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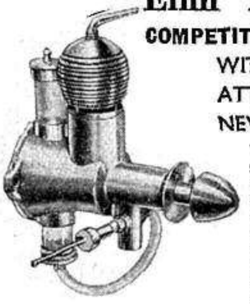

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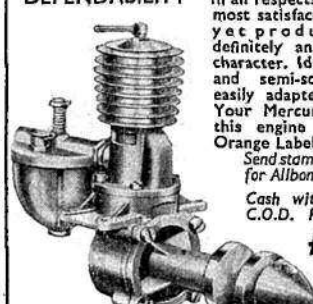

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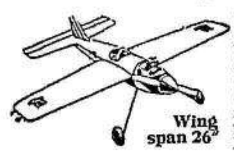

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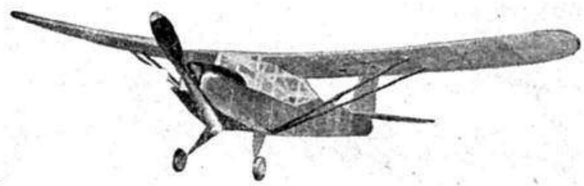

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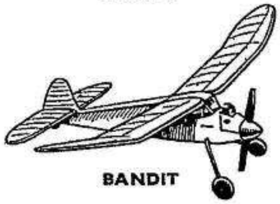
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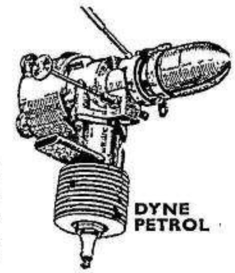
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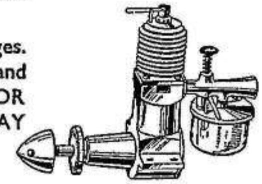
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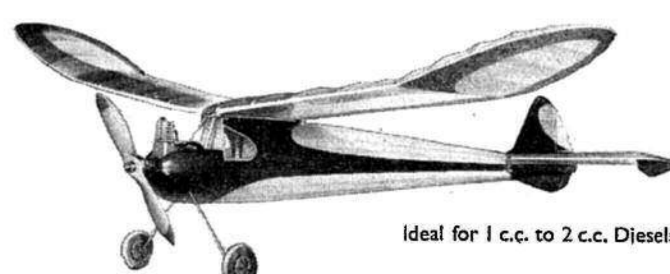

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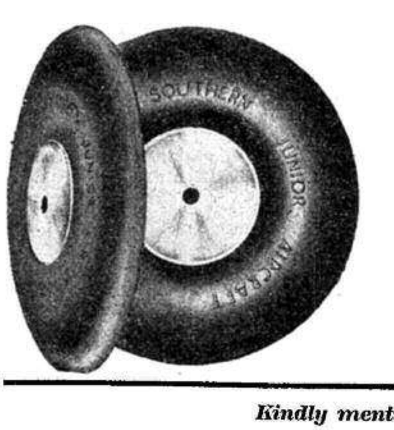

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ESTABLISHED 1935

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(Aeromodeller Photo.)

ROYAL RECOGNITION. Her Majesty the Queen presents the magnificent "Queen's Cup," trophy to Phil Smith of Bournemouth, the fortunate winner, on the occasion of her visit to the Northern Heights Gala Day.

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The QUEENS CUP

DESCRIBED BY **C. S. RUSHBROOKE**

FOREWORD BY

WITH apologies to whoever said the following words (since I do not know their origin), I quote the following :—

"*In a Democratic country there is much complaint and little suffering. In a Totalitarian state there is little complaint and much suffering.*"

What has this to do with aeromodelling—or the "Queen's Cup"?

Just this :—

It may be said that so far as concerns the aeromodelling movement . . . "In a Democratic country there is much Royal support and little or no government support. In a Totalitarian state there is little or no Royal support but much government support."

It is, of course, common knowledge that in this country the model aeroplane—or for that matter the *light* aeroplane—movement has received little or no government support; but looking back over the past twelve years to the time when the circulation of this Journal was a mere 4,000 copies per issue I have seen a steady yet increasing growth of the aeromodelling movement entirely *un*supported by the government, yet *more and more* favoured by Royalty.

For this, I personally, am grateful. Some folk count their blessings in terms of money. Others, including myself, value much more the "hall-mark" of Royal Favour.

The model aircraft movement received its first Royal Favour on the occasion of the visit by H.R.H. the

Her Majesty the Queen displayed a deep interest in the activities of Phil Smith, winner of the "Queen's Cup" after the actual presentation. *Aeromodeller Photo.*

THOUGH it has long been my habit to attend every aeromodelling meeting of note both at home and abroad (when circumstances and the exchequer allow), a Northern Heights Gala Day always eluded me through one cause or another until 1948.. However, this year I vowed that it was time I saw for myself what happens at this "Ascot" of the aeromodelling world, and by dint of much scraping and saving of the precious "basic" necessity for travel in these enlightened days, the journey to London and Langley was made.

Taking in first a Council meeting and the S.M.A.E. dinner and prize-giving on the previous day, much trepidation was felt at the state of the weather, which brought out its usual summer quota of wind and rain in unlimited quantities. The faces of one or two Gala Day organisers were expressive of their thoughts of what would happen on the morrow if conditions did not improve, and only a slight improvement resulted from suitable lubrication by one or two sympathisers!

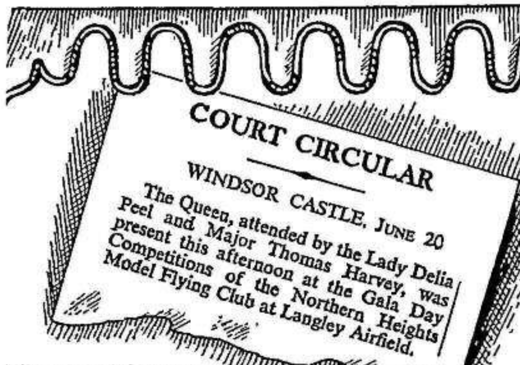
However, luck was with the fellows, and despite a doubtful cast to the sky in the early morning, the day cleared up to result eventually in almost perfect conditions for model flying. How seldom do we find this happen—especially on a day fixed for an important function. The one snag was the wind direction, being towards instead of away from the specially erected enclosures, which by virtue of their permanency did not allow of the shifting of control centres. However, the drift was not strong, and what breeze there was eventually died out almost completely, resulting in some extraordinary flying.

A general inspection of the layout and control showed that a great deal of thought had gone into the preliminary arrangements, and had the wind obliged by proceeding in its usual direction, the many thousands of spectators arrayed behind the stout fencing would have had a fine view of all the many and varied activities encountered in our hobby. With nine events on the elaborate programme, with very large entries in each, it was obvious that most of the events had to take place simultaneously, and the aerodrome was dotted with groups of modellers competing with many and varied (some definitely weird) examples of the aeromodeller's craft.

Owing to its scattered nature, it was impossible to take in everything that occurred, and readers must excuse me if many excellent flights are not reported here.

Thermals were virtually picked off the ground, and I witnessed many models just on the point of landing suddenly lift into the air and continue to stooge around for many additional seconds. Rarely have these elusive thermals been so marked in their course across a 'drome, and at one time no less than five gliders were to be seen circling in a small section of space, looking for all the world as though they were controlled by a marionette exponent.

Speed control-line models were of course demonstrated directly in front of the long line of spectators, outstanding among these being a waspish looking job powered by one of the new "Nordec" motors, and sporting a glo-plug. This machine, owned by J. B. Wood, was flown on long lines, and employed the usual American technique of ditching the "dolly" undercart once the model was airborne. A speed of 86 m.p.h. was recorded during the course of the contest, the engine giving out a healthy crackle—and a horrible stink!—in the process. This model was demonstrated later to the Queen, who displayed a keen interest in this newest craze of ours.



COURT CIRCULAR

WINDSOR CASTLE, JUNE 20

The Queen, attended by the Lady Delia Peel and Major Thomas Harvey, was present this afternoon at the Gala Day Competitions of the Northern Heights Model Flying Club at Langley Airfield.

With acknowledgements to "The Times"

D. A. RUSSELL, *M.I.Mech. E.*

Duchess of Kent, accompanied by her children, H.R.H. the Duke of Kent and H.R.H. Princess Alexandra, when they visited Britain's Second National Model Aircraft Exhibition organised by this Journal in January 1947.

Some 18 months later the model aircraft movement in this country has received an even greater honour in the way of Royal Recognition by the visit of Her Majesty the Queen accompanied by her younger daughter Princess Margaret, on the occasion of the Northern Heights Gala Day at Langley aerodrome on June 20th 1948.

The *fullest* recognition of the aeromodelling movement in this country has yet to come. For the two or three genuine aeromodellers presented to Royalty at this meeting, quite a number of Officials such as Directors of the Hawker Aircraft Co. and other V.I.P.'s, were presented also.

It is not for us to question this: we mention it merely for the record, and to encourage the aeromodellers in this country to yet greater achievements, so that eventually—we dare to hope—both His Majesty the King *as well* as his Queen will favour a National Meeting with their presence, and "meet the modellers".

The above expression of opinion, though personal is yet representable of the policy of this Journal, and will no doubt make crystal clear that we prefer recognition by Royalty—the favour of which can be bestowed on the humblest of us—to the doubtful support of any government which may, or may not, be capable of learning the simple lessons which experience offers to us all.

Aeromodeller Photo. *Her Majesty the Queen, with Princess Margaret, receives a bouquet from Phyllis Turner, daughter of Northern Height's popular Secretary.*

Flying for the Queen's Cup had got under way, and, this type of model being my pet failing, attention was devoted to this for some time. It is disappointing to record that very few chaps had got down to designing and building a special model to the new specification, most of the machines seen being modified (and in some cases truly botched up) Wakefield models that had seen service before.

It was evident that many of the models on view were insufficiently tested, and a large number could only just stagger off the take-off area, some not even managing that effort. Obviously many of the models could have done with just a shade more wind to help them away, but nobody dared voice such a heresy !!! Many fine models were to be expected from the names of some entrants, and it is surprising to note how the same chaps always seem to shine when it comes to real craftsmanship. P. T. Capon's red and white model was outstandingly pleasant on the eye, whilst the winner displayed his usual high standard of constructional skill.

Phil Smith of Bournemouth proved the top man in this keenly contested event, making three fine flights of consistent excellence. His model, a slab-sided cabin job faired to a streamline section at the nose, had a polyhedral wing and was designed for the contest. It employed a fairly short but powerful motor run, the idea being to get the model up to the "thermal altitude" as quickly as possible. A hefty motor comprising twenty strands of $\frac{1}{4}''$ strip was used, and an interesting feature of this design is the incorporation of ballast in the high pylon type cabin to raise the C/G to the C.L.A.

Another innovation was the Helicopter Trophy, and though I was unable to get along for a close-up of this contest, it was possible to discern a number of models hovering around from time to time. Reports indicate that the standard of flying in this section, with one or two outstanding exceptions, was not good. However, S. Millard's win must have been well merited against such competition provided by the acknowledged expert in this class of flying, Ron Warring, who came second.

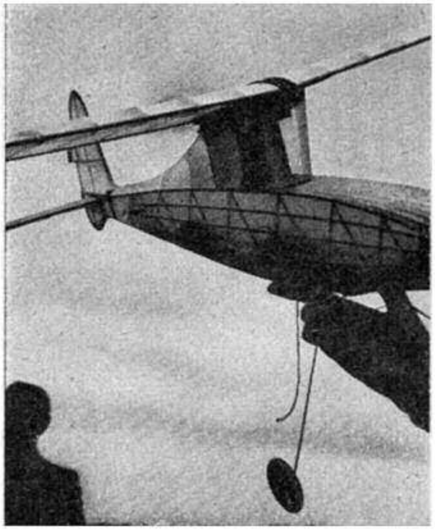
During all this time, Pete (Nationals Winner) Cock from Southampton was demonstrating his skill in control-line stunt flying, surrounded by an admiring crowd. It is a pity that the organisers did not produce him in order to provide a comparison with the speed exhibition staged by Mr. Wood, as there is no doubt that from the spectators' viewpoint stunt has it over pure speed every time.

The sudden appearance of a host of police heralded the arrival of the Queen and Princess Margaret, and a general orderliness was brought about. Welcomed by the club's President and his wife, the royal party was conducted to the special enclosure where a number of (non-aeromodelling) celebrities were presented to Her Majesty.

The party then inspected a large number of excellent models arrayed in the Concours enclosure, and witnessed demonstrations of a number of models of various types. I have no hesitation in stating that I was fully prepared to find a merely casual interest displayed by the distinguished visitors, and it is therefore all the more pleasant to record that both the Queen and Princess Margaret evidenced a keen and thoroughly sincere interest in both models and fliers throughout their stay.

Following the inspection of models, a display of full size flying was staged, Mr. "Bill" Humble of Hawkers putting a,

(*Continued on page 465. Competition Results overleaf*)



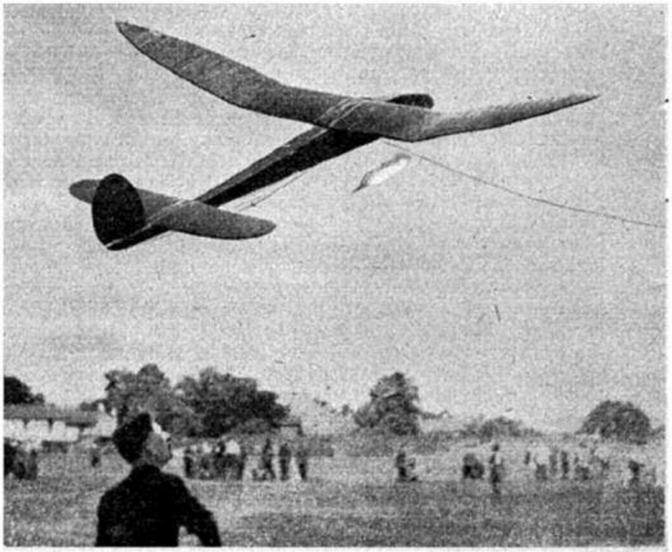
Above, Phil Smith and the "Hi-climber" in action. Note also "in action" in the foreground the Editor of the "Aeromodeller" left and the Editor of "Model Aircraft" right, both in photographic stances!
Left, a close-up of the "Hi-climber". Note the dethermaliser fuse length!
Bottom left, L. Simmonds of Northern Heights with his Queen's Cup model.
Bottom right, Roy Yeabsley's latest 10 footer that astonished all with a flight of 56 mins. 53·6 secs.

Copies of any photograph appearing in this report may be obtained from the Aeromodeller Offices—see Contents page for details.

Aeromodeller Photos.

NORTHERN HEIGHTS

	FLIGHT CUP		
1.	R. Yeabsley	Croydon	300
2.	A. R. T. Jennings	Harrow	168·8
3.	B. P. Lewis	Worthing	128·5
4.	R. R. Stoward	Kingsbury	109
5.	R. Jessop	Zephyrs	105·5
6.	B. E. Woollams	Watford	82·5
	MODEL ENGINEER CUP		
1.	R. Double	Warwick	243·2
2.	T. A. Geesing	Croydon	205·5
3.	K. M. Lloyd	Birmingham	201
4.	A. D. Piggott	Croydon	177
5.	G. Watts	Northampton	159·25
6.	P. B. Allaker	Surbiton	150
	QUEEN'S CUP		
1.	P. L. Smith	Bournemouth	567·25
2.	L. A. C. Ryde	Northern Heights	436·5
3.	P. T. Capon	S.M.A.E. C.M.	420·6
4.	J. B. Cox	Northern Heights	389
5.	E. A. Davies	North Kent	325·6
6.	F. E. Dewell	Middlesbrough	320·3
	HELICOPTER TROPHY		
1.	S. Millard	Luton	53·2
2.	R. H. Warring	Zombies	28·4
3.	I. V. Dowsett	Brentford & Chiswick	24.6
4.	D, A. Brockman	Zombies	23·5



Left, J. Wood's speed control line model on the starter.

Right, Cyril Shaw assisted by G. Swan hearkens to the note of his McCoy 49 powered speedster.

Centre, this interesting example of scale control line modelling by H. D. Cuss is a Grumman Tigercat powered with twin Mills diesels.

Bottom left, this assistant to a competitor in the Queen's Cup makes sure of his fingers with a gauntlet that did not go unused as the motor broke shortly after this picture was taken!

Bottom right, a general view of the Concours enclosure.

Aeromodeller Photos.

GALA RESULTS

CORONATION CUP

1.	P. Broadway	Brentford & Chiswick	74
2.	W. G. Johnson	Warwick	68·4
3.	B. C. Gunter	Bushy Park	66·4
4.	E. H. Keil	West Essex	63
5.	D. A. Bason	Northampton	60·6
6.	J. H. Rumley	North Kent	52·8

FAIREY CUP INTER-CLUB TEAM CONTEST

1.	Bushy Park	612·4
2.	Zephyrs	604
3.	Blackheath	542

CONTROL LINE SPEED CONTEST

Open Class

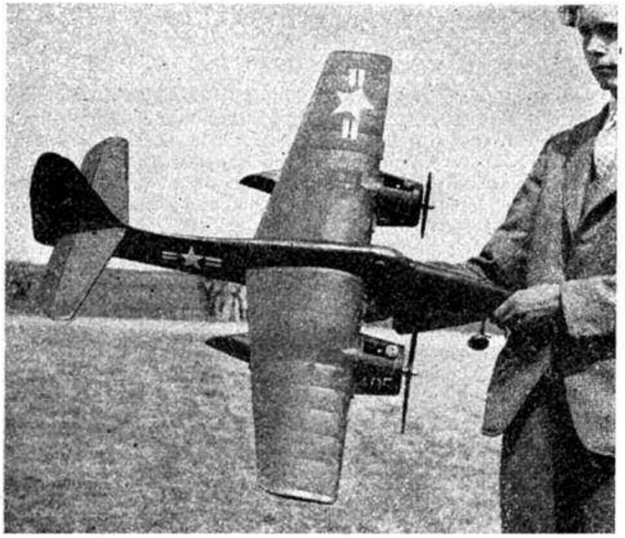
1.	G. H. S. Swann	West Essex	92 m.p.h.
2.	F. Guest	Bushy Park	66·2 m.p.h.
3.	J. Deniz	West Essex	62 m.p.h.

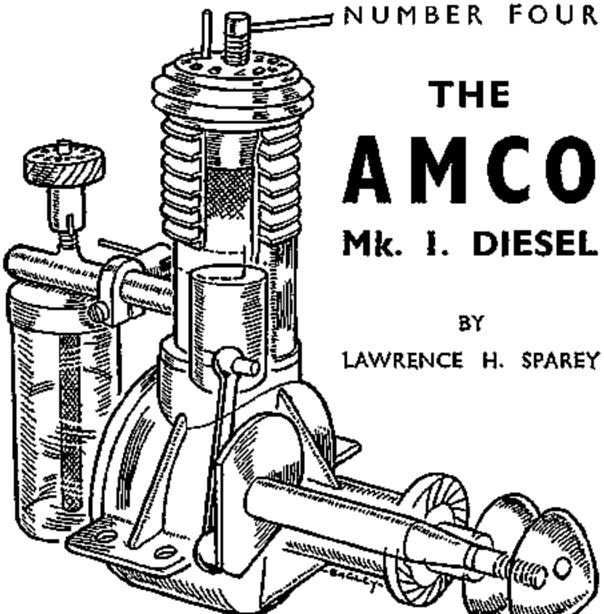
British

1.	J. B. Wood	S.M.A.E. C.M.	86 m.p.h.
2.	F. R. Powell	Upton	48 m.p.h.
3.	A. E. Burch	Halton	27·75 m.p.h.

CONCOURS D'ELEGANCE

Power Driven Model Aircraft	P. T. Capon	S.M.A.E. C.M.
General Flying	P. T. Capon	S.M.A.E. C.M.
Flying Scale	H. J. Towner	Eastbourne
Solid Scale	A. C. I. Fidler	St. Athan
Unorthodox	A. Wilson	Hayes
GALA CHAMPION	R. H. Warring	Zombies





NUMBER FOUR

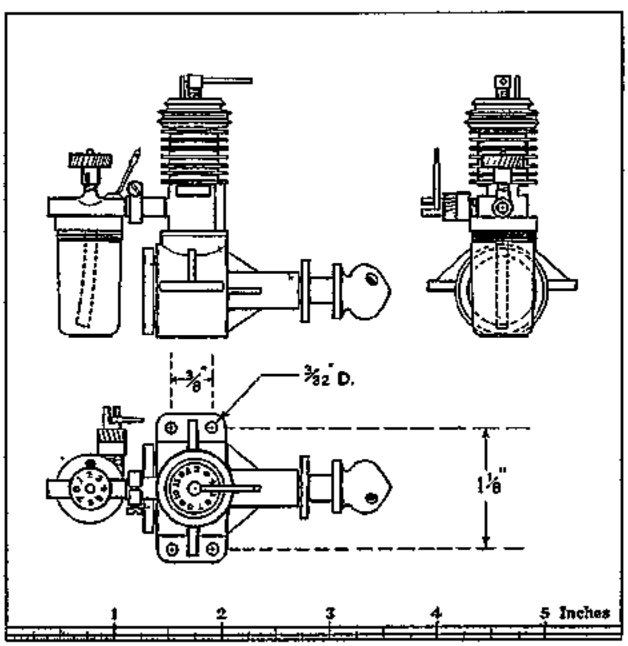
THE AMCO Mk. I. DIESEL

BY

LAWRENCE H. SPAREY

IT may appear from time to time that some of the results of these tests are not consistent, insofar as some engines may not seem to give a result which might be expected from their capacity. It must be remembered, however, that the results published are only those obtained from the one engine tested, so that any limitations or faults peculiar to that one engine will influence the test. Certain engines have developed faults during test, such as partial seizure and tightening-up and air locks; not that any such faults have arisen with the Amco, which has proved one of the most satisfactory and reliable engines yet tested.

After considerable deliberation it has been decided not to rectify any faults which may develop under test, as it was felt that a truer picture of the engine's reliability and performance would thus result. Also, if one embarks on a policy of rectifying faults, it is difficult to draw a line, as it might then be considered legitimate to take an engine to pieces, lap off high spots on the piston or cylinder, for instance, re-assemble the engine, and obtain quite different results from those originally obtained. Such results would be of little value to the ordinary, purchasing, public.



TEST.

Fuel : Maker's recommended fuel was used.

Starting : Hand starting was used. Considering its small capacity, the Amco starts exceedingly well both from cold and when hot. The cut-out is efficient up to about 9,000 r.p.m., but fails to operate above that figure.

Running : The engine runs well and steadily over a wide range of speeds, but is inclined to " hunt ", and vary its speed at revs. above about 8,000. This seems to be due to the particularly deep and narrow fuel tank, which causes a large variation in fuel level as the tank becomes exhausted.

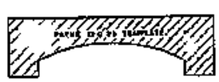
B.H.P. : The very good figure of ·0456 b.h.p. was obtained at 8,900 r.p.m., and the engine is notable for its very flat power curve. It will thus be seen that at 5,000 r.p.m. the output is still as high as ·025 b.h.p., while an increase in revs. to 10,000 per minute yields ·0385 b.h.p. Thus, power output over a wide range of speeds is satisfactory. As is characteristic of these very small capacity diesel engines, maximum b.h.p. is attained at a comparatively high r.p.m.

Power Weight Ratio : ·376 b.h.p./lb.

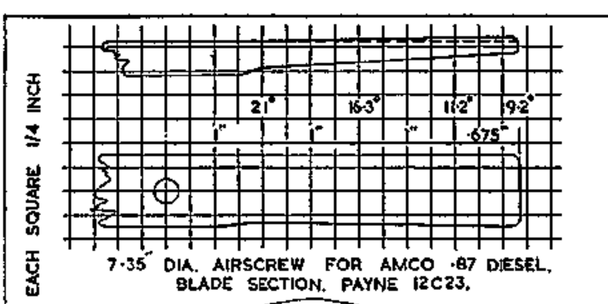
Static Thrust : Using the maker's recommended airscrew as supplied with the engine, a maximum thrust of 9¼ ozs. is obtained at 6,600 r.p.m. This drops to 6½ ozs. at 5,000 r.p.m. The static thrust graph forms a perfectly straight line within the tested speed range, and the airscrew may be considered to be one of the most efficient of the orthodox type.

The Aeromodeller airscrew was tested between 6,000 and 8,100 r.p.m., yielding a static thrust of 12½ ozs. at the higher figure. Here, again, the graph shows a straight line characteristic, which would, in fact, almost form a direct continuation of the line obtained for the maker's airscrew. Straight line graphs are, of course, characteristic of propellers of fine pitch.

Summary : The Amco " 87 " appears to be a reliable engine, giving results above those which might be expected for its size. The engine is easy to handle and control, the throttle control being exceptionally smooth and delightful.



FULL-SIZE BLADE TEMPLATE FOR UPPER SURFACE OF AIRSCREW

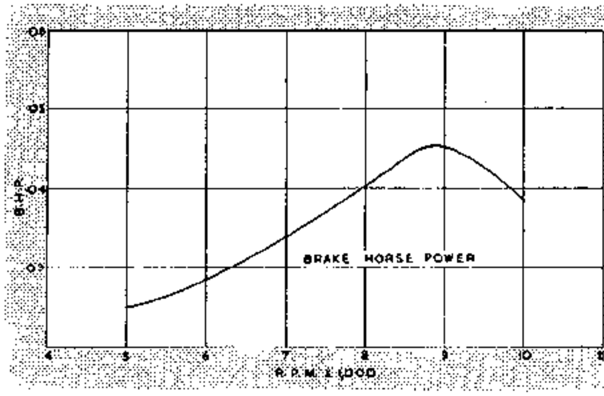


7·35" DIA. AIRSCREW FOR AMCO ·87 DIESEL. BLADE SECTION. PAYNE 12C23.

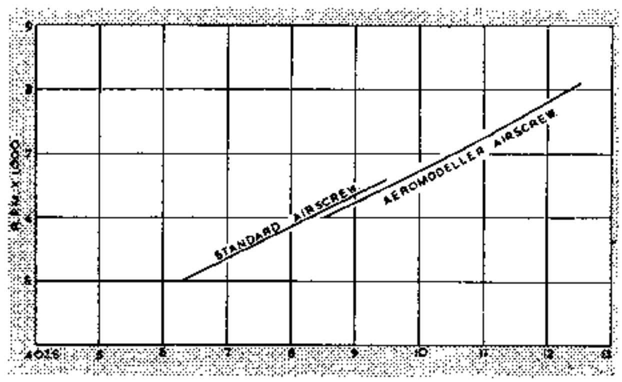
FULL SIZE SECTION.

General Constructional Data.

Name : " Amco ·87 " c.c. diesel Mark I.
Manufacturer's Name and Address : Anchor Motor Co. Ltd., The Newgate, Chester.
Retail Price : £4. 4s.
Delivery : Ex stock from stockist.
Spares : 100 per cent. at works, 1 to 7 days, according to extent of repairs.
Type : Compression ignition two stroke.
Specified Fuel : 50 per cent. "Amco". 50 per cent. Ether Meth. 40 per cent. Redex. 60 per cent. Ether Meth., or any recognised fuel.
Capacity : ·87 cubic centimetres ·05 cubic ins.
Weight : Bare 1 oz. 15 drms.
Compression Ratio : 16–1, 20–1.
Mounting : Beam, upright or inverted.
Recommended Airscrews : Free Flight 9×4. Control Line 6×8.
Recommended Flywheel : 4½ ozs., 1¾" diameter.
Tank : Injection moulding. Capacity 3 c.c. ·199 c. ins. Running time 1½ minutes.
Bore : ·375".
Stroke : ·412".
Cylinder : Screwed to crankcase. Of S.14 material, hardened, ground and honed, round and parallel to ·00005. No. of Ports : 1 inlet, 1 transfer, 2 exhaust.
Cylinder Head : Dural bar. Screwed to cylinder. 3 fins.
Contra Piston : S.14. Hardened and ground.
Crankcase : Die cast. Screw in crankcase cover. Pressure die casting LAC.112 12 per cent. Si 9 per cent. Copper.
Piston : Flat top. S.14. Hardened ground and honed. Reamed and parallel to ·00005. Cylinder clearance ·0001 to ·00015.
Connecting Rod : S.11. Hardened, tempered, spherical ended. Bearings, reamed and lapped.
Crankpin Bearing : Plain S.11. Hardened, tempered and ground.
Main Bearing : Plain, reamed and honed. 12 per cent. Si casting ±·00015. Equivalent Phos. Bronze self lubricating.
Little End Bearing : Plain.
Special Features : All main parts are mated. No nuts and bolts, no excess metal giving ultra lightweight. Highly developed port timing giving peak of power curve at highest possible r.p.m. with standard prop. Angular Transfer port.



Snap action, patent plunger cut-out requiring minimum effort for operation and immediate effect. Runs in either direction with efficiency. Strong carberettor clamp. No thread. Will run upright or inverted. Extension needle available 2/6 high angle tank. Climb vertically. Comp. and Mixt. controls numbered for easy reference. Easily dismantled with combination tool provided with engine.



THE QUEEN'S CUP *(continued from page 461)*

Firefly through its paces to the astonishment of all who witnessed his polished display. The high spot of the performance being a beautifully executed " hesitation roll " only some fifty feet off the deck.

Despite the excitement of the Royal visit and the aforementioned spectacular display, the lads were carrying on all over the field with their contest flying in an effort to get all their requisite flights in in time for the closing prize-giving. Models were all over the sky, and large numbers were chased across the surrounding countryside by the many owners who managed a flyaway. Many models were recovered from the tops of the huge hangars lining one side of the 'drome.

Following the presentation of the main Trophy by Her Majesty, certain of the organisers were presented and received souvenir medallions in recognition of their services. It is a pity that the hardest worked official of them all, " Val " Turner, did not receive this recognition at the public stand, as a large number went away with the feeling that someone had " boobed ". What they did not know was that the Queen made a special point of proceeding to the control marquee to congratulate Val and his hard-working family, an honour that was highly appreciated.

The Ascot flavour was enhanced by the weird head-pieces to be seen around the enclosures—both "serious" and facetious, aeromodellers evidently having their own versions of the New Look. Many thought that a certain Eton topper would have been improved by the addition of a windsock, but the object of comment came through the day unscathed !

Late in the afternoon, a large glider was to be seen steadily cruising around the airfield, contacting and losing thermals in regular succession, and it was soon evident that something out of the ordinary was happening. The model was one of Yeabsley's well known outsize " Sunspot " designs, and all eyes were fixed on the model as it soared around for over fifty-six minutes, finally passing out of sight of the timekeepers at 56 : 53·6—well and truly a new British record. (This time has been surpassed by a flight made on the same day in the North of England, but the merit of Yeabsley's flight is none the less worthy of especial mention.)

As closing time drew near, I am informed that matters became something of a shambles, but that was inevitable in view of the large entry for the extensive programme. The total number of competitors was almost up to the quota received for the Nationals—a two day affair—and it says much for the hard work of the organisers and their many helpers that the final results were produced in short order, with the one exception of the Team event, which entailed a great deal of time going through the whole of the other results.

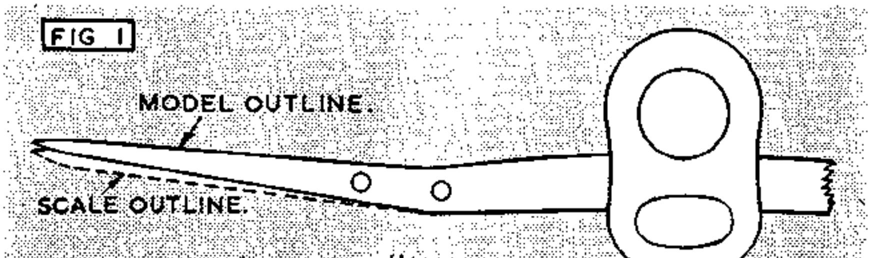
With so much activity taking place at so many widely spaced centres, description of such a meeting is necessarily sketchy, but it took no measure of second sight to appreciate the huge undertaking this meeting entailed, and my congratulations go to those who worked so hard to make this meeting a success. A nebulous, but nevertheless most important " official " who must have his share of praise is the Clerk of the Weather, what a pity that he cannot maintain his " Gala Day " attitude for us on more than one Sunday in the course of a year !.

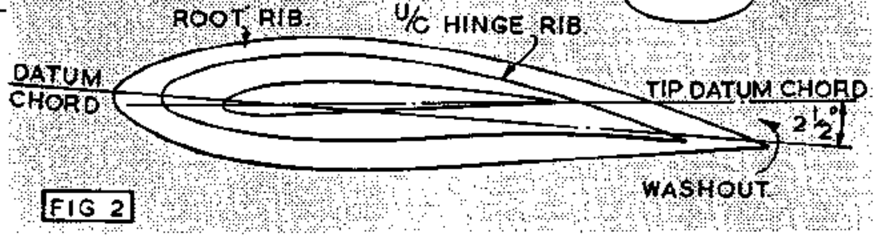
So ended my first glimpse of one of these well established meetings, and it will go down in history as the initiation of a royal interest in us and our " funny little habits ". May it be the forerunner of a new appreciation by those in high places, who could do so much to improve our status and facilities in the pursuit of our chosen hobby.

THE FLYING SCALE MODEL

PART 5

By C. RUPERT MOORE, A.R.C.A.

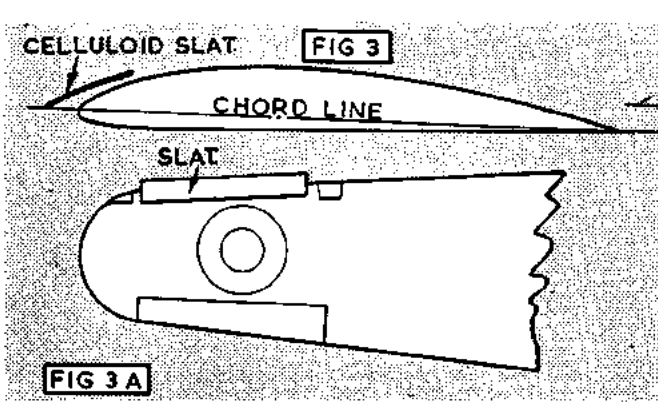


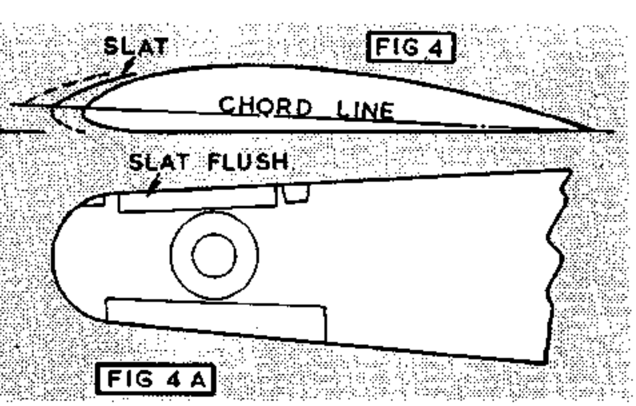


THE last four articles have dealt with various methods of coaxing a flying scale model to fly in a manner worthy of a decent citizen and consequently I have devoted much of the space to stability. There is one thing however which I have not dealt with yet, and that is lateral stability. Personally I will never increase the dihedral of the top surface of a wing, otherwise the whole appearance is destroyed, but often an extra 1 degree dihedral can be gained by giving the undersurface more dihedral, thus reducing the depth of the tip rib (Fig. 1). Wherever possible I build a model with scale wing section, but in certain cases I believe it is perfectly legitimate to modify sections in order to gain stability. To my mind it is far more acceptable than to increase dihedral as sections are only noticeable on close inspection.

The biggest problem of lateral stability I have had to solve is in my twelfth-scale " Typhoon," therefore I propose to explain it thoroughly. The top surface of the wing is at scale dihedral but the undersurface has 1 degree greater dihedral than scale as explained in Fig. 1. In order to accommodate the retracting wheels and also to flow correctly into the fuselage lines, a scale bi-convex root was used ; this gradually changed to an under-cambered section at the undercarriage hinge rib (in line with the inner cannon) (Fig. 2). Washout, that is decreased angle of incidence at the wing tips, is built into the wing spars. This makes sure that the wing roots stall long before the tips and at the same time give the trailing edge more dihedral, which all helps. Even with all this the Typhoon had a bad habit of dropping one or other of the wings at the critical moment when the power died away. For this reason I fitted slots from the tip to the landing lights and found that this vice was entirely cured. In Fig. 3 I show the section used. The leading edge of the slot is in line with the datum chord of the section and is very effective in this position.

In order that the outline should not be destroyed, the slat itself was made of transparent celluloid. There is a better solution which should be tried, but I have had no time to do it. The wing should be cut away to accommodate the slot in order that the leading edge is in a straight line (Fig. 4 and 4A). The slat should still be made of celluloid to keep it as thin as possible, but it should be coloured to match the wing. Not only are slots an advantage laterally because they delay the stall at the wing tips, but they also have great effect on longitudinal stability. Slots on a model can completely cut out a stall, thus reducing the area of tailplane required to pull the model out of the ensuing dive which never takes place because of the slots. To return to lateral stability, these suggestions will and have controlled most models, even including the Typhoon, but there still remain the large number of aircraft with no dihedral at all. Here automatic control is absolutely essential, and the first (and possibly the only method) which comes to mind is the pendulum. First let me go back a bit. In the very early days of flying a pendulum control was invented, and I believe patented, for full-size aircraft, and was simply a joy stick with a heavy weight at the bottom, the theory being that as the stick would always remain vertical the controls would be automatic. Fig. 5 shows an aeroplane turning about its joystick. The theory completely ignored acceleration. If the throttle was opened the aeroplane left the weight behind, which caused the joystick to go forward, thus depressing the elevators and making the aircraft dive. If the throttle was closed the reverse took place, the weight overtook the aeroplane and raised the elevator, developing into an ever-increasing switch-back. On the real aircraft when the rudder was turned the weight tended to go away from the turn because of centrifugal force (Fig. 6), thus increasing the bank. The trouble here is that the centrifugal force still continues after the rudder is straightened. Most people, including myself, have built pendulum-controlled models but I found that it is difficult, if not impossible, to make the elevator control successful in spite of damping, but the lateral control is





practical. This is because a model is set to fly straight or in very large circles and the centrifugal force never seems to pile up because the rudder is fixed, at any rate not sufficiently to cancel out the desired working. A pendulum working in either vertical or horizontal plane can be used, though the latter is usually more convenient as it is clear of rubber, etc. On models, particularly small models, the aileron effect is frequently reversed, the down-going aileron causing so much drag that the breaking effect is greater than the extra lift which should appear. This slows the wing in question and allows the opposite wing to gain speed and lift, thus reversing the whole process. This makes it an advantage to have only upward movement on the ailerons and Fig. 7 shows a very successful mechanism. Here a horizontal pendulum is used as this can be housed in the centre section. The action is simple; when a wing drops, the pendulum swings to that side, causing the control rod A to travel to the low side. At each end of this control rod is a bend of similar shape to an umbrella catch. These are so arranged that when the pendulum is central the eye in the control horn B is engaging the straight portion of the shaft, but when the control rod A travels to the low wing the "umbrella" bend engages the eye of the aileron control horn of the high wing, causing this aileron to be raised. Should double acting ailerons be desired, then the detail on Fig. 7 shows the reverse bend. It will be noted that the height of the bend is not so great, in order that a differential effect is incorporated, as in full-sized practice. Structurally the whole thing is straightforward, the control rod A is made of 20 s.w.g. piano wire and can be made in one continuous piece though I favour each half being separate and both end eyes engaging the single pendulum prong. Each half should have four bearings, 1, 2, 3 and 4, made as celluloid washers. Washer number 4 contains the return bend of the control rod. This return is simply to prevent the control rod from turning. Where "knock-off" wings are wanted as separate units a further method has been used with success and is shown in Fig. 8. Here each aileron is worked independently by its own pendulum. The pendulum is made to pass through the wing and is bent at such an angle that it allows for downward travel if necessary. The upper arm, which is at right angles to the pendulum arm, projects above the top surface and has an eye on its end. The control horn is a simple soft iron wire prong which slots through the eye. You will note the axis of the pendulum is at an angle and not vertical. This tends to reduce the over-sensitive action often found with either horizontal or vertical pendulum controls and is advisable even on Fig. 7. The advantages of this kind of mechanism are easier adjustment and the possibility of being fitted to separate wings for "knock-off ability." The disadvantage is that it is more vulnerable.

FIG 5

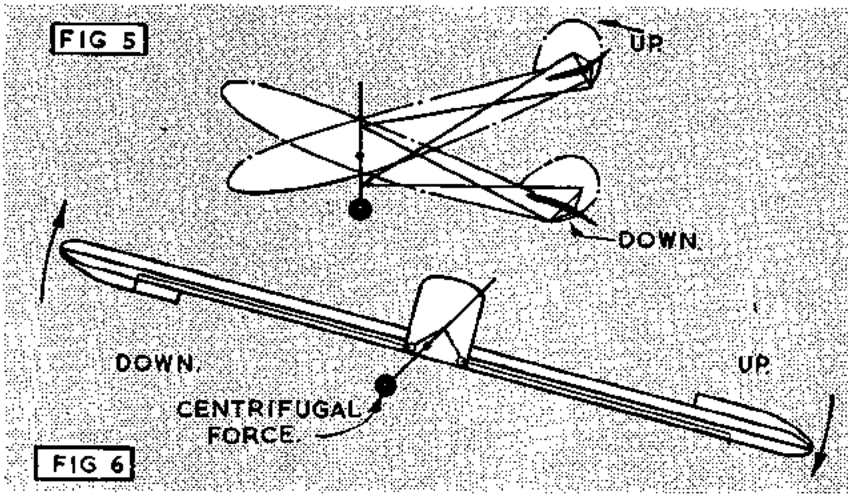


FIG 6

There is still another approach to this problem and that is to control the model laterally by the rudder. This, of course, was done to great effect on the V.I., which has no ailerons. This has been done on certain Belgian diesel models simply by having an arm projecting from the bottom of the rudder forward inside the fuselage. On the end of this is a weight. This simply works by the weight falling on the low side, thus turning the rudder in the opposite direction. On non-scale models this has worked extremely well, particularly on pylon models, but it has two shortcomings where scale models are concerned. Firstly, because the balance arm projects forward, the rudder must turn one way or the other at the most critical time of all, in a steep climb, at or near the stall. This is of no consequence on heavily dihedralled pylon models but must be fatal to most scale models. If the model is rubber-driven the weight of the pendulum at the tail end is prohibitive. I have found it far safer to use the total rudder and fin area as one unit moving through a far smaller angle than the smaller area of the rudder alone through a greater angle. I suggest the pendulum be fitted in front of the C. of G. of rubber models so that the weight pays for itself as ballast and coupling it to the fin through a mechanism similar to that described in Fig. 3, Part III of this article. In certain very rare cases it may be worth while to connect ailerons and rudder to the same pendulum. You will, of course, understand that I only suggest the fitting of any of these mechanical controls where there is no other solution.

FIG. 7

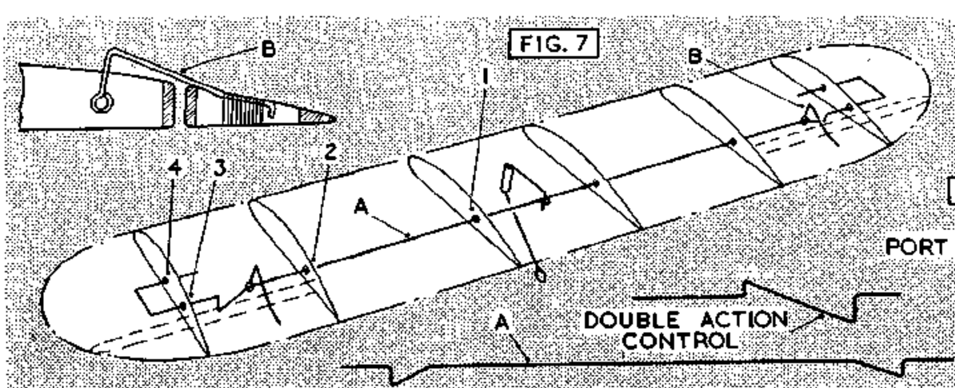
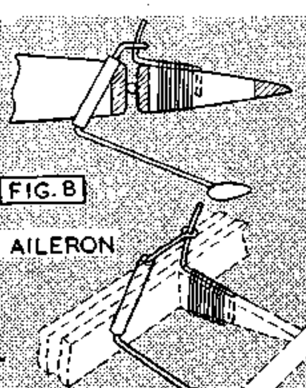
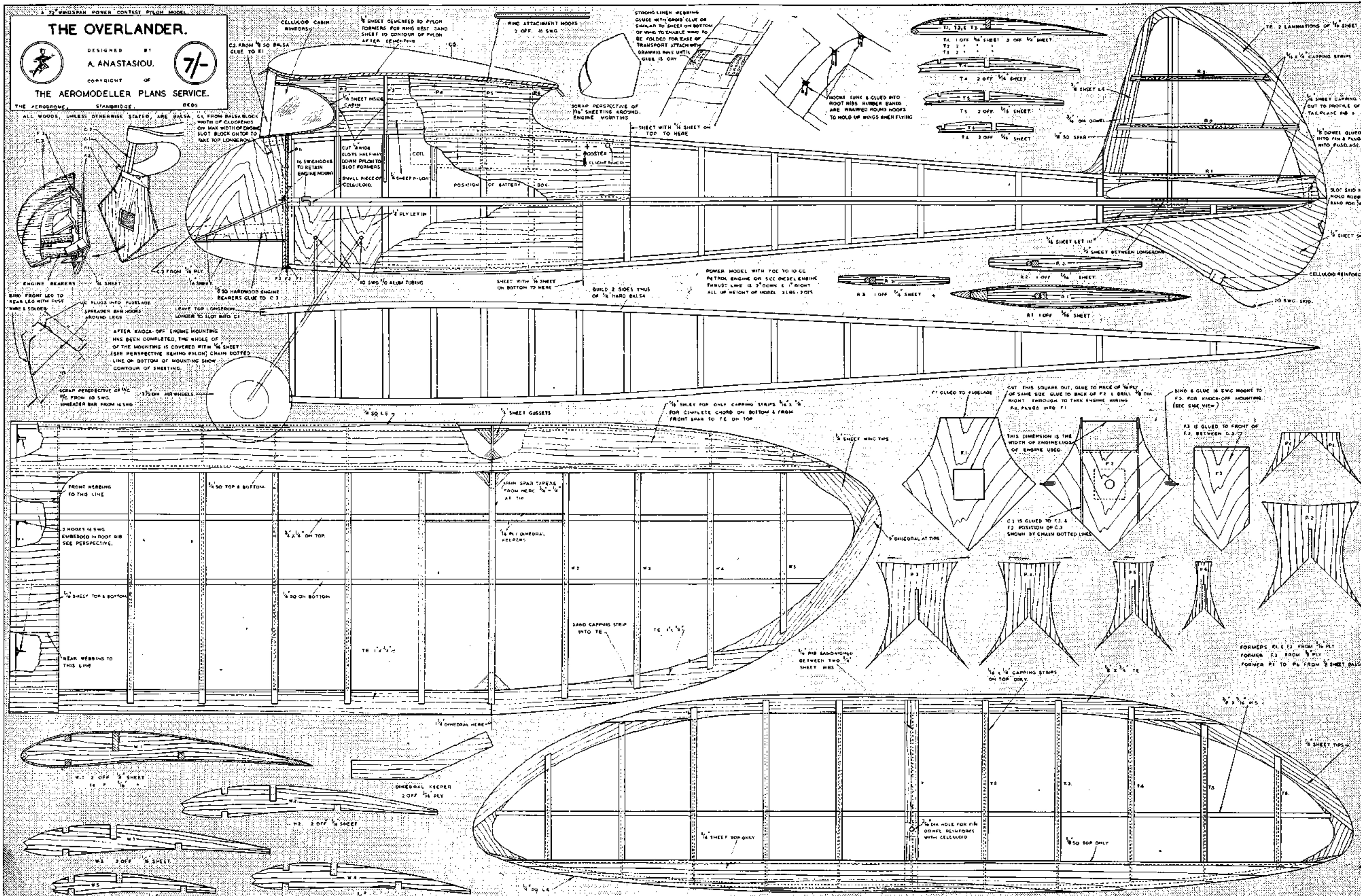


FIG. 8





A 72" WINGSPAN POWER CONTEST PYLON MODEL
THE OVERLANDER.
DESIGNED BY
A. ANASTASIOU.
7/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, BEDS
ALL WOODS, UNLESS OTHERWISE STATED, ARE BALSA.
CELLULOID CABIN WINDOWS
1/8" SHEET CEMENTED TO PYLON FORMERS FOR RING REST. SAND SHEET TO CONTOUR OF PYLON AFTER CEMENTING
WING ATTACHMENT HOOKS 2 OFF 16 SWG
SCRAP PERSPECTIVE OF 1/16" SHEETING AROUND ENGINE MOUNTING
HOOKS SUNK & GLUED INTO ROOT RIBS. RUBBER BANDS ARE WRAPPED ROUND HOOKS TO HOLD UP WINGS WHEN FLYING
COIL
POSITION OF BATTERY BOX
SHEET WITH 1/16" SHEET ON TOP TO HERE
SHEET WITH 1/16" SHEET ON BOTTOM TO HERE
10 SWG 1/8 ALUM TUBING
ENGINE BEARERS
BUILD 2 SIDES THUS OF 1/4 HARD BALSA
POWER MODEL WITH 7CC TO 10 CC PETROL ENGINE OR 5 CC DIESEL ENGINE
AFTER KNOCK-OFF ENGINE MOUNTING HAS BEEN COMPLETED, THE WHOLE OF THE MOUNTING IS COVERED WITH 1/16" SHEET (SEE PERSPECTIVE BEHIND PYLON) CHAIN DOTTED LINE ON BOTTOM OF MOUNTING SHOW CONTOUR OF SHEETING.
3 1/2" DIA AIRWHEELS
1/4 SQ L.E.
1/8" SHEET GUSSETS
1/8" SHEET WING TIPS
FRONT WEBBING TO THIS LINE
REAR WEBBING TO THIS LINE
SAND CAPPING STRIP INTO T.E.
DIHEDRAL KEEPER 2 OFF 1/16 PLY
W.1 2 OFF 1/8" SHEET
W.2 2 OFF 1/16" SHEET
W.3 2 OFF 1/16" SHEET
W.4 2 OFF 1/16" SHEET
W.5 2 OFF 1/16" SHEET
1/8" SHEET TIPS
1/16" SHEET TOP ONLY
1/8 SQ TOP ONLY
1/4 SQ L.E.
T.E. 2 LAMINATIONS OF 1/16" SHEET
1/8" SHEET L.E.
1/8" SQ SPAR
1/8" DIA DOWEL
CELLULOID REINFORCEMENT
20 SWG SKID
R.1 1 OFF 1/16" SHEET
R.2 1 OFF 1/16" SHEET
R.3 1 OFF 1/16" SHEET
FORMERS F1 & F2 FROM 1/16 PLY
FORMER F3 FROM 1/8 PLY
FORMER P1 TO P6 FROM 1/8 SHEET BALSA
PET. 299.

A 6-FT. SPAN CONTEST PYLON MODEL

DESIGNED BY A · ANASTASION

THE OVERLANDER

THIS model was designed for both contest and sport flying. On the first day out it took fourth place in the Brentford and Chiswick Gala for Croydon and since that day has made approximately 400 flights without damage.

Build the two sides first, joining them in the usual way, leaving one longeron longer than the rest at the nose. Take a piece of ⅛ in. sheet balsa, cut to shape of pylon and cement into position on fuselage. Cut out formers, cement to fuselage and side of pylon. Cut ⅛ in. sheet balsa, lay on top of formers to form wing mount. Cut out four pieces of ⅛ in. ply to fit in between front lower spacers, then drill holes for aluminium tubing for undercart legs. Cut out piece of 1/16 in. ply for fuselage bulkhead F.1. with square cut out for rear of F.2. Cement this on nose when cut to shape and cement C.1. on, then cut out C.2., fix in place, make battery box and fix coil, flight timer, and booster leads in place, with all wires going down fuselage and out of space cut in F.1. Fix wing attachment hooks in place, also under fin, and the sheet front section of fuselage. Before sheeting mark position of battery, coil and flight timer inspection hatches. Sheet inside of cabin and continue sheet out to C.1.—sand sheet down well. (The curve of the pylon is not hard to shape.) Cement celluloid round cabin.

Wings. Cut wing spars from ¼ in. sheet balsa (trailing edge medium hard). Cut out ribs from 1/16 in. sheet balsa and two from ¼ in. sheet. Pin down trailing edge; the leading of the rear trailing edge must be raised 3/32 in. Cement ribs with leading edge in place, drop spars in and make sure the root ¼ in. sheet ribs are at the correct angle, and hooks 1, 2 and 3 for rubber bands.

Sheet and cap wings. When the latter are set, sand all over and then lay wings upside down so that the centre sections are flat. Brush glue on sheet where webbing is to be placed. Press webbing down and push drawing pins through webbing into sheet—leave to dry for several hours.

Tailplane. Reinforce centre-rib with thin celluloid sheet and cap top of tailplane only.

Fin. Cut out ribs from medium soft 1/16 in. sheet, slide ribs on to 3/16 in. dowel and ¼ in. spar. Cement leading edge into place—add two-piece trailing edge. Cap ribs. The bottom rib being capped with 1/16 in. sheet, with the shape of the top camber of tailplane.

Flying. Test for glide down a slope if possible, when correct glide is obtained start motor up to about half throttle and launch into wind with about 10 sec. motor run—it should turn gently to the right. When model is trimmed it should have a gentle right-hand power flight and glide.

Full sized plans (see quarter scale reproduction on previous pages) are available, price 7/–, from the Aeromodeller Plans Service, The Aerodrome, Stanbridge, Beds.

BUZZARD II BY C · S · WEST

IN order that this unusual model may give a consistent performance it is desirable that the flying surfaces should be in accurate alignment and that the weight of each wing should be exactly the same.

Pod and Fin. The pod or fuselage is built first as a frame of 3/16 in. by 3/16 in. balsa which may have to be steamed or have slight nicks cut on the inside of the curves. No strength will be lost with the last mentioned procedure as the sides of the frame are next covered with 1/16 in. sheet balsa. The spar of the fin is then cemented in position at the rear end and the ribs and edges fitted while the pod is lying on one side. The fin ribs may be fitted as strips which are sanded down to section after the cement has hardened. Plywood ribs which have been drilled for the wing dowels are now cemented in position on either side. A piece of lead 2 in. by ¾ in. by 3/16 in. is now cut out and should weigh about 2 ozs. This is folded around the nose and held in place with a small countersunk nut and bolt. The corners must now be filed and rounded off until the fuselage balances at a point 4 in. from the front (without wings). Further trimming will be effected when the machine is complete by adding lead shot.

Wings. The wings are built by usual methods but great care must be exercised especially when covering to prevent warping or inconsistency of any kind. First make two thin plywood templates for the largest and smallest ribs. Clamp these together with the spar notches lined up and drill two holes 1/16 in. dia. to receive the wires on which are threaded the required number of pieces of wood to make ribs for one wing. Then with a template on either side the whole lot are carved and sanded down to shape. The spar notches may be cut before removal from the wire. On assembly, the leading edge must be blocked up to give the required wash in at the tip. The tubes which receive the dowels protruding from the fuselage are wound on a piece of dowel of like diameter and may be either sheet celluloid or brown paper.

Covering. The elevator tabs must not be covered as an uncontrollable warping may take place. Rag tissue is advised for the wings and fin applied very evenly and given one coat of clear dope.

Tow Hook. The tow hook is formed from 16 s.w.g. wire and cemented in place as shown. Improved line stability may be obtained by using twin hooks situated on the leading edge of the wings at half span and a " Y " shaped towline.

Full sized plans are available, price 2/– (see third scale reproduction opposite) from the Aeromodeller Plans Service, The Aerodrome, Stanbridge, Beds.

A 48" WINGSPAN TAILLESS SAILPLANE.

BUZZARD II.

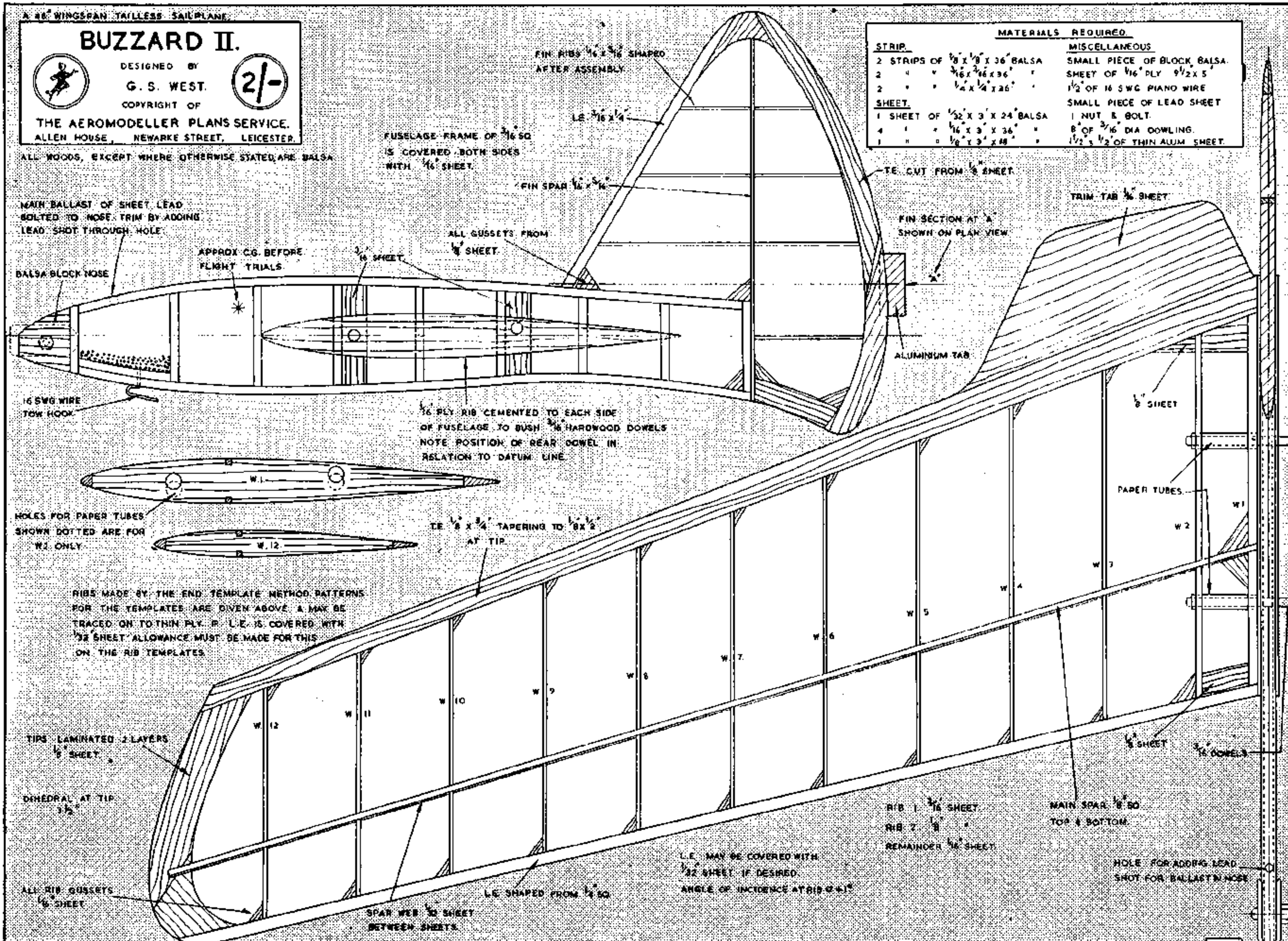
DESIGNED BY G. S. WEST.

2/-

ALL WOODS, EXCEPT WHERE OTHERWISE STATED ARE BALSA.

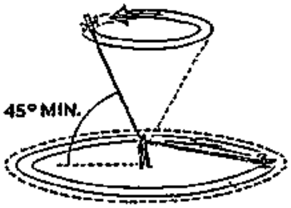
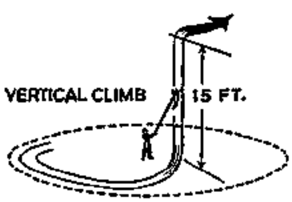
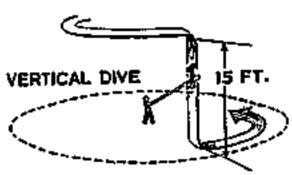
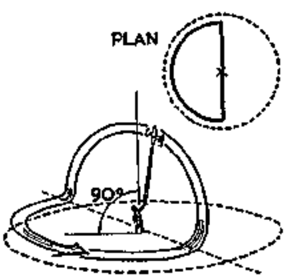
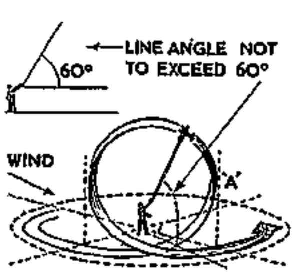
MATERIALS REQUIRED.

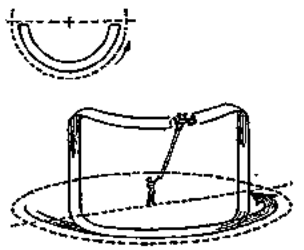
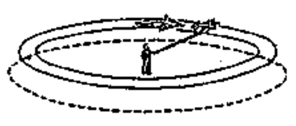
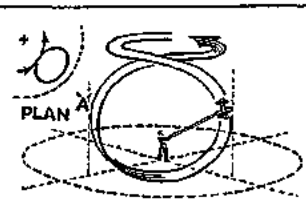
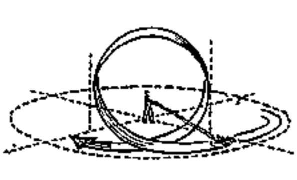
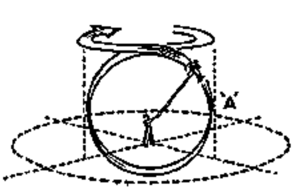
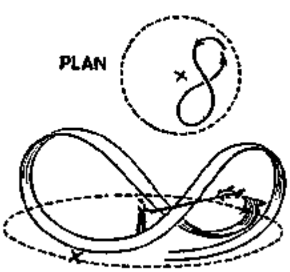
STRIP.	MISCELLANEOUS
2 STRIPS OF 1/8" x 1/8" x 36" BALSA	SMALL PIECE OF BLOCK BALSA.
2 " " 3/16" x 3/16" x 36" "	SHEET OF 1/16" PLY 9 1/2 x 5"
2 " " 1/4" x 1/4" x 36" "	1 1/2" OF 16 SWG PIANO WIRE
SHEET.	SMALL PIECE OF LEAD SHEET
1 SHEET OF 1/32" x 3" x 24" BALSA	1 NUT & BOLT.
4 " " 1/16" x 3" x 36" "	8" OF 3/16" DIA DOWLING.
1 " " 1/8" x 3" x 18" "	1 1/2" x 1/2" OF THIN ALUM. SHEET.

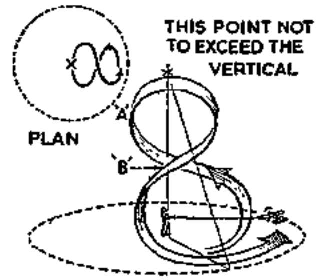
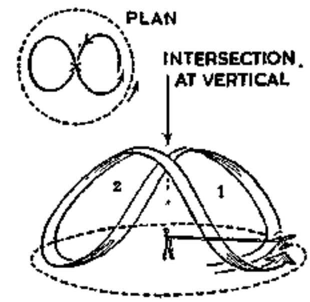
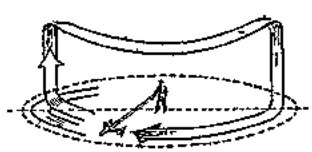
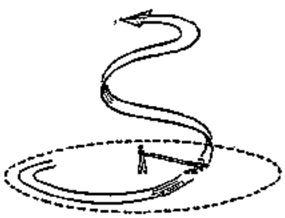
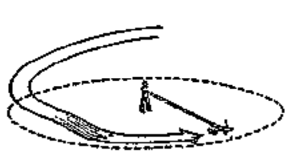


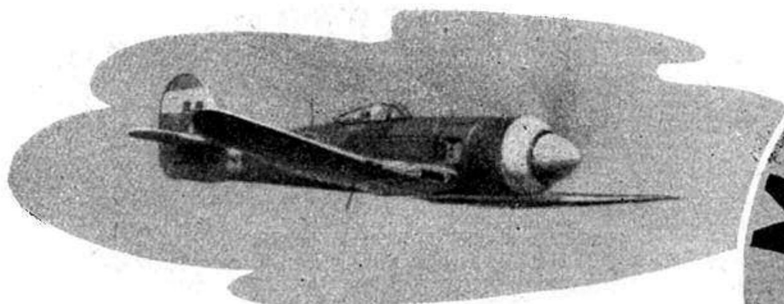
CONTROL LINE AEROBATIC SCHEDULE . . R. H. Warring

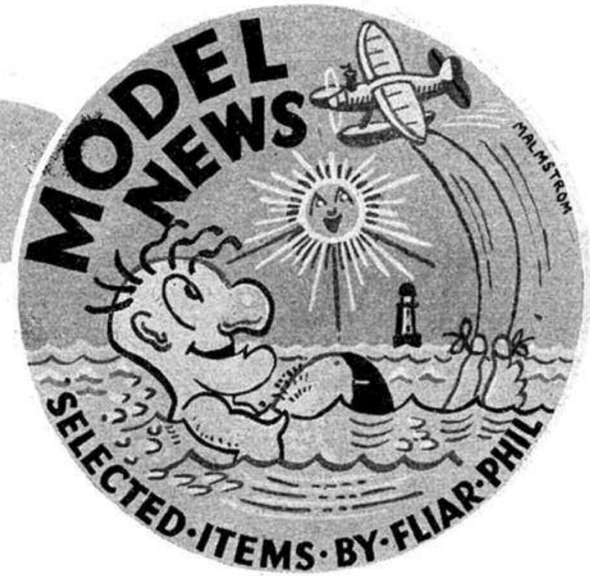
(Ground Circle shown dotted for reference)

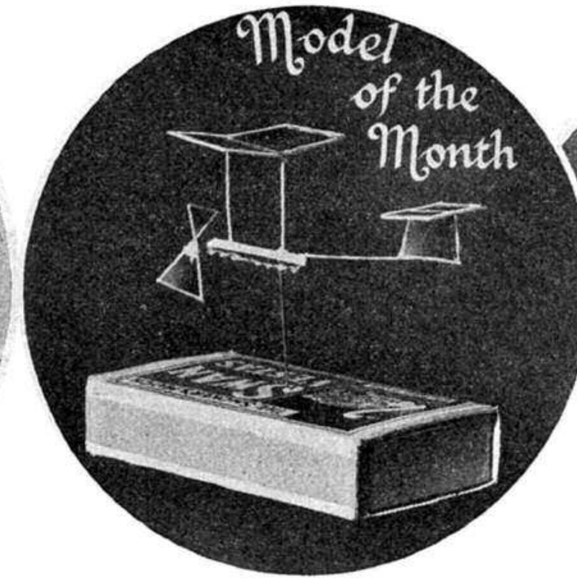
MANŒUVRE			POINTS		ACTION
				Max.	
	(*a*) TAKE OFF	Good Rough Poor	5 3 1	5	With only moderate power available, never pull model off sharply with full-up elevator—it will tend to mush or stall. Best practice is to complete a few yards run with elevators neutral and then ease elevators up for safe climbing angle. With excess power model *can* be taken straight off.
	(*b*) LEVEL FLIGHT (i) Two circuits at constant height (ii) One steady circuit with lines at over 45 degrees to ground	Level Wavy Poor Good Wavy	5 3 1 5 3	10	For less critical control, keep whole arm and wrist straight—move whole arm up and down for control. Some models tend to climb into wind more than others, so correct by experience. To hold high-level flight, climb to necessary height and hold on enough elevator to maintain this height. Be ready to step back—and apply down elevator at the same time—if lines slacken. All stunt models should hold 45 degrees min. bank with ease—lines slackening indicate lack of power, incorrect rigging, or more rudder offset required.
	(c) CLIMB To be through 15 ft.	Vertical Steep Shallow	10 5 2	10	Full-up elevator from low-level flight—ease off as soon as model reaches vertical and hold on that elevator required to maintain vertical. Recover with full-down elevator as soon as enough height has been reached (*i.e.*, model has covered 15 ft. minimum vertical flight required) or lines show signs of slackening. True vertical may be difficult to judge at first unless there is a suitable background, *e.g.*, trees or buildings.
	(*d*) DIVE To be through 15 ft.	Vertical Steep Shallow	15 7 2	15	Full-down elevator from high-level flight—ease off as model reaches vertical attitude and hold on elevator required to keep vertical. Start recovery — full-up elevator — with ample height to spare for pull-out. Short, near-vertical dives should be practiced first to judge initial height required for satisfactory performance.
	(*e*) WING-OVER Bisecting circuit vertically over pilot	Vertical Steep Shallow	15 7 2	15	Full-up elevator from low-level flight—ease off to vertical climb and *hold model in this position*. Recover normal flight attitude at bottom of dive with full-up elevator. Practice is necessary to get a true wing-over—complete lack of horizon or other reference overhead making judgment difficult. An easy manœuvre on short lines—so practice with these first. A good stunt model will wing-over on long lines with little or no tension at the top point. If in doubt, or the pilot loses sight of the model, it is generally best to recover " blind " with full-up elevator.
	(*f*) INSIDE LOOP To be completed in quarter lap. Line angle not to exceed 60 degrees at top of loop. Only consecutive loops carry points. Poor loops take 75% points.	One loop Consecutive— Two loops Three loops Four loops Five loops	15 30 50 75 100	100	Put model into vertical climb and hold until line angle is approximately 45 degrees. Then full-up elevator and hold on until loop is completed. If there is a wind, carry out this manœuvre downwind. With properly trimmed model and good power there should be no need to step back to maintain line tension. Consecutive loops: Unless model has at least 15 ft. height in hand at bottom of first loop, flatten out each climb part of successive loops at point "A" by easing off elevator—otherwise height will be lost on each loop and model may strike ground.

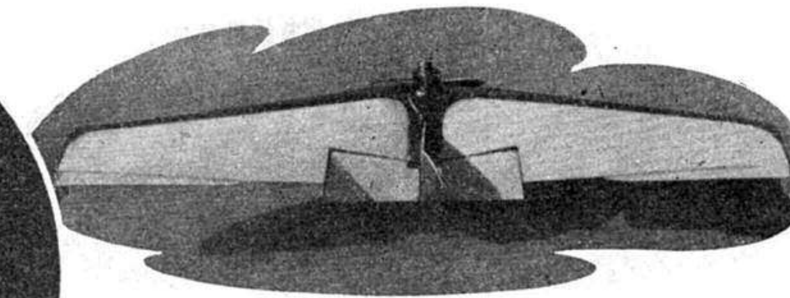
MANŒUVRE			POINTS		ACTION
	(*g*) SQUARE INSIDE LOOP Horizontal portions of loop to be half lap	Square Moderate Poor, but completed	30 20 10	Max. 30	Vertical climb from low level flight—recover when lines pass 45 degrees with full-up elevator, easing off to neutral to maintain *inverted* high-level flight for half a lap. (CAUTION: Controls are reversed in inverted position—until familiar with this it is easy to put model into an inverted dive, in which case put on full-*down* elevator and recover properly when model is upright once more.) Full-up elevator at end of inverted leg and ease off for vertical dive—recover in good time. An elevator range of at least 40 degrees is desirable.
	(*h*) INVERTED FLIGHT Start and end normal way up Inverted laps to be in opposite direction to normal flight	One lap level One lap wavy Two laps level Two laps wavy Inverted climb Inverted dive Recovery	10 7 15 10 10 10 15	50	Complete one half of a loop, ease elevators to neutral at top when model will be in inverted position with ample height in hand. SINCE CONTROLS ARE NOW REVERSED PRACTICE IS NEEDED TO MAINTAIN SMOOTH CONTROL—the "instinctive" correction is now the wrong one! If the pilot gets into trouble at first, he should, as a general rule, put on full-*down* elevator and hold until model reaches upright position again and recover from there. The common error is to start an inverted dive and try to recover with up-elevator.
	(*i*) OUTSIDE LOOP From normal high-level flight downwards To be completed in quarter lap Line angle not to exceed 60 degrees Only consecutive loops carry points Poor loops take 75 % of points	One loop Consecutive— Two loops Three loops Four loops Five loops	30 65 100 140 180	180	Hold high level flight—as high as is safe (line angle 60 degrees). Put on full-down elevator and hold. Recover to normal flight at completion of outside loop. Once familiar with model's behaviour starting height can be adjusted accordingly—but start initially with ample height and step back quickly if necessary should lines slacken off. For *consecutive loops* flatten climb at point "A" on *each* loop.
	(*j*) OUTSIDE LOOP From inverted flight upwards Line angle not to exceed 60 degrees To be completed in quarter lap Only consecutive loops carry points Poor loops take 75 % points	One loop Consecutive— Two loops Three loops Four loops Five loops	25 55 90 130 175	175	From low-level inverted flight, start vertical climb with full-down elevator and ease off. Apply full-down elevator again when lines reach 45 degrees and hold on. Recover by easing off down elevator at completion of loop. For consecutive loops flatten out each climb as above *unless* there is at least 15 ft. to spare at bottom of loop. NOTE: Up and down elevator range should be identical for inverted flight manœuvres.
	(*k*) INSIDE LOOP From inverted high-level flight downwards Loop to be completed in quarter lap Line angle not to exceed 60 degrees Only consecutive loops carry points Poor loops take 75 % points	One loop Consecutive— Two loops Three loops Four loops Five loops	30 65 100 140 180	180	Hold high-level *inverted* flight—60 degree line angle. Put on full-up elevator and hold. Recover by easing off elevator at completion of loop. For *consecutive loops* ease off up elevator slightly at point "A", full-up elevator at top again. This will prevent loss of height on each loop. When familiar with model's performance, starting height may be adjusted accordingly—the lower it is the more spectacular the manœuvre.
	(*l*) HORIZONTAL FIGURE "8"	Good Moderate Fair	40 25 10	40	Once familiar with reversed controls in inverted flight position, this manœuvre is comparatively simple. A normal inside loop is started from low-level flight, but the second part on the loop is turned into an inverted dive by slight down elevator. Recover with full-down elevator and hold until model is at top of second loop (now upright again). Ease off down elevator and make necessary recovery with up elevator. Until the pilot is thoroughly familiar with the fact that controls are not "instinctive" when inverted there is a danger of pulling the model into the ground at point "X."

MANŒUVRE			POINTS		ACTION
	(*m*) VERTICAL FIGURE "8" Top point of upper loop not to exceed the vertical	Good Moderate Fair	40 25 10	Max. 40	Start a tight loop from low-level flight with full-up elevator. Apply full-down elevator quickly just before top of this loop and hold until upper (inverted) loop is completed. Flatten out this loop by momentarily easing off elevator at point "A" if line angle is less than 60 degrees—otherwise there will be insufficient height for completion of manœuvre. On completion of upper (inverted) loop, recover with full-up elevator, stepping back smartly if necessary to maintain line tension. For the first attempts, break off manœuvre at point "B."
	(*n*) OVERHEAD FIGURE "8" Intersection of figure immediately above pilot	Good Moderate Fair	50 40 25	50	This is really a combination of two wing-overs, one in inverted flight. From low-level flight first practice part (*i*) until the model can readily be made to pass directly overhead. To complete "8," start part (*i*) and when model is directly overhead apply slight down elevator. Recover at low-level inverted flight with more down elevator; level out and start inverted climb, aiming to bring model back directly overhead at top of climb. At top of climb apply slight up elevator and recover normal flight position. Familiarity with control reversal in inverted flight is essential for success with this manœuvre.
	(*o*) SQUARE OUTSIDE LOOP Horizontal parts of loop to be half lap, and model to be inverted and opposite direction of circuit to normal flight	Square Moderate Poor, but completed	40 25 10	40	This manœuvre is carried out exactly as for Square Inside Loop (*g*), with the exception that it is started from low-level inverted flight and thus control movements are reversed throughout. Familiarity with inverted flying technique is essential for success.
	(*p*) VERTICAL FIGURE 'S'	Good Moderate Fair	30 20 10	30	The Vertical "S" is a comparatively simple manœuvre. Start a normal inside loop from low-level flight. Apply full-down elevator at top of this loop and hold until model completes "S." Recover at high-level flight or dive away, as found best. A powerful motor is needed and the model should have no tendency to slacken off lines at high altitudes. This manœuvre is far more spectacular—and dangerous!—if started from high-level flight downwards.
	(*q*) LANDING	Good Bounce Flop	10 5 0	10	Landings definitely need a little care. Some models tend to float when the motor cuts. In all cases, best practice is to make a glide approach with slight down elevator—never put on up elevator immediately after the motor has cut—and ease up very gradually to a three-point landing. Most common error is to flatten out for the landing above ground level, with the result that the model flops in or bounces badly. Quite a number of models will make a smooth "wheel" landing if simply held in a shallow glide with power off.
	(*r*) ADDITIONAL RATING OF GENERAL FLYING STANDARD	Maximum	50	50	
				1,030	TOTAL POSSIBLE POINTS.









FROM Bouncing-in-the-Briny Fliar Phil comes back on to dry land, to cough up a lot of water and another " Model News."

You can't keep the superlative merchants (" Is this a record, please ? ") down, and answering the elderberry pith epic of a recent " Model News " is an even smaller model which flies. J. H. Maxwell did the deadly deed, and our Model of the Month shows the model (?) in all its glory. Despite its naked appearance, it is (of course) decently covered with Microfilm ! The wing span is 1·5 inches ; the wing area 1 square inch ; the length 3 inches ; and the weight ·00245 ozs. The model is constructed mainly of 1/64th inch square indoor balsa, with a 3/64th inch wide single strand motor cut from a toy balloon. The motor run carries the model along in level flight for about 3 feet after which it glides in to a landing. It is interesting to note that Mr. Maxwell's model though smaller and of spidery structure is the heavier of the two according to comparative figures so unless Mr. Whitworth's figures were incorrectly recorded elderberry pith must be amazingly light stuff, and perhaps should be better known as an aeromodelling material. Incidentally, Mr. Maxwell hopes perhaps Mr. Warring will now accept this as proof that he has flown pylon models !

Our left hand " cloud " supports a beautiful piece of solid modelling and photography from R. Winfrey of Helston. This Tempest II has retracting undercart, moveable controls, detailed cockpit, sliding hood and retracting step.

Scale model honours go to P. Haywood of Warrington for his rubber powered Tiger Moth based on the A.P.S. design, illustrated below left. It is to be modified for a Mills very shortly.

Below this a handsome replica of the " Natsneez " by D. North. Since this photograph was taken the model has twice been stripped and the all up weight with a Frog 100 is now down to 13½ ozs., with beneficial results to the flying speed.

Our second " cloud ", right, shows Lt. Penny's successful control-line flying wing. It weighs 19½ ozs., 43 in. span, and is powered by a Mills. 45 m.p.h. is claimed with a 6 in. diameter cut down standard Mills prop. The undercart is fully sprung, with solid rubber wheels.

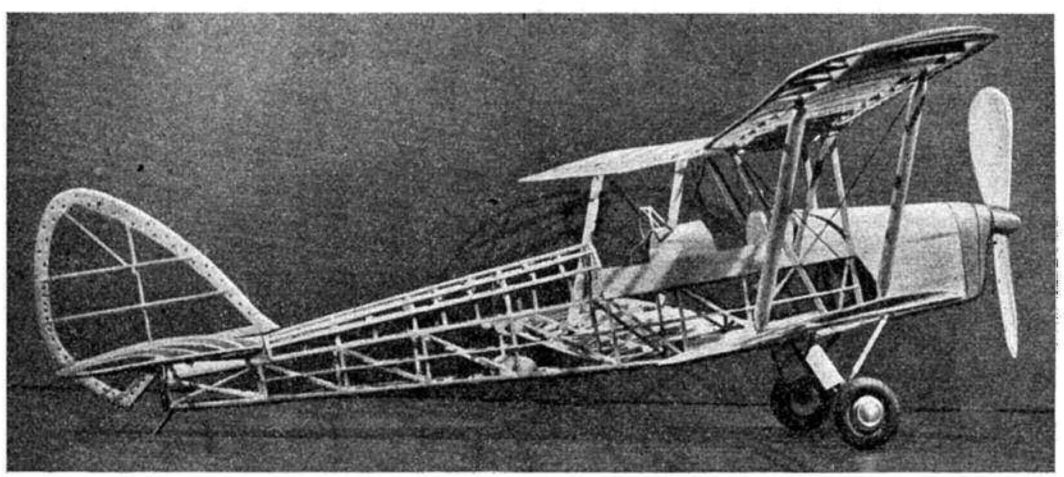
Back to the centre, below, and a most interesting Italian sailplane which held the world record for some time. Rather more graceful and sturdy than most Italian designs, this machine has a most impressive performance record.

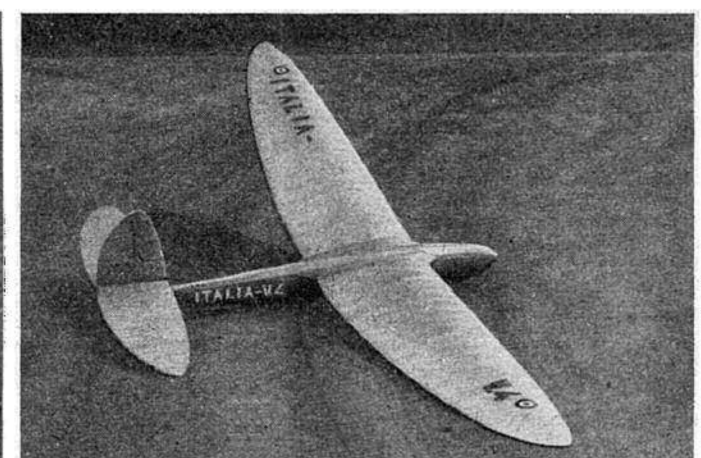
It will soon be time again for microfilmies and bottom centre shows a beautiful example of " spiderweb " modelling. It is the American class B Cabin Model record holder by Merrick S. (Pete) Andrews. Time 17 minutes 40·6 secs. Pete Andrews also holds the class C stick record with a time of 27 minutes 4 seconds. The models of course are free flight, flown in a spacious disused air-ship hangar in which furnishings our friends the Yanks are luckier than ourselves as several of these buildings still remain at their disposal.

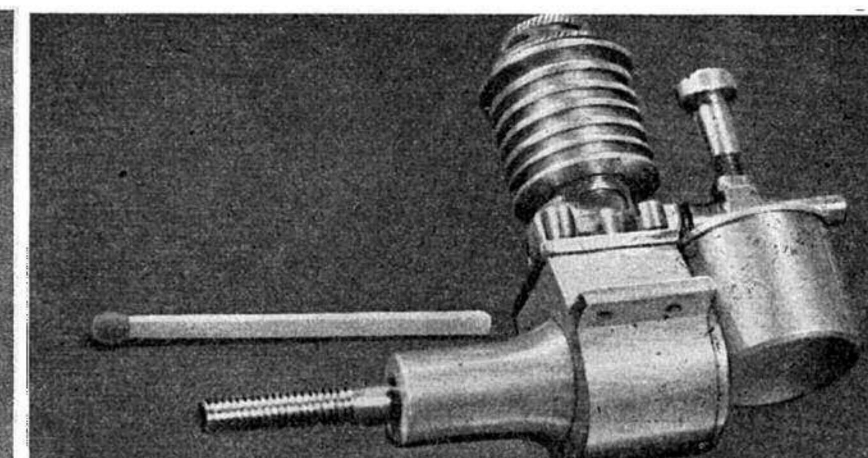
Aeromodellers have amongst them a considerable section of engineers, like R. Bennett of Biggleswade for instance, who made the " half dimensioned " ·625 c.c. version of the Sparey 5 c.c. shown below right. Matchstick shows the size.

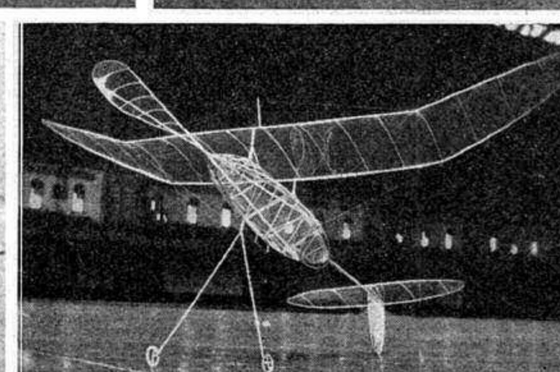
Finally a sight—and a sound—that shook many a visitor to Eaton Bray and Eaton Bray itself, last International Week—A. H. McBean's Dynajet-powered tailless glider airborne on 3½ lbs. of pure noise. B. Daw took the photograph.

Fliar Phil bids *au revoir*—and goes back to polishing up his " je suis, tu es, il ain't " . . . for International Week !









TROPHY DAY AT EATON BRAY

BY H · G · HUNDLEBY

VERY soon your scribe will be accused of writing weather reports in lieu of contest reports, but try as he may to suppress the distasteful subject it shows even greater persistence as the flying season progresses. May we therefore make the observation that RAIN in large and copious quantities was the predominant feature at Eaton Bray on Sunday, July 4th. It resulted in the postponement of the Arnhem Glider Trophy to some future date, but in spite of its continuance until 7 p.m., did not deter those diehards who flew in the Victory Glider Cup and the Russell Power Trophy.

With tow lines and models sagging under the weight of water, glider enthusiasts squelched across the grass to the launching area with a gusty wind adding to their troubles. Anything resembling a lightweight became an immediate handicap to its owner and the stout efforts of the Yeabsley Bros. in getting away Roy Yeabsley's latest 10-ft. lightweight were appreciated by all. Minney, of Luton, who arrived somewhat breathless almost at the end of the contest, and only just managed his two flights before closing time, was the final victor, going o.o.s. on each flight.

In view of the appalling flying conditions it was decided to revise the original precision rules of the Russell Power Trophy to ratio-duration, hand-launching being allowed. Swindon Club flew in strength, taking the first three places and producing some very nifty climbs in the bargain, Secretary L. F. Coker proving a popular winner. Ease of starting was most noticeable throughout the contest; in fact, one would have imagined that diesels thrived on a dose of rainwater in addition to their normal diet.

By 7 o'clock, as the last competitor made his flight, almost everyone was wet through, but being aeromodellers it worried them little. (We never cease to wonder at the discomforts the average aeromodeller will endure rather than lose his day's flying.) And need we mention that it stopped raining at 7 o'clock!

RUSSELL POWER TROPHY

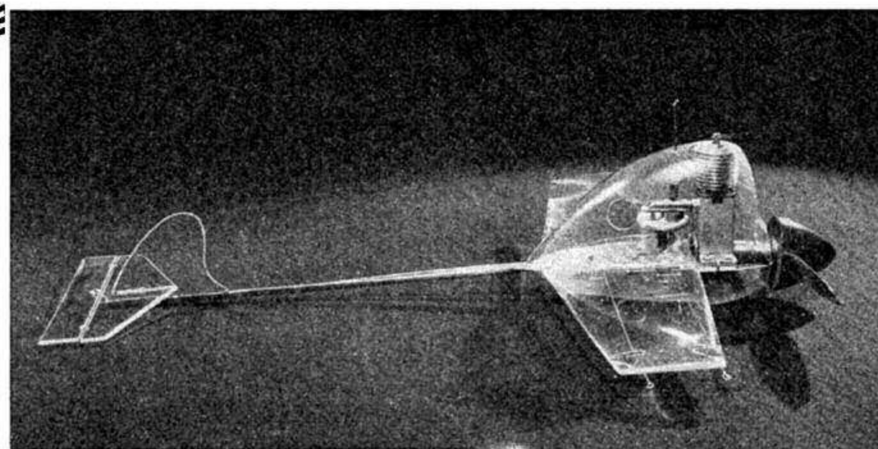
			Ratio
1.	L. F. Coker	Swindon	4·21
2.	M. A. Greenwood	Swindon	3·71
3.	I. R. Bittle	Swindon	2·71
4.	Houghton	Luton	2·5
5.	L. A. Rogers	Swindon	2·39
6.	R. Minney	Luton	20·8

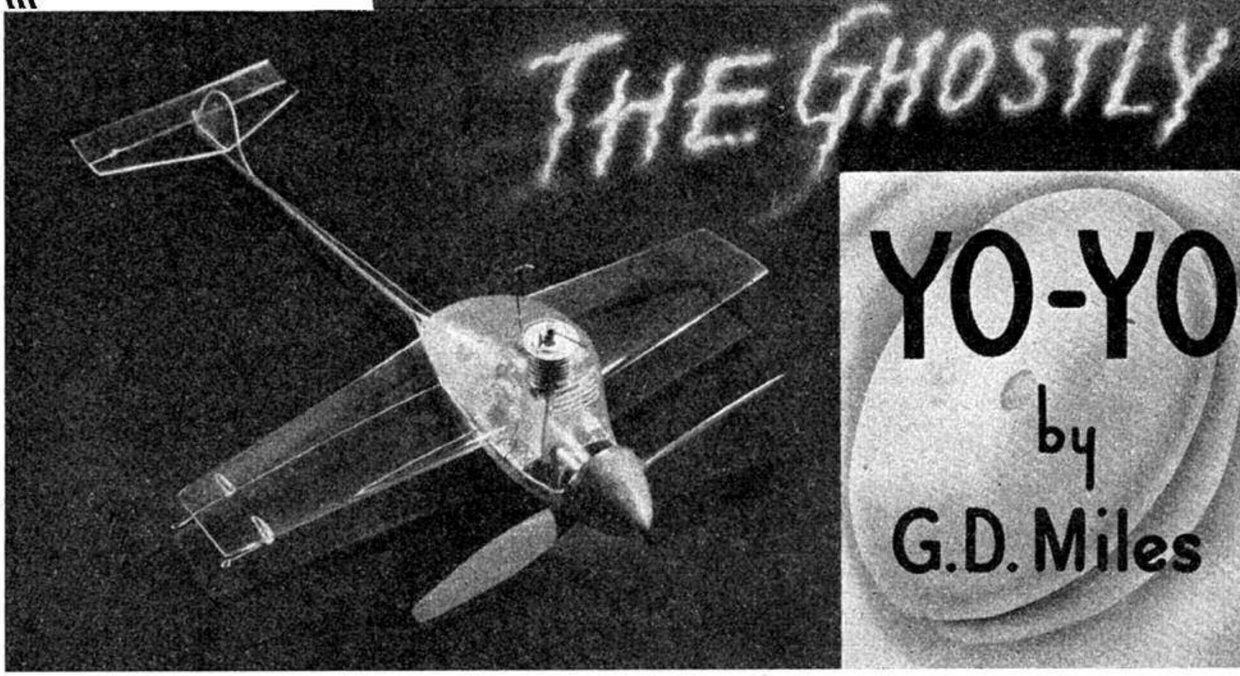
VICTORY TROPHY

			Two-Flight Aggregate
1.	R. Minney	Luton	153·3
2.	R. Yeabsley	Croydon	135
3.	C. Houghton	Luton	117
4.	M. D. Casey	Palmers Green	49
5.	P. B. Wyatt	Ipswich	46
6.	J. Evans	Leighton Buzzard	45

Heading photo shows the general wet and windy scene around the control tower. Top, L. F. Coker with his Mills powered pylon model which incidentally uses a rectangular non-helical airscrew. Centre, shows Cyril Houghton (right) and a very suitably attired helper preparing his model. Note the undercamber on the wing! Left, a King Falcon being launched in the rain. *(Aeromodeller Photos.)*

WING SPAN	..	12″
MAX. CHORD	..	3½″
TAIL SPAN	..	5″
MAX. CHORD	..	2½″
OVERALL LENGTH		15¾″
SPEED	..	40 m.p.h. +





THE GHOSTLY YO-YO

by G.D. Miles

AS announced in the February issue, Mr. G. D. Miles received a special award for his entry in the AEROMODELLER Photographic Contest with a first-rate photo of his new transparent control line model. We have secured further shots of this most unorthodox craft, together with a brief description of the methods employed in the construction which we are certain will interest the vast majority of our readers.

Before commencing production of the perspex model, the designer proved the general design by building a wooden prototype, using a dural fuselage, balsa wings and plywood tail unit. This try-out proved very successful, having a maximum speed of around 43 m.p.h., so work then commenced on the "Ghost".

The fuselage was constructed from L angle dural of ¾ in. × ¾ in. section, one end being flattened to form the wing positioner. From the trailing edge of the mainplane the dural angle was closed up (being left slightly open at the rear end to accommodate the fin) and cut down to ¼-in. deep. The boom was then filed to oval cross section, and highly polished.

The flat dural engine mount has each side turned down to stiffen the whole job, and is riveted to the fuselage boom, and the control plate bolted in position. Control line guides were shaped and glued to the wings.

Next followed the mainplanes, which were cut from ⅛ in. sheet perspex, cut true to outline with a fine saw. The sheet was then mounted on a formed wooden block and filed to the correct airfoil section, scraping and emery papering producing a smooth surface, followed by polishing.

Similar practice was used in producing the tail unit. Small pins were used for hinges, and were sunk into the perspex. After polishing, the tailplane and fin were slotted and glued together, then mounted on the tail boom.

The most interesting portion, *i.e.* the cowling, took a great deal of ingenuity to produce. Wooden forms were made 1/16-in. undersize, over which was stretched 1/16-in. sheet perspex after heating in an oven until pliable. The upper and lower shell were then trimmed and fitted, being fixed in position with wire mounts. Ventilating louvres were cut in both upper and lower cowls for cooling purposes, and a circular opening made to enable engine choking to be carried out.

This interesting project "circulates" at 40 m.p.h. and presents a somewhat weird appearance! No doubt we shall see more models of this type appearing now that the idea has been sown, but full marks go to Mr. Miles for the introduction of something really new into the aeromodelling game.

Equal credit is due to Mr. R. Morgan for his excellent photography. The shots presented here are amongst the best examples of the photographer's art we have had the pleasure of handling.

YOUR Gadget King once again opens another issue of "Gadget Review" remarking that having been up the poll (sh !) in the last few months, he was gratified to find that quite a fair number of readers had the courage to admit to reading his wretched writings—and even to liking the pickings from the brains of the genii so delicately (?) rehashed for their consumption. All that is now needed to fill his cup of happiness to overflowing is the sight of some misguided modelbod actually using a gadget from these pages—and getting away with it . . .

After which homily it will probably be as well to transport ourselves quickly to our gadget No. 1—which is not an up-ended lawnmower as it might appear to the uninitiated (apologies to Bagley !). This magnificent piece of ironmongery is a control-line handle with all modern conveniences, designed by W. K. LYTH of Hull, especially for the boys who use flax lines. The main idea is to use old typewriter spools to hold the line, which can easily be reeled in and out without tangling and which therefore allows one set of long lines to serve any model, the length being adjusted by the spools to suit individual models. The spools, which must of course be identical, are held on to the shouldered and screwed ends of a 3/16 in. metal rod passing through a wooden handle, by a nut at the lower end and a milled nut at the top—the latter to allow for adjustments to the length of line. Aluminium guide holders are countersunk screwed to the top and bottom of the wooden handle. The guides are plastic tube to minimise fraying of the lines, glued in place with balsa cement. Washers separate the spools from the guide holders and a bolt slides into the lower spool to lock it in the required position. Winding is carried out by means of a handle on the lower spool. Consus warns the circulation devotees that it is fatal to try and use this handle as it is for wire lines, although it is very easy to modify it suitably. Wide-centre spools of much smaller thickness must be used, of hardwood or similar material and the guide holders will have to be tinplate with the guides brass tubing, or wire holders with the guides bent in as loops.

As nobody has produced or is likely to produce a vibrationless diesel, I. W. CAMBELL produced this solution to the problem, shown in Fig. 2. Now Consus can offer no guarantee but the designer claims the scheme gives good results. Very simply the bearers are made from strips of spring steel—the best answer being from an ordinary table-knife blade. These can be inserted into a forward bulkhead as shown, the other end being screwed to the block nose. The idea is that the steel damps down the vibration and transmits far less to the basic structure. Consus doesn't know very much about the physics of the matter—but vague memories arise of experiments in resonance which lead him to tentatively suggest that if the free length of the bearers happened to coincide with the resonant figure for the engine's usual r.p.m. a result very far removed from vibrationless might result—have a look at a reed type rev. counter ! Still Consus is perfectly willing to stand corrected if need be. The chance after all is a pretty long one. Meanwhile though—he's sticking to his cherished hardwood—but would like to hear from more adventuresome types who got results of either kind !

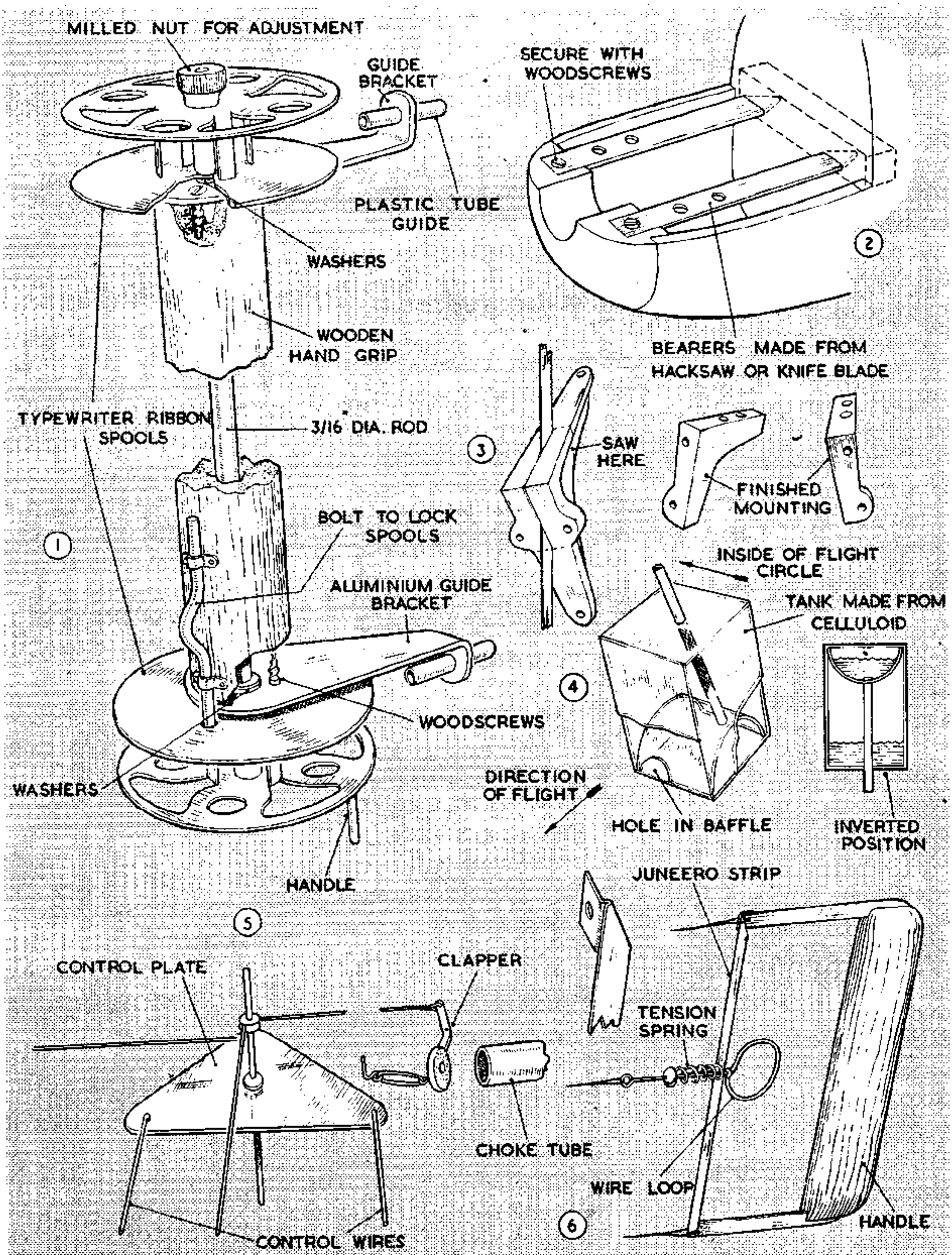
Seeing that the power merchants have practically taken over "Gadget Review" as well as the rest of the magazine (entirely the fault of everybody) we come to another gadget in Fig. 3 which is again devoted to engine mounting, especially for the larger diesels, and frankly a very good idea it is too. A. R. S. SHARP recommends the conversion of ordinary small cast aluminium brackets—obtainable very cheaply at Woolworths and ironmongers. Conversion is very easy, entailing only the use of a hacksaw, a file and a drill of suitable size. The designer recommends the use of a knock-off front panel or similar fixing, for he says that in a crash the bearers are the last things to break. After checking the exact dimensions required from the engine mark them off on the bracket arms. Then saw right down the centreline until the saw clears the whole of the marked off portion, and saw off the excess at the end of each arm. You will now have a pair of very strong mounts, which only need drilling to take the engine and filing at the corners to round them off.

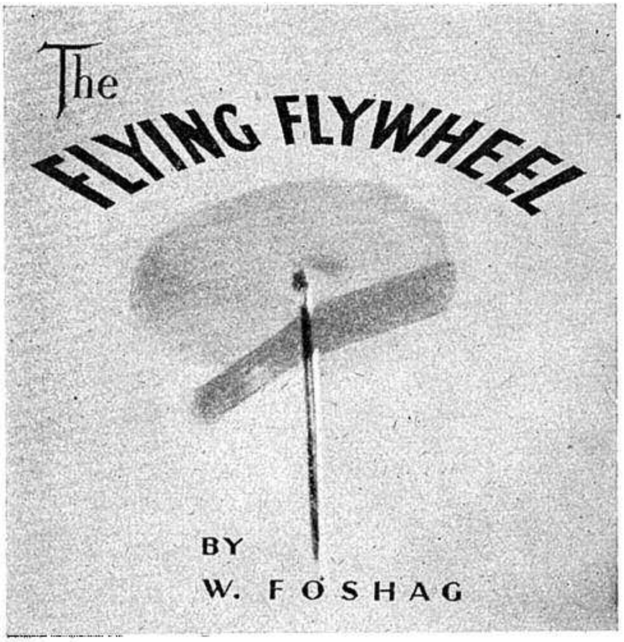
A useful tip for petrol fans and other modellers who build large models comes from A. M. L. KENNAUGH of Leamington Spa. Really good light silk still being the devil's own job to obtain, heavy tissue is often resorted to and this of course is not as strong as could be desired. However, a beautiful and very tough finish can be produced on ordinary rag or bamboo tissue by giving one coat of lacquer.

If you're one of the control-line addicts of "upside down, nothing on the clock and still climbing" S. HULL's design for a tank for inverted flying shown in Fig. 4 will be of interest. Indeed, even if you haven't been bitten by the circulation bug you'll be impressed by the ingenuity of this gadget. The whole principle of course, depends on a baffle fitted so that when the model inverts sufficient quantity of fuel is held around the fuel tube to ensure constant feed. Note the fuel entrance to the baffle must point forward in the direction of flight and in towards the pilot—otherwise all the fuel will merely run out when the machine climbs or not refill when it is used. The air vent in the filler cap must be as small as possible. The only disadvantage appears to Consus to be the alternating of the feed from suction in normal flight to gravity in inverted which might possibly give rise to throttle trouble with choking in the inverted position. Perhaps one of our practical types will try it and tell him.

Rounding off our August miscellany are two ideas from either a retiring or a forgetful gentleman who sent an unsigned contribution from Brook House, Dean Close School, Cheltenham. Mr. ? ? ? ? ? ? ? (don't try and pronounce that !) has produced yet another throttler for control-line diesels and a complementary control-line handle with finger throttle control. They are illustrated in Figs. 5 and 6. A pull on the third line works the little clapper which clamps down on the induction pipe (choke tube) of the engine, thus choking it. A series of pulls "blips" the engine and materially reduces its revs thus allowing a gentle engine-on landing to be made. The simple handle has an 18 s.w.g. loop for the finger, attached to the third line. Another warning. The tension necessary on this type of third line will probably need constant inspection owing to the elongating and *vice versa* habits of control lines !

With International Week at any moment Consus signs off—perhaps he'll manage an International flavour to the October contribution !

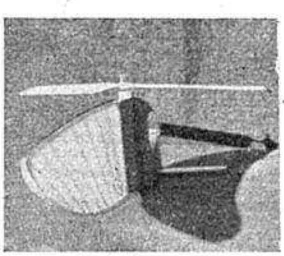

MILLED NUT FOR ADJUSTMENT
GUIDE BRACKET
PLASTIC TUBE GUIDE
WASHERS
WOODEN HAND GRIP
TYPEWRITER RIBBON SPOOLS
3/16" DIA. ROD
1
BOLT TO LOCK SPOOLS
ALUMINIUM GUIDE BRACKET
WOODSCREWS
WASHERS
HANDLE
SECURE WITH WOODSCREWS
2
BEARERS MADE FROM HACKSAW OR KNIFE BLADE
3
SAW HERE
FINISHED MOUNTING
INSIDE OF FLIGHT CIRCLE
TANK MADE FROM CELLULOID
4
DIRECTION OF FLIGHT
HOLE IN BAFFLE
INVERTED POSITION
5
CONTROL PLATE
CLAPPER
CHOKE TUBE
CONTROL WIRES
JUNEERO STRIP
TENSION SPRING
WIRE LOOP
6
HANDLE



The Flying Flywheel

BY W. FOSHAG

The heading photograph shows the Flying Flywheel under way, in characteristic flying position with the anti-torque vanes clearly visible. Above shows the hand launch position and an R.O.G. Below are photos of two semi-scale developments of the same principle, both of which fly successfully.



THIS simple stick helicopter, in reality, is an interesting experiment in inherent stability and torque compensation. In most every sense of the word the model is a flying gyroscope. This accounts for its unexcelled stability. The model is so stable that it may be launched from most any angle and it will quickly recover. The photographs show more advanced stages of the same basic design.

To construct, first select the motor stick (E) of rather hard $\frac{1}{4}'' \times \frac{1}{8}'' \times 12''$ balsa. Any suitable thrust bearing (G) is now bound securely to the motor stick with thread. At the bottom of the motor stick we mount a small metal hook (F). It is also bound to the stick.

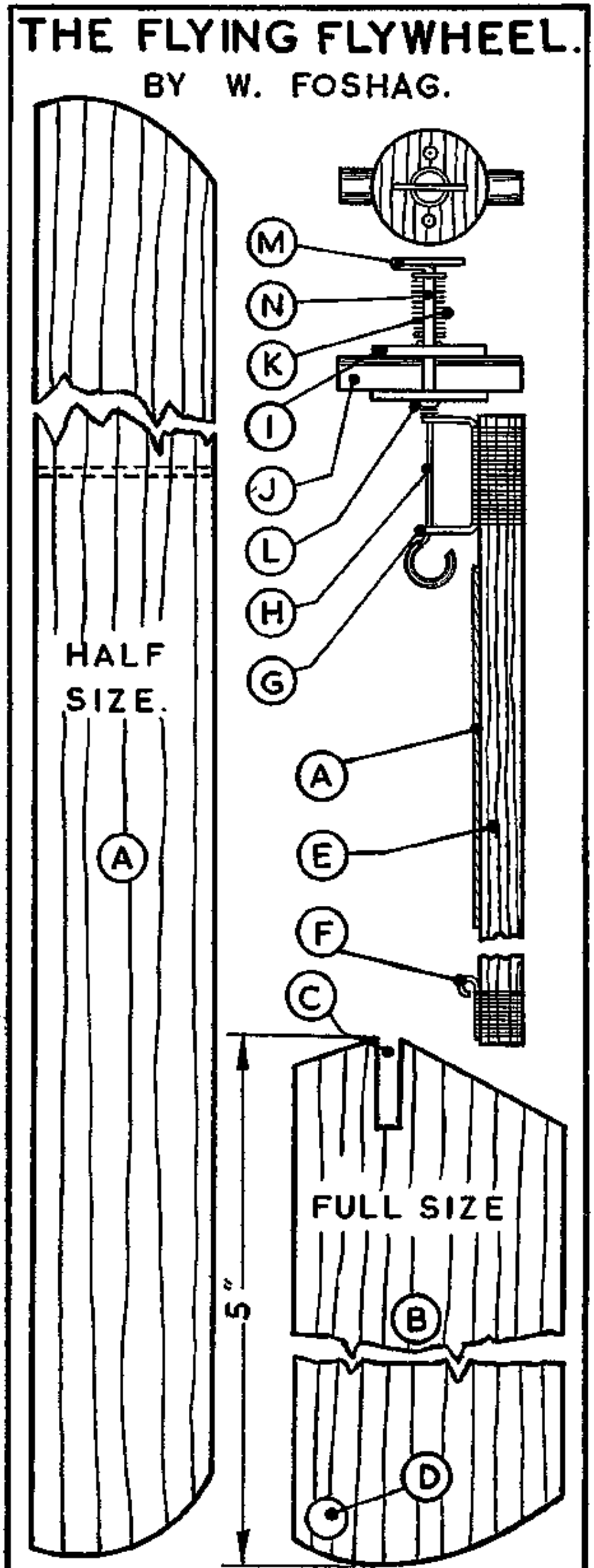
The hub contains a free-wheeler, but if the reader wishes to simplify, the clutch may be abandoned. The first step in making the rotor head is to firmly roll porous tissue paper and glue about a $\frac{1}{8}$ in. drill in order to form the blade journals (J). This tube will be trimmed at the ends and slipped off the drill in order to dry. Two identical 1/16 in. balsa discs (I) are cut and drilled in order to hold two 1/16 in. pine dowels (N). The two discs (I), the paper tube (J) and the pine dowels (N) are now glued together. Some form of metal thrust bearing (L) is attached to both discs as shown. The motor hook (H) is now passed through the hub. A small, but easy acting spring (K), with a washer soldered to both ends, is mounted on the shaft (H) and the shaft is bent over and soldered to the top washer. A cross-wire (M) is now soldered to this, which finishes the hub. Remember to place washers between all moving bearings (L). Cover hook (H) with a small section of rubber tubing.

Two 1/16 in. blades are built from the full-sized plans. Cut gap (C) which holds a $\frac{1}{8}$ in. pine dowel 1 in. long. This blade spar should fit tightly into the blade journals (J). The anti-torque vane (A) is shown half sized and is cut from 1/32 in. soft sheet. It should be glued on the motor stick as shown.

It is very important that the weights (D) are mounted and these should weigh in the vicinity of ·015–·02 ozs. each. They are best made by melting a drop of solder with a soldering iron.

Four loops of 3/16 in. rubber makes the motor. It should be attached at one end to the motor hook (H) and at the other end to an 'S' hook. This permits drill winding. Lubricate the motor and make all adjustments accordingly.

Although the duration is not too high, very high altitude flights are common and general performance is first rate.



TECHNICAL TOPICS

BY P · R · PAYNE

More About Airscrews.

" Incidentally, when is some one going to tell us all about props and the best ones to use for each purpose ; we find that a fine pitch may give lots less thrust, but the model certainly climbs faster. We have vague theories about this but cannot substantiate them—it seems that you get more revs . . . less thrust but a faster climb ! Can it be ' geared-down ' effect as with a car gear box ? When I have broached this subject to model men who are supposed to know, all we get is a load of flannel . . . an R.A.F. fitters trade board has nothing on it." This extract is from a letter by Mr. Watkins, of Cardiff, and expresses what appears to be a very general perplexity.

The best pitch to use with any given model is really a very simple matter, but so many amateur theorists have been talking about the high efficiencies achieved when the pitch is as large as the diameter that many have been led astray. They forget that a model with a 2 c.c. engine would have to fly at about 60 m.p.h. for such an airscrew to operate efficiently!

It is obvious that if an airscrew makes a hundred revolutions every second (6,000 r.p.m.) and the model moves through the air at a speed of 25 feet every second, the advance per revolution of the airscrew will be 25/100 feet or 3 inches. If we increase this by about 30 % we shall have the most suitable airscrew (geometric) pitch—in this case 4 ins., a fairly typical value for normal free flight models. Even with a very light pylon model which rockets skywards at, say, 50 ft./sec., the optimum pitch will still be only 8 ins. and this is a most unusual case. The accompanying Nomogram gives advance per rev. and optimum pitch for all normal cases, and Table 1 gives typical free flight values for the few engines which have so far been tested by Aeromodeller Research Department.

Diameter.

This is of paramount importance if best results are to be obtained ; the brake horsepower tests in L. H. Sparey's " Engine Analysis " series have clearly shown that maximum b.h.p. is only developed at one engine speed. Thus the airscrew diameter must be such that the engine can just turn it at this optimum speed *in flight*. This means that maximum r.p.m. under static conditions will be somewhat lower of course—usually between 500–1,500 r.p.m. lower, though we have no accurate means of checking these figures at the moment. Fig. 1 shows the effect of varying diameters of the performance of the AMCO ·87 engine.

It is possible to calculate this optimum diameter, but this calls for a large number of careful tests before the values of a constant " K " can be finally decided. However, the writer has used the formula given below for several months, and it can be relied upon to give a fairly accurate answer for free flight airscrews, whilst it is usually quite reliable for high speed work. This gives :

$$\text{Airscrew diameter (feet)} = 5\sqrt{\frac{\text{b.h.p.}}{n^3 k}}$$

where n = engine speed in revs./sec., and is in millions (e.g. n=100 r.p.s. $N^3 = 1{\cdot}0$).
b.h.p. = brake horse power, obtained from the relevant engine performance graph.
k = a constant, values for which are given in Table 2. These are by no means final and were measured with non-helical pitch screws.

By choosing the optimum values for n and b.h.p. and applying the answer, it is possible to obtain considerable increases in thrust with orthodox " helical-pitch " designs.

Static Thrust.

The only reliable criterion for airscrew efficiency is the thrust generated in flight. Static thrust is a most unreliable substitute, but it does give some idea of relative efficiency for free flight airscrews when intelligently used. For instance, the static thrust of the N.H.P. " Frog 100 " airscrew designed for the Aeromodeller test was just 50 % greater than that of the maker's design. With this information alone it seems justifiable to claim a considerable improvement in flight, but

(continued overleaf)

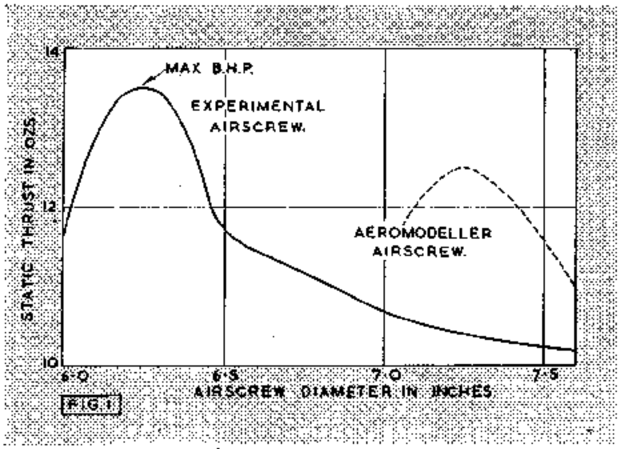


FIG. 1

it is impossible to say how much in the absence of flight tests. On the other hand, a higher design speed might knock off the extra five ounces, and the new airscrew show no improvement whatsoever under static conditions, although the true thrust in flight would probably be doubled.

A good illustration of this occurred some nine months ago, when an airscrew was produced for a Mills-powered pylon model with a very fast climb. Static tests gave 14 ozs. for both this and the maker's design, and some of the club members expressed the fear that the writer was slipping! On the control flight test rig, however, the maker's airscrew failed to reach anything like the desired speed; the new one gave a slightly lower initial acceleration, but pulled the test rig into the roof after take off. Tests on a subsequent model revealed a 100% increase in thrust at the design speed.

At the present stage of development, flight tests are only comparative and since their accuracy is rather poor the results are not given in the " Engine Analysis " series. It is hoped to make accurate wind tunnel tests in the not-too-distant future, and this ideal solution should provide ample proof for the practicalist and accurate figures for the theorists.

Progress to Date.

Generally speaking, we have reached the stage where both pitch and diameter can be finally decided long before a model is built, unless it is to fly at a very high speed. But we are still a long way from achieving efficiencies which are theoretically obtainable, or from finding a satisfactory answer to the many inconstancies. Why, for instance, should three designs be good, and the fourth very good ? And why should the torque coefficient of a Frog 100 airscrew be half that for the E.D. Mark II design, when scale effect considerations seem to indicate that it should be greater ? What is the best aspect ratio ? These and many other problems will have to be solved before we can begin to feel at all satisfied with our knowledge of the subject.

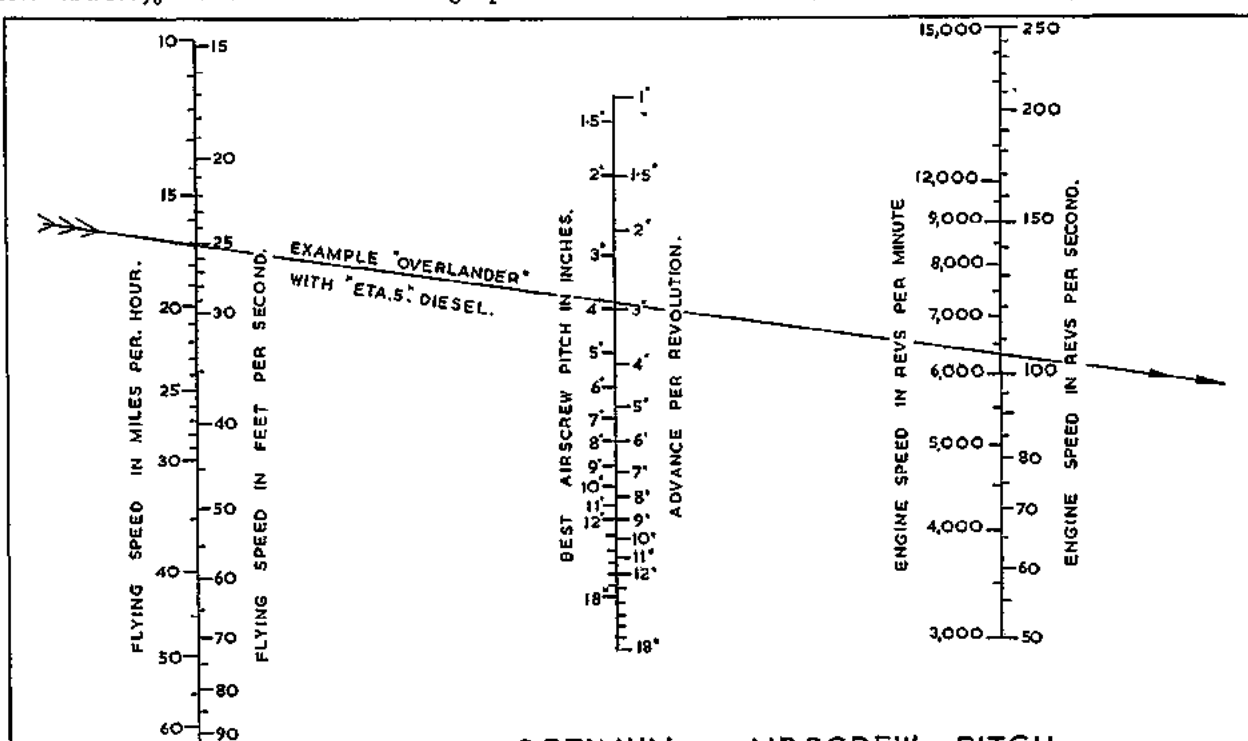
TABLE 1.

Engine.	Airscrew Diameter.	Free Flight Pitch.	Static R.P.M.
AMCO ·87 ...	7·0"	2·5"	8,000
Frog 100 ...	8·25"	2·7"	7,500
Mills Mk. II ...	9·0"	3·5"	7,000
E.D. Comp. Sp.	9·25"	3·1"	6,500
ETA '5' ...	11·0"	4·0"	5,800

N.B.—Since the optimum diameters given are based on panelled chord NHP airscrew, the approximate static r.p.m. required is given as a check.

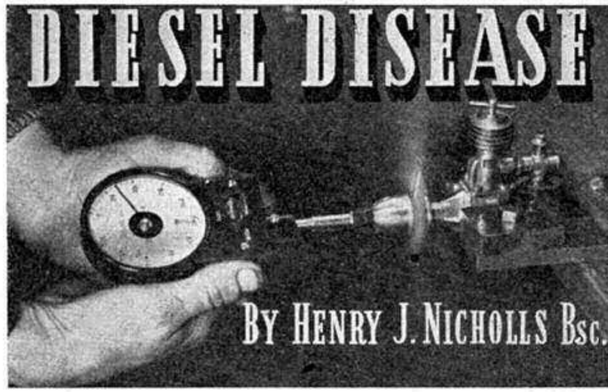
TABLE 2.

Engine Size.	"K."
1 c.c.	0·12
1·5 c.c.	0·2
2·5—5·0 c.c. ...	0·35



OPTIMUM AIRSCREW PITCH.

& ADVANCE PER REV BASED ON ENGINE & FLYING SPEED.



LET me state clearly and categorically before going any further that I am not decrying or deprecating the small diesel. I know it to be one of the finest motors of its kind we could possibly have. I know that without its advent literally thousands of modellers would never have tasted the pleasures of power flying. It is only the fact that too much has been expected of them through misinformation that I want to deal with now.

I have called this " Diesel Disease ". Is that a reasonable title? I think so, although they suffer fractures and dislocations rather than diseases. And like most breakages these are nearly always due to the motor being asked to do the impossible or force being used where none is necessary.

Every reputable engine goes out with the makers' instructions for starting and running and with his official fuel recommendation. Experience shows that aeromodellers all too often have to pay dearly for having thought they know how to handle a motor better than the man who made it.

That is the first point—and I now come to my second. The unfair comparison between diesel and petrol power output. This is a complete technical question that would fill a dozen articles longer than this one and I will only state briefly here that the few comparisons I have seen quoted in print *must* have been obtained by comparing the best of the diesels with the *worst* of the petrol engines.

When I find a 5 c.c. diesel that will turn a free flight prop of 12×6 ins. as does my Delong 30 at over 10,000 on the bench and 12,000 r.p.m. in the air—or a control-line 10×8 or 9×10 ins. at almost the same speed and will give with it first flick starting—control over r.p.m. through the ignition timing or the equivalent for an all-weight (including the much maligned coil and condenser and batteries) of 12½ ounces, I will begin to believe that the diesel is better than the best petrol but not till then. And there are several petrol motors that ounce for ounce can better the performance of the Delong.

To return to my first point—breakages. What is the snag inherent in the diesel that leads to all this trouble and multiplicity of repairs? It is something that is adequately dealt with in almost every makers' leaflet which can, I think, be fairly described as " some of the best written and least read publications in existence ".

The diesel or C.I. engine depends fundamentally on a very high compression ratio so that the clearance between piston and contra-piston at top dead centre is very small.

Also the engine is dependent for its starting on a flooded or partially flooded condition. The result is that when starting there is *bound* to be a certain amount of liquid fuel in the combustion space.

Should the amount of this liquid exceed the clearance volume at T.D.C. a hydraulic lock will form, *i.e.* the combustion space will be *full* of fuel and as liquids are incompressible the engine solidly resists turning of the crankshaft.

With the engine in this condition any forcing of the prop over compression can only result in damage to the engine, a bent con-rod, a broken crankshaft or worse still a combination of the two.

I just hate to think of the number of engines I have seen in this unhappy condition. Con-rods like letter S's and webs snapped off on crankshafts, and sad letters from the owners saying (apparently innocently) " I was only trying to start the motor when it stopped with a mechanical click " or " the motor was running when it suddenly stopped ", or even worse —" the model was flying when the motor suddenly stopped with a click ".

Yes, I have seen those explanations and scores of others similar. And from a quick examination of the inside of the engine it has been perfectly obvious that these " explanations " are quite untrue.

Then there is the lad who frankly admits what he has done and describes the symptoms accurately such as stiffness at T.D.C.; oscillating prop and backfiring once motor started etc. but does not realise the cause of the trouble. And all this could be avoided if the makers' instructions had been carefully followed in the first place.

Starting diesels is a knack not easily learned, particularly for the lone-hand modeller who has to find things out for himself and has no guide and mentor to help him.

I *do* know just one or two people who can take any make of diesel, even one they have never seen before, and by going through a set routine find the starting settings and get the motor going in a matter of minutes. I can do it myself. But that happy state of affairs comes only after hours of practice in handling these engines and with A PROPER UNDERSTANDING OF THE PRECISE WORKING CONDITION INSIDE THE MOTOR.

All I can do here is tell you how to avoid smashing your engine up.

I repeat—at the risk of being called a bore—FOLLOW THE MAKERS' INSTRUCTIONS as nearly as you can.

If you *have* made a mistake and you *do* get a hydraulic lock —you must clear it very carefully before proceeding further.

Here is the proper drill for doing this which applies to ALL diesels.

To clear a hydraulic it is only necessary to reduce the amount of fuel in the cylinder head *and* the engine compression. So first of all slacken off compression an exact amount. Say half a turn. Now turn engine over backwards (*i.e.* NOT against compression) until the piston is at the B.D.C. and the exhaust ports are open. Blow sharply right through the exhaust ports (or pipes) blowing out excess fuel. Hold firmly in the thumb and fingers of the hand and turn prop SLOWLY over compression. ON NO ACCOUNT flick it over.

If the lock has not been cleared, again put piston to B.D.C. and blow fuel out through the exhaust ports. Try again and keep on until the motor is clear and will turn again freely.

NOW:—Without increasing compression, and with the throttle needle closed down flick the prop over. If the sump is over-full of fuel the lock may build up again and you will have to repeat the whole process. If the sump has just sufficient fuel in it for a start but not an excess—the hydraulic lock will not build up again and the motor will flick over freely.

If it is free, gradually increase compression the half turn you slackened off, and flicking over should now produce a start as long as your original settings were right.

This all sounds very nice on paper, but believe me learning how to handle a diesel (or a petrol motor for that matter) just doesn't come easily to some people. In fact I know lads who have had engines for years and are still quite clueless on how to handle them.

The main thing to remember is that force is NEVER necessary and that if a condition ever arises when it has to be used then something is wrong and those wrong conditions must immediately be adjusted.

The above procedure for clearing a hydraulic is based on that principle.

To sum up then. Properly handled the diesel engine will give a long life of trouble free service, which is comparable with a good petrol but not better than the best.

Badly handled the petrol motor will simply refuse to function. The diesel engine may get smashed up internally. As our friend in " Merry-Go-Round " says with weekly regularity " There's a clue here somewhere " or if not a clue—a moral. Dare I mention those makers' instructions again ? ? ?

The HAPPY INVENTOR

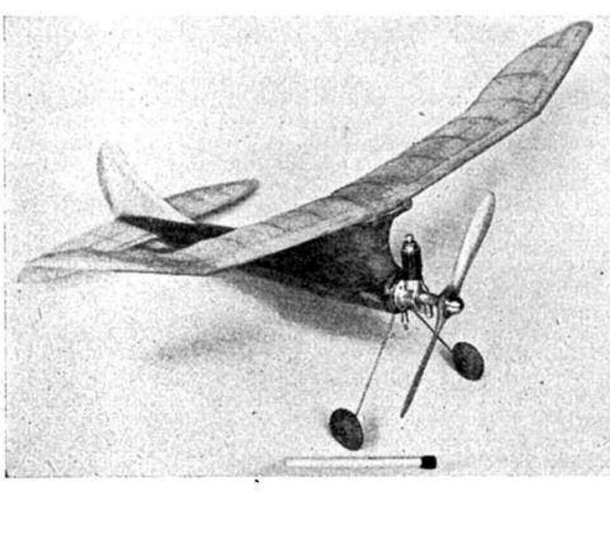
BY WILLIAM WINTER

Continued from our previous issue.

TOYS always held a peculiar fascination for Arden and it was no surprise to his friends when he organized a toy factory in 1916. This business was highly successful until 1919 when his partners, including a Wall Streeter with a notion of selling stock, forced him to sell out for $20,000.

Somewhere along the road between 300 and 400 inventions Ray and a partner formed Ultrade Products as an outlet for the stream of ideas. These products ran a strange and wonderful variety from telescopic rifle sights to toy trains. When a toy train manufacturer became interested in the possibilities of a miniature gas engine in the early thirties Ray was steered back to his natural field. The revolutionary valve in piston engine resulted. The first Atom engine which featured this valve was an Arden design, as are, of course, the present Arden ·099 and ·019, manufactured by Microbilt.

At 58, the father of a 36 year old son, and a 35 year old daughter, and blessed with four grandchildren, Ray looks nearer to 40 than 60, an impression heightened by a combination of boundless energy and a profound interest in the latest problems and developments in model aviation. This subject he pursues with a gusto that more than matches the pep of the most rabid hobbyist. It is impossible to reconcile this quiet but incisive-speaking man with gas model flights a full decade before the first World War. He is one of those rare individuals that require little sleep; he is apt to work through the night, nodding off for a few seconds at the bench, then plugging on completely refreshed. He takes an especial delight in watching the sun come up after a fruitful night's labour over bench or machine. He chain-smokes cigars, cramming two for each one he smokes into your pockets, and dashes up and down stairs in a frightening manner. He may churn through fifteen technical tomes in search of an illusive fact.



Ray's quiet lakeside laboratory is eloquent testimony to his never ending scientific approach to gas engine design. One of his prime objectives is a completely flexible glo-plugged engine which will idle down or rev way up. Nothing truly revolutionary has taken place in engine design in 75 to 100 years in his opinion. Present engine ultimately will yield 30,000 revs a minute in Arden's estimation. He has attained 26,000 in his laboratory. Producing a really flexible motor means far more to him than the pursuit of brute power, which he can double now on his laboratory engines. Arden believes we have more power now than can be handled by the average hobbyist. He turns down frequent requests to provide special fuels and engines to individuals, a practice which, in his opinion, is all wrong. One wall of his shop is lined with fuel containers for some fifty successful blends he has developed. Some of these potent brews would scare the daylights out of the most rabid speed demon. In all he has developed and tested 500 fuels. Present engine classifications annoy him. He so dislikes big engines that he easily resists the temptation to listen to the frequent advice that he should produce a " 60."

" Why stop at 60," he exclaims. " If you want speed, let me make a bigger engine, and attach a strong enough cable to the model and I will give you 200 to 250 m.p.h."

If you press him for his views on trends, he'll flash a dreamy smile and pull down from a shelf a small white box. Out of it emerges a 12 in. Zipper type model, with neatly planked monocoque fuselage and built-up wings and tail. Its tiny motor, smaller than a paper of matches, has had hundreds of hours running time, and will turn up 12,000 r.p.m.

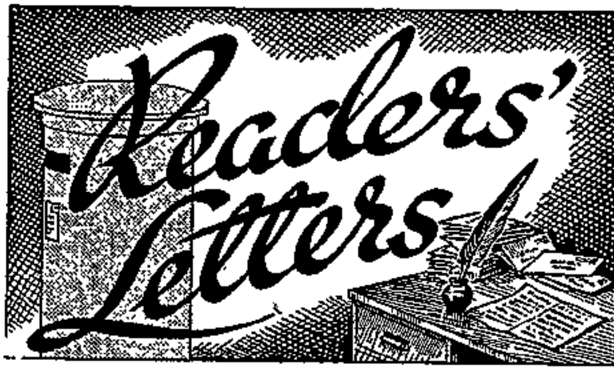
To emphasize the relative indestructibility of his little-free-flight job, Arden tosses it harmlessly to the floor.

Arden's passion for the tiny is the one common denominator that ties together his many and varied inventions. His first gas engine is hardly a giant among today's larger engines. Its light ignition was sensational in its day. Glen Curtiss used smaller, lighter Arden coils on his famous prop-drive " wind wagon " before he made his first airplane flight. By 1910 Ray had developed a two-cylinder model engine weighing only fourteen ounces and over 25 years of experimenting got engine weight down to two ounces. His smallest engine weighs only 23 grains and is carried about in a spectacles case. To build it, Ray was forced to develop a special kit of tiny tools, including taps, dies, drills, and laps smaller than a paper match. Much of the work was painstakingly and beautifully done under a magnifying glass. The spark plug alone took 100 hours to construct and is about as big as the head of a match. Diamond pointed tools were required for cutting, and fine copper wire and diamond dust for drilling its quartz insulator. This Tom Thumb among Lilliputians is, of course, the ultimate extreme. For small practical gas models Arden has two engines that weigh, complete with prop and tank, 87 and 112 grains. These, he feels, are ideal for 12- to 20 inch models.

In his research Arden marshalls a lifetime of experience and an impressive array of scientific gadgets. He may run an engine, picking up the frequency of its exhaust by a microphone, then amplifying the sound waves with a special amplifier of his own invention, projecting the waves on the face of an oscillograph. This permits him to study exhaust characteristics and ultimately to correct and improve engine design. For fuel research he is apt to use a large test engine, in which the compression ratio of up to 40-to-1 may be controlled and varied along with other factors.

Years of toy designing—he is always emphatic that the gas model is more of a scientific instrument than a toy—have convinced Arden that hard-to-control, easily smashed gas models is a trend in the wrong direction. Small models and engines could bring gas modelling, he thinks, to untold thousands of youngsters. What he told Herring forty-four years ago, he has achieved. He has built the smallest gas engine in the world.

Heading photo shows an engine weighing 87 grains with bore and stroke of ·22" and capable of 12,000 revs. Left is probably the smallest free flight power model in the world. Note the matchstick !



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

DEAR SIR,

I should like briefly to answer Messrs. Robin Banks and P. R. Payne.

To Mr. Banks.—Experiments have been carried out with a Frog 100 diesel mounted on a " floating " bulkhead and it has been found that the engine works perfectly providing it can be locked for the starting process. The use and merits of any mechanism can only be decided when faced by a particular design problem.

To Mr. Payne.—Repeated experiments carried out by myself in actual flight as well as the test bench have shown the following:—Using the same diameter airscrews of different pitches on the same model, the fine pitch airscrew, requiring greater revs. per sec., gives far greater torque reaction to the model than the coarse pitch slow speed airscrew, IN SPITE OF THE FACT THAT MORE POWER IS REQUIRED TO DRIVE THE SLOW SPEED AIRSCREW.

I suggest a simple reduction gear could make use of this fact.

C. RUPERT MOORE.

DEAR SIR,

This letter of mine is in answer to the article of J. Noonan, published in the AEROMODELLER of January, 1948.

I don't share Noonan's opinion regarding diesel engines. He says that the diesel is a motor completely bypassed by petrol engines because it has few revolutions, low power, etc. But I beg him to consider that it is only five years since diesel engines for models have come out, so there is a very great difference of age between the two. Consequently the diesel is only a baby in comparison with petrol engines, and it has still a long way forward to go. However, in many aspects it has by-passed petrol engines.

1. It is much lighter, because it hasn't coil, condenser, etc.
2. Starting is simpler.
3. Its maintenance is more moderate for lack of batteries.
4. It hasn't any complication.
5. Its price is much lower (very important).

In conclusion for its lightness and for its considerable power, especially in the best types, we can affirm with sureness that in free flight, diesel is to be preferred. Actually it is inferior in line controlled models, but we hope for its future. Actually we have obtained 11,000 r.p.m. and everything makes us think that diesels will attain more revolutions.

Moreover, if we consider that in Europe controlled flying isn't so widespread as in America, we understand why diesel engines are preferred, and especially good ones.

We have also to remember that the diesel for its low cost and for its easy starting has permitted widespread power modelling in Europe. I could mention many good diesels built here in Italy, with 11,000 r.p.m. and 1/3 h.p. but I don't want to make free publicity. I think that Noonan hasn't seen the last engines built in the Continent, and he bases his suppositions on diesels built in America, or on engines that he has seen two or three years ago in Italy, France and so on.

Siracuse, Italy. STRACUZZI SILVESTRO.

DEAR SIR,

In replying to Mr. Payne's letter in your June issue, firstly, one cannot agree that it would be just to accuse a technical writer that his work was unreadable solely because statements had been supported by necessary qualification. I would stress the desirable avoidance of ambiguous interpretations by readers not technically trained.

It seems unfair to the L.S.A.R.A. for Mr. Payne to claim that they have defined two terms that have been in common use for many years, though as Mr. Payne indicates readers have probably got used to his misuse of these two terms it cannot be credited that Schmitz was equally confused.

L.S.A.R.A. Report No. 29 includes in an expression for tailplane efficiency the ratio of the two dimensional lift slopes of wing and tailplane. Mr. Payne's nomogram assumed that this ratio is unity and it is considered that this assumption may often lead to serious error as is verified in L.S.A.R.A. Report No. 35.

In passing I must express appreciation of Mr. Sparey's " Engine Analysis Reports " which give such good " engineering " information However, I note that on page 311 the static thrust graph indicates that over the speed range of 5,000 to 5,500 r.p.m. at which the two airscrews can be compared the makers standard airscrew gives twelve to eighteen per cent. more static thrust for the same engine power output than the airscrew designed by Mr. Payne.

Finally, sir, torque is a moment, engine power is a rate of doing work. A reduction gear will increase the airscrew torque in the ratio of the gear ratio, engine torque remaining constant and frictional loss being neglected.

University of London. J. C. GIBBINGS.

DEAR SIR,

I found Mr. Guilmant's article in the December AEROMODELLER very interesting, and as I have made some research with tailless sailplanes I feel in a position to reply to some facts laid down in this article.

Firstly Mr. Guilmant makes several references to the Horton full-size tailless sailplane firm and he appears to closely follow the full size tailless doctrine. With tailless models this can be fatal, as the full size machines have control surfaces and a pilot to control them, and I would especially emphasize this where the towlaunch is concerned.

On aspect ratios Mr. Guilmant seems to favour from 10 to 15 which is high for a normal model, let alone a flying wing. I have found just what is required in the way of aspect ratio and have found an extremely low aspect ratio to be just the goods as far as stability is concerned, while not going so low as the A.P.S. " Floating Kidney ". On my machines I have frequently used an A/R of 4 5 : 1 combined with a sweepback of 45 degrees and an angle of washout of 25°. Now, according to Mr. Guilmant this breaks all the rules in existence, yet my model flies as stably as any orthodox model. I challenge any modeller to use this formula and see if his model isn't stable. I should add that the area of washout is 25% wing area and 3/8 in. dihedral is used for every foot of span. I think the explanation for the stability of this formula is that the large angle of sweepback gives the also large area of washout a good moment leverage plus the dihedral which gives additional lateral stability. No less than four fins were used, two small tip fins, one main central fin and a sub underfin of ply which also acted as a skid. The wing section used was Clark Y.

Mr. Guilmant's principles of construction seem sound enough and I agree that the tongue and box wing fixing is certainly required, but as for his sparless wings I entirely disagree. Any sailplane needs a spar, as a study of wing loads will tell you. In his conclusion Mr. Guilmant states that if everybody pools their ideas the perfect layout may be reached. Well, try my theory, and I guarantee I have done something towards the perfect model.

Tottenhoe, Beds. C. A. BATES.

Aircraft Described No. 10

THE HAWKER TOMTIT

By E. J. Riding

CONTEMPORARY with the Avro 621 Tutor, the Hawker Tomtit was one of the designs submitted as a replacement R.A.F. trainer in 1928.

It first flew during the latter half of that year and although of normal biplane aerodynamical design, it embodied one or two features such as all-metal construction, blind flying equipment and Handley Page type automatic slots not encountered previously in a machine of this category.

An Air Ministry contract was issued for about 100 machines to be supplied to the R.A.F., some of these being numbered J.9775–82 and K.1781–5. They were used mainly for advanced training and instrument flying, and in 1935, batches of them were put up for disposal on the civilian market.

Initially a service design, one or two production machines were allotted to civilian buyers, the first of these, G.AALL, going to the Hon. F. E. Guest in August, 1929. G.AASI, fitted with an A.D.C. Hermes I engine, was flown by the Cellon Company for many years as a demonstration machine and business hack, before being modified together with G.ABOD and G.ABAX to take the Wolseley A.R.9 radial engine. In this state, all three machines did a considerable amount of test and development work at Castle Bromwich during the years 1934–37.

The name which will always be remembered in connection with the restoration of service Hawker Tomtits is that of the late Brian Field, who did all his reconditioning and test flying from a small field in the grounds of Kingswood Knoll, a house situated on the Tadworth–Reigate road.

All the constructional work was carried out in some stables adjoining the house, the machines afterwards being wheeled out onto the field and rigged in the open.

From 1937 onwards Brian Field completed and sold two or three Tomtits each year, namely, G.AEVO and G.AEXC in 1937, G.AFFL, G.AFIB and G.AFKB in 1938, and G.AFTA and G.AFVV in 1939.

Of these, 'FL went to the Southend Flying Club at Rochford, 'IB and 'TA to the Leicester Club at Braunstone, and the rest to private owners, to whom they provided excellent sporting mounts.

Through the courtesy of its present owner, Mr. R. C. Stafford Allen, we had the pleasure recently of photographing and flying in G.AFTA.

Mr. Stafford Allen keeps his machine at the disused U.S.A.A.F. aerodrome at Chalgrove, where he has inaugurated the Oxford Gliding Club.

The machine is fitted and approved for glider towing, the price per tow to 2,000 feet being 15/–.

During the war, 'TA found its way into the hands of Alex Henshaw, who was then testing Spitfires at Castle Bromwich. Presumably it was here that the Spitfire type windscreen and head-rest were added to the rear cockpit.

Since both these items are not standard equipment, I have indicated them by dotted line on the G.A. drawing.

G.ABII, shown in one of the lower photos, was owned by R. C. Cox at Fairoaks, but it has since suffered damage as the result of an accident in the Isle of Wight.

Construction: Fuselage built up from steel tubes bolted and riveted together in the usual Hawker custom. A system of light wooden formers and stringers down the four sides gives the fuselage an oval-cross sectional shape. With the exception of the sheet aluminium cowling panels it is covered with fabric throughout.

The wings each have two main spars formed from drawn steel strip with girder-type light alloy ribs and fabric covering. Frise type ailerons are fitted to the lower wings only.

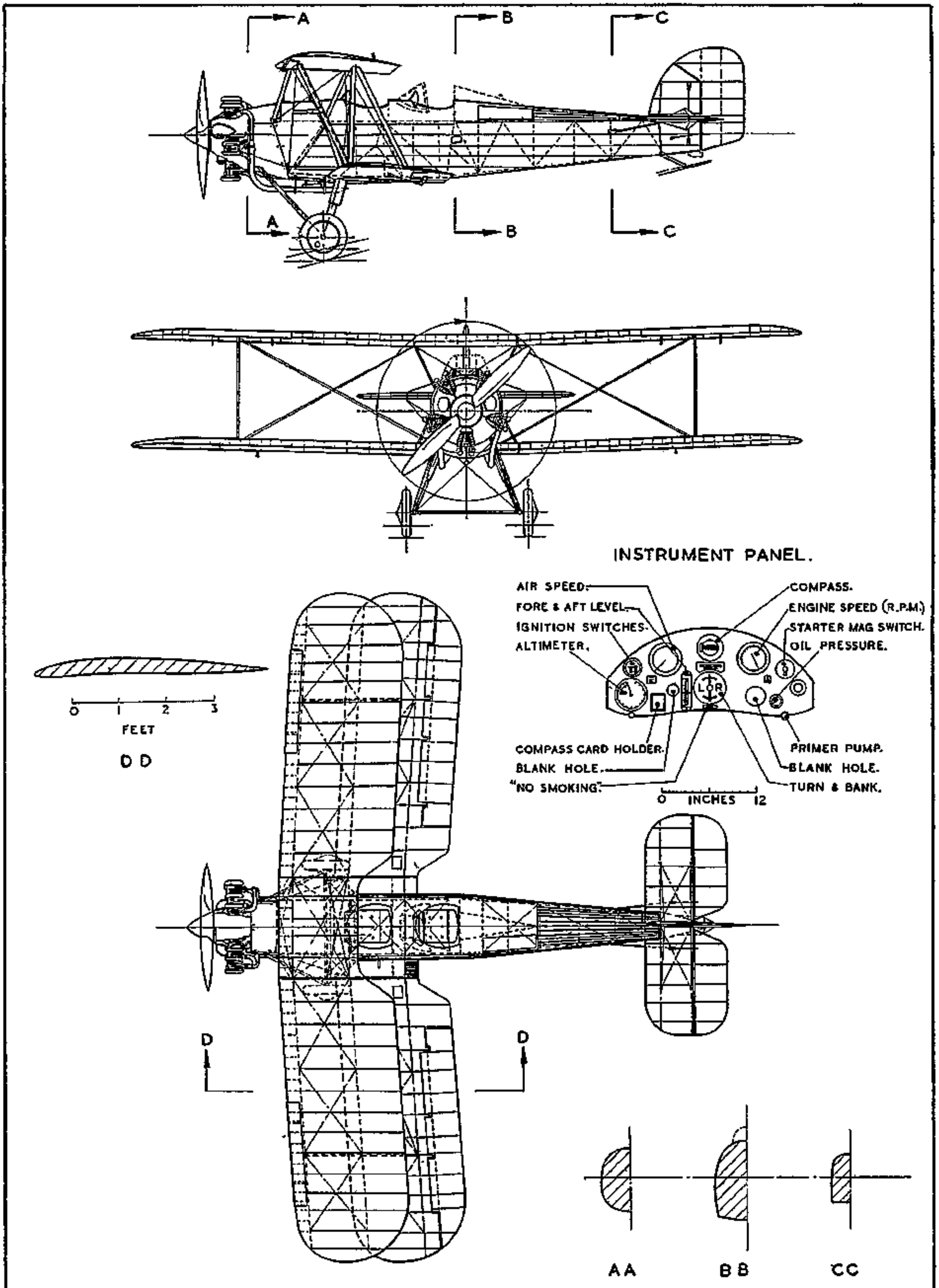
The heavy forward stagger (28 ins.) of the wings offers easy entrance and exit to both cockpits, which, incidentally, are very roomy and equipped with dual controls and instruments. Fuel tank, holding 24 gallons, situated in front bay of fuselage. Power is supplied by a five-cylinder, air-cooled, 150 h.p. Armstrong Siddeley Mongoose IIIC radial engine.

Colour: G.AFTA, dark blue fuselage and fin with aluminium letters. Wings and tail surfaces aluminium, black letters on wings—see Mr. Moore's cover painting. G.ABII, aluminium all over with black letters. R.A.F. Tomtits were alluminium all over with standard roundels and rudder flash of the period.

¼ in. to 1 ft. reproductions of the G.A. drawing may be obtained, price 1/–, from AEROMODELLER Plans Service. Sets of four flying or static views, size 6½ in. × 4½ in., price 6/–, from Eaton Bray Studios.

Specification:
Span: 28 ft. 6 ins. Length: 23 ft. 8 ins. Height: 9 ft. 0 ins. Wing Area: 238 sq. ft. Tare Weight: 1,278 lbs. Loaded Weight: 2,100 lbs. Max. Speed: 124 m.p.h. Cruising Speed: 100 m.p.h. Landing Speed: 45 m.p.h. Climb: 10,000 ft. in 14½ mins. Range: 350 miles. Ceiling: 19,500 ft.

"Aeromodeller" Photos.



HAWKER TOMTIT.

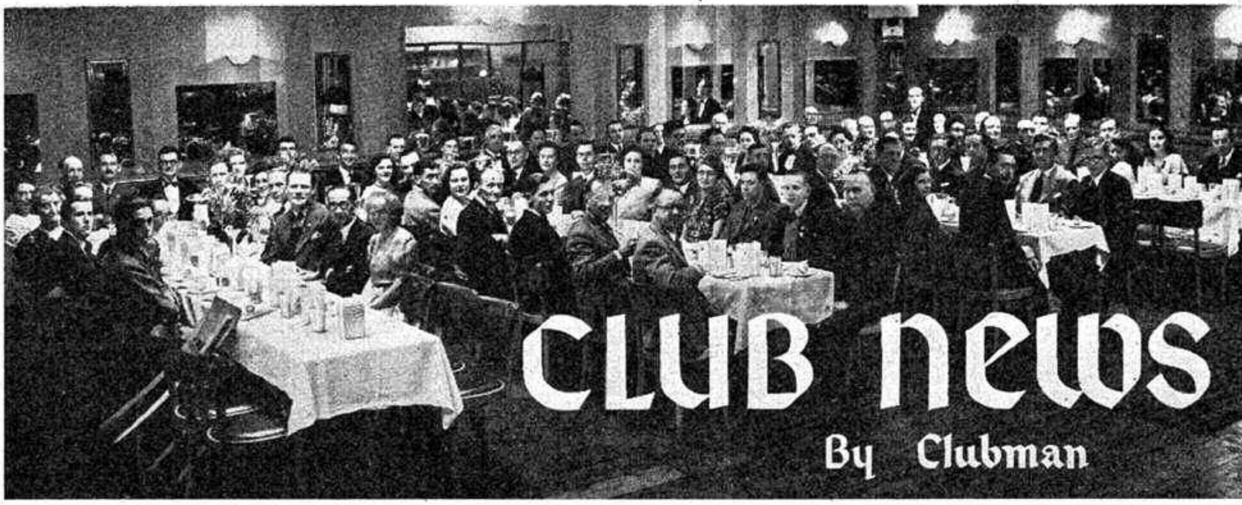


Photo. by Cecil Walden Ltd.

Many well known faces will be recognised from this photograph taken at the annual S.M.A.E. dinner held on June 19th at the Chez-Auguste Restaurant.

COMMENCING with the next issue, the closing date for club reports will be extended from the 20th of the month preceding publication to the 25th, thus giving press secs. a few days more grace, and (we hope) enabling them to maintain an even better topical and up-to-date touch in their reports. This is brought about by an improvement in printing services, and we trust the extra days' grace will react to the benefit of club fixtures generally.

A snippet received from Yorkshire, coupled with facts gleaned from our American correspondent, indicate a danger connected with control-line flying that must be kept in mind. The increasing use of steel wire for tethering purposes brings in its train a careful consideration of when and where to fly! A Doncaster chap was flying his control-liner about 30 feet up against a background of storm clouds, when he received a mild shock . . . the other lads could see his hair stand on end like spikes ! ! Four circuits were made in all, and each time the model came in line with a particular cloud the shock was felt. This, however, is a minor happening in comparison with recent occurrences in the States, where two fellows have been killed owing to their flying wires tangling with overhead power cables. Granted this hazard is not likely to be so common in this country, but I personally have seen control-line flying taking place near such power lines—though the potential danger did not strike me until I read of the fatal accidents mentioned above. So, lads, watch out for static charges, and for goodness sake don't fly near power cables—it just doesn't pay.

I regret to announce the passing of one of the real pioneers of the model aircraft hobby in this country, Mr. C. A. Burchell. A well-known character, he was affectionately known as "Old Charlie" to the majority of pre-war aeromodellers, and could always be relied upon to produce some well-made gadget from his pockets on the slightest provocation. A past master at prop. carving and geared nosepieces, he initiated a number of our present-day experts into the gentle art on Parliament Hill Fields, and his characteristic stance will be missed from future meetings.

Having spent a wet and cold Sunday helping to officiate at the Wakefield Trials (see last month's report) I think I am entitled to "tear a strip" off those finalists who failed to turn up at the meeting. From the seeded 100 no less than 18 failed to put in an appearance ! Apart from this, no notice was forwarded to the Comp. Sec. that they would not be competing, and I personally think this rank bad manners and far from playing the game. I wonder did they consider the fact that they were doing someone else out of the opportunity of competing for the Wakefield Trials, as it is quite on the cards that the full quota could have been made up had the authorities been notified that certain individuals would not be available. Play the game, cads ! !

The new list of British National Records is gradually being appreciated, and two new records have been established and ratified in recent weeks. J. D. Taplin (Isle of Thanet) has pushed his record for the Class II Control-line category up to 89·95 m.p.h., whilst the first entry against the Power Flying Scale class goes to P. L. Petch (Invicta) who flew his 57-in. span "Fokker D.8" for 36 seconds. Both models were powered with Comp. E.D's.

I expect I shall be able to report the ratification of a new record in the sailplane class in the next issue, as I learn of a flight that even put Ron. Yeabsley's effort (see N. Heights Gala report) in the shade. A Leeds. modeller flew his tow-launched glider for a flip of over 63 minutes before the job passed o.o.s., and it may be that both jobs were winging their way at the same time ! At any rate, both flights took place on the same day.

Whilst on the subject of record attempts, there is a certain lack of information on the subject of the newly introduced Control-line classes. Make note therefore of the following requirements for this type of record, which must be strictly adhered to.

LINE LENGTH—*must be as under for each class :—*

Class I — $26\frac{1}{4}$ *feet*
Class II — 35 ,,
Class III — $52\frac{1}{2}$,,
Class IV — 70 ,,
} *minus 18 inches allowance for forearm.*

DISTANCE COVERED *for record timing must be* $\frac{1}{4}$ *mile, i.e. :*

Class I — 8 *laps.*
Class II — 6 ,,
Class III — 4 ,,
Class IV — 3 ,,

HEIGHT.—*Model must not exceed an altitude of 10 feet (classes I and II) or 15 feet (classes III and IV) during the record run.*

All record attempts shall only be made at recognised meetings, or under specially sanctioned conditions.

A **WESTERN AREA RALLY** will be held at Lulsgate Airfield, Bristol, on September 12th, with Open Rubber, Open Glider, Open Power and Aerobatic C/L on the menu.

In the **LONDON AREA** r.t.p. finals, Streatham (top team from south of the river) beat Greenford by 998·2 seconds to 832·2. Good work was put in in a very short time by London Area officials in arranging the S.M.A.E. Dinner and Prize-giving, held at the Chez Auguste on the 19th June. It was a pleasure to meet so many of the old stagers in this hobby, together with many new faces. Altogether a very pleasant evening.

The **SOUTH WEST AREA** (Devon and Cornwall) is to stage its first Rally on August Bank Holiday, when flying will take place from 11 a.m. to 6 p.m. at Exeter Airport.

S.M.A.E. CONTEST RESULTS

JUNIOR CONTEST, May 2nd.

1.	Elton, P.	Birmingham	502·4
2.	Dowsett, I.	Brentford	454·4
3.	Watts, G.	Northampton	444
4.	Hicks, A.	Willesden	400
5.	Preeger, H.	Greenford	285·7
6.	Bennett, D.	Whitefield	265
7.	Sandell, J.	Southampton	228·9
8.	Marquis, D.	Eston	226
9.	Cole, R.	Swansea	222·3
10.	Schofield, W.	Ashton	220·6
11.	Hill, D.	Wolves	220
12.	Arnold, D.	Southampton	212·4

(57 competitors)

OPEN POWER DURATION, May 2nd.

1.	Kirkham, E.		16·66 ratio
2.	Howard, J.	North Kent	14·75 „
3.	Richardson,	Southend	13·27 „
4.	Marcus, N.	Croydon	12·54 „
5.	Moulton, R.	West Essex	9·53 „
6.	Pilgrim, N.	Birmingham	8·09 „
7.	Gunter, Mrs.	Bushy Park	8·01 „
8.	Eckersley, S.	Bradford	7·76 „
9.	Collins, S.	Northern Heights	7·36 „
10.	Watson, R.	Watford	7·18 „
11.	Butcher, N. J.	Hastings	7·00 „
12.	Moss, G.	Northern Heights	6·7 „

(167 competitors)

K. & M.A.A. CUP, June 13th.

1.	Taylor, A. H.	Bushy Park	788·5
2.	Cotten, E.	Ilford	782
3.	Sim, A.	Park M.A.L.	752
4.	Geesing, T. A.	Croydon	750·5
5.	Denyer, E.	Croydon	747
6.	Kay, S.	Bury	740
7.	Brain, E. G.	Brixton	726·6
8.	Pullen, R.	Park M.A.L.	725
	Hucklesby, A. J.	Luton	
	Marcus, N. G.	Croydon	
9.	Jessop, R.	Zephyrs	724·4
10.	Bainbridge, D.	South Nottingham	720
11.	Evans, J.	Leighton Buzzard	699
12.	Harvey, J. M.	Gillingham	698

(467 competitors)

Full details can be obtained from D. W. Bullocke, 21, Crown Hill Park, Torquay.

Lost models are still turning up around Northampton way following the Sywell Nationals. Mr. Mason has the following models at his address awaiting collection: Mills (5289) powered black and red " Slicker," and Amco (262) diamond fuselage job with red wings.

Selection of the " Nationals " champions needs revision, if only to prevent a recurrence of this year's happenings, by virtue of which a chap was able to carry off the title by winning one comp. only. The Americans are working a new system that gives bonus points for flying in more than one contest, on the assumption that a champion modeller is one who can build and fly a variety of models successfully, and I would like to see something on these lines tried out at the '49 meeting. If you have any ideas on this matter I shall be pleased to hear, and collate the ideas for submission to the appropriate committee that will settle next year's affairs.

A number of overseas readers write this month asking to be put in touch with modellers over here who would like to correspond on all matters aeromodelling. They are: J. Hughes (20), of 11, Victoria Street, Revesby, New South Wales, Australia; Howard W. Smeltzer (26), 243, Washington Ave., Greensburg, Pa., U.S.A., who spent 2½ years in this country during the war; C. Jones, Sec. of the Launceston M.A.C. at 15, Cameron St., Launceston, Tasmania, who writes on behalf of all his club members.

Edwin C. Woynoski of 326, Hanover Street, Nanticoke, Penns., U.S.A., asks my assistance in contacting some of the friends he met over this side. After serving with the American Army in England he was wounded in Belgium and invalided back to the States. Spasmodic correspondence ceased owing to frequent spells in hospital, and now having partially recovered he wishes to get in touch again with D. Moore-Hepplestone, R. R. Randall, Ted Aylward and Guy Raemaker of Belgium. Take it from there chaps.

On June 12th, E. Sayers' " Ivory Gull "—**IPSWICH M.A.C.**—caught a violent thermal and disappeared into cloud after 15 minutes, though it was bad luck no official timekeeper was on the spot!

A couple of club glider records went west in the **BLACKPOOL & FYLDE M.A.S.** when H. George flew his lightweight for 8 : 21·3 o.o.s., followed a week later by Jack Owen's F.A.I. job which remained aloft for 8 : 35, finally going o.o.s. over the water.

The first Gala Day of the **BERKHAMSTED M.A.E.** was a great success, with a large number of spectators present. Two visiting clubs cleaned up most of the prizes, the results being as follows :—

Glider	Ward	Watford	5 : 36
	How	Berkhamsted	3 : 33
Power	Farrow	Watford	6 : 55
	Atkinson	Watford	3 : 29

The **LUTON & D.M.A.S.** have been having a crowded time of late what with the Nationals, London Area C.C. and the Wakefield Trials. After their experiences at the Nationals with six to seven foot span medium A/R gliders, all going o.o.s. after approximately three minutes, they have gone all Croydon, and a number of ten-footers are on the stocks! Having cleaned up Kingsbury in the L.A. events, they now face near neighbours St. Albans.

The **NOTTINGHAM AREA COUNCIL OF AEROMODELLERS** is to stage another Rally at Langar on September 19th, with all comps. running simultaneously from 11 a.m. to 7.30 p.m. Glider, Rubber, Power Duration and C/L stunting will be on the programme, and a running buffet is promised! Results will be judged on a two-flight aggregate this time, which should please the contestants.

Commencing the 28th September the Kensington Men's Institute will be running classes for model aircraft construction. Full particulars from the Principal at Wornington Road School, Golborne Road, W.10.

Another group to stage an open affair will be the **PORTSMOUTH D.A.M.C.** Southern Counties Rally at Grange Aerodrome, Gosport, on September 19th. The usual events will be staged, and all enquiries should be directed to R. C. F. Day, 11, Harleston Road, Cosham, Portsmouth.

Club Records in the **BURY & D.M.A.C.** are being broken at the rate of one per week, the latest efforts being 3 : 50 h.l. and 4 : 00 r.o.g. by W. Hink's lightweight duration job. In the K. & M.A.A. event, junior club champ. S. Kay clocked a total of 1045 seconds, his last flight being 11 : 05 o.o.s. Model was a " Mick Farthing Lightweight."

D. Waite of the **STOCKTON & D.M.F.C.** raised his own tail-less glider record to 2 : 29 o.o.s. with a " Swallow " (he tows it off the ground, thus dispensing with helpers), whilst E. A. Harrison put up a good flight with his " Hi-Ball " on the same day. From a 6-second motor run the model totalled 2 : 18, thus gaining a ratio of 23, only ·7 below the club record.

Membership in the **SOUTH NOTTINGHAM M.F.C.** approaches the forty mark, and tentative stabs are being made at S.M.A.E. comps. G. Hocken has broken the club r.o.g. record with a time of 7 : 42·5, while Alan Oakley put up a ratio of 8·75 at the N.A.C.A. " do " at the end of March. Dave Ward's " Skyliner " was recovered from Derby, some 15 miles away, after a flight of 10 : 00 o.o.s. K. & M.A.A. day saw a good turn-out at Langar, when the glider record " went for a burton " three times, finally resting with Dave Bainbridge's F.A.I. job at 16 : 07.

Repairs having been effected since Sywell, the **BRIGHTON D.M.A.C.** turned out in force on June 13th to find warm, hazy conditions which enabled K. C. Perelli to put up best time of the day, 6 : 30, with his well built " Fillons Champion " on its second flight. S. Ridge topped the club's effort in the comp. with a total of 9 : 46.

On the same date the **WIGAN M.A.C.** combined with the St. Helens boys, when W. L. Mercer raised the club junior record to 2 : 57 o.o.s. Later in the day he pushed the power duration time to 1 : 28. B. Picken of Wigan took honours for best time of the day with 4 : 34·4 o.o.s., final results being :

Rubber	R. Scott	St. Helens	3 : 36·8 agg.
	R. Baldwin	Wigan	3 : 03·3
	W. L. Mercer	Wigan	2 : 57
Power	R. Scott	St. Helens	2 : 12·2
	W. L. Mercer	Wigan	1 : 27·8
	R. Baldwin	Wigan	1 : 23·8

BLACKHEATH M.F.C. have started a savings scheme in order to assist in visiting outside meetings. The idea will be a useful addition to the existing Junior Assistance Fund from which chaps receive odd payments to defray expenses! Youngest member has just been enrolled—three-month-old Mary Galbreath, whose mother was runner-up in the Ladies' event during the 1947 Nationals.

The five minute rule played havoc with the **BIRMINGHAM M.A.C.** times in the K. & M.A.A., and Frank Chatwin, who did 9 minutes, came nowhere. Late in the afternoon Ken Lloyd raised the glider record to 8 : 38, and Bob Perry pushed up the power record to 3 : 42 from a 9-second motor run. W. Whittall won the first leg of the club Junior Cup with an aggregate of 847·4, while Lloyd aggregated 462 in the major comp.

The **DURHAM CITY M.F.C.** collected second and third places in the recent N.E. Area Rally glider event, and I learn that Messrs. Willins and Wilkinson are dabbling with radio control. New club records are:

Open Glider	W. J. Freek	5 :53·5
Open Rubber	H. Storey	3 : 16
Power Ratio	K. J. Warriner	8.1
Open Biplane	W. J. Freek	1 : 00

Glorious weather favoured a couple of comps. staged by the **SOUTH BIRMINGHAM M.F.C.** at Sutton Park. A. J. Hewitt won the glider event with an aggregate of 5 : 25·5, while G. Parker won the power event with a ratio of 9. Winning model was a 32-in span job powered by an Amco.

June 13th seems to have been a good day all over the country. The **BELFAIRS M.A.C.** had a succession of fine flights, K. Strowiger 4 : 26, P. Field 4 : 20·6, M. A. King 4 : 16·3 and 8 : 01·4—the model being found under a couple of horses after a two-hour search. Might as well not have bothered!! New club records are:

Flying Boat R.O.W.	M. A. King	:40
Sailplane T.L.	D. Willmott	7 : 30
Sailplane H.L.	P. Field	1 : 35·5
F.A.I. T.L.	M. A. King	8 : 01·4
F.A.I. H.L.	M. A. King	2 : 15·9
Tailless	P. Field	57·6

SCUNTHORPE M.A.C. had a fillup of high flights on the 20th June. Mr Sharman lost his Korda after a flip of 8 : 53, T. Bootland's Gutteridge model clocked 6 : 36. Both chaps bettered these times at a later meeting, Sharman being tops with a time of 9 : 55.

Bags of thermals were also around the **SOUTHERN CROSS A.C.** ground, when four models were lost in a day of high times. Top man was T. Rendle, who aggregated 11 : 0·9. Highlight of the day was K. Donald's o.o.s. flight, which after clearing off in the middle of a thermal was returned to the owner by a fisherman who picked the model up floating some five miles out to sea!

A 23-minute flight from a 20-second engine run is reported from the **BARNSLEY & D.M.A.C.**, the model being a Mills-powered "Slicker" owned by D. Exley. P. Burkinshaw raised the club glider record to 9 ; 27 with his "Mick Farthing Glider," and followed up by collecting a place at the Wakefield Open Day.

Ninety-five entrants from twelve clubs took part in the **MANCHESTER & D. COUNCIL OF M.A.C.'s** contest for various trophies on June 20th. A number of thermal flights were witnessed, but the five minute rule prevented this from materially affecting the final results, which were:

Senior	C. Wyatt	Ashton	6 : 39·5
	F. Nash	Manchester	6 : 10·5
	J. Arden	Ashton	6 : 04
Junior	D. Bennett	Whitefield	6 : 16
	—. Banks	Rochdale	5 : 41·4
	S. Spencer	Bury	5 : 30·3
Power Ratio	Lee	Cheadle	21·5
	Cunliffe	Salford	16·25
	J. Arden	Ashton	14·9
F.A.I. Glider	R. Woodhouse	Whitefield	5 : 45
	R. Askew	Cheadle	5 : 33
	L. Goring	Oldham	4 : 02

BRISTOL & WEST M.A.C. now have the use of Lulsgate Aerodrome and seem to be sitting pretty. Gamage Day proved a complete washout, but Flight Cup day saw C. H. Middleton fly his seven-foot lifting fuselage glider away for a total of 1,002 seconds.

The **HUDDERSFIELD AIR LEAGUE M.A.C.** will be holding a rally on August 29th at David Brown's Airfield, Crosland Heath.

The **HATFIELD M.A.C.** went for a day's flying recently, with thermals galore. R. Smith broke the club record with a flip of 7 : 26 o.o.s., flying a rather unusual model of his own design. D. Cox broke the rubber duration record at the N. Heights Gala with a time of 6 : 51.

"LOOK MA—'BANSHEE'!"

BUSHY PARK M.F.C. still do their stuff, witness A. H. Taylor's win in the K. & M.A.A. event, and the usual show of power models seen at all the big meetings. "Gus" Gunter lost his Arden ·199 powered modified "Banshee" at the Keil trophy and eagerly awaits news of it. Pete Mason clocked 8 : 05 from a 20 secs. motor run, model being a cabin type own design powered by O.K.29.

R. Cooke of the **COVENTRY & D.M.A.C.** has raised the club rubber record to 18 : 26 with a lightweight, other good flights recently witnessed being 6 : 08 1 by B. Roberts' "Igo," and 3 : 08·5 by the club's Latvian member, L. Selga.

With overcast and gusty weather, the **ABERDEEN M.A.C.** contest for the McPhail Trophy (power models) was won by J. H. Davidson with an average ratio of 4 44, runner up being J. Lawrie, ratio 3·63, third man A. Mackenzie averaging 2 9. Best flight of the day was by I. M. Davidson's "Little Vagabond" which caught the only thermal of the day and clocked 4 : 15.

G. Davies of 1, Brock Road, Chorley, Lancs, wishes to start a club in that area, and a chap with similar ideals is R. A. Clark of 25, Clarendon Road, Ashford, Middlesex.

Well, chaps, that's the lot for this month, so away to your balsa and cement and repair all those jobs that have been strewn all over the fields in the recent bad weather! Don't forget the new date for forwarding of club reports, and keep us and others up to date with your doings. Cheerio and have a bash at those records—there are still plenty of classes not yet showing a time against them. The CLUBMAN.

NEW CLUBS

BARGOED M.F.C.
B. Noonan, 41, John Street, Bargoed, Glamorgan.
MALMESBURY A. & M.E.C.
D. L. T. Tugwell, "Trewenna," Bremilham Rd., Malmesbury, Wilts.

MANBY M.A.C.
W/O Benson, 26, Married Quarters, R.A.F., Manby, Nr. Louth, Lincs.
HERNE HILL POWER CLUB (Formerly Screaming Demons)
A. D. Green, 137, Bellenden Road, Peckham, S.E.15.

SECRETARIAL CHANGES

ASHFORD M.A.C.
N. L. Abbott, 1, Langholm Road, Ashford, Kent.
ACCRINGTON & D.M.F.C.
H. Motler, 17, Chestnut Avenue, Accrington, Lancs.
MARKET HARBOROUGH M.A.C.
V. C. Redfern, 29, Highfield Street, Market Harborough, Leics.
RETFORD & D.M.A.C.
W. G. Upton, 33, Chancery Lane, Retford, Notts.
SWINDON M.A.C.
R. Smith, 107, York Road, Swindon, Wilts.
HIGHER WALTON (Lancs.) & D.M.A.C.
J. Smith, "Lyndhurst," Brindle Road, Bamber Bridge, Lancs.
IPSWICH M.A.C.
A. G. Driver, 28, Berners Street, Ipswich.
GRAVESEND A.M.C.
G. Barker, 3a, Cobham Street, Gravesend, Kent.
BLACKHEATH M.F.C.
W. Bishop, 15, Gellatly Road, New Cross, S.E.14.
BRIGHTON & DISTRICT CONTROLLED FLIGHT M.A.C.
A. J. Holliday, 123, Hollingbury Road, Brighton, 6.
LANCASTER & MORECAMBE M.C.
J. Smethurst, 78, Edward Street, Lancaster.
SHEFFIELD S.A.M.
J. D. Canny, 313, Ecclesall Road, Sheffield, 11.
RETFORD & D.M.A.C.
G. A. Cole, 96, Leafield Road, Retford, Notts.
WITNEY YOUTH CENTRE M.A.C.
Miss V. J. Adams, 2, Tower Hill Works, Tower Hill, Witney, Oxon.
WALSALL M.A.C.
D. F. Marshall, 61, South Street, Walsall, Staffs.
HULL & D.M.A.C.
H. Deer, 116, Albert Avenue, Hull, Yorks.
COLLEGE OF AUTO & AERO ENG. M.C.
H. Bethell, College House, 72, Prince's Way, Wimbledon Park, S.W.19.
CAMBRIDGE M.A.S.
R. Hussey, 9, Aylestone Road, Chesterton, Cambridge.
MIDDLETON & D.M.A.C.
W. E. Vickers, 3, Pembridge Road, Victoria Avenue East, Nr. Blackley, Manchester.
BEDFORD & D.M.A.C. (Formerly Non-Coms.)
J. W. Crosley, 58, Gloucester Road, Bedford.
HORNSEY M.A.C.
K. F. Jones, 11, Landrock Road, Hornsey, N.8.
OSWIN AVENUE (Balby) M.A.C.
S. Tyler, 6, Ellers Drive, Bessacarr, Doncaster, Yorks.
EDINBURGH M.F.C.
M. L. Mackay, 26, Anglo Park Terrace, Edinburgh, 11.
BRIXTON D.M.F.C.
D. W. Ley, 74, Franche Court Road, Earlsfield, S.W.17.
GLOUCESTER & D.M.A.C.
C. J. Moon, "Longmead" Pilford Avenue, Leckhampton, Cheltenham.
WARWICKSHIRE M.S.
P. R. Lewis, 34, St. Lawrence Avenue, Warwick.
NOTTINGHAM & D.M.A.C.
J. Pilsworth, 60, Holly Gardens, Thorneywood, Nottingham.
OXFORD CIVIL DEFENCE M.A.C.
F. Simmons, 35, Eden Drive, Headington, Oxford.
SUDBURY HEIGHTS M.A.C.
A. E. Dutson, 1214, Greenford Road, Greenford, Middlesex.
PRESTON & D.M.A.C.
E. Venslow, 17, Clarence Street, Leyland, Lancs.
PHOENIX M.F.C.
J. H. Cockayne, 2, Richmond Road, Mangotsfield, Nr. Bristol.
ZOOMERS M.A.C.
J. Barker, 25, Elliot Close, Grantham, Lincs.
HUDDERSFIELD AIR LEAGUE M.A.C.
E. Sparks, 6, Bank Buildings, Meltham, Huddersfield.
CANNOCK CHASE M.A.C.
S. G. Carnell, 27, Spring Street, Cannock, Staffs.
LINCOLN & D.M.A.S.
P. Mitchell, "Thorneywood," Hawthorn Road, Cherry Willingham, Lincoln.

NIPPER.
We regret that a typographical error occurred in the price of the above kit manufactured by Model Aircraft (Bournemouth) Ltd., in our Control Line Trade Review in the July issue. It was given as 19/6 and should have read as 9/6.

HYDULIGNUM.
We regret that an unfortunate misstatement was made in our article "Everything under Control Line," that appeared in the July issue. It was mentioned that model "Hydulignum" airscrews were produced from "Jablo" material, a statement that is entirely incorrect. "Hydulignum" airscrews are manufactured from a synthetic resin bonded laminated and compressed timber, produced by Messrs. Hordern-Richmond Ltd. and neither they nor their product "Hydulignum" are connected in any way with "Jablo" material.
We tender our sincere apologies to Messrs. Hordern-Richmond Ltd. for any embarrassment caused by the above-mentioned statement.

CLASSIFIED ADVERTISEMENTS

PRESS DATE for September issue—August 1st.
ADVERTISEMENT RATES:
Private **Minimum 18 words 6s., and 4d. per word for each subsequent word.**
Trade **Minimum 18 words 12s., and 8d. per word for each subsequent word.**
Box numbers are permissible—to count as 6 words when costing the advertisement.
COPY and Box No. replies should be sent to the Classified Advertisement Dept., The "Aeromodeller," The Aerodrome, Billington Road, Stanbridge, Beds.

Owing to shortage of space many advertisements are being held over until next month.

FOR SALE

"Arden" ·199 diesel head; Glo-plug; brand new pre-war clockwork timer. Offers. Box 159.

Second-hand:—1 "Ohlsson 60," £5; 1 "Thor 'B'," £4; 1 "Mighty Midget," £4 10s. 1 "Dennymite," £4 10s.; 1 "Ohlsson ·23," £5. Brand New:—2 "Ohlsson 60's," £9 each; 1 "Red Head McCoy 60," £18; 1 Hassard "Sky Devil," £13; 1 "Thunder Bird" (Super Charged), £15 10s. Cooper, "Brecquou," Fir Tree Road, Epsom Downs, Surrey.

"E.D. Mark II" diesel, as new, £3 10s. or offers to Fullick, 11, Sunvale, Shottermill, Surrey.

"Frog 45," well made up, complete, minus engine. Good suitable engine mounts. Box No. 152.

"Eros" 7' 6" span monoplane. All as illustrated January AEROMODELLER. Lovely finished job; 1½ hours all weathers flight. Powered "ETA 5," new 4" airwheels, timer, etc. Complete, ready to fly, £18. Dudgeon, 11, Carmichael Street, Law, Carluke, Lanarkshire.

"A.F.P.", Vols. 1–2, £2; "Aeroplane," Jan., 1940–December, 1945, unbound, all perfect. Best offer over £3. Jenner, 68, Central Road, Morden, Surrey.

"E.D." Competition Special, 2 props., bottle fuel, bench run only, £4 or best offer. Lockton, 188, Nettleham Road, Lincoln.

"Clansman" diesel, 5 c.c., very good condition, £5. A. Fairbairn, Colebrooke Terrace, Abington, Lanarkshire.

"Aircraft of the Fighting Powers," Volumes 1–5, perfectly new, best offers. Maw, "West Royd," Manchester Road, Bury, Lancs.

Well-made "Frog 45," uncovered; "E.D." Mk. II, new; prop. Lot £6 15s. Partly made 30" "Auster," 15/–. 1946 bound AEROMODELLERS, one guinea. 1947 ditto, 1948 Jan., July, loose, 25/–. Books: Bowden, Ripon, Sparey, Rushbrooke, 30/–. Elliman, Mere Cottage, Chestnut Avenue, Guildford.

Unused "Dyno" 3·1 c.c. diesel engine, £4; and also "Majesco" 4·5 c.c. petrol engine, £3 10s. Box 155.

Large number of aircraft kits. Send stamped, addressed envelope for lists. All kits at reduced prices. Box No. 154.

50 in. Super Scale "Westland Lysander," unflown, fine model, £3 15s. Trummel, 32, Grange Avenue, Thornbury, Bradford, Yorks.

Abbas Major Air Pistol, nearly new £4, or exchange for "E.D. Mk. II" diesel. E. Redfern, 300, Badsley Moor Lane, East Dene, Rotherham, Yorks.

Brand new "Ohlsson 23" and "Super Hurricane 24", what offers? also "Aircraft Fighting Powers", Vols. I–VI, £4 the set, excellent condition. Day, 230, Henleaze Road, Bristol.

Two new "Ohlsson 19" engines, complete bench run, £8 10s. each. Barry, 224, Kettering Road, Northampton.

"Frog 45," brand new, powered complete "Frog 175," engine, perfect running condition. Flying trim. Offers. J. R. Wastell, Sycamore Lodge, Brayton, Selby.

2 "Frog 45's," 1 "Rover," 1 "Vagabond" complete with engines (Frog 100's) new condition, test flown only. S.A.E. for full details. A. Imrie, Station Cottages, Humbie, East Lothian.

"Ohlsson" 60, £8, "Bunch Tiger," unused £8, "Arden" 199, unused £10. All complete with coil, etc. Howard, 145, Brooklands Road, Sale, Cheshire.

"Prentis" 4 way D.P. Fuse board. "Bills" SW/Fuse both 15A, 250V. "Prentis" 440 V. 3/5.75A. Contractor, 3 PH. All ironclad for "Amco 87" or similar. Taylor, 34, Welbeck Road, Hyde, Cheshire.

"E.D." Marine, Silencers, Exhausts, Auxiliary Tank, Flywheel. Test run 15 minutes only. Offers. Beebee, 4, Howard Avenue, Monton, Eccles, Lancs.

AEROMODELLER, "Constructor," "Model Airplane News," "Flying Aces," "Popular Flying," other magazines, from 1935. S.A.E. List. Moore, 2, Bridge Street, Derby.

New "Ohlsson 60" electrics, £8 10s. "23" electrics, £7 10s. used "Mills," £2 10s. "K.6," £6 10s. Jones, 37, Redington Road, London, N.W.3.

"A.F.P." Vol. III and V, 12/6 each. "Air Training Corps Gazette" 1942, Jan., Feb. missing. 1943 Jan., July, Sept. missing. 1944 complete, 1945 Feb, March missing. 1946, 1947 complete. £1 the lot. "Model Airplane News," December 1934, 1935 Oct. missing, 1936 May, June, July, Oct., Dec. missing, and "Flying Aces" Jan., Feb., March 1934. All at 4d. each. All books in excellent condition. Bromwell, 1, Dyke Road Drive, Brighton, 6.

Unfinished "Junior 60", £3 10s. "Clan" ·9 c.c. diesel engine, perfect condition, 2 props, £4. 1 pair 2 in. M.S. pneumatic wheels, new, 5/–. Write, Larcombe, Dorset Arms, Lymington, Hants.

American "Ohlsson 23" petrol engine with all accessories, brand new, offers or exchange for new American 5 or 10 c.c. engine. Squire, 527, Foundry Lane, Leeds, 9.

"Aircraft of Fighting Powers" Vols. I, II, IV. "Jane's All Worlds Aircraft" 1942. "Flight" loosely bound, January–March 1940 ditto 1941. Best offers. Hallam, , Saint Michael's, Pembroke.

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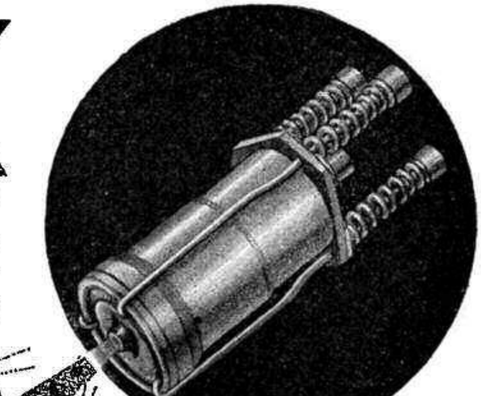

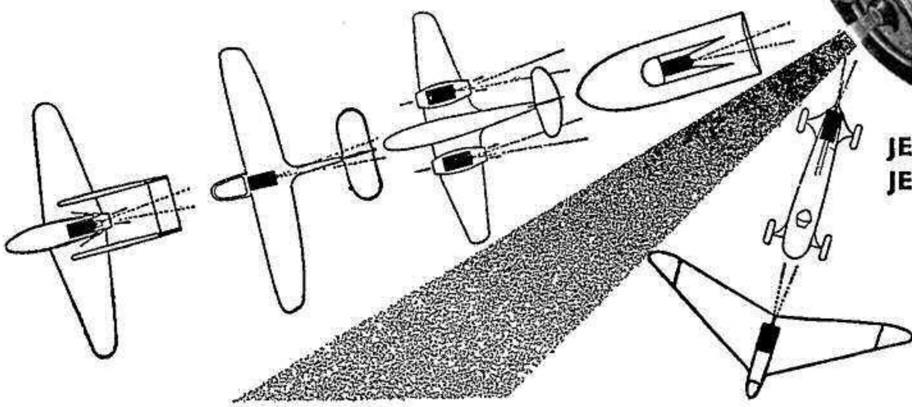

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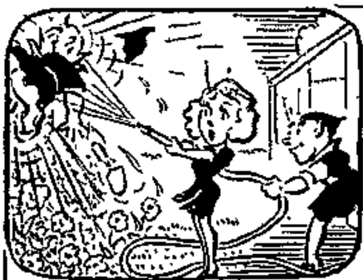

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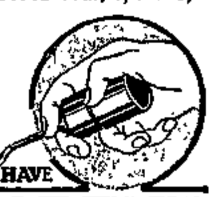

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Fast becoming the most popular Glow Plug, the Hotpoint glows brighter, lasts longer, and will put new life into an old motor.

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Tell at a glance the speed of your model.
No skill on the part of the operator is required.
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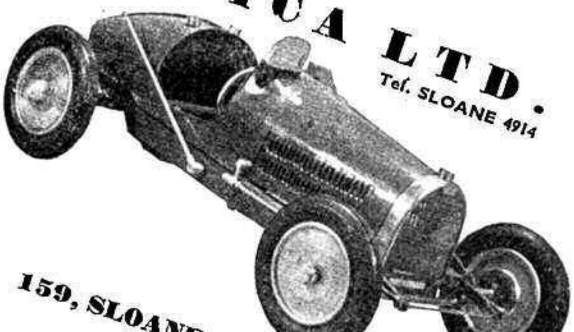

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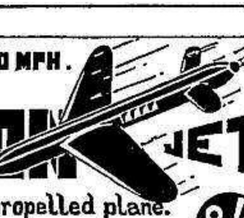

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Stamped addressed envelope brings latest list of Kits, Engines and Accessories available.

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The name and symbol for quality and efficiency

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Due to increased production on equipment recently installed to meet rapidly expanding export and home markets, ETA power units are now considerably reduced in price, bringing unmatched quality and high performance within the reach of all. The special design features for which ETA products are renowned have been retained, and several improvements incorporated. Two models of the ETA "5" are now offered, and may be obtained through your retailer.

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Current Price £7 . 19 . 6 Ex Stock
COMPLETE WITH CUT-OUT, CHOKE AND TANK

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VENTURI INTAKE FOR USE WITH WEDGE TANKS Etc.

E/45 Venturi conversion units, for interchange with standard induction heads on 1947 and 1948 units, are available at 14/8 each.

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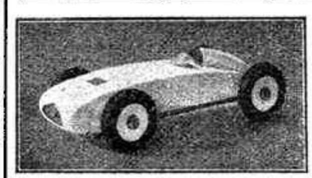

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Classified Advertisements cont. from page 494.

"AMCO" powered "Slicker Mite", £5. "E.D." Competition special powered "Peregrine Falcon" 54, Comp job, £7. Both engines new, excellent flyers. Webley "Junior" pistol, £3 10s. V Batts, 29, The Oval, Farncombe, Surrey.

"Frog 45", "E.D." Mk. II, 2¼ in. Rider Wheels, Snip timer, Alton fuel can, and carrying case. Lovely model, £9. Slee, Belmont, Braunton, Devon.

Several ·4, ·6, ·7 c.c. diesel engines. Brand new, tested only. L/W airscrew, 45/- each. Taylor, 46, Sunnyside Rd., Ilford, Essex.

"Mills" 1·3 c.c. Teknific Prop. Bench run only. Sheet and Block Balsa, value 15/-; unused solid plans. Lot £4 10s. 0d. Bargain. Rosser, Pembroke, Queen's Road, Aberystwyth.

2·8 "Micron" powered "Scorpion", £10. "Kemp" powered "Southerner Mite", £5. "Phantom", 30/-. All in perfect condition, engines bench run only. Macintyre, 55, Brockley Park, London, S.E.23.

"Frog .175" engine, electrics, timer, for sale, good condition. £2 15s. 0d. P. Pattison, "Woodstock", Stagshaw Road, Corbridge, Northumberland.

2 c.c. "Movo," fitted large capacity tank. Run 35 mins. Offers. Box 153.

"Frog 100" engine. Almost new. £2 10s. Apply Elton, 6, Burnham Court, Brent Street, Hendon, N.W.4.

Ex-Government Target Gliders, span 45 ins., length 42 ins., detachable wings, 17/6, carriage paid. S. Clare, 37, Mildmay Park, London, N.1.

Partly completed 12 ft. span high-wing monoplane, with bench-tested 25 c.c. o.h.v. engine, £12 or offers. Will sell separately. Palmer, 53, Henry Road, Chelmsford.

Super Scale 60 in. "Lysander" Kit. Guaranteed complete. Cost 41/6, reasonable offer accepted. Hall, 70, Duncombe Road, Herts.

Partly constructed "Frog 45" with kit, £2. "Frog 100" diesel, perfect condition, test run only, £2 10s. Russell's "Design and Construction," 7/6. "Model Aeroplane Manual," 5/-. "Flying Model Planes," 5/-. Box No. 158.

Several American engines, 3 ft. "C/L Tempest." S.A.E. for details and photos. Box No. 157.

"Majesco" 2·2 c.c. diesel, purchase April, as new, £3 15s. or near offer. P. Addey, Lodgelands, Jarvis Brook, Crowborough, Sussex.

Model Aircraft Radio/Electrical business, 4 main bus routes stop at door. Busy West London area. Lease, low rent, £450 o.n. Box No. 149.

"ETA.5," brand new, appreciable stock of balsa and other accessories including two new pair of airwheels, 3½ in. by 4 in. Will accept £10 for the lot. S. G. Walton, 90, Goodyear Avenue, Low Hill, Wolverhampton, Staffs.

Exhibition of Models, Handicraft and Art organised by the Royal Air Forces Association (Hull Branch), 11th–18th September, 1948. Valuable Cups, Trophies and Prizes. Open to all ages. Send 2½d. stamped addressed envelope for full details to R.A.F.A., 83, Beverley Road, Hull.

5 c.c. Micron, bench run, in perfect condition. £7 or best offers. J. D. Burton, Quorn Hall, Loughborough, Leics.

New E.D. Comp. powered "Copperhead" with Mercury control handle. Beautifully finished and fully flight tested. £7. Photographs sent. D. G. Wiggins, 305, Old Farm Avenue, Sidcup, Kent.

42 AEROMODELLERS, Jan., 1945, to July, 1948, inclusive. 30/- or offer. Write Etter, 9, Trevelyan Crescent, Kenton, Middx.

Bargain. Frog 100 1 c.c. and Milford Mite, requires attention, both diesels. for £4. 10s. Jones, 45, Melwood Drive, Liverpool, 12.

EXCHANGE.

Will exchange new American gas engines, new "AMCO 87," "Frog 100," "Kemp Hawk," or "Comet Mk. I" engines. Norman W. Davis, New City, Rockland Co., New York, U.S.A.

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AEROMODELLER back issues can be obtained from W. H. Forway, Elizabeth Villa, Coventry Corner, Hockley, Essex. Early copies bought.

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Express Service—"Keil," "Frog," "Halfax," "Mills," "E.D.", "ETA," "MACO," selected Balsa. Morris, 28a, Broad Street, King's Lynn, Norfolk.

North East Engine Depot, 6, Victoria Street, Goole, Yorks. Part exchange service. We have a large stock of guaranteed petrol and diesel engines from ·2 c.c. to 15 c.c. We require American engines and "Frog 100's." We guarantee satisfaction in all cases.

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For immediate disposal. Stock of aeromodels, including "Keilkraft," "Halfax," "Skyleada," etc., and accessories; bargain. 'Phone Liberty 6381.

Dealer wishes to dispose of surplus stock of modelmakers' plans, aeroplane kits, etc., to be cleared at less than cost. Write for list. Thornley, 361, Woodchurch Road, Birkenhead.

"Reeves" diesel engines—3·4 c.c. rotary valve, £3 7s. 6d., with Glo-plug attachment, weight 6½ ozs., engines guaranteed. Die castings and materials for diesel and petrol engines, £1 7s. 6d. Send S.A.E. Reeves Model Power Units, Church Street, Shifnal, Shropshire.

Model builders, you will find everything you need in our new 40-page catalogue, price 6d. Beverley Products, Beverley House, Oakwood Avenue, Leeds.

Four Westbury winners. Apex 15 c.c., New Atom 6 c.c., New Atom III 6 c.c. with rotary valve, and Atom V 30 c.c. Engine castings of DTD 424 alloy 9 tons tensile sp. gr. 250, lighter and stronger than die cast. Sets of castings, blue prints, gearing, ball-races, piston rings, plugs and all equipment. Send us your requirements for special castings. Trade enquiries invited. The Headingley Motor and Engineering Co. Ltd., 8, Otley Road, Leeds.

"Wildcat" 5 c.c. diesel part-machined engine kits, specially produced for modellers who do not possess lathes. 62s. 6d. Send S.A.E. for full information. Davies-Charlton & Co., 13, Rainhall Road, Barnoldswick, via Colne, Lancs.

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THEY'RE NEW!

KEILKRAFT BANDIT and OUTLAW

BANDIT

Keilkraft present the Bandit . . . Bill Dean's latest class A contest design. Designed to handle the tremendous power of the new Mk. II Mills diesel, this cabin model climbs just as fast as the famous Slicker. For trouble free adjustment the engine installation is upright. The fuselage features 'W' bracing and a sheeted nose. Both the wing and tailplane L.E.'s are sheeted to prevent warping and increase efficiency. Flying surfaces are flat underneath for easy covering.

SPAN 44" LENGTH 28" WING AREA 223 sq. in.

KIT CONTAINS

8 printed balsa sheets, plenty of balsa strip, ample cement, shaped windshield, 2" streamlined wheels, sandpaper, wire, ply, engine bolts, etc. Also the usual super detailed Keilkraft plan and instruction leaflet. Price **21/-**

UNBEATABLE **FOR**

- **EASY CONSTRUCTION**
- **RUGGED STRENGTH**
- **PERFORMANCE!**

OUTLAW

Keilkraft's graceful new Outlaw is the model for those who prefer the cabin layout, yet glance wistfully at the rocket like climb of the Slickers. Many months in the developing, this 1948 design by Bill Dean is the most efficient free flight model yet produced for the E.D. Comp. Special.

SPAN 50" WEIGHT 14½ ozs.

WING AREA 292½ sq. in.

KIT CONTAINS *9 printed balsa sheets, plenty of balsa strip, ample cement and tissue paste, shaped windshield, 2¼" streamlined rubber wheels, sandpaper, tissue, wire, engine bolts, etc. Super detailed Keilkraft plan and instruction leaflet.*

PRICE **27/6**

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PHANTOM 21" Span
Kit includes shaped wings, tailplane, fuselage sides, and all accessories including parts for control handle. This is the ideal trainer. Price **18/6**

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16" version of the famous Phantom. Price **11/6**

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Limited stunt model. Kit includes handle and many shaped parts. Price **22/6**

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Speed Model. Capable of speeds over 90 m.p.h. when suitably powered. Price **45/-**

LOOK OUT FOR THE STUNTMASTER!
30" span Super Stunt Model for Mills Mk. II

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STANDS 33 & 34

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