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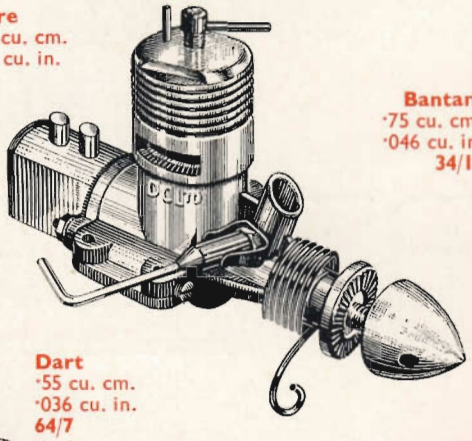
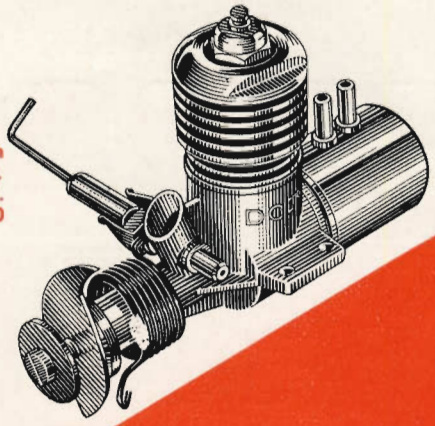
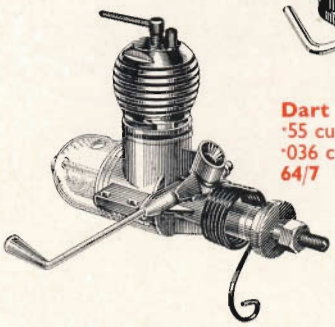


Sabre
1·49 cu. cm.
·091 cu. in.
53/–



Bantam
·75 cu. cm.
·046 cu. in.
34/10



Dart
·55 cu. cm.
·036 cu. in.
64/7

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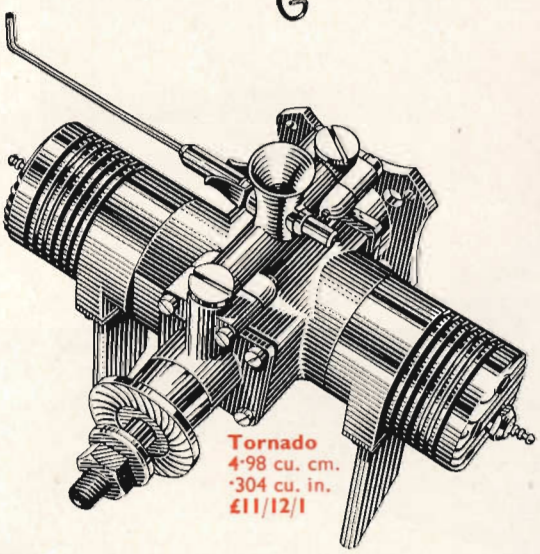
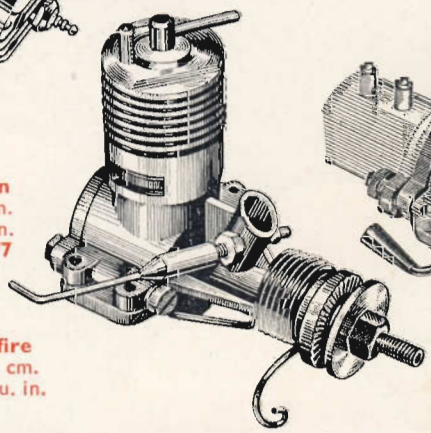
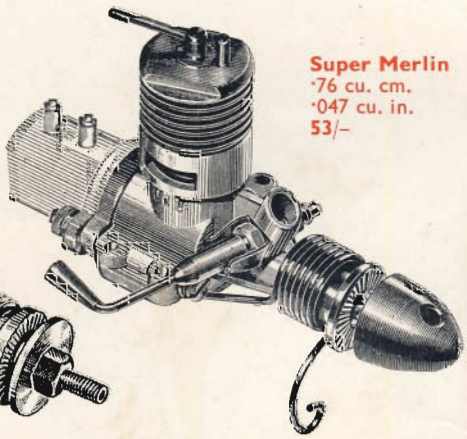


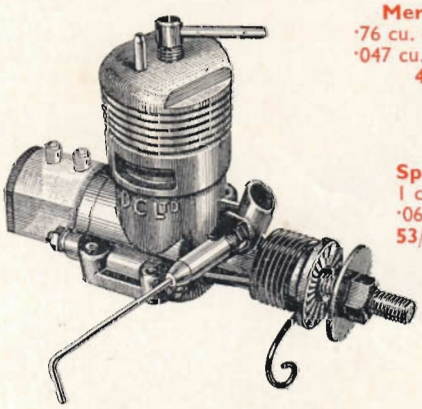
Tornado
4·98 cu. cm.
·304 cu. in.
£11/12/1



Merlin
·76 cu. cm.
·047 cu. in.
44/7



Super Merlin
·76 cu. cm.
·047 cu. in.
53/–



Spitfire
1 cu. cm.
·06 cu. in.
53/–

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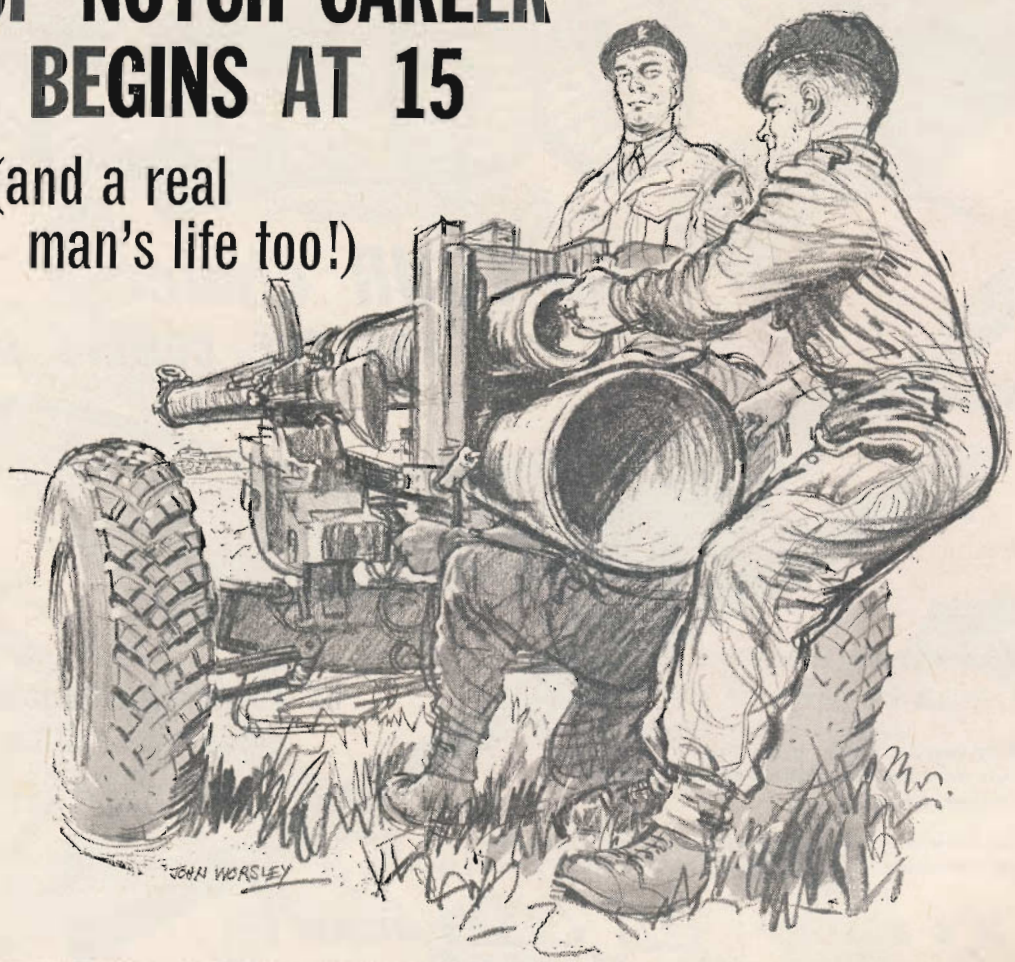

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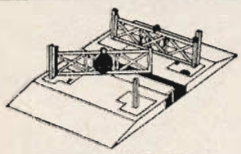

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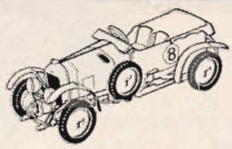

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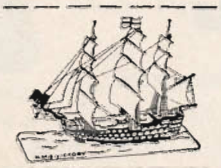

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[A359]

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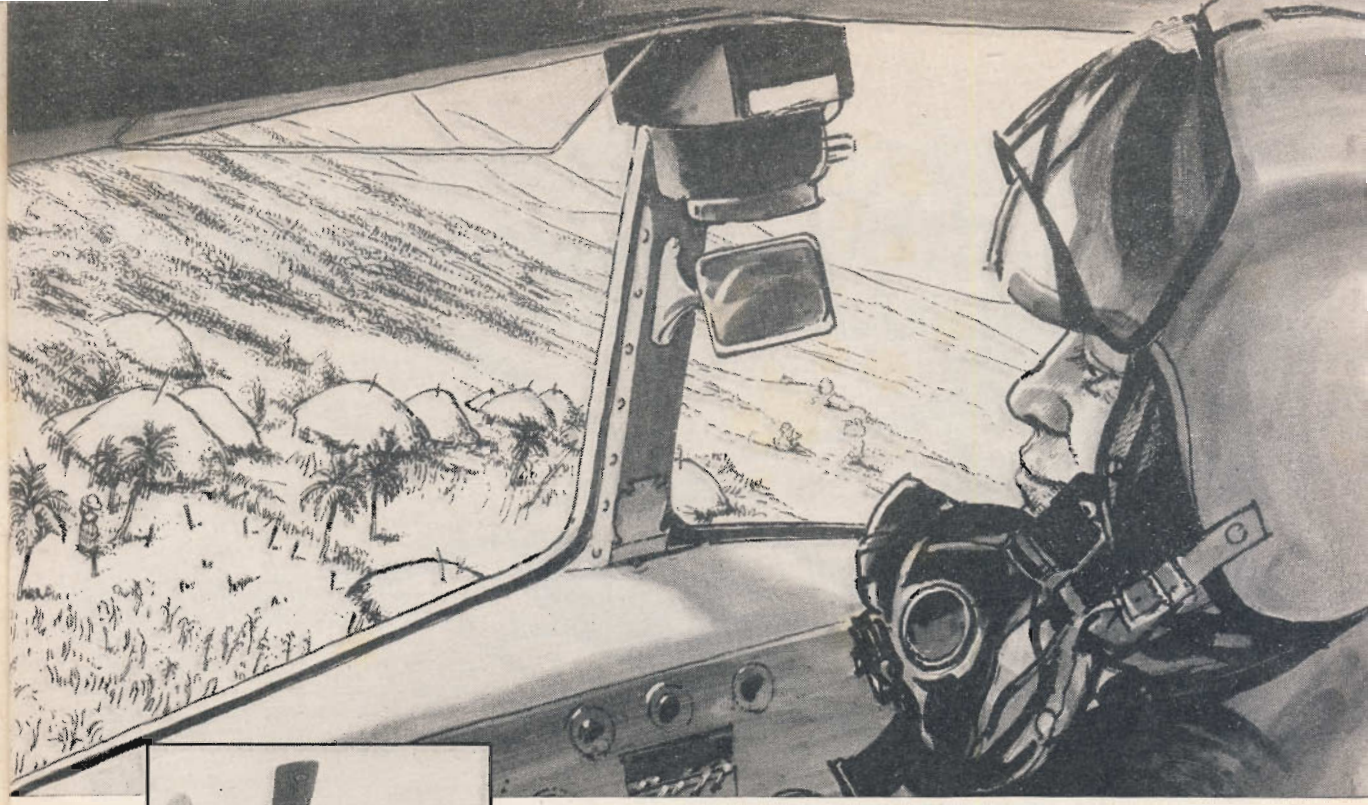

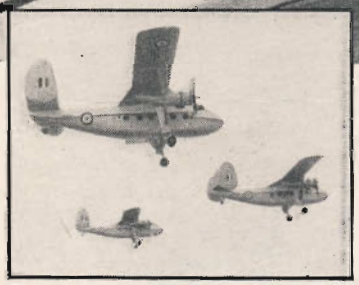

'*Flight*' *Photograph*

PIONEER IN AFRICA. These Twin Pioneers are part of No. 21 Squadron R.A.F., now out in East Africa. Specifically designed for liaison work, they do a score of jobs that a larger or faster aircraft could not tackle. One day they will fly supplies to a famine-stricken village. Next day, the job will be flying troops to a 400-yard airstrip, or photographing the country for a new survey. Or reconnaissance, or dropping a doctor by parachute to an urgent case.

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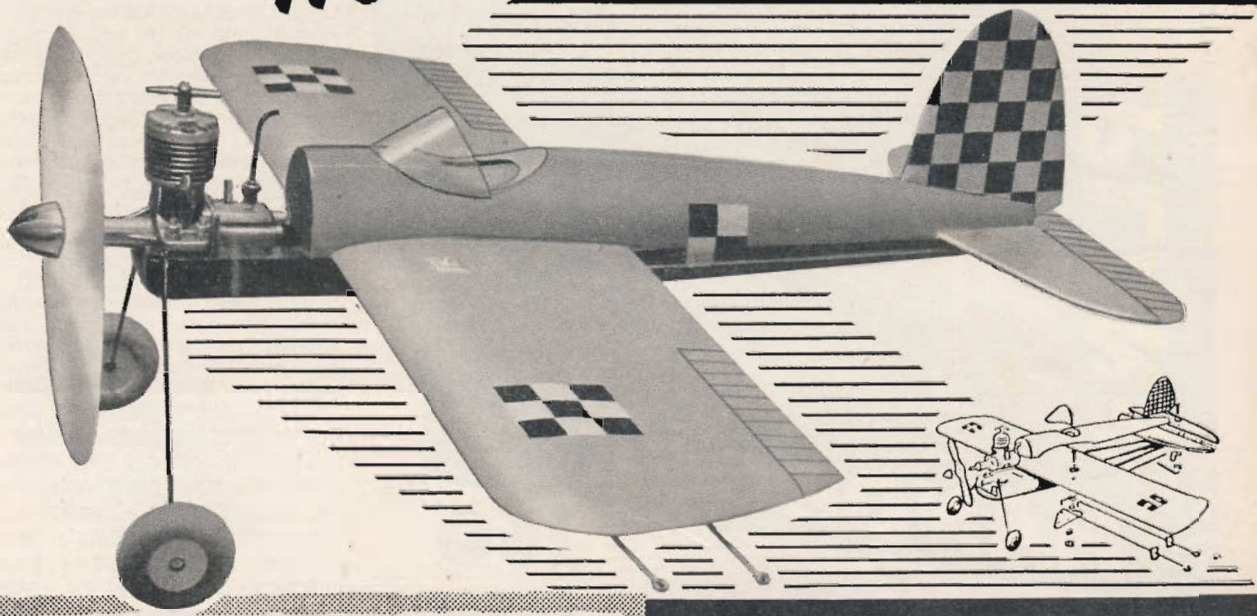

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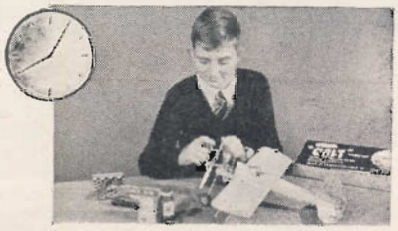
27/6

In one hour five minutes, John Arnold of Hampshire, completed his KWIK-FIX "COLT" model! — Can you Beat-the-Clock?



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VOLUME XXV
No. 290 MARCH 1960

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AEROMODELLER Incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the 15th of the previous month by the Proprietors:

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Royal Interest

WHEN H.R.H. Duke of Edinburgh visited Christchurch United Clubs in Kennington, London, during one of his frequent tours of boys clubs, his attention was drawn to a regular aeromodelling class as our heading photograph shows. Looking on at the left-hand side of the photograph is none other than J. C. Smith who was Competition Secretary of the S.M.A.E. for a number of years and who still maintains a keen interest in the hobby through his connection with this boys' club since 1941. We are pleased to have this opportunity of illustrating His Royal Highness's interest in aeromodelling and reminding readers that the Duke is Patron of the S.M.A.E.

Return Performance—by request !

Following the most successful display of control-line flying on the grounds of Wembley Stadium during the non-football moments of the 1958 English Schools Soccer International the S.M.A.E. has been asked to arrange another demonstration before an anticipated audience of 90,000 schoolboys and teachers. Such an opportunity should never be missed, and an appeal is made right now for skilled volunteers from parts within easy reach of Wembley to submit their names to Ken Brookes, S.M.A.E. Public Relations Officer, Londonderry House, Park Lane W.1.

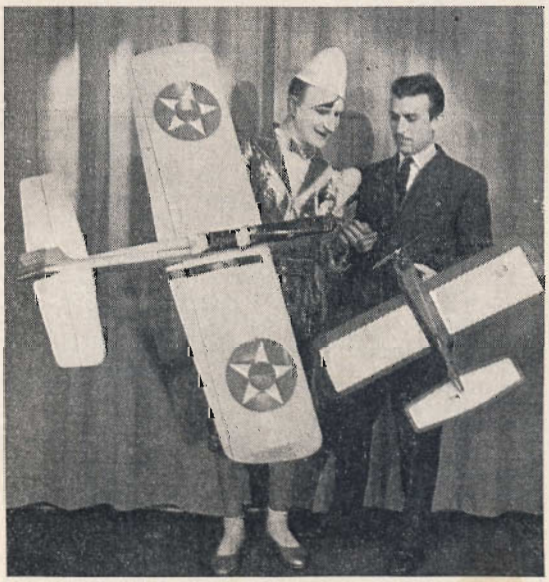
The last display was rewarded with a handsome contribution to Society funds, and in view of the heavy expenses involved in full representation at the 1960 World Championships in Hungary (nine modellers, plus manager), this is an opportunity for the control-line enthusiasts to help themselves. Combat, team race, scale and stunt models are the types that appeal most at these displays, so come on the the con-liners!

Date Correction

Apparently our announcement that the international contest for tailless models would be taking place in Holland on March 20th, which was published in connection with our report on the F.A.I. Committee meeting, was incorrect. We are informed by the model aviation section of the Royal Aero Club of the Netherlands that the event will take place on September 17th/18th at Terlet and will include rubber, glider and power classes. All three classes are to conform to the F.A.I. World Championship specification regarding areas, loadings and weight of rubber. This date correction is certainly more encouraging and permits plenty of time for preparation of models. Can we hope to see strong British participation for this 1960 contest?

Fred Borders

As widely reported in the British National Press, Fred Borders, creator of KeilKraft Tru-flex plastic propellers, and one of Britain's most ambitious aeromodellers died on January 8th. Although Fred attained tremendous fame as a mathematical genius through many television programmes, his prowess as an aeromodeller was not generally known. In 1950 he completed a 10 ft. 10 in. span Douglas Dakota for radio control. Model weighed 15 lbs. and was powered by two Forster 99, 16 c.c. petrol engines, each of which was controlled by a separate receiver for an unusual form of 2-speed control. When the engines were advanced or retarded the flexible propellers provided automatic variable pitch, running extremely fine at speeds below 5,000 r.p.m. and increasing to 10 in. pitch at 10,000 r.p.m. All control of the Dakota was through this engine speed system, but although we heard of quite successful ground running tests, and the model was displayed on several occasions, we never heard of any successful flight. One of our most vivid memories of those halcyon Fairlop days was of Fred arriving at the airfield in his London taxi cab with the enormous Dakota fuselage superimposed on the high roof.



Cirque vol Circulaire

We are indebted to our contemporary magazine "*Modele*" for bringing to our attention the fact that one of the most celebrated clowns in the famous Continental Pinder circus is an ardent control-line enthusiast. Rolph Zavatta first saw a control-line model flying during a circus stop at Tournai and in no time at all, he was fully absorbed by the hobby to the extent that he makes it a practice of contacting local clubs at each of the towns and cities visited by the circus. For example, in Brussels he has enjoyed the magnificent facilities of the flying circles at Etterbeek and he numbers many of the expert French and Belgian C/L fliers among his closest friends. In the photograph we see him with the French champion Malfait. With his professional performances taking him to places as far apart as Bizerta in Tunisia and Brussels, Rolph Zavatta is in a unique position to publicise our hobby—a service he enjoys considerably and which is greatly appreciated.

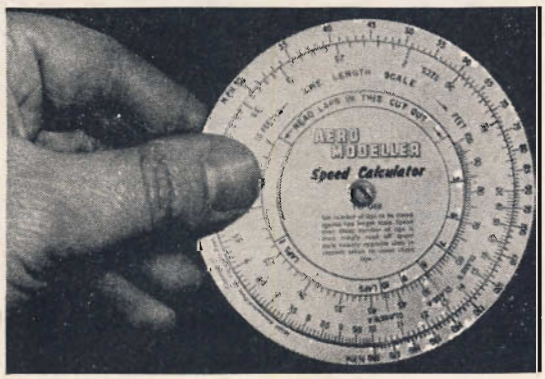
More aeromodelling stamps

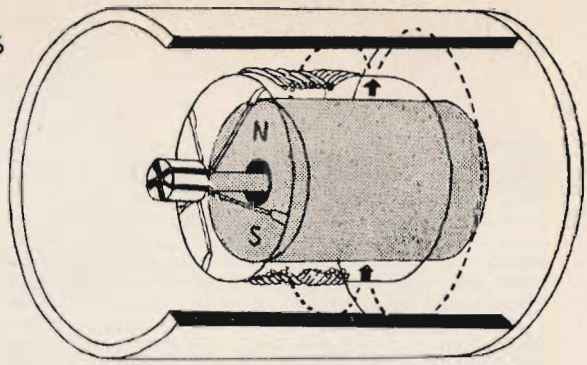
From Israel, Naftali Kadmon has sent us two more examples of aeromodelling stamps, one from Holland, the other from China. As Naftali comments, the Chinese stamp is rather unique in that it illustrates a majority of female modellers in those parts and that it displays a novel pylon model profile in the background.

Your Speed Calculator

As a special "readers' service" the free speed calculator included with this copy has been specially produced in time for the important 1960 contest season. It is a simple matter to cut out the two discs and remove the window for reading off the number of laps, but we must emphasise that the accuracy of the calculator depends upon careful alignment of the two centre holes on a good pivot. As can be seen in our prototype example we used a 6BA nut and bolt, bushing the centre holes with a washer on each disc which can in fact be cemented into position to provide a good bearing. As a further form of protection to prolong the life of your calculator, it can be faced with thin celluloid or acetate sheet, or mounted on plywood and kept in a polythene bag. We make no claim for the calculator being precise to fractions of a mile per hour, but every effort has been made to ensure its accuracy over the very wide range of speed which it covers, and moreover, it provides you with a calculator which will give you a speed figure regardless of the line length. There is no need to fly on specific radii just as long as you can make an accurate measurement of the length of your lines from the handle to the model centre.

Spare copies of the calculator will be sold separately at a later date for those who wish to replace their original discs.





The remarkable Micromax . . . . more details for

ELECTRIC POWER

IN OUR DECEMBER issue report on the successful flying demonstration by Fred Militky, Graupner company designer, we promised further details of our own findings in bench and flying tests with the remarkable Micromax motor.

First, a little of the history of this motor.

Towards the end of February, 1959, a man walked into the editorial offices of *Modell*, one of the leading German monthlies on modelling and asked them if the midget motor which he held in his hand could be of interest to model builders. The man was Dr. Ing. Fritz Faulhaber who had developed this thimble-sized motor as a servo-motor, connected directly into transistor control circuits, for use in remotely-controlled camera-shutters, etc. The quickest check by the staff of *Modell* proved that this minute motor, with a weight of 9/10ths oz. and with a driving shaft that could not be held between the fingers when only 1½ volts were applied, would be of terrific interest to modellers all over the world. To their further astonishment they found that a 1 : 59 reduction gearing was built into the motor. Generally the design can only be classed as first class watchmaking precision and in no way a toy. The motor will start with only 0·05 volts and will reach its highest output at about 14,500 r.p.m. at 2 - 3 volts and drawing 350 milliamps. Four volts is rather high for continuous running, although this can be used for very short bursts.

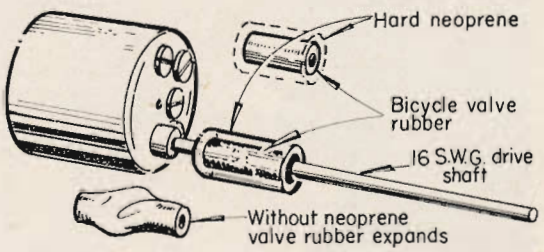
From this data it is quite clear that this motor can be run off the vibrating reeds of an audio frequency receiver in a radio-controlled unit, leaving out relays. The power available is enough to operate any normal control surface of a radio controlled plane, and the Graupner Bellamatic servo (an example of which we have under test) employs the Micromax. The motor is being made with three different reduction gear ratios, *i.e.*, 59 : 1, 15 : 1 and 3·9 : 1. The unloaded speed, without reduction gearing is nearly 21,000 with a 3-volt supply.

The motor differs from the other similar small electric unit, the well-established "Distler" motor by its method of wave-wound (as on a ball of string), coil winding. The induction part of the winding lies outside of the magnetic field and the field is provided by a fixed permanent magnet of the ceramic type. Reference to the sketch illustrates how the lines of force which emanate from this magnet pass through the rotating armature coils and then have their return path through the outer casing of the motor which is of iron base. The diminutive 3/64-in. commutator minimises brush wear by its small size for operation at such high speeds. The low starting current (voltage) and general high efficiency of the Micromax is due to the extremely low weight of the armature and the fact that there are practically no losses of magnetic lines of force. The brushes are made of doubled gold wire but a newer type of brush made of copper and graphite is being developed.

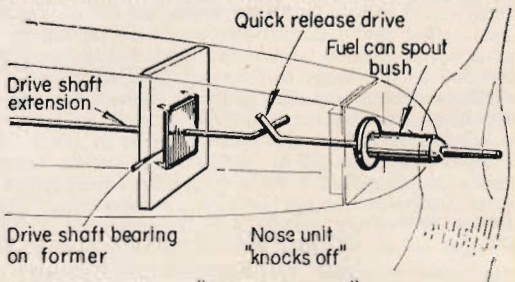
Hans Dieter Heck, Editor of the radio and electronic side of *Modell* magazine, conducted a series of tests on special equipment to provide the figures on the graph and our own rather elementary checks confirm his findings absolutely. Taking the bottom section of the graph, power in Watts is indicated on the left-hand scale, and across the base the torque in centimetres/grammes for the three gear ratios as well as for the straight motor. The efficiency shown includes gearing losses and the maximum mechanical power output indicates something of the order of 1/1500 h.p. The upper half of the graph indicates motor speed at the left side and final shaft speeds for the various ratios on the right, and connecting the two halves of the graph is the ideal example showing the desirable running speed for maximum mechanical power output at reasonable battery drain. It is obvious that one should aim for 950 prop r.p.m. when using 15 : 1 drive ratio. This will not only ensure longer battery life, but also complies with the manufacturers advice to run at the lowest load for longest brush life,—and brushes are *not* replaceable!

Micromax operators who are not familiar with electric motor operation should be warned that it would be hazardous for them to allow the motor to be stalled at any time, the windings would soon be burned out. Consequently, one *must* incorporate a safety device to permit the motor to run-on if the propeller has stopped. Fred Militky used ultra lightweight balsa propellers which sheared at the root in the event of any mishap, but our own experiments lead us to using more robust propellers, and the two simple safety drive connections illustrated in the sketches below.

Ordinary bicycle valve rubber can be used as a connector from the shaft to the prop shaft, and whilst this gives sufficient grip for driving without slip, the Micromax



SLIP DRIVE (Permits motor to run when prop is stalled)



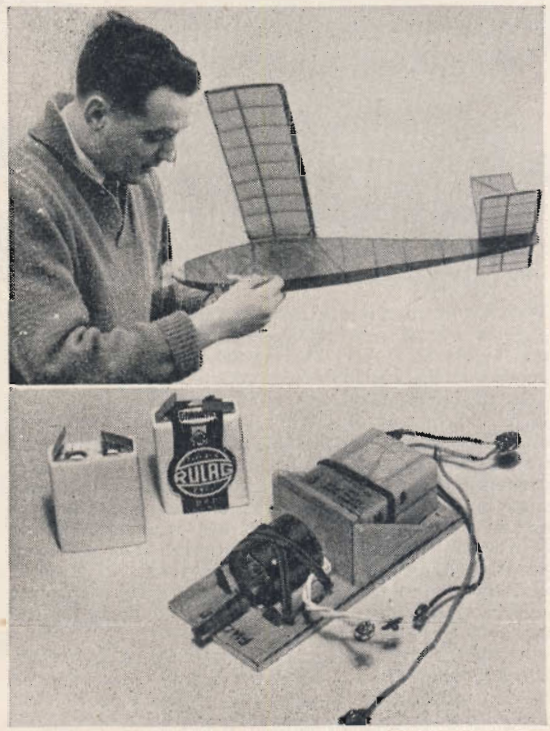
ELECTRIC DRIVE "PROP SAVER"

is so powerful it will continue to run even though the prop shaft be stopped and the drive shaft thus slips inside the valve rubber. To prevent expansion or twisting of the connecter a hard Neoprene sleeve should be fitted. As a further safety measure the nose block can have the simple shaft engager as used on many toys.

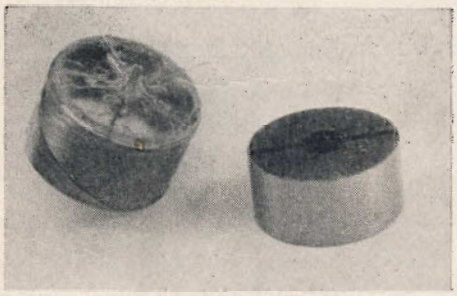
How can one produce an electric flying model? The major consideration is one of weight, and our first thoughts were directed towards a delta configuration, and accordingly one was made (we should say carved) from a block of 1-in. thick expanded polystyrene (Jablite) with the power unit superimposed on the centre section. Area was approximately 160 sq. in. and flying weight of 5½-oz. seemed acceptable, but the required flying speed was too high for the power/propeller combination in use. Our Micromax is 15 : 1 ratio, the most suitable for prop-drive.

Accordingly, a second, conventional model using the wing and tail surfaces from the standard A.P.S. *Rubberdub* design was made with a standard fuselage construction to carry the unit illustrated internally beneath the parasol wing mounting. Experiments still proceed. We have yet to reach the dry cell battery stage and all flights thus far have been with two standard Magnatex cells in series, giving 4 volts. Like the miniature accumulators used in Germany, known as *Rulag*, these lead acid cells are rechargeable at 10 m/A rate without venting and provide the finest output/weight ratio.

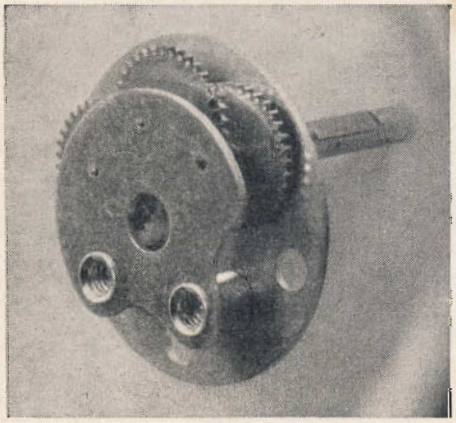
Aeromodelling is always the more fascinating when success does not come easily and there is a demand for individual experiment. Electric model power provides just the stimulant we need for a new phase in aero-modelling and we would welcome news of our readers' experiments in this direction.



John Taylor sets fuse for a test flight at top. Power unit, with spare cells, shows snap connectors and simple detachable mountings. Below are German test curves

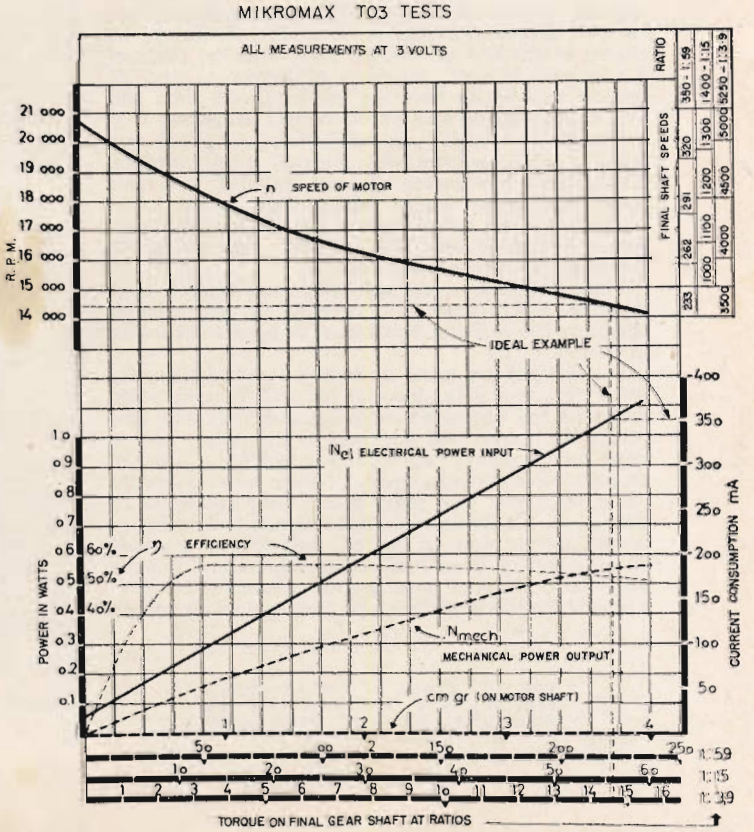


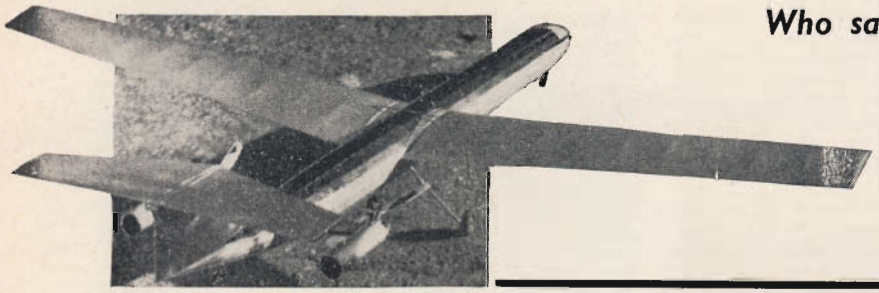
Coil and magnet, above, gearbox below, indicate superb workmanship in a Micromax, more demanding in fact than for miniature diesels



Power curve and internal detail by courtesy of "Modell" magazine.

(See also March, 1960, MODEL MAKER for Marine Motor Test on the Micromax)





Who said it was impossible?

This remarkable semi-scale Jet Airliner flies like a dream, even on unmatched power units

WHEN THE remarkable attributes of tail-mounted twin engined models were first observed in thought provoking test flights at R.A.F. Henlow last year, we began to appreciate the possibilities of such a layout.

In their feature on tail twins (November 1959 issue) H. E. Males and R. Deveraux listed the experiments and described prototypes that had performed well under free flight and radio control, regardless of engine synchronisation. An obvious further development was something on the lines of the French Caravelle jet airliner and in *Coccinelle*, H. E. Males has produced a docile twin which is an assured crowd stopper. With protected props, and the great virtue of being able to perform well on one engine, Coccinelle also employs a simple construction system to enable quick building of the airframe.

Make up the fuselage box and fit back of weight compartment. Mark around the box at 3 in. intervals to give location of formers. Fit formers 1 to 12 then make the undercarriage assemblies and fix to box. (Nose wheel and washers must be fitted before bending the wire). Assemble box for wing tongue, bind lightly with thread, coated with cement before fixing with incidence packing to fuselage box. Check engines and props to be used against drawings for clearance. Make up the engine bearer and cement in place, also the piece of ⅛ in. sheet forward. Fit parts of former 13 and aft vertical keel which keys the tail incidence, then add F14 halves. Fix top and bottom central stringers.

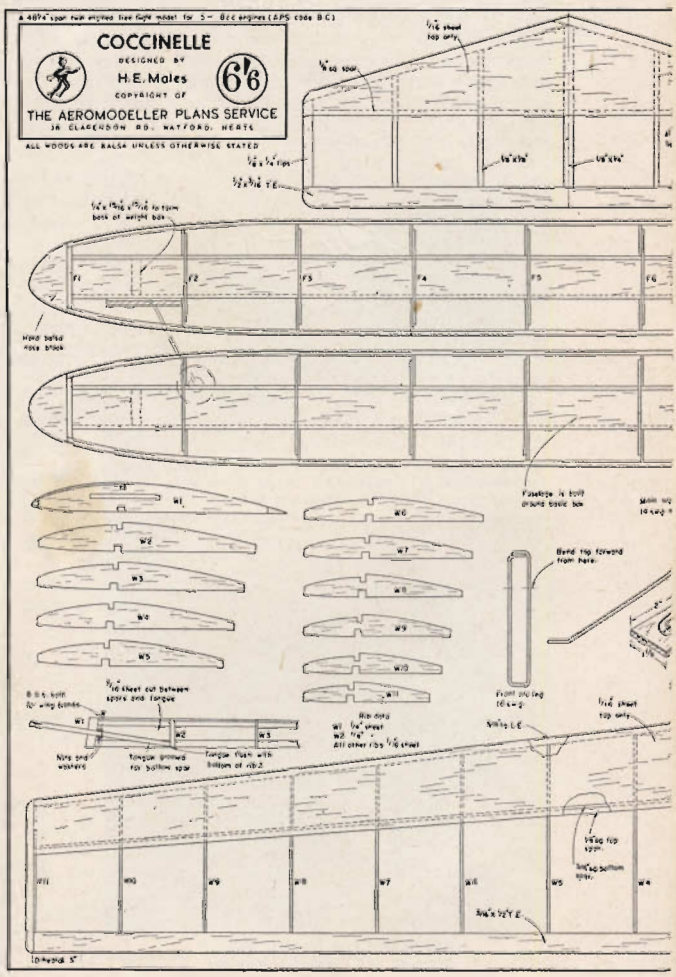
Fit the two central side stringers ensuring that rear point is central in plan view, then all other stringers. Plank between stringers adjacent to wing box, also above and below engine bearers and round undercarriage legs. Fit root ribs over ends of wing box and fair into fuselage with 1/16 in. sheet. Add fin to the fuselage, also tailplane platform.

Make tailplane using soft sheet for leading edge covering. Steam sheet L.E. covering for the wing to curvature before fixing. Rib 1 must be bevelled as shown in section.

Dummy jets are made by rolling and steaming very soft sheet round 1 in. diameter rod and fitting formers. Assemble the uncovered model, rest engines and propellers on bearers and add lead to the weight box to bring balance point to a position ½ in. behind C.G. shown on plan. Fit noseblock, cover tail-plane with lightweight tissue, remainder with heavy grade. Give two coats of clear dope. Fit dummy jets to the bearers and rudder to the fin. Colour dope as desired, preferably to resemble an airliner, fuel proof the engine bearers and dummy jets only. Cut ears off small graduated tanks and fit with a cement fillet around their tops. Bolt engines on upright with needles facing outwards. Drill ⅛ in. diameter hole in noseblock and insert lead to bring C.G. to correct position.

The prototype is fitted with two Davies-Charlton "Dart" engines and weighs 18 ozs. With this power the model sustains a fast steep climb. On the better of the two engines only, it reaches about 100 ft. altitude in 40 secs. and should take-off quite easily from a smooth surface.

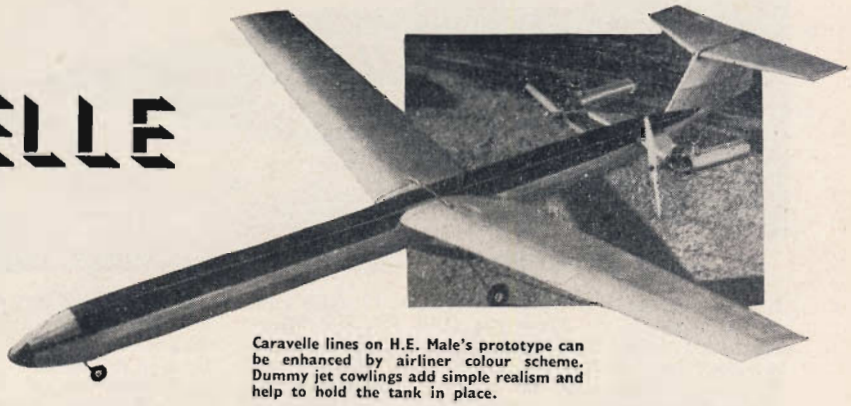
Trimming calls for central rudder. Test for glide and adjust tailplane incidence if necessary. If the model turns, correct the warped surface. Try a short power



FULL SIZE COPIES OF THIS 1/5th SCALE REPRODUCTION ARE AVAILABLE AS PLAN U752 FROM A.P.S. PRICE 6s. 6d. PLUS 6d. POSTAGE

COCCINELLE

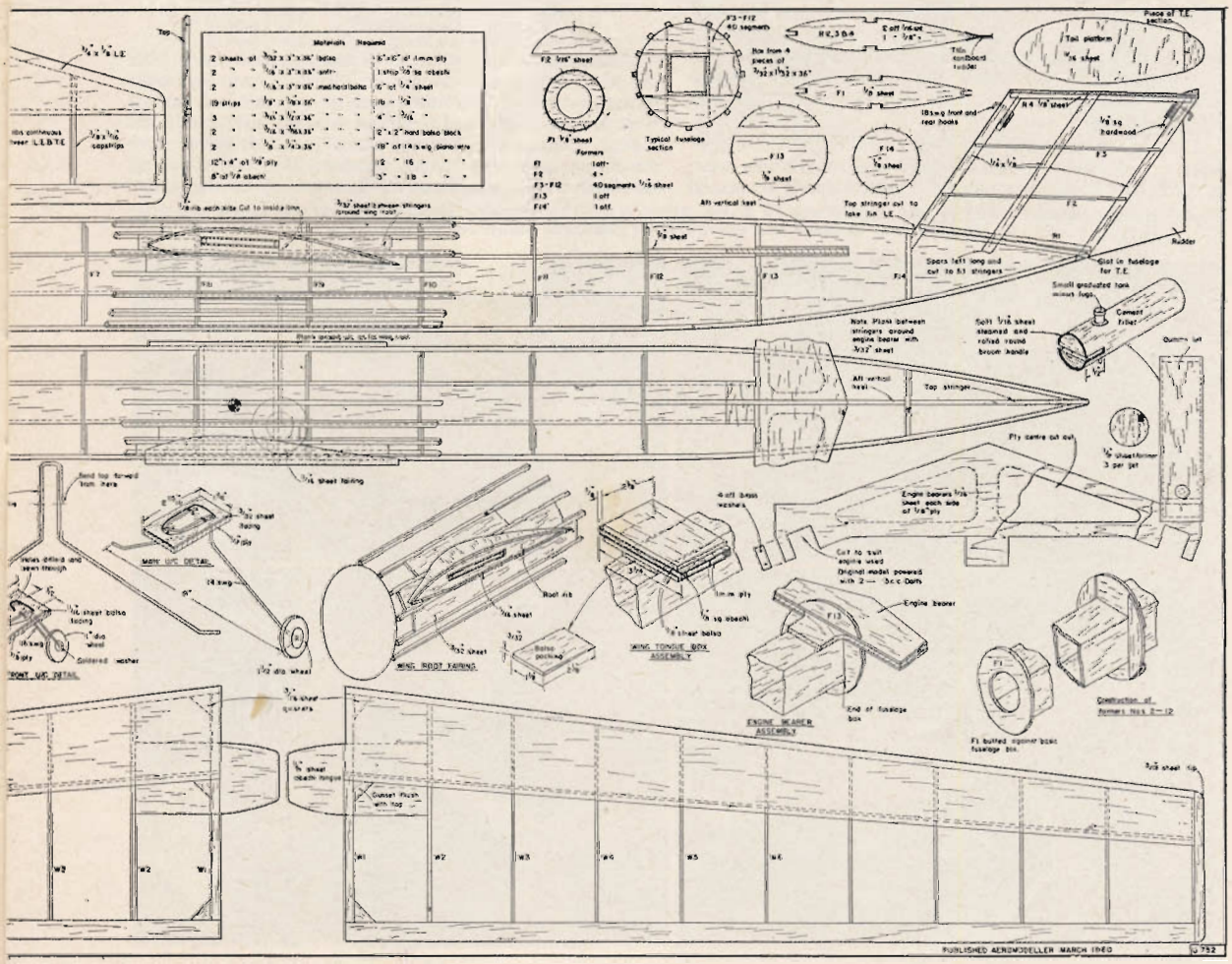
designed by H. E. Males



Caravelle lines on H.E. Male's prototype can be enhanced by airliner colour scheme. Dummy jet cowlings add simple realism and help to hold the tank in place.

flight on one engine. If necessary, adjust sidethrust to give straight flight or a very large radius turn.

Repeat procedure with the other engine. A small amount of rudder can then be applied to give a right turn with either or both engines running or on the glide. An alternative trim is obtained by offsetting both engines slightly to the left of the "neutral" position with rudder straight. This gives a constant right trim under power and straight glide. This trim, which the designer employs has the advantage of causing the model to glide through through any area of lift.



Reported by Ted Malkin

ENTRANTS began arriving at Weedons, 12 miles south of Christchurch on December 27th for the "Gorse Paddock" Nats. Accommodation had been kindly provided by the R.N.Z.A.F. and U.S. Navy at this R.N.Z.A.F. base, used for stores in connection with "Operation deepfreeze". Huts, beds, and mattresses were supplied by the U.S. Navy and excellent ablutions with hot and cold showers were greatly appreciated by the modellers.

Unfortunately the weather did not look too promising as an 18-20 m.p.h. wind was blowing and this made it impossible to carry out any testing prior to the start of the Nats. *A*/2 commenced at 6 a.m. on December 28th. This was also to offer a first glimpse of the flying field which was no aerodrome—flying was to take place in adjoining farmers paddocks; these turned out to be about 200 yards sq. surrounded with gorse hedge fences. Three paddocks down-wind the gorse became general overall. Another ½-mile further on there was a high belt on pine and gum trees!

During the first early morning round there was a light breeze with very patchy lift, and few maximums were scored. In succeeding rounds the wind steadily increased and lift became very strong. Because of this, the gorse, and trees, it took a fit, keen and lucky man to get five flights. Many A.P.S. designs were in evidence and top three in A/2 were:

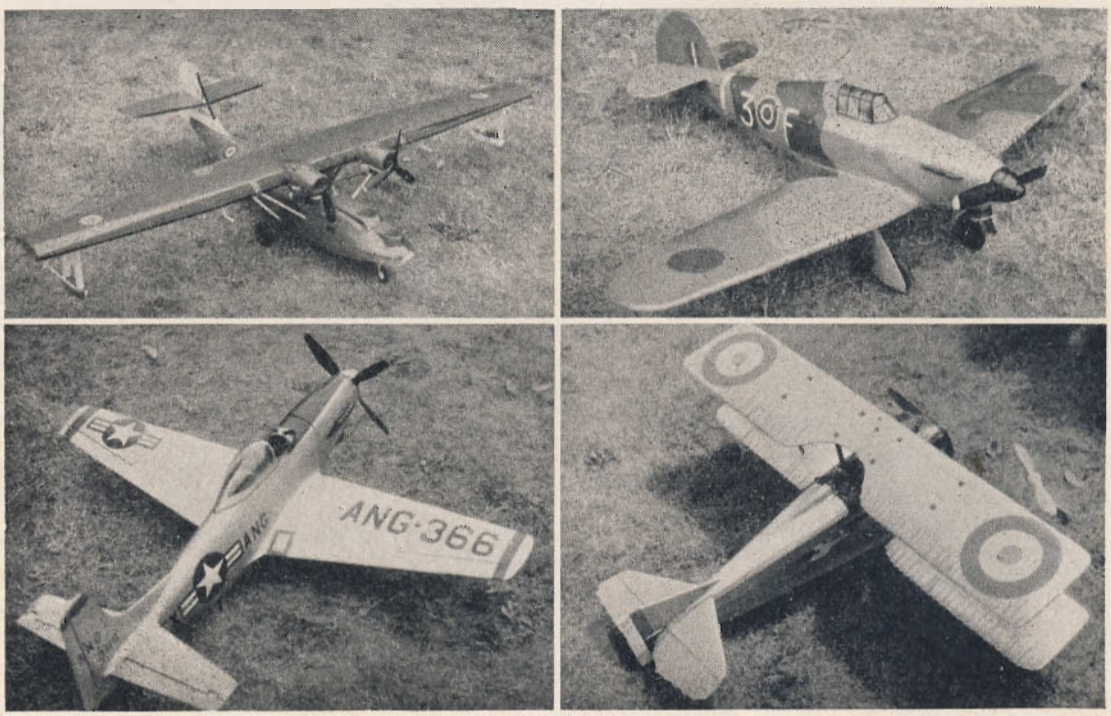
P. Levet	...	Auckland	900 secs.
J. Malkin	...	Upper Hutt	821.8 secs.
N. Hopley	...	Roskill	778·1 secs.

Chuck Glider was held on the same afternoon, calling for six flights, with 1½ minutes maximums. The wind had increased further making conditions extremely difficult. Modellers were seen dashing about all over the place showing their brawny chests and muscular arms, and the expressions on their faces were something to behold.

1. J. Malkin	...	Upper Hutt	276·1 secs.
2. J. Hearne	...	Auckland	222·6 secs.
3. G. Coleman		Christchurch	209·5 secs.
D. Ramsay	...	Auckland	209·5 secs.

Wakefield on December 29th had a 6 a.m. start, with the wind at about 10-15 m.p.h. Mortality rate was high in the first round. Thermals were in evidence but models were disappearing o.o.s. before a maximum could be scored. During succeeding rounds thermals were more prevalent and the wind increase slight. Retrieving involved a run of about 1½-2 miles. With the 1 hr.

Above, Souvenir Pennant points to Mike Bistossi with his XL-56b. Below, Catalina by W. Briggs placed second; the Hurricane is by B. Fagg; Mustang by C. Thompson; and superb SPAD by Pete Carter, which won its Class.



rounds this made it increasingly difficult for the flier to return in time, especially if he started late in the round. At the end of the third round P. Carter of Kaipio and W. Cook of Upper Hutt were leading. During the fourth round Carter looped in the wind on launching and damaged his prop, so missing that round. Bill Cook's model struck a monstrous down-draught, landing after 92 secs. At the end of the 4th round J. Malkin, of Upper Hutt, was first, W. Cook, Upper Hutt, 2nd, and P. Levet, Auckland, third. In the fifth round Malkin and Levet again both scored maximums, while Cook's model disappeared behind some high trees in 115 sec. The final results were:—

J. Malkin...	...	Upper Hutt	... 781·6 secs.
P. Levet ...	...	Auckland	... 734·0 secs.
W. Cook ...	...	Upper Hutt	... 684·2 secs.

Winner's model was that used in England in 1958 for the Wakefield Championships.

On the afternoon of December 29th the first heat of **Class A** team race started, and Oliver Tigers were used almost exclusively, with the occasional Enya 15D. Heats were run over 160 laps on 52 ft. 6 in. lines, this giving a distance of ten miles. The general standard of Class A racing was fairly low compared with other years. Whipping was much in evidence but officials generally let this go. Heats were run off fairly smoothly and the final got under way at 5 p.m.

N. Fergusson	...	Kaipio ...	... 8m. 52 secs.
W. Choy ...	...	Wellington	... 10m. 35·4 secs.
L. Vincent	...	Auckland	... 10m. 46·3 secs.

All day Wednesday, the R/C boys fought it out. P. Lagan of Christchurch winning, with L. Sharland of Timaru second and B. Shackell of Timaru third.

At the same time, **F.A.I. free flight power** attracted approximately 50 entries, about 25 of which put in official flights. During the first round it was suggested to the contest director that the round system be thrown open. There were several objections to this and it was not until the third round when everyone was wet through, including the dissenters, that the round system was abandoned. Even during the rain, slight lift was encountered. The final result was a clear win for the Auckland club.

J. Winn ...	...	Auckland	... 681·4 secs.
N. Hewitson	...	Auckland	... 629·8 secs.
B. Keegan	...	Auckland	... 512·7 secs.

In the afternoon the weather cleared up for **Class B** team race and as usual for C/L, was almost ideal. The heats were again run over 160 laps, on 60 ft. lines, this giving a distance of 11.425 miles. The man with the strongest arm won the heats. Some heats had only two models competing, and during one of these, whilst one model was refuelling, the other model increased its speed by 9 m.p.h. due to whipping. The final started at 5 p.m. and was an extremely good race.

W. Stott ...	...	Christchurch	... 9m. 25 secs.
N. Hewitson	...	Auckland	... 10m. 21·7 secs.
B. Keegan	...	Auckland	... 10m. 55·0 secs.
J. Winn ...	...	Auckland	... 159¾ laps.

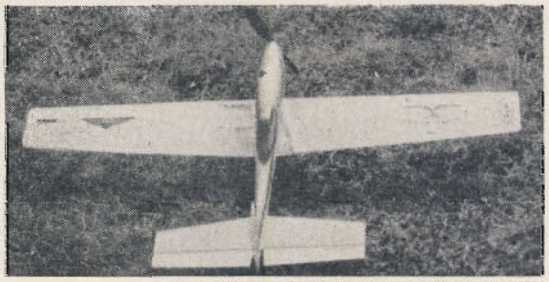
J. Winn could have won this race had he not broken a gudgeon pin and glided to rest ¾ of a lap from the finish.

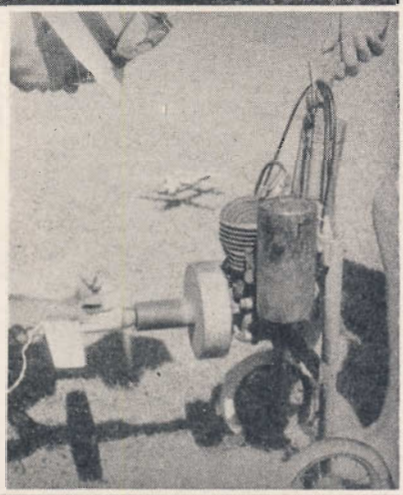
As is always the way with C/L events, conditions were hot and calm for Thursday. All classes of **Speed,** C/L scale and aerobatics were flown on this day. Three contestants were using Mono-line speed for the first time at the N.Z. Nats. All speed classes got away without the usual fuss and bother as in other years, and all 3 piston class records went for a Burton. In Class II the existing speed record of 120.8 was raised to 126.27 m.p.h. by Harvey Westland using a home made motor. In a special attempt by M. McCorie, flying a five year old unreworked Dooling 61 model, the record was increased from 140.5 to 147.5 m.p.h. A. Carmine increased the Class I record from 101.4 m.p.h. to 102.27 m.p.h. Aerobatics were of the usual low standard with nothing very new in the way of design.

Some of **C/L scale** models were very impressive, including a Dynajet powered F-100 Super Sabre. After catching fire once and making several false starts this model made a very impressive flight. Peter Carter's winning Spad was of a very high standard.

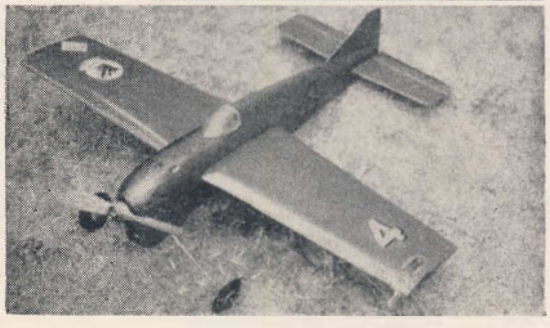
Class I			
A. Carmine	...	Masterton	... 102·27 m.p.h.
A. Pearce...	...	Auckland	... 101·12 m.p.h.
Class II			
G. Westland	...	Kaipio ...	... 126·27 m.p.h.
J. Winn ...	...	Auckland	... 118·3 m.p.h.
J. Heney	...	Christchurch	... 118·3 m.p.h.
Class III			
J. Henry	...	Christchurch	... 142·8 m.p.h.
J. Winn ...	...	Auckland	... 119·9 m.p.h.
Class IV (jets)			
J. Winn ...	...	Auckland	... 110·4 m.p.h.
Aerobatics			
T. Fenwick	...	Christchurch	... 351 points
D. McPherson	...	Palmerston Nth	335 points
B. Deakin	...	Palmerston Nth	311 points
C/L Scale			
P. Carter	...	Kaipio ...	... 84 points Spad
W. Briggs	...	Gore ...	... 77 points Catalina

Continued on page 147

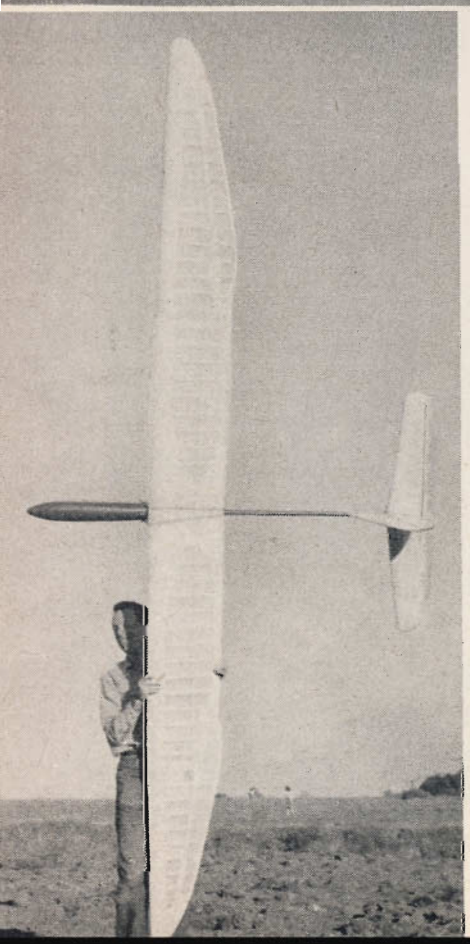




Above, W. Choy's second place "A" racer. Right, one of several portable starters, this one very handy and mobile. Below, W. Stott's class "B" winner shows Moir influence in its lines



CALIFORNIAN SLOPE SOARING



by

Bob Linn

Top Left. Bob Hartlieb's Thermic100 ridge soaring; has home built radio for single channel rudder only. Model weighs 54-oz. Below it is another ridge soarer with the Hughes airfield runaway in background and at right veteran Bill Butler launches his modified Thermic 100. Left, John Stephenson's Whopper for Orbit 8-channel, has a separate channel and servo on each of the enormous ailerons, 13 ft. span, 8 lbs.

A 200FT. CLIFF, favoured by westerly winds from the nearby Pacific Ocean, (bordering on the edge of an airport built by Howard Hughes for his own personal use and that of the Hughes Aircraft Company) is the site on weekend afternoons of R/C slope soaring. Spots like this are getting rather rare in Southern California as almost every other site overlooking the surrounding countryside is either covered with houses, or soon will be. On a clear day the distant mountains, some with their mantle of winter snow, can be seen in the distance, and the blue waters of the Pacific on one side with miles and miles of outstretched cities gives one a strange feeling to be able to enjoy model flying and also the surrounding panorama.

R/C slope soaring has been going on for some years around Southern California but lately it has been picking up in intensity as places to fly power R/C become scarcer and scarcer. The one lone flying field gets pretty crowded at weekends with everyone trying to get flights in before high winds develop. Now the ideal solution to the wind problem is to put the radio in a glider, sleep late on Sunday morning, and when the winds blow, head for the nearby hill. One of the advantages of this spot is that 9 out of 10 times the wind is blowing directly at the face of the cliff at anywhere from 8 to 15 m.p.h.

To watch a 13 ft. glider of the type built by John Stephenson floating majestically back and forth along these cliffs is one sight that will thrill the heart of any model builder. This glider features an 8-channel Orbit receiver, weighs in at 8 lbs. and features a separate servo in each wing for each aileron. This giant was out for repairs for a while after John tried to do a slow roll with it; there just wasn't quite enough aileron control.

One of the best of the slope fliers is Bob Hartlieb who flies a modified Thermic 100, his model weighs 3⅛ lbs. and has a home built receiver.

The Thermic 100 (which unfortunately is no longer available) is one of the most popular of the models for this sport. When one visits the different shops throughout town and asks for a Thermic kit, the common answer is "no, but I sure wish I did as I've been getting dozens of calls for them". That's the way things go however. When a kit is available no one wants it, but just let it go out of production and then everyone wants it!

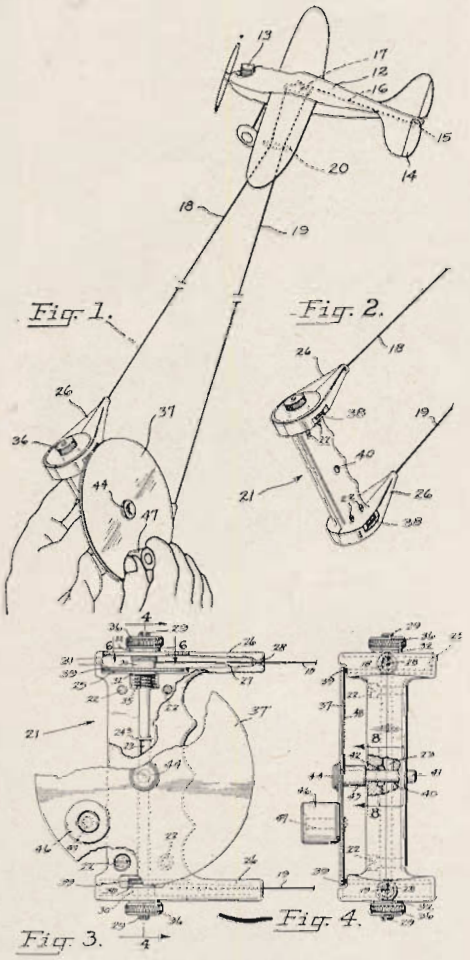
One of the real veterans of the slope is Allan Holton who flies an 800 sq. in. wing. Allan who drives 40 miles each way to fly at the hill also uses an 8-channel Orbit receiver which operate an unique system of servos. One servo operates the rudder, one servo a trimable elevator and one the standard elevator.

A newcomer to the sport turned out recently. He was Frank Nishina who converted a 20 year old Zipper pylon power model into a slope soarer and added a 2-channel tone receiver of his own.

Another welcome enthusiast to the sport is the "father" of all model flying in California, Bill Butler. Bill, who is in his 60's has at some time or other tried every form of model building and flying. He uses the wing and tail surfaces from a Thermic 100 mated to one of his own fuselages, and appears to offer the advantages of his experience to newcomers.

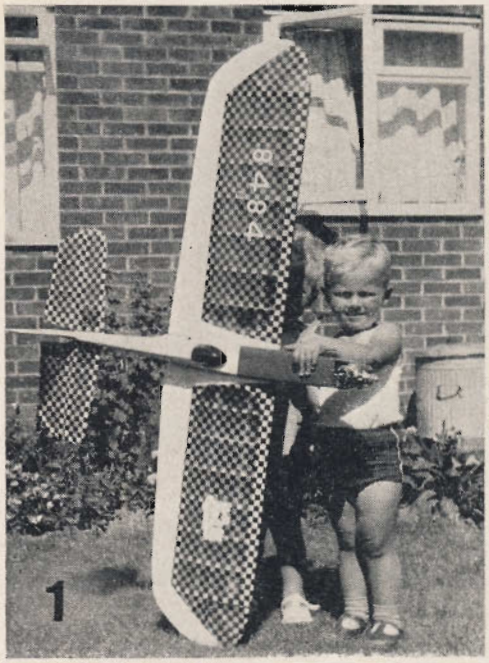
Allan Holton heaves his Orbit 8-channel, 800 sq. in. 4½ lb. design. Has servos for twin elevator as well as normal elevator. Bottom, we have two modified Thermic 100's, at right, by Bob Hartlieb with external rubber for escapement below fuselage boom

IMPORTANT PATENTS (USA)



2743068 N. E. WALKER (U.S.A.)
APPLN. DATE 2.5.52.

Another wire-storage type of control line handle is provided by this invention. Here the two spools are horizontally disposed one to each end of the handle and are rotated by means of a winding wheel which may be detached from the handle. Figures 1 and 2 show this clearly, while figures 3 and 4 show how frictional engagement is effected between a treated face of the winder wheel and the edges of the storage reels which extend through their housings. Both reels are mounted on a common shaft and may each be locked against inadvertent rotation by the knurled pieces 36 which serve to lock the reels against the walls of their housings. According to the descriptive passages of the specification the slight degree of slip permissable between the winding wheel and the reels allows the wire tension, when winding, to become balanced.

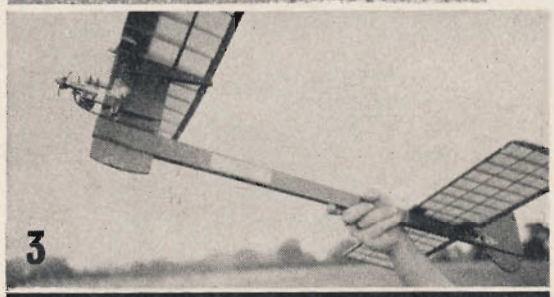


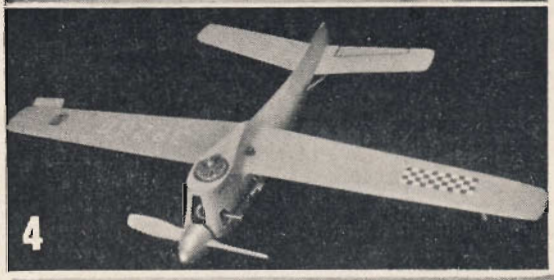
MODEL NEWS

"Now dear, hold Daddy's aeroplane nicely while I click the camera and don't hide behind the wing Annie, or the Editor won't be able to see you". We can just imagine the situation when Gordon Oswell took picture **1** to show his latest stunt model from Ashford, Kent. We presume Gordon will be performing in the Nationals for the Gold Trophy with this much chequered effort. And what a perfect mate for that picture number **2**! The same backdoor background with dustbin for balsa shavings and kitchen table for banished modellers rivalling the brickwork for a typical domestic scene.

The glider is none other than an A.P.S. *Sans Egal* A/2 held by three year-old Neil Webb, whose father is very pleased with the model's thermal performance. In fact he tells us that it has already influenced several of his Brierley Hill club-mates to build the same design.

An APS *Y-Bar* with a difference is seen in picture **3**. This is an A.M. 15 version driving an 8 x 3½ prop. Mr. Whalley tells us that lowering the centre of lateral area controls the rate of spiral turn and helps to steepen the climb, and he felt that the pylon was rather high and so raised the engine to its unique position. Experiments continue and the present model has a Fox 19 using *Dream Weaver* size wing and tail, but with as much as ⅜ in. wash-in on the starboard panel. This elevation of the thrust-line is perhaps a step towards the currently





very popular trend in the American mid-west to push the engine up the pylon for high thrust-line.

Sales of Ugo Rossi's *Devil* speed design published in January issue indicate an increasing interest in F.A.I. speed. F. L. Warburton of Bolton submitted picture **4** which shows his model for the Enya 15 glow engine with fibreglass speed-pan, and which is currently flying at around 104 m.p.h.

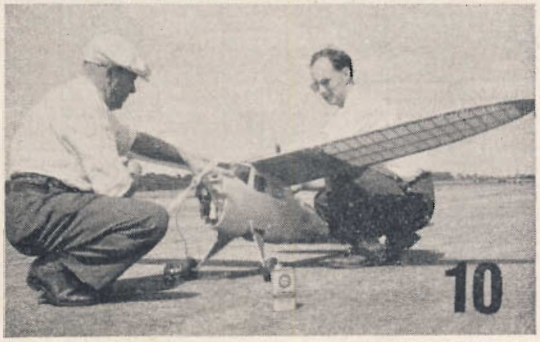
B. E. Newman, of Lee, London sent photograph **5** of his *D.H.C.2 Beaver* in Royal Canadian Mounted Police colours of dark blue and bright yellow. This 64 in. model is powered by an A.M. 35 diesel and it placed 7th at the 1959 Nationals, although it should be noted that performance was somewhat impaired due to an unknown person using the port wing as a door mat! Facing it in picture **6** is another intricate scale job by John French of Bristol showing his rubber-driven *Westland Lysander* made from APS plan which took him 100 hours to make.

Photography is so very often a companion hobby to aeromodelling and Brian Monaghan of Manchester is a keen exponent of both hobbies, sending us picture **7** showing a wartime scene faked with the aid of his own solid scale (not plastic) Hawker Hurricane and Messerschmitt M.E.110 Dark room jiggery pokery enables one to convey considerable realism.

For how many more seasons will the Oliver Tiger remain supreme in team racing? Many endeavours have been disappointing in their attempt to depose the ruler of its class, but one engine which is rivalling the Oliver product is the Rivers Silver Streak and in picture **8** Hector Ray of Nuneaton (left) is seen starting his Class A Racer which uses the "Silver Streak" and claims a performance of 92 m.p.h. for 32 laps. The motor has been polished internally by Hector, but apart from that, is a standard unit.

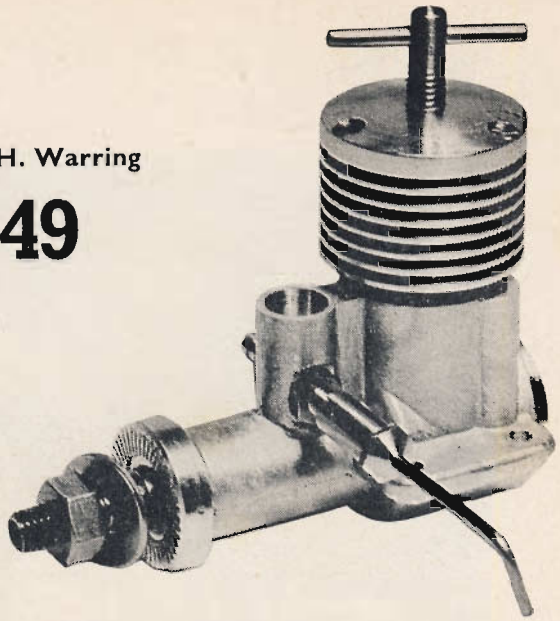
Hoovercraft are with us, no matter what their limitations. At the Northwood club, normally famed for its combat activities, we spotted Peter Tribe (left), in picture **9** with his Frog 150 Octogon which hovers 1 in above surfaces and Bruce Sawford's 12-sided saucer for a Davies-Charlton Sabre 1.5 c.c. which hovers about ¾ in. In both cases air is ducted to the outer rim to form a supporting curtain of high pressure slipstream.

Picture **10** illustrates a fine joint effort from Cirencester where P. Gibbens made most of the air frame for this APS *Mercury* 4, and M. Rose built the radio gear for the model. Incidentally, for those who are concerned about powerplants for the Mercury this particular example is flying on an Ohlsson 60, 10 c.c. ignition motor.



Engine Analysis No. 69 by R. H. Warring

the P.A.W. 1·49



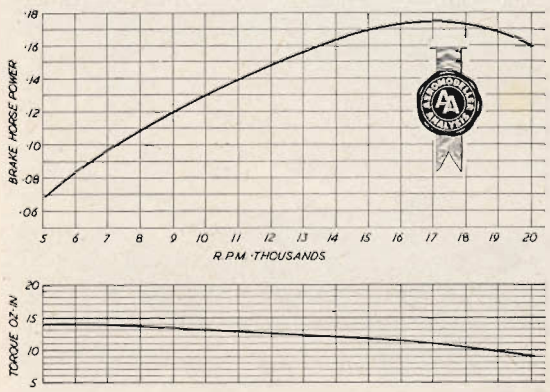
PROPELLER—R.P.M. FIGURES

Propeller dia. pitch		*r.p.m.*	*Propeller dia. pitch*		*r.p.m.*
			7 x 4		13,600
6 x 6	Trucut	13,600	8 x 4		11,200
6 x 3		18,000	8 x 5		10,000
6 x 4		16,500	9 x 3½	Tiger	9,000
8 x 4		11,400	8 x 4		11,800
9 x 4		9,000	8 x 3½		12,700
10 x 4		6,500	7 x 4	Frog Nylon	15,400
8 x 6		8,400	6 x 4		20,000 plus
12 x 4		5,000	8 x 4		11,600
6 x 4	Stant	16,800	8 x 5		9,500
6 x 5		15,300	8 x 6		8,500
7 x 3		15,500	7 x 6		13,600

Fuel: Mercury No. 8

BESIDES BEING ONE of the best made engines we have had the pleasure of examining for some time, the PAW 1·49 diesel proved, on test, to be the most powerful 1·5 cc. engine we have yet handled, coupled with operating characteristics which made it as easy for starting and adjusting as any "beginners" design. Flexibility of performance is truly remarkable. It ran just as consistently on a 12 x 4 propeller at 5,000 r.p.m. as on a 6 x 4 Frog nylon at 20,000 r.p.m. Nor was it fussy about fuel mixtures and high speed running was just as smooth on "straight" diesel mixtures as nitrated fuels. Hand starting was virtually instantaneous, following finger-choking, hot or cold, Starting with a rich mixture and compression well backed off, there was not the slightest trace of viciousness on 6-in. diameter propellers and the engine ran so evenly on any given setting that it was difficult to know just when one had arrived at the optimum setting.

The high peak power is due largely to the fact that torque is maintained through the upper speed range so that peak B.H.P. is reached at 17,000 r.p.m.—which is an extremely high figure for diesels or any plain bearing engine. Even at peak the fall-off is quite moderate and so right from 10,000 r.p.m. up the performance on any propeller load is outstanding, and really smooth. There is not a single item that could be faulted about performance or handling characteristics—except perhaps the fact that the intake tube is very near the cylinder finning and choking a hot engine can mean a burnt finger.



Essentially the PAW 1·49 is a scaled down version of the 2·5 cc. "Special" (*see* AEROMODELLER Test Report No. 42, December 1957), with a number of detail design modifications. Basically, these comprise the elimination of the rear ball race in favour of a full length plain bearing, modification to the propeller driver and the adoption of a right-angled, as opposed to an angled spraybar. The cylinder walls are also somewhat thicker, resulting in a very rigid warp-free unit.

The gravity die-cast crankcase follows the same geometry as on the larger engine and is a first-class job. Quite extensive machining is carried out on this unit and the bearing length is fitted with a cast iron bush which appears to be reamed and lapped to size. The hardened steel shaft is of substantial diameter ($\frac{11}{32}$ in. nominal), ground between centres. The intake port is a high aspect ratio rectangular slot cut with a Woodruff (key) cutter matching a similar but slightly wider slot cut in the bush. The purely circular intake tube hole opens directly into this slot which has the effect of giving extremely rapid opening and closing and no doubt contributes markedly towards the excellent high-speed performance.

The front end of the crankshaft is machined to a taper to take the dural propeller driver, stepping down to a 1B.A. threaded length. A groove is cut at the back end of the taper length, presumably to ensure that the driver cannot bind on the crankcase. The front of the taper protrudes slightly beyond the driver, which is a nuisance in that it requires the propeller hub to be counterbored or the back diameter opened out slightly to clear.

The crankshaft web is of generous thickness, machined away for counter-balance. The hollow crankpin is $\frac{13}{64}$ in. diameter, ground to finish and a beautiful fit in the connecting rod big end. Similarly with the little end bearing. There is no "play" whatsoever in the assembly. Another excellent feature of the crankshaft unit is the employment of generous radii at all changes of section.

The hardened steel cylinder has an o/d of ·687 in., consistent with a wall thickness of nearly 1/10 in. Three exhaust ports are cut through the walls and three fluted transfer passages on the inside, extending up almost to the top of the exhaust openings. The cylinder is not ground externally and the bore is ground and lapped to size. There is a certain amount of taper towards the top of the bore but the relief provided at the bottom is quite small. Exhaust timing is orthodox (approximately 140 degrees opening) and there is a fair amount of sub-piston induction.

The piston is of cast iron with a shallow conical top. Piston-cylinder fit is very good indeed. Gudgeon pin is $\frac{1}{8}$ in. diameter and a press fit. The connecting rod is machined from high duty light alloy with an oil hole feeding the big end bearing. The contra-piston is also of cast iron, quite shallow in depth, but again, obviously adequately proportioned for there was never any indication of it working back from a setting, nor was it ever stiff to adjust.

The cylinder seals on a machined ledge in the crankcase casting, being held down by three 8 B.A. screws passing through the jacket into the crankcase. The jacket itself is machined from dural to an easy fit over the cylinder. No gaskets are employed, nor is there any definite location for cylinder position. It is strictly advisable, therefore, not to disassemble the engine after running in; or if this cannot be avoided, to mark the cylinder so that it is reassembled in exactly the same position (with the piston also the same way round as originally).

The crankcase rear cover is machined from dural and screws into the crankcase, again sealing without a gasket. The spraybar is of brass, of sensible proportions, the needle lock being provided by a split brass thimble which proved fully reliable.

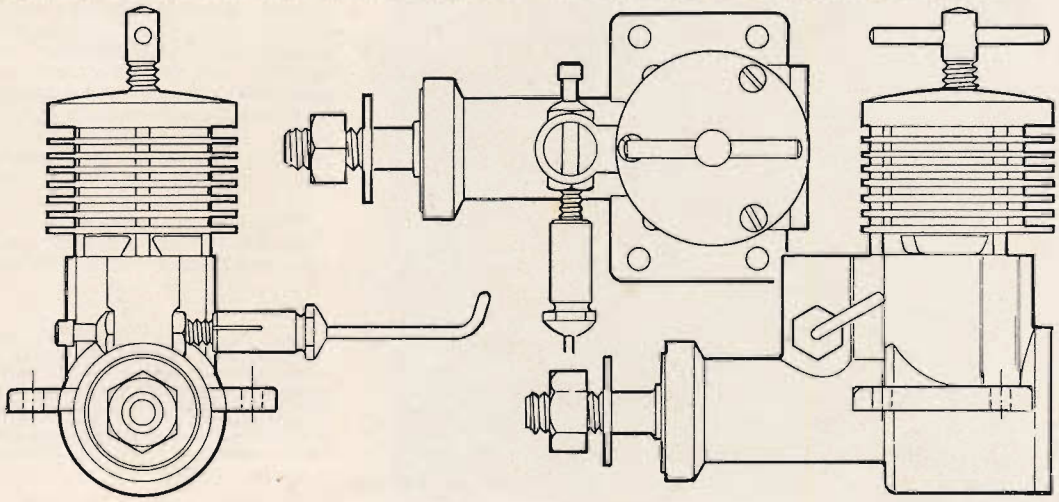
The whole engine is constructed on rugged, rigid lines, yet this is achieved without the penalty of too much added weight. Offsetting the large cut-out in the crankshaft, the generous diameter ensures adequate strength and the detail design is consistent with high shock strength, despite the fact that this unit is rendered really hard. The thick, perfectly plain cylinder should be quite free from heat distortion, which again is shown in practice by the outstanding high speed performance. And throughout, the quality of the workmanship is excellent —and thorough. Finishing the bore, for example, is no easy job with this type of internal transfer porting, yet it would be difficult to better it on the example examined.

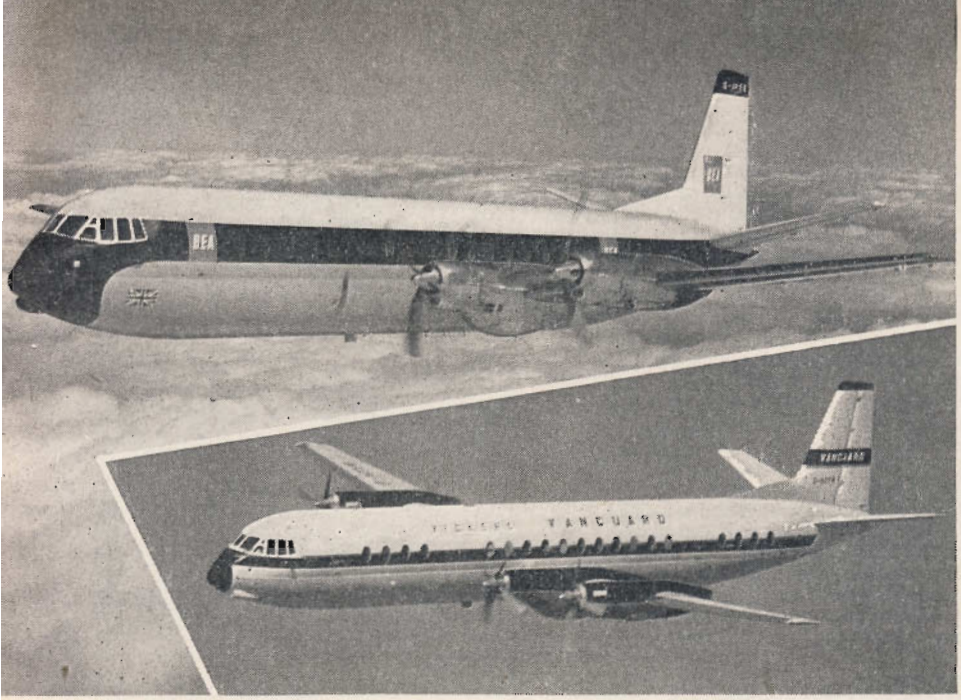
On a limited production engine like this, obviously each one receives considerably more "individual" attention than on a mass-produced article, which also accounts for the difference in price. But the ultimate performance is still dependent on the design layout. In the case of the PAW 1·49 the customer appears to be getting the best of two worlds—a design in the top class and "model engineering" custom manufacture. There may be certain variations in individual performance as a result of the production technique, but any PAW 1·49 would have to be well "down" on average standards not to compare favourably with any other 1·5 for contest

or sports work. It certainly has a "contest" performance with the opportunity of operating it at speeds up to 17,000 r.p.m. with no loss of power—and equally it is such a nice engine to handle and appears so durable that its extra cost would more than justify its selection for Sunday flying!

SPECIFICATION

Displacement: 1·473 c.c. (·09 cu. in.).
Bore: ·494 in. Stroke: ·469 in.
Bare Weight: 3¼ oz. Max. Torque: 14 oz.-in. at 7,000 r.p.m.
Max. Power: ·176 B.H.P. at 17,000 r.p.m.
Power rating: ·12 B.H.P. per c.c.
Power/Weight ratio: ·05 B.H.P. per ounce.
Material specification:
Crankcase: Gravity die-casting in light alloy. Cylinder: Hardened steel
Piston: Brico cast iron. Contra-piston: Brico cast iron.
Connecting rod: Machined from Hiduminium light alloy.
Bearing: Cast iron bush. Spraybar: Brass.
Cylinder Jacket: Machined from dural.
Manufacturers & Distributors:
PROGRESS AERO WORKS, Chester Road, Macclesfield.
Retail price £4 6s. 0d. inc. P.T. Export price £3 12s. 10d.





KEY TO VANGUARD CUTAWAY

1. Radome over cloud—collision warning radar
2. Electrically heated and demisted windscreen panels
3. Air supply duct to flight deck
4. Radio crate
5. Gravity fillers
6. Fuel jettison pipe
7. Main air conditioning duct
8. Passenger individual cold air duct
9. Wing centre section
10. Fin and tailplane attachment frames
11. Electrical de-icing (Napier spraymat)
12. Dielectric fin tip incorporating the V.H.F. and V.O.R./I.L.S. Aerials
13. Rear pressure bulkhead
14. Viscount-type windows (26" x 19")
15. Access holes to integral tanks
16. Jetpipe
17. Integrally stiffened wing torque box
18. Spring tab
19. Access panels to aileron seal
20. Three part aileron
21. Detachable Wing tip
22. Wing centre web
23. De-icing hot-air duct
24. Air intake to de-icing heat exchanger
25. Main undercarriage machined rib
26. 14' 6" diameter platform De Havilland propellers
27. Conical spinner
28. Petal type cowlings
29. Oil cooler
30. Main engine air intakes
31. Ram air intakes for intercoolers in air conditioning system

AIRCRAFT IN SERVICE

Number 8

VICKERS VANGUARD

by D. H. Cooksey

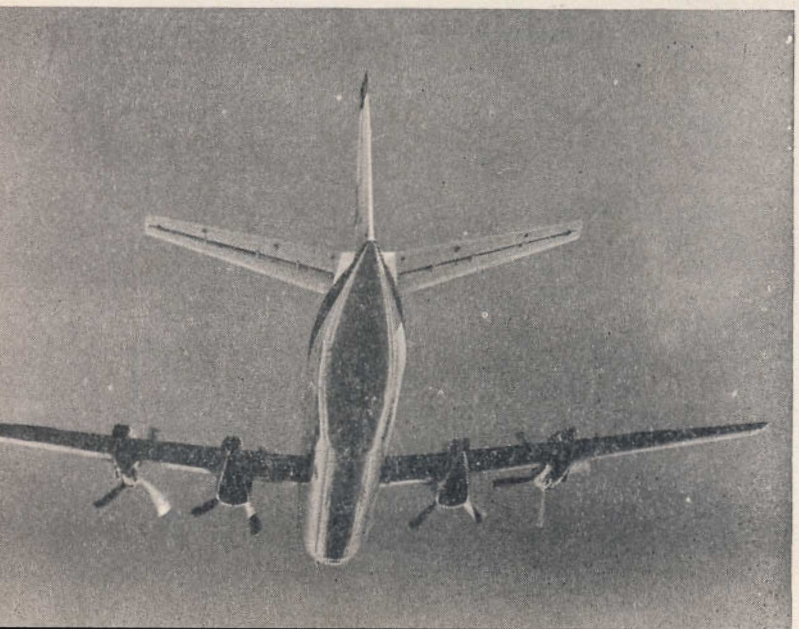
WHEN British European Airways establish the Vickers Type 950 Vanguard in airline service during the coming summer months they will be taking the first steps to proving the manufacturers' claim that this is the World's most economic and flexible turbo-prop airliner. Twenty Vanguards are on order for B.E.A. and a further 20 are due to go to Trans-Canada Air Lines, with first delivery in July. It is expected that the 425 miles per hour cruising speed over short to medium hauls will offer as good, if not better, block speed (take-off to touch down) than the faster and more expensive pure jets.

Moreover, the high density seating version for no less than 139 passengers can offer remarkable economies in operation with a strong case for air fare reductions.

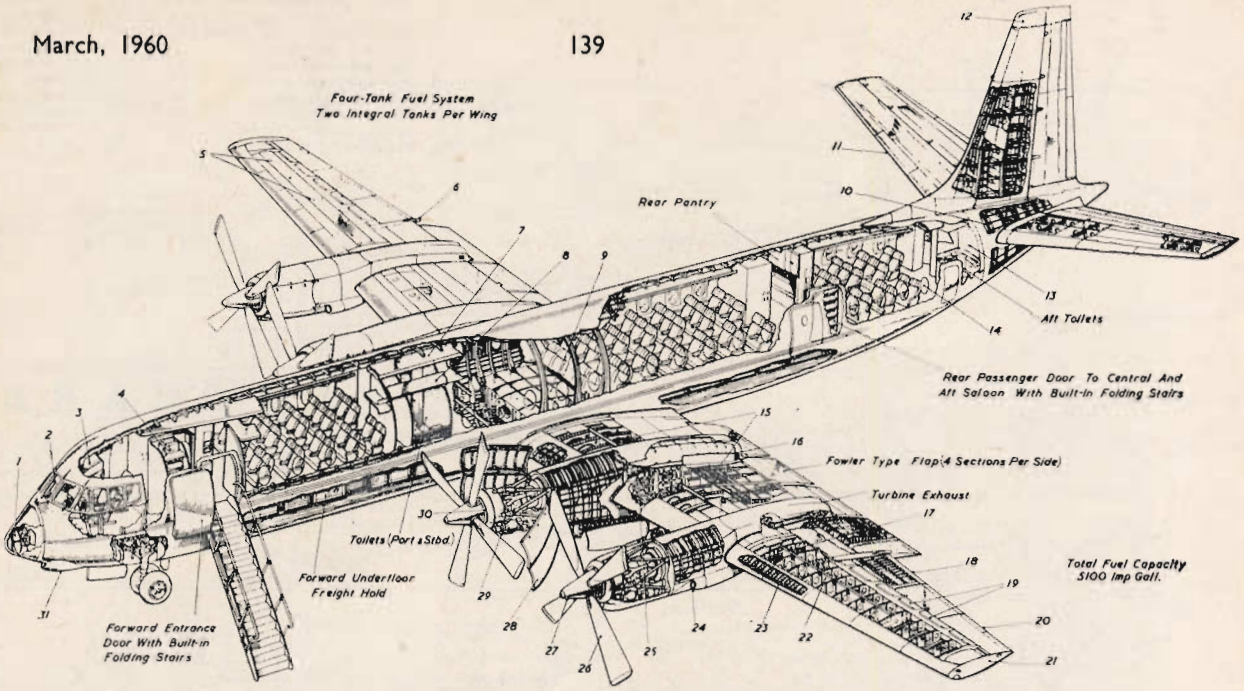
Already the Vanguard has proved itself in a series of trial flights from London to European centres. When the first B.E.A. Vanguard (G-APEA) flew to Hamburg in early May, 1959, it created a record block speed. The first Vanguard, G-AOYW (which was not a prototype because it was built on production jigs), was taken out for engine tests on December 4th, 1958, and left the Brooklands runway for the Vickers test centre at Wisley on January 20th, 1959. At the time of writing five Vanguards are flying and production rate is steadily speeding up. Incidentally, the approximate cost of each aircraft including adequate spares supply is £1,000,000.

The T.C.A. order was placed after one of the most exhaustive analyses ever undertaken and remembering that it was very much due to the Canadian exploitation of the Viscount that gave Vickers such a boost in the commercial use of the Vanguard's predecessor, it is not unreasonable to suppose that once this large turbo-prop has proved the claims for economy, Vickers order books will be filled with the names of other airlines. Production rate is scheduled to rise to three per month and the recent tropical tests throughout Africa have shown how the Vanguard can more than match its closest rival in all conditions.

Obviously the design of the Vanguard is based upon the most successful Viscount series of which



Heading photograph compares the first Vanguard colour scheme with that to be applied to B.E.A. aircraft. Full details are given on the drawing for those who wish to model either version. Rear view at left, and Farnborough display landing at right, emphasise the double bubble fuselage section, generous dihedral angles on wing and tail, and constant chord flaps



some 415 examples have been purchased for service throughout the world. The Vanguard was intended from the very first to be a workmanlike successor capable of carrying a 21,000 payload at lower cost than that of the Viscount operation and to fly from 2,000-yard runways. Double-bubble section fuselage offers enormous freight volume at a very small penalty in cruising speed and a generous dihedral on both the wing and tail have been incorporated to give a minimum effect on stability with changes in engine power. Some 22 models were used in the initial development stages, with the result that modifications after air tests have been only of a minor nature.

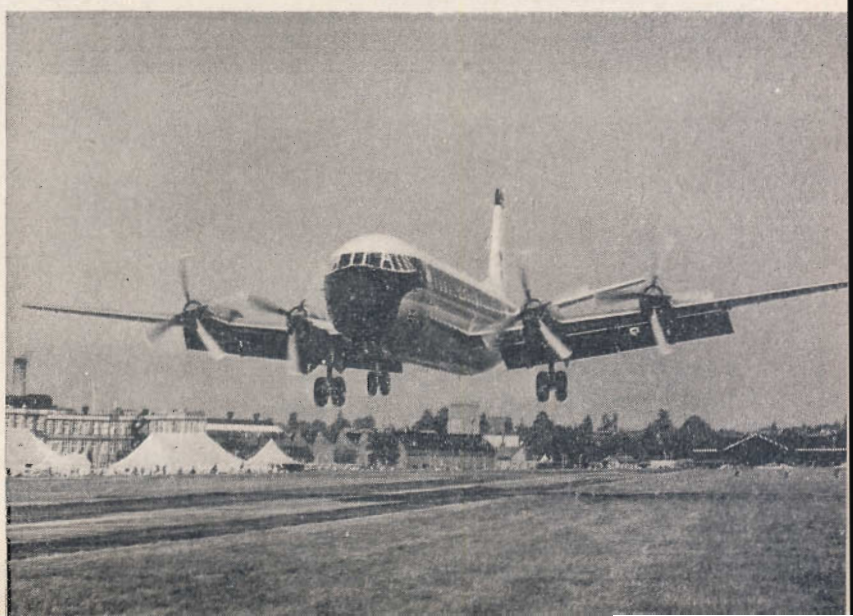
Constructionally, one of the most interesting features of the Vanguard is the use of integral fuel tanks, a complete departure for the Vickers Company which called for extensive machined skinning. One particular wing panel is 28 ft. 4 in. long, 28 in. wide and 2 in. thick before machining and its original weight of 2,000 lb. is reduced by a very high percentage before application to the wing structure. These solid panels, forming a box with the two vertical spare webs are completely sealed to contain fuel right out to almost the wingtip. Fuel is in fact carried practically over the whole span with the exception of the wing centre-section within the fuselage.

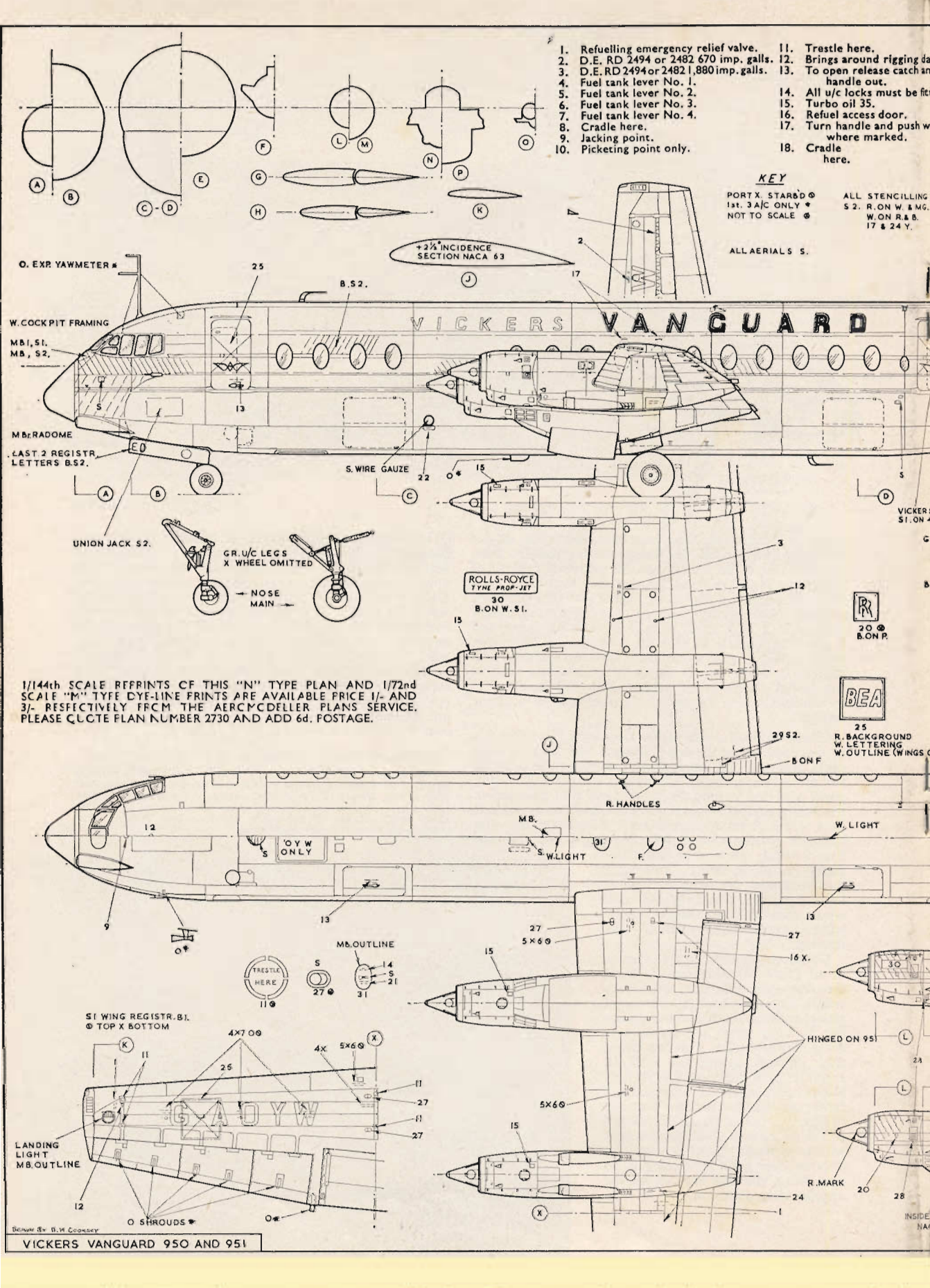
Controls are completely manual in all cases following directly from the valuable Viscount experience which dispensed with all forms of power control and hence the reason for the large servo and spring taps on the trailing edges. This has meant that through spring tab control, elevators and ailerons are in fact independent of one another and not cross connected. Another example of simplification is the use of constant chord wing flaps of the Fowler type which operate parallel to one another over their four sections on each wing, and this has created the angular wing planform.

The Vanguard has been designed basically to carry two passenger classes divided by a detachable bulkhead and seat arrangements are such that many variations can be applied with as many as six variable positions for the dividing bulkhead. A standard version with three cabins will carry a total of 96 passengers with mixed four and five abreast seating. In the high density arrangement with as many as 139 passengers, seating is six abreast and with seats arranged at wider pitch, the same six abreast arrangement is used in a 120-passenger version. This aspect of passenger class balancing in today's airliners is a little appreciated side of airliner operation and seating arrangements can be changed to suit the particular route over which the aircraft is likely to be flown.

DATA

Four Rolls-Royce Tyne engines, 5,030 s.h.p. plus 1,240 lb. residual thrust. Four-bladed de Havilland 14 ft. 6 in. propellers. *Dimensions:* span 118 ft., length 122 ft. 10·4 in., height 35 ft.; gross wing area 1,529 sq. ft. *Performance:* Crusing speed 425 m.p.h. at 115,000 lb. all-up weight. Range (84 passengers and four tons freight) 1,750 miles; with 86 passengers 2,340 miles.





1/144th SCALE REPRINTS OF THIS "N" TYPE PLAN AND 1/72nd SCALE "M" TYPE DYE-LINE PRINTS ARE AVAILABLE PRICE 1/- AND 3/- RESPECTIVELY FROM THE AEROMODELLER PLANS SERVICE. PLEASE QUOTE PLAN NUMBER 2730 AND ADD 6d. POSTAGE.

Drawn By B. M. Cooksey

VICKERS VANGUARD 950 AND 951

19. Fire access doors.
20. Rolls-Royce plate.
21. Press and turn to open.
22. Toilet water.
23. Weight empty 89,733 lb.
Weight empty 40,702 Kg.
Max weight 131,000 lb.
Authorised 59,420 Kg.
24. Fuel feed line water drain valve.
29. No step.

datum.
and pull
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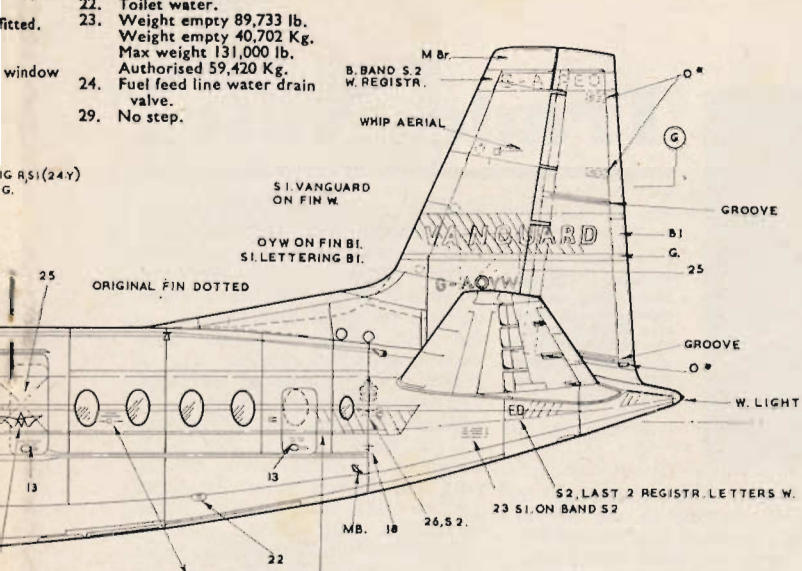
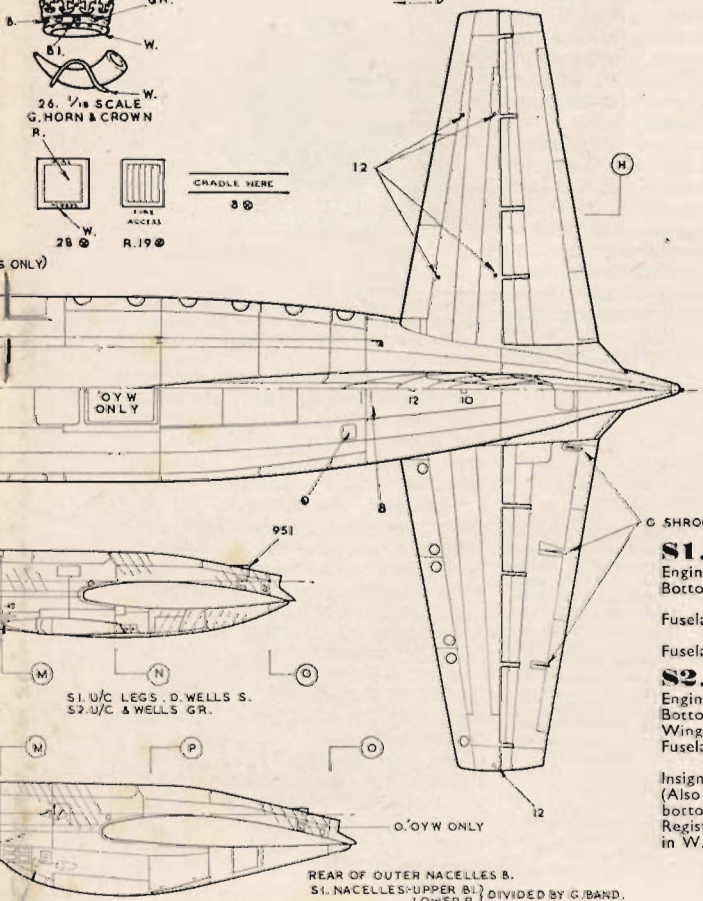
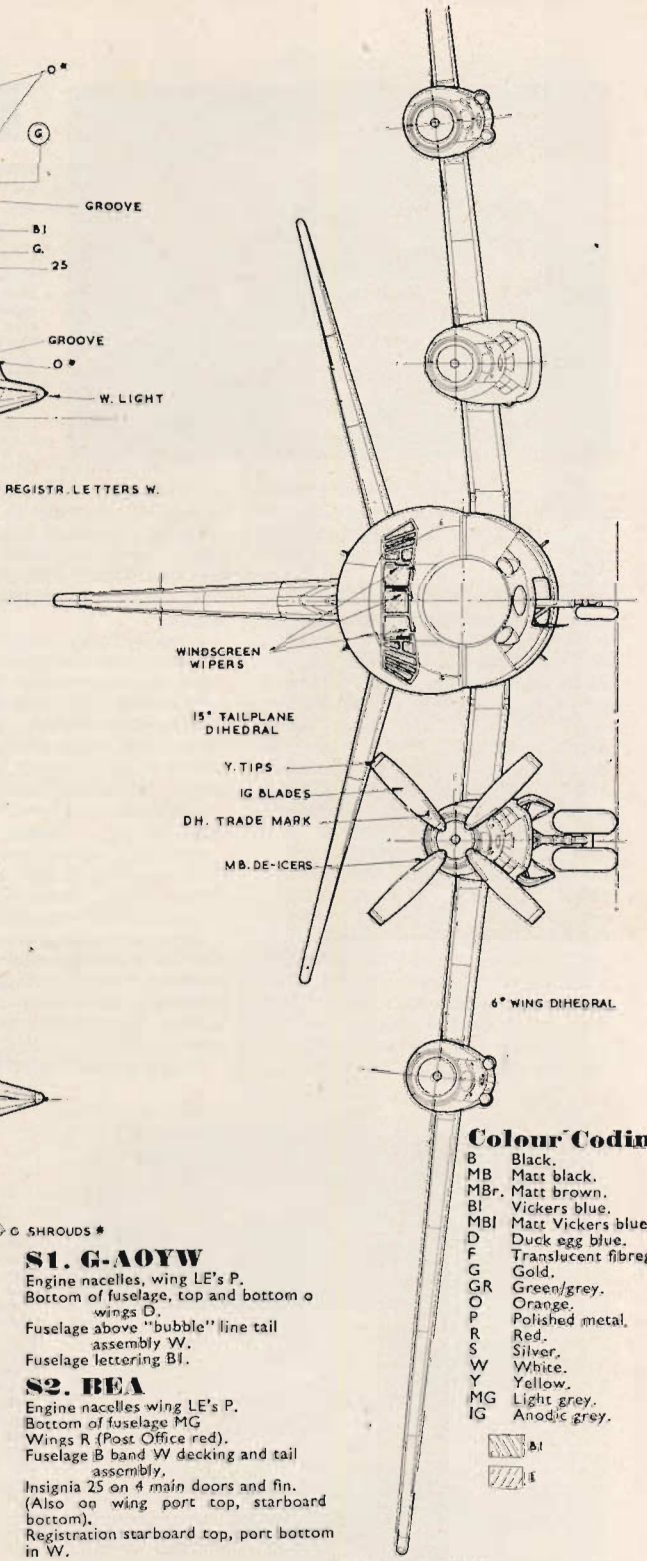
window







S1. G-AOYW

Engine nacelles, wing LE's P.
Bottom of fuselage, top and bottom o wings D.
Fuselage above "bubble" line tail assembly W.
Fuselage lettering Bl.

S2. BEA

Engine nacelles wing LE's P.
Bottom of fuselage MG
Wings R (Post Office red).
Fuselage B band W decking and tail assembly.
Insignia 25 on 4 main doors and fin.
(Also on wing port top, starboard bottom).
Registration starboard top, port bottom in W.

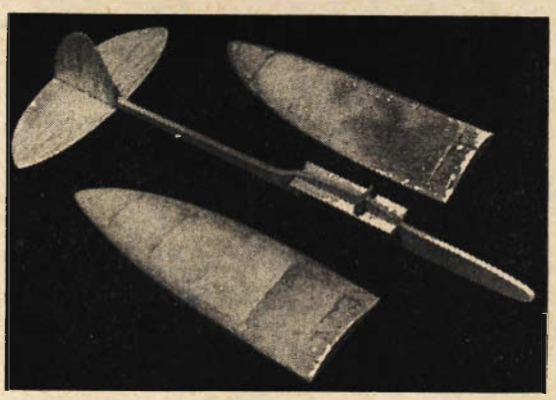
Colour Coding

B	Black.
MB	Matt black.
MBr.	Matt brown.
Bl	Vickers blue.
MBl	Matt Vickers blue.
D	Duck egg blue.
F	Translucent fibreglass.
G	Gold.
GR	Green/grey.
O	Orange.
P	Polished metal.
R	Red.
S	Silver.
W	White.
Y	Yellow.
MG	Light grey.
IG	Anodic grey.

Bl
F

FT.

Trade Notes



Yeoman Clipper before wing attachment showing wing root dihedral keeper and platform. Wings are covered on top surface only with tissue.

We have just experienced a great deal of pleasure making up the *Yeoman Clipper* kit produced for 6/11 retail by **A. A. Hales Ltd.** Photo above shows the model at the stage where we covered the wings prior to assembly on the fuselage mounting, and as can be seen, nothing is left to chance in this 22-in. span glider, with all parts jig-fitting together in a manner which the makers are calling "Automatic" assembly. What might not be readily appreciated is the admirable thought behind this design, which is aimed at providing the young modeller or beginner with something that is specially easy to build, is prefabricated, yet calls for tissue covering, and is tolerant enough in its design and assembly method to guarantee good flight performance regardless of the standard of modelling. Wing structure is particularly interesting in that it is made over a sheet planform, with edges and ribs superimposed and tissue covering limited to top surface only. This is enough to initiate the novice in the art of covering, without frightening him off . . . and we need hardly add that the Clipper flies extraordinarily well, especially from a catapult launch.

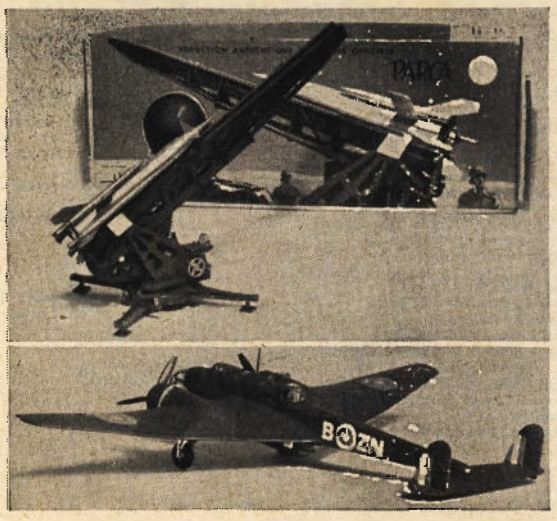
Looking for screwed rod, assorted nuts and bolts, shimstock or paxolin? Then we suggest you drop a line mentioning this column to **K. R. Whiston** of 8 Watford Bridge Road, New Mills, Stockport, asking for his 28-page listing of thousands of useful modelling items in surplus aircraft material — it's a treasure chest for the enthusiast.

LePage's have just introduced their shilling tube of Sure-grip Plastic Wood. Natural colour is just a shade darker than balsa, on which it keys well. Being cellulose base it will thin easily, and our tip for getting a smooth surface to eliminate sanding is to smooth it down with a wet finger when moulding the wood to shape.

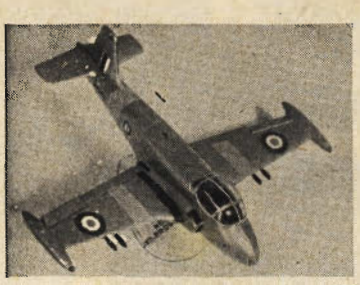
Frog's 1/99th scale Handley Page *Hampden* and 1/115th *Wellington* are attractive W.W. II additions to their 3/6 range of plastics, while the *Dragon Rapide* (1/68th) joins the range as a "civvy" and the *Lancaster* (1/96th) comes at 6/6. The pity of the new series, beside the scale variations, is the apparent lack of research for authentic markings. The Hampden carries correct B-ZN squadron marking for 106 Squadron on the starboard side, but needs correction, as on our photo, for the port side. Letters should be either grey or red. Same applies to the Wellington with WP-F markings for 90 Squadron. With the Lancaster we have a choice of WP or VN for 90 or 50 Squadrons with correct disposition of the letters: but scale adherents will positively cringe at the thought of putting G-AGUK on their Dragon Rapides for that was the dismantled Lancaster with Lancastrian nose observed by so many modellers when Northern Heights Gala was held at Langley! So if you have both kits, you could paint the Lancaster silver as "Star Gold" in the British South American Airways fleet and use the fictitious "Rapide" transfers!

Venner "Memo-Park" 0-60 minute timer weighs ¾ oz., costs 29/3d, is worth investigation for d/t work, has 1 in. travel on snap-off action, we are experimenting with one.

When such colourful Rapides as 'HKV in Automobile Association black and yellow, 'HLL, 'FEZ, 'HKU in B.E.A. maroon, white and silver, or OO-AFG in Avions Fairey's flame and white are so well known, it seems incredible that the manufacturers should not take advantage for sales appeal. Other than these points, International Model Aircraft Ltd. are to be congratulated



Left: Heller Parka missile and launcher has operating elevation control, and rotates. Kit sells in Guernsey at 9s. 11d, was sent to us by Fletcher's, the model shop on that Island: but the Etendard by same manufacturer defeated us! Below is Frog Hampden with re-arranged lettering (See text)



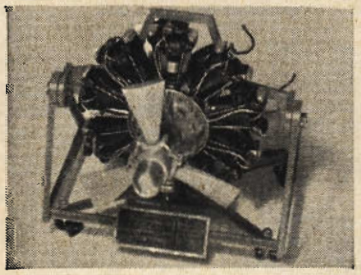
Airfix Jet Provost III painted in trainer markings used in 1959

on a really fine plastic model of the Queen of biplane airliners.

KeilKraft's 44-in. *Gaucho* free flight contest power kit for 1·5 c.c. is on the AEROMODELLER building board, and at 21/6 we rate this design highly for its many practical features. Flat bottom airfoil, warp proof tail structure, simple fuselage and rear-mounted fin are easily made through high standard of die-cutting, and first class plan.

New from **Airfix** is the 2/-'1/72nd *Jet Provost III* with ejector seats, new hood and curved screen. Advised colour scheme is now outdated — refer to R.A.F. Aircrew recruiting advts. for the latest nose/tail/tip fluorescent paint application, and if you want to be different, use the new scheme but on light grey airframe for Hunting's civil demonstrator Mk. II, G-AOUS (in black across fin base). For flying scale as well as plastic fans, the **Monogram** *Wright Cyclone* is the last of three outstanding American kits to arrive since our forecast of last August. To accurate 1/12th scale, weighing 1¾ oz. (for scale model installation) and with one cylinder cut away for working piston, it can be (and we have) motorised with a Jap electric motor, for which the moulding is specially shaped. A spare cylinder half is included for those who don't motorise and kit price is 23/4, less motor; 34/2 with.

Veron's Colt Trainer is introduced by an enterprising competition, details of which have been given in their advertisements. Any person with the slightest knowledge of aeromodelling and enthusiasm to take up the hobby can assemble this kit to the stage required and qualify to win an engine, should their certified time to construct be among the fastest of the month. Finishing and flying is quite simple for the beginner. Engines are being awarded to the quickest builders, each month, by **Electronic Developments** and if one *is* lucky or quick enough to win a "Bee" a Colt Trainer can be built for about 30s.

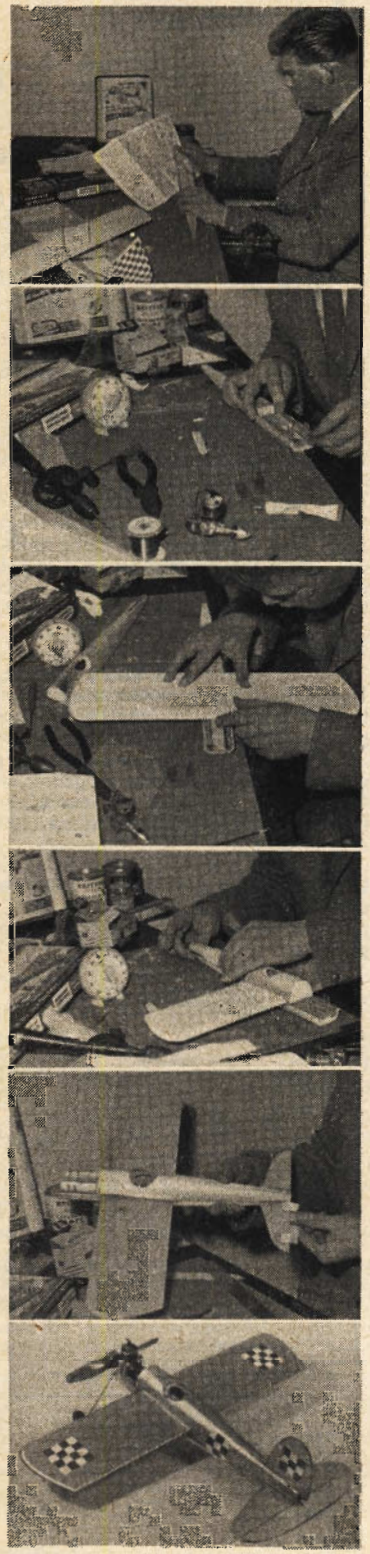


The COLT kit deserves a description because of the degree of prefabrication. To start with, the all-balsa parts are cut and shaped to a high standard. Examples of this are the aerofoil section shaped wing and oval section hollow fuselage halves. The problem of bending and fitting the u/c is eliminated in the kit, for the sponge rubber wheels are ready-retained and wire is pre-bent. Attachment to the model is by means of looped ends that simply fit over the engine mounting bolts.

Constructionwise, the model goes together well, in a time slightly longer than that claimed by Veron— 1 hr. 14 mins. This difference in time (only a few minutes) on our model was due to the fact that we went a stage further than required and bolted the engine in place. It should be noted that in the competition time taken to complete the model *does not* include painting, decoration, engine mounting etc.

Actual construction is very simple and is shown well by the photographs. A few notes on one or two points might help other Colt builders. Firstly, when fitting the engine, do not be tempted to hollow out the forward fuselage to take the crankcase flange of the "Bee"; u/c wire loops lift the engine up sufficiently to clear the fuselage. Another point to watch is that your tape hinges are correctly alternated.

To finish the model only requires light sanding overall, brushing on a few coats of sanding sealer, then colour dope and transfers. The model flies well and is an ideal trainer enabling the beginner to learn quickly—our's was tested on a limited 17 ft. radius and the "Bee" performed perfectly using its standard tank. The ease and speed of construction, together with the very low cost to get airborne (assuming one wins an engine!) that is possible with this model, make it a specially suitable subject for the newcomer to aeromodelling.



Left: Monogram's Wright Cyclone on its stand with motorising drive to working piston and prop. Right, Mike Farmer makes our test Colt in 74 minutes, with another couple of hours for dope and decoration. Pinger kitchen timer registered Zero for top study pic, 13 mins to bearer fitting, 23 to wing fix, 27 to fuselage top addition and 46 to control hinging

Dave McQue's

SIMPLETONE

transmitter

Since publication of Dave's Crystal stabilised OXO tin tone transmitter circuit last August, we have been plagued with requests for a "how to do" feature. This is "it" for the tone fans. For Dave's explanation of crystal control— see August, 1959, issue.

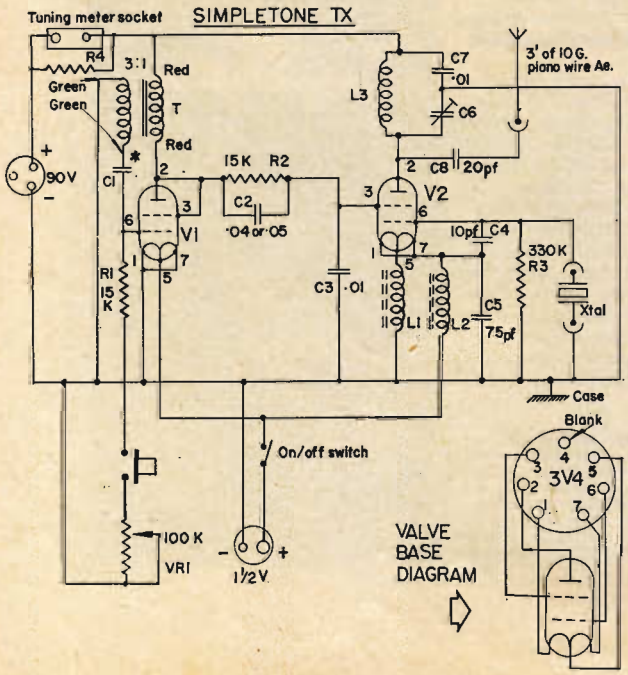
Carefully plan out the chassis and cut to size. Cut back side flanges to allow them to tuck in when bent. Overall flat panel should measure 2⅜ in. x 5 in. with ⅜ in. flanges at sides and one end, 1¼ in. on the end to carry C_6. Mark out and drill all holes before bending. Note the fixing holes for C_6 will depend on the particular capacitor used. Also the valveholder fixing holes should be marked out, using the valveholder as a template so as to align the pins as shown in the wiring sketch. Use a penknife to remove all burrs. Sketch opposite is actual size.

Wiring

Fit the valveholders with a solder tag adjacent to pin 1 or 7. It is best to solder a bit of wire to these before bolting down as the chassis conducts heat away and prevents a good joint being made *in situ*.

Before fitting C_6, solder its moving plate brush to one of its metal standoff pillars together with one end of C_7. Lead length of C_7 will not exceed ¼ in. when finished (this job is not practical without a 120 watt iron when C_6 is in position).

Bolt down the transformer using the bolts to mount the two strips underneath. Use shakeproof washers under all nuts to ensure security. Fit C_3, connecting it to pin 4 as well as pin 3 of V2 and keep leads as short as possible.



How it fits in the OXO tin—batteries need foam packing and in this view, valves and Xtal are detached. Meter socket is at lower left side. Tuning hole half way up same side, switches on front face

Connect pin 5 of V1 to tag 3. Connect R_2 in parallel with C_2, between pins 3 and 4 of V2 and pins 2 and 3 of V1. Connect one red transformer wire to pin 2 and 3 of V1 also connect R_3 across Xtal holder using ends to connect to earth at one end and pin 6 of V2 at the other.

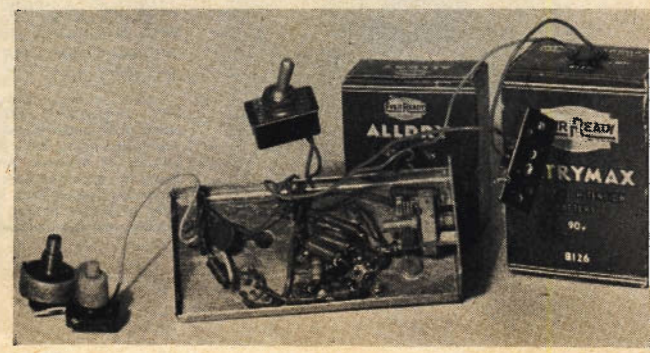
Connect L_2, C_5 and C_4 to pins 1 and 7 of V2, then connect other ends of L_2 and C_5 to tag 2 and other end of C_4 to Xtal holder and pin 6 of V2. The rest of the components associated with V2 can then be assembled as illustrated. C_1 and R_1 are connected to pin 6 of V1 then the other end of C_1 goes to tag 4 and other end of R_1 to tag 6. As the leads may require reversal to get V1 to oscillate when the button is pressed, do not cut the green transformer leads but temporarily connect one to tag 5 and one to tag 4. Note that the earth return from VR_1 is made via the case. This can be safeguarded by a wire from tag 5 to VR_1.

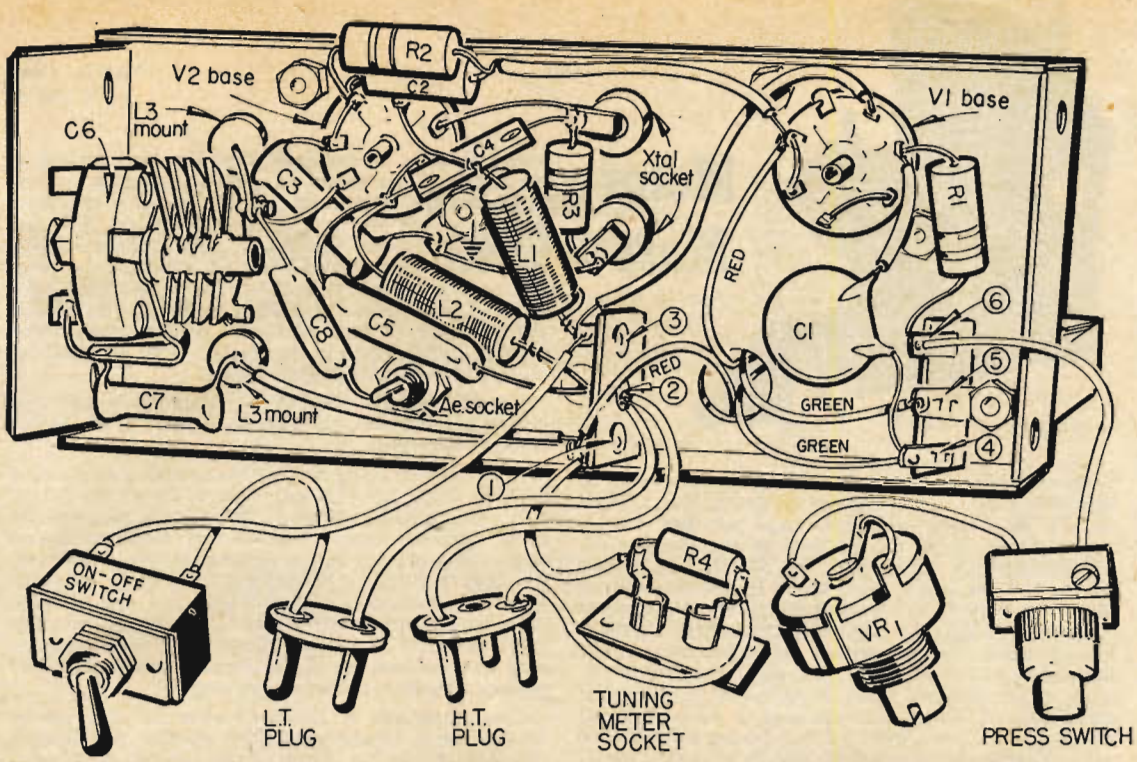
Testing

When the Tx is complete, insert one valve in V1 valveholder. Connect LT (AD 35, 1.5v) and switch on. Check the valve filament glow and if satisfactory insert a 5ma meter in the meter socket. Set VR_1 midway, connect HT battery. If the meter reads full scale switch off, and reverse transformer green leads, if it reads zero press the button when a tone should be heard due to vibration of transformer windings. Meter reading will vary between 2mA to over 5mA depending on the setting of VR_1. Highest notes take highest current.

Switch off and disconnect HT. Insert V2, switch on and check that V2 filaments glow. Insert Xtal and connect HT, if all is well, current reading will be around

Underside of Simpletone when removed from OXO tin, showing component layout as sketch opposite which is actual size

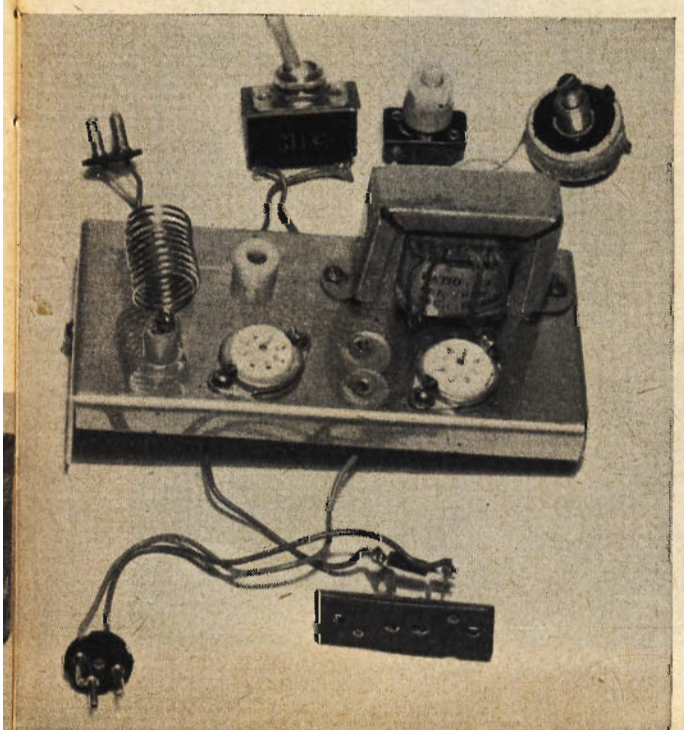




4mA. Carefully rotate C_6. When at between ½ and full mesh a dip in the meter reading will be obtained. Note that when the aerial is fitted, the dip will occur at a different (reduced mesh) setting of C_6 due to aerial loading. The dip will then not be so pronounced. The position of the meter socket relative to C_6 is so arranged that this adjustment may be carried out with the Tx held normally but turned on one edge. The tuning meter is then removed for normal operation. To tune a receiver to this Tx, first start with full aerial on Tx. Having located the tuning point on the Rx tuning, remove Tx aerial to make final adjustments with Rx and Tx well apart. Maximum range with aerial removed will only amount to a few feet, but that's all you need to do with this handy OXO tin sized crystal stabilised transmitter.

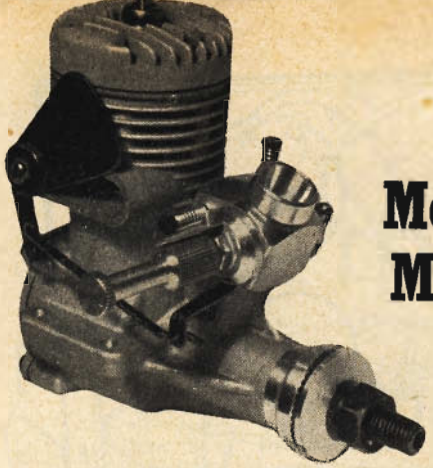
Photos show how the base fits happily in a standard 2½ x 5 x 6½ in. OXO tin (most grocers are pleased to dispose of them) with B126 and AD35 batteries. The various switches, and VR_1 are accommodated so that they come handy on the one face of the tin except for the meter socket which is on the same edge as C_6, self tapping screws being used throughout.

Below, topside of transmitter, less crystal and valves. Note socket for aerial and home made polythene coil supports. Set suits all tone receivers



PARTS LIST

OXO tin for case; 6¾ in. x 3 in. 18g. Aluminium for chassis.
2, B7G valveholders preferably ceramic or P.T.F.E.
2, Valves 3V4 (V1, and V2); 1, Transformer "Radiospares" miniature 3 : 1 (T).
1, Xtal in range 13,480 Kc/s to 13,640 Kc/s or (8,990 Kc/s to 9,090 Kc/s).
1, Xtal holder to suit. 2, 15K ½-watt 10% resistors R_1 and R_2 (brown, green, orange, silver).
1, 330K resistor ½-watt 10% (orange, orange, yellow, silver) R_3.
1, 47 ohm resistor ½-watt 10 or 20% mauve, yellow, black R_4.
VR_1, 100K potentiometer ½-watt (tone frequency control).
C_1 Capacitor in range 0·003 mF to 0·01 mF depending on range of modulation tone frequencies desired, *smaller* value gives *higher* frequency tone.
If it is found that the Rx responds best to a high note, *i.e.*, VR_1 at its minimum value, reduce C_1 to raise the range of tones obtainable by adjusting VR_1.
C_2 0·04 or 0·05 150V or 200V working metalised paper capacitor.
C_3 and C_7 0·01 High K ceramic tubular C_4 10pF silvered mica capacitor.
C_5 75pF silvered mica capacitor. C_6 30pF airspaced variable preset.
C_8 20pF silvered mica. Two, "2 amp" Neosid choke cores. L_1 and L_2. 2 amp Radiospares, TV interference suppressor chokes can be stripped and rewound. Closewind full 28 to 32g enamelled wire.
L_3, 10 turns 18g enamelled or bare closewound on a pencell as a mandrel and then gently stretched to achieve overall length of 13/16 in.
Push button. Single pole single throw Q.M.B. (quick make and break) on/off switch, 2 pin socket, 2 pin plug, 3 pin plug.
Aerial socket is standard Radiospares banana plug socket, two more could be used as feed through insulators for L_3 in place of the polythene taken from ex-Govt. Surplus Co-ax. Cable (Uniradio 1) used in originals.
2, ¼ in. rubber grommets, one required for aerial passing through case, and one for transformer leads through chassis.
2, 3-way tag strips (Radiospares). 2, solder tags.
6, 6BA x ½ in. R.H. screws. 6, 6BA nuts.



Motor Mart

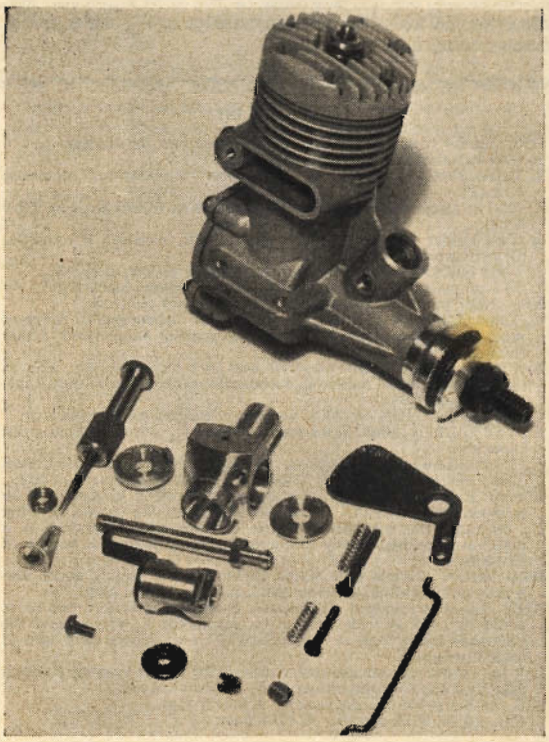
TWO NEW sources of engine manufacture have come to light this month, the first from Australia. Des Latham and D. W. Meany of Sydney have put their 10 c.c. racing motor, based on the lines of the Dooling 61, into limited scale production. The bore is 1 in., stroke ·75 in. and the price, £30A which is said to compare favourably with the £60A asked for the Dooling product in those parts. The other new engine comes from Northern Ireland where Pat Armstrong has produced a most successful prototype for his 2.5 c.c. diesel which embodies some of his patented ideas on induction, transfer and speed control. These ideas are said to have produced 12,000 r.p.m. from a Mills 1.3 c.c. driving a Frog 8 x 6 nylon prop.—a figure which we venture to suggest would be very good for many a racing 2.5 c.c. engine! Few details are as yet available, but one unusual aspect will be that the rotary intake will be to the side of the crankcase as on the American Cannon 300.

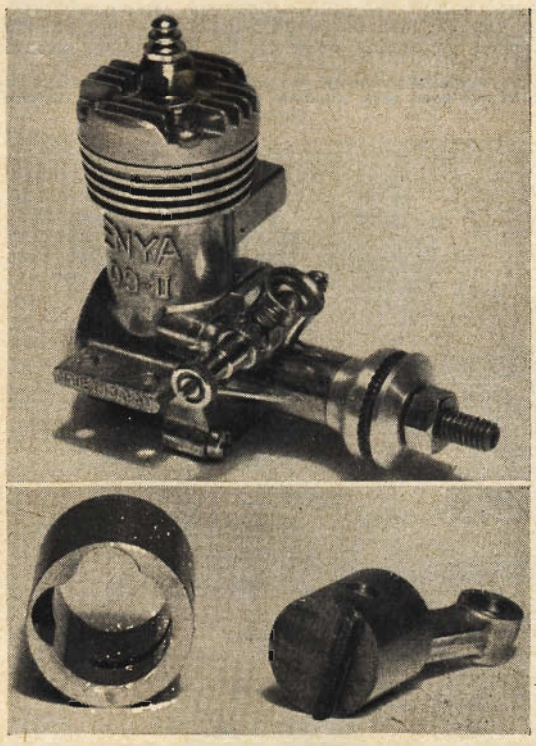
From established manufacturers, we have had the opportunity of examining the new **Merco** Multi-speed 35 which is illustrated here, showing its coupled exhaust/intake controls. Tremendous effort has been applied to the design of this motor to more than match its contempories, and air-proving tests by Stewart Uwins have shown that Bill Morley and Ron Checksfield of Merco have really produced the "goods". This radio or control-line version will sell at £7 12s. 6d. including the plug, and an example of its performance is flexibility from 2,000—11,500 r.p.m. on a Frog nylon 10 x 6 without any tendency to stall, and with perfect proportional control. Incorporated in the throttle is an air-bleed for idling and a stop for minimum slow.

Considering the number of components and the quality of its control, the increase in price for the Merco is most reasonable.

From **Enya** in Japan we have been running an example of their latest .09 (1.6 c.c.) Mk. 2 illustrated below, right. Most striking feature of the engine is the simplicity of the cylinder barrel with its very thick walls and completely orthodox transfer/exhaust porting. From new, the Enya 09 turned a Frog nylon 7 x 4 at no less than 14,000 r.p.m. using KeilKraft Nitrex fuel and an A.M. "A" type plug which suits it best. In spite of the extremely short induction throat, the Enya has good suction, is easy to start and has all the fine characteristics of its predecessors from the same company.

Congratulations to **Davies-Charlton** for their introduction of a 52-page miniature booklet providing a complete guide to model diesel engine operators! Copies of this handbook are given free with every Davies-Charlton diesel and by following the well illustrated text the raw beginner should have no difficulty in starting his engine. Special emphasis is laid upon the correct use of the *Quickstart* spring and drawings show ideal method of engagement on the propeller or driving claw.





READERS' LETTERS

More on Met

DEAR SIR,

I read with interest S/Ldr. W. Drinkell's "reaction" to my short article on the utilisation of a cold front. Since the weather is a much-abused (though not this past year) but little-studied factor of model flying, and its discussion can only serve us all, I should like to remark briefly on some points in S/Ldr. Drinkell's article.

S/Ldr. Drinkell seems to me to oversimplify and typify somewhat. He says he is not certain whether the front "was indeed typical of those in the northern hemisphere". Of course not! If it were, no modeller would have been able to utilise it. Moreover, he seems to crash through an open door, being "inclined to think that the front was very weak". But that was just what I had stressed in the article and had found out with the aid of my model ("Evaluation of these data show that the front was not of a very active kind, neither in horizontal nor in vertical velocities")! On considering meteorology as an aid to modelling, one has always to take into account that one is dealing with models, not with full-sized aircraft, as well as being handicapped by the necessity of following the model. A *typical* strong front, would therefore, never suit the purpose. And this, I believe, is a point to be borne in mind, a point which I have also tried to stress in one of my books*.

The synoptic chart accompanying my article shows an *actual* frontal system, whereas the sketch by S/Ldr. Drinkell is a typification, found in any Met. textbook, although quite similar to those frontal systems coming in from the Atlantic and crossing the British Isles. However, the cross-section X-Y drawn by him is quite misleading, again being simplified: the slope of the fronts is exaggerated some twenty to fifty times!

Yet I, too, agree with the conclusion drawn by S/Ldr. Drinkell in his last paragraph. A study of the weather is most important, and therefore he did well to bring the illustrative material as well as the chart.

I should be most interested to hear from other modellers who have tried "flying the weather".

Jerusalem, Israel. N. KADMON.

* "Meteorology", Tel-Aviv, 1953 (which serves as the standard met. textbook in Israel.)

Following receipt of this letter, we have given our contributor, Sqdn./Ldr. W. Drinkell, D.F.C., A.F.C., the opportunity to provide the following reply:

May I say that I agree with everything Naftali Kadmon has said in his letter. My "reaction" to the original report was based not on any theoretical or text book concept of frontal systems but on a healthy respect of cold fronts from full-size aircraft experience. I am sure Kadmon would agree that it would be extremely unwise to state categorically in black and white just what weather could be expected from his chart without more information, and for this reason the introductory cross references in my article - "British Weather" were an expression of my opinions.

The slopes of the fronts may be misleading but they were diagrammatic and the distances were stated in the text as up to 600 miles for the warm front and 50 - 100 miles for the cold front. Indeed, when reading the proofs before publication I pointed out the same observation to the Editor, but we agreed that in conjunction with the text it might not be so confusing.

As for the synoptic chart — it was a typification! But by coincidence I am attaching the chart published in today's (21/1'60) edition of the *Daily Telegraph* (*strikingly similar*—ED.). Moreover, in the past two months we have had several cycles of such systems pass over us and the cold fronts have thrown the text book at us with hail and thunder!

The most important aspect of all this is, of course, the weather is the element in which we fly our models, and it is worthy of more attention than merely a fleeting glimpse through the club window.—

SQDN./LDR. DRINKELL

F.A.I. Rule Changes

DEAR SIR,

I have a few observations on the recent F.A.I. meeting reported in your Janauary edition. Firstly, I feel that only in the course of World Championships for A/2 gliders being held in exceptional weather is there any requirement for the "flying-off" rule to be changed. For bad weather and minor events, the existing rules are satisfactory.

Secondly, if one assumed that the rules would be changed so that in a normal competition only those achieving maximums scored in each round could proceed to the next round, the natural reaction from everyone would be that it would amount to no more than an unsatisfactory gamble. Yet we do this when adopting the current proposition for repeated three-minute fly-offs!

Thirdly, it would be more fair to fly another three rounds (a fixed number with perhaps 3½ or four minutes as a limit).

Fourthly, in my estimation, should the Italian proposal to increase glider weight to 28 gms. per square dm. be carried through, then do the Italians realise that the minimum towing speed required will be in the vicinity of 8 m. per sec. and could they suggest who might be capable of running 100 m. in 12·5 secs. over a grass field in still air conditions?

Bromma, Sweden. H. THOMANN.

12th New Zealand Nats (Cont. from page 131)

F/F Scale.

Was held during the morning but owing to the writer assisting club members this event was missed.

Results

R. Fleet ...	... Auckland	...	69½ points
A. Stace ...	... Christchurch	...	56 points
B. Shackell	... Timaru ...	...	55½ points

The week was now drawing to a close and on Friday, January 1st, 1960, **Payload** got away to a late start at 6.35 a.m. owing to over indulgence at new year celebrations. Many modellers were wearing dark glasses to shield their eyes from the bright sunlight. Wind was quite strong, even in the first round and many models eliminated themselves. Nearly all were American .049 powered designs and being small disappeared downwind very quickly. Once again the drift was towards the gorse. By the 5th round very few models were left.

Below, left, P. Levet who placed second in Wakefield. Centre, J. Fougere's pulse jet powered scale F100 and right, D. Kennedy launches his Wakefield entry

P. Graham	... Wellington	...	553·7 secs.
N. Hewiston	... Auckland	...	531·8 secs.
B. Stanish	... Auckland	...	514·1 secs.

In the afternoon conditions were atrocious for A/1 glider with the wind increasing to about 30 m.p.h. It was a case of the survival of the fittest as follows:—

R. Lewis ...	... Auckland	...	412·1 secs.
N. Hopley	... Roskill ...	...	395·3 secs.
B. Keegan	... Auckland	...	345·0 secs.

Championship winning club was Auckland once again with 592 points and Kaipio, runners up with 199 points, were well behind. Champion of champions was once more J. Winn, Auckland, with 111 points, and N. Hewitson 2nd with 95 points. Junior champion was P. Levet of Auckland with 113½ points.

At the prize giving it was announced that N.Z. would, for the first time participate in the world power championships. The team announced was: J. Winn, Auckland, N. Hewitson, Auckland, and J. Sheppard of Papakura who is already in England. This brought to a close a happy but most tiring Nationals.

I. S. Cameron's prize-winning model which has earned many honours in northern events compares with the British registered Cessna Airmaster below, on the Croydon tarmac.

Cessna C-34

by I. S. Cameron

THIS CLEAN, HIGH wing cabin monoplane by Cessna has always been regarded by "old hand" aeromodellers as an ideal subject for a flying scale model, with its well proportioned lines and lack of struttery. It is therefore, very surprising that among the many plans which have appeared from time to time over the last 20 years none are accurate representations of the aeroplane.

This model is the result of two years research and is an accurate replica of the prototype G-AEAI which is shown in the photographs.

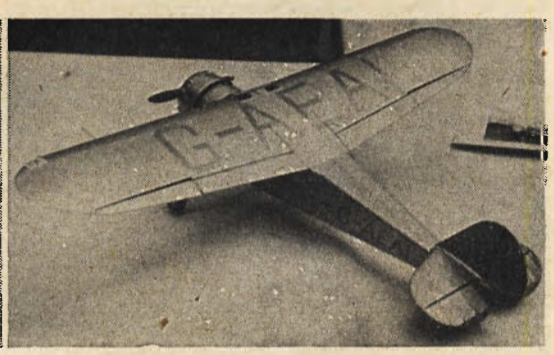
Start by building the tailplane over the plan around a card former, cut to the inside shape of the outline. Using $\frac{1}{32}$ in. x $\frac{1}{8}$ in. balsa strip soaked in water, form the outline using a slow-drying glue. Fit $\frac{1}{4}$ in. x $\frac{1}{16}$ in. balsa spar and ribs and when dry, sand to a thin aerofoil section with a flat bottom. Bind hooks of 22 gauge piano wire for the rubber band attachment to fuselage. Vertical tail surface is made in similar fashion.

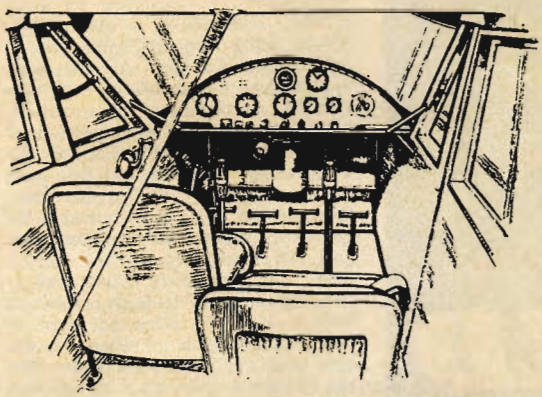
The wing L.E. is cut from $\frac{1}{8}$ in. x $\frac{1}{4}$ in. to fit the rib contours, T.E. is similarly cut from $\frac{3}{16}$ in. sheet balsa notched to receive each rib. Note that the root rib is from $\frac{1}{8}$ in. sheet and is faced with $\frac{1}{32}$ in. plywood which extends over the balsa L.E. and T.E. sections, covering the end grain. Cut the tongue from hard $\frac{1}{8}$ in. sheet balsa to the outline shown on the plan. Assemble ribs onto spar, then fit the leading and tail edges and tips cut from sheet. Slide in the tongue but do not glue yet. When this basic frame is dry, remove from plan and sandpaper all over. Cover L.E. top surface with $\frac{1}{32}$ in. sheet balsa as well as the tip surface. Prop up the tip 1in. for the dihedral, keep the tongue horizontal and glue this item now: when dry, fit the two stiffening spars around the tongue and finally sand all over with fine grade abrasive paper. Build the opposite wing in this manner.

The basic fuselage is built over the plan, make two frames one on top of the other, joined later with spacers to fit the plan view. Put in gussets and tubes around the undercarriage attachment and join the nose with F.1. If a beam mounted engine is to be used, slots will have to be cut in F.1 for the hardwood bearers to suit the engine. Using a radial mounted engine, screw direct to the ply interim former as shown on the plan.

The cabin interior is shown in the sketches and should be modelled for realism but keep the seats, etc., light in weight.

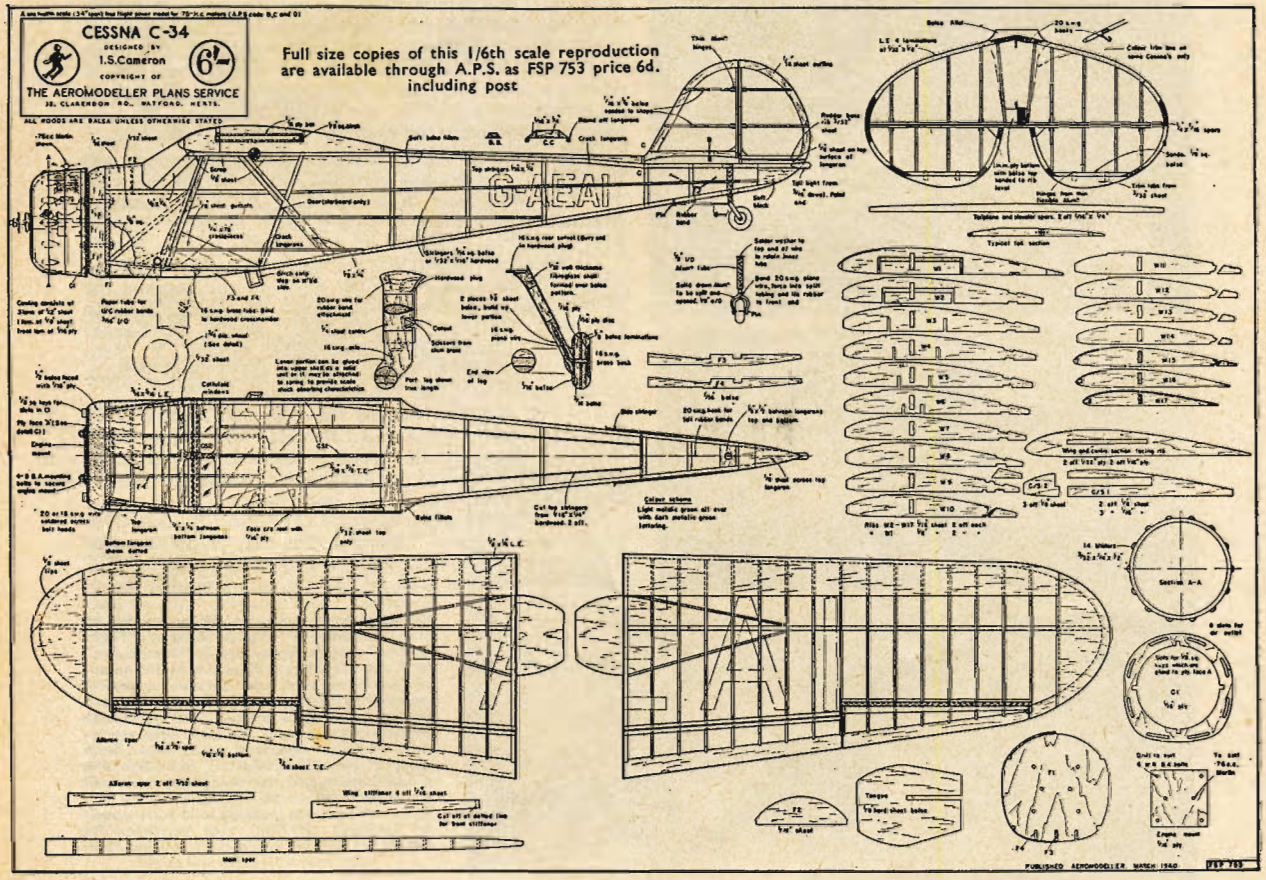
Fit all stringers, hooks, etc., and tailwheel. Cover with lightweight tissue and give one coat of clear dope. Finish all over with Cellon light metallic green with lettering and trim in dark metallic green. Wing registration letters are 3¼ in. high x $\frac{3}{8}$ in. stroke width. Those on the fuselage are 1 in. high x $\frac{1}{8}$ in. stroke width. The proportions and positioning of the letters can be seen from the photographs.

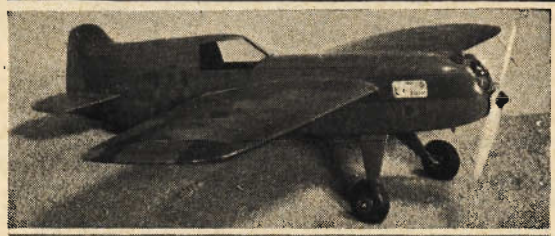


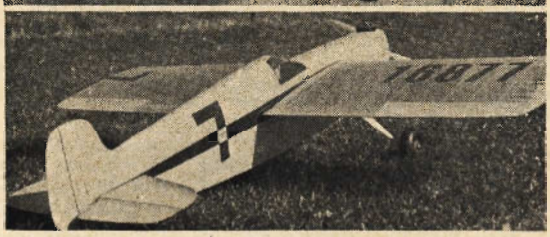


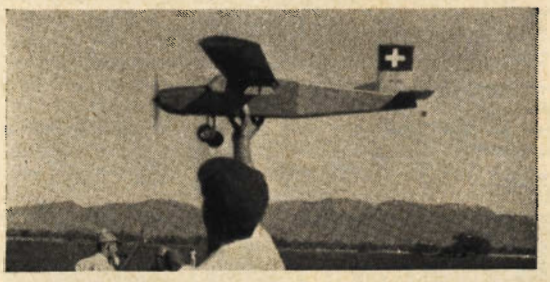
Interior detail of this pre-war light plane shows right seat in rear position for pilot's access from door on right side. A bench seat for two passengers is fitted across rear of a rather cramped cabin. G-AEAI was actually burned out at Squires Gate in September, 1950. Another, registered G-AFBY lasted until November, 1951.

The cowling may be made from fibreglass or balsa with plastic or balsa "blisters" of which there are 14. It is held in place on the original by an elastic retaining band between a hook on the front former and a hook inside the cowl, which itself is located by small wood blocks. Trim for right circuits and stand by for super realism !









IT IS ALWAYS satisfying to learn of an aeromodeller's outstanding efforts being awarded some special distinction. As part of the 40th Anniversary celebrations of the **Finnish** Aeronautical Association, Markku Tahkapaa was announced as the "Finnish Modeller of the Year". This well-deserved title goes to Markku not only for his great flying in the A/2 finals, but also for his many other National successes and his leadership in the Turku club. The New Year's day Indoor meeting in the 45-ft. high exhibition hall at Helsinki attracted over 70 entries, two-thirds of them in the ever popular "Hyttynen" classes for the Finnish kit design. The hall was draughty, and suspended illuminations and loudspeakers from the previous evening's celebrations were added hazards. Leif Englund won the under 35 cm. class with 7 : 11 and was second in the bigger class with 5 : 05 (won by Esko Hamalainen with 8 : 47 — seen launching for this flight in heading picture).

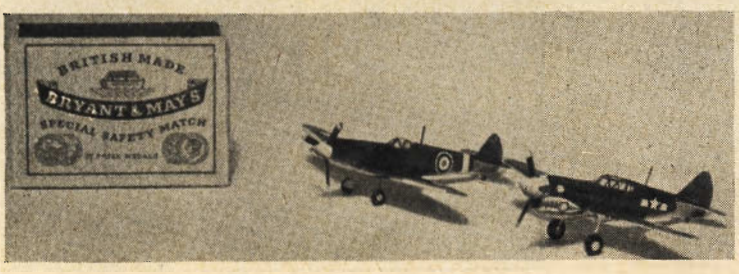
Finland is host country for the Nordic Champs on March 20th at Tampere, and they intend to apply the new F.A.I. continued maximum system in the event of a fly-off. For the first time also the Finns are to decide their National Champions through five contests, beginning with one in February, and concluding in October. A points system awards 100 for the winner, with others getting a percentage according to their times. Best three performances out of the five events are taken into consideration to decide the eventual Champion of each class.

A fascinating flying site for indoor duration was discovered in **Germany** recently. Gerry Weinkopf went 590 ft. *underground* in a salt mine 30 miles north of Stuttgart where there is a cave 80 ft. in diameter with a 70 ft. ceiling — should be no draught troubles there !

Hamamatsu Airport was the site for the 1959 All-**Japan** Championships on November 8th last, and topping the World Championship classes were : Wakefield, Y. Goto (883 sec.), Omura (745), Ito (741); Power, H. Suzuki (834 sec.), Ueda (827), Ono (821); Glider, Y. Sato (710 sec.), Okamoto (661), Uehara (577); and 2·5 c.c. speed, K. Mihara 160 k.p.h., Fujimuro 157 k.p.h.

Did you ever like the way *the other man's* plane flew? Over in Kansas City, U.S.A., Jim Hall and Wilbur Reed did when flying on the KC/RC club's Liberty field, so they swapped ! Hall exchanged his Astro for Reed's Smog Hog and now they're both happy !

How long to build a Gasser? The Prop Busters Club of Rapid City, South Dakota (bet they've got a super flying area), estimate 20-24 hours up to the stage of R/C installation. Some idea of the universal popularity of



Below the heading picture are two models by Vern Clements for the J. Roberts' "Flight Control" system. Upper one is "Bumble-Bee" for K and B 35, flies at 85 m.p.h. on full speed. 15 m.p.h. on slow, uses throttle to perfect manoeuvres in stunt schedule. Below it is a smaller K and B 23 design "Snap" also with variable speed control and some very attractive semi-scale American racer lines. Scale model of the "Pilatus Porter" is by Bob Linn of Los Angeles, and was doing very well until it met its untimely end in collision with a car. Bottom left, superb Japanese solid scale models by Hasegawa (1/170th) with matchbox for comparison, having moulded transparent cockpits, true scale finish and colour.

Zurad launches his Wakefield which we detailed last month,—note small tail area. Extreme right is Ford Lloyd of Melbourne, Australia is an APS fan, with his Clwyd Queen and June Bug (note increased fin area)

the Gasser, and its wide range of application comes in *Model News*, the aeromodelling magazine in **Australia.** The Melbourne R/C clubsters decided to explore the possibilities of slope soaring off the sides of Mount Fraser, an extinct volcano 26 miles out of town. Surprisingly, the Gasser slope soars, though the airfoil section is not the most suitable for long soaring flights. All models flown (including R6Bs and O/Ds) were power models though not an engine was used all day.

Selecting three top men to represent so vast a country as the **United States** in a World Championships is no easy task. Last year, after trials which involved long distance travel for the participants, a free flight power team was chosen but, of course, there was no final event for them to attend. When the announcement was made that the delayed event would be held in 1960 (at Cranfield over July 30th - August 1st week-end), power modellers were thrown into a small confusion. Would the 1959 team still stand? If not, what would happen to those qualifiers? Answers are now given that fresh trials *will* take place, that the 1959 team members can fly in their zone semi-finals and that they can challenge the semi-final winner to a fly-off. The U.S.A. team should be pretty strong after all this selection!

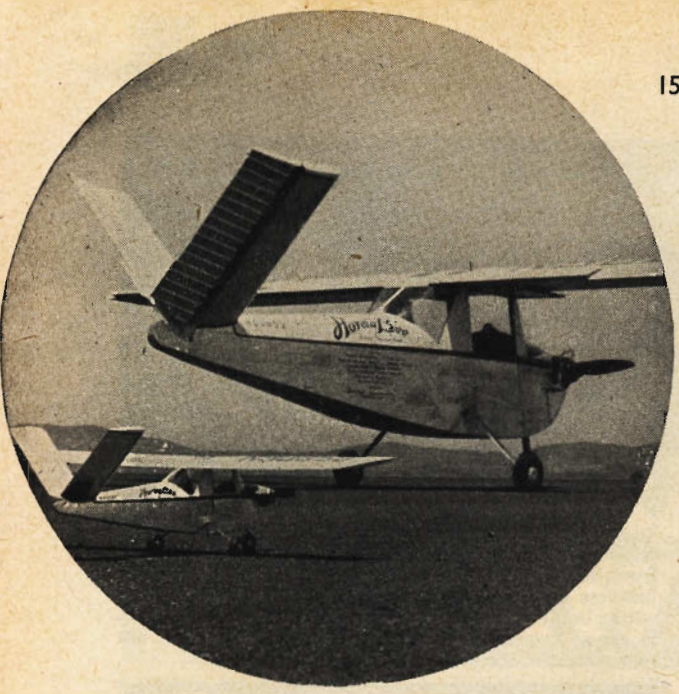
Congratulations!

Incidentally, this column seems to be the appropriate place, in view of their world-wide associations, of passing our sincerest congratulations to Nat and Irwin Polk on the occasion of their 25th anniversary in the Model and Hobby business. Polk's is an institution one cannot miss on any fortunate trip to New York City, and it is very largely due to their enterprising promotion of new ideas that we enjoy so much of our modelling today. They were first to see the possibilities of Jim Walker's Fireball kit during the very beginnings of control-line back in 1940. They introduced Jetex, diesels, and countless other European developments to American modellers, and, we hope, will go on to their 50th anniversary with continued success.

What's happening to aeromodelling in **Spain?** Our information is that the hobby is taking a dip in the popularity poll in those parts, the well known experts from Barcelona having had to lay off for a while due to business commitments. We hope we shall be proved wrong in this news for Spain is always a respected country in the C/L circles and it would be a pity if it is not represented in the World Championships.

Right: top, scale Czechoslovakian Aero—A4 1920 fighter by Jiri Baitler has a 17 c.c. engine, weighs 6 lbs., span about 43 in. Below, it is a S.E.5 by John Matthews of Woodbridge, Ontario, Canada, non-flying to 1/16th scale, the first of a series by this modeller with extensive detail representing full size components. Mr. Matthews is currently seeking interior detail of the Siskin III—any helpers?

Bottom, left, Blackburn Monoplane by Victor Larsen of San Diego for an O.K. Cub .74 diesel swinging a 10 x 3½ prop! At right is Ulrich Stampa's Hovercraft at Bremen in Germany for the Taifun Hurricane 1.5 c.c. which is equipped with Teko radio/control on the rudder. The model will lift 4½ lbs. satisfactorily



SOMETHING FOR THE TECHNICALLY MINDED

Bob Annenberg

takes all the guesswork out of

U and V tails

EXAMPLES OF FULL scale aircraft utilising tailplane dihedral to supplement or replace fin area are given. Simple formulae and equivalent nomographs are included for the evaluation of the tip rise which can be used to replace a single specific fin. In the forementioned formulae and nomograph, the modifying effect of starting the dihedral at other than the centre line is given for an elliptic planform. A formula and nomograph are presented to give the per cent. loss of tailplane effectiveness from that of the "flat" tail of elliptic planform.

Introduction

Tailplanes whose tips are at a different level to their centre line are by no means unusual in full scale practice, but it is rather more difficult to find examples where the dihedral, or anhedral, is large enough to significantly affect let alone completely eliminate the fin area.

Examples of the former are:

(*a*) S.O. Trident III; (*b*) Aerocar model one; (*c*) North American X15.

Examples of the latter are:

(*a*) Somers-Kendall S.K.I. Racer; (*b*) Beecraft "Honey Bee"; (*c*) Beechcraft Bonanza.

Publicised functional, as distinct from scale, model aircraft designs also provide examples of tailplane dihedral as follows from the AEROMODELLER Plans Service:—

(*a*) Bluebottle. (*b*) Satu. (*c*) Gnat.

To those who are interested in designing their own models, the background fund of available designs and personal experience is enough to make the decision as to fin size a comparatively easy one *if* the fin is a single central one allied to a flat tailplane.

Although tailplane dihedral has disadvantages, circumstances sometimes indicate advantages greatly outweighing those disadvantages, and whenever this is so, its use constitutes intelligent design and should be fostered.

Advantages and disadvantages

One advantage sometimes claimed for the V-tail is that the elimination of the fin results surface in a reduction in drag. As is now recognised by full scale designers, the increase in surface area necessary to produce the same equivalent effect as a single fin *and* flat tail is very little different from the area of the single fin. Consequently, a significant reduction in drag cannot reasonably be expected from the introduction of tailplane dihedral.

When a fin is absent, clearly, loss of directional stability due to breakdown of fuselage flow at high incidence cannot occur; neither can that fin stall at large angles of yaw. Nevertheless, it is worth recording that a form of fin stall can be manifest at combinations of large V-tail incidence and large angles of yaw because the leading half wing experiences additional incidence from the yaw and consequently a tendency to lose lift by local stalling.

One of the more obvious advantages of significant tailplane dihedral lies in the fact that over a range of incidence, the proportion of tailplane surface area lying in the comparatively low velocity wake behind the wing is not subject to any violent fluctuations. This is a very desirable characteristic in such as stunt controline models, where a flat tail lying right in the middle of the wing wake can lead to a sudden change in the stability and smoothness of control.

When the tips are above the centreline, the tail is somewhat less vulnerable in "awkward" landings than is a flat or anhedral tail.

It is very true that a V or U tail is rather more prone to warp than a flat tail and also more difficult to keep true because a special jig is needed unless the tail takes to pieces.

A further disadvantage derives from the difficulty of devising a crashproof method of fixing which always gives the unique necessary trim setting.

Changes in directional trim only can be obtained on the V-tail by equal and opposite deflections of *two* trim surfaces, one on each half and preferably placed halfway along each semispan; this introduces mechanical complications for an Auto-rudder because a single trim surface on one half only, causes a pitch as well as a directional trim, change.

Heading: Honey Bee model (APS plan FSP/505, 4/6d) shows off its vee tail in front of full size counterpart. Below, the Planet Satellite with a Y tail and shaft driven pusher prop, an elegant craft which did not succeed

Overcoming the disadvantages

With the very light and relatively flimsy tailplanes appropriate for free flight contest work, warping is a major problem. A flat board to which the tail is strapped with elastic bands is the normal answer; the corresponding answer with a V or U tail seems to be unavoidably, a special jig. For the straight dihedral V-tail joined at the centre, the two halves can be strapped together as is common practice with wings. For the flat centre section of the U-tail, even with a centre line joint, a jig may be desirable unless the flat centre section is a relatively small fraction of the span.

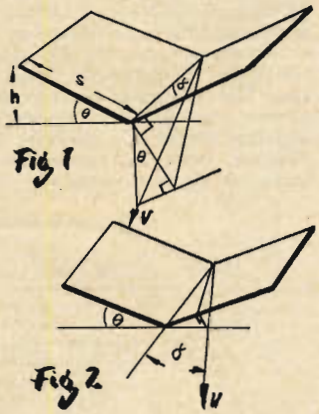
For most model designers, crashproofness is synonymous with rubber band fixings. Accurate directional trim means that both the leading edge *and* the trailing edge of the V-tailplane at their attachment points *must* be accurately lined up for *every* flight with the *least possible* attention. Further more, there must be *rubber band constraint only* against lifting the tail vertically out of its seating otherwise a rough landing can smash the locating devices. The most obvious way of providing this is to glue a long strip of rectangular section hardwood to the tail along the centreline to sit in a corresponding slot in the fuselage or fin top. All sorts of variations on this technique suggest themselves, *e.g.*, a hardwood centre line rib, cut rather deeper than the design shape, using the extra depth as the locating strip.

The problem of providing Auto-rudder trim in the absence of a normal rear fin has already been mentioned. The obvious solution is to use a very squat fin as a V-tail pylon, but this has the disadvantage of an insecure seating. Perhaps a better alternative is to use a very small centre fin, which could be all-moving, forward of the Vee tail rather than having a simple rudder tab on a larger fin. Yet another alternative is to have a small all-moving trim surface *ahead* of the wing. (Preset trim can evidently utilise equal and opposite displacement of the twin tabs on the tail.

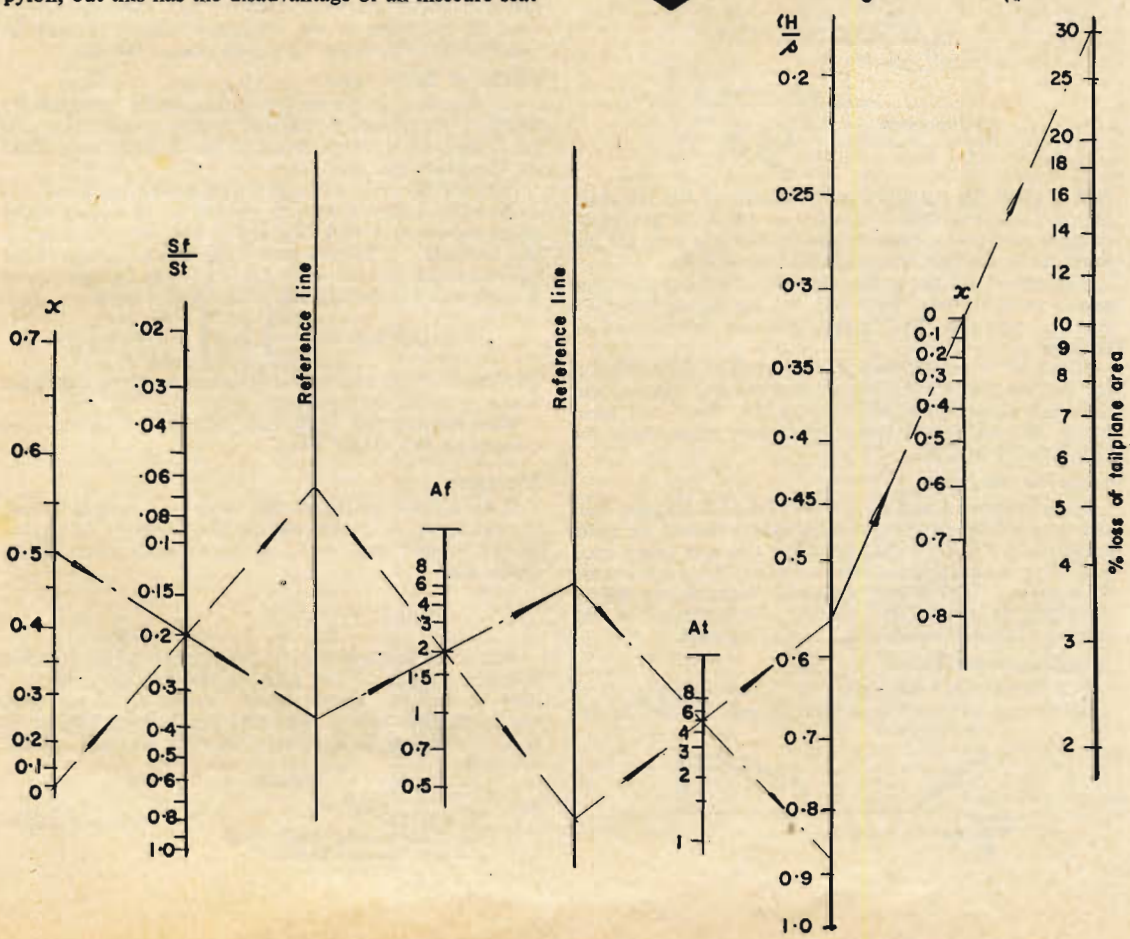
Elementary theory of the V-tail

The explanation given in the following paragraphs does not attempt to go into the details of the numerical

(*continued overleaf*)



USE THIS NOMOGRAPH FOR EASY CALCULATION



calculations required to derive the numbers associated with the basic formula. By reference to the Figs. 1 and 2, the change of incidence measured at right angles to the half wing at dihedral angle θ caused by (*a*) a change of pitch attitude α is $+ \alpha \cos \theta$ (*b*) a change in yaw angle γ is $\pm \gamma \sin \theta$ depending upon which wing half is being considered.

These changes of local incidence cause lift changes perpendicular to the half wing which can be resolved into components in the sense of a normal flat tail and a fin. This leads us to the simple conclusions that (*a*) the effectiveness of a tail with dihedral, angle θ acting as fin depends upon $\sin^2 \theta$ and (*b*) its effectiveness as a tail is reduced by a factor of $\cos^2 \theta$.

While conclusion (*b*) is a substantially complete one, conclusion (*a*) requires a rather more careful consideration. The changes of local incidence produced by angle of yaw γ are equal and opposite on the two half wings and this produces a spanwise distribution of lift quite different from that produced by constant spanwise incidence distribution (see Fig. 3 for an elliptic planform).

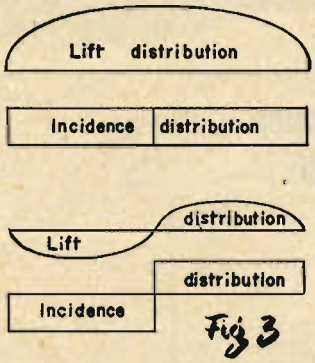


Fig 3

Ref. 1 gives the comparative ordinates of the spanwise lift distributions and it is easy to show by graphical integration that the ratio of lifts on one side only for the same numerical incidence is substantially 0.4.

The equivalent fin is thus defined as having the same aspect ratio as the "flat" tail but having an area 0.4 $\sin^2 \theta$ times the "flat" area. We can recapitulate as follows:—

If the tip rise at each tip is h and the s is the structural (or flat) semispan the effective fin area and effective tail area are obtained by multiplying the "flat" tail area, at the flat tail aspect ratio, by factors respectively 0.4 $(h/s)^2$ and $1-(h/s)^2$.

Limits of the theory

Experiments in U.S.A. by the N.A.C.A. suggest that the above comparatively elementary theory is quite satisfactory provided that the angle through which each half wing is raised from the horizontal does not exceed 50 degrees. This is very fortunate, because the theory presumes to ignore the vertical displacement of the trailing vortices attached to the trailing edge.

Modification for U-Tail

For convenience we define the U-tail (see Fig. 4) as a tail having a flat centre section of span 2xs and its tips raised H above the level of the flat centre section. The most simple way of correcting for having the dihedral start at a point other than the centre line, is to write the two formulae as $0.4(h/s)^2 f(x)$ and $1-(h/s)^2 F(x)$. Now f(x) and F(x) are unique functions of x for an elliptic planform and x is a number between 0 and 1. The first formula is equivalent to asserting that the ratio H/h is uniquely dependent upon x for the same equivalent fin area and the same "flat" tail shape; furthermore, although f(x) is known for an elliptic planform, the corresponding shape of f(x) for such as a rectangular planform is noticeably different for values of x greater than $\frac{1}{2}$. (See Fig 5.).

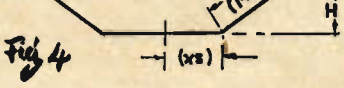


Fig 4

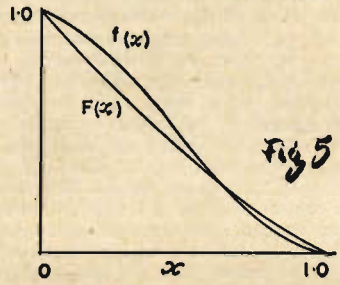


Fig 5

It is suggested that in practice, f(x) can be taken as applicable to all normal planform shapes; accepting this assumption allows us to derive a unique alignment chart (or nomogram) equivalent to that formula. Because identical ideas are applicable to the formula $(H/s)^2 F(x)$ an extension of the alignment chart can also be constructed to give the % loss of area of the tail.

Effects of aspect ratio.

As explained in the recapitulation under "Elementary theory", the equation $0.4(h/s)^2$ needs a correction for the comparative aspect ratios of the desired "equivalent fin" and the "flat tail".

Now the lift curve slope of a wing whose aspect ratio A is between 1 and 6 can be shown to be substantially proportional to $A \div (A+3)$; Ref. 2 provides the data for this formula. It follows that if the suffix f refers to the equivalent fin and the suffix t refers to the flat tail; using S to denote the appropriate area, we can write:

$$0{\cdot}4(H/s)^2 f(x) = \left(\frac{Sf}{St}\right) \cdot \left(\frac{Af}{At}\right) \cdot \left(\frac{At+3}{Af+3}\right)$$

and this formula enables us to evaluate H/s if x and the S and A values are specified.

The Nomograph is a very convenient method of evaluating H/s $(H/s)^2 F(x)$.

Example:

If we assume an elliptic fin, Area = 6 square inches, Aspect Ratio = 2 with elliptic tail, Area = 30 square inches, Aspect ratio = 5. If the dihedral starts at the centre line,

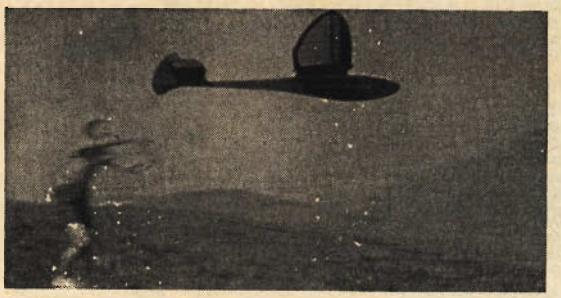
$$0{\cdot}4(h/s)^2 = \frac{6}{30} \times \frac{2}{5} \times \frac{8}{5} \quad \therefore h/s = 0{\cdot}564$$

Where the dihedral angle is $34\frac{1}{2}$ degrees and the effective tailplane area is 68 per cent. of the flat tail area, *i.e.*, 20·4 sq. inches. If the dihedral starts at 50 per cent. semispan, then H/s = 0·88 and the dihedral cannot be realised because it is greater than 50 per cent. of the semispan.

REFERENCES

No.	*Designation*	*Author*
1.	R. & M. 2593	Faulkner & Watson
2.	Royal Aeronautical Society Data Sheets "Controls 01.01.01."	

CLUB NEWS



Hand launched Leprechaun (A.P.S. Plan G.370 — 11s.) at CLWYD reminds us that this year's event takes place on July 4th at the famous N. Wales soaring site.

I WONDER HOW MANY models have been lost from Chobham Common? One awaiting a claimant is radio controlled, fell out of a tree in grounds three miles from the infamous heathlands, has an engine said to be 3·5 c.c., 50-in. span, airwheels, etc. I'll be pleased to accept claims and forward them to the person looking after the weather-beaten model.

North Western

N.W. Area Winter Rally on December 20th in atrocious weather called for 60-lb. towline, and early D/Ts as O.O.S. time was little more than 60 seconds! Most models stayed in their boxes, but those who did fly won as follows:

Open Rubber (12 entries:)

1. J. O'Donnell (Whitefield)	2:36	2:47	0:00	5:23
2. D. Wolstenholme (Elmac) ...	1:25	0:00	0:00	1:25
3. D. C. Barber (Southport)	0:52	0:00	0:00	0:52

Open Glider (33 entries):

1. J. O'Donnell (Whitefield)	1:51	1:25	0:00	3:16
2. C. Wyatt (Ashton) ...	2:09	0:00	0:00	2:09
3. B. Talbot (Wigan) ...	1:15	0:00	0:00	1:15

Open Power (30 entries):

1. E. Lord (Elmac) ...	2:22	1:43	1:13	5:18
2. B. Talbot (Wigan) ...	1:39	2:05	2:07	4:51
3. D. Jackson (Ashton) ...	2:57	1:05	0:00	4:02

Class "A" Team Race (9 entries):
I. R. Puddephatt (Urmston)

BAINES GRAMMAR SCHOOL A.C. (Blackpool) was recently re-formed after a lapse of several years, has the school workshop as a clubroom, use of the extensive school playing fields as a flying ground, and thus the club is now flourishing with gliders and free flight power as main interests.

OLDHAM AND D.M.A.C. have a keen interest in C/L flying, combat being most popular with plenty of Frog 3·49s in attendance. One group of members are concentrating on T/R. S. Stansfield's B Racer was going quite nicely on their last visit to Stretton. They now have a central pole for indoor flying at the clubroom now at Derker Annexe, Derker Street, each Friday night, 7.30 p.m.

The SOUTHPORT D.M.A.C. formed in September now has 26 members, their main interests being in F/F power, glider and C/L combat. At the N.W. Area Winter Rally D. Barber came third in rubber. Club's address for other modellers in the area is: Sec. B. J. Irvin, 97 Shellfield Road, Southport.

Ted Wilding has put in more air-time than anyone else lately at WIGAN M.A.C. His R/C models are *Matador, Rattler, Deacon* and *Junior* "60" — all equipped with Galloping Ghost, using tone radio. New members are still coming in to swell the ranks. One new junior member who arrived around Christmas, graduated from a Mills ·75 to a Torp ·15 and Jap timer almost overnight, but he is in good hands with their free flighters, and is not likely to be encouraged to build one of Brian Picken's MAX ·35-powered F/F monsters just yet.

At a recent MACCLESFIELD M.A.C. meeting the more progressive element decided that club competitions were too limited in scope and number of competitions has now been more than doubled.

Considerable enthusiasm has been shown for the events, more popular of which are ½A combat, ·8 c.c. combat, rat race (the rules of which are not yet properly known; nearest attempt to define them being: "Well it's like combat only you don't use streamers"); scale and concours d'elegance. Entries to the last two are to be displayed at the Hobbies Exhibition.

Main interest during 1959 in CONGLETON M.A.C. was the club championship series of free flight and control line competitions. A different type of contest was held each month with scoring on a points basis. R. Lea, the winner, received the senior championship trophy for his efforts, and popular 13-year-old L. Hulme won the junior trophy. Membership now stands at 25. Club will be holding its annual control line rally on Easter Monday, in the local park. All clubs interested are invited to attend and compete in Combat, "A" Team Race, and Stunt, run to S.M.A.E. rules. Entry fee 1s. 6d. per contest, valuable cash prizes awarded to winners. Note: Bring S.M.A.E. insurance cards along. Full details from Club Secretary, Mr. J. Cooke, 9 Mill Street, Congleton, Cheshire.

BLACKPOOL AND FYLDE M.A.C. continues to thrive and during the past weeks several members have been busy improving (?) appearance of the club-room by painting large brightly-coloured pictures on the walls. Due to the weather there has been little outdoor flying activity. A visit to a local home for disabled children, to give a film-show and display is being planned for the near future.

As we go to press we learn that the WOODFORD RALLY is dated for April 24th, an early date because of Auro 748 tests.

Midland

A new club has been formed in BRIDGNORTH, which has been meeting since October and they now have their own headquarters. It is proposed to hold competitions with the R.A.F. stationed at Bridgnorth and also with one or two other clubs in the district.

The winter stalwarts of SUTTON COLDFIELD R/C M.A.C., braving every kind of weather except fog or gale are putting in a lot of flying hours. D. E. Thumpston's 6-ft. span O/D job shot up at a fantastic speed from 500 ft. to 1,000 ft. (after the engine cut) in a most amazing January thermal, the like of which no one present had ever seen before — unfortunately he decided upon a spiral — which went on longer than intended.

LOUGHBOROUGH AND D. "WOMBATS" M.A.C. has now been running for nine months collecting twenty-five members, mostly seniors, during that time. As with BASINGSTOKE M.A.C. (reported last month) they have a permanently-rented clubroom very conveniently placed above the local model shop having a "pub" next door, a chip shop within 30 seconds 'staggering distance and a hot dog stall one minute away. Members are keen on all types of models except scale, open power coming into prominence with a spate of ETA 19 *Dixielanders*. ETA 29 power jobs are on the way together with Wakefield and a club design A/2. A 6-ft. scaled-up A.P.S. *Frankenstein II* appropriately called the "Frankenstein Monster" is to be fitted with R C proportional. The club sec's address is "Wendover", 51 Garendon Road, Loughborough, Leics.

The majority of WEST BROMWICH M.A.C. members are concentrating on control line this year, with accent on stunt, combat and team racing. The combat boys hope to prove once again the general superiority of the orthodox model as opposed to the flying wing which was much in evidence last year — watch out Northwood!! A number of models of the "Hovercraft" have been constructed, with very pleasing results, being able to traverse ponds.

East Anglian

Flying most Sundays on a small piece of waste land on East Hill and usually having a good attendance, COLCHESTER M.A.C. dabble in stunt, combat, team racing, rubber, power, and anything new. Although the club has been in the doldrums for some years it is now beginning to pull round and building is improving. They are now holding meetings every Monday night, 7 o'clock at the Technical College, Sheepen Road, and any lone modellers in Colchester are welcome.

Nearly 50 members of HORNCHURCH M.A.C. attended the A.G.M. held on December 4th. A committee of seven were elected with Bob Wells still the popular secretary.

London

CRYSTAL PALACE M.A.C. started the year well by having the largest club entry in the "National Model Exhibition". The club has once more sought the guidance of the Croydon Council and hence now meet at All Saints School, Upper Norwood, every Monday at 7.30 p.m. The new club room has prompted members to investigate the mysteries of indoor flying. A pylon for R.T.P. flying is in hand. Plans are being made for a mass exodus to Scampton again this year, and more members are required to keep the cost low.

ENFIELD AND D.M.A.C. have been trying to keep members competition-minded during the winter by a series of combat events. The latest of these was won by Roger Jones who they think is a future winner for stunt competitions. Members are keen on contacting clubs in the area, in order to arrange an interclub combat event. The Club Rally will probably be held on July 10th and as in previous years events will be team race A and B, stunt, speed, and combat.

The HAYES M.A.C. team of Laurie Barr, Jim Baguley and Jim Sporran, won the L.D.I.C.C. once again, and the annual C/L comps. are now under way. Top F.A.I. speed so far is McGladdery s 90·3 m.p.h. with an *Olympic*, and Balch won "A T/R in 5·39, but had the model stolen when his shed was burgled. Club members and others are asked to watch for a Fox 35 with A.M. sprayer and needle, a tuned Rivers 2·49 with a shiny c/case, and aluminium washer under the liner — and a 3 c.c. Special Rivers — so please watch out!

South Midland

HIGH WYCOMBE club will be holding their sixth Control/Line Rally on May 1st, 1960, at R.A.F. Booker. Events include A and B team race, combat and, for the first time, stunt, which I am sure will be a most welcome programme addition.

In ERGS M.F.C., near Bedford, "Multis" have become very popular among the forty members due to the success achieved with two twins, an A.P.S. Invader and Mosquito. Club has been asked to give fete displays following the success of those last year. Despite bad weather, and as a result of predominant control/line activity amongst the members, the club has not missed one Sunday's flying as yet. Fortunately their well-equipped flying-field has many shelters — lucky people ! Any unattached aero-modellers in the Bedford area are invited to ask for details in the modelling department at "Goldings" in the High Street, Bedford.

R.A.F. HALTON M.A.C. is at last finding its feet, the interest being mostly R/C, sport and combat, with the occasional glider and stunter thrown in now and again. L. A. A. Goddard seems to spread his time building R/C suitcases with wings, that fly much better than anything complicated. The Wendover Hills have claimed two *Ebenezers* — one with a brand new Pee Wee and the lads are waiting for the snow to go before any attempt is made to look for them. They also had a spate of *Inch Worms* with ¼ c.c. engines on top of the wings — they always seem to land near the W.A.A.F. block — can't think why !

Twenty members of WATFORD AND WAYFARERS M.A.C.s decided for the forthcoming year to use the name of Watford Wayfarers, thus amalgamating the members of the Warfarers Competition Group and the local Watford club. Meetings will be held on the last Wednesday in each month at Reed's school commencing 7.30 p.m., and new members are welcomed. Plans for rubber powered R.T.P. and several film shows are under way to promote interest. More competition minded members hope to concentrate on all the free flight classes this season, although interest in team racing is high, several ETA 15 and 29-powered models being planned.

NAPIER AND ENGLISH ELECTRIC M.A.S. at Luton has just completed its first year and interest is on the up-grade. Control/line stunt and ½A combat flying are the most popular interests, the latter proving far less expensive and just as thrilling as the S.M.A.E. class. The Society's 1960 social season was off to a good start on January 12th when Pete Holland presented a talk and film show. This type of evening proved to be enormously popular.

Southern

LEATHERHEAD AND D.M.F.C. celebrated their 50th club meeting on January 8th and they have planned their future programme to include talks on various modelling topics.

Great Balls of Fire ! ! Young Rees of Letchworth demonstrated his remarkable ability at last year's Nationals to breathe like a dragon — with Oliver brew, too !

Northern

ROTHERHAM AND D.M.F.C. suffers from a ban on power at their local flying field and also the consequent adverse effect on membership at annual prize-giving. J. Roderick received club champion's for 1959. Other cup winners for 1959 were glider and rubber, E. Wisbey; power, J. Roderick; and junior champion, P. Adlington.

CHESTERFIELD SKYLINERS M.A.C. members who attended the winter rally at Wigsley did not do too well, although they tried their hardest in the "impossible" weather. Mr. B. Fearn entered in both radio and power; his attempt in radio failed. On his first test flight in power he clocked a four-minute max. on an eight-second run. His Cox Olympic-powered *Swiss Miss* landed at the other side of the airfield — no mean distance.

WHITBY M.A.C. has been in existence for five years, but this seems to be their first venture into print. On Sunday 17th a slope soaring competition was held and was the most exciting competition in the club's history. With only the second flight of the day Mike Haley's model flew away and was lost O.O.S. A few flights later Jeremy Royston's model set up a new club record. The first three places went to J. Royston, D. Coates and M. Pickering. During a hectic afternoon of much sprinting, chasing and craning of necks four models were lost out of sight, one landed on an inaccessible roof and another was later recovered from the sea! The next club competition will be for solid models!

Channel Isles

A club has been formed in JERSEY starting with 25 members, and local readers are invited to join. They are lucky in being able to have a large wooden building for a club-room. Flying is mostly control/line with a few radio controlled *Sparkies* and *R.6Bs*. Free flights may not become too popular as it is rather wet retrieving from the sea! No flying boats as yet. Sec's address is "Breezy Hill', Quennevais Drive, St. Brelade, Jersey, C.I.

Ireland

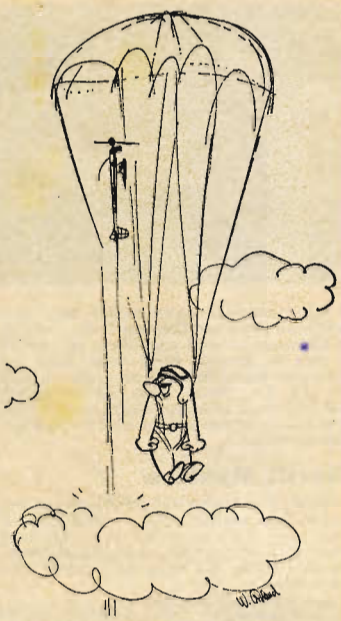
On Boxing Day LARNE M.F.C. held a semi-scale Precision event. Due to conditions, the three flights were of only 30 sec. limit each. Although there was a very strong wind blowing some bods did manage to get a few good flights, the winner was W. Blair with 84 points out of a possible 110; L. Blair and J. Strain took second and third places.

Scotland

MONTROSE M.A.C.'s return to Club News is possible now that they have completed modernisation of their premises. Ten of the dozen members build regularly, but only four in the club workshop as three live in the country, two are in the R.A.F. and one is married. To make the new decade the club held an open glider comp. on January 3rd. This was for the Oberbeck Cup and was their first five-round contest. Despite listless and dank conditions each of the top three included a single 3-min. max. Results were:

1. C. G. Campbell ... 634 sec.
2. I. R. Wheeler (J) ... 570 sec.
3. D. L. Petrie ... ... 437 sec.

The annual KIRKCALDY CLUB combat competition was held on the now traditional first Sunday of the new year. The season was off to an enthusiastic start with twelve entrants (more than half the club), seven of whom were entered for the "½A" combat. The juniors were well represented by "Wee Jim Arnott" who proved to be the major opponent in the 3·5 c.c. combat event and was beaten by only one cut in a hair-raising final with the competition secretary. Very successful ½A combat, finished in a three-way



battle of the "little giants" for the club cup. The three winners were inseparable so the cup went jointly to D. McQuillen, B. Wright, and A. Morrison.

Pen Pals

A pen pal is required by M. J. Smith, 1 Pettus Road, South Park Avenue, Norwich, Norfolk. English-speaking with A/2 interests, living on Continent or in U.S.A.

THE CLUBMAN.

New Clubs

BAINES GRAMMAR SCHOOL M.A.C.
D. Thompson, Baines Grammar School, Poulton-le-Fylde, Nr. Blackpool, Lancs.

BRIDGNORTH M.A.C.
C. Greatwich, 67 High Street, Bridgnorth, Shropshire.

JERSEY, C.I., M.A.C.
F. Gilks, "Breezy Hill", Quennevais Drive, St. Brelade, Jersey, C.I.

Change of Secretary

COLCHESTER M.A.C.
G. M. Manset, 214 Bergholt Road, Colchester, Essex.

CLEETHORPES AND D.M.A.C.
C. Taylor, 10 Nicholson Street, Cleethorpes, Lincs.

Club reports should be submitted to the Editor not later than the 15th of each month. They should be factual and informative, and will appear in the issue published exactly one month after the above press date, e.g. reports received in February appear in the May issue, published April 14th.

1960 S.M.A.E Contest programme

March 6th
Gamage Cup (U/R Rubber)
Pilcher Cup (U/R Glider
White Cup (U/R Power) — *D/C*

March 20th
*K.M.A.A. Cup (F.A.I. Glider Elim.)
Gutteridge Trophy (F.A.I. Rubber) — *Area Centralised*

April 10th
*Astral Trophy (F.A.I. Power)
S.M.A.E. Cup (F.A.I. Glider Elim.)
Women's Cup (U/R Rubber-Glider)
Jetex Trophy — *Area Centralised*

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

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

BRITISH NATIONALS
June 5th
Thurston Cup (U/R Glider)
Short Cup (P.A.A. Load)
S.M.A.E. Cup (F.A.I. R/C Multi)
Lady Shelley Cup (Tailless)
Knokke Trophy (C/L Scale)
Davies Trophy (Class A)
Combat (Prelim. Heats)
Speed — *R.A.F. Scampton*
June 6th
Sir John Shelley (U/R Power)
Model Aircraft (U/R Rubber)
Super Scale (F/F Scale)
Ripmax Trophy (F.A.I. R/C Single)
Davies Trophy (Class ½A & B)
Combat (Finals)
Speed
Gold Trophy (Stunt C/L)

June 18th/19th
F.A.I. Power Trials (10 flights) — *Centralised*
July 2nd/3rd
Second F.A.I. Control Line Trials — *Centralised*
July 16th/17th
Practice Trials F.A.I. Rubber
Practice Trials F.A.I. Glider (Five flights each contest) — *Centralised*
To be fixed
SCOTTISH GALA
K.L.M. Trophy (U/R Power)
C.M.A. Trophy (U/R Rubber)
Glider (U/R Glider)
Taplin Trophy (R/C Single)
Team Racing (Classes A & B)
July 24th
*Model Engineer Cup (Team Glider)
Flight Cup (U/R Rubber) — *Area Centralised*
July 30th/August 2nd
WORLD CHAMPIONSHIPS POWER — *Cranfield*
August 21st
Area Championships (Rubber/Power/Glider — *Centralised*
September 4th
NORTHERN GALA
PAAload America class
Glider (U/R Glider)
Hamley Trophy (U/R Power
Caton Trophy (U/R Rubber)
Aeromodeller Trophy (R/C Multi)
Team Racing (½A, A & B)
United Kingdom Challenge Match
September 18th
*Keil Trophy (Team Power)
Frog Junior Trophy U/R Rubber/Glider) — *Area Centralised*
October 9th
*Farrow Shield (Team Rubber)
Team Racing (Classes ½A, A & B) — *Area Centralised*
October 16th
Frog Senior Cup (U/R Power)
C.M.A. Cup (U/R Glider) — *Decentralised*

* *Contests counting for Plugge Cup points.*

PROGRAMME NOTES

Decentralised Contests: March 6th and October 16th may be run on club grounds and controlled by club officials. Entries should reach Londonderry House not later than seven days before the contest, but late entry (*i.e.*, on the day of the contest) is permitted at *double* the normal fee. Results with any late fees must be sent by the club to reach Londonderry House not later than seven days after the contest.

Area Centralised Events are run and controlled by Area Committees. The Area Competition Secretary arranges to receive entries, he will also arrange to submit results and entry fees.

Radio Control and Control/Line Trials: May 21st and 22nd, together with the the second Control/Line trials on July 2nd and 3rd will be used to select the British teams to fly in the World Championships. Entry fee is 10s. for each class, and entries definitely close on May 6th.

The British Nationals. Special entry forms will be sent to all clubs, and full instructions for entry will be found thereon.

F.A.I. Power Trials to select the British World Championship Power Team will be held on Saturday and Sunday, June 18th and 19th, commencing 1 p.m. They are open to all competitors who have flown in either the Astral Trophy or the Halfax Trophy, entry fee will be 10s. Special entry forms will be issued and entries will close on June 3rd.

Special practice Trials will be held in the F.A.I. rubber and glider classes (*a*) to give competitors experience under World Championship conditions; and (*b*) to decide the award of the AEROMODELLER *A/2 Trophy* and the *Premier Shield*. Entry will be open in the rubber class, but entries in the A/2 event will be restricted, based on the results of the K.M.A.A. and S.M.A.E. Cups. Entries will be at normal contest fees and will close on July 1st.

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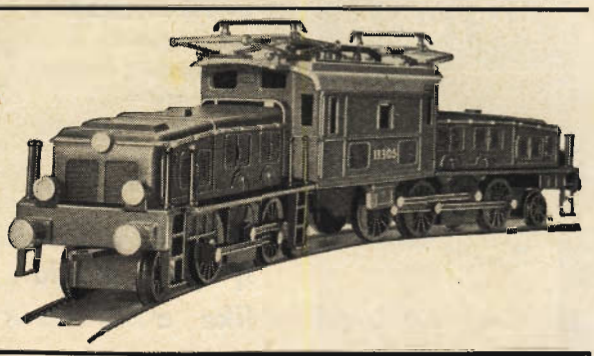

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A.M. 3.5 ... 58/6+11/1
A.M. 10 c.c. ... 49/–+ 7/8
A.M. 15 ... 50/–+7/10
D.C. Bambi ... 65/–+10/–
D.C. Sabre ... 46/–+ 7/–
D.C.S. Merlin 46/–+ 7/–
D.C. Dart Mk. II 56/–+ 8/7
D.C. Rapier ... 67/–+10/9
E.D. Fury ... 63/9+11/6
E.D. Hornet ... 46/–+ 8/4
E.D. 2.46 c.c. ... 65/–+11/9
E.D. Hunter 66/–+11/11
E.D. Comp. Spec. ... 52/–+ 9/5
E.D. Mk. IV ... 65/–+11/9
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Marquis ... 28/3+4/3
Tiger Moth ... 18/3+2/9
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Fairy D ... 41/3+6/10
Focke Wulfe 22/–+3/8
Lavochkin ... 26/–+4/4
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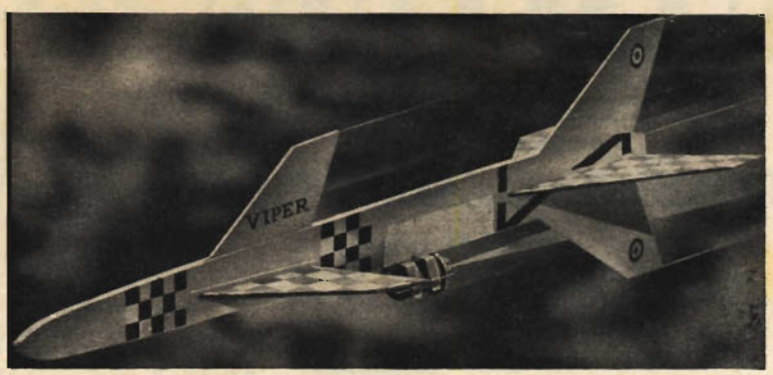

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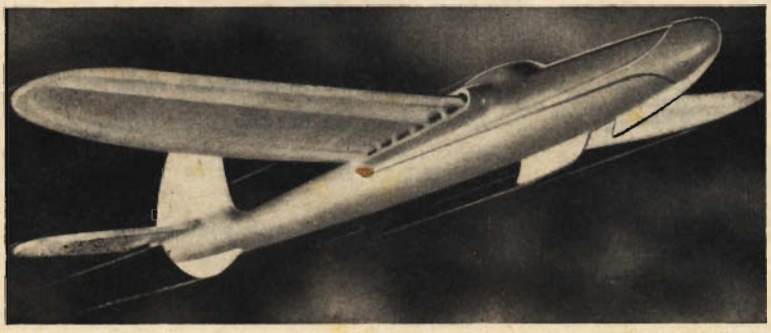

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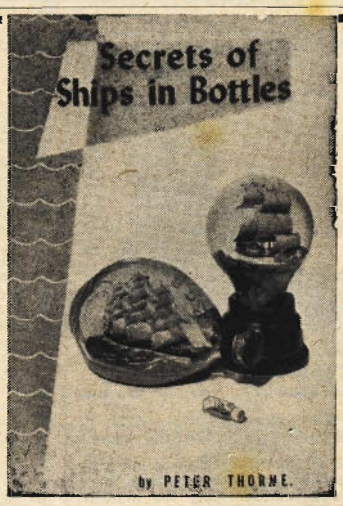

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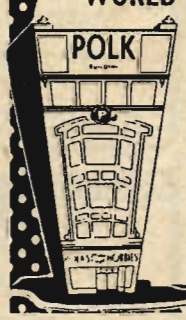

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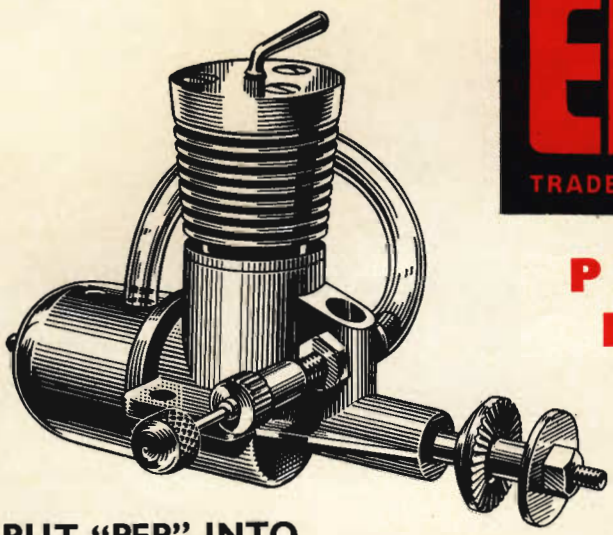

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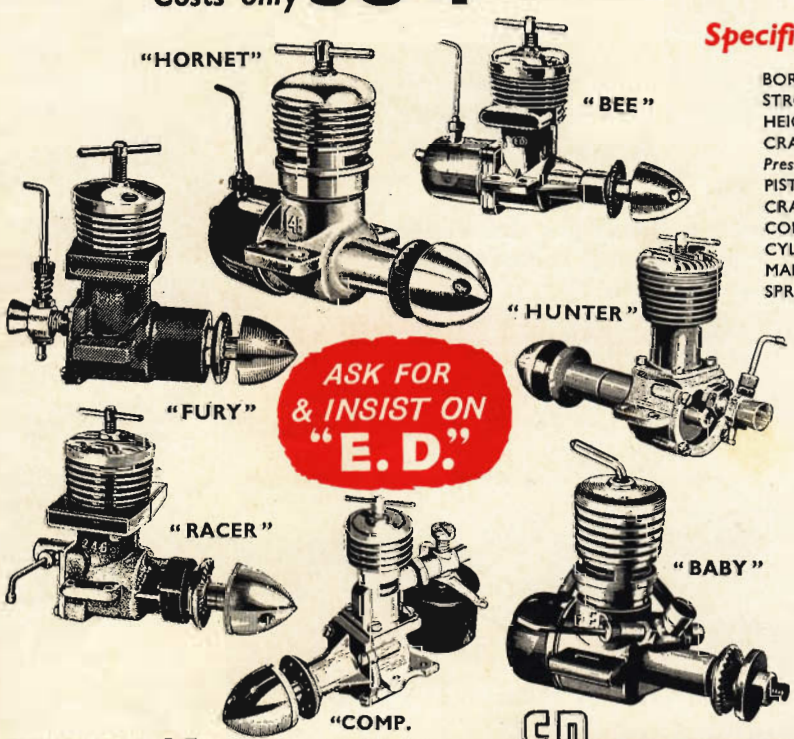

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