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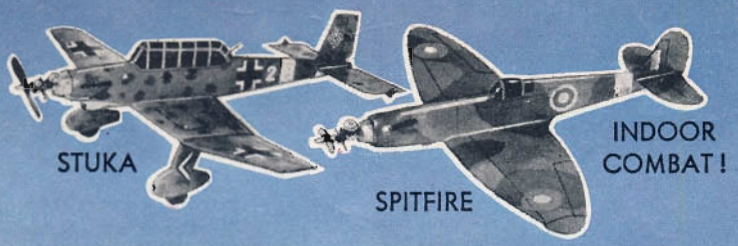

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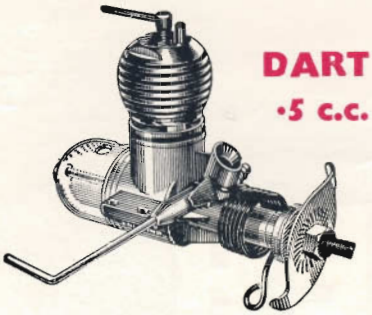

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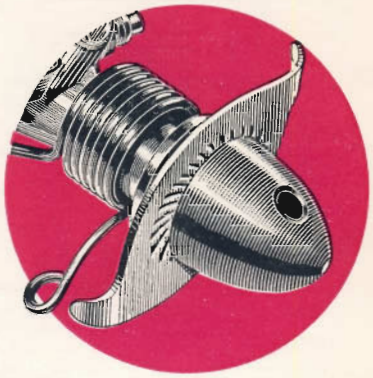

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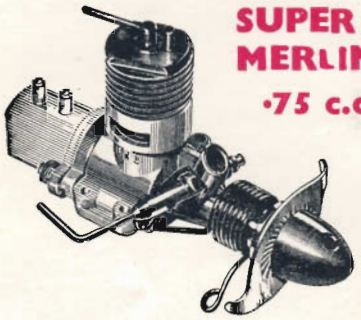

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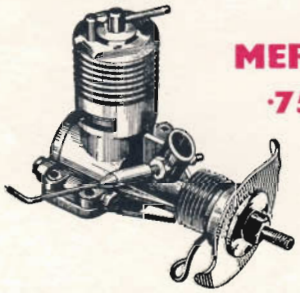

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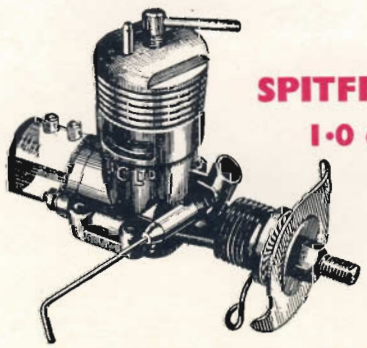

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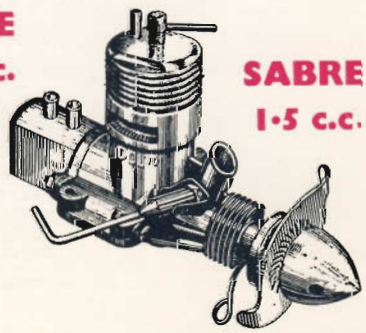

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AERO MODELLER

MAP HOBBY MAGAZINE

March 1964

VOLUME XXIX No. 338

other modelling angles . . .

March edition of 'Radio Control Models & Electronics' will contain a FULL-SIZE plan for "Pumpkin Seed", a 20 in. span biplane for any light weight single channel radio equipment. This pert little design by Bert C. Striegler will find its way around many local fields we'll bet. For the more advanced enthusiast the issue will contain instructions for the conversion of the "Capri" pocket sound-wave receiver to radio control superhet standard.

Experimentally minded modellers may care to delve into the intricacies of radio control Hovercraft, as the series which commenced in the February edition is continued.

Commercial radio equipment tested in March issue includes the O.S. Minitron Escapements from Japan, plus new multi and single channel servos. A new single channel all transistor radio set is also the subject of an editorial review.

March issue of 'Model Maker and Model Cars' will be the last issue under that title for with the April issue 'Model Cars' becomes a separate magazine. Since the hobby of electric car racing was introduced by 'Model Maker' (9 years ago) it is natural that an article in the March issue should look back over some of the milestones in the development of this hobby.

The marine content leads off with a model of the cable ship "Mercury", recently in the news and there is an interesting article on a miniature model of the liner "Aquitania", which is also featured on the cover. Making miniature accumulators, two foreign cruiser drawings, scale factors in design, warship detail, boilers for steam plants, and all the regular features ensure that every reader will find something instructive and informative.

contents

cover

Speke Airport, Liverpool, is the background for Maurice Bodey's prototype 1/24th scale "Fokker Friendship" in MacRobertson Miller Airlines livery. A description of this month's addition to the Aeromodeller Plans Service range appears of pages 126-128 of this issue. Colour detail in this photograph forms a most useful aid to modellers who wish to reproduce the same scheme.

next month . . .

Rotary wings are always of interest and a selection of easy to make **Helicopters** including two full-size plans by Francis Boreham are bound to please. Greatest need in multi-Channel radio control is for a trainer with a reputation and we know of none better than Ed. Kazmirski's **Tauri.** Introduced to Aeromodeller Plans Service in April issue, it brings a topline design (as kitted by Topflite) to all r/c enthusiasts in Britain. George Cox returns with the 1924 **Douglas World Cruiser** as his "Famous Biplane" subject—and the famed round the world flier will be fully detailed. More for beginners, for contest fans, for sportsters all in April issue out on March 20th.

Editorial and Advertisement offices

38 Clarendon Road, Watford, Herts

Telephone : **Watford 32351** (Mon.-Fri.)

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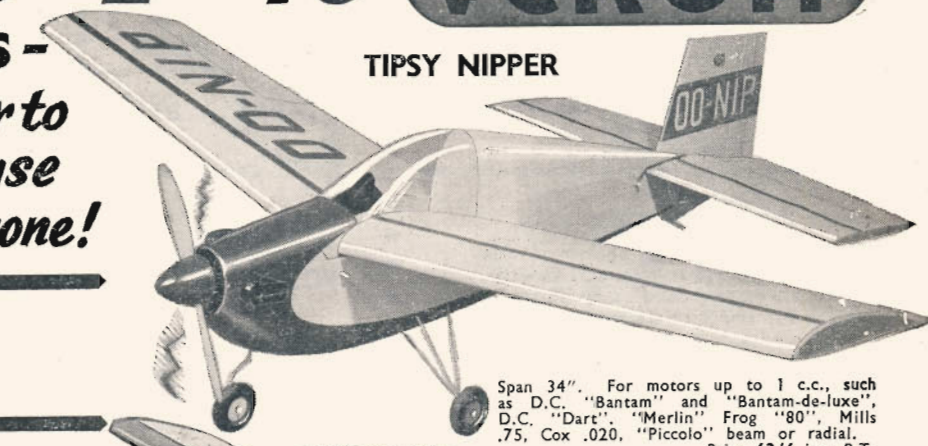

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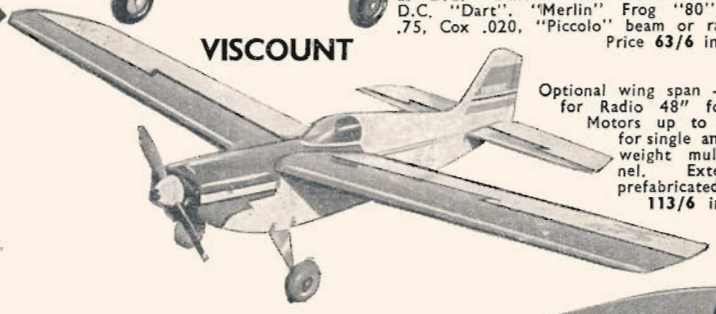

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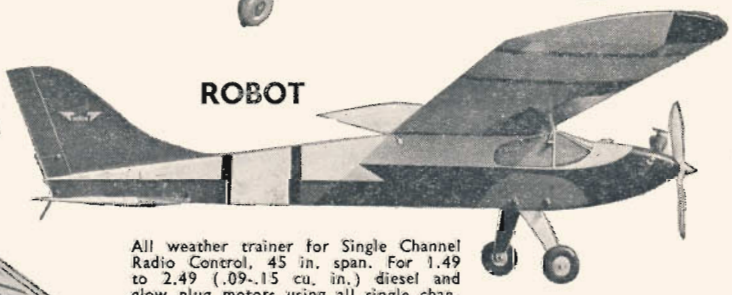

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1/2"	3 1/2
3/32" x 3/32"	2
1/8"	2
3/16"	2 1/2
1/4"	3
3/8"	3
1/2"	3 1/2
1/8" x 1/8"	2 1/2
3/16"	3
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1/2"	4
1/4" x 1/4"	4
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3"	1/8
4"	2/5

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1/2" x 2"	2/4
3"	3/4
4"	4/4

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1/8"	2
3/16"	2 1/2
1/4"	3
3/8"	3 1/2
1/2"	4
3/32" x 3/32"	2 1/2
1/8"	2 1/2
3/16"	3
1/4"	3 1/2
3/8"	4
1/2"	4 1/2
1/8" x 1/8"	3
3/16"	3 1/2

SIZE 36" LONG BY	PRICE EACH
1/8" x 1/4"	4 1/2d
3/8"	5
1/2"	6
3/16" x 3/16"	5
1/4"	5 1/2
3/8"	6
1/2"	6 1/2
1/4" x 1/4"	6
3/8"	7
1/2"	8
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1/2"	5
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1/4"	4
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3/16"	4
1/4"	5
3/8"	5½
1/2"	6½

SIZE 36" LONG BY	PRICE EACH s d
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1/4"	6
3/8"	6½
1/2"	7
1/4" x 1/4"	7
3/8"	8
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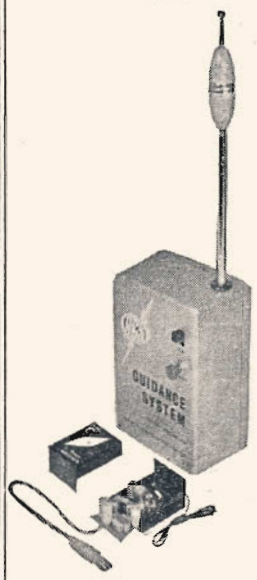

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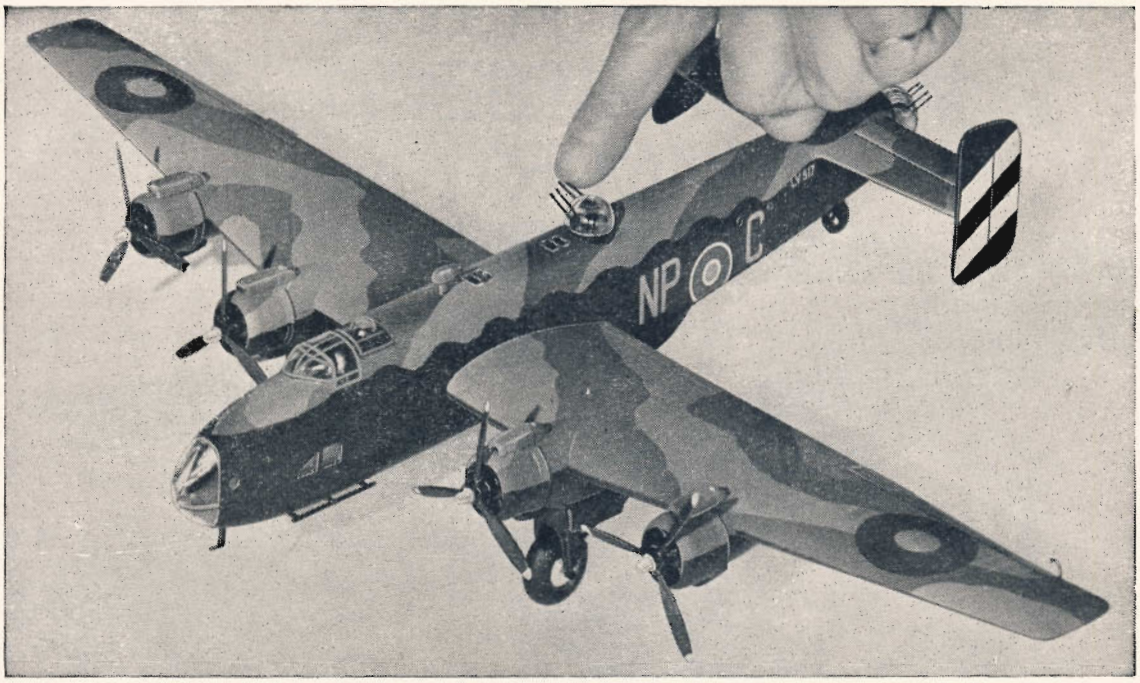

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First Issue FRIDAY 6th March

2/6

FIRST FRIDAY OF THE MONTH

- SPECIAL FEATURES that will appear in Issue No. 1

First of a series on SIMPLE CHASSIS CONSTRUCTION : Auto Union C Type, with pictures, cutaway sketches, 3/32 scale drawings of car : PORSCHE Type 904 3/32 scale drawing, photos, details : Vintage Department : 3/32 drawings of Original Bullnosed M.G. No. 1 plus first Midget — famous M type. CLUB STORY No. 1 Runnymede M.C.C. in words and pictures. (Your club too could be described!) WILLIAM BODDY, famous model-car-collecting Editor of *Motor Sport* on "My Model Collection". WHO'S WHO IN MODEL CARS : Breakdown of British proprietary sets and cars in tabulated form — essential reading for tyro and expert alike. A look at the RACING CAR SHOW : Trade News with first Reports from BRIGHTON TOY FAIR and the one-make trade shows. THEORY OF CAR PERFORMANCE mainly on 4-wheel drive and braking this month. Detail approach to models of MERCEDES BENZ Silver Arrows . . . and lots more . . . editorial comment . . . correspondence . . . club reports . . . news . . .

- *MORE USEFUL PARTICULARS OF MODEL CARS. How big are we going to be ? Same size as our other magazines 9¼ in. by 7¼ in. 52 pages-full each month at 2/6d. — Don't forget always FIRST Friday of the month. "Dickie" Dickson will edit — which doesn't mean write it all, please . . . so lots of room for contributions from all the best informed people. Walkden Fisher will be associate editor . . . so the North should get a fair crack of the whip. All our regular critical team will be playing a part . . . plus an immense part by our readers in keeping us up to the mark with their very latest needs. Oh ! what scales ? The lot ! Emphasis on 1/32 but all the way from 1/87 up to 1/24th regularly — outside these sizes more occasionally. Working, non-working, historic, futuristic . . . the lot.*

MAP HOBBY MAGAZINES

FILL YOUR MODELLING NEEDS THROUGHOUT THE MONTH

MODEL AERONAUTICAL PRESS LTD.

38 CLARENDON ROAD, WATFORD, HERTS

First Friday of the month
MODEL CARS (From March 6)

Second Friday of the month
RADIO CONTROL MODELS

Third Friday of the Month
AEROMODELLER

Fourth Friday of the month
MODEL MAKER

clubs which are unable to undertake a block re-affiliation of their members and spread their re-affiliation over the year.

Nevertheless it is interesting to know that the claim for largest club as far as voting status is concerned is Sheffield S.A.M., closely followed by St. Albans, then Northampton, High Wycombe, Hayes and Anglia. No doubt we shall now be bombarded with counter claims and it will be interesting to find which is the most numerically strong group in the country.

Heard at the Hangar Doors

Settling down to earth after a five-minute flight with only the quiet whine of the miniature electric motor to betray its presence, a Graupner "Silentius" make a peaceful evening scene. Unusual? Why yes, for this model is radio controlled, see page 146 for details.

New World Records

Helicopters have been the subject of five new records recently homologated by the F.A.I. In the power driven class Stefan Purice of Rumania achieved a duration of 2 hours 53 minutes 37 seconds and a height of 3,750 m. (12,303.2 ft.) on September 24th, 1963. This is a most noteworthy achievement and we look forward to obtaining details of the fuel capacity for the Schlosser 2.5 engine in this double record claim.

Viatcheslav Titlov of the U.S.S.R. established a powered helicopter distance record of 91.491 Km. (56.849 miles) from Kazan to Chikchi on October 1st, 1963. Sounds as though these helicopters are thermal prone!

In the rubber driven 'copter class, Petras Motekaitis achieved a duration of 12 minutes 2 seconds and an altitude of 869 m. (2,851.05 ft.) on July 6th, 1963. Another Russian record is that for distance in a closed circuit set up by P. Velitchkovski and Guerasimov at Baiserke on June 23rd, 1963. They covered a distance of 185 Km. (114.95 miles).

In control line speed, Elio Zanin of Italy has further improved on his record with a tremendous jet speed flight of 315 Km./h. (195.732 m.p.h.) at Lucca on September 8th, 1963.

Largest Club?

The voting status figures for S.M.A.E. affiliated clubs as revealed at the Annual General Meeting in York, were based upon the numbers of club members recorded *at the time of re-affiliation.*

This may not necessarily provide an accurate cross-section of club strength since there are many

Midget Racing Design

Rollason Aircraft of Croydon Airport have announced a competition which will appeal to a number of aeromodellers of our acquaintance.

The purpose of the event is to encourage the production of new midget racer designs in Great Britain. Specifications restrict the design to the converted 1,500 c.c. Volkswagen (Rollason Ardem) Mark 4 or 5, the aircraft minimum wing area shall be 65 sq. ft., minimum length 10 ft., fuel capacity 7 gallons, maximum all up weight 750 lbs. and stalling speed not more than 60 m.p.h. The closing date for entries is March 1st, 1964, and the prizes, 100, 75 and 50 guineas for the first three prizes. Drawings have to be submitted by September 1st, 1964, and the rules clearly specify the manner in which they shall be produced. We shall be pleased to forward entry forms to any interested aeromodellers.

A. F. Houlberg, M.B.E., Memorial Fund

The Memorial Fund to the late Chairman of the S.M.A.E., A. F. Houlberg, has been opened with a generous donation by the Society President, the Rt. Hon. Lord Brabazon of Tara, M.C. Those wishing to make a donation should address their subscription to the A. F. Houlberg Memorial Fund, S.M.A.E. Ltd., 10A Electric Avenue, Brixton, London, S.W.9. Tributes to Alex Houlberg have appeared in aeronautical and modelling magazines throughout the world. *Model Avia* in Belgium has reproduced a personal tribute by Albert Roussel in which he reflects upon the early days of the F.A.I.

organisation and the manner in which Mr. Houlberg was so influential in producing the basis upon which the C.I.A.M. has been able to work so successfully. He concludes his tribute with the announcement that it is proposed to create a perpetual challenge trophy to be known as the "A. F. Houlberg Trophy" for annual competition in Belgium.

Concerted Action

Radio interference is one of the most serious problems for the R/C enthusiast in the U.S.A. Widespread use of Walkie Talkie radios operating in the Citizens Band have been responsible for the destruction of many an expensive multi channel model. As a result of this the Academy of Model Aeronautics appointed a committee of experts to represent aeromodellers before the F.C.C., which is the body responsible for allocating frequencies. A fund has been established within the A.M.A. and this has already raised $4,000 for legal and other professional support. A firm of specialist attorneys have been providing professional representation with the aim of obtaining a revision of existing regulations in order to protect aeromodelling activity. We wish them all success.

Another A.M.A. activity is the organisation of a special model show which will be incorporated within the grand International Air Pageant planned for January 1965 at Palm Springs, California.

Weekend in Paree

Coupe d'Hiver fliers John O'Donnell, Geoff Kent, Bill Horton, Peter Cameron, Trevor Faulkner and Anthony Allsopp are off to Paris for the weekend of February 22/23rd as the British contingent in the French finals. They will become the Anglo part of the Anglo-French challenge arranged by AEROMODELLER and *Le Modele Reduit d'Avion* and we shall be reporting their exploits in full next month. Meanwhile, Pete Cameron's model is drawn above right.

Golden Wings

Response from School and Youth groups to our non-expert "Golden Wings" comp. has been tremendous and more than satisfying. Details have been circulated to all applicants but should any club wish to join in, there is still plenty of time as the contest runs right through the season until finals in September. Send to the editorial offices for full information.

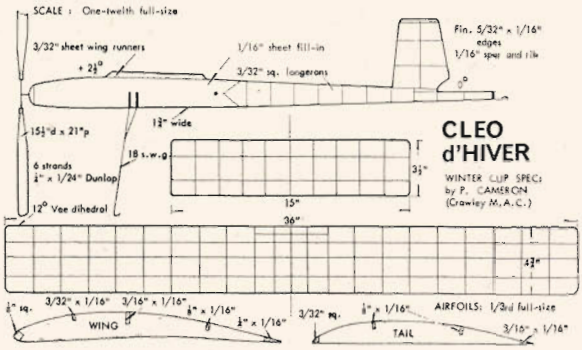
Have Your Aeromodellers Bound

Once more we offer the service of binding volumes of AEROMODELLER for readers, complete with index (which can be obtained from the editorial offices separately, price 1/-).

The magazines are bound within hard covers with red cloth covering and the title gold blocked on the spine.

Regretfully, we must increase the charge for this service to £1 per volume as of February 1st, but can assure readers that commensurate with the increase in price of 5/- we are also arranging for a stronger method of binding of improved quality.

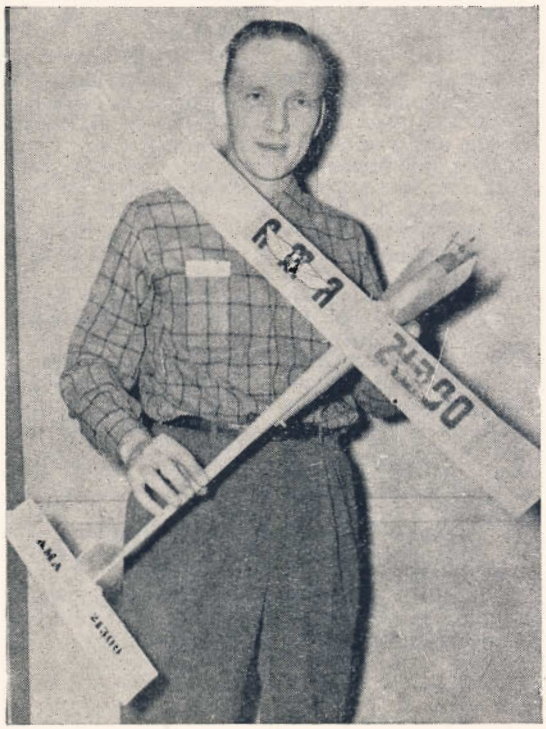
Magazines should be well packed and sent, together with remittance (which includes return postage) plus name and address clearly block printed to AEROMODELLER Binding Department, 38 Clarendon Road, Watford, Herts.



Coupe d'Hiver design á la U.S.A. by Earl Nielsen of Chicago has a rolled sheet balsa motor tube formed to elliptical section with a tapered and rolled tailboom superimposed to make up the required 3.1 sq. in. fuselage cross section in "double bubble" style. Coupe d'Hiver appears to be taking on rapidly in many countries.

Corsair Colours

Editor of the "British Plastic Modeller's Society" Newsheet, R. C. Jones provided useful corrections to our two-blue and white scheme for the Corsair drawn in January issue. The top decking was officially known as *Sea Blue*, Midnite (or Midnight) Blue was not in use until September '44. The blending colour was known as *Intermediate Blue* (a powdery blue-grey) and the undersurfaces were not as our information from Brewster Aircraft provided, non-specular (matt) white ; but *Insignia White* which is off-white. Odd point is that the insignia on the Corsair was not Insignia White: but non-spec white . . . ah well! At least we've established that Corsairs *were* white of a sort underneath.



Model on the Cover!

½ in. = 1 ft. scale model for two .8 c.c.-1.5 c.c. engines with simple construction by

MAURICE BODEY

THIS VERSION OF the Fokker-F.27 Friendship has been specifically designed for moderately experienced builders and to use engines of 1-1.5 c.c. The simple structure is exemplified by a new form of wing assembly where there are *no* ribs and the result of which is an extremely strong replica of the full size, very narrow wing.

Of all the twin-engine prop-jet aircraft produced in the last 10 years, the Friendship is undoubtedly the most successful. It operates in many countries, carrying the bright colours of a large number of airlines and is manufactured under license in the U.S.A. by the Fairchild Corporation. It was designed to meet the demand for a modern successor to the well-worn Douglas DC-3 but applying the latest stringent safety regulations. As a fast, short haul airliner carrying around 40 passengers, it is seen most in the United Kingdom, in the colours of *Aer Lingus*.

As can be seen on the cover, Maurice Bodey chose the markings of the Australian *MacRobertson Miller Airlines* which are especially colourful and details of whose markings are given on the full-size plan.

For most enthusiasts, the most difficult part of the construction will at first sight be the well-sprung nose wheel but in actual fact, Maurice has so designed this unit that it can quite easily be made from 1/16 in brass sheet and should present no difficulty to anyone with hacksaw and small Swiss files.

Truly, this Friendship design would be our recommendation to any control line scale enthusiast wanting to make his first "Twin" and we are sure that the extensive possibilities of adding interior detail and fitting opening doors, etc., etc., will have an equal appeal to the experienced flier.

Start construction with the **Fuselage** first by cutting formers F1 and F3 from ⅛ in. ply and remaining formers from ⅛ in. sheet balsa. Keels F13-14-15 are cut from ⅛ in. sheet balsa and laid flat over plan. Cement half formers F4 to F12 in their respective positions on the keels. Now cement complete cabin sides F16 (steamed to the curve with windows cut out), followed by F3, F17 and then F2. When completely set, lift off plan and add the other halves in same procedure for the starboard side. Cut nose keel F18 from ¼ in. ply and glue to F3 and F17 then glue F1 in place using a good resin glue, *not* balsa cement. The fuselage can now be set aside to thoroughly dry.

The **Wing** is of high aspect ratio and therefore needs to be torsionally stiff. It also has to take a fair amount of knocks in the usual control line landing procedure and so stout grade sheet balsa is employed. Because of the frontal taper it is necessary to make the wings in three sections and for this purpose, different sheet thickness are employed.

Carefully mark the centre section shape on ⅜ in. and ¼ in. sheet balsa. The outer panels are marked on ¼ in. and ⅜ in. sheet. Leading and trailing edges are tapered in thickness and depth as indicated in the two views on the drawing and the five cross sections. Shape these edges square and leave all sheet panels as "blanks" for the first stage of assembly. Fret the two ⅛ in. plywood spars W1 and W2 to shape and prepare the ⅛ in. ply bellcrank mounting platform. We are now ready to begin assembly.

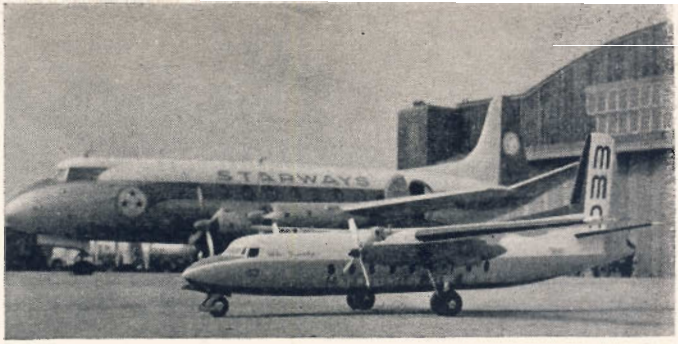
First attach leading and trailing edges to the centre section bottom sheet. Add the ⅛ in. ply bellcrank platform after drilling and installing bolt then recess the lower sheet to allow a slot for the push-rod. Temporarily tack the top sheet in place and now rough carve the centre section to airfoil, shape, checking it against the plan for the fit in F13. Sandpaper smooth, taking care all the time not to damage the protruding leading and trailing edges.

Now remove the top sheeting and fit W1 and W2, making slots in the bottom sheeting to accommodate the nacelle former protrusions. Use a good resin glue for this joint on which so much depends. The lower outer panels from ¼ in. sheet can now be offered up to the leading edges (which should be cracked to match the dihedral in the front view) and also the extensions of W1 and W2. Again, use a good grade resin glue for these important joints. Assemble complete bellcrank unit with lead-out wires and push-rod to the plywood mount and recess the upper centre section sheet to ensure clearance at full range of movement (see fuselage side view). Solder cup washers on wires so that they cannot come loose and lock the main nuts on pivot bolt with solder. Add 2½ oz. lead weight to starboard tip and complete the tips with 1/16 in. ply ribs and ⅜ in. sheet extremities. Fit brass tubes in the port tip for smooth operation.

The upper wing panels can now be fitted beginning with the centre section and then the outer panels, shaped to true airfoil according to the cross-sections. Make frequent checks by eye from front and rear to see that the wing is being carved true and without warp, then sandpaper over all and finally offer to the fuselage, sliding push rod through all formers F7-F11.

Make sure the wing sits square from front view on to the fuselage within the shape cut-a-way from F13—so that the correct angle to incidence is maintained.

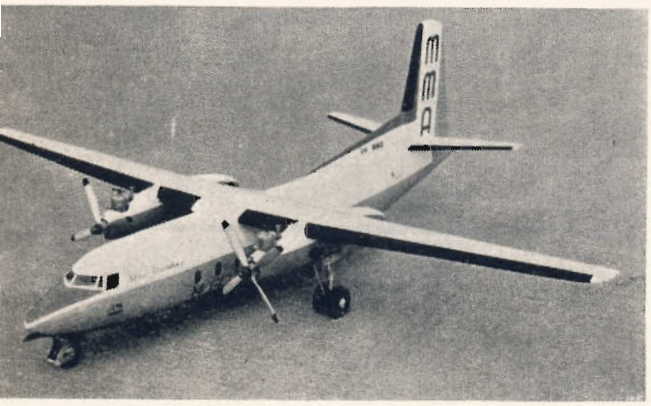
The **Tailplane** is a simple, streamlined sectioned shape and its only complication is the dihedral angle which is maintained by plywood keepers "A" and "B". Make up the assembly and fit to the fuselage keel F13, keeping it perfectly horizontal and parallel to the upper fuselage line.



Maurice Bodey's Friendship prototype posed at Speke Airport is given away only by the exposed engine cylinders, in this case E.D. Cadets. Appearance belies the simplicity of construction for this fine model which can be brightly decorated in any of many airline colour schemes.

Cement $\frac{3}{32}$ in. x 1 in. balsa spine seating strip from wing to tail over formers F8-10, also add pieces of clear acetate inside F16 at window positions. When wing and tail are firm, bend extreme end of pushrod to fit elevator horn so that controls are free and have full range of up and down elevator movement.

Make brass nose gear parts and firmly bolt to nose former F18. The fuselage should now be planked with $\frac{1}{2}$ in. x $\frac{3}{32}$ in. strip balsa. Add nose, tail and cabin blocks. When set, carve blocks roughly to shape and then sand complete fuselage to a smooth finish. The 1 in. x $\frac{3}{8}$ in. balsa spine is glued

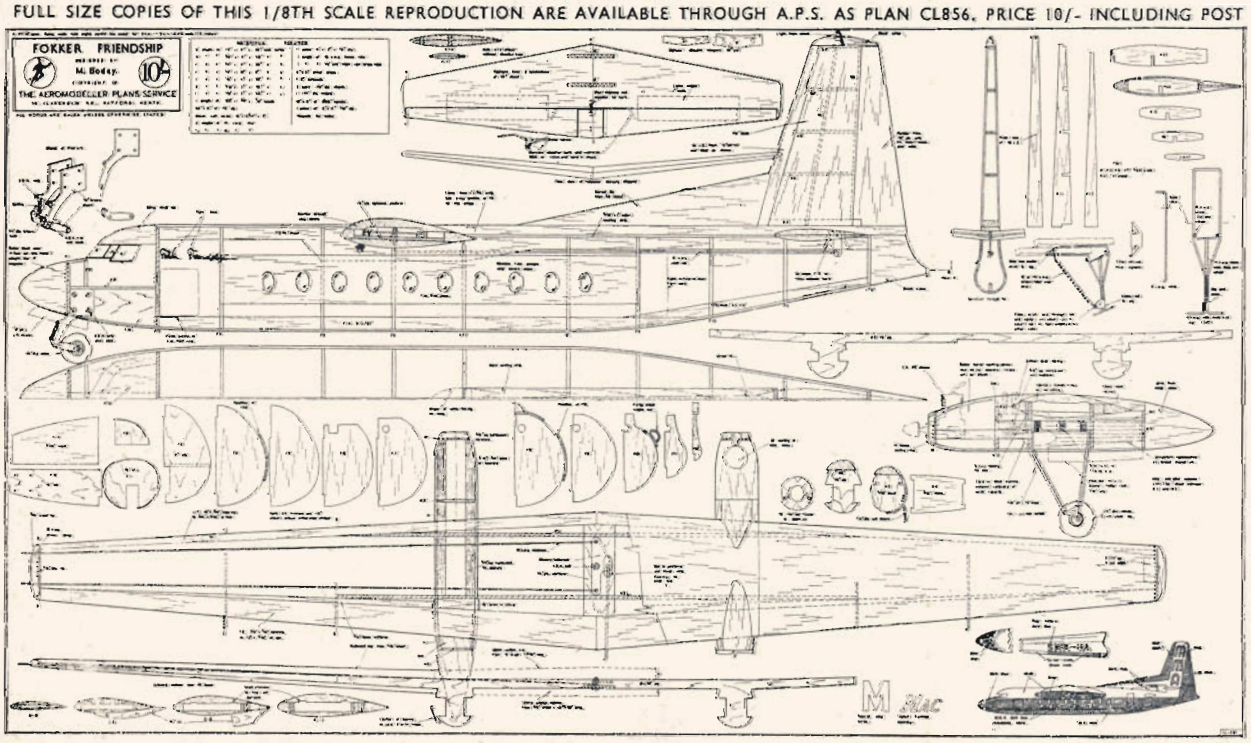


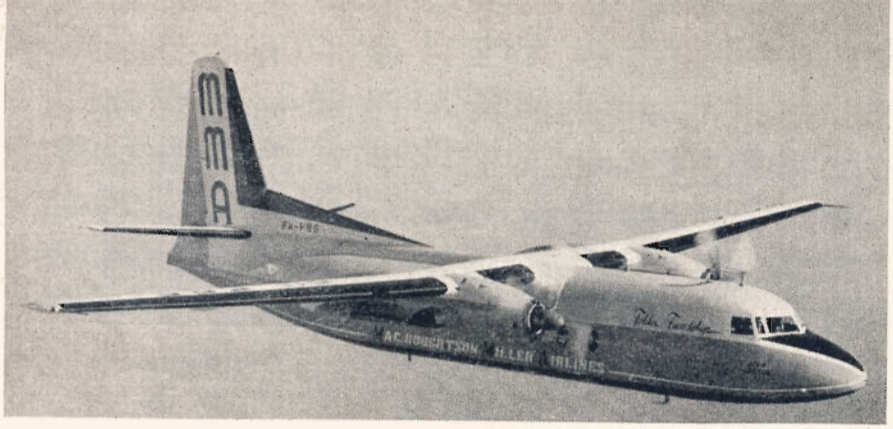
in position on rear of fuselage, followed by R3. Cut **Fin** Parts R1 to R7 from $\frac{3}{32}$ in. sheet. The former R1 is cemented to R3, followed by R4-7. By cementing R1 and leading edge in position, one can carefully align completed fin and leave to set. The fin can now be covered in $\frac{1}{16}$ in. sheet and sanded to section. NOTE:— The fin follows the fuselage in a continuous line. Shape dorsal fin, and cement in position.

Thread $\frac{3}{8}$ in. square hardwood bearers through W1 and W2 **Nacelle** former extensions. Add fuel tanks at this stage. Cement former N2 and lower engine bearers, using resin glue. Study main undercarriage detail and make up as shown, binding firmly to upper hardwood bearers. Add N4 and N3 and then plank from N2 to N3 with $\frac{3}{32}$ in. strip balsa. Upper balsa block fairings and tail block can be added, after which they are carved roughly to shape and the complete nacelle at this stage can be roughly sanded to shape. Engine cowling is carved and hollowed from hard balsa block and lightly cemented to F1. Add ply nose ring N1 and $\frac{1}{4}$ in. balsa nose ring to their respective positions. This construction is the same for both starboard and port nacelles. The completed nacelles can now be sanded to correct shape.

The model is now ready for covering after giving it a final sanding to ensure that no bumps are left. Cover complete model with lightweight tissue and give it one coat of clear dope after sanding lightly. Follow by giving up to six thin coats of sanding sealer, when a smooth finish should result. Items such as U/C doors, rudder, exhaust pipes, nacelle corrugation and ply parts at "B" and "C" on under-

FULL SIZE COPIES OF THIS 1/8TH SCALE REPRODUCTION ARE AVAILABLE THROUGH A.P.S. AS PLAN CL856. PRICE 10/- INCLUDING POST





Fokker Friendship
(continued)

The real thing! Still bearing the Dutch registration PH-FBG (R.M.A. Swan) of MacRobertson Miller Airlines on test prior to delivery. This aircraft became VH-MMS as shown on the model.

side of wings can now be added. The cockpit windows are made in six pieces with thin cardboard framing. Cut top half of engine cowlings away and thoroughly fuel proof engine bearers, N2 and inside of cowling. The engines can now be installed, and the upper cowling can be cut away to suit engine used.

Give the model one final coat of sanding sealer before painting on the Airline colours chosen. A few examples of Airlines using "Friendships" are *Aer Lingus, Philippine Air Lines, K.L.M., East West Airlines, Ansett-ANA.*

Fuelproof the completed model and check for balance. If nose weight is needed, drill into nose block and add lead. First flights should be flown off smooth ground, using 7½ x 4 props and 50 ft. lines. Make sure your lines are in good condition, and the model will fly at about 60 m.p.h. quite smoothly. No trouble should be experienced on take-offs or landings, or with single engine operation after full power take-off.

Treat this model with respect and you will be rewarded with many hours of happy *Friendship.*

Reader's letters . . .

S.M.A.E.

Dear Sir,

The Society of Model Aeronautical Engineers is now effectively "under new management". All the Officers know what fellow modellers want from the Society. The Chairman and Vice-Chairman, who are magazine editors, are each running schemes to encourage and help young modellers.

The Technical Secretary and his sub-committee are burning much midnight oil in the quest to solve the silencer problem which, because of the Noise Abatement Act, has become the major reason for loss of flying fields. All full and country members now receive regular copies of the Society's newsheet *Model Flying.* For this and other services of the Society, including fully comprehensive insurance up to £50,000, they pay:—

Country Members £2.
Junior Full Club Members 11/3d.
Intermediate Club Members 18/-
Senior Club Members 36/-

So the largest individual contribution is about 10d. per week, the Juniors only contributing about 3d. For people not interested in getting newsheets, rule books and not wanting to enter too many contests per year, there is Associate membership. An Associate pays 12/6d. a year for full insurance coverage and the right to wear the Society's badge, which is world famous. If you have any queries relating to the S.M.A.E., possibly I can help you?

KEVIN LINDSAY, P.R.O., S.M.A.E.
Please write to :—
53 Guildford Avenue,
Surbiton,
Surrey.

I flew it!

Dear Sir,

In the Christmas issue of AERO-MODELLER, Mr. W. R. Matthews mentioned the fact that the Frog people gave a correct serial number (N3780) to their plastic Magister model.

Perhaps you might like to see a photograph of four of these models perched on the fuselage of the original machine. It was taken at Kingstown Aerodrome, Carlisle in 1940, and the Unit was No. 15 Elementary Flying Training School, R.A.F.

N3780 was one of the 'better' Maggles and I flew her a lot. Before the war she was the demonstration aircraft at Reading where she was built and she ended her career there as a test aircraft with a new Miles Propeller of which nothing more, so far as I know, was heard.

C. NEPEAN BISHOP,
Secretary, THE SEAPLANE CLUB.
Bognor Regis.

Veteran pilot, well known for his aerobatics in the specially converted Tiger Moths of the "Tiger Club", C. Nepean Bishop took this photograph of his Frog Penguin plastic Magister models in 1940 as they nestled upon the anti spin strake of the actual machine modelled by the kit, see letter above.

Those were the days!

Dear Sir,

Lt. Col. Bowden's article "Engine Reminiscences" in Christmas AERO-MODELLER interested me very much and I must agree with his suggestion there is a field for the lower speed engine, with the larger prop absorbing *all* the power for general model flying than we have on the market today. The trend seems to be entirely towards the high reving engine which will drag a heavily loaded model crammed with electronics, through a more or less set pattern of stunts. Not only this, but most of these models are of the same design, usually of a previous championship class—for pattern aerobatics. It is, however, refreshing to note a tendency in some quarters to get back to the *real* scale model — with scale flying speeds — and how nice these are to watch from a spectators point of view, also the comparatively few experimental models, autogiros, helicoptors, etc. It may interest the modern modeller to know that all "power" models of the 1930 period (petrol and compressed air) *had* to take off grass, there were *no* runways or perimeter tracks in those days—reason—no jet flying! These models were seldom less than about 7 ft. span, and our club effort here near Nottingham fitted with an *ATOM Minor* weighed about 8 lbs., and the engine was a Club effort made up from the Westbury castings. It gave good results but as Col. Bowden has remarked, was difficult to start. In conclusion, it may interest Col. Bowden to know *I* happened to be one of the spectators mentioned at Faireys Aerodrome when his record flight was made. I also have two photo's of the "Blue Dragon" being made ready for this particular flight, and would be pleased to loan this old photo album, if Col. Bowden would like to see them.

F. A. LOWE.
Beeston, Notts.

Build 'em tough

Dear Sir,

With reference to the "New Wing Structure" feature in December AEROMODELLER, I should like to point out that this form of construction is extremely similar to that employed by W. Werwage in his "Ares" design.

In my humble opinion, Werwage's structure stands out as the best we have yet seen for large stunt models. immense strength, faced with ply over It centres round an I-section spar of the centre section (in this case mainly to carry the undercarriage). The "skeleton ribs" pass above and below this spar, with additional riblets between spar and L.E. to support the covering. Concentrating all the strength into one spar and omitting leading edge sheeting produces an extremely light and springy wing.

I have built two 35 stunters using this structure, and claims it to be as near indestructible as one can hope to get. Even with nylon covering and an elaborate finish weight can be kept well under 3 lbs. As an illustration of crash resistance, one of these models went into the deck from a wingover and buried itself up to the leading edge (a matter of some 10 in.) without suffering more than stress cracks.

In the light of experience gained with these models, and in quest of something lighter still, I designed a more rigid wing more suited to tissue covering. This was, to all intents and purposes, identical to that detailed by F/Lt. Falconer. I found that the D-section torsion box made too rigid a structure to be compatible with good crash resistance, and this model was written off in comparatively minor brush with the ground.

I would fully endorse all F/Lt. Falconer's claims of economy, lightness, and ease and rapidity of building. Apart from these and other advantages, I would heartily commend this structure to those modellers (and there must be many of them) who are growing tired of the conventional W1-W2-W3, etc., layout.

B. MACGRATH.

Tooting, London, S.W.17.

Appreciation

Dear Sir,

I would like to congratulate two of our aeromodelling "menders" for their exceptionally fine service. Namely Geoff Franklin (*Shattered Orbit*) and D. J. Allen (*Shattered Merco* 49), their repair services are first class and give new hope to "shatterers" like me.

L. HODGES.

R.A.F. Lyneham.

Penetration

The four letters which follow are but a small representation of the selection received on the subject of Mr. G. Rees's article in last month's edition. They clearly indicate the divergence of opinion which exists concerning this word and its accepted application to aeromodelling and certainly protest at the suggestion that the word be removed from our modelling vocabulary.

Space permitting, we may have more to say on this subject next month.

Dear Sir,

The article by G. Rees on Penetration was most interesting and he did well to lay some very dearly held misconceptions on this subject.

I feel though that I must disagree when he says that it would be a good thing to drop the word from our vocabulary.

It is surely the most apt word to describe the ability of a glider (or any gliding model) to make headway with the lowest rate of sink.

This ability, so useful to a slope soarer and the full size sailplane, is obtained not only by addition of ballast and trimming for max. L/D ratio but most important, by reduction in total drag. A consideration often missed on the average slope soarer.

More research is needed into aerofoils for this type of model as the popular A/2 types of section do not lend themselves to good gliding ratios.

I would like to add that if the average aeromodeller was to take a short course in gliding and light plane flying, it would help to rid him of his most dearly held misconceptions.

KARL M. WEBSTER.

Rochester.

Dear Sir,

I read in the February issue of AEROMODELLER that the conception "penetration" has been disputed by Mr. Rees. I am really sorry that such a fine and significant word should not be used any more. The term "penetration" is full of expression and it seems to be widely used by practical free-fliers and radio control modellers.

I emphasize that there exists such a thing as "penetration". When a model is meeting a horizontal gust, *e.g.*, it can easily fly through it (pentrate) or it can stall. In the first case I say that the model has a better penetration. Simple, isn't it?

What Mr. Rees seems to do is a kind of vector addition of the speed of the wind relative to the floor and the speed of the model relative to the wind. Mr. Rees describes a state of equilibrium of the forces acting upon the model. We know from the most elementary mechanics that this implies the speed of the model to remain constant relative to the wind. And if this condition is satisfied we can use the method of vector addition as Mr. Rees seems to have done.

The condition for the wind to remain constant relative to the model implies that we cannot allow gusts, etc.

I do not know what the weather is like in England but here in Scandinavia where I live, the air is very seldom still, it is very easy to observe small variations of the wind speed and its direction. Then the model is very often describing very small oscillations around its axes.

When there is no equilibrium of forces acting upon the model we must apply Newton's laws of motion and so we introduce the term "inertia".

Now let us consider a model flying in the Scandinavian weather. As the model has got a certain mass it has also got a certain amount of inertia, which has the effect of trying to conservate the speed and direction of the model relative to the wind when the model is oscillating.

Let us go on considering a model in equilibrium flying with constant speed in a certain mass of air. Now let us imagine that the model flies into a thermal which has quite another wind speed vector than the mass of air first considered. After a while in the thermal the model might very well fly steady again with the same speed relative to the thermal as formerly relative to the mass of air. But during a certain period when the model was flying between the thermal and the mass of air the wind speed relative to the model varied, and so the equilibrium was spoiled and so the "inertia" forces came into action.

And what happens when the inertia forces are acting upon the model might very well be associated to the conception "penetration".

In order not to bore the reader I will not go into theories but it is a well-known fact that a heavy model flying with high speed "penetrates" better, and is not so easily upset by a gust. Especially for free-flight contest modellers it might be useful to know how to increase the penetration or "dynamic stability", and what might be done, by studying the theory of the so called phugoid oscillations.

P. WANNGARD.

Stockholm, Sweden.

Dear Sir,

I read with interest the article on page 84 of the February AEROMODELLER entitled "Penetration", but I find that there are certain points on which I cannot agree with the author.

He seems to infer that the term "penetration" is a misnomer which should be replaced by "airspeed", and refers to a sentence on my "Slope Rhino" plan where I say "Add weight under the C.G. to increase penetration".

I believe that "penetration" is a perfectly correct word to use here—the addition of weight increases the models capabilities for battling its way into the oncoming airstream—it helps the model to PENETRATE into it, rather than be blown backwards.

Much as I agree that his change of terms could be used as an alternative, I certainly fail to see that "penetration" as used in that context is a mistake.

I. ANDERSON.

Weston-super-Mare.

Dear Sir,

On glancing through my copy of your February issue I was attracted by the article on "Penetration" by G. Rees. Unfortunately I cannot agree with his dogma and feel that most serious Aeromodellers were already well aware of the simple fact *re* airspeed and groundspeed which he put forward.

My dictionary gives the meaning of "penetrate" as "to enter into" and I possibly mistakenly have thought for many years that an aeroplane did in fact enter into the air immediately in front of it whether this air is stationary or not and does therefore penetrate.

My next point is that rightly or wrongly and it really does not matter, our Aeromodeller probably thinks of penetration as a ratio between groundspeed and wind velocity and it is this which is so important to the man standing on the ground watching his creation fighting to windward. Now it seems to me that for a given wind velocity the aeroplane which owing to wing/power/loading has the greatest groundspeed can be considered to have the greatest penetration as it must obviously have the highest airspeed and as I mentioned must be entering into or penetrating the air at the highest rate.

Finally Mr. Rees was not quite accurate, in saying that drift "obviously depends on wind speed and direction". Other forces such as temperature and air density enter into the picture and these also affect the groundspeed/airspeed question as it does not follow that groundspeed must be *constant* for a given wind *speed*.

H. M. CAMPBELL.

Glasgow

LET'S GO FLYING

Beginning a new series for the novice

by **JOHN BARKER**

Junior modeller from Coventry, F. Devitt launches R. Draper's A/2 Glider.

"LET'S GO FLYING" is not just a title, it is a real invitation. There are few things more depressing than to spend a lot of time building a model only to find that it will not fly ; or worse still to have it crashing into a seemingly irreparable mess. In this series we will show methods of building and flying which will ensure success. More important, where possible we want to explain why we adopt a certain course of action.

Before going into detail it will be profitable to consider the growth of aeromodelling to the present time and how this affects the newcomer to the hobby.

Aeromodelling can be considered as having started in the 1920's. In those days, almost all the models were powered by rubber motors and were constructed from such materials as spruce, plywood, bamboo, silk and wire. Aerodynamic design was of the crudest, partly due to the materials used and most likely due to the small number of modellers giving little cross fertilization of ideas. Some years later aerodynamic design had improved to the extent that the flying of gliders became a worthwhile proposition. In the early 1930's there were two events in the United States which were of immense significance to the model aircraft enthusiast. The first was the introduction of Balsa Wood and the second was the manufacture of miniature petrol motors.

At this time the beginners' path was clear. He could start with simple rubber models and would then be competent to build the somewhat larger gliders if he wished. Another line he could follow was that of rubber driven scale models although the performance of these latter was such as to render them little more than a constructional exercise. He could also tackle petrol models although the cost was much higher, they were more complicated and much more difficult to handle.

The 1940's saw the introduction of control line flying by Jim Walker which opened up a whole new branch of aeromodelling. Speed, stunt, scale, team race and combat all made rapid progress in the immediate post war years.

The wartime developments in electronics gave a new start to radio control, and although progress was slow at first, the last few years have shown remarkable improvements.

The end of the war brought news of the introduction of the 'Diesel' engine by European enthusiasts. These engines removed the need for the large and heavy ignition components and made miniaturisation of the engine itself worth while. They were a significant step forward and jogged the American industry into the introduction of the glow plug.

Allied to the above, particularly in recent years, there have been enormous improvements in structual design, largely in the direction of simplification. Another important factor is the way that improvements in one branch of the hobby have benefited other branches. For instance ; control line has given us better motors, gliders have given us efficient wings and rubber models have developed lightweight structures.

This brief historical survey will give some idea of the present state of the hobby and we will try to show what this means to the beginner. Firstly, there are so many different types of model aeroplane that if a new type was tackled each year it would probably take a lifetime to get through them all. This means that there is no need to be bored, there is always something new to try. Building a reasonable variety of models is a good thing and will give a true knowledge of the hobby. Do not, however, go to the other extreme by trying everything and achieving nothing. Secondly, the highest performing models in any particular class are very good and this gives a worthwhile challenge.

Thirdly, the models of average performance in any class have usually been so well developed that the beginner can tackle them with confidence and expect a reasonable performance. But a word of warning. This simplicity is a trap into which many beginners fall. They confuse a *simple* method with a *slapdash* method. The really important thing in aeromodelling is to adopt the correct mental approach which will ensure that you do all the things which you know should be done.

Responsibilities and Safety

We make no apologies for introducing this aspect of the hobby to you at such an early stage. It is difficult to overestimate their importance. Every modeller has a responsibility to avoid harm to other people and their property and if he is sensible he will want to avoid hurting himself.

Choose your flying fields to suit your models. You will find some flying fields where rubber models and gliders may be flown quite happily and yet the roar of motors would be completely intolerable. It is hoped that in the near future the governing bodies of aeromodelling and the manufacturers will themselves adopt a responsible attitude and ensure that these miniature motors are fitted with silencers.

When choosing a site for control line flying make very sure that you DO NOT FLY NEAR HIGH TENSION

LINES. Several flyers have been tragically killed by neglecting this precaution.

Try to fly within the confines of your flying field. This is usually possible by sensible use of a "dethermaliser". If you do fly away be careful not to damage growing crops whilst searching for the model. Just think how you would feel if the farmer came into your flying field and trampled all over your models whilst searching for one of his stray animals.

It is a wise precaution to have third party insurance cover for damage caused by your model. The easiest way to arrange this is by joining the S.M.A.E. The membership fees cover the cost of insurance.

Cost

Cost is a very variable factor in the hobby and is almost what you like to make it. One modeller will spend more money in a weekend travelling to a competition than another will spend in a whole year on building materials. Confining ourselves to the materials and equipment side it is a strange fact that the newcomer to the hobby almost always spends more money than the expert. This is often because the beginner believes that a new engine or a new kit or new fuel will cure all his troubles. This is not so, you cannot buy your way out of trouble.

Be sure that you buy the right things first. Buy your balsa knife before you buy your balsa: buy a timer before you buy an engine and so on.

Talking of engines, it is important to buy the right type to suit the type of flying that you intend to do, but we shall be going further into this later in the series.

It is seldom realised by the beginner that a good model should last for several years providing that it is properly repaired. A new model fairly often suffers damage on it's early flights before it is trimmed and before the weak spots have been sorted out. It is at this stage that the beginner will 'junk' the model believing it to be no good. The expert on the other hand will carry out some careful repairs and gradually bring the model to a high state of trim. He will then usually prefer it to a new model. So don't forget; repairing is a great cost and time saver.

Balsa Wood

If you like to get one up on your friends, you may like to know that the Latin name for the balsa tree is Ochroma Lagopus and that it is a hardwood. The main source of supply is Ecuador. The rate of growth of a balsa tree is very rapid and varies greatly with the annual rainfall. The density of the tree varies with the rate of growth. As the strength of balsa wood depends on the density, we aeromodellers are very fortunate in having a standard material with a wide range of strengths. Some idea of the variation possible is given by *Table* 1 which shows the gradings applied by one of the leading suppliers of balsa wood.

In addition to the density variations there are differences in the way in which the balsa planks are cut from the tree. *Figure* 1.1 shows a cross section of a balsa log giving two positions from which a plank may be sawn. Quarter sawn wood is very stiff but will easily crack if bent across the grain. It is used for parts such as ribs and formers and other sheet parts requiring resistance to warping. Quarter grain wood is usually rather dark and speckled in appearance. Tangent sawn wood is easily bent across the grain and so would be used for sheeting which requires to be curved. It has a smooth light appearance. The wood can also be sawn at any angle between these two and will then give intermediate properties.

Balsa is usually sold in three-foot lengths but four-foot lengths are occasionally available. Normal sheet width is three inches but two inch and four inch widths are also stocked by many model shops. Thicknesses range from 1/64th to 1/2 but the 1/64th is rarely stocked. A wide variety of strip sizes are available but it is usually better and cheaper to strip your own from sheet. A stripper for this purpose is described later. Block balsa is also available but is little used except for carving propellers on rubber models, or for cowlings or fuselage parts on large models.

The wide variations in the density and the grain of balsa wood demand great care in choosing the correct wood for the particular job in hand. This is really most important so do not be too embarassed to look at every sheet in the shop if necessary. It is a wise policy to buy good wood when you see it even if it is not immediately required. Wood for spars and longerons should have a long straight grain or it will fracture in use. Avoid sheet with prominent saw marks which cannot easily be

Extremely rare photograph of a Balsa tree in the Ecuadorian Jungle taken in colour by Mr. "Solarbo" J. V. Patterson when out there arranging further supplies for his Company.

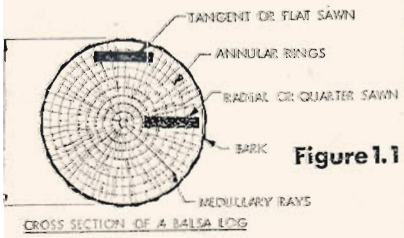


Figure 1.1

Table 1.1

'Solarbo' Balsa Grading

Density lb. cu. ft.	*Grading*
6 and under	very light
up to 7	light
7-9	medium soft
9-12	medium
over 12	heavy
over 16	extra hard

sanded out. Some sheets will be found with minor discolourations and worm holes. These are not a serious disadvantage for most sheet work.

Spruce

This wood is much heavier than balsa but it is very strong and springy. It was one of the first aeromodelling materials but fell into disuse with the introduction of balsa wood. It is now returning to favour for certain parts of the model. In particular we may mention the mainspars of glider wings ; the flexing of the spruce absorbs towing strains better than would balsa spars. Spruce is also one of the best woods for making the fuselage of a chuck glider.

Plywood

Plywood is widely used for the highly loaded parts of a model and also for making templates. It is readily available in the model shops and is usually sold by the square foot. The thicknesses quoted are nominal and can vary considerably from the actual figure. This need cause no concern provided that you measure or even 'eye up' the actual sheet in the shop to find a suitable piece.

Covering Materials

The most widely used covering material is 'Modelspan' tissue which is available in light and heavy grades. It is a very good material and is suitable for almost all models. The chief disadvantage is its great capacity for absorbing dope particularly in the heavyweight grade.

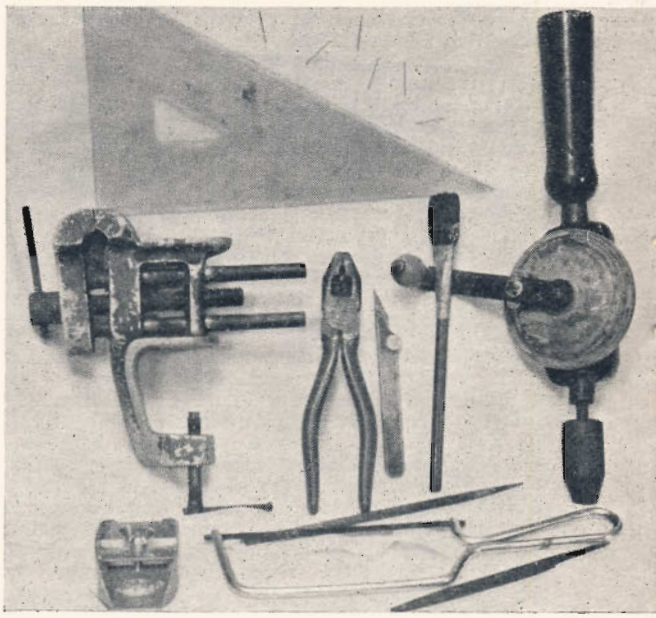
For covering lightweight structures the best material is Jap tissue. It takes much less dope than *Modelspan* to render it airtight and it does not shrink so strongly. Unfortunately it is difficult to obtain and is not usually stocked by model shops.

Larger and heavier models can benefit from being covered in silk or nylon. This is a little more difficult to apply than the tissues but it is durable. Suitable grades are stocked by several mail order, and many local model shops.

Beginners may be confused when they read reports of certain indoor models being covered with microfilm. This has nothing to do with photography! The microfilm referred to here was originally used in certain branches of physics. An American named Kittel realized that this could provide a light, airproof covering for model aeroplanes and introduced it for this purpose in 1931. To produce microfilm we first mix up a microfilm solution. Many ingredients have been tried for this but the simplest mixture, although not the best, is ordinary clear dope with a few drops of castor oil added. A small amount of this solution is then poured on to the surface of some water. The solution will be found to spread out and form a skin on top of the water. It will harden after a minute or two when it can be lifted on a wire frame ready for applying to the model.

Surface Finishes

Many things have changed over the years in the building of model aircraft but one thing has stayed constant. This is the use of dope as a method of finishing the surfaces. There is good reason for this. The primary purpose of dope is to render tissue and fabric airproof but in addition it makes the covering tighter, much stronger and to a large extent waterproof. It has secondary uses as a sanding sealer and also as an adhesive for tissue. Ordinary dope is a clear thick liquid but it is also pigmented to give a range of colours. The coloured dopes do not tighten as well as the clear variety and are also somewhat heavier. The usual practice with free flight models is to use coloured tissue and clear dope, although sheet fuselages are quite often colour doped. Control line models and the larger radio models usually use coloured dope much more widely.



Typical range of 'kitchen table' modellers' tools as used by the author for all of his aeromodelling.

An almost essential supplement to dope is dope thinners. Clear dope requires thinning when used with lightweight structures to reduce its tautening power and thus prevent warps. Coloured dopes are usually thinned because a large number of thin coats gives the best finish.

One other important product which must be mentioned under this heading is Fuel Proofer. It is an unfortunate fact that the fuel used for glow plug motors softens a normal dope finish. Fuel proofer is a clear liquid which is applied, where necessary, after the normal dope finish. The proofer hardens after application and prevents the glow fuel from attacking the dope.

Adhesives

The main adhesive used for building models is Balsa Cement. It is a quick drying product which performs its main job of making balsa joints extremely well. Balsa cement will also give quite good joints with harder woods although many builders prefer a glue more especially made for the purpose. There are a wide range of these at most 'Do it yourself' shops. The medium size tube of balsa cement is probably the best size to buy. It is large enough to be economical and small enough to be handled easily.

The quick drying properties of balsa cement can be an embarrassment at times when large areas have to be glued all at one time. The modern P.V.A. adhesives serve this purpose very well. An example

of these is Casco *'Glue-All'* which is particularly suitable for aeromodelling use because of its special nozzle.

The modelling movement is completely divided on the question of whether tissue covering should be stuck to the framework with paste or with dope. We shall be describing both methods later. Suffice to say here that if you do go for paste the type to use is the white 'photographic' variety of which *'Gripfix'* is a typical example.

Wire

The normal wire for aeromodelling use is the strong, springy variety, known in this country as piano wire and in the United States as music wire. Wire for constructional purposes is sold in three foot lengths and a variety of gauges. Wire for control lines is sold in coils of suitable length and is frequently stranded. *Table* 1.2 lists the most used gauges together with their actual diameters. The full range of gauges is very much larger than that shown and includes all the odd numbers. These others, however, are not readily available.

The above covers the main materials that the beginner will encounter but the position is not static. As articles in the AEROMODELLER will show; aluminium alloys, fibreglass, foam plastics and other materials are being tried and may change our constructional ideas in a few years.

The Tools

The essentials are few and reasonably cheap. A natural starting point is the building board. Almost anything that is flat, is as big as the component you wish to build, and into which you can stick pins will do the job. If you do buy one, at least a foot wide and four feet long would be about right. You will also need a cutting board about a foot square otherwise you will cut your plan to pieces.

A balsa knife taking replaceable blades is a good investment. The types with a flat handle are the best; they are safer, easier to handle, and they don't roll off the workbench. The only type of blade you normally need is the triangular one shown in the photograph.

A whole range of pliers would be nice but if you are keeping down the costs buy a good big pair. Small pliers just cannot bend thick wire but thin wire can almost always be bent, even to an intricate shape, on the corners of big pliers. Special wire clippers are unnecessary. A miniature hacksaw will cut all the wire that cannot be done with the pliers and will be useful for other jobs as well.

Lots of pins will be needed but do not buy high quality ones. High quality pins are usually too brittle to bend and a bent pin can be invaluable at times. You may smile but a pin cushion is much better than a tin when you are working. A piece of foam plastic makes a good pin cushion.

A dope brush will be required. A high quality one is, of course, the best; but bearing in mind that dope is not really brushed but only transferred from the tin to the tissue a tenpenny brush from Woolworths will do the job almost as well and *if* it is cleaned after use will last for several years.

Some way of preventing the framework from sticking to the plan is needed. Soap may be rubbed over the joint positions on the plan or a sheet of waxed paper may be pinned over it completely. Probably the best material for this purpose is 'Permatrace' drawing film if you can get hold of any. It is sold at art supply shops.

The only other real necessity is a straightedge. The writer prefers a big 60° set square which serves the purpose of straightedge and square.

Other items which will be of use are a wheelbrace with a selection of drills, a small vice, a few files, a 'Zip' razor plane (from the red and gold store), a hand brush and a waste bin. The latter two items are almost essential; partly to keep on good terms with the family but chiefly because you cannot produce your best work when the workbench is in a mess.

A final item which is strongly recommended is the stripper shown in *Figure* 1.2. This produces stripwood from sheet and can save a lot of money.

It gives better wood selection as the quality of the balsa can usually be judged more easily as a sheet. Strips can also be matched by cutting from the same sheet which will give better structures that are less liable to warp.

NEXT MONTH: Joints and Structures

Table 1.2

Piano Wire Sizes

s.w.g.	Dia.
8	.160
10	.128
12	.104
14	.080
16	.064
18	.048
20	.036
22	.028
24	.022
26	.018
30	.0124
33	.010

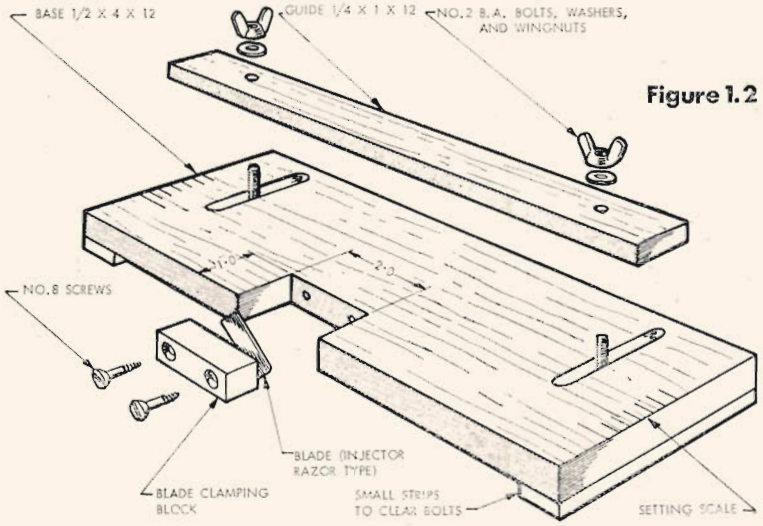


Figure 1.2

BALSA WOOD STRIPPER at right has been specially designed for its simplicity and efficiency. General assembly is self-evident. The adjustable guide on the top is moved from side to side and clamped tight with wingnuts. Sheet balsa is then pushed along the top of the stripper base with one straight edge running against the guide. The space between the blade and the guide determines the width of the strip.

SIGN POST

A MONTHLY ENQUIRY SERVICE

Each month, *Aeromodeller* and *Air-Britain* combine forces to answer interesting questions sent in by readers. Postcards, please, to "Sign Post" c/o Aeromodeller, 38 Clarendon Rd., Waford.

Sharktooth Israeli

About six years ago there appeared in another journal colour drawings of the Israeli Air Force Ouragan. I seem to recall that the drawing showed a magnificent "sharktooth effect" on the nose intake. Is there any photographic evidence to support this, I suspect, unusual Israeli embellishment of a military jet?

(L. S., Glasgow).

Thanks to the photographic knowledge and patience of one of our associates, the accompanying photograph has been gleaned from an original colour transparency. Unlike the colour drawing referred to, this IDF/AF Dassault MD-450 Ouragan has no slate grey and blue camouflaged upper surfaces. It is left in bare metal. The nose decoration has white "teeth" on a black base (upper molars) and black-outlined white teeth on a red base (lower molars). The "eye" has a red centre on white with a black outline. Behind the mouth and on the fin, hastily taped wrapping paper obscures the unit and individual markings. The national marking, a sixpointed light blue "Star of David", appears on a white circle, on each side of the rear fuselage and the wings. In this instance the wing tip fuel tanks have a red "lightning" device visible. The IDF/AF at one time possessed 75 Ouragans but these have since been withdrawn from front-line service.

KLM Stripes

I am making the A.P.S. Dakota in KLM colours. Is it true that the fin stripes are to be altered?

(K.B., London).

Yes, as possible during maintenance all KLM fleet A/C will be given horizontal Cerulean and Azure blue stripes with white leading edges on vertical tail surfaces. The company emblem is also to be altered with crown in the light blue and KLM dark blue. Typical DC-3 is PH-DAD.

Gaudy Wimpeys

I have heard it said that some "Wimpeys" were used for air-sea rescue duties in the Middle East and that they were unusual in that the external finish was gaudy and highly non-standard. Details, please.

(V. T., Bristol).

Vickers Wellington Mk. Ic two-motor medium bombers reached the Mediterranean theatre of operations in the Autumn of 1940.

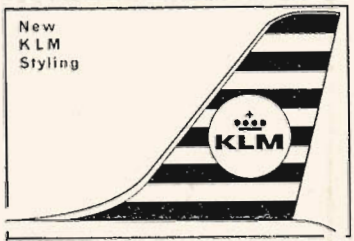
From then on, the "Wimpey", as the Wellington was affectionately dubbed, served from North Africa to the last campaign in Italy in 1945. *But presumably the query refers to the trio of Wellington Mk Ics which formed the initial equipment of the R.A.F. Sea Rescue Flight which was established at Landing Ground L.G.39 (Burg el Arab, Egypt) from August* 13, 1941. *The euphemistic phrase "operationally tired" (the American "war weary" was less pompous!) was applied to the three Mk Is (T2829, T2839 and T2551) and it is doubtful whether a year of desert warfare had left the night bomber camouflage of "sand, spinach and soot" in immaculate condition. Whatever the reason, it was decided early in September* 1941 *to repaint them in a colour scheme devised by members of the S.R. Flt. and based on the scheme then in use for flying-boats. What might have been a brilliantly executed but quite unexceptional exercise began to fall apart when it was observed: (a) no-one could locate Service instructions for this scheme, and (b) none of the correct dopes were available. All that was to hand turned out to be; (1) blue (2) grey, and (3) silver. Only "Wimpey" T2829 survived after November* 1941, *the other two being written-off in crashes. Up to this point the story can be vouched for but, what remains a mystery is just how these three colours were applied. Perhaps one day, who knows? evidence will come to light by way of photographs or sketches by eye-witnesses.*

Congo Miscellany

I have searched without success for information on markings of aircraft used by the Katangan Air Force. I understand some Doves and Fouga Magisters were offensively employed and would like to have markings if they are unusual, for my models.

(F.T., Tunbridge Wells).

Most KAT aircraft retained their original manufacturer's or previous owner's colourings. Identities were altered to carry the prefix KAT or KA and roundels were red, green, white concentric rings with three copper or red crosses on the white centre. A square fin marking with a green diagonal stripe separating white and red triangles also carried the three red crosses. Doves which were ex-Belgian Force Publique aircraft D 18, *etc., became KAT-*11, -14, -18, -19, -22. *A Heron became KAT-*01 *and three DC3 Dakotas KAT* 02, 03, 04. *The Magisters were KAT* 91, 92 *and* 93 *and three Piper Comanches were numbered KA* 111, 119 *and* 81. *The helicopter force was one Sikorsky S-55 number K* 51 *and two Alouettes, KAT* 52 *and* 53.

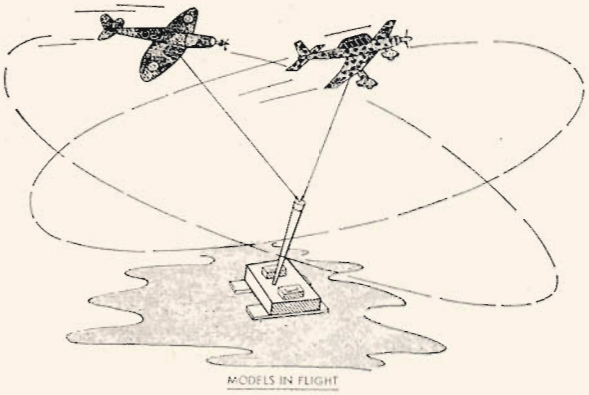


These markings were applied to aircraft prior to September 1961.

Later, Dornier Do 28*As had their factory numbers prefixed KA and became KA* 3016, 7, 8, 9 *and* 3020. *A DC3 Dakota bought as ZS-DFN became KA-DFN. Another, ex-Dominican HI-*40 *became KA-*40 *and a DC4 from Persia was changed from EP-ADJ to KA-ADJ.*

North American Harvards were numbered KA 28 *to* 38 *inclusive. The last three now serving in the Portugese Air Force in Angola, are fitted with rocket rails.*

Katangan Dove Bomber above and C-47 Dakota below. Pilot is J. Hedges, well known South African speed aeromodeller who served in a senior position with the K.A.F.



MODELS IN FLIGHT

BOTH MODELS ZOOM AROUND IN DIFFERENT PLANES IF THEY ARE VERY SLIGHTLY OVERELEVATED. THE SAME EFFECT TAKES PLACE WHEN THE REAR MODEL CLOSES UP INTO THE OTHER'S SLIPSTREAM, AND ITS FLIGHT PATTERN IS DISTURBED

Indoor Combat! by Eric Clutton

TWO AT A TIME ROUND THE POLE-FLYING WITH SPITFIRE AND STUKA

RUBBER-POWERED RTP models have never found particular favour with Five Towns MAC. Except for the odd flash of enthusiasm for a rubber driven speed model, and experiment with small scale kits, the club pole remained inactive.

This situation has now drastically changed. It all started when one of the members brought a Cox TD.01 powered stunter to the clubroom and tried it RTP (round the pole). The results were hair-raising to say the least!

The possibilities in this activity immediately appealed to Eric Clutton and the next club meeting saw him armed with the prototype caricature "Stuka". This was highly successful and could be flown really slowly by running the engine rather rich. The next step was a little drastic; *another* pivot was added to the pole and Eric produced the "Spitfire". Excitement was at fever pitch when *both* Spitfire *and* Stuka were hooked on and released (one person can launch both models if desired). The motors were running very rich and both models proceeded round the pole at a sedate pace, occasionally overtaking either underneath, or over the top!

Streamers were tried, and the motors progressively leaned out. Both models going really fast is quite hectic!

The occasional collision is inevitable but damage is surprisingly minor, even at the higher speeds. Line tangles happen all the time, but this doesn't seem to matter—on several occasions they have had one model towing its opponent round with a dead engine! The models sometimes clash together and become so entangled that they continue to fly round as a composite aircraft! Carpet thread seems to withstand the strain, but a good heavy base is essential for the pole. (The Five Towns pole is set in a box full of concrete and they *still* have to ballast it with two house bricks).

Sometimes a model will start to wind the line round the pole and it is probably safest to leave it until the model comes up against the pole—without damage.

The disc on top of the pylon is a new addition which minimises line tangles as it stops the wire pick-ups from picking up each other! If the upper model cuts first the lines are *bound* to tangle, so it is advisable to stop the lower model as well if this happens. Just step into the circle behind the model and grab the line. Mind your big feet on the other model (*guilty*!). Models should be tested individually on low revs. Opinions are divided as to whether combat is best flown fast or slow—fast is certainly more thrilling!

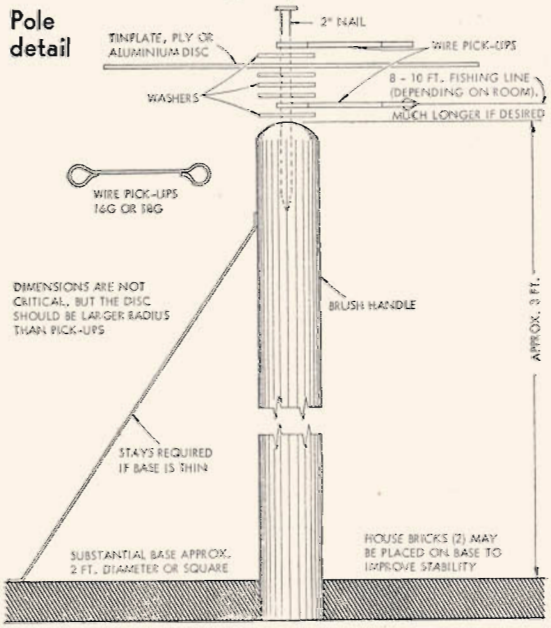
Lines to models should be approximately same length—Five Towns tried making one line longer than the other, but the overtaking model almost invariably bit the other model's line and crashed. If the lines are the same length the slipstream effect comes into play and the faster the models fly, the more powerful is this effect. Watch out for any hanging lights in the clubroom—Eric had a Goodyear racer wrapped around a light cord!

Although RTP Combat looks very hectic it is quite safe if reasonable precautions are taken—after all, the models only weigh a few ounces! Props may be fitted backwards to slow models down even further.

The possibilities with this indoor combat are exciting, and it has taken this club by storm—models being flown include *Stuka, Spitfire, Me* 109, *Tony, Hurricane, Curtiss SB*-1, *Mosquito* and *Me* 110. So far they have only had two models flying together, but who knows if two people launched two models each ————!!!

The really surprising thing is the way the models overtake each other, sometimes over the top, and sometimes underneath. It is much easier on the nerves (and models) if they are fairly well matched for speed, so that an overtaking manoeuvre is a long drawn out affair!; 049's have been flown but this is a bit risky with the hotter engines and maximum engine size recommended is 0.5 c.c. Five Towns have flown an out-and-out speed model with TD.01 and it was completely *invisible*!!

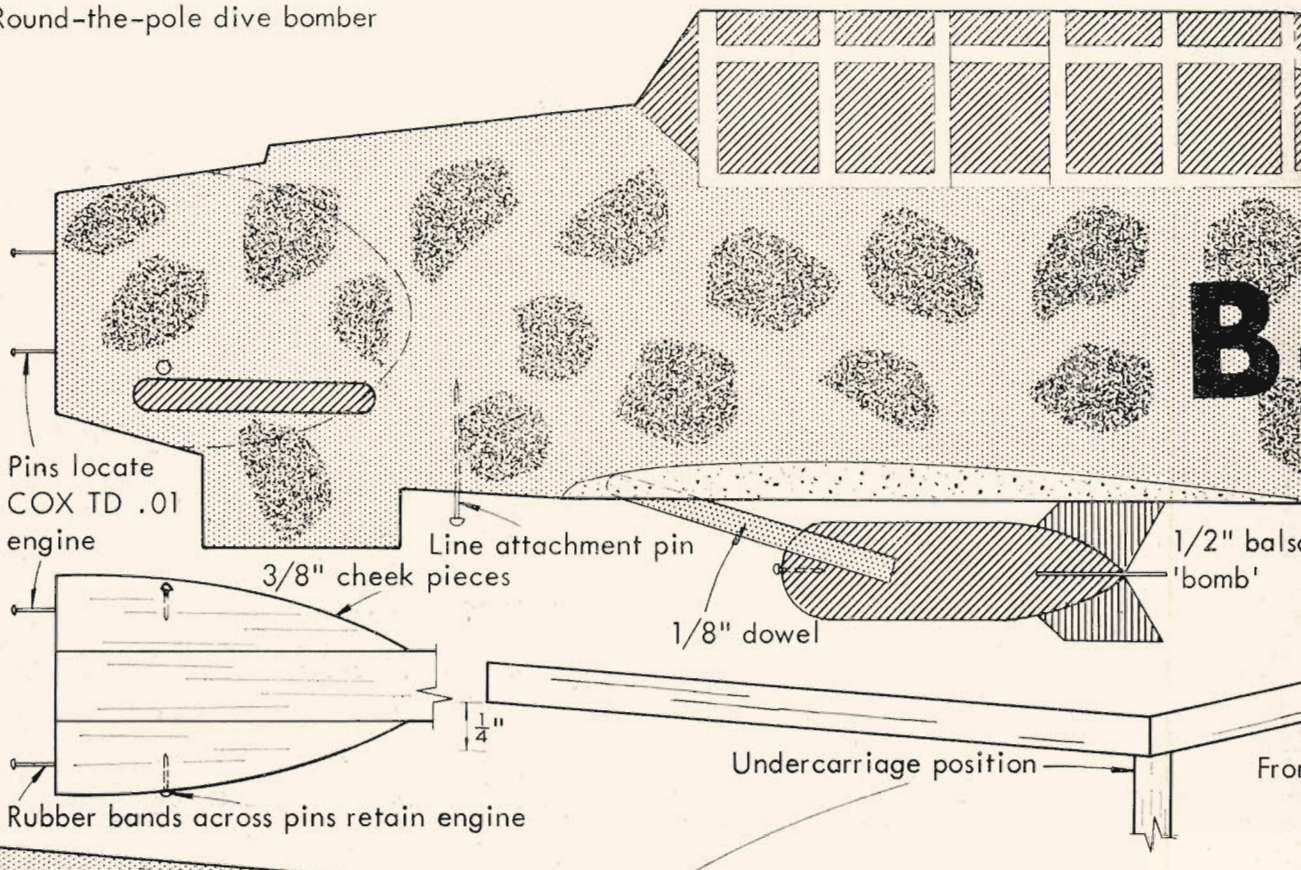
Pole detail

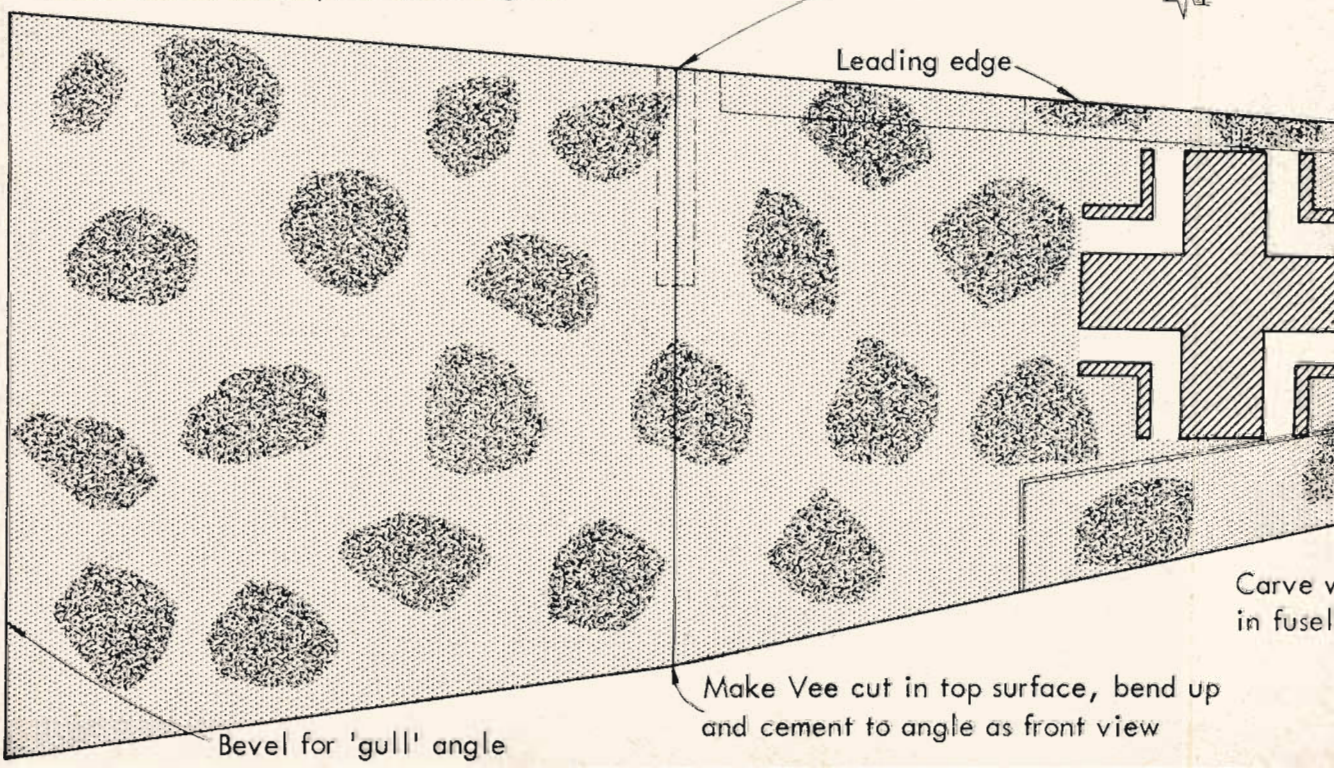


STUKA

ERIC CLUTTON'S 18 inch
Round-the-pole dive bomber

FULL-SIZE plans for this all-balsa wood model. Cu
to outlines, sandpaper smooth and radius edges, as
with care, coat with sanding sealer and camouflage lig
dark brown then strap on the engine and fly !





parts
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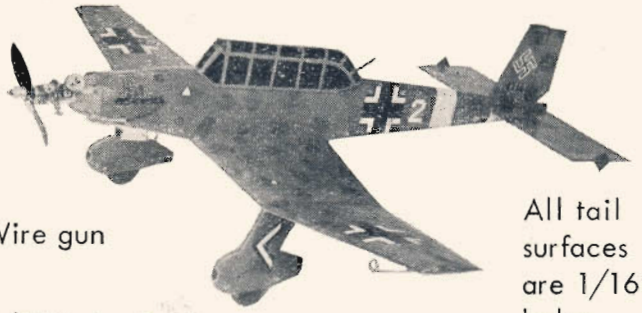


Wire gun

All tail surfaces are 1/16" balsa

3/8" balsa fuselage

4 UR

1/16" ply

Card fins

1¼"

view of wing

See other views for pin positions

ttach guide with
ement and nylon
tch under LEFT wing

18 s.w.g. line guide

Fuselage front view

Fin position

Tailplane

Tip fin

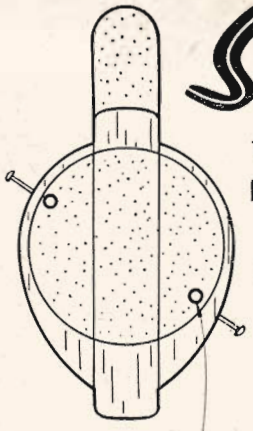
ng to section
e side view

Balance 1¼" from leading edge

3/16" undercarriage leg, attach to wing with nylon reinforcement

SPITFIRE

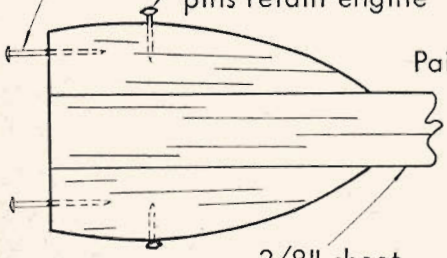
15½" SPAN ROUND-THE-POLE FIGHTER
FOR COX ·010, ·020 by ERIC CLUTTON



Front view of nose

Pins locate engine mounting holes

Rubber bands across pins retain engine



Paint cabin black

3/8" sheet balsa fuselage

3/8" sheet balsa cheek pieces

DK Green

Paint exhaust black

DK Grey

Light grey letters

Tooth from a comb

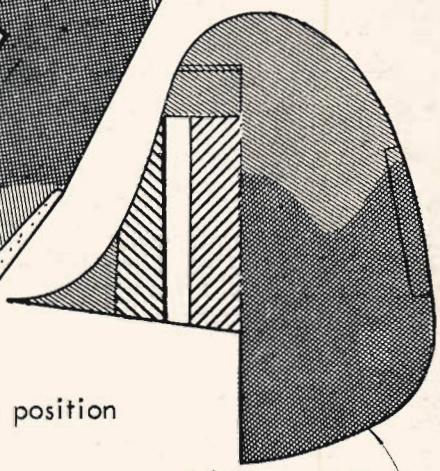
HOT

EE123

Tail slot

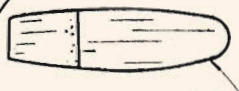
1/16" p tailwhe

Duckegg blue band



1/16" sheet fin

Wing position



Balance Point

Fit 1/4" carb: after wing

Pin for line attachment

Rubber bands

Sketch shows balsa grain directio and engine mount pins. Cant engine for fuel feed

Make wing in two halves, bevel centres and join with each tip raised $1\frac{1}{4}$ inches

'16"
eet tailplane

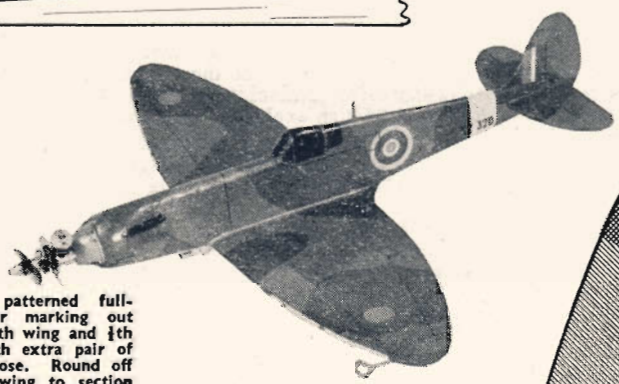
18 s.w.g. line guide attach with nylon patch under left wing

Carve wing to section in side view

Front view of wing tip taper

Yellow leading edge

Red



Use camouflage patterned full-size drawings for marking out $\frac{1}{32}$th tail parts, $\frac{1}{16}$th wing and $\frac{1}{8}$th sheet fuselage with extra pair of cheek pieces at nose. Round off all edges, shape wing to section in side view. It is better to make the wing in two pieces so that halves may be placed together for sanding to the same outline. Assemble with $1\frac{1}{2}$ in. dihedral under each wing tip, positions of the radiator and oil cooler are marked in dotted line on the plan, also the undercarriage which has one half of the wheel well painted black on the underneath only, as shown. The whole model should be liberally coated with sanding sealer before applying colour. Sketch indicates engine mount pin arrangements. This simple system for midget radially mounted engines with integral tanks is crash proof and combat proof ! 'Happy hunting'.

Front

Front

3/16" wing

Hollow out

Plan

Side

3/8" sheet

Plan

Side

Oil cooler (under left wing)

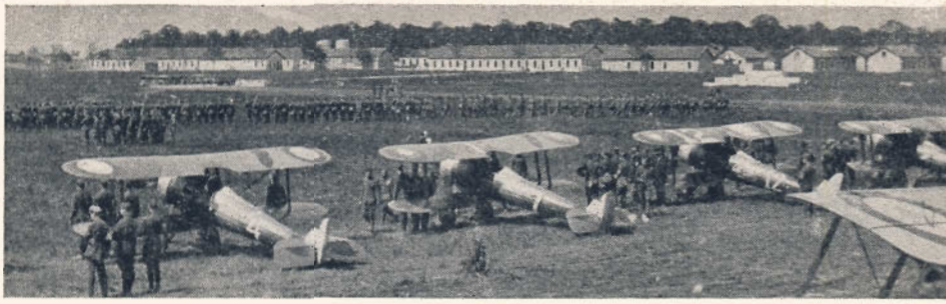
Radiator (under right wing)

Mark all panels and control surfaces with dark ball pen. Paint undersides light grey

1/16" wing root fillet

AIRCRAFT DESCRIBED
Number 130

by P. L. GRAY



NIEUPORT 28 C-1

The 1st Pursuit Group AEF on parade for Decorations at Toul. Unlike aircraft No's 7, 12 & 18 (at right), number 4 does not have its numeral above the upper wing. (H. Wynne collection photo).

THE ENTRY OF THE United States into the first World War with aircraft manufacturing resources limited to trainers rendered them largely dependent on the other Allied countries for the supply of their operational machines. The main fighter supplies came from the French in the shape of Nieuport 28 C1 and later the Spad 13 as more supplies became available. The first American fighter units to be formed were the 94th and 95th Aero Squadrons, arriving at the recently organised Pursuit Training and Organisation Centre at Villeneuveles-Vertus from the main A.E.F. training centre at Issoudun during February and early March 1918: they were equipped with Nieuport 28 C1 machines.

Moving down to Toul on 9th April the 94th (Hat in the Ring) first became operational on the 14th and the first American victories were claimed that day when Lt. Alan Winslow and Lt. Douglas Campbell climbed out of the mist over Toul airfield to shoot down an Albatros DVa and a Pfalz DIII from Jasta 64 which had followed back Capt. Peterson and Lt. Rickenbacker from an earlier patrol. On 4th May the 95th (Bucking Mule) arrived at Toul thereby forming the nucleus of the First Pursuit Group which was completed at the end of the month by the arrival of the 27th and 147th Aero Squadrons. All flew Nieuport 28s and operated quietly on this sector of the Front until 28th June when the Group was moved up to the Champagne district to take part in the anticipated offensive at Chateau Thierry.

Here they were opposed by some of the crack German Jagdstaffeln including the whole of Geschwader I (Richthofen) now commanded by Göring. Although quite agile, it was found that the Nieuport 28 was no match for the Fokker D VIIs which now outnumbered it. In spite of their spirit and dash the American pilots could not be expected to successfully compete with such skilled and experienced adversaries and in six short weeks the Group lost 36 pilots to the enemy. On the 1st August the 27th Aero Squadron lost no less than six pilots and after this disaster the Group gradually withdrew from operations to re-equip with Spads.

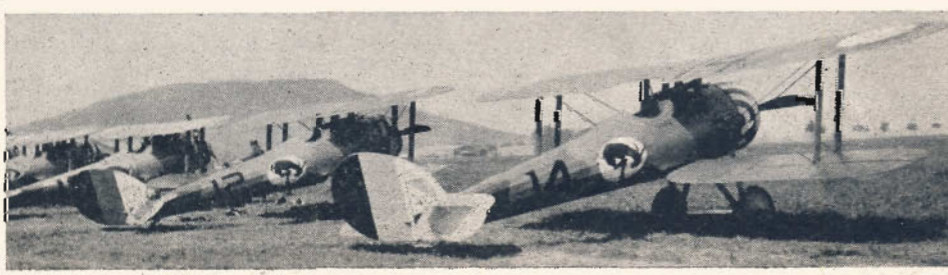
The Americans were under a handicap from the start in having to fly an aeroplane with a reputation for shedding its wing fabric at high speed, which in fact was true, and which prevented diving away at high speed to break off a combat. A pretty devastating thought for a pilot to realise he could not dive away from the immensely strong Fokkers if he so wished. Their manœuvrability was good but that alone wasn't enough. The Nieuport 28 also had something of a reputation for catching fire although this was mainly due to 'pilot error'. No throttle was fitted to the Gnome engines and reduced power was obtained by controls which cut out ignition and fuel from certain cylinders. Should the pilot forget to cut the fuel when cutting the ignition, raw fuel spilled out of the exhaust valves into the cowling there combining with the air to form an inflammable, high explosive, mixture.

In appearance the Nieuport 28 was undoubtedly one of the best-looking fighters to emerge from World War I, an atmosphere of typical French elegance surrounding it, although its style of construction was comparatively orthodox. Power was supplied by a 150 h.p. Gnome Monosoupape (single valve) 9N rotary engine housed in a circular cowl with smaller than usual frontal opening which was compensated by additional venting slots being fretted in the sides. The basic fuselage structure was a braced spruce box-girder with fretted formers and stringers maintaining the circular cowl section, with a gradual flattening of the sides, to a vertical knife-edge at the tailpost. From the rear of the cockpit to the cowling the fuselage was covered with preformed composition board panels with removable metal access doors where necessary.

Of differing span, the wings were based on two hollow box-spars which were equidistant in both wings, this resulting in parallel interplane struts in spite of different chord on upper and lower planes. Leading edges were sheeted with three-ply and ribs were capped with tapering ply strips, the wing tips were truly eliptical. Ailerons were fitted to the lower wings only all controls being cleanly kept within the wing. Tail unit construction was unique in that a moulded two-ply skin, composed of 25 mm. strips of tulip wood laid diagonally to each other (90 deg.), was pinned and glued to the basic structure and covered with fabric and doped.

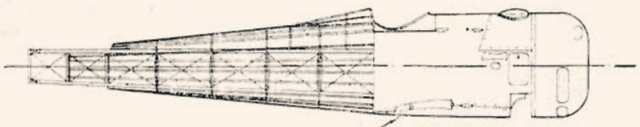
The interplane struts were of hollowed spruce with linen binding at intervals: centre-section and undercarriage vee struts were of steel with aluminium sheet fairings. Twin spreader bars braced the undercarriage vees and the split axle was bound with elastic shock cord to provide the springing, likewise the sturdy ash tailskid was sprung with this material.

Many Nieuport 28s survived the war, the Swiss Air Force used them sor some while and several wound up in Hollywood where they were used in such films as "Dawn Patrol", "Sky Devils", "Men with Wings", and "Hell's Angels".



The 95th (Bucking Mule) Aero Squadron AEF at Toul. No's 12 and 14 had repeated numerals above upper starboard wing. Cowl stripings vary though camouflage pattern is identical for all Nieuport 28s (H. Wynne collection photo).

Five original Nieuport 28s survive in the US. A few of these were used in films and suffered alterations to strutting. Three of these had wingspans reduced when with Paramount Pictures. The unaltered one belongs to Robert Rust of Atlanta, Georgia, and of the other four, two remain in the Tallmantz collection at Los Angeles, another is in Cole Palen's flying collection, the fourth went to E. Carlson of Spokane. In Europe, the sole survivor appears to be that in the Swiss Air Force Museum at Dubendorf.



4 M.M. COMPOSITION BOARD PANELS

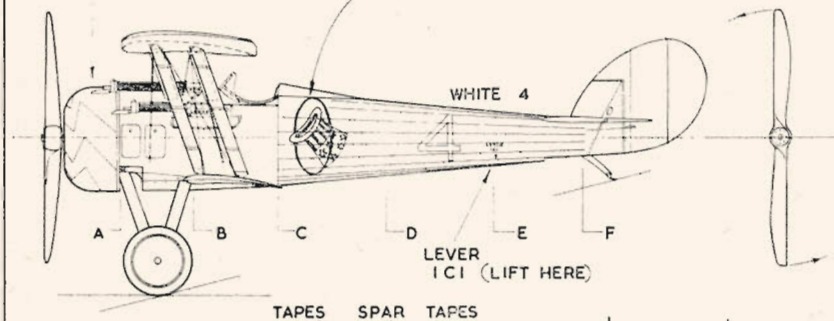
Colour detail: Machines were camouflaged on upper and side surfaces in irregular patches of light grey-green, dark olive green, light earth shade and dark brown. Colours on the fuselage were in order: dark brown (nose) light green, dark olive green and small patch of dark brown under tailplane. Under-surface of wings and tailplane was natural fabric clear doped and varnished. Interplane struts were natural varnished spruce, undercarriage and centre-section struts were painted green. Roundels were carried on both surfaces of upper wings and underneath lower wings but NOT on fuselage sides. 'U.S.A. Roundels': Red outer, blue, white centre spot. 'French roundels': Red outer, white, blue (cobalt) centre spot. Rudder: equal stripes of Red (leading), white, blue (rear) both U.S.A. and French. 'N.B.' The earlier U.S.A. rudder stripes were in order: white (leading), blue, red (rear), approx April/May 1918 period.

Specification

Manufacturer: Société Anonyme des Etablissments Nieuport.
Power Plant: 150 h.p. Gnome Monosoupape 9N rotary.
Span Upper: 8.16 m. (26ft. 9¼ in.).
Lower: 7.753 m. (25ft. 5¼ in.).
Chord Upper: 1.3 m. (4ft. 3¼ in.).
Lower: 1.0 m. (3ft. 3⅜ in.).
Length: 6.4 m. (21 ft.).
Height: 2.46 m. (8 ft. 1 in.).
Dihedral Upper only: 1½ deg.
Weight empty: 436 kg. (961 lb.).
Weight loaded: 698 kg. (1,539 lb.).
Maximum speed: 206 km. hr. (128 m.p.h.).
Ceiling: 6,000 m. (19,685 ft.).
Duration: approximately 2 hours.
Armament: Twin Vickers machine guns mounted to port side of fuselage.

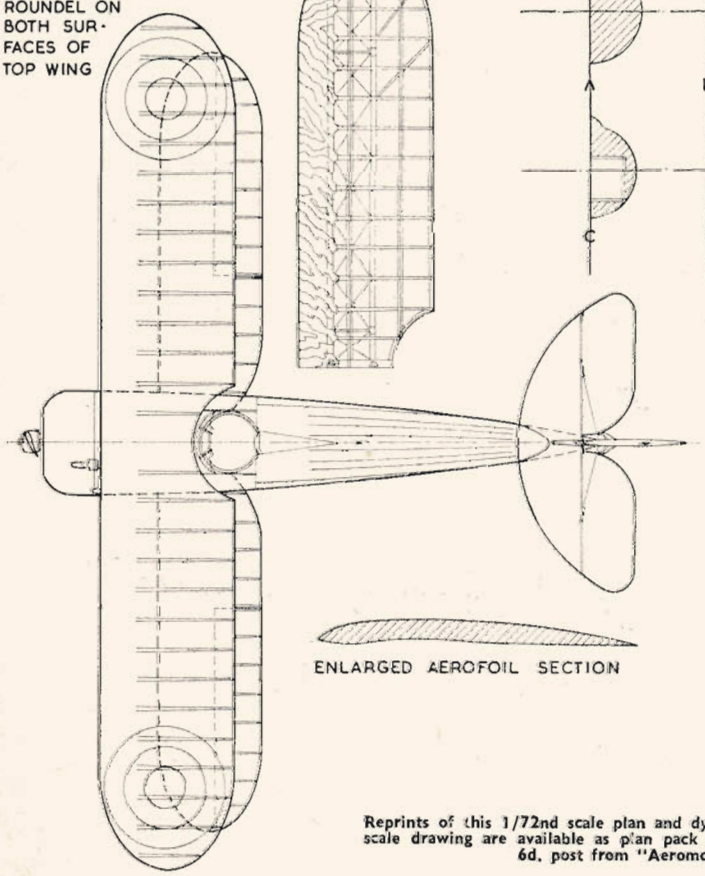
RED & WHITE ZIG-ZAG ON SOME 94TH COWLS

94TH SQDN. INSIGNIA. CROWN BLUE WITH WHITE STARS. RED & WHITE BAND

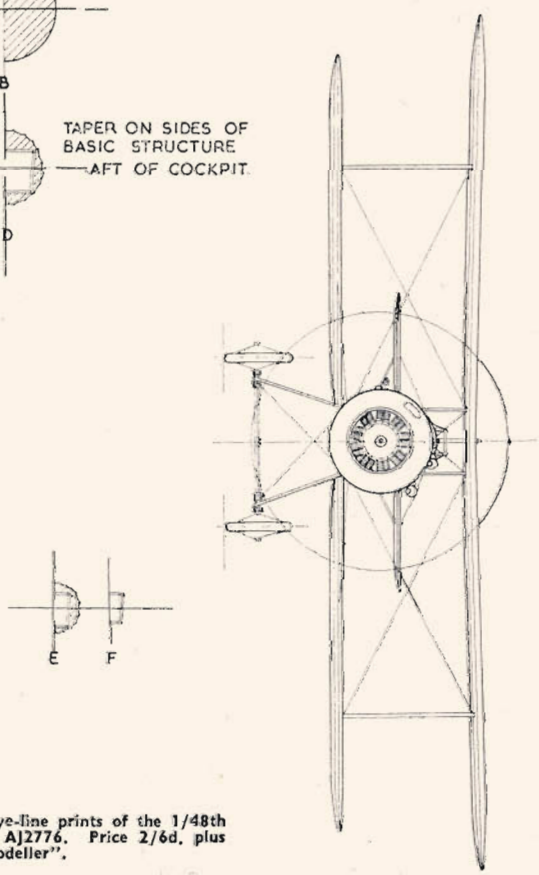


TAPES SPAR TAPES

ROUNDEL ON BOTH SURFACES OF TOP WING



TAPER ON SIDES OF BASIC STRUCTURE —AFT OF COCKPIT



ENLARGED AEROFOIL SECTION

Reprints of this 1/72nd scale plan and dye-line prints of the 1/48th scale drawing are available as plan pack AJ2776. Price 2/6d. plus 6d. post from "Aeromodeller".

NIEUPORT 28 C-1

FT.

Top : M. Kingsbury's Merco 35 powered Piper Pawnee Crop Duster which really dusts, flown control line, as also A.26 Invader for two K & B 15s in executive version below it.

THE 16TH NEW ZEALAND Nationals were held at Kaiapoi in the South Island, and it was naturally expected that a small number of contestants would enter. Suffice to say, 101 entrants were considered a really good muster.

Right from the time of arrival it was apparent that the Kaiapoi club had gone out of their way to make it a good show. This field was a real eye opener, miles and miles of flat ground, with just an occasional fence.

Saturday, 28th December, arrived with most modellers awakening at 5 a.m. to find the wind barely discernible, but from the East, and with some misgivings started getting A/2's ready. Out of 28 entrants 24 flew and the standard of flying was, on the whole, good, most modellers paying particular attention to their towing.

Round one commenced at 5.30 a.m. and only three maxes were recorded, possibly due to the fact that the sky had a high overcast and the Easterly wind was cool. During round two more lift was around and nine maxes were recorded but no doubles were in amongst them, so in round three the contest was still wide open till D. Kennedy of Oamaru and L. Holland of Ashburton returned maxes which put them in the lead. Six other maxes were also recorded in this round but these could not affect the top chaps at all. In round four the wind started to freshen and the surprising thing was that few wings were folded. Six maxes were scored in this round with only G. Madder of Wanganui and L. Holland securing a treble. Round five had only four maxes with Kennedy and Madder gaining two of them and the final results were posted as:—

1. G. Madder (Wanganui) 803.6
2. L. Holland (Ashburton) 777.1
3. D. Kennedy (Oamaru) 744.5

In the afternoon **Class B team race** and **C/L Scale** were held. Once again the question of 100 m.p.h. team racers were around but this year they were here with a vengeance. In the heats John Crombie of Wellington proved the 100 m.p.h. theory with a blistering 140 laps in 6:57 to create a new N.Z. record. The final was flown after a false start and the placings were :

1. J. Crombie (Wellington) 7:5.6
2. A. Cook (Christchurch) 7:26.1
3. W. Stott (Christchurch) 8:37
4. N. Tristram (Papatoetoe) 9:33.8

It is interesting to note that Tristram was flying a model powered by a Rivers 3.5 c.c. diesel and 24 of 29 entrants flew.

Control line Scale was held at a changed venue due to fairly heavy winds and the flying was excellent. Top praise goes to M. Kingsbury of Ashburton for his very scaleish flight of a Piper Pawnee cropdusted powered by a Merco 35, even to the extent of dropping a load of fertilizer but luckily not over the judges. Neville Dawson of Wellington once again entered his true-jet Grumman Panther and although not as impressive as the Pawnee was more spectacular and when the judges had totted up their scores it was found that he had come out on top again. Full results were :—

1. N. Dawson (Wellington), Panther 747 pts. 2. J. Godfrey (Hastings), Cessna 310 679 pts. 3. M. Kingsbury (Ashburton), Piper Pawnee 583 pts.

Indoor flying was held in the evening at the Cowles Stadium in Christchurch which is a building approximately 140 ft. x 110 ft. x 50 ft. high but the ceiling is fairly cluttered up with lights thus giving an effective height of approx. 38 ft. Of the 18 entered 17 flew and quite a few fliers were impressed enough to vow to try their hand at it. Biggest model flown was T. Martin's "Super C" which was trimmed well and won first place.

1. T. Martin (Roskill), 11:9.2
2. B. Roots (Wellington) 7:14.8
3. G. Bowden (Roskill), 6:18.3

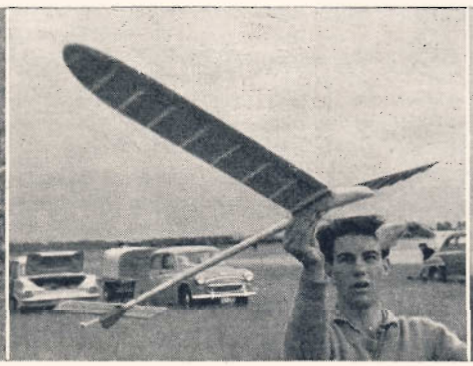
The next morning it was a heavy lidded bunch of fliers who appeared on the field for the start of **Wakefield.** Sharp at 5.30 a.m. the contest commenced, with a varying wind keeping modellers on their toes. With only 13 entered and flying this contest seemed to be a rather relaxing event but even so the top times were fairly good. Devon Sutcliffe decided to change from 12 strands to 14 in the third round and this certainly gave his model more punch and he "maxed" in the last three rounds. There were no maxes in the first round, J. Malkin getting the closest at 176.5 and in round two he managed the only max. Round three saw Sutcliffe gain his first and in round four Malkin and Sutcliffe had two of the three maxes scored. In round five only Sutcliffe maxed again whilst Malkin managed 162 secs. so managing to hold his lead over Sutcliffe. In all a total of only 10 maxes were scored and this contest could be regarded as the nearest ever to calm non lifting air yet held in N.Z. Final results were :—

1. J. Malkin (Wellington), 864.3
2. D. Sutcliffe (Auckland), 835.0
3. I. Henry (Christchurch), 752.9

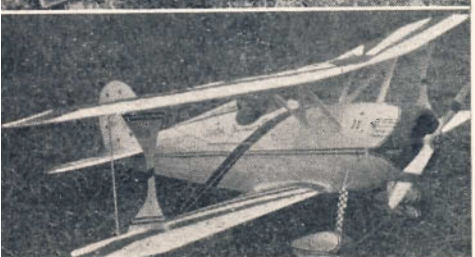
Whilst Wakefield was being flown, the **Multi radio** control boys were being put through the hoop and there was a surprisingly low entry in this event. Only five entered and three flew which made it quite easy for Judge Peter Dyer who arrived in style—flying his own "Turbulent" and lobbing it into one of the many spacious paddocks. Once again contestants seemed loath to risk their models at low altitude and played it safe up high. Gear was mostly Bonner, Orbit and Kraft. The final placings were:—

1. A. Lynch (Blenheim), 206 pts. 2. H. Richardson (Palmerston North), 136½ pts. 3. R. Truman, (Roskill), 21½ pts.

Also flown at the same time but at a different venue was **C/L Aerobatics.** The judge said the standard was excellent. All of the boys are now using big stunters



Left : winner of A/2 glider was G. Madder with his "Pasadena". Centre : A.P.S. "Mini Egal" modified by A. Mackenzie being launched by B. Clay. Right: Free flight champion Brian Roots with his Tee Dee 15 "Saturn", 4th in F.A.I. power, was also 4th in Wakefield.



Rudder only R/C design by Reg Truman used AM.15 diesel, Wright radio gear. Below it is a free flight scale model, also with AM.15, of the Great Lakes Special from our Famous Biplanes drawing made by M. Paton of Christchurch.

with 35's up front and the winner flew an APS, U-2 design with O.S. 35.

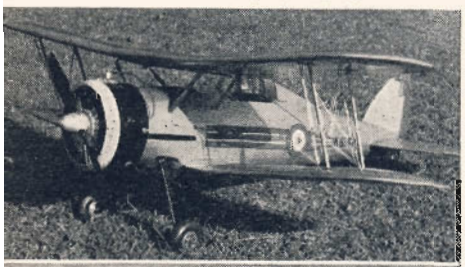
1. N. Tristram (Papatoetoe), 929 pts.
2. P. Wheeler (Kaiapoi), 923 pts.
3. N. Dawson (Wellington), 905 pts.

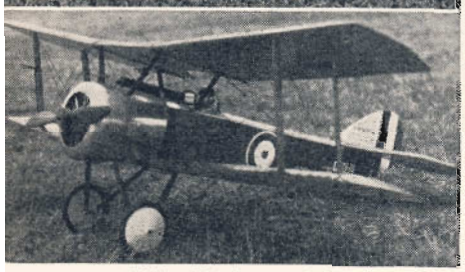
During the afternoon the **Class A, team racers** were milling around and in this John Crombie succeeded in pulling off the double by winning this event as well. Most of the modellers were using Mk. II Eta 15's and all the finalists used them. Geoff Tennant established a new N.Z. record in his heat when he made the time of 5:02 for the 100 laps.

1. J. Crombie (Wellington) 5:25.1
2. Guy-Scrymageour Team (Roskill) 5:34.5
3. E. Thomas (Papatoetoe) 5:39.9
4. G. Tennant (Palmerston North) 6:46.5

With another late night due to the Annual General Meeting it was a case of matchsticks to prop open the eyelids for the start of **F.A.I. Power** on Monday morning, and calm skies with rather ominous clouds made everyone grab raincoats. Ian Henry showed it was no fluke with his 12th place at Wiener-Neustadt and flew magnificently in the conditions.

1. L. Henry (Christchurch), 794.1
2. P. Lagan (Christchurch), 780.0
3. J. Woolley (Kaiapoi), 749.0





Whilst F.A.I. was being flown **Free Flight Scale** was also being run but not many of the models managed to R.O.G. and most resorted to a hand launch. By winning this event Neville Dawson completed his double flying an extremely neat "Quickstart" Dart powered "Sopwith Pup".

1. N. Dawson (Wellington), Sopwith Pup 639 pts. 2. J. Chivers (Ashburton), Fokker E III 514½ pts. 3. R. Hardwick (Ashburton), Turbulent 443 pts.

In the afternoon **Open Power** and **Hand Launched Glider** were run off concurrently and much interest was shown when it was known that there was a McCoy 60 powered model weighing 54 ounces to be flown by Ian Henry and also a 22 oz. Dooling 29 NigNog flown by John Malkin. As a result speculation was rife as to the merits of each. Henry's machine looked most spectacular on a 2½ sec. motor run but due to a series of misfortunes the model was written off during the contest. A lot of fliers were using their F.A.I. jobs and these handled the 20 m.p.h. wind quite well. Possibly it was because of the wind that only 15 out of 33 entries flew. This contest is decided on three flights of three minutes only and the final results were :—

1. J. Malkin (Wellington), 452.0
2. P. Lagan (Christchurch), 429.2
3. M. Stevens (Christchurch) 424.6

On Tuesday, December 31st, the **Nordic** A/I contest commenced with a light Easterly blowing, and a lowering cloud cover that eventually gave way to a heavy shower of rain during the fourth round. Out of 36 entered 27 flew and once again towing was given a great deal of attention. This contest had a surprisingly low number of maxes with only 5 being recorded during the entire event. Lester Holland of Ashburton showed much fitter competitors the right way to fly an A/I and came into top slot. The placings were :—

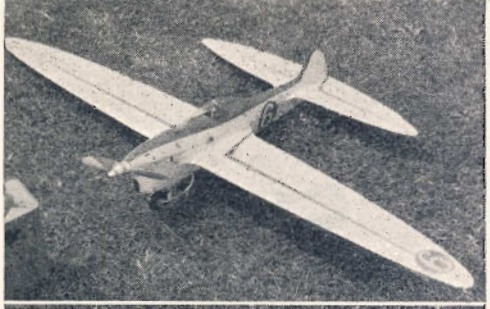
1. L. Holland (Ashburton), 613.9
2. F. A. Macaulay (Kaiapoi), 600.3
3. R. D. Kennedy (Oamaru), 593.9

At the same time **Radio Control Rudder only** was being flown and the standard on the whole seemed fairly poor and of the 15 entered only 9 flew. Harvey Westland won this event using home built multi-gear, the rudder only being used.

1. H. Westland (Kaiapoi), 106 pts.
2. J. Godfrey (Hastings), 63 pts.
3. L. Holland (Ashburton), 50 pts.

In the afternoon modellers were treated to a Canterbury Nor'wester, a wind that makes all modellers hearts quail but brings cries of delight from the full size glider boys and as a consequence **Speed** Class I (2.5) was a bit of a shambles. Some of the faster models eliminated themselves due to the conditions and the winner thoroughly deserved his first place.

1. D. Kennedy (Oamaru), 106.5 m.p.h.
2. A. McKenzie (Southland), 105.8 m.p.h.



Top : John Crombie's winning F.A.I. Team Racer with ETA 15 Mk II. Below is Ian Henry's winning McCoy 60 speedster we see he's now going in for fins !

With all the flying over, all that was left was the prize-giving and the various Champions awards.

To sum up, these Nats were a 'really' good affair and this is due to the hard-working Kaiapoi club members who literally thought of everything and also to the retiring N.Z.M.A.A. Council members and wives. Surely the hardest task at a Nats is that of Recording Officer and in this the N.Z.M.A.A. had a specially good one in Des Walker, who was ably assisted by his wife Joan. To these two are offered 'all' thanks for a job well done.

16th New Zealand Nationals

at Kaiapoi, South Island. *Reported by John Malkin*

M. Glendenning placed 4th in C/L scale with his 10 c.c. Super Cyclone petrol ignition Gloster Gladiator. Below it, Sopwith Pup powered by Dart diesel won F.F. scale for Nev. Dawson (also winner of C/L scale with Dynajet/Panther).

January 1st arrived too quickly for some, and for others they wished it hadn't arrived at all, but once again **Payload** got the New Year off to a good start. The weather was just about perfect for this event and some of the boys didn't have the help of the wind to help get their models off the take off area and so missed out the odd round. As is usual in this event the majority of modellers were using 049s the only variation being Harry Winn of Auckland who was flying a T.D. 15 powered O/D, weighing 30 ozs. Even with this weight penalty Harry established and held his lead from go to whoa, and thoroughly deserved his win. The contest ended with the final placings being :—

1. H. Winn (Auckland), 804.1
2. B. Roots (Wellington), 649.1
3. G. Speedie (Wellington), 613.7

This finished off all the Free Flight flying and in the afternoon the remaining classes of speed were flown off, being **29, 60,** and **Jet** classes.

Speed Class III (.29)

1. H. Westland (Kaiapoi), 111.2 m.p.h.
2. B. Deakin (Palmerston North), 103.8
3. D. Kennedy (Oamaru), 103 m.p.h.

Speed Class IV (.60).

1. I. Henry (Christchurch), 130 m.p.h.
2. S. Townley (Roskill), 128 m.p.h.
3. P. Wheeler (Kaiapoi), 86.5 m.p.h.

Jet.

1. D. Kennedy (Oamaru), 125.8 m.p.h.

Destined for an early demise but nevertheless thrilling, Ian Henry's McCoy 60 "Safari" for open power. Below is stunt winner N. D. Tristram's U-2 from APS plans with OS 35 engine.

Free Flight Champion.

1. B. Roots (Wellington), 74 pts.
2. J. Malkin (Wellington), 64 pts.

Control Line Champion.

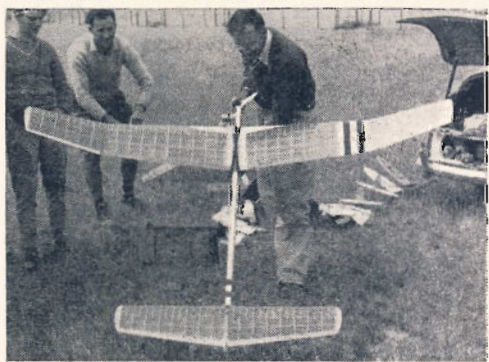
1. D. Kennedy (Oamaru), 56 pts.
2. J. Crombie (Wellington), 50 pts.

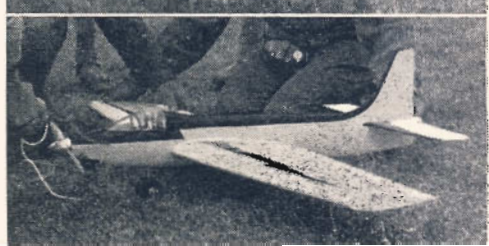
Champion of Champions.

1. D. Kennedy (Oamaru), 81 pts.
2. P. Lagan (Christchurch), 77 pts.

Champion Club.

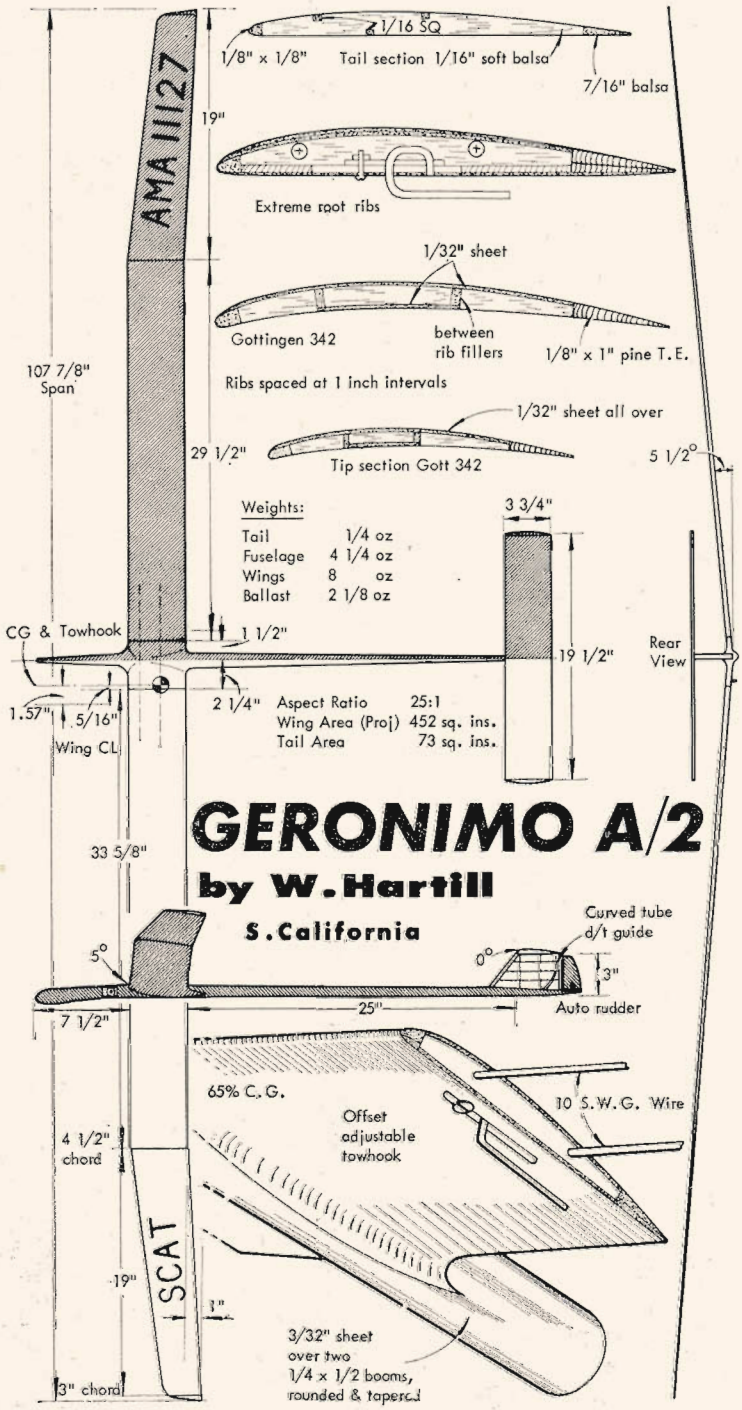
1. Wellington, 269 pts.
2. Christchurch, 260 pts.





CONTEST DESIGNS

THREE UNCONVENTIONAL APPROACHES



Bill Hartill's high aspect ratio A/2 glider abounds with technical interest. Almost everything about it is radical and the most fascinating aspect is the manner in which it adopts the Thomann system of asymmetric wing layout with an offset and adjustable towhook mounted within the port wing root. Swept tips tend to give a gull effect in the side elevation but the 5½ deg. dihedral is constant out to the thin tip section. The entire upper surface of the wing is sheet covered with $\frac{1}{32}$ in. balsa and the Tee tail is of comparatively conventional structure with three $\frac{1}{16}$ in. square spars. An auto rudder trip and timer starter are actuated by a pull out pin attached to the towline, the line to the tailplane being completely internal, fitting through a curved tip within the fin. A full explanation of the Thomann system was published in Aeromodeller for March 1958 when the asymmetric balanced wing system was first introduced through his "Aquila" design. The purpose of the system is to improve the efficiency of the model while it is circling with a small turning radius.

Tailless

Winner of the Lady Shelley Cup for tailless models by a 1:38 margin in 1962, John Pool's "Never Forget" Mark VI was initially designed for either tractor or pusher propeller arrangement. The wing would be shifted rearwards for the pusher configuration to be mounted just in front of the unusual dethermaliser vanes. These pull upwards like an umbrella, exposing a polythene drag vane to the airflow, giving a false D/T'd tail effect. John feels that the tip fins might be dispensed with for the tractor version but in any case they would be needed if the model is flown as a pusher since the main centre fin would then be removed. The geodetic wing proved to be just as easy to make as a normal straight wing by fitting straight ribs first and then having four separate half templates for the diagonal ribs so that the straight ribs remain whole and the diagonal ribs are butt jointed.

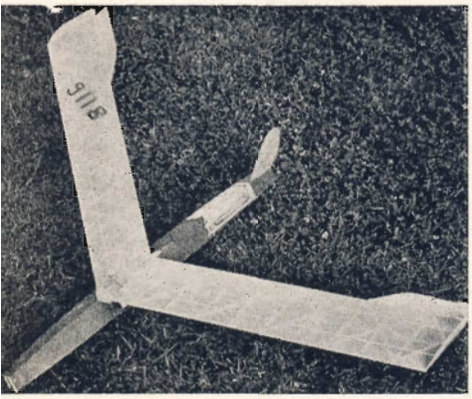
As for performance, apart from the 1962 success; at the Northern Gala 1963, it flew at a time when conventional models were being turned over in the breeze. On 750 out of the permissible 900 turns the model climbed high enough for any easy maximum but it had to be brought down with a short fuse due to the fast drift offering a choice of a cornfield or the hangars as a resting place.

Too few tailless models are seen at the only British event, we hope that this will inspire some fresh enthusiasm.

Canard

It was our pleasure to report many many months ago that Douglas Joyce only narrowly missed a team place in the eliminations for the U.S.A. team to go to Austria last year. The "Lightning 7" is shown in sufficient detail for anyone to produce a replica and we are most grateful to Doug for his co-operation in providing us with so much information. Primary advantage of the canard configuration is that the total horizontal area may be used efficiently for lift. In order that the model be stable the wing loading of the front wing is somewhat greater than that of the rear wing. The front wing requires high lift coefficients at low or critical Reynolds numbers and low aspect ratios, therefore an under cambered section with a sharp leading edge and turbulator is used. The rear wing, with its higher aspect ratio and lower lift coefficient requirements uses a flat bottom section which will minimise drag during climb. The result is an exceptional climb and glide combination.

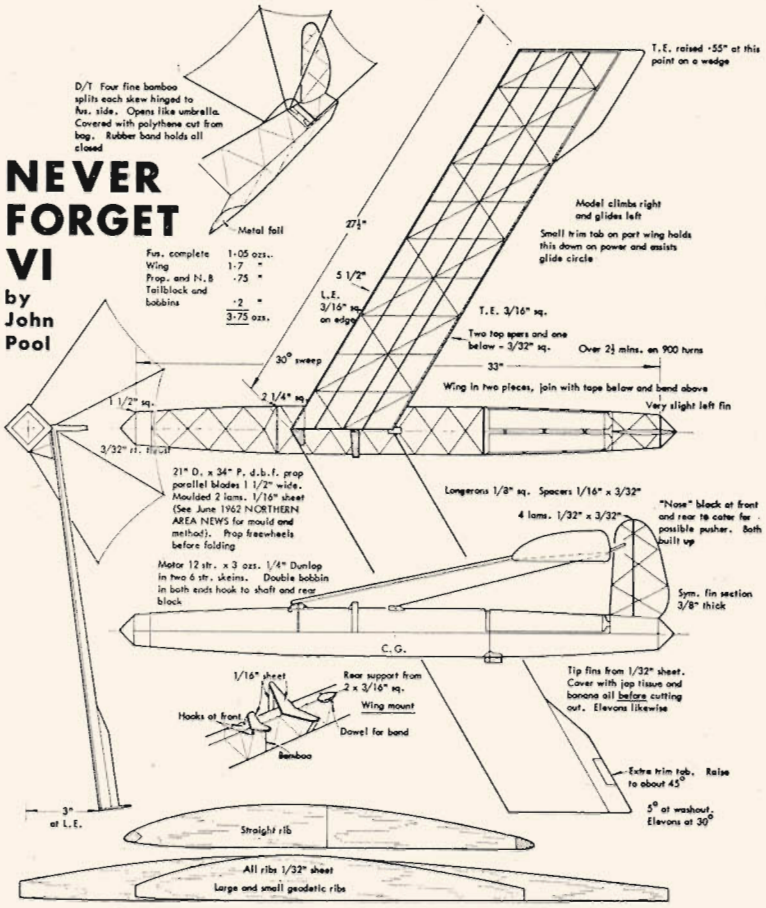
A second advantage to this particular layout; but incidental to the canard configuration results from the engine location.



John Pool's tailless model with prop removed and dethermaliser folded.

NEVER FORGET VI

by John Pool



The model is completely free of the propeller slipstream with a significant decrease in drag and other slipstream effect on stability and trim. This motor location also provides excellent protection for the engine and propeller.

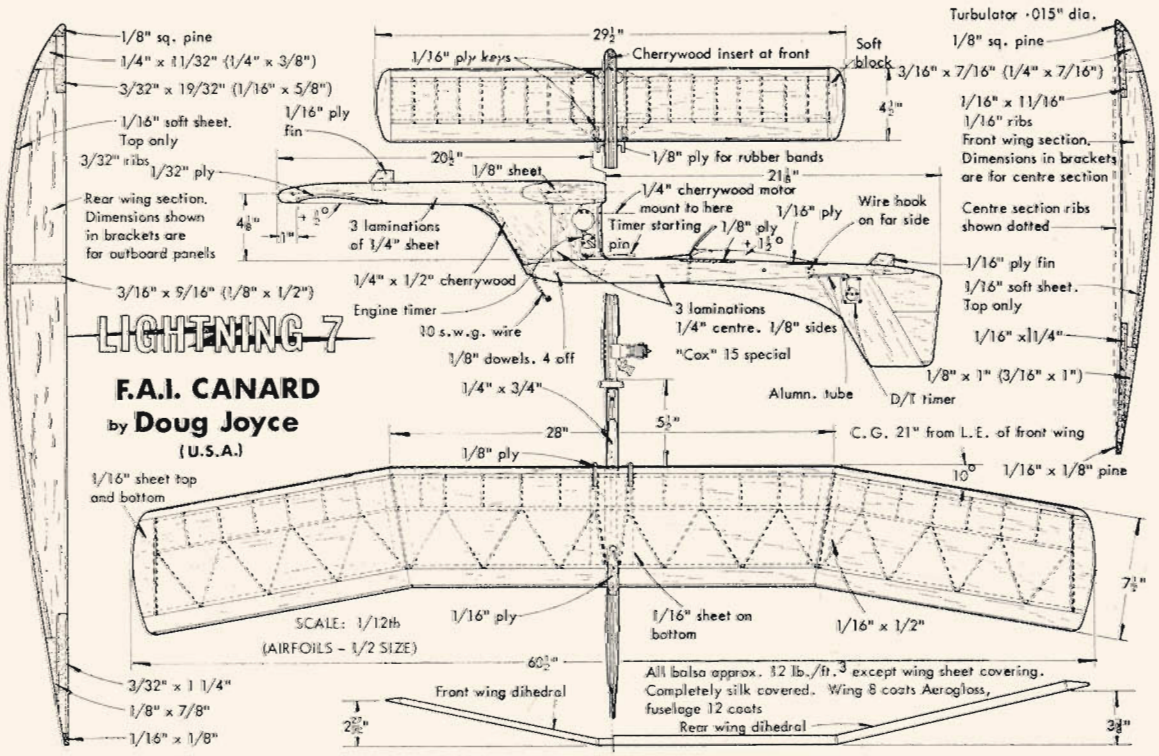
"Lightning 7" is trimmed for a near vertical climb with no more than 1/3 to ½ turn to the right to bring model into a position for the transition. The glide is also to the right and kept as large as consistency will allow. The climb angle is trimmed by adjusting incidence, either front or rear wing, while the climb turn is adjusted by varying the size of the rear fin. Slipstream from the propeller has a rotary motion which produces a pressure on the fin, and since the area of the fin is located below the centre line of the propeller it will produce a turning moment to the left which is proportional to its area. In other words it is used for the same purpose as side thrust which is not effective on this model. The forward fin is used to effect changes in the directional stability for the purpose of obtaining the correct amount of spiral stability.

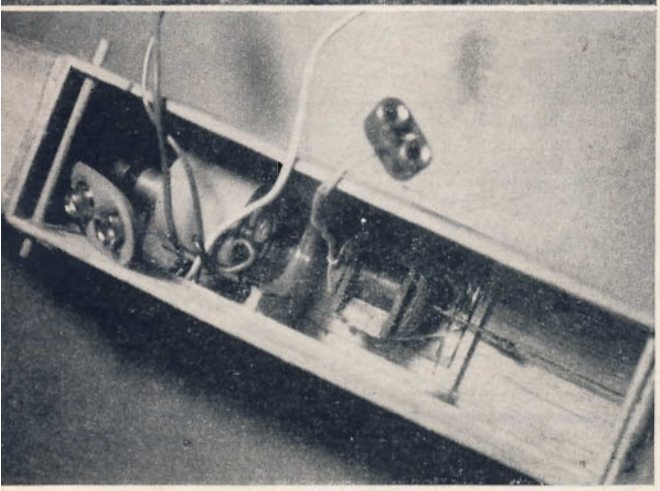
LIGHTNING 7

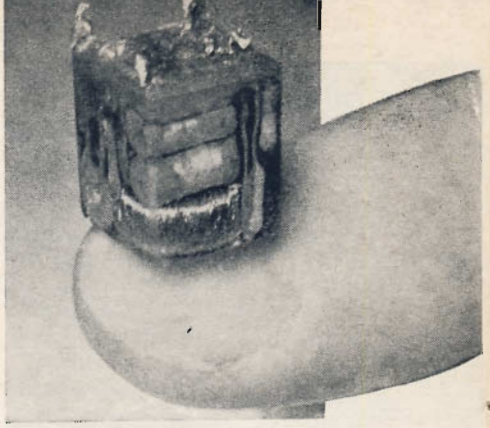
F.A.I. CANARD

by **Doug Joyce**

(U.S.A.)







Enlarged view of a Bentert ultra light-weight 3.5 gramme receiver, using four transistors. Graupner Silentius being launched at left. Interior detail shows 9 v. battery snaps over Micro TO 3 drive motor with magnet servo behind. Rx fits above electric motor.

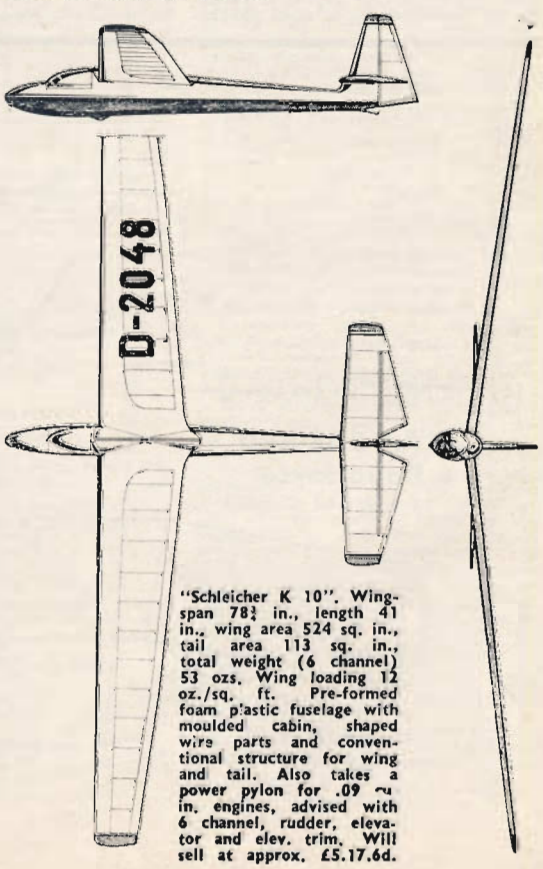
Over the Waves

example flying most stably in a moderate wind with Cox Pee Wee power. Wings are made in solid expanded polystyrene reinforced with glass fibre and the fuselage carved from balsa block. The radio used in this model was a "heavy" type, using four stages and weighing 15 grammes. It was this equipment which was used by the Graupner development engineer, Fred Militky, to make incredible all-electric flights in October last year. Hans Heck introduced Herr Bentert to Militky and over a weekend, a standard Micro T 03 driven *Graupner Silentius* was converted. Photos illustrate the equipment and a typical climb away from launch. On one six minute flight, using water activated batteries for the drive motor, the Silentius climbed to a height of 500 feet.

It seems only a short while ago that the weight penalties involved in electric power would have made small models difficult to fly free flight and now they are even radio controlled!

SUB-MINIATURISATION of radio control receivers has resulted in some remarkable achievements in West Germany. Hilmar Bentert of Berlin has produced receivers weighing as little as 3.5 grammes (0.15 ozs.!). Encapsulated in Araldite and made to drive a magnet servo, the total weight including battery and servo is a mere 15 grammes or a fraction over ½ oz.! Hans Dieter Heck, the editor of *Modell* magazine has published full size plans for a 10 in. span model using this type of equipment and informs us that he has seen an even smaller, 8 in. wing span,

Max Coote of Ripmax Ltd. with prototype Graupner K 10 slope soarer after test flights at Kirchheim-Teck, West Germany. Model was initially checked with ailerons but rudder/elevator and trim found sufficient for all manoeuvres.



"Schleicher K 10". Wing-span 78¾ in., length 41 in., wing area 524 sq. in., tail area 113 sq. in., total weight (6 channel) 53 ozs. Wing loading 12 oz./sq. ft. Pre-formed foam plastic fuselage with moulded cabin, shaped wire parts and conventional structure for wing and tail. Also takes a power pylon for .09 ~u in. engines, advised with 6 channel, rudder, elevator and elev. trim. Will sell at approx. £5.17.6d.

Total flying weight of the Silentius was 145 grammes (5.1 oz.).

At this rate, indoor parlour flying with radio seems almost a possibility if only we could produce ultra slow flight. A major difficulty with these very small models is keeping them in sight.

The receivers are made privately by Herr Bentert and details have been published in Herr Heck's *Modeli* magazine.

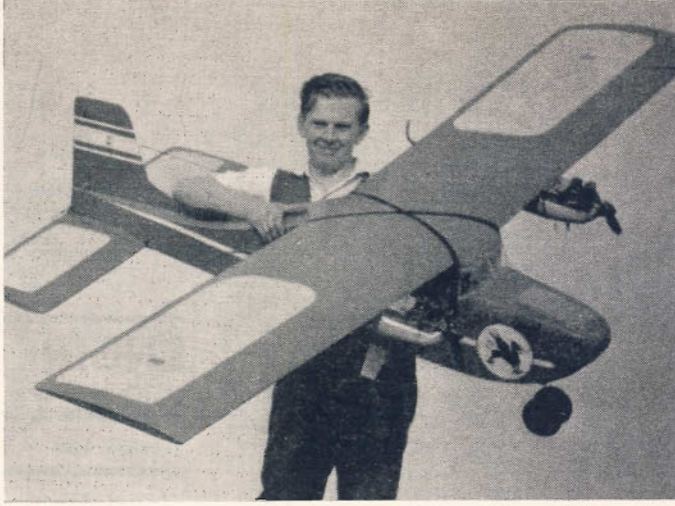
Scale Slope Soarer Kit

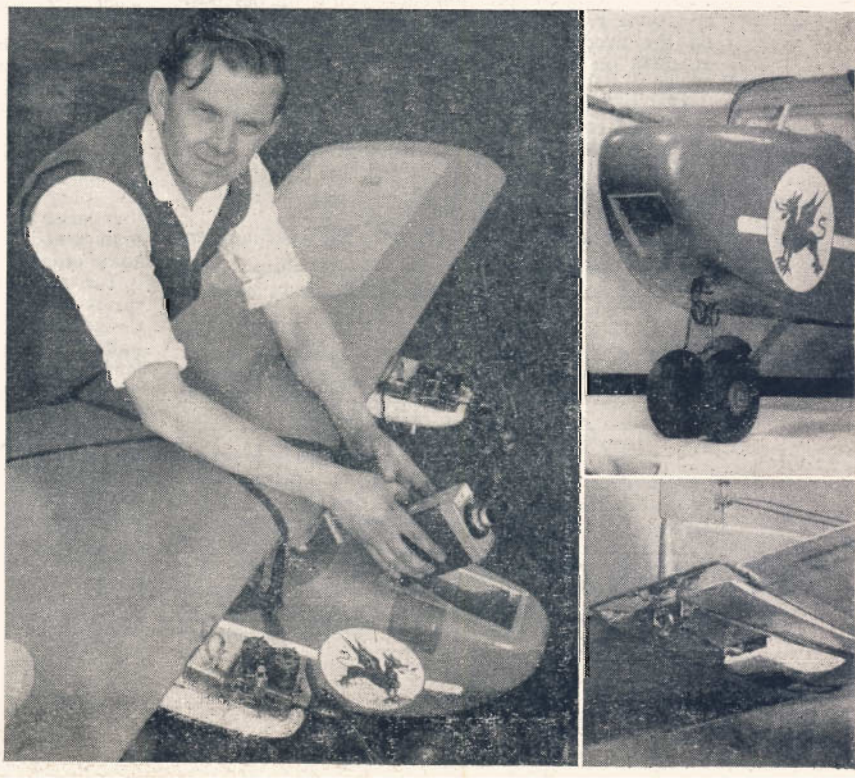
Another development in Germany is the introduction at the 1964 Trade Fairs of the *Schleicher K* 10 scale glider kit by Graupner for 2-6 channel radio. This is about as close to true scale as can be obtained with a model sailplane and is a replica of one of the latest and most advanced 15 m. span products of a famous German sailplane designer. We have already had glowing reports of flight demonstrations and handling from the British distributor, Max Coote and it seems that this 78¾ in. span model will do much to satisfy the obvious demand for models that not only perform well but also look like the real thing when soaring over the ridge.

Radio Cineplane

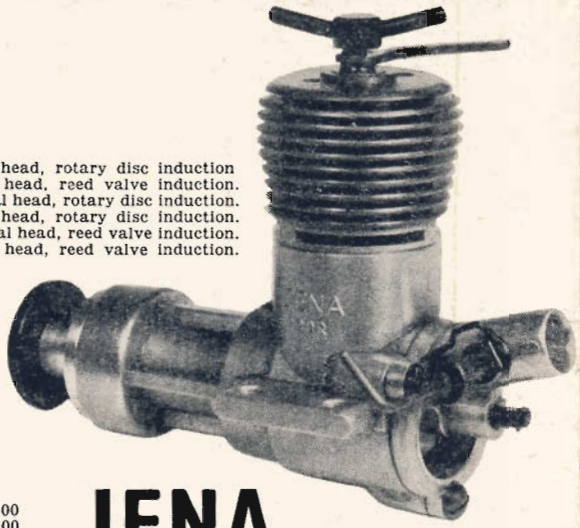
Readers may recall our feature in July '62 on aerial photography by John Bond of Stroud, Glos. An 8 ft. version of the *Keilkraft Junior* 60 was fitted with a cheap camera on the fuselage side and successful aerial photography of the locality provided a fascinating addition to normal radio control. We mentioned that Mr. Bond was making a 1½ A.P.S. *Waveguide* with two engines for a cine camera and now we have details of the successful first flights at Blakehill Farm. Mr. Bond has sent us his film and it is indeed most impressive, illustrating the possibilities of this form of radio sport flying. The ciné camera is mounted in the nose of the model, which is powered by a pair of Taplin Twin cylinder diesels. The camera is clockwork driven and runs for 33 seconds on one wind. It can be triggered by radio control and stopped and started as often as required during the run, though long sequences are best. The camera is mounted so that it shoots through a transparent ¾ in. Perspex window looking slightly downwards and forward at the nose. It has been proven by experiment that rigid mounting is most successful and better than any attempt to allow for shock absorption. An interesting point is that when the camera is removed, it has to be substituted by no less than 24 oz. ofputty!

The radio is an early Octone Receiver and Transmitter, which still gives good service after many years of hard use. Eight channels are employed on the tailplane, rudder, throttles and camera, and when the camera is not used, the spare channels are employed for rudder trim for deliberate single engine flight, when one tank is only half filled. The nosewheel is steered by micro switch contacts on the rudder servo and throttles are coupled so that both engines can be reduced to idling simultaneously. Three Mini-Uniacs and one Musclemite are employed. The full moving tailplane pivots on a length of aluminium tubing and has proved to be excellent for flight trim. Another fascinating aspect is the use of home constructed 6 in. diameter wheels made from a pair of plastic balls. In a year of use they have not required any extra inflation. Considering the weight of the model at 18 lb., Mr. Bond speaks very highly of the handling, and thrust developed by the two Taplin Twins, which have never given a moments trouble. He is now setting up the camera to film across the engine and looking aft so that an impression of flight relationship can be obtained. Extended film scenes are also planned so that a complete film from take-off to landing, including a low level run across the airfield will add to the fascination of this most interesting achievement.





John Bond of Stroud, Glos., with his 18 lb. Taplin Twin 1½ A.P.S. Waveguide cineplane. View at top of page illustrates general appearance, whilst photos at right show camera installation with perspex window in the nose and also the all moving tail set in the up trim position. Wingspan is 96 in., chord 18 in., length 69 in. Flies with rudder trim on single engine only and has produced some very interesting film.



ENGINE ANALYSIS

Number 120

JENA

2 c.c. Diesel reviewed by R. H. Warring

Specification

Displacement: 1.97 c.c. (.12 cu in.)
Bore: .548 in. (13.9 m.m.)
Stroke: .512 in. (13 m.m.)
Bare weight: 5 oz.
Power output: .238 B.H.P. maximum at 13,800 r.p.m.
Max. torque: 22 oz.-ins at 9,500 r.p.m.
Power rating: .12 B.H.P. per c.c.
Power/weight ratio: .0475 B.H.P. per oz.

Material specification :

Crankcase: light alloy pressure die casting.
Cylinder (liner): hardened steel.
Crankshaft: hardened steel.
Piston: cast iron.
Contra piston: hardened steel.
Connecting rod: light alloy pressuro die casting.
Cylinder jacket: turned dural (anodised blue)
Crankcase back cover: light alloy pressure die casting.
Rotor disc: light alloy pressure die casting.
Main bearings: two lightweight ball races.
Propeller driver: dural.
Propeller shaft: 4 m.m. steel screw (metric thread)

Models and variants :

Jena 2 c.c. DNR—diesel, normal head, rotary disc induction
2 c.c. DNK—diesel, normal head, reed valve induction.
2.5 c.c. DNR—diesel, normal head, rotary disc induction.
2.5 c.c. DKR—diesel, small head, rotary disc induction.
2.5 c.c. DNK—diesel, normal head, reed valve induction.
2.5 c.c. DMK—diesel, small head, reed valve induction.

Propeller—R.P.M. Figures

Trucut	9 x 6	9,400
	9 x 4	11,400
Stant	9 x 5	10,000
	9 x 4	10,800
	8 x 4	13,200
Frog nylon	9 x 6	10,200
	8 x 6	11,000
Top Flite nylon	8 x 6	11,200
	9 x 4	11,300

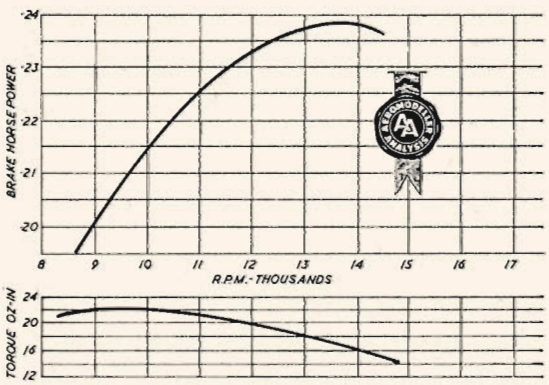
Fuel: Mercury No. 8.

THE JENA 2 c.c. and 2.5 c.c. diesels comprise a complete 'family' of six variants, all based on the same crankcase/crankshaft assembly. Alternative liners offer capacities of 2 c.c. or 2.5 c.c.

Handling characteristics are a trifle unusual, and we found the Jena quite 'individual' in this respect, but very easy to handle once these characteristics had been determined. Suction lift is poor, so the tank needs mounting quite close to the engine and with a minimum of suction head. Priming through the exhaust we found more or less essential for easy starting, with the *compression* setting anything from half to one turn *more* than for running. Needle valve position was not at all critical, provided it was open enough. It could be left at three—three and a half turns open, compression backed off to the best position once running and then final adjustments made on the needle. Using this technique starting was excellent on all propeller sizes, with a welcome lack of viciousness on the smaller diameters.

The Jena, however, was not fussy about different fuels and could be started and run consistently on all the normal brands tried, although at high speeds (above 12-13,000 r.p.m.) a nitrated fuel is essential to eliminating missing, and up to 5 per cent amyl nitrite can be used with advantage.

Although not stiff to start with, the specimen engine used for test (the better of three examples run-up for test—ED) materially improved in performance during a run-in period. An initial run on a 9 x 6 Frog nylon propeller, for example, gave 8,500 r.p.m., which had increased to 10,200 r.p.m. after some half an hour's running (during which period it was not uncommon for sparks to fly out of the exhaust).

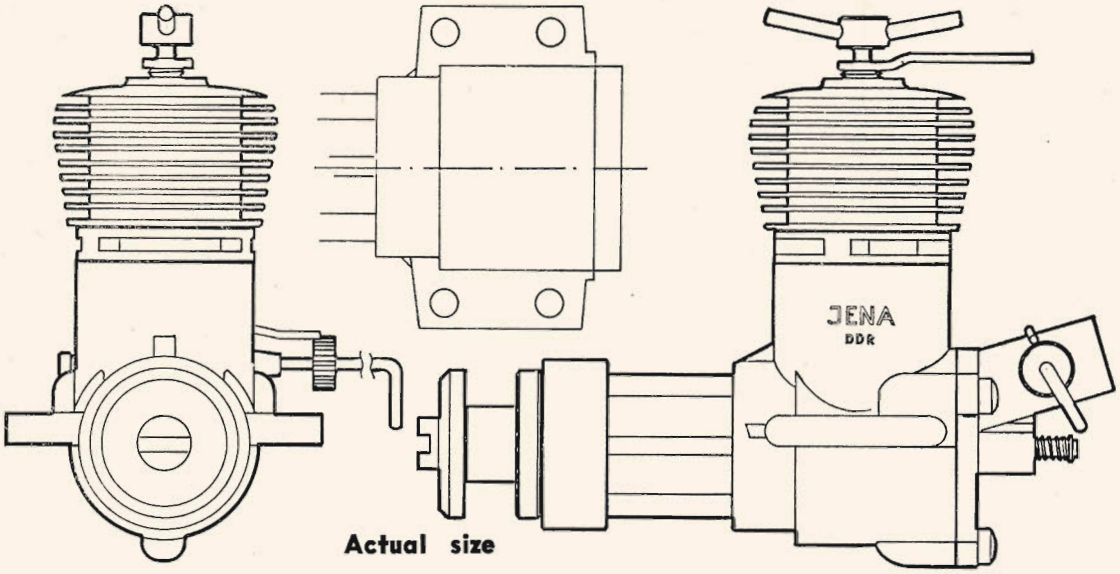


The Jena was definitely happier running at the higher speeds (above 11-12,000 r.p.m.) and turned in a very creditable test performance for a 2 c.c. engine, peaking at nearly 14,000 r.p.m., at which speed it was developing almost .24 brake horse power. It is, of course, of 'racing' layout with a twin ballrace main bearing and rear rotary induction.

The compression screw is provided with a locking lever, and this is definitely necessary. The contra piston tends to 'run' all the time during initial adjustment, although it will often hold a setting once the engine is fully warmed up. Contra movement is easy, and one soon gets used to using the locking lever in adjusting this control. Vibration level is quite high when running at all speeds, which could contribute to a 'free' contra piston, and is undoubtedly due to the relatively heavy piston construction and plain (unbalanced) crankshaft. The degree of unbalance is rather unusual in what is essentially a high speed engine and could possibly be troublesome on a R/C model.

The standard crankcase unit for the series comprises a light alloy pressure die casting of compact design into which are pressed the two lightweight ball races forming the main bearing. The journal length between the bearings is not relieved to any appreciable extent and appears to run very lightly on the shaft. Nevertheless there is a substantial oil leakage down the bearing which, despite the sealing washer fitted to the front race emerges from the front of the bearing and is sprayed out.

The crankshaft is of hardened steel .275 in. diameter ground all over to finish. It projects only $\frac{1}{4}$ in. in front of the front bearing, this length being tapered. A dural driver fits on to this taper and the propeller shaft is formed by a .151 in. diameter metric thread steel screw just a shade over $\frac{1}{2}$ in. long. The driver carries an integral $\frac{3}{8}$ in. diameter spigot



Actual size

fitting the propeller hub. We personally feel that this spigot diameter is too large (it takes too much out of the centre of small diameter propellers to drill a $\frac{3}{8}$ in. diameter hole in the hub); and it is also too long to accommodate 4 in. pitch propellers. This, however, is a small point. It would be easy to reduce both the diameter and length, since the metal is quite soft and could even be filed, if necessary.

At the rear end of the crankshaft the web is only .105 in. thick, not cut away for balance. The integral crankpin is .222 in. diameter, drilled to take an extension pad which engages in and and acts as a driver for the rotary disc.

The cylinder is of hardened steel and appears to be a casting which is subsequently machined down the bore and honed to size; with outside surfaces machined and finished by grinding. Transfer area is massive and consists of six deep semi-circular grooves on the inside wall, separated only by narrow pillars. The top of each transfer passage is angled upwards, but terminates well below the exhaust. The bottom o/d of the cylinder is threaded to screw into the crankcase, and the smaller upper o/d is threaded to take the finned cylinder jacket.

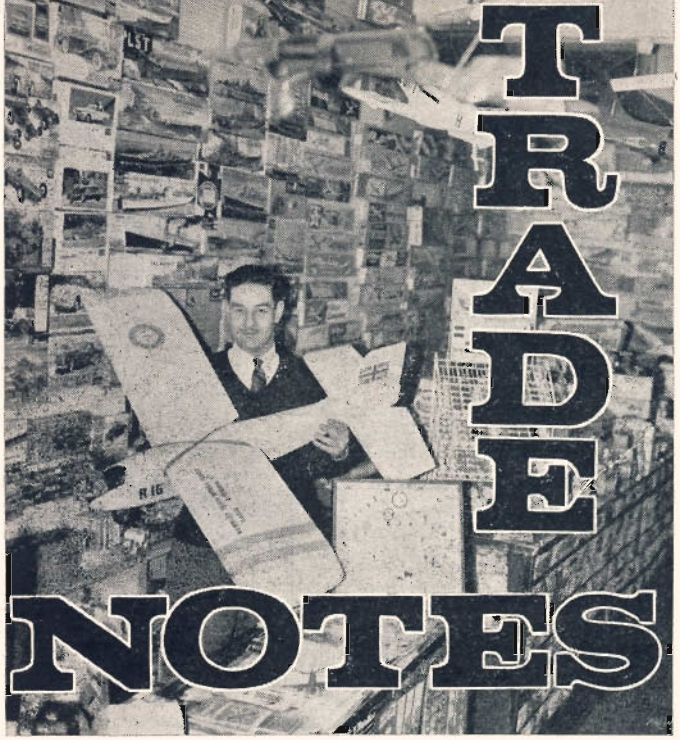
Made of cast iron, the piston has thick walls and a conical head. The connecting rod is relatively short and of generous proportions and good bearing length. The silver steel gudgeon pin is press fitted. Both connecting rod bearings are unbushed and the big end bearing is drilled with a lubricating hole. A very close piston/cylinder fit is achieved with very little relief of the bore at the lower end. The makers do, in fact, claim a fitting tolerance of less than .0005 millimetres, or something like 2/100ths of a thou. We suspect that this could result in some engines going out "tight" as this places a premium on bore circularity, but the particular specimen tested could not be faulted in this respect. Also the workmanship was generally excellent throughout.

The back cover is a light alloy pressure die casting, with the intake tube integral. It attaches to the crankcase by three screws in the conventional manner. The rotor is also a light alloy pressure dia. casting, machined to finish on the circumference and back face which incorporates an integral spigot at the centre approximately $\frac{1}{8}$ in. long and .155 in. diameter. This forms the spindle for the rotor, running in a hole in the centre of the backplate. This hole is counterbored and fitted with a spring loaded plunger, the spring coming outside the backplate and retained on the plunger spindle by a small circlip. Pressing this in against the spring moves the plunger forward which in turn presses the rotor away from the backplate—and the motor immediately stops because of the air bleed introduced. This was designed purely as a 'motor stop' device and it serves no other useful purpose.

Although we are normally critical of the use of light alloy for a rear rotor on account of its liability to wear, that on the Jena showed no trace at all of wear or rubbing when the motor was disassembled after some $1\frac{1}{2}$ hours running time, other than signs of rubbing contact with the drive pin. Should wear occur at a later stage it would, of course, be a very simple matter to fit a replacement rotor—but perhaps Jena's alloy is better than others we have seen used for this hard-worked component.

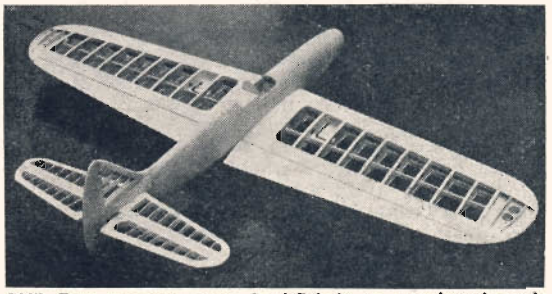
Drive pick-up for the rotor is a hardened pin of the same diameter as the crankpin, stepped down in diameter to fit into the hole in the crankpin. Alternative engagement holes are provided on the rotor for anticlockwise (R) or clockwise (L) rotation, as required. The rotary valve Jena will run equally well in either direction (provided the rotor pick up is selected accordingly), which could be a distinct advantage for particular applications — e.g., twin-engined models with contra rotating propellers, or pusher installations.

The needle valve assembly is an open jet instead of the conventional spraybar. Although such systems are usually far more touchy than spraybars as regards setting, that on the Jena proved particularly non-critical. It does, however, have a tendency to starve the engine of fuel in the 'lean running' position, and can be opened up to advantage from the normal running position when starting a cold engine.



AS LAST MONTH, plastics offer greatest variety in news and include the 'Lockheed Hudson' in the **Airfix** 1/72nd series at 4/6d., **Monogram's** 'Hawker Hurricane' which can be made in any of five 1/48th versions and **Frog's** 'Supermarine S.6B' 1/72nd at 2/6d. The latter starts a new "Trailblazer" series while a 'Super VC 10' kit with flashing beacon, and nav. lights promises another 1/144th jetliner range.

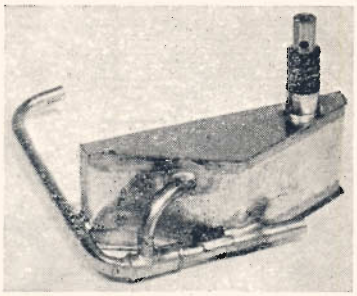
Other news concerning kit models comes from **Graupner** in W. Germany. Details of the 'K.10' scale slope soarer are given on p. 146, but another item bound to attract the radio fans will be the 55 in. 'Floride' shoulder wing fully aerobatic multi-design by G. Samann. Smaller than the 'Caravelle', it still carries 10 channel gear and will weigh up to 5 lb. with any 35 engine. Other new kits from the German firm are the "Little Uhu" glider of 27½ in. span, an ideal beginner's subject, and addition of an 18½ in. 'Dornier Do 27' to the "quickie" rubber scale series. In radio, the **Graupner-Grundig** range goes to Superhet. More next month, when trade fairs at Brighton and Nuremburg may bring further revelations.



BMP Tony structure above is definitely an experienced man's model. Potential builders should watch cowl assembly and ignore note on F.16. The part doesn't exist, as builder D. Bolt discovered! Now being finished, as also the Veron Mini-Robot at right, a shape becoming very popular on local flying fields.

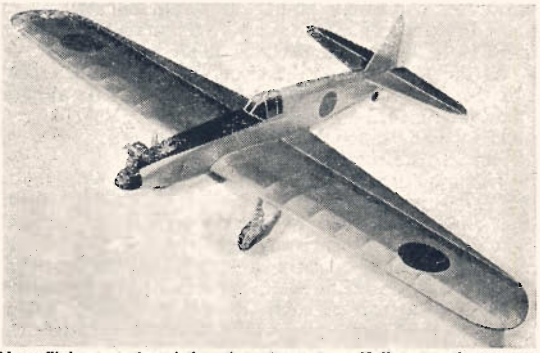
Even with our sharpest ear close to the ground, we have yet to learn of anything new in kits for flying models in the British trade, though some interesting accessory items have come to our attention. **Finnigan**

Left: Wembley Pk. Model Shop proprietor Brian Smith is an ardent r/c flier, and is seen with BMP "Navigator" ready for Metz 10 channel gear. Right: The Edmonds "Reguflo" FAI team race tank, made to 9.8 c.c. and with close lapped vent valve, at 16/6d. Gives constant feed to last drop.



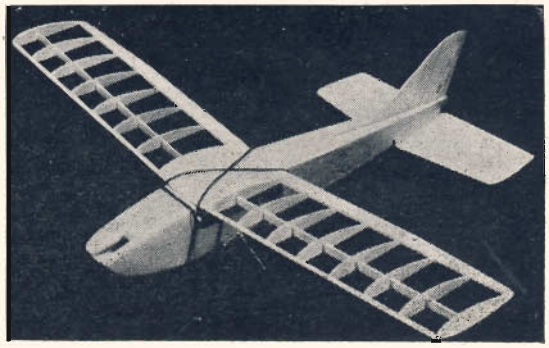
Speciality Paints are marketing 2½ oz. cans of 'Brushing Hammer Finish' at 3/6d. We have tested green, blue and pewter samples, and the effect is remarkably good on transmitter cases, tool boxes, etc.

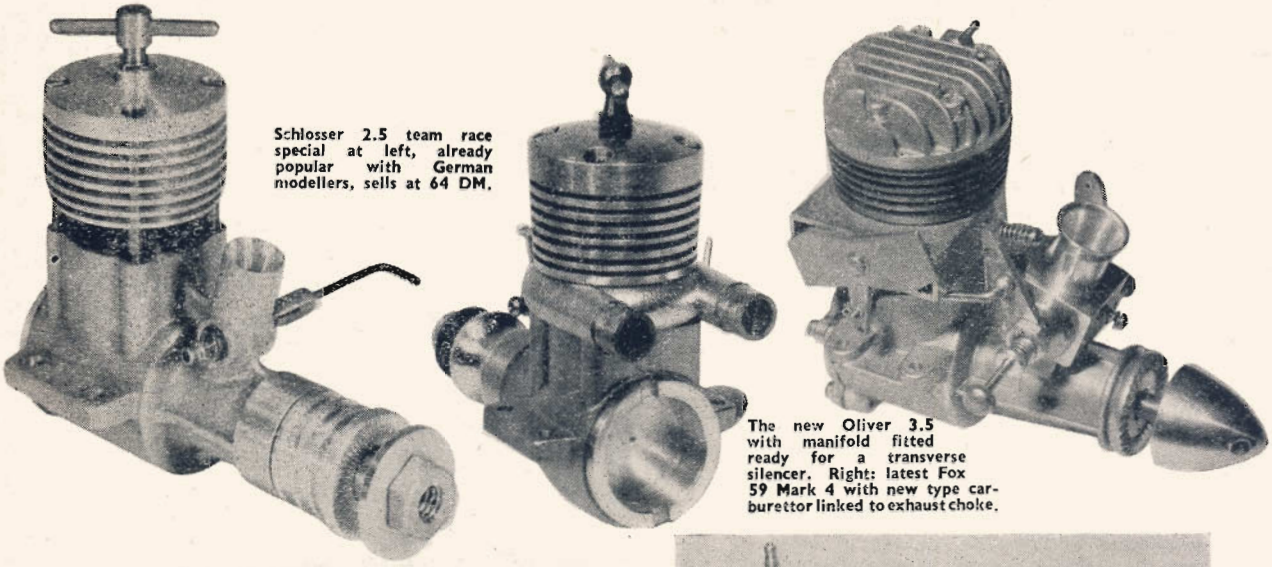
The virtues of **Bondaglass** are well known enough, but 'Bondapaste' is probably not so well known to modellers. A new two-tube 4/6d. pack of this 30 minute hard setting filler which can be sawn or drilled and tapped, brings a new medium for the majority of modellers. Many experts have used similar hard setting epoxy fillers for all sorts of jobs from building up prop blade roots to holding u/c wire in place in recent years.



Now flight tested and found to be a beautifully smooth stunter with Rivers 3.5, is the Kookaburra "Swallow" kit. Looks good too, and only needed heavy tailwheel for ideal balance.

Kits we have previously reviewed and which have progressed through construction include the **BMP** 'Navigator', multi-channel stunter, which unfortunately bit the dust in no uncertain way with a sad case of runaway elevator in the "down" direction, after flying very well indeed. However, we can at least show what another one looks like in our heading pic! The other trio of test models *are* ours!





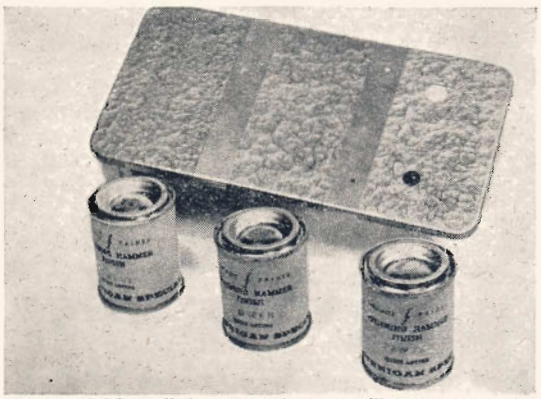
Schlosser 2.5 team race special at left, already popular with German modellers, sells at 64 DM.

The new Oliver 3.5 with manifold fitted ready for a transverse silencer. Right: latest Fox 59 Mark 4 with new type carburettor linked to exhaust choke.

. . . and Motor Mart

"TIGER MAJOR" is the suggested name for the new 3.5 c.c. diesel from **Oliver's.** Specifically designed to accept a silencer manifold with minimum power loss, the new engine will have an immediate appeal for combat as well as R/C and C/L stunt flying. R.p.m. loss with the Oliver manifold and a simple expansion chamber is barely 2½ per cent, and the silencing effect greater than any other unit yet tested. We like the Tiger Major very much, and a full analysis will appear shortly. Meanwhile the manifold is so designed to be fitted to the Cub and the Tiger units, but must be a works fitting due to machining requirements.

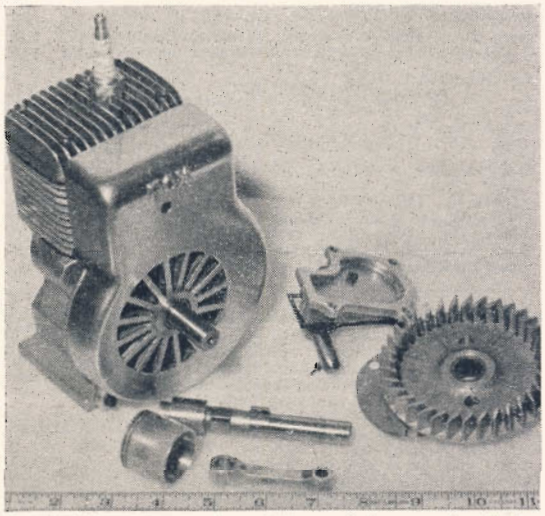
Duke Fox is a prolific engine designer and his



Hammer finish applied to transmitter case illustrates neat effect of blue, green and pewter test strips. Has high gloss and 100 per cent fuel proof.

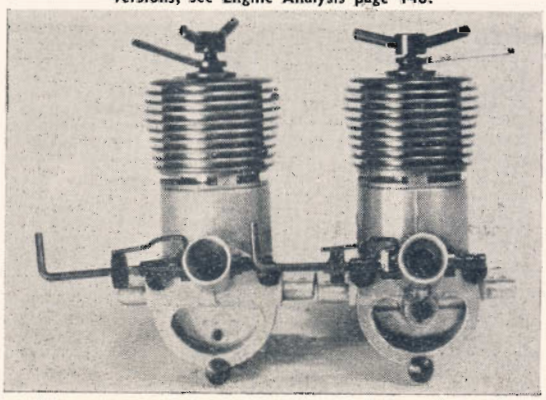
latest for R/C is the Mark 4 **Fox 59** with a new type of intake manifold. This incorporates a rotary butterfly valve above the fuel jet. The new system incorporates three adjustable jets to feed at full, half and closed throttle positions. Fox also has an interest in the utility engine, and is producing a 4-stroke which will undoubtedly have an appeal for giant model builders as well as garden mower and portable saw producers.

Benno Schlosser's latest product in West Germany



is a 2.5 for team racing with special expensive Swiss ball-races and several "re-work" features. Pilot production run of 14 were sold quickly and have produced high speed with 45 laps range. Benno's current effort is with a twin BB 1 c.c. diesel of high output said to be equal to good 1.5 c.c. engines.

Above, Fox utility engine, 1¼ in. bore, 1 in. stroke with an "L" head for side valve 4-stroke. Has 2:1 power take-off as needed, self cooling fan, measures only 6 x 4½ x 4½ ins., is 20.15 c.c. Below, comparison of Jena 2 c.c. reed valve and disc valve versions, see Engine Analysis page 148.



CLUB AND CONTEST NEWS

1963 Annual International Correspondence Event

Nine countries participated in this event which closed last October and Teeside M.F.C. represented G.B. for the third time. Only home success (despite two reasonably calm but liftless days), was in F.A.I. power when Bert Spurr won the individual class using his variant of the 'Ripthor' powered by a Cox 15 special. This model also won the East Anglian Area F.A.I. postal contest in November and the A.I.P.C. Open and F.A.I. events of 1961. Their two man F.A.I. power team of Bert and Jim McCann topped the team contest. Jim McCann flying a TD .09 powered V.H.T.L. sheeted wing model. Other notable wins were by Bernie Colson, and Wayne Kinney both junior members of the New England Wakefield group, U.S.A., who won chuck glider and open glider respectively. Another new name in this contest, but certainly not to general contest flying was Henry Struck of The New England Group, who topped the F.A.I. totals and made the highest overall score.

RESULTS

FAI Teams (3 men 5 x 3 maxes)

A2—Badhoeuedorp and Sloten L.C (Holland)	38:09
Wakefield—New England Wakefield Group (U.S.A.) ...	38:54
Power—Teesside M.F.C. (G.B.)	24:47
F.A.I. Total—Rand M.A.C. (South Africa)	82:13

Open Teams (3 men 5 x 3 maxes)

Glider—New England Wakefield Group (U.S.A.)	35:52
Rubber—New England Wakefield Group (U.S.A.) ...	41:42
Power—Rand M.A.C. (South Africa)	36:38
Open Team Total—New England Wakefield Group (U.S.A.)	120:56
Grand Team Total—New England Wakefield Group (U.S.A.)	197:26

Individual F.A.I.

A2—Ted Boyeng (Holland)	15:00
Wakefield—Ed Dolby (U.S.A.)	13:34
Power—Bert Spurr (G.B.)	14:14
Total F.A.I.—Henry Struck (U.S.A.)	25:46

Individual Open

Chuck Glider—Bernie Colson (U.S.A.)	3:25
Rubber—Ed Dolby (U.S.A.)	14:55
Glider—Wayne Kinney (U.S.A.)	12:23
Power—Peter Levet (New Zealand)	14:50
Open Total—Ed Dolby (U.S.A.)	27:41
Grand Individual Total—Henry Struck (U.S.A.)	42:21

Northwood and Eastcote club's open night. Many very good models including lots of A.P.S. designs were shown.

Changes at Stevenage

Now they have settled into their new club room at the Sishers Youth Club, Stevenage M.F.C. are providing all paid up members with building boards and storage space to encourage building. Other good things available to the club include large grass and tarmac areas (the latter is floodlit) for C/L flying. For those who can't wait to join, meetings are held every Wednesday and Friday. Sad note is the passing of 'News & Views' one of the liveliest of this countries club news letters. Editor Geoff Dallimer has taken a break and needs more time for hobbying.

Bert Spurr's A.I.P.C. winning F.A.I. F/F power model. Cox 15 Special on pressure feed Cut off works via fuel cut and pressure release. Also the winner of the East Anglian Postal event last year plus other events.

Control Line Quadrathon

Clayton M.A.C. held a "Quadrathon" control-line event on January 19th at their local flying site. This consisted of four 'separate' events, stunt, speed, duration (on 30 c.c. of fuel) and a grand prix start. The same models had to be used for 'all' events, only change allowed being the propeller. Fifty feet lines were used. The event was based on the American A.Y.S.C. competition and results were :—1. D. T. Hambley. 2. P. Taylor. 3. P. Leigh.

Hayes Speed Meeting

In the speed meeting held by Hayes M.A.C. at their Charville Lane circuit on 29th December the outstanding flight trophy went to Alan Dell who did 81.33 m.p.h. in the pylon with a T.D. .09 'combat' model. Results were :— .049 class : 1. D. Balch, Feltham/Hayes, 60 m.p.h. 1.5 c.c. : 1. A. Dell, Feltham/Hayes, 81.33 m.p.h. 2. D. Balch, Feltham/Hayes, 79.31 m.p.h. 2.5 c.c. Open : 1. D. Bird, Brixton, 104:02 m.p.h. 2. D. Balch, Feltham/Hayes, 93.19 m.p.h. F.A.I.: 1. D. Balch, Feltham/Hayes, 87.71 m.p.h. 5 c.c. : 1. M. Billington, Brixton, 132:34 m.p.h. 2. K. Lindsey, Feltham/Hayes, 81.62 m.p.h. (practice model—he says!). 10 c.c. : 1. I. Roffey, Brixton, 141.55 m.p.h. 2. J. Taylor, Feltham/Hayes, 122.88 m.p.h.

Crawley Coupe d'Hiver and A/1

On December 8th, Crawley club held a "get-together" type competition for Coupe d'Hiver and A/1 glider. This proved a great success with 8 and 18 entries respectively. Many of the top names were there, but the host club took the top three places in Coupe d'Hiver. No less than six clubs were represented in spite of basically word of mouth publicity, after this latest success they hope to hold a repeat. Results are : **A/1 glider:** 1. A. Young (St. Albans), 5:22. 2. C. Morris (St. Albans), 5:06. 3. A. Wells (Hornchurch), 5:01. **Coupe d'Hiver :** 1. J. Wilson (Crawley), 4:11. 2. P. Cameron (Crawley), 3:45. 3. J. Darby (Crawley), 3:09. 3 x 2 min. max. in each class.

Engine Spotting

Included with film shows, indoor flying, etc., in the Walsall M.A.C. winter programme is a pair of novel contests, namely an original plans event and engine spotting contest. Other activities include 35 size combat and radio diversions in the shape of a new glider by Bob Ginder, and a super scale "Tiger Moth".

Long Service Treasurer

Mr. H. Baines was elected Treasurer of Blackheath M.F.C. for the 27th consecutive year at their recent A.G.M.

ROLLS-ROYCE PYLON RACE

Rolls Royce Welfare Model Aircraft Club, Derby, are holding a R/C pylon race meeting at Thulston Fields on April 5th. Venue is approx. four miles south of Derby, 300 yards down route B5010 from A6. Pylon poles for all events are 528 ft. apart. Proof of valid insurance must be shown. Events are Single Channel (one button on Tx only) pre-entry 1/6d. starts at 10 a.m. No limit on size of engine or type of model. Models have to complete as many laps as possible in four minutes. Multi-Pylon Race pre-entry entry 1/6d., field entry 2/-. Up to and including 2.5 c.c. engines, any design of model, times over one mile (five laps) Multi-Relay Race for other than Pylon Racers, pre-entry 1/6d., Field-entry 2/-. No limit on engine size or model. A team of two fliers with two models will have 10 minutes to complete as many laps as possible. Each model must fly once and complete a minimum of three laps. No model can fly until the baton (rubber band) has been fixed to it. Pre-entry forms and more details can be obtained from Mr. F. N. Dowson, 42 Hollis Street, Alvaston, Derby. This sounds like a real R/C day so lets see plenty of entries. 'Pylon Duster' (November '63 R.C.M. & E) takes 2.5 c.c. engines and is a quick building job for those who want a well tried model by April 5th. (Full size plans from Geoff Franklin, 101 Jarrom Street, Leicester, price 6/-).

Taper Out of Fashion ?

That 'P.63 King Cobra' on our September '63 cover (By F/O Denny) flew at the '63 R.A.F. M.A.A. Champs. with a new, large area wing with constant width and now, from 'Signal' the quarterly review of the Gravesend and D.M.A.C., we hear that their club member Roy Weeks has replaced a damaged "Orion" wing, with his own new version with constant chord from root to tip. The performance is said to be better on glide but flies slower, although still aerobatic. Power is supplied by a Merco .49 and controlled with F & M 10 channel R/C gear, via five relayless Duramites giving aileron, rudder, elevator, elevator trim and engine speed control.

Club Records

Leicester M.A.C. member Bernard Heggs broke his club R/C duration record on September 15th. The time of 24 min. 34 secs. was made flying a modified 'Keil Kraft Super 60' fitted with eight channel radio control. Pete Moore raised the club C/L endurance record to 10 min. 32 secs. using an O/D model, on December 8th. Moreover the 2.5 c.c. engine was also designed and built by himself and used 60 c.c. of fuel in the attempt. Sounds as though it's now a case of largest tank takes record !

IRISH CAPERS

December 26th found 50 models and twice as many people at Sydenham R.N.A. yard to be entertained by, among precision flights and rat racing, a flyaway with Maurice Doyle's glider. It looped and looped and looped ; but just wouldn't come down !

Night Flights

Thirty-five feet lines and two combat models powered by Cox .09 and Frog 2.49 were used by Southampton M.A.C. members to fly in pitch darkness ! Only guide was a pencell torch strapped to the "Scorcher's" wing. Report says it was good for a giggle : but we always thought Pete of that name had left the south for Stevenage (pun !).

Subs for Hut

Woking D.M.A.C. elected to increase Senior member's fees to 3/- per month at their A.G.M. on January 3rd, so that the club can purchase a hut of their own —to go with the permanent flying site.

Farnborough Boxing Day Rally

Perfect flying conditions attracted a fair number of entries from modellers who had recovered after the previous day of festivity. Rain stopped at 11.30 and left negligible drift and no thermal activity. Only glider did not have a fly-off, in which Mike Burrows managed one genuine 2:51 still air performance. In Rubber there was only one entry, without a full maximum score ! Fly-offs were held just before dusk, most models being clocked O.O.S. in the quickly rising mist. Results : **Power :** (14 entries 6 in fly-off). 1. D. Hipperson (St. Albans) 9:00 + 5:40. 2. J. Boxall (Portsmouth) 9:00 + 5:12. 3. J. O'Donnell (Whitefield) 9:00 + 5:12. **Rubber :** (7 entries, 6 fly-off). 1. J. North (Croydon) 9:00 + 5:16. 2. F. Boxall (Brighton) 9:00 + 4:30. 3. J. Allen (Brighton) 9:00 + 3:49. **Glider :** (10 entries). 1. M. Dilly (Croydon) 8:01. 2. A. Wisher (Croydon) 7:14. 3. A. Young (St. Albans) 7:05. **½A Power :** (8 entries, 5 in fly-off). 1. A. Young (St. Albans) 9:00 + 4:02. 2. D. Hipperson (St. Albans) 9:00 + 3:25. 3. K. Smith (Croydon) 9:00 + 3:20.

F. A. Lowe reminisces on page 128 of truly vintage days such as 26th August, 1934, when the "Sir John Shelley" was run by T.M.A.C. at "Faireys" which is now the central area of London Airport (Heathrow). Sorry lads but we cannot supply plans for these 30 year olds ; but what a selection of vintage contest subjects!

Olde Tyme Rubber Comp.

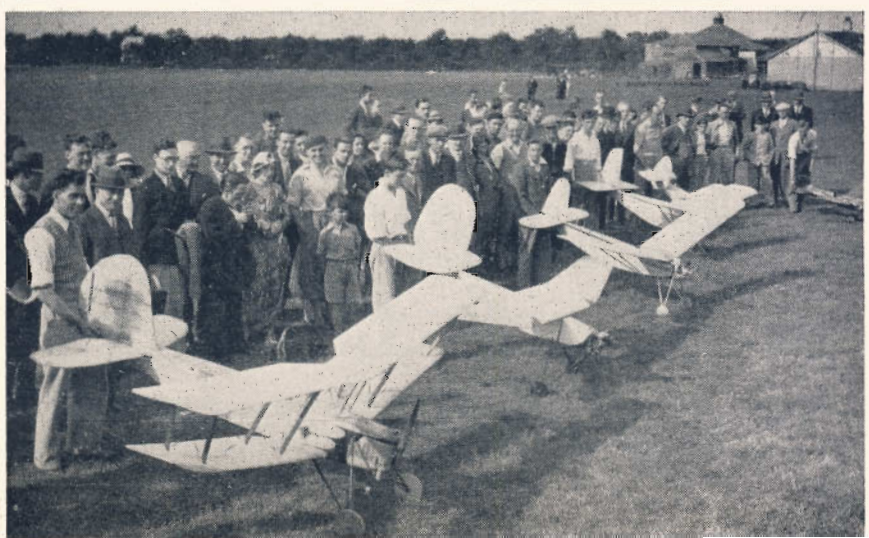
Timperley D.M.F.C. held their Olde Tyme Rubber Competition on 17th November. The rules were very simple stating the model must be a pre 1/1/1950 design, max. wing span 36 in. flat (not projected). Fuselage (length squared divided by one hundred), must be able to stand on three points for 10 seconds, and must R.O.G. unassisted. Prop diameter no greater than original design, but may be made to fold, freewheel, or feather as preferred. Rubber weight not to exceed original power. Fuselage or tailplane may be modified from original only to facilitate tip up of tail dethermaliser. R. Brownson's winning "Upstairs Maid" burst a motor and had to fly rather "holey". Les Massie's "Philibuster" took off like a rocket, but he had it damaged when two gentlemen out shooting retrieved it for him ; not by gunfire by the way ! It was a very enjoyable event in spite of the cold weather and a further contest is to be held this year. Results for two flights each were : 1. R. F. Brownson "Upstairs Maid", 4:44. 2. D. Fletcher "Philibuster", 2:24. 3. L. Massie "Philibuster", 2:18. 4. H. Winstanley "Condor Clipper", 1:47.

Rubber Beats Power on Water

December 19th saw a fair attendance of Brighton D.M.A.C. members at Ditchling Beacon Pond, for their annual Chairman's Cup seaplane contest. This annual tussle between rubber and power once more showed the advantage of rubber in this event, when Fred Boxall came first with 6:25 followed by John West's 'Dixielander' with 5:05. Dave Welsh came third despite demolishing his fuselage with a broken rubber motor.

Revival

Pontefract and D.M.A.C. have just been re-formed, with a membership of 17. Main interests are R/C, C/L Stunt, F.A.I. and Open Power, A/1, A/2 and F/F Scale. Flying takes place every Sunday in Pontefract Park and club meetings, are held every other Wednesday (February 5th-19th, etc.) in the Further Education Unit of the Caneton Secondary Modern School, Pontefract. This is a brand new building and facilities include the use of the kitchen (who's for chips?) and 8 m.m. Projector. An A/1 competition is scheduled to start in March.



Contest Calendar

February 23rd *South of Scotland All F.A.I. Meeting.* Abbotsinch Airfield. R/G/P, T/R Stunt, Speed (No pylon available) 2/6 field entry.
Northern Area Winter Rally, R.A.F. Driffield, E. Yorks. Open R/G/P/½A and Combined F.A.I. classes event.

March 22nd G.M.A.C. Hornets Rally. Abbotsinch Airfield. R/G/P, ½A and B T/R, Combat.

March 29-30th *North Western Area Easter Meeting.* R.A.F. Tern Hill 10 miles south of Whitchurch (Salop) on A.41. "Sunday 29th": Open Rubber, Open Power, F.A.I. T/R Combat, C/L Stunt, R/C Scale. "Monday 30th": Open Glider, Combined F.A.I. F/F Event, B T/R, ½ AT/R, Combat, Multi R/C, F/F Scale. Pre-Entry forms from G. K. Mutch, 90 Wolverham Road, Ellesmere Port, Cheshire.

April 5th *Farnborough M.A.C. Easter Monday Bank Holiday Spot Landing R/C Competition.* Chobham Common. Pre-Entry 2/6d. and details from J. Goldsmith, 14 Leopold Ave., Farnborough, Hants.

April 5th *Rolls-Royce Welfare M.A.C.* R/C Pylon Race meeting. Thulston Field, four miles south of Derby. Single Channel, Multi and Multi-relay Race. Pre-Entry forms from F. N. Dawson, 42 Hollis Street, Alvaston, Derby.

April 12th *Bristol R/C M.A.C.* Pylon Racing, two classes: (i) For Pylon Dusters only; (ii) Open to any R/C model. At R.A.F. Hullavington, Wilts.

S.M.A.E. Contest Programme

March 22nd K.M.A.A. Cup (A/2 Glider); Frog Senior Cup (Open Power); F.A.I. Rubber. *At Area Venues.*

April 19th Gamage Cup (Open Rubber); Pilcher Cup (Open Glider); F.A.I. Power. *At Area Venues.*

April 19th Centralised C/L events at *R.A.F. Tern Hill.*

April 19th Multi Radio Control at *Woburn Abbey.*

May 3rd F.A.I. Control Line Team Trials at *R.A.F. Barkston Heath* or *Wipsley.*

May 17th *British National Championships at venue to be announced.* Thurston Cup (U/R Glider); Womens' Cup (G/R/P); Lady Shelley Cup (Tailless); S.M.A.E. Trophy (Radio Control Multi); Scale Flights (Radio Control); Scale Flights (Free Flight); Scale Flights (Control Line); Gold Trophy (C.L. Stunt); Team Racing (Class A); Combat (Prelim. Heats); Speed (Classes 1, 2, and 3).

May 18th Model Aircraft (U/R Rubber); Sir John Shelley (U/R Power); P.A.A. Load (Pay-load); S.M.A.E. Trophy (Radio Multi); Scale judging (Radio Control); Scale judging (Control Line); Scale judging (Free Flight); Team Racing (Class ½A); Team Racing (Class B); Combat (Heats and Finals); Speed (Classes 4, 5 and 6).

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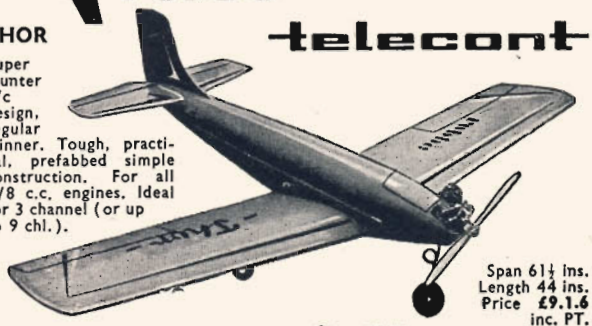
Super stunter r/c design, regular winner. Tough, practical, prefabbed simple construction. For all 5/8 c.c. engines. Ideal for 3 channel (or up to 9 chl.).



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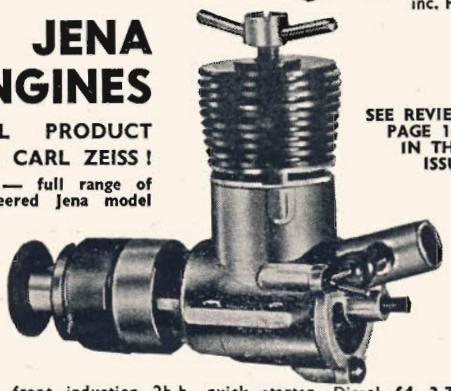

SEE REVIEW PAGE 148 IN THIS ISSUE

JENA 1 c.c. Air cooled, front induction 2b.b. quick starter. Diesel	£4. 3.7
JENA 1 c.c. Water cooled, with exhaust, as above	£5. 5.8
JENA 2 c.c. 2 ball bearings, rotary	£5. 5.8
JENA 2.5 c.c. Diesel—small cylinder head	£5. 5.8
JENA 2.5 c.c. ditto—normal cylinder head	£5. 5.8
JENA 2.5 c.c. Diesel—reed valve—normal cylinder head	£5. 5.8
JENA 2.5 c.c. ditto—small cylinder head	£5. 5.8
JENA 2.5 c.c. Diesel Watercooled	£6.12.6
Flywheel & Clutch	£1. 1.1
JENA R/C THROTTLE for 2 c.c. and 2.5 c.c.	£1.16.3

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5-ch. Tx	**£46.14.0**	inc. tax
9-ch. Tx	**£59.15.0**	inc. tax

Receivers :

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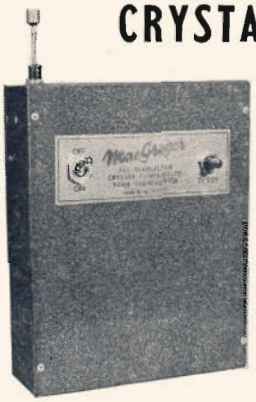

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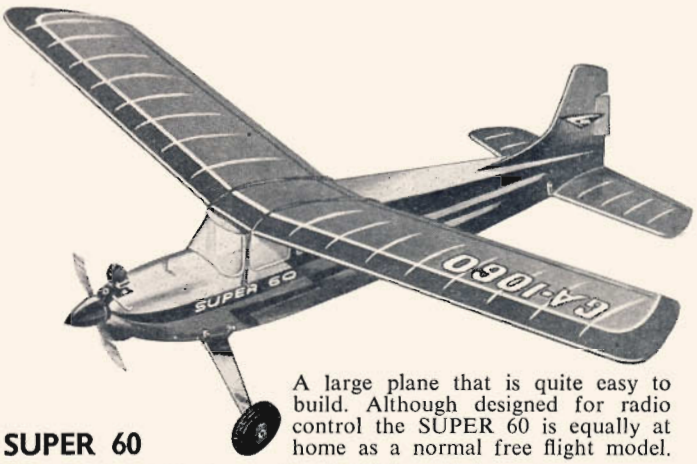

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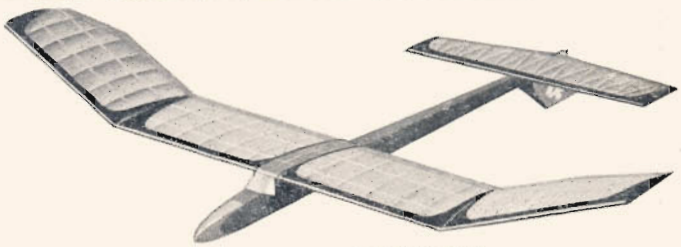

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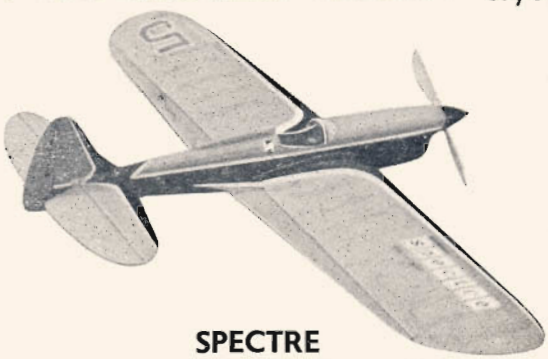

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