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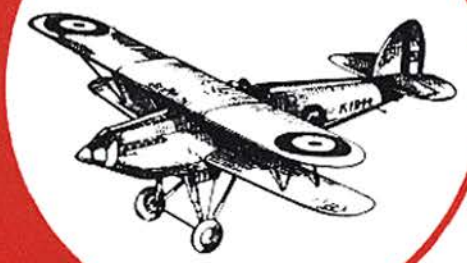

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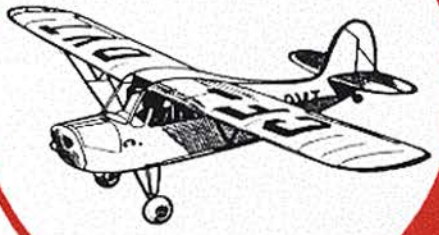

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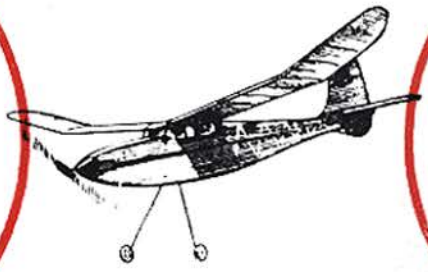

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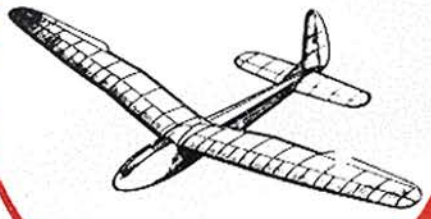

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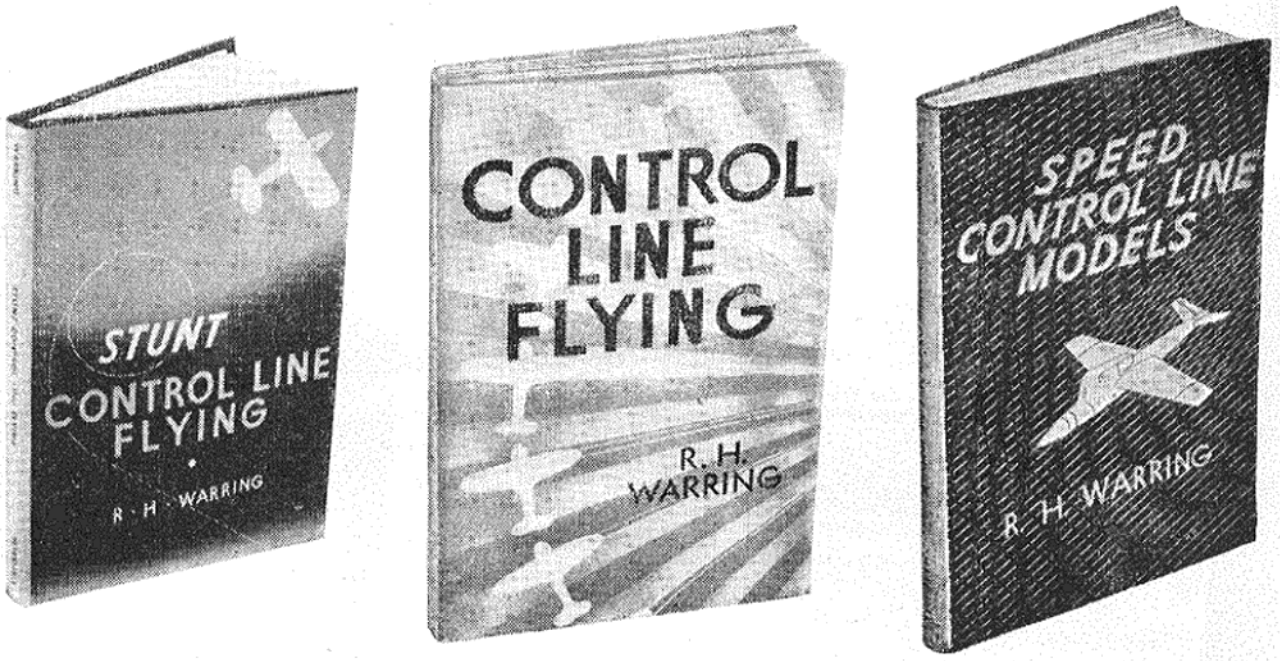

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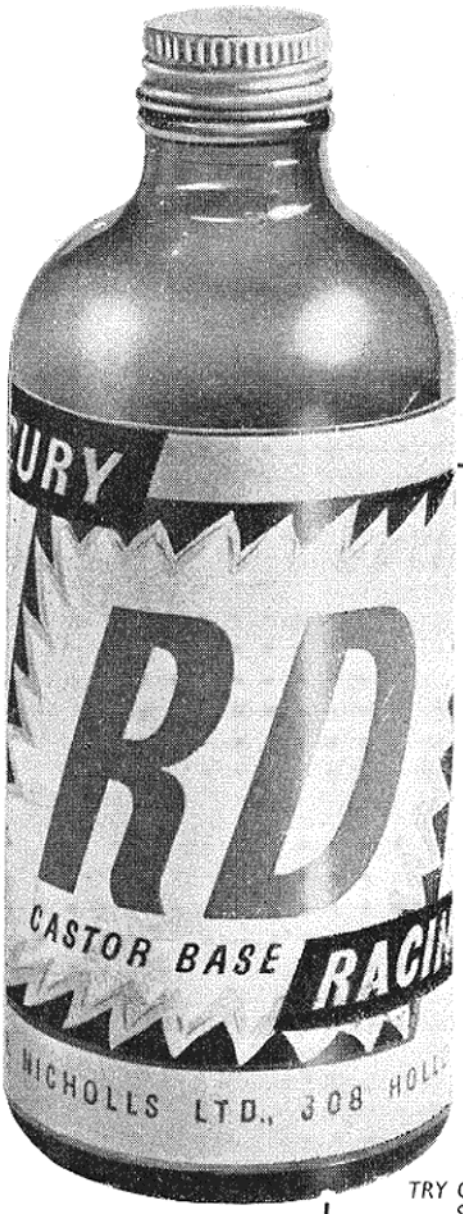

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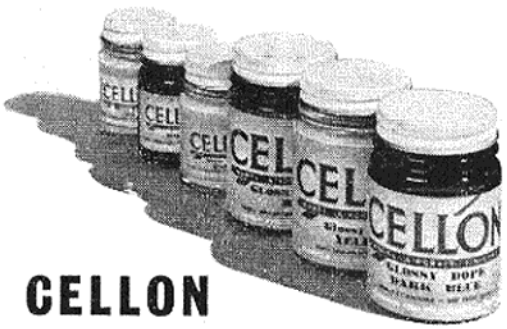

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The official Journal of the
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ENGINEERS

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3½ Hour R/C Glider Record

A TRUE example of team effort has been the steady raising of the radio controlled glider record by members of the Northern Heights Club. A pooling of ideas between R/C and aircraft experts has produced a model that the builders are confident will, given the correct weather conditions, enable them to seriously attempt obtaining a world record.

The current claim for a British record of 3 hr. 39 min. 27 sec. awaits ratification by the S.M.A.E., but who knows, by the time this is through there may be another claim pending?

Flights take place at Ivinghoe Beacon, Dunstable, and the pilots for the above record were Geof Warwick, Malcolm Young and Bob Copland, as apparently the concentration required to keep a model in soaring currents for flights of this length, makes a ½-hour-on, 1-hour-off system essential.

New Award

A NEW addition to the S.M.A.E.'s prize list is the Arthur Mullett Memorial Trophy. This is to be awarded annually to the person who in the opinion of the Council has done most to raise the prestige of British aeromodelling, or who has performed the most sporting action or gesture of the year. This trophy is unique as it can be awarded to anyone, unlike the other cups which are awarded exclusively for contest successes. A worthy manner to perpetuate the name of a popular figure, who although not an active flier, worked for many years behind the scenes of the model movement.

On the Cover

A background of land and sea provides the identifying clue to this month's cover subject—the Grumman Tracker, designed as a sub hunter and in service with the Royal Canadian Navy. Photo is by courtesy of *Flight*.

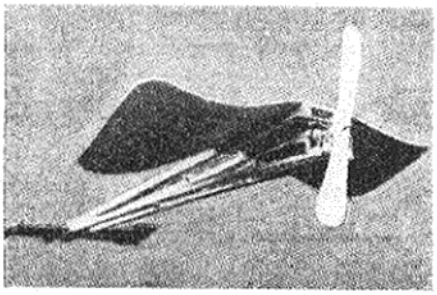
Early Electrics

UNDER the title "Short Circuited" reference was made in the last S.M.A.E. News Sheet to the recent flights made with an electrically-driven model aircraft by Col. H. J. Taplin. John O'Donnell of the Whitefield Club drew attention to the fact that an article appeared in our companion journal the "Model Engineer" on October 21st, 1909, describing the efforts of a Mr. J. L. Cannon of Bowes Park.

with his electrically powered models. As this has created some interest and discussion we are reprinting below the article concerned, together with the original photo and drawing of one of the models referred to:—

THIS model is of interest, being electrically driven and tried in a somewhat unusual way. The following description is from some particulars kindly supplied by the owner, Mr. J. L. Cannon, of 61, Belsize Avenue, Palmerston Road, Bowes Park, N.:—

Base is made of four sticks of American white-wood, each ⅜ in. by ⅜ in.; they are 2½ in. apart at one end and meet at the other, and held together by two pieces of wood nailed at the sides. The design, as will be seen from the illustration, is of the monoplane type. The main plane is made of thick cardboard, 18 in. across the tips by 5½ in. breadth. The rear plane is 11 in. across the tips by 3¼ in. breadth. This includes two

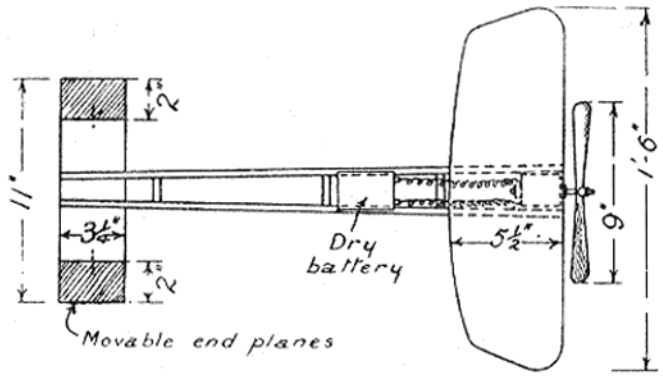


The model shown in diagram below.

small movable end planes which are each 2 in. in width. A two-bladed screw propeller is placed at the front; it is 9 in. dia.; blades, 1½ in. breadth at the tips made of a single piece of American oak ⅛ in. thick twisted out of the straight; the blades are ¾ in. breadth at the centre, and canted about ¼ in. It is driven by a compound wound electric motor working at 4 volts pressure, current being supplied by the refill dry batteries for a pocket electric lamp, and is attached direct to the motor spindle, which has been extended by a piece soldered on. The weight of machine and motor is 1½ lb., or with batteries on, just under 2 lb. Our readers will notice that this machine is similar to the Bleriot monoplane, but it has no vertical rudder. Steering to right or left is accomplished by either of the two small end planes situated at the rear. If these two planes are both dipped the machine rises, this position being used when starting.

When the machine is to be used a short length of strong rubber is attached to the under side of the frame, a light line is attached to the rubber, the object being to absorb any sudden jerk when pulling down. An assistant holds the line loosely, and the operator launches the machine off a tall pair of trestles. It then flies in a large circle, plenty of line being played out at discretion. When the batteries are exhausted the machine descends slowly, and is caught by the operator before it reaches the ground. The highest flight yet accomplished is about 35 ft.; duration 8 min., approximate. Mr. Cannon calls this machine an electroplane, and considers that an electrically-driven model is better than an indiarubber-driven model to experiment with. He states, however, that the batteries become exhausted very quickly, so that convenience is obtained at some expense if many flights are made. A drawback to electric propulsion is also heaviness, but this does not matter if a high number of revolutions per minute is used. In a recent experiment a higher voltage was tried with the result that the motor winding fused somewhere. Mr. Cannon concludes from this that there is a limit to the number of revolutions possible to obtain.

It is gratifying to find an experimenter having the courage to use an electric motor and battery to drive his model, instead of the almost universal twisted rubber cord. That electricity is not hopelessly outclassed seems evident by Mr. Cannon's sad story of the loss of an electrically-propelled model of the box type, which, imitating the unfortunate dirigible La Patrie, broke away one evening in the early part of this year, and flew into the unknown, the course being from Belsize Avenue over the Alexandra Palace. The lifting surface of this machine was about 12 sq. ft., and it carried an electric accumulator weighing about 6 lb. Mr. Cannon, though highly gratified at the flying capabilities of his machine, still deplores his loss. If any of our readers have found a derelict aeroplane which appears to be the long lost one, perhaps they will be kind enough to communicate with Mr. Cannon.



DIAGRAMMATIC PLAN OF AEROPLANE.

THE WORLD CHAMPS

In lighter vein

WE WON'T FORGET . . . the utter amazement on the faces of the Czechs, Dutch and Germans when Bob Burgess gave a real Yorkshire rendering of the " Blaydon Races " one evening.

★

. . . true Irishman Patrick Kieran Smith, that fair isle's sole representative, who had us all in fits—and knots !

★

. . . playing " wet nurse "—literally—to Harry Hundleby of our contemporary, all the way across Germany and Belgium. A Czech mosquito took a fancy to Harry's ankle—which rebelled and swelled. A wet towel was the answer—as the photo above shows.

★

. . . the only shirt of its kind, as worn by Gerry Ritz, the American team manager. Gerry printed the model motif on the material by the silk screen process, then had it made up into the shirt. The result, while certainly distinctive, was also blinding in a not-so-subtle shade of orange !

★

. . . our team manager climbing into a large bath, which promptly up-ended. Spluttering after the resultant " tidal wave," and thinking his gross weight must be fairly high, he climbed out only to find one of the legs of the bath was missing !

★

. . . the hordes of autograph hunters, who wanted the British to sign anything and everything.

★

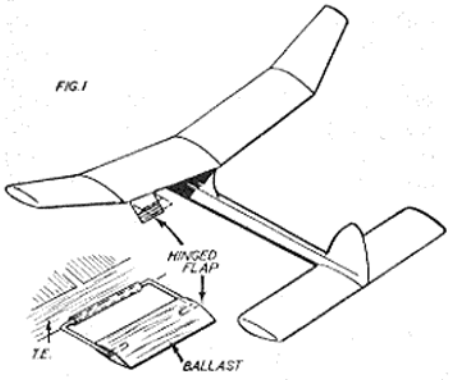
. . . and finally the team manager who was a constant inspiration to us all. . . .

SAFETY IN TURNS

demands a SPECIAL *trimming technique*

The " tilted tail " technique has long been in favour with experts, such as Norman Marcus.

AS every flier knows—or soon finds out—trimming a model for a safe turn in flight is often a tricky business. Any powered model —whether driven by a rubber motor or an engine—will have two distinct trimming speeds, one under power and one on the glide. Since turn trim is largely bound up with flying speed, achieving a balance between power on and power off trim for



consistent, circling flight, usually demands very careful adjustment.

On the glide a model is usually flying quite slowly. With the best duration trim, in fact, just below the stalling speed. Since rudder power is related to flying speed (actually the square of the speed), what is a comparatively mild turning force on the glide can become excessive under power, when flying speed is much higher. Hence the use of rudder offset for turn trim on a power model must be strictly limited or preferably avoided altogether.

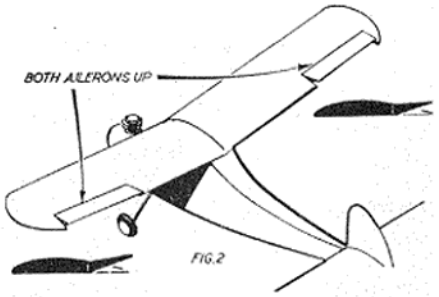
Power models, too, introduce another turning force of their own—torque. With conventional propeller rotation (anti-clockwise), this tends to make a model turn to the left under power. However, in the case of models with pylon mounted wings the natural turn under power may be reversed, due to slipstream effect on the pylon side area.

When a model goes into a turn under power another force is generated due to the gyroscopic effect of the rotating propeller. This tends to lift the nose *up* in a left turn and push it *down* in a right turn.

Take rubber-powered models first as these do not have the exaggerated power on force reactions of a high-climbing power duration model. The rubber motor gives a progressively diminishing power output, starting with an initial burst of high power. If trimmed, or allowed, to turn to the left *with* torque the initial burst of power will tend to pull it up into a stall, assisted by the nose-up gyroscopic reaction. Hence it is much safer to trim *all* rubber powered models to turn to the *right* under power.

The most common method of doing this is first to adjust the glide circle, usually for a right turn. Then use side-thrust packing to the right to overcome the torque force under power so that a similar smooth right-hand circle is obtained under power. Sidethrust must not be overdone, otherwise it will pull the model into a spiral dive to the right. Downthrust may still be necessary to " kill " the initial stall, even with a right-hand turn, but the use of sidethrust means that far less downthrust is necessary for the same overall effect. In general, some downthrust is nearly always necessary if the c.g. position is 50 per cent. of the wing chord, or forward (the farther forward the more downthrust required), but the amount required decreases appreciably the farther aft that the c.g. is. Also the tighter the power-on turn to the right, the less the downthrust required.

One characteristic of a rubber model gliding with a free-wheeling propeller is not often appreciated. The free-wheeling prop has considerable " steering " influence and the glide turn will vary with alteration of **sidethrust** packing. If the free-wheeling propeller is pointed straight (little or no sidethrust packing) a considerable amount of rudder offset may be necessary to get a circling glide path—too much to use under power. Hence sidethrust can be useful on the glide as well as under power on such models.



A similar trimming technique can be adopted with low- and moderate-power sports type power models, although since the power output or thrust is constant with an engine there is no objection to letting the model circle to the left under power, provided there is no strong stalling tendency present in the design set-up.

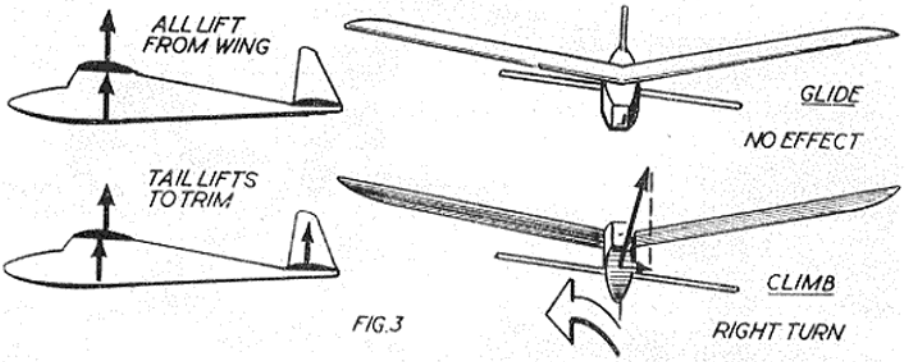


FIG.3

Using rudder for glide trim, a very safe arrangement is then a right glide circle (given by rudder offset) and a left "power on" circle produced by torque overcoming rudder reaction. The amount of left turn can be increased by increasing the propeller pitch and thus slowing the engine; or decreased by using a finer pitch propeller.

This technique of turning under power *against* rudder offset is often used with fast-climbing power models, although usually pylon-type models are made to turn to the right under power, or substantially straight. Any rudder offset is usually critical—and dangerous—if in the same direction as the power on turn, whether apparently compensated by side-thrust or not. Rudder trim is so critical, in fact, that it is usually considered best design practice to build the fin integral with the fuselage so that it cannot be accidentally displaced, and dispense with a rudder tab entirely.

A practical method of getting a glide circle then is by fitting a small hinged flap to the trailing edge of one wing (usually the left wing), near the middle of the semi-span—Fig. 1. At high speed, e.g. under power, this flap trails out flat and has little or no effect on trim. When the motor cuts and the speed drops, the weight of the flap is no longer fully supported by the airstream, so it trails down and produces a drag force to turn the model in that direction. Its effect can be varied by adding ballast to it—a simple and practical method of glide turn trimming which works well on any size or configuration of power model which has a slow gliding speed. However, its main application is for duration model trimming.

Alternative methods of producing turns are—(a) ailerons, (b) pendulum rudders, (c) tilting the tailplane.

(a) *Ailerons*—these do not have the same effect on models as on full size aircraft. Differential aileron displacement tends to produce a strong rolling force which can put the model into a spiral dive. The only effective way of using ailerons on models as stabilising trim appears to be with both ailerons *raised* and then adjusted to different angles for turn trim. Generally their effect is then less drastic than rudder offset. —Fig. 2.

(b) *Pendulum rudders*—have their exponents who swear by their effectiveness; and almost every experienced modeller who has *not* used them will condemn them out of hand! Suffice it to say that their performance cannot be regarded as consistently reliable although they may give quite good results on a sports type or scale model.

(c) *Tilted tailplane*—is a very effective and usually non-critical method of adjusting for turn, but its behaviour is bound up with the rigging of the model. The rule is that the model will turn in the direction of the raised tip, but its reaction is most favourable the farther aft the c.g. position. Since duration models are commonly rigged with the balance point well aft, tailplane tilt is an effective method of trimming. On sports type models, balanced well forward, tailplane tilt may have little effect on normal flight, but a strong effect under a change in flight conditions.

If the model is balanced at the point of wing lift, for example—Fig. 3—the tailplane is contributing no lift at all under this flight trim. Hence tilting the tailplane will not have any effect. This could correspond to glide trim. If the model is made to fly faster—e.g., under power—the trim will change so that the tailplane has to carry an appreciable load. Hence the effect of the tilted tailplane, as far as turn is concerned, will become quite marked.

Where the model is balanced with the c.g. well aft, the tailplane will be carrying a fair proportion of the total weight—that is, it will be developing lift—on the glide—Fig. 4. Hence tailplane tilt will be effective in trimming for turn. At higher speeds tailplane lift will tend to decrease—or should do so, if the design is stable—and the turning effect of the tilted tailplane will decrease a little. Hence this is a safe trim. If the model speeds up, the turn will tend to open out, unlike rudder action, or a tilted tailplane with a forward c.g. position, where an increase in speed increases the turning effect. To get an appreciably constant effect from a tilted tailplane the corresponding c.g. position for rigging is about on the trailing edge of the wing; but for c.g. rigging positions from 50 per cent. of the wing, aft, tilted tailplane trim is generally safe. It is not, however, particularly good if used in conjunction with a tight circling trim.

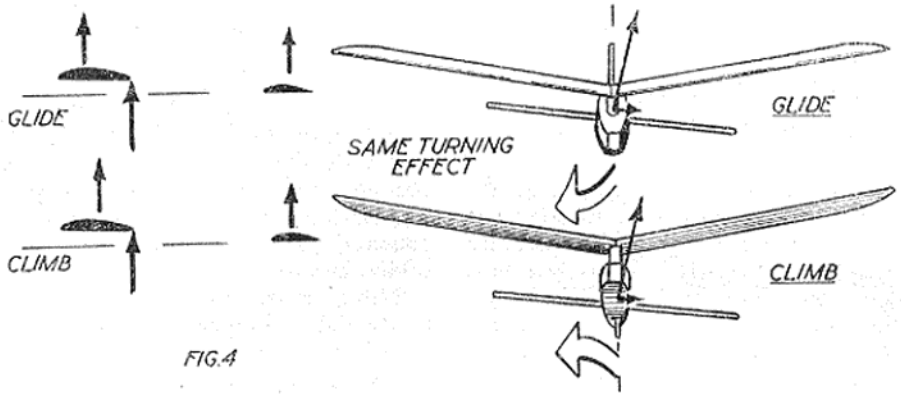


FIG.4

R/C in a Nutshell

OF radio-controlled model aircraft, an expert F/F and C/L modeller was once heard to remark: "A hundred hours' work for ten minutes' flying."

There was once more than a grain of truth here: partly through the fault of R/C enthusiasts themselves and partly because of the very nature of radio-controlled model flying. Some of the people who have taken up R/C flying in the past have been radio experts and not model fliers. They have often tended to underestimate the importance of a thorough knowledge of F/F model aircraft, as the sorrowful sight of many a heap of splintered balsawood and wrecked radio apparatus has testified. Equally to blame were the modellers who thought they could enjoy radio-controlled model flying with no more attention to servicing and pre-flight checking than they would give an A-2 glider.

The NEW M.A. BEGINNERS' COURSE PART XX

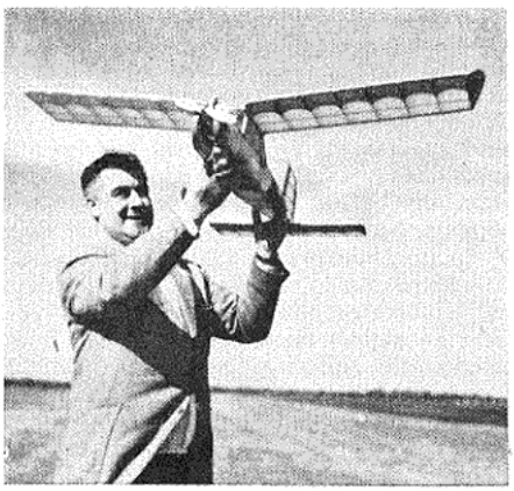
If your only interest in the hobby is to see your model finished as quickly as possible and to fly it without more ado, you are advised to forget all about R/C and stick to gliders or control-liners.

If, on the other hand, you are happy in spending several weeks of spare time building a model, installing the equipment with care and thought and, when you get to the airfield, are prepared to fly only if and when everything has been checked and rechecked and found perfect, then there is absolutely no reason why you should not join the growing band of enthusiasts who are enjoying what is, undoubtedly, the most satisfying branch of model aeronautics. You do *not* need to know all about radio theory. A knowledge of radio will help, but, today, most commercially-built model R/C apparatus is sufficiently reliable to enable anyone to install and operate it without difficulty.

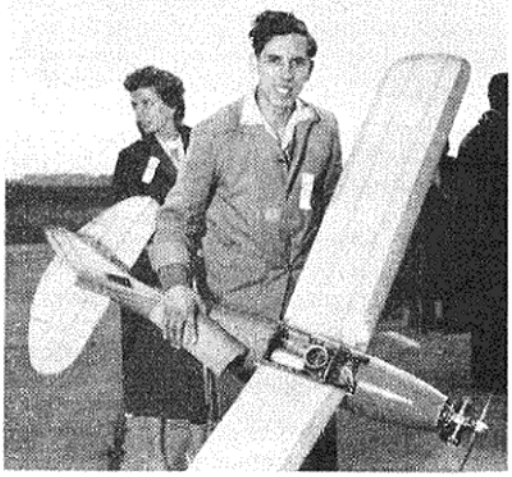
R/C models are now becoming clearly separated into a number of different types, ranging from the simple, lightweight, single-control machine, adapted from a standard F/F design, to big, specially-designed, multi-channel aircraft equipped with everything from engine throttle control to wheel brakes.

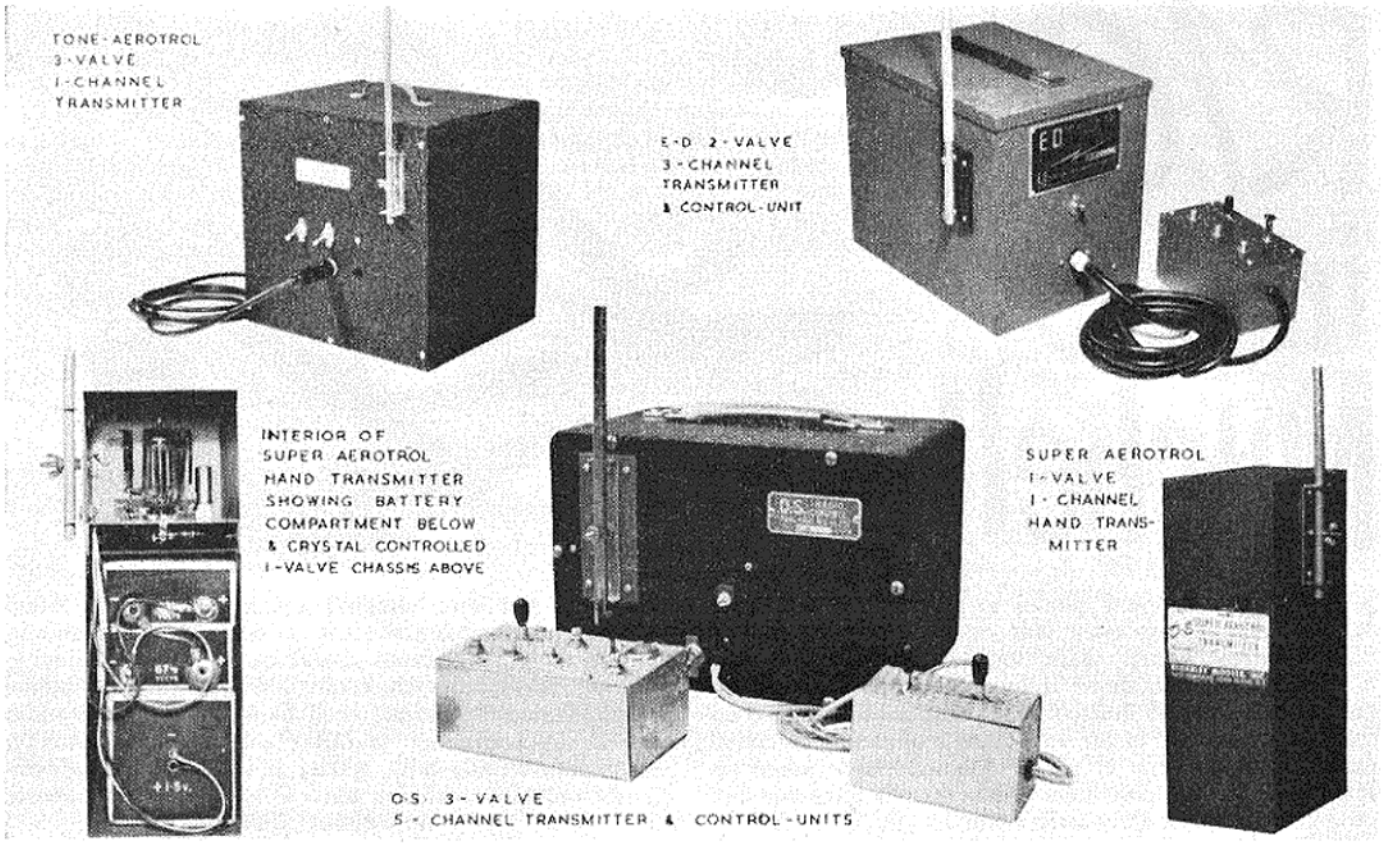
The most advanced R/C model flying seen to date has been in the United States—particularly in California. Here, aided by weather conditions which permit all-the-year-round flying and, therefore, much valuable practice, a number of highly skilled modellers have succeeded in performing the sort of flights which have been the dream of model aeroplane enthusiasts ever since the hobby started.

The type of model used by these experts is invariably a "multi-channel" job. That is to say, the R/C equip-



Our heading photo shows a fine R/C model flying-boat, the American Berkeley Sea-Cat. Left: a small British kit design for lightweight single-channel control, the Veron Skyskooter. Right: one of Europe's most outstanding R/C modellers, Karl-Heinz Stegmeier, with his 8-channel model fitted with pneumatically operated controls, It has rudder, elevator and engine control, plus a nosewheel brake and parachute release.





ment is of a pattern which permits independent movement of a number of different controls, supplementary to the standard rudder control. Usually, these extra controls include elevators and a throttle, or similar mechanism, to alter engine speed. In addition, the model may be fitted with ailerons, wheel-brakes and a steerable nose or tailwheel.

With such a set-up, the expert starts his engine, throttles down and taxies the model away from the transmitter under its own power. When it reaches the take-off point, he turns the model into the wind and then, under full power, sends it speeding down the runway to lift off and climb swiftly and steadily to 1,000 ft., or more. Next, " down-elevator " and the model is in a screaming dive, the engine note rising, 40, 50, 60 miles an hour. The pilot neutralises the controls, moves the elevator to " up " and the model loops, once, twice, thrice. Now the model is climbing again, this time to peel off into a true vertical spin, wings rotating about the fuselage as it plunges earthwards. The pilot pulls out, reduces engine speed and brings the aircraft back over the runway. It turns, settles on to the concrete for a " touch-and-go " landing and, as the pilot presses the motor control button to open the throttle, quickly takes off again. Now, a wide climbing turn, then the machine rolls over on to its back, cruising along in inverted flight. Back on an even keel, another circuit and now a barrel-roll. More climb and then, something not permitted with most full-size aircraft, and outside loop. Back to the runway, engine throttled back, the model touches down smoothly, slows, is taxied back to the transmitter and braked to a standstill as the motor is cut.

Such is the standard of radio-controlled flying that has been reached among the leading U.S. exponents. But it has taken years of development work on both aircraft and radio equipment and, most important of all, practice, practice and more practice in flying the models. Such models are, very definitely, not for beginners in R/C, no matter how expert they may be in other branches of model flying. For the newcomer, the wisest choice is a relatively simple model equipped with rudder control only.

This type of machine can be basically a F/F type, inherently stable and thus capable of recovering quickly when left to its own devices. The type of control used is a simple self-neutralising system, operated by a single press-button key on the transmitter. Holding the button down causes the rudder to move over a fixed amount. When the button is released, the rudder springs back to the central position again. If the transmitter key is pressed again, the rudder moves an equal amount in the other direction, returning to neutral as soon as the button is released. Thus we have a simple sequence: left, neutral, right, neutral, left, neutral and so on.

It may be thought that this simple three-position rudder permits only directional control, but, in fact, a " rudder-only " model can be made to perform numerous different manoeuvres, including loops. This depends on the design of the model itself and on the " rudder-power " used, i.e., the size and angular movement of the rudder.

At first you will be well advised to use low rudder-power; a rudder that is not too big and has a small movement—perhaps $\frac{1}{8}$-in. or $\frac{3}{16}$-in. each way. Even with this small amount, however, you will notice that the model automatically banks in the direction of the turn. This, of course, is because the inner wing is moving through the air at a slightly lower speed than the outer wing and, consequently, suffers a slight loss of lift. If the rudder is now adjusted to give a tighter turn, it will be found that, by holding the control button down, the model will bank steeply and enter a spiral dive. This should be attempted only from a safe altitude (say,

500 ft.) and the model can then be made to spiral down for four or five revolutions during which time it will pick up considerable excess flying speed. If the transmitter button is now momentarily released and pressed again to give opposite rudder, the model will be brought out of its spiral and the excess flying speed and extra lift of both wings will quickly cause it to zoom upward into a climb. If the rudder is now neutralised and the timing judged correctly, the model will climb past the vertical and complete a loop.

Many other manoeuvres, such as stall turns and Immelmann turns, are also possible with a rudder-only model, although, if the utmost stunting ability is required with rudder-only control, a specially designed model, rather than one suitable for beginners, is, of course, preferable.

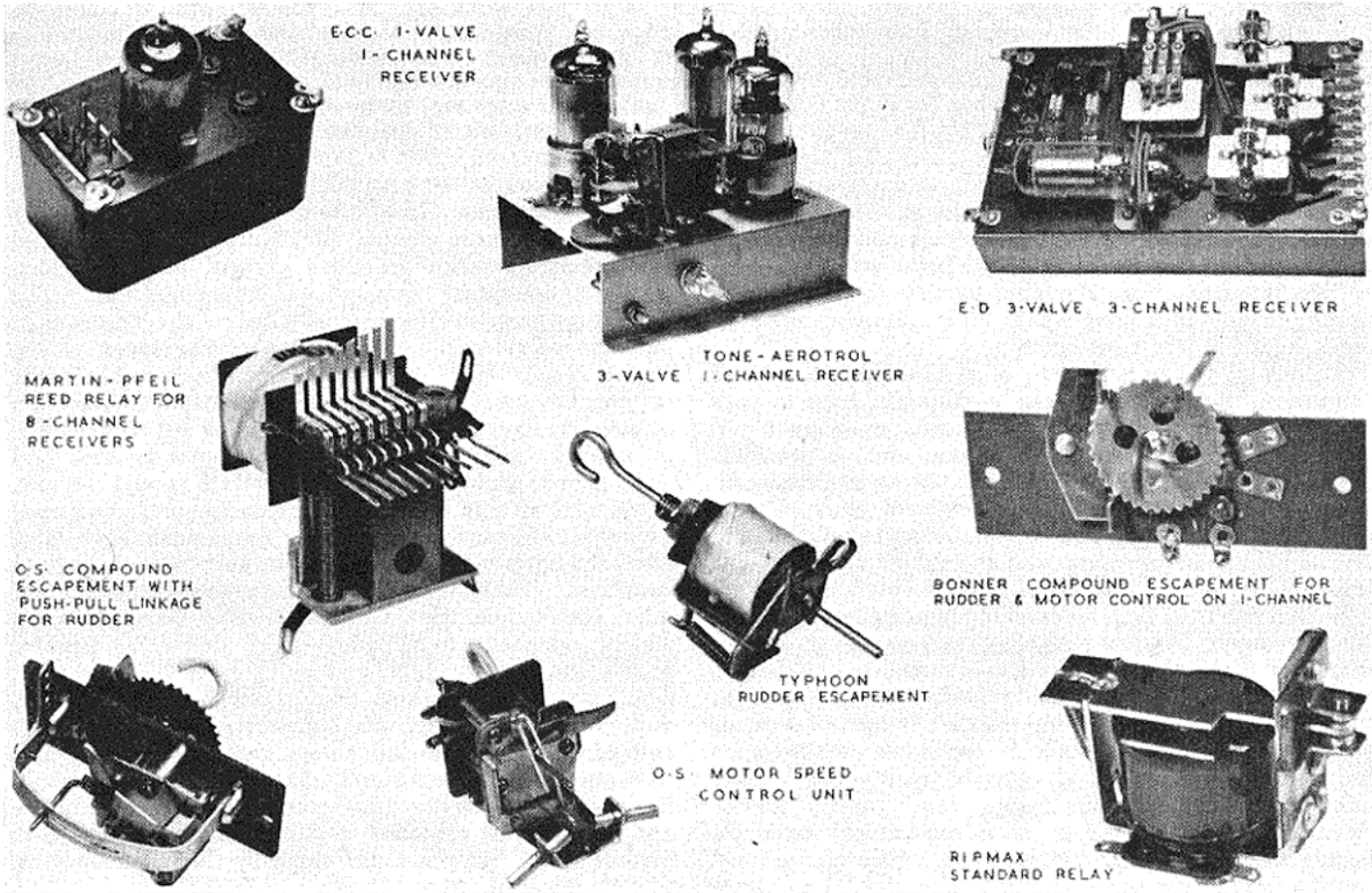
The simplest type of R/C system consists of (1) a *transmitter*, for generating and radiating the radio signal; (2) a *receiver*, installed in the model for picking up the signal and converting it into electrical energy capable of operating an electro-magnetic switch, known as a *relay*, and (3) an *actuator*, an electro-mechanical device, which is switched on and off by the relay, and operates, in turn, the rudder.

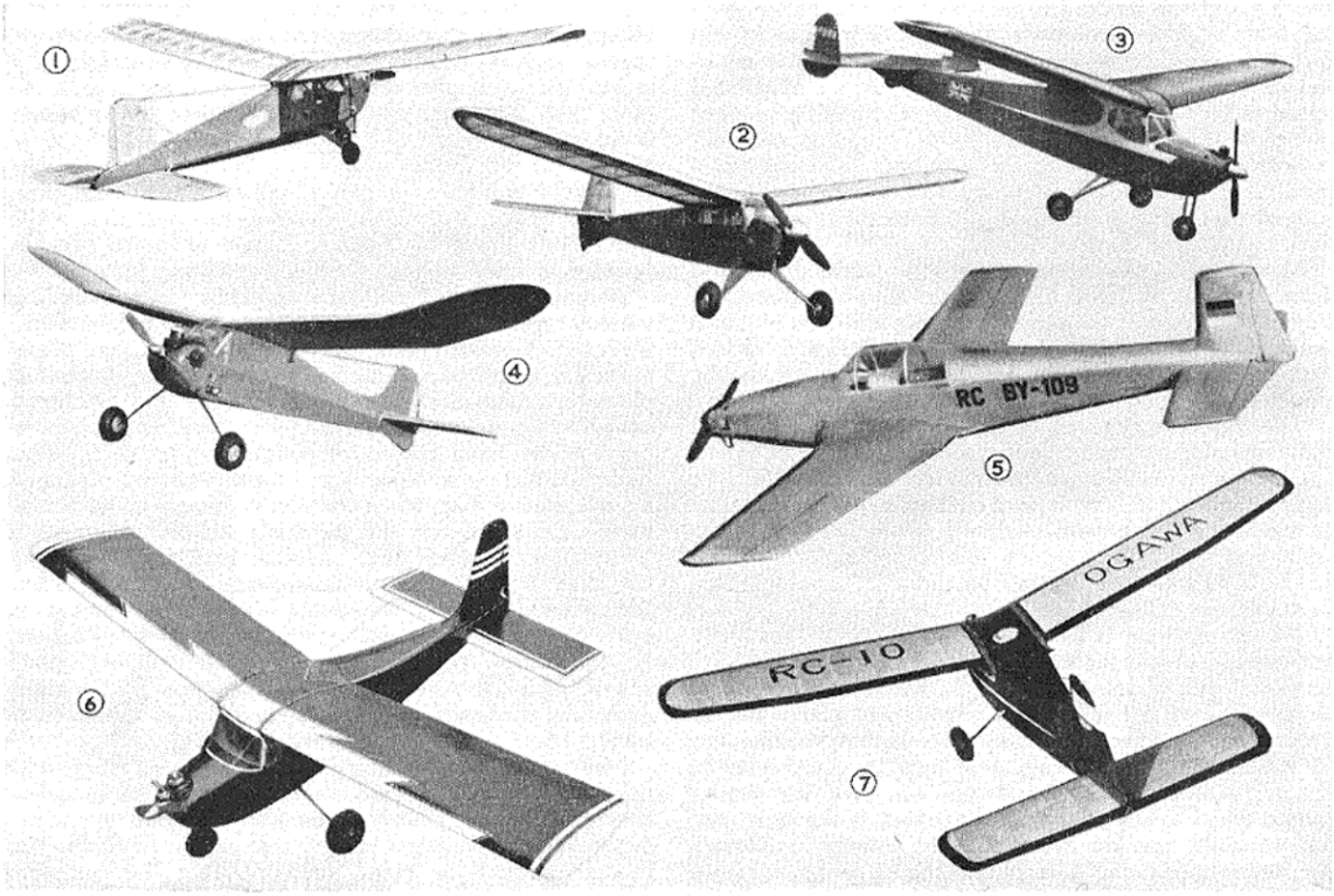
The transmitter is usually a simple one or two-valve self-contained portable unit housed, complete with batteries, in a metal or plastic case which has a sectional or telescopic aerial fitted to it. It may be placed on the ground and connected to the push button sending key by means of a flexible lead, or it may be constructed in the form of a lighter, hand-type set with the keying button fitted to the case. Dry batteries, of the type used for portable wireless receivers, are usually employed, the h.t. voltage being 90-150, and the l.t. being 1.5 volts.

Receiver types are somewhat more varied and may utilise one, two or three miniature or subminiature valves, or may incorporate transistors. The weight of a typical single-channel model aircraft receiver may be no more than 3 or 4 oz., the batteries required for operating it adding a further 3-5 oz. According to the type of receiver circuit, an h.t. supply of between 45 and 90 volts is most commonly employed, obtained by coupling together 22½-volt or 30-volt hearing aid batteries, while the 1½-volt l.t. is obtained with two or more pencells coupled in parallel, or a flashlamp cell.

Actuators are now in many different forms including various types of electric motor driven servo mechanisms, while, in Germany, an ingenious engine-driven pneumatically operated system has proved highly successful. However, these are mainly intended for multi-controls and the simple rubber-driven electro-magnetic escapement is the usual choice for rudder-only models. This device consists of a solenoid and a pawl system, arranged in such a way that, when the coil is energised, an armature is pulled in and the pawl is permitted to rotate a quarter of a revolution. Motive power for rotating the pawl is supplied by a simple rubber motor. When the current is cut off, the spring-loaded armature moves out again and the pawl rotates another quarter revolution. It is, of course, quite a simple matter to couple the pawl spindle to a rod which will move the rudder left or right each time the actuator circuit is energised by the receiver relay.

Most escapements require a minimum of 3 to 4½-volts (4½-6 volts being preferred) and the weight of the complete control actuating gear will be in the region of 3-5 oz. depending on the size of battery that can be carried in the model. It will be seen, therefore, that the complete





Examples of R/C models. 1—A famous American design, Dr. Walter Good's 74-in. Rudderbug. 2—A popular British kit model, the Keilkraft Junior-60. 3—An attractive 6-ft. span rudder-only model by Sqn. Ldr. Ware, R.A.F. 4—A well-known American rudder-only kit model, the Berkeley Super-Brigadier. 5—A German scale type multi-control model by H. Bernhardt; it has eight-channel equipment controlling rudder, elevator, ailerons and engine speed. 6—A typical example of the modern trend in R/C design, a 48-in. Japanese built model, having relatively high wing-loading (20 oz./sq. ft.), fitted with rudder and 2-speed engine control. 7—Another Japanese model: of 59-in. span, it has O.S. equipment, including compound escapement and motor control.

radio installation for a simple rudder-only layout can be achieved within a weight of about 12 oz. (It is possible, by using the lightest available receiver and escapement and the smallest batteries, to reduce total weight to 8 oz., or less, but this means reducing battery capacity to the minimum and to a level which means frequent replacement in the interests of safety.)

To ensure the preservation of a reasonable degree of robustness, the model, should, preferably, have a bare weight of about twice that of the radio equipment it is required to carry and the minimum size of our R/C model will, therefore, be dictated, to some extent, by these requirements. For a total weight of 36 oz., a wing loading of 12-13 oz./sq. ft. is reasonable and would require a wing area of between 400 and 432 sq. in. This suggests a model of 50-54-in. span with a mean chord of 8-in.

Such a size is, in fact, an excellent choice for a beginner. Not too large, it is, nevertheless, big enough to give a smoother flight than a very small model.

Between " rudder only " and " multi-channel " models, there are various types of " intermediate " control systems. Usually, these take the form of accessories designed for use with inexpensive single-channel equipment. They offer the addition of an engine-speed control and/or elevator control by means of a mechanical sequence system instead of electronic selection. One of the most well-known of these is the Bonner Compound Escapement, an elaboration of the standard electro-magnetic rubber-driven escapement. In addition to left and right rudder and an automatic return to neutral, the compound escapement provides an extra control position which brings a secondary escapement into operation. The secondary escapement generally takes the form of a " motor-control-unit " which changes the speed of the engine from " fast " to " slow " or vice-versa. At the transmitter, the pilot selects the required control by pulsing the sending key: one pulse giving left rudder, two pulses right rudder and three pulses motor control.

To permit R/C enthusiasts to operate model aircraft, boats, etc., without the need of a radio amateur's technical examination, special transmitting frequencies have been allocated for model R/C work by the authorities in various countries. These frequencies are in the h.f., v.h.f. and u.h.f. wavebands, the 27 Mc/s h.f. band being the most widely adopted, (e.g., 26.96-27.28 Mc/s in Britain, 27.255 Mc/s in the U.S. and 27.12 Mc/s in Germany). The maximum permitted transmitter power is 5 watts and, needless to say, all commercially made model equipment conforms to these various requirements. The only other regulation is that the operator's should be registered with the radio communications authority and for this, in the case of British modellers, licences costing £1 for five years, are issued by the Radio Branch, G.P.O. Headquarters, London, E.C.1.

Topical Twists

by PYLONIUS

Situation Vacant

Somewhere, the other month, I read that the aeromodeller of to-day is the pilot of the future. On another page there's a picture of the plane of the future streaking confidently skywards, disdainful of anything so outdated as a human pilot.

This would seem to indicate a pretty dim future for our budding pilot. After packing away his toy models and rarin' to get at them full-size controls, he finds himself faced with two dismal alternatives; either to sit in a concrete blockhouse, count backwards from ten to zero, and prod a button, or to join the end of a dole queue. Being an open air type he'd probably choose the dole queue.

Not yet having caught up with the ready made plastic age I might have the wrong idea about the modern aeromodeller. Perhaps he's not a homo sap. type at all but a little electronic brain which turns out ready made models for the amusement of brainless humans. In time, as it matures and grows a few more valves, it will be fitted into a sonic interceptor, and thus become the pilot of the future.

Gee!

Seeing all those fat, little Gee Bee planes floating about the other month took me right back to the balsa starved 1930's. This was the glorious hey-day of the American model mag., which invariably had one of these fat, little planes on the cover. After wading through a couple of dozen pages on the vital statistics of the little monsters (60-60-60) you would most likely come across a plan of one of the new fangled balsa models.

These models were, of course, strictly forbidden in this country, which was still deeply entrenched in the oiled-silk and spruce era. The magazines could only be smuggled in with batches of lurid, pulp literature. This made rummaging around a certain type of bookstall somewhat damaging to your moral reputation, but well worth the sacrifice.

News had leaked through that a model plane could be built with a razor blade, a pair of pliers and a handful of pins. Joe Bloggs thought that such a model would be rather on the heavy side, but, fortunately, his friend was holding a block of the infidel balsa at the time. Had he been patriotic enough to have remained loyal to the latest British article on "Four Blade Airscrews from Lignum Vitae," the model world would have been the richer by the loss of Joe Bloggs.

The intriguing thing about the new American models, apart from the fact that they didn't require multi-gear boxes and soldered up tailplanes, was their inability to do less than 18 min. Flipping through the mags, Joe Bloggs and friend were disdainful of anything that wouldn't remain aloft for more than a round 20 min.

"Hardly worth chucking the thing up for anything less," as Joe remarked.

They hadn't, of course, reckoned on our treacherous climate, but for some curious reason they were quite triumphant at getting 20 sec. out of the tenth model.

Fairy Aviation

As my odd reports always read a bit Irish I'm naturally interested in the genuine article—the Irish Club News. After ploughing tearfully through the calamitous report from the Phoenix Club of Dublin's fair city I was asking myself what had become of the luck of the Irish.

After much thought I could only conclude that the fairy folk took a dim view of competition from other improbable flying creatures, and turned out in force for a spot of sabotage.

With the sound of breaking Wakefield motors providing such entertainment we can only assume that the good fairies are partial to skiffle music, which just shows how inhuman they are.

It may well be that the fairy folk have nothing against model planes as such, but are disconcerted by the broomstick fuselages which are now all the rage. Seeing one of these pole-like efforts floating along they take it that their legendary enemy, the flying harpy, is abroad.

To avoid mistakes perhaps the Irish boys could fit their models with some friendly sort of identification, like a four leaf toadstool, so the good fairies will know which is witch.

Wash-Out

It appears that one of the first model flying machines was not just a straightforward, chuck-it-and-run affair made from eagles' feathers and bicycle chains, or whatever they used in those. days—there were certain strings attached. In fact, it was a monster sort of kite. Not a flimsy Chinese affair with painted dragon and paper pigtail but something that looked like an enormous scrubbing board with Monday's washing flying below.

One thing these early, rope-tugging fliers had in common with the modern mod was a perverted idea of the beautiful. As today the love struck zealots make cooing noises in the direction of some repulsive pylon model, so did their rope-tugging forebears regard their gruesome contraption as graceful.

Even some of my models I regard as beautiful—when they fly. Definitely a love starved type.

Up the Pole

I seem to be a dead loss at these "win a guinea" competitions. Now, take the latest one, guessing what the lozenge shaped object on a ski plane is. The answer came to me in a flash. Obviously the pilot had heard that, up in those regions, you would never lose your way if you knew the position of the North Pole. So, being a canny sort of character, he just dug the thing up and mounted it on top of his plane—horizontally, of course, as the other way up would have been too tall a story.

What could be a more logical explanation? But, I bet I don't win. Almost certain to be something silly like radar.

A Doubtful Start

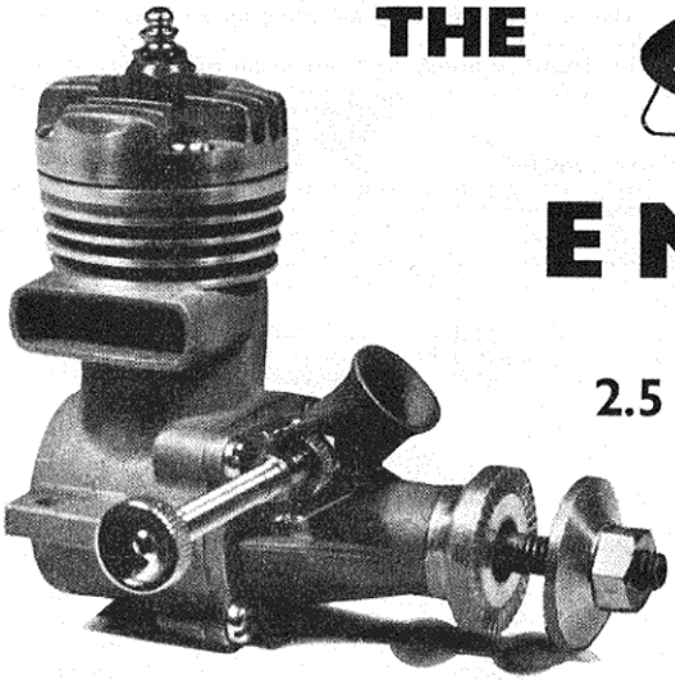
Report has it that the first model aeroplane was built about 1840—just a bit before my time. Pleasant visions are conjured up of a happy, be-whiskered gentleman reverently launching his model across ye olde village green. Now a few doubting Thomases are questioning the fact that the first model aeroplane really flew. Possibly their first models didn't, even when built from a semi-finished kit, so they don't see why this be-whiskered old gentleman should have things all his own ancient way.

SKETCHES BY—ALI

THE MA ENGINE TESTS

ENYA 15-1B

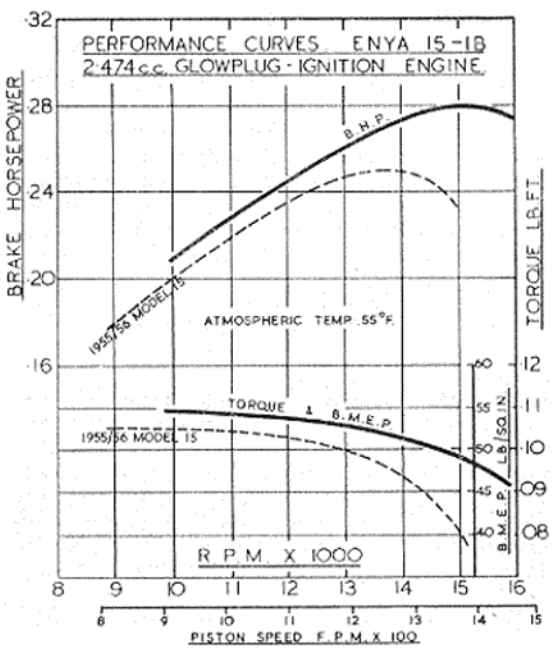
2.5 c.c. GLOWPLUG MOTOR



". . . on a par with the best in the 2.5 c.c. Glowplug class . . ."

THE original model 2.5 c.c. glowplug Enya 15 was introduced early in 1955 and production continued through 1956. We had one of these engines on test last year. It was a delightful little motor, exceptionally easy starting and possessing those silky, smooth-firing qualities which, difficult to put on paper, nevertheless make the tester's life so much more pleasant than do the harsh-running, erratic and unpredictable characteristics of some engines which pass through our hands.

This earlier test revealed an output of 0.25 b.h.p. at 13,800 r.p.m., using 25 per cent nitromethane in the fuel, but with the detachable choke insert retained; a figure which, until recently, would have justified the Enya's inclusion in the upper performance group of 2.5 c.c. engines. In order to compete with the best in the highly-competitive International class, however, it was evident that a small increase in output would be necessary and, towards the end of 1956, the manufacturers succeeded in doing this by introducing some minor modifications into the design.



These consist of a raised compression cylinder-head of slightly changed form, a slightly enlarged crankshaft port, a fractionally lighter piston and a reduced diameter spraybar. In addition the crankshaft and front-bearing assembly has been lightened by reducing the journal length by 2 mm. and by taking the gas passage a further 4 mm. forward into the shaft so that the complete engine is also fractionally lighter.

This revised model was put into production in January of this year and was initially known as the 15-1S, which designation, however, was later changed to 15-1B. Apart from the almost imperceptible reduction in front bearing length, there are no external changes and the only way in which the 15-1B can be readily distinguished from its earlier brother is in its use of Phillips screws, on the cylinder-head and crankcase flange, in place of the ordinary cheese-head screws used previously.

So far as performance is concerned, the peak b.h.p. has been raised quite appreciably, sufficient in fact, to place the Enya 15-1B in the front rank of 2.5 c.c. production glowplug engines.

Enya engines are, of course, of Japanese manufacture. They have enjoyed an excellent reputation for many years in Japan and also in the few countries to which they have been exported, mainly on account of their sound construction, easy handling and useful performance. During the past year or so, however, the manufacturers have obviously been turning their attention to ultra-high performance and their success here has been most noticeable in the 2.5 c.c. Enya 15-D diesel, and in the 5 c.c. Mk. III model 29.

Like all the current Enya glowplug models, the 15-1B is a loop-scavenged, shaft-valve engine, having the crankcase and cylinder barrel in a single pressure diecast unit, with pressed-in liner. The casting is of good quality, sandblasted and with machined edges to give a pleasing matt grey and polished aluminium finish.

Specification

Type: Single-cylinder, air-cooled, loop-scavenged two-stroke cycle glow-

plug ignition. Induction by crankshaft type rotary valve. Centrally located plug.

Swept Volume: 2.474 c.c. (0.151 cu. in.).

Bore: 15 mm. (0.5905 in.). Stroke: 14 mm. (0.5512 in.).

Stroke/Bore Ratio: 0.933 : 1.

Weight: 4.2 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase and cylinder barrel with inserted cast-iron cylinder liner. Pressure die-cast aluminium alloy front housing with integral venturi intake and bronze main bearing. Balanced crankshaft with 9 mm. (0.354 in.) dia. journal and 5 mm. (0.197 in.) dia. crankpin. 10 × 7 mm. rectangular shaft valve port and 6.5 mm. (0.256 in.) dia. gas passage. Lapped lightweight piston with straight fence baffle and 4 mm. (0.157 in.) full-floating gudgeon-pin having aluminium end-pads. Alloy connecting-rod with bronze big-end bush. Deeply finned aluminium alloy cylinder head having cast-in threaded bush for glowplug, and attached to main casting with four screws, with metal-to-metal joint. Alloy prop driver fitted to matching taper on shaft. Nickel-plated brass spraybar type needle-valve assembly with flexible needle-valve stem and detachable venturi insert. Beam mounting lugs, also provision for installing three radial mounting studs in rear of crankcase.

Test Engine Data

Running time prior to test: 1½ hours.

Fuel used: 25 per cent. B.D.H. nitromethane, 50 per cent. I.C.I. blending methanol, 25 per cent. Duckham's racing castor-oil.

Ignition plug used: Enya No. 1 standard 2-volt Ni. Cr. glowplug. 2.1 volts used to start. Venturi insert retained for all tests.

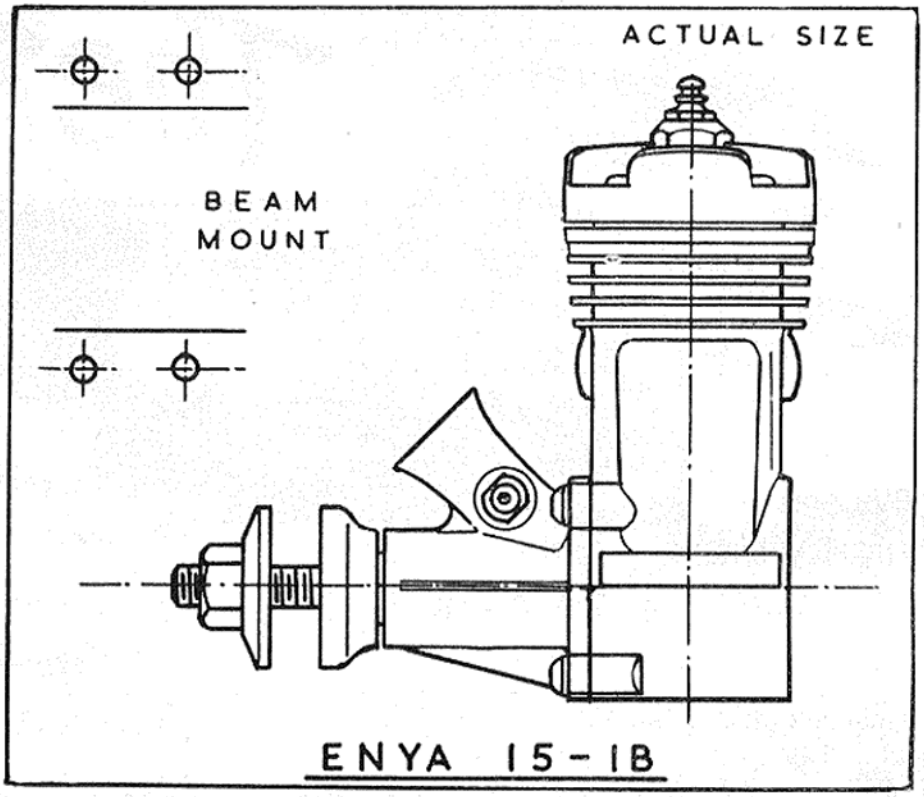
Performance

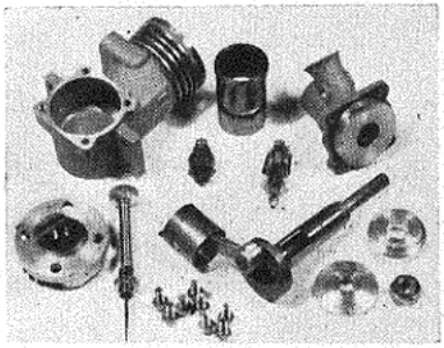
The 15-1B is, perhaps, just a trifle less foolproof than the original type Enya 15. It is still an easy starting engine, but responds less readily to the more "clueless" type of handling that its predecessor seemed to take in its stride. As the engine is intended for the competition minded user rather than the raw beginner, however, this can scarcely be taken as a criticism and, in this event, is a small price to pay for the extra performance available.

As was expected, the improved output of the 15-1B became increasingly evident as load was reduced and r.p.m. raised. At 12,000 r.p.m., torque was up approximately 5 per cent; at 13,000 r.p.m. approximately 7 per cent.; at 14,000, 10 per cent. and at 15,000, 22 per cent. Maximum b.m.e.p., which was reached at around 10,000 r.p.m., was just under 55 lb./sq. in. which is a good figure for engines of this type.

The peaking speed of the 15-1B, as compared with the earlier 15, has been raised by more than 1,000 r.p.m. to a little over 15,000. Here, we recorded an output of 0.28 b.h.p. which, it will be observed, is on a par with the best that we have thus far obtained in the 2.5 c.c. glow engine class.

This, it will be noted, followed a running-in period of 1½ hours and was obtained with a nitromethane content of 25 per cent., a standard nickel-chromium element plug and with the venturi restrictor in position. We are informed by the makers that their own dynamometer tests have indicated that an output of nearly 0.30 b.h.p. can be obtained with these engines in stock condition after adequate running-in and that approximately 0.31 b.h.p. at 16,000 r.p.m. has been reached with the venturi insert removed. Having found that factory claims concerning at least two other Enya engines were more than substantiated by our own tests, we have no reason to doubt that, under reasonably favourable atmospheric conditions and with some extra running, our test model would, in fact, more closely approach these figures. It may be mentioned, in passing, that Enya makes five different types of glowplugs to enable the best choice to be made for any given conditions. These include two standard 2-volt nickel-chromium plugs and three 1½-volt racing plugs with platinum-rhodium filaments.



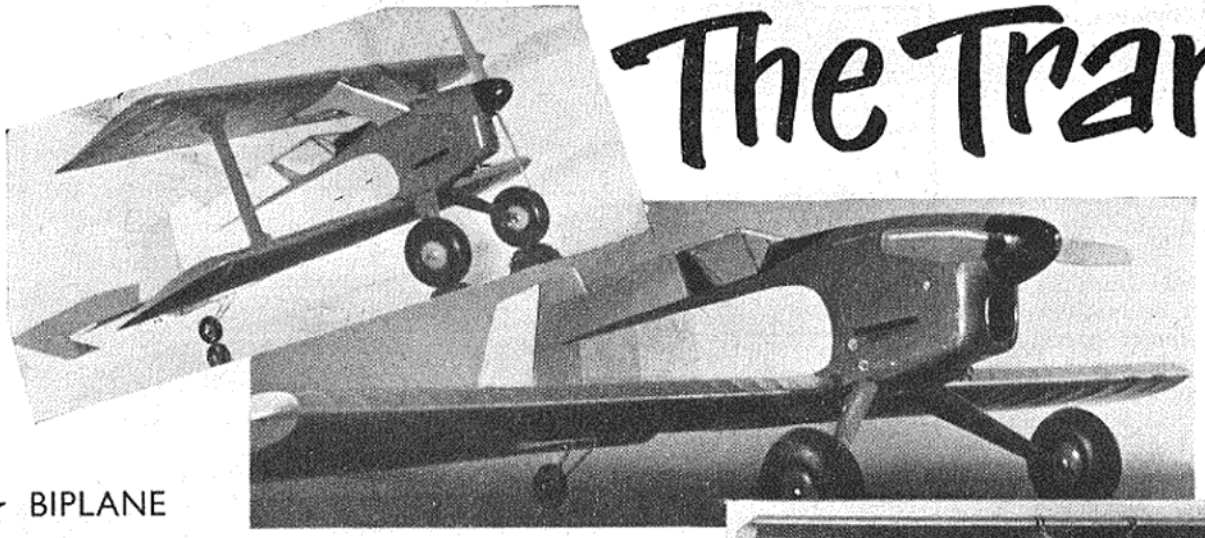


The 15-1B ran evenly at all speeds tested. It was fairly sensitive to the needle-valve but adjustment of the control was helped by the sensible design of the needle-valve assembly with its large knurled adjusting knob, flexible stem and effective ratchet device.

Power/Weight Ratio (as tested): 1.07 b.h.p./lb.

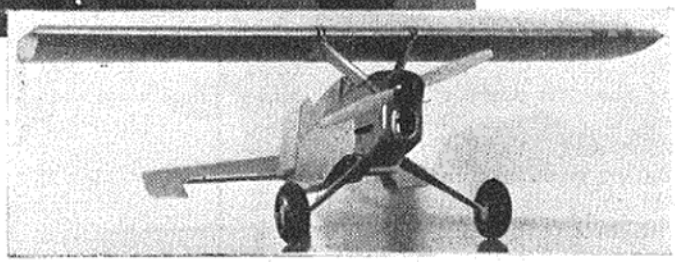
Specific Output (as tested): 113 b.h.p./litre.

The Tramp



SUITABLE FOR ENGINES FROM 2.5-5 c.c.

★ BIPLANE
★ HIGH WING
★ LOW WING ★ SEA PLANE
★ SKI PLANE ★ TRAINER
★ ADVANCED STUNTER



An all-in-one control line composite from Poland

by Wiestaw Schier

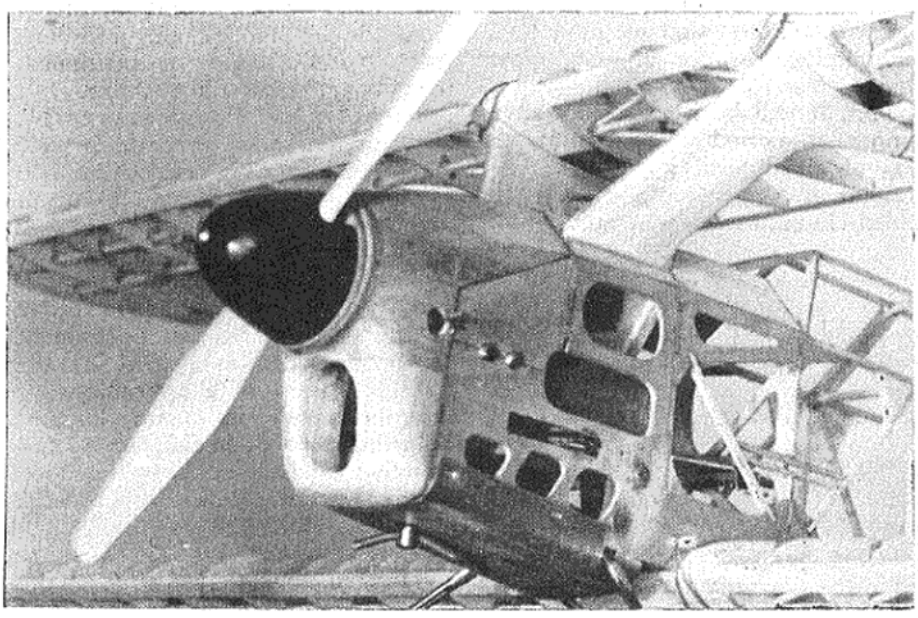
THE Tramp is unique among C/L designs, as it can be readily converted to fly in many different versions. If you are fed up with a biplane, remove one of the wings and fly it as a monoplane, or in winter when snow makes normal flying impossible fit the skis and get a new thrill out of control-lining. Or again, perhaps summer rain has turned your flying field into a pond, then there's still no need to be grounded, fit the floats and keep flying.

To those who are accustomed to looking at the all-sheet, pre-fabricated, tip-from-box, squeeze-tube-of-cement, shake-well, allow-to-dry and it's ready-to-fly type of C/L model that is so popular nowadays, the construction may appear a little tricky. This is not so, however, and although some of the constructional ideas used may appear strange to your eyes, they have been thoroughly flight proven.

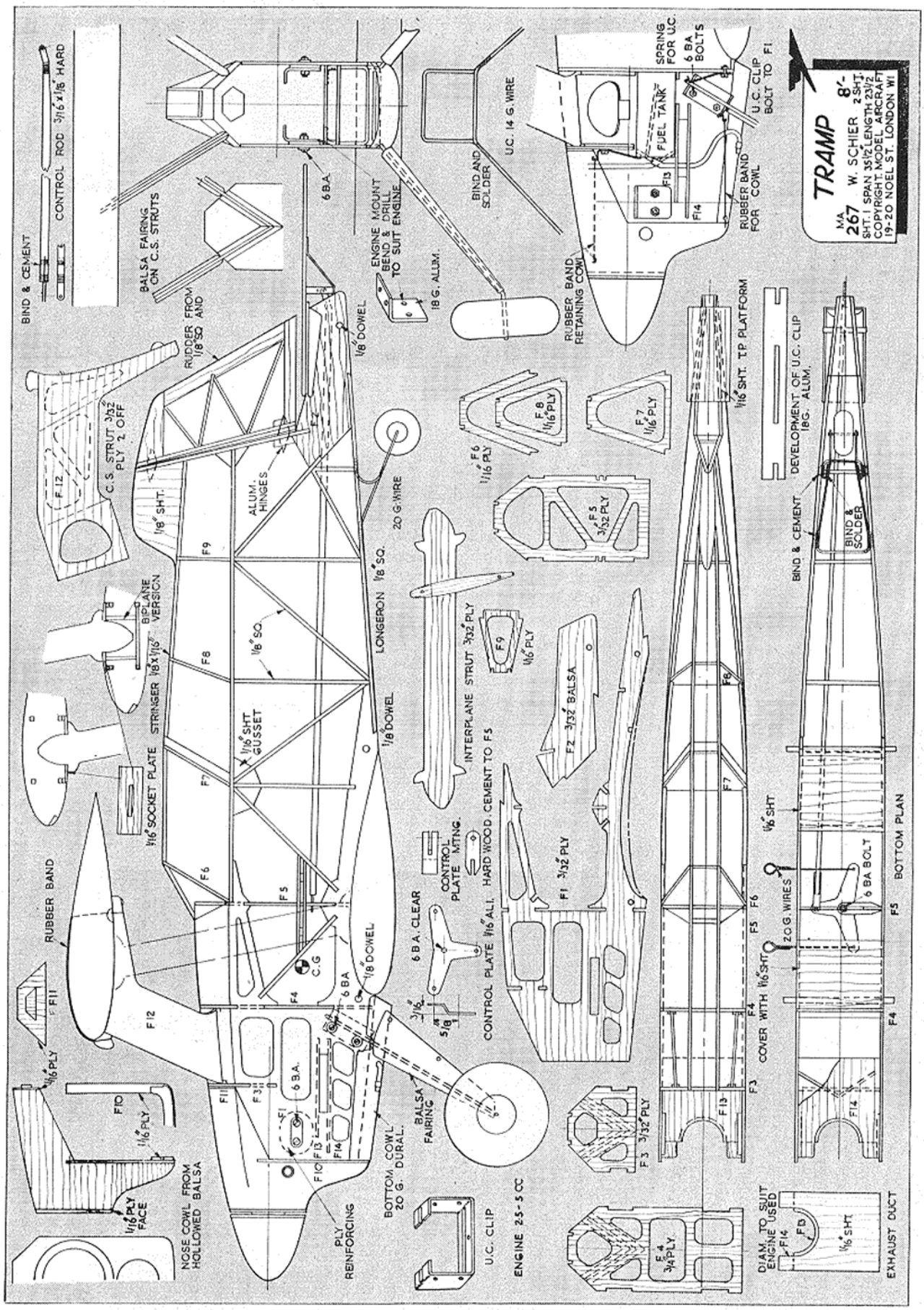
The total possible variants for this design are many but the following list will give some idea of the different models that can be obtained by merely rearranging various components.

1. The biplane with non-symmetrical wing section 1, is the basic version, and fitted with any average 2½ c.c. engine it will make an ideal trainer, capable of the simpler aerobatic manoeuvres, which include wing overs, loops—single and consecutive and inverted flight.

2. The special biplane stunt version differs from the above in having a symmetrical wing section, and its wing area increased by adding two ribs to each tip; accordingly the wing struts should be repositioned two ribs further out. Fitted with a suitably powerful 3.5-5 c.c. engine it is capable of the full stunt schedule. Because of the greatly increased



This close-up of the nose gives a good idea of the construction.



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, 8s. 0d. TWO SHEETS, POST FREE

speed it is necessary to use the unbalanced "B" tailplane to avoid elevator flutter and vibration.

3. The low wing version is obtained by removing the upper wing from either 1 or 2. The only other change necessary is to use the smaller tail "C."

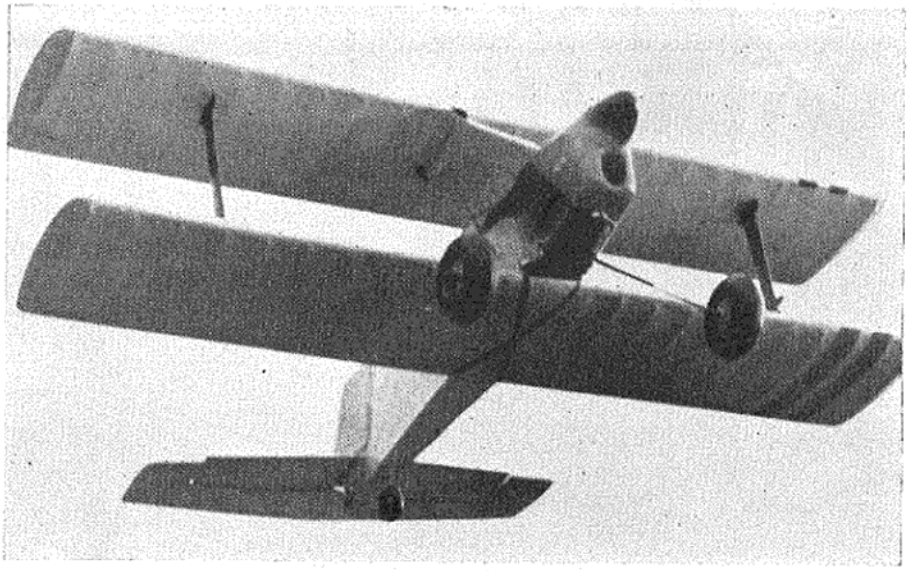
4. A parasol version of 3, is obtained by removing the lower wing. However, the flying characteristics are completely different, the high wing giving the model a very lively performance.

5. The Class B team race version can consist of either 3 or 4, it only being necessary to use a 30 c.c. tank, positioned in the fuselage at an angle to ensure that all the fuel is used.

6. By merely fitting floats or skis any of the variants can be converted into a completely different machine, not only from the point of view of appearance either, one must try flying a control liner from water to really appreciate that it is a new branch of flying.

To obtain all these variations it is assumed that all the different components have been constructed, but if desired one can, of course, simply construct one particular type.

The only constructional doubt that might remain after studying the detailed two sheet plan, is the composite hardwood/balsa construction, but provided a suitable cement such as Durafix is used for the hardwood or hardwood-balsa joints no difficulties should be experienced.



A good action shot of the biplane airborne.

It would, however, be a good idea to pre-cement all joints.

Strip hardwood such as spruce, birch, pine or obeche is obtainable from most model shops, but should there be any difficulty very hard balsa maybe substituted.

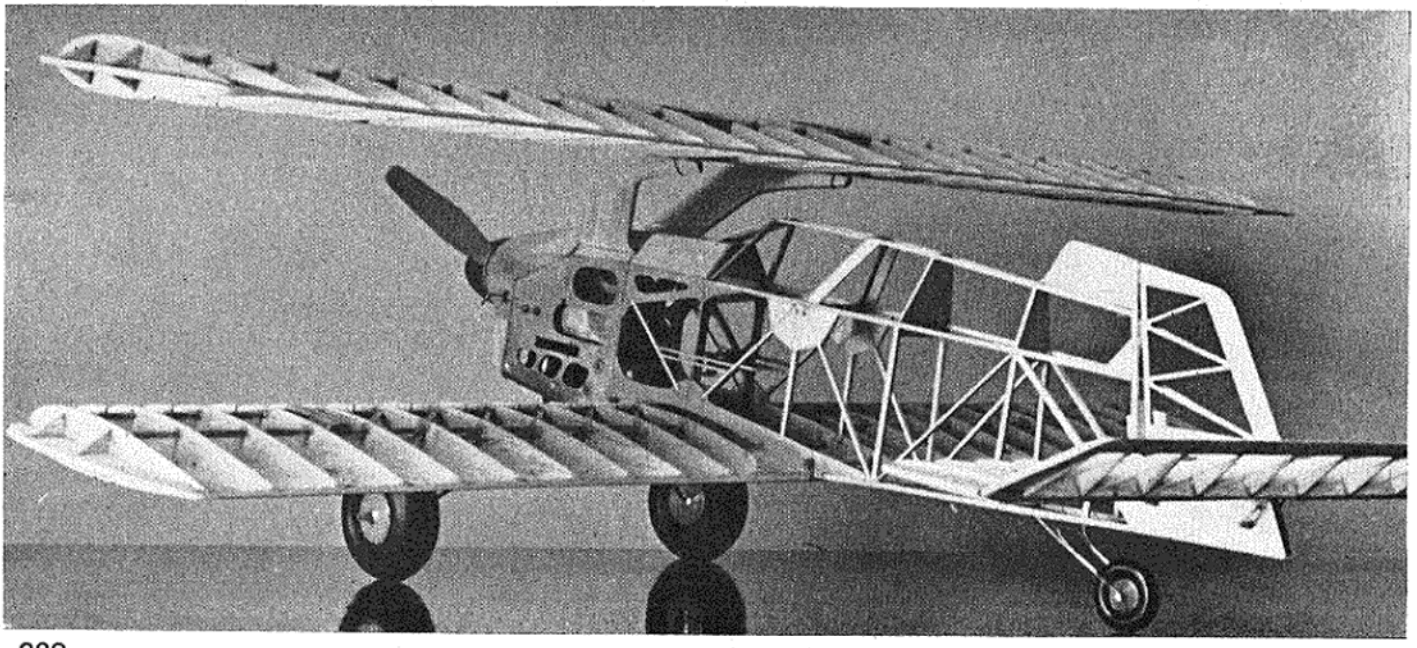
Incidentally, if you intend to use an engine of low power, the weight of the model must be kept as low as possible to ensure a good performance, so it would be quite in order to use balsa wood throughout in such a case.

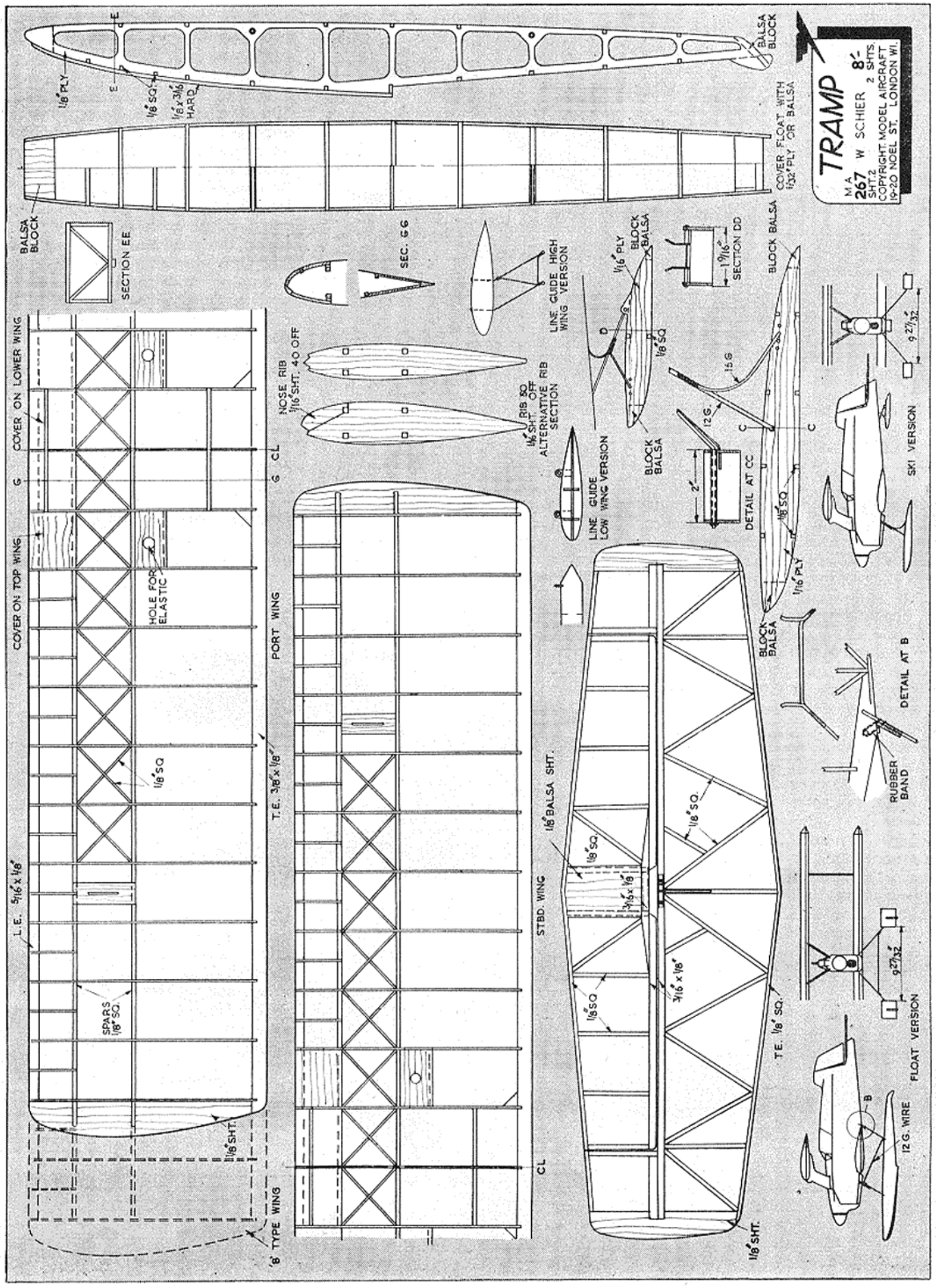
To obtain the best performance, particularly with the smaller engines, the propeller is most important, and various pitch/diameter combinations should be tried until the best results are obtained. Generally, for training and stunt flying, a fairly large diameter fine pitch prop is best, i.e., 9 × 6, 10 × 5, etc., but for team racing or fast flying a coarser pitch is necessary, and an 8 × 8 or 8 × 9 should be tried.

The length of line will, of course, depend on the motor used but a good average would be between 40-50 ft. for 2.5 c.c. versions; up to 60 ft. for the 5 c.c. stunt version.

I hope that this brief description of Tramp has shown how versatile the design is, and that those who build it will get as many hours of fun experimenting with the different layouts as I have had.

Another uncovered view this time of the complete model.




TRAMP
M.A. 267 W SCHIER 8'-
SHT.2 2 SHTS.
COPYRIGHT MODEL AIRCRAFT
19-20 NOEL ST. LONDON W1.
BALSA BLOCK
1/8" PLY
1/8" SQ
1/8 x 3/16 HARD
COVER FLOAT WITH 1/32" PLY OR BALSA
SECTION EE
SEC. GG
LINE GUIDE HIGH WING VERSION
NOSE RIB 1/16 SHT. 40 OFF
RIB SO 1/16 SHT. OFF ALTERNATIVE RIB SECTION
LINE GUIDE LOW WING VERSION
BLOCK BALSA
SECTION DD
DETAIL AT CC
SKI VERSION
COVER ON LOWER WING
COVER ON TOP WING
HOLE FOR ELASTIC
PORT WING
L.E. 5/16 x 1/8"
SPARS 1/8" SQ
1/16" SHT.
T.E. 3/8" x 1/8"
1/8" SQ
STBD. WING
1/8" BALSA SHT.
3/16 x 1/8"
T.E. 1/8" SQ.
1/8" SHT.
DETAIL AT B
RUBBER BAND
FLOAT VERSION
12 G. WIRE
'8' TYPE WING

LATEST SUPERSONIC SHAPE taken off the secret list in the States is Republic's F-105 *Thunderchief*, which is in production for the U.S.A.F. as a tactical A-bomber. Area-ruled, with wasp-waist and bulbous tail-end, it has completely new swept-forward air intake ducts in the wing roots, designed to create a double-shockwave to slow air entering the engine and to protect the low-set tailplane from excessive buffeting. A third air intake at the base of the fin is said to "capture more air to cool the after end of the ship."

Other mod. con. include a conical camber wing leading edge which the pilot can droop to reduce drag at cruising speeds and to eliminate tip stalling at high angles of attack, clover-leaf speed brakes that form the last 36 in. of the fuselage, and an internal weapons bay in the fuselage, as well as underwing racks. Powered by a 15,000 lb. thrust (plus afterburner) Pratt & Whitney J75 turbojet, the *Thunderchief* is 63 ft. 1 in. long and spans 34 ft. 11 in. Range, with flight refuelling, is described as "global."

* * *

Since the U.S. Navy adopted Britain's **MIRROR LANDING SIGHT** to replace the batsmen on its carriers, the deck-landing accident rate has dropped from 2.4 per thousand to 0.98. Apart from saving the lives of pilots, this has slashed the Navy's running expenses by £7 million a year.

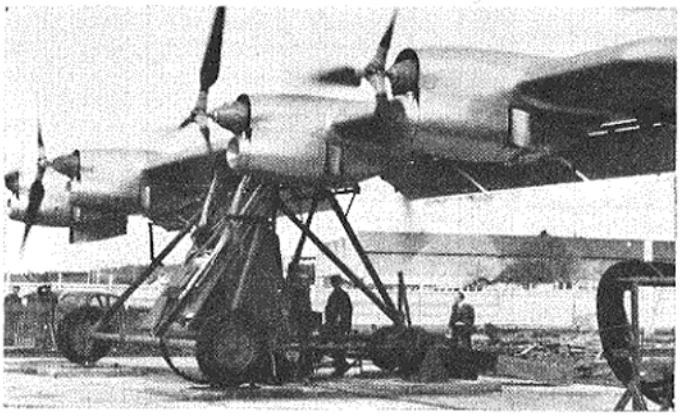
* * *

WOT! NO NOSEWHEEL? The Hurel-Dubois HD-34 (left), which appears to have parted company with its nosewheel, is the first of eight which are being built for the Institut Géographique National. Intended for photographic duties, it carries two vertical cameras with 32 spare reels of film, and two oblique cameras. The crew of five includes two camera operators, and the nosewheel has been made retractable so that it does not interfere with the view from the photographer-navigator's post in the nose.

Fitted with the usual Hurel-Dubois high-lift wing, with a span of 148 ft. 7½ in. and aspect ratio of 20.2, the *HD*-34 is powered by two 1,525 h.p. Wright 982 C9 engines and has an endurance of eight hours at 174 m.p.h.

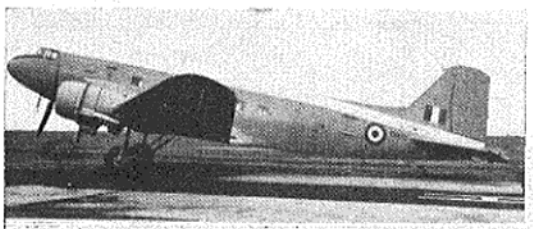
* * *

WOT! NO FUSELAGE? Even more startling is the contraption shown in the photograph below, which looks as if it might be some form of flying crane. In fact, it is a mobile test rig for developing the wing and engine installation of the Breguet 940 *Intégral* short landing and take-off aircraft.



The mobile test rig used for research on the Breguet 940 Intégral.

The *Intégral* will be a high-wing passenger or freight transport of conventional layout, powered by four 400 h.p. Turbomeca Turmo II turboprops. These will be fitted with large-diameter propellers, so that the entire 57 ft. wing span will be blanketed by their slipstream. A combination of high-lift section and very large slotted flaps is expected to enable the 6½-ton aircraft to take off in 65 yd. and land in 40 yd. with a full load of 21 passengers. Max. cruising speed will be 250 m.p.h. and stalling speed 28 m.p.h.



(Left). Uniquely camouflaged C-47B is personal aircraft of A.O.C. Gibraltar. (Below). Latest B.O.A.C. colouring displayed on a Britannia.

THE AMOUNT OF ENGINE needed to thrust the McDonnell F3H-2N *Demon* naval fighter to speeds of over 600 m.p.h. at 40,000 ft. is well shown in the picture below, right. The turbojet is an Allison J71-A-2 which gives a thrust of 10,000 lb.-plus, even without the use of its afterburner.

Shown for the first time in this photograph is the *Demon's* retractable flight refuelling probe, which is housed in a fairing on the starboard side of the cockpit. Armament comprises four nose-mounted 20 mm. cannon and six *Sparrow* air-to-air guided missiles on under-wing racks.

Demons are serving with U.S. Fleets in the Atlantic, Pacific and Mediterranean.

* * *

UNIQUE R.A.F. CAMOUFLAGE scheme is carried by *Dakota* KN452, which is battleship grey all over, except for a white cabin top and black anti-dazzle patch on its nose. Built originally for the U.S.A.F. as a C-47B with the serial 44-76591, it has been refurnished at Benson as the personal mount of the Air Officer Commanding R.A.F. Gibraltar.

* * *

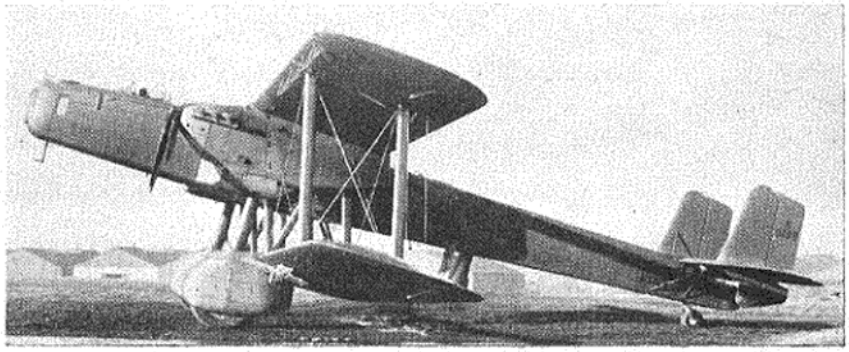
BRITAIN'S LATEST RADAR, known to be the best in the world, is being used to control the operations of 300 R.C.A.F. *Sabre* and CF-100 fighters flying from Gros Tenquin and Marville in France and Sweibrucken and Baden-Soellingen in Germany. It is so efficient that operators were able to "see" two aircraft collide in the air more than 100 miles away and trace the paths of the largest pieces of the debris as they fell to the ground.

* * *

NOVEL ITEM at this year's Farnborough show was the **HARRIER**—no, not an aeroplane but a lightweight folding car. Designed specifically for airborne operations, it was speedily unloaded from a Percival Pembroke, unfolded, then driven down the runway in flashing style with its four-man crew.

FROM THE PAST . . . . . No. 17

Handley Page Heyford



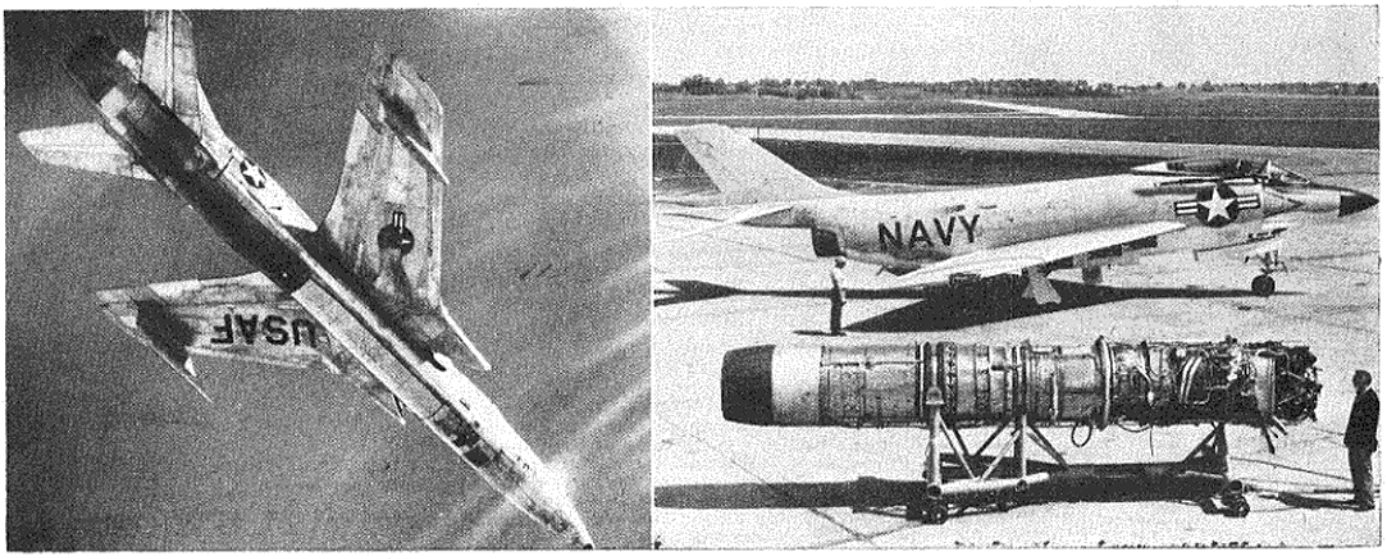
THE HANDLEY PAGE *HEYFORD* may not have been the most handsome of bombers; but if you ever saw one looped as I did—a 99 Squadron machine from Mildenhall—it is unlikely that you will ever forget it.

Last of the R.A.F.'s heavy bomber biplanes, the 4-seat *Heyford* had its fuselage and engines hung under the top wing. Its main bomb load of 2,800 lb. was housed in the thickened centre-section of the bottom wing, which was conveniently close to the ground for rearming. And it was a veritable flying fortress, with three Lewis machine-guns in nose, dorsal and retractable under-fuselage "dustbin" turrets.

The prototype H.P. 38 was designed to Spec. B19/27 and flew in June, 1930. But the production *Heyford I* which flew three years later with two 525 h.p. Rolls-Royce Kestrel IIIS engines, was to Spec. 23/32. It was followed by the Mks. II and III with 640 h.p. Kestrel VI engines before production ended in September, 1936. A total of 122 were built, and although the last of the eight *Heyford* squadrons had been re-equipped with *Wellingtons* by 1939, the big biplanes could still be seen flying on training duties during the early years of the war. Span 75 ft. Length 58 ft. Height 17 ft. 6 in. Wing area 1,470 sq. ft. Loaded weight (Mk. II) 16,750 lb.

Performance (Mk. II): Max. speed 142 m.p.h. Climb to 10,000 ft. in 15.3 min. Service ceiling 21,000 ft.

America's newest off the secret list, the Republic F-105.



The McDonnell F3H-2N and the part that provides the urge.

Honours go to

LADY LUCK certainly gave British fliers a miss at the World Championships for A/2 and Speed, this year held at Mlada Boleslav, a small town 57 kilometres from Prague. John Hannay was extremely unlucky to mar what would have been a perfect score with a miserable 75 sec. in the first round, even so he finished ninth out of 73 competitors. Speed man Ray "Gadget" Gibbs was virtually out of the speed contest in the first round when his Carter Special "blew-up" while he was lapping at an estimated 215 k.p.h.

If these events could have been foreseen, perhaps it would have been a less cheerful party that left London on August Bank Holiday Monday to travel by train across Belgium and Germany and into Czechoslovakia. Prague, the capital, was reached on the Tuesday evening and it was a tired and grubby party that entered the Hotel Europa to spend a comfortable night. An opportunity for a short sight-seeing walk presented itself the next morning, followed by an excellent lunch, after which we boarded the buses for the trip to Mlada Boleslav.

The Hotel Venec.

Our arrival in this small Czech town savoured of a film festival; the entrance to the Hotel Venec—where competitors were accommodated — was crammed with local sightseers, while from the hotel roof fluttered the flags of the 20 competing nations. Even the shop window displays had an aeromodelling motif and it was obvious that the whole town was geared up to make the World Championships a really festive occasion. We had already had a foretaste of what was to come when we passed the airfield on the way into the town—it, also, was decorated with flags and bunting.

Language difficulties were non-existent, as the British party were allotted no less than three English-speaking Czech interpreters—Susanne, Charlie and Felix, who was an ex-Spitfire pilot. (He received the name Felix, so he told us, in his R.A.F. days—it was the nearest pronunciation they could get to his Czech name.)

From the British team's point of view, Thursday, devoted to processing and trimming, was fairly uneventful. The weather was sunny with a light breeze, although we did hear one American team member seriously voicing doubts about the "near-gale" conditions! The team was shepherded smoothly through the well organised processing by team manager Eddie Cosh, although eyebrows were raised when John Hannay was told that his No. 1 model was over size. However, this proved to be a decimal point that had accidentally moved a mere two places.

And so to Friday and the start of the contest. Five rounds of one hour each were to be flown; three in the morning and two in the afternoon. Each round was further divided into four 15 min. periods and team managers were kept on their toes as in this 15 min. one team member had to have his model weighed, line checked, collect two time-keepers (of which there was no shortage) and complete his launch.

Recovery country down wind was fairly reasonable, although a small wood collected quite a few models, but the motor-cycle recovery service was the best yet. Also a Zlin light aircraft was flying round most of the day operating under instructions received from "spotters" with portable TX's positioned on and over the aerodrome boundary.

As regards weather, it was warm and sunny, except when the sun disappeared behind cloud, when, for about 5 min. or so the air would become quite cold and completely dead. It was impossible to predict when these "dead" periods would arrive.

Lots were drawn among the British team to decide the order of flying for the first round, which was Wiggins, Tyrell, Burgess and Hannay.

Wiggins found lift and scored a max. —along with 37 other contestants, including Tyrell, the second man away. The latter's model sank quickly after a couple of stalls but managed to stay aloft for 3 : 06. Burgess was not so lucky and made only 77 sec., while Hannay, too, struck one of the cold spells and returned a mere 75 sec.

Lift there was in plenty—if one could find it. Wiggins, Hannay and Burgess

Top: Sladky about to lift off the model from the dolly before starting his motor. Centre: Managers of the winning A/2 teams with the prizes. Left to right: Sljivar of Yugoslavia, Kuznecov of Russia and Brauner of Czechoslovakia. Bottom picture shows the three individual winners in the A/2—Babic in the centre, Sokolov on the left, with Hadzovic on the right.

)R A.2 and SPEED

Eastern Europe

all scored max's in the second round, but Tyrell—with what appeared to be a tricky model to trim—still had his stalling troubles and was down after 96 sec.

Round three saw another max. each for Hannay and Burgess, but Wiggins, after a good tow, was down for 45 sec. due to a jammed auto-rudder. The contest was now beginning to sort itself out. At the end of the round there were seven perfect scores on the board, including two Russians and two Yugoslavs, thus putting their countries in a strong position for the team prize.

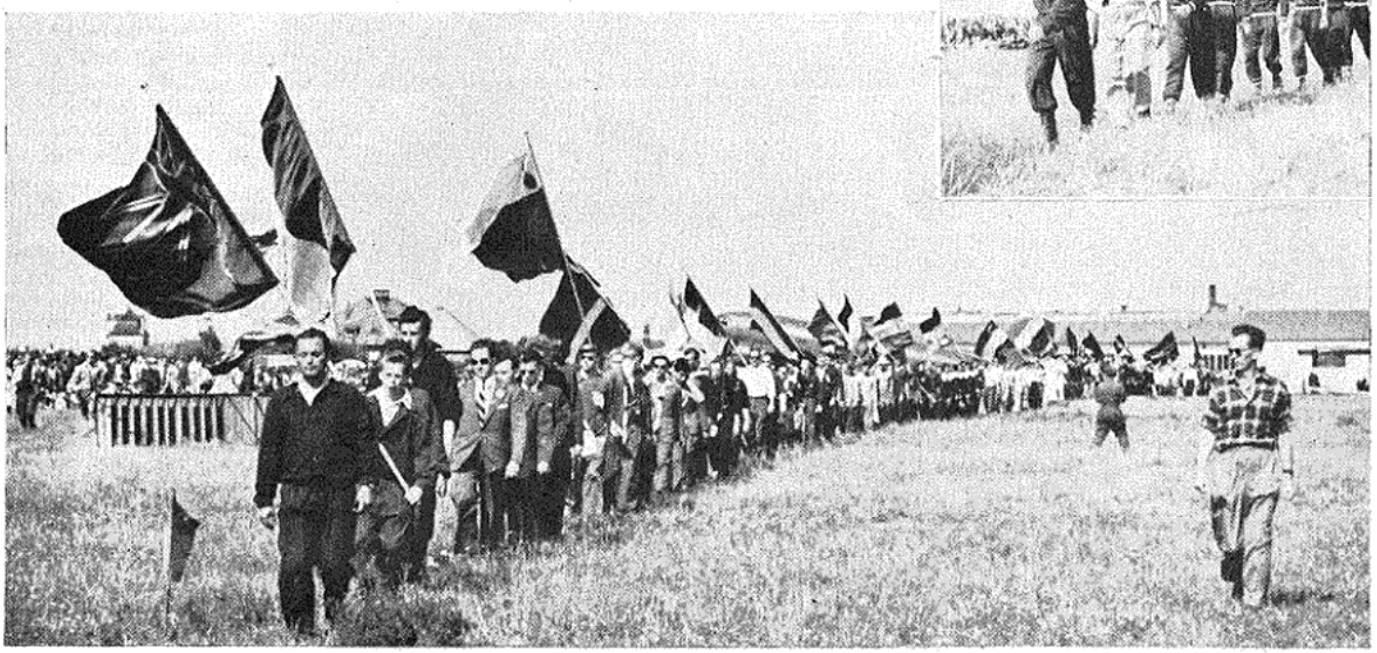
Previously we had taken a stroll around the various "encampments"—fortunately for our bulging waistline not too scattered—and met many familiar faces. Hungarian George Benedek, of aerofoil fame, was this year manager of his country's A/2 team and when it came to finding lift, it was George that knew the spot. The team's models had changed little from last year and still featured built up tissue covered fuselages.

Of new design trends there was little to be seen, although three of the Russian models, while of orthodox layout, did feature an unusual fuselage "spine." Of dural, it was about $\frac{1}{8}$ in. thick, let into a slot starting just behind the nose and extending over the centre section to just beyond the trailing edge of the wing.

Balsa was much in evidence in the construction—unlike the Russian Wakefields of '56, which made extensive use of a native reed.

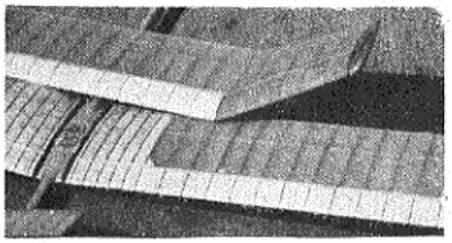
The Bulgarian models had first caught our eye when roasting on the

Above: Babic just after his last flight. Model was well constructed and of orthodox design. The two piece wing was to Babic's own aerofoil. Right: A Czech flag bearer leads Eddie Cosh and the boys, who formed part of the long, long file of all the competing nations (below).



RAPHED BY ROY WESSON

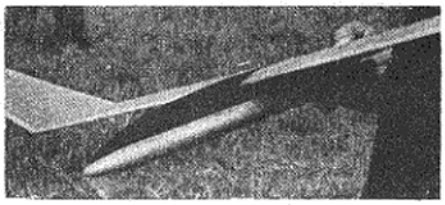
concrete outside the processing room (models, not us!). Beautifully constructed, they were also collecting some



beautiful warps. Odd feature was the balsa sheeted leading edges let in *between* the ply ribs. (See photo above.)

After the lunch break, the wind had freshened by the start of round four at 2.30 and also there was a slight overcast. It was, naturally, in this round that possible individual winners would come to the fore, and the end saw only Babic and Hadzovic of Yugoslavia and Zsembery of Hungary making perfect scores.

The sky was overcast for the final round and lift was certainly a little more difficult to find; when the sun disappeared down draughts were plentiful. However, both the Yugoslavs and the



The dural "spine" on a Russian model.

Russians were obviously flying under conditions well known to them. Babic, on his all-important last flight, made for a point well out on the airfield accompanied by Sokolov of Russia. The two groups split, prepared their models, then waited. Why they did so

The two groups walk out for the final.

soon became evident when the Russians, seeing a model obviously in a thermal, frantically scrambled to a point underneath the airborne model and made what must be the fastest tow and release on record! Meanwhile Babic, too, had wasted no time in becoming airborne, and as the results show, his was the model that made the winning max.

However, it was Russia that gained the team prize with a mere 7 point lead over Yugoslavia. Great Britain, although not disgraced, finished in 9th place.

The A/2 contest was certainly well organised, although in view of the duration of the meeting as a whole, it would obviously have been better if the rounds had been extended to longer periods.

Speed Championships

AS previously forecast in MODEL AIRCRAFT, the Czechs and the Italians were firm favourites for the team trophy and indeed the final results showed Czechoslovakia once again at the top, with Italy a rather shaky second, being closely challenged this year by Hungary.

1. **Otto Cizek, well-known Czech modeller, wields the slide rule during the processing of the British team's models.**

2. **Quite an armful; a French team member returns from a recovery sortie!**

3. **Norbert Parucha and Ebignev Macejevski of the Polish team.**

4. **Vasiljev lights up for Simenov; model was the only one of the Russians that did not feature the dural "spine."**

Processing of the speed models had been completed on the Friday, and no snags were encountered by the British boys. Pete Wright had given his models a few test laps, but Ray Gibbs decided to save his models for the competition.

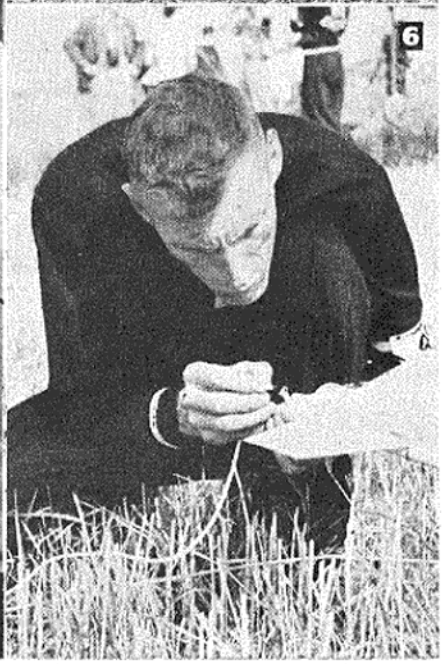
Saturday morning was to have seen the start of the contest, but an overnight storm had reduced the two speed circles to a state of quagmire, thus the start was postponed until after the lunch break. The circles had been specially constructed with a surface of coarse red sand, which had been watered and rolled continuously to provide a firm base.

The contest was divided into three rounds of four hours each, two to be run on the Saturday and one on the Sunday morning; lots were drawn to decide the order of flying. A period of ten minutes from the time of calling was allowed,

Vasilcenko poised ready to release team mate Gajevski's model.

when fliers had to complete their line check and be ready to enter the circle. On the take-off area, a further ten minutes was permitted in which to get the model airborne, and two attempts were allowed.

The weather was again warm and sunny, and of Great Britain's two-man team, Pete Wright was first away. However, due to an over-rich mixture his Barbini-powered model had a poor



1. **Madame Fontaine awaits the ready signal from husband Jean flying for France.**
2. **Christenson of the U.S. wipes down his model after both had been for a swim. Model came down in river, so without hesitation its owner dived in and recovered it safely—apart from a little tissue-slitting to let the water drain out!**
3. **Guido Fea of Italy discusses with Andrea Possenti the latter's all-sheet wing model.**
4. **British team manager with Hannay and Wiggins in the queue at control.**
5. **Simenov and Vasiljev of the Russian team. Models were beautifully constructed although rather flimsy by our standards. The low aspect-ratio two-piece wings featured a very thin aerofoil section.**
6. **Tisutin of Russia, known to the British boys as "the Cossack," lights the d/t fuse of Sokolov's model.**

TEAM RESULTS FOR THE DAUMERIE TROPHY

1. U.S.S.R.	6. Denmark	11/12. Austria	16. Finland
2. Yugoslavia	7. Sweden	11/12. Canada	17. Bulgaria
3. Czechoslovakia	8. Italy	13. Belgium	18. Holland
4. Hungary	9. Great Britain	14. France	19. Australia
5. Germany	10. U.S.A.	15. Poland	20. Ireland

INDIVIDUAL RESULTS FOR THE SWEDISH CUP

			1.	2.	3.	4.	5.	Total
1.	Babic Slobodan	Yugoslavia	180	180	180	180	180	900
2.	Sokolov	U.S.S.R.	180	180	180	180	149	165	854
3.	Hadzovic, M.	Yugoslavia	180	180	180	180	117	837
4.	Simonov	U.S.S.R.	180	180	180	115	180	835
5.	Zsembery, F.	Hungary	180	180	180	180	114	834
6.	Michalek, J.	Czechoslovakia	180	91	180	180	180	811
7.	Kunz, H.	Germany	180	180	180	80	180	800
8/9.	Hannay, J.	Great Britain	75	180	180	180	180	795
8/9.	Hansen, H.	Denmark	180	152	103	180	180	795
10.	Medaglia, E.	Italy	180	180	180	94	158	792
11.	Tisutin	U.S.S.R.	171	73	180	180	180	784
12.	Thomas, M. (P) Bartonicek	Canada	155	101	180	180	164	780
13.	Simon, G.	Hungary	180	180	66	155	180	761
14.	Huge, E.	Belgium	180	180	118	103	167	748
15.	Christenson, E.	U.S.A.	180	180	66	180	130	736
16.	Vuletic, M.	Yugoslavia	180	180	92	97	180	729
17.	Kalen, G. K. S.	Sweden	61	180	180	173	134	728
18.	Spulak, V.	Czechoslovakia	175	88	148	136	180	727
19.	Knoos, P. S.	Sweden	180	180	70	180	113	723
20.	Varetto, C.	Italy	180	180	153	39	167	719
21.	Ciesielski, D.	Germany	180	180	53	123	180	716
22.	Hansen, B.	Denmark	180	77	150	128	180	715
23.	Hajek, H.	Czechoslovakia	109	180	180	180	54	703
24.	Neumann, H.	Germany	180	145	180	73	120	698
25.	Nielsen, H. F.	Denmark	180	173	104	180	60	697
26/27.	Gindici, G.	France	180	160	48	121	180	689
26/27.	Czepe, K.	Austria	94	170	133	122	180	689
28.	Hoafly Masen, C.	U.S.A.	141	101	180	124	136	682
29/30.	Wiggins, E.	Great Britain	180	180	45	140	135	680
29/30.	Nilsson, N. G.	Sweden	180	37	180	180	103	680
31.	Camp, Luis Van	Belgium	180	130	79	180	107	676
32.	Hach, W.	Austria	180	180	127	180	6	673
33.	Bausch, L.	Holland	95	77	180	180	139	671
34.	Zenger, L.	Germany	122	167	120	75	180	664
35.	Ritz, G.	U.S.A.	72	48	180	180	180	660
36.	Crawford, J. (P) Pek	Canada	180	180	55	63	180	658
37.	Tlapak, L.	Austria	180	154	111	127	78	650
38.	Niemela, S.	Finland	41	180	102	141	180	644
39.	Martin, J. P.	France	180	75	180	158	48	641
40.	Takko, S.	Finland	77	107	118	180	154	636
41.	Macejevski, E.	Poland	180	75	180	21	180	636
42.	Ree, A.	Hungary	71	161	89	133	180	634
43.	Horyna, V.	Czechoslovakia	111	128	180	148	63	360
44.	Dihn, J.	Poland	180	128	82	156	80	626
45.	Fontaine, J.	France	90	157	113	180	83	623
46.	Burgess, R.	Great Britain	87	180	180	86	88	621
47.	Frederiksen, F.	Denmark	180	25	180	180	52	617
48.	Vlajcev, A.	Bulgaria	166	180	45	104	121	616
49.	Tyrrell, B.	Great Britain	180	96	52	106	180	614
50.	Possenti, A.	Italy	180	93	148	70	121	612
51.	Hagel, R.	Sweden	87	101	180	132	109	609
52.	Jastremoski, J.	Poland	63	180	126	114	116	599
53.	Mircev, A.	Bulgaria	113	115	124	106	139	597
54.	Guilloteen, R.	France	126	140	180	79	71	596
55.	Vasiljev	U.S.S.R.	180	180	77	92	56	587
56.	Howie, R. H. (P) Feigl	Australia	180	180	122	56	45	583
57.	Laframbiose, J. (P) Sedivec	Canada	41	151	180	88	114	574
58.	Hamalainen, E.	Finland	32	180	99	62	180	553
58.	Paracha, N.	Poland	180	69	85	102	117	553
60.	Roser, N.	Hungary	36	71	180	180	84	551
61.	Karamitev, P.	Bulgaria	180	43	155	68	99	545
62.	Wilkin, G.	Belgium	81	93	180	68	118	540
63.	Petrovski, P.	Yugoslavia	180	26	118	71	130	525
63.	Buiter, A.	Holland	180	56	110	57	122	525
63.	Teunissen, A.	Holland	107	168	53	74	123	525
66.	Stojanov, M.	Bulgaria	45	119	180	63	116	523
67.	Smith, P.	Ireland	108	38	180	84	111	521
68.	Schirru, S.	Italy	41	59	180	78	103	461
69.	Etherington, W. (P) Prochazka	Canada	155	92	52	49	86	434
70.	Cornellissen, G.	Holland	64	108	73	98	84	427
71.	Thomas, G.	U.S.A.	61	180	37	81	67	426
72.	Mass, J.	Belgium	106	27	48	94	39	314
73.	Schledarer, M.	Austria	0	69	39	66	89	263

(P) indicates proxy flown

1. Two young members of the Hungarian team. Models were among the very few that featured built-up tissue-covered fuselages.

2. Kurt Czepa of Austria with his unusual sheet wing model with pencil slim tubular fuselage.

3. Slobodan Babic prepares for his final flight.

4. Eddie Cosh lights up the d/t fuse on Bob Burgess's veteran model, while Mrs. Hannay holds.

5. Veteran flier George Benedek, the Hungarian team manager, about to release for Ferenc Zsemberg, who placed fifth.

run and, realising he could do better, he did not put his hand in the pylon. Unfortunately, on his second attempt, sand had entered the motor and blocked the needle jet.

When Gibbs came out to fly the atmosphere among the watching crowd can only be described as "electric." Timed over five laps, his estimated speed was put at 215 k.p.h.; then it happened! The Carter Special cut dead after the five laps, and on examination it was found that its cylinder and liner had completely fractured. First impression was that loose particles of sand had entered the air intake, although expert opinion was that fatigue was the more likely cause. This has since been confirmed by Fred Carter, the designer. Thus was Great Britain's chance of an individual award completely eliminated.

Meanwhile, the Italian team were off to a bad start, with only two out of the four team members returning a score. Pratti, with the new Super-Tigre G.20V, made a neat 192 k.p.h., and flying proxy for Berselli managed 189 k.p.h. Both Grandesso, with a works modified B.40, and Cellini were plagued with starting troubles, the latter being convinced that the sand was to blame. Certainly, there was more than spent fuel coming through the exhaust of his Barbini, which was the same motor that he had in Italy last year.

Assistants were constantly patting the sand back into place where it had been churned up, but there was still too much loose sand on the surface. Front induction motors suffered the most, naturally, and as these were in the majority, nearly everyone except the Czechs had to overcome this hazard.

The Czech team, of course, had rear induction engines, but still took no chances. Engines were started with the model *off* the dolly. In fact the whole starting technique was a fine example of team work at its best.

But if the competitors were having troubles with the sand in the circle, we were having troubles of our own on the outside. Wandering among the tents of the ten competing countries, we stopped among the Bulgarians. Our pidgin English having produced no results, we eventually conversed through a Czech interpreter—a Professor as a matter of

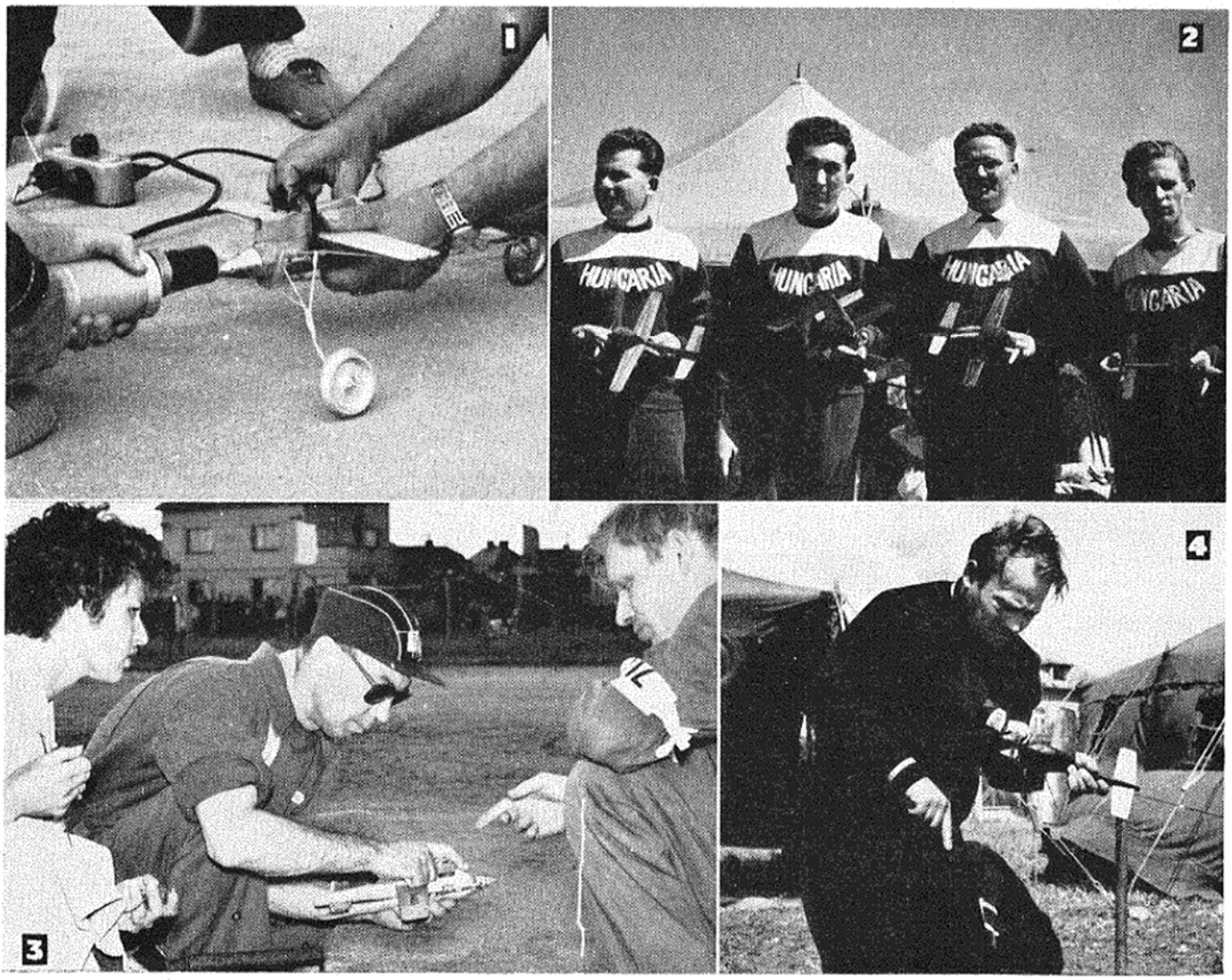
Pratti assists Grandesso after the latter failed to score in the first round.

1. Close-up of Russian Oleg Gajevski's beautifully-finished speed model. Engine was a WIP-20, hand finished to a high standard. The neat electric starter was run off a car battery.

2. Three of the four-man Hungarian team. Left to right: Gyula Krizsma, Rezso Beck, Antal Reti (team manager) and Janos Czizmarek. Vitkovits unfortunately, was missing.

3. Without doubt the most glamourous speed team manager, Mme. Rosa Deligne watches husband Paulin, with Henri Stouffs on the right. Both returned almost identical speeds in the two final rounds, after motor troubles in the first.

4. Vasilcenko uses a hefty forefinger on a test run. Model had dural pan with balsa wing.



Mir Zatocil of the Czech team flew into second place. Motor, of course, is the M.V.V.S. Of the type used this year, only four have been made.

fact—who spoke Russian. The Bulgarians also spoke Russian, so the conversation was translated by them from their native tongue into Russian, the Professor then worked out the meaning in Czech, then passed it on to us in English—if you follow! However, the Bulgarian boys were extremely friendly and you can see a photo of four of them on page 337. Fuel seemed to be their biggest problem; nitro methane having to be imported, it was thus very expensive. Three of the models were powered by standard Super-Tigre G.20's, while Ivan Vasilev had the Laparto Super T. Highest speed achieved on their home ground was evidently 168 k.p.h.

A few tents further along the line were the Hungarians, and language difficulties were eased by Dr. Geza of Budapest, who spoke excellent English. It seems that Hungary also now has a State Model Institute, which opened as recently as July 1st, this year. Two members of the team—Vitkovits and Beck—are employed there. As the designer of Alag engines, Krizsma is the top speed man in Hungary and recently set up a new Hungarian record of 211 k.p.h.

Back in the speed circle, the first round was really showing the capabilities of the Czech team, who had been "in training" for a fortnight before the event. Sladky, with the rear-induction MVVS motor he used in the Criterium, put up the fastest recorded time so far with 205 k.p.h., while Smejkal and Zatocil also went over the 200 k.p.h. mark with 204 and 202 k.p.h. respectively. Odd man out was newcomer Frant Pastyrik, who made only 194 k.p.h. His motor was the newest of the four MVVS's and in fact he was compelled to run it in during the two days before the contest.

With such consistent flying by the Czech team, speeds would obviously have to be of a high order to provide any worthwhile challenge. But the challenge, at least individually, came shortly after when Krizsma matched Sladky with 205 k.p.h., using a hotted-up version of the Alag X-3.

For the second round Pete Wright changed over to Gibbs' fuel and made 165 k.p.h., but the motor sounded much healthier on the ground than it did airborne. Gibbs now attempted to fly his No. 2 model, but it was obvious that this was incapable of putting up even a moderate performance.

Pratti for Italy reached 198, while with Berselli's model he was only 1 k.p.h. slower. Cellini still had motor trouble, but Grandesso made his first score with 197 k.p.h. Externally the new Super-Tigre, as flown by Pratti, has a larger and stronger crankcase, has a redesigned head, and features a large frontal air intake of about $\frac{3}{8}$ in. diameter. The transfer port is larger than previously, but the exhaust port is standard. Piston is of the plain lapped type. During a ground run the tachometer showed a steady 17,300 r.p.m., while estimated r.p.m. airborne were between 18-19,000.

Applause greeted Sladky and Zatocil when they both made 211 k.p.h., and with the 208 and 204 k.p.h. of Pastyrik

Pete Wright tanks up with some of Gadget's fuel in his Barbini-powered model before the start of the second round. Later he changed over to his Vltavan-powered model.

and Smejkal, the Czechs were all set for the team award.

Later, in conversation with Josef Sladky, we asked about the Czech fuel. He told us that the mixture is 45 per cent. nitro methane, 20 per cent. nitro benzene, 10 per cent. methanol, 24½ per cent. castor oil, plus ½ per cent. of something which Josef couldn't name—although judging by the laughter, Czech humour is not far removed from our own! Incidentally, their hand carved props had terrific "bite" and were shaved at the root to suit engine revs.

So far we've made no mention of the Russians, but really they were never in the picture. Vasilcenko, the jet flier, was the only member of the team to go over the 190 k.p.h. mark.

Came the final, and a resounding 216 k.p.h. from Sladky, with Zatocil close behind with 214 k.p.h. to make absolutely certain of the team prize for Czechoslovakia.

Pete Wright changed over to his Vltavan-powered model and reached 160 k.p.h. to put him 22nd in the final results, while Gibbs failed to record an official flight with his reserve model.

So ended the World Championships for A/2 and Speed, or at least the contest side of the programme. After lunch the competing teams lined up in single file, and with their national flags at the head, marched in single file across the airfield to the dais, where the prize-giving was held. This short ceremony over, the spectators and teams settled down to watch an air display, which although not on Farnborough lines, was just as pleasing in its own individual way. Light aircraft, gliders and parachutists did manoeuvres the like of which is very rarely—if ever—seen in this country. A solitary Mig trainer was the only jet to make an appearance, and did a couple of low and noisy passes. Actually, we suspect that this was laid on specially to wake up the British team manager, who was having a quiet doze on the grass in front of the stand.

Sunday did not end up with the usual banquet, and this seems a splendid idea. Certainly it gave the boys (and girls) an opportunity to mix a little more after the meal was over. After this trip nobody will ever believe that old tag about the British being reserved! The British, too, will be remembered in Mlada Boleslav for one thing at least—they introduced jive to Czechoslovakia, much to the delight of the local inhabitants, who packed into the hotel every night to listen to the international jazz group, comprising Kurt Czepa (Austria) on piano, the writer on drums, and unknown guitarists and harmonica players joining in. The solo "jive" demonstrations by a certain member of the British team also "brought the house down."

All in all, it was a most enjoyable trip, and all the members of the British party will long remember the friendliness and hospitality of the people they met in Czechoslovakia.

The British dinner table. Working left to right—Bob Burgess, Eddie Wiggins, Brian Tyrrell, Pat Smith of Ireland, Eddie Cosh, Gadget Gibbs, "Rushy," Mrs. Hannay and John Hannay.

INDIVIDUAL SPEED RESULTS

			k.p.h. 1	2	3	Fastest time in m.p.h.
1.	Sladky, Josef	Czechoslovakia	205	211	216	134.216
2.	Zatocil, Mir	Czechoslovakia	202	211	214	132.973
3.	Pastyrik, Frant	Czechoslovakia	194	208	0	129.245
4.	Krizsma, Gyula	Hungary	205	0	203	127.381
5.	Smejkal, Vaclav	Czechoslovakia	204	204	203	126.759
6.	Grandesso	Italy	0	197	204	126.759
7.	Vitkovits, Miclos	Hungary	0	184	200	124.274
8.	Pratti, Amato	Italy	192	198	197	123.031
9.	Berselli Paolo (P) Pratti, Amato	Italy	189	197	180	122.410
10.	Vasilcenko, Michal	U.S.S.R.	194	185	191	120.546
11.	Beck, Rezsa	Hungary	189	0	0	117.439
12.	Czizmarek, Jonas	Hungary	0	182	186	115.575
13.	Kuznecov, A. F.	U.S.S.R.	159	184	184	114.332
14.	Gorziza, Helmut	Germany	0	163	180	111.847
15.	Hagberg, Bo-Mans	Sweden	163	171	179	111.225
16.	Gajevski, O. K.	U.S.S.R.	0	163	173	107.497
17.	Stouffs, Henri	Belgium	0	165	171	106.254
18.	Deligne, Paulin	Belgium	0	160	171	106.254
19.	Bovin, Lars	Sweden	0	0	169	105.012
20.	Frolich, Josef	Germany	0	169	169	105.012
21.	Natalenko, V. P.	U.S.S.R.	165	162	156	102.526
22.	Wright, Leonard	Great Britain	0	165	160	102.526
23.	Tinev, Stoilka	Bulgaria	151	160	0	99.419
24.	Martinelle, B. H.	Sweden	147	0	151	93.827
25.	Vasilev, Ivan	Bulgaria	0	0	141	87.613
26.	Raskov, Krystjan	Bulgaria	0	0	135	83.885
27.	Boncev, Ljuben	Bulgaria	0	0	134	83.264
28/32.	Cellini, G. B.	Italy	0	0	0	
28/32.	Gibbs, Raymond	Great Britain	0	0	0	
28/32.	Hagel, Rolf	Sweden	0	0	0	
28/32.	Hamalainen, Esko	Finland	0	0	0	
28/32.	Jaaskelainen, K.	Finland	0	0	0	

(P) indicates proxy flown

TEAM RESULTS FOR THE LEONARDO DA VINCI TROPHY

1. Czechoslovakia
2. Italy
3. Hungary
4. U.S.S.R.
5. Sweden
6. Bulgaria
7. Germany
8. Belgium
9. Great Britain
10. Finland

1. The Czech team, left to right: Smejkal, Sladky, Husicka (team manager), Pastyrik and Zatocil.

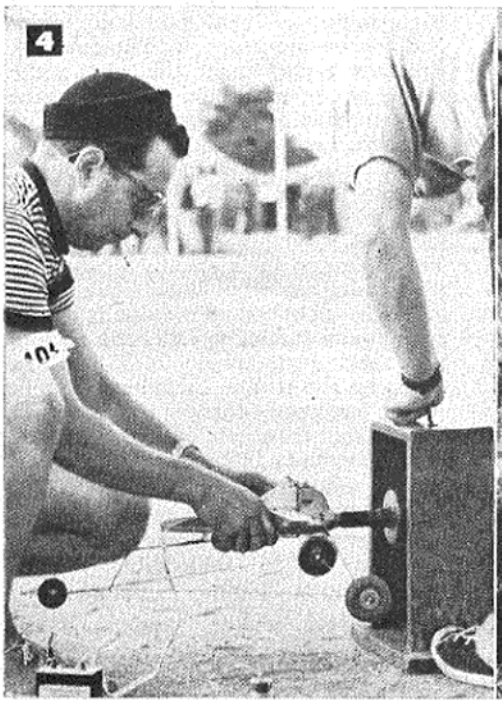
2. A saddened " Gadget " displays the damage to his Carter Special.

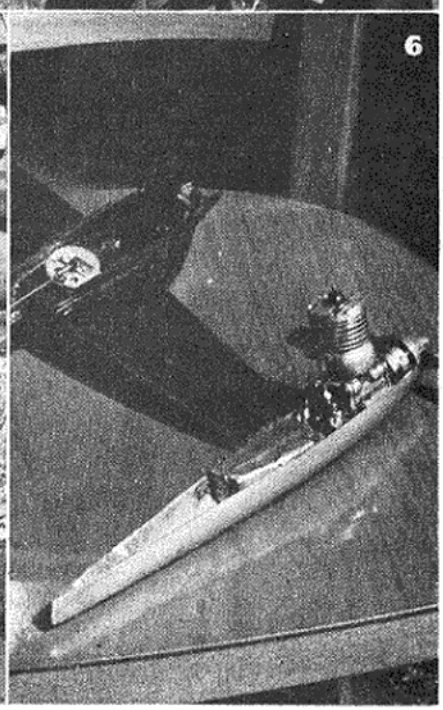
3. Three of the Bulgarian team. Left to right: Raskov, Vasilev and Boncev. On Boncev's model note the completely cowled cylinder head of the Super-Tigre.

4. Grandesso of Italy flew into 6th place with this works-modified Barbini B.40. Incidentally, designer Barbini himself was unable to make the trip this year.

5. A troubled Cellini reaches for a spanner to sort out his Barbini after completing only half a lap in the first round.

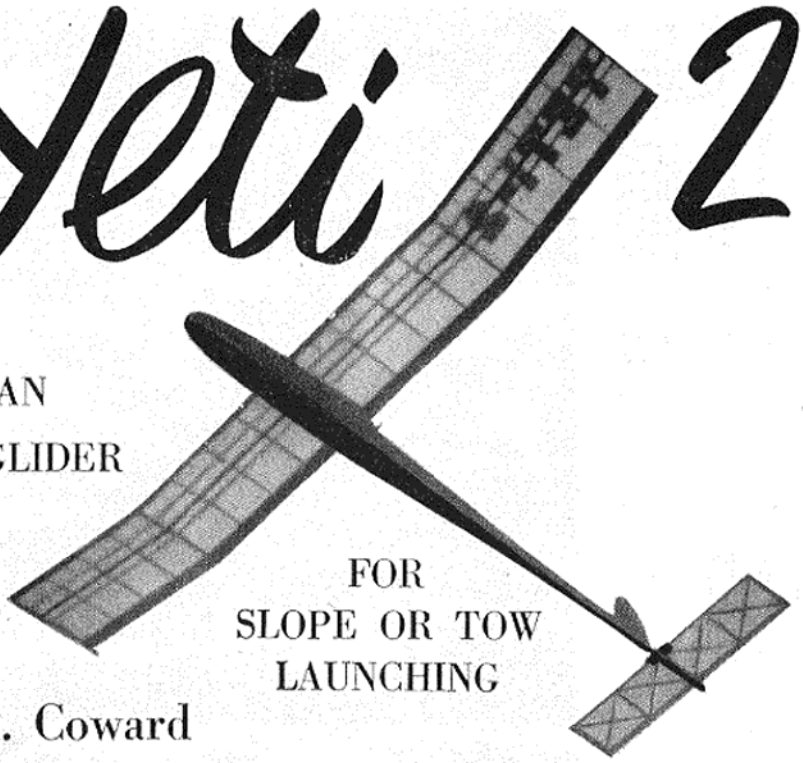
6. The M.V.V.S. motor in Sladky's model. Induction is through a rear mounted rotary valve. Note the circular bell crank.





Yeti 2

AN A/1 GLIDER FOR SLOPE OR TOW LAUNCHING



by T. Coward

THE A/1 glider is very popular on the Continent as a beginners' class and as a stepping stone to A/2's. Although *Yeti* is easy to build, it has more than a beginners performance as was shown at last years' Epsom Slope Soaring meeting held at Box Hill, which it won with two flights of 1 : 44 and 1 : 46 o.o.s. respectively.

Wings

These are quite straightforward as they were designed with simplicity and speed of construction in mind. The ribs and riblets can be made by using the sandwich method, i.e. pinning the required number of pieces of $\frac{1}{16}$ in. sheet together to form a block and sanding it to the aerofoil section. Use hard $\frac{3}{16}$ in. sq. for the spars as they take quite a strain when towing up. The leading edge should be built up on a flat board from three pieces of $\frac{1}{8}$ in. sq. and it must be allowed to thoroughly set before being built into the wing.

When covering the wings, the tissue can be folded over the end rib and pasted on to it, but before water shrinking or doping is started the endplates must be firmly cemented on to the end ribs, as these prevent them buckling when the tissue tightens.

Fuselage

The basic construction is a box formed from $\frac{3}{16}$ in. sq. Two sides are built on the plan; building one over the other ensures greater accuracy. They are joined together at the wing seating by the formers, the towhook having been previously attached to F2. When this is set, the two rear ends are brought together and cemented face to face for $3\frac{1}{2}$ in. It is very important that the fuselage is absolutely straight as the moment-arm is longer than normal and a slight bend in it will give trouble when flying. Next, the $\frac{3}{16}$ in. sq. spacers are added top and bottom to the nose and the rest of the fuselage. After the weight box is built of medium $\frac{1}{8}$ in. sheet, it can be cemented into the nose, the nose block added, and sanded to fair into the fuselage.

Cut away under the nose block and front fuselage sufficiently to accommodate the $\frac{1}{16}$ in. ply which protects the nose when landing on hard ground. The sheet sides of the fuselage can be either let-in between the spacers or cemented on the outside. If the latter method is chosen the sides should be put on first, then the top and bottom added, slightly overlapping the nose block; they can be sanded to fair into the block afterwards. The panels which make up the wing seating should not be sheeted.

The fuselage aft of the sheeting is double covered with heavy weight Modelspan, the second covering being doped on, then the fin, tail support, wing dowels and d/t hooks can be added. If you wish to make a detachable nose fin, it can be of the "plug-in" type incorporating paper tubes in the nose block and top sheeting.

Tailplane

This should be as light as possible and all joints should be a good fit so that warping does not occur. The d/t hooks are bent pins, cemented into the wood, which is reinforced round them with gauze. When covered, give the tail one coat only of thick dope.

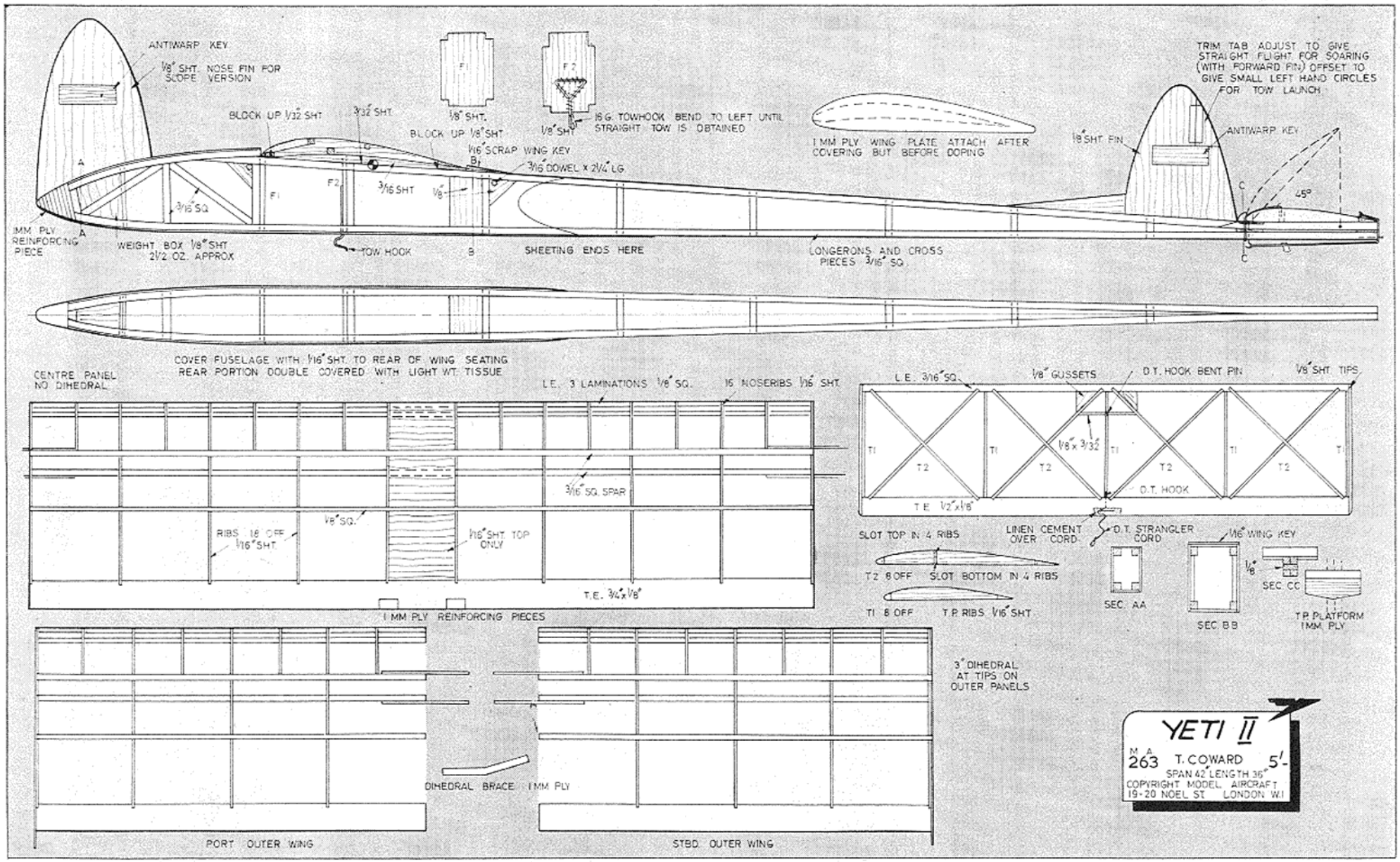
Trimming and Flying for Soaring

The model should be trimmed over flat ground for a perfectly straight flight. Once the c.g. is fixed at the point shown on the plan all trimming should be done by packing up the tailplane, so that flight is very near the stall. A hillside which faces the prevailing wind and a reasonably calm day should be chosen for flying. According to the flying speed of your model so the launching site will differ as the up currents on the hill face move at different speeds at different points. Using a trial-and-error principle, the height at which the model is launched that gives longest flights, will soon be found. On launching, the model should rise quite considerably for little forward movement until it is up to 50 ft. above the launching site and then it will fly forwards, still rising, until it flies beyond the influence of the slope currents. If it is well trimmed it should stay near the hill for a long time.

For Tow Launch

Remove the nose fin but fly with the c.g. in the same position. Again, all trimming should be done with tail incidence. The trimtab should be offset no more than $\frac{1}{8}$ in.; this is most important. If this does not give the required left turn, pack up the left tip of the tail plane by inserting scrap under one side on the support. The towhook will have to be bent to the left, i.e. the inside of the circle, to counteract the trim, to give a straight tow up. The offset required on the hook may be up to half an inch. If, when this is achieved, the model does not climb to the top of the line, the hook will have to be bent so that it is further back but still offset. This seems to be a natural occurrence when using an offset hook. When the model is at the top of the line it should come under the influence of the circling trim and turn away from you, so dropping the towline automatically.

One last word—there is nothing more frustrating than seeing your model circling serenely higher and higher and further away from you, without a d/t, so always use one.



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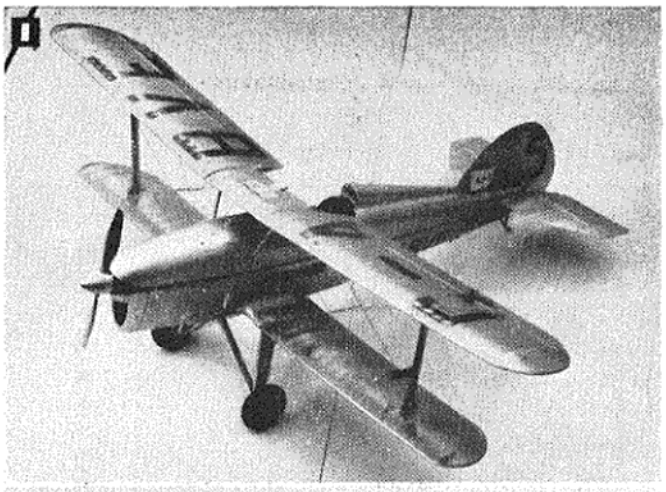
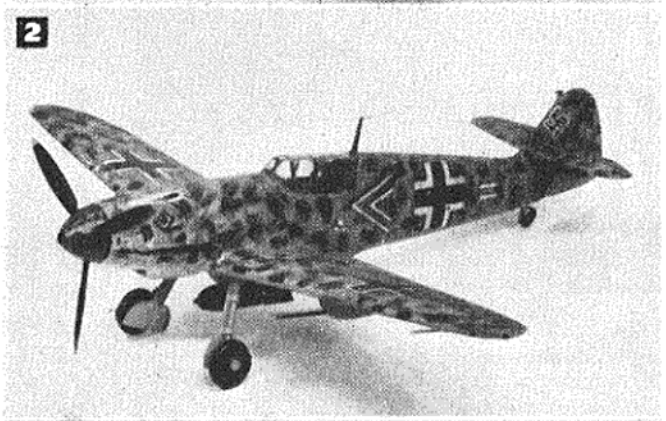
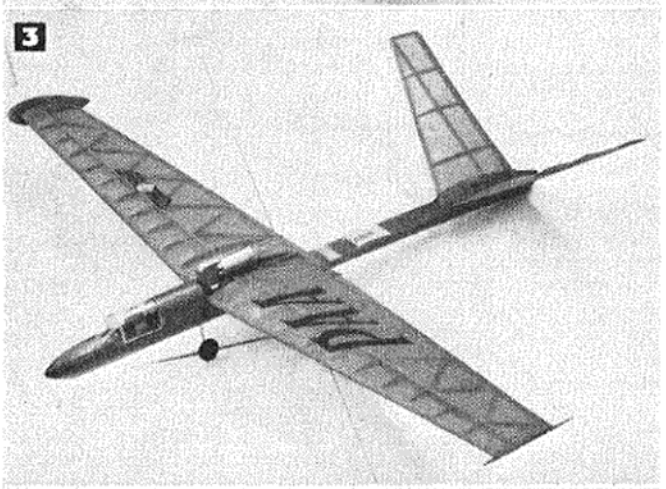
The MODEL ENGINEER EXHIBITION







TRUE to tradition, the high average quality of the aircraft exhibits at this year's Model Engineer Exhibition must have made the judges' (Messrs. Houlberg, Taylor and Goslings) task an unenviable one.

A F/F model of the *Arrow Active*, by well-known scale enthusiast E. H. Norman, won the Championship Cup, while last year's winner, R. A. Chivrall, had entered a F/F S.E.5, which in its details must be as near true scale as it is possible to get. Unfortunately, in spite of much midnight oil burning, he was unable to completely finish it, the rigging being the most noticeable omission.

Just to prove that models that have been flown in contests can still come up to Exhibition standards, John O'Donnell sent along his *Transient* Wakefield and his *Peter Pan* P.A.A. Jetex design. These gained a Bronze Medal and a Very Highly Commended respectively, while among the F/F power models, B. I. Fry's Silver Medal and MODEL AIRCRAFT Prize winning *Wendy* was a beautiful example of flying model construction and finish.

The invasion into the solids section of models made from plastic kits did not reach the proportions expected. However, it is possible that the organisers will have to consider a separate section for this type of model in the future. Of the ordinary solids, Dr. F. J. Morley's Bristol *Braemar II*, which won for him the Bristol cup and a Bronze Medal, was quite outstanding, though we would have hesitated to choose between this and the *Avro* 504, Armstrong Whitworth *Siskin IIIA*, and the *R.E.8* (Bronze Medal, V.H.C. and Silver Medal respectively) entered by H. J. Randall of Brighton.

It is always heartening to see the interest taken by the juniors, and indeed some of their models bore direct comparison with those in the senior section. Of particular note this year was the Avro *Lancaster Mk. III* entered by J. Williams, and which was awarded a Bronze Medal.

This year for the first time an aircraft was entered for the Duke of Edinburgh Trophy (awarded for any engineering model that has previously won a cup or medal), in this case P. G. Cookley's Bleriot Type XI, which was a Championship Cup winner three years ago. Although he was unlucky this time, we are sure that one day an aircraft will win this coveted award.


11

RESULTS

CHAMPIONSHIP CUP
E. H. Norman (Arrow Active)

" MODEL AIRCRAFT " PRIZE
(For model built from " M.A." plans)
B. I. Fry (*Wendy*)

BRISTOL CUP AND BRONZE MEDAL
Dr. F. J. Morley (Bristol Braemar II)

RADIO CONTROLLED AIRCRAFT
Bronze Medal ... ... E. and J. R. Mead (Junior 60)

FREE-FLIGHT RUBBER DRIVEN AIRCRAFT
Bronze Medal ... ... J. O'Donnell (Transient Wakefield)

FREE-FLIGHT POWER DRIVEN AIRCRAFT
Silver Medal ... ... B. I. Fry (*Wendy*)

NON-FLYING AIRCRAFT
Silver Medal ... ... H. J. Randall (R.E.8)

SCALE FREE-FLIGHT OR CONTROL-LINE AIRCRAFT
Bronze Medal ... ... R. A. Chivrall (S.E.5)

CONTROL-LINE MODELS
Bronze Medal ... ... C. Hallowood (Venture I)

JUNIOR SECTION
Bronze Medal ... ... J. Williams (Avro Lancaster III)

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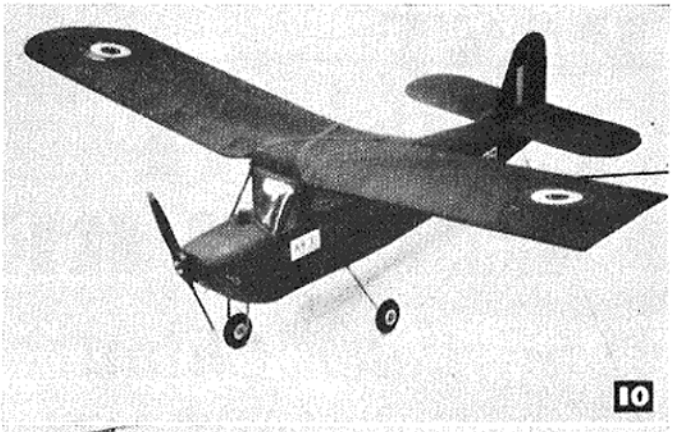
1. **This year's Championship Cup winning model was E. H. Norman's beautiful silver and blue " Arrow Active."**
2. **John Wardman secured a Highly Commended with his solid Me.109G.**
3. **This rather futuristic Jetex P.A.A. design won a V.H.C. for John O'Donnell.**
4. **Three beautiful solids entered by H. J. Randall, all won awards, this " Siskin" obtaining a V.H.C.**
5. **Silver paper was used to cover this " Super Sabre" entered by L. J. Brock.**
6. **Some of the Society's many cups and trophies were on show at the S.M.A.E. stand. Incidentally, the MODEL AIRCRAFT photos that decorate the walls may be borrowed by clubs for local exhibitions**
7. **An interesting Yugoslav-designed seaplane, entered by W. R. Stobart.**
8. **A beautiful example of accurate scale modelling—R. A. Chivrall's S.E.5.**
9. **This nicely finished Wakefield model was entered by A. Roginsky and was awarded a V.H.C.**
10. **A fine example of how well a sports F/F model can be finished. B. I. Fry's Silver Medal and " M.A." prize winning " Wendy."**
11. **Throughout the Exhibition, replicas of the Auster " Alpine," featured in the September " Model Aircraft," were being built on the demonstration stand.**

6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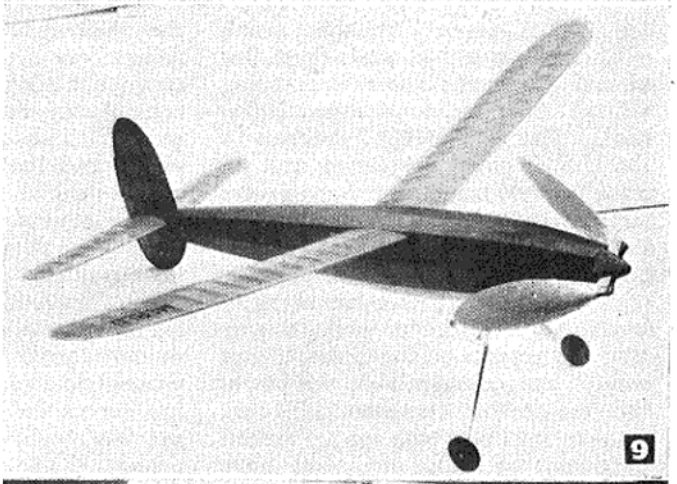
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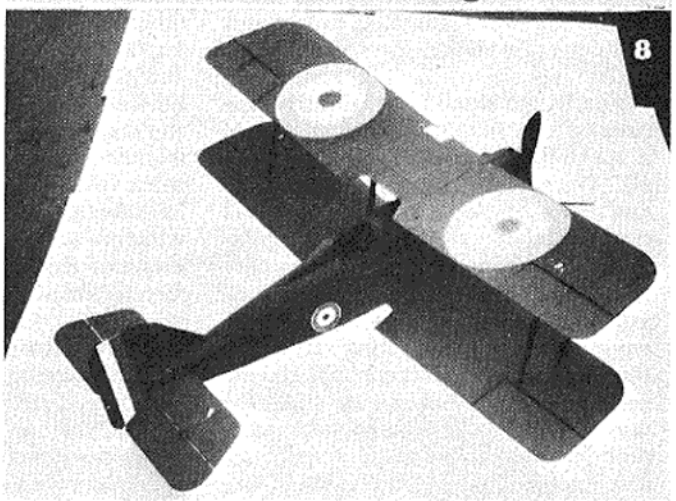
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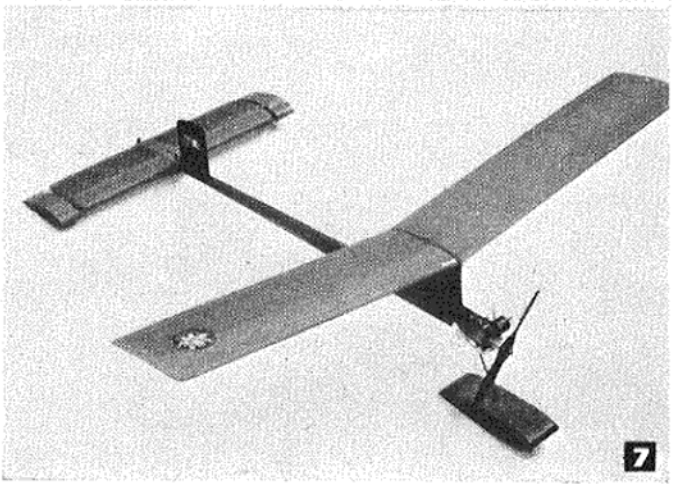
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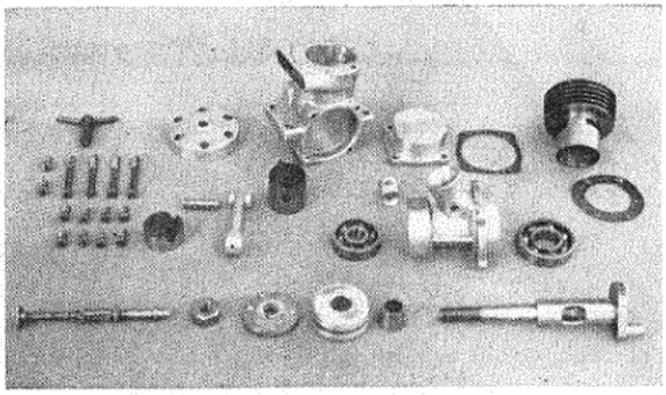
PAST PRESENT and FUTURE

by Peter Chinn



The "bits and pieces" of the prototype O.S. 2.54 diesel, which is described in the text.

A NEW event at this year's American Nationals (just finishing as these notes are being written) is a radio-controlled pylon race. The rate of R/C progress in the U.S. is pretty staggering and we imagine that, if this new event proves popular, we shall be seeing (or, at least, hearing of) some hot performances in a couple more years.

A few weeks ago we had a letter from Keith Storey, who, having read our reports on the Oliver-Tiger, wanted our comments on the use of this motor for the event. Keith, team-racing pioneer, former speed flyer and A.M.A. president, gave us some gen on his R/C racer and this certainly makes interesting reading.

Firstly, we should explain that the rules of the race call for five laps of a 1,056-ft. course—i.e., one mile in all. The course is merely two straights and two 180-degree turns around pylons placed 528 ft. apart. Regulations governing model design are simple and divide models into three groups: for 0.19, 0.15 and 0.09 cu. in. engines. Minimum wing areas for these are 766, 576 and 386 sq. in. respectively. Apparently in the interests of safety, high wing-loadings and low power-loadings are, therefore, prohibited. The models are required to r.o.g.

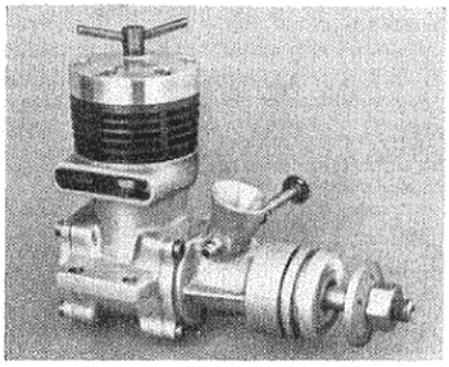
Keith chose the 0.15 (2.5 c.c.) size as being the best solution with the radio set-up planned. He is using Bob Dunham's latest Orbit eight-channel gear which allows two controls to be operated simultaneously. This is coupled to Bonner servos and the all-up weight of the model (called *Gold Rush of* '57) is approximately 4 lb., giving a wing-loading of 16 oz./sq. ft. The model has rudder, motor and elevator control. Rudder and elevators can be moved simultaneously to get the model round the pylons quickly without loss of height and there are *two* servos on the elevator, one to provide a quick up and down, with a positive return to neutral, and the other for trimming out the elevator for best level flight speed.

This new R/C event will no doubt be watched with interest and, while the standard of R/C flying in Britain is not such as to encourage us to think that pylon racing will reach here for some time, possibly we may witness a European international event of this type in the not too far distant future.

On Museums and Collections

The idea of a Model Motor Museum, first suggested by assistant editor Norman Butcher in the June issue, does not appear to have since received overmuch support at home, which is a pity. The idea is certainly a commendable one, but how it should be put into practice is not too clear at the time of writing.

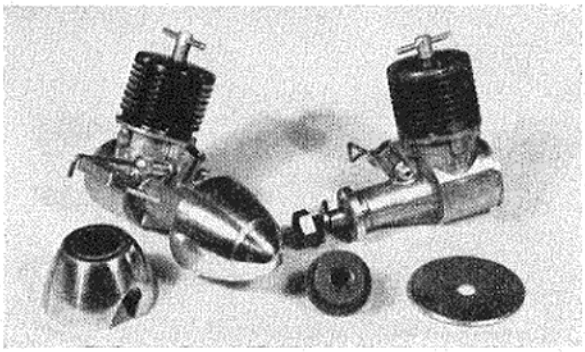
Organising, housing and maintaining (and, possibly, financing) such a scheme does present problems. Not every model engine carries markings giving its name or origin and the first requirement, obviously, is a "curator" thoroughly familiar with model engines and, in particular, those produced in the pre-war period and early post-war years.



The latest prototype O.S. 2.5 c.c. diesel. This, one of numerous designs tested, has twin ball bearings and loop scavenging.

Assuming that a permanent home for the collection could be provided by the S.M.A.E. (at Londonderry House?) it would then be necessary to ensure that these engines—especially if a proportion of them were on loan only to the museum—were properly cared for by regular inspection and cleaning and not merely left to gather dust and rust.

In addition, there is the question of restoring neglected, damaged or incomplete engines donated to the museum. Many of the interesting early engines that have come to light from time to time have passed through various hands and have suffered accordingly, but, in some cases at least, it is clear that these



The popular Allen-Mercury 25 and 35 diesels are now the only British plain bearing engines of their class in current production. Shown are a pair of special Mercury spinners ideally suited to these engines.

would be worth restoring. Here, it would be necessary to keep in touch with private collectors and other possible sources of supply for spare parts and with engine authorities able to undertake restoration work, such as the repair or remaking of parts otherwise irreplaceable. Obviously, some funds would have to be made available to the museum for this sort of work.

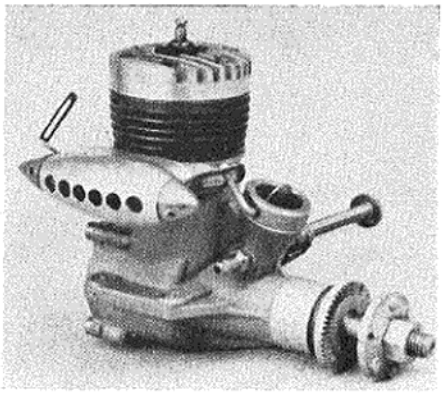
The alternative to a centralised collection of this nature is, of course, the private collections and it seems to us, that, for the present, the best we can hope for is that the private collector will continue in the good work of saving old engines from the scrap heap and of gathering together representative examples of current types. In due course, it may be possible to establish a central register of all the rare and interesting types owned by individual collectors to serve as a permanent record and source of reference. The co-operation of these individuals might then be sought to occasionally assemble suitable selections for exhibition—perhaps at the Model Engineer Exhibition.

This, of course, is the procedure that has been adopted to good effect in the automobile world—notably by the Veteran Car Club and by various one-make car clubs—and has encouraged the preservation and continued appreciation of many examples of automobile engineering that would have otherwise been lost to posterity.

The application of this system to model engines, is, in fact, already well under way in America. Bruce Underwood, a keen model engine collector of Columbus, Ohio, began collecting early and unusual type model engines some years ago. He went about this work seriously, even going to the trouble of having printed special notepaper headed "Underwood Model Engine Collection" and established contact with other collectors and interested people. We were called in at an early stage to help establish the identity and date of manufacture of one or two of these engines and subsequently became one of the "founder members" of Underwood's collector's circle, which now numbers over a dozen people, including two in the United Kingdom.

The organisation of the Underwood scheme could very well be taken as a model for similar associations in other countries. Special forms have been devised for the listing of individual collections and, in addition to columns for make, type, capacity and year, there is a system of coding to establish the condition of each engine. From the information on these forms, a central register is being compiled.

Most of the members of the Underwood group have collections of around 100 engines and upwards and Bruce's own collection is now bordering on 200 different types. Top score as regards sheer numbers, however, goes to Steve Ditta of New York with 249 engines at the last count. Needless to say, the list contains many famous motors of the pre-war era: Brown-Junior, Baby-Cyclone, Forster, Hurleman, Ohlsson, Dennymite, etc., as well as some lesser known ones of the pre- and early post-war period, names like Dreadnaught, May, Howler, Perky, Black Panther, Husky and Melcraft.

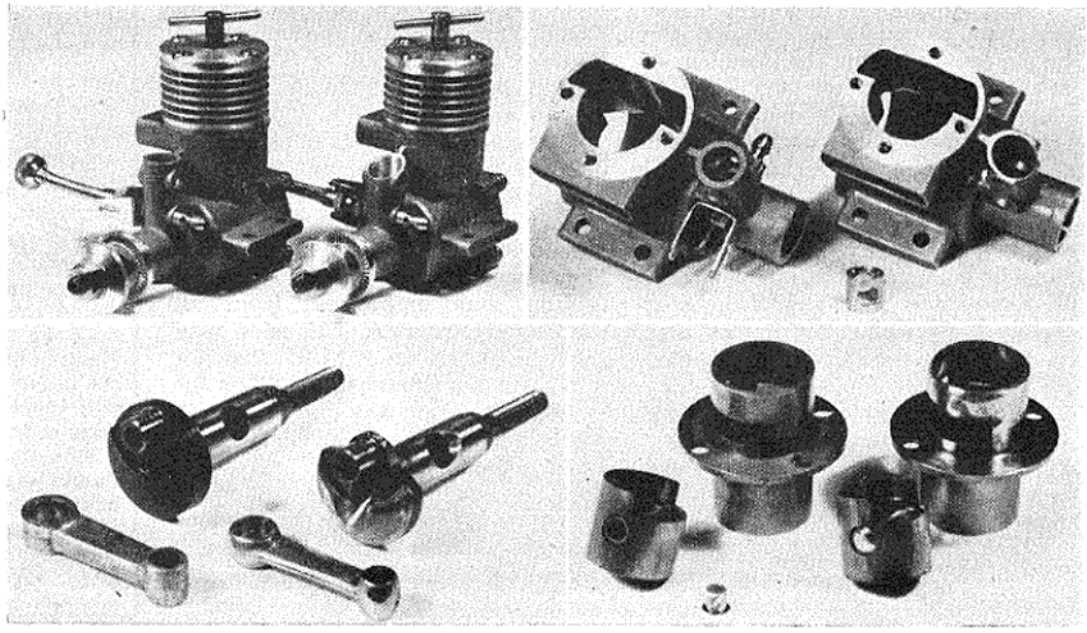


The modified R/C speed control system that will be available for fitting to the latest type O.S. Max-35 engine, now features a butterfly throttle valve coupled to the variable exhaust restrictor.

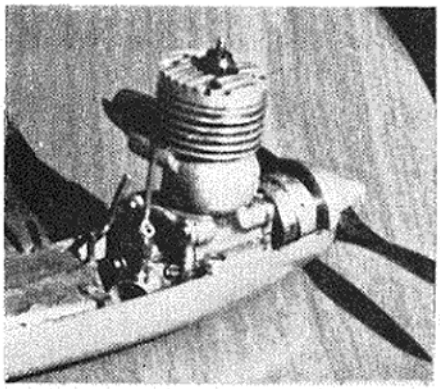
Undoubtedly, Bruce Underwood is performing an invaluable service in gathering a collection which so well illustrates the history of the model aircraft engine, and in encouraging others to do likewise. His efforts, too, have not gone unheeded by American manufacturers and ex-manufacturers, some of whom have donated still-surviving early examples of their work to his collection.

Late Engine News

We have just received one of the new O.S. Max 35's (name now officially given as "Max-35"—not "Max-1 35" as hitherto) first mentioned in this column last month. In addition to the detailed changes



Polishing operations on an Enya 15-D by Ron Draper, compared with the standard engine and parts, shown left in each of these photos. As yet not run-in, the engine is giving over 0.3 b.h.p.



Sladky's motor as used in winning this year's World Speed Championship. Note the position of the intake, and metal tank.

then mentioned, the new Max has two tapped lugs hidden in the exhaust duct. These are for mounting the R/C speed control unit that will be available as an optional extra for these engines. This unit has been modified from the earlier design shown last month, the coupled intake flap now being replaced by a special venturi insert equipped with a butterfly valve.

We also show two photographs of the latest in the series of O.S. International class diesels that have been under development for the past year. This one, it will be observed, is another loop scavenged job like the Enya Diesel, but takes the idea a stage further by employing a baffle piston, the contra-piston, of course, being suitably contoured to accommodate the baffle at t.d.c. This makes the O.S. unique among present day diesels and it will be most interesting to hear more about the performance of this engine. No attempt has been made (with the prototype at least) to cheapen the engine by reducing the number of parts, which number 21, plus 14 Phillips screws. The engine has a $\frac{3}{8}$ in. dia. mainshaft with rectangular intake port and two ball journal bearings.

Some standard modifications, mainly polishing, to an Enya 15-D diesel by Ron Draper are shown in the photographs on page 345. Interested mainly in obtaining top performance on an 8 × 4, or similar, prop, Ron has polished out the intake, widening and sloping the entry after removing the venturi restrictor, smoothed out the crankshaft porting and rounded the cylinder liner skirt to smooth the transfer. In addition, the crank web has been ground away either side of the crankpin and the con rod lightened and polished.

To be perfectly truthful, when we made some brief checks on this engine against a stock 15-D, there was an only just perceptible improvement, but as the engine at this time has had only about 10 minutes' running (apart from the factory test) it is obvious that some improvement can be expected with further running. On an 8 × 3½ Top-Flite prop, Ron Draper has checked the engine at 15,800 r.p.m., as against 16,000 on his works-modified Oliver and any engine that can come that close to an Oliver is quite some motor.

Hot Performance at U.S. Nats.

Since these notes were written, we have received the results of the 26th American Nationals. For a start, we should mention that Keith Storey won the R/C Pylon Race. We have no details, but could it be that the Oliver Tiger has found fresh fields to conquer? In regular R/C (stunt), Bob Dunham won the multi-channel event, amassing 266.5 points to just beat Harold deBolt. Dr. Walter Good was third and Howard Bonner fourth. Incidentally, Dick Branstner did something new: inverted spins! (No, they weren't accidental.)

The C/L speed events witnessed some shattering times. In Half-A, 100 m.p.h. was once again topped, but the really staggering performance came in Class A (i.e., 0.19 cu in.-3¼ c.c.) with record holder Bill Wisniewski's 154.58 m.p.h. After that, Arnold Nelson's record time of 153 m.p.h. in Class B (0.29 cu. in.) sounds quite leisurely. In Class C (0.60 cu. in.) top time was 169.58 m.p.h. by Randall Cullin (1 m.p.h. short of the record) and in the Jet Speed class there was another record figure of 177.27 m.p.h. by Ted Reese —5½ m.p.h. better than the Russian held world record.

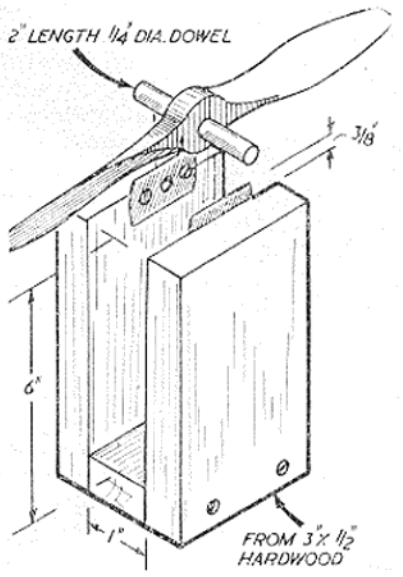
Wisniewski and Nelson have been selected as members of the U.S. speed team to the World Championships and if they can make 15's go as well as their 19's and 29's, maybe the Czechs and Italians will be finding some opposition from an unexpected quarter. It is a pity that the American A.M.A. does not introduce an International Class for speed in the same way that they have recognised International Class PAA-Load, Wakefield, A/2 and free-flight power. We have no doubt that this would encourage the development of suitable American 2.5 c.c. engines and result in some really high speeds.

build this . . . . . PROPELLER BALANCING JIG

FOR efficient performance, all propellers should be correctly balanced. A simple jig can be made for balancing power propellers (wood or plastic) by construction of a U-shaped frame to the dimensions given in the drawing. Hard wood of at least ½ in. thickness should be used for the frame parts which must be assembled accurately and pinned or screwed together.

The knife edges for balancing are provided by two razor blades, mounted with small woodscrews. Make sure that the blades when fitted in position are exactly parallel and also level. You can check this by laying a piece of flat material over the blades and testing with a spirit level.

Propellers for balancing must be mounted on a 2 in. length of dowel which is a plug fit in the hub hole (usually ¼ in. on commercial propellers). To fit a larger hub hole, either use a large dowel or wrap round the dowel with gumstrip to build up to the required diameter. Material is filed, carved or sanded off the heavier blade until the propeller will balance level when tried both ways round.



When not in use the knife edge should be covered with a block of soft balsa fitted over the top of the jig. This will prevent the possibility of cutting the fingers on the protruding knife edges.

The 1957 NORTHERN GALA

HELD AT LINTON-ON-OUSE NEAR YORK

AFTER a disappointment last year, and a few doubts earlier in the season, the Northern Area were fortunate finally in their choice of site, and the gala this year was held to schedule, at Linton-on-Ouse, near York. Special mention should be made of the excellent co-operation of Wing Commander Brain, A.F.C., and his officers, in the provision of every facility from P.A. to field ambulance, their interest and keenness went a long way toward making this a very happy meeting for the three thousand odd competitors and spectators.

The weather was bright and warm, but unfortunately, the wind was in rather an awkward direction, carrying not a few models into difficult terrain; I understand that several models were lost in standing corn. The Northern Area have long been aware of this particular hazard, and have suggested that next season's meeting should be held later in the year, a tentative suggestion being September 6th, when the crops will all be cut and recovery simplified. In fairness too, the organisers should pay more attention towards a punctual start, some of the people responsible for the running of competitions not arriving until well after 11 o'clock, owing to transport delays. In view of the rather early close down this did cause one or two competitors some embarrassment.

As usual, the R/C and C/L events attracted the greatest number of spectators, and even if the flying was not of the highest standard, they seemed well entertained. Harold Budding's win in the R/C event was a very popular one, this very unassuming local club lad well merited his success. It was quite noticeable that most of the models suffered from lack of penetration, at least 70 per cent. were unable to move forward at all on the up wind beat. Donahue was well out of luck, he made two beautifully straight and natural take offs, to suffer from engine trouble in the air. The Wharfedale lads seemed to handle the C/L events with smoothness, in spite of the inevitable couple of arguments from competitors who tried to invoke rules not in the book. The Perth lads had an excellent day, and are rapidly coming to the front in this class of event.

The F/F events went on a very easy fly-as-you-will basis, but several competitors were handicapped by a first flight maximum and consequent loss of model, and one or two found themselves without sufficient time to make their third flights. Special mention should be made of the English Challenge match team, who completely outclassed their Scottish opponents, although in fairness it should be said that the Scottish lads were short of a member in two of the events.

Generally this was a very pleasant meeting, well, enjoyed by most people attending, but for future occasions, attention must be paid to running times, competitions ending at five-thirty *must* start to time, and more advance details would be appreciated by competitors. With such an aerodrome, and such excellent facilities, this could be one of the meetings of the year.

Top photo: K. Lees of West Yorks prepares for his first flight in the Ripmax. Model is single channel.
Right: A group of Scottish fliers, F. Robson (Edinburgh), R. Sleight (Prestwick), A. Hamilton (Stranraer).

RESULTS

FLIGHT CUP

1. R. Lennox ..	.. Birmingham ..	.. ..	12.00
2. R. Burwood ..	.. Surbiton ..	.. ..	11.09
3. H. O'Donnell	.. Whitefield ..	.. ..	10.59

C.M.A. CUP

1. R. Swinden ..	.. Darlington ..	.. ..	8.52
2. I. Ellison ..	.. Eng. Elec. ..	.. ..	7.41
3. G. L. French	.. Laindon	.. ..	7.27

FROG SENIOR CUP

1. B. Broomfield	.. Middlesbrough .	.. ..	10.27
2. S. Lanfranchi	.. Baildon	.. ..	9.52
3. N. Worley ..	.. Southampton ..	.. ..	9.31

P.A.A. TROPHY

1. A. M. Robson	.. Stockton ..	.. ..	5.43
2. P. Muller ..	.. Surbiton ..	.. ..	4.23
3. R. Firth ..	.. York	.. ..	3.31

RIPMAX TROPHY

1. H. Budding	.. York ..	.. ..	326.25 pts.
2. J. Nixon ..	.. N. Lincs. ..	.. ..	157.5
3. R. Donahue	.. Kersal ..	.. ..	110.0

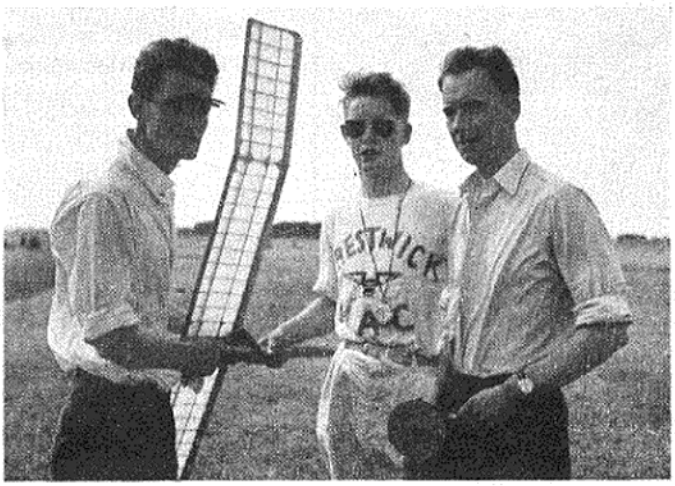
TEAM RACE CLASS "A"
1. Lawton .. .. Heath A.M.

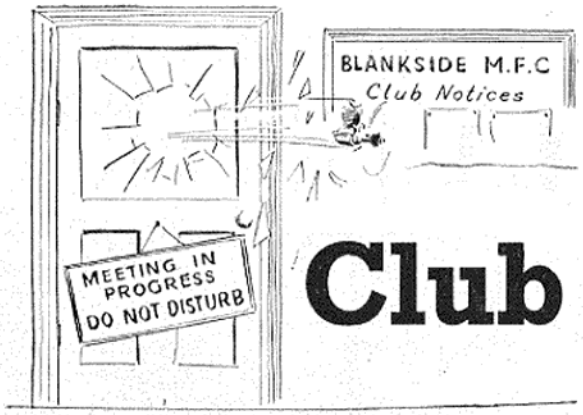
TEAM RACE CLASS "B"
1. R. Irvine .. .. Perth

SPEED

Class One	D. Morgan	82 m.p.h.
Class Two	Hall	130 m.p.h.
Class Three	Drewell	141 m.p.h.

England beat Scotland in the U.K. March by 15 pts. to 9 pts.





Club News

ENFIELD & D.M.F.C.

The team racing boys have been keeping up to scratch recently, at the last of the four London Area Team Race League meetings, members came 1st, 2nd, 3rd in the class "A"; winner was George Allen, followed by his usual team mate, Pete Hartwell, flying separately this time, and third Don Walker/Bob Page.

As a result of this and previous placings, George and Pete are second and third respectively in the final results of the league.

Although there was no "B" racing at the last meeting, the Don Walker/Ray Tuthill team, having won all the first three meetings, are the final winners of class "B."

Over August Bank Holiday, a small contingent visited the Northern Gala, without any luck. The F/F chaps took some very potent jobs along with them, and promptly lost them, so nothing was forthcoming from that quarter, and the class "B" team was very narrowly beaten in their heat, and unfortunately the "30 sec." rule was not applied with the result that only one of the three top models present was in the finals and that was the northerner. It might be mentioned that the London contingent did not appreciate the way southerners were eliminated by applying the rules one way for them, and another way for northerners, or the disgusting flying "manners" displayed by some, in fact, most of the northern fliers, we thought such styles were confined to the Continent.

DEBDENAIRS M.F.C.

History was made in a very small way when the Enfield class "A" contest saw our single entry, a brand-new racer with the distinctive transfer of Debdenairs. This will be better known, we hope, in the future, and will meet better luck too! That line test is certainly something. We retired somewhat less green, sadder but wiser.

Perhaps when dervishes reel giddily away to their premature graves, we shall get a look in, if we ever find one of those Oliver Tigers!

Club membership approaches 30 and we always welcome newcomers at Loughton Hall every Friday fortnight, alternating with flying at Grange Farm, Chigwell.

Remember if your are in the Epping Forest district and are interested in model flying, Debdenairs are interested in you.

Details from hon. sec., P. Oliver, 23, Covert Road, Chigwell, Essex.

STRATFORD-ON-AVON D.M.A.C.

As part of the revival programme, the club is holding a rally for all types of "kites" at Wellesbourne Aerodrome on September 22nd. If any club or enthusiasts in the district would like a day of sports flying they will be welcome.

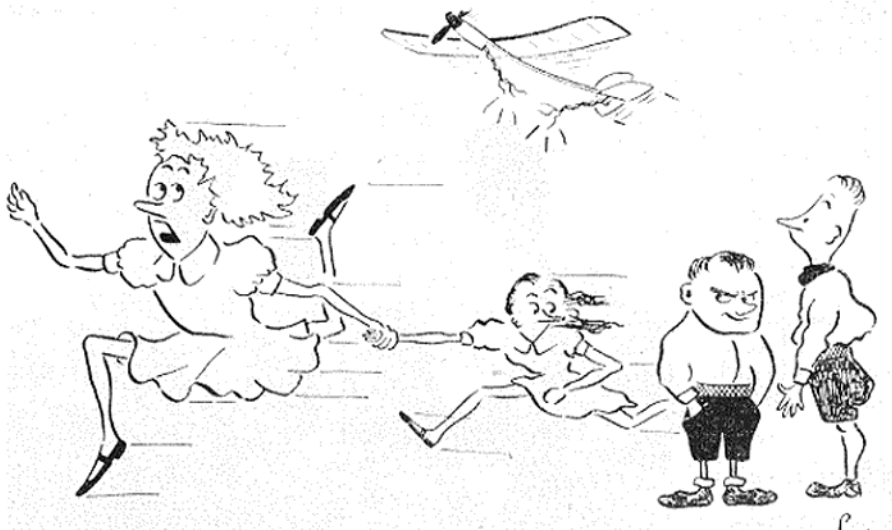
LITTLEOVER M.A.C.

About 30 members attended the Hyde Rally which unfortunately had to be reorganised at the last minute, due, we believe, to the local council raising objections. We made the best of the conditions and had quite a successful day in the end. Dave Keeling chopped his way to second place against a Leeds clubman in the final of the combat event, while Phil Roe took first in the glider event. We liked the unknown bod from Blackburn who kindly lent us a combat job in the semi-finals when our pile was almost gone.

Latest project is a C/L D.H. *Heron* from M.A. plans. It is to be used by the club for local displays. Power will be four E.D. 246's.

BAILDON M.F.C.

Our only success at the *Stockport Express* Rally at Woodford was Arthur Collinson's win in open power (though Arthur himself was a bit upset because he lost his model in the fly-off, however, he now has two electric razors instead of one). This success atoned for the assorted disasters which overcame the rest of us, and when—in addition to getting his model back—he subsequently cleared third prize in both the Queen's Cup and open power at the N. Heights Gala a week later, even he became somewhat mollified.



"Run for it, Cynthia—they'll be needing some more elastic."

At the ill-fated Scottish Gala our sole representative, J. A. B. Pannett, didn't fly because of the weather; but in the Northern Gala at Linton we turned up in strength—for what good it did us! During one stage of the event, we had six models lost between us, and although one or two of these were eventually found our only consolation was Silvio's second place in the Frog Senior—achieved at the cost of two lost models, though one of them (wrecked) was among those later recovered. Frank McNulty was unluckiest—he lost two machines and didn't even get any bits back!

GODALMING & D.M.F.C.

The most notable success this season was junior Bobby Bell's second place in the London Area ½A team race league. Although this is the first flyable C/L model he has built, it has achieved 75 m.p.h. so far, and is as steady as a rock (or brick?) He uses a sleeved Oliver Tiger, which the boys have not "got at" yet.

Our flying field is well suited to R/C gliders and several have been built to date. R. Reffel has turned in a number of very good flights and in a recent gale it took four chaps to manhandle it over the ridge for launching, but it flew well with a pair of heavy pliers fitted for better penetration!

Free-flight interest seems to be falling; it appears that as soon as our younger members start getting results they leave the district. However, in the L.D.I.C.C. second round we beat Enfield by a wide margin of about 8 min.

CONTEST CALENDAR

Sept.	22nd	All Britain Rally, Radlett, Herts.
,,	29th	TEAM RACING. "½A," "A" and "B" Classes. Area.
		South Coast Gala Rally, Ashdown Forest, F/F all classes.
,,		South Coast Gala Rally, Ashdown
Oct.	13th	K.M.A.A. CUP. U/R Glider.
		*FARROW SHIELD, Team Rubber. Area.
,,	27th	HAMLEY TROPHY, U/R Power.
		FROG JUNIOR CUP. U/R Rubber/Glider. D/C.

*Plugge Cup event.

LONG EATON M.A.C.

Though mainly a sports modelling club, there have been quite a few entries in the Nats., Woodford and Wellesbourne; in the latter, the club came third in team race and reached the semi-finals in combat. The club seems "on demand" for garden fetes, etc., a few of which have already taken place, impressing and entertaining the onlookers a great deal. Flying on the local park is still prohibited, though every effort is being made to convince the councillors that there is very little or no danger. The catering manager, who sells crisps, lemonade, etc., has got himself a notorious reputation as he never lets an opportunity go by for selling his goods! No wonder we are all broke!

EXMOUTH & D.M.A.C.

At the last club contest the first place in both the power and glider event went to two junior members. David Selway won the power with his A.M.10 powered Y-Bar and the other junior, Peter Hutchings took first in glider. This was a double shock to the seniors.

The rubber contest was a hot battle for first place between Peter and Dennis Baudet, the father and son team, in this round Peter won with a margin of 58 sec.

Sad news for the club was that Tom Westacott, owing to illness, has had to give up flying. This will be a big loss to the club as he flew in power, rubber and glider and also C/L.

CHANGE OF SECRETARY

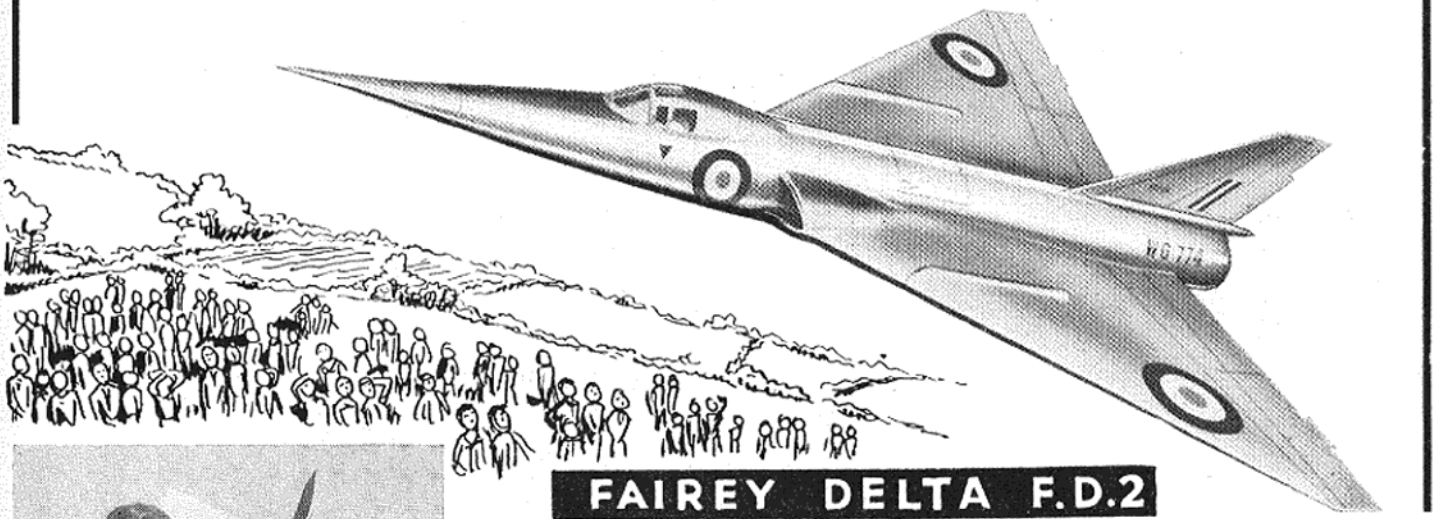
LEICESTER M.A.C. M. A. Colyer, 17, Turville Road, Leicester.

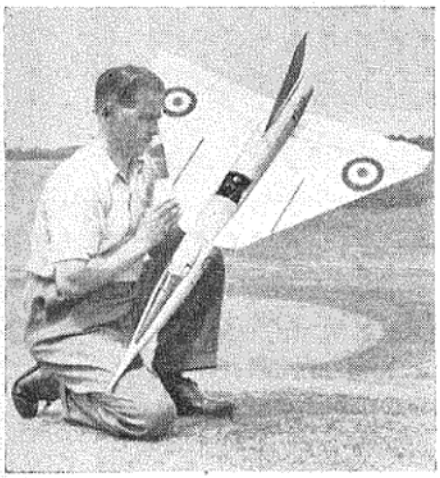
LITTLEOVER M.A.C. D. M. Keeling, 1, Bansall Avenue, Littleover Lane, Derby.

PEN PAL WANTED

By Vlastimil Rybak, Molotovstr. n.45, Svitavy, Czechoslovakia, who would like to exchange correspondence, magazines, engines, etc., with an English enthusiast—particularly interested in R/C.

THIS PERFORMANCE THRILLED THOUSANDS!





FAIREY DELTA F.D.2

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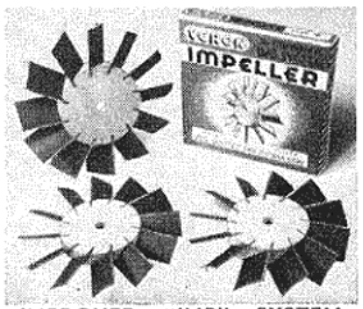

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OCTOBER 1957

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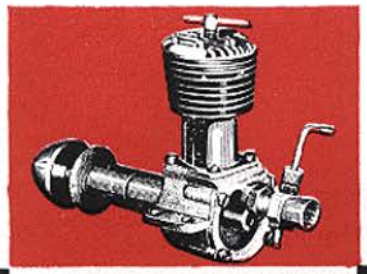

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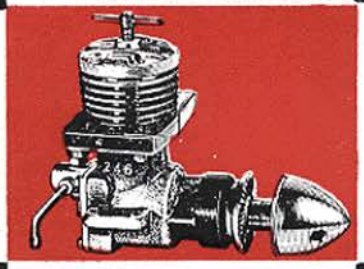

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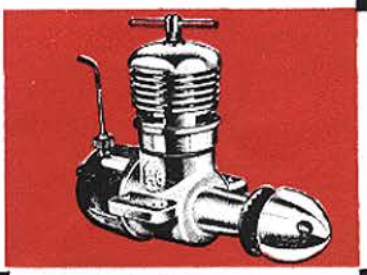

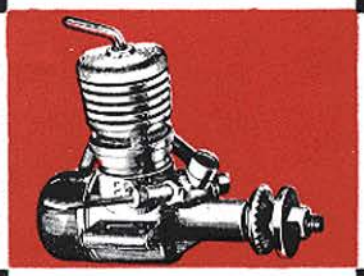

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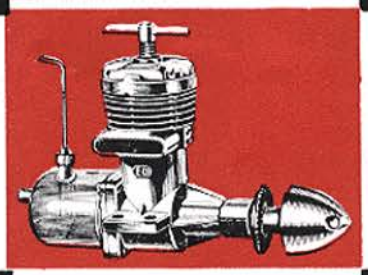

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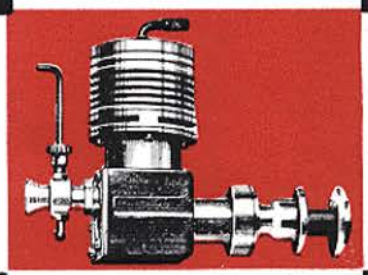

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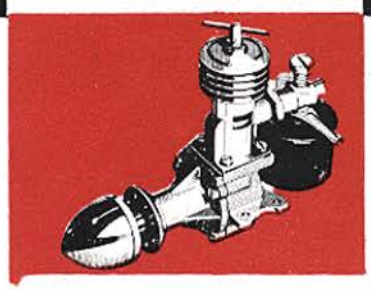

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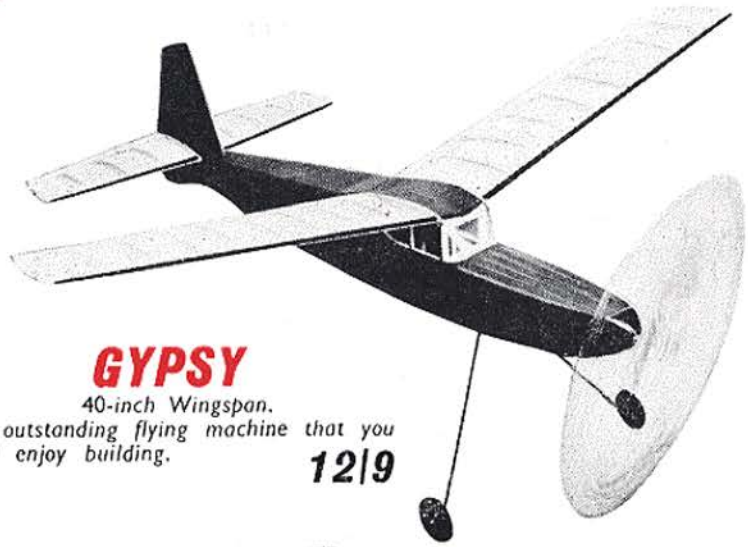

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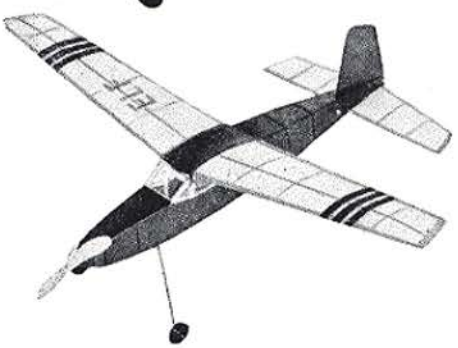

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