

AERO MODELLER

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JULY 1963

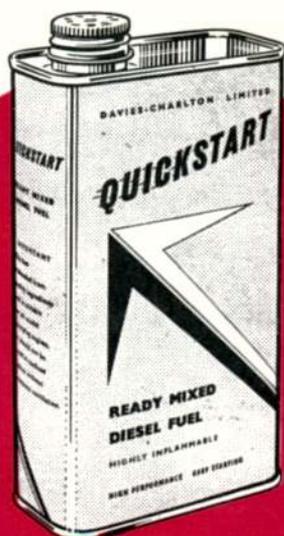
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AERO MODELLER

MAP HOBBY MAGAZINE

other modelling angles . . .

July edition of our companion magazine *Radio Control Models and Electronics* will be of particular attraction to all radio control boat modellers. Main feature will be a full-size pull out plan for a 20 in. single channel power boat, which can be made from a few sheets of balsa. Construction is simplicity itself. If you want a holiday amusement subject that cannot fly away and has a mighty job to sink, will take any kind of radio gear, then this is "it". Photo feature explains assembly and R/C installation. The new "Miniten", 10 channel valve transmitter will be popular with home constructors of multi gear, a 3-view of Jerry Nelson's model, latest commercial news, gadgets and loads of other gen' to satisfy the R/C fraternity.

July *Model Maker & Model Cars* details a sailing model, *Cutty Sark*, made from a plastic kit, plus full-size plans for a German explosive motor boat *Schlitten*. This scale working model is quite a novelty. Plans for a neat hovercraft, features on making yacht hulls from plaster and glass fibre, drawings of the 1933 3.9 Maserati and the Lola G.T. four wheel drive car will satisfy car enthusiasts.

Both magazines are the same price . . . 2s. per copy. If your hobby shop or newsagent does not carry stock, send 2s. 4d. for return post delivery from address below.

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38 Clarendon Road,
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July 1963

VOLUME XXVIII No. 330

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cover

Specially commissioned painting by Lawrence Bagley depicts the famous Japanese lightweight fighter of World War II, the Mitsubishi A6M5 Zero-Sen (code name Zeke) in action. A full description of this aircraft appears on pages 340-343 of this issue, together with 1/48th scale drawings in keeping with our previously published plans of other World War II Fighters, by contributor D. H. Cooksey. Not normally a colourful subject, we have gone to some trouble to find the brightest possible authentic decoration for a Zero.

next month . . .

August issue is traditionally the "Nats" report issue. Watch out for a very complete coverage of the 1963 British National Championships held at R.A.F. Barkston Heath, near Grantham over Whitsun, with photographs of all winners and stage by stage details of contests, plus outstanding happenings. **Gadget Review** will include some novel new ideas to aid you with your modelling. **Book Reviews** summarises the latest publications of aviation and aeromodelling interest. A 40 in. simple structure .049 (1/2A) contest model, the Zeus will be a great attraction for many people using this size of engine for contest free flight. Full-size plan of the month will be for an attractive profile semi-scale two-way model that we know will have a great attraction among all sport flyers. **Engine Analysis** on the new Eta 15D Mark II, which is breaking all records in the team race sphere . . . plus some real surprises we have up our sleeves, all out on July 19th.

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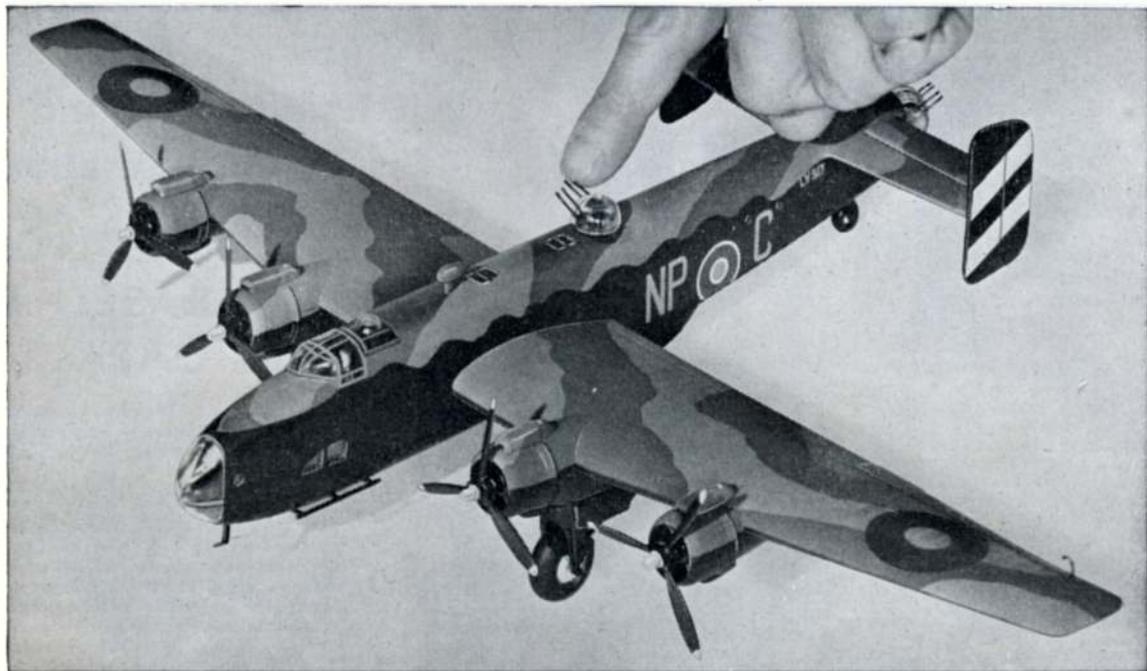
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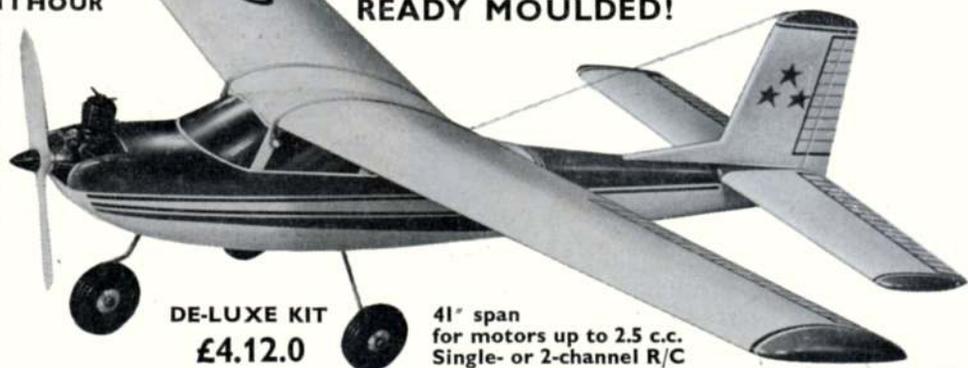
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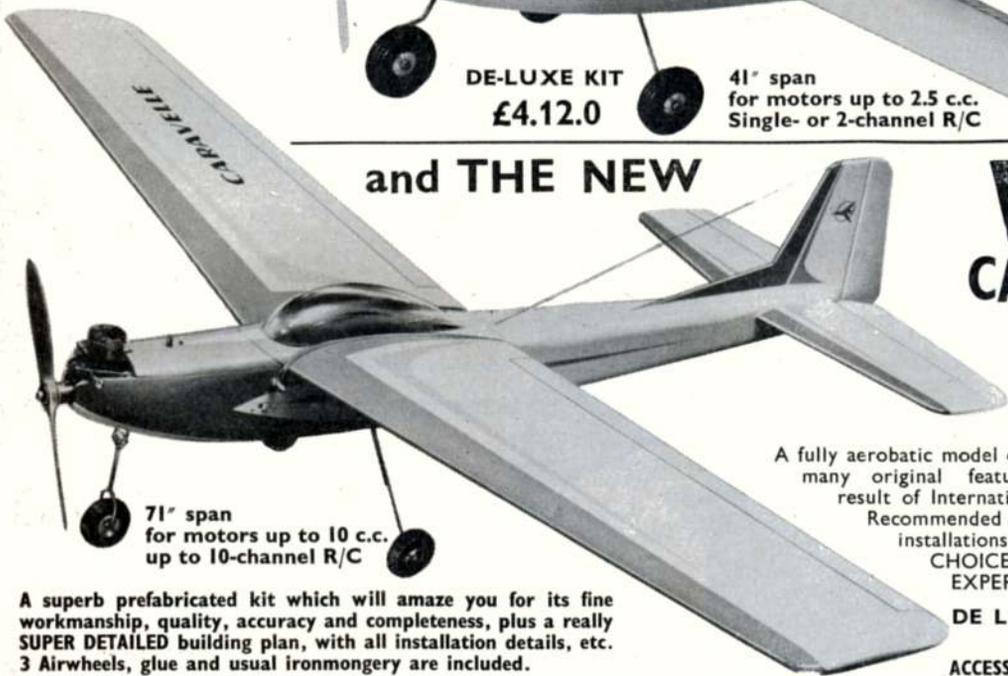


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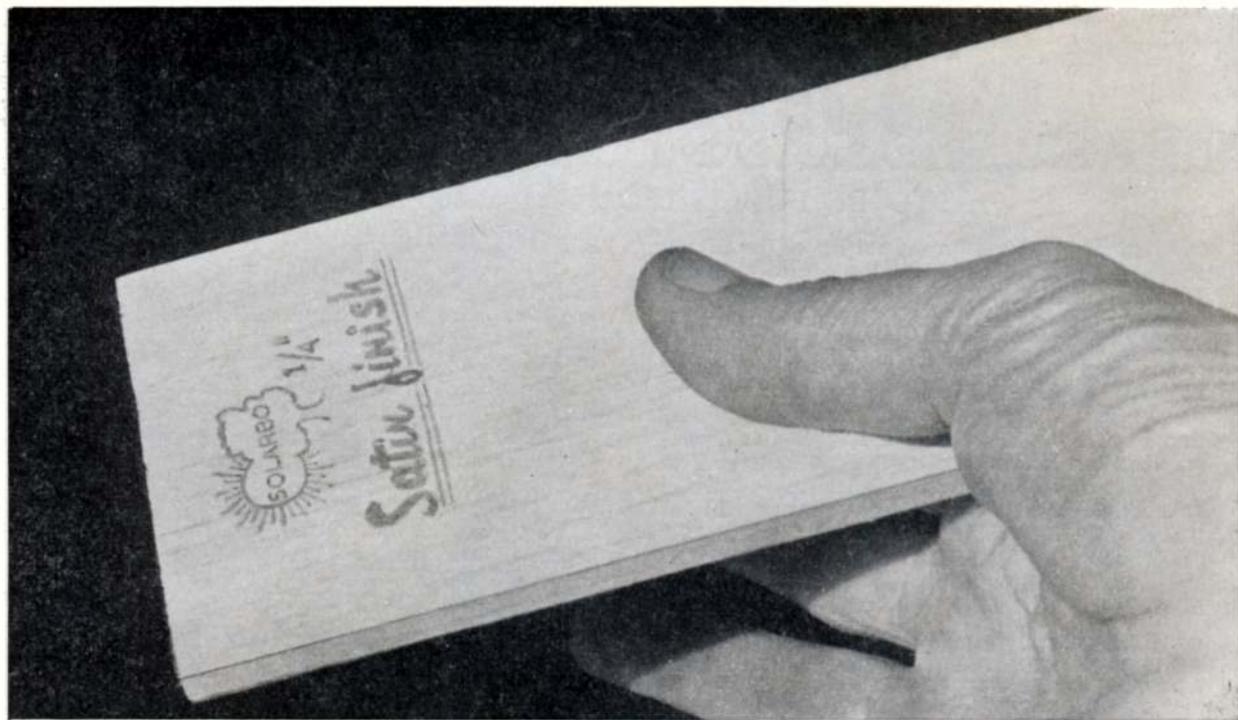
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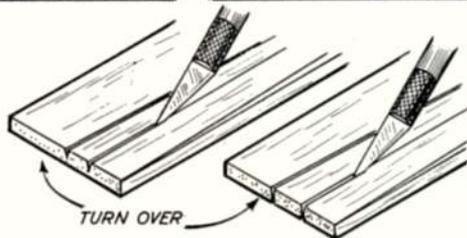
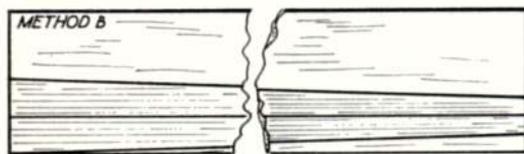
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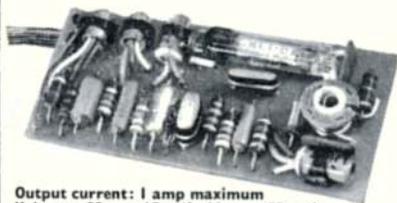


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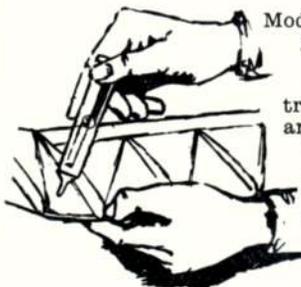
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Heard at the HANGAR DOORS

Re-built Bf 109G on display at R.A.F. Bentwaters

Messerschmitt to be grounded

Much to our regret (and we are sure that all our readers join us) the Messerschmitt Bf 109G which was being re-constructed by enthusiastic R.A.F. personnel at R.A.F. Wattisham, will never become airborne again. The reason for the restriction is an Air Ministry decision. Apparently there is a three year gap in the records connected with the machine and it is thought that during comparative tests, storage and general mishandling at exhibitions, the airframe has been over stressed and may be unsafe. Even though the re-construction is not complete the new paint job in authentic colouring will make this sole surviving Bf 109 a much valued museum piece and we hope that it will not be hidden from view too often. What a pity we shall never have the opportunity of seeing it airborne with the preserved Hurricane and Spitfire.

Incidentally, next title in the Harleyford Publications book range is a monograph on the Messerschmitt Bf 109 to partner their earlier title on the Spitfire. We understand that special attention has been given to modellers demands in this new volume and that there will be cross sections with the drawings, which cover 23 aircraft. There will also be full colour representations of the Bf 109 E-31 and G-10 types to illustrate the wide range of camouflage and markings. Surely this will soon be the subject of someone's multi channel scale modelling effort?

Airship bid dropped

We learn from the *Evening Mail and Dispatch* of Wednesday May 15th that Wilfred Jones of Sutton Coldfield has withdrawn his attempt to build a 12 foot long airship. He intended to fly the Helium filled "model" across the English Channel and back as part of Sutton Coldfield's Carnival week celebrations in June. Undaunted, Mr. Jones is now diverting his attention to a 7 in. span semi-scale Spitfire.

Club liaison

Huddersfield D.M.A.C. have recently been having difficulty with local control-line operation because of the noise nuisance problem. An exhibition was arranged to try to explain the purpose of the hobby and also to demonstrate a silencer designed by member Edward Kelly. We have been sent a sketch of the silencer, which is, in fact, a two stage baffle unit and also a press clipping from *Huddersfield Daily Examiner* of May 18th. A photo of club members accompanied a report on a statement by a local councillor who said "We have always found the club members helpful and this new device (the silencer) is most welcome. This is the sort of hobby which needs encouraging in young people."

By presenting their case in a practical manner, Huddersfield D.M.A.C. are certainly taking the right line with good public relations.

† Malcolm Young

The modelling movement, and especially the Northern Heights M.F.C. lost a devoted and hard working enthusiast on April 17th when Malcolm Young died at the early age of 37 after a brief illness. A long time aeromodeller with keenest interests in Wakefield, A/2, Radio controlled slope soaring and indoor flying, Malcolm was largely responsible for organisation of the famed annual Northern Heights Gala day at R.A.F. Halton. His quiet manner and calm disposition enabled him to surmount many a difficulty and brought to him a very wide circle of friends both here and among International visitors. He was a kingpost in the Cranfield processing teams for Championship events. Among his modelling achievements he was particularly proud of his part in establishing the slope soaring duration record with the Northern Heights team.

Bigger Business

An important statement has been issued by BEME Tele Communications Ltd. concerning the future of *Radio and Electronic Products Ltd.* which we quote as follows:—

"Derritron Ltd., announce that as from June 1st 1963, *Radio and Electronic Products* have joined the *Derritron Electronics Group*.

"In future the company will operate as the R.E.P. Division of BEME Telecommunications Ltd., (one of the Derritron Group subsidiaries). All production and development of R.E.P. equipment, formerly carried out at 75, South Western Road, St. Margarets, Twickenham Middlesex, will be transferred to the BEME factory at Shipyard Estate, Hythe, Southampton.

"Mr. G. Honnest-Redlich will be managing the R.E.P. division, and will continue to develop radio control equipment for which his firm is so well known, and which recently earned his team first place in the World Championship eliminators at Odiham."

Underlining this above statement is the pleasing fact that flying this all-British (indeed, all R.E.P.) equipment in a Merco 49 powered *Uproar* (need we say, A.P.S. plan RC.710 price 8s. 6d.). Chris Olsen was the sole representative of British radio equipment in the 1963 team trials and it is very much to his credit and the above company that he obtained this leading position.

R/C team selection

The ten leading performers from the first R/C trial at R.A.F. Barkston Heath qualified for a final deciding trial at R.A.F. Odiham on May 19th. In actual fact, due to two withdrawals, and the taking in of 11th and 12th placings, practically all the aspirants for a place in the 1963 British team for the World Championships were included. Blustery conditions had their effect; but did not alter the placings of the first three who, subject to S.M.A.E. ratification, constitute the team to

go to Belgium. There is no change in personnel from last year, the order being C. Olsen, F.v.d. Bergh and H. Brooks. First reserve, in 4th place is P. Waters. Honours were evenly spread among the manufacturers, the selection of the first four being R.E.P., Orbit; F. & M.; and Min-X with G. Pike's Space Control in 6th. Geoff's demonstration of rolling turns with the proportional gear and general smoothness of control were most impressive.

| | | 1st | 2nd | 3rd | Total |
|--------------|------------------|---------|---------|--------|---------|
| C. Olsen | C.M. | 1599.5 | 1789.7 | 1853 | 3642.75 |
| F.v.d. Bergh | Bromley | 1747.25 | 1768.25 | 1830.7 | 3599 |
| H. Brooks | S.M.F. | 1640.5 | 1829.5 | 1759 | 3588.5 |
| P. Waters | Pt. Talbot | 1533 | 1681.7 | 1672.5 | 3354.25 |
| E. Johnson | Bristol R.C.M.C. | 1421.7 | 1638.25 | 1627.5 | 3265.95 |
| G. Pike | Nottingham | 1289.5 | 1536.25 | 1489.7 | 3026 |

Aeromodelling on Television

Scottish and Anglian channels of ATV television have each carried features on our hobby, so too has BBC Western region produced a fine show on radio controlled models which went out on national scale last year. Currently showing on television are the longest series yet, for aeromodelling has been included in BBC *Hobbies Club* shown each Friday at 5.35 p.m. Produced by Tony Arnold, using several well known S.M.A.E. members for demonstration flying, these four programmes on June 7th, 14th, 21st and 28th will do much to popularise the hobby; though from what we learn at present, they may give too "expert" a view.

Independent television chose a different line when they introduced aeromodelling through *Tuesday Rendezvous* on May 7th and will spread their novices feature right through to July. Doug McHard designed a special little 24 in. rubber driven model for this programme, named TR 5-5:30 (the hour of the programme on Tuesdays). Pod and boom style fuselage is easily made from die-cut balsa sheet supplied free to viewers together with plan and instructions. Within a few days of the first announcement over 20,000 stamped and addressed envelopes arrived in ITV's postbag, asking for the parts! Seems like June is "busting out all over" as the song goes, so far as aeromodelling is concerned!

Recent events

That International postal event for models to the *Coupe d'Hiver* class which we mentioned last month involved more than just Illinois and Timperley clubs. Cheadle, Crawley, Woking and Sheffield each supplied other entries and though mad March winds played havoc with results, their enthusiasm is by no means dampened. In fact, Illinois M.A.C. would like to run an August date postal event. Any newcomers interested?

Coupe d'Hiver was on the programme for *Woking & D.M.A.C. Gala* on May 5th at Chobham Common which had all the excitements of a gorse fire (whoopie—what thermals!) and an International flavour with New Zealanders Ron Magill topping Chuck Glider and Bill McGarvey placing 3rd to those regular fly-off men O'Donnell and Elliot in open rubber. From New England, U.S.A. came John Bell (ex-Swindon too) to take 3rd in Glider. The ubiquitous O'Donnell won C. d'Hiver with 3:56 against Geoff Kent's 3:39. John West headed power and Jim Baguley the glider event so that only in 1/4A power do we find a relatively new name in D. Hipperton of Croydon winning with 7:26. He was chased along by J. Boxall who uses a Melinex covered model and with which he won 1/4A at Chobham for the *East Anglian Area Gala* on the following Sunday, May 12th. Quantities of dope were given as prizes, and most went to the renowned names such as George Fuller in rubber, Al Wisher in glider and Martin Dilly



Chris Olsen's Uproar with Merco 49 (has also been a test bed for Merco 61) with all-R.E.P. gear, Dekatone and Musclemite servos, the leading performer in British team trials at R.A.F. Odiham

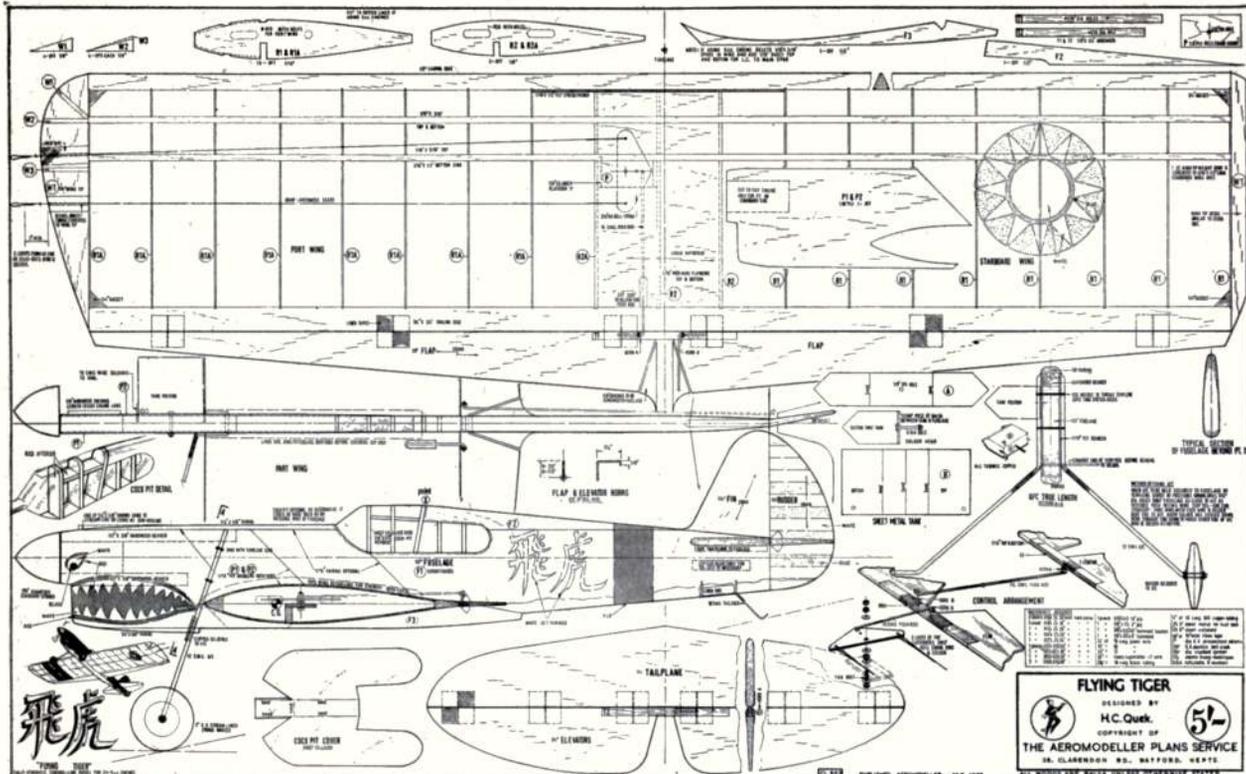
in power with Mike Burrows collecting 2nds in glider and 1/4A. Only one junior entered. He was A. Sipton of Colchester who showed promise in open power. What a shame it is that only the host area (who, with 50 or so airfields and large open tracts, had to go to London Area's Chobham) could produce a flyer of under 16 years. Something missing somewhere.

Up north at Elvington on the same blustery day, May 12th, *York M.A.S.* ran their open rally for an admirable display of useful prizes. Typical was glider in which 16 entered but only three flew! R. Salmon was leader of the brave with a mere 3:33 total but in power a hardy 6 made flights with Tom Stoker leading G. Stringwell! at 1st and 2nd. Ernie Thorpe of Derby pipped J. O'Donnell in rubber and R/C seemed to be shared by B. Deniel of Doncaster and Roland Scott. April 28th would have been a far better date choice as the S.M.A.E. results show. It was also chosen by the *RAFMAA* for their postal Open glider and power events, won by Chief Tech. Coman of Newton in power (whose *Zeus* .049 power design appears in August *AEROMODELLER*) and L.A.C. Mountford of Odiham in glider who made the only triple max score.

Vintage events have been reported in *World News* from the U.S.A. and Canada. The bug has bitten in *East Lancs M.A.C.* who ran their "Old Timer" contest for pre-1950 rubber designs, on March 31st Dave Wolsenholme won the fly-off for first place with Charles Smith, each making three 2-minute max's. Dave used a "Scream" and Charles a "Raff V". This design by Norman Marcus remains a popular lightweight over the years as plan D253 in A.P.S., price 3s.,—shows you can't keep a good 'un down!

Vintage event winner at East Lancs Club contest was Dave Wolsenholme, seen here holding the second place model,—an A.P.S. Marcus "Raff V" design flown by Charles Smith. Over generous dihedral is the result of modern doping techniques on elderly extra lightweight structure design! Note: NO dethermaliser fitted!





FULL-SIZE COPIES OF THESE 1/6TH SCALE REPRODUCTIONS ARE AVAILABLE THROUGH A.P.S. AS CL.842 (RED DRAGON) AND CL.843 (FLYING TIGER), 5/6d EACH INC. POST.

Whichever model is chosen, the same building instructions apply.

Begin the **wing** by cutting 16 1/16 in. ribs and three 1/8 in. ribs from medium hard balsa. A ply template will definitely be a great help. Cut the necessary holes for the leadout wires for ribs R1A and R2A as indicated.

Shape the leading edge from 1/2 x 1/2 x 36 in. and the trailing edge from a 1/2 x 3/4 x 36 in. medium hard balsa. Cement the 1/16 in. ply strengthener to the leading edge. Notch 1/16 in. deep grooves in the edges to take the ribs, then build the wing directly over the plan by first pinning in position the 3/16 x 1/2 x 36 in. main spar and the 1/2 x 3/4 x 36 in. trailing edge. Slide and cement the ribs in position. Adjust for squareness before cement sets. Allow to dry then add the leading edge to the free ends of the ribs. Use pieces of scrap balsa to pack up.

Add in the 1/2 in. balsa gussets, the 1/2 in. thick bellcrank ply mount P1 with 3/32 in. dia. hole drilled and also cement on the wing tips WT. Cement the two top 1/16 x 3/16 x 36 in. balsa strips on the ribs.

When the wing has set remove it from the plan and add in the 1/2 in. square to the under side of the ply P1. Cement the lower 1/16 x 3/16 x 36 in. strip in place and also add W1, W2, W3 to the wing tips.

Cut and sand the two wing flaps to section from 1/2 in. medium hard balsa. Note that the port flap is slightly longer than the starboard. Bend from 18 s.w.g. piano wire, loops first, one each of horn "A" and horn "B". Push the straight end of these horns through the 1/16 in. dia. holes drilled on the hardwood flap joiner T1, bend

"Flying Tigers" in triplicate, three of the designer's friends, resident in London with their models, each admirably decorated, two of them in the style shown on the plan. Model at left has a slight variation and shorter tail moment. Both "Red Dragon" and "Flying Tiger" enjoy identical proportions so there is little to choose between them for flight performance. As a pair, flown simultaneously in the same circuit, they make an impressive display in "Military" combat.

the piano wire as indicated on plan. Bind these horns with Terylene cord and give a good coating of cement. Also pre-cement the edges of the flaps and T1 to be connected. When the skin of cement is sufficiently dry, join both flaps together to T1, checking alignment.

Attach flaps to the wing trailing edge with linen hinges, arranged the clothes horse style. Add the control assembly including the 16 s.w.g. piano wire push rod up to flap horn "A". Solder where necessary.

Now plank top and bottom centre section of the wing from R2A to R2 with 1/16 in. medium hard balsa sheet. Tape 18 s.w.g. brass tubing leadout guides to port wing tip, thread the leadout cables through, form loops and solder as shown. Bind and cement approx. 1 oz. of weight to starboard side of the 3/16 x 1/2 x 36 in. main spar.

Start the **fuselage** by cutting F1, F2, F3 from a 1/2 x 3 x 24 in. medium hard balsa. Cement F2 to F1. If a solid cockpit is desired—which is obviously stronger for the tyro—it should be built as an integral part.

Pre-cement and finally cement the 1/2 x 3/4 in. hardwood bearers to F1. The space between the two bearers is entirely dependent on the type of engine used.

Cut P1 and P2 1/16 in. ply doublers and thoroughly pre-cement surfaces before fixing them in actual positions. This is most important for a long lasting job.

When the cement has set, carefully trim wing seating of F1 to match wing centre section. Pre-cement both surfaces before final fixing. Reinforce with linen tape or



"Red Dragon" & "Flying Tiger" (cont.)

glass fibre between wing and fuselage at this point. Now cement F3 and the lower nose $\frac{1}{4} \times \frac{5}{8}$ in. fairing in position. Sand to shape when cement sets. On the "Red Dragon" the dummy belly tank adds a touch of realism and strength.

Next, cut and sand the tail to section from $\frac{1}{4} \times 3 \times 36$ in. medium hard balsa.

Fix the elevator horn "A" to hardwood joiner T2 as for T1. Pre-cement and join both elevators to T2. Attach elevators to the tail with linen hinges, again in clothes horse hinge style. Cement to the fuselage. Reinforce with linen tape between underside tail and fuselage sides.

Fin and rudder are also made from $\frac{1}{4}$ in. sheet. Sand both to section with all edges nicely radiused. Cement fin to the rear end of fuselage and allow to dry. When set, thoroughly cement the rudder to the fin with approximately $\frac{5}{8}$ in. off-set for a biased turn to the right. This will keep the lines tight.

Bend the undercarriage from 12 s.w.g. piano wire following the true shape given on the plan.

Notch the top of the hardwood bearer at position shown so as to allow for seating of the wire. Drill $1/16$ in. dia. holes through the fuselage, slide undercarriage into

position and bind with Terylene cord. Solder the stop-peg as detailed on plan. Cement the top $\frac{1}{4} \times \frac{5}{8}$ in. nose fairing and sand to shape when dry. Make tail skid from 18 s.w.g. piano wire and tape to fuselage as shown.

Solder wheels to main legs and at the same time, make up and solder the fuel tank as detailed. Note the two 18 s.w.g. stop-pegs to be soldered to the tank. Alternatively the Mercury or BMP tanks will easily adapt to the profile fuselage; but must be bound in place or held with neoprene tube and self tapping screws as advised for "Peacemaker" and in "Control Line Manual".

If a built-up cockpit is chosen, paint the interior before adding the celluloid cover.

If you are considering following up the same finished design, the method and the colour scheme are as follows:—

Sand paper the entire model with very fine grade paper after first smoothing off by rough sanding. Cover the top side of the wing with dark and the lower side with white heavy tissue. Apply the tissue wet if you prefer, but on a straight wing like these, covering is no problem and it can be applied dry. The amount of curves are only limited to the wing tips. There is no necessity to tissue the other parts of the model, unless you intend to have a top class finished job, in which cases, use light-weight tissue.

Apply three coats of 50/50 per cent. clear dope to the tissue covered wings. Two coats of sanding sealer to the rest of the model, rubbing down after each, will sufficiently fill most grains. Let the clear dope and the sanding sealer dry completely before applying colour.

The cockpit interior on all models was painted red. The lower half of "Flying Tiger" was sky-blue. The tissue top surface of the wing given only one coat of black. Three coats of colour dope will be enough for the other parts of the model. It is important to sand between coats in order to achieve a smooth finish. The cockpit frames are externally outlined in black on the Tiger.

For the "Tiger", the rudder bears alternate blue and white stripes, a red band around the fuselage, the familiar marking of the "P-40" mouth outlined in red with red interior and the teeth in white adorns the nose. Small but fierce looking eyes are outlined in red and the rest of the eye in black and white.

The emblem of the Chinese "Sun" is white painted on the top the starboard wing and a black-red-black stripe is added on the lower surface of the same wing. The two Chinese characters in white on the port-side of the fuselage, pronounced "Fey Woo", simply means "Flying Tiger". That for the "Dragon" is pronounced "Hoon Loon".

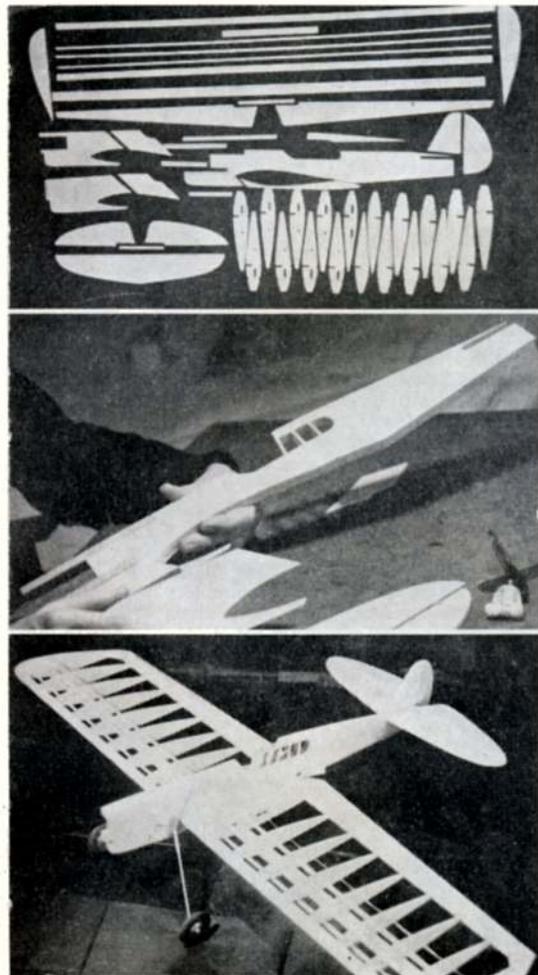
Decoration for the "Red Dragon" is separately detailed for camouflage on the plan. Otherwise, study the Zero details on pages 340-343 for alternatives.

When you are finally satisfied with all the odd designs and lettering, give the entire model a coat of fuel proofer. Allow to dry, preferably overnight. Then drill holes to mount the fuel tank and the engine.

Are you ready to fly at this stage? No! not until you have linked up the 16 s.w.g. push rod from flap horn "B" to elevator horn "A". This done, with elevator and flap set equally neutral with the lines, you are ready to go. Both models will fly through all the looping manoeuvres and are stable when inverted.

Good luck and happy stunting!

"Flying Tiger" components are displayed at top left, ready cut for assembly. Note the general simplicity of this design, made from stock sheet and strip. Central picture shows the fuselage which is cut from $\frac{1}{4}$ in. sheet with engine bearers inset and cabin structure fitted. Bottom, a completed airframe, ready for covering. Again, note the general simplicity of this model and the use of leading edge surface spars to maintain the symmetrical airfoil section.





R.F.C. SQUADRON MARKINGS

Described by

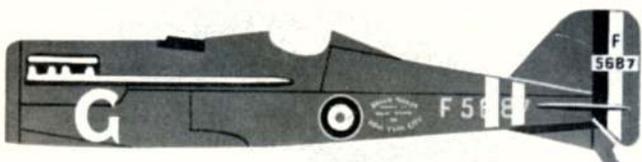
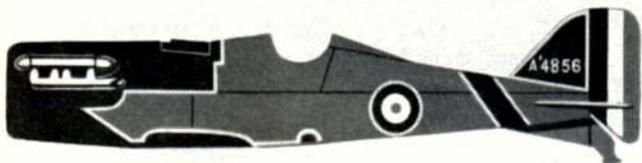
Leslie A. Rogers

Drawn to 1/72 scale

by K. McDonough

Part 16. No. 60 SQUADRON R.F.C.

AFTER A MIXED establishment of Morane types No. 60 Squadron was fully equipped with Nieuport scouts in the early summer of 1917. It was afterwards re-equipped



with S.E.5's in June/July, 1917, many of which had been discarded by No. 56 Squadron.

Using *Nieuport Scouts*, the **Flight and individual markings** were as follows:

"A" *Flight*—all aircraft were marked "A" in red or black (on the silver finish) in front of the fuselage cockade. Individual marking was by numbers 1, 2, 3, 4, 5, 6, painted in red or black behind the cockade. "B" *Flight* was "A" *Flight*, but using the letter "B". "C" *Flight* was as "A" *Flight* but using the letter "C".

Using *S.E.5's*, some of the first machines carried a black band outlined in white running diagonally across the fuselage, over the decking and down the other side. In addition, the footstep contour line of the lower wing, and the nose panelling was outlined with a white line about two inches wide. No reason for this has been given. Many pilots also had small personal markings—the Fern Leaf on A'8898 would almost certainly indicate a New Zealand pilot.

It is unknown whether the above markings were used by the whole Squadron, photographs show them on three different aircraft—A'8898, A'4856 and one other. After this period, the markings are not very well recorded.

The **Squadron marking** (carried from about July/August, 1917 to March, 1918) was a white disc painted behind the cockade on the fuselage side and repeated on the top decking. **Individual marking** was by letters, believed to have been "A" to "S", but minus "I", location is unknown, but in the case of "A" (B'507), the letter was painted on the fuselage in front of the cockade in white and repeated on the centre section. N.B.—The photo of "A" is the only one that has been seen of this period and shows the S.E.5 that the German Air Service used for evaluation.

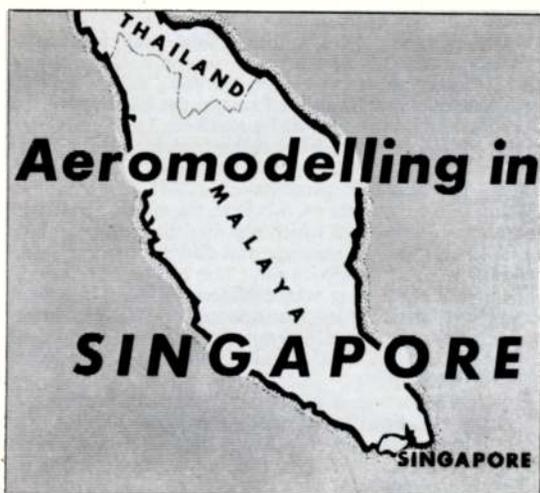
In March, 1918, the Squadron marking was changed to two white vertical bands in front of the tailplane. Individual marking was again by letters.

"A" *Flight* used the letters A, B, C, D, E, F, painted in white in front of the fuselage cockade. "B" *Flight* used the letters G, H, J, K, L, M, painted in white on the nose below the exhaust manifold. "C" *Flight* used the letters T, U, V, W, X, Y, painted in white in front of the fuselage cockade.

It is uncertain if the letters were still carried on the centre section

Fern leaf can just be seen on the light upper half of S.E.5 fin in top picture. Below is the fancy style individual letter as used from July '17 to March '18. 1/72nd scale drawings at left show at top, the Nieuport Scout markings, the German assessed S.E.5A, then the diagonally marked aircraft "G" is a late '18 S.E.5A, as presented by Mrs. H. R. Stevens of New York City, named "Sally Parker" and at bottom is an S.E.5A of "C" flight in late '18.





SITUATED AT THE Southern tip of Malaya, only 80 miles from the Equator, the island of Singapore is about the size of the Isle of Man; but has a considerably higher proportion of territory unuseable for aeromodelling—in other words—Jungle.

General (by H. C. Quek)

The Singapore Aeromodelling Society—S.A.S.—is a registered aeromodelling club. It is the official organised body catering for all competitions and functions of the local aeromodellers. In addition each Royal Air Force station in Singapore has its own club at Seletar, Tengah and Changi. Though these are not affiliated to the S.A.S., the officers give every encouragement possible to their members and local aeromodellers are often invited to friendly contests on their bases.

There are two classes of S.A.S. membership. A senior member (over 21 years) pays \$3.00 enrolment fee and \$12.00 annual subscription whilst a junior only pays \$3.00 annual subscription. All members are entitled to the same privileges regardless of class of membership. The \$ equals 2s. 4d.

From the subscriptions collected, the S.A.S. absorbs the cost of liability insurance. Members are covered by third-party insurance up to a sum of \$25,000.00 during sports flying sessions and up to \$200,000.00 during major contests held at Air Ministry airfields.

SINGAPORE CONTROL-LINERS. Left, Class B rat racer winners Yong Kian Teck and mechanic; centre, a junior winner Chow Weng Woh and mechanic; right, the keen father and son pair of the Ng family, winners of F.A.I. racing. These enthusiasts were participants at the December 30th meeting, which was specially aimed at getting Singapore control-line flyers together

Of about 250 registered members in the S.A.S., approximately 13 per cent. are regular enthusiasts to be seen flying during every week-end and public holiday. As is usual, only about a handful are really keen and willing to sacrifice time and money to maintain the club in a smooth functioning order.

Due to a few "lone wolf" modellers causing damage to flying fields, the club has suffered loss of many centrally located control-line flying sites. The S.A.S. tried all possible ways to encourage these poor public relations risks to join the club and fly at specific hours; but without success. Present flying fields are limited to the National Park, the Girls' Sports Club, the University of Malaya, and the Singapore Traction Company Sports Club grounds. Sometimes modellers take advantage of flying in newly open grounds that have been bull-dozed and levelled for housing estates. Flying in such grounds ceases when once the housing development are in progress.

The S.A.S. makes every effort to organise a quarterly competition. It also undertakes to provide flying exhibitions at fairs, Boy Scouts' Jamborees and any other public functions without charge. The club has also been providing flying entertainment for children in the underprivileged homes on many occasions. S.M.A.E. rules and regulations are extensively adopted in all events and additional rules and regulations made for special contests.

Radio Control (by Flt. Lt. Noel Falconer)

There has been single channel interest for many years, despite the climate; large temperature changes rendered circuits unstable, and relay contacts difficult to keep clean. Better equipment has resulted in increase of interest and there are usually about a dozen fliers at Kallang Park on Sunday mornings.

The R.A.F. single channel fans seem to have standardised on Ken Willard's *Roaring 20* and the *Schoolboy*, with Cox .010/.020, Kraft K3VK radio and Babcock MK V Hyper Compound. Various transmitters are used, the O.S. Minitron becoming popular.

However, the main interest is in multi. Mike Eber (one might call him the Walt Good of Singapore) led the way with O.S. gear. A few more sets arrived from various manufacturers, but at this time only O.S. could take the climate.

Late in 1961, gear became available from the U.S.A. Orbit 10's were ordered, and proved outstandingly successful. F & M 10 was also satisfactory, but two Space Control rigs were initially disappointing, the latest Mk V unit being a distinct improvement. Today



there are some 25 full multi rigs ready to operate, from U.S., Japanese and British sources. Servos are always Duramites or Transmites, relayless equipment being especially worthwhile. The K & B 45 is the most common engine but all makes are in use. Until recently most fliers were using the *Gee String*, but more and more *Stormers* are appearing, usually with strip ailerons. The *Jackdaw* is fairly common. A couple of *Taurus* are projected and there are *Spitfires* and *Kingcobras* building.

Dr. Ding is flying Dunham's *Sorcerer*. He has a combination of experience and natural ability that makes him a formidable competitor, and possibly the best flier in S.E. Asia. Y. S. Fong, who seems to have more radio gear than most model shops, is probably the Number Two. Currently he is using the *Gee String* but with strip ailerons.

Singapore radio flying is controlled by the Radio Modellers of Singapore (yes, another RAMS!) after a friendly secession from the Singapore Aeromodelling Society, to resolve airfield and insurance difficulties.

Radio gear is cheaper than in U.K. but the thing that makes the movement go is the people in it. They are as warm hearted, generous, co-operative and competent a group as I have ever known. Moreover they are as up to date as any other more favourably situated group. As an example, here's a tip picked up in the RAMS for dual purposing a Duramite.

The normal P.C. board is replaced by a pivoted one which rotates about the axle that the contact gear uses. A Graupner T-05 controls the position of the P.C. board via worm drive for trim adjustment. The Duramite is set up on self neutralising. As soon as the P.C. board is moved the neutralising contacts are energised and move the control. Fitted with any amplifier pack the set-up saves considerable weight and space, but needs four reeds, of course.

Service Viewpoint (by P. Everitt at Tengah).

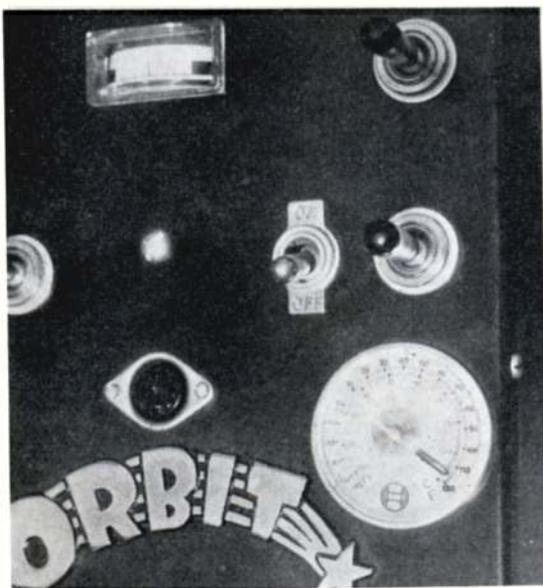
A few years ago the only engines one could get were English and German then the selection was very small. This also went for kits as well, with a few German ones included. Accessories such as tissue, d/t fuse, brass tubing, etc., were very hard to obtain. Plywood and modelling silk were non-existent and even now are difficult items to obtain. This has all been changed by the persistence of a few very keen modellers and the foresight of a harassed shopkeeper. Two of the modellers were Brian Emery and John Toohey. The shopkeeper is Balwan Balbir. Through Brian and John asking for different engines and accessories, Balwan started importing goods from America and Italy.

On the flying side, one big disadvantage for the local Singapore modellers is lack of facilities for free flight duration flying. R.A.F. Personnel are better off.

Anybody who comes to Singapore will quickly appreciate the difficulties for modellers, where everything has to be imported, and there is a lack of flying space. As an encourager for fresh enthusiasm, the Singapore "beginners" Champs, were held on Sunday December 30th. Weather was very good, being very calm and very hot. The competition was all control-line and held mainly to bring beginners together and fly their models against each other. There were open classes in B Rat Race, B Combat and Class A/F.A.I. team race. Highlights to remember were the high standard of flying by all beginners; the almighty line tangle in the first heat of the A./F.A.I. race, the fine demonstration stunt flying by Jim Pickford and for your reporter, a "star" moment when his head came in contact with an Eta 29 Rat Racer. Result of the impact was one Eta 29 with a very bent crankshaft and a head with six stitches (must wear a crash helmet next time!)



Flying at R.A.F. Seletar (note Beverley tail, and water in background). RAMS members are keen on the *Stormer*, seen here being released, *Gee-String*, *Hustler*, *Delta*, *Sorcerer* and other latest multi designs



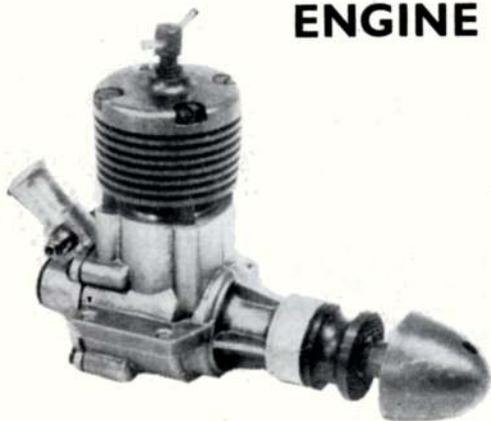
Noel Falconer fitted a thermometer on his *Orbit* Tx and as one can see, the reading is 115 deg. F. High temperature makes pot tuning sensitive but everything works reliably. Below is Dr. Ding and his *Sorcerer*, K & B 35, *Orbit* radio, Transmites with K. C. Oei's (pronounced Wee) *Stormer* in background using O.S. 49, O.S. radio and Duramites



ENGINE ANALYSIS

No. III

By R. H. WARRING



“RYTHM”

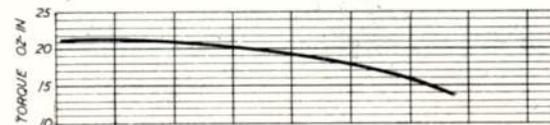
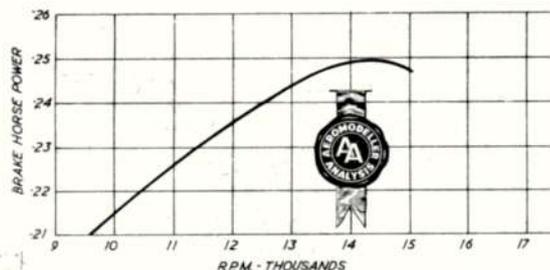
2.46 TWIN BALL RACE
DIESEL PRODUCED IN
THE UKRAINE FOR
U.S.S.R. MODELLERS



SUPERFICIALLY THIS 2.5 c.c. U.S.S.R. diesel resembles a mixture of 'Frog' and 'ED.' layout with a rather hand-made look, apart from the anodising on the cylinder jacket, driver and spinner nut. It has, however, obviously been produced as a 'racing' diesel by Krasnorouski of Kiev, featuring a twin ballrace crankshaft bearing and relatively advanced timing, although allied to drum valve induction. Performance in this latter respect was disappointing on test, largely due to handling difficulties. Starting and adjustment characteristics are, quite frankly, poor—due partly to the very poor suction, plus an over-stiff contra piston and a spraybar/needle valve combination which seemed incapable of supplying an optimum mixture. Possibly these are faults of the individual engine tested, for much of the maker's claimed performance potential appeared to be there in the design, but instead of their figure of .32 B.H.P. at 15,000 our test results were much more modest. The more we ran it, too, the more we came to dislike its characteristics, which on the larger propeller sizes called for setting up the tank at exactly the right level to keep engine suction with just the right amount of 'gravity' assistance.

Moderate performance

Performance was more or less the same on all the standard British commercial fuels tried. The recom-



mended fuel mixture in the instruction leaflet specified six ingredients, which we could only identify as basically a 30/40 ether/paraffin mixture plus 4 per cent. nitrate additives, leaving two 17 per cent. constituents 'unknown' types of lubricating oil. Perhaps they could have made all the difference! Basically, however, any good diesel should run on straight ether/paraffin/oil mixture, with a little nitrate to promote smoothness. This one did not object to a normal fuel so much as having to struggle to induct enough mixture via a consistent needle valve setting.

Two ball-races

Constructional layout is orthodox. The crankcase unit is a gravity die casting of quite substantial wall thickness machined internally for the two ballrace housings and also to provide clearance for the con rod big end. Actual crankcase volume is quite small. The .275 in. (7 mm.) diameter hardened steel crankshaft steps down to .236 in. (6 mm.) diameter immediately behind the front ballrace which is of lightweight type and accommodates the propeller driver on a split brass collet before being threaded for the remainder of its front end length. It is finished by grinding between centres. The shaft diameter is relatively small for a modern diesel of this size, but there is, of course, no port cut out or central hole.

Drum valve induction

Induction is by a drum valve of virtually the same form as that introduced by George Fletcher on the Frog '349', again of hardened steel 9.5 mm. diameter and running in a plain bore bearing surface in the rear crankcase housing. This housing also has the angled intake tube cast integral with it. Bearing length for the drum valve is bored and reamed right through, the open end subsequently being sealed with a rather crude rubber moulding—a much more straightforward method than having to finish a blind bore.

The cylinder liner is of hardened steel and conventional 'British' pattern with a wall thickness slightly in excess of $\frac{1}{16}$ in. It seats in the crankcase on a ring section, through which are cut the circumferential exhaust ports. Transfer ports are drilled upwards at an angle through the walls from the outside and the tops of the transfer passages emerging in the pillars between the exhaust ports finishing square and almost completely overlapping the exhaust opening. The ports are, in fact, further

Specification

Displacement: 2.46 cu. cent. (.15 cu. in.)
 Bore: .552 in. (14 mm.)
 Stroke: .630 in. (16 mm.)
 Bare weight: 6½ ozs.
 Max. power: .25 B.H.P. at 14,400 r.p.m.
 Max. torque: 21.5 ozs.-ins. at 9,800 r.p.m.

Power rating: .1 B.H.P. per c.c.
 Power/weight ratio: .038 B.H.P. per oz.

Construction:

Crankcase unit: light alloy gravity die casting, machined faces and machined internally for ball race housings, transfer port clearances and connecting rod clearance.

Cylinder liner: hardened steel .6985 in. o/d (top and bottom, above and below exhaust ring).

Piston: cast iron: shallow conical frustum top.

Gudgeon pin: silver steel approx. .165 in. diameter.

Connecting rod: machined from dural

Crankshaft: hardened steel (solid)

Drum valve: hardened steel, .3735 in. o/d drum.

Main bearings: Standard 7 mm. ball race (rear); lightweight 6 mm. ball race (front).

Cylinder jacket: turned dural, anodised purple.

Propeller driver: turned dural, anodised purple; brass split collet.

Spinner nut: turned dural, anodised purple.

Crankcase back cover (integral drum valve housing and intake tube): light alloy gravity die casting.

Spraybar: brass.

Propeller r.p.m. figures

| Propeller dia. x pitch | r.p.m. |
|---------------------------|--------|
| Frog 9 x 6 | 10,500 |
| 8 x 4 | 12,900 |
| KK 9 x 4 | 11,600 |
| 8 x 4 | 13,000 |
| Top Flite 9 x 4 | 11,000 |
| 8 x 6 | 11,100 |
| 8 x 4 | 13,600 |

machined after drilling to produce a square section on the inside walls.

The piston is machined from cast iron and is of substantial section and weight. Finish is fair but the fit in the liner is good, and possibly obtained by lapping. The gudgeon pin is press fitted whilst the connecting rod is machined from dural, and rather roughly at that. The parts that matter, though, the big and little end bearings, are reasonably finished, but not as good a fit as they could have been.

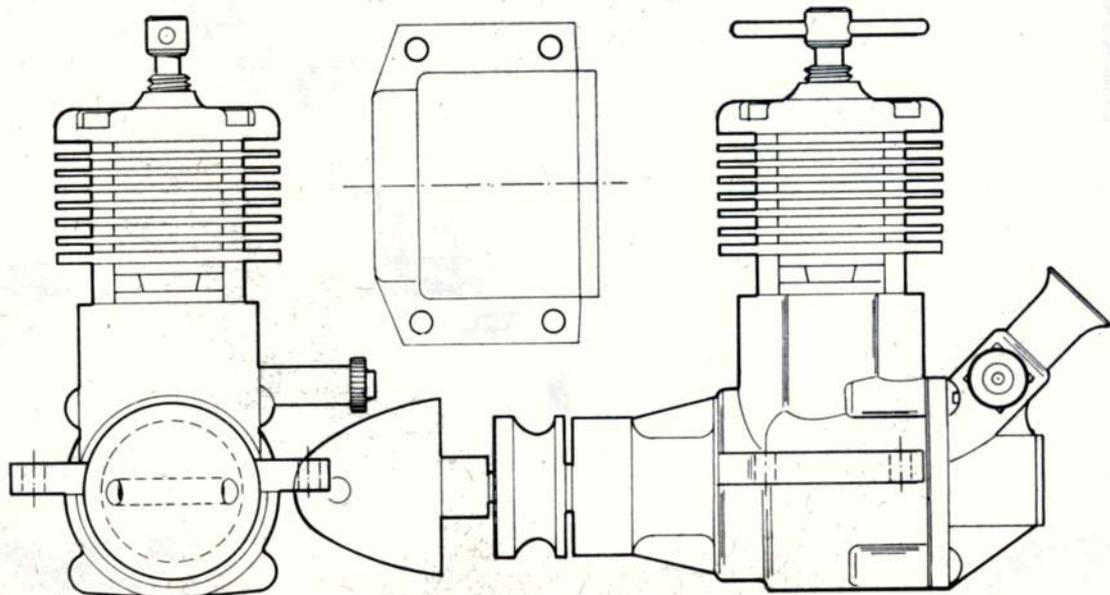
The cylinder jacket is a conventional straightforward turning, fitting over the top of the liner and with the whole assembly secured by four screws through into the crankcase unit. The contra piston appears to be of cast iron and, as mentioned previously, too tightly fitted for easy adjustment. This is not helped by the fact that the tommy bar is rather flimsy and thin—painful to the fingers when attempting to adjust a tight "contra".

Gasket seals are used under the liner 'ring' seating on the crankcase unit, between the crankcase and back cover unit and in front of the rear ballrace. A hard resin-paper thermoset plastic washer is used between the front bearing housing and the propeller driver, presumably to act both as a spacer and an oil seal. The

spraybar is of brass with a steel needle soldered into a split brass thimble, with locking action provided by friction. The spraybar locks against rotation by locating in a 'flat' in the intake tube o/d.

Machining

This engine appears to have been made with rather limited machine tool equipment and although the workmanship is generally good it is not up to the standard that one comes to expect for a 'racing' engine. Although not necessarily affecting performance as such, many machined parts on the castings show considerable evidence of excessive chatter, although all the ground finishes are good. The choice of drum valve induction is also surprising on a 'racing' diesel. Whilst this provides unlimited scope for induction timing without weakening of shaft the actual port opening is comparatively modest (although larger than could be accommodated on the size of crankshaft used). And theoretical advantages of drum induction are often more than offset by the increase in friction and consequent power loss in driving the drum. Basically, in fact, we found nothing at all to enthuse over in this engine other than the internal 'squaring' of the transfer ports and plenty to criticise.





AIRCRAFT DESCRIBED

NUMBER 124

Drawn by D. H. COOKSEY

MITSUBISHI A6M5 Zero-sen

ゼロ戦

FIRST PRODUCED IN the Japanese calendar year 2600 (1940), the Mitsubishi A6M5 became popularly known as the "Zero-sen" since Japanese designations used the last digits of the calendar year for type identification. However, very little was known about this aircraft among opposing forces. When the Zero appeared with devastating surprise over Pearl Harbour it only served to provide brutal confirmation that the aircraft did, in fact, exist. Later, the South Pacific Forces code name system allocated *Zeke* to the type and henceforth all subsequent models adopted this name as far as the Allied Forces were concerned. There was an exception when the clipped wing type 32 was first named the "Hap" after General Hap Arnold, the Commanding General of the American Air Force and this was altered, after objection to "Hamp" for a brief period.

Historically, the Zero or "Zeke" dates back to October 1937 when the Japanese Navy issued a directive for a fighter which should have a speed of more than 312 m.p.h. 1½ hours endurance and mixed cannon/machine gun armament. The prototype was made by Mitsubishi to Jiro Hirokoshi's design and flown in early 1940. The 875 h.p. Zue-sei, 14 cylinder radial engine did not provide satisfactory performance in the first two aircraft and a third prototype used the Nakajima Sakae (Prosperity)

engine of 925 h.p. This became the standard production fighter.

In order to achieve the specified performance every effort was made to reduce the tare weight. ESD aluminium alloy, being a blend with zinc and magnesium, was extensively employed on the wings and fuselage. Moreover, this was of relatively thin gauge and flush riveting employed throughout, so effecting considerable weight saving and streamlining. The centre section was made in one piece with the fuselage saddled over it to eliminate heavy junction fittings.

Initially, the Zero was employed in combat against the Chinese Forces where it was matched with the American Volunteer Group headed by Claire Chennault, operating Curtiss P.40's. The General's warnings that a superior fighter existed went unheeded and it was not until an accidentally found type 21 was located in the Aleutian Islands in June 1943, that the full capabilities (and faults) of the Zero came to be understood.

These early versions had folding wing tips for carrier operations. The tips were removed and squared off for the type 32 and subsequently this short span, 36 foot wing was rounded off for the mass produced type 52. A total of 10,934 Zeros were made and of these, Nakajima produced the greater quantity of 6,215. The same company also built the "Rufe" floatplane conversion with a large single float mounted in a forward position under the fuselage and two single strut cantilever supporting floats at mid span under either wing.

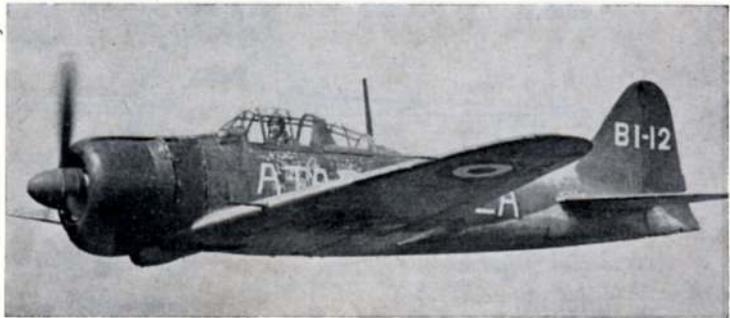
The Zero played a part in every battle where the Japanese Air Force and Navy were engaged and in the final stages of the war, were used for suicide attacks on the United States Fleet. It was the mount for the leading Japanese Ace, Captain Saburo Sakai of the Imperial Japanese Navy whose wartime biography "Samurai" gives one a fine account of the aircraft in service.

Captured Zeros were given a full evaluation at Wright and Eglin fields in the U.S.A. Matched against the Grumman F4F Wildcat, the American machine climbed faster to 8,000 feet but thereafter, the "Zeke" was faster to 13,000 feet and merits about equal above this altitude. Each had the same turning radius at all altitudes and the Zero was about 10 to 15 knots faster with a



Heading shows one of the four preserved Zeros, this being a type 52, serial No. 5357, now exhibited in the Edward T. Maloney Air Museum, California. Made in May, 1943, it was captured by the U.S. Marines at Asifito, Saipan, and subsequently tested by many famous pilots in the U.S.A., including almost all of the manufacturer's test pilots. Photo by Robert Boehme. At left: is an interior view of another preserved Zero, this time just the fuselage cockpit area and wing centre section with undercarriage at the Imperial War Museum, London, S.E.1. This photograph (taken with the kind co-operation of Mr. W. Y. Carmen, keeper of the Exhibits Department), shows the intrusion of the two machine guns with prominent cocking levers into the cockpit area, the disposition of the instruments and the reflector gun sight. The cockpit is, in fact, well equipped and not indicative of hasty mass production methods to produce dispensible fighters.

Mitsubishi A6M5 type 52 being flown by a Japanese pilot on a test flight after capture. This aircraft is the partner to the one illustrated in the drawing overleaf and its cockpit section is that which is currently exhibited in the Imperial War Museum, London. Imperial War Museum photo CF.901. Drawings at right are taken from the instructions for the Marusan 1/35th scale plastic kit, as illustrated and reviewed on page 347 and show salient differences between various Zero types. At bottom of page, early model 21 Zeros showing their standard markings and emphasising their retractable tail wheel.

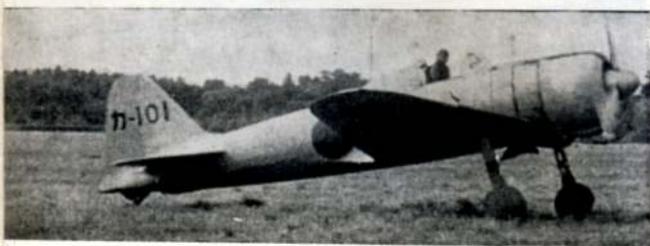
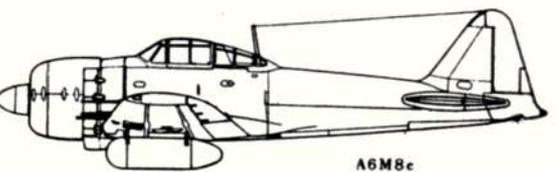
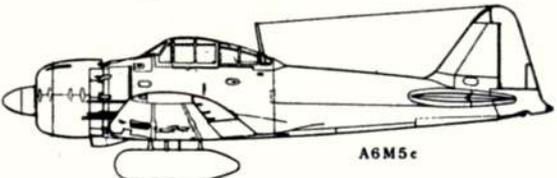
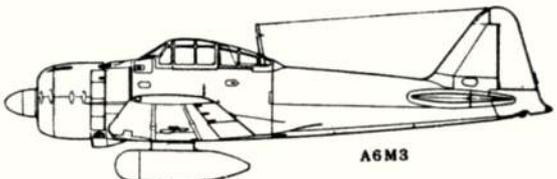
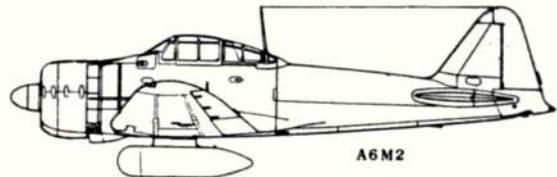
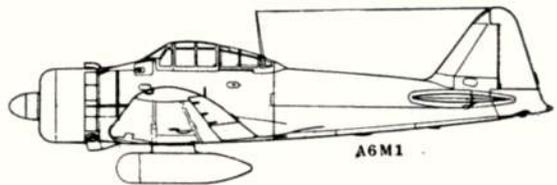


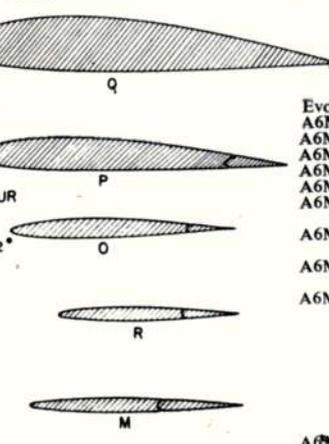
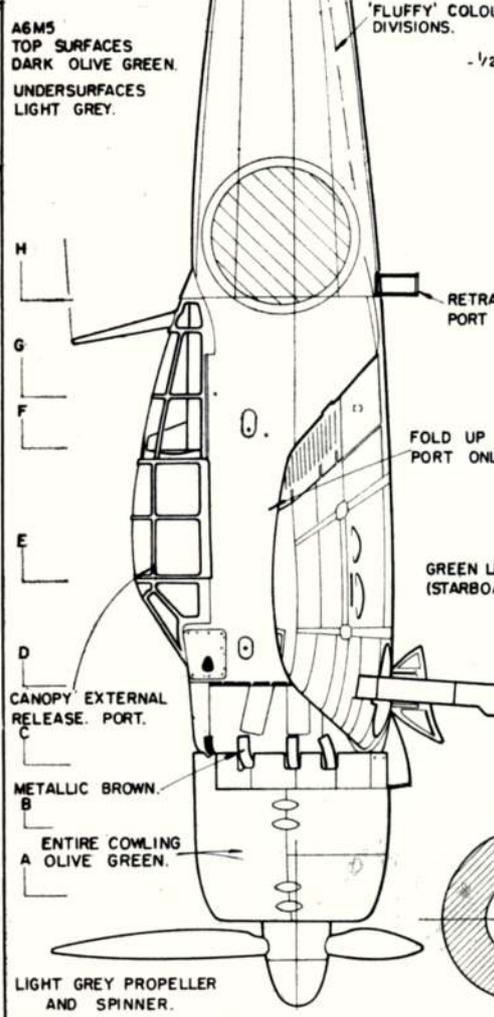
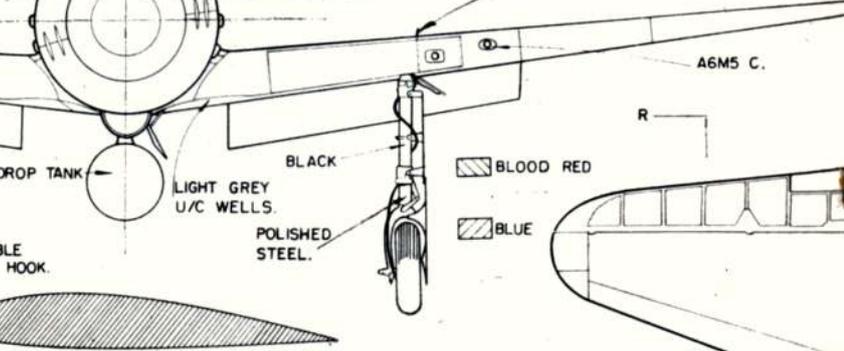
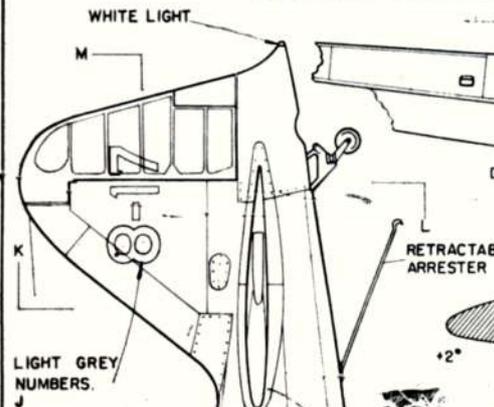
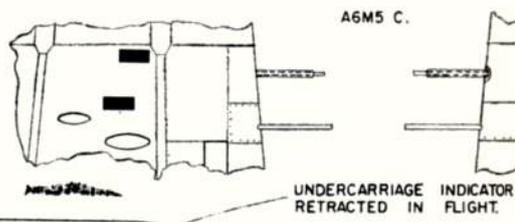
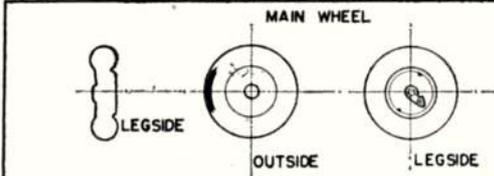
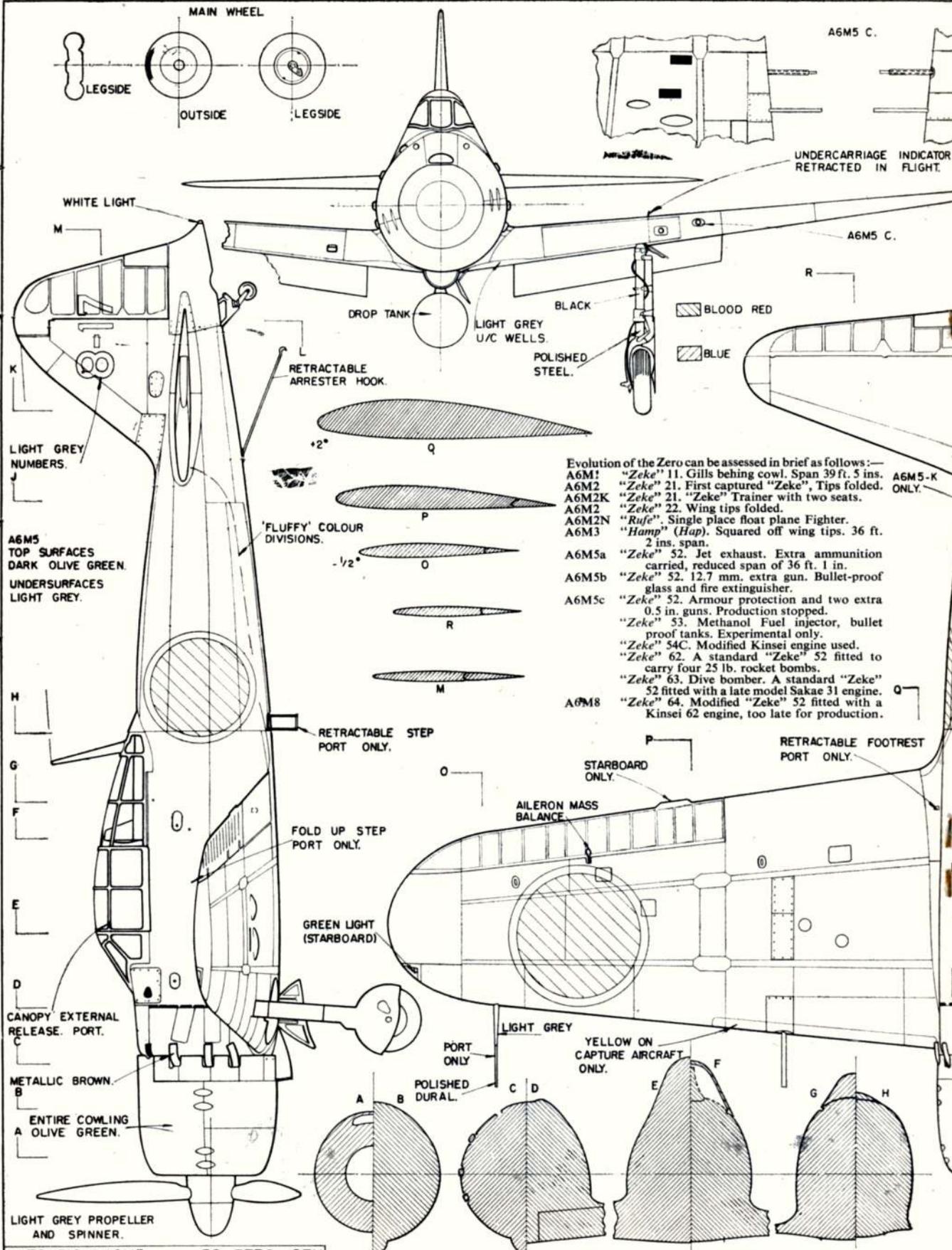
maximum speed of 344 m.p.h. at 21,000 feet. However, the weakness of the Zero was in its lack of armour plate, and leak proof tanks. It afforded virtually no pilot protection and was most vulnerable to gunfire, either bursting into flame or disintegrating, not bearing the tough characteristics of, for example, the Grumman Wildcat or Chance-Vought Corsair.

Nevertheless, the armament of two 20 mm. cannon and two 7.7 mm. machine guns, subsequently amended to include larger bore guns, gave the Zero sufficient fire power to claim many successes. The widespread landing gear was excellent for rough field work and carrier landing. Visibility from the teardrop shape cabin was excellent and the wide range of travel for the seat which enabled the pilot to place himself high for take-off and landing was of great advantage.

Pilots reported that very little change of trim was required with variation in speed or power and any type of aerobatics could be performed below 200 knots. Ailerons were most effective and although it was possible to completely stall the tail controls, the ailerons would always roll the Zero into level position. Disadvantages were inferior diving qualities at high speeds and the noise of the direct exhausts ejecting on either side of the cockpit.

One characteristic, peculiar to the Mitsubishi Zero was the "popping" of the thin gauge skin on the wings, if the aircraft was taken into a region of high temperature as for example, wheeled out of a cold hangar into the sunlight. This is the sort of effect one gets when squeezing an oil can, and the metal assumes shape afterwards. Not until the A6M8 was introduced was any large change made in the basic design, when Mitsubishi's own Kinsei 14 cylinder, 1,500 h.p. engine was fitted. The forward section of the fuselage required to be re-designed to accept the increased power and larger diameter engine. Prototypes were rushed through in 1945 but by this time the sands of time were running out against the Japanese Forces and although plans were made to produce over 6,000 machines of this type alone during 1946, in actual fact no production version was actually flown.



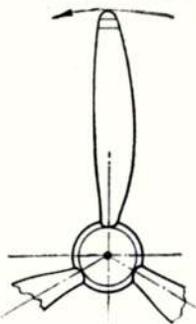
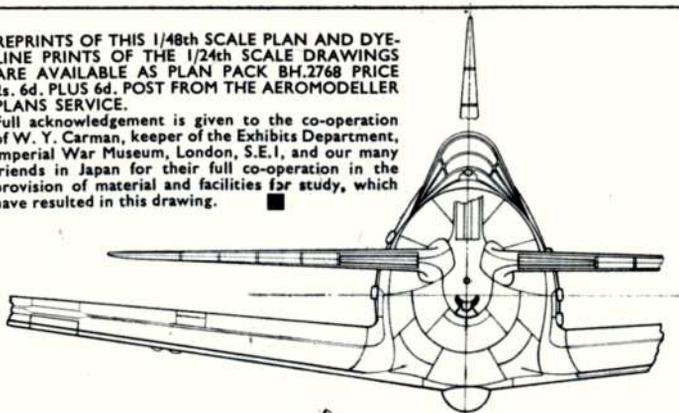
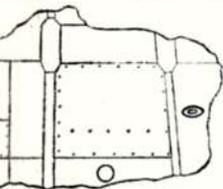


Evolution of the Zero can be assessed in brief as follows:—
 A6M1 "Zeke" 11. Gills behind cowl. Span 39 ft. 5 ins.
 A6M2 "Zeke" 21. First captured "Zeke", Tips folded.
 A6M2K "Zeke" 21. "Zeke" Trainer with two seats.
 A6M2 "Zeke" 22. Wing tips folded.
 A6M2N "Rufe" (Hap). Single place float plane Fighter.
 A6M3 "Hamp" (Hap). Squared off wing tips. 36 ft. 2 ins. span.
 A6M5a "Zeke" 52. Jet exhaust. Extra ammunition carried, reduced span of 36 ft. 1 in.
 A6M5b "Zeke" 52. 12.7 mm. extra gun. Bullet-proof glass and fire extinguisher.
 A6M5c "Zeke" 52. Armour protection and two extra 0.5 in. guns. Production stopped.
 "Zeke" 53. Methanol Fuel injector, bullet proof tanks. Experimental only.
 "Zeke" 54C. Modified Kinsei engine used.
 "Zeke" 62. A standard "Zeke" 52 fitted to carry four 25 lb. rocket bombs.
 "Zeke" 63. Dive bomber. A standard "Zeke" 52 fitted with a late model Sakae 31 engine.
 A6M8 "Zeke" 64. Modified "Zeke" 52 fitted with a Kinsei 62 engine, too late for production.

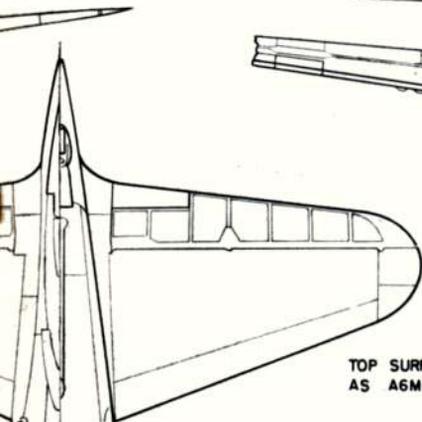
MITSUBISHI A6M5 MODEL 52 ZERO - SEN

REPRINTS OF THIS 1/48th SCALE PLAN AND DYE-LINE PRINTS OF THE 1/24th SCALE DRAWINGS ARE AVAILABLE AS PLAN PACK BH.2768 PRICE 2s. 6d. PLUS 6d. POST FROM THE AEROMODELLER PLANS SERVICE.

Full acknowledgement is given to the co-operation of W. Y. Carman, keeper of the Exhibits Department, Imperial War Museum, London, S.E.1, and our many friends in Japan for their full co-operation in the provision of material and facilities for study, which have resulted in this drawing.



BLACK PROPELLER AND SPINNER.

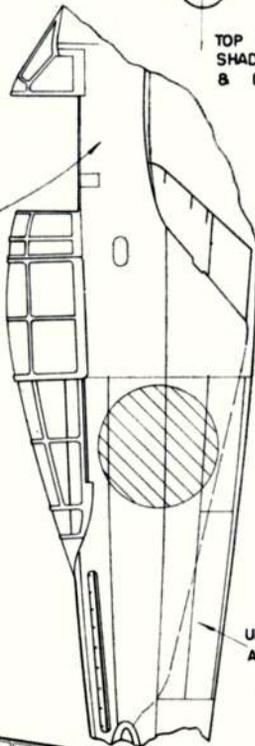


TOP SURFACES AS A6M5.

TOP SURFACES SHADOW SHADED DARK EARTH & DARK OLIVE.

PORT ONLY.

TRAINER VERSION
A6M5 - K.
ZERO - RENSEN.
NO WING CANNON
FITTED.



LIGHT GREY.

PORT ONLY

CARTRIDGE SHUTE PORT ONLY.

HINGE

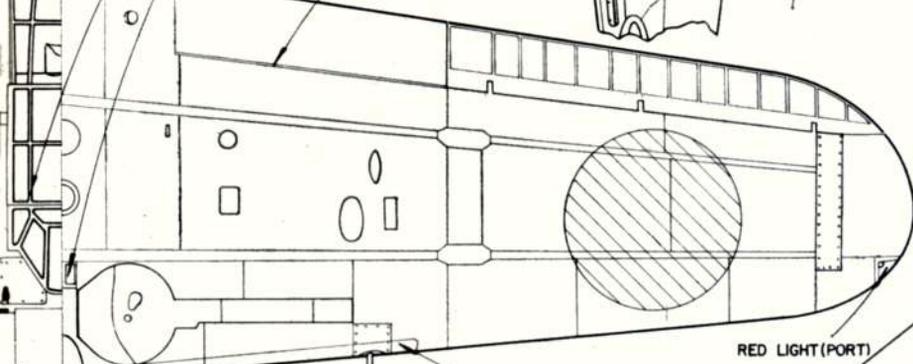
UNDERSURFACES AS A6M5.

YELLOW.

WHITE LETTERING

ALL MARKINGS ON CAPTURED AIRCRAFT ROUGHLY HAND PAINTED.

AIRCRAFT WAS VERY BATTERED, AND BARE METAL WAS VISIBLE WHERE DOPE HAD FLAKED OFF

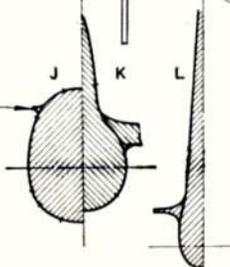


RED LIGHT (PORT)

YELLOW ON CAPTURED AIRCRAFT ONLY.

LIGHT GREY UNDER SURFACES AS A6M5.

A6M5K ONLY



REDDISH BROWN DOPED FABRIC RUDDER.

WHITE

HINTS 'n TIPS

LAST MONTH WE discussed a construction analysis of an existing A/2 glider flown by a fellow clubman, pointing out the development progress of the design and we are sure that this must have been a great help to many people about to create their own gliders.

This month we tackle the question of glider design more intricately but deal with the whole process in a practical manner devoid of theory and using the good old reliable methods of rule and thumb engineering.

First requirement of any glider is that it must be stable both on the tow and during the glide. It must have a reasonable sinking speed, be fairly simple and should never change trim—i.e. remain warp free.

We can start by considering the tailplane area. A good figure from general field experience is 75 sq. ins. This in turn calls for a minimum moment arm for

optimum stability of 24 ins. We can go slightly larger in moment arm than this to say 28 in. or 29 in. but this calls for shifting the C.G. back to about 55 per cent. of the wing chord to avoid an "overstable" condition. The ideal C.G. position can be arrived at by development.

Now to find how much area we have available for the wing. It is 525 minus 75

which amounts to 450 sq. ins. For the type of model and wing section envisaged, a 6 in. chord is the average which should be used. From this, a preliminary wingspan calculation is 450 divided by 6 which equals 75 inches.

A normal dihedral form is that of a flat centre section with dihedralled tips in the ratio, 1 to 1 or slightly less. This gives a tip section span of 18½ in. We make this 18 in. to allow a nominal two inch rib spacing, adjusted at the centre if need be. Dihedral is then decided as being between 6½ inch and 5½ inches lift at the extreme tip and we can take a compromise of 6 inches. For final area and span calculations we need one more piece of information. This is the shape of the wing tip.

In the flat state we will make this an easily calculable and efficient shape thus as in Figure 1. In the flat state the area of this will be equal to $(14 \times 6) + (2 \times 2) + \frac{(4\pi)}{4} + \frac{(16\pi)}{4} = 103.7 \text{ in}^2$, as can be seen in Fig. 1(a).

The projected length with 6 in. dihedral will be found using Fig. 1(b). Projected length = $\sqrt{18^2 - 6^2} = 16.97 \text{ ins.}$

The projected area of the tip then becomes:— $103.7 \times 16.97 \times 97.7 \text{ in}^2$. Note that we have saved about

Setting about the design of an A/2 glider—from a practical viewpoint

by Jim Baguley

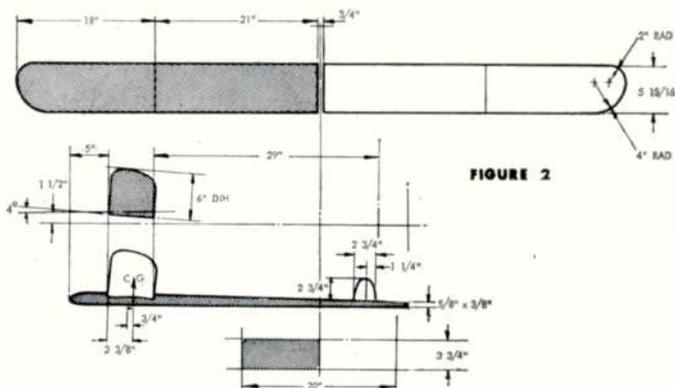


FIGURE 2

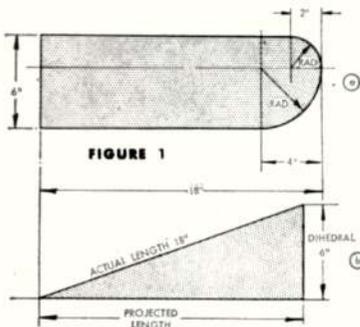


FIGURE 1

6 sq. ins. per tip. This is important for all wing area measurement must be in the projected state for contest purposes. The area actually left for the centre section is now $450 - (2 \times 97.7) = 254.6 \text{ sq. ins.}$ This means that centre section length can be 254.6 divided by chord of 6 inches, giving a length of 42.4 inches. If we make the fuselage ¼ inch wide and the centre sections round figure lengths of 21 inches each we now have a centre section length of 42.75 inches which means an excess area amounting to .35 ins. times 6 in. chord, or 2.1 sq. ins. excess. The most convenient way of "losing" this is by making the wing chord 5 1/8 which will reduce area by approximately 1/8 x 72 or 4 1/2 sq. ins. Of course, if we want the absolute full allowed wing area, the centre section panels should be reduced from the proposed 21 inches to 20.8 inches with adjustment to the rib spacing.



FIGURE 3

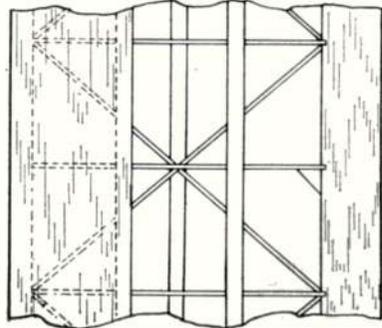


FIGURE 4

Next decision to reach concerns the tailplane dimensions. These can be chosen to fit the construction. If we make span 20 ins. the chord will be $3\frac{1}{2}$ inches for 75 sq. inches of area. This would seem to lend itself to a two inch "Union Jack" construction.

Two piece wings are an unfortunate necessity for transportation and for neatness we will plug them onto the fuselage sides in the manner advised last month and in May issue. If we then place the clockwork dethermaliser timer *under* the wings and on the fuselage side this will give a fuselage depth of around 3 ins. which seems in these times to be excessive. As an alternative we can place the timer in front of, or behind the wing. For reasons of using the weight for balance, and for strength, a nose timer is best.

The minimum fuselage depth to accept the timer is $1\frac{1}{2}$ ins. when allowing for rounding of the fuselage section. Minimum nose length to allow ballast and timer to be fitted now becomes about 5 inches. Now it is possible to provisionally draw the model outline, setting the wing at 4 deg. angle of incidence relative to the

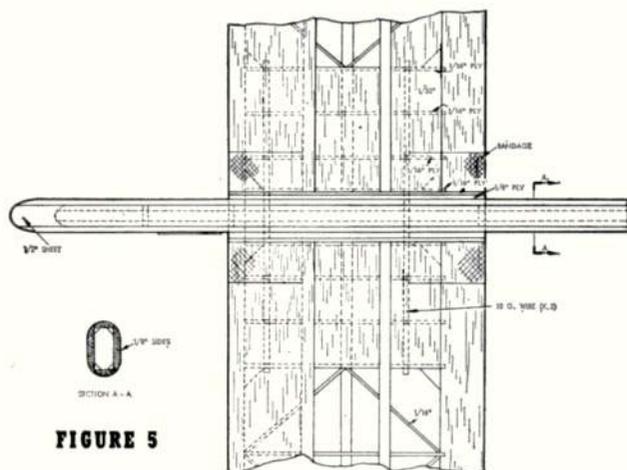
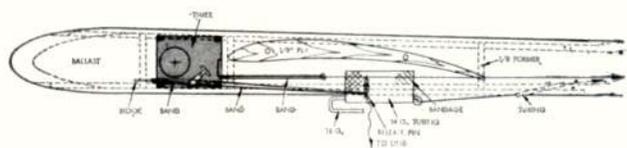


FIGURE 5



fuselage bottom, assuming that the wing angle of attack will be around this figure. Tailplane incidence will be built at the fuselage top and adjusted to the correct angle on trimming.

This takes us as far as Fig. 2. We must still decide the fuselage shape. A straight taper from a basic $1\frac{1}{2}$ deep by $\frac{3}{4}$ wide maximum at the wing, as decided previously to $\frac{3}{8}$ deep by $\frac{3}{8}$ wide at the tailplane leading edge sounds right. The fuselage front will then be symmetrically shaped forward of the leading edge. The fin can only be estimated at an ellipse in $2\frac{1}{4}$ inches square to be as small as is reasonable. It is a fairly simple matter to add more fin area on the field.

A pair of typical airfoils which would suit the purpose well are shown in Fig. 3. The wing airfoil is not thin and has given good results, for example on Joe Bilgri's wakefield design. The tailplane airfoil is nearly matched.

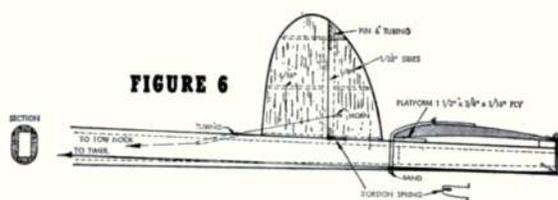


FIGURE 6

The requirement of freedom from warps is predominant so we will sacrifice some lightness considerations to this end by using the construction shown in Fig. 4 in conjunction with a 2 inch "Union Jack" rib form. The flat three spar construction ensures that no deep notches are taken from the ribs thus avoiding any possibility of rib distortion. Individual hardwood spars are deep enough to ensure no possibility of buckling. Leading and trailing edges are to be made of stout section medium wood. The sheeted wing leading edge is there only for aerodynamic reasons.

There is no need to plug the wing into the fuselage as the section is deep enough not to distort and we are faced merely with providing anchorage for the wing as seen in Fig. 5. This is simply done with $\frac{1}{2}$ in. ply ribs stuck to the fuselage sides and the wire dowels threading straight through.

The fuselage section shown is chosen as a light simple box type which easily provides a rounded section. Longerons are balsa and finish about 18 in. aft of the wing.

A warp free fin is also essential and in Fig. 6 we show how the recommended construction is $1/32$ sheet sides, spaced out to a symmetrical airfoil section with $1/16$ ribs. This figure also illustrates how the tailplane seats on the rear fuselage and the auto-rudder and dethermaliser lines run forwards. Note too, the torsion spring to set the auto-rudder after release from the tow-line.

Final appearance

Using the basic dimensions we determined and as illustrated in Fig. 2, and applying the constructional details we have now described, we arrive at the final model, which should look something like Fig. 7. This is a purely functional contest design, which will meet the A/2 specifications and give good performance.

Now why not have a go and make one for yourself?

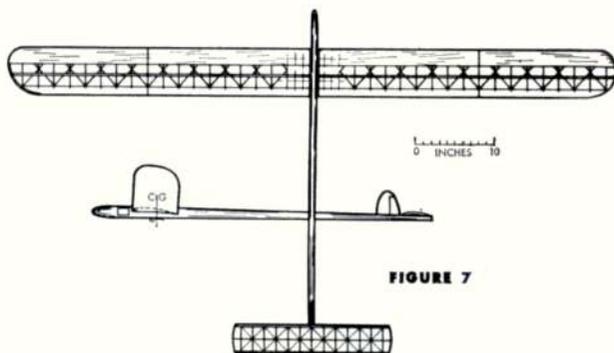
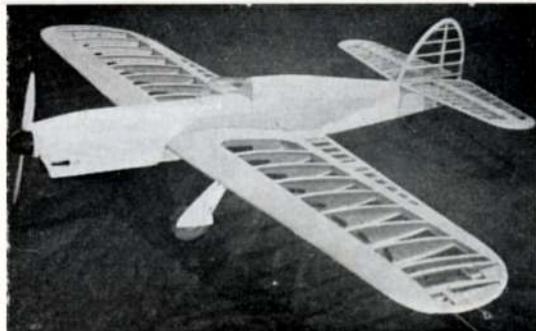


FIGURE 7

TRADE NOTES

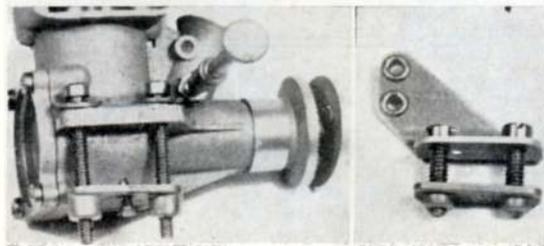
Right: the latest from VERON is a 34 inch span Fairey Topsy Nipper for radio control which has been tested with the R.E.P. Gemini single channel outfit. Below is our test VECO Hawker Hurricane, designed by Bob Palmer, made by E. A. Stevens. A nice kit, with all of Bob's latest control gimmickry for top performance



POPULARITY OF Airfix plastic model kits in the U.S.A. has reached such proportions that a new company has been formed—the *Airfix Corporation of America*, to manufacture in the States, Twenty of the aircraft kits are in the first moulding programme which will overcome tariff and transportation costs to bring the price down for modellers in the U.S.A.

Frog have added two more models to their 2s. range of 1/72nd scale plastics, the *Hawker Sea Fury* and the *Miles Magister*. The "Maggie" is specially interesting to us as we still have a *Penguin* plastic as put out by Frog about twenty years ago! Comparison shows how inferior were the early kits according to today's demanding standards of accuracy. The new Frog kit for the Miles trainer is better detailed in every way than its predecessor. Transfers are novel in that they include civilian and service markings for an impressed aircraft. Alas no explanation of this mystery comes with the kit.

Phil Smith's 34 in. span *Topsy Nipper*, just coming out from Veron certainly looks like being a winner. Full prefabrication will be found to be even more complete than in other admired sets from Model Aircraft (Bournemouth) and at 63s. 6d. this is going to be a regular attender at Sunday flying sessions with radio control up and down the country. So too will the adventurous Graupner *Consul* which we have just received for test along with the *Filou* power-egg glider and the multi channel *Caravelle*. More on those at a later date when built and tested. For the moment we simply must record our impression of the *Consul*.



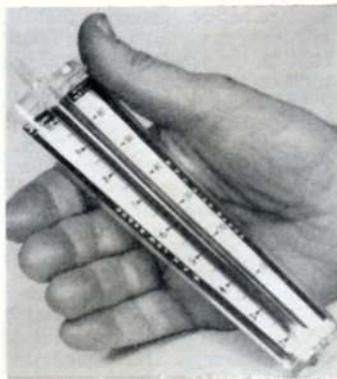
This makes modelling into an assembly job, even for radio control. The fuselage, tail and wing panels come ready moulded in expanded polystyrene, and various ply and balsa parts make up the rest. It is a very clever, thoroughly engineered job created specially for Graupner/Grundig radio equipment but adaptable to any R/C with motorised servo. In fact some ingenuity will probably get a rubber drive escapement in the fuselage. At £4 12s. through *RipMax* who are British distributors, the *Consul* is one of the most pleasing cabin style designs we have ever seen. Engines of around 1.5 c.c. would be best suited but it will fly on up to 2.5 (span is 41 in.). Protection and finishing of the plastic is by tissue covering, and advised laquer. Crash resistance, as we found with the *Schuco Completa* is high with the plastic wings able to flex on shock loads.

P.V.A. type glues are used for expanded polystyrene, and one we have just "discovered" in handy tubes at 1s. 6d. in *Uni-Bond*. This sticks practically anything (with pressure while drying) in about an hour, dries colourless and makes a very neat job. We've been using P.V.A. on almost every model since we saw the inside of Howard Bonner's *Smog Hog* back in 1957.

Bradshaw Model Products sent us their new *Navigator* kit for a shoulder wing radio model of 54 ins. span and 540 square inch wing. This makes it slightly smaller than Tom Brett's World Championship winning *Perigee* but with straightforward simple structure and lines. Claimed to take up to 10 c.c., we should think that 5 c.c. would be more suitable, even with full Metz multi gear as shown on the plan. Formed Dural u/c, wheels and tank plus pre-fab work make this a fine stablemate for the *Lancer* at £6; though it should be emphasised that the *Navigator* also performs well on straight rudder only... it won the event at Tern Hill earlier in the year.

Another fascinating range of kits just up for test from Roland Scott are the *Goldberg Falcons*, the *Voodoo* and the *Viking*, of which more anon. . . .

Left: DYNAMIC MODELS (U.S.A.) have introduced sets of mounting plates to suit a wide variety of engines with $\frac{1}{8}$, $\frac{9}{16}$, and $\frac{1}{2}$ inch hole spacing. Integral nuts and pegged plate making engine fitting easier. Also using similar nut plate is their brass grommetted horn to which push rod is directly soldered. No washer needed and slop free bearing results. Right: DWYER wind meter, accurately indicates from 2 to 65 m.p.h. Most useful instrument for free fliers, as used by Met experts. Leaves no argument on wind strength!





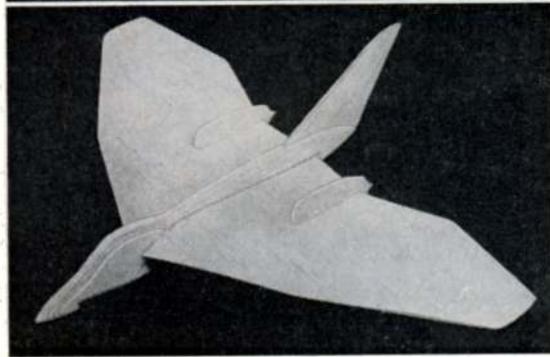
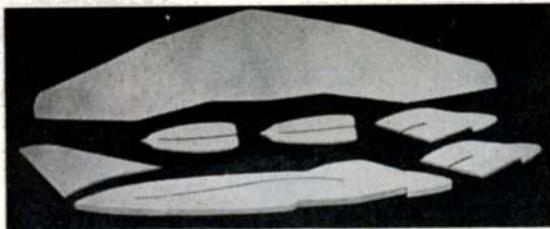
ZERO plastic kit model review

by Alec Gee

| Photo | Model type | Maker | Price | Claimed Scale | True Scale | Span | Country of Origin | No. of Parts | Remarks |
|-------|---------------|----------|-------|---------------|------------|--------------|-------------------|----------------------|---|
| 1 | A6M5 Model 52 | Marusan | 8/- | 1/35 | 1/37 | 11.11/16 in. | Japan | 41 | Moderate rivetting and panelling, u/c recesses, belly tank, matt "Hinomaru" transfers, good scale. |
| 2 | A6M5 Model 52 | Otaki | 10/6 | 1/35 | 1/35 | 12½ in. | Japan | 46 | Heavy rivetting. U/c recesses. Kit includes mechanism for prop and tailwheel drive. Eccentric transfers. |
| 3 | A6M5 Model 52 | Lindberg | 5/9 | 1/48 | 1/45 | 9½ in. | U.S.A. | 31 inc. motor, stand | Incorrect detail includes excess surface taper, undercarriage, tank, aerial mast, ailerons. Moderate rivetting. Includes electric motor for assembly. |
| 4 | A6M5 Model 52 | Monogram | 11/6 | 1/48 | 1/48 | 9 in. | U.S.A. | 26 | Moderate rivetting, neat detail. Excellent scale except fin decoration, shiny transfers, long ailerons. Good pilot. Retracting undercarriage. |
| 5 | A6M5 Model 52 | Aurora | 6/11 | 1/48 | 1/47 | 9½ in. | U.S.A. | 28 inc. stand | Flat wing, heavy rivets. Mast, cockpit shape, belly tank need attention. |
| 6 | A6M5 Model 52 | Nichimo | 5/- | 1/70 | 1/70 | 6.3/16 in. | Japan | 29 | Heavy rivets, undercarriage recesses, belly tank, good scale. |
| 7 | A6M2 Model 21 | Airfix | 2/- | 1/72 | 1/71 | 6.9/16 in. | Gt. Britain | 29 inc. stand | Panelling, no rivets, u/c recess, belly tank, long ailerons, no flaps. |
| 8 | A6M2 Model 21 | Frog | 2/- | 1/72 | 1/75 | 6½ in. | Gt. Britain | 30 inc. stand | Panelling, no rivets, no u/c recess, belly tank, yellow "Hinomaru" surrounds, ailerons not inset. |
| 9 | A6M5 Model 52 | Revell | 2/11 | 1/72 | 1/73 | 5.15/16 in. | U.S.A. | 22 inc. stand | Light rivets, u/c recess, heavy spar lines, belly tank, no aerial, neat cockpit and detail. |
| 10 | A6M8 Model 54 | Fujimi | 5/- | 1/70 | 1/71 | 6.1/16 in. | Japan | 24 | More like model 64. Has inset ailerons of model 21, u/c recesses, heavy rivets. |
| 11 | A6M2 Model 21 | Fujimi | 5/- | 1/70 | 1/70 | 6.21/32 in. | Japan | 24 | Long aileron, folding tip version, u/c recesses, heavy rivets. |
| 12 | A6M3 Model 32 | Fujimi | 5/- | 1/70 | 1/72 | 6 in. | Japan | 24 | Clipped wing version, u/c recesses, heavy rivets. |

Of the twelve International Zero plastic kits made up for this review, the Monogram (4) and Marusan (1) are particularly impressive for their intricate detail and attention to scale. Some models have distinctly novel forward fuselage cross sections and others, unusual wing shapes and radio mast positions. All of which serves to illustrate the fact that although well known by name, the Zero has not been particularly well appreciated in design detail. Revell's new 1/72nd model is neat and takes the prize for an outstanding kit box painting, whilst the Fujimi Company shows enterprise in producing three different models, although they have made some components common where, in fact, differences should apply. Few use correct flush riveting.





Cut slot to hold reflex curve

1/16" Jet nacelles

3/16" sheet profile fuselage (shaped to section)

Balance point

Paint black

Ply sides

Catapult hook

1/16" ply sides to nose

1/16" sheet fin

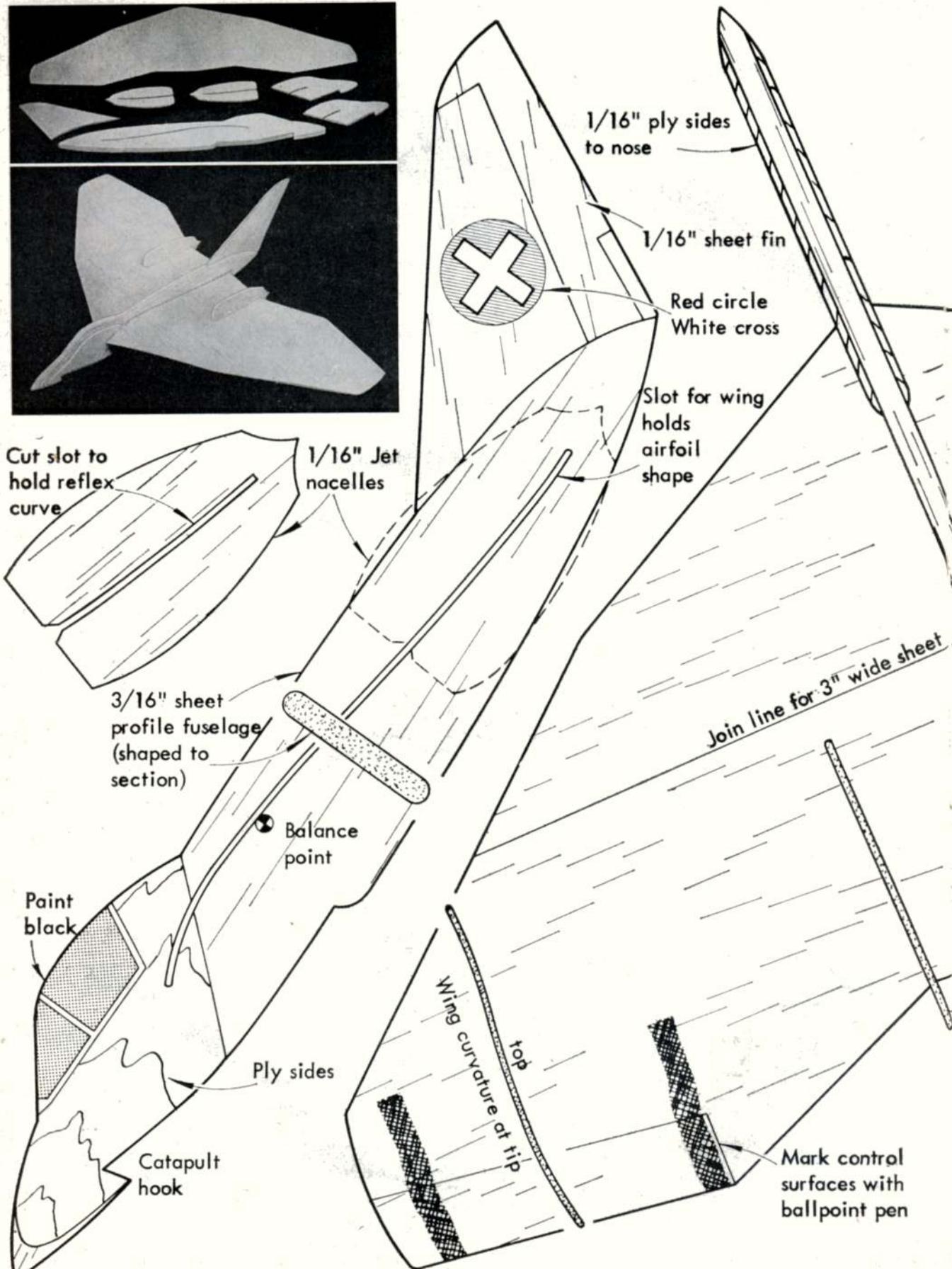
Red circle
White cross

Slot for wing holds airfoil shape

Join line for 3" wide sheet

Wing curvature at tip top

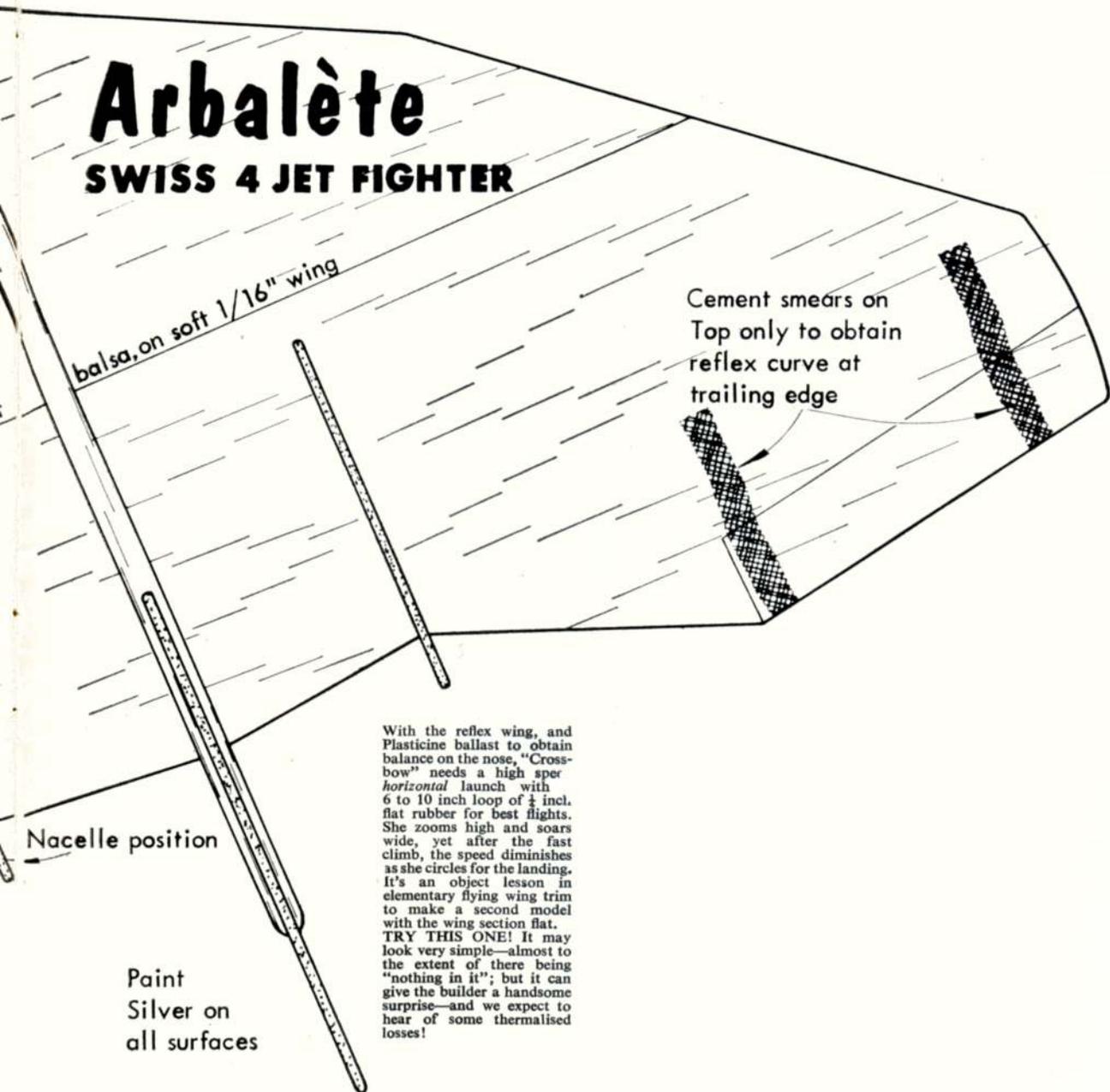
Mark control surfaces with ballpoint pen



IN 1951 THE Swiss Federal Aircraft Factory at Emmen turned out this novel four-jet flying wing fighter and named it appropriately the N-20 "Crossbow" (Arbalète). It was to be a 6/10ths scale model for a national defence interceptor, the "Stinger"; but after tests the project was dropped. For years the appealing shape of the aircraft has attracted passers by at Emmen—and few knew the purpose or destiny of the aircraft. Whatever happens to it, we've taken it up as a most suitable subject for a catapult launched glider that can be made in a trice and will give hours of amusement. Make the wing flat if you want a high speed long distance flier, or follow our recommendation and use the curved airfoil for some fascinating glides. Shape the fuselage from 3/16th sheet balsa, and the nose plates from thin ply, otherwise the "Crossbow" is all 1/16th sheet. All components are shown prior to assembly over at top left. Shape them join the wing sheets and slide into fuselage slot. Use plenty of cement, and apply four smears as shown to obtain tip reflex. Sandpaper smooth, give two coats of sealer then colour dope.

Arbalète

SWISS 4 JET FIGHTER



Cement smears on Top only to obtain reflex curve at trailing edge

balsa, on soft 1/16" wing

Nacelle position

Paint
Silver on
all surfaces

With the reflex wing, and Plasticine ballast to obtain balance on the nose, "Crossbow" needs a high speed horizontal launch with 6 to 10 inch loop of 1/4 incl. flat rubber for best flights. She zooms high and soars wide, yet after the fast climb, the speed diminishes as she circles for the landing. It's an object lesson in elementary flying wing trim to make a second model with the wing section flat. **TRY THIS ONE!** It may look very simple—almost to the extent of there being "nothing in it"; but it can give the builder a handsome surprise—and we expect to hear of some thermalised losses!

WORLD NEWS



HEADING THE POWER team championships so far in **FINLAND** is Sandy Pimenoff with Harri Raulio and the Laxman twins in close company while Pentti Aalto, Bjorn Storgards and Esko Hamalainen seem sure of the Wakefield team. Glider is less sure, a third contest takes place in June but most certainly the Finns will be strongly represented at the World Champs, Wiener-Neustadt. By all accounts, glider is going to be a very high standard event. In **SWEDEN**, Bror Eimar from Stockholm made five A/2 max's in the winter event *over ice*, runner-up Knut Andersson was only 5 secs short (see pic). Leading three in Wakefield, Quarnstrom, Johansson and Akesson all went through to the 7th round and in power Broberg and Wall each scored full max's. Of a possible 2,700 seconds, the team from Uppsala club scored no less than 2677!

Over 100 competitors from England, France, Germany, U.S.A. and Yugoslavia joined modellers from the host country **AUSTRIA** at Zell am See for the power and A/2 international in April. A/2 proved to be a case of tactics with Austrian Blacher winning a 7th round fly-off over German Lau mainly by means of having his fellow countrymen rush around under the model to spark off a thermal. John West was impressed by the standards, with German and Austrian names dominating top 24 glider placings and the leading 6 having over 854 secs. Power is quite a different story, for evidently many contestants have yet to learn how to control the output of latest engines. Elsewhere in Austria, their C/L Championships were in a way novel, for *all* the team race and the speed entrants used Paul Bugl's engines. All the stunt flyers used O.S. Max 35's. Fastest speed was Bugl's own 112 m.p.h. and he also topped T/R with a 4:45 time for the 10 kilometres.

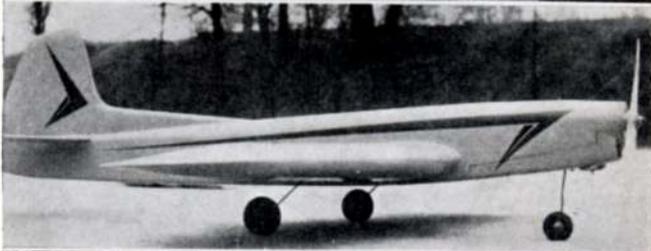
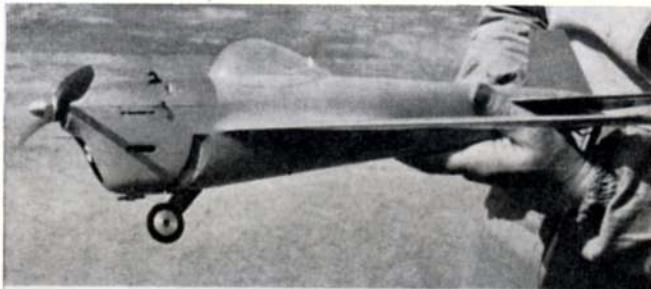
Twelve teams travelled to Sao Paulo in **BRAZIL** (some of them for over 1,500 miles) to enter the "1000 laps of Ibirapuera" marathon team race. Among them were groups from the World Famous Botafogo football team (see pic). The "magic" hour was at last broken with 55 minutes, 28.1 seconds by the Veloso/Poltromeu/Sager team and their Fox 29 "Fury" design, 2nd model used an Enya 29 and 3rd, a Super Tigre G.21.

In **PORTUGAL** they have a Society to promote

publicity for aeronautics, which ran an F.A.I. rubber and glider event on May 5th. Joao Rafa won glider with 748 secs and Altamiro Rodrigues was leader in power with 792 secs. He was in Wakefield and A/2 teams at the last World Champs, placing 5th in A/2 on that occasion.

Back to team racing, and in the 1964 preliminary team elims in the U.S.A. the Stockton-Jehlik team has established fastest yet in F.A.I. racing with 4:13 using an Eta 15 Mk. 2. Don Jehlik also happens to be newly appointed A.M.A. T/R matters Chairman. Should know what he is talking about! Over on the west coast, the big story is the annual Nats at Los Angeles this time, end of July. Indoor times of 38 mins by Carl Redlin and Bill Atwood in the Santa Ana hanger in the team elims seem to predict as much sensation for indoor as for outdoor events at the forthcoming all-American jamboree. Incidentally we had the real pleasure of meeting Bill Atwood over here this month. Amazing to have at first hand the story of the birth of the model aero engine.

Left: Knut Andersson of Malmo reminds us of the Winter in this view of his 2nd place A/2 glider at the SWEDISH winter nationals, was just 5 seconds short of a perfect 900 secs. score. Below, top: At **AUSTRIAN** Champs for C/L models Bugl's new racer with his own diesel engine has glass fibre fuselage and sprung monowheel. Centre: new look in stunters in Mothwurf's 2nd place model with trike gear and O.S.35 engine. Bottom: in 1000 lap Marathon at Sao Paulo **BRAZIL**, the Botafogo football team was well represented, gaining 2nd, 3rd and 4th places. Matuso Maeda's "Benky" was 2nd, seen here with Botafogo Manager, Haroldo Campos. What happens when Pele takes up the hobby?





THE ANNUAL South African National Championships took place over the Easter holidays, April 12th—15th in ideal conditions at three separate venues, in the Transvaal. Jackson's Drift was used for free flight, April 12th-13th; Rand Airport at Germiston for control line, and Wonderboom airfield, Pretoria for radio control over the full period.

Seventeen events were included in the S.A.M.A.A. programme for free flight and control line and out of a possible 35 first three places, the host club, Rand M.A.C., collected 26 with eleven first. Visitors came up from the South Coasts at Cape Town and Durban, also from Maritzburg. However, the change in altitude with the Rand at about 4,500 feet a.s.l. affected trim severely for those not familiar with the conditions.

Highlights of a very successful S.A.M.A.A. meeting were the inauguration of the new concrete circle for Control-line events at Germiston and an exciting class B team race heat. A. Swanby had the misfortune to lose a prop whilst lapping at 104 m.p.h. with his Eta 29 model and then someone stopped Eddy Boys' *Razzamachas* with his foot and the resultant broken prop cost Ed. the race when he was beaten into 2nd place by 12 seconds. Eventual winner of the Class B final was G. Groenberg of Durban with a time of 6:35.

Basil Menges became winner of the control line high point trophy despite misfortune in the speed circle, his F.A.I. model gave promise, flying on monoline to establish South Africa in this international class; but everything happened from prop breakage to bursting pen bladders when it came to making a test flight.

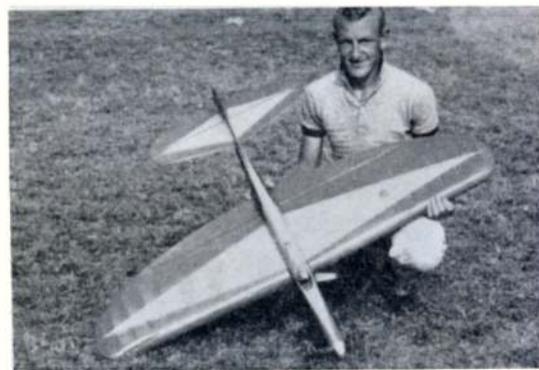
Combat was inaugurated at this meeting with stalwart Eddy Boys coming through in the last battle with half a model to win. So too was carrier control line flying introduced at this meeting with N. Allen from Maritzburg making the first ever demonstration, taking off well, flying slow, then fast; but unfortunately landing 6 in. short of the deck, to neatly remove the tail unit!

Most exciting interlude in control line was the arrival of a local parachutist in the area when the scale event was being run. In free flight, Peter Visser from the Cape had his World Championship models but lost the trim. There were no full maximum totals and free flight champ was J. Swallow of the Rand who was 2nd in open power, Jetex and Open rubber, 3rd in $\frac{1}{2}$ A power and 1st in A/1 glider and F.A.I. power.

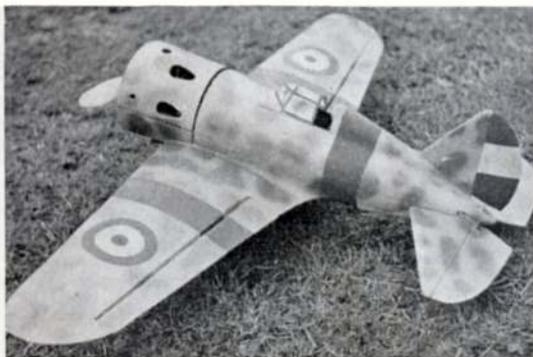
Radio control was judged by three experienced pilots, who had been thoroughly briefed on the F.A.I. judges guide and indoctrinated with a novel "gimmick"—two stop watches which were used to time the individual circles in figure of eight manoeuvres. With this, it was expected that one could judge whether the eight s were

symmetrical with equal size loops. Models were largely *Taurus*, *Stormer* and *Sultan* types with individual *Viscount* and *Orion* in multi. In rudder only, own design models led with a *Charger* in 3rd place. Veco 45's took 10 of the first twelve places. O.S.49 the other two and R/C equipment honours were shared by Orbit and Kraft. Leading three in multi, Malherbe, Culverwell and Connacher are among the most well known and longest experienced South African flyers and it is hoped we shall see them in action in Belgium during August.

Left, the new R.M.A.C. control line circuit at Rand Airport. Below, top to bottom, free flight champ John Swallow gets his open rubber job back from the ever handy South African "retriever". Centre, stunt winner L. Marnewecke of the Rand with his Veco Thunderbird. Bottom is scale winner E. Gates from Durban and his heavily loaded P-51 Mustang



Scale Model News



JULY IS ALWAYS the seasonal month for scale fever so we make no apology for showing this bevy of beauties from all parts. Top of the page and leading off is Dennis Bryant's (of "Model Supplies," London, S.E.4) magnificent *Macchi Castoldi MC 202*. Test flown in early May, it is 63 in. span, making it one-seventh scale, weighs 7½ lbs. and uses F & M 10 channel Hercules/Midas radio gear with five Transmite servos. For the initial eight flights a K & B 45 was used, later replaced by a Veco 45 in time for the British Nationals. Beautifully spray finished in O-My dopes, it came up rather shiny for first outings, but has subsequently been rubbed down for more realistic model type finish. The model proved to be very touchy on ailerons but this has been cured by improved gearing and reduced movement. It also uses glass fibre strengthening *inside* the planked fuselage. This saved the model on a serious prang, the fuselage splitting open along the join line of upper and lower halves where there was no fibre! Similarly the enormous spinner is moulded in glass fibre.

Granger Williams, manufacturer of many small accessories, wheels, pilots, etc., in California is also multi channel scale radio enthusiast. He is seen at left with his *Nieuport 28*, 53 in. span, one-sixth scale for Orbit 10 channel equipment and Transmite servos. The generous area of this biplane is 720 square inches and with thin semi-symmetrical airfoils (the only deviation from scale) it is a most impressive flyer. Engine cowling around the K & B 35 is glass fibre and this helped save the model when Granger was "shot down" by radio interference. The 1/16th thick fibre took the load but unfortunately, the elaborate specially made .005 in. sheet brass landing gear fairings were destroyed only a few hours after much effort in construction. We have seen a colour picture of this model and it looks positively tremendous, makes a fine mate for Granger's *Curtiss R3C-1* racer.

Bottom of our first page is what appears to be quick work by Australian Tony Shennan, now at Walton-on-Thames, following our feature on the *Polikarpov I-16 "Rata"* of last month, in fact Tony made this model some months ago to drawings in *R.A.F. Flying Review*, using their colour scheme in Republican markings. He powered this model with a Cameron 15 but in fact the enormous cowling is large enough to take bigger power plants. Fuselage is covered with 1/16th sheet following the style of the full-size aircraft with wings double covered in heavyweight tissue. Novel application is the conversion of those long span ailerons into coupled flaps hooked up to the elevators. This way, the only aerobatic limitation for this kind of model seems to be square loops and triangles.

Incidentally, Tony has now been joined by fellow Australian scale modeller Geoff Pentland over here, and together they have got down to work on

"Kookaburra" Technical Publications, producing a series of technical manuals, the first of which is to be on the Hawker Hurricane.

Over to the top of the right-hand column and no excuses are offered for the slightly blurred effect for this realistic action photo of Dennis Thumpston's seven year old one-tenth scale *Tiger Moth*. After many years of free flight, Dennis fitted a lightweight miniature Otarian receiver and a Conquest actuator and the Mills .75 diesel takes it up perfectly. How nice it is to see a *Tiger* nicely coloured in the markings of the 1940-41 period. In fact, this is a replica of one of the first aircraft he flew during his war-time period training.

Next a real touch of the unorthodox and this one comes from Ole-Dan Nielsen of California. It is an accurate replica of the *Kellett* autogyro for control line using the Roberts system with throttle on the McCoy 60 in the nose. Fuselage length is 32 in., rotor diameter 69 in. and maximum speed 40 m.p.h. However, it is not the high speed which fascinates with an autogyro; the low speed performance goes down to 5 m.p.h. with the solid mahogany blades supporting all of 6½ lbs. total weight. Elevator control is used but the model is in the process of having an all moving tail of larger area for better control at low speed. Ole is now thinking of a 10 channel radio control *Pitcairn PCA-2* autogyro, which should be most exciting.

Central pic is Joe Fergusson's *Airspeed Ferry* from Paisley, Scotland. This model appeared at the 1962 Nats but was smitten with bad luck, not the least of which was the use of a completely flat glow-plug battery. This model took three years of intermittent constructional effort and now has a Fox 049 fitted in the upper, central nacelle. Made to one-twelfth scale, giving a span of 55 in. and total weight of 30 ozs., the model was enlarged from early AEROMODELLER plans and is built exactly as the full-size complete to all rigging detail, which means that the power unit is entirely held in place by the interstrut bracing made from control line wire. Free wheeling airscrews are fitted to the outer nacelles. The *Ferry* is finished in dark blue and silver with white lettering.

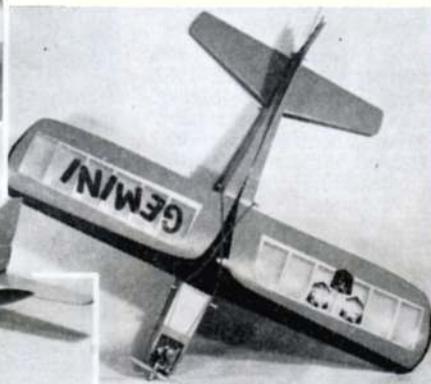
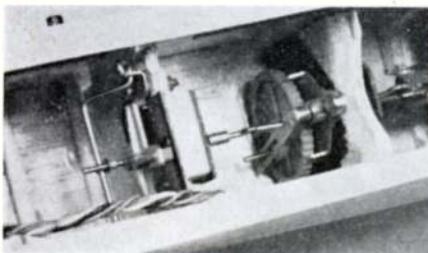
Achieving more recent attention through the B.B.C. television series on its wartime activities (although with an inferior and reduced size replica of the real machine for supposed full-size ground scenes), the *Westland Lysander* is always a modellers favourite. The one in our picture was made by W. A. Fraser of Winchester. As with Granger Williams *Nieuport* on the opposite page, this "Lizzy" has a glass fibre cowling, which Mr. Fraser has made to form a completely "knock-offable" unit, retained by internal pegs and rubber bands. The engine is mounted on a plywood base that slides out of the back of the cowling when necessary. Built from the AEROMODELLER Plans Service drawing, the model is covered in silk and powered by an AM 25. A standard 10 by 6 in. prop is used for flight and this takes the 3½ lb. model very well.

Another AEROMODELLER Plans Service design, which has achieved tremendous popularity, is the *Fairey Gannet* seen in our last photograph. This particular model took about three years to build during university vacations and was made by M. G. Chaplin of Cheltenham, who constructed it to operate from the Cheltenham M.A.C.'s aircraft carrier. Because of the stresses likely to occur during "hooking on" the deck, the model is modified to have a somewhat stiffer structure. There is a strongly fixed undercarriage, a 12 in. Arrestor hook and third line engine control, which works on a neoprene tube carburettor intake extension, running right back to just in front of the rear cockpit.



Over the Waves

- FIELD TESTS
- WITH NEW
- MODELS AND
- EQUIPMENT



Above: TWINS by Frank Johnson of California are a 10 ft. 4 ins. 18 lb. Catalina with 2 Super Tigre 56's, Orbit R/C gear and an F-82 Twin Mustang with Deans 12 R/C featuring retracting u/c, flaps and landing lights. Will fly on one engine. Left, is David Taffler's stretched Gemini R/C. Shows mounting of the Commander/Corporal escapements—for throttle control on Cox 049. Free plan in May issue R.C.M. & E. Bottom left is the Skol-kits Robbe Thor structure, now approaching field tests with multi-gear

WHEN R.E.P.'S DEVELOPMENT engineer Chris Olsen demonstrated to us prototypes for the new Gemini single channel radio control sets we were immediately enthused. Here were two simple single channel sets as modestly priced as any, which could be operated simultaneously.

Immunity to interaction is achieved by the addition of a tuned filter in the receiver circuit, matched to the modulation frequency of its all transistor transmitter which is anodised either red (3,200 c.p.s.) or green (850 c.p.s.). Six transistors are employed in the circuit and power is a 9 volt battery. The receiver is a compact



arrangement, measuring only $1\frac{3}{4}$ by $1\frac{1}{2}$ by $1\frac{1}{4}$ in. in its crash resistant nylon case and weighs just $1\frac{1}{2}$ ozs. This circuit also has six transistors, with a working voltage of 4.5. Receivers on both frequencies are available for relay or relayless operation, the former for use with motorised servos such as the Climax Unimite and the latter to drive escapements by direct output.

A technical test has already appeared in June *Radio Control Models & Electronics*. Gemini Twins were then fitted into models for air testing, one into David Taffler's "stretched" 29 in. Gemini model (*R.C.M. & E. Free Plan* in May) with Conquest escapement and the other into Pete Holland's well worn prototype *A.P.S. Timber* with Climax Unimite single channel servo.

First flown was the Gemini (model) with the higher frequency set, initially losing range, but re-tuning cured this. During the second attempt, the low frequency transmitter was keyed spasmodically to investigate interaction, which did not occur. Following this encouraging experiment, both models were launched to be airborne together, again without any interaction. Unfortunately, a spurious low tone signal from a nearby transmitter put an end to *Timber* carrying the 850 c.p.s. Gemini set, fortunately without damage to either radio or servo.

Our test Gemini sets therefore appeared quite free from interaction. The lower frequency receiver was not

entirely free from outside interference as it comes within the common frequency range of most tone transmitters, but we feel this kind of hazard is unlikely to affect the higher frequency Gemini with its 3,200 c.p.s. tone, unless there are some other filter outfits around. To the sport flier, the "twins" open up simultaneous single channel flying with British equipment at an outfit cost favourably comparable with any beginners' single channel tone set. No wonder we learn of large scale production intentions under the new Derritron Group ownership.

Gremlin Lancer

Flown to third place in the '62 Nationals rudder only competition by designer Roland Scott, the *Lancer* is now kitted under Bradshaw Model Products' *Gremlin* label. This is a strictly functional model (as we mentioned in Trade Review last month) designed to withstand the hard knocks it is likely to receive at the hand of a tyro, and our test job certainly did take the knocks on several horrible occasions (stuck relay). Powered by an O.S. 15 R/C engine it flew passably, but a Veco 19 R/C pulled the 4½ lbs. model much better. If trimmed carefully the *Lancer* becomes a remarkable rudder only aerobatic model and with ½ in. rudder movement in either direction our's will execute such neat barrel rolls *from level flight* that admiring modellers were heard to remark "Who needs ailerons?" For the less experienced 2.5 c.c. should be ample and weight of 3½ lb. ideal. *Lancer* will take any R/C outfit.

Receiver installed in foam rubber packing by builder Bill Hockey in our test model is a four channel home built unit, with a valve/transistor *Quetone* circuit (AEROMODELLER, August 1959) using an R.E.P. 10 reed bank and four E.D. Bleep relays. Incidentally the *Quetone* makes a reliable receiver for many uses.

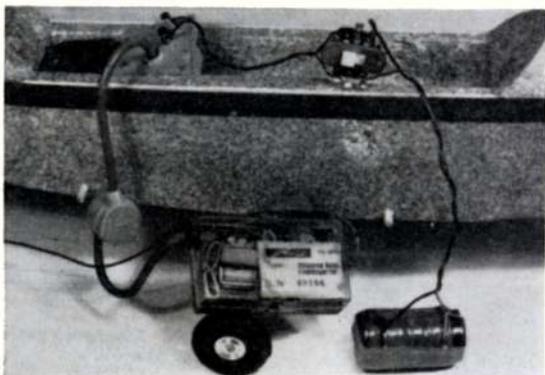
Throttle servo is an old R.E.P. Mini-Uniac re-motored with a Japanese TKK "Orbit". The Mini-Uniac is bolted to the left hand fuselage side and its lead screw drive connected to the throttle link consisting of a length of Bowden Cable with piano wire ends. This runs in a length of brass tube Araldited to the fuselage side.

The other two channels switch the rudder servo bolted to the right hand fuselage side. This is a home made unit using Ripmax gears supported between two Paxolin plates, the longer one mounting a motor from an early Bonner servo, and the short plate forming the printed circuit wiper plate which is a copy of the Bonner Duramite circuit. Wipers are carried on the final drive arm (Paxolin) and made from shim brass.

Schuco Complettta

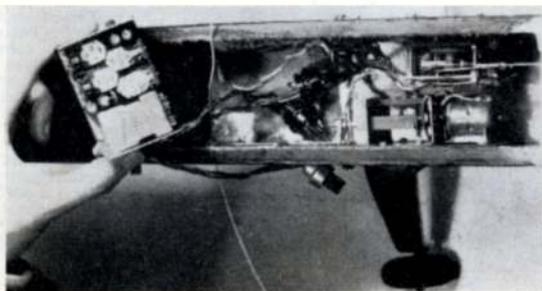
This ready-to-fly expanded polystyrene radio design for .8 c.c., distributed by Bradshaw Model Products at 6 guineas retail, has now been checked out with the gear for which it was designed. We borrowed a used *Metz Baby* outfit from Roland Scott's stock, fitted the new type single channel Metz servo, a 6 v. DEAC 225 pack and were immediately in business. Close range check failed to find any point in the Rx tuning where the receiver would not work! Even at 100 yards, tuning was incredibly flexible and eventually at no less than 330 yards, we found the ideal spot in the tuning choke.

First flights were dogged by a tendency to sharp left turn, which, coupled with a servo having to cycle through left to get to right rudder, landed us in three heavy prangs. Only evidence of accident was the 2 in. stretch in the nylon cords to the rudder and a crack in the balsa rudder itself. The styrene is remarkably shockproof. More offset on the D.C. Merlin and application of will-power to restrict the temptation of a signal at less than 20 feet, and the ready-to-fly *Complettta* was living up to its name.

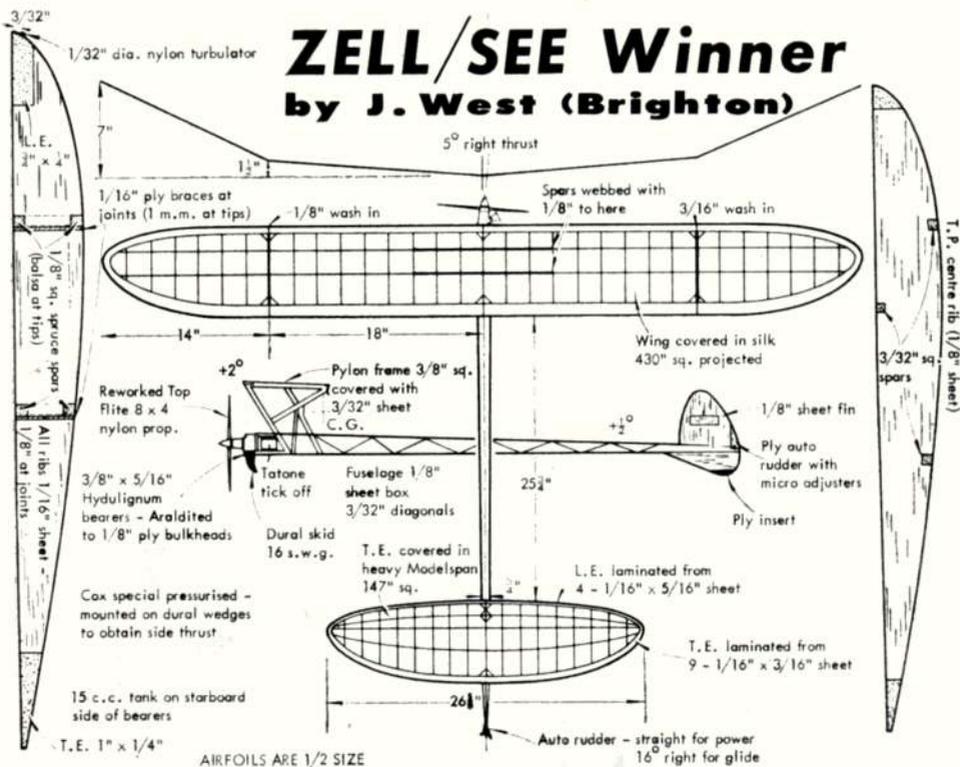


The Metz Baby is simplicity itself. If one eliminates the switch there is no need for soldering in the '63 outfit one does not even have to tune the Rx! Next stage is to convert the fuselage for other types of rudder drive. As supplied it is strictly for motor servos only.

Above, Schuco Complettta expanded polystyrene model with complete Metz Baby Rx harness. Metz servo linked to Rx by plug and batts by quick release buttons. A very simple and reliable outfit. Below is Bill Hockey and test B.M.P. *Lancer* with fuselage detail showing 4 channel *Quetone* Rx and home built servos



ZELL/SEE Winner by J. West (Brighton)



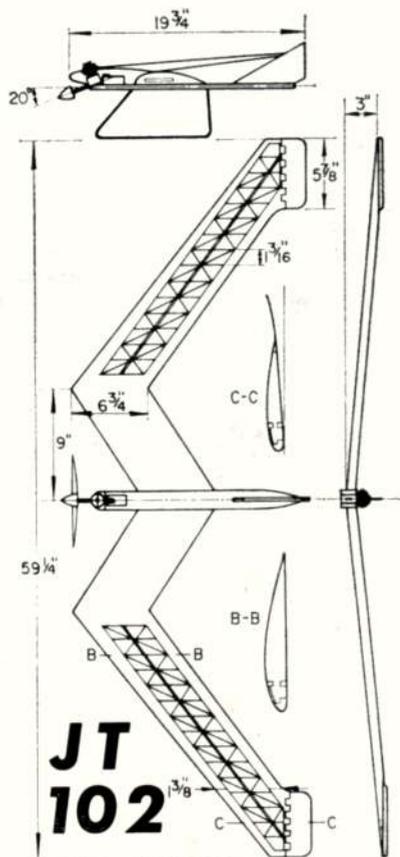
Contest designs

John West and his International event winner, now bearing the Austrian Aero Club insignia on the left tip panel as a souvenir of a meeting thoroughly enjoyed at Zell am See, Austria



Ask John West for the development story of his model which led the field of proficient European power experts at Zell am See with four easy maxes followed by a short engine run (due to a split tank) to produce 2:05,— and the answer will be disarming. For this is a hybrid, assembled from some well worn, and other fairly new components. There are no gimmicks, and the Conover style section with nose turbulator is perhaps the only distinction from pure convention. This is a case of reliability in the hands of a very experienced power flier, using a very powerful engine. John's long string of successes with the "Dixie-lander" have left their impression, and we are sure that many who have enjoyed George Fuller's design will also find an appeal in this straightforward F.A.I. spec: model.

For less conventional tastes, Jerzy Tombacher's tailless power model from Poland for 1.5 c.c. engines offers a complete contrast. A Clark Y type airfoil is used throughout the span of the W shaped wing, with increasing wash-out towards the tips where trimming ailerons for turn and climb are hinged. Note the 20 degrees of downthrust needed to stabilise the power run. Centre section is balsa sheeted and a wire skid replaces a wheeled undercarriage. There are not many flying wing events per year, perhaps this shape will stimulate more enthusiasm.



CLUB NEWS

IT NEVER CEASES to amaze us how model performances progress year by year. The radio flyers seem to be able to do anything and everything with even the most intricate scale subjects. In the three free flight classes, maximums come thick and fast, especially in power and now in team race the introduction of the new Eta 15 seems to be knocking all established records for the proverbial Burton. However, old man weather doesn't seem to change his status as far as British modelling is concerned and continues to blow hard. On April 28th he relaxed and what a mighty performance was put up by George French and Mike Green in the Astral Trophy. It looks as though we have some strong names up at the top ready for the trials and a tough team to go to Wiener-Neustadt in August. And congrats to New Zealand teamster Bill McGarvey for his 3rd place in the Gutteridge Trophy. On top of this we must comment on the encouraging entry for the open glider event on April 28th, do we detect a resurgence of enthusiasm?

First news comes from the SOUTHERN AREA, where Reigate and Salfords M.A.C. took part in an exhibition of leisure activities held at a local school. Local radio hams rather misguidedly put their aerial right over the C/L circle, this being cut down on the first flight! Out on the playing fields Neil Ward showed the public how to do it by losing his *Matador* O.O.S., whilst the rest of the members used the slot racing cars for amusement.

Southern Multi Flyers now have a new permanent flying site, which they are clearing, and making useable after their last site went under the plough. D. Raymond has a Merco 49 powered *Smog Hog* (A.P.S. Plan RC/659) with a 19 per cent. wing section, and steerable nosewheel. Nice and steady!

Chichester M.A.C. have produced their best yet news-sheet, with a nice ode on how to fly a radio slope soarer without a slope, written by "Jerry", part of which is:

*The cows looked up and watched it prang
then charged to the crash in one great gang
They gathered around and started to chew*

*But when he got there he was far too late
They had eaten the tail ('ard luck, mate!)*

They also say the secretary fell off a fence, and landed on his head (explains the ode). He should be back to normal quite soon.

More down to earth news comes from Southampton M.A.C. who have made many trips to Beaulieu and Stoney Cross Aerodrome.

The SOUTH EASTERN AREA Crawley & D.M.A.C. held their A.G.M. on May 2nd, the main item being engine noise, result of which is a maximum of 1.5 c.c. engine capacity ruling *unless* silenced. Due to the efforts of Don Plunkett, Pete Cameron, Bill Horton and Jack Darvey the club are now in the lead for the R.A.F.A. shield after the first round held at Ashdown. Leatherhead and D.M.A.C. even have the local papers giving them a write up on their contest results and also lost models. It seems to be very good publicity.

Brighton D.M.A.C. are pleased with John West and Dave Welch who accompanied George French on the trip to the International meeting at Zell-am-See, Austria on April 21st. As reported in World News last month John was the top individual in power (see *Contest Designs* this month). Unfortunately Dave broke the wing of his model on dethermalising which spoiled his trip. John also flew an A/2 without any great success—says Austrian conditions are very different!

In the Area event for the Astral Trophy John was plagued with engine trouble and only managed 13:46. Pete Brown came second with 13:14, and Stan Ford third with 11:02. In the glider event on the same day John did three maxes plus a fly-off of 2:21.

From *Sea-Dog* we hear that the K.M.A.A. cup flown at Ashdown on April 7th in a healthy (?) force 5 gale from the East made things very unpleasant with a vicious downdraught in the "Valley of Doom". Newcomer Chriss Foss of Brighton flying an *Empress* kit showed everybody the way home by clocking 9:46 with only 4 flights (a junior too). Only one Power entry dared the elements, this was Harry Hutchings of East Grinstead with an 0.9 powered model. Nobody flew in rubber. April 28th at Ashdown was by contrast graced by fine weather with a large attendance and flying all day. John West of Brighton put in some very good times totalling 9:01.21 to take open glider, he also took 1st Area place in the Astral Trophy.

During a patch of winter boredom NORTHERN AREA members of Sheffield S.A. hit on a new form of amusement. Take a 3½d. bar of KIT-KAT, eat contents, fold up aluminium foil and squeeze it onto one side of the outside cover, so that it holds top and bottom together in the middle, and thus forms a flying wing biplane. Launch from shoulder height—and have fun.

Five Towns M.A.C. held a display of C/L flying at a local beauty spot on April 21st. Highlight of the day was Eric Clutton's stunt display with his 60 in. span *Big Snibbo* design powered by a 10 c.c. glow *Snowfire* 60, made by fellow clubman Frank Snow. Flying was done on 100 foot lines for big manoeuvres. The display did a lot of good for public relations at which the club are making a big drive. They all visited the N.W.A. rally at Ternhill and thoroughly enjoyed themselves in spite of the weather. A club transfer design comp was won by Pete Gould, not unnaturally since he submitted 8 designs out of the 12 entered! Their continual barrage for a flying ground on the local council has at last borne fruit (after 19 long years), in the form of a disused colliery tip. Very rough but they are thankful for small mercies. Anyone got a spare bulldozer?

They now hold their club meetings at the Crown and Anchor, Tower Square, Tunstall every Tuesday 8 p.m. Prospective members are very welcome and should come to the club meeting.

About 10 members of the Wharfedale M.F.C. attended the N.W. Area Rally at Ternhill, where Dick Place took a 1st, 2nd and a 3rd. Bad luck plagued the Long-Davy team in F.A.I. When they turned in the fantastic time of 3:40 the judges wouldn't believe it and they had to have a re-fly. However things turned out better on the second day when they took 2nd place in $\frac{1}{2}$ A using a borrowed Oliver Cub in a Mick Bellamy designed *Panther Cub*. The following week the Long-Davy team took 2nd place in T/R at the trials, and the Northgate-Humphrey team 4th place with the *Perfidia* T/R using an old Eta 15.

From Tynemouth M.A.C. in the NORTH EAST we hear that Club Sec. Ron Pollard put in a perfect score of 15:00 min. + 2:41 in the Weston Cup using a sheeted wing Wakefield wound up to 120 per cent. (!) on 14 strands. C. Rennie managed 13:02 in the S.M.A.E. cup, the highest time in the N.E. Area.

The NORTH WESTERN AREA Chester M.F.C. tell of some details for the Clwyd Slope Soaring contest, taking place on July 21st at the West Slopes of Moel-Pfamau, Near Mold, Denbighshire. The events will be Open A/2, Junior and Radio. Pre-entry is a must to C. R. Filtins, 26 Raymond Street, Chester by July 14th. Entry fees 2s. Senior and 1s. Juniors. Due to fire hazards fuse type D/T's will not be permitted.

A rising membership is the good news from East Lanes, M.F.C. who are running plenty of club comps to keep the interest going, and building like mad. They also hope to have more members at the Nats this year.

From the WESTERN AREA we hear that Brian Eggleston has joined the area, winning the second area rally with 3 maxs, and also the all-F.A.I. power event with his Cox 15 model.

Bristol R/C club are putting all their efforts into the club rally to be held at R.A.F. Hullavington on July 14th. It is hoped that the scale event will provide a really good show this year as it is the focal point of the meeting. Club members wives are being induced to assist in providing refreshments on the field.

Several scale models are being built, the most ambitious being Roy Norris' *D.H. 88 Comet* with retracting u/c. Doc Henley has built a *Bristol Bulldog* which flies very well, and a *Hawker Hart*.

Brian Bow was the only member of Bristol and West to enter the N.W.A. rally and placed 4th with an A.P.S. 96A in glider. In the S.M.A.E. area events on April 28th, Brian Bow and Dick Cummins both did well in the Gutteridge Trophy.

Witcombe Residential Club are now having flying field problems as a large portion of Brockworth Airfield has gone under the plough, and put a finish to contest flying. They are now devising contests for small models to suit the space. They would be very interested to hear from a club with similar problems. *Le Petit Knight* (May '63 issue) has not gone unnoticed by this club.

LONDON AREA has interesting news, starting with Wanstead Warhawks M.A.C. who report that the club combat comp took place with plenty of wind and crashes. The winner of the three man final was R. Church flying a Rivers 2.5 powered A.P.S. *Razor Blade*. Indoor flying has been taking place with R.T.P. models powered by

S.M.A.E. Contests

| | | |
|------------|--|---|
| June 22/23 | 1st FREE FLIGHT TRIALS. Single Channel and Intermediate Class R/C (Experimental Contests) | } R.A.F. Barkston Heath |
| June 30 | Gamage Cup (U/R Rubber) Pilcher Cup (U/R Glider) Quickstart Trophy ($\frac{1}{2}$ A Power) C/L Meeting | |
| July 7 | 2nd FREE FLIGHT TRIALS | } Area venues Centralised R.A.F. Barkston Heath |
| July 13/14 | White Cup (U/R Power) Frog Junior (U/R Rubber/Glider) | |
| July 28 | | Decentralised |

S.M.A.E. Contest results

April 28th London Area conditions, light winds, bright.

GUTTERIDGE TROPHY. F.A.I. Rubber (63 flew).

| | | |
|------------------|------------|-------|
| 1. M. Thomas | Whitefield | 14:30 |
| 2. A. R. Wells | Hornchurch | 14:21 |
| 3. W. McGarvey | Stevenage | 14:19 |
| 4. G. L. Roberts | Lincoln | 14:11 |
| 5. H. Tubbs | Baldon | 14:07 |
| 6. B. Hugh | Springpark | 14:01 |

ASTRAL TROPHY. F.A.I. Power. (43 flew).

| | | |
|----------------|-------------|---------------|
| 1. G. French | Essex | 15:00 + 16:40 |
| 2. M. Green | C.M. | 15:00 + 10:29 |
| 3. G. Fuller | St. Albans | 14:46 |
| 4. R. Monks | Birmingham | 14:36 |
| 5. G. Cornell | Croydon | 14:31 |
| 6. P. Manville | Bournemouth | 14:12 |

U/R GLIDER (141 flew).

| | | |
|---------------------|------------|-------------|
| 1. A. L. Wisler | Croydon | 9:00 + 6:35 |
| 2. A. Abbs (Junior) | Norwich | 9:00 + 6:30 |
| 3. J. West | Brighton | 9:00 + 2:21 |
| 4. B. A. Manners | C.M. | 9:00 + 1:49 |
| 5. R. Salmon | Haltfax | 9:00 + 1:47 |
| 6. S. Sherwood | Hornchurch | 9:00 + 1:14 |

Cox TD.010's. M. Lewis flying a scaled down Reg Parham rubber model has set the indoor record at 52 secs. under a 10 ft. ceiling.

From Cosmo A.C. we hear they held a static model competition with cups and money vouchers as prizes. S. Waller receiving 1st prize and A. Tick 2nd.

A one model rubber comp featuring *Le Petit Knight* (May issue) is being run by the Dagenham M.A.C. and these models are being built at the weekly club meetings so as not to disrupt members existing building programmes.

News of another rally, this time from the Hayes D.M.A.C. whose free flight gala will be held at Chobham on July 7th. Events are Open Power, Rubber, Glider and 1/4 A Power with entry on the field and max's to suit the conditions. At the trials they had bad luck with their F.A.I. T/R entries as just about everything went wrong after practice times of 4:20. At the N.W.A. Open meeting they had better luck when A. Dell won 1/4 A T/R with the record time of 8:57 in the ten mile final. At the trials they topped speed, and only have to find another 20 m.p.h. before the Criterium of Aces in August. Jim Baguley managed to take open glider at the Woking F/F rally with an A/2.

This year is the first Feltham D.M.A.C. open rally. It is strictly C/L with S.M.A.E. combat and Class "B" Rat Racing, to be held at the Hayes C/L circuit, Charville Lane, Hayes on July 28th. Each event is 2s. 6d. pre-entry to A. G. Dell, 8 York Way, Hampton Road, West Hanworth, Middlesex. On March 31st they held their first club comp of the year with John Bourne winning a 20 min. six in a circle, Rat Race.

Richmond D.M.A.C. sent clubman a copy of their new transfer with their excellent newsletter, which looks very nice in white, black and red. Also spotted in the news-sheet was the following heading "Subscriptions for 1963 are due from the following"—followed by a list of 28 names. No we won't say who they are, but it does seem a good way of getting subscriptions in. Pity some clubs didn't do this with those "refused late" Nats entries.

Just because they organised the combat at the C/L team trials, Northwood M.A.C. say that it wasn't a fiddle that their members came first and second. Every kind of model from biplanes to flying saucers were entered in the clubs half hour "Scramble" in which Pete Freebrey emerged another 1st with Brian Jones a close 2nd. Following this chuck glider comp was flown with "Moggs" Morris gaining 1st place. Yet another club comp was for a one-off model, Speed and stunt contest held on the local common, resulting in a six point lead over Pete Tribe by "Stoo" Holland.

Contest successes are the news from Croydon D.M.A.C. Norman Elliot pipped J. O'Donnell in the open rubber fly-off at N.W. Area meeting. Dave "1A" Hipperson won at the Woking Gala with a T.D.049 original. Socially the clubs annual "do" took the form of an informal get-together, and they were pleased to see Ron Magill of New Zealand there.

From the MIDLAND AREA Cannock (Outlaws) M.A.C. we hear that their diehard combat enthusiasts, Messrs. Degg, Davies and Fereday attended the N.W. Area meeting with Degg reaching the semi-final, even though it cost two P.A.W. 19s. They are holding a series of Concours, Combat, Rat Race, Glider and Chuck Glider to decide the best all round modellers. Winners so far are Degg and Davies. They have fun in the club room by flying scaled down *Yellow Bird's* on a line attached to a girder in the centre of the club room. (Sort of arm powered R.T.P.).

Heanor M.A.C. are trying to attract local modellers to their club, and have two very good flying sites. One for C/L and one for F/F. Flying takes place around 12 noon on Sundays at both fields, and prospective members should phone W. Tansley (Langley Mill 2131).

The good news from Leicester M.A.S. is that they now have the use of an ex R.A.F. (U.S.A.F.) airfield at Bruntingthorpe. They also have a very strict set of rules for the use of the airfield. The C/O caught up with them, when he found a sweet wrapper and complained. The club also had a look round and found several such wrappers and a "Jelly Baby" of indeterminate sex.

A photographic competition was recently held in the Coventry D.M.A.C. The pictures (models of course) were taken in the school hall and the whole thing was a great success. Their outdoor season got off to a windy start, but eight members went to the Area events at R.A.F. High Ercall, where John Deeming wrecked a brand new F.A.I. power job. They hold weekly meetings alternating each month between Tuesdays and Thursdays. The day for June is Thursday at the Scout Hut, on the G.E.C. sports ground.

The EAST ANGLIAN AREA Slope Soaring rally will now be held on August 11th, not on August 25th, due to the clash of dates with the Croydon Gala.

Membership of North Norfolk Aeromodellers has steadily increased, despite the weather and wide area covered, some 14 multi and 6 single channel jobs should be flying this summer. They had cups given to them for glider, won by D. Lambert with a *Caprice*, and own design won by P. Pestell with a *Peewee* powered semi-scale Delta. Meetings are held on the third Friday of the month at the White Lion, Holt (a good re-fuelling centre). The flying is done on Kelling Heath, but soon they will be moving to R.A.F. Sculthorpe, thanks to some great help from the U.S.A.F.

BRISTOL 2nd ANNUAL R.C. RALLY at R.A.F. HULLAVINGTON, WILTS. Sunday JULY 14th 1963

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Anglia M.F.C. report that seven members attended the N.W. Area Gala. Scoring three max's with a *Caprice*, D. Roche won a cup and an angle poise lamp.

From SCOTLAND we hear that the 5s. entry fee to the Scottish Nationals includes membership to the Scottish Aeromodellers Association who are providing the prizes and organisation. The decentralised contests, held on April 7th suffered bad weather, but the power times were particularly good. The Allison Trophy for open power went to Petrie of Montrose with 8:45 followed by Douglas (G.M.A.C.) with 4:45. The Montgomery Cup went to Harris of Prestwick with 3:45 followed by Martin of Kirkcaldy with 1:42, who also took the Finlayson open rubber trophy with 4:33. There is also a nice article on F.A.I. T/R prop carving by Hugh Lorimer in the latest edition of *Scottish Aeromodelling* (Subscription 3s. per annum).

Angus D.A.L. will be holding their first Gala on August 25th. Free flight events will be held at Barry Links, near Dundee, while the control-line boys will be catered for at Arbroath Condor Aerodrome. For full list of events see contest calendar. Pre-entry is essential for C/L as the names must go to the C/O. Last date for entry August 7th. Further details from B. G. Wright, 81, Kings Gate, Aberdeen (F/F) and G. Bell, 10 Ballindean Road, Dundee (C/L).

A new clubroom is the news from Bucksburn A.T. after a long hard search for something suitable. They have also gained access to Dyce Aerodrome and start flying there in June. Glasgow Hornets held their annual combat comp at Braidbar on Easter Sunday but only had a small entry. They managed to top the winter T/R league with Ken Johnstone taking 1A, and John Agnew F.A.I.

Very rare news from WALES comes from the Cardiff M.A.C. who report they now have 30 members after a recruiting drive, most of whom were going to the Nats.

Pen Pals

For P. Turner, No. 3 R.D., Kaiwaha, Northland, New Zealand. And 18 year old enthusiast in F/F Sport, Scale, and C/L Stunt, who would like a pen pal in the U.S.A. with a view to swapping kits, accessories etc.

THE CLUBMAN.

Contest Calendar

- June 23 Wharfedale C/L Rally, Rufforth, York. 1/4 A, F.A.I., B T/R, Combat. Pre-entry to C. Secker, 33 Rookwood Road, Leeds 9.
- June 30 Irish C/L Nats. Baldonnell, Details, M. G. Sheehy, 19 Culmore Road, Palerstown, Co. Durham.
- South of Scotland Gala. R.A.F. Abbotsinch. Open G/R/P, 1/4 A, F.A.I., B T/R, Combat, R/C, Chuck, Glider. Pre-entry 2s. 6d. W. Douglas, 3 Dudley Drive, Glasgow W.2.
- Esher C/L Stunt event (Max 15 entries). P. Wolfenden, 127 Claygate Lane, Hinchley Wood, Esher, Surrey.
- July 7 Hayes F/F Gala. Chobham. Open, G/R/P and 1/4 A Power.
- July 14 Bristol R/C M.A.C. Rally. R.A.F. Hullavington. Multi Scale and Single F.A.I. Schedule. Pre-entry 5s. to W. Bellinger, 48 Stirlingale Road, Bath.
- July 21 Northern Heights Gala. R.A.F. Halton. Open G/R/P, F.A.I. Power, (Queen Elizabeth Cup), 1/4 A Power, Helicopter, R/C, Concours d'Elegance Combat.
- Clwyd Slope Soaring Contest. West Slopes of Moel-Ffamau, Nr. Mold. Open, A/2, Radio, Junior events. Pre-entry, 2s. Seniors, 1s. Juniors to C. R. Filtness, 26, Raymond St., Chester.
- July 28 Lincoln & Wigsley Club Rally. Wigsley, Nr. Newark. Open, Rubber, Power, Glider, Open, multi-channel R/C. Pre-entry 2s. 6d. to P. Wyatt, 1 Wharfedale Drive, Fosse Est., Lincoln. Field and re-entry 3s. 6d.
- Feltham C/L Rally. Hayes C/L circuit, Charville Lane, Hayes. S.M.A.E. Combat and Class 'B' Rat-Racing. Pre-entry 2s. 6d. to A. G. Dell, 8 York Way, West Hanworth, Middlesex. (Max 64 in. each event).

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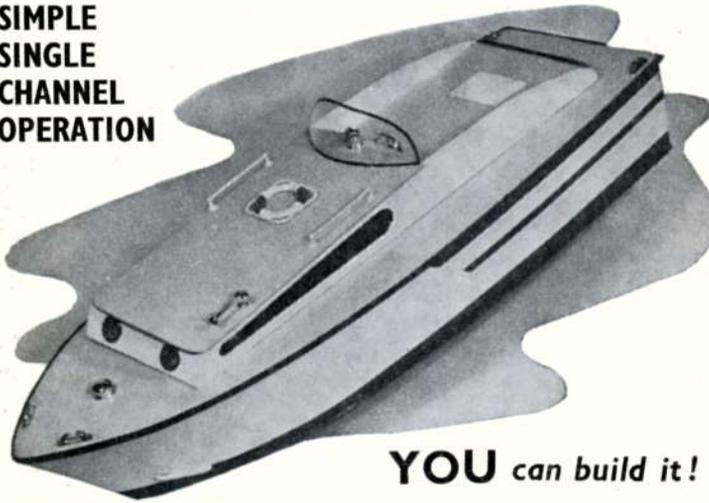
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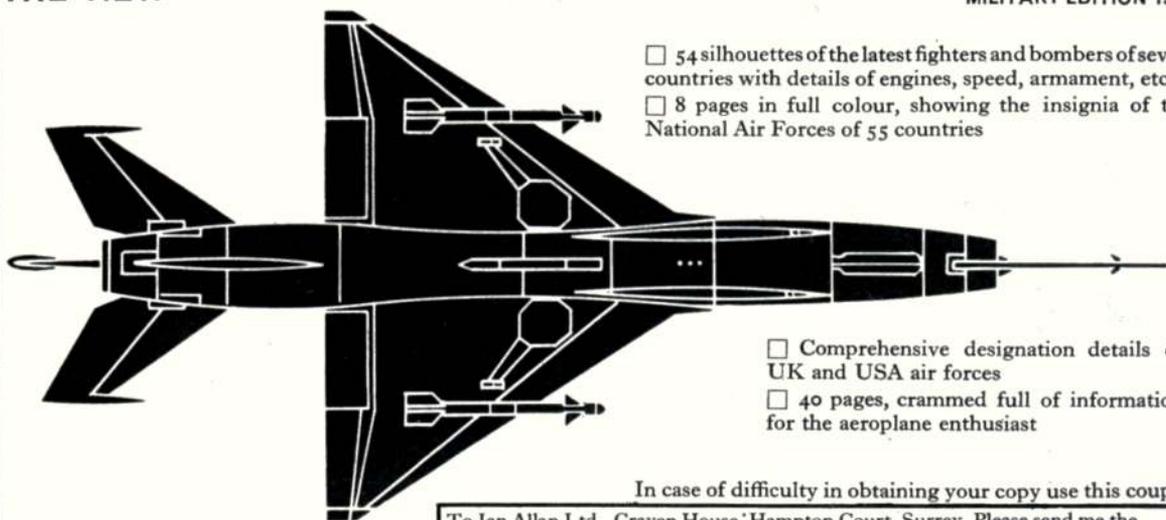
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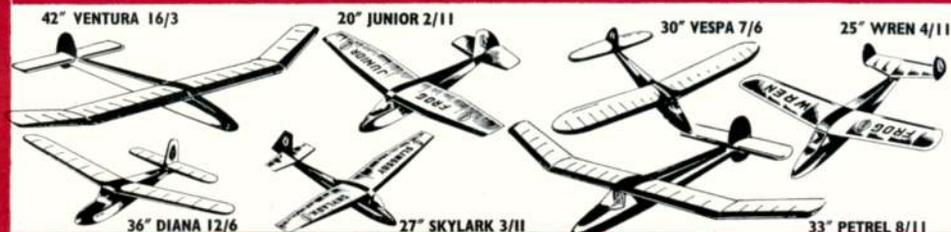
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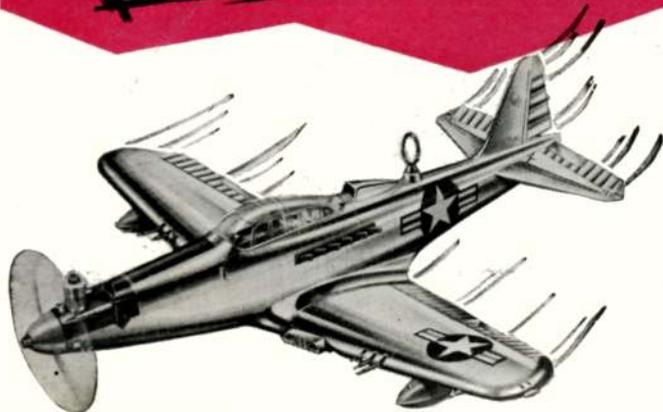
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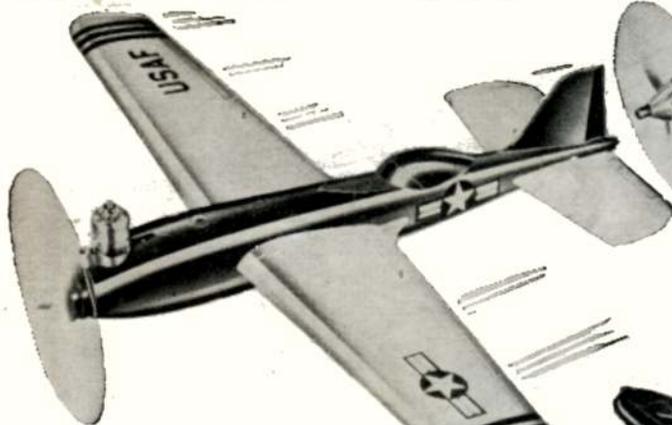
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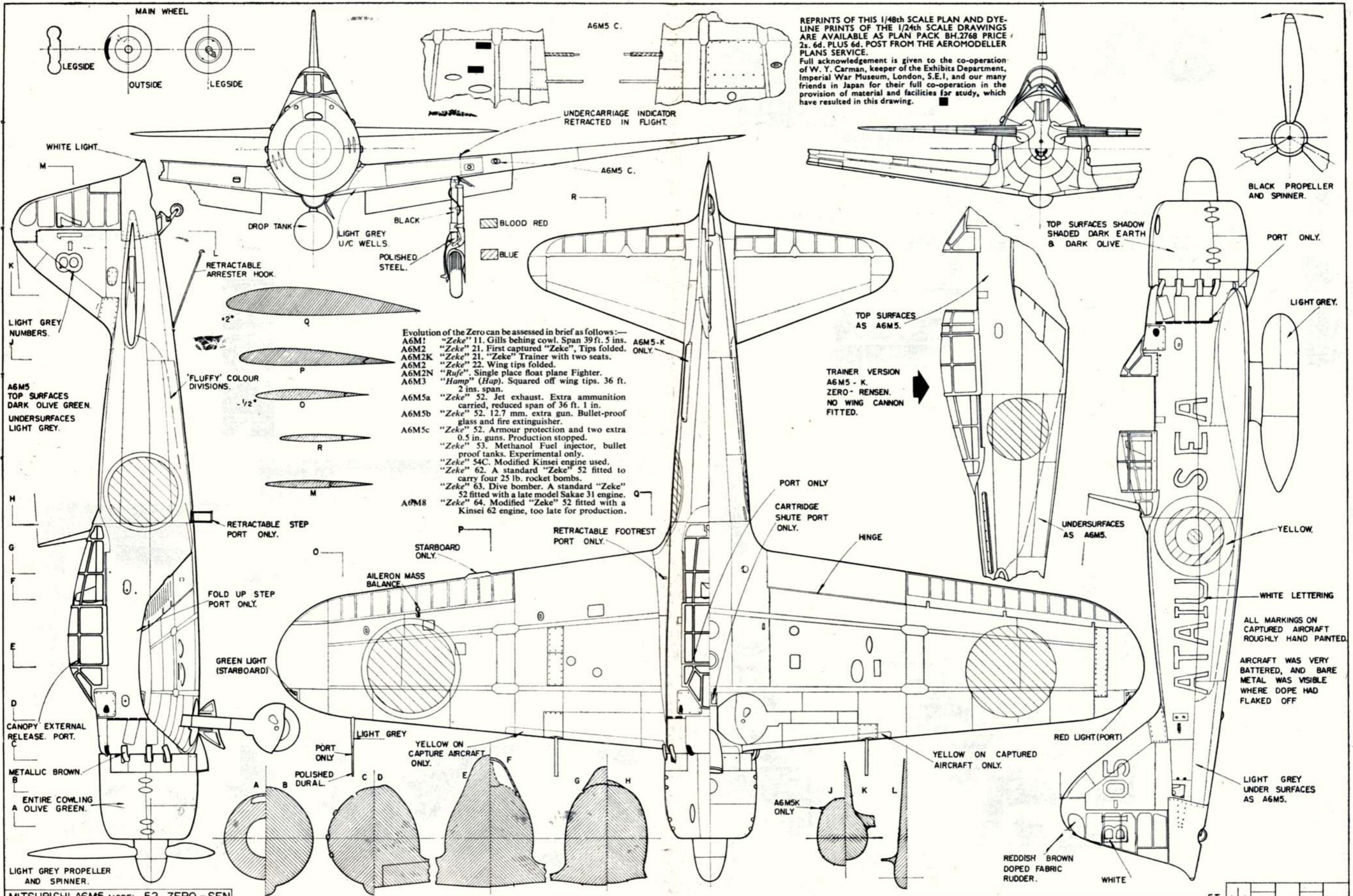
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Evolution of the Zero can be assessed in brief as follows:-
 A6M1 "Zeke" 11. Gills behind cowl. Span 39 ft. 5 ins.
 A6M2 "Zeke" 21. First captured "Zeke", Tips folded.
 A6M2K "Zeke" 21. "Zeke" Trainer with two seats.
 A6M2 "Zeke" 22. Wing tips folded.
 A6M2N "Rufe". Single place float plane Fighter.
 A6M3 "Hamp" (Hap). Squared off wing tips. 36 ft. 2 ins. span.
 A6M5a "Zeke" 52. Jet exhaust. Extra ammunition carried, reduced span of 36 ft. 1 in.
 A6M5b "Zeke" 52. 12.7 mm. extra gun. Bullet-proof glass and fire extinguisher.
 A6M5c "Zeke" 52. Armour protection and two extra 0.5 in. guns. Production stopped.
 "Zeke" 53. Methanol Fuel injector, bullet proof tanks. Experimental only.
 "Zeke" 54C. Modified Kinsei engine used.
 "Zeke" 62. A standard "Zeke" 52 fitted to carry four 25 lb. rocket bombs.
 "Zeke" 63. Dive bomber. A standard "Zeke" 52 fitted with a late model Sakae 31 engine.
 A6M8 "Zeke" 64. Modified "Zeke" 52 fitted with a Kinsei 62 engine, too late for production.

A6M5 TOP SURFACES DARK OLIVE GREEN. UNDERSURFACES LIGHT GREY.

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