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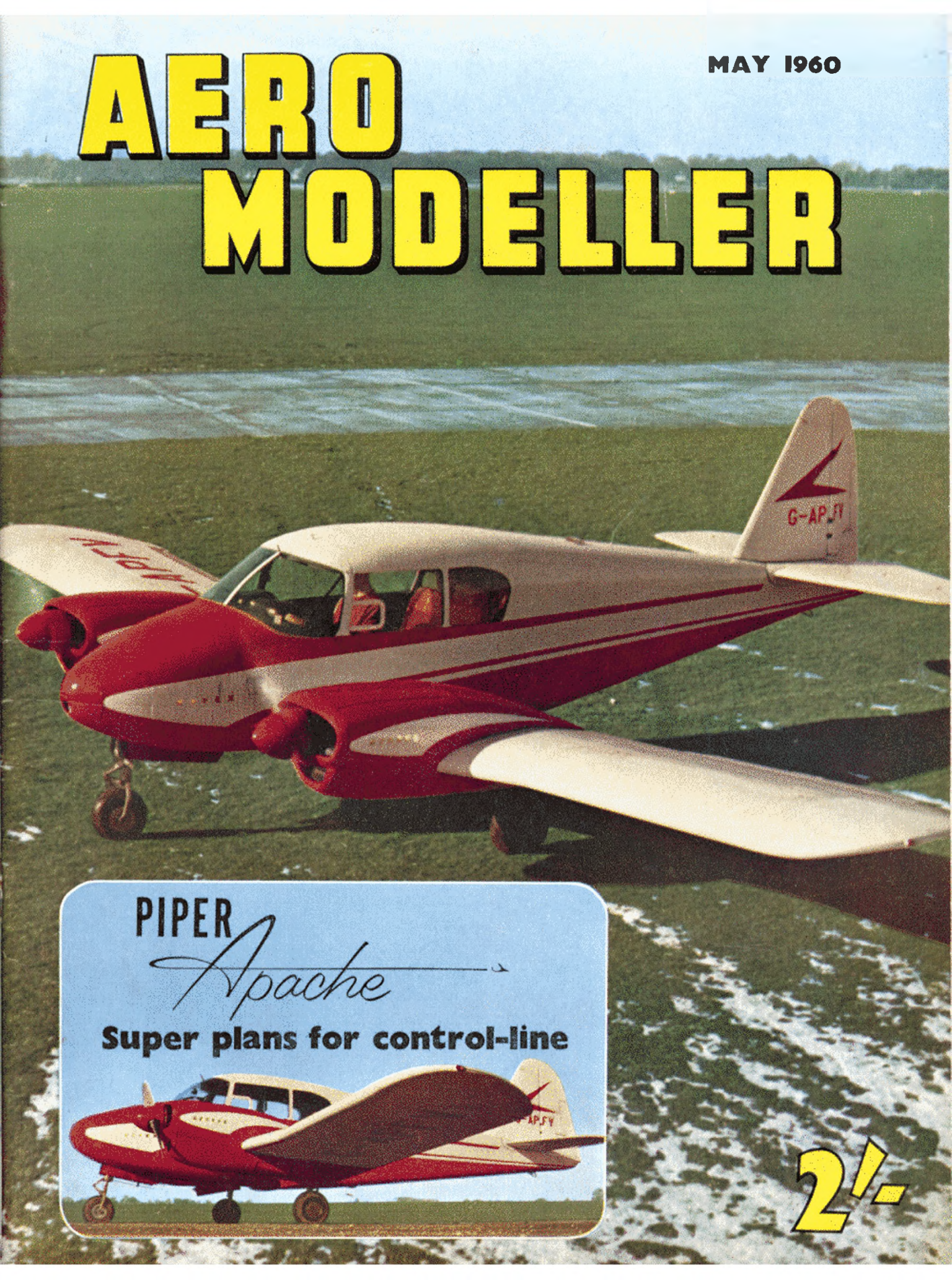
MAY 1960



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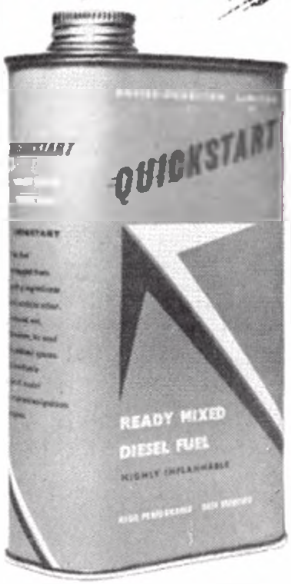

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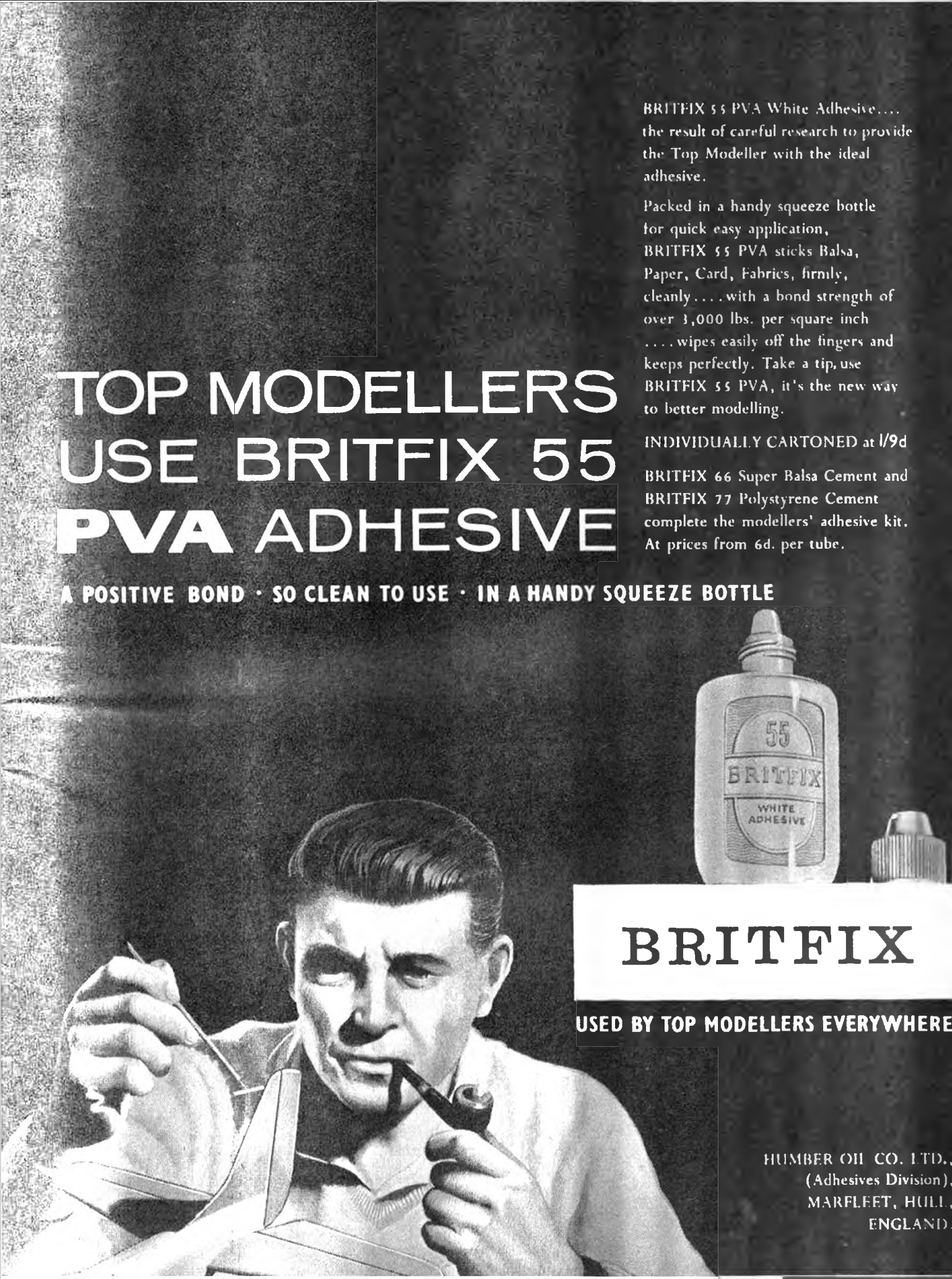

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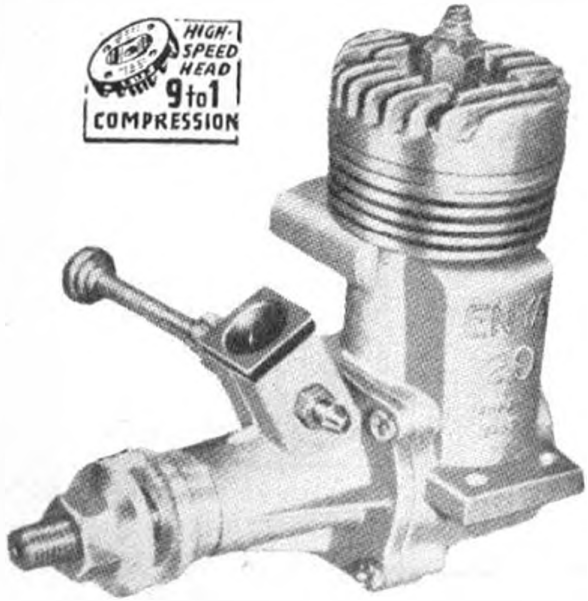

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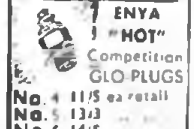

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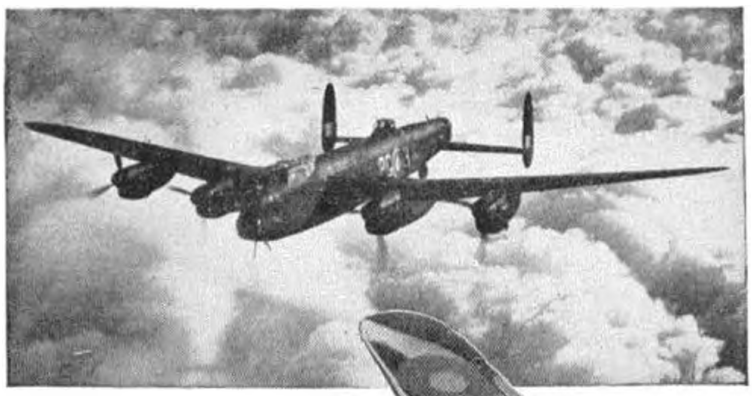

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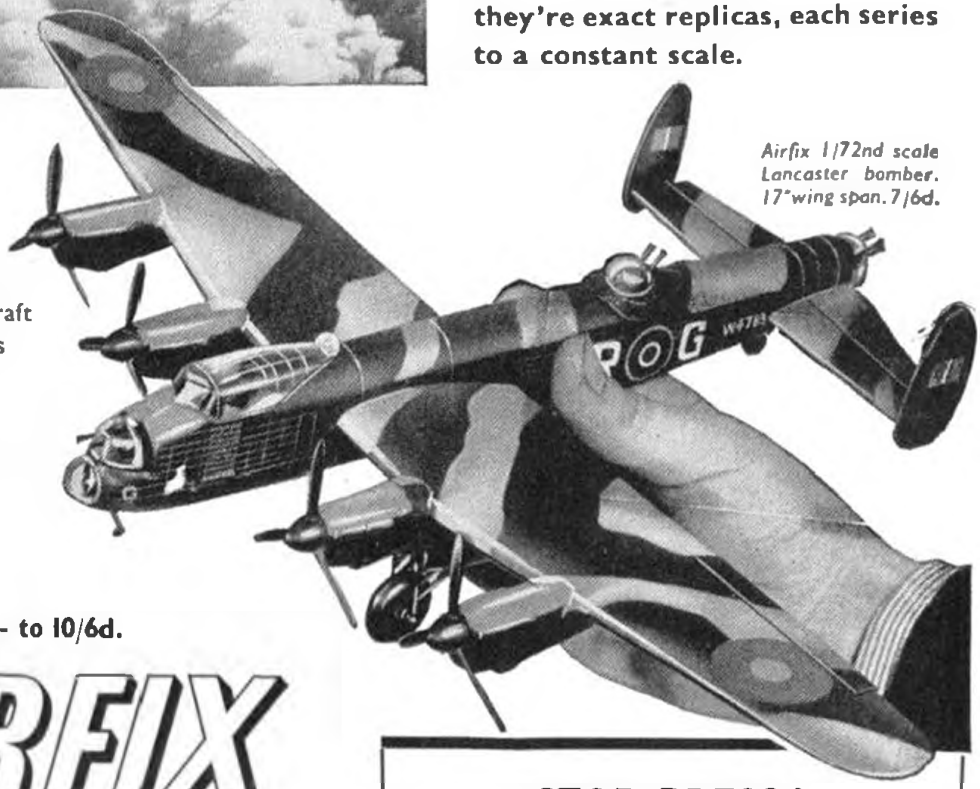

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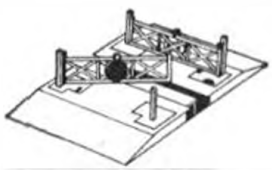

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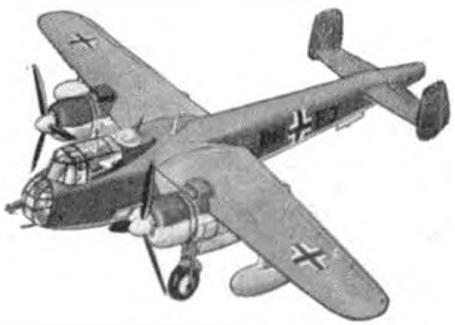

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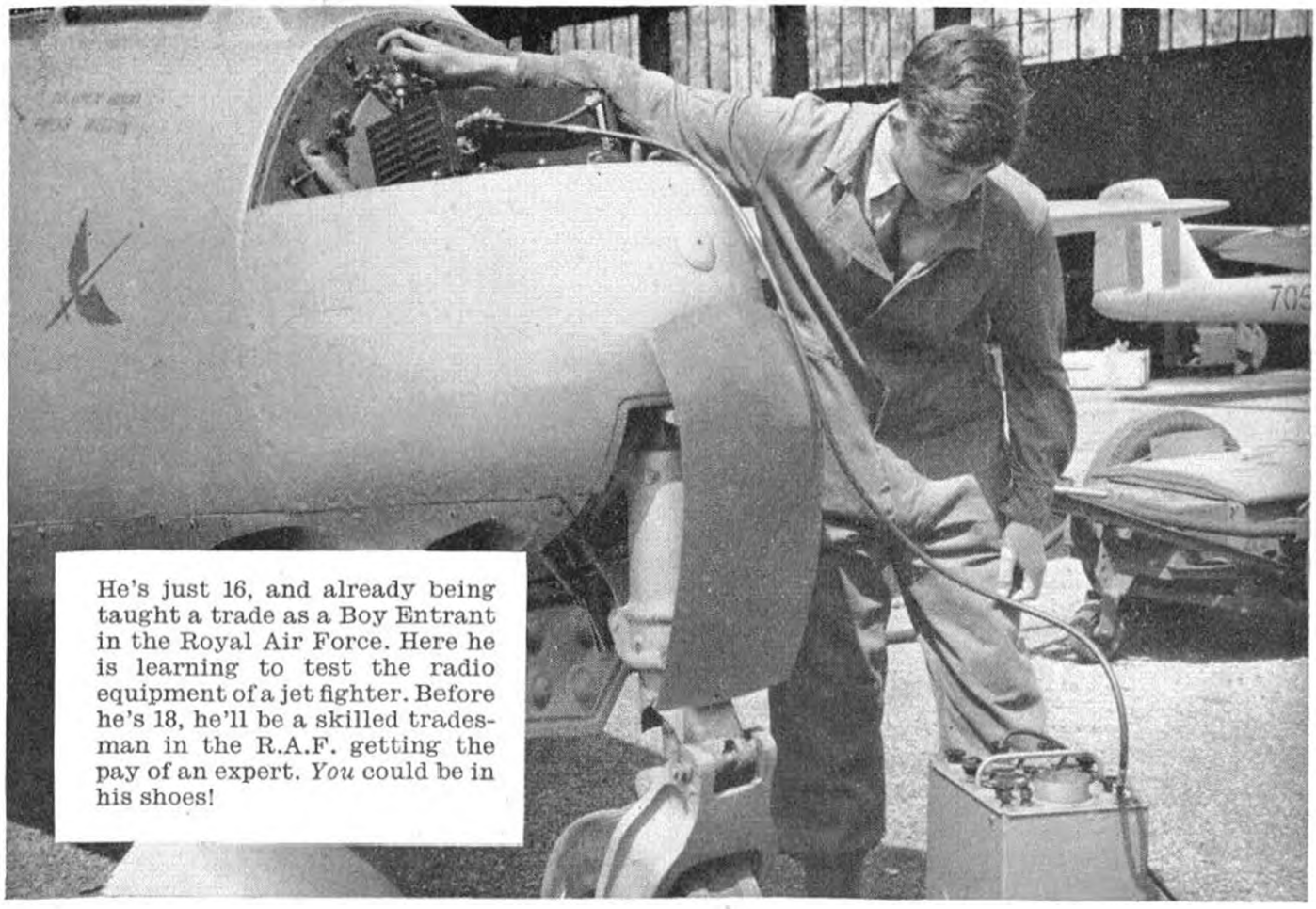

He's just 16, and already being taught a trade as a Boy Entrant in the Royal Air Force. Here he is learning to test the radio equipment of a jet fighter. Before he's 18, he'll be a skilled tradesman in the R.A.F. getting the pay of an expert. *You* could be in his shoes!

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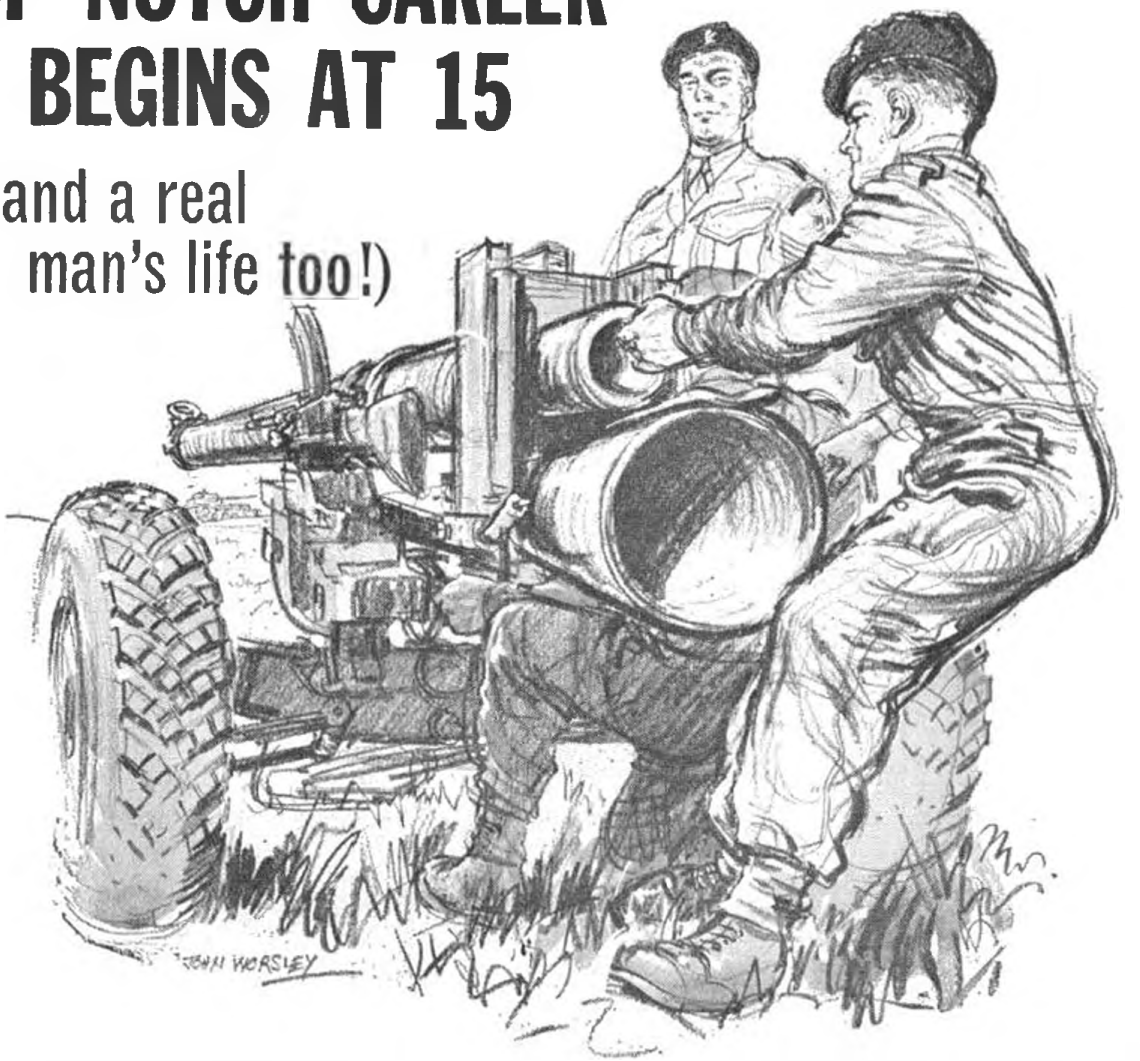

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AERO MODELLER

Editorial Director D. J. Laidlaw-Dickson

Advertisement Director C. S. Rushbrooke

Editor
R. G. MOULTON

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TELEPHONE: WATFORD 32351 (Monday-Friday)

VOLUME XXV

No. 292 MAY 1960

CONTENTS

On the Cover

Vigors Aviation demonstrator Piper Apache wheels around in front of the Kidlington Control Tower for our benefit. Red and warm white colour scheme is standard for this 160 model Apache formerly E1—ALK when delivered Via Dublin.

AEROMODELLER Incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the 15th of the previous month by the Proprietors:
MODEL AERONAUTICAL PRESS LIMITED
SUBSCRIPTION RATE: (Inland) 28/6. (Overseas) 27/6 per annum prepaid including the special Christmas number.

Noise

IT IS NOW five months since we first drew attention to the inevitable acceptance of the "Noise Abatement Bill" put forward by Mr. Rupert Speir M.P., the Conservative Member for Hexham, Northumberland. The House of Commons dealt with the second reading on March 4th, and there is little doubt that it is only a matter of time before the Bill becomes law. What surprised us most was that model aeroplanes never received a single mention! Maybe we are less offensive to Members of Parliament than to local residents for hardly a week passes by without our hearing of some loss of flying facilities through excessive noise nuisance.

Only recently our own local Watford newspapers carried reports of a strong appeal by a resident for de-valuation of his house rating, the appeal for which included "*the Sunday afternoon whirrr of model aeroplanes which disturb the peace from mid-day to late evening*". Admittedly he had other, more acceptable reasons for lowering his property valuation; but the fact remains that he succeeded in his claim and obtained a reduction of 4 per cent.

By such unfavourable publicity, our hobby will suffer in the future. We know that the Watford case is by no means isolated and similar occurrances in other communities have had far reaching results. We might mention that it is forbidden by law to operate a model aeroplane engine within defined distances of habitation in Zurich, Switzerland. Unless something is done *soon*, we may well be faced with similar legislation.

To this end, we fully support the offer made by MERCO to award two of their engines to the best and most practical designs for a universal silencer. Further, we will add to the awards by giving an AEROMODELLER subscription to the design placed third. What is wanted is a simple, compact unit which will not spoil engine performance, yet will reduce noise to an acceptable level. It must fit closely to the exhaust stack of glowplug engines, and have adaptation for 360 deg. ported diesels. It must be easy to produce, made of inexpensive material, and adaptable to fit on engines without having to modify crankcases or cylinders.

We know the specification is not an easy one to meet; but our experience of gadget conscious aeromodellers leads us to believe that through such open competition to find the best, the MERCO enterprise will be well rewarded. For the winning design they offer a 35 Multispeed, and for the runner-up, a standard 29. It will be our pleasure to co-judge entries sent to

these offices to arrive by April 30th and announce the winners in a future issue.

Our New Baby

Six days before this issue appears our new baby *Radio Control Models & Electronics* will have appeared in the shops. As we write the presses are still turning and we have only the final proofs before us, but this we do know, our modelling public has given it just about the finest, kindest, most encouraging send-off we could possibly wish for. Our early expectation of first printing figures has been nearly doubled, and many trade outlets have re-ordered before getting any copies as their first batch had already sold in advance. Enthusiasts all over the world have rushed to complete subscription forms and sent them with their good wishes and promises of contributions in the future, our fans at home have been equally cheering. We think it is a really good first issue, though nothing like so good as we hope to offer a few numbers on, but we have yet to receive our new readers' reactions . . . so all we can say just now is thanks for the good wishes and if you have not seen a copy yet grab one while you can, it may be a "collector's piece" of tomorrow !

Our Cover

It is with special pleasure that we draw your attention to our first-ever colour-photo cover, illustrating the Piper Apache executive twin, a model of which is featured on pages 240/1. Arranged by courtesy of Vigors Aviation, Piper distributors in Britain, and the Kidlington Airport control tower, the photograph was taken just before the last snows of winter disappeared from this Oxford field. There are ten or more Apaches now on the British register, G-APFV coming from Eire as EI-ALK last November and being rather unique in that it was *not* delivered by the incredible Max Conrad. Max makes a habit of flying the Atlantic solo in Piper deliveries to Europe and Africa, having long passed the 50th crossing and established two amazing World Records. In June last year he flew a Comanche with 250 h.p. engine 7,668 miles non-stop from Casablanca to Los Angeles, and in November, changed to a 180 h.p. engine for another record class and flew from Casablanca to El Paso, furthermost point in Texas for a 6,959 mile distance. Not bad for a 57 year old veteran flyer who lives (when at home) with his wife and ten children in San Francisco.

We hope that this use of colour photography will become a frequent feature and look forward to the day when we shall be able to extend its application to our inside pages.

Chasing the lolly

Every week-end seems to see a flurry of early morning activity on Kentish roads as Charles Dance and Wally Skeels make their attempts to establish a World distance record for R/C models, using a Taplin Twin. Best effort to date, and one which was recorded by Television film cameras from start to finish, was a magnificent effort on March 13th. Since the previous attempt recorded last month, Wally Skeels had fitted an ingenious elevator trim, and control over the large span Smog Hog variant was good enough to keep it within a few hundred feet, up and down dale, around twisty bends, with a Morgan Plus Four chasing. Unfortunately, last minute adjustments to the twin cylinders prior to take-off resulted in a gradual over-compressed effect, and after 23¼ miles, and 55 minutes of flight, the model lost height as power was reduced, landing close to the roadside.

Controlling a model from the chase car is no easy task and Wally Skeels (at left in the photograph with Chas Dance fitting the wing in place) is to be congratulated for his single channel efforts. Subsequent attempts up to press date have been dogged by misfortune and terminated at 3 and 10 mile distance: but we hope one day to report success in their Lympne-Sidcup chase.

The Original Hangar Doors

The bleak sandy wastes of Kitty Hawk and sketchy lines of the Wright "Flyer" in front of the Wright Brothers' Hangars and spartan living quarters, make our unusual choice of a heading photograph on the page opposite rather unreal in appearance. These are the original sheds, as pictured in 1903 and happily, the U.S. National Park Service has reconstructed them on the same "Birthplace of Aviation" site so that pilgrims to Kill Devil Hill can see the Wright workshop, tools and kitchen exactly as they were 57 years ago.

Soviet Meteorological models

(Translated from "Wings of the Fatherland")

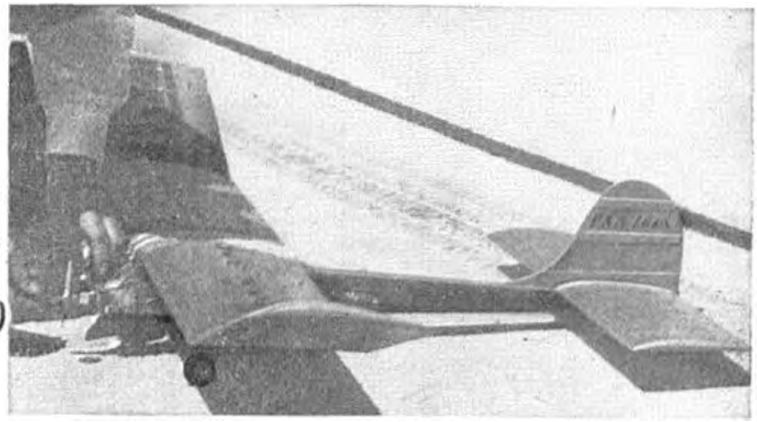
Radio controlled models flying at a height of 500 metres above the Karakumi desert, are sent up by members of the meteorological expedition from the A. E. Voyaikov geophysical observatory. A small instrument, in the model, registers the temperature, pressure and humidity of the air. The direction of the airflows and the height of the lower banks of clouds are also determined with great exactitude.

With the help of models, scientists in the Karakumi are studying how movements of air masses at a great height influence the weather in the lower layers of the atmosphere and subsequently on the earth's surface. The connection between these meteorological conditions is shown more exactly in the desert.

Models are used first of all for probing the lower layers of the atmosphere. Both gliders and powered R/C aircraft are part of the equipment of the meteorological expedition. Power models are about 70-in. span, 60-in. long, with a ·62 B.H.P. engine arranged behind the wings as a pusher, the nose carrying the radio and instruments.

They are constructed by a scientific worker from the Main Geophysical Observatory, the candidate of physical-mathematical study, P. Vorontsov, and the Leningrad aeromodellers A. Erler, N. Bulkin, G. Artukhov and B. Khrustalev. The radio control system was built by candidate in the study of physical mathematics, V. Mukuriya. Readers may remember that photograph in *World News* for February, 1959, showing well-known U.S. modeller Henry Struck and his meteorological research radio-controlled model with five-channel equipment. Similar official research is being made in Great Britain.

Pee Wee PAA Load



(The next British Contest class?)

described by Harry English

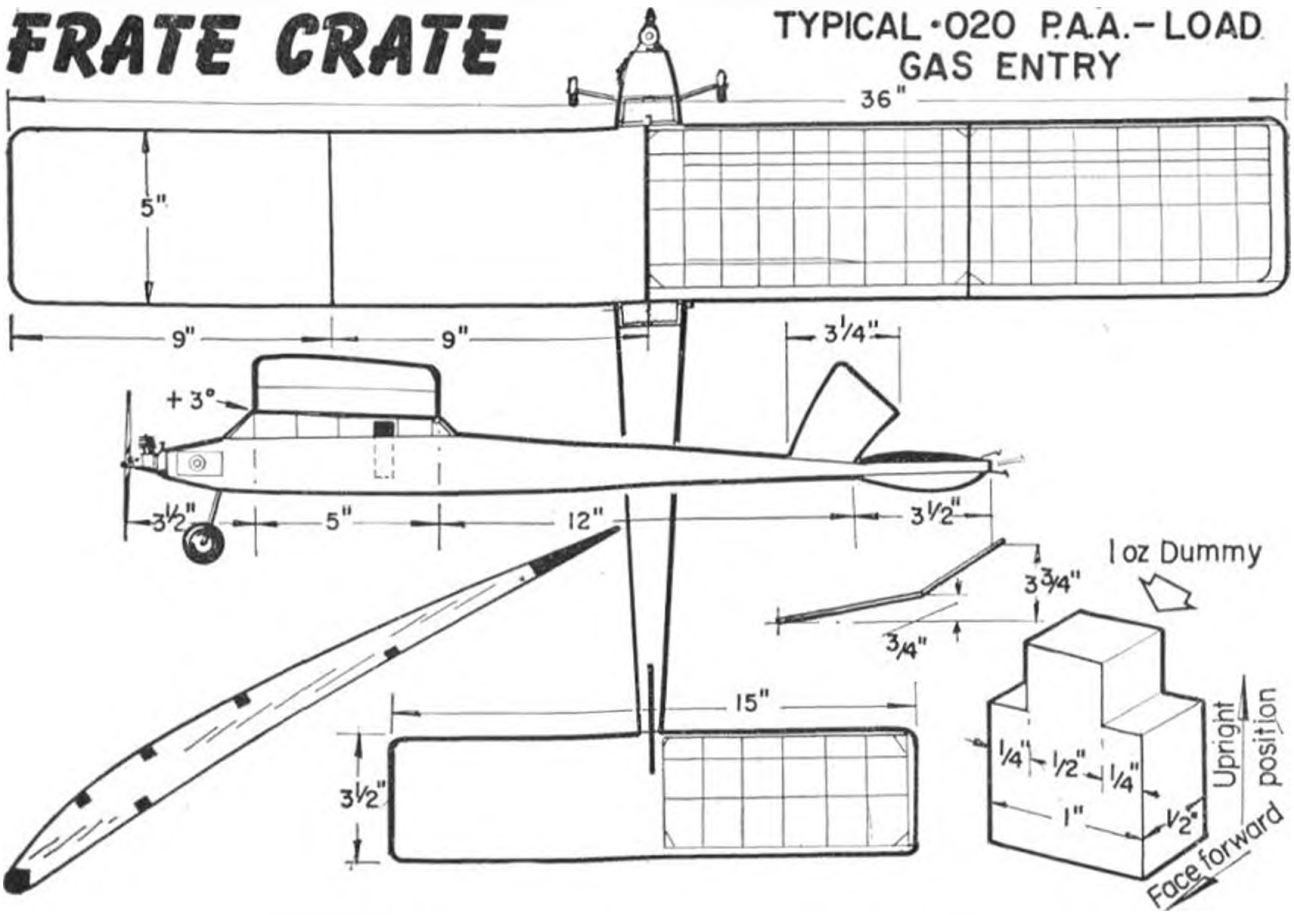
FEW WILL DENY that the Pan American Airlines sponsored Paa-load events throughout the world had become a little unpopular, with fewer and fewer entries showing up in 1958. The events, particularly Clipper Cargo, had become "experts' events". Looking back over the winners lists, a select few were always at the top; they had become PAA specialists.

This did not hold true for the Jetex event in the U.S.A., the rules for which have remained unchanged, and this event still gains in popularity.

The introduction of the Cox "Pee Wee" ·020 engine is, in our opinion, one of the most important innovations in American, and perhaps World, modelling history. It provided an amazing little powerhouse for sport or contest flying. Great interest was even shown for very small R/C models. The price of these little jewels also put them within reach of even the younger flyers.

When Pan American Airlines announced the 1959 rules they were met with a good deal of enthusiasm by contest flyers since they no longer had to fight for very hot ·049's and very light balsa to build the large Cargo models. The old rules for Cargo only allowed scoring for the amount of cargo carried. Now, they could count the weight of aircraft, timer, finish, engine, the *total weight* flown on official flights. This, of course, allowed very strong, practical models and more attention to nice finishes.

Since maximum size was limited, every contestant had the same choice of aircraft size, the same engine, of course, and could build a strong model which would last as long as any other model in his contest fleet. Somewhat smaller and lighter were the models for the PAA Load gas event. Only 36 in. maximum overall measurements were allowed and the flights were scored on



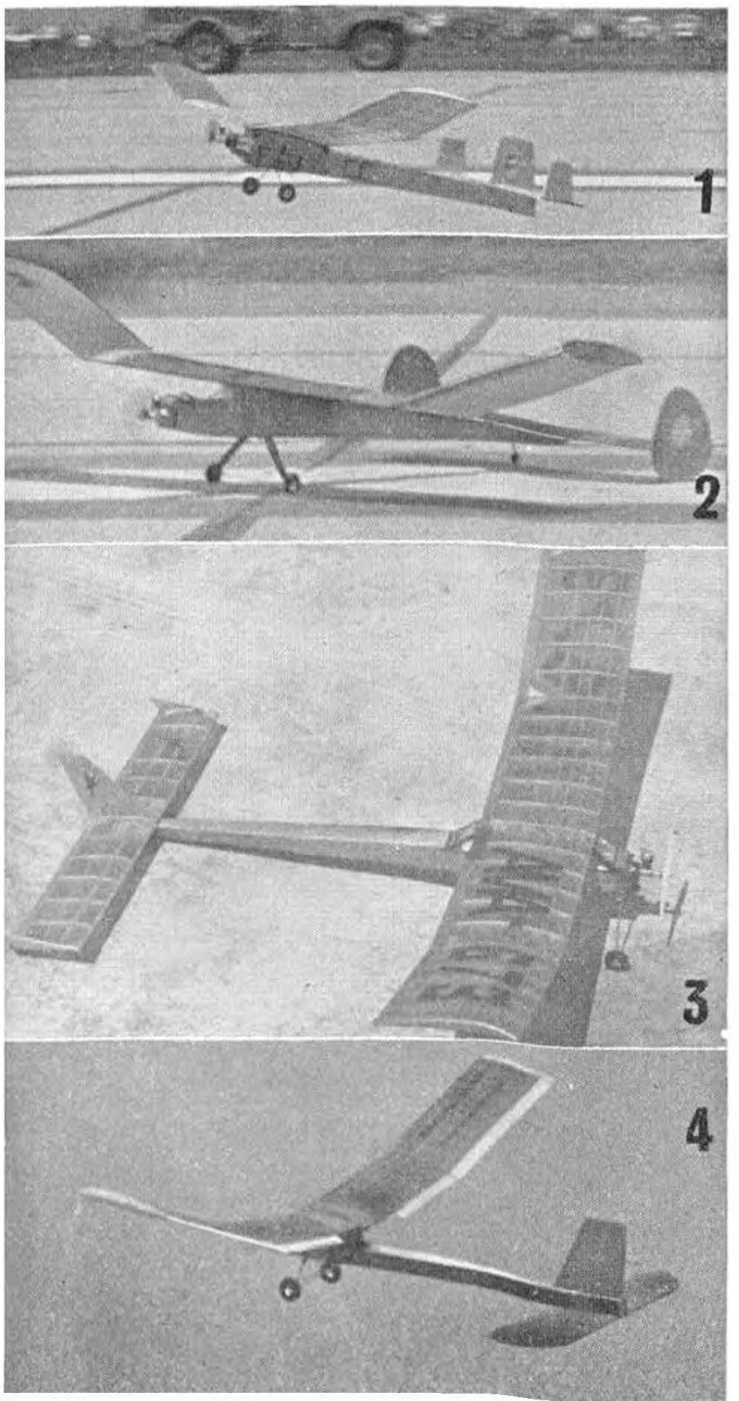
Opposite page: Heading photograph shows veteran modeller, C. O. Wright's Clipper Cargo entry which lifted over 17 ounces on an official flight. Note tiny prop. for so large an airframe. Drawing is to one-sixth scale and gives the author's recommendations for PAAload gas class. With so many Pee-Wees in circulation throughout Europe, will this class come across the Atlantic?

endurance with a given minimum weight. Jetex rules were unchanged.

Basically the 1959 and present rules are as follows:

PAA load gas:

Maximum Dimension (wing or fuselage) length: 36 inches.
Minimum weight with one ounce dummy: 5 ounces.
Maximum engine displacement: ·020 Cubic inches.
Maximum engine run (R.O.G. *or* H.L.): 20 seconds.
Launching: At least one R.O.G. for scoring.
Number of flights: six.
Scoring: Total duration of highest three flights, at least one of which must be R.O.G.



Jetex:

The rules for this event are the same in every respect of size, and weight. The major difference is that the maximum engine size is a Jetex 150. Scoring, dummy size, etc., is the same as for PAA load gas.

Clipper Cargo

Maximum Dimension: 48 inches.
Minimum weight, with one ounce dummy: 6 ounces.
Maximum engine displacement: ·020 cubic inches.
Maximum engine run: 20 seconds, R.O.G.
Launching: Must R.O.G. for scoring credit.
Number of flights: six.
Scoring: The total gross weight lifted on the three highest gross weight credit flights.
Note: A credit flight must last at least 40 seconds including the 20-second engine run.

These rules, at first glance, perhaps, might look a little tough. However, the present American National records will give some idea of what is possible.

·020 PAAload gas: 14 : 44·1 Jetex: 14 : 37.
·020 Clipper Cargo: 51 ounces

These are the records in the open age category. Note the similarity of rules between Jetex and the gas event insofar as size, weight, etc., and the very similar record times in these two events.

Singling out the Clipper Cargo record above, we see that the total weight lifted on each of the three scoring flights had to be an average of 17 ounces. This is not too great a weight, since the model and engine weight is included under today's rules. At the 1959 American Nationals, a number of Cargo jobs lifted 17 or 18 ounces and were carried away on thermal flights.

Greatest emphasis in the rules is the weight carrying ability of the model. Each event requires a dummy of minimum weight and size and certain visibility requirements for that dummy. In addition, there is a certain size and weight cargo package to be carried in the Cargo models. In actual scoring operations for Cargo flying, the "all-up" weight of the model at take-off including model plus fuel, plus payload aboard, plus ballast, if any, is counted for score.

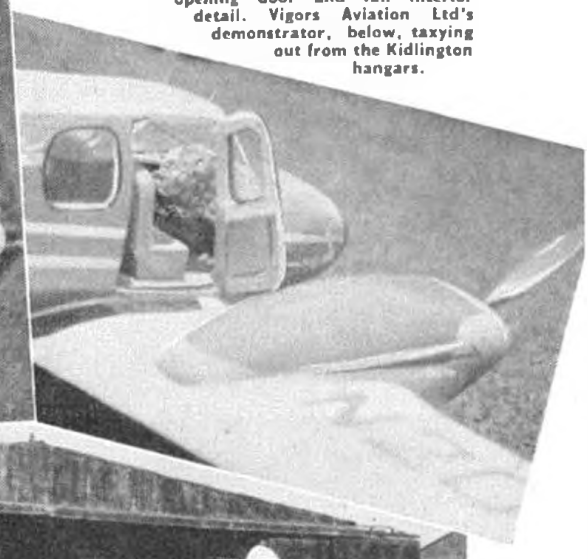
Some contestants prefer attempting very heavy weights and then decreasing the weight until the model will lift and fly the required 40 seconds. Another school prefers flying just above the minimum required weight and then adding ballast for each succeeding flight. Some have found the ideal weight that their models will fly and after dragging this weight into the air for three "credit" flights, the models are loaded up gradually for the remaining attempts. This is the preferred method since the contestant is almost assured of three credit flights before starting to fool around in attempting to improve his weights.

The only hitch to this method is that few modellers have ready access to a take-off strip for practice sessions to determine the ideal weight his model will almost always fly.

The favourite practice of the would-be Paaload contestant seems to be to build a very substantial craft as large as the rules allow and then try to get the very utmost in performance from his engines. Of course, close attention to fuel and props make the big difference here, since most of the Cox Pee Wees are normally very

continued on page 242

Photographs at left: 1. U.S.A.F. Lieutenant Bryan Thompson's model becomes airborne at the Nats.; 2. Duralumin undercarriage gear, and large wheels are an aid for critical take-off, this one in Clipper Cargo by John Allen; 3. the author's own Clipper Cargo entry which briefly held the American record; 4. Large, strong wings are possible under the new rules where the airframe weight is included in all-up weight. This model is by Jack Blair.



Designer and original model, with opening door and full interior detail. Vigors Aviation Ltd's demonstrator, below, taxying out from the Kidlington hangars.

The plane on the Cover!

PIPER Apache

37" Control-line for 1-1·5 c.c.

by John Stivala

WHEN JOHN STIVALA first sent us this neat 1/12th scale controlliner for two 1 c.c. or 1·5 c.c. engines he lived in his native Malta G.C. Now he is an Australian—living at Coburg, Victoria!

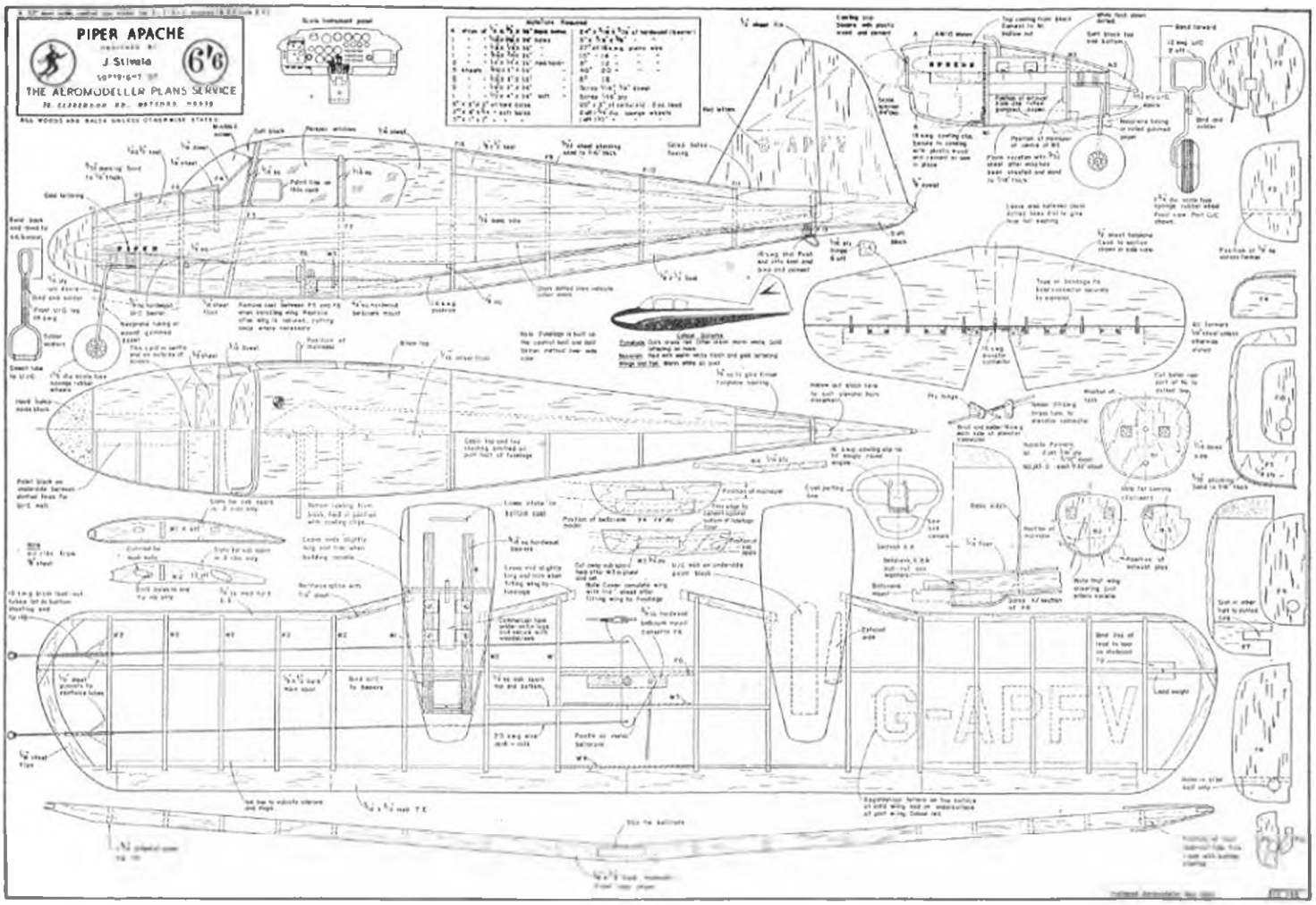
A brief description of the full-size Apache is necessary to indicate this aircraft's capabilities. The 1960 Apache, powered by two 160 h.p. Lycoming engines, has an outstanding performance as well as being the cheapest twin available. Max speed is 183 m.p.h. and cruising 171 m.p.h.; this with five passengers aboard. Using the aid of wide span flaps, landing speed is only 52 m.p.h. landing distance being 670 ft. Cruising range is 840 miles but this can be increased to 1,200 using auxiliary tanks, and even further for Max Conrad to make his trans-atlantic ferry flights (related in Hangar Doors). Loaded weight is 3,800 lb. and span 37 ft. 1½ in. length 27 ft. 4½ in. Equipment for both night and day flying is provided in the form of full instrumentation plus many radio aids.

Vigors Ltd. of Kidlington made available their demonstration Apache G-APFV for preparation of these drawings which are all the more accurate for Vigors' kind assistance, and this particular machine will be based at Kidlington, Oxford in future if you want to see the plane on the cover.

Our model Apache is all-sheet covered, and because of this, very strong. Simplified lines make for easy construction; flying is similarly easy and stable on 40-50 ft. ·010 ins. wire lines.

Fuselage construction comes first. Pin ¼ x ½ in. keel pieces over the plan and then cement half formers F.1 to F.12 in place at right angles to the plan. When dry, the keel is removed from the plan and a second set of half formers are added plus nosewheel bearer. The ¼ in. sq. floor supports and 1/16 in. sheet, floor are fitted into place, then the basic fuselage sides of 1/16 in. sheet are attached after outer edges of F7 are added. Keel is removed between F5 and F8. Retain pieces for later replacement after wing is installed. Nose and tail soft balsa blocks are carved and sanded in position. Upper fuselage can now be planked with 3/32 in. sheet; from F8 to F11, and in front of cabin F1 to F4. Nosewheel wire is bent and bound in place on ¾ in. sq. hardwood bearer. Cockpit and interior details in the form of instrument panel, seats etc. are applied and block cabin roof cemented in place before shaping to match planking. Window frame from 1/16 sheet is cemented in front of F8. Similarly, 1/16 in. sq. upright frames are added, either side of F7, before covering windows with acetate and moulded windscreen. Bend the 16 s.w.g. wire tailskid, push into keel, bind and cement.

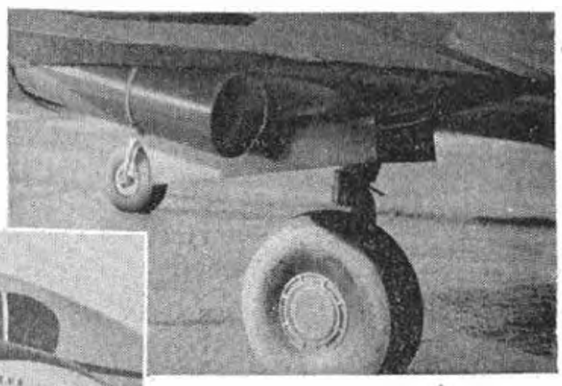
Panels are made separately over the wing plan to accommodate dihedral. Slide ribs over mainspars, fit ribs to T.E. pinned over plan, add L.E. sections and



FULL SIZE COPIES OF THIS 1/6TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN C.756, PRICE 6s. 6d., PLUS 6d. POST FROM AEROMODELLER PLANS SERVICE

tips. Join halves with F6, W3, W4, add bellcrank mount. Fit the bellcrank. Now assemble nacelle formers, N1, 2, 3, on engine bearers and add to wingspar with joint between N2 and spar. Bind the main u/c legs in place on the bearers. Next, offer the wing to the fuselage, joining at floor underside which sets incidence by tops of W3, F6. Replace keel parts. Leadout and pushrod wires are attached. (Note 16 s.w.g. brass lead-out tubes at port tip). Now sheet all over surfaces, extending sheet into nacelle and fuselage area. After fitting tanks, nacelles are planked with 3/32nd sheet, and top and bottom cowlings hollowed out from block, top then being cemented in place. 16 s.w.g. wire cowling clip must be tested for snugfit around engine before sewing to lower cowl. 18 s.w.g. wire clip is secured at rear of cowl.

Tailplane and fin are made up from $\frac{1}{2}$ in. sheet, noting elevator connector details and attached to rear fuselage. Join pushrod to the horn with central lead-outs and elevators "neutral". Now complete fuselage planking, sand over all parts, cover with tissue, then sanding sealer can be applied and model finished in red and white colour scheme shown in the plan and on the cover.



Close ups of actual aircraft show, left, cowling and nosewheel detail. Note also landing light in nose. Above, mainwheel, u/c doors, and short exhaust pipe shroud protruding from nacelle under wing

what's the answer?

WE ALL KNOW that the initial burst of power you get from a rubber motor is much greater than the steady output. John Dorby, who is one of our best flyers, says the best solution is to use return gears which even out the initial burst. Mike Strange, on the other hand, believes in an automatic trimming device working off rubber tension on the tailplane incidence. Our theorist says Mike is right, but Mike's models never perform all that well. What's the answer?

"Initial burst of power!"

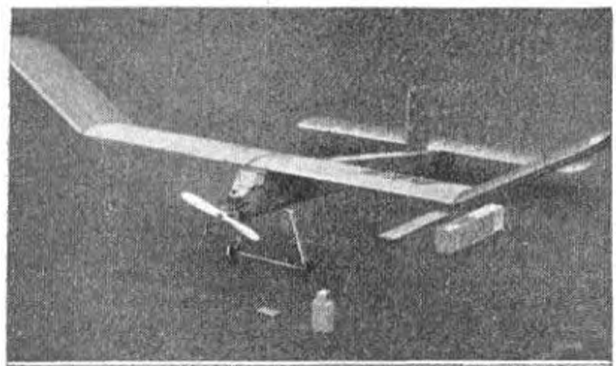
"Not that kind of return gear"!

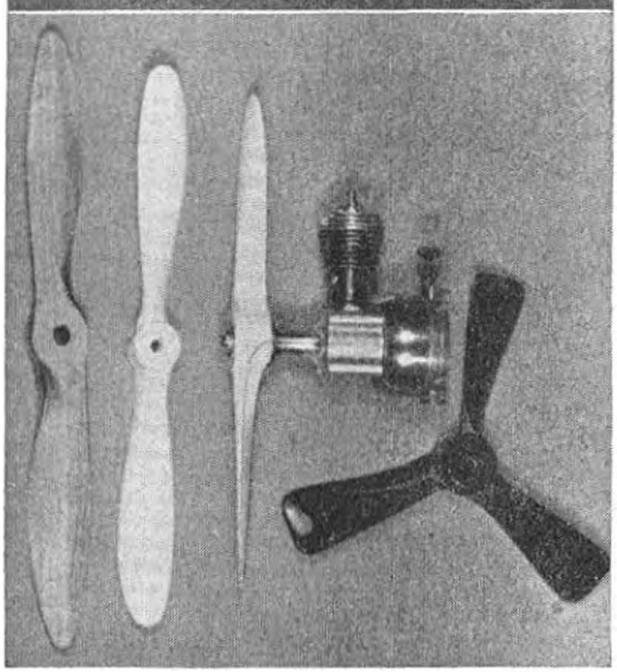
Answer.—It is true that return gears do give a slightly better distribution of torque output, but the difference is slight. Particularly where motor lengths are short, as with present-day Wakefields, return gears do not seem worthwhile.

An automatic tailplane trimmer, on the other hand, could show definite advantages, but only if worked off the motor *torque*. It is no good at all trying to use motor tension for this varies over the whole run and may even reach a peak when the motor is nearly unwound. Tension only falls off markedly just as the motor is running out. Torque, on the other hand, varies consistently with the power output.

Pee Wee PAAload

(*continued from page* 239)





Top: John O'Donnell's 1 c.c. Clipper Cargo winner at the '59 PAA Festival with PAAman and Cargo box on display. AM10 model weighs 15¼ oz. empty, lifted 29 oz. on Cox 8 x 4 in. prop. Wing has Gunic modified MVA 301 section, 508 sq. ins. and 207 sq. ins. lifting tail. Bottom picture shows Pee Wee and typical props. Tornado wooden 5 x 3 in., Cox 4¼ x 2¼ in., Cox 4 x 2¼ in. on shaft and the remarkable 3¼ x 2¼ in. three blader.

close in output. Most winners at the large American contests during the first year of these new rules, have used Cox racing fuel in their engines and, surprisingly, a very small (3¼/2½ p.) 3-*bladed* nylon propeller as made for one of Cox's ready-to-fly airplanes. Many disbelievers have had their eyes opened by the fabulous performance of the fast turning .020's with this prop. It would be interesting to see how this combination would compare with a diesel of this size when one is produced in numbers.

Since the engine run is limited to 20 seconds, the shut-off systems have received close attention in order to get as close to this figure as possible. Clockwork timers are almost universally used either to shut off the fuel from the tank attached to the engine or an external tank, or to shut off the air. The latter method allows the use of the regular tank without drilling any extra holes. A short piece of aluminium tubing is simply inserted through a hole in the firewall and into the air intake of the engine. A piece of surgical tubing runs from this to the timer. The engine is instantly stopped when the tubing is pinched shut. This method seems the most accurate and is preferred by the author.

Large wheels have proven their value on the heavy Cargo models, where every flight is R.O.G. Wheel diameters usually run above 1¼ inches. Very thick wheels made of balsa with plywood outsides and brass bushings, are often seen. Dural landing gears also help support these models. Some landing gear systems have been of the R/C variety, folding upon impact and saving the model and its precious dummy for another attempt.

As far as construction is concerned, the greatest trend is toward moderately undercambered, multi-sparred wings for the smaller gas event entries and somewhat more robust planked leading edge construction for the Cargo models. Tails generally, are multi-sparred or of the sheeted leading edge type.

PAAload models offer much of a challenge to all contestants: Rules are strict but not so much that ingenuity and design ability of the individual modeller is restricted. Flights are slower than those of the screaming F.A.I. types and are realistic, most of the time. The rewards (in the U.S.A.) are great—Pan American Airlines, of course, offers and sponsors fabulous prizes for the winners of these events in large meetings, usually wrist watches or, more recently, handsome transistor radios.

The models are cheaper and easier to build and fly. And most important to most of us, they're FUN to fly.

Vee tail control

AERO MODELLER

Experiments with Butterfly tails on Radio Controlled gliders by German expert Werner Thies . . .

described by H. J. Meier

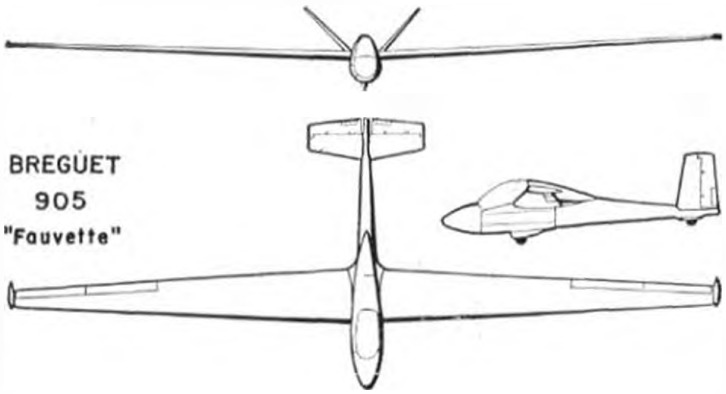
THE problems connected with the use of U- or V-shaped empennages on model planes have recently been examined (March AEROMODELLER 1960), in a most enlightening manner by Bob Annenberg. A description of the results of some practical tests with butterfly tails mounted on radio controlled gliders, conducted a few months ago by Werner Thies of Kaltenkirchen, Germany, might be of interest in connection with this article.

The purpose of these tests was to examine the feasibility of a unique method of control, in which only one ruddervator was operated at a time and generally only in the "up" direction, at that. The behaviour of the model glider flown with this type of control was quite spectacular, to put it mildly. Though the asymmetric rudder movement created the expected moments about the vertical and lateral axes, it unfortunately did not do so in the desired sequence of events. The first reaction of the model on application of the rudder was to lift its nose, climb and decelerate in doing so. Only after quite some time did it eventually turn into the desired direction, losing altitude while trying to recover its normal flying speed and requiring constant rudder corrections to dampen out these undesired oscillations. While this attitude all but eliminated the danger of a spiral dive, it certainly did not make things easier for the pilot during precision landings.

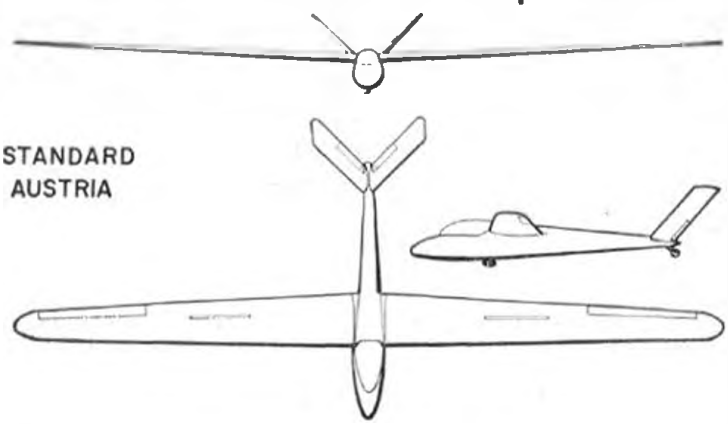
Step 2 was to test a more normal system of control, using two push rods to operate the two ruddervators in opposite directions, employing the same amount of travel on both. This calmed down the model somewhat, but the movable surfaces proved to be still too large for comfortable flying (6·5 per cent. of the horizontal projection of the tailplane). This second version of the test plane is shown in the accompanying photos. The dihedral angle of the V-tail was 100 deg., i.e. higher than the one usually found on full size craft.

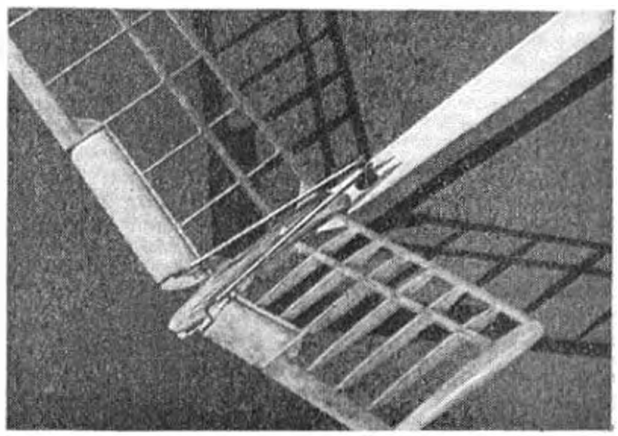
Taking a hint from the designers of these full size gliders, a new modified third version of the V-tail was built. This one, featuring the new look in empennages, had the tail surfaces prominently swept back and the size of ruddervators cut down to a mere 3 per cent. of the total tailplane area. This did the trick and made the glider behave. It now reacted quickly to rudder movements, showed only very slight tendencies to spiral in after prolonged application of full rudder and levelled out into normal and straight flight as soon as the rudder was neutralized again.

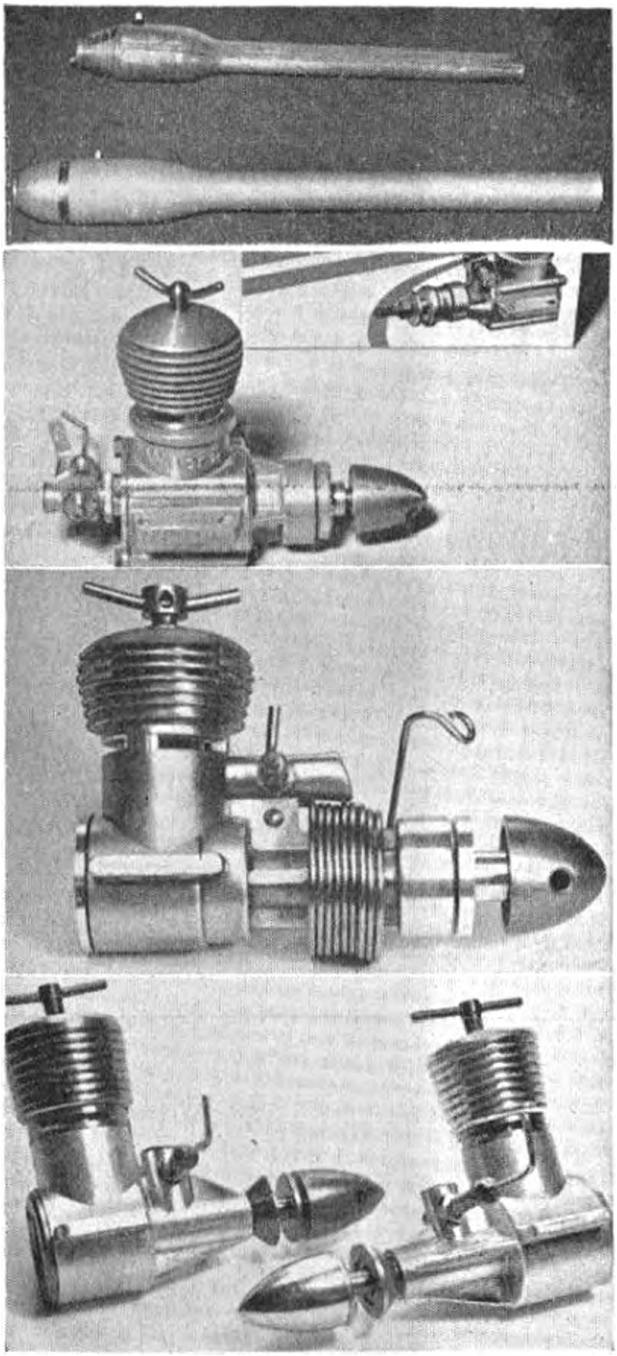
The swept back butterfly tail, with dihedral angle increased to 120-140 deg. and possibly using differential rudder travel for the ruddervators, might be a sound feature of a comparatively simple, single channel, i.e. single function glider and should give good results, provided the modeller already has some experience with adjusting models of somewhat more than average trimming difficulties, which seem to be the main handicap of this type of tail arrangement.



Vee-tailed Sailplanes







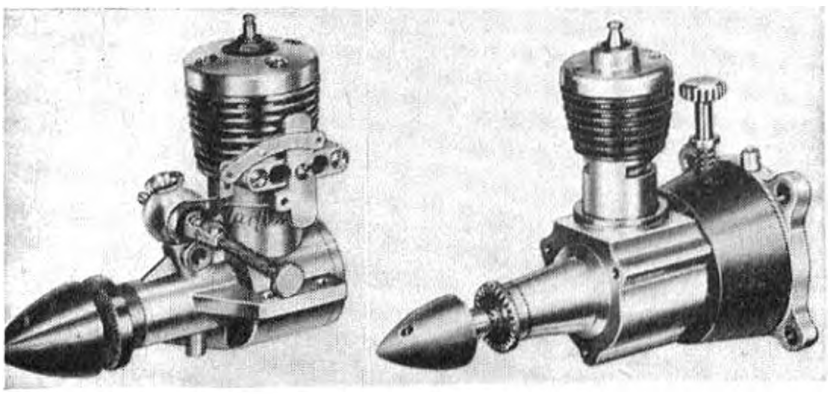
Motor Mart

IT IS WITH SOME regret that this feature has to announce the fact that *Davies-Charlton* will no longer be producing the Bambi diesel. This little gem has become a firm favourite with vest-pocket size model enthusiasts the World over, and for a long time it reigned supreme among the miniatures. Alas, the production of a diesel to such fine limits is no longer an economic proposition, and rather than put up the price, the Isle of Man factory will cease production to find space in the plant for new ventures.

However, if only one engines passes from the scene, there are many this month to keep the ardent collector interested, and we start the round up on the Continent.

Ugo Rossi and his brother Cesare have absolutely dominated the speed scene in Italy this past season in every class from 2.5 c.c. to jet. Ugo's Devil design for the Super Tigre G.20V was detailed in our January issue, and from the number of plans we are selling, looks like being the World's standard F.A.I. speed model! Now the Rossi's are selling their jet unit which they call the *Vulcan* (also their trading name for glow-plugs) at £12 each, and as can be seen in the top left photo, it is large enough to dwarf a standard Dynajet. Actually it is even larger than the Ivannikov unit which holds the current World Speed record of 184 m.p.h., and the Rossi's have already achieved speeds of 180 m.p.h. in competition. Thrust claim is 7½ lbs., weight at 14½ ounces is well below the F.A.I. top limit and the overall length is 27 inches. Unfortunately the diameter of the jet pipe is well over the 1.25 sq. in. A.M.A. limit at 1¾ in. (2.45 sq. in.). The Combustion chamber measures 2 15/16 in. diameter.

Among the new engines at the Nuremburg Trade Fair was the *Webra* Bully Mark II 3.5 c.c. diesel with a pair of ball bearings and an intake throttle as standard equipment on rear induction as distinct from the previous crankshaft valve. Price in Deutschmarks is 48, the equivalent of roughly £4. From the East Zone, *Zeiss* are producing a new series of diesels known as the Jena's and the newest is 1 c.c. with front cylinder wall port induction facing forwards for ram intake. The ubiquitous coil spring starter, 360 deg. porting and ball bearing supported shaft are other features, and the bore/stroke dimensions are 10½ and 11½ mm. respectively. Another 1 c.c. comes from *Engel*, known as the "Rebell" with 10 mm. bore and 13 mm. stroke plus a 1.5 c.c. variant with dimensions increased to 12 and 13 mm. These plain bearing simple designs are obviously produced for the large sport flyer market, selling at only DM 24.95.



Above. Top to Bottom: Rossi Vulcan jet with Dynajet for size comparison. The new Webra Bully with back door intake and throttle. Camera company Zeiss's Jena 1 c.c. has ram intake and side port. The Engel pair of Rebells are 1.5 and 1 c.c. At right, the new Taifun engines are the 3.5 c.c. Bison for hard work in C/L and R/C and the diminutive Foxie 0.44 c.c. with integral tank

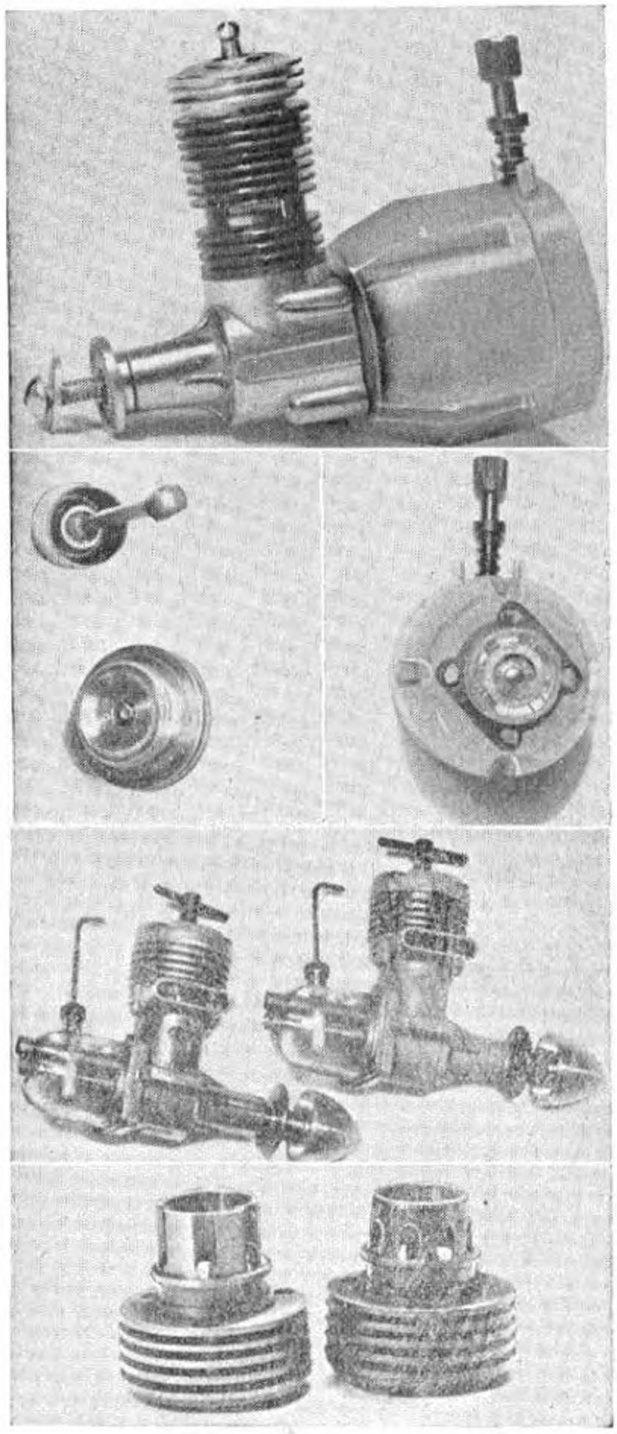
"Colonel Taplin I Presume"

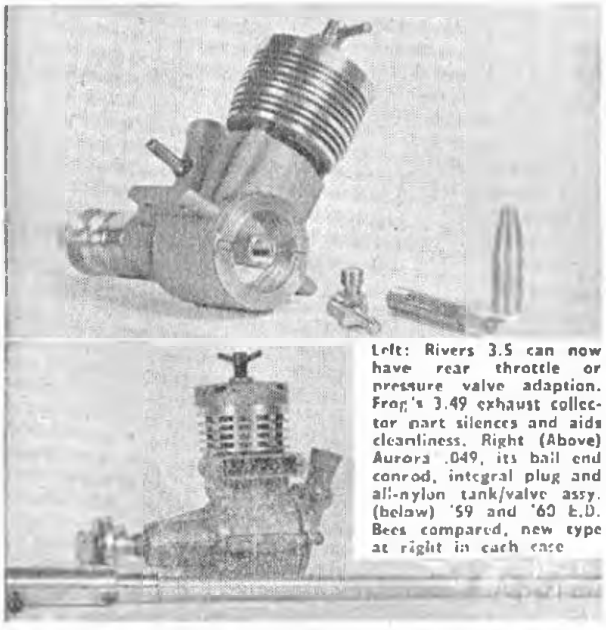
With such expansion in the German market, one cannot expect the *Graupner* establishment to be marking time, and at Nuremburg they had two new engines on show for the first time. The *Taifun* Bison is a 16 mm. bore, 18 mm. stroke glowplug engine of 3.5 c.c. designed expressly for the long running periods and hard life expected in control line and radio flying. Coupled exhaust and intake throttle is sold as an accessory and peak power claim is 0.31 b.h.p. at 13,000 r.p.m. Flexible needle valve extension and an apparent stub for tapping a tank pressure valve opposite the intake, are wise modern features. From the same stable comes the surprising *Taifun* Foxie of 8 mm. bore and 9 mm. stroke giving a swept volume of .44 c.c. This is the same capacity as the new *O.K.* engine we announced last month, and will appeal to small model fliers. One of the new Graupner kits, the Amigo A/2 glider, will have power pod details for a Foxie over the centre section. Incidentally, the American O.K. company announces a new type 85 cent. glow plug with a ceramic liner to the bore surrounding the element. Known as "Glow-trol", the advantages are said to include longer life, coil protection and better low speed running for radio control.

New Type Intake Valve

Also new in the U.S.A. is the *Aurora* Tornado, produced by K. & B. (now owned by the Plastics firm) for ready to fly c/liners. This .049 cu. in. is going to be the talking point for many months to come. We rate it the easiest-ever engine for starting, and among its features are moulded nylon tank and backplate, flexible plastic membrane intake valve which will not lock or foul if grit gets inside, fully floating little end on the con-rod and a performance that matches most of its competitors.

On this side of the Atlantic, *Electronic Developments* announce the E.D. Bee 1960 series, with many mods including a relieved shaft, new transfer ports, cast disc, blued steel parts, sandblasted castings and considerably improved performance. Up to 5,000 extra r.p.m. are claimed on a 6 x 4 now that peak power comes at 15,000 r.p.m., and the general appearance of this new Bee really puts it into the quality class at the same price of 52s. 6d.





Left: Rivers 3.5 can now have rear throttle or pressure valve adaption. Frog's 3.49 exhaust collector part silences and aids cleanliness. Right (Above) Aurora .049, its ball end conrod, integral plug and all-nylon tank/valve assy. (below) '59 and '60 E.D. Bees compared, new type at right in each case

DESPITE THE CURRENT popularity of prefabricated kits, plastic kits, quick starting motors, etc., and a generally "easier" modelling life, we are happy to observe that the real enthusiasts (kitchen table balsa butchers) are not losing interest in the hobby. We still have a regular flow of ingenious and helpful ideas arriving in our daily post-bag for this popular feature.

To start this month's Review we have an old idea that is about due for a new lease of life, and is shown in **A**. The motor mount is made from 1/16th steel plate, and is strong enough for motors of up to 2·5 c.c. Advantages are quite obvious — it can be used to bulkhead mount "beam" engines, is fully adjustable, inexpensive and simple to construct (no soldered joints). When bending the cut out plate, ⅛-in. holes must be drilled in side pieces, to produce a neat right-angle bend and eliminate cracks. Also from Albert Verhelst of Ghent, Belgium, illustrated at **B**, and modelled from a George Aldrich "Nobler" kit fitting, we have an efficient stunt tank design. It should be emphasised that construction must be accurate, and the tinplate flap must hinge freely over required distance of 10 mm. to the limit stop; *see* plan view, top right. The baffle bulkhead can be soldered in place by patching the top rear half of the tank last.

Mr. Sawyer of Solihull originally fitted a 10 c.c. tank to his A.P.S. *Hawker Fury*, but flights of insufficient duration were experienced; so, rather than cut away the fuselage to incorporate a larger tank, he fitted a 7½ c.c. tank between the engine bearers, immediately behind the crankcase. This additional tank is seen in **C**, and can be more simplified than shown if vents are disposed near to the fuel tube of the original tank. Blank off *one* vent and connect the other to the fuel tube.

It almost seems criminal to throw away those odd-shaped plastic mouldings in which so many everyday articles are packed today, but a good use is rarely found. A "Knickerbocker Glory" container (!) has an obvious use as a spinner (**D**) for rubber models in this case. The stem from this twopenny sweetmeat container is cut off and the base drilled to take a screwed brass bush and then cemented in place convex side inwards and remaining plastic *behind* the bush cut away. Concave base makes for a neat assembly, bringing spinner and nose block together, while permitting washer or ball-races to be used. The full diameter of the container may be obtained by using a ply backplate, states W. C. Morrison of Renfrewshire, Scotland, who submitted the idea.

A very simple but effective method for keeping your lines taut in manoeuvres when circulating with a C/L model is the addition of a piece of thread from starboard elevator to trailing edge of a hinged rudder. This is for models with the rudder extending beyond elevator. A narrow chord rudder requires a length of wire protruding from the rudder, as illustrated in **E**. B. Napier, of Banstead, Surrey, who gave us the idea, recommends 45 deg. rudder movement, which has no effect on speed, but gives extra line tension when needed.

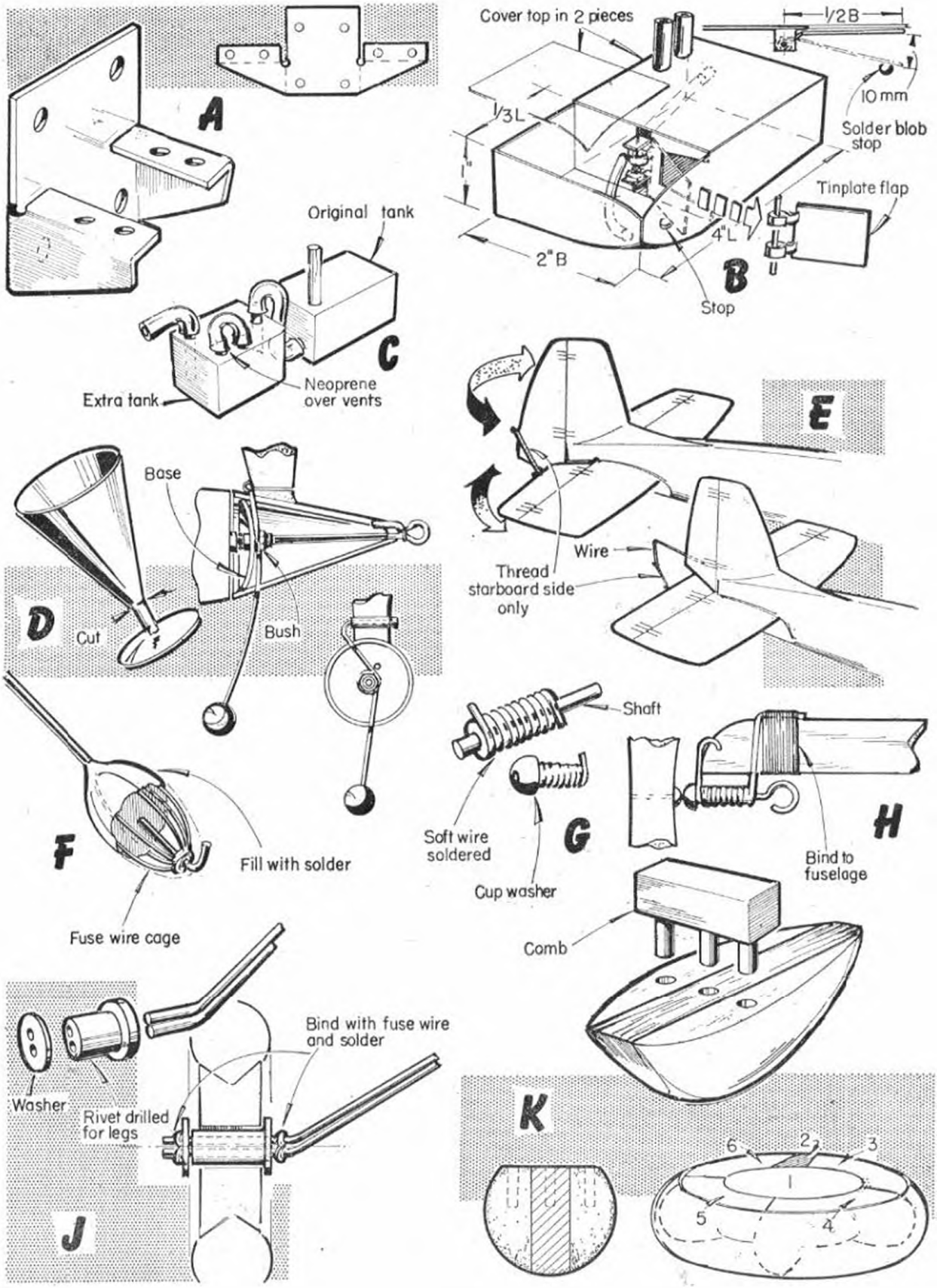
A counterweight is necessary for the folding prop. shown in **D**, but how does one make such a beautifully-streamlined weight as that drawn? The answer, from D. Burt of Luton, can be found in **F**, and involves the making of a "cage" from fuse wire, which is then filled with solder until correct balance is obtained.

Another "gadget" for the rubber model is the bush made by winding soft wire (paper clips) around a length of piano wire. Excess soft wire is just snipped off, and a cup washer soldered on to complete, as illustrated in **G**, and contributed by the same W. C. Morrison who gave us the previously-mentioned spinner.

Yet another Morrison rubber model "appliance" is to be seen in **H**, and incorporates the same wire winding principle. For indoor stick models, it forms both bush *and* support, and is very strong when bound as shown.

Charles Riall of "Galloping Ghost" fame has a means of bracing wheel axles against bending, in **J**. Double wire U/C legs are required, one positioned vertically above the other. A light alloy rivet is drilled to take the two wires, the wheel hub is then drilled to take the rivet. A washer to suit the protruding wires should be made up and attached. Fuse wire is then bound and soldered at points shown. The result is an easier to make, doubly tough landing gear.

Canopies for models of the Spitfire, Lancaster and Mosquito are, because of their bulges and side blisters, difficult to remove from formers, if home-made. A collapsible former is the solution here, and has been thought up by E. G. Humphrey, of Halifax. His Spitfire former in **K** is carved from one piece of wood and cut into three. A "comb" holds the three pieces as one, by means of drilled holes. The method of moulding is the "draping" method, whereby a heated sheet of acetate is drawn over the former. Numbered illustration in **K** shows the arrangement of formers for moulding circular cowlings. Acetate can be pushed around such a former with a spatula if you don't want to burn your fingers !


A
Original tank
C
Extra tank
Neoprene over vents
Cover top in 2 pieces
1/2B
10 mm
Solder blob stop
1/3L
Tinplate flap
4"L
2"B
B
Stop
E
Wire
Thread starboard side only
Base
D
Cut
Bush
F
Fill with solder
Fuse wire cage
Shaft
Soft wire soldered
G
Cup washer
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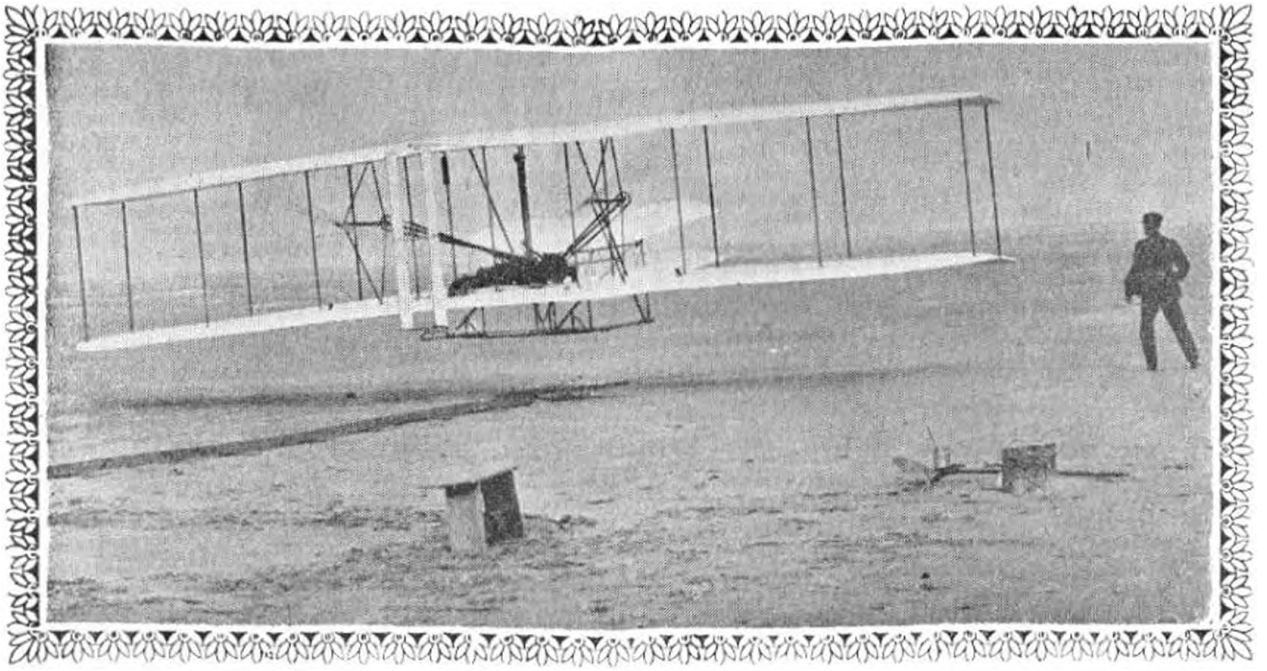


Famous Biplanes
No. 24 by G. A. G. COX

WRIGHT "FLYER"

BY 1896 WHEN Wilbur and Orville Wright diverted their energies from their successful cycle manufacturing business to the challenge of flight, several men had already flown. It is true that their machines were little more than box kites, but they knew how to obtain lift from wing surfaces and how to achieve a measure of directional stability from a rudimentary tail. Inherent stability and satisfactory controllability were still unsolved problems, however, and no one had built a flying machine which could rise from the ground under its own power.

The Wright brothers studied in detail the experiments of the great Otto Lilienthal, of the Briton Pilcher and of Chanute (who had himself made seven hundred flights and who came to Kitty Hawk to advise them), they studied the structure and movements of animals and birds, and embarked on their own research into the first principles of flight with no established laws or formulae to go on other than those of Newton. In retrospect, their difficulties can too easily be minimised. Many schoolboys today know more about how an aircraft is constructed and flown than did the most enlightened experimenter of sixty years ago; they will refer urbanely to incidence, dihedral, centre of pressure and other facts which the pioneers of flying had to find out for themselves by experiment, calculation and the fatal accidents of others.

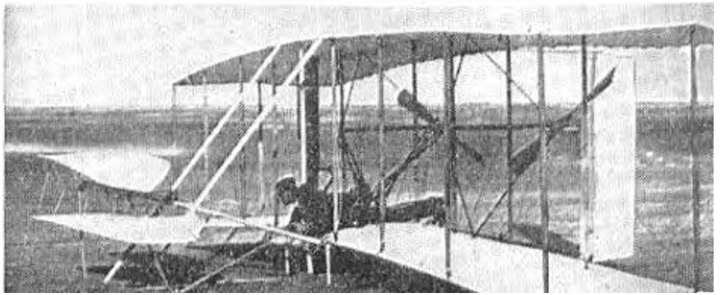
No experimenter at the turn of the century applied himself to a task with greater dedication than did the Wright brothers. Beginning their practical experiments in 1900, they tested gliders from Kill Devil Hill, North Carolina, for two-and-a-half years, making more than a thousand flights. During this time they also tested hundreds of aerofoil sections in a home-made wind tunnel and designed and tested many different propellers. Late in 1902 Wilbur and Orville began constructing their first powered machine. Many of the necessary materials were at hand in their own workshops — steel tube, spoke wire, ash, etc., and what they lacked they bought locally, including fifty-six yards of "Pride of the West" muslin — an order which set the local tongues wagging. One important item was unobtainable: no automobile manufacturer could supply a suitable engine for the aeroplane, and so the brothers designed and built their own. It had four horizontal cylinders, water-cooled, and was the first petrol engine to have an aluminium cylinder block and crankcase. Two of these castings were made, and the spare one was given by Orville Wright to the Science Museum in London. It is now incorporated in a replica of the engine which is on display beside the

(*Continued on page* 254)

KEY TO DRAWING

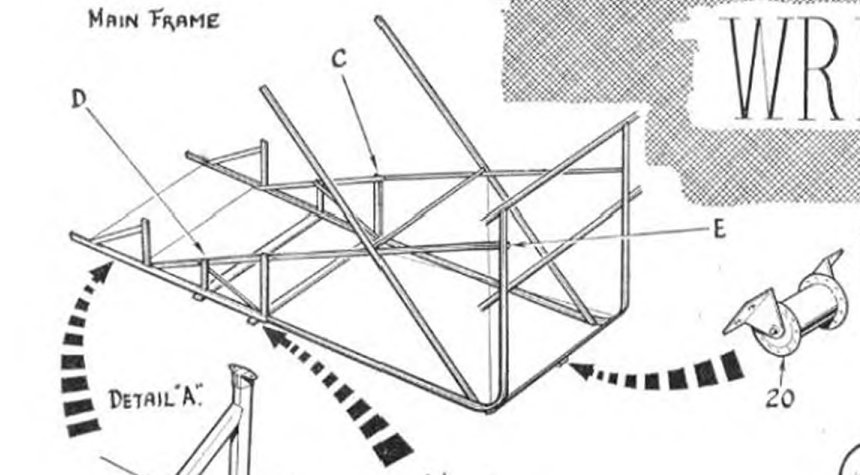
1. Incidence wires at A, B and C
2. This wire connected to the rear spar on C.L. of aircraft
3. To upper rear spar at C
4. To lower rear spar on C.L.
5. Rear spar hinged here to facilitate wing warping
6. Rudders covered on outside surface only
7. Elevators covered on upper surface only, but fabric is wrapped round and sewn—hence third line on drawing. (Spars and ribs are covered on underside with strip of fabric)
8. Spars pivoted on upright members
9. Pivoted hip cradle
10. 1/3 Gallon petrol tank.
11. Radiator
12. Footrest with crossbar
13. Wood strip stiffener
14. Interplane struts were drilled to take horizontal wire.
15. 5½ in. steel and leather wheel on magneto friction-driven from 16 in. flywheel
16. Elevator operating assembly at D, E and F
17. Centre rib offset 1 in. to port
18. Strut on C.L. of aircraft
19. Elevator lever
20. Motorcycle ball-bearing hub ran on launching rail
21. 1/32 in. mild steel strip
22. Broken lines indicate fabric seams. (Seam lines are indicated on top surface of starboard wing although the fabric is shown partly removed)
23. Fabric seams on top side of starboard wing
24. Fabric seams on underside of starboard wing
25. Wires between ends of elevator spars
26. Lacing at wing joint line
27. Wires between skids.
28. Steel eye bolt simply bound to end o spruce strut
29. Fabric covering for 11 in. of tip
30. Steel tubes with brazed joints
31. Flat mild steel strip with brazed joints
32. Spruce pulley, wire bound, with chandelier chain pinned in place
33. 1/32 in. steel strap
34. Anemometer
35. Red rubber hose
36. Black rubber hose
37. White rubber hose.
38. One sprocket only is shown.
39. Induction chambers
40. Header tank for cooling system

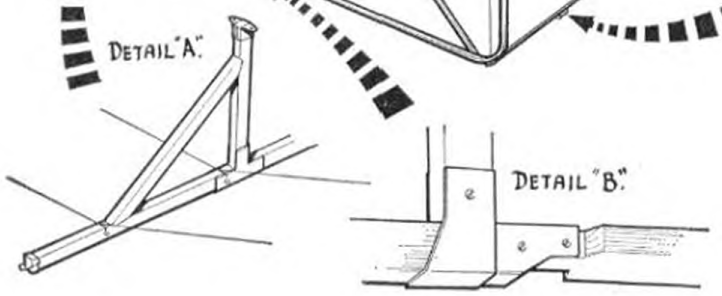
Historic first flight on December 17th 1903 seen in heading and view of Wilbur at the controls on December 14th illustrate frailty of the "Flyer" — *Science Museum Photos*

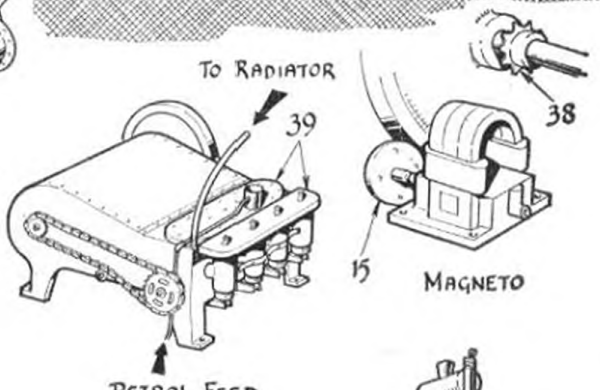


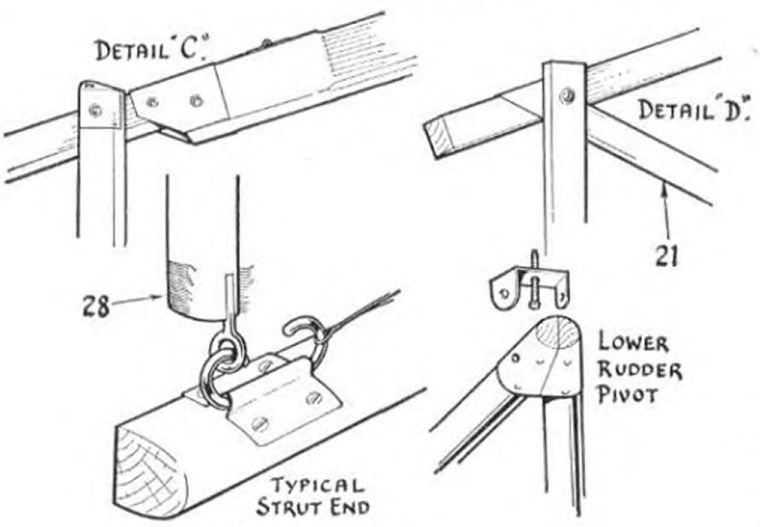
WRIGHT "FLYER"

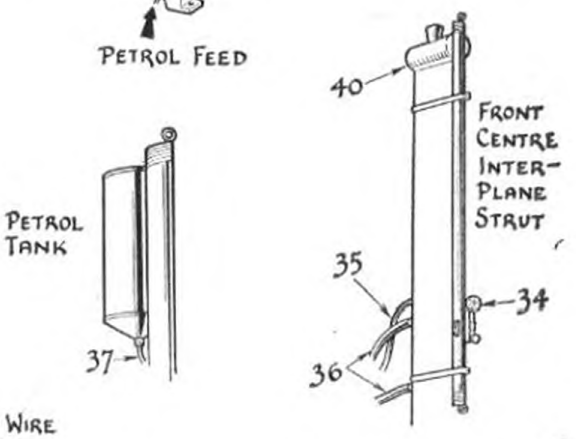
SKETCHPAGE

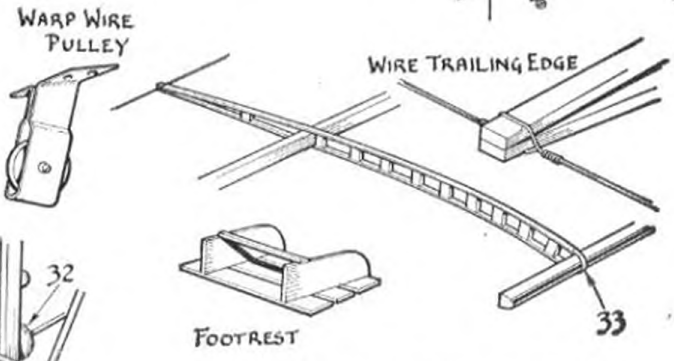


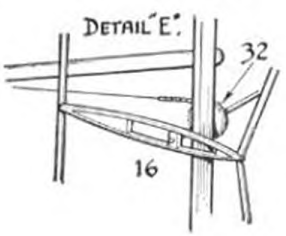












Colouring Notes for Modellers

Fabric: Unbleached, undoped muslin, oatmeal colour. The fabric is translucent, and so shows darker where there are two layers. (See note 7 in key)

Exposed wood: All ash and spruce, all clear varnished

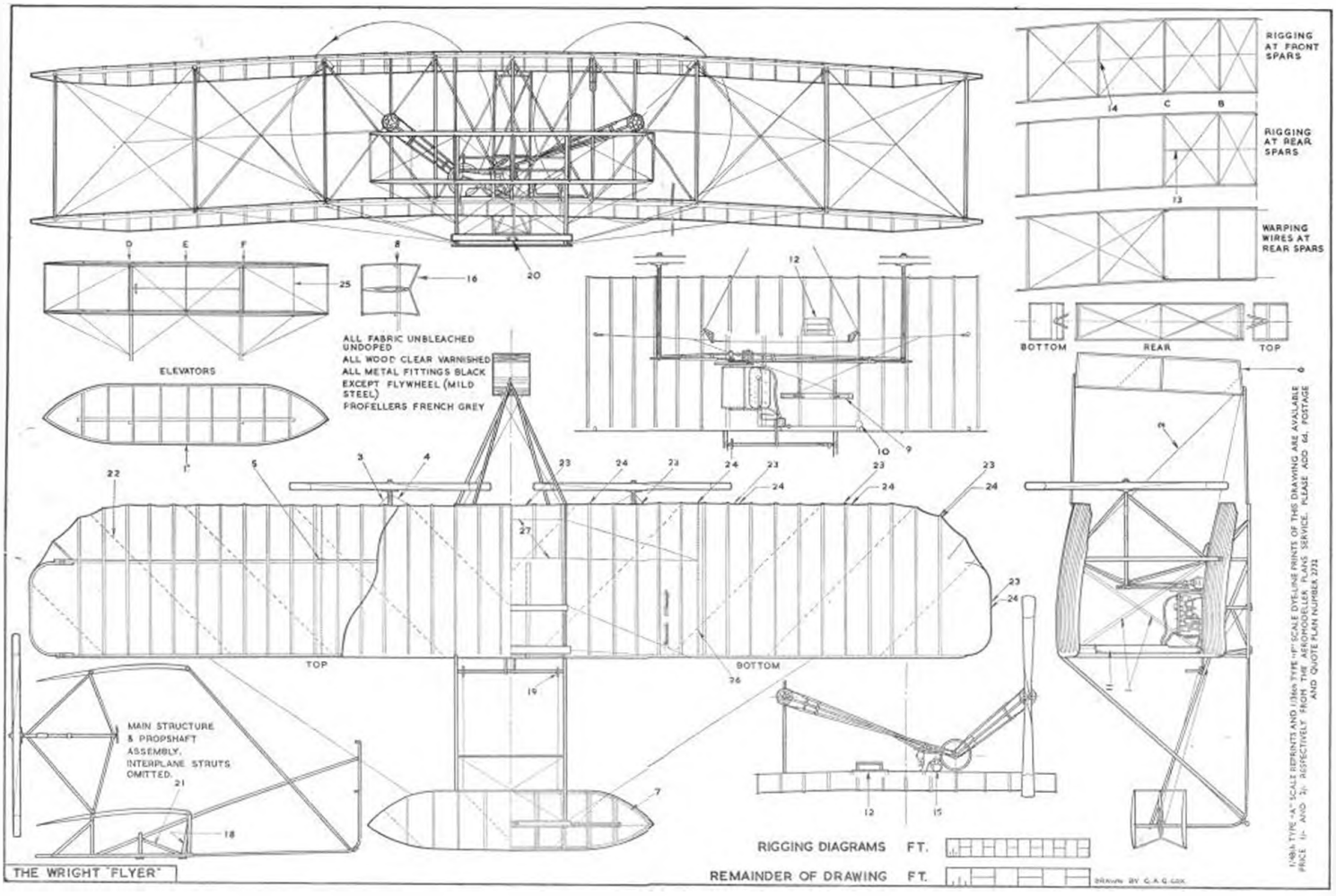
Metal Fittings: Painted dull black

Propellers: Painted "French Grey" (Medium grey)

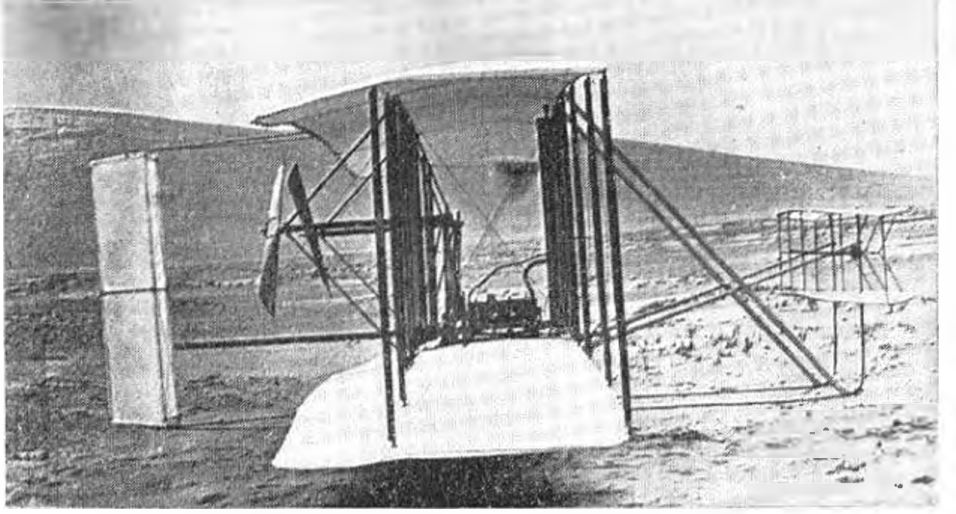
Rubber hoses to Radiator and Tank: See key to drawing

Specification

Flyer	Span	40 ft. 4 in.
	Length	21 ft.
	Wing Area	510 sq. ft.
	All-up Weight	750 lb.
	Wing Loading	1.47 lb/sq. ft.
Engine	Bore	4 in.
	Stroke	4 in.
	Power	12 b.h.p.
	Weight	170 lb. (some sources quote 180 lb.)



THE WRIGHT "FLYER"



Side and Front elevation photographs on this page were taken at Kitty Hawk before the great flight. Incredible fact is that such good quality photographs were taken to record the occasion these from the Science Museum collection

(*continued from page* 250)

aeroplane. Transmission to the tubular propeller shafts was by chain and sprocket, the port chain being crossed to give counter-rotation. Both chains ran in guide tubes attached to the prop-shaft assembly bracing tubes. During initial tests one propeller shaft fractured, so they were replaced by solid ones. A gravity petrol tank holding one-third of a gallon was attached to a front interplane strut, and the radiator behind the centre strut. Instrumentation consisted of an anemometer, stopwatch and revolution counter, air speed being calculated from these readings after the flight. The pilot lay on the centre section, his feet resting on a wooden platform which had a cross-rail, probably to provide an anchor in the event of a crash landing. The pilot's hip cradle, padded on the inside and covered with hessian, was attached to the wing by two swinging links, and to the cradle were connected the wing warping wires. By swaying his body, therefore, the pilot could warp the outer wing panels (the rear spars were hinged to permit this). The vertical surfaces at the rear of the machine were not rudders as such, but were connected to the wing warping wires and were intended to correct yawing. It is not clear whether these surfaces were intended to be out of vertical as shown in the drawing. The replica on display in the Science Museum has its rudders at this angle, and they are shown in this position in the official drawings, but contemporary photographs suggest that they may originally have been vertical. The elevators were operated by pulley from a cross-shaft just forward of the lower wing. The pilot held the elevator handle in his left handle, leaving his right hand free to operate by another wooden lever the timing instruments. All control wires were of piano wire with chandelier chain inserts to pass over pulleys.

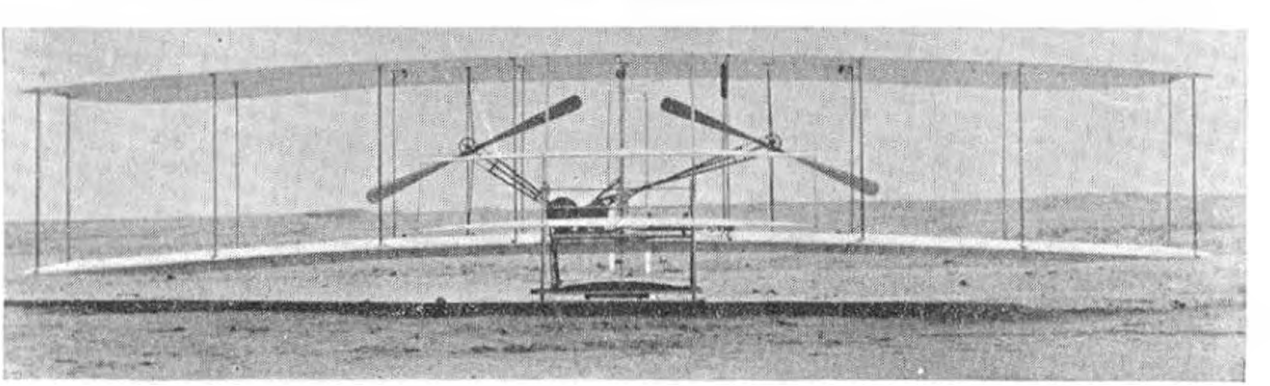
A curious feature of the Flyer was its unequal span wings, the starboard being approximately four inches longer than the port. This may be attributable to a constructional error, but may possibly have been to balance the uneven distribution of weight. Neither Wilbur nor Orville was heavily built, while the engine weighed between 170 and 180 pounds.

Although they lived at Dayton, Ohio, the Wright brothers set up camp at Kitty Hawk, North Carolina, for their flying experiments, because weather records showed that there was an almost constant twenty-miles-an-hour wind at this point. Nevertheless, on December 12th, 1903, when their machine was finally ready for testing, the wind dropped, so they decided to wait for more favourable conditions. On December 14th a wind had sprung up, but while the craft was running along the launching rail a wire broke, and they spent three days restoring the damage. On the 17th a chill wind of 22-27 m.p.h. blew in from the coast, rather stronger than was ideal, but the brothers decided to try. So confident were they of success that they sent invitations far and wide to be present at this epoch-making event. Only five local people turned up, three of them to render assistance in case of an accident. It had been decided by the toss of a coin that Orville should be pilot on the first flight. He positioned himself carefully on the lower wing while his elder brother stood at the starboard wing tip ready to steady the machine during its take-off run. With the engine roaring and the chains rattling in their guide tubes, the Flyer slowly gathered speed and rose from the ground. That first flight lasted just ten seconds; the distance covered was 112 feet and the maximum altitude 14 feet. On the same day other flights were made, the fourth being by Wilbur; this time the Flyer travelled a distance of 852 feet in 59 seconds. Unfortunately, the landing was a bad one and the machine was badly damaged.

Ironically, no one took any notice of the Wright brothers' achievement. People either regarded it as unimportant, or, more commonly, just would not believe that it had happened. Even in 1905 when flights of up to 24 miles had been made, people were still incredulous. It was not until 1908 when the brothers demonstrated their machine in France with durations of up to 1 hour 53 minutes that it really dawned on the world what had happened.

Because for many years the Smithsonian Institute in Washington refused to recognise the Wright Flyer as the first machine capable of powered flight, the restored machine was brought to England for exhibition at the Science Museum, on condition that it should stay here permanently unless asked for by Orville Wright. (Wilbur died in 1912.) A complete set of working drawings was made at the Museum and sent to Orville for checking, and it was from these drawings that the replica now on show was made by De Havilland apprentices. Before he died in 1948, Orville Wright asked for the return of the original Flyer, and it now occupies the position it deserves in the Smithsonian Institute. As if to make amends for an injustice to two great Americans, Congress passed a resolution making December 17th, 1959, "Wright Brothers' Day", and there is now a fine memorial at Kitty Hawk to the birth of aviation.

The writer is grateful to Mr. Brian Lacey of the National Aeronautical Collection, South Kensington, for access to official drawings and the replica of the Wright Flyer, and for his special assistance in the preparation of this article.

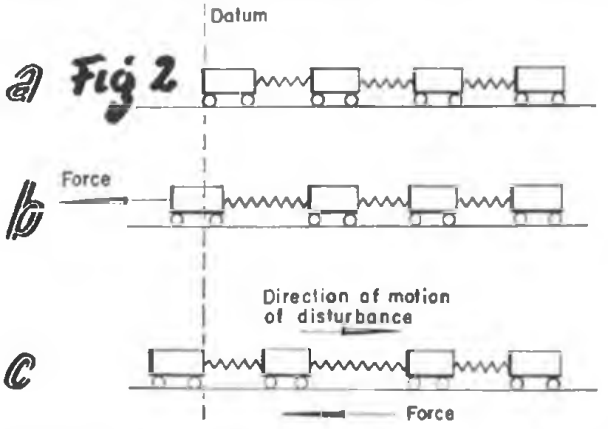


Ram Induction

Suggestions for improving power by A. F. MARSHALL, M.Sc.

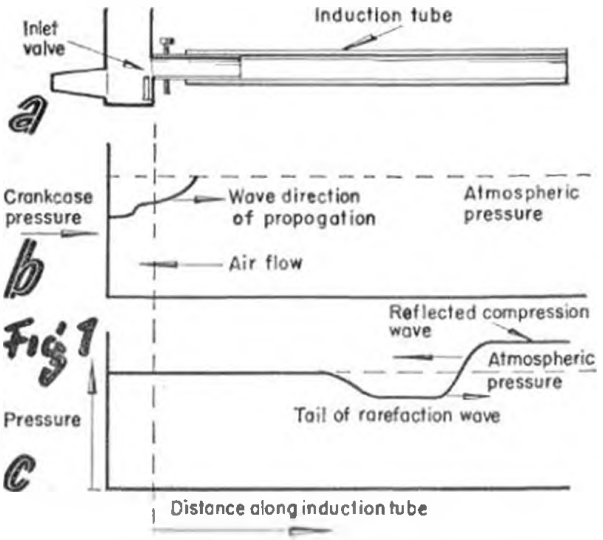
RAM INDUCTION is a little-known phenomenon among present-day aeromodellers. In effect it is the utilisation of the pressure wave system set up in the induction tube to increase air input to the engine. The simplest method is merely to increase the length of the induction tube. This extended induction tube was used on the Ohlsson spark ignition engines of the 1945 - 49 era for free-flight.

An idea of the possible gain in the air throughput can be obtained from the results of experiments done by the author on a small reciprocating compressor during the course of his studies. Keeping the speed constant at 1,450 r.p.m. and the delivery pressure at approximately 150 p.s.i.g. then, by putting a plain tube 4 feet 9 inches long and § inch internal diameter on the intake pipe, the air throughput was increased by nearly 18 per cent.



The process depends upon the generation of waves in the induction pipe as indicated in *Fig.* 1. At the instant of the inlet port opening, the pressure in the crankcase is below that of the atmosphere (*i.e.*, in the pipe). Air rushes through the port causing a rarefaction wave to be generated in the induction pipe. This wave travels along the pipe until it reaches the open end. Here it undergoes a reflection process.

A clearer understanding of the particle and wave movement of the gas in the above tube can be obtained by considering an analogous motion. A series of railway trucks in a siding coupled with springs are stationary, *Fig.* 2(*a*). When the first truck is given a sharp tug (*b*) (representing the inlet port opening and air passing into the crankcase) it moves to the left. The spring-coupling pulls on the next truck causing that to move to the left, *Fig.* 2(*c*). This in turn acts on the next truck by means of the appropriate coupling spring and so on. Thus we have the disturbance (*i.e.*, wave front) moving to the right and the trucks moving to the left for a short distance. This represents a rarefaction moving to the right. Since the end truck is not fixed rigidly in any way it can be likened to the open-end of the tube. If this analogy holds, then we would expect that the disturbance would be reflected from the open-end as a compression wave. When the disturbing force reaches the last truck, then, because there is no further restraining force to the right, the truck moves sharply to the left. It strikes its neighbour violently which now moves off to the left. It can be seen that the disturbance has been reflected at the open-end and is now travelling back towards the source. This time both trucks and disturbance are moving in the same direction, hence representing a returning compression wave.



Since the pressure changes involved are relatively small, inflow through the open-end occurs under sub-sonic conditions. The effect of this is that pressure at the open-end remains virtually constant. Thus to counteract the outward moving rarefaction wave and at the same time keeping the end pressure constant, an inward moving compression wave must be generated. This is propogated along the induction pipe towards the inlet port.

If this compression wave reaches the inlet valve just as it is opening then there is a high pressure difference across the port, thus increasing the charge of air into the crankcase during the valve opening time.

In practice, each generated wave travels the length of tube several times, undergoing reflections at each end. The amplitude will decrease with time due to frictional effects. Each time the inlet valve opens a new wave will be generated and its effects will be superimposed on the already present system. It can, however, be appreciated that if the pipe length is correctly matched to engine speed then once steady conditions have been reached a compression wave can be caused to be present at the inlet port each time that it opens. This is known as a "standing" compression wave.

From the above explanation it is obvious that successful ram induction depends mainly on the matching of pipe length to engine speed.

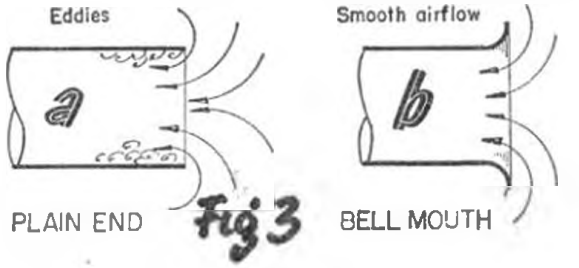
Theory indicates that the product of engine speed and pipe length should be a constant. Thus doubling the engine speed requires that the length of induction pipe should be halved. This is only approximate since no correction has been made for the crankcase volume.

Should this constant not be correct, *i.e.*, the engine speed not matched to pipe length or *vice versa*, then it is possible that a standing rarefaction could be generated at the inlet port, thus *decreasing* the air to the engine.

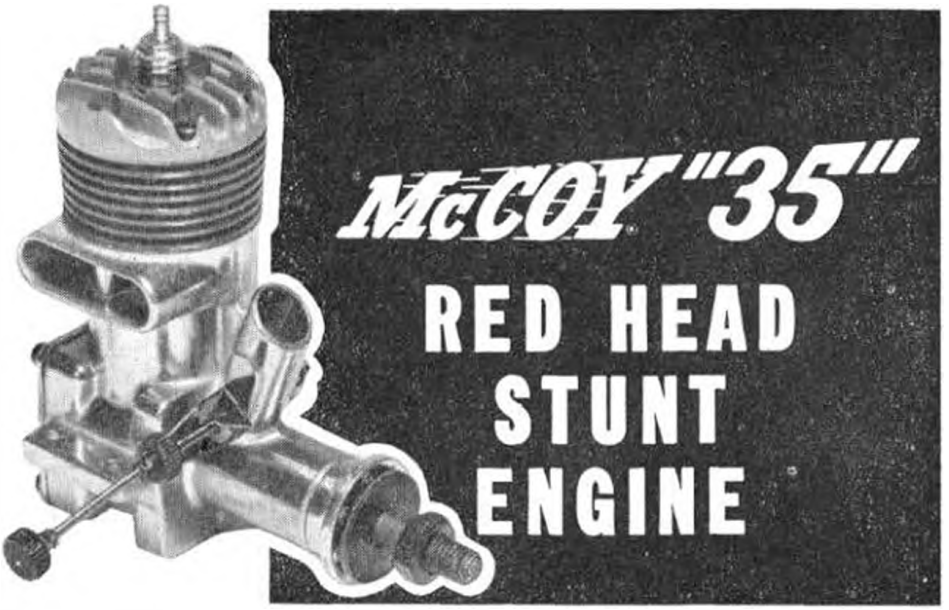
For maximum efficiency the open end of the tube should have a bell-mouthed entry as shown in *Fig.* 3(*b*). With smooth air flow into the tube the best use is made of the pressure wave system. When using a plain pipe-end some of the energy is lost in eddies as in *Fig.* 3(*a*).

Since machining facilities are not available to many aeromodellers the bell-mouth entry may be neglected.

(*Continued on page* 265)



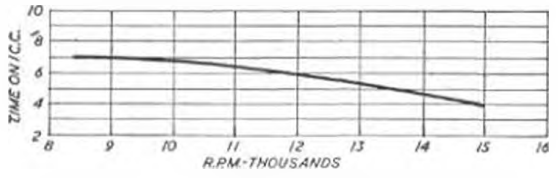
Engine Analysis No. 71



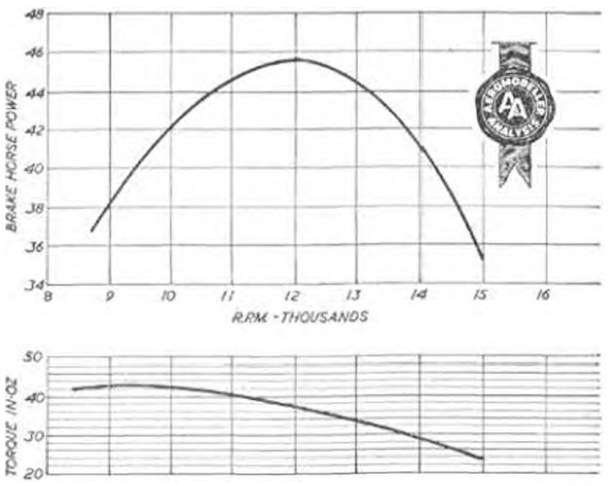
by
R. H. Warring

THE McCOY "35", now made by the Testor Company in America is essentially a sports type engine of a size particularly attractive for radio control and large control line stunt models. Although it bears the McCoy name, and retains much of the appearance of the original McCoy, it is essentially a low priced engine produced on a mass production basis. Despite this obvious cheapening it is, however, an engine with plenty of power, easy to start and generally good on handling qualities.

The engine tested was one borrowed from a modeller who had already used it quite extensively for radio control work. It was certainly not in the prime of new condition and the main bearing, in particular, had picked up with the shaft showing considerable signs of overheating. The piston fit was also quite loose so that there was virtually no compression, but provided a little oil was squirted in through the exhaust port to provide a temporary seal, starting from cold was almost instantaneous on any propeller size following a generous choke. On glow engines of this size one can, in fact, tolerate almost complete absence of compression which hardly affects the running characteristics at all.



Fuel consumption above: Power curve below



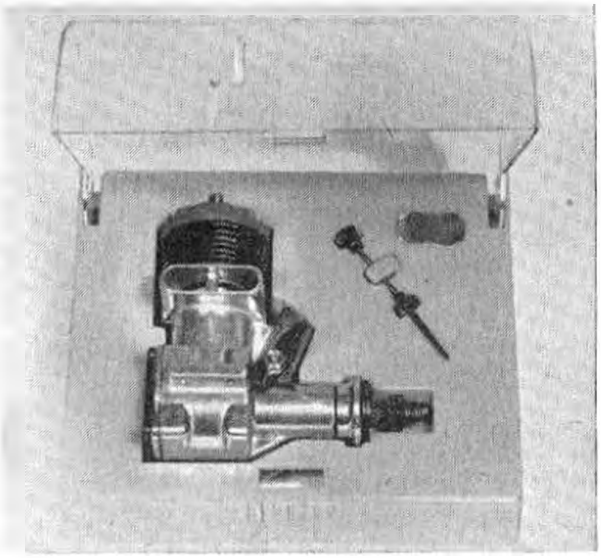
Standard (undoped) glow fuel was used for all the running tests and running was consistent at all load speeds up to the maximum attempted (15,000 r.p.m.). There did not appear any need for doped fuels for high speed running, although performance at the top end would have been improved with a nitromethane fuel. On standard fuel, peak power was developed at 12,000 r.p.m., which is a very convenient point for both control line and radio work. The propeller/r.p.m. figures are in fact comparable with more expensive units up to the peak power figure.

The McCoy "35" also appeared quite happy about producing work at low speeds—swinging a 12 in. x 4 in. propeller at 9,000 r.p.m. for example, and it would run steadily at even lower speeds on larger sizes. It also hand-started readily on 8 in. diameter propellers. Fuel consumption was quite moderate for a glow engine of this swept volume.

Constructionally the McCoy 35 features a substantial crankcase casting extending up to the top of the exhaust and incorporating stub exhaust, choke tube and main bearing. A wide transfer passage is cast in the left hand side with a small projection in the centre which divides the passage but has the main purpose of supporting the lower cylinder when assembled.

The cylinder is of unhardened steel, machined with integral fins at the top reducing to a very thin wall for the lower part which is enclosed by the crankcase casting. Large area transfer and exhaust ports are cut in the cylinder walls, diametrically opposed. The cylinder is held down by three long screws through the head and engaging in the crankcase and seats on a gasket. The cast light alloy head is further secured to the cylinder by three additional short screws.

The piston appears to be a high-precision iron casting and has a slightly rounded top with a conventional



straight deflector. It is thin-walled and relatively light for its size, local wall thickness being increased in the region of the gudgeon pin holes. The diameter is relieved below the gudgeon pin and the fit in the cylinder, as mentioned previously, very slack. This is probably characteristic of the production, using selective assembly for matching pistons and cylinders.

The crankshaft is of conventional design, .3675 inches diameter stepping down to a ¼ inch diameter threaded length. The crank web is machined with a counterweight. The shaft is hardened and the journal surfaces and crankpin finished by grinding. Its induction port is square, with a large diameter hole extending slightly past it to lighten the shaft.

The main bearing is an iron sleeve press or shrunk-fitted into the crankcase. The finish is rough, being only reamed to final size. The whole bearing in fact—on this particular engine at least—was such that the shaft had a considerable degree of side play.

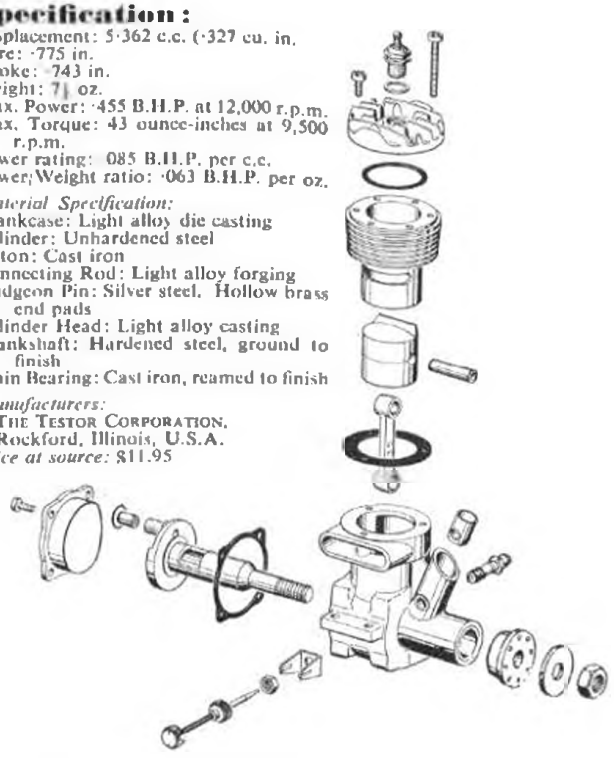
The connecting rod is a very light forging, unbushed. Propeller driver and crankcase backplate are castings, the former machined to taper to fit the shaft. The back cover seals on a gasket, being held by four screws. All the castings are brightly polished to finish with the exception of the head, which is stove enamelled red. The presentation of the engine is also enhanced by the attractive moulded polystyrene box seen in the photo above.

Specification :

Displacement: 5·362 c.c. (·327 cu. in.
Bore: ·775 in.
Stroke: ·743 in.
Weight: 7¼ oz.
Max. Power: ·455 B.H.P. at 12,000 r.p.m.
Max. Torque: 43 ounce-inches at 9,500 r.p.m.
Power rating: ·085 B.H.P. per c.c.
Power/Weight ratio: ·063 B.H.P. per oz.

Material Specification:
Crankcase: Light alloy die casting
Cylinder: Unhardened steel
Piston: Cast iron
Connecting Rod: Light alloy forging
Gudgeon Pin: Silver steel. Hollow brass end pads
Cylinder Head: Light alloy casting
Crankshaft: Hardened steel, ground to finish
Main Bearing: Cast iron, reamed to finish

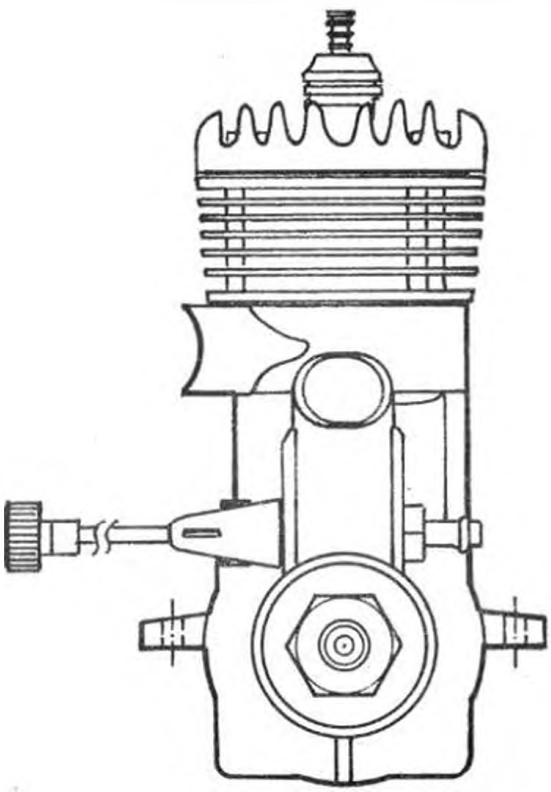
Manufacturers:
THE TESTOR CORPORATION,
Rockford, Illinois, U.S.A.
Price at source: $11.95

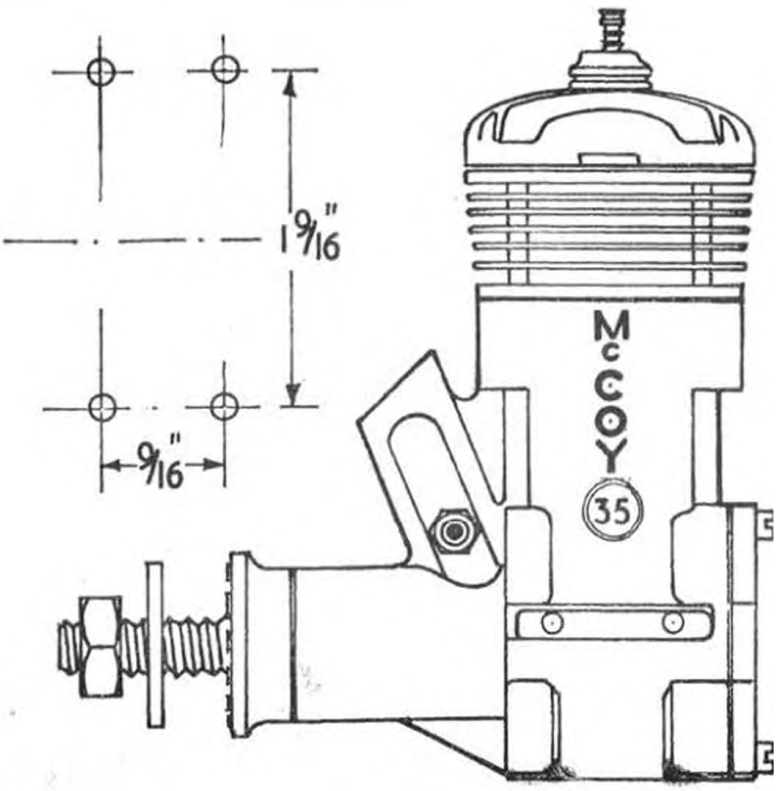


PROPELLER — R.P.M. FIGURES	
Propeller dia. x pitch	*r.p.m.*
10 x 6 (Frog nylon)	11,000
9 x 6 (Frog nylon)	13,000
12 x 4 (Trucut)	9,000
11 x 4 (Trucut)	10,200
10 x 4 (Trucut)	10,800
9 x 4 (Trucut)	13,500
9 x 6 (Trucut)	11,700

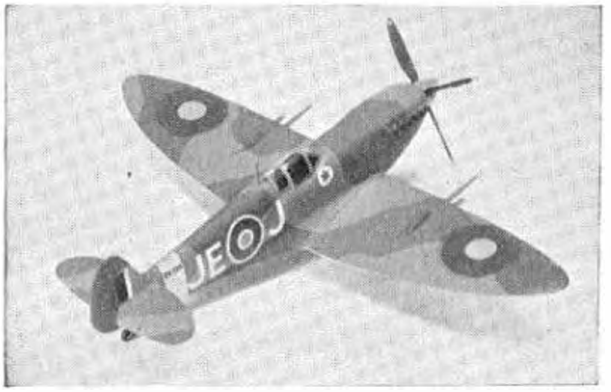
Fuel used: K.K. Methanex.

AEROMODELLER Plans Service Power coding "K"





PLASTIKITICISMS



PLASTICS are now virtually the only type of non-flying model kit sold; the old partly cut out balsa kits are as dead as the dodo. They have the great advantage that a modeller of moderate skill can produce a really pleasing model with a minimum of mess and trouble, while for those who have greater skill they can form the basis of a really faithful reproduction of the original.

The purpose of this article is to bring forward some criticisms of current kits, in the hope that the manufacturers will incorporate them in future models, with the object of enhancing accuracy and correcting various glaring faults now apparent in kits of almost every range.

We are very pleased to receive criticisms and, in fact, we encourage same, as it is only by virtue of such criticisms from the model-making public, over the past 5-6 years or so, that we have been able to improve our standard in detail, design, etc. We have, in fact, completely re-made two or three moulds, such as the Spitfire, M.E.109 etc., and improved others. AIRFIX

The first point is inaccuracy of markings. This falls under various headings—badly printed glossy transfers, inaccurate colours of plastic, insufficient instructions given for finishing etc. Why for instance did not Aurora get an accurate picture of a Pan Am 707 before producing a model in a colour scheme which no aircraft of this Airline has ever carried? Why did not Frog check the colour of B.E.A.'s red for the markings of the Viscount, instead of producing these in the brownish colour that they are?

Some of the earlier ones were admittedly slightly off colour, owing to the method of printing the first batch, but present ones are an exact match with a colour sample supplied by B.E.A.—FROG.

The markings given by Lindberg for the Ju 87 and the Me 262 are quite inaccurate; the sizes of the crosses are wrong, and the crosses themselves are of the pre-war type with narrow white bands instead of the later and correct type—any photograph will prove this. Examples of this type can be repeated *ad nauseam*—post-war type R.A.F. roundels with large diameter red centres but with yellow outer rings on the Airfix Spitfire is another that comes to mind.

Bearing in mind the vast quantity handled, and of course the human element, some of these occasionally slip through our inspection. Both we and the Manufacturers of the transfers are making every effort to deal with any printing errors, as we are, of course, aware that the quality of the transfer is just as important as the riveting, and correct detailing. AIRFIX.

Still on the subject of transfers, why are these always glossy, which is incorrect for camouflaged aircraft? Revell give matt ones in some kits, (e.g. Stratotanker) so it *can* be done. Register on transfers is often poor; Airfix are bad offenders at this, but the worst example is on the I.T.C./Kleeware Martin M.B.2.

In fairness to transfer printers: this is a difficult problem particularly during times of high humidity.—REVELL.

Kits are often pressed in the wrong colours; the Aurora P.26 is pressed in light blue, and on the box lid the fuselage is shown as being in this colour with red and white markings, whereas this machine's fuselage was actually dark green with black and white markings. Surely this could have been checked before production. The recent, and most attractive, Lindberg Kit of the Hawker Hunter is pressed in white; it seems unlikely that any Hunter has ever been white, and no directions for painting are given in the Kit. Why not press it in silver or grey, and include details of the camouflage pattern. The Aurora 707 is pressed in white, whereas most of the machine is silver, a notoriously difficult colour to paint well; it would have been far better to press it in silver and leave the white to be painted. Revell's Crusader Kit includes instructions, (quite correct) that the upper half of the aircraft should be left grey, and the lower half painted white, but omits to mention that the rear half of the fuselage is natural Titanium, and leading edges of wings and fin natural aluminium.

Comments of this nature would probably be disputed by our research department in Venice, California, and this type of criticism can only lead to lengthy correspondence which could never reach a satisfactory conclusion. However, a comment from our Chief Engineer is that silver is also difficult to mould without streaking.—REVELL.

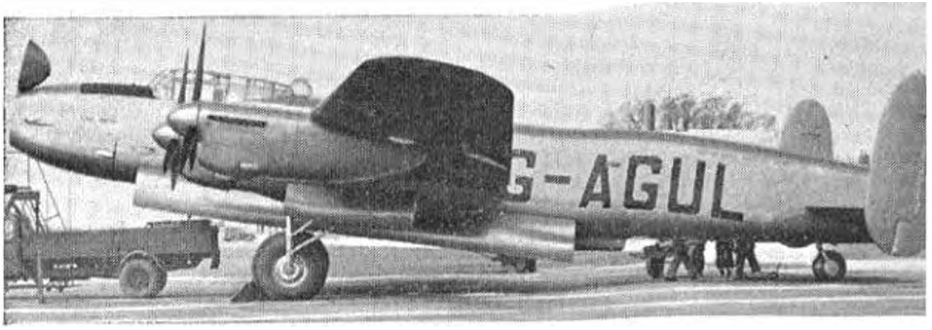
Examples of this sort of thing could be multiplied many times over; let us have (*a*) pressings in the correct colours, and (*b*) full and detailed painting instructions, including interiors. While on the subject of the latter, why not print the box lids in really accurate colours; Airfix say to paint the Sunderland upper surfaces in dark green and dark grey, but what shades of these colours, whose variety is legion? If it is impossible to do this for reasons of printing, let us have a small slip of paper included in the kit give the correct colours, including those for painting the interiors.

We admit that the instructions on the Sunderland could have specified the exact colour to be used, but it was assumed that as most model-makers who assemble Airfix kits use Airfix paints and adhesive, they would find the correct colour in our range.—AIRFIX.

Turning from markings to the actual pressings themselves, the standard fault found in kits by almost every maker is thick trailing edges—in some cases almost as

Heading photo: Completely new Airfix Spitfire IX kit has been produced to replace original inaccurate model. One colour scheme Frog could have used, left, on Automobile Association Rapide, in traditional A. A. yellow and black. All upper surfaces are black; undersides yellow with reverse colour A.A. badges in typical military roundel positions. Registration on top of starboard, below port wings

A critical comment by reader W. R. Matthews, with kit manufacturers' observations



thick as the leading edge, which ruins the appearance of the wings. Yet this is not necessary; Heller produce models (e.g. Vautour) with trailing edges like knife-blades, and even some of the cheap kits (e.g. Frog Spitfire) are almost as good; all models, particularly the more expensive ones, should be made to these standards.

There is a production problem here—allied to cost. Obviously there is always a reason for everything.—REVELL.

Airliners without transparent cabin windows are inexcusable.

This method was adopted because of the great difficulty in achieving satisfactory results by any other way, bearing in mind that these models were also factory-built in large numbers for B.O.A.C., and the only practical method of applying the transfers is after the fuselage halves are assembled and painted.—FROG.

Frog spoil the otherwise excellent Britannia and DC.7c this way, likewise Revell with their Electra, 707 and DC-7c, and again there is no reason for it; the Heller Caravelle has a solid blue transfer band, and instructions are given to apply this, punch out the window holes and then cement in the windows. In some cases the actual external shape of the model is grossly inaccurate; the worst example of this being the Lindberg Stuka which is so bad as to be not worth making, but many others come to mind, such as Revell's B.25 with a transparent ventral turret which no B.25 ever had, no transparent tail-cone, and no engine exhausts. At this stage, too, all models, except the cheapest, should have retractable under-carriages and moving control surfaces; many Makers have done this already, e.g., Lindberg and Monogram, but Airfix having designed a beautiful retracting under-carriage for the Heron, spoil it by giving instructions to cement the nosewheel and cabin doors; the Lancaster and Wellington also have what might be called "semi-retractable" under-carriages; the box lid, which says that these models have retractable undercarriages, is most misleading.

In the case of the Wellington and Heron these are completely retractable, and working, but owing to our policy of maintaining a constant 1/72nd Scale we find it impossible to incorporate hinges on such small components as undercarriage doors, although these could be moulded in 1/72nd Scale, they would not be sufficiently strong to allow these parts to operate successfully. This also applies to the Lancaster and we feel that this undercarriage is retractable, but should the joint sections be made to 1/72nd scale, here again they would be so very minute as to be completely impractical. Therefore, we have adapted the undercarriage so that it would be capable of taking up two positions, and being supported by an arm in the dropped position.—AIRFIX.

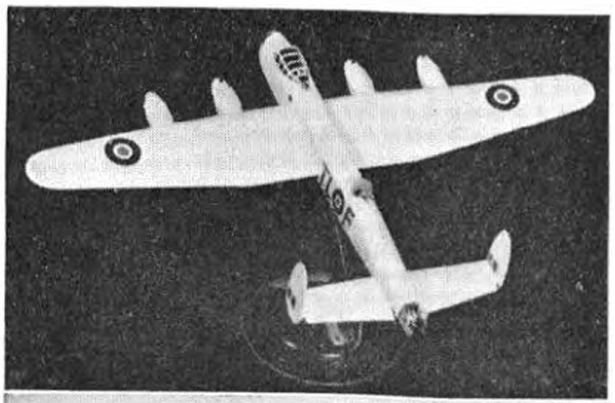
Criticism may also be levelled against the fit of the parts in many kits, particularly wings to fuselages. In Frog's Avro Vulcan the wing tongues are nearly 1/16 in. too thick, and much laborious filing is necessary before they fit properly.

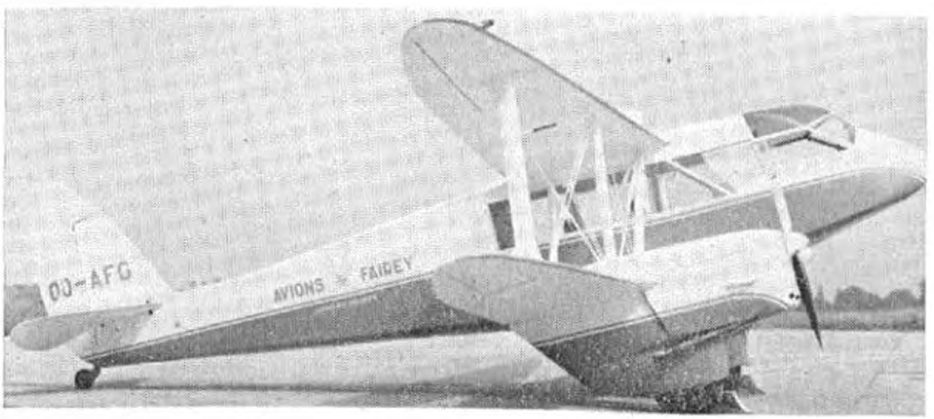
(The fact that the contributor's example had wing-tongues which were too thick is rather exceptional, as these parts usually fit perfectly.—FROG).

In some cases even the fuselage halves do not fit accurately, e.g., Revell's Stratotanker and R3Y.2 flying-boat. Coarse detailing is another fault, though a great improvement has been noticeable recently; the early Airfix kits were very poor, but nothing could be better in this respect than their Sunderland and Bristol 192.

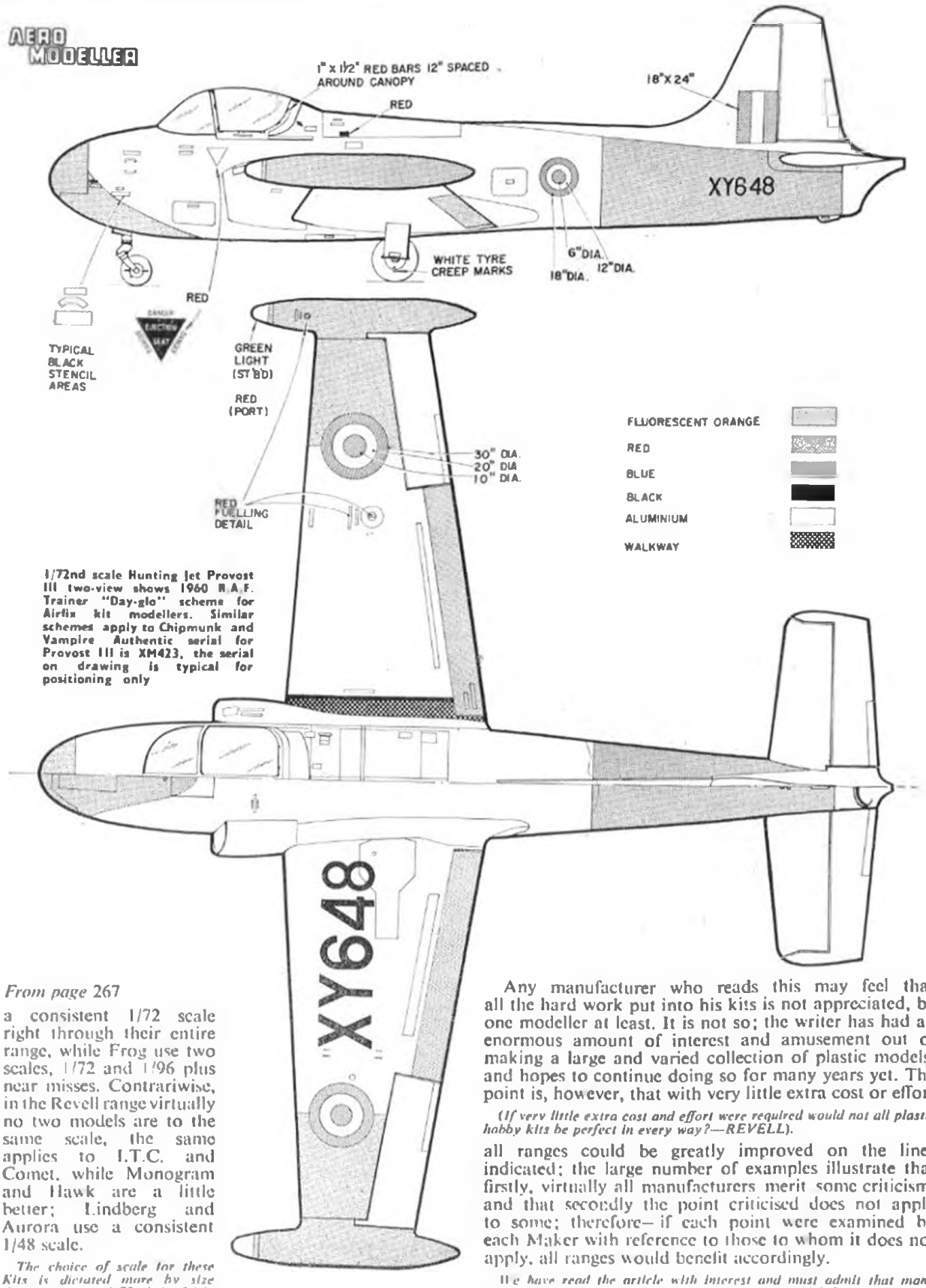
The final point of criticism is the wider one of variation of scale, and in this respect it is almost entirely the American manufacturers who are at fault. Airfix follow

(*Continued overleaf*)





Frog 1/96th Lancaster suggestions; Avro 683 Lancaster (top) although not 'GUK, mentioned in March AEROMODELLER to use "Rapide" transfers illustrates size of markings and aircraft mods identical to 'GUK. Centre: Alternate 35 SQDN. scheme and markings for black and white postwar goodwill tour Frog Lancaster. Avions Fairey much modified Rapide coloured flame and white, provides another scheme for Frog 1/68th model. Further alternative can be found in Shells "Know your Airliners" published by Perry Colour Books with data on 'GUF in navy blue and silver for Island Air Services.



1/72nd scale Hunting Jet Provost III two-view shows 1960 R.A.F. Trainer "Day-glo" scheme for Airfix kit modellers. Similar schemes apply to Chipmunk and Vampire. Authentic serial for Provost III is XM423, the serial on drawing is typical for positioning only

From page 267

a consistent 1/72 scale right through their entire range, while Frog use two scales, 1/72 and 1/96 plus near misses. Contrariwise, in the Revell range virtually no two models are to the same scale, the same applies to I.T.C. and Comet, while Monogram and Hawk are a little better; Lindberg and Aurora use a consistent 1/48 scale.

The choice of scale for these Kits is dictated more by size than anything. 1/72nd is fairly universal for the smaller models and 1/96th seems the most suitable for the larger ones. Occasionally a series is made to a given size of model, and in these cases the scale is of secondary consideration.—FROG.

Any manufacturer who reads this may feel that all the hard work put into his kits is not appreciated, by one modeller at least. It is not so; the writer has had an enormous amount of interest and amusement out of making a large and varied collection of plastic models, and hopes to continue doing so for many years yet. The point is, however, that with very little extra cost or effort

(If very little extra cost and effort were required would not all plastic hobby kits be perfect in every way?—REVELL).

all ranges could be greatly improved on the lines indicated; the large number of examples illustrate that firstly, virtually all manufacturers merit some criticism, and that secondly the point criticised does not apply to some; therefore– if each point were examined by each Maker with reference to those to whom it does not apply, all ranges would benefit accordingly.

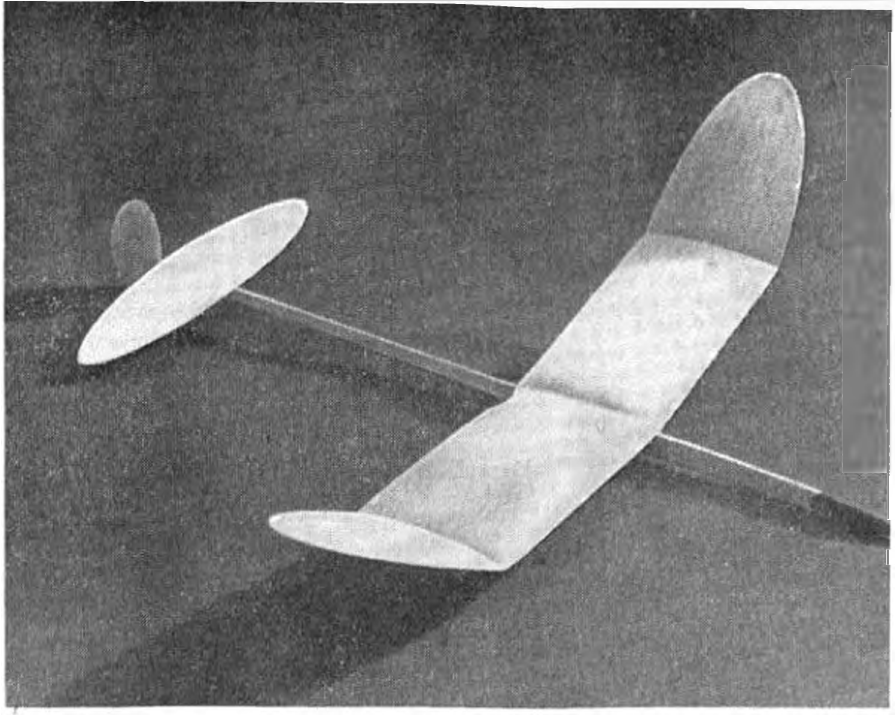
We have read the article with interest and must admit that many of the criticisms aimed at ourselves and other Model Construction Kit manufacturers are, in fact valid.. We can only say that in our own case, we do always go to very great lengths to produce a perfect article consistent with economic production.—AURORA.

In closing, we should like to state that the constructive criticisms such as indicated in your Article are indeed a great incentive to us to develop the high standards which are now being achieved, in our range of construction kits.—AIRFIX PRODUCTS LIMITED.

Britain's best indoor chuck glider design with a top time of 45·5 secs. at the indoor Nats.

Vi et arme

by J. T. ELLISON



ON THE WHOLE, the chuck glider is regarded as one of the simplest forms of aeromodelling. This may be so when a stable flight pattern satisfies the modeller's desires. However, when a chuck glider is intended to be used for contest work, more thought and care is required in the building of the model. Chuck gliding becomes a speciality, and not something to pass a pleasant, if hectic, half-hour between other indoor contests. The plans of this model are intended for the benefit of the serious modeller keen on obtaining high durations.

The first essential point in the construction of indoor hand launched gliders is the selection of materials. For the wing, extreme care should be taken to choose wood which is very light, yet which has sufficient strength to withstand the initial launch. Stresses imposed are considerable, as launching speeds have been estimated at up to one hundred m.p.h. The tail and fin are best cut from quarter grain sheet, which is very rigid as this will discourage any tendency to flutter on launch. The fuselage is cut from medium hard straight grained balsa, this also must be rigid, to reduce any whipping.

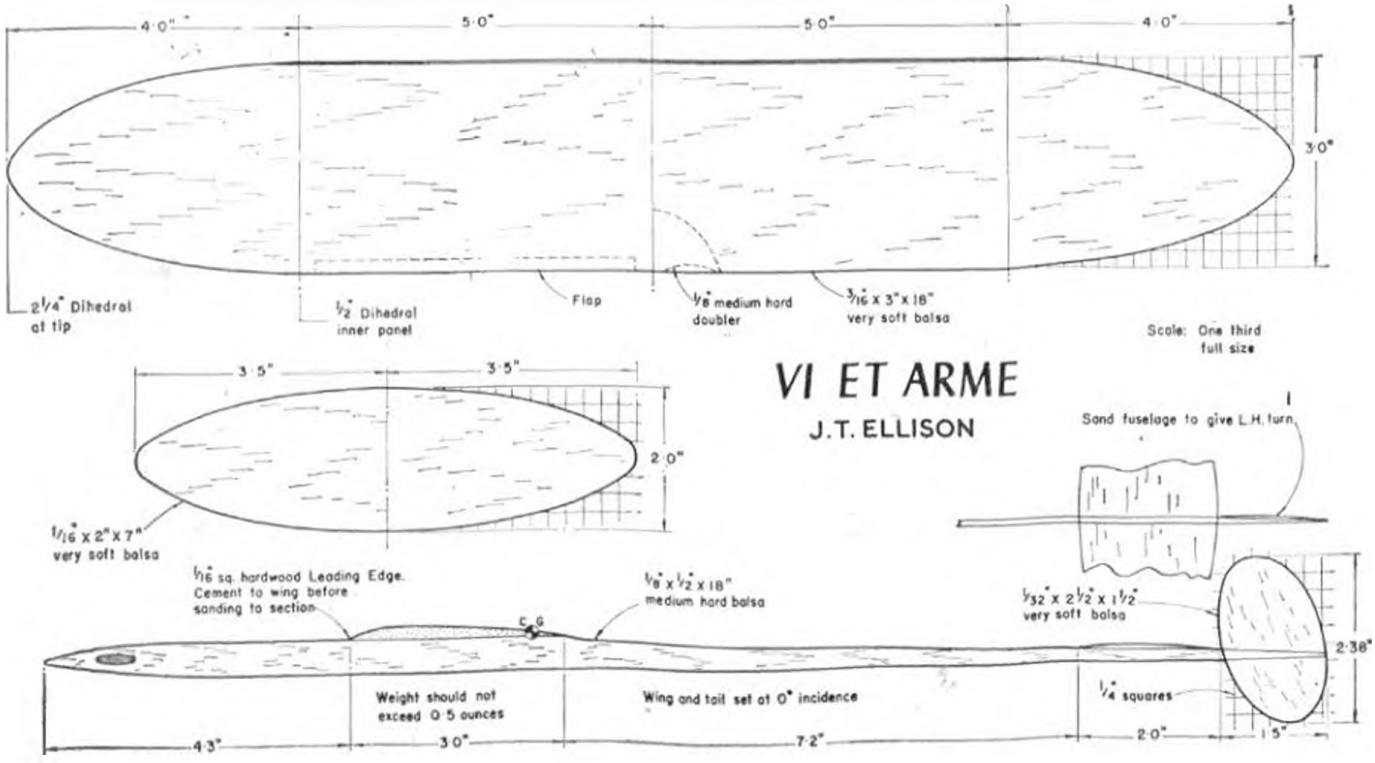
After cutting out the wing, tail, fin, fuselage and finger grip, proceed as follows.

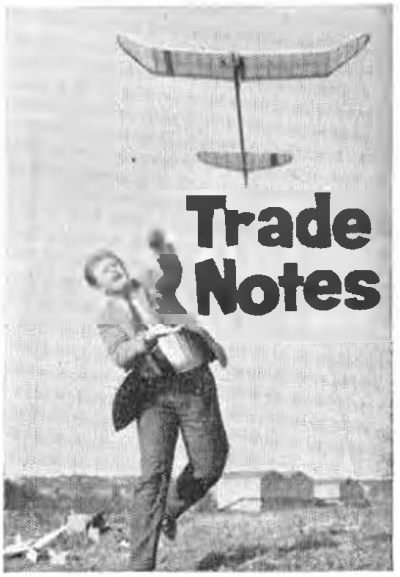
If the model is intended to be flown in a small hall, a length of 1/16-in. square hardwood should be cemented to the leading edge of the wing before carving and sanding. Carve the wing to rough airfoil section, then sand to the exact contour shown. The use of a template to check the section during sanding is strongly recommended. Care should be taken not to apply too much pressure when sanding as this compresses the wood, reducing thickness but not weight. Cut the wing through at the dihedral breaks and sand the ends to exactly the required angle. Pre-cement the dihedral joints.

Carve and sand the tailplane and fin to airfoil section in similar manner to the wing. It should be noted that the fin has a sideways lifting section to assist in providing turn when the model is gliding. The side of the fin to be left flat is the port side (*i.e.*, the side cemented to the fuselage).

continued on page 263

ENLARGE PLAN BELOW X 3 TO GET FULL SIZE PATTERNS

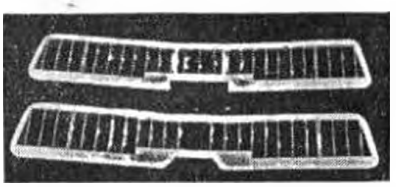




THE SPATE OF bright weather enjoyed in March certainly brought out evidence of plentiful winter building in our district, we hope that it is typical and indicates a boom year for aeromodelling. At any rate, the manufacturers are out to please and our test bench is almost groaning under the pressure of successive new kits.

Latest of the arrivals is the **Mercury** *Viper* control line stunt and combat trainer for 1 c.c. to 1.5 c.c., and in several ways this kit which sells for a very reasonable 17s. 6d. establishes even higher standards than those already set by Mercury kits. Firstly the clear plan is just that—there is a complete plan view of the model on the drawing so that at first glance, one gets an immediate appreciation of the proportions. The profile fuselage permits this without spoiling wing detail on the drawing. Next, the intricate name transfer is bright, well printed, and very distinctive. Then the bent wire u/c as usual in Mercury lines, and *really new*, the one-piece prefabricated leading and trailing edge sections. We count this important enough to photograph specially for this edition, rather than await the finished report. Note how leading and trailing edges are cross slotted for ribs, are of equal grain and hardness and most important, are of good section. It may waste more balsa producing this unit edging; but it saves on labour and gives a better result. Incidentally, did overseas readers spot that line in Henry J's advertisement last month about his *Poste Restante* service? Henry's shop at 308 Holloway Road N.7. is "open" for leaving messages if you happen to be without a London address and want your mail forwarded. Fine idea Henry!

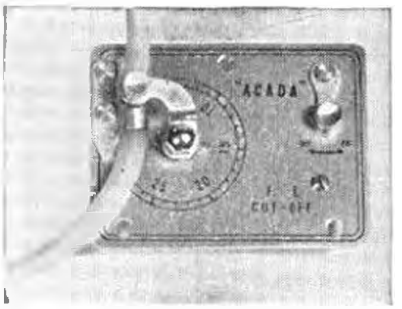
Electronic Developments are producing two new fuels, the *Economic* at 3s. per 10 ounce tin and *Super Zip* for 3s. 6d. The Economic is as the name suggests, a general purpose fuel, and Super Zip is nitrated for high speeds and maximum performance with economy. Both have castor oil lubricant and will replace the existing E.D. blends. The .8 c.c. Pep diesel is also their great new line, selling so fast they haven't had time to send us a viewing sample! Could it be the Pep's performance (13,500 r.p.m. claimed on a 6 x 4 in.) that induced a spurt on the new version of the Bee? (See Motor Mart).



Scale effect with rib spacing on Frog's S.E.5a wings helps to make a realistic model

One of the kits coming off our production line is the 22 in. span *Bantam Cock*, designed specially for the new .8 c.e. glow engines and with the **Davies Charlton** *Bantam* in mind. Stage by stage details on the plan (also a real plan with a complete top view of the model) leave nothing to doubt, and this **Yeoman** kit is very low priced at 8s. 11d. One aspect that might not be readily appreciated is the constant width fuselage, this sensibly offers a rigid

Left: New Humbrol Mini-kit of plastic enamels in palette pack for 2s. Right: Henry Nicholl's latest Viper C/L kit introduces unit edging with fabricated trailing and leading edge strip



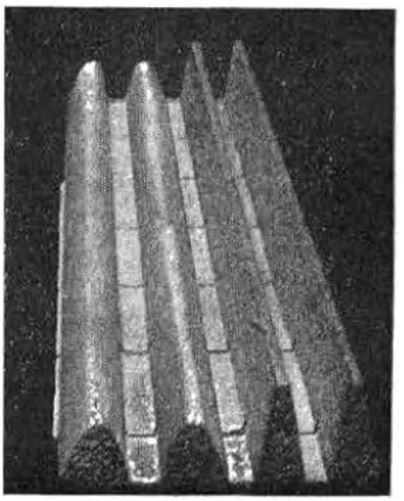
New Japanese timer shown in shut-off position. Heading shows our test KeilKraft Gaucho before flyaway 3rd flight, was recovered by Ed. from rooftops after taking pic with our new Rollei!

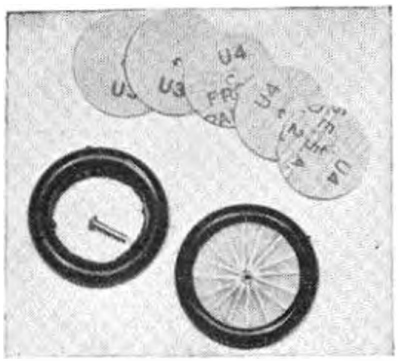
tail mounting, usually the weak point on small models, and though perhaps not as others, might well start a fashion for the feature once our modelling eyes have adjusted themselves to it. Don't expect wheels and tank for this price either,—Yeoman have very neatly avoided such extra expense by having no undercarriage and using the tank fitted on the Bantam engine!

A new, low priced painting set of enamels is announced by **The Humber Oil Co. Ltd.**, and consists of a handy pack of six colours in phials, held tight in a six compartment tray. The clever idea is that when the phials are taken out, the recesses make a palette for mixing special tones from the basic colours.

Enamels are the well-known Humbrol one-hour drying plastic enamel, and the cost of the "Mini-kit" is 2s. Colours are—blue, yellow, red, green, black and white. Mixing instructions for varied shades are included on the reverse side of the pack.

From Japan, yet another timer. This is the **Acada** marketed by Y. Oishi and arranged so that flexible fuel tube is squashed as a





Frog SE5a wheels take full marks for good ideas. Have plastic tires, brass bush and fabric over "spokes"

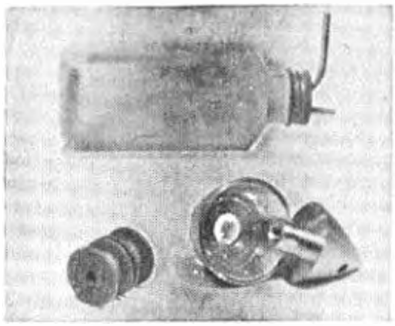
shut-off valve. Sample is not like previous Japanese timers in that it dispenses with snap shut-off action, although general proportions are the same as for other movements.

Other interesting accessories come nearer home and are produced by that keen aeromodeller from Wigan, **Dave Morgan.** Dave is specialising in a model aircraft engineering service to undertake repairs on foreign motors, rebores and to make any specially requested items. We have had the opportunity of seeing his "Clunk" tank for radio control, a selected 2 ounce polythene bottle with specially vented cap, filler and feed pipe with a weighted flexible feed tube that follows the fuel in all stunt attitudes. Also his spinner for racers in two parts for Olivers etc. and having the rear part left for the purchaser to cut away to suit his choice of props. Diameter is 1¼ inches. For rubber enthusiasts, a non-bunch double bobbin turned from solid Tufnol fibre is just the job. What about some 90 deg. needle valve feed tubes and team racer pans *a la* Bernard "Startiger" Dave?

So successful was the first **Airfix** advertising campaign on I.T.V. just before last Christmas, Airfix Products are planning a concentrated programme for all nine I.T.V. stations this Easter, so if you want to see how to make a Sunderland from their 10s. 6d. kit, we suggest you take a peep at the square lantern.

Smog Hoggers and other big model flyers will appreciate **Model Aerodrome Ltd.,** efforts to meet the demand for larger airwheels for they have now introduced just what many modellers have been requesting. Adjustable hubs on these 3½ in. diameter de luxe wheels enable one to set the degree of softness, and at 17s. 6d. per pair, they represent first class value. We can thoroughly

Dave Morgan's accessories, Clunk Tank, Non-bunch bobbin and Racer spinner



Latest Drome wheels suit large models perfectly, have adjustable alloy hubs

recommend them as a good "buy".

Among the new kits on our test bench is the **International Model Aircraft** scale S.E.5a for 1 c.c. to 1.5 c.c. engines and control line flying. This latest in the large range of Frog kits is obviously the work of a real enthusiast. So many kits appear to fall down through oversights of die-cutting or fits that should come to the attention of an enthusiastic development staff but there are no such failings in this S.E.5a. Selling at 32s. 6d. it includes a nylon bellcrank, plastic pilot and very easy to make realistic wheels.

Sheen Models sent us clippings of their pink, blue and green nylon chiffon selling at 5s. per sq. yard. This is the same material we have been using for our radio models, and which has been seen on many an *Uproar;* but it has not been available at this low price before.

Vi et arme (*Continued from page 261*)

Sand the rear end of fuselage so the fin, when attached, will give left turn. Then round off and sand all corners except where the wing and tail unit are to be cemented.

Cement the tail and fin in position, checking to ensure that they are square on the fuselage. When dry, cement the wing in place again checking for squareness. Then add the finger grip reinforcement. Add one more thin coat of cement to the wing fuselage joint and the dihedral breaks to reinforce these highly stressed regions. Make two cuts in the trailing edge of the port wing inner panel 3/16-in. deep (chordwise) and positioned 1/4-in. from the dihedral breaks. The flap so formed should now be steamed down about 20 degrees and cemented to retain it in position. Take care to avoid any dry joints.

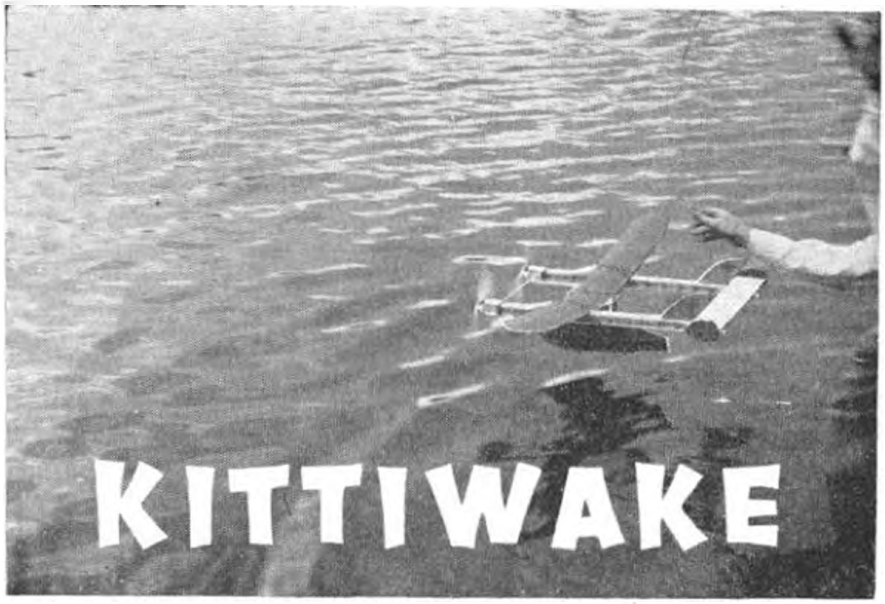
As components should already have been sanded prior to assembly, the complete model should only require a light sanding before application of finish. Sprinkle talcum powder on to the model and rub in well with the fingers. Then sand (on top of the talcum) with very fine sand paper (or wet and dry paper). The record holding model was left like this, but the finish can be preserved at the cost of weight increase by application of a single coat of thin dope followed by a further light sanding. Wax polishing is also optional.

Pre-flight adjustments

Check rigging (*i.e.*, incidence and turn) and correct the surfaces if necessary. Add Plasticine to the fuselage nose until the model balances at the centre of gravity position indicated on the drawing.

Test glide the model and obtain a flat glide with wide left-hand circle by cutting, bending and cementing the tailplane and fin if necessary. Launching technique tends to vary with each individual and consequently few mandatory rules can be laid down. However, the standard method is to throw the model with considerable right bank so it climbs to the right before swinging into a left-hand glide. Start with a fairly gentle throw, launching with 45 degrees right bank (starboard wing low), and upwards at about 60 degrees to the horizontal. Stalling at the top of the climb can be eliminated by varying the angle of launch (bank and elevation), flap droop, rudder and tail incidence (and C.G. position). Power of throw should be increased gradually up to the limit of the launcher. Durations obtained will depend upon the adjustments of the model, size of hall used and the technique and power of the flyer. Hence the name "Vi et Arme" which is Latin for "*by force of arm*". Left-hand modellers should reverse all asymmetric adjustments, both on model and in the launching.

Note.—Weight of finished model should not exceed 0·5 oz. for top contest performance.



Holder of the British record for Waterplane duration, this twin - motored Flying boat is simple to build yet offers hours of fun . . . .

by RAY PARKER

UNTIL A COUPLE of years ago when W. Tinker and Co. of the Portsmouth and Epsom clubs experimented with this type of craft, apparently only members of the old North Kent M.A.S. and the present North Kent Nomads M.C. have made rubber driven flying boats. It is rather surprising that more modellers have not done so, as the flying boat is a fascinating subject and very spectacular when skimming off the water.

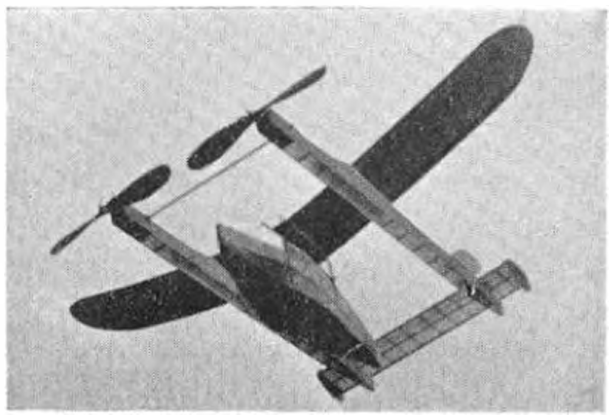
Experiments have been made with single motor layouts but the designer has yet to see one take off the water without a hard push. When they appear to have sufficient power to take off, torque troubles are in evidence as the machine tilts badly and invariably spins into the water. Sponsons and floats do not appear to be effective, however well designed, as drag on the water pulls the machine round.

Having had some success with the twin motor layout, it was decided to build a "Wakefield" size machine for two reasons. Further, it is a very efficient "land" plane size and secondly, a long motor run can be obtained due to the length of nacelles. Since an "old rule" Wakefield had 14 strands of ¼ in. x 1/24th in. 36 inches long, Ray decided to power Kittiwake with two motors each comprising 8 strands of the same 36 in. length.

Start construction by building the hull, two ⅛ in. sq. side frames for which are pinned down over the plan, one frame over the other for accuracy and speed. When dry, they are separated, and 16 s.w.g. wire wing mounts bent and bound in place and gussetted. A paper tube is made by rolling over suitably waxed dowel a d cementing, then fitted to former H.2. This former and H 1. are then joined to the side frames and whole structure allowed to dry thoroughly. Rear of side frames are brought together and held under pressure of a clothes peg. The front end is similarly treated after steaming the structure forward of H.1. Spacers and dowels are now added. Underside of the hull is covered with 1/32nd sheet, leaving a hole for the paper tube end to prevent cavitation on take-off. Five of the upper hull panels can be covered with white tissue, doped inside and out, for cabin effect; otherwise cover with coloured tissue, as for the rest of the hull, and apply 2 coats of dope. The lower half of the hull should be clear varnished. Wire braces are bound and soldered to wing mounts.

Wing construction is quite straightforward, noting that ⅛th dowels protrude ¼ in. above the wing, and the covering of the centre section over the hull, with 1/32nd sheet. When joining the wings, ply dihedral keepers are used to maintain 4 in. dihedral under each wing tip. Tailplane is also straightforward. Note that the upper spar is cut short at the tips. Two end fins are cut from 1/32nd sheet and cemented in place applying only a small amount of cement to prevent warping.

Nacelle construction is of simple box form, starting with two sides built together over the plan. These are joined with spacers, rear ends being brought together first. Pieces of ⅛ in. sheet, frame "A" and 1 mm. ply are added around the nose. 1/16 in. sheet and ply laminated rear motor peg retainers are drilled and cemented in place. Fit brass tubes to the starboard nacelle only to take a U-shape wire to hold the prop. after winding this motor first. Add ⅛ in. sheet wing mounts, noting one is smaller than the other to take the dihedral. Also add slotted ⅛ in. sheet piece, for fins, on the top rear of each nacelle. Make up two fins, and cement in place after



As the name implies, this Flying Boat has Wakefield proportions; but we've yet to see a twin boom wake in the finals though American Bob Cummins experimented that way a few years back. Note the counter rotating propellers, short hull, and snappy take-off from water as in the photograph above

covering. Cover all surfaces with lightweight Modelspan, and dope as for similar sized conventional rubber model.

When making prop. assemblies, note that your port runs in clockwise direction and starboard anti-clockwise. Study prop. shaft details well before bending the wire.

Make up two motors, each of 8 strands ⅛ in. x 1/24 in., 36 in. long. These should be pretensioned before fitting to nacelles—100 turns clockwise for starboard motor, and 100 turns anticlockwise for port. Useful fittings for motor pegs are paper tubes either side of bobbins to keep the motors central. Assemble the model with nacelles parallel, and held by the tailplane and a 14½ in. length of ¼ in. square balsa across front ends of nacelles, just behind pieces "A", so that ⅛ in. protrudes either side. Rubber bands hold this in place, and is so designed as to break on a hard landing and so save the airframe. A wing wire brace of 20 s.w.g. Piano wire simply hooks over the protruding dowels on upper wing surfaces. Make sure the wing is central between nacelles when attaching rubber bands. A simple arrangement of bands holds hull under centre section. Kittiwake should balance at 50 per cent. chord. Should any correction be necessary to achieve this, it is best to move the wing mounts rather than add weight. Lateral balance *can* be corrected by addition of weight.

On the original model, it was found that initial glide tests were good, and that 1/16 in. packing could be added under tailplane trailing edge without causing a stall. The noseblock was packed with ⅛ in. downthrust and 1/32 in. side thrust on each nacelle for a good circling climb. These adjustments are now incorporated in the design. When trimming, increase turns gradually, working up to 800 maximum. A point to watch is to have an equal number of turns on each motor. Before attempting water takeoffs, practise from short grass.

RAM induction (*continued from page 255*)

Efficiency loss is very slight. It may be of interest to note that all of the compressor experiments were carried out with plain pipe-ends.

Before applying this method it is essential to know the engine speed. Unless a stroboscope is available the best method of determining this is by using the torque absorption curves for various propellers published in the AEROMODELLER in conjunction with the torque-speed curve for your engine.

In the light of the above information ram induction was tried on an E.D. 2·46 Racer in an A.P.S. *Duellist*. The induction tube was a 6-inch length of ⅜-inch internal diameter polythene tube, as used for motor-cycle fuel tubing.

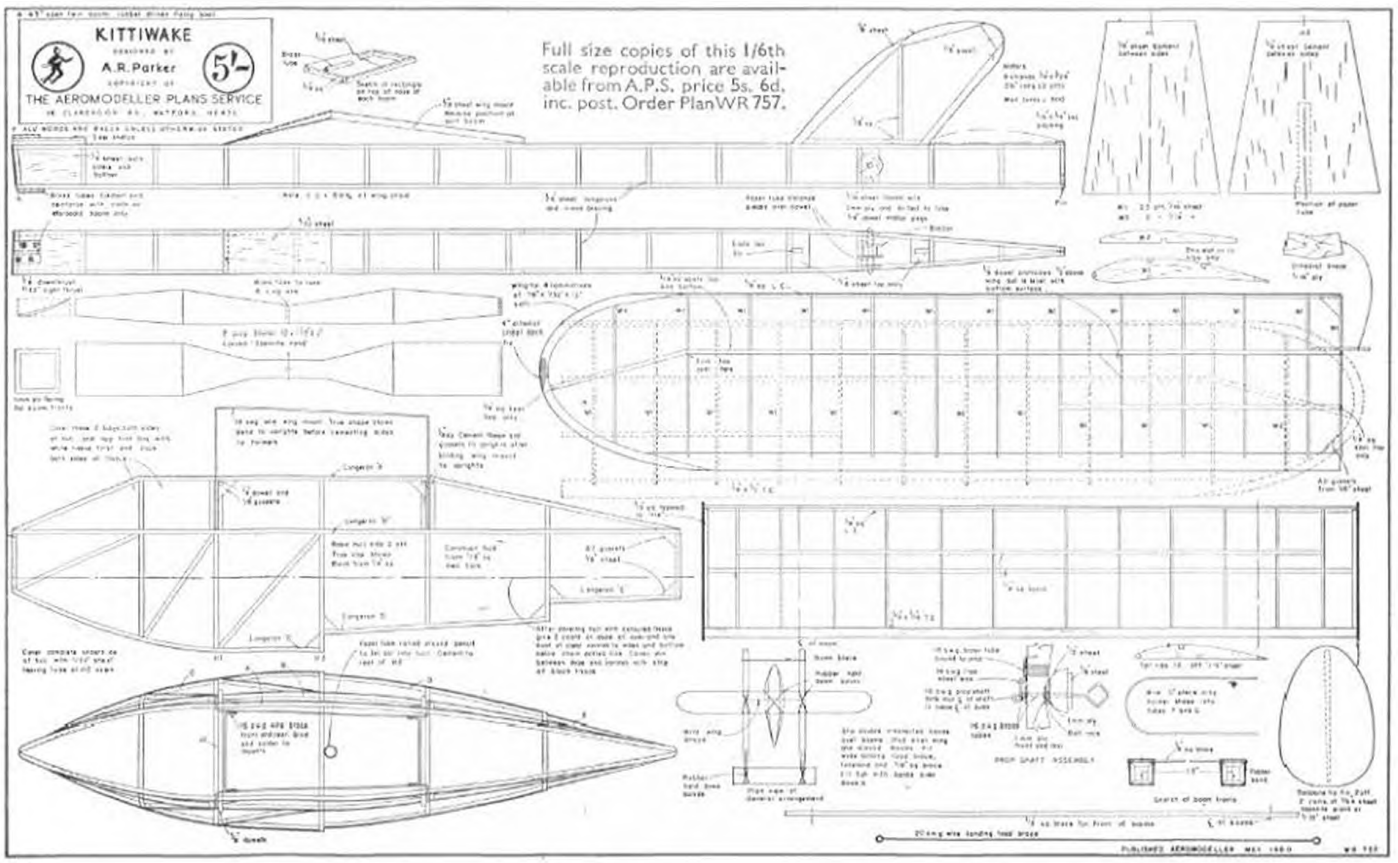
With measured lines and stop-watch ready, the mode was launched. The idea was to time the model with, and without, the induction tube over several laps. The tube was to be trimmed before every other flight until maximum speed was attained.

Unfortunately, the pilot was a novice friend. After two circuits at very creditable speed the flight, and the experiments, abruptly terminated !

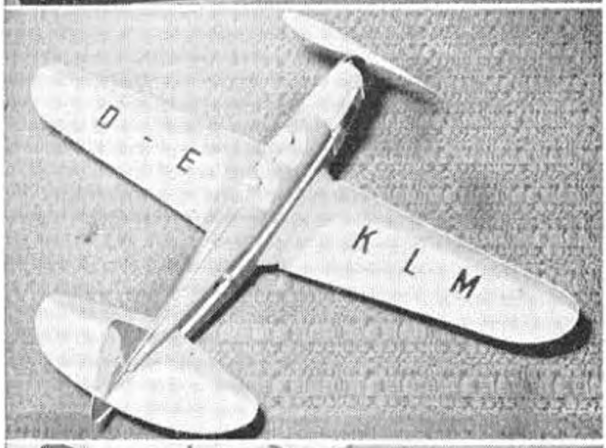
Undaunted, the author has left provision for an induction tube on a partially-built Class B team racer.

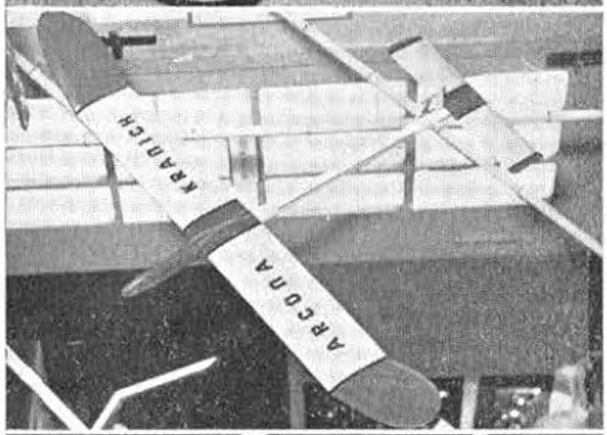
Suggested pipe lengths for engine speeds

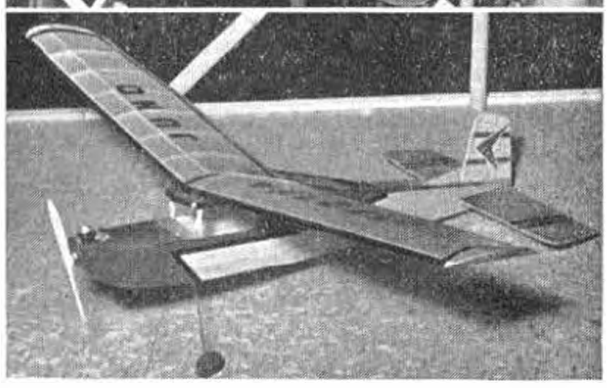
Engine Speed R.P.M.	Induction Pipe Length ins.
10,000	8·2
12,000	6·9
14,000	5·9
16,000	5·2



U.S. & GERMAN TRADE FAIRS







THERE'S ALWAYS something to be learned from study of foreign products, especially if one happens to be engaged in the British model trade. For this reason, and also because we like our readers to be up to date with new items from overseas, we are offering this summary of outstanding products seen for the first time at the big trade shows in Chicago and Nuremburg.

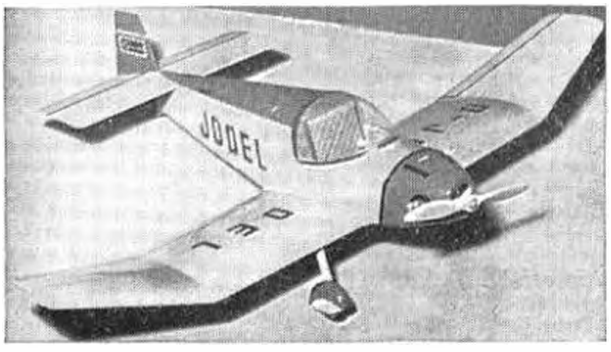
Firstly, from the U.S.A., the surprise announcement was **Aurora's** takeover of **K & B** engines, with Johnny Brodbeck in command, and their introduction of the amazingly easy-starting "*Tornado*" ·049 with moulded nylon tank and membrane intake (see Motor Mart). The outstanding new items were **Cox's** 24 in. plastic *Curtiss Pusher* — in kit form for ·049 pusher power, and their biggest ever ready-to-fly, a 32 in. *Piper Comanche* which comes complete with plain bearing Cox *Sportsman* 15 mounted sidewinder for 25 Dollars. Separate kit for a family passenger set is included at no extra charge.

Bob Holland has merged with **Hi Johnson** in the engine field. Great things are expected from so powerful a merger, for Holland's *Hornet* dominated the ·049 and Johnson's 29 and 35 were top of their classes at last years U.S. Nats.

In the plastic non-flying mart, **Monogram** have a *Dauntless* dive bomber with ground accessories, operating dive brakes and flaps, bomb dropping, swivelling guns and retracting u/c but all to an odd scale for 9¾ in. span. **Lindberg** cover the Jetliner trio of *Boeing* 707, *Douglas DC-8* and *Convair* 880 at 49 cents each and 7½ in. span: but their surprises are ready to fly control-line models for *electric* power. *Bird Dog*, *Cornell* and *Mustang* scale models fly "up to 25 ft. circle" with power from a dry battery pack running up insulated lines to nose mounted motor and small prop. Price is $6.98. Plastics continue to prosper, but the trend in U.S.A. is to dogs, bird, skulls and skeletons apart from the items we mention.

In Germany, the Nuremburg show has a greater modelling interest. **Graupner's** introduction of four aircraft kits (see pics) each outstandingly novel in approach; two engines, three boat kits; and countless accessories indicates this company's industry. Hans Schumacher was there to demonstrate his new 3 and 10 channel r/c gear. His *Bellaphon* 3 is on the new German frequency of 40.68 Mcs. Tx is all-transistor crystal oscillator with a coil in the collapsible aerial as detailed in MODEL MAKER feature, August '59, claiming 5 times old aerial efficiency. Tuned filter Rx can be 27.12 Mcs or 40.68 with filters at 400, 650 and 900 cycles and as

Left: top to bottom, DUX all-plastic ready to fly Me 109 for Cox Babe Bee 049 sells at 85s. Rubber drive Klemm 25 also by DUX of Ludenscheid is 20¼ in. span. Arcona's Kranich glider has Jedelsky airfoil, is A/1 spec: sells for 18s. 6d. and like the Arcona "Juno" at bottom, is one of 20 new items from this Offenburg firm. Juno is 24 in. for a Cox Pee Wee, costs 17s. Below: Jodel D-11 by Eggenweiler is 20¼ in. for Pee Wee power F/F and has sheeted wing.



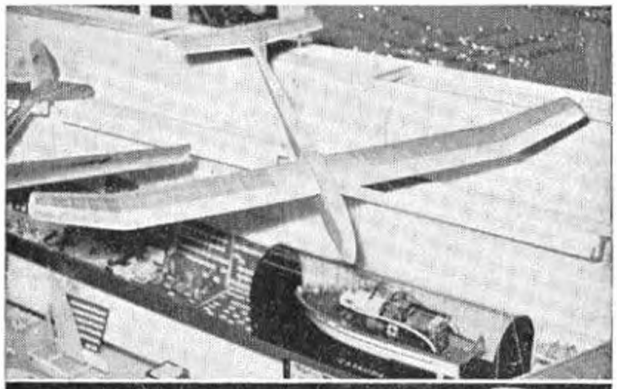
Below: The Hegi 330 kit for Sorgel's "Pascha" 67 in. r/c glider displayed with other Schuco lines. K-H Denzin's 48 in. Auster is another Schuco introduction for radio control. Right: Top to bottom, Hans Schumacher, Graupner r/c designer with Piper Tri-Pacer mock-up using 3 channel Polyton, actual kit in next view. Is 43½ in. span for 1.5 c.c. Next, Klemm 107B with plastic mouldings, for c/l, is 28½ in. span for 1 c.c. Militky's electric powered Silentius, now available in kit form, and at bottom, the all-purpose Amigo to A/2 spec.

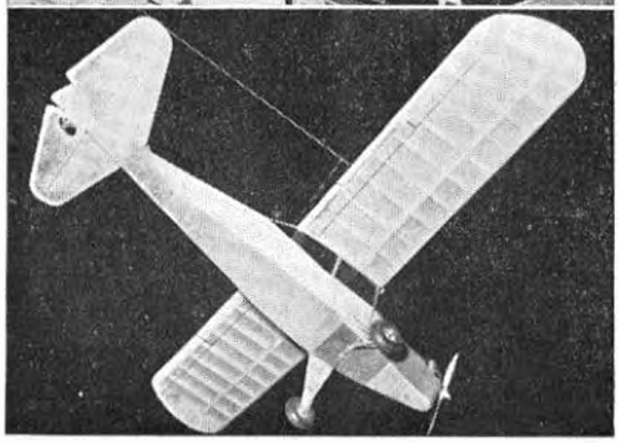
with *Ultraton* single channel, it is all-transistor. Ten channel Polyton for simultaneous proportional using the *Bellamatic* servos has two *Micromax* motors on the main joystick for built-in pulsing, with a pulser connected to the 2nd stick. All these new Tx's have charger units incorporated for the new type *Sonnenschein* accumulators. Fred Militky's electric power model, the *Silentius*, is one of the new kits and a special two blade folder prop with plastic hub will be available as an extra.

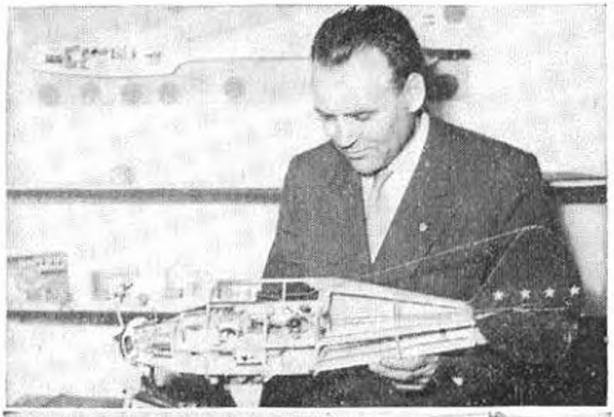
For our money, the *Amigo A*/2 is favourite. We flew the prototype at A/2 weight with single channel last year at Kirchheim, and now the kit is out, detail is included for 3-channel so adding to the variety of applications for the design which include power with the *Foxie* engine above the c/ section, and slope soaring.

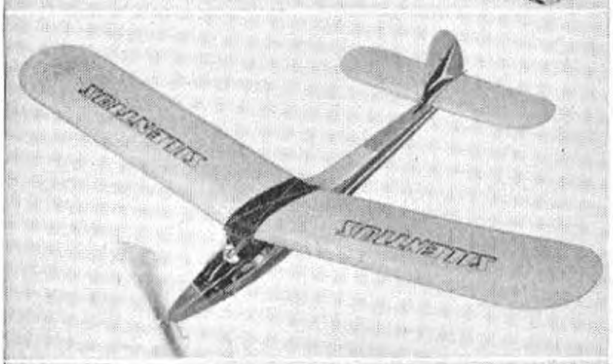
Dux Models, who have taken over **Star Models** have the honour to be first European Co. to produce a scale plastic ready-to-fly c/l model in their *Me*.109. They also have a "*Test Pilot*" plastic trainer in kit form with 18 in. span, for the Cox Babe Bee engine. This sells at 28s. less engine, and a companion model, a 20½ in. span *Klemm* 25 for rubber power sells at about 21s. so plastics are not going to mean a reduction in kit costs.

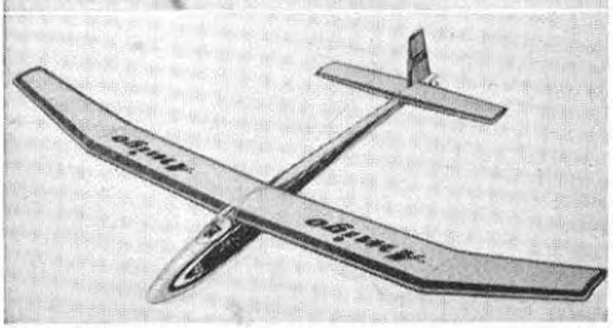
Schuco have Wolfgang Sorgel's "*Pascha* 67" radio glider kitted for about 36s. and Karl-Heinz Denzin's 48 in. semi-scale *Auster Aiglet* for up to 3 channel (new **Metz** r/c gear). This power model for 1 c.c. to 2·5 c.c. engines can carry up to 16 oz. of radio equipment, should be a very popular seller at 47s. 6d. Nor are these all the new kit sat Nuremburg—some of the other interesting, smaller, designs are illustrated on the page opposite.











OUR EDITORIAL comment in February issue under the title of "Self-help", has obviously hit hard among the keener control-line clubs worthy of their name. We refer to those at Wharfedale and Hayes. The latter club are building up a sensibly programmed campaign for a 2-acre site with space for four circles, two surfaced and two grassed. Labour will be offered by the club, who are already soliciting outside assistance and have reached a substantial figure for financing the project from their own resources. The land and additional moneys will however, have to come from the Borough Council, and when in the next month or so, the lads have their plan ready for presentation, they will approach the Council with the proposition. All success to their enterprising efforts—we hope they succeed and give Hayes, Middlesex the great honour of being first in the British Isles to have a control-line model centre.

Incidentally, yet another fine site *has* just been opened in Europe, this time at Milan.

North Western

Area Meeting on February 2nd, 1960, accepted the resignation of John Hannay as Area P.R.O. Everyone wishes John, who is at present in hospital, a speedy recovery and soon back again with his *Topscores*. **STOCKPORT AND D.M.A.C.** are organising a fund for a trophy to perpetuate the memory of the late Keith Ridyard, whom many will remember as Area Comp. Secretary. Trophy will be known as the Keith Ridyard Memorial Trophy and will be accepted by the Area for open competition. Donations to be sent to K. Maddocks, 82 Broadway, Bredbury, Stockport.

WIGAN M.A.C. comp. this year provided a very entertaining day for all concerned. Combat event was run in two separate sections, under 2 c.c. and over 2 c.c., both being won by Roger Fortey, who is still a junior and by virtue of his outstanding performance, qualified for the Junior Championship Trophy. Senior Champion was George Ayles, who won the open power event. Brian Picken justified his "hot favourite" position by finishing top in the rubber event, as well as taking the Bradburn Trophy for senior champion of the whole season. Eric Ashcroft although unplaced in club comp., was a convincing winner of the Carrington Cup for the season's junior champion. Brian Talbot was winner of the glider event. Plans are already under way to send the usual full coach load to the Nats. this year.

Many new R/C models will soon be having their first airing, in preparation for the new season. Eric Tomlinson has a *Gasser* for single channel R/C, and a *Waveguide* under way; Red Wilding, a *Junior* 60 and soon a *Smog-Hog*. Allan Mason is in the throws of finishing an 8-reed receiver, simultaneous operation, for an O.D. Enya 29 powered model. Another similar outfit has been installed in a *Smog-Hog* by Arthur Hedley, who is currently flying a Torp. 15 powered *Victor* American design for single-channel.

Members of **CHORLTON M.F.C.** attended the indoor nationals, only successful member being John Birks, who placed third in chuck glider.

They also managed to raise a full coach-load to Colne Rally with more succes on this occasion, John Birks being on the mark again with first place in junior power. Kevin McGree placed second in the somewhat hectic combat, knocking out the club secretary on the way to the final. On Sunday, March 13th, the club held an F.A.I. event, but the weather was very much against good flights. Eventual first placings were John Birks flying a power model. Brian Spencer (*Topscore*) and Kevin McGee (*Inchworm*). **CHORLTON M.F.C.** held their A.G.M. on Friday, January 15th at Seymour Park School. Attendance was very good. Prize giving was a walk over for Kevin McGee, who all but took the lot; his flying during the past year has been an example to all.

Winter rally of the **EAST LANCASHIRE M.A.C.** was held on February 28th, and was quite successful despite windy weather.

CLUB NEWS

Entries were up some 25 per cent. on previous years (past the 100 mark). Power was won by J. O'Donnell, who lost his model in the process. D. Wolstonholme placed first in rubber. ½A combat was poorly supported, J. Smith of Leigh M.A.C. being winner. S.M.A.E. Combat was a different proposition with over 20 competitors and an exciting three man final won by D. Kirkman (Loughborough College and Derby M.A.C.).

London

Apathy for once took a back seat at the Area A.G.M. Instead of the usual loud silence when the election of officers came round, there were not only volunteers, there was even voting! A refreshing change; and as a result, there is now a new Secretary, Treasurer, Competition Secretary (and Assistant), P.O.R. and Vice-Chairman. Only survivors are the Chairman, Council Delegate; and one of the auditors. New committee is:—

Chairman: Bob Copland
Vice-Chairman: Pete Muller
Competition Secretary: Mike Bassett
Comp. Sec's. Assistant: Sid Smeed
Secretary: Dave Williamson
Council Delegate: Dave Posner
P.R.O.: Pete Muller
Auditors: Malcolm Young and George Upson

HORNCHURCH M.A.C. free flight comp. was held on February 14th and resulted in a win for Clive Morris. Not only can they boast having Hornchurch Aerodrome for a flying field, but were delighted to find recently that a new surface has been laid between the hangars, which is perfect for speed and team racing. Rules are now being devised for up to ·8 c.c. team racing (½A?).

In **NORTHWOOD M.A.C.** there has been a great resurgence of R.T.P. flying, since it was realised that newspaper could be used to keep diesel fuel off the floor! The club scramble has favoured by good weather. Dick Pratt and Brian Jones made 9½ runs in half an hour with their gliders. All the other entrants pranged or lost their models, noteably Pete Perry, who lost his *Ebeneza* when the motor cut out at 500 feet over Watford (didn't land on us!).

ST. CLEMENT DANES GRAMMAR SCHOOL club has been "going" now for over 17 years and yet have never sent in a report to "Club News"! The club has the extensive use of the school playing field, and the playground (otherwise known as the cage) for free flight and team racing, and should the former prove to be too small, there are the infamous "Wormwood Scrubs" only three minutes away. During the winter months they take to R.T.P. team racing in the school hall.

Looking back through the cupboards recently, **CRYSTAL PALACE M.A.C.** discovered seven silver cups for which they are competing during the season—lucky them! One senior has a 5 c.c. petrol spark combat model (steel helmets will be worn!) and the club is going *en masse* to the High Wycombe C/L Rally in May.

First **MILL HILL M.A.C.** contest of the current season was held at Copthall playing fields on February 14th, 1960, in the form of a scramble in which each competitor endeavoured to obtain the highest possible flying time in a maximum of 15 minutes. Eventual winner was Mike Barton with a time of 52 seconds, which was obtained from two flights and was sufficient to secure the points. (Yes you read right—only 52 secs. in 15 whole minutes! !) Following Tuesday, for the first time a Plastics Exhibition was held. Models varied from an ancient Avro 504K to the latest Chance Vought Cutlass. Models were judged by Members of the Trade, namely Mr. A. Blunt, Mr. J. Lane and Mr. M. Barton, who commented on the high quality of the models placed before them. Winner after careful consideration was Mr. W. G. Evans with the 504K.

LEWISHAM ORBITS CLUB (LOMAC) inform us that they have now disbanded, and contest members have joined **WEST ESSEX M.A.C.**

A recently formed model group, No. 768 **(BROCKLEY COUNTY SCHOOL) SQUADRON A.T.C.**, have twelve members, and fly on their school field at Downham on Sunday. Main interest is control-line, with power from Cox Pee-Wees to an Eta 29 Mk. VI. Members Pete Isom, George Wright and Tom Kingston, all fly ½A Combat keenly; Stan Natchy flies his hot B team racer, Eta 29, at over 85 m.p.h. Jim Patrick had an F.A.I. speed model, until a 128 m.p.h. quarrel with a wall (pilot's error), however, his Super Tigre still runs and a new model is on the way. Intentions are to fly in the A.T.C. comp. if the specials come up.

South Midland

HIGH WYCOMBE M.A.C. remind everyone of the Rally at Booker on May 1st (Labour Day!) and that there'll be *all* classes including *stunt*. Pre-entry advised for everything to make sure of getting on this popular rally.

Such flying activity that has taken place during the last few months at **STEVENAGE M.A.C.** was mainly by the hardy C/L and R/C types. This, however was not entirely without an occasional bit of F/F when a model got away! Don Beaver's R/C design was unfortunate to be eaten by a herd of cows during an enforced overnight stay in their field, and Eric Noble's "Galloping Ghost" missile ended its activities even more abruptly for the 'n'th time. Pete Weston's Silver Streak powered team racer is also a casualty having caught fire and burnt out during practicing—must be hot fuel! Chiefy Wheeler's *Halifax* is now nearing completion and very good it looks too, especially the size 00 fur lined boots of the aircrew!

To Mavis and Pete Giggle, congratulations on the Happy Event! Gamage day brought a force five wind and temperatures in the low forties, however, there was some lift around as Alan Payne's *Rumrod 250* (T—Hopper powered) failed to return from a first round max. in the White Cup. G. W. Dallimer repeated the feat losing a model in both White and Pilcher events, one being returned from the Vauxhall factory at Luton some 11 miles away. Needless to say the fuse wasn't lit! Junior member David Dyer, did well in the Pilcher managing a hard earned score of 6 : 26.

ABINGDON AND D.M.F.C. held a club rally on Oxford's Port Meadow on February 28th The rat race was won by N. Webb with another Oliver-powered product of his warped building board. In between times he entertained with his motorised bean-pole which flies (?). S. Dickson tried to prove his *Daedalus* would float in the Thames, but the river bank and some trees prevented him from doing so. G. Balmforth flew his 30-inch R/C *Gasser*. It weighs as much as the 40-inch original and flies accordingly, and P. Lovegrove gave a hair-raising (for him!) demonstration with his Max-35-powered, 48-inch span *Loopstick* on Galloping Ghost.

Seven **WATFORD WAYFARERS M.A.C.** members made an early start for the Gamage, Pilcher and White Cup events held on blustery March 6th at Wheathampstead. Times in the events were very low owing to the high winds and unbroken cloud, although B. Dowling found some lift, doing two maximums and 2·43 in the Pilcher with an old A/2 out for the first time.

Biggest laugh of the year was provided by a certain member who found his trousers around his ankles whilst towing up his glider. Needless to say, the model spun in. (Not decfee'd but debagged, so to speak! Still, he won ! !)

WELLINGBOROUGH M.A.C. is getting the contest season off to a good start, under Pete Johnson as Comp. Sec. Junior R.

Morris has 52 points towards the club championship. Nearest senior is E. Arnold with 10 points for winning a recent power comp. with a *Dixielander* MVVS-powered. Three new innovations include rubber or power floatplane, 1·5 c.c. max. F/F comp. and Jetex event; in this they hope to raise the club record of 77 secs.! The C/L events catered for include a whole day at a local 'drome during (we hope) warmer weather. Also C/L demonstrations at local galas and fetes. New members always welcomed at clubrooms in Winstanley Road on Monday evenings. (Incidentally we were misled on a change of address as stated in April AERO-MODELLER, the new WellingboroughSecretary, J. Parkinson, was announced as Northampton M.A.C. Sec.!)

DUNSTABLE SCHOOL M.A.C. has been completely re-formed with 12 members all keen and rarin' to go with 21 engines between them including a P.A.W. 1·49 with which it is hoped to do some serious team racing, the main interest is now centred on ½A team racing (with Mills ·76, Merlins and Bantams) in the "quad". Combat is not really appreciated due to the expense involved, because only three of the members have a reliable source of income. Any Grammar School boy at Dunstable is welcome on Saturdays.

MAIDENHEAD D.S.A. now has 23 members who attend the Friday evening meetings at the Youth Club, Cookham Road. A great deal of indoor flying is done with electric R.T.P. scale models and flight is controlled by a model railway controller which works very well; R.T.P. speed is also followed by some members. Tony Clements is the most successful. Phil Scotcher and Barry Wilson are building and flying micro-film models which fly very well until someone opens the door.

First coach trip was run on February 28th to Chobham Common and was well supported; Tony Clements and Michael White put up a very good show with free flight models, but most models came home in dozens of bits. Radio control is going quite well with A. Marshall leading the rest. All the equipment was built in the clubroom: seven receivers and actuators, and one transmitter.

ERGS M.F.C. officials are hard at work arranging details for a mass (35 member) visit to Scampton. Local interest has been aroused with many spectators, and minor traffic jams next to the flying field where the majority of the ERGS are all trying to unwind lines from pilots, tie on streamers, fill up tanks, etc. – in short, combat is in progress. As a result of the contest season coming up fast, the free flight activity has increased considerably although somewhat limited by the size of the field for high performance models.

NORTHAMPTON M.A.C. contests for first half of this year are: April 17th—Open glider; May 8th—Open power; June 12th—Open rubber. Main interest is towards F.A.I. classes, especially power. Prof. Payne is building a pair of A.P.S. *Atlantis* ! Another *Atlantis* is being built by Mick Evatt as well as his Mk. 6 model, which is second of a series to have an under-cambered tailplane to control looping tendency. A/2 is not so bright this year, with only two new models being built. Prof. Payne is about the only active rubber modeller with an *XI.59* just completed, to add to his numerous open models.

Midlands

BRIERLEY HILL AERONAUTS are now preparing for the forthcoming season. First club competition (combat) was held on Sunday, February 21st. Treasurer Mick Wilkinson is now in possession of two ETA29 models which in the humble opinion of fellow club members are equal to any 5 c.c. free-flight models yet seen. (Sounds like we shall be dodging a lot of 29 free-flighters at Scampton.)

MIDLANDERS M.A.C. combat competition was held in December on a disused 'drome, the winner being B. Colley and runner-up M. Ashcroft. Highlight of the cup was in the final bout, when Ashcroft's lines (both) gave up the ghost and the model hurtled 100 ft. into the blue, descending within a couple of feet of a Mk. VIII Jaguar whose owner promptly exclaimed "Damned good flight, old boy!" (What an appreciative man!) Stunt comp. held in February was a great success. M. Ashcroft, winner, was closely followed by R. Kendrick. Both models O.D. Club is now preparing team racers, etc., for the Nats and hope to make their mark.

SUTTON COLDFIELD R.C.M.A.C. celebrated their first club birthday with a well-supported dinner/dance held locally at the Royal Hotel. The comprehensive set of club rules adopted officially at their A.G.M. are available to other clubs if anyone is interested. Club uniform is likely to include a steel helmet now that the "multi-bug" is biting — good biz for the model shops though.

In the aftermath of a hectic winter of all-night parties and forgotten building boards for OUTLAWS (CANNOCK) M.A.C. (they are seriously thinking of changing the name to Outlaws Social Club and Marriage Bureau) the cold realisation has suddenly dawned that from March 20th there are seven stunt and six T/R comps. in the 11 weeks before the Nats. All is now feverish activity and the new team racers developed from last year's mistakes (some would say catastrophies) should be just about dry by the morning of the first comp. Their two normally intrepid stunt flyers are undergoing agonies trying to decide whether the urgent need for practice to recover last year's high standard should be over-ruled by the wisdom of not flying in the near-gale conditions prevailing at the moment. Combat interest has died the death. Only four entries at the very most can be raised as opposed to 11 last year. A good sign, however, is a considerable increase in the number of full S.M.A.E. members and fewer associates. Nats arrangements are well in hand, with just about the last word in 1960 super-de luxe omnibusery already booked for two-and-a-half days.

North Eastern

SUNDERLAND M.A.C. has recently been re-formed and has approximately two dozen active members. Club meetings are held every Thursday night in the clubroom above "Chippy Stores" in Station Road, Sunderland, all flying each Sunday at R.A.F. Usworth, a local airfield.

South Western

On June 19th the EXMOUTH AND D.M.A.C. will be holding on Woodbury Common, near Exmouth, the South Western Area free flight championships for S.W. Area shield. Competition is limited to Devon and Cornwall. All clubs and unattached modellers within this area are invited to attend. Entry fee will be 1/6 per event. Anyone wishing for further details should send S.A.E. to D. G. Baudet, Hon. Sec., Exmouth and D.M.A.C., 80 Moorfield Road, Withycombe, Exmouth.

Southern

BASINGSTOKE A.C. are being presented with two trophies, one for glider and the other for "open power". Both were given originally to the previous Basingstoke club which was disbanded in 1955. Messrs. Turner's model shop presented the open power and O-My Celestor Ltd. the glider trophy. Club is also going ahead with plans for Basingstoke Carnival week, July 2nd-7th, when they hope to put on a display of static models and a control line exhibition, the stars of this show no doubt being A. Stokes and R. Appleton. There are also rumours of a very hush-hush highly detailed F/F flying scale model being built by A. Stokes for the Nationals at Scampton this year.

East Midland

We hear that a new club has been started in Lincoln, to be called LINCOLN AERO-MODELLERS. Secretary is M. E. Elmer, 25 Queensway, Lincoln. The old club has been wound up through lack of any interest.

Western

WESTON CONTROLINERS had recently a friendly comp. against the Bristol lads at R.A.F. Colerne. Weston won the combat — P. Heeley first, and R. Burgess second — whilst Bristol won the team racing. One of the members has got hold of a cine camera and has taken many films of models in flight, which are to be shown at future club meetings. Sunday afternoon flying sessions are becoming very good turnouts, all types of C/L models abounding. It is very pleasing to see that some modellers in the club are breaking away from the conventional trends, but combat is still, by a small margin, the most popular.

Northern

Members are now preparing for the new season in earnest at WHARFEDALE M.A.C. Programme for the immediate future includes participation in one of the largest Hobbies Exhibitions in Yorkshire, organised by the Otley Rotary Club to be held in the secondary modern school, North Parade, Otley, on April 20th-23rd. At the last exhibition over 7,000 visitors were recorded. Also to be included is a flying display, and the opportunity of questioning club members. March 6th was junior day for the Wharfedale club at R.A.F. Rufforth, junior members, with a model, travelled *free* on the club bus. Senior members devoted most of their energy to running a ·75 c.c. - 1·5 c.c. K.K. Champ T/R event. Before racing could start, however, a few problems had to be overcome. Namely, to teach the juniors how to fly! Club's attempts to secure a flying ground have met with some success, for they are now able to use R.A.F. Rufforth on Sunday each month subject to quite reasonable conditions. However, attempts to obtain a permanent C/L circuit continue.

Eire

DUN LAOGHAIRE M.F.C. was founded three years ago and consists mainly of junior members, but nevertheless it has gained a name to be feared in contests, (they tell me) especially in combat and team racing. Last season was the most successful to date, gaining places in the Nationals, Butlins and other contests. Club is lucky to have a good C/L flying ground centrally located, and many new models have been built and tested for the coming season.

Scotland

Principal Scottish contests being held this year are: Scottish Gala—August 14th, Abbotsinch Aerodrome, Paisley; P.A.A. Festival—June 25th-26th, Abbotsinch Aerodrome, Paisley. Former is a S.M.A.E. centralised event being same as last year and latter is an S.M.A.E.-sanctioned contest run to the new P.A.A. rules. In brief, these are: All P.A.A. contests 0·020 cu. ins. capacity for power, Jetex 150 for senior jet, Jetex 50 for junior jet. In accordance with American P.A.A. rules, 1960 two classes only for P.A.A. engine-powered models are being run, P.A.A. load gas, and clipper cargo to engine capacity as described in this issue. Rest of the contests are as for last year.

Wales

CARDIFF M.A.C. held a C/L competition at Pengam on Sunday, February 7th—a bright but cold day. Winner of the 3·5 combat was Tony Hill with an Oliver-powered *Duellist*. Second was K. Widdison of the Cardiff Dragons flying a Webra Mach 1-powered wing. Latest "crash-proof" covering is taffeta favoured by Allan Jones in a tasteful shade of mauve. Standard of combat is rising but more entries are needed. On Sunday, February 21st, a Max Meet was held at Ely, Cardiff, and was a great success. Favoured by ideal conditions the modest one-minute maximums were stepped up by

half-minutes, and ended in an exciting duel being won by Doug Dyer, Cardiff, when his rival Pete Waters, Port Talbot overrun the 10-sec. engine run limit, when attempting to equal the Cardiff man's three-minute flight. Tying for third place were E. J. Langton and J. H. Phillips.

Services

Control line is still the main interest at KHORMAKSAR M.A.C., accent being on combat and team race, although there is a growing following for stunt. Members think that the difficulties encountered with diesels in a hot climate are much exaggerated and find that most ball-race units have their handling qualities little affected, although there is definitely a loss of power, shown by the fact that 60 m.p.h. is a very good speed for ½A team race there. Best motor for general use is P.A.W. 2·49 of which there are about two dozen in the club. A combined T/R event for ½A and A to old rules was held on February 7th. Winners were: ½A—Woodward (o/d Frog 150R tuned); A—Johnson (o/d Enya 15D). Johnson was doing 58 laps at 78 m.p.h. Clubroom which members were building (illustrated in September issue) is now complete and in use.

R.A.F. MELKSHAM M.A.C. has now been re-formed and at the time of writing there are over twenty keen members. If there is any nearby club which would like to take part in competitions during the summer, they should contact the Treasurer, Cpl. Tech. Lindsay, c/o Corporals' Club, Royal Air Force, Melksham Wilts, and get in the queue for the flying field!

THE CLUBMAN.

Pen Pals

Pen Pals are required by the following:

Lloyd A. Willis, 62 Morton Street, Invercargill, New Zealand. Aged 20, interests are mainly C/L scale. Pal in Britain preferably.

Tony W. Bishop, 19 Kingsley Road, Bedford. Aged 16, interests are glider and C/L. Pal in France, same age preferred.

S.M.A.E. Contests

May 1st
- Halfax Trophy (F.A.I. Power) } *Area*
- *Weston Cup (F.A.I. Rubber) } *Centralised*

May 21st/22nd
- FIRST F.A.I. CONTROL LINE TRIALS } *Centralised*
- F.A.I. RADIO CONTROL TRIALS }

BRITISH NATIONALS

June 5th
- Thurston Cup (U/R Glider)
- Short Cup (P.A.A. Load)
- S.M.A.E. Cup (F.A.I. R/C Multi)
- Lady Shelley Cup (Tailless)
- Knokke Trophy (C/L Scale)
- Davies Trophy (Class A)
- Combat (Prelim. Heats)
- Speed

R.A.F. Scampton

June 6th
- Sir John Shelley (U/R Power)
- Model Aircraft (U/R Rubber)
- Super Scale (F/F Scale)
- Ripmax Trophy (F.A.I. R/C Single)
- Davies Trophy (Class ½A & B)
- Combat (Finals)
- Speed
- Gold Trophy (Stunt C/L)

For Your Diary

April 24th
Stockport Advertiser Rally, A. V. Roe Airfield, Woodford (all classes).

May 1st
High Wycombe Rally, R.A.F. Booker (C/L all classes).

May 15th
Dagenham Rally (combat). Pre-entry to 27 Bell Farm Avenue, Dagenham.

May 29th
Scottish Nationals. Kirkcaldy (control line).

June 25th - 26th
P.A.A. Festival (rules as in this issue), Abbotsinch, Paisley.

July 2nd - 3rd
R.A.F.M.A.A. Championships (all classes), R.A.F. Debden.

July 10th
Scottish Nationals, Abbotsinch, Paisley (free flight).
Enfield Rally (team race, A, B, stunt, speed, combat).

August 14th
Scottish Gala, Abbotsinch.
Ramsgate C/L Rally. F.A.I. & B., T/R, Combat & Stunt, J. Bakers Sports Ground.

August 28th
South Midland Area Gala (all classes), Cranfield.

September 18th
Caledonia Shield, Lanark.

S.M.A.E. Results

Decentralised contests. March 6th 1960.

White Cup — U/R Power — 143 entries

1	Roberts G. L. (Lincoln)	12:00 + 4:04
2	Castell G. (Letchworth)	12:00 + 2:25
3	Thorne C. (Letchworth)	12:00 + 2:05
4	Willis N. (Essex)	11:51
5	Carter A. (Liverpool)	11:28

Gamage Cup — U/R Rubber — 100 entries

1	Elliott N. P. (Southampton)	12:00 + 4:50
2	Morley D. (Lincoln)	11:35
3	Monks R. (B'ham)	10:40
4	Parker A. (Exmouth)	10:31
5	Broady S. (Teeside)	10:13

Pilcher Cup — U/R Glider — 215 entries

1	Dowling B. (Watford Wayfarers)	8:43
2	Dallimer G. W. (Stevenage)	8:40
3	Webb A. C. (Brierly Hill)	8:31
4	Aitkenhead C. C. (Glevum)	8:30
5	Perry D. (B'ham)	8:03

CLASSIFIED ADVERTISEMENTS

PRESS DATE for issue June, 1960, April 18, 1960

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FOR SALE

"M.A.B." Pulse Jet, offers. "E.D. Racer", "Mills 75", "Fuji 1·6 c.c.", 35s. each. "A.M. 10" needs rebore 10s. S.A.E. Turner, 12 Monks Close, S. Rusilip, Middx.

Oliver Tiger Mk. III, unrun, in box with makers instructions £6. Scale P.51 Mustang. Nearly finished £2 or £7 combined. Scott, 85 Fernheath Road, Winton, Bournemouth.

Cabin launch 42 in. glass fibre hull, 3·5 AMCO, Kitchin rudder £15. Hull £10. Bird, The Rectory, Creeting St. Mary, Ipswich.

Short of cash. A.M.15 in unflown A.P.S. unlimited 45s., o.n.o. Teal, 8 Croysdale Avenue, Sunbury-on-Thames, Middx.

McCoy ·60 new £12; Fox 35 new £5; used McCoy 60's £7 and £8. Box No. 619.

Mk. III Oliver Tiger, brand new, never run £6; E.D. 2·46 50s. Chapman, 74 The Tideway, Rochester, Kent.

O.S. Max 29, 1959, brand new and unrun. Two restrictors, £6 or nearest offer takes. R. E. Jeffs, 58 Gladstone Place, Brighton.

E.D. Transitrol Receiver and Transmitter, used only once, like new £9. Also following motors all new never used, Fox ·59 £13; Fox ·25 £6; Fox ·15 £3; Fox ·09 £2; Space Hopper ·049 70s.; K.B. 19 R/C £9; Dooling ·29 Racing engine £10. Bench run only, Fox ·35 Combat Special £6. Box No. 618.

Airtrols, two as new, perfect, £4 10s. each. Ripmax pathfinder receiver, as new £3. Triang radiomaster TX, as new £4 15s. P.A.W. 2·49, brand new, boxed £5. Frog Vibramatic £1 10s. E.D. Comp. Special £1. Patterson, 412 Wellington Street, Grimsby.

New, unused, in original boxes and wrappings, O.S. ·29 R/C £5 10s. O.S. ·35 R/C £5 10s. Enya ·15D Diesel £4 10s. Howlett, 119 Ellerdine Road, Hounslow, Middx.

O.S. Max 15 II, unused in box £4 o.n.o. James, 265 Wellingborough Road, Rushden, Northants.

A.M.35 with prop. and spinner, hardly used 50s.; R.M.A. Pulse Control box, as new 35s.; R.M.A. geared Servo 15s., both in boxes with instructions; American Aquaskimmer 30 in. by 12 in. for aero engine 25s.; A.P.S. Peacemaker, nylon covered, with plans 30s.; A.P.S. Hoverking uncovered with plans 30s.; K.K. Sea Nymph 10s.; A.P.S. plans, Aiglet 2s.; Se5a 3 c.c. 2s.; Jeep 9d.; Miranda 3s. 6d.; M.M.P.S. Vosper 7s. 6d.; 32 AEROMODELLERS, January, '56 to July, '59; MODELMAKERS, February, '58 to August, '59, April, '58 missing, offers? S.A.E. please. Agnew Jnr., Gurney Street, Stonehaven, Kincardineshire.

Oliver III, fully tuned, with two special Hoffman ballraces, £4 15s. Wyatt, 1 Richmond Villas, Bisley Road, Stroud, Glos.

Mills ·75 Frog 160 hardly used; E.D. Bee with speed model £3 5s. the lot. M. Gallon, 6 Broomfield Terrace, Whitby, Yorks.

Super Merlin £2, o.n.o. R. Hudson, 28 Low Albion Street, Wilton Park, Bishop Auckland, Co. Durham.

Two E.D. Comp. Specials 30s. each. AEROMODELLERS complete, June, 1947 to December, 1959. What offers? Cary, 31 The Mead, Wallington, Surrey.

Brand new, E.D. PCI Tx and Airtrol RX with F.R. Compound escapement £11, o.n.o. R. Clarke, 5 The Pastures, Cheriton, Alresford, Hants.

K. and B. ·45 R/C £6 as new. Veco 35 £5 as new. Rogers, "Basildon", Chorley Road, West Wycombe, Bucks.

Genuine bargains guaranteed to be in good condition. Professionally built high power crystal controlled TX, 6v. power feed from car battery, telescopic aerial, meter, etc. £8. E.C.C. hand-held Tx with microswitch keying, including batteries £3. Wright Rx and Relaytor plus batteries, perfect £5. Ditto as new £6. New U9Reely and lines £3. Four Jaico type relays 3,500 ohm. £2. Price, Westerland Cottage, Westerland, Paignton, Devon.

Unused O.S. 29 Multi-speed £4 15s. E.C.C. 951B Transmitter and Receiver £3 10s. Transitrol Receiver £3, o.n.o. Lindsay, The Bungalow, Mid Shawton Farm, Chapeltown, Nr. Strathaven, Lanarkshire.

Amco 3·5 BB 45s. E.D. Bee Mk. I. 25s. Ashworth, 24 South Royde Avenue, Halifax, Yorks.

One re-worked Oliver £5 5s. One P.B. Elfin 2·49 35s. One McCoy 19 £3 10s. One McCoy 29 Super Stunt £3 10s. Jet-master and fuel 15s. All excellent condition. I. Mackay, 10 Kilmarnock Road, Mauchline, Ayrshire.

McCoy 29 Red Head £5. A.M.35 50s. Fox 15 new, £3. Foreman, 155 Earlham Grove, Weston-super-Mare, Somerset.

Well built, unflown, Mercury Aeronca Sedan £9, o.n.o. A.M. 35 40s. Hunter 50s., s.a.e. Rubie, 12 Raglan Court, South Croydon, Surrey.

Must sell: OMU 205D crystal controlled hand Tx, as new. Offers to Box No. 621.

Selling up: Bambi 30s., battered "Bee" (less carburettor) 10s.; Frog 2·49 B.B. modified, less liner 20s. Apply: Linton, 8 Hodge Street, Blackley, Manchester 9.

Mills P.75 33s. Mills P.75 42s. 6d. Mills 1·3 (1) 17s. 6d. Allbon Spitfire 32s. 6d. Javelin I 32s. 6d. Javelin II 43s. 6d. Amco PB35 37s. 6d. Rapier (Air or W/C) 85s. Webra Record (new) 70s. "Sea Commander" Kit 50s. All in very good condition. Sgt. Brambley, Sgt's. Mess, R.A.F. Bassingbourn, Herts.

Frog 80 17s. 6d.; Frog 180 £1; E.D. Bee £1; Hornet 25s.; Comp. Special 25s.; Frog 150 25s.; Elfin 2·49 27s. 6d.; Watercooled Bee with Flywheel, Universal Coupling 40s.; A.M. 25, A.M. 35 30s. each. All above engines good condition. Allbon Javelin 7s. 6d. P. Moreton, "Rockcliffe", Midland Road, Wellingborough.

Continued on page 279

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FOR SALE—*Continued from page 277*

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R.E.P. Transistorised 6-reed Rx. as new £10; E.D. 3-reed £6; Sea Commander launch, complete with Taplin Twin £12. Lilleystone, 325 Upper Elmers End Road, Beckenham, Kent. Bec 2420.

As new Frog 500 45s.; Dart 32s. 6d.; Frog 150 30s.; AEROMODELLER Annuals '53, '55, '56, '57 20s.; 80 Model Aircrafts AEROMODELLERS '53 '57 30s., o.n.o. Pearson, 25 Stirling Road, Melton Mowbray.

E.D. Hornet £1 Albon Merlin 15s. Merlin needs new con-rod and spray-bar assembly. (unflown) Hampton, 18, Ponderlaw Street, Arbroath, Angus.

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E.D. P.C.I. Transmitter, Transitrol receiver £7, Frog 349 30s. Bambi 15s. Matthews, 30, Charles Street, Tring, Herts.

Elfins 1·49 c.c. 30s. and 1·8 c.c. 35s. o.n.o. 5 c.c. Owatt, offers, also Elmic Diesel Timer (new 12s. 6d.) and Eindee Timer, perfect. F. Smith, 10, Eastbrook Road, Portslade, Sussex.

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10 c.c. Anderson Spitfire, Ohlson 60', O.K. Super 60, or Super Cyclone. Spark Ignition only. Details to Bill Blake, 53A The Green, Southwick, Sussex (Southwick 3651).

Engine collector returning to America, wishes to obtain 1·5 c.c. Oliver "Tiger Cub". Will consider damaged one. All letters answered. Box No. 620.

Urgently Oliver Tiger III, damaged one considered. Write: A. A. Parker, 12 Alexandra Terrace, Exmouth, Devon.

Aeromodeller wants drawings (any scale), phots, gen. on Avro Anson. B. Cramp, 111 Fulwell Road, Fulwell, Sunderland, Co. Durham.

WANTED: Diesel and Glow Engines in good condition, for cash or exchange. Hobby Supplies, 4 Station Parade, Burlington Lane, London, W.4. CHIswick 9930.

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Ex-Government Stop Watches, 45s. Illustrated leaflet on request. Charles Frank, 67-73 Saltmarket, Glasgow, C.1.

Catalogue No. 14 Government Surplus and model radio control. Over 500 illustrated items, 2s. (refunded on purchase). P/P 6d. Arthur Sallis Radio Control Ltd., 93 (A) North Road, Brighton.

Tatone Clockwork Timers. Fuel shut offs (0—20 secs.) and D-Ts. (0—6 mins.). Weight only ½ oz. 30s. each post free from Dave Posner, 61a Canfield Gardens, London, N.W.6.

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American K. and B. Engines: 45 R/C £11 10s.; 23 R/C 15s. 35 R/C £9; 19 R/C £7 15s.; S.29 £6 10s. 15 £4 17s. 6d. 09 £4 10s.; Ohlsson Plugs with Idle Bar 9s. each. Le-Core Bros., 373 High Street, Chatham, Kent.

BOOKS

MODEL AVIA—the monthly magazine for model flying in Belgium. Send for free specimen copy and subscription details. Model Avia, 67 Avenue Victor Emmanuel III, Uccle, Belgium.

SAILPLANE AND GLIDING—Published every month. Send stamped addressed envelope for descriptive leaflet; or 2s. 10d. for current copy; or 17s. for a year's subscription to British Gliding Association, Dept. A, 19 Park Lane, London, W.1.

American magazines. Year's subscription, *Model Airplane News*, 39s. Full catalogue free. Willen Ltd. (Dept. 1), 9 Drapers Gardens, London, E.C.2.

Fascinating floating saucer experiments. "Driving Whirlwinds", by Robert Morison, 2s. 9d. post free. Lew Singer, 3 Kent Road, Acton Green, London, W.4.

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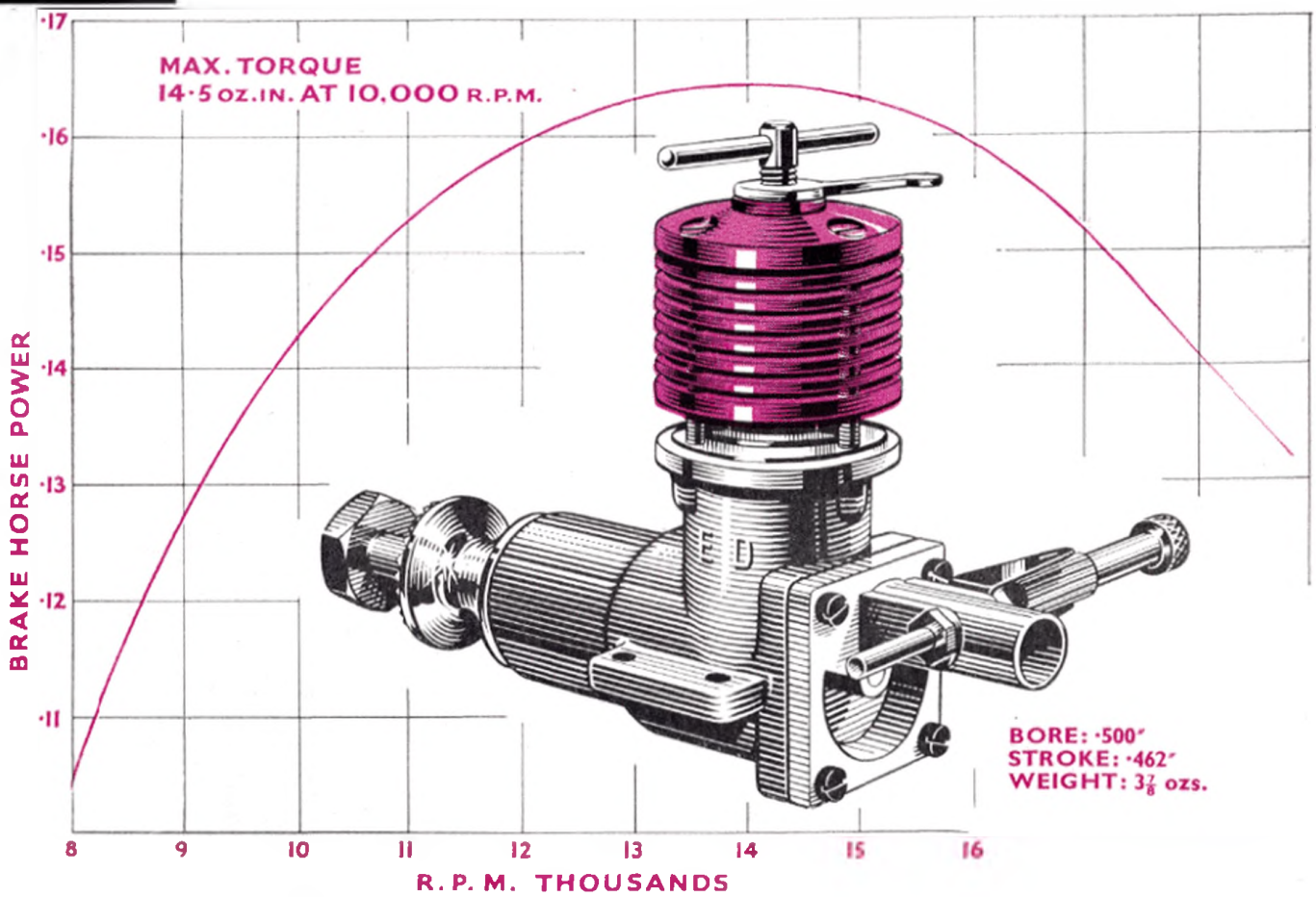

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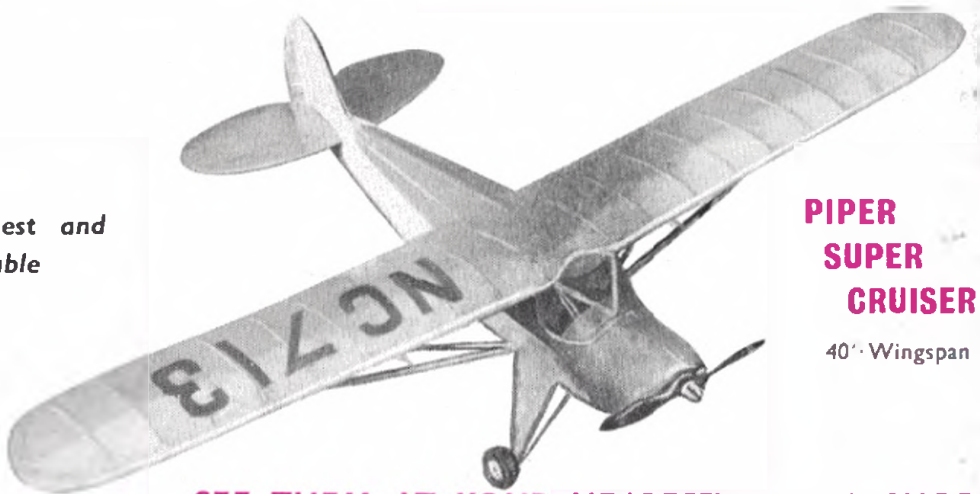

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