.),	13 : 30
2. M. O'Regan (Phoenix A.C.),	10 : 2.8
3. J. Thompson (Dublin S.M.E.E.),	6 : 40.6
4. F. McDonnell (Belfast M.F.C.),	5 : 41.6
5. A. Murtagh (Dublin M.F.C.),	5 : 31.8
6. T. McClelland (Belfast M.F.C.),	4 : 45.6

At the prize-giving dinner held in Dublin Airport that night the prizes were presented by Mrs. J. C. Kelly-Rogers wife of the president of M.A.C.I. As mentioned earlier the club championship Trophy did eventually go to the Dublin S.M.E.E., who wound up the season with a grand total of 28 points, 24 of which were gained at the Nationals.

CROSSWORD SOLUTION



BRADFORD M.A.C.

Veteran Norman Lees was top man in the area in the first 1954 Wakefield eliminator with a 14 : 22 aggregate, son Dennis being close behind with 12 : 22, and C. P. Miller having lost his best model testing, put up a creditable 10 : 58 with his spare—afterwards finding the other machine quite easily in a field three miles away ! On the same day A. Collinson and Silvio were 1st and 2nd in an area power comp., clocking 7 : 31 and 6 : 14 respectively.

In the Halfax Trophy, A. Collinson was again top man in the area, putting up 8 : 32 with his *Elliminator*—having now hotted up his new model a little too much with a glo-plug Super Tigre and reduced it to produce on the tarmac whilst testing. The Super Tigre will not growl again for some time, either, as it suffered a broken crankshaft ! Silvio placed third with his "Torpedo" powered *Mini-Hogan*, and S. Eckersley was second in the first A.2 eliminator on the same day.

A club "general" competition was held on October 4th; highest time—8 : 24—being recorded by S. Eckersley's A.2; G. Lusby, also flying glider, was second with 6 : 54. C. P. Miller's errant Wakefield—yes, the same one !—disappeared o.o.s. for a max on its first flight, once more returning to the fold after the contest had ended ! Silvio, only other competitor to complete three flights, scored 3 : 38 !

WORKSOP AEROMODELLERS

After the successful day out at Sherburn, the club has burst into renewed enthusiasm: free-flight, gliders, R/C models and even helicopters are flying as well as the more usual team race, stunt and combat C/L models. Pete's 6 ft. glider is the first 100 per cent. successful R/C model in the club. It has a number of useful features, the main one being thermal-delay operated D.F.S. type brakes. These enable very accurate spot landings to be made.

Dennis Redhead has emerged from the year's contest flying as the best team race pilot, his almost faultless technique being much in demand by the nervous type of builder. He flew seven of the club's nine Class "A" entries at Sherburn.

The club will hold its usual "free for all" on Boxing Day.

AEROBODS OF NOTE

PETE BUSKELL

Pete, through quiet efficient flying has become a top ranking power-flyer. First in Power Trials and 4th in World Power Championship.

THE HORNCHURCH M.A.C.

A coach outing to the All Britain Rally provided many members with their first revealing glimpse of a major model event. Needless to say, they were all much delighted with the experience.

In the hope of stepping up contest enthusiasm the club is holding a series of "all-in" free flight competitions; the idea being to include as wide a diversity of model types as possible.

Our first comp. on these lines produced nine assorted entries. They were subject to the following "handicap" rules: Sport models—30 sec. motor run; Power Duration—15 sec.; Gliders—200 ft. towline; Rubber models—unrestricted.

The event was won by a Jetex "200" powered model, with a two flight aggregate of 2 min. 12 sec.

CHESTER M.F.C.

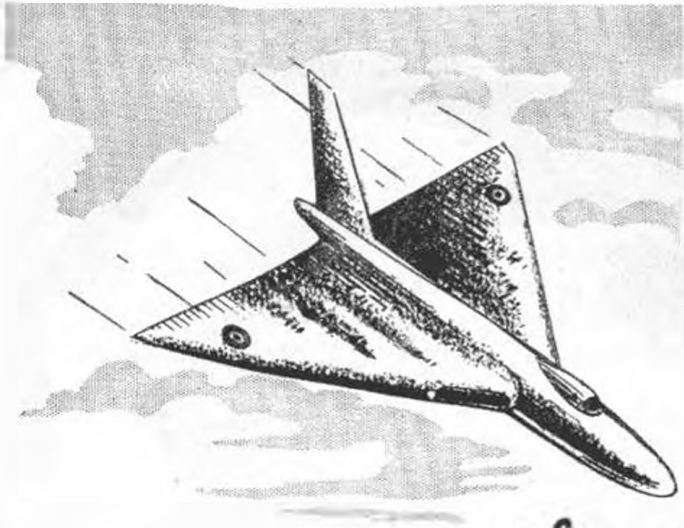
We recently tried a new type of competition which we think may be of interest to other clubs who like ourselves are not blessed with a great amount of space. Rules—best of three flights open to any type of model except R/C, unlimited line length for gliders and unlimited engine run for power jobs. Models are required to land *within the flying field boundary*.

This was the idea of our worthy president Mr. R. W. Milton, who also generously provided the prizes. The first round saw some close times (1 : 48)-(1 : 44) and 1 : 40 but F. Dodd managed a crafty 2 : 30 with his power job on his last flight to win.

F. Dodd also won the Hammond Power Cup on October 4th with a Mills 1.3 job, his total time was 299 sec. C. R. Filtness (*Mallard*) 244 sec. took second place with K. Modern (*Mallard*) 172 sec. third.

Our Wakefield event (new rule) for the Chidley Cup on October 11th, saw some close flying especially in the first round, when the first four were within ten seconds of each other. Top time in this round was by Mrs. Modern flying her first Wakefield a *Gipsy*.

F. Wilde the eventual winner clocked a total of 402 sec with F. Dodd in second place just one second behind. K. Modern just managed to pip his wife for third place.



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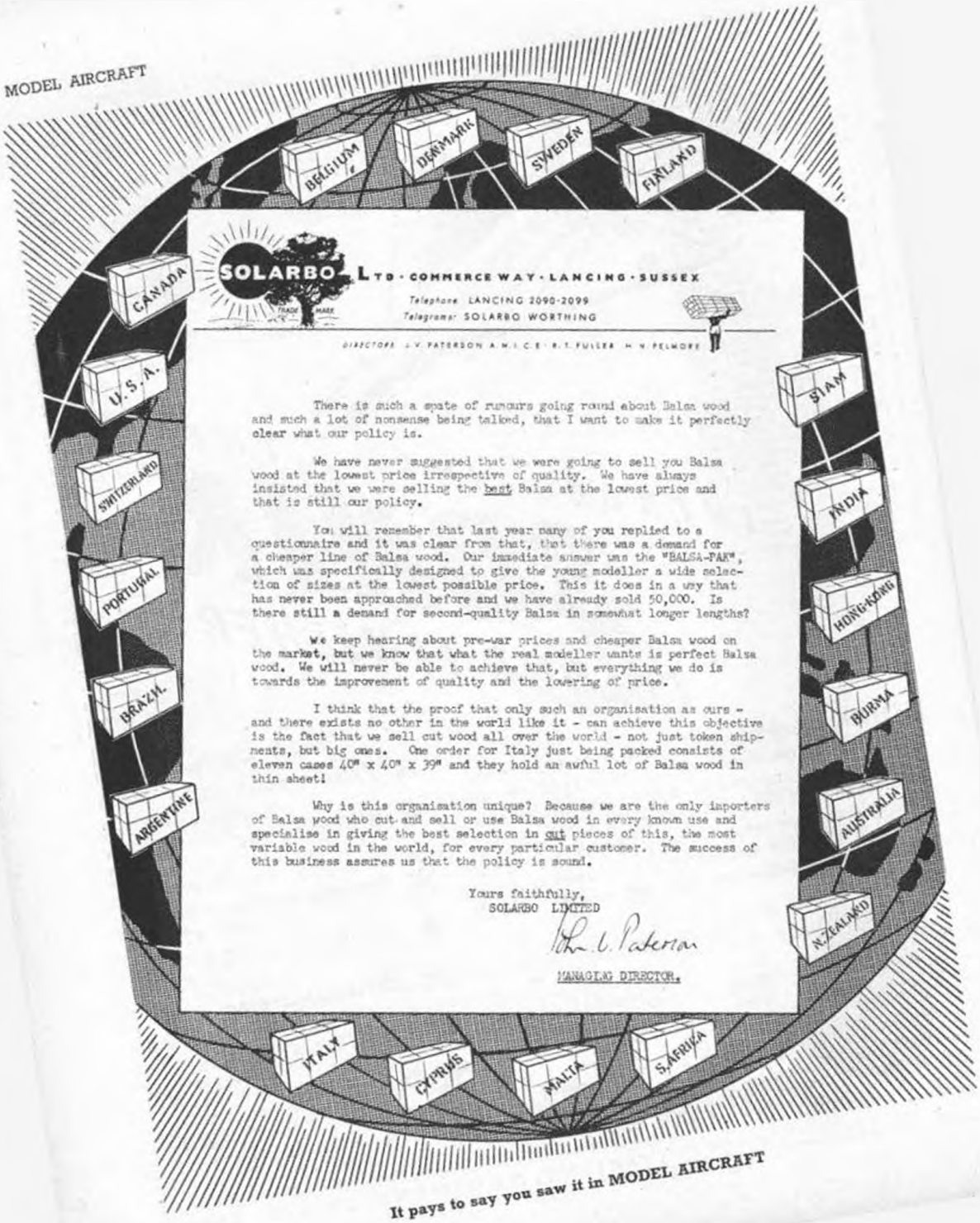

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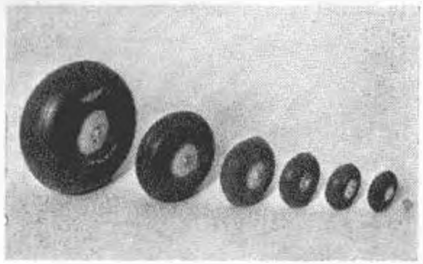

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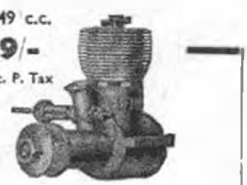

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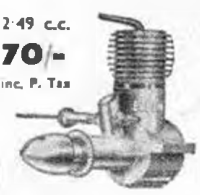

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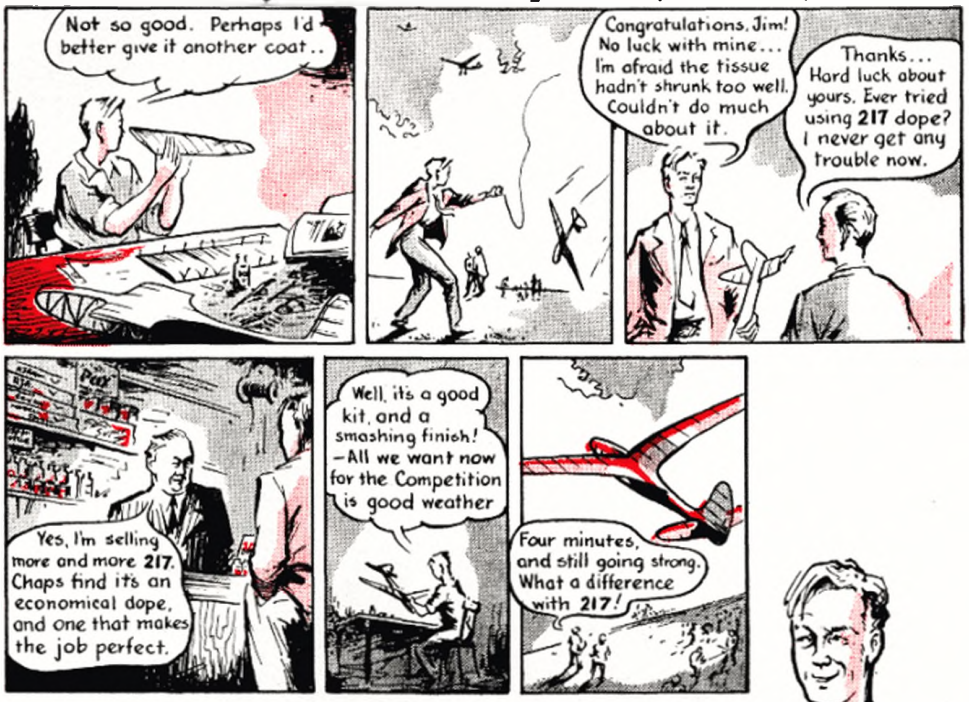

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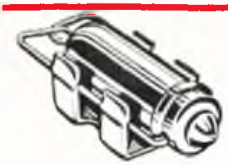
POWER



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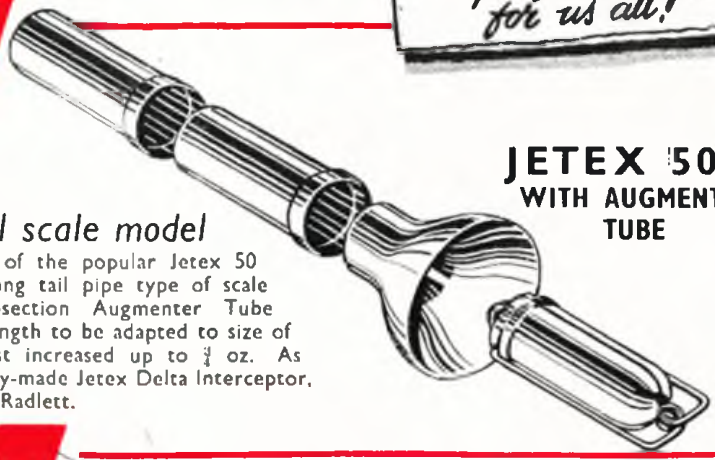
POWER



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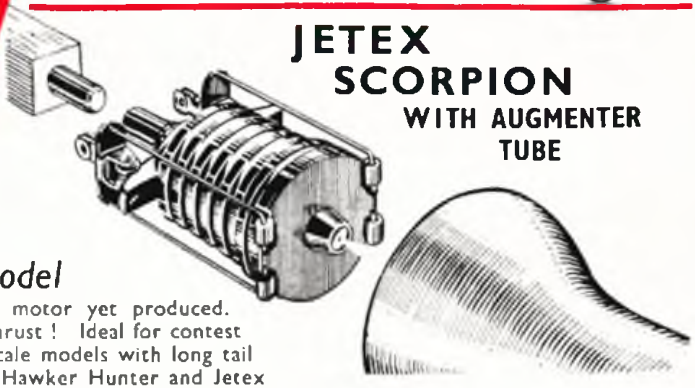
WITH AUGMENTER TUBE

For the small scale model

A special version of the popular Jetex 50 motor for the long tail pipe type of scale model. The 3-section Augmenter Tube enables tube length to be adapted to size of model. Thrust increased up to ¾ oz. As fitted in ready-made Jetex Delta Interceptor, also seen at Radlett.

POWER



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