MODEL AIRCRAFT

INSIDE

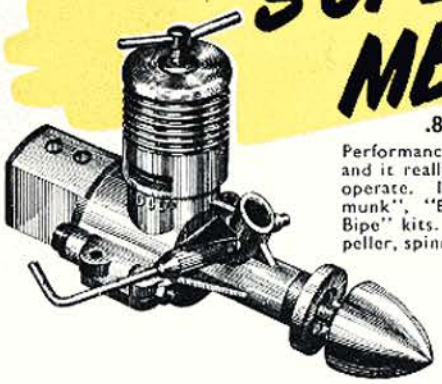
Super detailed plans of the D.H. MOSQUITO

1'6

JANUARY 1958

AT YOUR SERVICE!

SUPER MERLIN



.8 c.c. .049 cu. in.

Performance is as good as its looks, and it really is easy to start and operate. Ideal for our "Chipmunk", "Ballerina" and "D.C Bipe" kits. Complete with propeller, spinner and tommy bar.

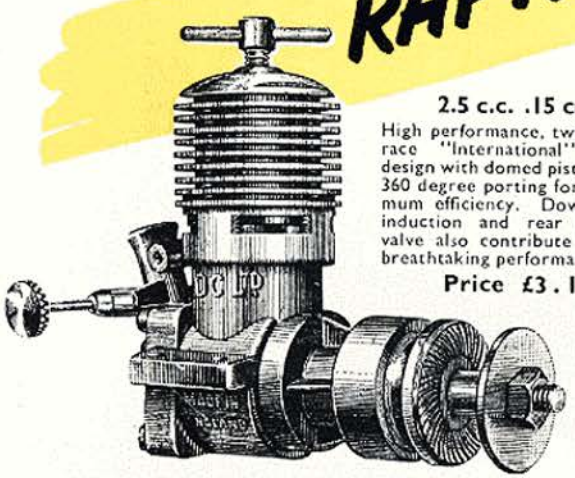
Price £2 . 12 . 7

The most up-to-date model engine factory in the trade, fully equipped with the latest machine tool equipment, is at your service. Expert staff ensure that engineering standards of the highest degree are maintained, so that you, the customer, will enjoy model aero engines of superlative quality and performance. You can purchase any of our extensive range of engines with complete confidence. Every one is inspected and tested in our specially built test shop and every one is backed by a comprehensive spares and after-sales service.

DAVIES CHARLTON LIMITED

HILLS MEADOWS . DOUGLAS . ISLE OF MAN

RAPIER

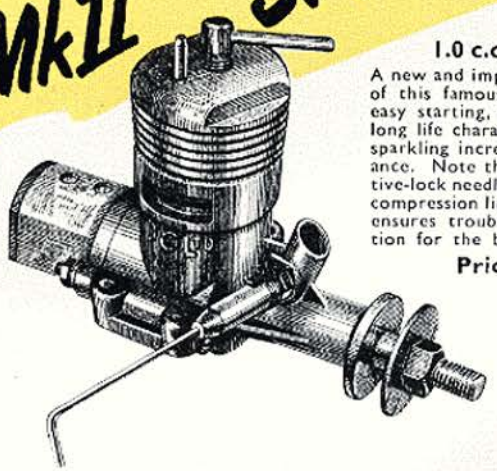


2.5 c.c. .15 cu. in.

High performance, twin ball-race "International" class design with domed piston and 360 degree porting for maximum efficiency. Downdraft induction and rear rotary valve also contribute to its breathtaking performance.

Price £3 . 19 . 11

MkII SPITFIRE



1.0 c.c. .06 cu. in.

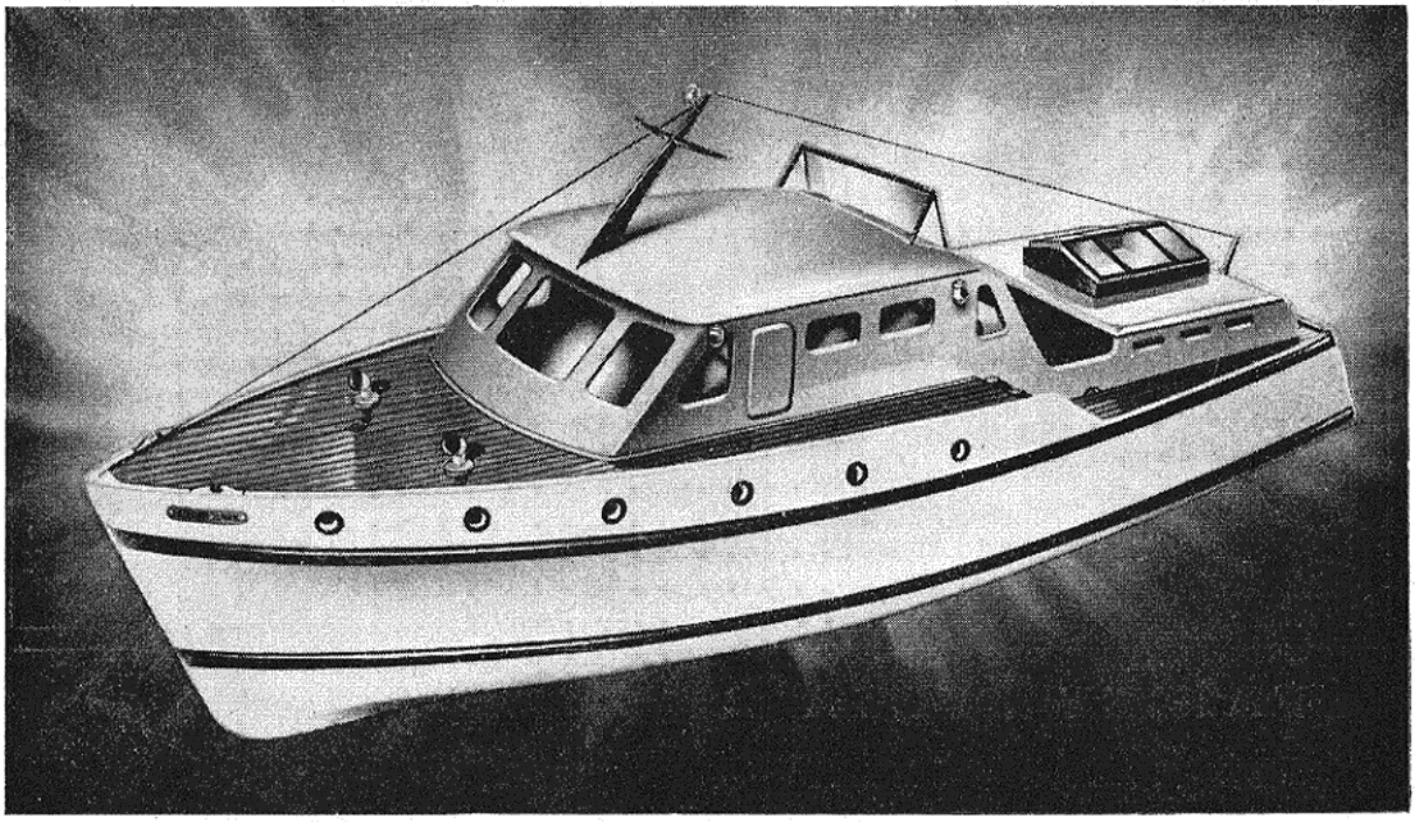
A new and improved version of this famous engine with easy starting, flexibility and long life characteristics, plus sparkling increased performance. Note the angled positive-lock needle valve and the compression limit stop which ensures trouble free operation for the beginner.

Price £2 . 12 . 7

WHITE CLOUD "Marinecraft" Cabin Cruiser—

can now be fitted with

Radio Control!



Although of relatively small dimensions, "White Cloud" is an impressive model when complete. **Price £2.15.2**

It is designed for any standard 4½-6 volt electric motor and the Cabin space allows ample room for drive gear and batteries.

Radio Control Equipment can also be accommodated below deck with locking covers to protect valuable equipment from water.

"SILVER DAWN" a larger version of the above with an overall length of 31" and 9" beam. **Price £6.4.9**

Write for our new Brochure fully illustrated in colour featuring all "Marinecraft" Kits. Postage 4d.

For those unable to call at our retail shops, we offer a prompt 24-hour postal service.

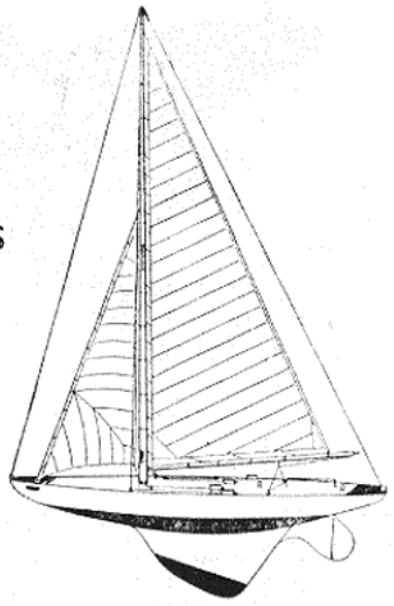
"Marinecraft" MODEL YACHTS

Two attractive models with a fine performance.

"IONA" Model Racing Yacht. Overall length 24", Beam 5½". **Price £2.14.0.**

"FIONA" Racing Model Yacht. Grace and speed in every line. Overall length 36" Beam 9". **Price £6.15.0.**

All prices include P. Tax.



"IONA" a most attractive model yacht. Ideal for the beginner to build and sail.

MODEL AERODROME LTD.

141. STRATFORD ROAD
BIRMINGHAM.11

MODEL AIRCRAFT

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★

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★

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1958 WORLD CHAMPS

AT its recent meeting in Paris, at which fourteen countries were represented, the F.A.I. Model Commission unanimously decided to accept Great Britain's offer to organise the World Rubber and Power Championships at Cranfield Aerodrome, Beds, in 1958.

The Model Commission suggested that it would ease travel difficulties if the Championships were held at some time other than the August Bank Holiday period. The S.M.A.E. Council, however, were unable to agree to this suggestion, mainly because of the difficulty which would be experienced in obtaining contest organisation staff for a period of three days at any other time.

The fact that the voting on this matter was unanimous confirms that the 1958 World Championships will be eagerly looked forward to by our overseas friends. We know from conversations which we have had with many of them at international meetings that the 1953 and 1956 Cranfield meetings established a reputation for combining efficiency with informality, and a pleasant get-together atmosphere—something which is, unfortunately, often lacking at international events.

Further F.A.I. Contests

THE F.A.I. Model Commission have also decided to continue the present arrangement of holding combined World Championship meetings each year with the events grouped and held in one country.

After 1958, World Championships will also be held for Team Racing, C/L Aerobatics and R/C. As from 1959, the grouping of the Championships will be as follows :—

1959 Rubber-Glider-Power, to be held in Russia.

1960 C/L Team Race, Aerobatics, Speed, and R/C (venues to be announced).

The following proposals by Russia are to be considered at the next meeting:—

(a) That teams shall consist of three members.
(b) That full-size aircraft may be used to check height of models attempting to break altitude records.

The Mostest !

ELSEWHERE in this issue we publish a review of "British Aeroplanes, 1914-18" by J. M. Bruce, M.A., a book which immediately impressed us not only by its price, but also by the monumental effort needed to compile so much

Space Mail

Sputniks, as well as flying round in outer space, are now encircling the earth via the world's postal services, as this stamp from East Germany shows.

data on so many aircraft, of a period which is notorious for its pitfalls.

Consequently, we rather imagined the author to be scholarly and certainly elderly, but when we recently had the opportunity of meeting Jack Bruce he turned out to be a young man in his early thirties. When he first commenced work on his book it was intended for publication at 12s. 6d., but so much new material was unearthed that it was expanded to its present size.

Already it is being referred to as "the twelve guinea book" and if the price staggers you, take heart—at least one aviation bookseller is offering it for sale by the instalment plan.

M.A. Contest Calendar

THE following list gives details of international events, other than the World Championships, which have been received up to the time of going to press :

Feb. 16th—Finland. A2, Rubber, Power.

May 24th/26th—Spain. European Cup — C/L Team Race and Aerobatics.

May 24th/26th—Monaco. Hydroplane, Rubber, Power and R/C.

Sept. 7th—Belgium. C/L Speed, Aerobatics, Team Racing.

Sept. 13th/14th.—Holland. Flying Wing.

Sept. 21st—Germany. King of the Belgians' Cup. R/C.

Now that the flying season will soon be under way we shall again be publishing the M.A. Contest Calendar each month.

First World C/L Meeting

CONTROL line enthusiasts will be pleased to learn that the meeting which has been known previously as the Criterium of Europe will next year have full international status and be open to teams from all countries which are members of the F.A.I.

This meeting will be organised by the Royal Aero Club of Belgium in Brussells on September 7th, 1958, to coincide with the World Fair which is being held there. It is intended that the experience gained in the organisation of this meeting shall be used as a guide for running the 1960 C/L World Championships and we hope that it succeeds in attracting entries from the countries outside Europe.

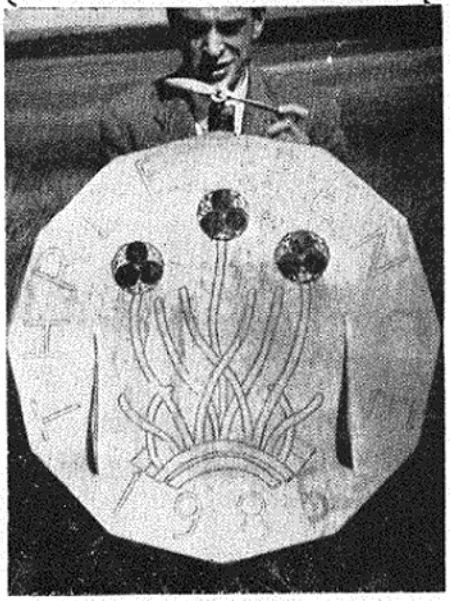
RECORD ROUND-UP

PERHAPS the best coverage ever afforded to the model aircraft movement by the lay press was, oddly enough, in connection with just two modellers. We need hardly add that they were Ray "Gadget" Gibbs and Fred Carter, and that the event was the record breaking attempt at Heston Aerodrome as reported on the opposite page.

S.M.A.E. Press Officer Ken Brookes sent a "handout" to all the national dailies, whose response was, to say the least, surprising. A particularly objective report appeared in the London *Evening News*, while *The Times* ("For people at the top") published a large photo of "Gadget" watching S.M.A.E. Tech. Sec. Henry J. Nicholls (looking more like Mr. Pastry than Mr. Pastry!) check the engine capacity of the Carter special. The B.B.C., too, referred to the record in their news bulletins and later did a "live" broadcast interview with "Gadget" and Fred Carter, while television coverage was also given to the event.

Tailpiece : We note that *Aeromodellista*, our Italian contemporary, refers to three new speeds achieved by the Czechs, two of which—if claimed—will constitute new world records. In the 2.5 c.c. class Sladky reached 236 k.p.h.—11 k.p.h. faster than Gibbs—while Studeny recorded 244 k.p.h. in the 5 c.c. class. This speed is, of course, identical with that achieved by Gibbs at Heston on November 17th, and as the Czech's flight was made in October, should it be submitted to the F.A.I. it will take precedence over Gibbs' claim.

MONEY FLIES



R. Hudson of Bingley in Yorks has obviously found another use for lucre apart from spending it, and if the date on the "coin" gives a foretaste of the size to come—we don't want to know! Actually, it really does fly, so the designer assures us. Span is 27 in. and the weight around 30-oz., and power is provided by an E.D. Bee. This photo was taken on Baildon Moor—probably the only place they dare fly the thing!

NATS FILM SHOW

BOOKINGS for the S.M.A.E. film production "The Nationals, 1957" are increasing rapidly and in view of this, clubs intending to show the film are advised to book as soon as possible to ensure the film being available on a specific date. Remember, it is in full colour, is suitable for 8 mm. projectors, and runs for 45 min. It will be appreciated, that the production of this film involved the society in considerable expense and a hiring fee of £1 1s. 0d. is charged to offset the initial cost. Bookings should be made through the S.M.A.E., Londonderry House, 19, Park Lane, W.1.

We list here the dates and clubs which are showing the film, complete up to the time of going to press.

Jan. 4th. A.R.C.C. (Sec. : 7, Church Lane, Garratt, Herts).

,, 8th. Sevenoaks M.F.C. (N. Couling, 28, Wilton Road, Dunton Green, Sevenoaks).

,, 16th. West Hants M.F.C. (K. Wrighton, 1, Lawson Road, Parkestone, Dorset).

,, 26th. Brighton & Dist. (I. Lucas, 7, Park Court, Preston Park Avenue, Brighton).

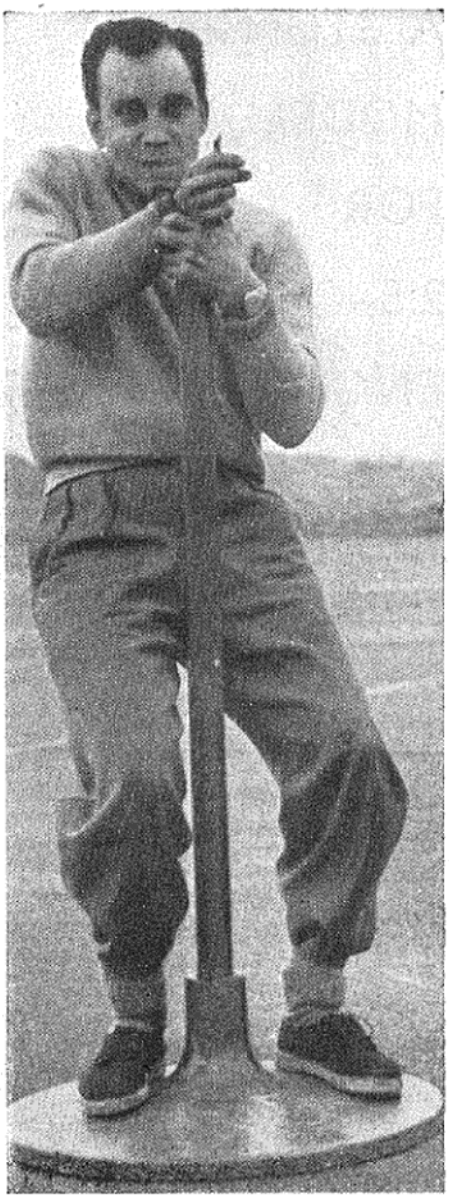
,, 31st. London Area (to be shown at Londonderry House, 7 p.m. with other items).

Feb. 7th. North London M.E.S. (Sec.: D. G. Gordon, 60, Victoria Road, New Barnet, Herts).

152 m.p.h.!

GIBBS CLAIMS NEW 5 c.c. WORLD RECORD

Latest Gibbs' model/Carter engine combination proves world beater on second flight



THE name of Ray ("Gadget") Gibbs is synonymous with successful speed flying, so when he told us he was going to have a crack at his own 5 c.c. World Speed Record we went along to Heston Aerodrome confident that he would succeed. We were not disappointed.

Weather conditions were far from ideal, as the low temperature, about 40 degrees, caused the oil to separate from the nitromethane in the fuel; in fact, Ray had to add more methanol to the brew to make it stable.

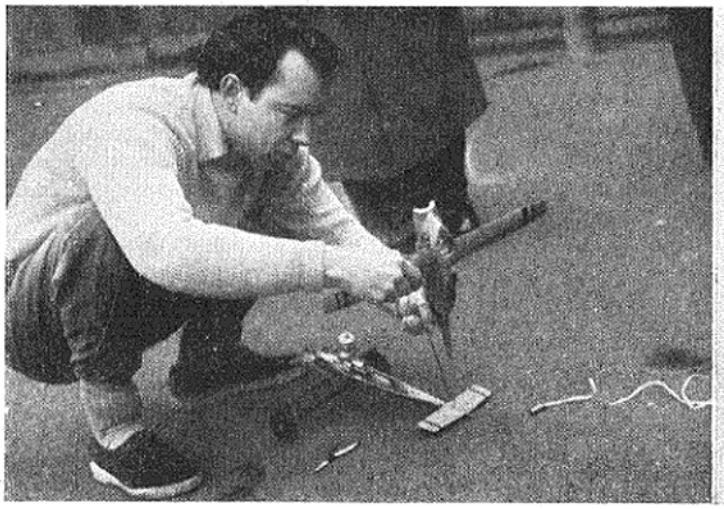
On his first run the motor leaned out after five laps, giving a slower speed than the present record of 146.2 m.p.h., but for the next attempt the needle was opened up half a turn, and the motor was "in" for the full distance of 10 laps. Although it still seemed as if the engine could cope with a further increase in fuel, the time for this flight was 14.7 sec., equivalent to 152 m.p.h., a gain of nearly 6 m.p.h. on the old record.

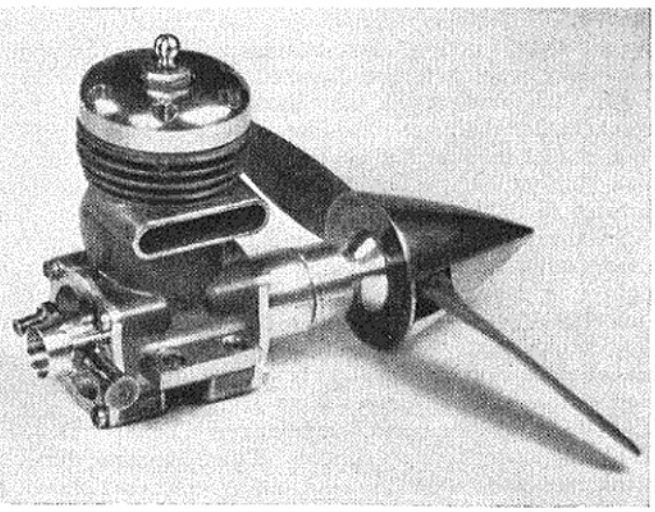
By now the conditions had deteriorated even more and the fuel was again separating, so although he was confident of being able to improve considerably even on this speed, "Gadget" wisely decided to hold over further attempts until a more suitable time. Indeed, such is his confidence in the power of this latest Carter engine that he thinks the top speed with the current 52 ft. 3 in. lines will be limited only by his ability to get round the pylon in pace with the model.

So far on practice runs, without a model, Ray has negotiated the pylon at almost 170 m.p.h.!

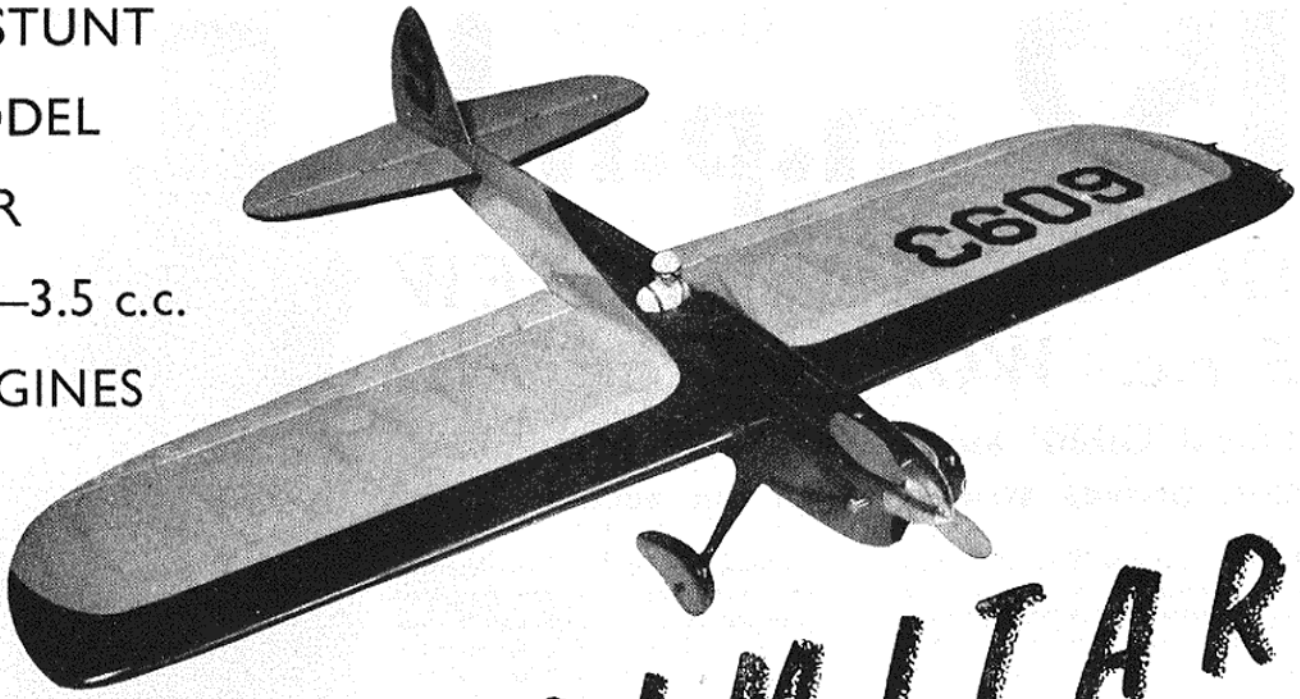
An interesting sidelight on this record attempt was the excellent publicity it received—see "Here and There." Also it is instructive to compare the speed attained with those mentioned in "Two Twenty-nines" on page 13.

Our heading photo shows "Gadget" in a typical flying pose. Contrary to usual practice he circulates astride the pylon, rather than walking round. Left: Inserting the pushrod in the bellcrank, as he assembles the model for its record flight. Right: The motor. The crankcase is Dooling but that's all—everything else is Carter built.





A STUNT MODEL FOR 2.5—3.5 c.c. ENGINES



SCIMITAR

Designed by BILL MORLEY to "slice" its way through the new stunt schedule

IN the 1954 Gold Trophy I flew a large Fox 35 powered model, and in the same contest the following year I used a model powered by an A.M.25. While both of these machines were excellent in their own ways, they each had their disadvantages. The smaller model hadn't the all-weather contest performance of the larger job, and the latter proved somewhat cumbersome to transport.

For these reasons I decided to design, for use in 1956, a medium-sized model around the Fox 19. Requirements for the design were good looks, coupled with the ability to perform such manoeuvres as square eights, hour glasses, triangles, etc. The result was the *Scimitar*.

On its test flight, it showed remarkable ability to "square off" and in fact its potential performance was limited only by the pilot's prowess with the handle.

In the Gold Trophy of 1956 the model gained the highest appearance points of the whole entry, but was unfortunately wrecked when the up line broke in a wingover. It has since been repaired and is now performing square loops, bunts and eights with great ease and regularity.

Construction is very simple. The wing ribs are made by sandwiching blanks between root and tip rib templates, then carving and sanding to shape. Note that there is slight taper on the leading edge, and that the inboard wing panel has 1 in. greater span than the outboard. Before you assemble the wing, all spars will have to be spliced, also make sure these splices are staggered when the wing is assembled.

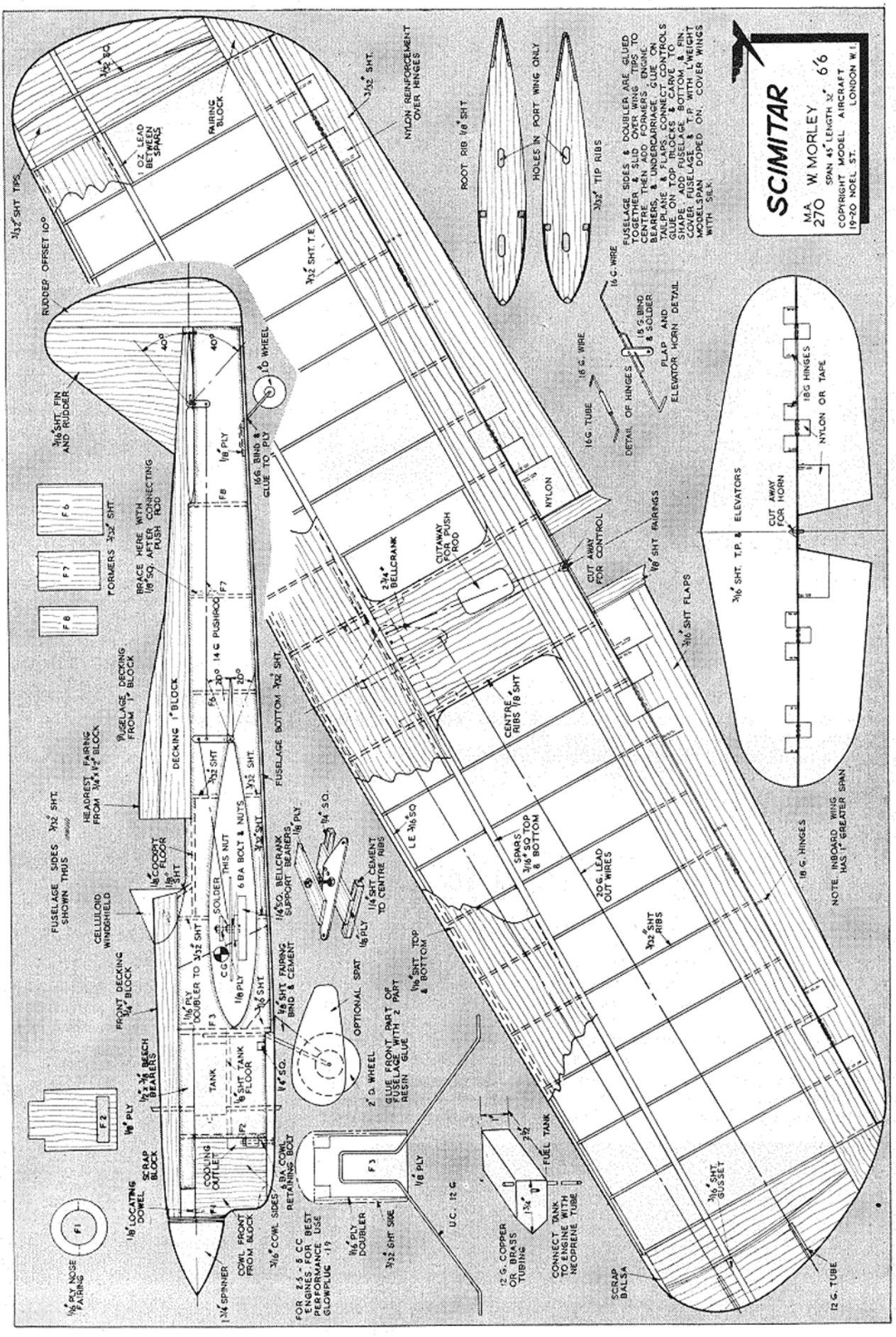
The fuselage is constructed by first cementing together the sides and doublers, and sliding these over the wing-tips to the correct position on the wing. Note the small cut-outs for the flap-horn. This component is placed in position as the sides are being slid into place. The rest of the fuselage is assembled once the sides are cemented in place, after which the small cut-outs are glued back into the sides, and the flaps are assembled on to the wing. Before finally cementing on the top fuselage decking, limit the control movement to that shown on the plan by firmly cementing in stops restricting the travel of the flap-horn.

The original model was silk covered, and this is well worth doing on any model of 2.5 c.c. and over. The spats are made of fibreglass with small metal inserts soldered to the axles. These are, of course, optional and in no way affect the performance. All other pertinent building instructions are shown on the plan.

The total weight should come out at about 32 oz. and if the model does not balance at the position shown, add lead to the appropriate end until it does.

Fly on 57 ft. Light Laystrate or 60 ft. 30 S.W.G. piano wire lines and make sure the ends are securely formed and the lines free from rust spots and kinks, or you are likely to have a rebuilding job on hand!

The *Scimitar* is the ideal model for the difficult manoeuvres in the 1958 S.M.A.E. Stunt Schedule, so build yours now and start practising.



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, 6s. 6d., POST FREE

AVIATION NEWSPAGE

by J. W. R. Taylor

FIRST VERTICAL TAKE-OFF AIRLINER is the way Fairey's describe their *Rotodyne*, the prototype of which flew last November 6th. Nor should we underestimate their claim that it is the most advanced aeroplane concept flying anywhere in the world, because a 48-passenger aircraft that offers a direct door-to-door average of 185 m.p.h. over 400-mile ranges, coupled with the versatility of a helicopter, could revolutionise short-haul travel.

For helicopter-style vertical take-off, the two 3,000 h.p. Napier Eland turboprops drive auxiliary compressors which pump compressed air through the stainless steel rotor blades to mix with fuel in pressure-jet burners at the tips. For cruising flight the engine power is transferred to the forward-facing propellers, and the *Rotodyne* becomes an almost conventional airliner, with lift shared between its fixed wings and auto-rotating rotor.

With an all-up weight of just over 17 tons, the *Rotodyne* is bigger than any other rotating wing aircraft except Russia's twin-turbine Mil Mi-6, which is a pure helicopter. Its fixed wings span 46 ft. 6 in., its rotor diameter is 90 ft. and its 3,300 cu. ft. cabin will accommodate 4½ tons of bulky freight as an alternative to passengers.

It's Magic

A NEW SYSTEM OF INSTRUMENTATION so simplified and accurate that it enabled an engineer with no previous flight experience to pilot a Lockheed T2V-1 *SeaStar* jet trainer has been developed by Douglas Aircraft.

The new instrument panel, which provides an artificial picture of the outside world for the pilot by day or night under all weather conditions, was first tested last August. It consists of a contact analogue displayed vertically in front of the pilot and a mechanically-operated horizontal navigational map display, together with several standby instruments.

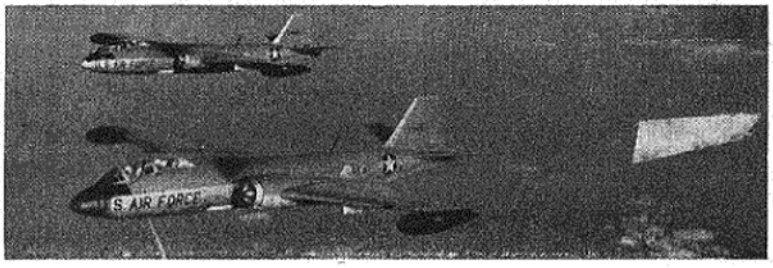
The analogue is a two-dimensional picture, presented on a flat, transparent cathode ray tube 2⅝ in. thick, 20 in. wide, and 11 in. high. The picture is made up of grid lines or random dots and gives the pilot the perspective of third dimension, depicting terrain and sky information.

Signals for both the analogue and horizontal navigational display are provided by a unique, miniature, airborne electronic digital computor which accepts and processes data from nearly 20 sensors.

Tugging Twosome

R.A.F. *Mosquitos* are **STILL IN BUSINESS** against anti-aircraft defences in Germany, 13 years after proving that they could beat anything put into the air against them in the same skies. This time, however, the "enemy" are more friendly, because the sole duty of the "Mossies" is to give practice to anti-aircraft gunners at the NATO ranges at Todenhorf, near Kiel.

Based at Schleswigland, Hamburg, the eight TT.35 target tugs and single demilitarised Mk.6 dual-control trainer make up the R.A.F.'s last *Mosquito* unit. Eight hours flying per day is average, with the drogues towed 3,000 ft. behind the aircraft for light ack-ack practice and 5,500 ft. behind for heavy gun firing. Results are assessed with the help of Swedish-developed "near-miss" recorders fitted to the drogues and the crews reckon that the best light ack-ack gunners are the R.A.F. Regiment, who easily hold their own with NATO units of the British, U.S., French, Danish and German armies.



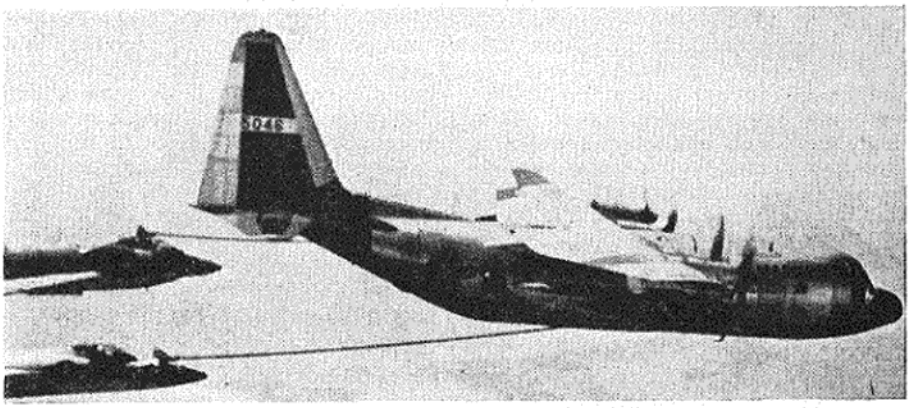
MORE UP-TO-DATE TUGS, but still basically of British design, are the Martin B-57Es used by the U.S.A.F. Powered, like all operational American-built *Canberras*, by two Curtiss-Wright J65 (Sapphire) turbojets, the B-57E can carry a variety of targets in two canisters under its rear fuselage and can tow a banner target at about 475 m.p.h. But it is otherwise almost identical with the B-57B tactical bomber and is quickly convertible for normal bombing duties. Only mods are removal of the canisters, cockpit towing controls, and the internal cable reels and fittings from the rotary bomb-door.

Czech-mite

BROUGHT FROM C.S.R. for MODEL AIRCRAFT was this photo of the trim little Motokov L-200 *Morava* five-seat light aircraft. First shown at an exhibition in Brno, the *Morava* has two 160 h.p. Walter Minor 6-III engines, which give it a top speed of 186.4 m.p.h. and a cruising range of 994 miles at 171 m.p.h.

Herculean Gas Pipes

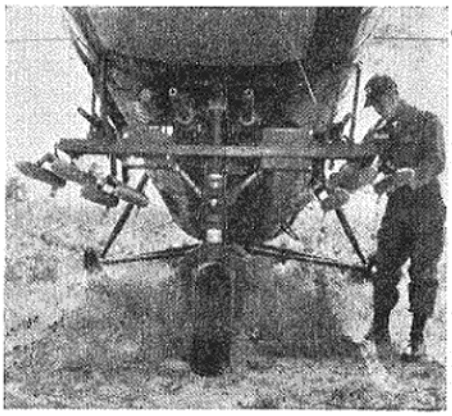
ANOTHER NEW JOB for a well-known aircraft is shown in the illustration right. At the moment, only one Lockheed C-130 *Hercules* has been modified into a flight refuelling tanker for evaluation by the U.S. Marine Corps at Patuxent, Maryland. But its capacious fuselage and relatively high top speed of 375 m.p.h. make the turboprop *Hercules* a useful machine for the job, especially as it can be converted back into a transport simply by removing from under its outer wings the hose-reel and pump units which are enclosed in small self-contained pods, and any special fuel tanks carried in the cabin. Yet another new version of the *Hercules* is the RC-130 developed for aerial mapping duties, and 16 of these aircraft are now in service in Florida.



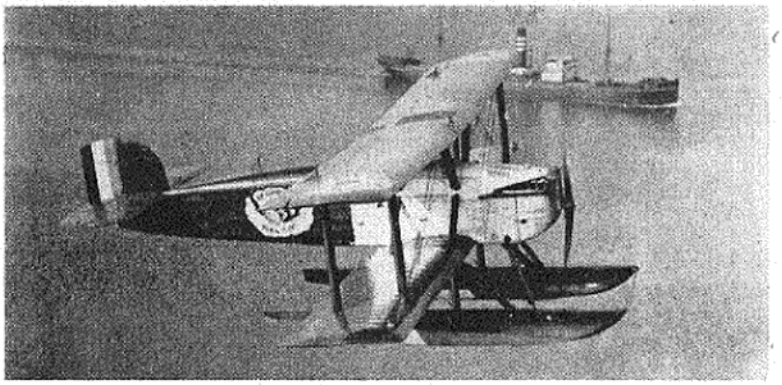
CHOPPER for CHOP-CHOP

SKYCAV is the latest American idea for military helicopters. An abbreviation of sky-cavalry, it converts the once-peaceful 'copter into a vicious close-support aircraft. The idea is to pop up from cover, loose off a burst of machine-gun fire or a few rockets at approaching tanks, vehicles or troops, and then drop down behind hills or trees to take cover and fly to a new position.

In tests at the U.S. Army Aviation Center, Fort Rucker, Alabama, various combinations of .30 in. machine-guns and 80 mm. Oerlikon rockets have been fired successfully.



FROM THE PAST . . . . . No. 20



The Douglas D-WC

THE DOUGLAS D-WC *WORLD CRUISER* was the first aircraft to fly round the world. Altogether, five were built for the U.S. Army Air Service in 1923 and they were designed for easy conversion from land to float undercarriage and *vice versa* so that they could make the best use of available land or water runways during their long flight. Each was a two-seater powered with a 420 h.p. Liberty 12-A engine.

Four *World Cruisers*, named after the cities of Chicago, New Orleans, Boston and Seattle, took off from Lake Washington, Seattle, on April 6th, 1924. "Seattle" hit a mountainside in Alaska. "Boston" force-landed in the Atlantic, its place being taken by a new machine, "Boston II." The survivors arrived back at Seattle on September 28th, 1924, after a 27,534-mile flight over 28 countries.

Span: 50 ft. Length: 35 ft. 6 in. Height: 13 ft. 7 in. Loaded weight: 7,380 lb. (landplane), 8,180 lb. (seaplane). Max. speed: 103 m.p.h. Max. range: 2,200 miles.

Topical Twists

by PYLONIUS

Gentlemen Prangsters

To the average bloke the chances of getting into an international contest are about as remote as the sort of control certain characters have over their radio models. Certainly the envy of his homely life is the wealthy traveller who can hoist his Union Jack standard over some foreign flying field, and proceed to take on the world's finest opposition with his first, yet-to-be-test-flown, model. How wonderful to stand there, amid the uniformed splendour of the works teams, as the supreme individualist, sporting a deerstalker hat, rolled shirt sleeves and a large expanse of surplus wing area. Will the gallant ship, even with clipped wings, beat the world with a glorious first flight?

The answer is usually to be found at the bottom of the result sheet, merited by the excruciating sort of flight that, apart from the odd jeer or two, would pass unnoticed in a junior club comp, but on the international level can be most embarrassing. As the model prangs-in flags would come down to half mast, the massed brass bands strike up a derisive "Colonel Bogey," and the little girl in national costume comes dashing out to snatch back her bouquet.

All of which is very damaging to national prestige. In fact, just a case of "Blow Union Jack, I'm all right."

Ages in the Air

Just how far a D/T-less model travels is usually a matter of speculation, wistfully indulged in after the careless flyer has given himself a well deserved kicking. Sometimes the answer comes by letter post—together with the model—but, more often than not, the fate of the model underlines the "If" on the "If Found" label. Seldom has one the luck to establish a long distance record by way of compensation, but this did happen to a young Danish flyer quite recently.

While a flight of 75 miles is quite remarkable, what is more astonishing is that the youthful kit builder holds the position of club chairman at the tender age of 15. An honour, which in this country is bestowed upon the superannuated modeller for services rendered in the bamboo and silk days. On this basis the junior members of this s ipling Danish club must be so young that they wouldn't have to be prodded onto the airfield like our own junior members but literally pushed.

Record Title

Modellers whose heads go around in circles when faced with the problem of finding a name for their new world beater will have to be strong willed to resist the topical appellations of "Sputnik" and "Bleep." Possibly, by now, some of our more rabid bench bashers will have kept pace with Russian air adventure by the simultaneous launching of "Sputnik II" (complete with model dog). Radio modellers, no doubt, will be more interested in the "Bleep" side of the sign business. To many of the less experienced the name will be the only Bleep they'll get.

At least we shall have these colourful names all to ourselves, for it seems our friends abroad disdain the use of sporty titles in favour of nationalistic insignia. Perhaps the reason for this is that they are such bad spellers. From what I see they are quite hopeless at spelling the names of their own countries. Even ignorant old me knows how to spell "Roumania" and "Hungary."

Cabbage Patch

I can think of no two hobbies more diverse than gardening and modelling, but according to club reports the two seem to enjoy some affinity beyond mutual commiseration about the atrocious weather. Old ladies who come to the Horticultural Show to sniff the gentle rose and prod the prize winning cabbage seem to enjoy a spot of combat to round off the hectic day. In static exhibitions cucumbers and models squat side by side in perfect harmony, while potted fuchsia peep shyly from under sheltering wings.

What the connection is completely escapes me. Perhaps they meet together on the cabbage patches which now pass for flying fields.

Building Time

It was the model builder who first proved to an astonished world that domestic man was capable of nobler things than cleaning his bike on Sunday morning. The humble kitchen table became the focus of ordinary man's urge for creative beauty, and the scale donkey engine and stick model aeroplane heralded a new age in home craftsmanship.

Early model man, living in the untroubled days of the pre Do-it-yourself era, was left to pursue his modelling destiny in peace. Proud as his wife might be of the gleaming donkey engine on the sideboard she still thought her ever-loving too much of a nitwit to hang a picture or put a washer on a tap.

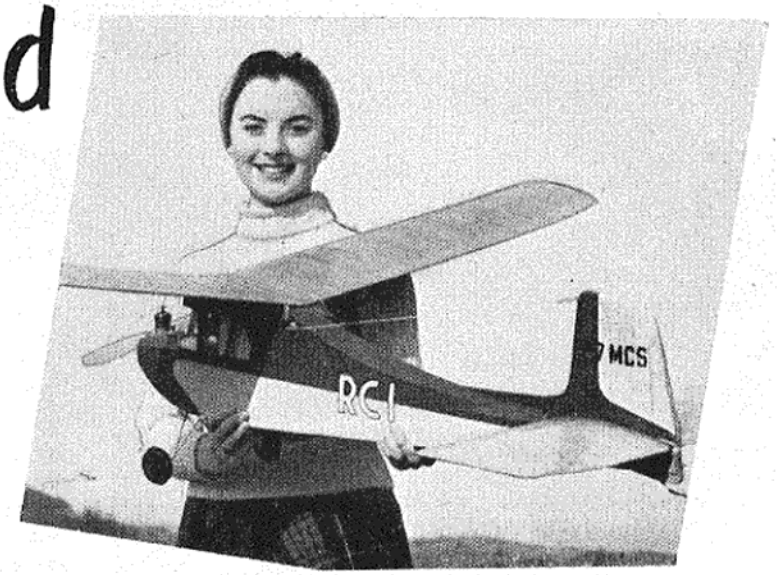
But times, unhappily, change. Whereas the afternoon shopping would consist of a chatty visit to the model shop for a tube of cement and six sheets of tissue, it now means a grim trudge to the handymans' shop for a bag of cement and six sheets of wallpaper. In place of the donkey engine on the kitchen table there is the donkey work of building the kitchen table. And the nearest the whitewashing modeller gets to any flying activity is when the steps give way under him.

Wet Banquet

Now that the banqueting season is once again upon us the modelling world will be shaking the mothballs out of its evening dress and the chestnuts into its after dinner speeches. While we all look forward to a banqueting season quite as wet as our flying one, there is the nagging doubt that our festal efforts are too austere by modern international standards. Our Eastern friends have already shown us the way to liven up the contest field with massed bands, flag waving processions and Olympic-style victory rostrums, and it might be expected that their banquet efforts go off with a similar flourish.

Sad to say this is not the case. Visitors to a recent Moscow Rally who had prepared themselves for a vodka and caviare orgy found themselves sidetracked into the local workers' canteen for a bunfight quite as prim as our own dinner and dance affairs.

Preparing and Flying your R/C Model

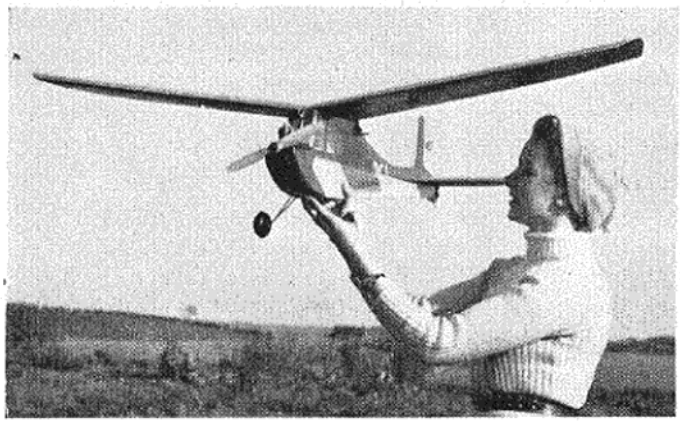


DEPENDABLE R/C and worry-free flying can only be possible if you are determined to leave nothing to chance.

Having already built and flown F/F models, you will be familiar with general trimming and adjustment procedure and will avoid the pitfalls that trap the unwary: the temptation to fly during windy weather or in unsuitable locations. But there is now also the radio equipment and control system to consider. It is no good thinking that, if it doesn't work properly on the first flight, you can put things right next time. There may be no next time, for, if the rudder locks over in a turn and you cannot release it, you will almost certainly wreck the model, or a large part of it, in the ensuing spiral dive. Even if the radio fails and the model goes "free-flight" with the rudder in neutral, it may well fly outside your safe landing area and be damaged by a collision with a building, tree or some other obstacle.

The NEW M.A. BEGINNERS' COURSE PART XXIII

This probably sounds rather discouraging and may suggest to some that R/C flying is something of a gamble, but any R/C enthusiast will tell you that, if you have a crash, or flyaway, it is nearly always your own fault and could have been avoided. Crashes seldom occur on first flights because the average modeller, having spent a fair sum of money and a great deal of time, in building his model, takes heed of such warnings as we have just given and is extra careful. The danger period is when, after a few successful flights, the modeller may begin to think that he has been over-cautious. If he then relaxes his pre-flight checking routine, a small thing, such as forgetting to check and replace a battery or rewind the escapement motor, may spell disaster. If you want to avoid such misfortune, you must, as we said at the beginning, leave absolutely nothing to chance and observe this rule at all times.

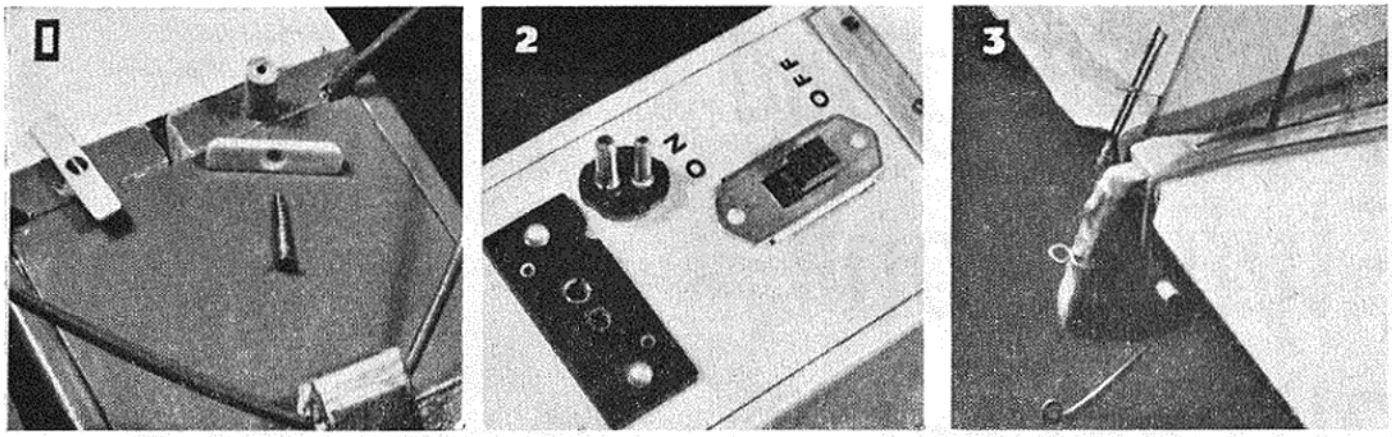


Check the model for balance and alignment as for a F/F machine.

However, before we are ready to journey out to the flying field, there are a few details to tidy up, following the general installation procedure covered in our last article.

Firstly, to deal with the question of securing the cabin and the battery compartment hatches. Especially where these are used to support or retain some part of the equipment (as in the converted *Deacon* model featured) wire clips are not too satisfactory and something more substantial is advisable. Some modellers use rubber bands across the hatch and attached to pegs or wire hooks. The only objection to this, apart, perhaps, from the question of appearance, is that residual diesel fuel causes rather rapid deterioration of the rubber, thereby adding to the items requiring our frequent attention. For the *Deacon*, therefore, the simple turn-buttons shown in Fig. 1 were devised. These, of plastic, or aluminium or brass, are mounted with $\frac{1}{2}$ in. × No. 0 woodscrews on $\frac{1}{2}$ in. lengths of $\frac{3}{16}$ in. dia. beech dowel, well glued and forced into suitable holes drilled in the bulkhead. The other end of the hatch can be secured with a strip of $\frac{1}{16}$ in. ply as shown in Fig. 2. This picture also shows the shorting plug which must always occupy the meter socket except when the receiver is being tuned.

Complete freedom of movement in the control linkage is most important. The rudder pin should be a free fit in the slotted rudder arm (see Fig. 3) and this latter should be angled slightly so that the sides of the slot do not bind on the pin in either the full-left or right positions.



1—Simple and serviceable turnbuttons for securing hatches. 2—Mark "on" and "off" positions of switch. Make sure shorting-plug is tight and cannot vibrate loose. 3—Fit the rudder pin low on the rudder for your first few flights to reduce control sensitivity.

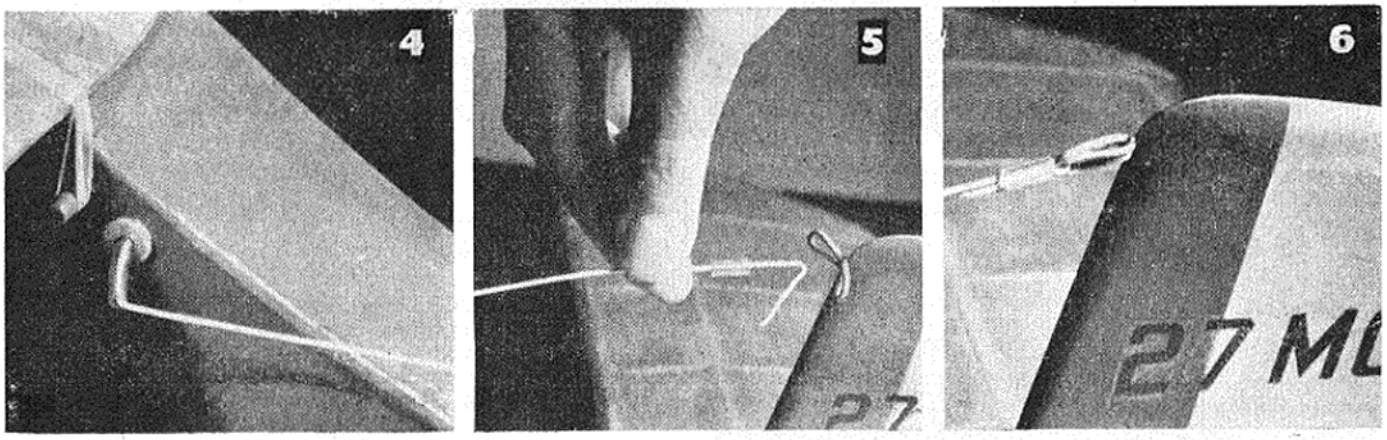
The fitting of the aerial deserves a little thought. It should be led out through a suitable grommet in the fuselage sheeting near the trailing edge of the wing. The method shown (Fig. 4) utilises two $\frac{1}{16}$ in. plywood discs and a 1 in. length of plastic tubing. The aerial is threaded through this and knotted on the inside so that no strain is imposed on the connection to the receiver. The free end is then attached to the rudder with a quickly detachable shock-absorbing connection consisting of a small rubber band stapled to the leading edge and a short piece of plastic tubing (Figs. 5 and 6).

For winding the escapement motor, an ordinary hand drill is best. In order to avoid straining any part of the rear bearing assembly, however, a flexible connection is desirable between the chuck and winding hook. A piece of ordinary coiled-wire curtain rod serves this purpose and can be seen in Fig. 8.

If you are using the standard E.D. transmitter, you will note that, after installing the two batteries, there is still some space left. As the lid of the case is quickly detachable, this space can be usefully employed to carry the keying switch and lead, the milliammeter and a tuning key for the receiver and a spare set of receiver and actuator batteries. See photo. To prevent any part of these coming into contact with the transmitter chassis proper, some full-depth pieces of hardboard or thick millboard should be used to divide off the compartments, foam plastic or crumpled paper being used as packing around the batteries. Incidentally, a good quality milliammeter can be obtained from Messrs. Ripmax, the radio control specialists, for 25s. This instrument is shown in use in Fig. 10.

As stated in Part XX, you must be licensed with the appropriate authority before you can use model radio equipment on either of the special frequencies that have been allotted for model control. This is merely a formality and, unlike the licensing of amateur radio stations, involves no technical examination. In the U.S. these licences are issued by the Federal Communications Commission and, in Great Britain, by the G.P.O. Licences issued by the G.P.O. are for a period of five years and cost £1. Remittances should be sent to the Accountant General's Department, General Post Office, London, E.C.1. You will receive in return a "Model Control Licence" issued under the provisions of the Wireless Telegraphy Act of 1949 and entitling you to use your equipment within a five-mile radius of your home or such place as you may specify as your "station." You may, of course, use the equipment outside the selected area, but you are then required to give notice of the occasion to the post office telephone manager of the area in which you wish to fly. If this seems rather a bother, remember that it is in your own interests to do so: there is just a possibility that other emissions are being made in that area that may upset your receiver. If you fly regularly from a site outside your area, you can make a "standing notification" to the telephone manager.

Unlike your F/F power models, your radio model will be relatively heavy, so that with the use of an engine of only moderate power (a 1.5 c.c. unit such as the Frog 149 is suggested for the converted *Deacon*) its flying characteristics are somewhat different. Compared with



4, 5 and 6—*This method of shockproof fitting, also allows the aerial to be quickly detached.*

a F/F contest model, the R/C job will be slower under power but faster in the glide and it is desirable to make sure that the alignment and trim of the model is as near perfect as possible, before glide testing.

First of all, check the tail-unit on its mounting, ensuring that the tailplane is accurately aligned and that the fin is not offset to one side. By keying the transmitter, check also that the two neutral positions of the rudder are, in fact, neutral. As with F/F models, it is helpful to add two small pieces of $\frac{1}{16}$ in. balsa to the underside of the tailplane each side of the tailplane platform to ensure that the tail-unit is always properly keyed in position. Now check the wing. It must, of course, be free from warps and correctly aligned on the fuselage. It also needs to be securely lashed with strong rubber bands. There are available, from stationers, large parcel bands, approximately $\frac{3}{8}$ in. wide which, doubled, can be used for this, or you can make up suitable loops from $\frac{1}{4} \times 1/20$ in. aero strip. The front pegs, incidentally, should face forward so that any collision impact will allow the wing to fly off the fuselage, thus reducing the risk of damage to both components.

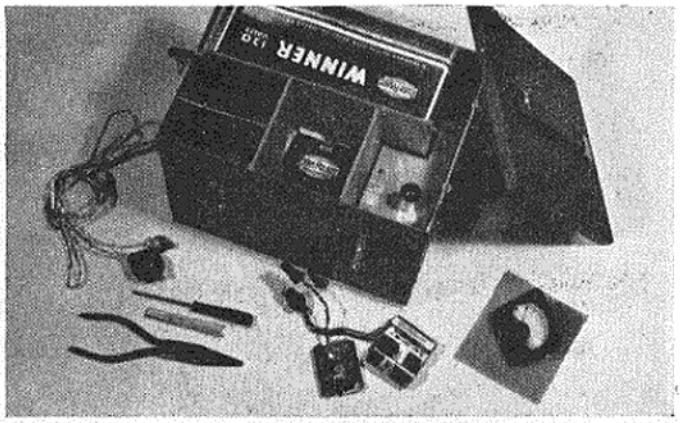
Make sure that the engine is bolted in securely, using fibre stop-nuts or a second nut locked against the first. The fuel tank will need to be large enough to permit engine runs of several minutes and if a tank of suitable capacity and shape cannot be bought ready-made, it will be necessary to make one. A clear plastic tank is preferable so that its contents can be visually checked.

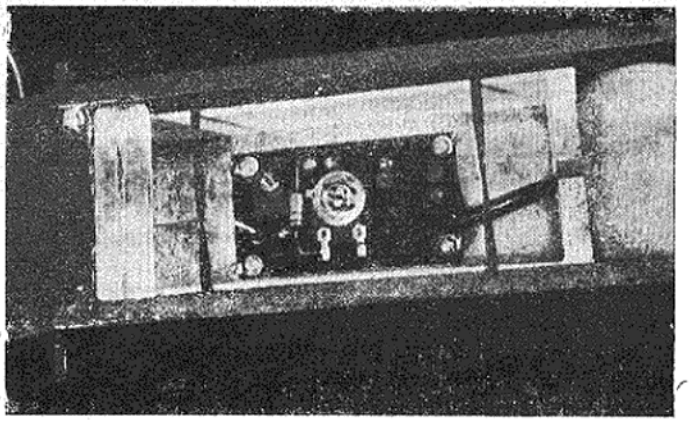
After ascertaining that the receiver and actuator gear are functioning correctly, it is necessary to make a second check with the engine running. Sometimes, engine vibration will cause the receiver relay to "chatter," resulting in a continuous or intermittent flutter of the rudder. Adequate insulation of the receiver from the airframe (see previous article) will usually absorb the normal level of engine vibration, but excessive vibration can be caused by an unbalanced propeller, or may be due to the engine having an inherent vibration period at that particular speed. In this case, first try another, similar prop, then one of a slightly different size, allowing the engine to run faster or slower.

Present day model R/C units are factory tuned and usually work satisfactorily immediately on installation. No trouble was experienced with the E.D. Transitrol set used in the *Deacon*, which operated "straight out of the box" after making the necessary battery connections and without touching either the tuning adjustment or sensitivity control. If your set requires tuning, this should be done in accordance with the instruction leaflet issued with your particular set, but, in any case, it will be necessary to make a range check and, possibly, re-tune the receiver at the flying site.

It goes without saying that you will need a helper on the flying field. If you have a willing friend who is experienced in R/C, so much the better, otherwise ask someone on whom you can depend and agree upon a simple code of hand signals.

Plug in the milliammeter, switch on both receiver and transmitter and first make a check within easy hailing distance so as to familiarise yourselves with the hand signals. Your assistant should be stationed at the transmitter and merely has to key the transmitter signal on and off as you raise and lower your arm (Fig. 9). Another signal, such as pointing your arm straight above your head, will indicate to him that he should hold the button down continuously for the "signal on" position while you re-tune the receiver. The range check should





Top. The transmitter case with hardboard divisions added, leaving storage space for keying lead, milliammeter, tuning keys and spare receiver batteries.

Access to the Transitrol receiver is gained through the cabin top after removing foam pad. Tuning adjustment is via small screw and locknut, upper left. Centre is sensitivity control.

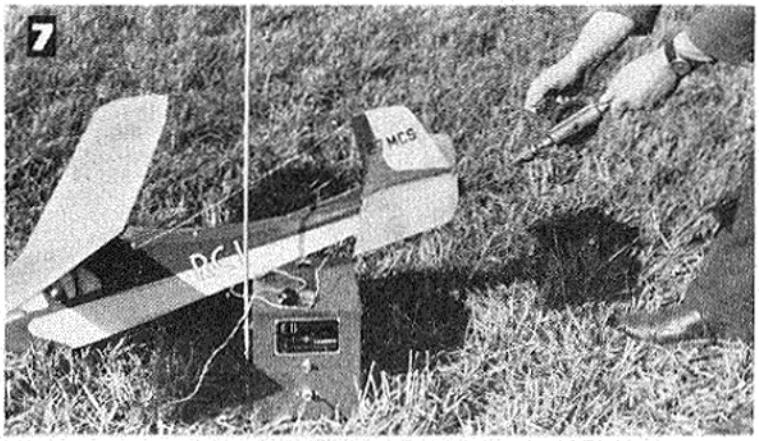
be made at progressively greater distances up to about 300 yards from the transmitter.

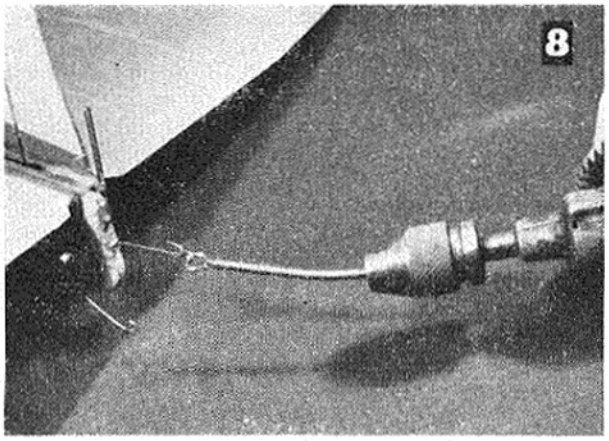
If the flying site is also in use by other R/C enthusiasts, you must, of course, make sure that all other transmitters are switched off while you make your range check. Similarly, you must not operate your transmitter while another model is in the air.

It now remains to determine the trim of the model with a few test glides, having first checked its balance. Due to its higher wing loading, the R/C model will require somewhat more vigorous launching. Do not merely hurl it forward, but run into the wind until the model flies itself out of your hand.

Now a final check before your first radio-controlled flight. Are there enough turns on the actuator motor? Perhaps your test glides jarred something out of adjustment. Check to make sure. Is the shorting-plug secure? Are the wing and tail rubbers O.K.?

When you are positive that you have done everything within your power to ensure the model's safety, put enough fuel in the tank for about $1\frac{1}{2}$ minutes' running time and start the engine. Allow it to warm up for 20 seconds or so, then throttle back to reduce power very slightly. Switch on both transmitter and receiver and check that the rudder is responding properly to the transmitter key. Now watch the rudder sequence as you press the key: left, neutral, right, neutral, left, neutral. Leave it so that the first signal in flight will move the rudder to the right. The engine now has enough fuel for





7—*Make sure you have enough turns on the escapement motor before each flight.* 8—*Flexible curtain rod used in drill chuck aids winding.*

about 30 seconds' flying. Don't get flustered. Launch the machine carefully and get back to the transmitter, or, if your helper is sufficiently experienced, let him launch the model.

Ideally, the model should just fly straight out in front of you in a shallow climb. If it turns, this will probably be slightly to the left, due to engine torque. This is where your " right rudder " first signal comes in. Press the button and watch. The model will swing right and in two or three seconds will be back into the wind again. Release the button, then, immediately, give a quick press and release to cancel out the left rudder position which follows. Try right rudder again briefly just to make sure that left rudder was, in fact cancelled, *then cancel left again.* The idea is to keep the model heading into wind and, when it turns away left again, to never get caught with " left " instead of " right " next in sequence.

The signals you send during your first flight should only be those required to keep the model heading upwind until the fuel runs out. This will give you the feel of the controls, but your primary aim at this stage is only to see your model safely back to earth again.

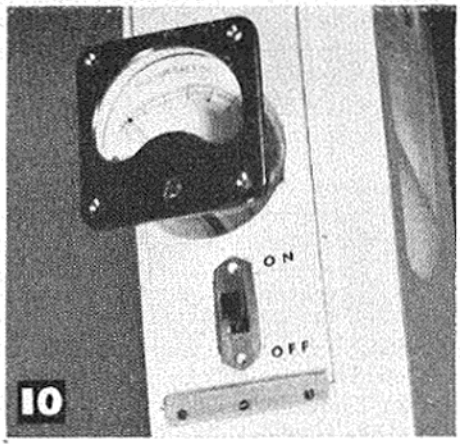
If, by any chance, there is virtually no wind, keep the motor run very short for your first flight. If the model should get rather too far away from you in this or any succeeding flight, you should turn it back towards the transmitter *only if you have at least* 50 *ft. of altitude.* Do not attempt to turn the model through 180 deg. or more in one movement. Make a quarter turn and neutralise, then another quarter turn and neutralise (always remembering to cancel the opposite control after each neutral). Don't wait until the model is nearly back to you before turning it back into the wind. Complete the 360 deg. turn so that the model is still in front of you.

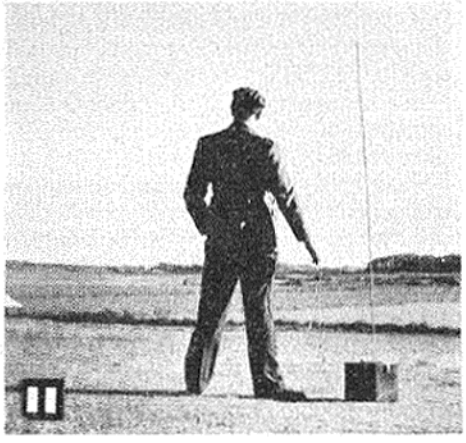
When the motor cuts, remember that the effectiveness of the rudder will probably be reduced by half, due to the absence of propeller slipstream and the model will therefore take longer to respond to your commands. Keep the model heading straight into the wind and try to avoid making turns when near the ground.

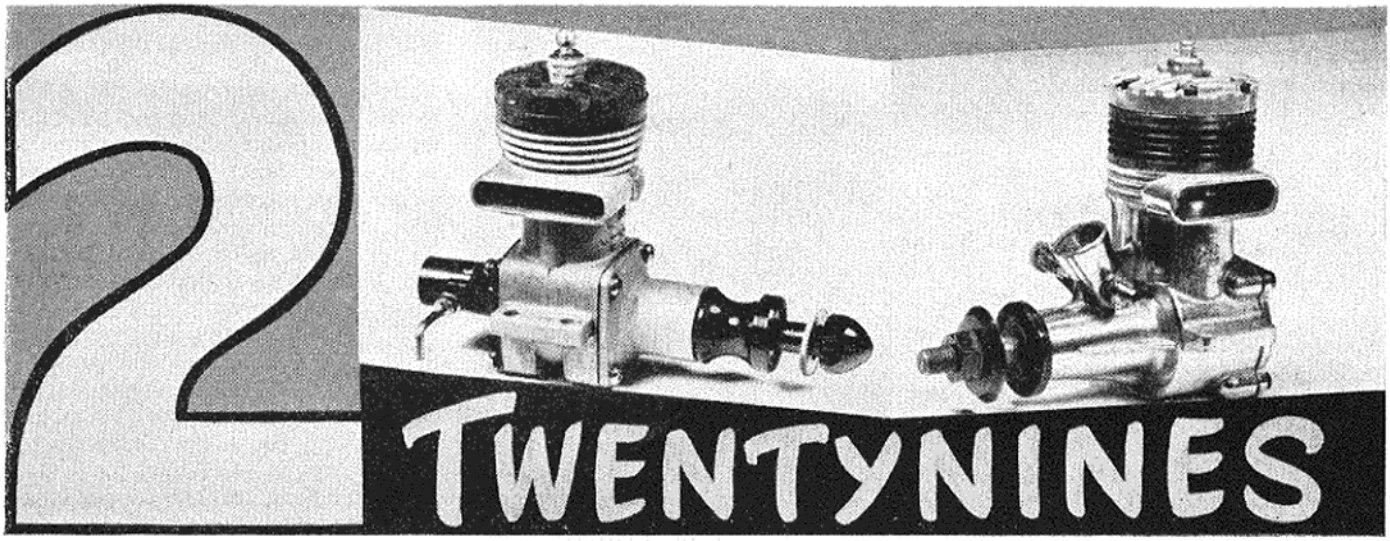
Having sucessfully brought your precious model down again, switch off the transmitter and receiver and carefully check everything before attempting another flight. Also, give a few moments' thought to your first flight. Was the model's trim satisfactory both under power and in the glide ? Or did it tend to stall or turn off one way ? Use your knowledge of F/F trimming to get the model properly adjusted before trying more revs or a longer motor run.

The rest is up to you. As explained in Part XX, a great deal can be done with a simple rudder-only R/C model, but, take care and never attempt manoeuvres without plenty of height. If you get confused and lose control of the model, this will not matter if you have plenty of altitude: you merely have to drop the transmitter key and wait for the model to level itself out. Never, never take risks and remember your " cockpit drill " always and check everything meticulously before each flight.

9—*Checking receiver reception. Increase distance from receiver to transmitter to* 300 *yards and re-check.* 10—*Standing current on the Transitrol receiver is* 0.2–0.4 *mA. as shown, which is increased to* 4 *mA on receipt of signal.* 11—*Concentrate on keeping the model in front of you and heading upwind during your first flights.*







. . . AND OTHER TOPICS by Peter Chinn

FOR several years now the Eta 29 has been the leading British 5 c.c. high-speed glowplug motor. It is, of course, essentially a " racing " type engine in the classical manner and in the tradition of the famous Red-Head 29 McCoy, now, alas, no more. For the past two or three years, the Eta 29, too, has been in somewhat short supply and we had begun to wonder whether it would follow the McCoy and disappear from the market, but lately these fears have been dispelled by the announcement of a new version, the Series V.

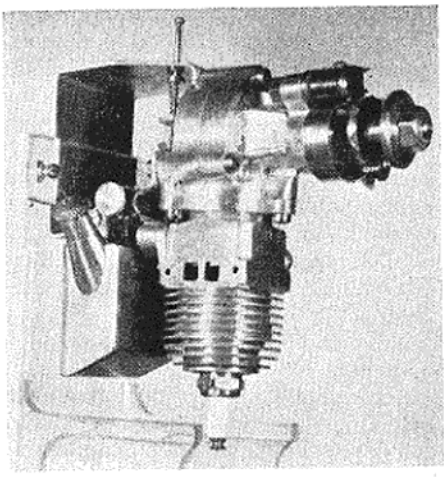
The original Series I Eta appeared in 1949 and, over the next year or two, was developed, via a short-lived Series II model, to the Series III, which remained, with small changes, until 1955-1956 when the IIIc model became the Series IV. During 1957, a complete redesign was undertaken and the Series V is the result. Some parts of the Series V are interchangeable with those of the earlier models, but most of the more important components, with the exception of the crankshaft and main-bearing assembly, are entirely new.

Firstly, the new Eta has a fresh main casting. Comprising barrel type crankcase and cylinder block, it has an enlarged transfer passage and is diecast in a new high-strength alloy. The shrunk-in cylinder liner has the usual six-port 180 deg. exhaust segment and four transfer inlet ports. On our particular engine (purchased September, 1957) there are also two large " Dooling type " skirt ports in the liner but the new piston does not possess similar skirt ports to register with these. The piston itself remains an extremely neat light alloy pressure diecasting, machined externally and with two Hepolite compression rings, but the earlier pattern deflector crown has now been abandoned in favour of a simple vertical baffle on a flat piston head, in the manner of most lapped-piston, loop-scavenged glowplug motors. A new connecting-rod with plain eyes (in place of the bronze-bushed bearings formerly used) is now employed and is coupled to the piston via a fully-floating $\frac{3}{16}$ in. dia. gudgeon-pin with brass end pads.

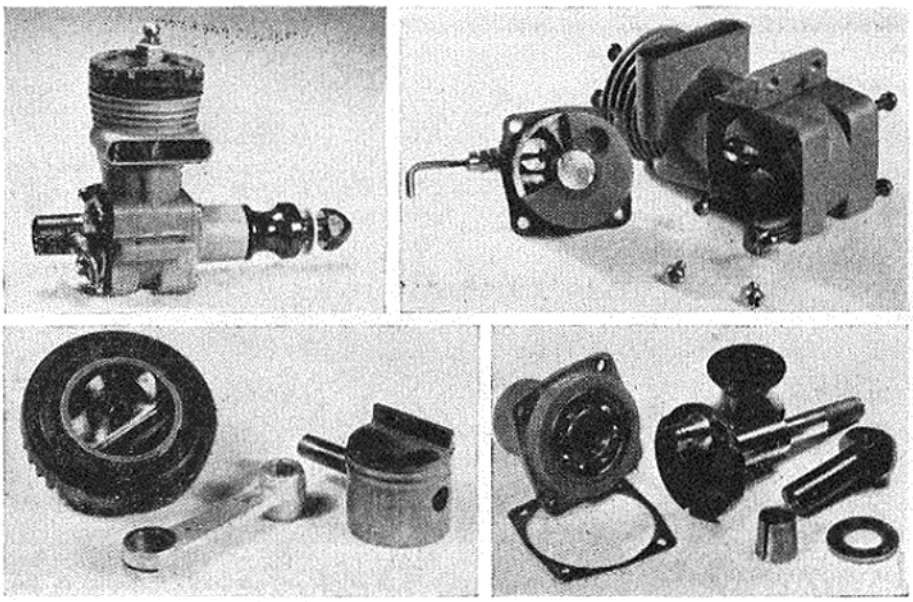
The disc type rotary-valve unit now features a rotor cut from " Tufnol " reinforced plastic material, which is mounted on a pin having a left-hand thread screwing into the combined back-plate/carburettor casting. This latter has a $\frac{5}{16}$ in. choke diameter and features an open type jet assembly. As with the front bearing assembly, a paper gasket is used to make the joint between the backplate and crankcase. The cylinder head, however, retains the lapped metal-to-metal joint always featured by the Eta 29, but with a narrower seating. The cylinder head is entirely new and has revised internal contours to suit the new piston. The ignition plug, formerly located centrally in the outside of the head but inclined so as to position the glow filament to the transfer side, is now offset to the exhaust side, as on some American designs, such as the " 100 Series " Veco motors described previously.

The crankshaft and bearing assembly continues virtually unchanged. The shaft, machined in one piece and hardened and ground, is balanced for all rotating weight by means of a crescent counterweight and has a 15/64 in. dia. hollow crankpin. It is supported in $\frac{1}{4}$ in. i.d. and $\frac{3}{8}$ in. i.d. precision ball journal bearings enclosed in a diecast alloy housing. Drive to the airscrew is conveyed via a steel split tapered collet and bobbin hub.

Of recent years the Eta 29 has earned many successes in class " B " team-racing and doubtless the specialists in this type of contest will be trying out the Series V during the coming season. With an output in the 0.60-0.65 b.h.p. region, the Eta remains the most powerful British engine on the market. Also, having regard to the prices of the very few remaining disc-valve, ball-bearing



Can anyone identify this mystery engine described on page 15 ?



Parts of the new British Eta 29 Series V racing motor show the many differences between this and the earlier Eta 29 models.

racing motors still made in various parts of the world, its price of £7 6s. 4d. seems very reasonable.

The K & B 29R

Another engine we acquired recently was a K & B-Allyn Torpedo 29R. This, with some hotting up, is the engine with which Bill Wisniewski has been getting speeds approaching 150 m.p.h. in the 5 c.c. class in the U.S.

After discussing the Eta 29, which, with the disc-valve McCoy Red-Head 29 and Dooling 29, exemplifies the hitherto accepted essentials of racing engine design, reference to the Torpedo 29R must inevitably focus attention on the wide differences between these two types.

The Torpedo 29R is a simple design. It has shaft-valve induction, a plain (bushed) main bearing and a lapped piston. Seven years ago, an engine having such a specification would not have been considered to possess an earthly chance in a speed event. The big change came in 1951 with the introduction of the 3¼ c.c. shaft-valve, plain bearing K & B Torpedo 19, which astonished everybody (including, we would guess, its makers) by proving to have a stock model performance (over 0.4 b.h.p.) far superior to the best disc-valve, ball-bearing 0.19 available.

Now and then someone comes up with an outwardly normal design which exceeds all expectations. The British AM-10 was a recent one and the Japanese Enya 29-3 promises to be another, but the sensation of 1951-52 was the Torpedo 19 and time has done nothing to diminish its ascendancy. American Class A (0.20 cu. in.) speed contests have long since become all-Torpedo events, but this is only half the story, for Torpedo 19 speeds have frequently equalled 0.30 cu. in. (5 c.c.) class times and at the last U.S. Nationals, a Wisniewski-tuned 19 returned the staggering speed of 154.6 m.p.h.—3 m.p.h. more, in fact, than the newly claimed Czech world record for the 5 c.c. class.

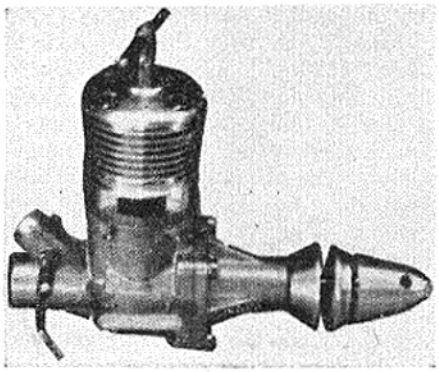
It was clear, from the showing of the Torpedo 19, that it should be possible to improve on standard shaft-valve, plain bearing 5 c.c. motors to the extent of bringing their performance up to within striking distance of the pukka racing engines. It cannot be said that this has succeeded to anything like the extent enjoyed with the Torpedo 19, but, during the last two years, the Torpedo 29R, in the hands of Wisniewski, has managed to make some impression on the Dooling 29 monopoly of the 5 c.c. classes, with one world record (142-odd m.p.h. and since twice exceeded, however), a Class B American senior record at 144 m.p.h. and a second place at 147.5 m.p.h. (0.6 m.p.h. behind a Fox 29R) at the 1956 U.S. Nationals.

Certainly, Wisniewski's tuning of the 29R has a lot to do with these performances. Among other things he modifies the valve port, the transfer port, and opens the intake to the maximum, laps the piston to an easier fit and runs the engine on a five-part basic brew containing 55 per cent. nitromethane and 10 per cent. nitrobenzene. But there can be no doubt as to the soundness of the basic design that responds to these modifications.

There is virtually no connection between the 29R and the standard Torpedo 29. It is a shorter stroke engine than the "square" 29 and has in fact, the same measurements as the Eta 29—i.e. 750 × 672 in. All parts are different, with the exception of a few minor items like the needle-valve assembly and prop nut. The 29R, however, is clearly based on another Torpedo model: the 35 (which is dealt with in our Engine Test feature this month) and a few parts, such as the conrod and back cover are interchangeable.

The crankcase is practically identical with that of the 35. The cylinder, smaller of course, has fewer cooling fins which are also of reduced outside diameter. The crankshaft has the same diameter journal and gas passage but the induction port gives an intake period of something over 190 deg., opening 10-15 deg. earlier than the 35. Incidentally, the 29R comes equipped with a venturi restrictor cutting the choke diameter down to about $\frac{3}{16}$ in., so it is assumed that the makers expect the engine to be used also for aerobatic work and other applications where fuel suction is more important than a high peak output. The makers give the peaking speed of the 29R as 15,500 r.p.m.—a clear 1,500-2,500 above that of the 35.

With the Dooling 29 back on the market in the U.S. (after a long absence) the chances of the 29R ousting the true racing type motor from the 5 c.c. class seem to be



From Italy comes this experimental, plain-bearing version of the Super-Tigre G.30. It may be offered as a (cheaper) companion model to the G.30 during 1958.

somewhat diminished, but, with the continuing example of the Torpedo .19 in the 0.20 cu. in. class, we may yet see renewed efforts to put a shaft-valve design on top.

In Brief . . .

A cheaper version of the rear induction Super-Tigre G.30, Italy's challenger in the 2.5 c.c. contest diesel class, may be offered shortly. It will be identical with the present model except for a new front housing with plain bearing instead of twin b.b. Incidentally, the G.30, which is one of the most pleasant high-performance diesels we have handled, will be included in the Engine Test series soon.

Can anyone identify the 7 c.c. petrol engine illustrated on page 13. This engine, now part of the American Underwood Collection, is believed to be of British origin and is probably of immediate pre-war vintage. Obviously all hand-made, it would appear to be the work of an enthusiastic and capable amateur.

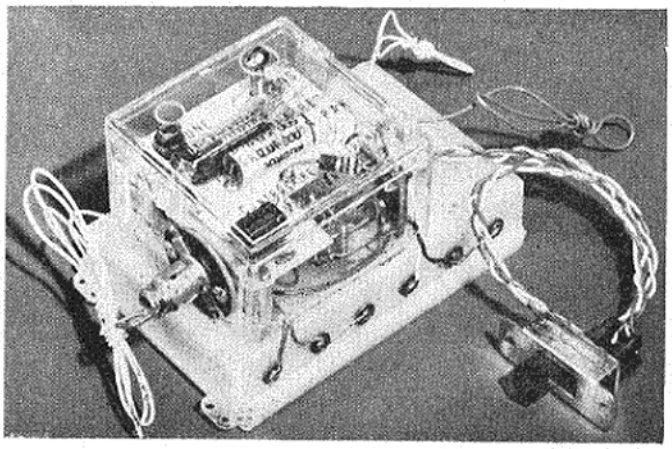
Lazy Man's R/C

There is no doubt that modellers, like everyone else, prefer to do things the easy way sometimes. The success of plastic solids, prefabricated kits and the universal acceptance of ready-made props, tanks, etc., are ample evidence of this. Therefore, it seems reasonable to suppose that, if someone offered a complete ready-to-install R/C unit—receiver, batteries and actuator, in one self-contained package ready to couple to the rudder—it, too, would find a ready sale.

This, we would guess, is the thought behind a new unit now being offered in the U.S. by John Maloney of "World Engines," the well-known model motor importer. This new unit is the "Control-Pak" or, to give it its full title, the Controlaire "Installation Pak" and is made by Controlaire Electronics of Fairborn, Ohio, under Jack Port (winner of the 1953 U.S. Nationals radio event and designer of the equipment) and John Maloney.

"Control-Pak" does not go quite so far as offering direct coupling to the rudder, but it does reduce the number of separate units to two and greatly simplifies installation. It comprises a 27 Mc/s receiver in a Plexiglass case, mounted direct on a plastic battery box containing all batteries, including the actuator battery. All the builder has to do is to glue the base cover of the battery box to a suitable bulkhead in the model (foam insulation is stated to be not essential) and fix the ready-wired switch on the side. Two leads, ready for connecting to the actuator, sprout from one end of the case and at the other end is mounted a meter socket.

The receiver circuit is basically that of the Controlaire SM-1 unit and embodies a 1AG4 hard valve plus a transistor. A Jaico relay is used. Standing current is 0.5 mA which jumps to 4.4 mA on receipt of signal from the average carrier-wave portable transmitter. The equipment had extensive field testing by members of the Springfield R/C group during 1957, totalling, it is said, over 1,200 hours actual flight time by both expert and novice.



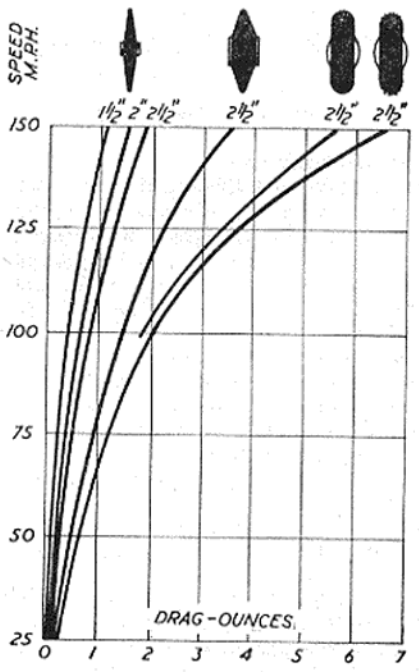
The new American "Control-Pak," a self contained and ready-wired receiver/battery-box unit, which is supplied ready for connection direct to the actuator.

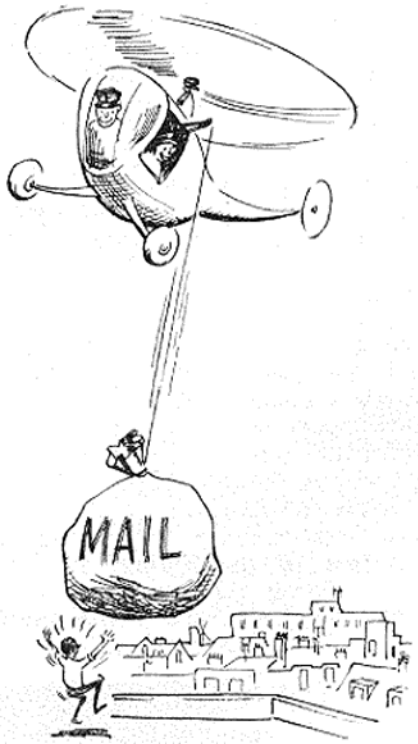
MORE DRAG — LESS SPEED

AT F/F speeds wheel drag is usually low, irrespective of the diameter and section of the wheel. At speeds much above 50 m.p.h., however, drag figures mount rapidly, particularly with the thicker, non-streamlined sections. At 100 m.p.h. a thick wheel will have twice the drag of a thin wheel of the same diameter, and at 150 m.p.h. as much as six times the drag.

Some wind tunnel test data are summarised in the graph. The thin section is typical of the streamlined moulded rubber or plastic wheels widely favoured for F/F and C/L models. The thicker tapered section wheel is generally used on heavier models where the greater width of hub is an advantage. Also the tyre itself is usually made of soft rubber, providing a good cushioning effect. There is virtually no "give" in streamline section wheels with the tyre materials normally employed.

The thicker balloon type wheels have prohibitive drag figures at really high speeds and so are really unsuitable for fast C/L models where maximum performance is required. A treaded tyre has a higher drag than a smooth tyre at the same speed.





Not the Answer

DEAR SIR,—I was introduced to aeromodelling early this year, by a modeller of some 25 years' experience who showed me a detailed scale model of a Sabre jet that he had constructed.

I entirely disagree with the Editorial comment (Here and There, May) that plastic kits have attracted many modellers to the hobby who would not otherwise have joined our ranks. In my opinion, the plastic kit does not initiate the potential enthusiast insofar as it lacks incentive and gives no filip to the modeller. As no great skill is required in construction and having completed a model so easily, the beginner will quickly become discouraged in attempting a hard or soft wood model, and revert to plastic kits.

Surely the true novice, the one who will go forward to advance modelling and whom you anticipate becoming a fan, will shun these plastic kits in an endeavour to display his skill and craftsmanship. The completion of balsa models offers a much greater sense of achievement and the satisfaction gained in showing one's friends a model and saying, "There you are, made it myself," is far more beneficial than producing a plastic one.

My first model, badly constructed and not to scale—even though I had a plan—spurred me on to produce something more accurate and in no way acted as a deterrent. Thus the little experience I have gained will assist in future models.

No doubt other potential enthusiasts will be influenced in the same manner.

As a final word, is it possible for a small column to be devoted to a "Tip of the Month," whereby experienced modellers could pass on useful gems of knowledge to beginners.

Yours faithfully,

Gibraltar. C. MCCALL, SGT.

Revs. v b.h.p.

DEAR SIR,—Looking through back issues of the modelling mags., I began to make a few calculations, due to having discovered a rather strange fact.

At one time, it was quite an acceptable proposition, to fly a 7 or 8 ft. model weighing some 6 lb. or so, with a 10 c.c. spark ignition engine producing some 0.2 b.h.p.

Now, we all know that this power output is about equal to the power of either a good 1.5 c.c. or a poorish 2.5 c.c. modern diesel; however, it is apparent what the result of trying to fly such a model with a 1.5 c.c. diesel would be!

Obviously there must be some logical explanation; to me the answer would appear to be in the crankshaft speed of the engines concerned. The older job swung a great big propeller at some three or four thousand revs., while now we run a much smaller one at some 10 to 13 thousand r.p.m.

Unless I've dropped a horrible clanger somewhere, which is quite possible, it would appear that the high r.p.m. of the modern engine results in inefficient propeller operation and that in fact we cannot, with our high speed props, transfer our power efficiently to our airscrews. In other words, the amount of thrust we would appear to get for a given b.h.p. figure seems to be lower than it was in, say, 1939.

The average figure for propeller r.p.m. in full size aircraft leads me to think that there may be something in this (even allowing for the tip-speed problem).

Please understand that I'm not referring to "pylon" type climbs, but to the type of performance expected of the average sports or radio job. Anyway, there it is: I'll throw it on the table for better brains than mine to think about.

Yours faithfully,

Waltham Chase, G. READ.
Southampton.

A Matter of Opinion

DEAR SIR,—I note in the December issue of MODEL AIRCRAFT under the heading "In This Issue" you ask for readers' opinions and constructive criticisms. As one of your regular readers for many years now, I would like to bring to your attention the fact that MODEL AIRCRAFT is, or should be, written for the model aircraft constructor, and not for the man who requires information regarding full size aircraft.

In this respect I would like to draw attention to the fact that the above-mentioned issue of MODEL AIRCRAFT contains no less than five pages which are devoted exclusively to full size aircraft. How much better it would be if these pages were allocated to articles written by leading modellers regarding their own particular specialities. I suggest that people interested in full size aircraft should invest in one or more of the very large number of periodicals concerning this subject, which would also be invaluable to "Solid Modellers."

Yours faithfully,

London, S.W.1. M. R. FISHER (Mrs.)

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.

Not for Me!

DEAR SIR, — After reading Mr. Houlberg's extremely interesting article on aeromodelling in Russia, I couldn't stifle a faint feeling of envy at the facilities offered to the Russian enthusiasts. I've had some experience of trying to stir up and maintain interest, not only in modelling clubs, but in the general youth club field.

Then came the second thoughts. I am glad that we have not reached that degree of organisation in this country—could I possibly dodder on as at present, building when time and energy permit, and flying my little sports jobs in our small playing field? And could I take my time over the building as now; upstairs somewhere there are kits bought before the war, which will be built *one day* and only this summer I actually put the finishing touches to a Corben Super Ace bought in 1937.

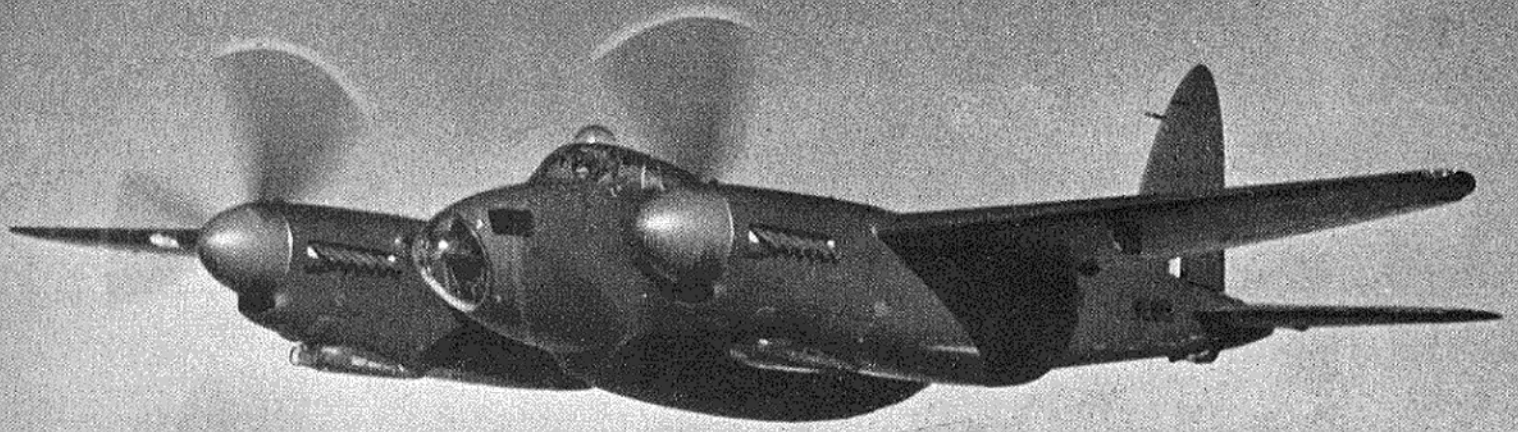
No; it may be helpful to be given materials, technical gen and the run of a workshop, but aeromodelling is a hobby, not a social duty!

Yours faithfully,

Colby, Norwich. A. A. C. JORDAN

C. McCALL wins this month's X-acto Knife Chest with his letter on plastic solids. Have you anything to say?—Choose your own subject, but keep it short, snappy and of general interest.

Scale drawings — sectioned views — photographs — cockpit layout — plus a pilot's impressions of the



MOSQUITO

by David Ogilvy

DURING the last decade military aeroplanes have tended more and more towards specialised duties, and although such terms as fighter-bomber are still a part of service parlance, it is hard to find any aeroplane that can claim honestly to fill that role. However, during World War II it was common practice for a design to be adapted to all manner of tasks for which it was not originally intended, and perhaps the most versatile of all was the D.H. 98 *Mosquito*.

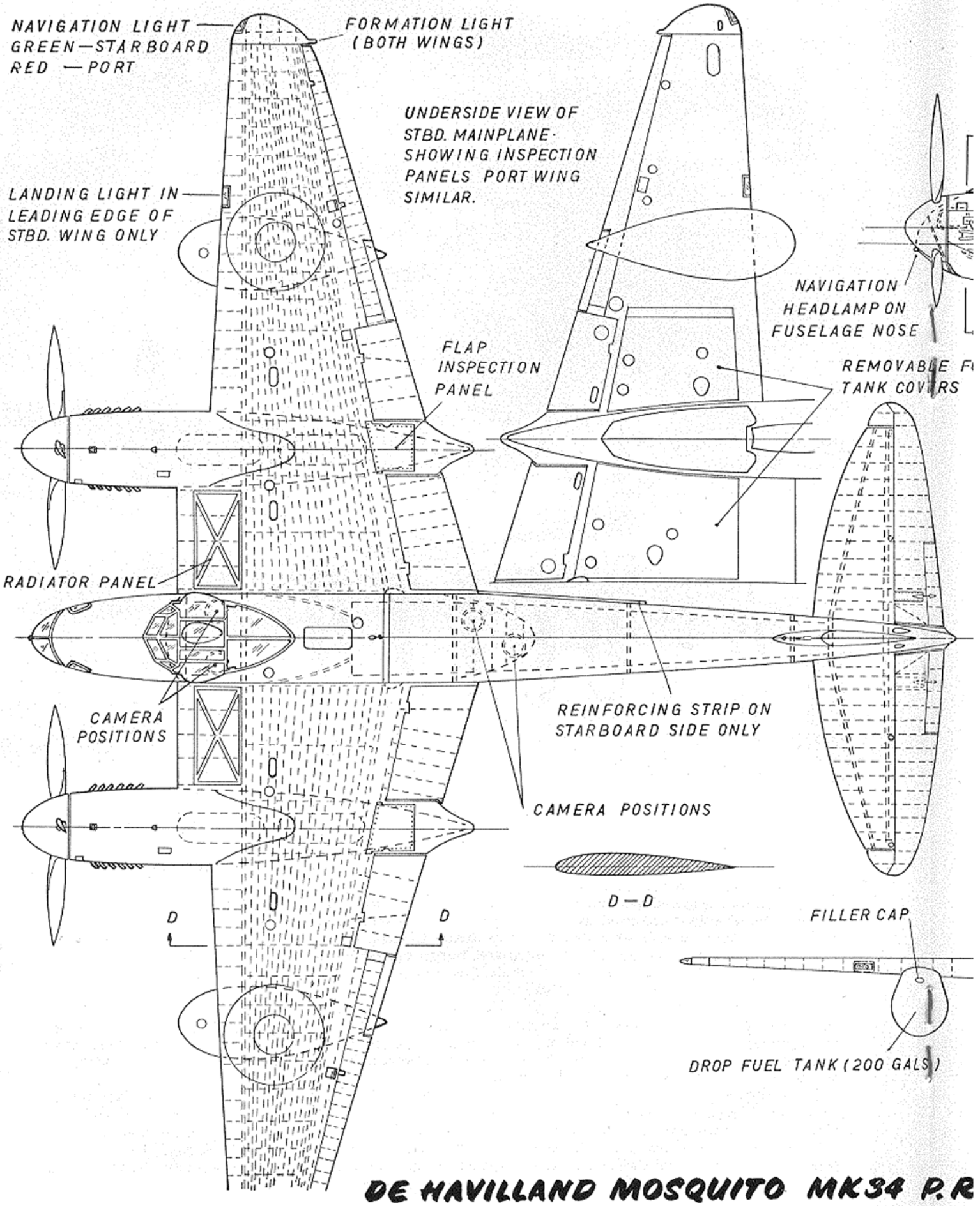
A potent twin-engined machine of unusually streamlined form, the " Mossie " (as it later became dubbed as a term of affection) surprised the pundits of its period by its method of construction—all wood, and much of it balsa ! Many people were doubtful of its ability to stand up to the inevitable stresses and strains that were to be imposed on an operational aeroplane, but its designers were fully confident that its pair of Rolls-Royce Merlin engines would enable it to escape from any pursuing fighter, and certainly later years dispelled any ideas of an inadequate structural strength.

Theory was soon proved in practice, and when the prototype first flew in 1940 there could be little doubt that here we had a war-winner. Originally entering squadron service in high-altitude photographic-reconnaissance form, the Mark I was followed quickly by fighter and bomber variants and one of the earliest versions, the Mark III trainer, is still flying in R.A.F. colours today with a change of power from Merlin 23s to 25s as the only difference from the original.

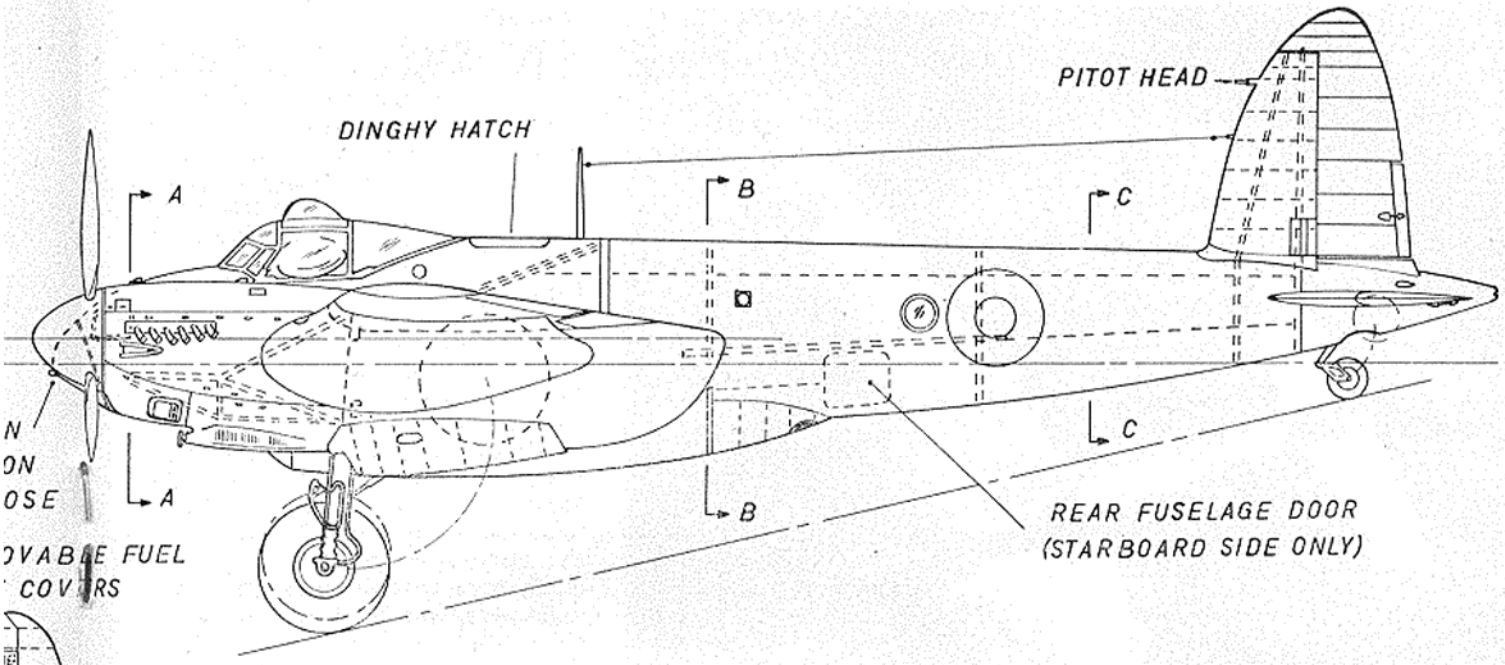
In its earliest days the *Mosquito* was considered quite a lethal monster and only above-average pilots of considerable experience were allowed to touch the type. However, training methods improved and before long intensive fast-twin conversion courses were introduced to make it just another machine for the many.

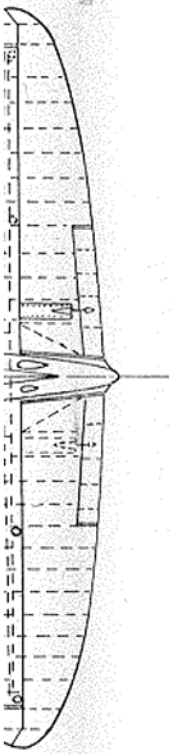
With its close-set power units with consequent torque and slipstream effect, the " Mossie " was particularly prone to swinging on take-off, and many of the earlier accidents for which the type undeservedly earned a

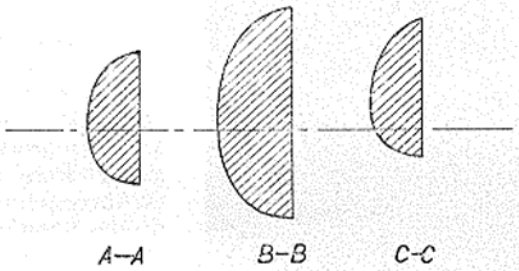
(Continued on page 20)



DE HAVILLAND MOSQUITO MK34 P.R

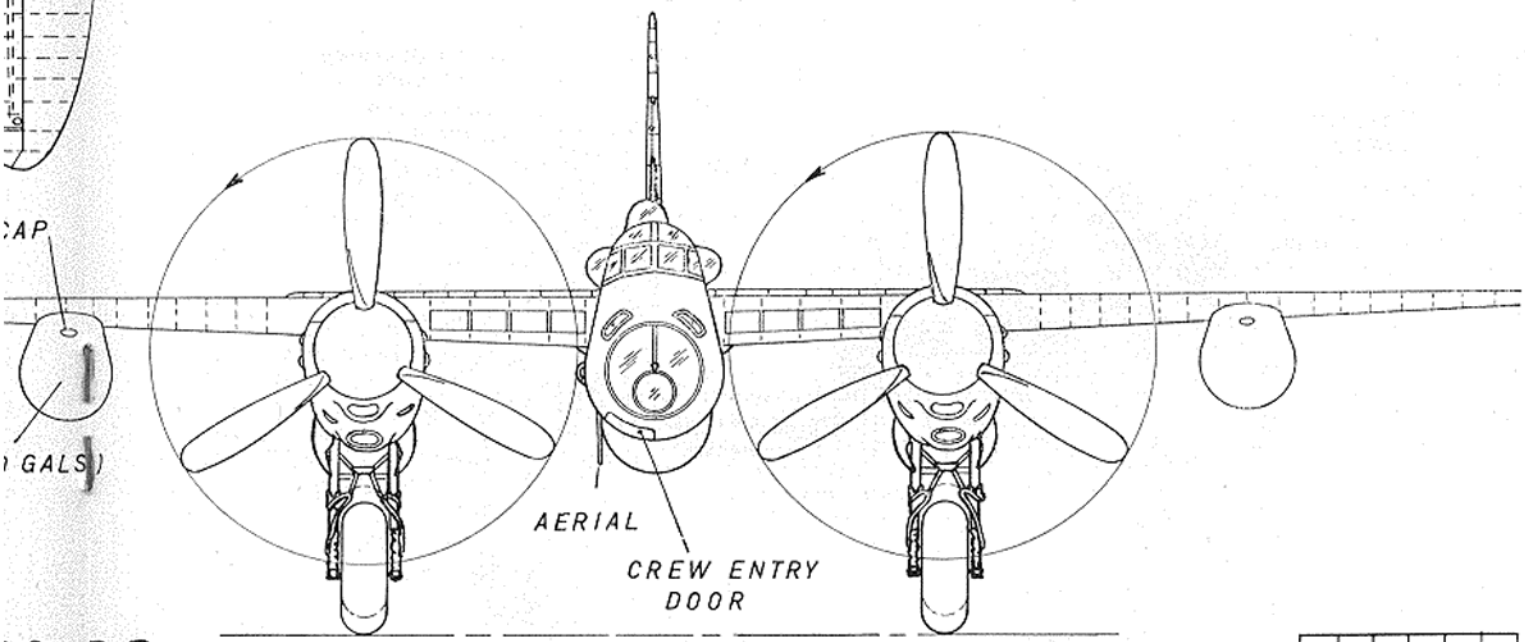






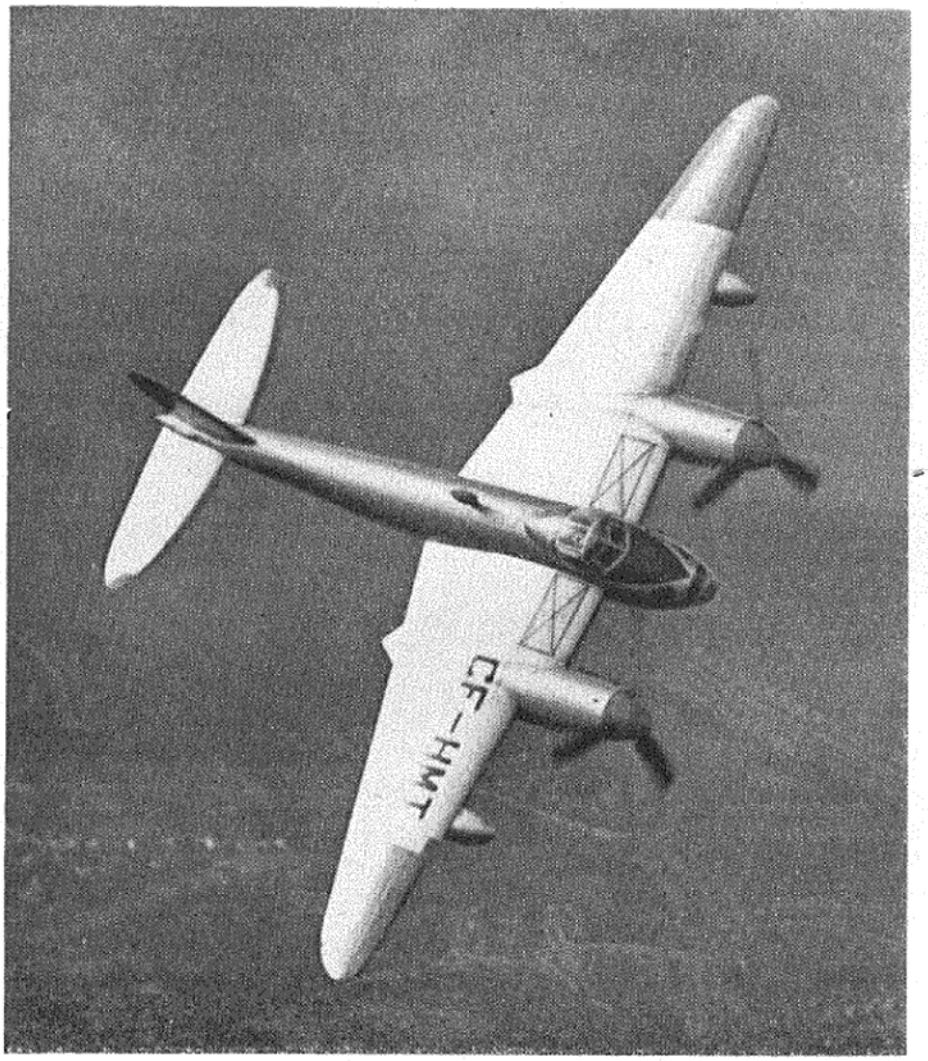
COLOUR SCHEME

P.R. CERULEAN BLUE-GREY ALL OVER. BLUE & RED ROUNDELS ON THE MAIN-PLANE TOP SURFACE & THE FUSELAGE SIDES. (NO ROUNDELS BENEATH THE MAINPLANES) A SMALL RED, WHITE & BLUE FLASH ON THE FIN.



DRAWN BY R.HAWKINS

FT.

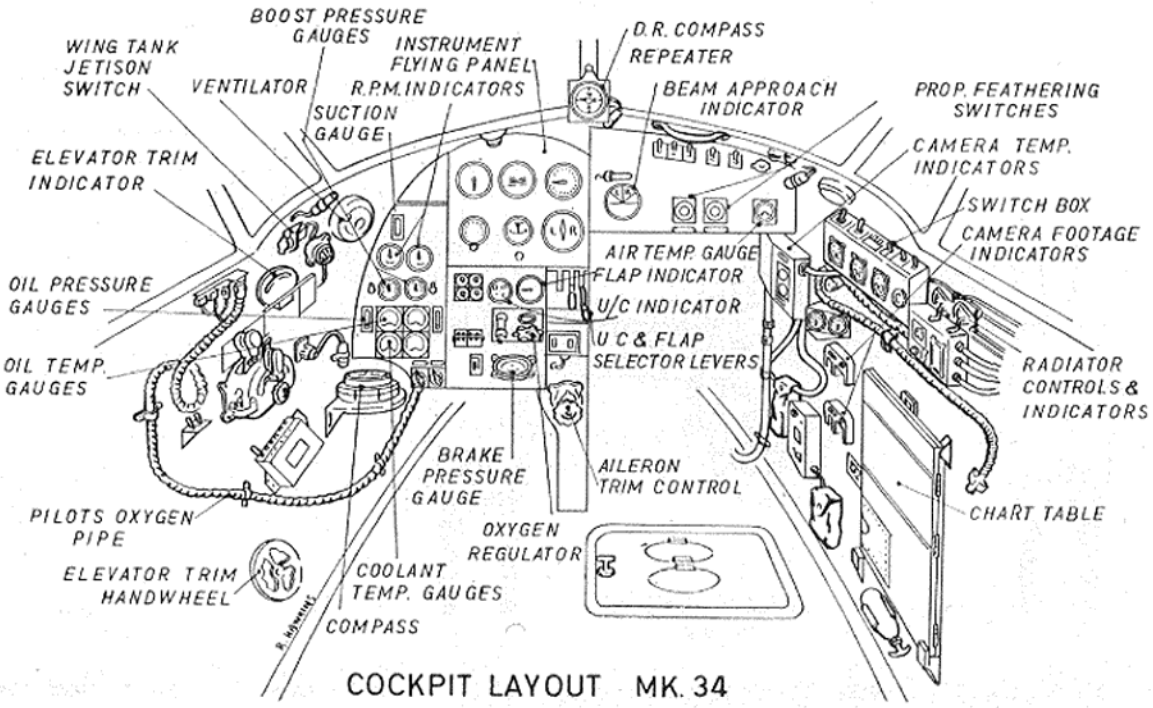


The author puts a civilian B.35 through its paces after an overhaul by Derby Aviation Ltd. for Spartan Air Services of Canada, who make extensive use of "Mosquitoes" for survey work.

reputation were due entirely to incorrect throttle technique. Juggling with the levers all the way up the quadrant as the aircraft gathered speed only aggravated an almost non-existent vice, and if one merely opened smoothly but *gently* with the port throttle slightly in the lead until full rudder control was attained, the "Mossie" would wend its way happily along the centre-line of anyone's runway.

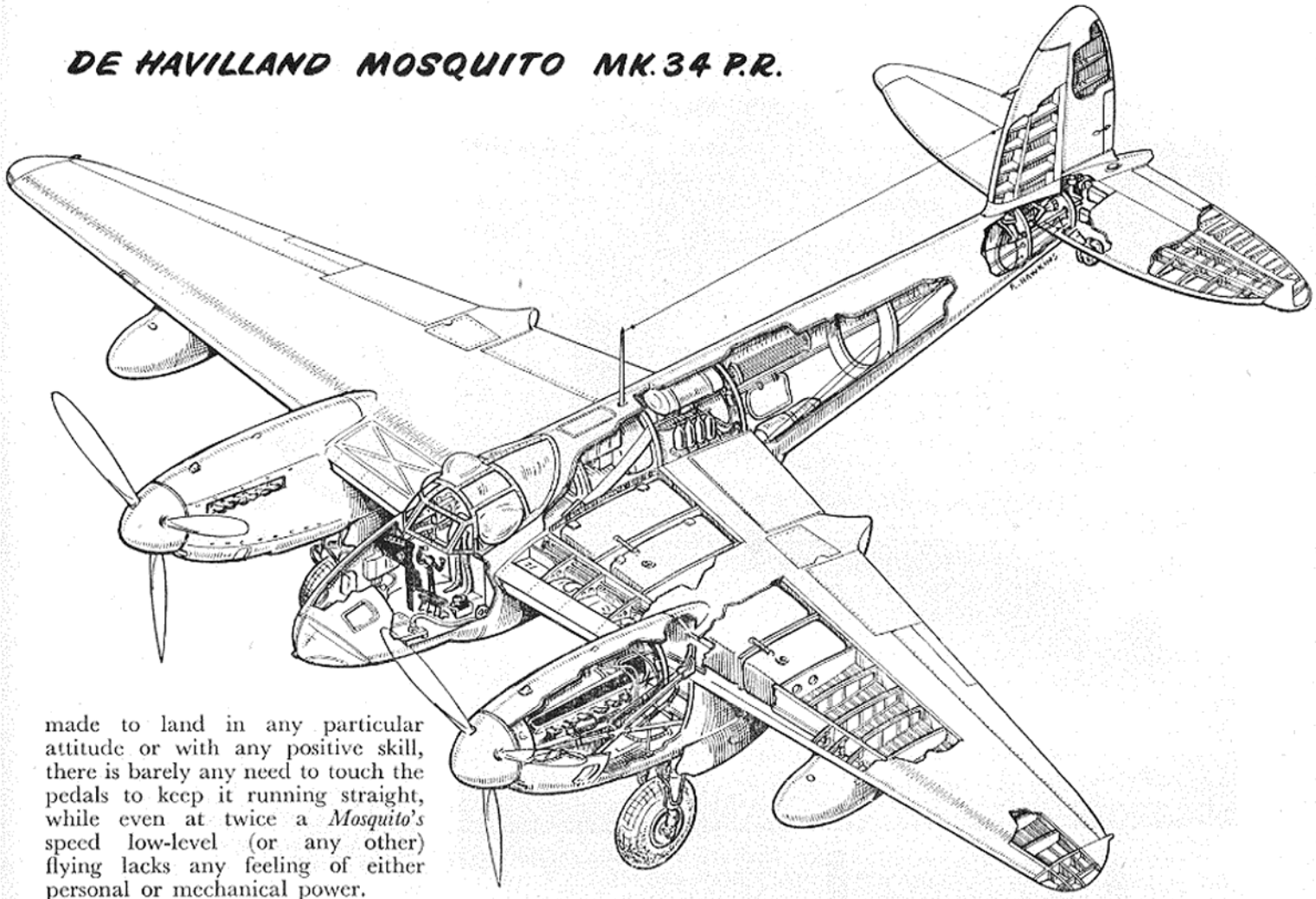
In the air, with everything tucked up, the *Mosquito* was a delight to fly. Firm and positive ailerons, surely the most important but often the sloppiest of all the controls, a surge of real power as the horses were let loose, a highly respectable rate of climb, touch-down and unstick speeds in the three-figure bracket and many other characteristics combine to make it an aeroplane in the truest use of the word; indeed it was a machine that some pilots feared, most loved, and all respected.

Aircraft have changed more than considerably since the era of the *Spitfire*, *Lancaster* and *Mosquito*, and with this change has been born an entirely new outlook on flying; one which to most piston pilots has taken the "kick" from the game. There is a tremendous satisfaction to be gained from dropping a "Mossie" on three-points just inside the aerodrome boundary, keeping it straight after landing with energetic use of the close-set rudder pedals, or roaring across hedges and hillocks on a low-level cross-country. With the jet, all that has gone; no attempt is



COCKPIT LAYOUT MK. 34

DE HAVILLAND MOSQUITO MK.34 P.R.



made to land in any particular attitude or with any positive skill, there is barely any need to touch the pedals to keep it running straight, while even at twice a *Mosquito's* speed low-level (or any other) flying lacks any feeling of either personal or mechanical power.

Not that we are condemning or belittling the service pilot of today, for his skill on the operating side, dealing with high fuel consumptions or letting down from great heights in bad weather with only a few minutes endurance, calls for considerable coolness and a sense of responsibility that only a flying man really understands, but his standards of pure handling have deteriorated critically and if he were to step from his *Hunter* to a *Spitfire* or his *Javelin* to a *Mosquito* he would break the older aeroplane long before getting airborne.

It is on the handling side that, from the pilot's viewpoint, the *Mosquito* excelled, although as military needs changed to wanting bigger (and better ?) things, so did the aeroplanes suffer the sins of the service. The early " Mossie," flying at about 15,000 lb. and with a fighter-type stick, was a very different mount from the late PR34 or B35, that thought nothing of topping the scales with an additional 7,000 lb. and which needed a bomber-type wheel to control it; yet each had its own attractive characteristics, the lighter marks being crisp, frisky and aerobatic while the heavier variants with their wing-drop and belly tanks, swollen fuselage undersides to accommodate stores or more fuel and their deeper-noted Merlin 113/114s, possessed a very positive strength of purpose, especially when roaring down the runway and needing nearly 2,000 yards of it before clambering into the air.

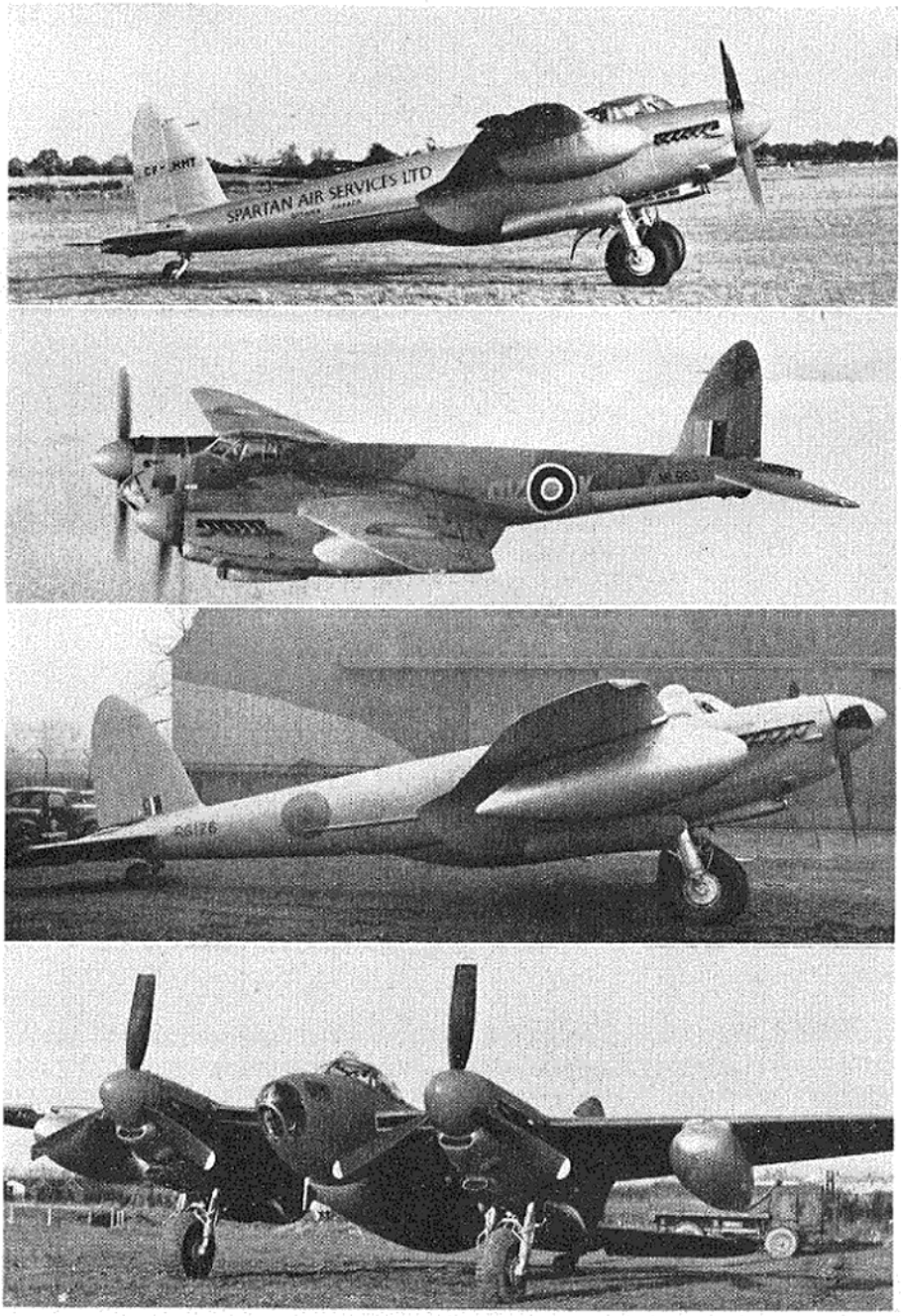
Although we must admit that piston-powered aircraft have had their day where operational flying is concerned (except for transport, maritime reconnaissance and similar duties where range and endurance are more important than speed), the later propeller-driven types such as the *Spitfire* and " Mossie " were often more than a match for some of their jet-driven counterparts. Well I remember flying a *Mosquito* PR34 and seeing ahead and slightly beneath a formation of five *Vampires,* and equally well I remember my elation at being able to close-in towards them; however, the distance was too great to make overtaking a practical game, and I was about to abandon the chase when a *Spitfire* PR19

The " Mosquito " PR Mk. 34s were a very long range development of the PR Mk. 16 and were brought about by the operational requirements of reconnaissance aircraft in South East Asia. These aircraft had to be capable of operating from bases in India and Northern Australia thus putting an emphasis on very long range characteristics. Unfortunately, the Mk. 16 did not possess the necessary range for this duty and so the Mk.34s were evolved as a replacement.

Largely responsible for the performance of the Mk.34 and 34As are the Rolls-Royce Merlin engines, these aircraft being powered with two Merlin 114s and 114As respectively.

Dimensions: Span 54 ft. 2 in. Length, 41 ft. 0 in. Height 15 ft. 3 in.

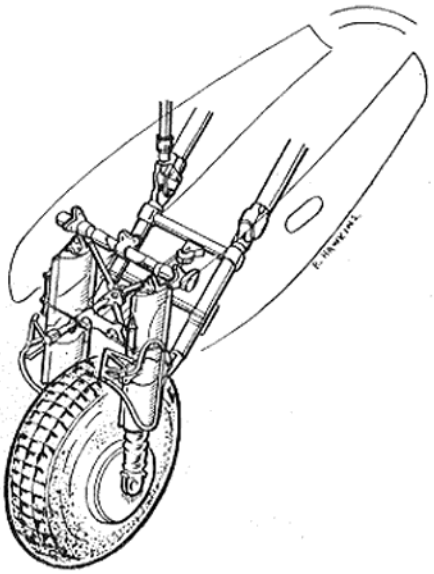
Performance: (Mk. 34 and 34A). Max. speed 425 m.p.h. at 30,500 ft. Operating speed 315 m.p.h. at 30,000 ft. Service ceiling 36,000 ft. Max. still air range 3,500 miles at 30,000 ft. at operating speed.



Top: A B35 converted for civilian use. In R.A.F. service the PR35 was basically a B35 but was equipped for night photo reconnaissance using flash equipment. Second photo shows the BXVI from which the PR34 version was developed (lower photos).

appeared beside me, the pilot gave the "thumbs up" (indicating a mutual appreciation of the situation) and then promptly flew over the top of the *Vampires*, doing a neat roll of achievement as he passed ahead of them!

Fortunately, the *Mosquito* is not dead, and it is the only wartime operational type still to find a place in modern military aviation. Bomber Mark 35s converted for target and banner-towing purposes are flown on anti-aircraft duties from Exeter, Langar and Llanbedr, whilst a squadron based at Schleswigland near Hamburg fulfils the same function for German gunners. Another unit, using civilian pilots on an Air Ministry contract basis, has replaced its *Spitfires* (alas, the last) by *Mosquitos* within the last few months, and at least one "Mossie" ploughs its way through the elements daily to bring back detailed met. information to its base at Woodvale in Lancashire, where three machines of the type are maintained for the purpose. Nearer the London area, two trainer Mark IIIs are used for pilot-checking by R.A.F. Home Command Examining Unit at White Waltham.

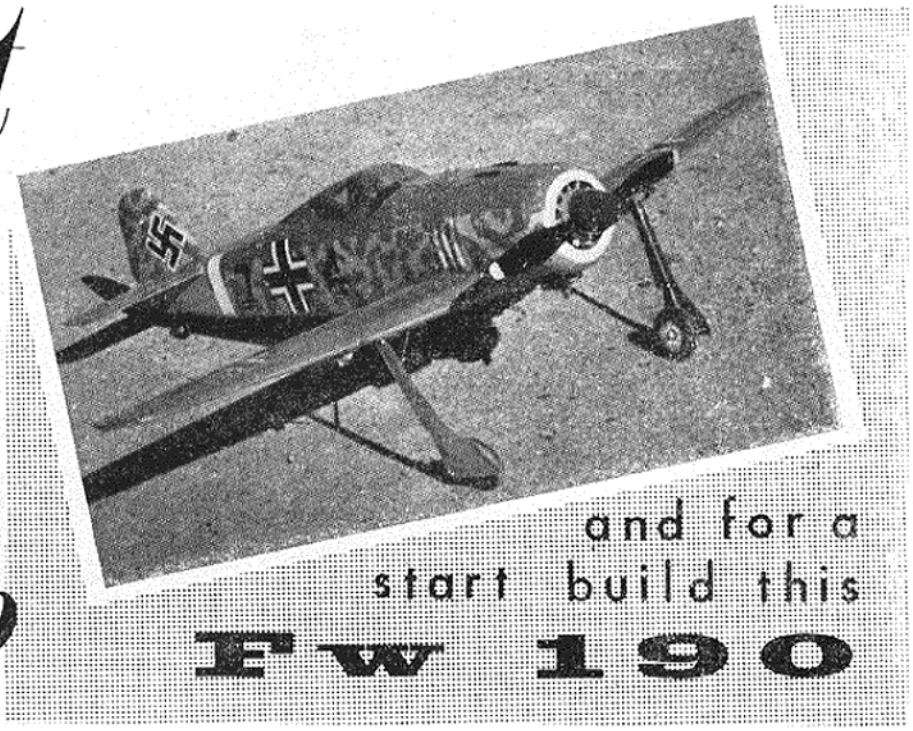


MAIN UNDERCARRIAGE UNIT MOSQUITO MK. 34

Although essentially of military intent, the *Mosquito* has found many civilian customers, for although it is not eligible for a British Certificate of Airworthiness, most foreign countries recognise a good aeroplane when they meet it and so away from home the type is likely to live longest. Several "Mossies" of various marks are used as high-speed transports by top-grade executives in the U.S.A., a pair of PR34s are working on air survey duties for an American firm in Libya, a B35 with the Spanish registration EC-AKH returned to this country a few weeks ago for overhaul by Derby Aviation (who had originally carried out the civilian conversion two years earlier) before being used on transatlantic runs, and ten mark 35s went from the same firm to Spartan Air Services of Ottawa, in Canada, to replace their ageing P38 *Lightnings*, also for high-level survey purposes.

The *Mosquito* has been, and still is, a great aeroplane. Modern trends have made it clear that nothing like it will ever see service again, and those of us who have had the good fortune to fly both fast piston and jet types will never forget the crackling of Merlins as the throttles are closed, and at the same time must offer our condolences to today's pilots who, with their all-through jet training, will never experience the feeling of real power in their hands or a kick in the back on take-off. With that missing, two of the most satisfying sensations of flying will have gone, and the *Mosquito* is the last aeroplane alive that is able to provide them.

Why Not Scale Team Racing?



by M. F. HAWKINS

WHEN the First All Speed Team in California started this Team Racing business, the rules stated that the models should be " scale or semi-scale " in appearance. I have never seen a scale model flown in competition racing and the reason for this is twofold. Firstly, some of the rules—that specifying a totally enclosed cylinder head is a good example—make it very difficult for an accurate scale model to conform to the specification. Secondly, to obtain the maximum speed and laps the model must be designed right down to the limits of the specification. Over the years one layout has proved to be the most consistently successful, therefore, all team racers now look alike—well almost !

Scale models can never compete on even terms with the highly developed present-day team racer, but what a wonderful sight it would be to see *Hurricanes*, *Spitfires*, *FW*190s, *Thunderbolts* and, perhaps, even Bristol *Monoplane Scouts* and Miles *Libellulas* racing each other. Most World War II fighters would work out at about the right size if built to a scale of $\frac{3}{4}$ in. to 1 ft., while of kit designs the Mercury *Spitfire* and *Mustang* would be very suitable.

I would like to suggest the following rules for scale team racing. They are framed so as to give a wide choice of suitable prototypes and I do not think that any one design would predominate, while the spectacle would be worth the extra work involved in building the models.

1. Minimum wing area 100 sq. in.
2. Undercarriage must be fixed, or retracting-detracting with scale type wheels. Some departure from scale will be allowed to enable safe landings and prop clearance.
3. Cockpit must contain a pilot of a scale appropriate to the model.
4. Cylinder head need not be completely cowled but should be as unobtrusive as possible, preferably inverted or side mounted.
5. Rules for racing, i.e., tank size, engine size, line length and number of laps, etc., as for S.M.A.E. Class A team racing.
6. The model judged in each heat to be best finished and nearest to scale (25 points for finish and 75 for scale and detail—this means that not too much notice will be taken of the inevitable wear and tear of a team racer), shall have four laps less to fly in that heat.

To test the practicability of these rules I have built and flown models that conform to them. A Douglas *Destroyer* is shown in the photo overleaf, while my *Focke Wulf* 190A4, as can be seen from the photographs, is an accurate and attractive model. It has even won a team race, but we are not yet very expert in Nicosia.

If by now you are sold on this scale team racing idea, you will be looking round for a suitable design, so what could be better than the *F.W.*190A4, plans and building instructions for which appear herewith.

Building Instructions

Start with the wing. Prick out the outline of the half wing on to $\frac{1}{16}$ in. sheet balsa, butt jointed to make up the necessary width. Cut four of these. Assemble the ribs, mainspar, outer leading edge and plywood front spar S1 on to the two under surfaces, building in $1\frac{1}{4}$ in. dihedral under each tip. Instal the control system and push rod, also the 1 oz. outboard wingtip weight.

Bend the undercarriage to shape to fit the wing and solder on the bracing rods to each leg. Sew it to the mainspar brace and glue this firmly to the mainspar, then sew the undercarriage to S1. Add the inner leading edge from soft $\frac{1}{2}$ in. balsa and finally add the upper wing surfaces.

Fuselage

Assemble the plywood formers F2 and F3 with the engine bearers and tank. Add the fuselage sides (shown dotted on the plan) from $\frac{1}{16}$ in. sheet and use plenty of $\frac{1}{2}$ in. block gussets to brace this structure to the wing.

An infinite variety of colour schemes is possible for most German aircraft and the FW190 is no exception. Michael Hawkins finished his own model with a grey/green mottle on the fuselage sides; upper surfaces of wings and tail plane medium blue/grey, and the under surfaces in pale grey.

Add the other formers and firmly glue some scrap block under the tailplane site. Build the stabiliser with the tape hinge and control frame sandwiched between the $\frac{1}{16}$ in. halves, and cement in place. Sheet in the rest of the fuselage with $\frac{1}{16}$ in. balsa and then construct the fin and rudder with $\frac{1}{16}$ in. sheet over the $\frac{1}{8}$ in. leading edge and tip, with ribs T1 and T2 cemented to the sternpost.

Add cockpit detail as required and a pilot to the appropriate scale. The canopy can be moulded or folded, though this latter is not so good, from acetate sheet.

The cowling is made up from $\frac{1}{2}$ in. sheet with a front ring cut from $\frac{1}{4}$ in. obeechi. The detachable lower half ends level with the wing leading edge, and the blisters which are attached to it overlap the fixed part. The cowling on the original was attached by two press studs on each side, sewn to small pieces of ply and let into the opposing surfaces.

Finishing

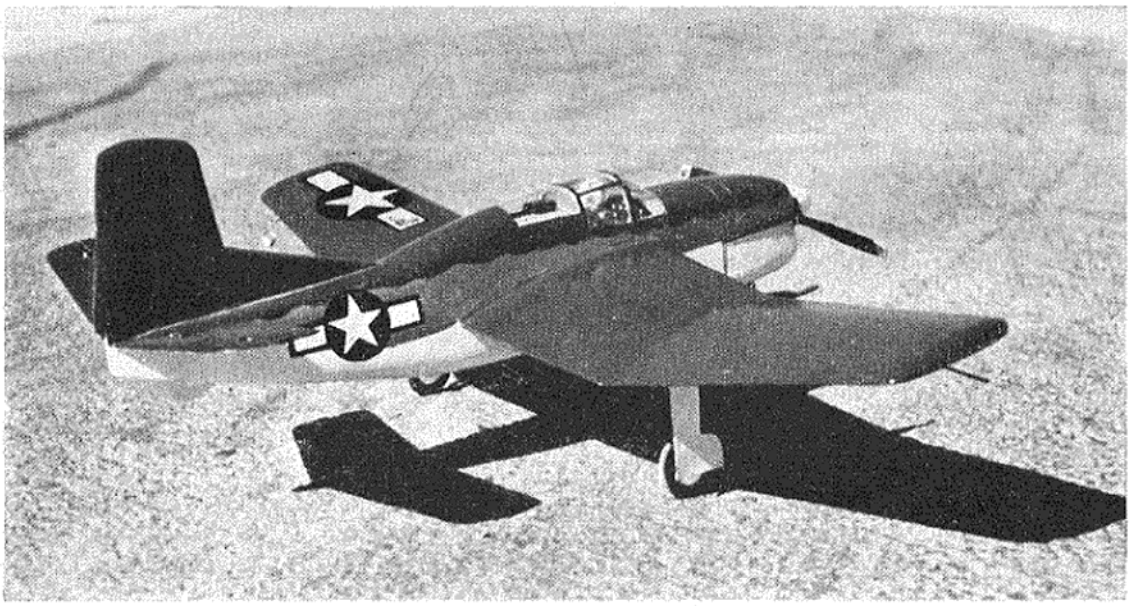
Give the entire model two thick coats of talc and clear dope mixed, then cover all over with lightweight tissue doped on.

Mark the control surfaces by cutting a shallow V with a sharp knife and indicate their ribs with thin strips of paper stuck in position, then add bomb rack, guns, trim tabs, oil cooler gills, and any other details you can dig up.

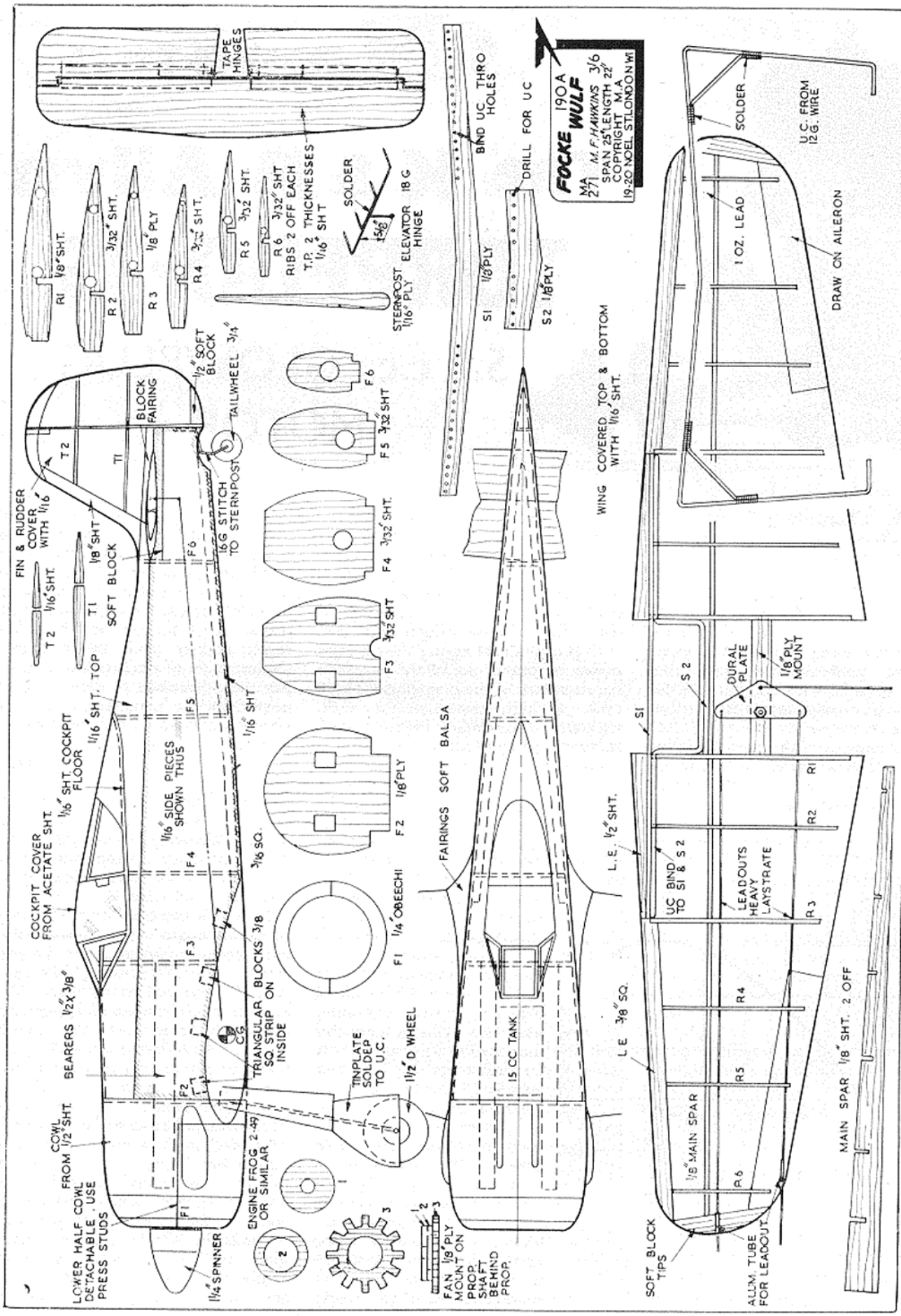
The fan is made from $\frac{1}{8}$ in. ply and mounted on the prop shaft behind the propeller and the model should balance on the front spar. Ballast in the nose may be necessary with a light motor.

The performance is not startling by normal team race standards—29 laps at 60 m.p.h. with a Frog 249 B.B., but the model flies steadily and will do a genuine three-point landing with no fear of nosing over.

Whether you fly this model for sport or racing you will find it well worth the building time.



Another model built by Michael Hawkins to his scale team race formula. This is the little-known Douglas XBTD-1 "Destroyer," forerunner of the "Skyraider." Only one of the full size machines was built and its C/L counterpart certainly makes an unusual model.



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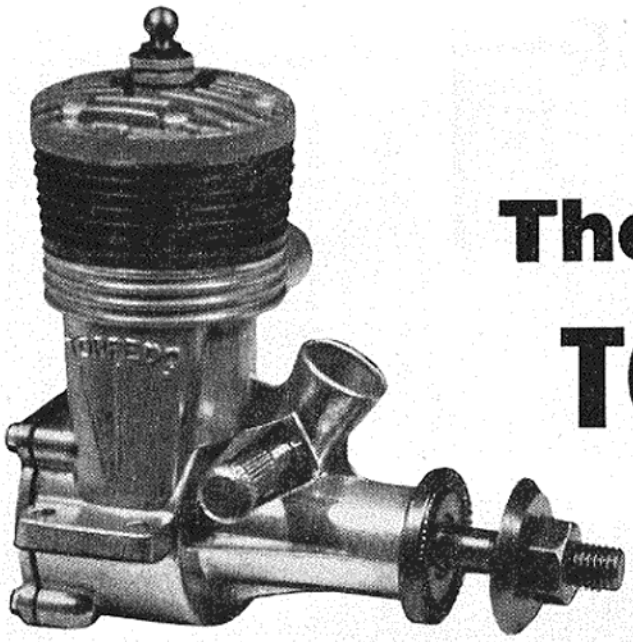


MA ENGINE TESTS

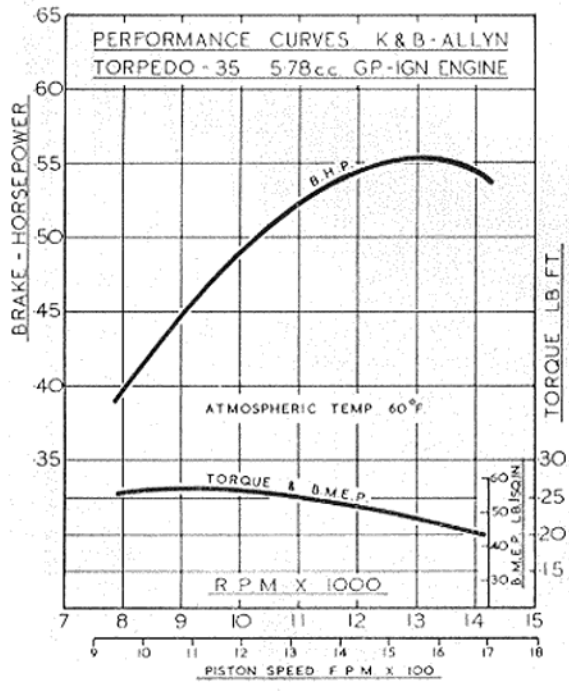
The K & B Allyn TORPEDO-35

5.8 c.c. GLOWPLUG MOTOR

THE "Torpedo-35" was introduced in June, 1954, and since that time has become accepted as one of the leading American engines in the 0.35 cu. in. (5.7-5.8 c.c.) class. Motors of this size first became popular for C/L aerobatic work some six or seven years ago and, more recently, have been widely used also for combat and for multi-channel radio-controlled models.

Most engines of the 0.35 glowplug class (and there are six American 35s at the present time, plus four others of foreign manufacture) adhere strictly to a proven formula, namely: shaft-valve induction, loop-scavenged cylinder, lapped piston and plain bushed bearings. The Torpedo is no exception to this rule and, structurally, is a simple and logical translation of these design essentials.

It goes without saying that a high power output is one of the accepted requirements of the 0.35 class. However, a high power-weight ratio without excessively high r.p.m., rather than ultra-high specific output, is obviously the desired characteristic in a 35. This, in fact, would appear to provide the clue to the rise of the 0.35 cu. in. engine as a class on its own, for the 0.35 size began as a distinctly odd capacity under both American and European systems of cylinder capacity classification.

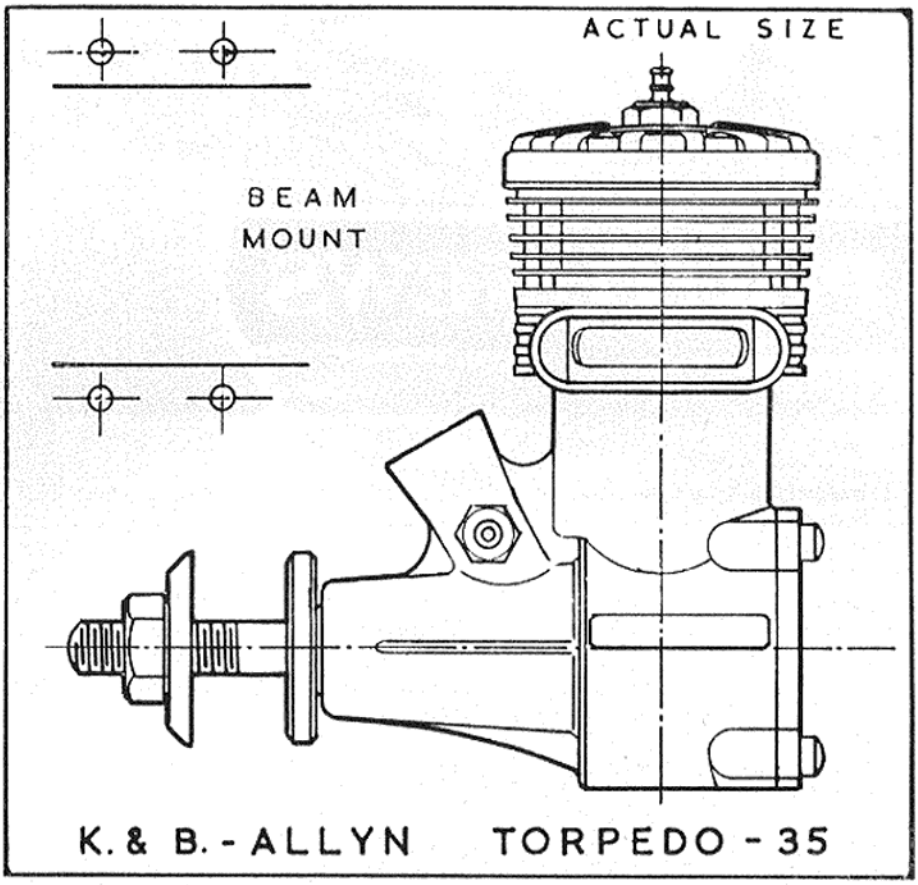


The 0.35 emerged—and, in many instances continues to be recognisable—as a 0.29 size engine externally, with the cylinder capacity increased 15-20 per cent. In most cases this has been achieved merely by increasing the cylinder bore; in others the stroke has been increased too. The general effect has been to raise the torque by an almost equal percentage at up to around 10,000 r.p.m. Since the carburettor choke area is deliberately reduced in order to increase fuel suction for aerobatic work, however, the 35 power curve usually levels off earlier, so that the peak b.h.p. occurs at somewhat lower revolutions than would be the case with a 0.29 intended for team racing or speed work on 7 and 8 in. diameter props. A 35 may not, in fact, deliver much greater peak b.h.p. than a modern 0.29 of similar design, but it has the advantage of delivering this power on the prop size (10 × 6) almost universally employed for competition stunt work with the size and type of model currently favoured. Useful output at medium-high revolutions, a good power-to-weight ratio and the ability to keep running evenly despite the large variations in fuel head that occur during manoeuvres, now also favour the typical 35 for multi R/C and for C/L combat.

K & B's interpretation of the 35 is, as one might expect, modelled on other recent engines in the Torpedo range. The Torpedo-35 followed a year after the well-known Torpedo-15 and, in construction and appearance, it closely resembles the smaller engine. It is based on an integral crankcase/main bearing casting, with one-piece steel cylinder and detachable alloy head. The crankshaft, which is not hardened, is an easy fit in a steel bushed main bearing, its lubrication being assisted by two minute longitudinal grooves in the bearing surface, which extend forward to just short of the front end of the bush. The shaft has a rectangular admission port, $\frac{3}{8}$ in. sq., communicating with a $\frac{5}{16}$ in. dia. gas passage, and a crescent counter-

balance which balances all rotating mass including a proportion of the conrod weight. Induction timing is the widely used 45 deg. after dead-centre, 180 deg. period.

The cylinder is machined in one piece with integral cooling fins. The bore is not especially highly finished and one may assume that the manufacturers have considered this adequate, and perhaps preferable, with a relatively soft surface, by reason of its allegedly improved ability to hold an oil film. The cylinder has the usual large exhaust and transfer ports and these have radiused corners. The bore is opened out, slightly, below port level to reduce piston drag. Only two long screws tie the complete cylinder assembly to the crankcase and, to eliminate gas leakage between the crankcase and base flange, the latter is made especially thick and rigid and the joint is sealed with a composition gasket. A gasket of similar material is used under the cylinder head and it is advisable to renew these should the engine be dismantled for servicing or parts replacement. Failure to do so may result in trouble with gasket blowing.



Specification

Type: single-cylinder, aircooled, loop-scavenged, two-stroke cycle. Glowplug ignition. Crankshaft type rotary-valve induction. No effective sub-piston supplementary induction period. Baffle piston. Central ignition plug.

Swept Volume: 0.3529 cu. in. (5.783 c.c.).

Bore: 0.790 in. Stroke: 0.720 in.

Stroke/Bore Ratio: 0.911 : 1.

Weight: 7.5 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase unit, tumble-finished, with steel bushed main bearing. Alloy steel counterbalanced crankshaft with $\frac{7}{16}$ in. dia. journal and 7/32 in. dia. tubular crank-pin. Blued steel drive washer fitted on shaft taper. One-piece cylinder with blued, corrosion-proof external finish and die-cast green-enamelled cylinder head. Six cylinder head screws, including two extra-long screws securing complete cylinder assembly to crankcase. Ultra lightweight Meehanite lapped piston with skirt section relieved below gudgeon-pin centres. Tubular full-floating gudgeon-pin with aluminium end pads. Drop-forged alloy connecting-rod (bronze-bushed at lower end on latest models). Spraybar type needle-valve assembly with $\frac{1}{4}$ in. choke detachable venturi. Beam mounting lugs.

Test Engine Data

Running time prior to test: $1\frac{1}{4}$ hours.

Fuel used: 10 per cent. B.D.H. nitromethane, 65 per cent. methanol 25 per cent. Castrol "M" castor base oil.

Ignition plug used: K & B standard short reach as fitted. 1.7 volts used to start.

Performance

With the Torpedo is packed a small warning slip which advises one hour of rich mixture bench running on a 10 × 6 prop prior to installing the engine in a model. There is some danger of piston seizure if this care is not exercised, but it is only fair to remark that, of two of these engines we have tested during the past three years, neither showed these tendencies and, after some exploratory test runs totalling about 10 min. duration, they were found to hold an even speed with the needle valve at the optimum power setting. This is, of course, dependent somewhat on the fuel used and (as with many other engines of this size and type) fuels of low (5 to 10 per cent.) nitromethane content are recommended.

Starting characteristics of the Torpedo-35 are orthodox. Fairly generous priming through the exhaust port is required for a start from cold, but thereafter the engine can be restarted with one or two choked preliminary flicks and without altering the needle-valve from its running setting. The needle valve itself is responsive and positive in operation.

On the torque reaction dynamometer, the Torpedo-35 delivered its maximum torque at a shade over 9,000 r.p.m., a figure of just over 0.26 lb. ft. being obtained, equal to a b.m.e.p. of 57 lb./sq. in., which, of course, is very satisfactory.

The manufacturer's claimed horsepower rating for the Torpedo-35 is 0.6 b.h.p. at 14,000 r.p.m. Our test engine delivered a peak output of approximately 0.56 b.h.p. at a little over 13,000 r.p.m., which, having regard to the variables introduced by air temperature, humidity and fuels—not to mention the inevitable slight differences between individual motors—is sufficient to suggest that a stock engine may, in fact, quite closely approach the maker's claim.

Power/Weight Ratio (as tested): 1.19 b.h.p./lb.

Specific Output (as tested): 97 b.h.p./litre.

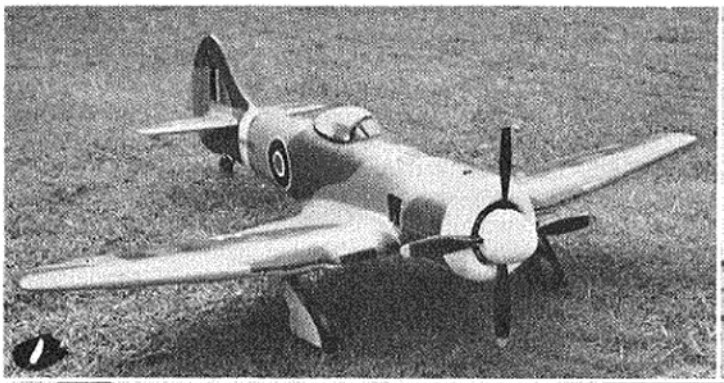
IT has been a long time since we printed a "Photonews" feature, but this has not been due to lack of photos sent to us, nor to lack of enthusiasm on our part to print our readers' pictures. Rather, it is that the majority of the photos we receive just are not suitable for reproduction. Ignoring those taken in a forest of grass or against the garden shed, to stand up to the loss of definition inseparable from reproduction, prints must be really "sharp" and preferably on glossy paper. We could, or course, print photos we ourselves take of readers' models, but MODEL AIRCRAFT's "Photonews" is essentially a feature for readers' pictures.

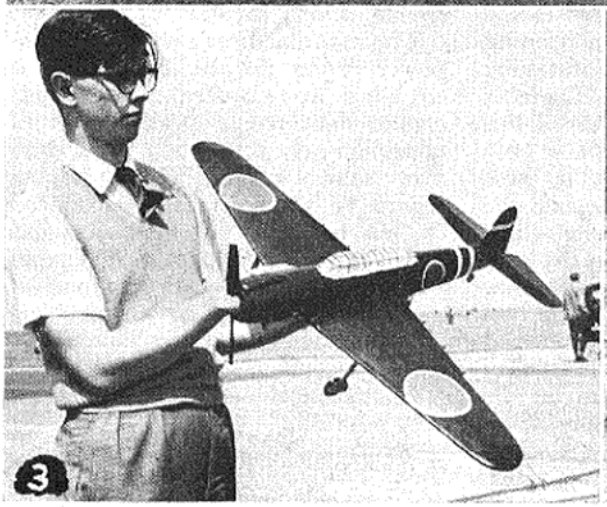
Below are four good examples of the sort of picture we require. **No. 1** is a very fine 1 in. to 1 ft. scale C/L model of the Hawker *Tempest II*. Built by D. Morrey, of Buerton, near Crewe, it took three years to complete, and features an undercarriage which is retractable by means of a third line. Entered in the Northern Models Exhibition it gained first place in the scale C/L class. Photo was taken by Clifford Kendall.

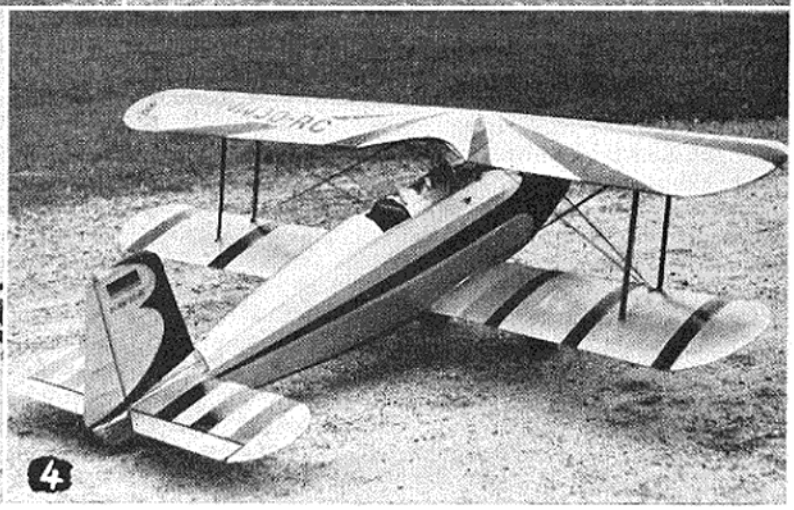
The realistically posed Westland *Widgeon* (**No. 2**) was built by J. McArthy, of the Southend Seniors Club. Scale is $\frac{3}{4}$ in. to 1 ft. and A. Longstaffe, who took the photo, tells us that with an Allbon Dart to supply the power, the model flies most consistently.

A popular MODEL AIRCRAFT plan design is featured in photo **No. 3,** which was taken by A. Dowdeswell, and shows M. F. Hawkins with his original Nakajima *Tenzan*. As this model was featured as recently as the November, 1957, issue, we need say no more than that it is a control-liner for $2\frac{1}{2}$-$3\frac{1}{2}$ c.c. engines, and flies as well as it looks.

Take a closer look at the Bücker *Jungmann* in photo **No. 4;** it is not a control-liner but a R/C model. It was built by a German flier, Lichius Koln and is powered with







an O.S. Max 35. Werner Wilke, who sent us the photo, says that the model is most stable and realistic in flight.

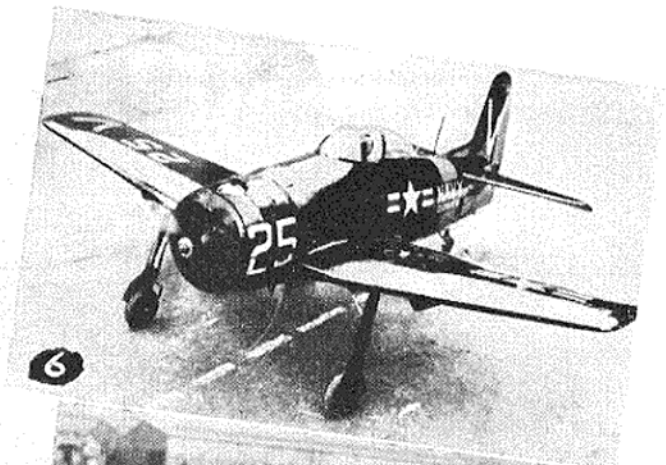
Photo **No. 5** is of Gordon Oswell's latest stunt model, held by his next-door neighbour. It has coupled elevators and flaps, is silk covered, and powered with a K & B 19. The wing span is 45 in. and the sprayed finish is copper and white.

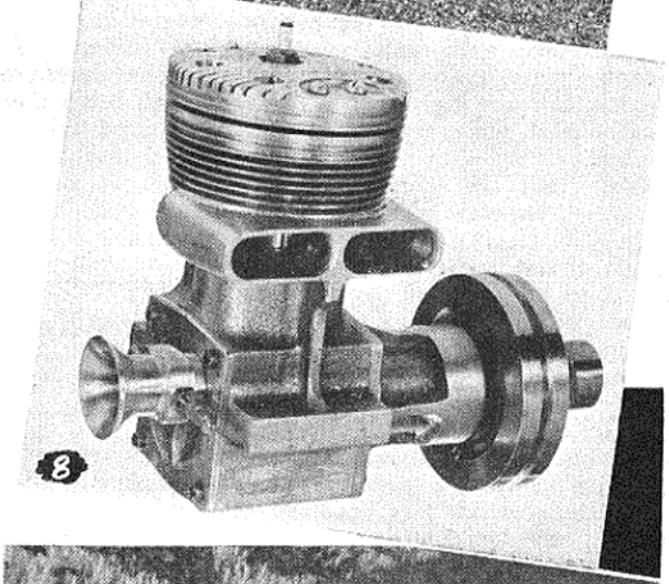
Another realistically posed model is the Frog 150-powered Grumman F8F2 *Bearcat*, shown in photo **No. 6.** Built to MODEL AIRCRAFT plan 214, this model has many additional features including a sliding cockpit cover, and full interior details. The markings are a mixture of handmade transfers and hand lettering. Builder W. Newton is to be congratulated on an outstanding machine.

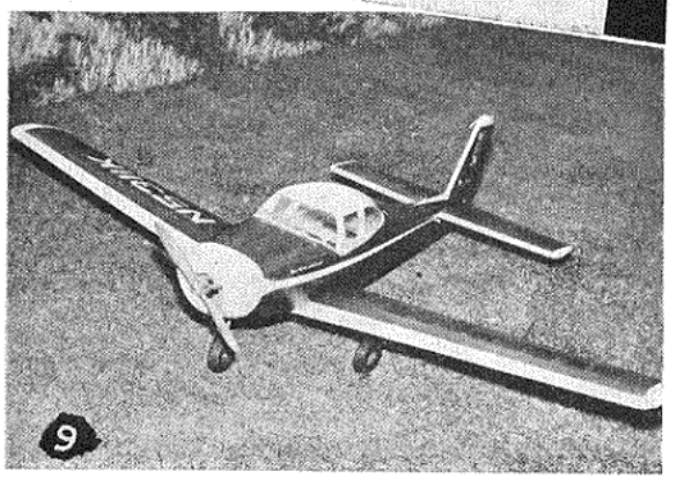
Photo **No. 7** is a rather unusual prototype for a F/F model. It is a *Zaunkoenig*, and J. Cooke, who built this machine, uses a Mills 0.75 c.c. for power. Unfortunately photographer B. Bower gives no other details, though it is obvious from the photo that this is a beautifully made model.

Something completely new for "Photonews" is the "model" shown in photo **No. 8.** This is a 30 c.c. two-stroke, designed, built and photographed by A. B. Swanston, of Mansfield. Following the traditional racing engine layout, this is the third motor of this size that Mr. Swanston has built, the other two being in America. At the moment experiments are being made with clapper valves and twin plug heads, but Mr. Swanston tells us that most of his workshop time is taken up in making heavyweight crankcases for Dooling 61s.

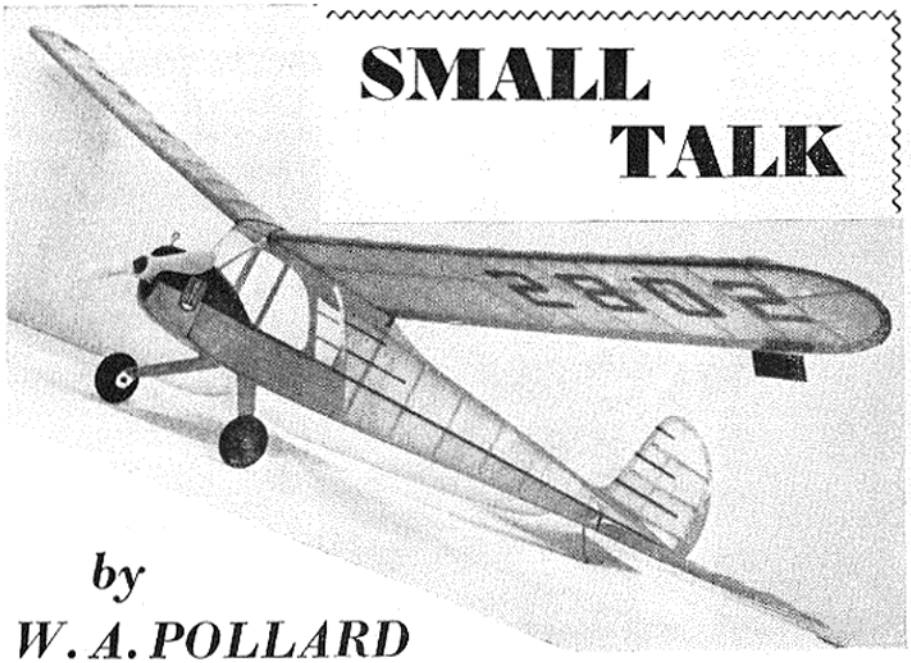
We turn to R/C for our last photo (**No. 9**) which shows the Ryan *Navion*, built from a Berkeley Kit by Leslie Kemp, of Sutton. The model is powered by a Forster 0.29 and on the radio side a sub-miniature Walter Good receiver, and a Babcock Mk. II escapement are used. With an all-up weight of 6½ lb., the model flies reasonably well in calm weather, but is a little touchy on the rudder.







SMALL TALK



by W. A. POLLARD

THE heading photo not only shows off to advantage the pleasing lines of this attractive little model, but also bears witness to its flying ability, for the model was by no means "unaired" when the picture was taken. A Frog 50 and an E.D. Bee (with radial mounting adaptor plate) powered the original models, but any 0.5 to 1 c.c. motor can be used, while the new Frog 80 is ideal.

Note that the longerons are of $\frac{3}{16}$ in. sq., whereas the spacers are only $\frac{1}{8}$ in. sq. fitted flush with the inside of the fuselage, so that there is a $\frac{1}{16}$ in. gap between them and the tissue covering. This space is occupied at the nose and tail by the $\frac{1}{16}$ in. sheeting which is therefore flush with the outside of longerons.

Build the starboard side first, face down on the plan, fitting the $\frac{1}{16}$ in. sheeting before the spacers. Next build the port side face upwards on top of the starboard, this time putting in the spacers before the $\frac{1}{16}$ in. sheet.

Cut out the fuselage formers, bend the 20 G. wire tail skid and attach to F4, then assemble the two sides with F1 and F2 and check for squareness. Complete the structure in the vicinity of the cabin, if necessary damping the sheeting over the nose to assist bending. Join the rear end of the fuselage, then fit F4 and the remaining spacers.

Add the $\frac{1}{16} \times \frac{1}{8}$ in. stringers, tapering the ends to fit, and the 3/32 in. dia. dowels at the tail and wing trailing edge. The dowel at the wing leading edge should be fitted later, after the windscreen is in position.

The cowling is carved from block and hollowed to suit the engine used, allowing sufficient space below the engine to accommodate the coil of fuel tubing used as a tank.

The duralumin undercarriage is much better than the wire type, and no more difficult to make, but take care that the bends are "true." Each wheel is attached by a 6 B.A. steel bolt, held firmly by a nut on each side of the leg. Be sure that the wheels rotate freely. Attach the completed undercarriage with woodscrews.

A free flight "Sportster" for 0.5-1 c.c. engines

The fin outline and rudder should be constructed and cemented, complete with the mainspar, exactly on the fuselage centre line, afterwards adding the $\frac{1}{16} \times \frac{1}{8}$ in. ribs, bent to shape as shown in the plan view.

Cut out the $\frac{3}{16}$ in. sheet tips, assemble on the plan, then put aside until required. Join the mainspars at the centre; note how the double thicknesses fit together and are reinforced with $\frac{1}{16}$ in. plywood.

Cut out all the ribs and build the wings one at a time by pinning down the mainspar, cementing the ribs in position, then the leading and trailing edges. Attach the tips at the angle shown, then trim the mainspar to shape between the last rib and the tip.

When completing the centre section take care to avoid warps. Prop up the tips so that they are both at the same height ($2\frac{3}{4}$ in. at the last rib), while the root ribs are flat on the plan. Check that neither wing is twisted. Fit the centre section leading and trailing edges and $\frac{1}{16}$ in. sheet gussets. When the cement is dry, spread more around the joints for extra strength.

Sand the leading and trailing edges to the correct aerofoil shape and round off the tips.

Cut out all the sheet parts, then assemble the whole outline flat on the plan. Add the main spar, ribs and $\frac{1}{16}$ in. gussets.

Sand the leading and trailing edges to the correct airfoil shape and round off the tips.

Sand smooth the whole structure before covering.

Lightweight Modelspan can be used for the entire model but, if desired, heavy grade on the fuselage will improve strength. At least four coats of thin clear dope should be applied overall, plus one or two extra coats round the nose.

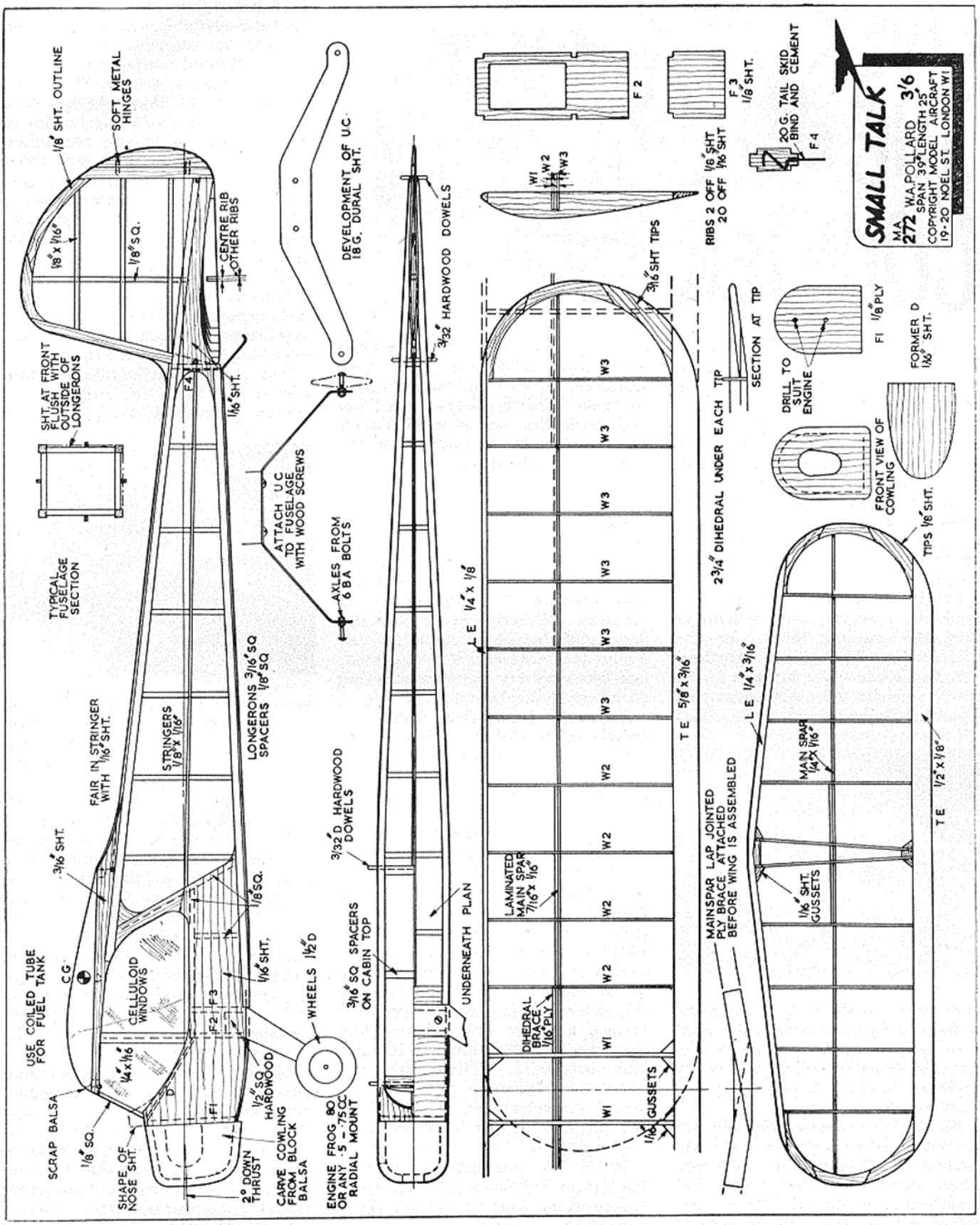
The original model was coloured yellow with black trim.

The thin celluloid cabin windows should be fitted after covering but before doping. Determine the windscreen shape by making a paper pattern by the cut-and-try method.

After the engine and fuel tube are in place, the cowling is attached by three spots of cement. I used this method for simplicity and found that the cowl could be snapped off and re-attached any number of times without trouble.

Start with the c.g. at about 50 per cent. wing chord and by small adjustments to wing incidence or balance (using modelling clay) trim for a smooth steady glide with little or no turn. For the first powered flight keep the revs low, increasing power gradually on successive flights. Turns to the right or to the left are possible but try to arrange side-thrust and rudder settings so that the turn on the glide is either reduced or reversed by the application of power. I tried a floating tab on the wing tip but soon discarded it as an unnecessary eyesore.

This model is stable but it should be noted that the rudder is in the slipstream and consequently is very effective under power, so for a quiet life make all adjustments small.



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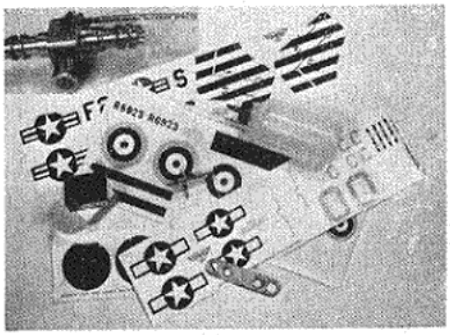
OVER THE COUNTER

A recent call at 308, Holloway Road, revealed several interesting accessories obtainable from the **Mercury** H.Q., and a preview of the models that will be available in the future, but here we must be careful what we say. We jumped the gun with our announcement of the *Picador* (a baby brother for the *Toreador*) in our November issue, and the resulting flood of orders forced Henry J. to revise his production schedule.

Of the things that are currently available, however, we particularly liked the transfer sheets for the C/L *Spitfire*, *Mustang* and *Lightning* (yes, that's a new one for later in the year), which are all obtainable separately, price 1s. 6d. each. Two



stunt tanks, small (1-1½ c.c. engines) or large (2-2½ c.c. engines), are good value at 3s. 3d. each, while a die-cast spinner which will fit practically anything except a K.L.G. plug is a must at 6d.

For the F/F enthusiast the Mercury cut-out at 4s. 11d. provides a cheap method of restricting your motor run, when measured in terms of a lost model and motor, while nowadays any power flier would be lost without his polythene "squeeze" bottle at 2s. 6d. complete with filler spout.

Finally, for R/C fliers, a line that is not exclusive to Mercury, but nonetheless obtainable from their wholesale department, the M.S. plastic tank. This is of 37 c.c. and has built-in baffles and a needle valve for cutting off the supply to the engine. It sells at 6s. 11d.

* * *

An improved version of the **Frog 150** is announced by International Model Aircraft. Externally the only difference from the earlier model is the cooling fins, which are now anodised blue instead of red (the 149 will continue to have red fins), and the use of a translucent nylon tank, which, it is claimed, is resistant to any known fuel, either diesel or glow plug.

Internal modifications include a redesigned crankshaft with strengthened crank web, and a cylinder base gasket of improved material, which is virtually free from shrinkage due to heat.

In spite of these improvements the price remains unchanged.

* * *

An interesting new line from **Ripmax** is a fuel tubing that is really different. Of the accepted Ripmax "thick wall" grade, the outside is, in addition, ribbed rather in the manner of a garden hose, and this ribbing, it is claimed, not only ensures a better grip when fitting the tube, but also enhances its non-kink properties. Three sizes are obtainable, 1/16, 3/32 and 1/8 in. internal diameter and they sell at 3d., 4d. and 5d. per ft. respectively.

* * *

When we first saw a copy of Harleyford Publications' **"Aircraft Camouflage and Markings 1907-1954,"** we predicted that it would become a standard reference work for many modellers. That we were correct was proved when the original edition quickly sold out, but now the publishers inform us that a revised reprint is available, so anyone looking forward to receiving a copy for Christmas need not be disappointed.

* * *

The name of **Skyleada** has been associated with model aircraft for as long as most of us can remember, and to recite a list of their kits evokes many memories from the past—the Korda *Wakefield*, for example, which was produced in 1939 and sold for about 7s. 6d. complete except for rubber and dope.

After a period of quiet while they concentrated on their cheap flying scale designs, Skyleada's now have a new designer and we can expect some interesting developments shortly.

The "new boy" is Ron Ward, who is well known for his all-round contest activities, and when we

looked in the other day we found him at work on his first design. We've always known that Ron was not averse to trying new ideas and this model certainly has its quota.

Although designed to the Class "A" T/R specification, it is not aimed primarily at the oil stained worthies who practise this sport. Rather, the kit is intended for C/L beginners and sports fliers who want a good looking, easy-to-build, rugged model to fly on Sunday mornings. Judging from the prototypes we examined, the model will fulfil these requirements, and the kit promises to be one of the most completely prefabricated designs yet seen on the market.

The price is expected to be about 22s. and deliveries will commence early in 1958.

* * *

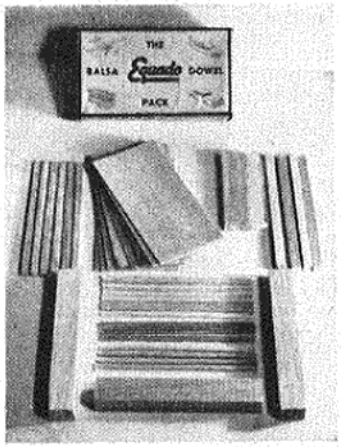
Not every youngster is able to spend the happy hours that Londoners devote to browsing in **Gamage's** model department, and realising this they produce each year what must be one of the most comprehensive and lavishly illustrated catalogues available. Entitled "Gamages

Book of Model Trains, Boats, Cars and Aircraft," it is obtainable from them direct, price 1s., and is definitely next best to a personal visit.

* * *

E. Law and Son, of Sutton, have been cutting balsa wood for over 20 years, but are still one of the few firms that specialise in cutting to metric sizes for overseas orders. This is a policy that must pay dividends, for imagine the bewilderment of little Pierre, or Kurt, or Gianno, trying to co-relate the metric sizes on his plan with the English sizes on his price list.

New on the home market is a balsa pack; this is sold under their trade name of **Equado** and costs



2s. 6d. It is nicely boxed, but we were rather relieved on opening it to find that contrary to what the label might suggest it did not contain round pieces of balsa, but a selection of useful size sheet, strip and block with some $\frac{1}{8}$ in. and $\frac{3}{16}$ in. beech dowel.

A list of the actual contents is printed on the label and if you work it out you will find you are doing quite well for your half-a-crown.

* * *

With the increasing use of glass fibre in model aircraft (Bill Morley recommends it for the spats of his *Scimitar*, see page 4), a booklet published by Bondaglass Ltd., 55, South End, Croydon, Surrey, is most topical. Entitled the **Bondaglass Handbook,** it deals in a clear and concise manner with the many aspects and uses of this increasingly popular material, so is a worthwhile buy for anyone who contemplates doing such diverse jobs as patching up his rusty car, making draining boards, or even making the spats for his *Scimitar* ! Priced at 2s. post free it is obtainable direct from the manufacturers at the above address.

Book Shelf

BRITISH AEROPLANES 1914-18. By J. M. Bruce. Putnams. £12 12s. 0d.

TO send a book such as this to a busy reviewer qualifies as mental cruelty. With one eye on the clock, he will open it up at page one, intending to base his criticism on a few sample pages, only to put it down regretfully two days and 741 pages later with the big problem still unsolved —how to write a convincing review of a book whose contents, printing and binding defy one word of complaint.

Jack Bruce has produced far more than a mere reference book. Except for three-view drawings, which would have made the book impracticably expensive, the enthusiast will find everything he wants to know about the aeroplanes built in Great Britain in 1914-18, even down to such details as serial numbers and the cost of airframes and engines.

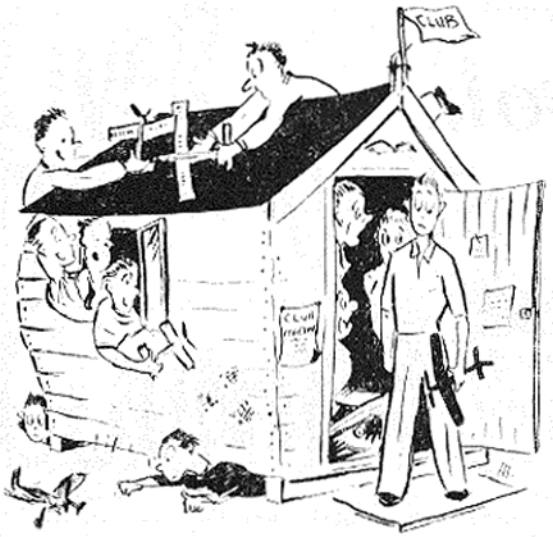
Collectors' eyes will goggle at the sight of 657 illustrations, many of them depicting rare types and variants that have never before appeared in print. Model-makers will be able to add a wealth of authentic detail to their models after studying its pages, although they may draw the line at copying the enthusiasm of the painter who interpreted an order to put recognition markings on the Sopwith Type 137 seaplane as requiring no fewer than four large roundels *under* the upper wing, as well as the usual quota elsewhere.

Above all, everyone will enjoy spending a quiet hour or two by the fireside with this book, reading the development problems that confronted designers in those far-off days, and of the great air battles fought over the Western Front and wherever else the R.F.C., R.A.F. and R.N.A.S. flew; because the whole book is immensely readable, all 400,000 words of it !

Interesting rare birds include a fighter designed by Jack Alcock of transatlantic flight fame; a Blackburn triplane; D.H.4 seaplane; Professor Low's rotary-engined flying bomb of 1916; the massive four-engined Kennedy Giant; and the very advanced Beardmore W.B.IV, the tractor airscrew of which was driven by an extension shaft from an engine behind the cockpit, giving the pilot an exceptional view, and which also had a built-in buoyancy chamber and jettisonable undercarriage for ditching at sea.

One can trace the whole evolution of the fighting aeroplane from the time when the observer of a Sopwith " Spinning Jenny " was armed with a shot-gun firing chain-shot, through the fantastic attempts to give machine-gunners a clear field of fire by sticking them in nacelles in the most unlikely places, right through to the experimental eight-gun Salamander trench-straffer of 1918. As interim measures, there are accounts of towing grapnels from a B.E.2c, of a combined searchlight-twin-Lewis armament pack in the nose of an F.E.2b and of a 1½-pounder Vickers gun that had such a kick that every time it was fired from a Short S.81 Gun-carrier the aircraft stopped dead and dropped 500 ft.

Long before coming to the last page, one has acquired a new admiration for the men who designed these almost legendary aircraft at a time when technical knowledge of aerodynamics and structures was limited, and of the pilots and crews who flew them on test and in action. Perhaps their spirit is best typified by the fabulous bearded Colonel Samson who tried a fly a Camel from a lighter towed behind a destroyer, crashed into the sea and was run over by the lighter, only to bob to the surface and say to his rescuer " Well, Robertson, I think it well worth trying again. . . "



Club News

SOUTHPORT M.A.C.

The competition for the Douglas Barber Glider Challenge Trophy took place at the club flying ground on Southport Beach. There was a total of seven entries. Four flights with a 2 min. maximum was decided upon because of very windy conditions and after a smashing time had been had by all, the contest finished at dusk. Junior member G. McCabe having top score of 5 : 46.

NORTH KENT NOMADS M.C.

With the close of the flying season and completion of club contests, the eventual winner of the club championship was J. W. Ashcombe, with A. R. Parker a close second.

Outstanding performances in recent weeks have been Arthur Hall's win in the Roberts Cup for flying boats, his first flight being only one second short of the British record in this class, and Wally Skeels' effort in the R/C event where he finished a clear 200 points ahead of the field.

Skeels flies a short moment arm version of the Junior 60 and single channel radio with compound escapements to give rudder, elevators, one aileron, and engine speed control. He uses a control box synchronised with escapement speeds to give up to five pulses for selection of controls. Engine is an A.M. 35; the model is comparitively lightly loaded, and down elevator is adjusted to give a shallow dive for effective penetration in windy conditions.

The next important club event will be the annual social and prize-giving early in the New Year, with the date yet to be announced, but the regular meetings will still be held on the last Monday in each month at the "Traveller's Rest," Bexleyheath (fully licensed !).

KENTON M.A.C.

The combat group has been very active in entering competitions in and around London. At last, the experience has paid dividends. At Wanstead, L. Burbridge was second and, at Dartford, G. Copeman, R. Mickman and L. Burbridge took first and fourth equal places.

The club 1.5 c.c. combat trainers are in constant circulation on Sunday afternoons.

Talks have been arranged by Mr. Paterson of Solarbo, Ron Moulton and Peter Holland for the evening meetings during the winter, and the rest of the time is taken up with lively and stimulating discussion.

LITTLEOVER M.A.C.

The club journeyed down to the All Britain Rally at Radlett, where six of our members entered combat. Both Dave Keeling and Ed Spencer were in the last eight remaining fliers. Dave Keeling won second place when it was decided to draw for positions, due to darkness falling.

INDOOR NATIONALS

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22nd—23rd FEBRUARY

E. Spencer has been putting in some class "B" practice with his E.T.A. powered job, and has recently been returning speeds of 100 m.p.h. plus.

NORTHWICK PARK M.A.C.

There has been increasing interest in radio controlled gliders in the club recently, and Messrs. Curry and Upson have achieved flights of up to quarter of an hour with their model—*Archangel*. The equipment used is an American DX receiver and servo controlled rudder. It was a sad event at the West Hants rally, at Beauleigh, when G. Upson at last stacked his notorious "near" F.A.I. power model.

The club has just participated in the Wembley Exhibition, by showing an excellent stand of models.

BAILDON M.F.C.

Bad weather once again put paid to our hopes of winning the Farrow—we couldn't even do as well as our rivals in our own area—and we were obliged to be content with Messrs. Lanfranchi and Pannett's first and third respectively in the Area Open Power contest. (As for the P.A.A. Scottish Festival—well, the least said the better; our sole entry recorded 1 : 55).

Halfax day produced a strong wind too, and Collinson's 6 : 54, Eggleston's 6 :45 and Pannett's 4 : 37 were our best efforts. However, the three-cornered final of the Area Knock-Out, flown the same day between our "A" team, Halifax and Stockton, provided an exciting end to the proceedings when we scraped home to victory over Stockton by 25 sec. with our final flight, made during the closing minutes of the meeting, by Arthur Collinson with a new and only partly-trimmed model.

In club events we have fared little better: the H.L. glider contest was held in cold, blustery weather and resulted in a surprise win for Stan Eckersley's A/2, and the "general" comp. was flown in fog and rain. Here Brian Eggleston's 2.5 *Creep* won with 8 : 05, and Tony Pannett's "Super" *Creep* came second with 6 : 37. Conditions for the Hamley, and a club open power comp. were the worst of all; only a lucky last flight of 2 : 55 lifted Silvio's total to a respectable one of over 6 min., and a mere 3 : 13 by Tony Pannett was our next best.

FARNBOROUGH M.A.C.

About half-a-dozen hardy members braved the elements for the November club competition. Flying between the showers, D. Sibbick's *Helicanth II* flew to first place in spite of lower than usual revs. from the Oliver Tiger, and a short D/T on the first flight.

Poor Alan Leeson spent most of the day nursing a damaged hand after it had met with the prop. blades of his re-worked E.D. 2.46. This boy has a works-tuned Oliver on order, so he had better be more careful in future ! He was flying another of his straight-dihedralled models; this one had nylon-covered wings which proved their worth later on when the model was caught downwind in a heavy shower.

Although the membership in the club is rather low, the fact that one junior was flying an E.D. Bee-powered pylon model against 2.5 c.c. jobs, gives an indication of the enthusiasm that exists.

ST. ALBANS M.A.C.

We carried off the London and District Inter-Club Challenge Cup, flying against Surbiton at Chobham Common; the detailed results being:

St. Albans: B. Cox (Power), 3 min. 15 sec., 2 min. 37 sec., 4 min. 00 sec.—9 min. 52 sec. I. Crawshaw (Glider), 1 min. 56 sec., 1 min. 50 sec., 3 min. 10 sec.—6 min. 56 sec. G. Fuller (Rubber), 2 min. 05 sec., 4 min. 00 sec.—6 min. 05 sec. Total aggregate—22 min. 53 sec.

Surbiton: D. Posner (Power), 2 min. 33 sec., 4 min. 00 sec., 3 min. 21 sec.—9 min. 54 sec. K. Glynn (Glider), 4 min. 00 sec., 2 min. 00 sec., 2 min. 58 sec.—8 min. 58 sec. J. Callinan (Rubber), 3 min. 30 sec. Total aggregate—22 min. 22 sec.

A very close thing, really. Callinan was unlucky in destroying both his first and reserve models, and George Fuller lost his long fuselage lightweight on the second flight and did not have a reserve. It became a problem as to whether we should find our rubber model or the Surbiton club should repair their one. It turned out neither way, leaving us the winner by the small margin of 31 sec.

Also that beautiful day was the Farrow team rubber and the K.M.A.A. U/R glider. The weather was absolutely perfect, as it has been once or twice for contests this year—Northern Heights, Croydon Gala. The wind was almost non-existent and when we arrived at Chobham, George was busy getting his first max. with his new lightweight—the model just floating about there. He quickly got his second, before we had properly started test flying, but his D/T fuse let him down on the third and he only scored 3 : 49.

Derek Knight, the club transport, practically, earned that title by taking most of the club's models in an absolutely immense box on the top of his car. This box was just the thing for doing repairs on later. It was so big that the builders thought it would be wiser to add streamlining fore and aft, which was done. A small free-wheeling prop completed the ensemble. We predict that this will become a familiar part of the landscape in the future at contests. Derek was flying a design based on Georg's lightweight, and had his first attempt at a competition, at least since the war !

HAYES M.A.C.

An interesting feature of our first indoor meeting this winter was a short film of the 1957 All Britain Rally, the accent naturally being on the club's activities. The amateur cameraman responsible, Ken Mason, rather strangely chose to show us the less successful part of the day; thus we saw a well-photographed and detailed study of us losing the class "A" team race, along with several red-hot action shots of radio jobs piling in (not ours, but a morbid subject to choose none the less !).

However, it was a pretty good effort for a first attempt, and the day was not as dismal as it may have appeared, for club secretary Josh Marshall became All Britain Champion for the third year running.

A number of impromptu team race contests have been held recently against the neighbouring clubs of Cowley and Uxbridge. In addition to

the experience gained from flying under contest conditions, we have also been given practical proof of how easy it is to bend good models and motors—must check those line-guides and lead-outs in future !

COWLEY (MIDDX.) M.F.C.

We attended the Southern Area Gala at Beaulieu, but showers, gusty winds and a broken down motor-cycle kept models in "coffins" until late afternoon. The meeting was poorly attended, but A. W. F. Alexander doubled his entry fee by winning rubber, while J. Punter (junior) achieved three max.'s to win glider.

The South Midland Area picnic was held in near-perfect weather and the club had a good day, winning the inter-club comp. with 31 : 20 total and taking first two places in rubber.

The club would like to contact any local clubs or individuals interested in indoor flying so that the possibilities may be explored of arranging meetings to revive this ancient sport in this part of the world. Enquiries to P. W. Quarterman, 1, Iver Lane, Cowley, Middx.

SIDCUP A.S.

On looking back over 1957 we have found that although we have made a poor showing at the major rallies this year, we have not disgraced ourselves by any means.

The total score at the end of the four rounds of the London Area League earlier this year showed L. Ashdown first in class "A" and the Templeman brothers first in "½A." At the Enfield rally, R. Wenz took second place in class "A" and A Hc u'ding second in class "B," while in the North Hants rally the Templeman brothers walked away with classes "A" and "½A."

For much too long the C/L boys have dominated the club, partly due to having a local park for C/L flying. However, more and more members are braving the gorse at Dartford Heath and there is now considerable interest in all types of F/F. To cater for this interest, several F/F comps. and scrambles have been held during the year meeting with varied success.

Not forgetting R/C; there are several members with R/C models now, the latest addition to the fold being B. I. Fry, whose large single-channel model is virtually an enlarged, streamlined version of his F/F "M.A." design, *Wendy*. This looks very promising.

The radio boys have successfully negotiated with a farmer—yes, a farmer !—and are using one of his fields for R/C flying. With this encouragement, some fast symmetrical-section jobs are to be seen belting about the sky on Sundays, and it is hoped we will be able to enter one or two in the radio comps. next year.

SOUTHERN AREA

We will hold an open rally at Beaulieu Aerodrome on February 23rd, 1958.

Competitions are for open power, glider, rubber, class "½A," "A" and "B" team race.

All modellers are welcome.

STRATFORD-ON-AVON M.A.C.

We recently acquired a plentiful supply of club transfers which are available to all club members at 3d. each. The design is in the form of a 2 in. × 2 in. shield with a blue diagonal, on a yellow background on which are inscribed the words "S.-on-A. D.M.A.C." The transfer was designed by the hon. secretary and consists partially of the Stratford coat-of-arms, and is in Stratford's traditional colours.

BRISTOL & WEST M.A.C.

We have had a very successful season as our open rubber design has proved very consistent. It has won all the rubber events held in the Western Area plus a first at the Stockport Express Rally and a fourth at Radlett. A club team secured third place in the Farrow Shield with 42 : 40 which included one triple max. This team must be unique among rubber fliers, three of them are ardent power men, none of whom had flown a contest rubber job until a few months ago !

The West of England Championships were held for the first time in three years. Superb weather was laid on and J. Down of South Bristol M.A.C. had a very convincing win with a combined total of 668 sec. out of 720 sec. max., in the glider and power events.

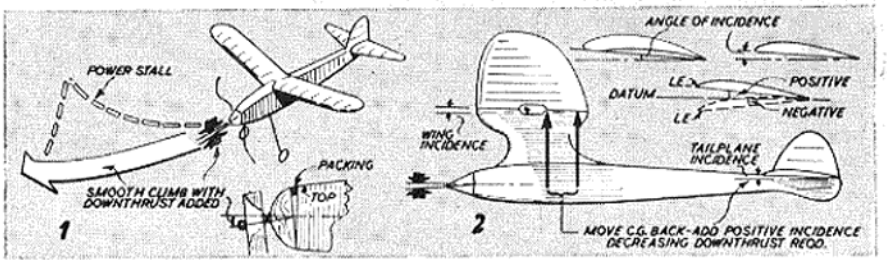
The Hamley saw R. Farr recording 7 : 04 and Brian Eggleston producing the season's best display of precision strafing with the secretary's car as chief target.

FREE FLIGHT TRIMMING TIPS

NEARLY all rubber models need downthrust to "kill" the stall which tends to develop under full power (1). As a general rule, the farther forward the balance point the greater the amount of downthrust needed to trim. There is no limit to the amount of downthrust which can be used, nor does downthrust necessarily result in lost power. The sign of excessive downthrust is if the model flies very fast and level, without climbing.

Downthrust may also be necessary on power models, but seldom to the same degree. The same rule applies. If the model balances at the mid-chord position or farther forward, some downthrust will almost certainly be necessary. The simplest way to add downthrust is to slip a washer or two between the engine lug and bearer at the rear bolt position.

On pylon-type power models only a moderate amount of downthrust should ever be necessary. To cure stalling under power it is better to move the balance point aft (2), adjusting the glide trim by increasing the tailplane incidence to balance.

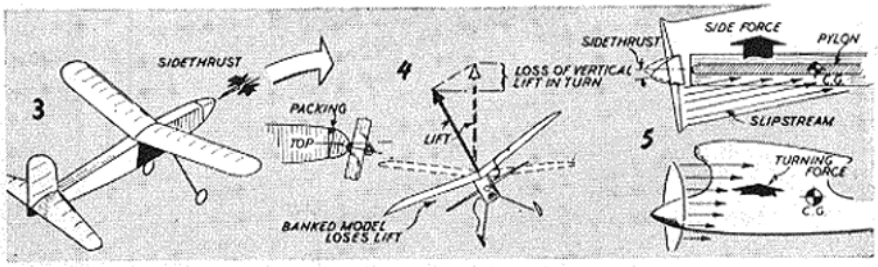


This can be carried to a point where no downthrust at all is necessary. Beyond that point there is a definite danger of the model diving in under power.

The best type of trim also incorporates sidethrust—with or without downthrust, as necessary. On a rubber model (3) the amount of sidethrust which can be used is very limited. It should always be used to give a right hand turn under power (with a normal anti-clockwise propeller), and should never exceed about 2 or 3 degrees, otherwise there is a danger of the model spiralling in. A turn has a similar effect to downthrust in killing a stall, so when sidethrust is added less downthrust is required. This is because when turning in a banked attitude the wings lose a certain amount of upward lift (4).

Sidethrust on power models is often employed to a far greater degree than on rubber models, and in either direction. Excessive sidethrust, however, is generally to be avoided on pylon models since it angles the slipstream against the pylon and generates a side force which can be troublesome (5). This is more dangerous with right sidethrust and a right turn under power than with left thrust and a left turn.

It is normally recommended that where sidethrust is employed for power trim, the direction of power turn should always be in the same direction—i.e. right thrust to give a right power turn, and vice versa.



There are the exceptional cases but since sidethrust is a very powerful trimming force it is usually best to work "with" it and use the minimum possible, consistent with the result required. If excessive sidethrust is necessary on any model to trim out the power flight, then generally this indicates a fault either in the original design or the rigging of the model.

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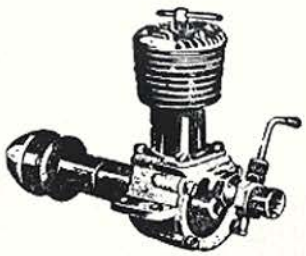

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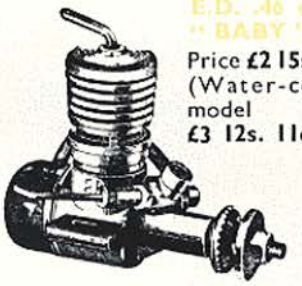

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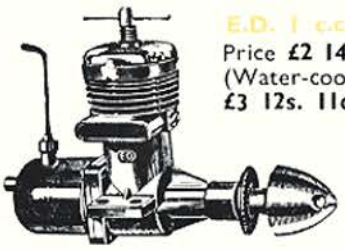

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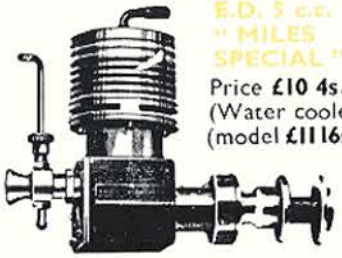

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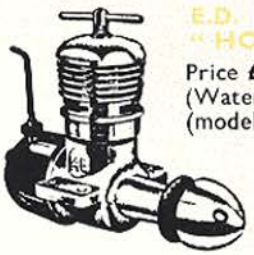

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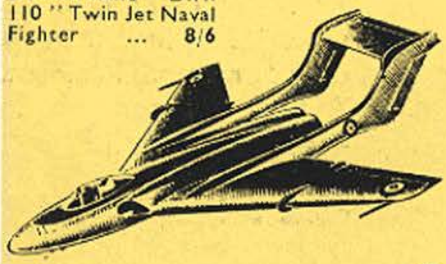

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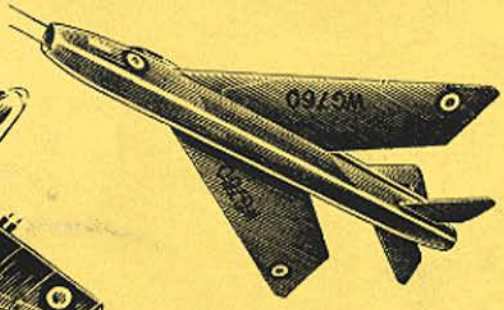

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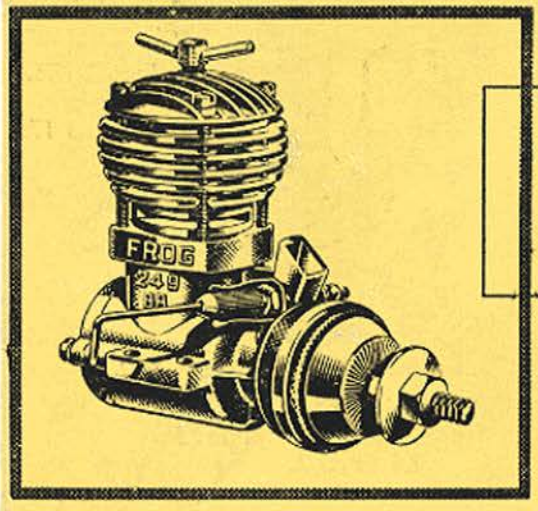

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