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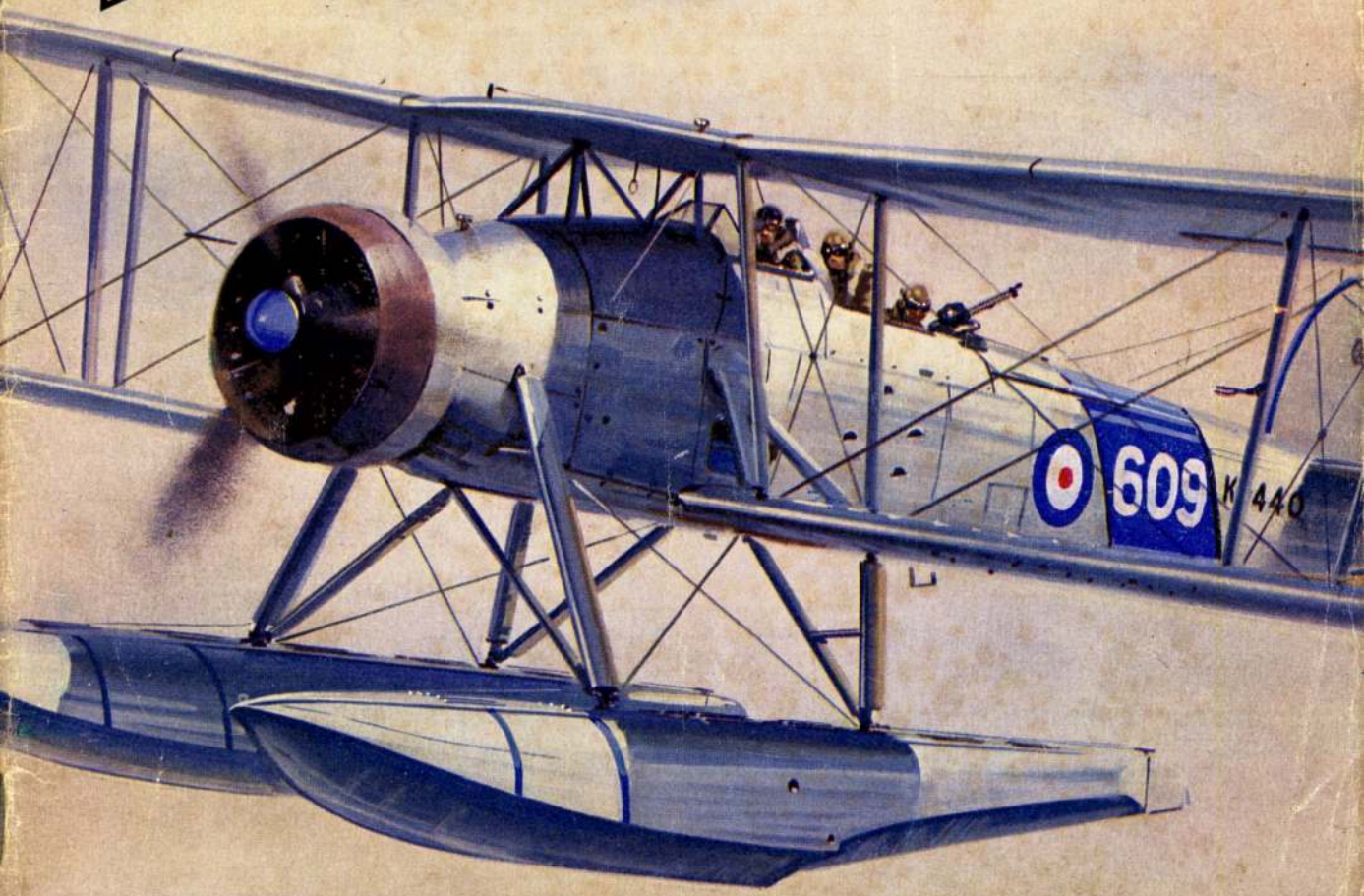

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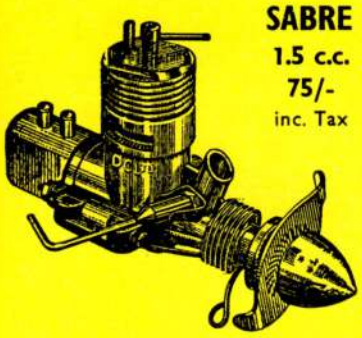

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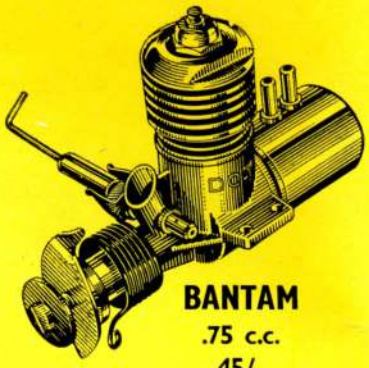

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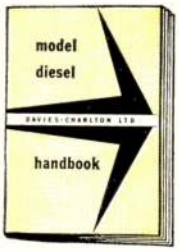

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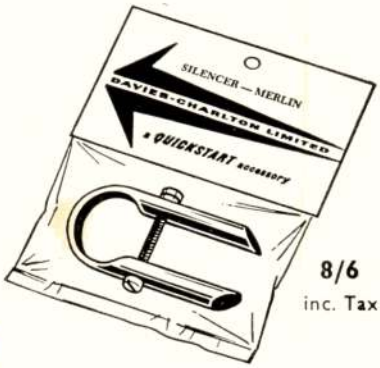

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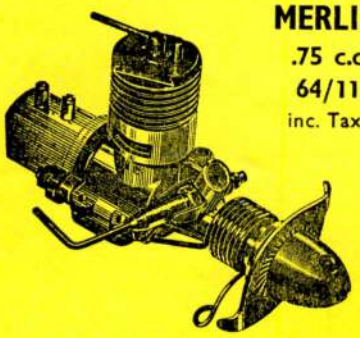

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Aero Modeller

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February 1966 VOLUME XXX1 No 361

CONTENTS

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Made your New Year resolution? We wonder what it could have been—To keep balsa dust out of the best carpet—To avoid upsetting the neighbours with a noisy engine—To do better in competitions—or to take a novice modeller under your wing and guide him over those early pitfalls which so often discourage enthusiasm.

If only a tenth of the experienced aeromodellers took care to aid the beginners we'd never have a junior problem. It's not too late to start now; why not give that lad with the new model a hand and lend him the benefit of your advice?

Australia, Sweden, Switzerland, Belgium, The Netherlands, Germany and this country have all adopted the Silencer rule in one form or another. In other Nations modellers have adopted the engine muffler on a voluntary basis, notably Japan and the U.S.A. The time approaches when the silencer must be considered as an International obligation to avoid such situations as now arise. British modellers in the S.M.A.E. are required to fly with silencers in practice for a World Championship where they are not necessary. Despite promised development in terms of engine efficiency, the disadvantages are obvious. Who is out of step? Those who adopt the silencer or those who prefer noise?

cover

One can almost hear the wind whistling through the multiple wires of this floatplane Fairey Swordfish as it clatters along at 100 knots with Pegasus straining. The faithful "Stringbag" or "Blackfish" is portrayed by artist Laurie Bagley to introduce George Cox's feature on pages 87-92 of this issue.

coming next month

Another packed issue with **TWO** Full-size plans on pull-out sheets. **"Mini-Bunt"** is a ½A combat design for 1.5 cc. and **"Goldwinga"** a 20 inch span simple to build rubber driven sportster with pusher prop arrangement by the inimitable Ray Malmstrom. Aeromodeller Plans Service supply a magnificent scale addition in Fujio Arigaya's **"Cessna 172 Skyhawk"**. This R/C design also free-flights, has promise for full controls including flaps and will be a Colour Cover feature. More from our columnists, Engine News. Gadget Review. The Books we're missing out this month and lots more besides out in March edition, on sale February 18th.

HENRY HINODE

HENRY HINODE SAYS —

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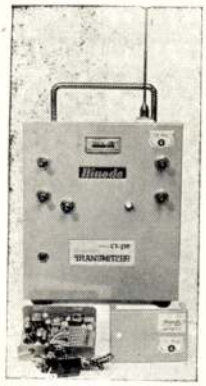

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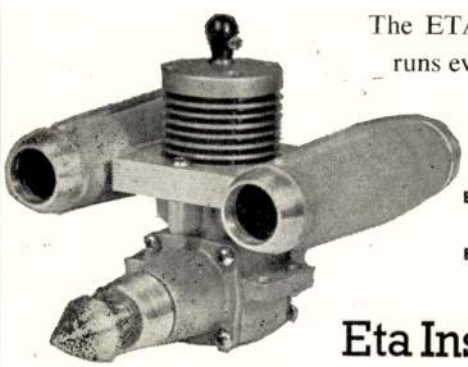

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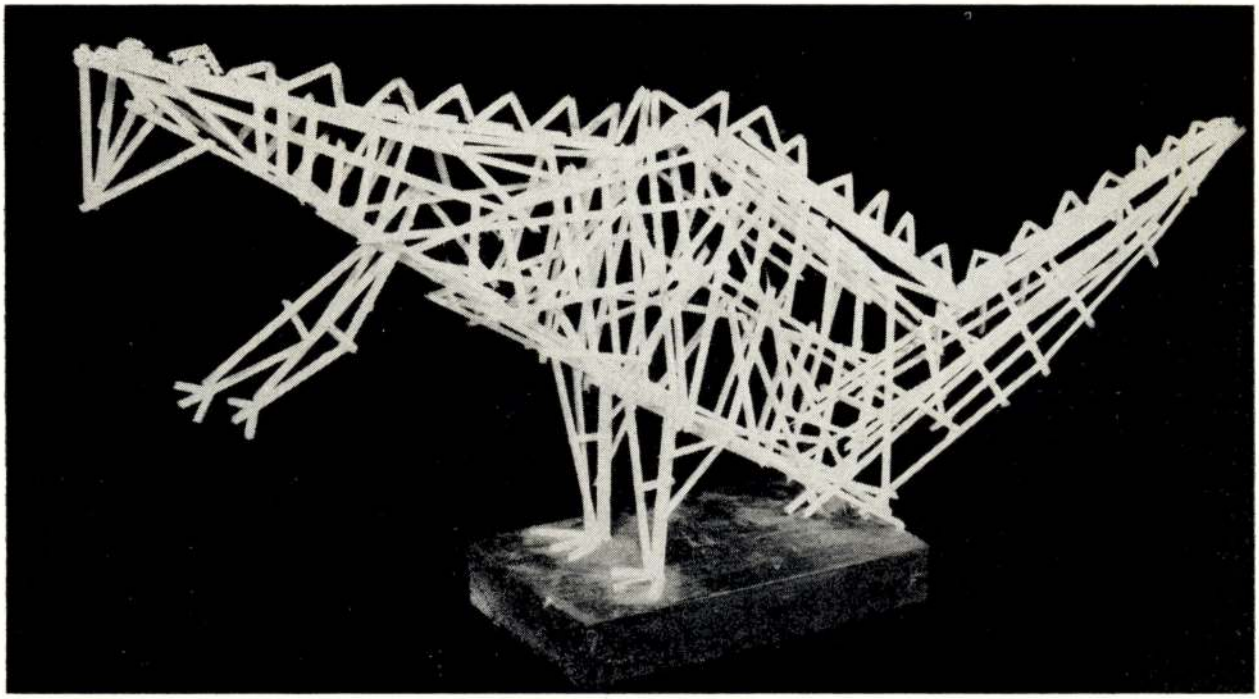
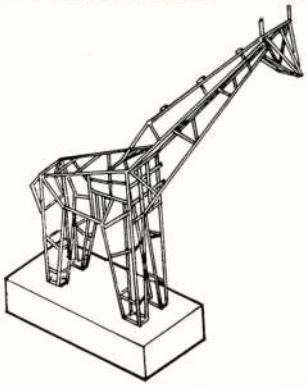
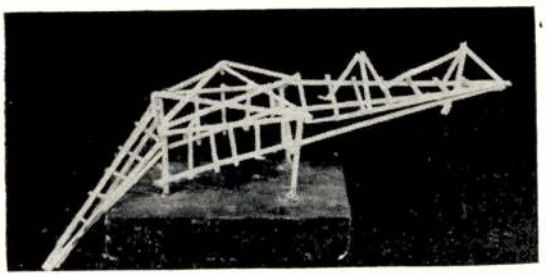


"DOODLING" in BALSAWOOD STRIP





Here's a novel idea thought up by schoolmaster-modeller David Slater—the making of 'space frame' figures in $\frac{1}{16}$ in. square balsa strip. In fact, we think it could properly be called "doodling" in balsa strip, and the imaginative possibilities are endless. The main thing is to start with a firm base of block balsa (coloured black for preference) and then go on to build up animal, bird, fish, human figure, mathematical or abstract shapes in any form which lends itself to angular adaption.

There's even a short-cut method to cutting the $\frac{1}{16}$ in. sq. strips to the required length—use scissors instead of a modelling knife! However, we found it best to use a razor blade, and also employ crack-bends wherever applicable. All you need is some lengths of $\frac{1}{16}$ in. square balsa, a tube of cement, some block balsa for the base—and plenty of imagination! You can use up every scrap of strip on the model for there is virtually no waste. And, like all Balsa models, of course, it will be best made in Solarbo!

Heard at the Hangar Doors

Off to a flying start, the test "Mini-Concord" launched by Mick Charles on frosty Boxing Day.

OUR LOST 'CORD is a rather sad story but as it serves to show that we're quite ordinary fellow modellers, the tale deserves the telling. Christmas spread itself over a nice long weekend this year and Boxing Day dawned with gin clear skies and a calm crispness that simply cried out loud as an ideal day for testing the New Veron **"Mini-Concord".** Mick Charles had made a grand job as ever on the kit and radio installation. We set forth for the local field and not even below zero hoar frost which crackled under foot across the white grass could daunt our anxiety to get into the air. Brrrh it **was** cold! That silenced AM 15 diesel warmed us up as we flicked its stiff form in turn. Once loosened, we had power enough, and away went the little red and white mini-multi for its first-ever flight. It was a beauty. Dives, loops, turns with 4 channels made it a charmer with a 15 minute engine run on the large fuel bottle Mick had fitted.

Thus encouraged, time for one more before lunch. This time with a little packing to reduce incidence and away **"Mini-Concord"** went. It repeated the pleasures of that first flight then those servos seemed a little sluggish. Time to come down—but no rudder, no elevator. Surrounded by experts, several hands tried the transmitter, but no joy. Our little bird had gone astray. That **"Mini-Concord"** is just about the most stable, steady climbing free flying radio control design you could ever wish to have.

Ever joined a Fox (red, four leg and bush tail variety) in a model search?—we have. So did we flush pigeon galore, stared cows static, staggered through thick underbrush stiff with frost, searched field after field,—even Elstree airfield until at last the search had to be called off. Boxing Day '65 is stamped upon our memory.

Why should it happen? Low batteries of course. They'd had a good run the day before in Mick's "H-Ray" and the moral of our tale of woe is that cold weather demands a full re-charge of DEAC accumulator batteries.

SIMILAR FLYAWAY affected Jack Wright of Esher MFC on December 13th. His Veron "Robot" which is crammed with 8 channel gear in its 45 in. span and has a Merco .29, decided to ignore the transmitter at Fairoaks airfield near Woking. Slight "up" trim set the Robot off and Jack felt helpless as any r/c flier will appreciate. Next day, John England phoned from the BAC airfield at Wisley where all those VC 10s and similar jets are tested. It seems that the model had made a perfect landing on the airfield. Guess what?—the DEACs were down to 2.5v. Welcome to the League of flat-batts Jack!

Check-list at bed time now reads:—Cat out, alarm set, soldering iron off, . . . charger ON.

COUPE D'HIVER joins the S.M.A.E. contest programme for the first time this season on March 27th and thus comes just at the end of our Winter to justify the name of the class. Meanwhile the Aeromodeller Postal event is very well supported with over 130 entry forms allocated for the alternate dates of February 20th and 27th. On February 27th a party of about 18 Britishers including our National Champ John O'Donnell, and Lady Champ Shirley Horton who is going with the Crawley contingent will be flying in the French final near Paris. This is the largest party yet for the Anglo-French Challenge and promises to be the biggest ever Coupe d'Hiver contest. St. Albans and Crawley members are also to proxy fly some of the dozen entries sent over by modellers from all parts of the U.S.A., a team is expected from Germany and *naturellement*, the French lads will be out in force to defend their honour. Last minute applications to join the party would be considered, and the stay-at-home postal competition forms will be available from the editorial offices until Feb. 4th. Another postal event is to be organised by the Croydon & DMAC for Coupe d'Hiver *and* A/1 glider classes as a *team event*. Martin Dilly tells us it's to be called the "Spring is here" International postal and is for teams of three who have to make flights during April. Three flights in each class with 3 minutes in glider and 2 mins. for CH, each with an unlimited fly-off are to be recorded and the times sent to Martin at 20 Links Road, West Wickham, Kent by May 20th. Plenty of time for those "down-under" to enter it as an autumn event. Send an SAE or addressed envelope with reply coupon if you want the full results.

STALWART OF CROYDON for so many years was Harry Hills and it is our very sad duty to tell you that Harry died early in December. His stopwatch and shooting stick were constant companions and we could never attempt to guess how many flights he must have timed. His eyesight was renowned, making Harry much in demand at the important trials and his knowledge of the SMAE rulebook gave him considerable advantage in any argument. A Fellow of the SMAE, his

support for the Croydon Club earned him a place among aeromodellings great workers.

WHAT HAPPENED to those aircraft replicas made for the "Mag Men" film? Practically all but an Avro Triplane and an Antoinette are now sold to places as far apart as the U.S.A., Australia and Germany. Happily, the generosity of the Bristol Aeroplane Co. has retained the Bristol Boxkites. One goes to the Bristol Museum, and the other to the Shuttleworth Collection at Warden airfield. Another recent addition to this air museum was the presentation of the surviving De Havilland 88 Comet racer G-ACSS for permanent display as a non-flying exhibit.

WORLD CHAMPIONSHIP competitor Robbie Rowe from South Africa had the misfortune to mislay his cine camera somewhere in Finland at the last free-flight Champs. He reported the loss and some months later received a large parcel from Helsinki containing one Cine camera, as well as a card expressing the regards of the lost property office. Integrity of this nature does much to establish goodwill among Nations.

AVENGERS FANS who were watching TV on December 17th had a surprise in store when they found aeromodelling applied to a distinctly shady purpose and an even bigger surprise when a character stated he would easily join the gang of crooks by brandishing a copy of . . . —you'll never guess,—the AEROMODELLER! Peak hour viewing of one of the top TV features brought us some publicity we'd never expected. But there's more to come. Our old premises at Watford have been used by the same production team for filming more scenes for the "Avengers" and though the notice board is no longer over the entrance, past visitors may be able to recognise the building. When we looked in after the film company had departed, the only property remaining to give evidence of their visit was a hangman's noose suspended from a ceiling!

BATH FESTIVAL is unusual location for a modelling contest but thanks to the co-operation of Bristol RCMAC, the Festival organisers are staking prize money at a high level for Goodyear Trophy style races to be held on 19th June. Rules established in the U.S.A. by the National Miniature Pylon Racing Association of America will apply and this means a top limit of .40 cu. ins. engines and minimum of 450 sq. ins. wing area. A prelim. event takes place at RAF Hullavington on April 11th. Starting money is announced in an advt on page 118 of this issue. **What,** be paid to fly! Never thought we'd live to see that day!

CONTROL - LINE World Championships arrangements for the meeting at R.A.F. Swinderby at the end of August are proceeding happily with the closest possible co-operation between the S.M.A.E. and the R.A.F.M.A.A.

Our informant on the U.S.A. team trials for this meeting was not quite correct in the announcement we published in November. Third man in the stunt team is Lew McFarland and not Bob Gialdini who ommited a manoeuvre on his last flight to lose his place and came 4th with George Aldrich in 5th. Top men Steve Wooley (who had a night hawk destroy his new model in flight) and Jim Silhavy each flew models which had served them well in past Championships at Budapest and Kiev. In Team race, a strict effort was made to simulate typical Champs conditions. No practicing was allowed during the finals. Teams are Jones-Tautz (4:32, 4:33, 4:34), Stockton-Jehlik (4:37, 4:38, 4:40) and Mobley-LeCrone (4:32, 4:39, 4:47). Speed team is as we announced, Bob Carpenter (Average 143 m.p.h.) Bill Wisniewski (142 m.p.h.) and Roger Theobald (140 m.p.h.). All except Tautz and Theobald have been on previous U.S.A. teams, so making this the strongest and most experienced team yet selected.

FLYING DUTCHMAN is W. Holle, of Enschede, The Netherlands. Using a Rossi .60 and "Rev-up" 9 x 12 in. prop., he established a new Dutch speed record of 178 m.p.h. on October 16th. This is the fastest we've heard of in Western Europe. Model was entirely conventional with helmet cowling, flown on 0.022 in. single line, and the fuel was a 50/50 mixture of Fox "Blast" and Cox Racing fuel.

OLD EQUIPMENT, no longer wanted, can be donated to a good cause if sent to L. Orriss, of 129 Merrill Road, Thurnscoe, Rotherham, Yorkshire. Mr. Orriss has started a club for local school lads and is coaching them in aeromodelling. He has given over his own gear, including R/C equipment, and feels that support for the youngsters is worthwhile. Any old engines? Kits? Wheels, etc., etc.?

TEAM SELECTION. The S.M.A.E. has recinded its exception to the Silencer requirement which applied for 1964/5 Team Trials and this means that in 1966 all models entered in Trials must use silencers, even though they are not required at an F.A.I. Championship.

By introducing the silencer ruling the S.M.A.E. took a bold step towards self-preservation, but has the silencing principle gone too far when it applies to International team selection trials? Here the entrant ought to be in a full state of preparedness for the International event. Yet this may not now be the case for if the entrant wants to fly without silencers at the International event in some classes he will have to build two new models to allow for the C of G changes and constructional differences obliged by fitting the silencer.

There is also the nagging doubt that insistance on the Silencer will produce the best teams. This largely affects Free-Flight Power (on which John O'Donnell comments on P. 107) Team Race and Speed. Extra weight and bulk of a silencer on a Team Racer affects accelleration and speed which are critical factors that experience has shown to more than offset the fuel economy gain.

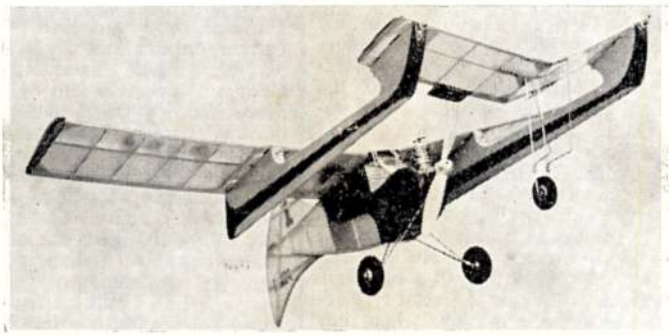
Suppose for example that teams A, B, and C qualify under the Silenced requirement at the trials. Are they then permitted to change models for the Championships? Previous S.M.A.E. directives demanded that Team models should not be flown within one month of the actual Championships and the entrant had to guarantee to supply a model and reserve identical to that he used to qualify. It is not too much a stretch of the imagination to foresee a situation where teams D, E, and F might be inferior with their silenced F.A.I. models but better than the selected A, B, and C when flying without silencers.

Similar situations apply to Speed and Free Flight. Surely the object is to select the best possible team for the conditions and regulations pertaining to the World Championships. It's all very well to maintain a noble and successful domestic rule, but when it affects National representation it is time to reconsider the valid exclusions.

THATAWAY

Geof Pegg's 'special' is an out-of-the-rut 36 inch sportster for 1-1·5cc engines

Whichaway? ————thataway! the tail-first model always gets you guessing—try this one for real fun.



NEARLY everyone has seen a conventional aircraft with booms, so why not a canard with booms? This was the basic idea which lead up to the designing of Thataway!

After many months of test flying with a 1.5 E.D. "Hornet" up front, the model proved to be a fast, reliable and stable flier with a glide that would do credit to any conventional freeflight aircraft. Although this design is unorthodox, the model itself can be easily constructed, thus allowing for easy repairs.

The fuselage is very straight-forward to build. The sides are made entirely of $\frac{3}{16}$ in. square strip. One side of the fuselage is constructed on the plan, and the other side built on top of it. This way the fuselage sides will be identical. After removal from the plan, the sides can be sanded down and parted, using a razor blade. The formers F1, F2 and F3 can now be positioned between the sides, making sure that the sides are perpendicular to the formers before cementing.

When the sides are dry cement the rear ends sides together. Sand the rear end of the fuselage down to $\frac{3}{16}$ in. Add all the top and bottom spacers, F1A, the front portion of the wing seating, of $\frac{3}{16}$ in. sheet, and finally let in $\frac{1}{16}$ in. and $\frac{1}{8}$ in. sheet as indicated on the plan. Locate the Bearers into F1 and F2 and cement. Next drill the engine bolt holes oversize to allow adjustment to the thrust line. Screw the tinplate nut holders to the underside of the bearers. Shape the side panels from $\frac{1}{4}$ in. sheet and cement into place. When dry cover across bottom bearers with $\frac{1}{16}$ in. sheet. When this has been done let in $\frac{1}{4}$ in. sheet between the side panels and $\frac{1}{16}$ in. sheet ply at the bottom of the fuselage for the U/C rest. Cement $\frac{1}{8}$ in. dowels into $\frac{1}{8}$ in. side sheets for U/C retaining bands, also locate $\frac{1}{8}$ in. dowels for the wing retaining bands. Finally cement windscreen into position.

Build the port boom by pinning the inside face to the plan, adding all the formers to it, and then cementing the outside to the formers. Remove boom from the board and sandpaper. Cement block balsa to the front and rear boom, and when dry carve and sand to the required shape. Apart from the leading and mainplane seating, cover the top with $\frac{1}{32}$ in. sheet. When dry, cement $\frac{1}{8}$ in. dowels into the boom for the retaining bands of the wings. Let $\frac{1}{16}$ in. sheet into the top of the mainplane seating, but leave the top of the leading plane seating open. This is to enable weight to be added to the boom bay. The starboard boom is built in a similar way, the only difference being that the outer face is pinned to the plan.

Commence the wing by pinning down the main spar and the lower part of the trailing edge. Add all the ribs, then cement the leading edge, the upper trailing edge and the gussets into place. Remove wing from the plan and chamfer the leading edge, main spar and trailing edge to the dihedral angle. Finally cement on the wing tips.

The centre section is built in a similar manner. Pin down the main spar and lower trailing edge, cement the $\frac{1}{16}$ in. ply brace to the main spar, position the two $\frac{1}{8}$ in. ribs (W1) and cement. When dry add the leading edge, upper trailing edge. Finish by covering the ribs with $\frac{1}{16}$ in. sheet (top only). After packing each wing tip up to $2\frac{3}{8}$ in., cement the wings to the C/S. Cover the top of the wings with $\frac{1}{16}$ in. sheet from the wing roots to F3B. Afterwards sandpaper the complete wing.

Start building the noseplane by pinning down the notched trailing edge. The two centre ribs of the nose-

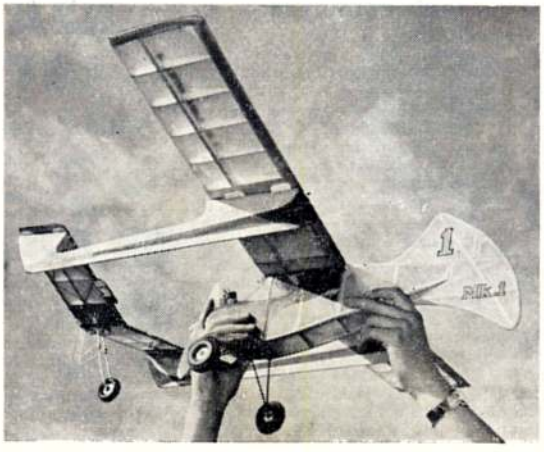
plane are set at the dihedral angle using a template. Next, cement in the rest of the ribs. Remove each half from the plan and cut out slots in the centre ribs to receive the three $\frac{1}{16}$ in. ply braces. When the ply braces have been cemented in let in $\frac{1}{16}$ in. sheet into the top and bottom end panels, fit and cement the tips and gussets. Finally, bind and cement brass tubing underneath the plane—18 S.W.G. tubing to the leading edge and 14 S.W.G. tubing to the mainspar. The use of these tubes is to retain the Mono-wheel undercarriage. It is imperative that **hard** wood be used for the complete structure of the leading plane.

The fin is best made by first constructing the laminated perimeter on the plan, and then adding $\frac{1}{16}$ in. square strips. Remove from the plan and round the laminated perimeter. Position the fin on the fuselage and cement.

The complete model should now be covered with lightweight tissue and given two or three coats of clear dope. To improve the finish a coat of sanding sealer may be used on wood. Complete the construction by cutting out the $\frac{1}{16}$ in. sheet boom and wing keepers. These must be positioned extremely accurately on the under surfaces of the leading and main plane.

The trimming of the model is the same as any free flight model. The C.G. position is very important, and because of this, the nose plane seating is left open to enable weight to be added or taken out. In the original model a weight of one ounce in each boom was necessary.

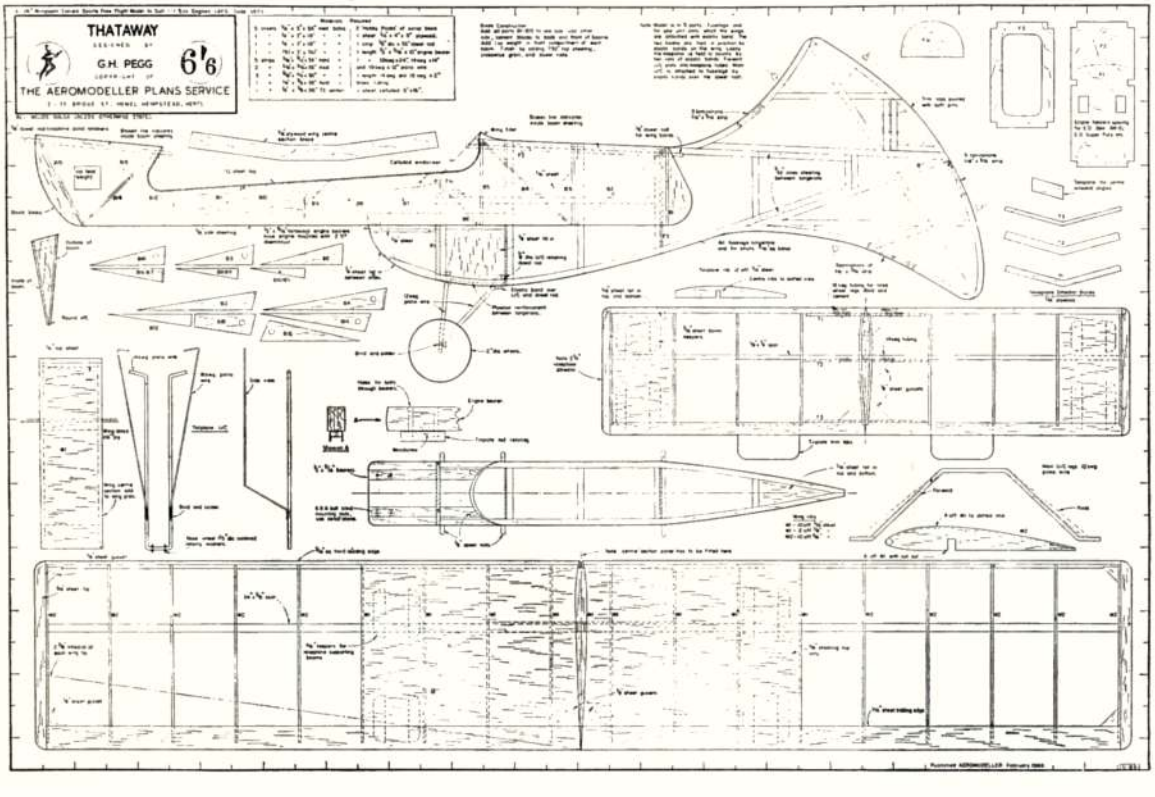
When the model is trimmed the front booms may be sealed up with $\frac{1}{16}$ in. sheet.



The author holds aloft his "Thataway" to reveal revised forward landing leg details and main undercarriage details. Note boom seating keys on wing and noseplane.

The model should on no account turn to the right under power as it will tend to spin in on the glide. Adjust the thrust line so that it flies **left** under power and **right** on the glide.

FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN U/897, PRICE 6/6d. PLUS 6d. POST FROM AEROMODELLER PLANS SERVICE



READERS' LETTERS

That P.47 Thunderbolt

Dear Sir, (to G. R. Duval)

I was interested to see, in the December 1965 issue of Aeromodeller your excellent drawing of the Thunderbolt FB.II HD185, FL-D, with camouflage noted as dark green/dark sea grey.

Thunderbolt FB.II HD298, RS-U which you illustrate with your article is wrongly captioned on the official photo: both SEAC Thunderbolts you show are of 30 Sqdn, the other being HD265, RS-G. I understand from an ex-pilot of 30 sqdn. Mr. T. E. Fulford that these photographs were probably taken, not at Chittagong but probably at Jamcha (or Jumchar). The camouflage of 30 sqdn.Thunderbolts was,like that of 60,134/131 and 258 Sqdns., dark green/dark earth. I have no reason, so far, to believe that the other Thunderbolt squadrons, 5, 34, 42, 79, 123/81, 113 135/615, 146 and 261 were camouflaged in other than this standard SEAC fighter Fighter-bomber colouring. I have a copy of Aeromodeller for December 1960 showing your Spitfire of 152 Sqdn. in this colouring and I have confirmation from Frank Wootton, then an Official War Artist, of similar colouring for Spitfires of 607 Sqdn.

I should be very grateful if you would tell me whether you have first-hand information about the colouring of HD298 the position of the code letters and the pattern of the camouflage above the wings, as these are different from those usually employed. So far 30 Sqdn. is the only one (of which I have seen photographs) with the code higher on the fuselage than the roundels although I have seen a drawing of a 42 Sqdn. FBII KJ316 AW-Y and photographs of FL-J and of HB975, WK-L (possibly 146 Sqdn.) with the code so placed. 60, 134/131 and 258 Sqdns. had their codes and aircraft letter in line with the roundels, with codes (60-MU, 131-NX, 134-GQ, 258-ZT) aft of the roundel on the starboard side while 30 had theirs, RS-, forward on both sides.

I imagine that HD185 was, before being taken on the strength of 81 sqdn. with 135, which was renumbered 81 on 20th June 1945. If so, it was then almost certainly coloured dark green/dark earth as were others in the same series. Thunderbolt F.Is HD108 and HD114 and Thunderbolt FB. 11s HD265, and HD298 (all 30 sqdn.) and HD196 of 134 Sqdn.

It is claimed that the green/earth camouflage was the exception rather than the rule but Spitfire FR.XIVs of 28 Sqdn. were newly painted in these colours in 1945-46 when stationed in Malaya, as were their Hurricanes and those of 30, 60, 134 and 258 Sqdns. earlier.

A number of late—delivery Thunderbolt FB. 11s retained their USAAF olive green decking and natural aluminium finish with the addition of black (or possibly dark blue) wing and tail bands; of these a small number, including KL339, GQ-B, of 134 (later 131) Sqdn. had the dorsal fin extension.

trust you will realise that I have no desire to find fault but to establish matters of fact; as you must have discovered, records of squadrons serving in the Far East during the War are far from complete as are details of markings.

Geoffrey J. Thomas

Worplesdon.

Author's reply

The wrong caption you mention is accepted, this is not unusual!

The correct camouflage for S.E.A.C. aircraft has long been argued over, but I can assure readers that as regards the Spitfire Mks V, VII, and VIII of that command, the colours were green and an earth colour. This latter shade has led to a lot of trouble, for it was not 'Fast' and a combination of sun, dust and monsoon rain caused it to bleach to an odd shade of dirty grey with a touch of purple. Now let me lead on the Thunderbolts of S.E.A.C. The first one I saw was at Kwetnge, Burma, on 20/4/45, a Mk. 1, camouflaged in green and brown. However, in July of that year, at Toungoo, Burma (Battle of the Sittang Bend) I saw several Mk.11s in green and a similar grey to my Spitfire. The question is—was this originally brown? When I began research for the drawing of HD185, FL-D, I did not trust memory, and consulted all available literature on the subject of colour. Still not satisfied, I did a careful photograph shade comparison, and reached the conclusion that HD185 was green/grey. In this, it is quite possible that I was wrong, and would be the first to admit it! The position of the code letters was taken directly from a landing shot of FL-D (I.W.M.), and the wing camouflage pattern arrived at from several photos and illustrations. Incidentally, the Ace of Spades motif was 'pinched' from a Luftwaffe Bf 109 unit in the Western Desert. About the code letters,—do bear in mind that there was quite a lot of amateur art here, the sizes and positions varied even within Squadrons. Is it not possible that this machine originally belonged to a Squadron which had the code letters in this configuration, such as Nos. 30 or 42, and the FL-D was put on over the original coding at the Maintenance Unit?

G. R. Duval.

Dear Sir,

I was most interested in your article describing the 'Thunderbolt' built by Republic Aircraft during the last war.

One of 'Republic's' test pilots was my friend Filmer F. Gilmer and he described to me the terrifying moments he had had trying to bale out from a P.47. He had he said just pulled out from a dive in which he had approached the speed of sound!—this wanted some believing in 1943, but he was I know reckoned unofficially to be the fastest man on earth at that time.

I have a picture of him and you can just make out the little golden Caterpillar broach which the chute company presented to him and which he wore on his lapel.

My son who reads your magazines prompted me to read this article as he remembered a similar flight of aircraft pictured in my old album.

By the way, hundreds of R.A.F. pilots trained on the **STEARMAN** aircraft in Canada—I've never heard it mentioned.

R. Howard.

London N.W.3.

The Stearman Pt.13 series were detailed in our "Famous Biplanes" series, reprint No. 2753 price 2/6d plus 6d post.

From a Reader ????

Dear Sir,

When I visit a shop to purchase a copy of "Aeromodeller" I am always careful to look through the magazine first, to see if it is interesting enough to buy. As I am a keen solid scale modeller, and like scale flying models, I look forward to when there is included in your magazine, a good 1/72nd or 1/48th drawing, or a giveaway scale plan. I am afraid that when I look through a lot of your magazines, I see only a lot of photos of club events and news which is of no interest to me. I fully realise that Aeromodeller has to cater for clubs, but don't you think you could put in a little more for the ordinary reader. When your magazine does a giveaway plan it's usually some outlandish type of plane, usually a profile type, which does not appeal to a scale modeller. How about a giveaway plan of a Blenheim bomber, or Defiant, or something of that nature, for a change, it would certainly be refreshing after all the profile and endurance jobs given away, even if such models of, say, a Mosquito were only rubber powered.

Also, I don't believe all of the present modellers are too dim or can't be bothered, or just radio control happy. You just try giving away some of the older designs, including pre-war ones, with every other monthly copy and you will soon see if interest is there or not, when your sales rate goes up.

Plymouth. *W. Holden.*

That glider

Dear Sir,

My attention has been drawn to your correspondence in the January "Aeromodeller" concerning the Motor Spatz G-ASPY.

Mr. G. Malham was incorrect in his assumption that the aircraft concerned "was from nearby Sutton Bank" and I would stress that it is in no way connected with our activities. Perhaps you would be kind enough to print a statement to this effect in the next issue lest an adverse impression be formed of our gliding club. I might point out that some of our members are also quite accomplished aeromodellers, and I myself graduated from aeromodelling several years ago.

M. J. C. Wilson.
(Chairman Flying Committee)

Yorkshire Gliding Club,
Sutton Bank, Thirsk.

Modellers move shop

Dear Sir,

As you know we (Wolverhampton Models and Hobbies) have moved to larger premises, and we had only one day to move all our stock etc.,

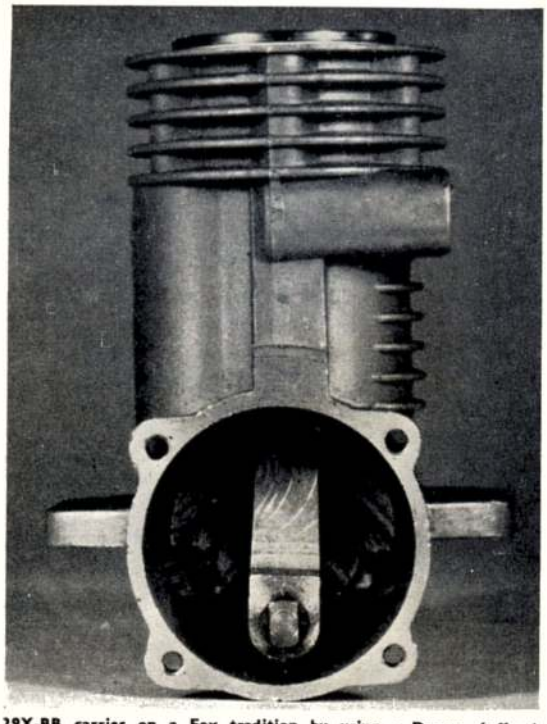
The Midland Reps of Airfix, A. A. Hales and Playcraft and the lads of Belston, Outlaws and Walsall M.A.C. worked like demons for 24 hours, and without any payment,—they simply would not accept any.

Their answer to me was "This is **our** Model Shop and we are moving it", surely a certain answer that there are no grander set of people than 'Aeromodellers'.

Out of the 132 new shops on this new trading centre there is only **one** that the "customers" will be interested in to move.

S. W. Daniel.

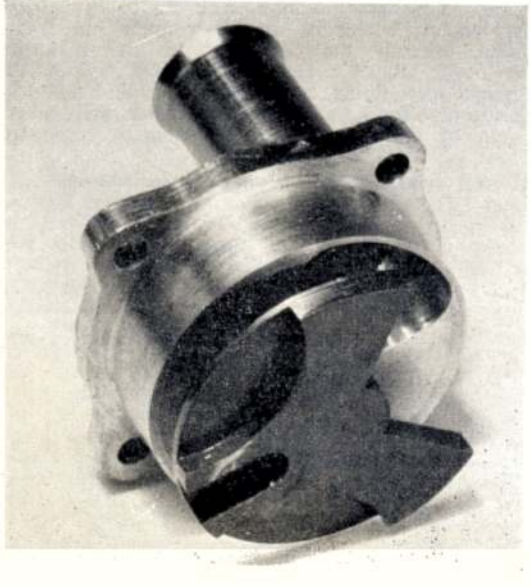
Wolverhampton.

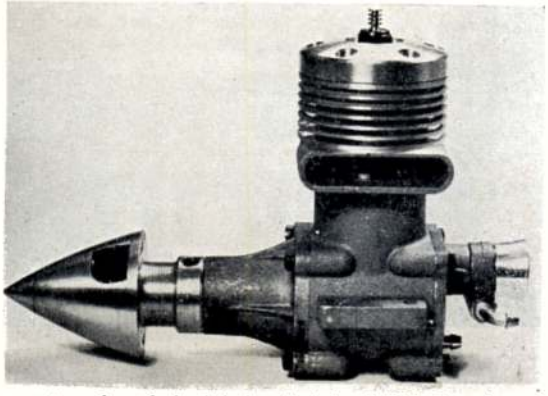


29X-BB carries on a Fox tradition by using a Desaxe (offset) cylinder. Flats on crankpin are for disc-valve drive.

Peter Chinn's *Latest Engine News*

On the new Fox 29X-BB, the valve rotor is of hardened steel and is integral with the rotor shaft. The backplate is machined from the solid.





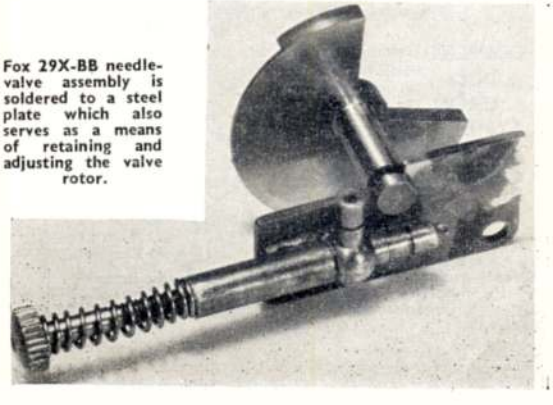
The current version of the Wisniewski designed K&B Torpedo 29R Series 64. These engines have been achieving speeds well into the 160's in the U.S.

THERE was a time, between 1947 and the mid-fifties, when no true exponent of the 5 cc. speed class would have ventured on the field with anything except a disc-valve engine—usually a McCoy or Dooling 29. Then, with the withdrawal of these engines from production and a cut back in commercial development of disc-valve racing engines, the emphasis began to swing towards shaft-valve motors, to the Fox 29R and later to the plain bushed bearing Fox 29X. This, we should add, was the trend in the U.S., where most of the highest speeds were set. Exceptions could be mentioned, such as various hand-built specials and, in the U.K., one commercial unit, the Eta 29.

This trend continued through to the early sixties, with the Super-Tigre G.21/29 now beginning to make its mark. Then, in 1962, K&B introduced the disc-valve Series 61 Torpedo 29R, not an overwhelming success in its original standard form, but the writing was clearly on the wall and within a year or so, shaft-valve successes began to rapidly diminish as Bill Wisniewski's improved "Series 64" K&B disc-valve Super-Tigre/K&B hybrids, and other specials came on the scene. Meanwhile, in continental Europe, both MVVS and MOKI developed powerful new disc-valve 29's.

Obviously, it is going to take some real wizardry to coax shaft-valve 29's, even highly developed ones like the S-T up to the 160-170 m.p.h. speeds now being reached in the U.S. with disc-valve engines and it is significant that both Fox and Super-Tigre, neither of whom has made a disc-valve engine for about fifteen years, have now seen fit to abandon

(continued on page 103)



Fox 29X-BB needle-valve assembly is soldered to a steel plate which also serves as a means of retaining and adjusting the valve rotor.

STRICTLY *Simple*

BEGINNING A NEW SERIES OF RADIO CONTROL FEATURES FOR THE SPORTSMAN

by DAVID BODDINGTON

Seen flying his "Quest" aileron control design on first flight tests at his picturesque Northants village home. Stacks of confidence—eh!

I WAS introduced to radio control flying nearly ten years ago. At that time commercial and home built radio gear tended to be unreliable with more time being spent on the bench than in the air. Escapements too were either very bulky or unpredictable. The models tended to be larger than the average of today's single channel designs and were frequently crude and ugly, altogether R/C flying represented quite a struggle with a single successful flight being considered a just reward for a whole day's effort.

How different the position is today! Modern radio equipment and accessories may not have completely reached the stage of 100 per cent reliability but is sufficiently foolproof to use on any model that the owner may consider to be virtually a work of art. Providing that he has carried out all reasonable checks diligently, there is little risk of his aircraft being written off due to malfunctioning of his radio equipment. Certainly one can visit any number of flying sites and hear the bemoaning of owners of crashed models. They will readily lay the blame on all sorts of reasons except the most frequent cause, *i.e.* (to use a Service term) *Pilot error*. This latter term can, of course, include such faults as poor trimming and insufficient preparation as well as faulty button pushing.

Then we have the present day single-control models. With all this efficiency equipment around there's bound to be a tremendous variety and selection to be seen at any club or rally, but is there? Let's be honest, the general standard of model design, construction and flying of the general "Fly for fun" single-control operator is pretty dismal; in fact it shows little improvement over the past ten years.

The usual excuses offered by the individual aeromodeller for this state of affairs is:

(a) "All I want to do is to fly a model and I'm not interested in fancy building."

(b) "What's it matter what it looks like so long as it flies."

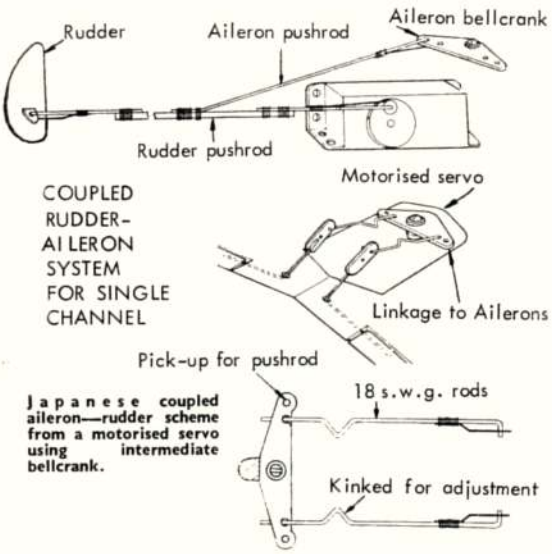
(c) "I didn't bother to finish it properly because I didn't know whether it would fly."

The answer to all three of these comments, assuming you are going to build at all, must be based on the fact that practically always it takes less time in the long run to do a job properly and therefore, with a little forethought and organization your model can be an object of pride instead of apology.

This, however, does not solve the singular lack of originality and inventiveness in the use of available radio equipment and consequent variety of model designs.

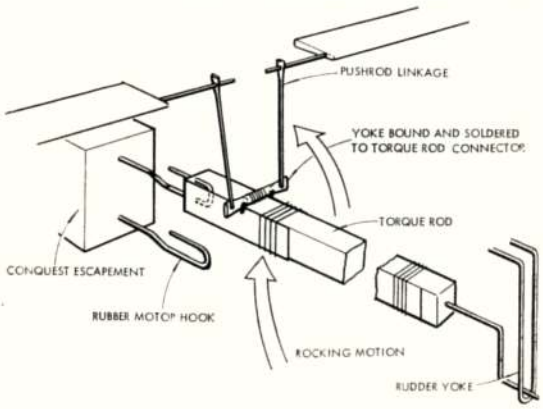
We have all read that a conventional design is ideal for the beginner radio control. Excellent advice indeed, but surely we are going to develop from this and if the general turnout at rallies is anything to go by we are not developing!

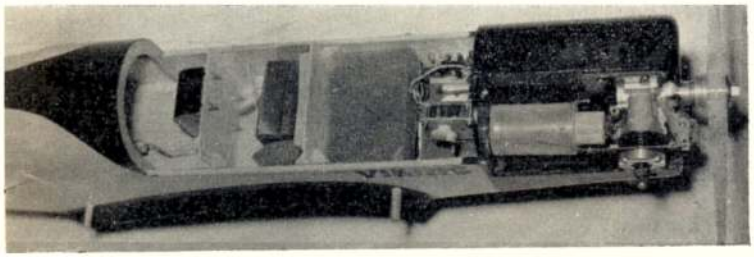
Surely somewhere there are modellers busy designing, making and flying new and exciting, yet practical, models? It is hoped that in this series of articles it will be possible to bring you up to date with developments not only in this country but from abroad. Already the *Sharkface* by Eric Clutton and Basil Murley's *Baz Bomb* have helped to introduce new flying techniques while this month's full size plan for John Bowmer's *Swannee* really takes us out of the rut. There will be many more to follow.

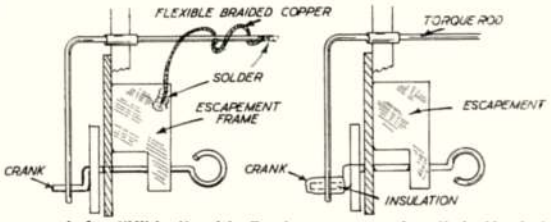


Japanese coupled aileron—rudder scheme from a motorised servo using intermediate bellcrank.

Below: author's coupled aileron—rudder for rubber drive.







Left: "Viking" with Futaba test gear installed. Vertical mounting of receiver and actuators is highly crash resistant. Above: means of bonding and insulating metal to metal connections to prevent interference.

Japan

A quick glance through a Japanese radio-control model magazine is sufficient to make one aware that in their country with a considerably smaller population than Great Britain, a tremendous amount of work is being done on single channel design both from the airframe and radio equipment standpoint. They have developed operation to a stage that we might find difficult to accept using the one channel to operate no less than five or six separate functions.

Although this is not necessarily advocated for general use, I'm sure we can learn a lot from it and from experimenting ourselves. Next month's APS plan will show how that skilled Japanese designer Fujio Arigaya (who gave us the popular Ju 87 semi-scale in August '65 issue) uses the single channel for multiple operations on an otherwise very simple Cessna 172 scale design.

An example of a combined rudder/aileron control from a single channel motorised servo mounted in the fuselage as shown on the page opposite.

We have far from exhausted the possibilities of equipment that has been on the market in this country for many years. Very little has been attempted with aileron control from rubber driven escapements and yet this proves to be perfectly feasible for the smaller models. The linkage as used on my *Push Moth* (Dec. R.C.M.&E.) and *Quest* could have hardly be more simple and functionally has found to be equally as good as rudder only. This idea can be further developed to couple rudder to aileron by adding a conventional rudder torque rod but remember that the rudder connection must be below the torque rod axis otherwise the rudder will be operating against the ailerons instead of with them. An alternative method of using an escapement of the Elmic "Conquest" type for aileron control, is to mount the escapement and its rubber drive completely in the wing. This has been used successfully on 1.5 cc. powered models of span to 48 in. but it is doubtful whether it would have power enough for larger models where, in any case, the motorised servos become more practical.

It is most important for the operation of the ailerons, whichever system is used that all linkages are absolutely free in their movements. It is also essential that the wings are firmly banded to the fuselage to prevent the linkages moving out of alignment but facilities should be allowed for the linkage to separate in a severe crash.

In using controls other than rudder, the scope for design of models is immediately increased. Layouts that may be unsuitable for rudder only may be quite stable when ailerons are fitted; this particularly applies to low wing designs and shoulder wing models with minimal dihedral. Flaps can be operated using the same basic aileron linkage except, of course, arranging for both of aileron type flaps to drop simultaneously. The escapement in this case would be secondary to a compound escapement or motorised blip. Why not try it as an alternative to engine control?

These few ideas may give food for thought, and future articles will illustrate further possibilities.

Flight testing the Futaba Superhet

ONE'S first impression of the Futuba equipment is that it is soundly and substantially constructed. This is confirmed on closer examination. The **transmitter,** although of unfamiliar proportions, is pleasant to handle with the aerial fully extended, and incorporates a good action micro switch. The transmitter batteries are incorporated in a battery box and although this gave no trouble during tests it should be checked regularly to ensure that all contacts are good. The **receiver** had many of its components sealed including the tuning slug. The **servo** was mechanically good and well protected, mounting is by four bolts projecting from the base for mounting through a plywood plate.

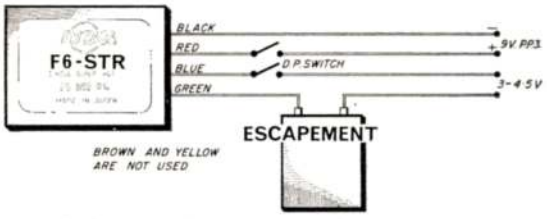
The **instructions** supplied were misleading due to the too literal translation from the Japanese also the illustrated wiring diagrams were virtually unreadable and this led to wasted time in checking all connections, a facility which the average aeromodeller may not have.

Initially, the Tx and Rx were tested with an Elmic Conquest escapement and on the bench all was

DATA

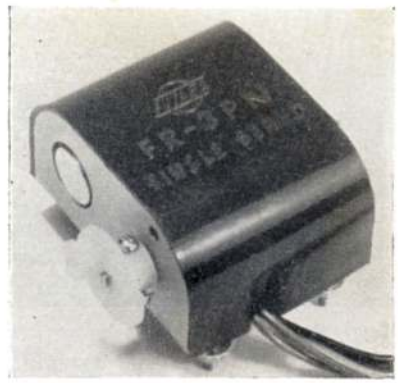
TRANSMITTER (FT-5C)
Type 6 Transistor, 1 Thermister, 12 volt, Tone-modulated.
Crystal 26.995 Mc/s (7 frequencies available)
Batteries Eight U7
Size 1½ x 4 x 5⅞ ins.
Weight 17½oz. complete
Aerial 12 section retractable 53½ ins.
Modulation 600 c/s **Range** approx. 1000 yds.
Cost £15.10.0
Technical Appraisal RCM & E October 1965 :
RECEIVER (F6-STR)
Type 6 Transistor Superheterodyne with relay
Crystal 26.995 Mc/s (six frequencies available)
Batteries 9 volt PP3 plus servo batteries
Size 1⅛ x 1⅜ x 2⅛ ins.
Weight 2⅜ oz.
Aerial 30 in. flexible
Cost £12.15.0
Technical Appraisal RCM & E October 1965
SERVO (FR-3PN)
Type 3 position motorized for relay triggering
Batteries Three U7-4.5V
Size 2¼ x 1⅜ x 1 ins.
Weight 2.1 oz.
Cost £3.15.6
U.K. DISTRIBUTORS
Contarnex Time and Control Ltd. 52/54 High Street, Croydon.

apparently satisfactory. It was installed in a *Warrior* biplane for flight testing, and a field test proved range to be more than adequate for the present present tuning. Slight intermitent chattering of the Conquest relay occurred on the ground and during the initial flight this became excessive. Although commands were held, it eventually led to the complete unwinding of the escapement motor, and on the glide, right rudder locked on and the model spiral dived into the ground from 300 feet. It was concluded that, the receiver being very sensitive, any forms of metal control linkage must be avoided. The circuits used for a simple escapement is:



A further bench test was carried out utilising the FR-3PN motorised servo with the Rising clockwork engine actuator all wired in accordance with the diagram below. Performance was satisfactory on the bench, left or right rudder positions were reasonably easily obtained with good "sniff back" action on the servo. The quick blip operation for engine control, was very positive and had the advantage of not requiring a full movement through the rudder servo.

The equipment was installed in a *Viking* low wing model. Installation was straight forward although the



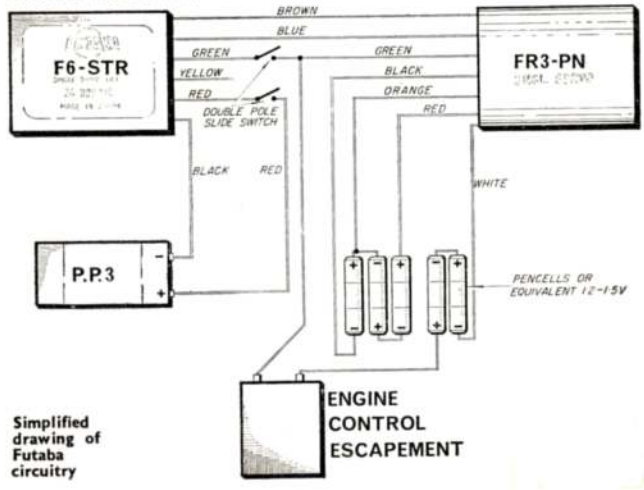
Futaba test gear as used by David Boddington for his practical flight review. Low price superhet is of considerable advantage to club fliers. Circuits below clarify the supplied instructions.

large complement of batteries (one PP3 and five U7's, it is impossible to use the same batteries for both actuators) meant that the positioning of these are critical to the centre of gravity position. In the air all systems were "go" but it was found more practical to obtain the second position of the servo by holding the first signal for a short time before releasing and holding again for the second position. This was found to be more positive during flying than the press-release-press and hold method whch requires fairly accurate timing to avoid beating or missing the second position. The quick blip throttle worked equally well in flight as on the bench. It is advisable to switch off the receiver before starting a Glo plug engine as the contact of plug lead on the engine can cause inadvertent operation of the actuators.

Conclusion

The Superhet receiver has the obvious advantage of allowing a model to be flown at the same time as other superhet equipped models on different frequencies, an important point at some flying sites. The motorised servo provides a good reliable operation suitable for either rudder or aileron control or combined, and is suitable for large control surfaces and aircraft. This latter point is important as the total weight of receiver actuators and batteries precludes its use in small models. The battery arrangements may present difficulties to the novice as far as the wiring is concerned and it is essential to ensure that the batteries are absoluely fresh—not standing on the dealers shelf for months.

To help reduce weight it may be worth trying, in place of U7's the HP16 long life miniature batteries recently introduced to the market and, remember that **all** batteries should be taped to prevent damage to contacts in crashes.



Simplified drawing of Futaba circuitry

Questions and Answers

letters from our novice readers with helpful suggestions to aid their modelling

Our new "Golden Wings" Club will be launched next month—with more Questions and Answers.

Local Club?

Dear Sir,

I am 14 years old and interested in all forms of model aircraft flying, but have many small problems that I can't really sort out on my own.

Would it be possible for you to tell me where I can obtain details of a good local model club as I feel meeting other modellers would help me to enjoy this hobby a lot more.

Congratulations on your fine magazine it really is the best available and should have an even greater appeal now "Model Aircraft" is incorporated in it.

H. Cunningham

Glasgow, Scotland.

Many thanks for your kind words about our journal, we are pleased to think that our readers like the presentation. The Society of Model Aeronautical Engineers Ltd., the controlling body for model aircraft flying in G.B., referred to as the S.M.A.E. most of the time, have a record of all the official and reliable model clubs and will be only too pleased to put you in touch with a club. Write enclosing a stamped addressed envelope to Mr. K. Lindsey, S.M.A.E.-P.R.O., 10A, Electric Avenue, Brixton, London.

Dethermaliser?

Dear Sir,

Can you please tell me what a dethermaliser is and how I can fit one to my own design free flight sports home model.

G. Scott.

Dunstable, Beds.

A dethermaliser is a timing device either clockwork or fuse operated that limits the duration of flight. The most common method is to have a fuse operated tailplane rigged so that when a length of fuse burns through a rubber band linked between two wires one on the tailplane and the other on the fuselage. When the band is broken, the tailplane is sprung by means of an elastic band and pops up, pivotting about the leading edge. This causes a loss of tail lift so that the model descends. It is usual to have an included 45-60° angle between underside of tailplane and fuselage centre line. Recent reference in "Aeromodeller" includes "Tipping Fuselage Dethermaliser" published on page 506, October 1964. "Fail Safe Dethermalisers" dealing with the dual use of a clockwork "Tatone Timer" and a fuse secondary method were published on page 185, April 1965. Chapter 1, page 44 of "Construction for Aeromodellers" gives many choices of dethermaliser methods including parachute, tipping tailplane, and spoiler.

Simple R/C

Dear Sir,

I have two problems that I would be very grateful if you could solve for me.

First I must say that I am not a "Wingman" because next January I will be 16 so if I join now I will have to give up my membership in 2 months. I have not joined before because I have only just taken up aeromodelling recently and anyway I have only just come back from Uganda in East Africa, so I will be very grateful, even though I am not a wingman, if you could answer my queries.

I have written away for the M.A. Plans handbook but I was sent a reply that it had gone out of print. There are none at the local model shop, so please can you suggest where I might get one.

Also, I have just built up the Macgregor Terrytone receiver and matching transmitter and have installed it in a hydroplane. But for Christmas I was hoping to get a kit for a R/C aeroplane. I have an E.D. Racer 2.46 which I want to put in it, and a F.R. Mk1 clockwork escapement which I also want to put in it. So please can you recommend the ideal beginner's model for single channel rudder only. I am rather lazy, so I would like one well prefabricated with all the extras (preformed U/C. etc).

I would be very grateful if you would send me a reply.

Vaughan Humphreys.

Spalding, Lincs.

The "Model Aircraft" plans handbook is out of print and M.A. plans are now available from A.P.S. 13-35, Bridge Street, Hemel Hempstead, Herts. A plans handbook of A.P.S. designs still costs only 2/- post free. Soon, a revised set of handbooks will be published dealing with all our plans in their own classes, i.e. aircraft, boats, trains etc. We would recommend any of the following kits as being very suitable for your radio gear and engine. Veron Cessna "Skylane" 54 in. span if scale-like lines are wanted, Veron "Robot" 45 in. high wing tough radio trainer, Keil Kraft "Super 60", 63 in. span high wing, slightly larger and a fine flier.

Balance

Dear Sir,

I have recently built the Spitfire from the Model Aircraft Plans No. M.A. 235 It is powered by an E. D. Super Fury 1. 5 cc engine on 30 foot lines. It flies extremely well under power but when the engine stops it will not glide.

I increased the balance until it was 30° nose heavy and increased both tail plane and elevator areas but it made no difference. I wondered if you could advise me as to what to do.

Robin Newball.

Braunstone, Leicester.

The centre of gravity position of a control line model in relation to the mid point between the control lines at the wing tip is more critical than most modellers realise. Increasing the nose weight and moving C of G forward in your Spitfire will only serve to increase its nose diving qualities. To cure this move C of G as far back as possible by adding very small weights to the rear of the fuselage. Stop adding weight when 1, The model glides well when the engine cuts. 2, The model becomes oversensitive to control movements. If case number 2 arises and it still does not glide, the wing loading is too high, i.e. the model is too heavy due to incorrect wood selection or too liberal applications of dope.

Ready-to-fly

Dear Sir,

I am still only a learner at model aeroplane flying and I would like your advice on a particular point. I have a control line model of a **Tri-ang Cox Tomahawk** powered by a **Cox Thimble—Drome .049** glowplug engine.

I was wondering if it is possible to convert it into a radio controlled model and if so could you let me know what it would involve. Hoping you can oblige me.

Raymond Hornby.

Wigan, Lancs.

The Cox Tomahawk control line ready-to-fly plastic model can only be flown as it is intended, as a control line model. Due to its small size, high wing loading i.e. weight divided into the area of the wing, this model is completely unsuitable for radio control conversion. Many radio control trainers are available and all the best are advertised in "Aeromodeller" and have been test constructed and flown by our staff to establish that they do in fact justify all claims made by the manufacturers.

Fuel troubles

Dear Sir,

I have built a power model called Skygipsy which you designed, the model is very good but there is one trouble with mine. I used Merlin Mills .75 like you said the model glides very good but when I start the engine and I launch the model it goes about six yards in front begins to climb the engine cuts out. I think it's something to do with the fuel tank, no matter how I set the engine it always does the same thing could you please give me advice on it.

G. Smith.

Roehampton, London S.W. 15.

It sounds as though you have fuel tank feed problems but this should not arise if you are using the small transparent plastic tank supplied with the engine. If you have not used this tank and have installed a new one in the fuselage it should be remembered that it has to be mounted as close as possible to the engine and a little above the needle valve centre line to give a slight gravity feed. Engine cutting is often caused by the model climbing so the engine needle valve some on a higher level than the fuel tank, this in turn leads to the engine being unable to suck the fuel up the pipe and eventual loss of power. If suction is weak and you can't get to the tank, restrict the engine air intake with a small piece of balsa strip on one side of the spray bar. Also be sure to see that the feed tube goes to the rearmost lower corner of the tank.

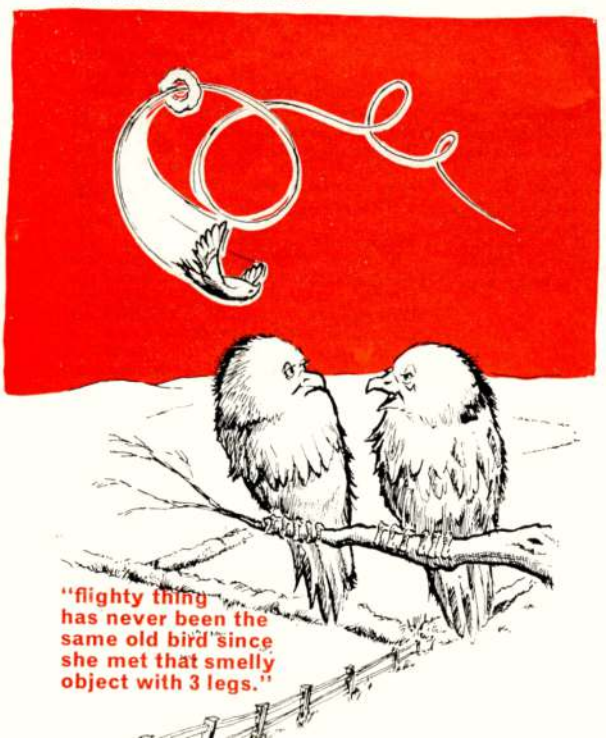
TOPICAL TWISTS

by 'Pylonius' illustrated by 'Sherry'

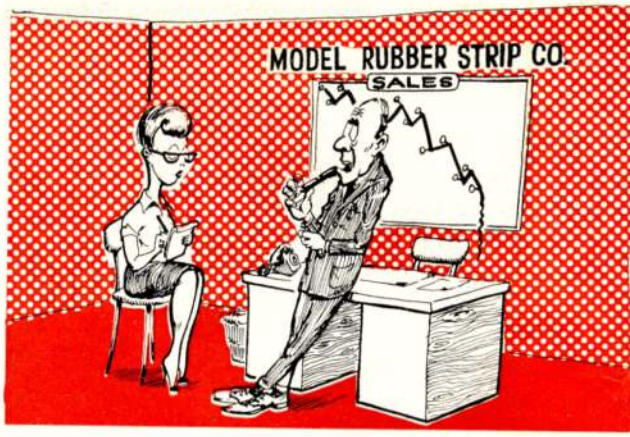
Cornithology

Lesser Glider and Rubber mortals are used to the sneers of the multitude, but seldom do we hear of the much vaunted Radio Modeller getting the "bird", but this is precisely what happened to a contributor to our companion magazine, "RADIO CONTROL MODELS & ELECTRONICS". Apparently, he and a party of friends were picnicking on wild and woolly Exmoor when the said contributor announced that he had a Robot in his boot. Someone idly muttered that he should be more careful where he trod, whilst another remarked that he was probably seeing too much "Dr. Who". But, of course, we kiddies know what sort of Robot he was referring to, and what sort of boot it was in.

Anyway, the Robot was rapidly prepared for flight, and, considering the aerobatic expertise displayed by a circus of wasps over the jampot, had much to emulate. But, as is the want of radio models in these high flying days it soon reached the neck bending altitude of 200 feet, and was drifting along minding its owner's business when it was joined in its aerial perambulations by a large buzzard. I would have said it was buzzed by a buzzard but I don't want to confuse anyone into believing that buzzards get their name from buzzing model planes. The Radio model, being a snooty sort of customer, resented this intrusion from a ready made fowl of the air, and being over Exmoor, put on a spot of Doone elevator—but still the buzzard buzzed.



"flighty thing has never been the same old bird since she met that smelly object with 3 legs."



"To the F.A.I.—I am very concerned . . ."

"Why don't you go back to Leighton where you belong," asked the Robot haughtily....

"Don't talk like that to me, you horrible trespassing toy," replied the buzzard. **"You get back to Chobham. This is my sanctuary, I'll report you to Peter Scott."**

"Ooh, if only I didn't have my silencer on . . ." fumed the Robot down seven inches of plastic tubing, then gave a gasp and a splutter and began to glide downwards.

"That's right," cried the buzzard, **"run home to daddy. Can't understand why those creatures down there have to build silly toy birds when live one's like us can do everything so much better."**

Anyway, the performance of the model had a most profound effect on the model flyer's companions—they are taking up bird watching.

Too Gooders.

Perhaps it is too much of a good thing that we live in the age of wonderlastic, and can too easily stretch our credulity to absorb the almost unbelievable. Thus, when we learn that those powers that be, who seem to delight in messing about with the power that is, have given the allocation of Wakefield twisty stuff a 20 per cent knock we just grin and wear it.

"Disqualified? Think so, too. Told you not to get any lubricant on the wing retaining bands."

Things may not get quite as bad as that, but most of our modelling troubles to-day are due to the experts becoming too expert for their own good. By all that's logical, sensible and reasonable even the 50 gramme Wakefield should have been a dead duck. Only in the most buoyant strata of air should it have limped even to the foot of the hill, and as for doing three minutes that should have been too much of an insult to us bulk rubber duffers who could just about top the minute mark on a full bicep bulging wind up. Had the experts not been quite so ambitiously expert and kept their super qualities under decent restraint things would never have go to this sad extreme. And much the same applies in other spheres of modelling. The power model has been expertised to the point where the rate of ascent is so rapid that it is in danger of disappearing into its own oblivion; the control liner chases itself with such lightning frenzy that the piloting area has much the appearance of a group of all in wrestlers participating in the Eton wall game; and, as for Radio, its not so much being an absolule expert, as being an absolute expert before your tenth birthday.

What is needed in the model world is egalitarian reform and I don't mean altering the shape of those things you have for breakfast, but a general levelling out of modelling ability. The experts should become

a little less brilliant, and us duffers just a shade more competent. This would make for a happier state of affairs all round. We wouldn't get the same group of super flyers taking home all the prizes and us duffers taking home all the wreckage.

What's all this nonsense I hear about apathy in the S.M.A.E. I know for a fact that the Society is open to people of every race and colour.

Nip in the Air

Mostly my concern about Japanese modelling has been over the fate of the indigenous tissue, and the first I heard, or rather saw, of our Far Eastern counterparts was in the photographs of rather diminutive gentlemen crouched behind huge models of American bombers. At the time I thought this to be some sort of war preparations, but have since learned that the Japanese do everything twice as big, twice as good and twice as quick as anybody else. And the reason that so many of them go in for model building is that, in Japan, there is no such thing as "do-it-yourself", as the houses are built of wallpaper and contain no furniture. Those not engaged in model building pass the time writing funny instruction sheets on how to build and fly them.

TEAM RACER appearance
——or where's that pilot?

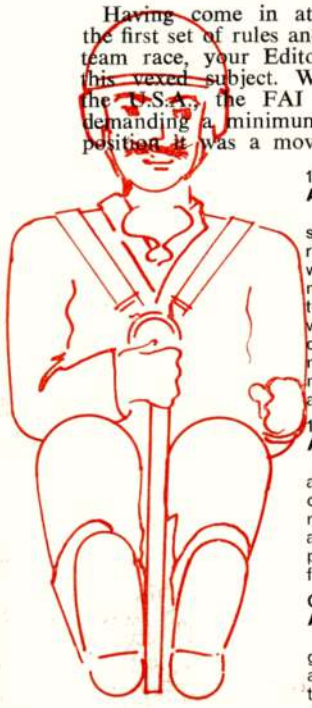
"Team racing models must be of the semi-scale type and their general lines must be in accordance with those of full-size aircraft"—F.A.I. Sporting Codes.

PUBLICATION of Boris Chkourski's "Snipe" team racer on P.541 of November issue has highlighted a controversial subject through its liberal interpretation of the FAI regulation regarding team racer appearance. *Are* its lines in accordance with those of full size aircraft? Certainly not in the view of many enthusiasts, including ourselves.

What is to prevent someone producing the tiniest of canopy blisters on a helmet cowled speed model if such a practice is permitted to develop? Only stringent application of the FAI definition can stop the degeneration of team racer appearance.

Having come in at the very beginning, written the first set of rules and flown in the first ever British team race, your Editor feels rather strongly about this vexed subject. When, on a proposition from the U.S.A., the FAI adopted a cross-section rule demanding a minimum of 39 sq. cm. at the pilot's position it was a move to stop the pod and boom types using the engine area for the 50 x 100 mm. minimum fuselage dimension,—but the wily Russian Chkourski has found a way around it by putting the canopy underneath the engine!

Surely the answer is to require a pilot in proportion to the simulated racer? Fearless Fred, our actual size genuine racing type in patriotic red is the sort of thing we have in mind. He fits Chkourski's "Fresco" as well as all the other racers in Aeromodeller Plans Service and though it is not expected that he should appear in entirety, at least his head might grace the cabin while his body should come within the general profile and plan of the racer. To fit the "Snipe" he would have to be a contortionist. How else could he conform to the FAI requirement that "A cockpit or cabin with transparent windshield giving direct visibility forward must be provided to house the *scale* model pilot which might be carried". Fearless Fred is *our* idea of a pilot *in scale* with the average team racer.



1958-59 Rules Handbook — **The Model Aeronautical Association of Australia.**

A Team Speed model need not be a scale model though scale models will be eligible as long as they adhere to all team racer specifications. No pod and boom, flush cockpit or flying wing design will be accepted unless they are actual scale models of a real aeroplane. Full forward vision for pilots in all team speed classes. Models shall have a full fuselage, conventional or butterfly empennage and a cockpit or cabin containing a dummy pilot with both being in proportion to the model. The pilot's head should be to scale of model. All models must at the cockpit or cabin conform to the sizes listed below at pilot's shoulders and floor to top of head in its original design.

1958 Competition Rules Handbook — **The Society of Model Aeronautical Engineers.**

Team Racing models shall be either scale or semi-scale in appearance and if semi-scale, must have a raised windshield or cabin. The aspect ratio of the wings shall not be more than 8:1 nor less than 4:1. Delta wing models will not be subject to the aspect ratio rule. The cockpit or cabin must contain a scale pilot, the head of which shall not be less than $\frac{7}{8}$" deep, except for class $\frac{1}{2}$A when it shall not be less than $\frac{1}{2}$" deep.

Official Regulations — **The New Zealand Model Aeronautical Association (Inc)**

Team racing models must be of a semi-scale type and their general lines must be in accordance with those of full size aircraft. If spinners are used, they must be of the round nosed type only. A cockpit or cabin with transparent windshield giving direct visibility forward must be provided to house a scale model pilot which must be carried.

VERON

"Mini-Concord"

40" SPAN SUPER STREAMLINED

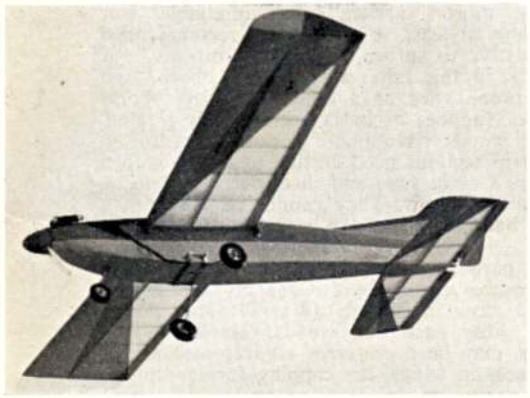
Model for RADIO CONTROL

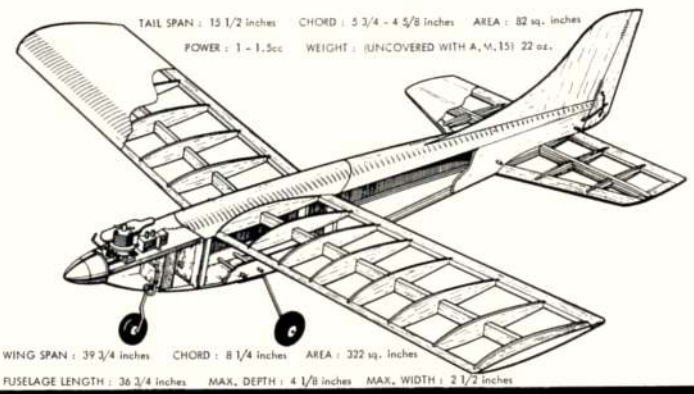
Graceful streamlining with a stable shoulder wing configuration gives the 'Mini-Concord' a purposeful appeal for use with single channel Radio Control for Rudder (and 'flip-up' elevator with rubber driven actuators). A very high degree of pre-fabrication and quality materials makes this design a joy to build and a robust and enduring performer.

Designed for Diesel and Glow-plug motors of 1 to 1.49 cc. (.061 to .099 cu. ins.)
Price £3.19.11

MODEL AIRCRAFT (BOURNEMOUTH) LTD.

NORWOOD PLACE . BOURNEMOUTH . HANTS





FLIGHT and BUILDING TEST

VERON

MINI-CONCORD

First envisaged as a scaled down version of the successful multi-channel R/C design '*Concord*', this Mini variant is far removed in appearance from the accepted single channel model as typified by the '*Robot*' and its Mini brother. The Mini Concord started life with symmetrical section on the wing and different tail areas but extensive flight kits of prototypes by designer Phil Smith of Model Aircraft (Bournemouth) Ltd., led to the conclusion that for inherent stability, a few concessions were necessary. It is to their credit—and our misfortune that they have managed to combine the attributes of a "Mini-Multi" control model with sports flying characteristics that put the model in the air as though on rails. Why our misfortune? How else can one describe a radio flyaway with 15 minute engine run? Our M-C flew away like a bird when we suffered a dose of 'NO-AC' on frosty Boxing Day tests. (*Moral*—make sure the DEAC's are *always* well charged especially in below zero weather). But back to what it *did* manage to perform at will before it took to the air on its own.

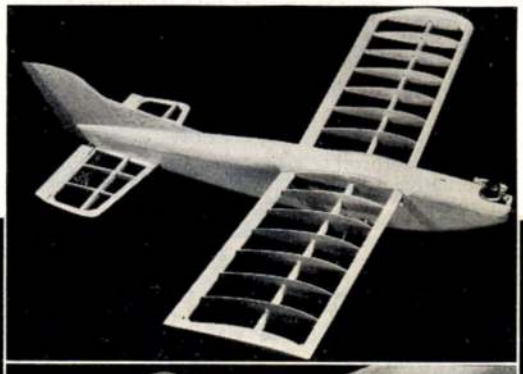
Beautifully held turns, a steady climb, figures of eight, vertical dive, loops—and all at the weight of 2lbs. 9ozs with an A.M. 15 and silencer. None would possibly complain at that! Phil's prototype was 28ozs. with single channel and rubber driven escapement but we went the whole hog and piled in 4 channels to check the full potential.

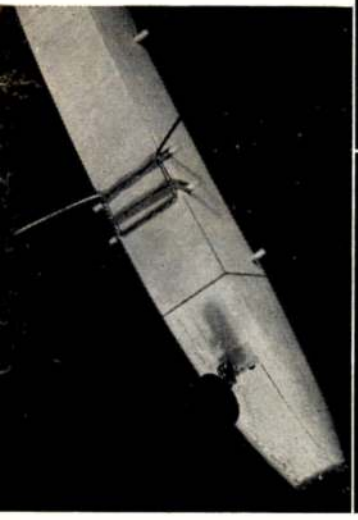
A Controlaire SH-20 Superhet, two Controlaire Servos and DEAC pack fit the large equipment bay with ease and despite the excess weight over standard S/C installation, only an ounce was needed in the nose for balance. Builder Mick Charles also fitted a large bottle tank to prolong the fun (and the agony).

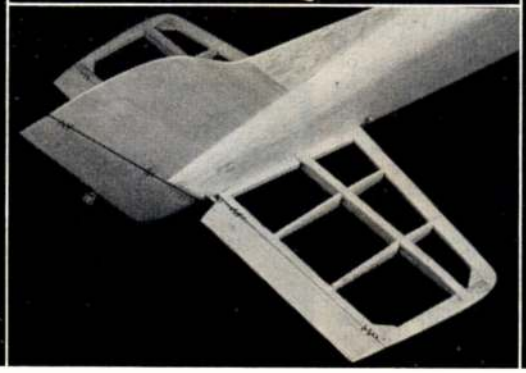
Structurally, elevators were easily adapted and the rudder enlarged. The fuselage bottom was sheeted with the grain across the width and thicker block added below the battery area. Our kit was from the first production batch and the upper nose cowl (which we made detachable) was ¼in. under width while the fuselage sides were excessively oversize. Also the trailing edges were not 'handed' so that we had a slight difference in widths as one was 'flipped' for the other wing half.

These points will be attended to, and should not give any difficulty in construction. In fact the M-C kit is quite a quick assembly thanks to prefabrication. Covered with nylon and given polyurethane decoration, it is robust and business like. We'll not be surprised to see one carrying exotic proportional gear of the Orbit 3+1 type before the year is out! At £3. 19. 11d its an absolute "natural" for the straight rudder-only man, or the ambitious owner of new lightweight multi-gear.

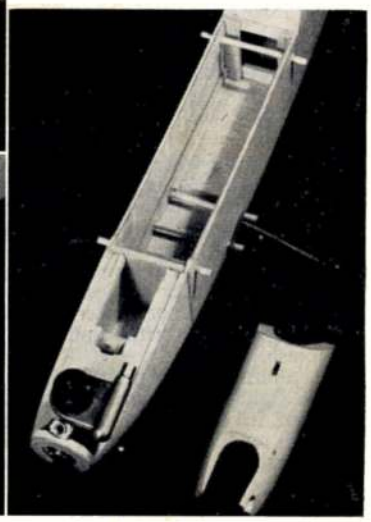
Gliding down to a first ever landing, the Mini Concord shows its lines—and a dirty oil streak from the silencer —above. Below is a detail of the shock absorbing undercarriage with plywood area around the main gear. Right is the completed airframe, 22 oz. with engine.







Below: a fuselage view showing the capacity for a large range of radio equipment and our modifications to accept a larger fuel tank with access to batteries below via detachable cowling. Below, centre, is the revised tail with elevator conversion and larger rudder for servo operation.



BASIC Aeromodelling

Second part of our new monthly series for the novice modeller

BEFORE the days of balsa (commercially available balsa, that is!), birch and spruce used to be the standard materials for airframe construction. Both are much heavier woods—birch is about four times and spruce about three times as heavy as medium balsa—but being strong and non-brittle woods can be used in smaller sections. Thus for a simple 'box' fuselage, for example, $\frac{3}{32}$ in. sq. spruce longerons would be stronger than $\frac{1}{8}$ in. sq. balsa and weigh only about one and a half times as much. However, neither spruce or birch will yield such strong glued joints as balsa with simple techniques, so when built-up frames were made in these materials in the old days the joints were usually 'pinned' with tiny nails as well as glued—with a considerable risk of splitting and thus weakening the members!

Spruce, and to a lesser extent birch, can still be used with advantage today allied to conventional balsa built-up frames. The advantage comes when there is only limited space to accommodate a spar and where that spar has to carry a heavy load, as in the mainspar of a wing with a very thin section—*Fig. 6*. Here a spruce spar may provide better strength in bending and greater resistance to brittle fracture than a combination of balsa spars of total weight (see *tables)* in practice, such applications are normally limited to towline glider wings with thin aerofoil sections—and even then only as an alternative form of construction rather than a general rule.

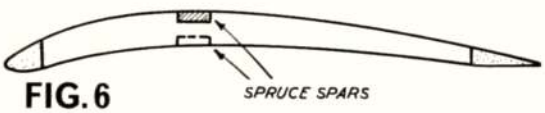


FIG. 6

Another case where a spruce spar may be preferred to balsa is for a thin boom section—*Fig. 7*—as in a smaller pod and boom fuselage (larger fuselages of this type would employ built-up construction to reduce weight). Even then there is a limit to how small a section can be used without being too "whippy". A larger section balsa spar of the same weight might well be stiffer, although it would also probably be more brittle and thus prone to breaking in a crash.

An alternative "hardwood" is obechi, which is slightly lighter than spruce (24 lb./cu. ft. as against 28 lb./cu. ft.) and nearly comparable in overall length. It is also readily available in "modelling" sizes. However, obechi is a wood which tends to be brittle and also splits easily. In small sections (e.g. spar sizes) it is only about one half as strong as spruce and the grain is far more "random" and unreliable. For aero-modelling, at least, it is not to be recommended as an alternative to spruce, or as a "substitute" for balsa. It was in this latter respect that obechi first came into prominence as a material during World War II when supplies of balsa became very limited.

All these woods have one "working" feature in common. Strip sections need cutting to length with a fine saw (e.g. a razor saw) and sheet parts need to be cut out with a fretsaw. They cannot be cut with a knife, like balsa, without the risk of splitting the wood.

The only parts of a model airframe which invariably *require* the use of hardwoods are the engine bearers and nose bulkheads (firewalls) on power models. In other cases hardwoods, usually in the form of ply, may be a *preferred* choice, such as for dihedral braces in wings, the capping former on the front of a rubber model fuselage and local strong points (e.g. rear dowel anchorage on rubber models; undercarriage mounting plates on power models, etc.). Wooden propellers for power models must also be carved from "hardwoods".

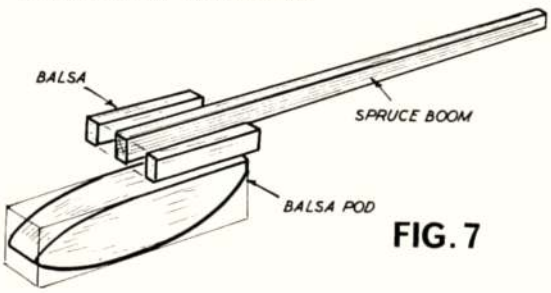
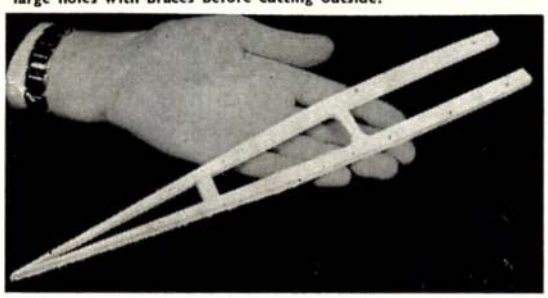


FIG. 7

TABLE VII WEIGHT OF 'HARDWOOD' SHEET (IN OUNCES)

SHEET SIZE	OBECHI	SPRUCE	BIRCH
36" x 3 x 1/16"	1.50	1.75	2.50
36" x 3 x 3/32"	2.25	2.625	3.75
36" x 3 x 1/8"	3.00	3.50	5.00
36" x 3 x 3/16"	4.50	5.25	7.50
36" x 3 x 1/4"	6.00	7.00	10.00
36" x 3 x 1/2"	12.00	14.00	20.00

A $\frac{1}{4}$ in. sheet spruce team racer crutch gives extra strength for mounting metal engine pan. Cut inside shape first, then support large holes with braces before cutting outside.



The term "hardwood" is used generally in aero-modelling, to describe all other woods which are harder and heavier than balsa. Technically this is wrong for what decides which is a "hardwood" in the true definition is whether the tree sheds its leaves in winter, or not. Balsa, in fact, is really a (true) hardwood; and so is obechi. Birch and spruce are "softwoods". However, this has little significance in modelling and it is certainly easier to call all woods stronger and heavier than balsa "hardwoods".

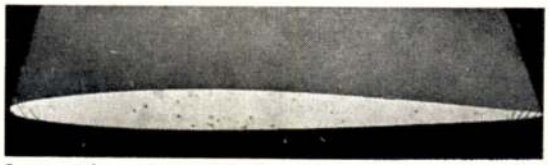
TABLE VIII WEIGHT OF 'HARDWOOD' STRIP (IN OUNCES)

STRIP SIZE X 36"	OBECHI	SPRUCE	BIRCH
1/16 sq—3 lengths	.250	.292	.416
1/8 x 1/16—3 lengths	.50	.585	.832
3/32 sq—4 lengths	.281	.328	.468
1/8 sq—2 lengths	.250	.292	.416
3/16 sq—1 length	.281	.328	.468
1/4 sq—1 length	.500	.585	.832

For engine bearers we need a *really* hard wood. Spruce is not good enough and birch is still a little on the weak side. The preferred material is ash, beech, larch or maple. Mahogany is also used sometimes, but that name implies to a whole variety of reddish-coloured woods which may range in strength from about the same as spruce, upwards. The fact that the really hard woods are also heavy does not matter, for the amount of wood required for bearers is quite small. This is where strength is more important than weight, for weak bearers are readily broken in a crash landing—and replacing them can be a difficult or near-impossible job if the front of the fuselage is oil-soaked, in practice, though, bearers are often fully supported by cowling blocks, when the choice of bearer stock does not become so important.

Spruce and Obechi grain differ as shown by strong grain spruce strip at the top and very slight grain in Obechi below.

Few modellers carve their own propellers for power models, but for the sake of completeness we will mention suitable woods. Again the harder "bearer type" woods are to be preferred for maximum strength, particularly if the propeller blades are carved thin. For thicker section blades—e.g. for sports models—a softer wood like mahogany can be used in the interest of easier carving. In any case, wooden power props are very prone to breakage and have largely been replaced by moulded nylon propellers for all types of models. The wooden propeller can still show an edge in efficiency—which is why it is still used for speed props—provided you are prepared to accept its vulnerability. The best material of all for a carved propeller is probably red fibre, which is very much stronger than wood. It is also a very much tougher material to work with and "carving" is largely reduced to a very tedious filing job!



Spruce strip used as reinforcing strip on leading and trailing edges of ⅛ in. sheet balsa team racer wing.

Ply (or plywood), as already noted, is used for "strong" formers and other small parts, and also for strong "facings". Very thin ply can also be rolled into tubes to make very strong and light tubular members. All modern plywood is resin bonded and should thus be free from the fault of "delamination" or the layers breaking apart; except that no ply other than "marine ply" is fully waterproof. This should not be any problem with aero-modelling structures, however, which are not expected to survive continual immersion. Aircraft-standard ply is normally made in birch (which is also the strongest ply) and this type is to be preferred. It can be identified by the whitish appearance of the wood rather than the reddish colour associated with "mahogany" ply. The latter can be quite variable in strength. The main thing is to choose a ply where the core thickness is not excessive as this is usually made from weaker wood—thus the thicker the core the weaker the ply as a whole. For really strong ply parts choose multi-ply (i.e. more than three layers or laminations, all of approximately equal thickness).

The thickness of plywood is always specified in millimetres (except in the United States and Canada) and is a *nominal* thickness with an allowance for finish sanding. In this country, common practice is to speak of ply thickness in inch fractions, which is an even more nominal measurement. The equivalent sizes are shown in *Table IX*.

Thickness of less than 1.5 mm. ($\frac{1}{16}$ in. approx.) are difficult to obtain although 0.5, 0.8 and 1 mm. ply is manufactured (mainly in Scandinavia). Such thicknesses are well worth obtaining whenever available as "stock" material since they can be used for a variety of strengthening purposes without adding too much weight—*see Table X*. Also a tube rolled from 0.5 mm. ply would have adequate strength for a rubber model or glider fuselage at about the same weight as a tube of the same diameter made from ⅛ in. balsa sheet, with the ply tube being considerably stronger. As *Table X* shows, however, ply is considerably heavier than balsa sheet and should only be used where strictly necessary. At the same time, where ply is used for formers or doublers, such parts should be cut out where possible (*Fig. 8*) to reduce weight.

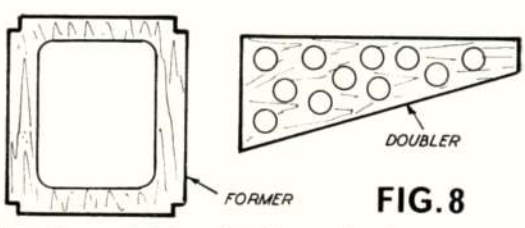


FIG. 8

Basically, good design with ply parts involves:

(i) Select *thickness* of ply according to the *stiffness* required from the part. If the ply is supported, e.g. going over sheet, use the thinnest plywood

consistent with the strength or reinforcement required.

(ii) Where the thickness of ply required represents a fairly substantial weight increase compared with balsa, cut out or lighten the ply part as far as possible to reduce weight to a minimum without sacrificing *necessary* strength or stiffness.

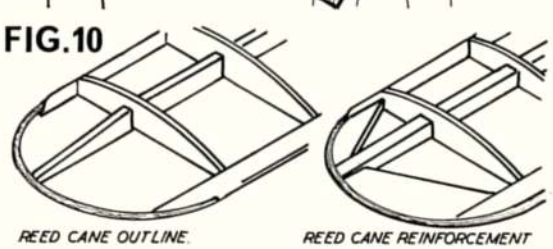
(iii) Never adopt a ' nominal thickness ' of ply as suitable for a new design without considering (i) and (ii) above.

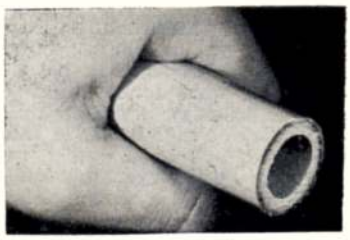
(iv) Where a plan specifies a ply thickness to be used, remember that this is *correctly* specified for purchase in its equivalent millimetre thickness and always try to get ' aircraft quality ' birch or beech ply for the job.

TABLE IX SIZES OF PLYWOOD

NOMINAL THICKNESS (MILLIMETRES)	NOMINAL THICKNESS (INCHES)	NOMINAL OR NEAREST INCH FRACTION
.5	.020	—
.8	.030	1/32
1	.039	—
1.5	.059	1/16
3	.118	1/8
4	.157	5/32
5	.197	—
6	.236	1/4
7	.315	5/16
9.5	.374	3/8

Two other woods (or rather ' grasses ') with a limited application are *bamboo* and *reed cane*. Bamboo is an extremely strong, hard material which at one time was widely used for undercarriage legs on rubber models, being both stiffer and lighter than wire. It is also about the best material for rear pegs for rubber models (in preference to hardwood dowel since it is much stronger and more reliable under bending load). Bamboo can also be split into smaller sections and bent over a candle flame to make curved wing or tailplane tips for small models—*Fig. 9*. The main snag with bamboo is in locating good quality (solid stock which can be split





The type of bamboo pole needed to strip modelling sized pieces from. Approx. 12 in. between bowels is the best available.

down and then shaved to the section required.) Small canes are not good and large diameter bamboos from which good strong lengths can be split seem to be a thing of the past. The strongest sections are those split out of the main section closest to the shiny outer surface.

Reed cane is a much weaker material with a naturally circular section. It can readily be bent to curves and, provided the unsupported area is not too large, is reasonably rigid in such shapes—*Fig. 10*. Tips made in this fashion, however, will tend to pull out of shape when tissue covered and doped. Another use for reed cane is as a reinforcement ' edging ' on conventional built-up balsa wing frames. Apart from these applications it has little other use for aeromodelling.

TABLE X APPLICATIONS & WEIGHTS OF BIRCH PLYWOOD

APPLICATIONS	THICKNESS OF BALSA SHEET OR EQUIVELENT WEIGHT.	WEIGHT: OUNCES PER SQ. IN.	THICKNESS
PLY FACINGS, PLY SHEETING, ROLLED TUBES	1/8"	.016	.8 mm (1/32")
NOSE FORMERS, RUBBER MODELS & SMALL POWER MODELS. DIHEDRAL BRACES	1/4"	.032	1.5 mm (1/16")
FORMERS & NOSE FORMERS ON POWER MODELS, STRONG DIHEDRAL BRACES	1/2"	.057	3 mm (1/8")
NOSE FORMERS & MAIN FORMERS ON LARGER POWER MODELS	5/8"	.071	4 mm (5/32")
NOSE FORMERS ON LARGE POWER MODELS	1"	1.07	6 mm (1/4")
NOSE FORMERS ON LARGER POWER MODELS	1.1/4"	1.41	8 mm (5/16")
LITTLE USED	1.1/2"	1.73	9.5 mm (3/8")

FAMOUS BIPLANES Number 35

Fairey SWORDFISH

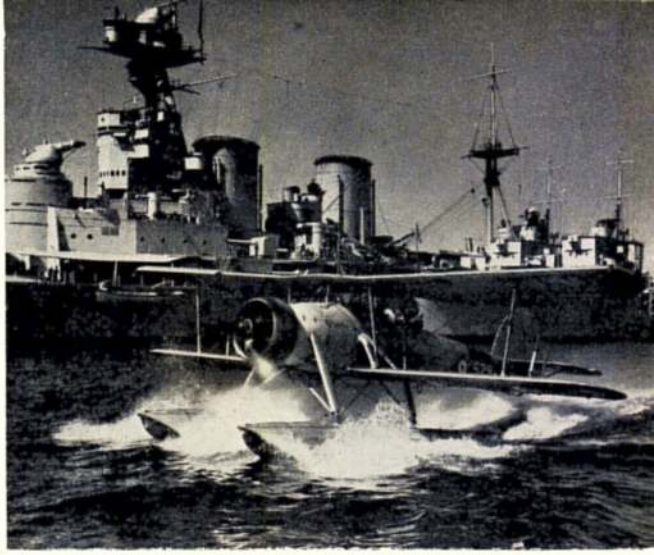
described and drawn by G. A. G. COX

FEW aircraft will ever rival the Swordfish's fame as an instrument of victory. The duration of this machine's service as a vehicle for so many dramatic events throughout the second World War, even outliving its designed successor, the Albacore, is a tribute to its superlative qualities as a fighting machine. The " Stringbag " was slow, it is true. A maximum indicated speed of something like 125 knots at the advent of jet propulsion would in itself appear to be an anachronism, but the special role which the Swordfish fulfilled demanded other qualities than speed: a rock-steady landing approach or torpedo run, a slow dive, economy of fuel and manoeuvrability, and these qualities the Swordfish had in abundance. The fact that some Fleet Air Arm and Royal Air Force units converted from Chesapeakes and Albacores to the Swordfish suggests that in the desperation of war, smoothness of contour and sophistication of equipment are secondary to military effectiveness.

The exploits of Swordfish crews in almost every major naval engagement during the second war are so numerous that it would be fruitless to attempt to do justice to the subject within the limits of this article. The reader is advised to consult the many historical accounts of the war at sea which have been written in recent years. It is felt that a description of the machine rather than its achievements will more nearly meet the needs of the model-building reader.

The Swordfish began as a private venture by the Fairey company in 1933—a bold venture in that no service specification had ever been issued for a general-purpose aircraft which was flexible enough to combine the functions of torpedo plane, bomber and spotter/reconnaissance. The T.S.R.1 (Torpedo/Spotter/Reconnaissance) which resulted from the calculations of C. R. Fairey and his chief designer, M. Lobelle, was very similar to the Swordfish but among the external differences which were immediately noticeable were an uncowled Pegasus engine, and wheel spats.

During spinning tests the T.S.R.1 went into an uncontrollable flat spin and crashed, but undismayed, the company built a second machine incorporating corrective modifications. An extra bay was added to the rear fuselage, and to compensate for the increased moment aft, the upper wing was swept back four degrees. In the spring of 1934 the new T.S.R.II, bearing the serial K4190, began flight trials at Martlesham and then at Gosport, and very soon a production contract for 86 machines was awarded. The first production machine, K5661, was delivered in February 1936.



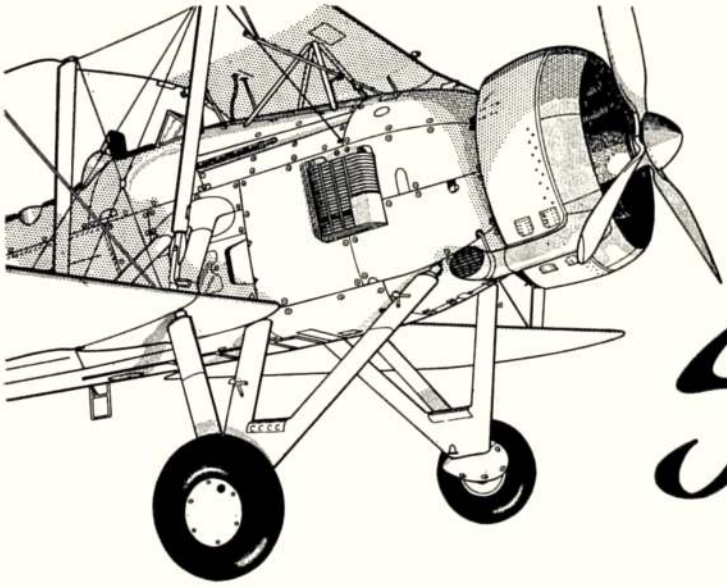
Above: Swordfish floatplane splashes its way past HMS "Hood", and below, left, a formation with chevron markings, armed with practice bombs and torpedoes. (Photographs by Charles E. Brown.) Below is the Swordfish preserved in the F.A.A. Museum at Yeovilton as HS 618, complete with dummy crew.

Production at the Hayes factory ended in 1940 with the 692nd Mark I so that assembly lines could be laid down for the new Albacore, but Swordfish production was transferred to the Blackburn factory at Brough. 300 Mark I " Blackfish " were built, followed by 1,080 Mark IIs and 319 Mark IIIs. The last aircraft left the Yorkshire factory in August 1944, bringing the grand total to 2,399.

There were, of course, many detailed differences between the marks, but the only major external distinguishing features were, in the Mark II, metal covering to part of the underside of the lower wing as a protection against the blast of rocket projectiles, and a larger oil cooler, although some late Mark Is were fitted with the more powerful engine and larger oil cooler. The Mark III was equipped with A.S.V. radar, and the radome between the undercarriage legs was a feature which was difficult to overlook. The Royal Canadian Air Force used Swordfish aircraft, those operating in Canada being fitted with enclosed cockpits and designated Mark IV.

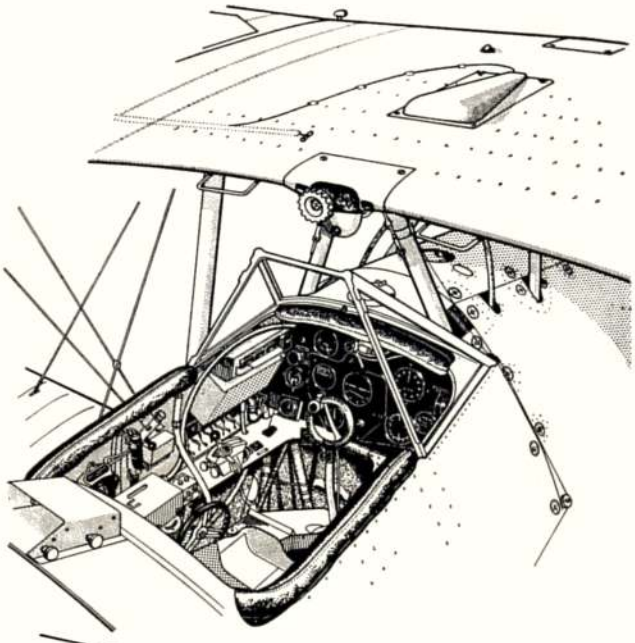
The fuselage of the Swordfish was a welded steel structure in three parts, joined together at the rear catapult spool and at the tailplane front spar. Metal fairing panels were attached to dural supports on the forward fuselage, while fabric-covered wooden panels covered the sides of the rear fuselage. A flotation bag with a buoyancy of 1,600 lb. filled the rear fuselage between stations J and K on the drawing. The wings were of tubular steel spars and struts with dural ribs and fabric covering except for areas on the lower stub wings and the upper centre-section which had a metal covering to provide

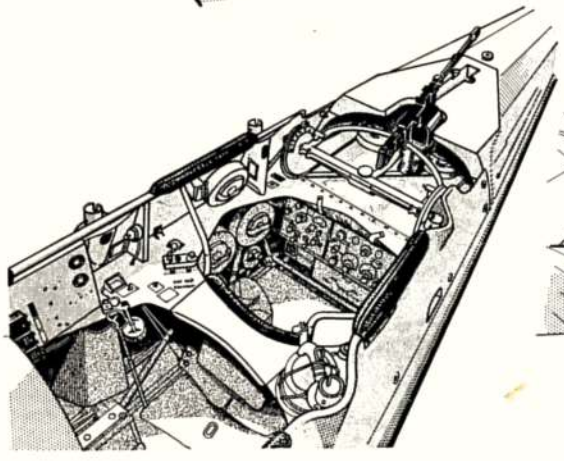
Continued on page 92

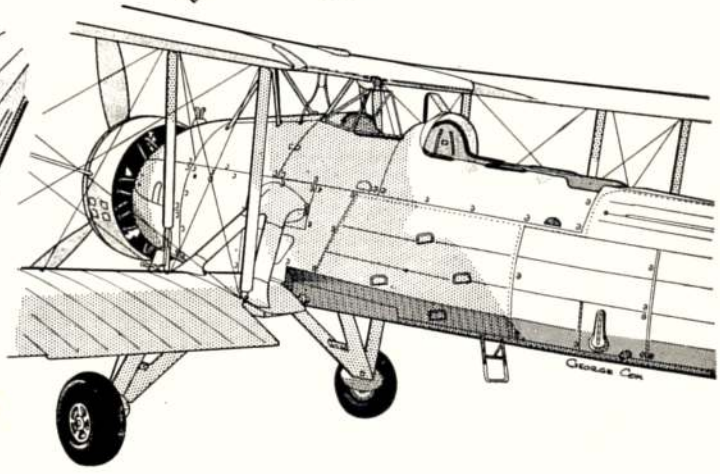


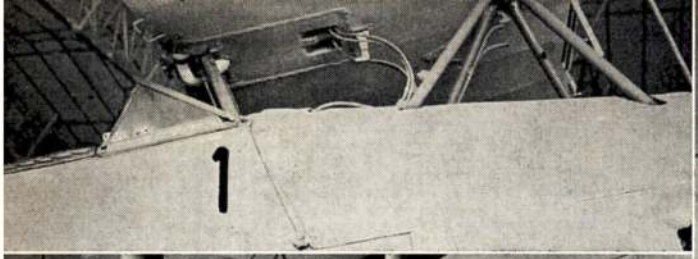
SWORDFISH

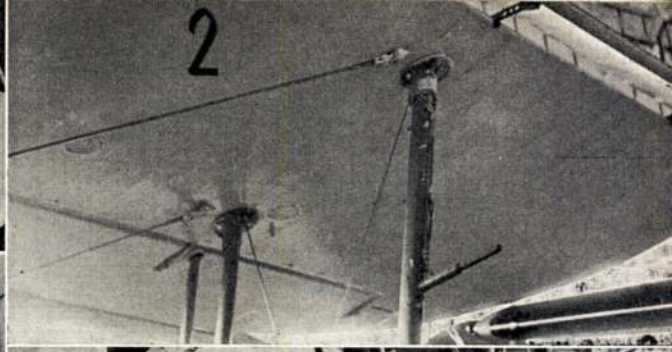
Sketchpage

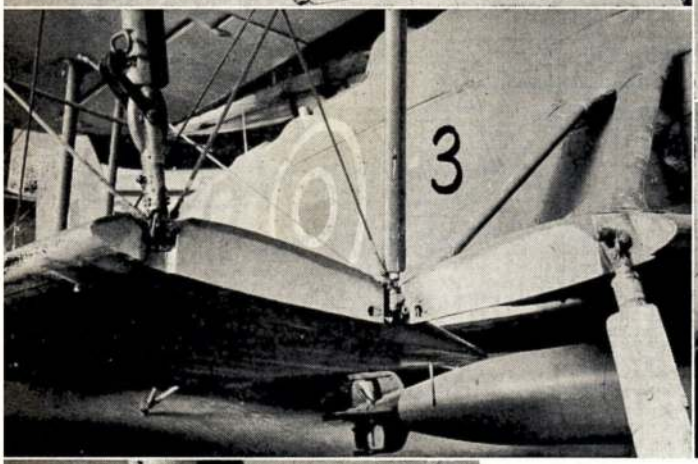


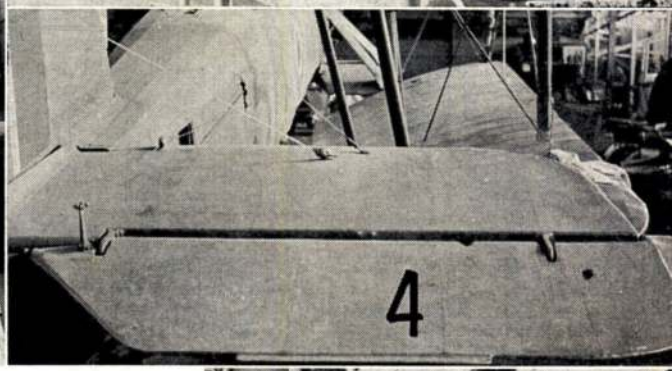












PIC PAGE

of Swordfish details on NF 389, a Mark III preserved at H.M.S. Ariel, Lee on Solent, the aircraft measured and sketched by George Cox for preparation of this feature.

1. Under the centre section, a view showing the pyramid struts and fuel lines as well as the windshield and rear struts.

2. Slats open on upper wing show the gap, and linking arms with 3 holes in each. Flying wires attach inboard of struts and pitot head leads are cleated to front of struts.

3. Hinged wings in folded position illustrate airfoil section, lower centre section drag struts, flying wire and inter-strut bracing pick-ups.

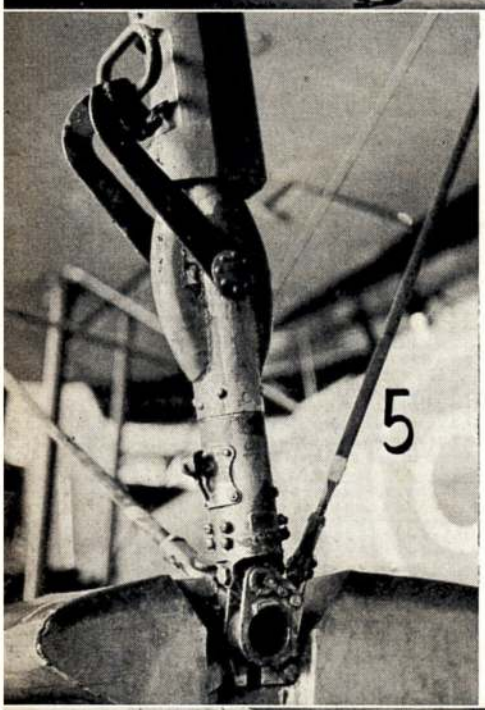
4. View over tailplane and elevators, with control horn near root and cable leading over tail surface through fairleads to fuselage. Fixed trim tab in this elevator.

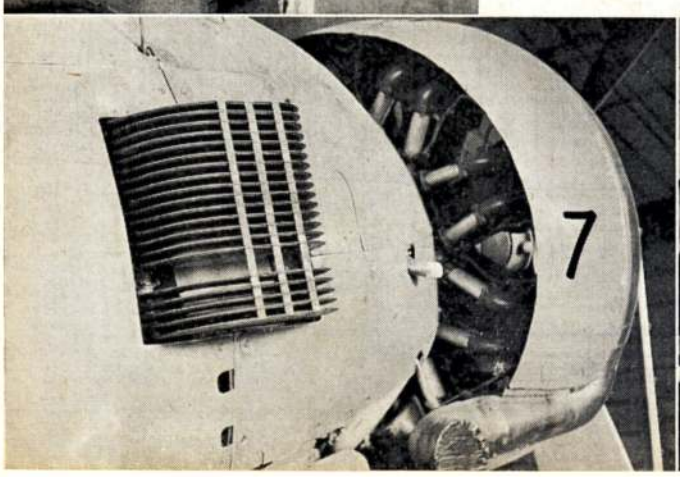
5. Close-up of forward strut at wing break shows locking catch to half wing. Note streamline section wires.

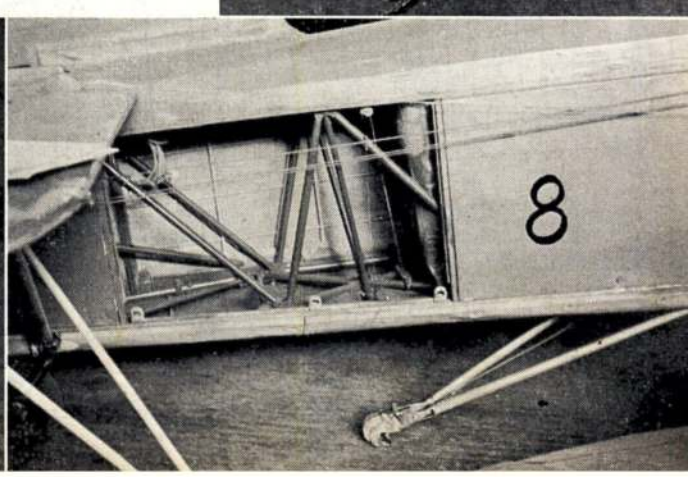
6. The undercarriage, as well as F.A.A. chocks and a torpedo in position.

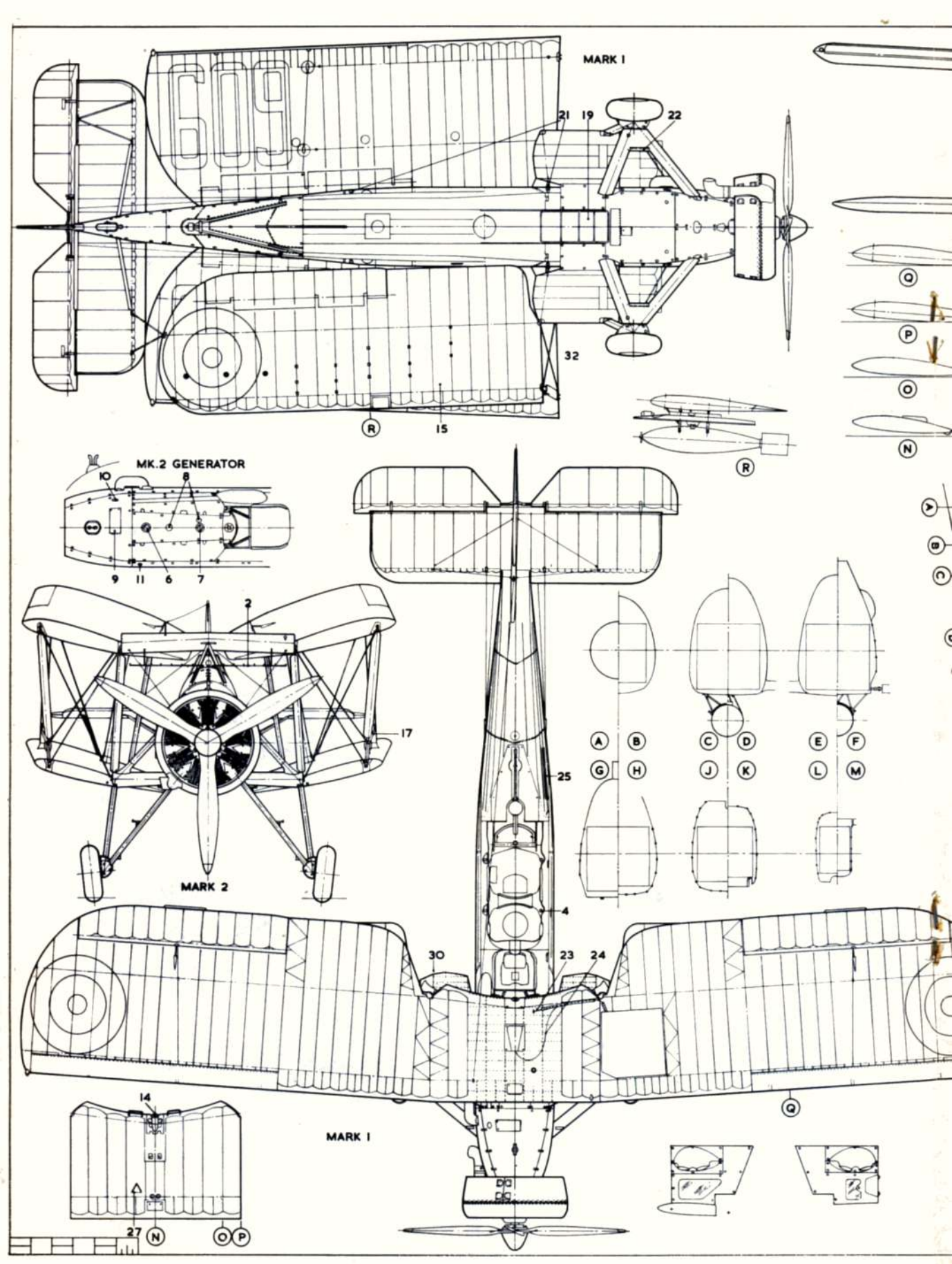
7. Rear of cowling around the Pegasus engine and the oil cooler in foreground. Exhaust has a blanking plate fitted here.

8. Rear fuselage structure revealed when panel is detached. Control cables to tail surfaces, arrested hook and two struts in foreground (to retain folded wings) are evident.








MARK 1
21
19
22
32
R
15
Q
P
O
N
MK.2 GENERATOR
10
8
9
11
6
7
2
17
MARK 2
25
4
30
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MARK 1
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O
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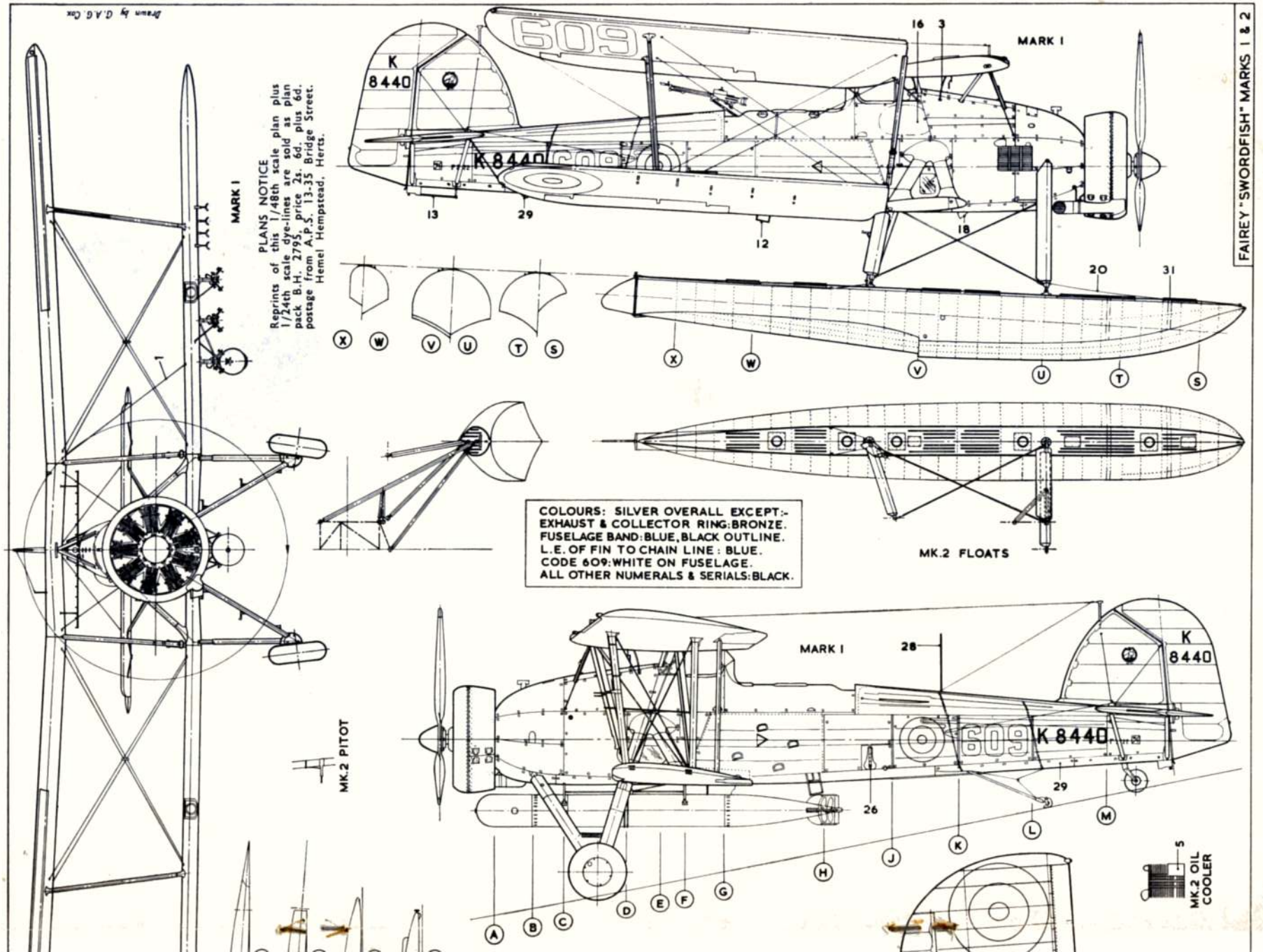
FAIREY "SWORDFISH" MARKS 1 & 2
Drawn by G.A.G. Cox
PLANS NOTICE
Reprints of this 1/48th scale plan plus 1/24th scale dye-lines are sold as plan pack B.H. 2795, price 2s. 6d. plus 6d. postage from A.P.S. 13-35 Bridge Street. Hemel Hempstead, Herts.
MARK 1
609
K 8440
K 8440
16
3
13
29
12
18
20
31
X
W
V
U
T
S
MK.2 FLOATS
COLOURS: SILVER OVERALL EXCEPT:-
EXHAUST & COLLECTOR RING: BRONZE.
FUSELAGE BAND: BLUE, BLACK OUTLINE.
L.E. OF FIN TO CHAIN LINE: BLUE.
CODE 609: WHITE ON FUSELAGE.
ALL OTHER NUMERALS & SERIALS: BLACK.
MARK 1
28
K 8440
609 K 8440
26
29
A
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C
D
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F
G
H
J
K
L
M
MK.2 PITOT
5
MK.2 OIL COOLER

Charles E. Brown photograph of a Swordfish over H.M.S. Ark Royal emphasises the stout aileron linking strut and other prominent rigging.

walkways. The interplane and undercarriage struts were faired to a streamline section, but the centre-section struts were left circular. The tail assembly was of mixed steel and dural construction, fabric-covered.

The standard defensive armament was one Vickers gun in the rear cockpit, with six spare drums of ammunition. The peculiar mounting was designed to provide runners for a tambour shutter which covered the gun breech when it was stowed, but which could be slid downwards and backwards under the gun during action. Another Vickers gun was mounted to fire forwards, but this was removed soon after entry into service, probably because of its inaccessibility when jammed. On many machines the bulged side panel on the starboard side was replaced by a flat one.

Alternative offensive weapon loadings were:

One eighteen inch torpedo	1610 lb.
One mine	1500 lb.
Six 100 lb. and eight 20 lb. bombs	760 lb.
Six 250 lb. and four 20 lb. bombs	1580 lb.
Two 500 lb. two 250 lb. and four 20 lb. bombs	1580 lb.
Three 500 lb. bombs	1500 lb.

The maximum permissible load for catapult operations was 1,500 lb., and the overload of 20 lb. sighter bombs was only carried during straight flying conditions. The Mark II and Mark III were fitted with rails to take four 60 lb. rocket projectiles under each wing.

The normal fuel load consisted of 155 gallons in the main tank which filled the fuselage space between stations C and D on the drawing, and a 12½ gallon gravity tank just forward of the pilot's instrument panel. An overload fuel tank of 69 gallons capacity could be carried under the fuselage, but more usually for long-range reconnaissance work a 60 gallon tank was mounted on the upper longerons immediately aft of the pilot, an extended hood with windshield being fitted to the centre cockpit to cover it.

Early Mark Is were powered by the Bristol Pegasus III M3 engine of 690 h.p., but later aircraft were fitted with the Pegasus XXX of 750 h.p. The performance of the Mark I was: Maximum speed 139 m.p.h. Cruising speed 104–129 m.p.h. at 5,000 ft. Landing speed 63 m.p.h. Range with torpedo 546 miles. Range with extra fuel 1,030 miles. Service ceiling 10,700 ft.

The writer acknowledges with sincere thanks the help given by Mr. J. MacDonald of Arbroath who has made a comprehensive study of the Swordfish, and who was generous in lending the fruits of his research for the preparation of this article. Thanks are also given to the Commanding Officer of H.M.S. Ariel, Lee-on-Solent, for permission to examine the Swordfish in his charge.

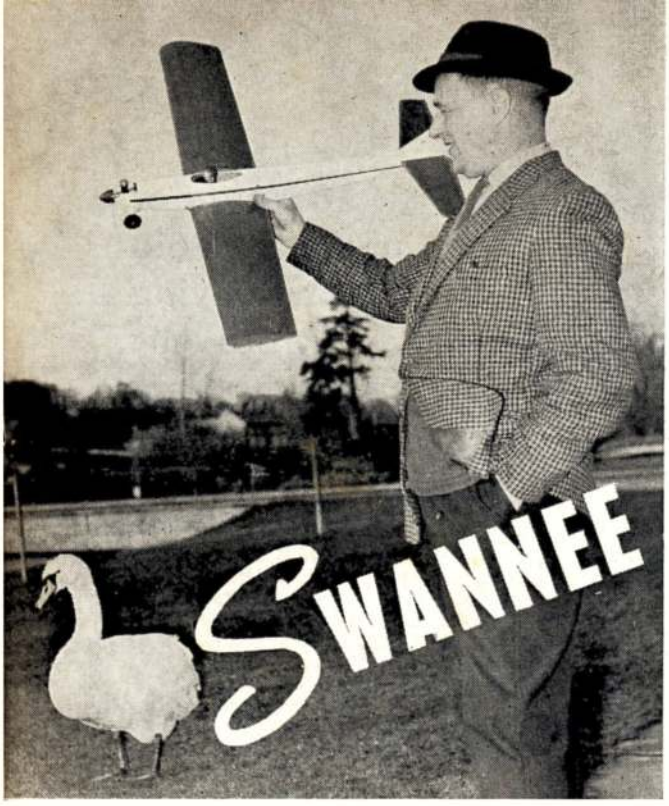
Footnote. *The machine at Lee-on-Solent is NF389, a Mark III substantially converted to Mark II standard. Another Mark III, NF370, is preserved in the Imperial War Museum. Two Mark IIs, HS618 and LS326 are preserved at the Fleet Air Arm Museum at Yeovilton; the latter machine was used in the making of the film "Sink the Bismarck", and was originally retained by the Fairey Company under Civil Registration G-AJVH.*

The leading dimensions of all marks are:—
Length, flying attitude 36′ 4″. Span, upper 45′ 6″. Span, lower 43′ 9″. Height, flying attitude 13′ 5¾″. Incidence (both wings) 4 degrees. Dihedral, upper 3 degrees. Dihedral, lower 1 degree. Sweepback, upper 4 degrees. Tail incidence, normal + 3 degrees.
Fin offset to starboard 1½ degrees.

Key to Drawing on centre pages.

1. Extra wire to leading edge when bombs are carried in wing racks.
2. Torpedo sight bars. Miniature lamps are equally-spaced along the upper edges. Electric cables are cleated to the front centre-section struts.
3. Hoisting sling of 100 cwt. cable attached to the upper longerons at the base of the rear centre-section struts. The free ends of the cables are stowed in the box in the upper centre-section with the 45 cwt. stay cables which attach to the front spar on the aircraft centre line.
4. Mountings for Type 0-3 compass. Note asymmetric layout.
5. Part of the larger, 20 element oil cooler blanked-off by a small aluminium plate.
6. Petrol filler cap, main tank.
7. Petrol filler cap, gravity tank.
8. Petrol gauges.
9. Access to oil filler cap.
10. Oil tank immersion heater.
11. Inertia starter socket.
12. This step should be removed when machine is fitted with floats.
13. Handling rail fitted in place of tailwheel on seaplane.
14. The aileron wires run parallel to the rear centre-section struts to the rocking head assembly which is connected to the ailerons by push-pull tubes. Rotating the handwheel imparts a downward bias to the ailerons of 8 degrees so that they act as flaps for catapult take-off.
15. Metal covering to the undersides as far out as here on Mark II and Mark III.
16. Forward synchronised gun rarely fitted.
17. Wing locking handles.
18. Bomb-aimer's retracting windshield.
19. Bomb-aimer's sliding hatch. Camera sometimes fitted above.
20. Seaplane towing bridle. Cable is spring-clipped to lower and then upper ends of inner front float struts.
21. Catapult spools.
22. Metal step plate over balsa fairings.
23. Dinghy release cord. A small handle was provided on upper centre-section for the pilot; another cable ran down the rear centre-section strut and along the outside of the fuselage on the starboard side level with the upper longeron, as far as the tailplane.
24. Cable from the dinghy in the port upper wing to an immersion switch on the firewall. Dinghy was automatically inflated if aircraft was submerged.
25. Zip access to sea anchor.
26. Narrow window disclosing six lead ballast weights mounted on the lower longeron on each side of the aircraft.
27. Zip inspection flaps.
28. Rod aerial fitted to all but early models.
29. Fairing panel around arrester hook 'A' frame. Note that the groove for the frame is wider on the port side to accommodate the hydraulic damper. This panel was replaced by another without grooves when the hook was removed for seaplane operations.
30. Limit of metal and anti-skid covering to lower stub plane.
31. Red warning bands on floats.
32. The wings are shown rotated about their rear spars in this view to show full chord.

N.B. K8440 was an 822 squadron machine aboard H.M.S. Courageous, and is shown in the drawing in its 1939 colouring. There is no evidence that this particular machine was ever fitted with floats. Modellers wishing to build the seaplane version are advised to substitute L2742 for K8440, and 529 for 609, or to model the prototype K4190; both these machines have been photographed fitted with floats.



YOUR FULL SIZE PLAN

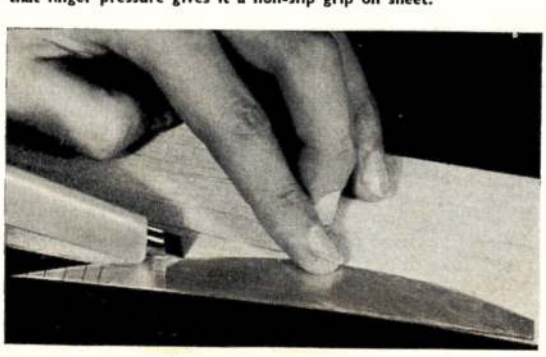
A 38 in. span single channel model

Designed by John Bowmer

AT first glance "Swannee" is a scaled down version of the popular type of multi-channel stunt model. The lines may well have a touch of Ed Kazmirski's *"Taurus"* but aerodynamically it could not be more different. Neutral stability is just the job on RCS 10 or Bonner Digimite, but it won't do for single channel work. This bird has every trick in the design book built in to ensure it knows which way is right side up, with adequate dihedral and decalage a pinch of washout, large tailplane, old Uncle Frank Zaic's Year Book and all.

The Japanese (refer to David Boddington) have gone in for ailerons in a big way for single channel low wing, but unless you are a bit of a gadgeteer, or possess a motorised actuator, it is not exactly the easiest way of doing things. Because of the design features mentioned, this model controls quite happily on rudder, and it does have better control on take off. It doesn't roll out from a turn quite so readily as the conventional high wing sports model, but one soon develops a touch of the opposite control to speed recoveries. While not so easy to fly as the designer's *"Erk"* (M.A. Feb. '63). It certainly looks better, is stronger, faster, takes off and lands better (with the wing only a couple of inches from terra firma on touchdown, the ground cushion effect is quite noticeable.)

Curved aluminium wing rib template as marked on plan. Bend so that finger pressure gives it a non-slip grip on sheet.



Construction is a slight break from the conventional, too. With the main initial consideration of reducing building time, "all balsa" construction is employed, and the resultant strength is amazing, while the weight compares favourably with conventional methods. It is suggested you cut out all the parts first, then you will have, for a very modest outlay, a "pre-fab" type kit, and you can settle down to the enjoyable bit of glueing it all together.

The importance of selecting the correct grade of balsa for the job cannot be over-emphasised, in particular the wood for the wing skin, which should be straight grain med. soft. An indication of the grades to use for the different parts is indicated on the plan, but everyone has different ideas of what "medium soft" means, so one must use ones common sense, giving consideration to the loading and function of each piece of wood in the model, see last months "Basic Aeromodelling". Anyhow, take time and care in your selection, even if it does result in strained relations with your favourite dealer. Build the model all of soft and you are setting yourself up for a steady job in the repair business. Accent on the hard and you will finish up with the proverbial winged brick.

As this design is not intended for the beginner, construction notes cover mainly points where the method deviates from normal practice.

Study carefully the sketches on the plan. Prepare and join the skin sheets, sand smooth the outer surfaces, cut the U/C slot and chamfer the trailing edge of the lower skins using a razor plane. Cut the ribs as illustrated and cement the inner leading edge strip, R2 to 6. W1 to 3 and R1 in place in that order. Accurately cut the triangular strip for setting the washout, and lightly cement in place under the TE, $\frac{1}{8}$ in. end to the tip. Pin the whole work down to the board. The upper skin is attached with P.V.A. glue, allowing several hours to set before removing the wing from the board.

Remove the strip from the underside of the TE and use in construction of the other wing half. Wing tip blocks are cut to profile and cemented on, finally shaping when set.

No dihedral braces are used, the butt joint being extremely strong when covered with the nylon strip.

Cover with lightweight tissue and give 2 coats of dope. Make up main U/C legs and cement in place.

Fairly conventional structure is used for the fuselage and sheet tail. After cutting out F1, assemble the nosewheel leg and mounting plate, as F1 can be used to align the mounting nuts for soldering. If you cannot find a suitable hinge, a brass tube soldered to the plate will suffice, as landing loads are quite light at this point. The lower plate should also be fitted at this time if your engine is radially mounted, the engine also being in place when positioning the nuts for soldering, but take care not to get solder on the bolts.

Note the differences at the aft end of the fuselage depending on whether torque rod or push-pull linkage is to be used. Make up the two fuselage sides complete and join using F1, 3 and 5. When set join aft end at tailpost. Pre-slot the soft $\frac{1}{4}$ in. balsa top for the fin, and chamfer to allow for tailplane incidence, then

Continued on page 109

16 Years of unusual Radio Control flying . . . brought to light from Australia

by J. Mulcahy

The author holds aloft his "Lucky Star", 7 ft. 2 in. wingspan O/D model. As well as being a night flier "Lucky Star" also carries a camera for daylight photography. Radio operates rudder, motor, elevator or camera from single channel cascaded escapements.

NIGHT FLYING

ONE evening early in May 1950 Ivan Unwin and the author were testing a new 6 feet span free flight glider.

They chose dusk as the time to fly while the air was flat calm. The glider would tow beautifully, so by using exactly 100 ft. of line they would time the descent with a stop watch, and trim adjustments were made between flights. This made trimming simple and accurate as each increase in glide time was because of an improvement in trim only, since there were no thermals or downdraughts to cause false times. Having decided night flying would be fun, Ivan installed two pencells and a bulb in the glider cabin and the adventures in night flying began.

The author built a six ft. span cabin monoplane to his own design which he called *"Mopoke"* and Ivan then built a four ft. span job of similar design which he called *"Little Mopoke"*.

They were both diesel powered. During construction, they had navigation light wires through the wings and fuselages connected to torch bulbs sockets at the wing tips and rear extremeties. The wing wires were soldered to brass contacts on the wing centre section which made connections with similar brass contacts on the top of the fuselage.

Two years and 186 free-night-flights later the author converted *"Mopoke"* to radio control.

After checking the range and testing for vibration troubles and finding everything alright, he switched on the navigation lights and had his first radio controlled flight of about four minutes duration. Weather conditions were perfect!

It was a pitch black calm night with a myriad of stars. Could this have been the first ever radio controlled flight at night? It was in late 1952.

There was no difficulty in controlling the model, and out of over three hundred further flights with the model, 95 per cent were at night.

At present the author has a five ft. span rudder only very aerobatic night flying job, and a seven ft. span machine fitted with rudder, elevator and three speed engine control, using cascaded escapements.

Frank Hettrich has a similarly controlled beautifully finished *"Wave-guide"* which has made many successful flights to date. Frank also learned to fly at night.

After a lot of experiments with battery sizes to give the most satisfactory lighting results it has been found that three 950 standard size torch cells soldered in series to give 4½ volts, and three 3.8 volt screw type torch bulbs give satisfaction. A standard clear bulb is screwed into the bulb socket under the tailplane, a red bulb on the port (left) wing tip and a green bulb in the starboard wing tip. Colour the red and green bulbs by using three thicknesses of coloured cellophane paper. The cellophane is pulled as tightly as possible around the glass of the bulb and bound with strong cotton on the metal stem just below the base of the glass. Excess paper covering the stem of the bulb is then trimmed off. Another method is to mix a teaspoonfull of gelatine in a small quantity of hot water and stir until dissolved. Then dip the glass of the bulb in and allow to dry. When the gelatine has dried on the bulb, dip the bulb in green or red ink, depending on the colour required.

It is important that the ink of the bulb from the previous dipping is perfectly dry, before the bulb is dipped again.

Three standard torch cell size 200 Ma Deac rechargeable cells give even better results, and have the advantage of being able to be recharged while still installed in the model. In one model Deac 450 Ma pencells are used for filament and escapements and 200 Ma Deac cells for lights. The navigation light circuit is so arranged that one or two bulbs could fail, but the remaining bulb or bulbs would remain alight.

It is advisable to twist all navigation light leads together, and for them to be kept away from radio and escapement leads, as much as possible, to avoid possible interference to radio operation.

Both my present night flying aircraft are trimmed to fly at their best with all night flying gear aboard, and when flown by day or competing in a contest, none of the lighting equipment is removed.

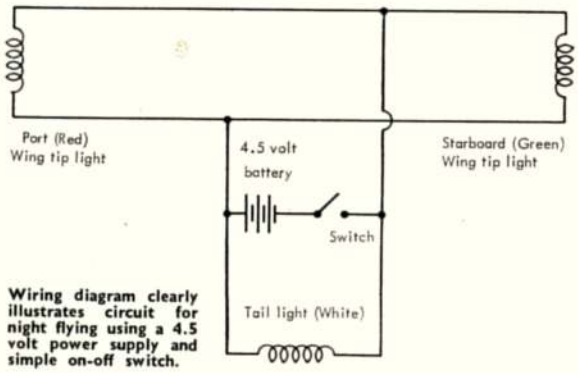
The author has also been successful in contests having gained first place in the Australian Championships once, and gained three 1st. and one 3rd. place, in Queensland State Championships, *all* with night flying equipped models.

The weight penalty, if you want to call it such, is about 13 oz. using standard torch cells, or 16 oz. using "Deac" cells.

It is an advantage for successful, enjoyable radio controlled night flying, that the three navigation lights should be visible at once, as far as possible, all the time.

Screw extention leads about eight inches long into the wing tip sockets so that the red and green lights extend beyond the wing tips. The lights then remain visible for much longer periods during manoeuvres. Build the wing tip extension sockets flush with the top surface of the wing, about one inch from the tip, and about one third the distance of the chord back from the leading edge.

All wires are carefully soldered and cemented to the structure near the soldered joints, so that vibration will not cause a broken wire. The wires are run internally in the wings and fuselage and anchored to the structure with a dab of cement every four or five inches to support them. Extension leads are made by removing the glass from a couple of fused bulbs, and separating the two wires that run to the filament. Remove the one that is connected to the brass case of the bulb. Screw the bulb base firmly into the wing tip socket and mark the side of the base nearest the wing tip. Bend a piece of 18 Gauge piano wire about ten inches long to fit once firmly around the top of the bulb case and solder, so that the wire protrudes past the wing tip, parallel to the leading edge.



Wiring diagram clearly illustrates circuit for night flying using a 4.5 volt power supply and simple on-off switch.

Solder a length of covered hook up wire to the tiny wire inside the bulb base, and then fill the inside of the bulb base with "Araldite" or epoxy glue and allow to dry.

The piano wire can be used as one of the extension wires, but it is preferable to use hook-up wire because of the lower resistance. Slide plastic tubing over the covered wires and piano wire stiffener. Now solder a bulb socket to the unattached end of the piano wire and solder the hook-up wire to the respective lugs of the holder. Your extension is now complete.

In recent years Jack and John Campbell (father and son), Frank Hettrich, Ivan Unwin, Ron Wilson, Allan Turton (now in the U.K.) to mention a few, have had well over a thousand night flights and none of the very few mishaps experienced in that time have been caused by pilot error, or because of what some may consider as extra hazards of night flying.

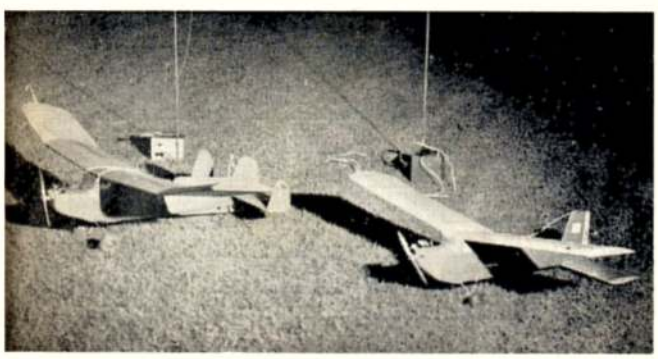
The prospective "night" aeromodeller must choose his night field carefully, being sure the field is safe to move about in the dark without the risk of injury to person or model. It must also be remembered that a field which is just large enough for safe daylight flying could be too small for night flying, as unlit obstructions around the boundries would be a danger.

Headlights of cars, and a pressure kerosene lantern are employed for light while assembling models but as soon as a model starts its take off, the headlights are switched off and the lantern put behind a screen.

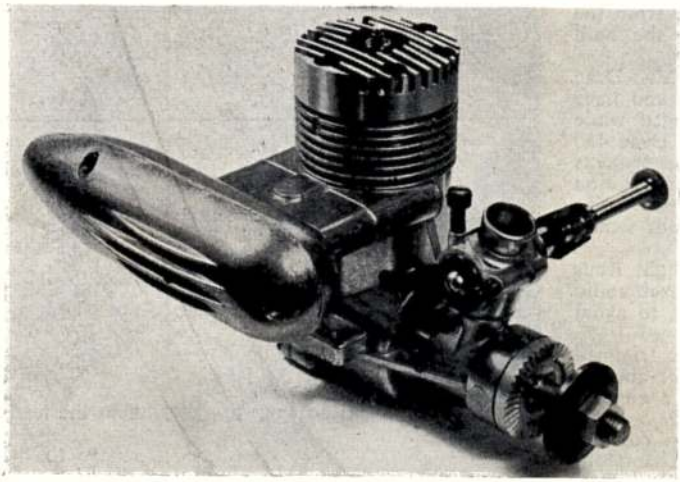
Precision night flying and aerobatics present no problems. When contests are approaching, it is usual to practice complete flight patterns Night aerobatics are very spectacular and spirals, stall turns, loops and rolls off the top of loops are carried out nearly every flying night. The only difference between day and night aerobatics is that at night they are performed at a higher altitude.

Most nights in Queensland are near-perfect for flying, and it's an enormous help to be able to perfect trim and learn to fly in pleasant calm conditions. When a chap has mastered his model in calm air, windier weather flying becomes a matter of course.

Perhaps this will inspire other aeromodellers to try night flying. We're sure they will find it as useful and pleasant as Australians have discovered.



Author's "Lucky Star" on left and Frank Hettrick's "Waveguide" on right. Note extension leads for tip lights. Both models have completed over 200 night flights.



Second in a new series of regular monthly

ENGINE TESTS

by

Peter Chinn

Designed for U.S. Pylon Racing . . . "well constructed"

O.S. MAX-H 40-R/C

(tested with silencer fitted)

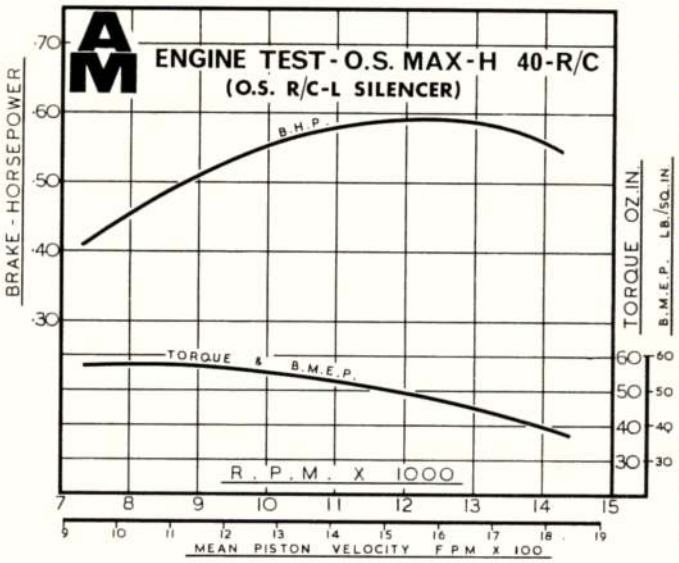
IT has to be admitted that most radio-control engines are hybrids. Very few were designed as R/C motors at the outset. The smaller jobs, as used for single-channel, are nearly always stock general purpose diesels or glows to which a throttle has been added. Early "multi" engines were usually stunt .35's equipped with throttle type carburettors and, even with the more recent .45-.60 cu. in. R/C engines, the tendency among manufacturers, to make one basic design serve more than one purpose, has persisted.

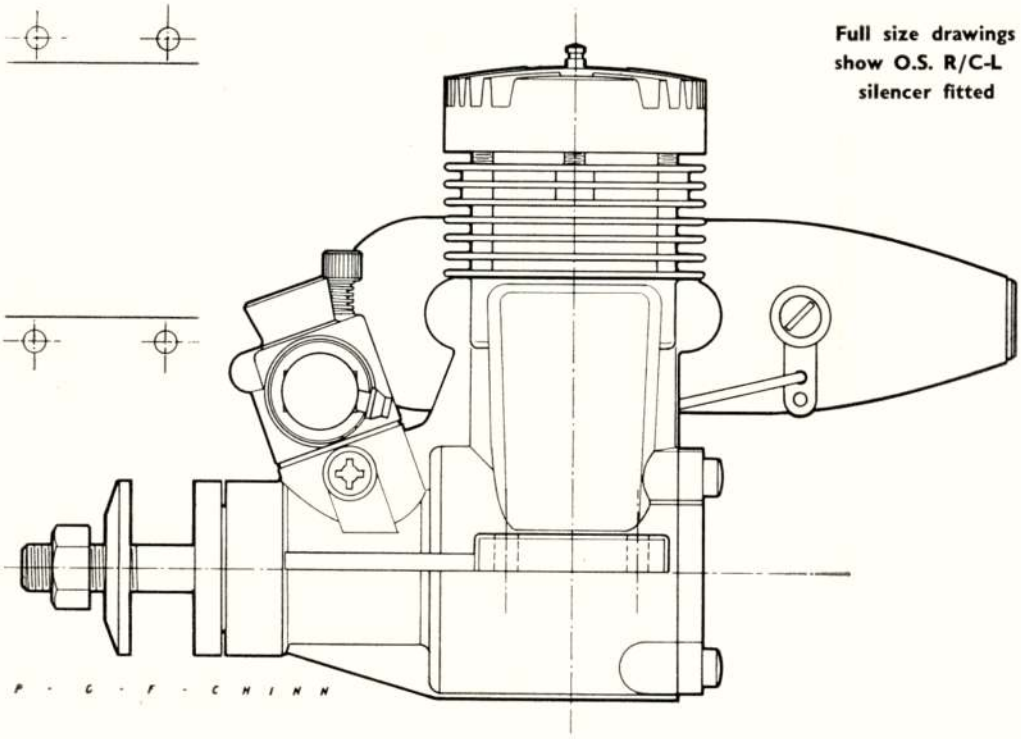
This often works better than one might suppose. Even engines that were designed purely for control-line speed (e.g. McCoy 60) can sometimes make quite good R/C motors with the addition of a suitable carburettor (and by reducing compression ratio if necessary) provided that port timing is not too extreme. If a high power output is required—as in a modern R/C aerobatic contest model—certain of the characteristics of the typical hot contest engine may, in fact, be desirable.

These may include generous intake porting and transfer passages, a light piston and conrod assembly, plus the structural rigidity and good bearings that sustained high performance calls for in any engine. If the manufacturer then makes the necessary modifications to ensure efficient carburation at low, as well as high, speeds and under conditions of extensive variation in fuel head, the basis of a good powerful R/C engine may be established. Drastically reduced carburettor choke area will, of course, be required (especially if the original design was intended for pressure feed and speeds of 16,000 r.p.m. and upwards) and this will automatically bring the b.h.p. peaking speed more into line with the prop requirements of R/C models. At the same time, it will usually be profitable to replace the cylinder with one providing modified port timing.

The O.S. Max-H 40-R/C, which is the subject of this month's report, undoubtedly benefits from the fact that it embodies basic design concepts contained in the other Max-H series high-performance engines (29R, 35C and 40-RR) without prejudice to the essential characteristics of a good R/C engine. In part, this is due to the fact that the Max-H series was conceived as a whole and not as a single type later modified to other uses.

Actually, the only components of the Max-H series that are exactly the same in all four models, are the connecting-rod and backplate. Many other parts look similar but have subtle modifications. So far as the 40-RR and 40-R/C are concerned, the latter has





Full size drawings show O.S. R/C-L silencer fitted

(quite apart from the obvious addition of the throttle system) a different cylinder with slightly smaller port areas, shorter transfer and exhaust periods, a hemispherical, instead of a wedge, combustion chamber and a slightly lower compression ratio.

Suitable Model Types

With a displacement of 6.5 cc. or .40 cu. in., the Max-H 40-R/C will probably be regarded in the U.K. as something of an "in-between". It is true, of course, that most current "full house" aerobatic models use .45-.60 cu. in. (7.5-10 cc.) engines and that, for models equipped with fewer controls, notably trainers and intermediate types, motors in the .19-.30 cu. in. (3-5 cc.) group are the generally accepted wear. However, it is worth pointing out that the Max-H 40-R/C would not be entirely out of place in a light multi since it actually equals (or in some cases exceeds) the power of most current 45-49 cu. in. R/C engines.

Where the 40-R/C has an obvious application, as American modellers have already discovered, is in "Goodyear" pylon racing. It meets, exactly, the rules laid down by the National Miniature Pylon Racing Association concerning power units for this type of event and its performance must obviously make it a serious contender. It remains to be seen whether this type of event will become popular in the U.K.

Examination of the parts of the Max-H 40-R/C discloses both intelligent design and notably good workmanship. The combined crankcase/front-housing/cylinder unit is an excellent diecasting, well-braced and extensively machined and the drop-in hardened steel cylinder liner is highly finished with cleanly cut ports. The crankshaft has an exceptionally large bore gas passage (bigger than on the O.S. 50 and 58 in fact) is finely ground on all working surfaces and avoids points of possible local weakness by the extensive use of radii. It runs in a high quality ball-bearing at the rear and a cast-in bronze bush at the front.

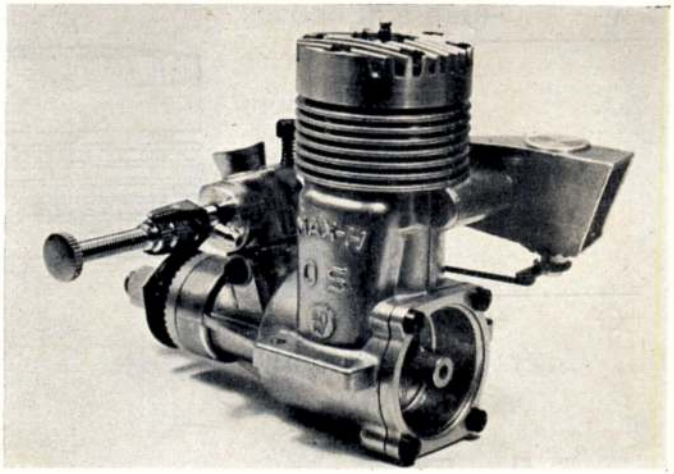
Throttles and Silencers

The carburettor is the same as that fitted to the O.S. Max-50 R/C and 58 R/C except for a slightly smaller (6.3 instead of 6.7 mm.) choke diameter. It has a ground brass throttle barrel smoothly rotating in a honed bearing surface and has the usual throttle stop and airbleed adjusting screws. The complete needle-valve assembly with tee fitting fuel inlet is mounted on the left hand side, the jet protruding into the centre of the throttle barrel which rotates around it.

No less than three types of coupled exhaust restrictor units are produced for the 40 R/C, the standard fitting, as seen in the U.K., being a right-angled, funnel-shaped diecast extension, with a vertically-pivoted butterfly valve coupled to the carburettor throttle. However, these various units are now of little concern in view of the obligation to use silencers. O.S., who were one of the first manufacturers to offer silencers for their engines, make two suitable for the 40 R/C, namely, the standard Jetstream type "L" (large) silencer, and the "R/C-L" type which has the addition of a laterally pivoted valve, in the aft section, for coupling to the carburettor throttle. Either type can be used with or without an extension duct supplied. They are made in diecast aluminium alloy half shells with machined dural nozzle rings and neat internal two-screw fixing.

Performance

One big disadvantage of many medium and large



Diecast funnel extension exhaust throttle fitted to O.S. Max-H 40-R/C is not a silencer as might be first supposed. This is in fact just an extension exhaust duct with a vertically pivoted butterfly valve located at its rear end linked to the carburettor throttle. This cannot be used with a silencer and thus the type R/C-L silencer was introduced with an internal butterfly valve.

size lapped piston engines has been the irksome and lengthy running-in period they require. Happily, this does not seem to be the case with the Max-H 40. During the first hour or two of running on our test engines, there was a slight loss of revs (2-3 per cent) in reaching running temperature from cold if the mixture was leaned out to the optimum, but there was never any question of hardening to a stop and, with the needle set a trifle rich there seems to be no reason why the 40 should not be run-in in the air. It was noticeable, however, that both hot re-starting and throttling improved after about two hours running.

Most of our tests were carried out with the R/C-L type silencer fitted. This chopped 300 to 1,000 r.p.m. off the revs depending on prop size, but the power output of the engine is so good that this can easily be afforded. On a 12 x 5 Power-Prop, for example, r.p.m. was reduced from 10,100 to 9,700. Matching the prop size closer to the engine's peaking speed, 10 x 6 and 10 x 5 Top-Flites (wood) were turned at 11,900 (11,300 with silencer) and 12,500 (11,900 with silencer). With the silencer, the engine pulled a wide range of other prop sizes quite happily, e.g. 8.100 on a 13 x 5½ Top-Flite wood, 8,700 on a 12 x 6 Power, 9,900 on an 11 x 6 Power, 10,800 on an 11 x 5 Top-Flite wood, 12,000 on an 11 x 4 Top-Flite wood and 13,500 on a 10 x 3½ Top-Flite wood.

Throttling was generally good and safe (bench) idling speeds on typical props ranged from 2,300 on an 11 x 6 to 2,900 on a 10 x 5. These required the airbleed almost fully open, but the engine remained somewhat critical to the throttle stop adjustment and we would suggest that when the throttle is coupled to a servo, any backlash in the linkage would need to be taken up.

As suggested by the r.p.m. figures on big props, the Max-H 40 R/C delivered notably good torque, and this reached nearly 58 oz. in. at 8,000 r.p.m. with the silencer fitted. As is usual with orthodox silencer systems, torque dropped off a little faster, as load was reduced, than it did without the silencer but the decline of the torque curve was by no means steep and, as a result, a very good maximum output of 0.59 b.h.p. at approximately 12,400 r.p.m. was recorded. Without the silencer, the engine reached .70 b.h.p. at 13,700 r.p.m.

The outstanding feature of the Max-H 40-R/C is, undoubtedly, its high power output and we think it is sufficiently well designed and constructed to stand up to this sort of performance, without deterioration, for long periods. Incidentally, the O.S. No. 7 bar-type glow plug survived all running and testing.

Power/Weight Ratio (as tested complete with silencer): 0.89 b.h.p./lb.

Specific Output (as tested complete with silencer): 91 b.h.p./litre.

SPECIFICATION

Type: Single-cylinder, air-cooled, loop-scavenged, two-stroke cycle glowplug ignition with ball-bearing crankshaft. Shaft type rotary-valve induction. Coupled throttle system.
Bore: 20.6 mm (0.8110 in.) Stroke: 19.5 mm. (0.7677 in.)
Stroke/Bore Ratio: 0.947:1
Weight: 9.9 oz. (with standard exhaust valve)
10.6 oz. (with Jetstream R/C-L silencer)

General Structural Data

Pressure diecast aluminium alloy *crankcase/cylinder block/front housing* unit with detachable *rear cover* secured with four Phillips screws. Case-hardened steel *crankshaft*, with 13 mm. dia. journal, 9.8 mm. bore gas passage and 6.35 mm. dia. hollow crankpin and counterbalanced by machined-in crescent counter weight supplemented by cutaway web flanks. 13 x 28 mm. 8-ball heavy duty *ball-bearing main*, supplemented by bronze *outer bearing*. Hardened steel *cylinder liner* located in cylinder block by flange at top and secured by cylinder head. Meehanite *piston* with flat crown and straight baffle filleted at base and with internal annular stiffening web above gudgeon-pin bosses. Fully-floating case-hardened 5 mm. dia. tubular steel *gudgeon-pin* with brass pads. Machined 24ST3 duralumin *connecting-rod* with two lubrication holes at big end. Pressure diecast and machined aluminium alloy *cylinder head* with cast-in brass thread insert for glowplug, recessed soft aluminium blowout-proof gasket and secured to cylinder block with six Phillips screws. Pressure diecast aluminium alloy *carburettor body* seating on rubber grommet in intake boss and secured with two screws. Ground brass *throttle barrel* rotating in honed bearing surface in carburettor body. Plated brass *spraybar assembly* with flexible needle-valve extension. Pressure diecast aluminium alloy right-angled *exhaust duct* with machined dural butterfly throttle unit and optional extension adaptor and interchangeable with Jetstream "L" or "R/C-L" silencers.

TEST CONDITIONS

Running time prior to test: 2 hours
Fuel used: 5 per cent nitromethane, 25 per cent Duckhams Racing Castor-Oil, 70 per cent, I.C.I. methanol.
Glowplug used: O.S. No.7 bar type, platinum filament, 1.5 volt.
Air temperature: 62 deg.F (17 deg.C)
Barometer: 29.8 in. Hg.
Silencer type: O.S. Jetstream R/C-L.

THE NEW 1966

McCOY's

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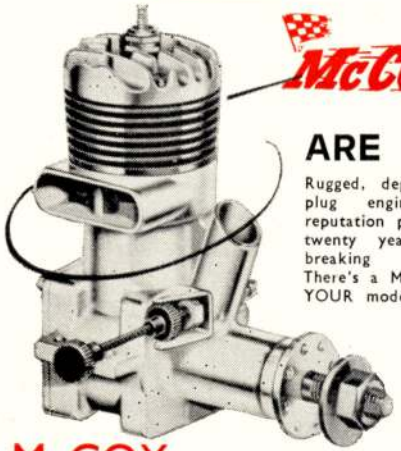

Rugged, dependable glow-plug engines with a reputation proven by over twenty years of record breaking performance. There's a McCoy to match YOUR model at an amazing low price!

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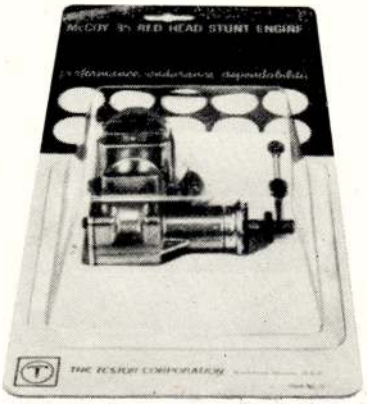

McCOY 19 STUNT

Snappy short stroke engine for free flight or control line. Just watch it lick the other 19's—and just look at the sensational price!

only 67/6!

SPECIFICATION

Bore	.642
Stroke	.617
Displacement	.19
Weight	6.0 ounces
H.P. Rating	.40 at 13,000

McCOY 19 R/C

Same specification as the 19 stunt, but fitted with the special McCoy barrel-type throttle for R/C work. Power to fly a 'Tauri', or similar model.

only 109/6!

SPECIFICATION

Bore	.642
Stroke	.617
Displacement	.19
Weight	7.0 ounces
H.P. Rating	.40 at 13,000

McCOY 29 STUNT

Rugged power a'plenty for that larger free flight or control line stunt model. Develops over one half horsepower.

only 74/6!

SPECIFICATION

Bore	.732
Stroke	.712
Displacement	.29
Weight	7.0 ounces
H.P. Rating	.54 at 12,500

McCOY 35 STUNT

Larger bore and stroke (not a bored-out 29) for a genuine 0.6 BHP at only 7 ounces weight! Superb for control line stunt.

only 79/6!

SPECIFICATION

Bore	.775
Stroke	.740
Displacement	.35
Weight	7.0 ounces
H.P. Rating	.60 at 12,500

McCOY 35 R/C

Handles those 'full house' multi models with lightweight gear, or puts real pep into a medium size R/C job. With full throttle control.

only 133/6!

SPECIFICATION

Bore	.775
Stroke	.740
Displacement	.35
Weight	8.0 ounces
H.P. Rating	.60 at 12,500

McCOY 40 STUNT

Pepped up by that little extra displacement for handling those really big control-liners. Fit the throttle of your choice for R/C pylon racing!

only 105/-!

SPECIFICATION

Bore	.828
Stroke	.740
Displacement	.40
Weight	8.0 ounces
H.P. Rating	.60 at 12,500

McCOY 60 SERIES 20

Best in the world and unrivalled as a precision 'racing' engine the '60' gives 1.32 BHP in power output! Handles the largest size of models with ease.

359/6

SPECIFICATION

Bore	.94
Stroke	.875
Displacement	.60
Weight	14 ounces

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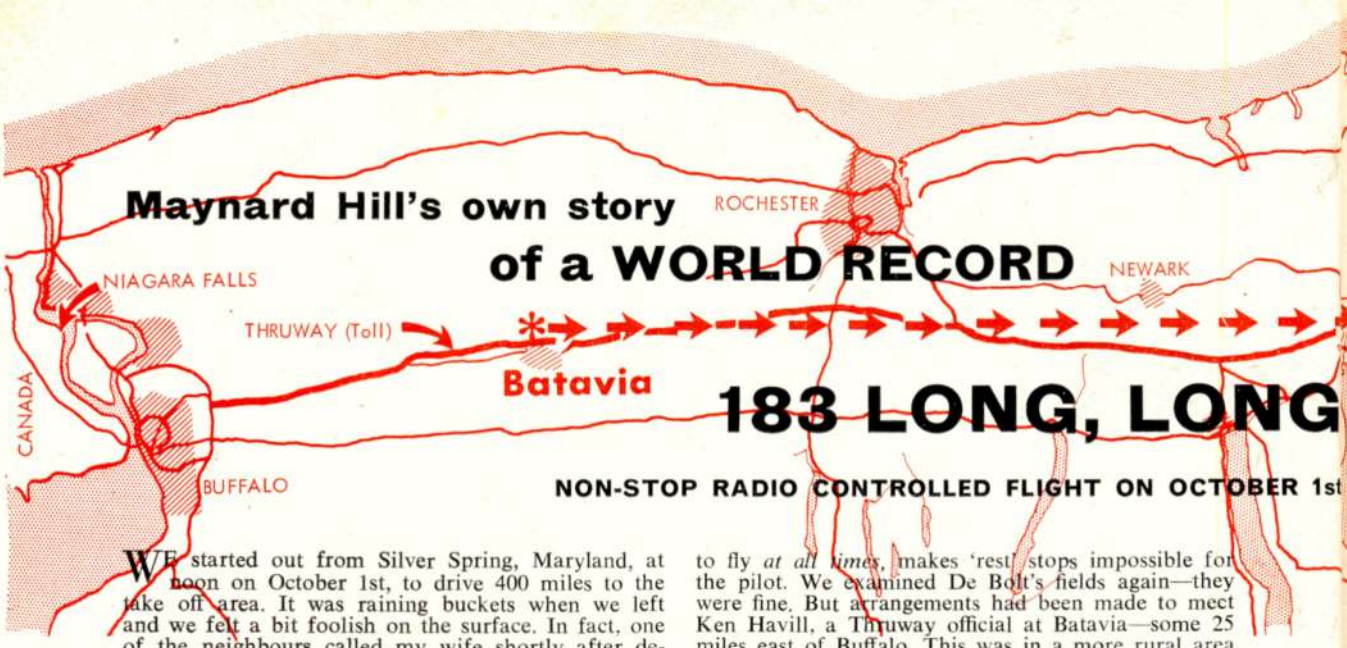


Maynard Hill's own story of a WORLD RECORD

183 LONG, LONG

NON-STOP RADIO CONTROLLED FLIGHT ON OCTOBER 1st

WE started out from Silver Spring, Maryland, at noon on October 1st, to drive 400 miles to the take off area. It was raining buckets when we left and we felt a bit foolish on the surface. In fact, one of the neighbours called my wife shortly after departure—to find out if I'd gone off my rocker, I suppose. The weather map showed rain over the entire northeastern quarter of the United States. But this was exactly what we wanted—for we'd become familiar with the weather pattern in upper New York and we knew that we had good chances for clear skies and good westerly tailwinds within the next day or two.

Ray Cramer, a colleague (Aerodynamicist at the Applied Physics Lab, Johns Hopkins University) and George Wells, the Academy of Model Aeronautics P.R. director went along from Silver Spring. Ray drove his convertible over 1,200 miles between noon on Friday and midnight Saturday. George was not along in any official capacity as P.R. man—he was to be co-Contest Director with Harold De Bolt who we met in Buffalo about midnight.

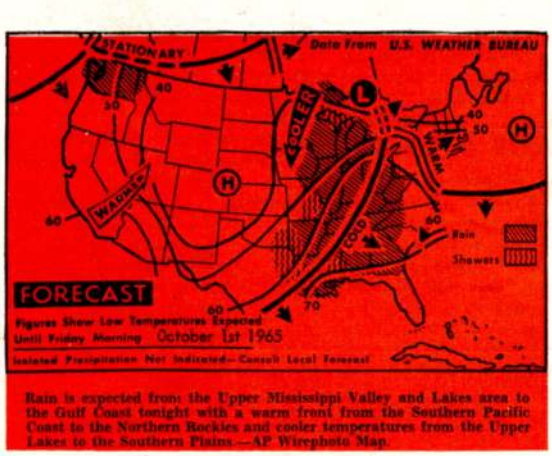
It was still raining at midnight, but we went out to survey several take off sites that Harold had located. Also we were at a motel right aside of the Buffalo airport and Jerry Stuerbutzel knew a direct route to the Weather Bureau office. The prophet there was very helpful. He predicted winds from West-Northwest at 15-20 knots for the next morning. He was right, the sky was generally sunny at 7 a.m. and by 8 a.m., there was a stiff westerly wind.

We were all careful what we ate for breakfast—because that new ruling by CIAM, requiring one person to fly *at all times*, makes 'rest' stops impossible for the pilot. We examined De Bolt's fields again—they were fine. But arrangements had been made to meet Ken Havill, a Thruway official at Batavia—some 25 miles east of Buffalo. This was in a more rural area and we found an excellent launch site on a farm about 1 mile north of the thruway interchange.

We pondered the Thruway map for a while and decided to go to the closest interchange beyond that needed to beat Mr. Malikov's existing world record of 155 miles. We agreed with Mr. Havill that we ought to get off the Thruway for landing, even though we had a patrol car that could have been used to slow routine traffic. We were asked to stop only in case of emergencies.

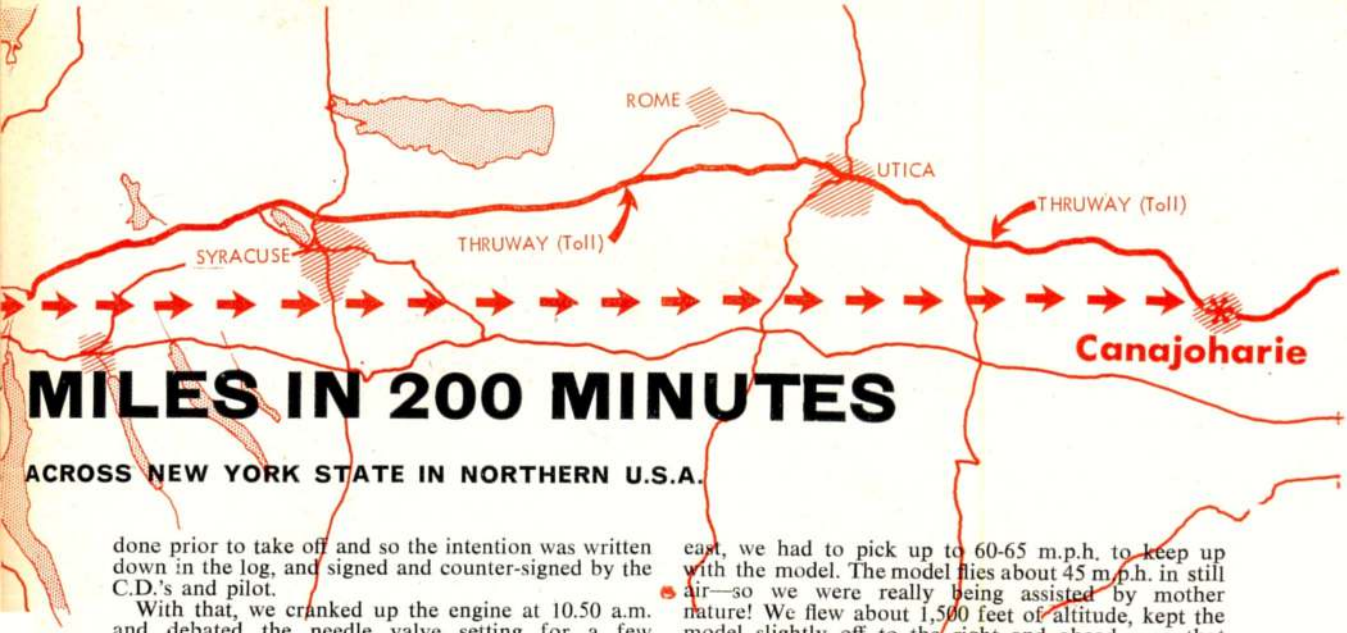
As a matter of side interest, permission had been obtained from the thruway Authority by first contacting Governor Rockefellor, of New York. Permission was granted on the basis of past experience by our crew and with the model, and rather careful thought was put into the safety of all concerned—which includes normal travellers on the Thruway. On the surface, it might seem like a simple thing to get in a convertible and drive heavy-foot down the road—but when you really get involved in it, you find the logistics and possible consequences are a bit frightening. We did an awful lot of practical flying in Maryland to be sure we knew how to set the needle valve for this trip!

The Canojoharie interchange was found to be 183 miles from the launch site and so we committed ourselves to landing in them within one kilometre of the toll booth at that place. This of course, must be



Rain is expected from the Upper Mississippi Valley and Lakes area to the Gulf Coast tonight with a warm front from the Southern Pacific Coast to the Northern Rockies and cooler temperatures from the Upper Lakes to the Southern Plains.—AP Wirephoto Map.

Get Ready . . .



MILES IN 200 MINUTES

ACROSS NEW YORK STATE IN NORTHERN U.S.A.

done prior to take off and so the intention was written down in the log, and signed and counter-signed by the C.D.'s and pilot.

With that, we cranked up the engine at 10.50 a.m. and debated the needle valve setting for a few minutes. I find with mufflers and long range fuels, its necessary to make the engine sag rich on the ground and have it pick up quite a few r.p.m. when put in the air. With the Merco 61, I use a 14 in. x 8 in. prop. with the Gee-Dee-Pike muffler, and a Veco-19 throttle for extra suction, at that lower power used. This will turn 5,700 r.p.m. if peaked out on the ground, but the engine will overheat and stop within 2 or 3 minutes if launched at this setting. It is necessary to 'sag' it to about 4,500 on the rich side prior to launch. Then it will go 6,000 to 6,200 in the air and run very happily.

We launched at 11.03 a.m., three minutes behind schedule and started towards the Thruway within two or three minutes. The entourage included Ray Cramer driving the convertible in the lead, with George Wells and myself in his car. Harold De Bolt with his two sons, and Don Blackburn followed next in Hal's fancy chrysler and Ken Havill with Jerry Stuerbutzel brought up the rear. We had Citizens Band for communication in cast of emergencies.

We covered the 1.2 miles to the Thruway in about 4 minutes—even though this was in a direct cross wind direction— and the wind was about 18 m.p.h. by now. We were travelling about 40 m.p.h. in this leg of the trip. We picked up our Thruway toll ticket very rapidly (there are large roofs over such places) and zipped onto the highway. As soon as we headed out east, we had to pick up to 60-65 m.p.h. to keep up with the model. The model flies about 45 m.p.h. in still air—so we were really being assisted by mother nature! We flew about 1,500 feet of altitude, kept the model slightly off to the right and ahead— so that it would blow off into the woods instead of crashing on the Thruway if something went wrong.

It was terribly cold in the convertible—air temperature was 52 deg. on the ground and open convertibles have a turbulence that circulates over the back seat. Ray and George were quite comfortable up front with the heater, and side windows up—but after 10-15 minutes I was almost ready to quit. We pulled out an overcoat that had been packed, threw it over my legs and this helped a bit.

The flight down the Thruway took 3 hours and 20 minutes—we cruised at 60 m.p.h. most of the time. Very few people realized that we were doing anything unusual There were strong thermals under the large thatchy cumulus clouds all over the sky, and the

Weather map for the day of the record flight indicates the favourable drift across the northern section of New York State which had been anticipated. Maynard Hill maintains a file of weather maps and these conditions are typical of October with fast moving cold fronts that bring rain for a few days then strong westerly winds when the cool air moves in. This dictated selection of the site far away from Maynard's home in Maryland as well as the need for a clearway with less traffic than in the densely populated areas. Pre-launch pic shows author tuning the Merco 61 with Roy Cramer in 200 acre alfafa field. 20 mph wind came through gap in woods, De Bolt launched the "Stretcher". At right, Maynard ducks on a low pass during tests for altitude record flight of 13,328 ft. with same model. Points to consider when reading this story of achievement which we specially requested are that the crew had no previous knowledge of the route, the groundspeed exceeded any sports car average over similar London-Manchester distance in Gt. Britain and the tank had enough fuel remaining to double the distance had prior arrangements been made and the car range not been limited to the usual 210 miles or so.

An attempt by other modellers in Texas terminated at 192 miles on a 196 mile target so cannot be claimed since a requirement of the record is that the model should reach its destination.

model would climb drastically while under them. Concern over visibility of the model would then force me to put down-trim into the model—and during some of these descents we had to speed up to 75 to 80 m.p.h., to stay with it. It is a pleasureable way to fly—quite easy in comparison to closed course flying (providing of course that everything keeps working as it did for us.) You simply feel you're flying into a very strong headwind and making no progress. Most of the flying is done with the rudder—just to keep it on course and off the Thruway. We had only two disturbing incidents during the trip. One was a single lane construction near Syracuse, where we had to slow the car down to 20 m.p.h. for several miles. We simply did "S" turns rather than fool with the throttle which was kept in full bore the entire trip. Then about 5 or 6 miles from our destination, we reached the highest point on the Thruway—some 850 feet, and started down a long hill for the next 2 miles or so. I had to press a lot of down-elevator during this time, and when we reached level ground, we found we had to slow down to 25-30 m.p.h. to wait for the model. A plume of smoke was coming out of the muffler—and this was very disturbing, for I knew it wasn't supposed to do that—and it was probably going to quit shortly. I reasoned that the long dive had cooled off the engine and that we'd best do something to heat it up quickly! The model virtually hung on the prop. in a quite high angle of attack. This apparently worked, for within about a minute we were climbing up from the 200 ft. low we had reached and were again at 1,500 feet. Down-trim was cranked in again and we steamed on home to Canojoharie at our usual pace of 60 m.p.h.

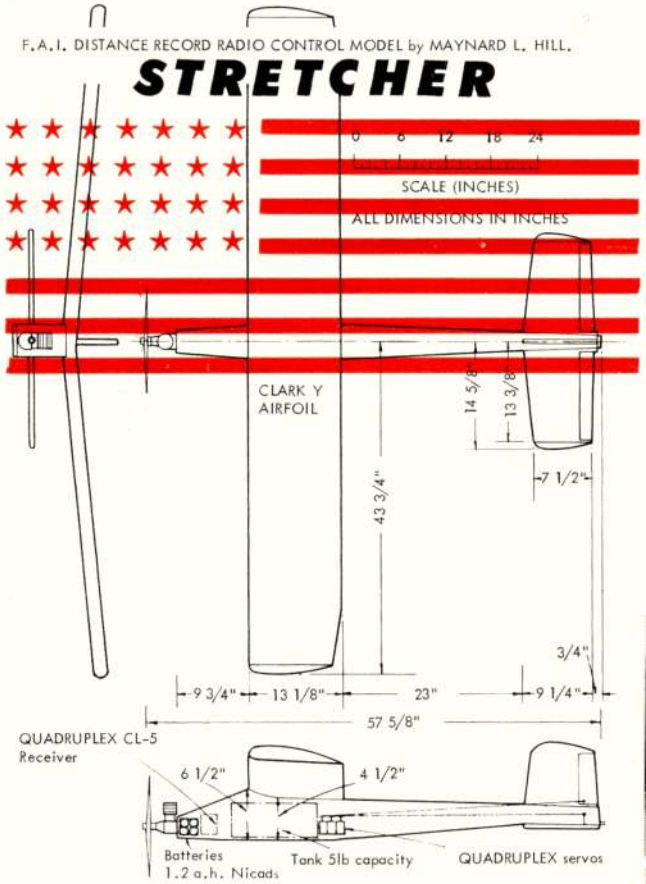
We had no prior knowledge as to just what sort of landing field we'd find. And essentially we didn't really find one, I was prepared to dive the model in vertically on the concrete if this turned out to be necessary! But Hal De Bolt found a small field next to the loop of ramp road leading to the toll booth. We came in over the trees and hit some very turbulent air, but managed to land with just a broken propeller. The 14 in. x 8 in. props I use are a rare vintage type, but I didn't feel too bad about that!

We all made the necessary measurements, (we were some 620 feet from the designated spot and no matter how you convert it, that's a lot less than 1 kilometre) got all the verifying signatures and then tramped off to the nearest restaurant to find some pilots relief tubes and to fill our bellies, everybody had missed lunch and no one had a chance for a rest stop. I suspect that if they had a chance, every member of this crew would vote to change the CIAM's ruling about that. If people in other parts of the world can find ways to comply with it, then we Americans can drum up plenty of pioneer spirit and keep up with them. But really, the difficult challenge of these records in the technical effort necessary to develop the models, and I worry that this rule might serve only to inhibit people by virtue of side difficulties that they surely must contemplate before starting Record breaking is indeed a fascinating game that can lead to new progress in the hobby. We'd like to see many more people participating in it.

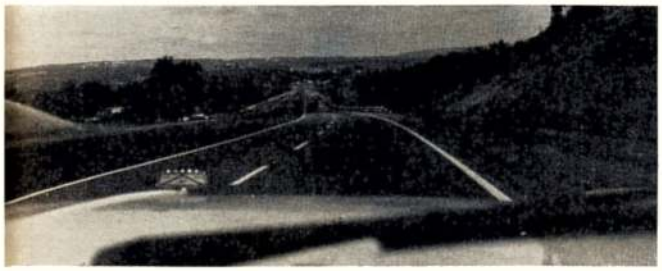
Some of the special thanks are due to the makers of various equipments in this model. It is a pleasure to thank England's Dennis Allen for making **Merco** engines. Many, many hours of running, some of it quite abusive are involved in getting ready for deviation or distance flights. The Merco's seem to tolerate this exceedingly well—and they behave quite systematically over long periods of time. This is quite important, for it is easy to reach faulty conclusions about effects of variations in fuel if bearings, rings, etc. are wearing out in the progress. Then too, Geoff Pike's **Gee-Dee** muffler is a good inovation. It not only makes the noise go away— it *really* does save fuel. Systematic tests showed about an 80 per cent saving in fuel at the power levels employed here. The **DeeBee CL-5** unit was of course a jewel—not a 'glitch' or miss was observed in the whole 183 miles even though we flew under mazes of high tension lines, under bridges and past many high power radio and television transmitters.

And as for people, this article would increase in length by another 100 per cent if I tried to thank everyone who helped. But I cannot omit thanking Henry Nicholls—who has promptly provided replacements for bent crankshafts, carburettor parts etc., that were ruined when the Mercos reached the ground unexpectedly in tests, and the crew that went on the trip—Harold De Bolt, George Wells, Ken Havill, Jerry Stuerbutzel, Don Blackburn and particularly Ray Cramer who skillfully did the hardest job of the flight— all of these deserve special thanks for their dedicated assistance. Many members of the DCRC club have provided much help in the long testing and development phases and I am most grateful to them —as well as to literally hundreds of modellers throughout the United States and Europe who pitched in useful ideas and hardware—such as vintage propellers for which we maintain a continued search.!

F.A.I. DISTANCE RECORD RADIO CONTROL MODEL by MAYNARD L. HILL.



At the end of the flight, Maynard Hill poses with model and radio Tx at Toll booth exit from the Thruway. Tired eyes and windswept hair were but slight discomforts! Right, the reliable Merco 61 with G-D-Pike silencer and 14 x 8 prop — quite a rare club to use these days! Model started carrying 4.4 lbs. of fuel, finished with a little less than 2 lbs. remaining. Formula was 1 part white petroleum spirit, 4 parts methanol, 1 part alcohol, plus oil we presume. Typical view through windshield below shows the fine highway. Photos at right and on page 101 by Freemont Davis.



Latest Engine News . . . *Cont.*

shaft-valves in favour of discs. Incidentally, it also looks as though O.S., new to the 5 cc. speed class, have missed the boat with their shaft-valve Max H 29R introduced just over a year ago. A couple of years earlier this could have been well up with the winners, but 152 m.p.h. (its Japanese Nats winning speed) and a potential of, perhaps, 160 m.p.h. maximum, is just not fast enough these days for international class competition.

One of the problems that has always faced designers of disc-valve engines has been the difficulty of evolving a valve rotor that would not wear rapidly, wobble, warp or otherwise become mis-aligned. Most manufacturers shied away from aluminium rotors some years ago, the first notable departure being the moulded plastic rotor used by the Dooling 29 in 1949. Other non-metallic materials used since, with varying degrees of success, have included Tufnol, nylon and delrin but difficulties have never been resolved 100 per cent.

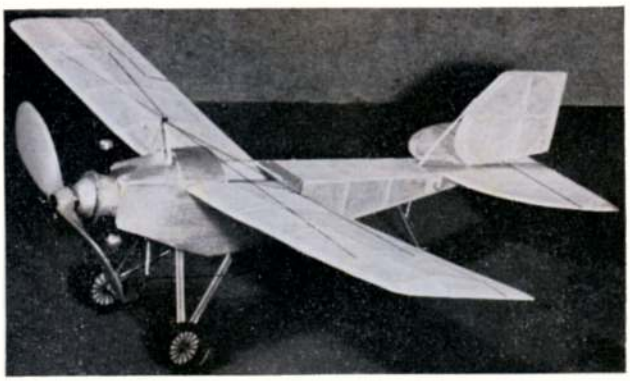
This problem is, in fact, reputed to have delayed the introduction of the new Super-Tigre G.21/29RV by several months. Various combinations of metallic and non-metallic materials were tried before the present rotor was adopted. This is apparently a glass-fibre reinforced nylon and has a moulded-in bronze bush.

Fox 29X-BB

The other new rear-disc 29, the Fox 29X-BB tackles the problem differently. The new Fox, in fact, uses a steel valve rotor. This is machined in one piece with a $\frac{3}{16}$ in. dia. shaft that rotates in the solid machined aluminium backplate, instead of the more normal practice of mounting the valve on a pin pressed into the backplate. The rotor and shaft are both case-hardened. On the face of it, it seems reasonable to suppose that this set-up should take care of most wear and alignment problems. The one snag to a steel rotor is its weight. Since it is almost impossible to perfectly balance any rotor disc, extra weight is obviously undesirable. However, by keeping the valve disc fairly thin (1/10 in.) and further reducing its thickness (to only 24 thou.) each side of the crankpin slot, Duke Fox has managed to improve balance to some extent. This is further aided by putting the intake port in the bottom right-hand corner (rather than the more usual upper right-hand corner) of the backplate, so that the crankpin slot is exactly opposite the valve sector.

Other features of this new Fox include a very hefty hardened crankshaft supported in $\frac{1}{2}$ in. i.d. and $\frac{3}{8}$ in. i.d. ball-bearings; a solid steel prop driver keyed to the shaft with a Woodruff key; a very wide exhaust port covering 194 degrees of the bore circumference and the gudgeon-pin retained by circlips in the piston bosses. The engine has a $\frac{1}{4}$ in. bore intake and is intended for pressure feed only via a bladder tank. There is no provision for tapping crankcase pressure. The needle-valve, which is of the type originally used on the Fox 29R, is sweated to a hardened steel plate attached to the backplate. The plate has a slot in the centre, which engages a groove in the end of the rotor shaft and serves to retain the latter as well as providing a means of adjusting rotor-to-backplate clearance by the use of shims. The main casting is an adaption of the current 36/40 unit, with the addition of a steel housing to take the front ball-bearing. The somewhat plentiful quota of ferrous metals in the engine's construction contributes to a slightly above average weight of 9.8 oz.

A wee scale rubber flyer from Ray Malmstrom



Eastbourne Aircraft Co. 1913

monoplane

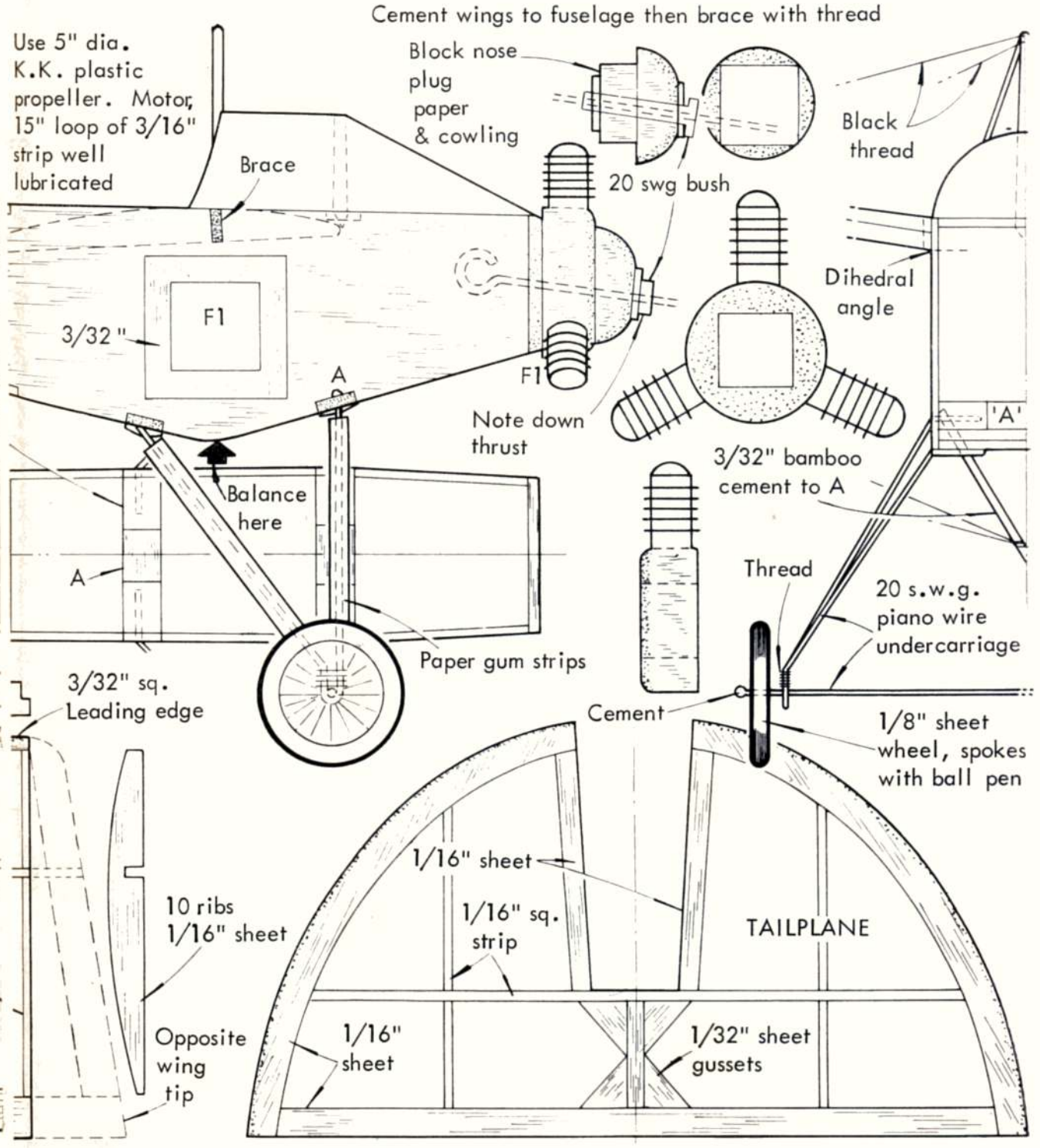
Designed by Ray Malmstrom

PORT WING
(repeat to dotted outline for starboard)

1/16" x 3/16" strip
1/16" sq. strip
1/16" sheet
Bamboo
1/32" sheet gusset
3/32" x 1/16" strip
FUSELAGE SIDE (make two)
3/32" dowel
Developed card paper cowling
Bamboo strip
1/16" sq. strip
1/16" sheet
Cut
1/16" sheet brace
Tape U/C legs to 'A'
1/16" sheet
FUSELAGE SIDE
Fin slot
Cover in light weight tissue and apply one coat of clear dope
1/16" sheet spar
3/16" sheet rigging blocks
1/16" sheet tip
1/16" sheet trailing edge
Angle this rib for dihedral

Here's a real vintage aeroplane, and one that despite its obvious suitability as a model flying machine, seems to have escaped the notice of the "scale boys". Way back in 1913 the Eastbourne Aviation Company's Monoplane turned out to be a fine little flyer. It has 29.2ft. span, 21ft. long, and was powered by a 35 h.p. Anzani three-cylinder engine. Our model of the E.A.C. Monoplane is simple and fun to build from these plans. You will get a great thrill from its realistic flight, recalling for you those early "do-or-die" days of aviation. Balance the model carefully, test glide over long grass and then after checking for correct downthrust and adding a wee mite (1/16in. approx.) of offset you'll be ready to go. Maximum turns on lubricated "run-in" rubber are about 650.

"Oh! Mary where's my cap and goggles—I'm aviating this afternoon"



John O'Donnell

resumes his column from 'Model Aircraft'

on Free Flight

being a contestant's view on recent decisions

"BUSINESS as usual" and "under new management" would seem to be the appropriate stock phrases with which to open my first monthly contribution for "Aeromodeller". The "reason why" will be quite apparent to most readers.

Followers of F.A.I. matters will have come to the conclusion long ago that big flyoffs at the World Championships are inevitably a prelude to proposals (and usually decisions) to alter the model specifications. The results from Kauhava certainly seem to have produced this effect at the C.I.A.M., (model side of the F.A.I.) meeting held in Paris from 17th to 19th November '65.

The out-voting of a British proposal to leave the specifications unchanged was followed by decisions to change both the Wakefield and Power requirements. The rubber allowance for Wakefields was reduced from 50 to 40 grams, whilst standard methanol/castor oil glow fuel (supplied by the organisers) is to be mandatory for Power. Both these proposals had quite convincing majorities—but even more drastic notions (35 grams and 1.5 cc. motors in current size and weight models) were mentioned.

That these changes will reduce performance is undeniable, and it can be argued that this is desirable. It would seem to me, however, that the proposals have been made because of the large flyoffs at Kauhava, without due appreciation as to how these arose. The combination of thermals and tactical flying seen in Finland produced scores out of all relation to the dead air capabilities of the models. Some of those participating at Kauhava would have turned in 5 x 3 mins. with Coupe d'Hiver models or, I dare say, with chuck gliders under those conditions.

As the performance of Wakefield and Power will decrease there will be inevitably an increased emphasis on thermal flying and all events will be flown in the same way as already adopted for A/2. The F.A.I.'s confirmation of a prescribed 50 x 100 metre (minimum) launching area will concentrate fliers and this has been shown to increase the amount of tactical flying. Whilst this might be acceptable to individuals (even if boring to their timekeepers) it is rather hard on the nerves of other International team members anxious about the round time running out.

All my 50 gram Wakefields have done about 3:15 to 3:20 in evening or early morning conditions so durations using 40 grams can only be expected to be in the 2:40 region. The inability to climb through low level turbulence in rough weather is liable to be even more important. Although present day Wakefields are fairly strong they do not make ideal bad weather models and can already turn in some pretty depressing scores if turbulence or sink is encountered.

Initial methods of coping with the rubber reduction will undoubtedly be simply to "poke another set of holes for the motor peg" (to borrow from a Joe Bilgri quotation). The short run/fast climb theory is sure to be expounded, but I am very far from being convinced that this is the best approach. Those inclined towards gadgetry may try such devices as variable tail incidence, wing camber and the like. These may well enable a Wakefield to be thrown much harder on launch without producing disastrous loops.

Power offers more scope for speculation. Whilst at first glance the elimination of nitromethane and the accompanying "buying" of power would seem attractive, it would also seem to have many undesirable implications. For most fliers it will become all important to possess a "good" motor—by this I mean one that runs well, rather than necessarily the latest product advertised. A handful of modellers will be able to mechanically rework motors themselves, or find someone to do it for them. When a similar fuel rule was introduced in C/L speed, performance failed to drop as much as expected due to developments in engine tuning. Much of this is quite beyond the capabilities of the average modeller who is able to little beyond voiding the guarantee by dismantling his engine. It is surely no coincidence that study of American speed fliers reveals trade connections and a complete absence of "stock" engines from the results. There is also the aspect that "standard fuel" is often anything but standard as demonstrated by fliers gaining or losing 5 m.p.h. at the World Speed Champs compared with their home performance. F.A.I. power models are not hard to trim safely, but best adjustment may be critical and dependant on engine r.p.m. on some designs.

The almost universal use of glow plug motors may well come to an end. There are many advantages in reverting to diesels, such as their ability to turn a large propeller and the opportunity of continuing to use fuel additives. Other possibilities include spark iginition, as I recollect the late Louis Garami's speed flight of 192 m.p.h. (circa 1949) using magneto ignition and oxygen boost. But this type of thing is hardly practical for most people.

All-in-all I cannot see any increase in interest resulting from these specifications changes. Furthermore, I am sure that there is something definitely lacking in a World Championship specification when the resultant models can be easily outflown by "open" versions.

Main news at the domestic level concerns the **1966 S.M.A.E. contest programme.** Following a initial draft discussed at the S.M.A.E. Council Meeting and A.G.M. in November, the programme was finalised at the following Council Meeting on 11th December. Conversation with two of the people present has enabled a fairly complete picture to be obtained.

Basically, the programme is much the same as usual with about half a dozen Area-semi-centralised events, plus the Nationals and other centralised events. This is hardly inspired—but, even worse, shows a complete disregard for the views, interest and support (from a wide area) demonstrated at the discussion following the A.G.M. for a programme based on a limited number of Centralised Meetings. These were considered by several club delegates to have more appeal than the present low-prestige area-semi centralised events (for which even the S.M.A.E. does not always publish the results). Consideration was to have been given to these views but doesn't seem to have materialised.

Many clubs and Areas stage events on dates already featuring S.M.A.E. area contests and hence demonstrate just how important the National events are considered. A change in the whole concept of our National contest programme would seem long overdue.

The **free flight trials** for the 1967 World Championships are scheduled to be held at Everleigh Dropping Zone in October and November '66. The logic of holding the Trials at this time escapes me completely. At the S.M.A.E. A.G.M. I personally queried the value of picking the teams the year before the Champs, and was assured that the opinions of the '65 teams would be ascertained. My viewpoint is that time to prepare is no substitute for enthusiasm, and the latter can well disappear before the Champs. Others are known to have opposing views but the 1965 team do not appear to have been consulted.

Despite often repeated exhortations to express views to the S.M.A.E. at their A.G.M. it is beginning to dawn on me that actually doing so is largely a waste of time and effort. Perhaps I should have imitated many other contest fliers and attended the Richmond Gala held on the same day.

The just announced specification changes should obviously have been considered before fixing the Trials. Whilst Wakefields may or may not change much, Power is liable to be a very different story as far as the motive power goes. It will be some time before the best approach emerges and is generally adopted—and only the really keen F.A.I. specialists are likely to devote the time and effort in the midst of the busy contest season to battle with new problems. Whilst such people may well make the team in any case, due consideration needs to be given to popularising the classes if F.A.I. is not to degenerate to being the interest of a few "diehards".

Holding the Trials around May '67 would appear to be a far better arrangement and hardly more risky as regards weather than November.

There is one final aspect of the Trials that must receive comment, and that is the decision to insist on silencers being used. Whilst there is logic in this, it is of the *ad absurdum* variety. By now I would have thought that the silencer rule would have been admitted to be unenforcable except for contest participants who often have to watch others sport-flying unsilenced at the same venue. To conduct a silenced Trials is hardly going to increase G.B.'s chances in the '67 Championships as the best silenced models may be far from being the best unsilenced ones (and this is what we are supposed to be trying to select).

Tuned exhaust silencers may be theoretically (and even demonstrably) increase power at a specific and narrow range of r.p.m. but fall into the province of the model engineer, who can already rework his engine. The enthusiast restricted to buying his equipment "over the counter" is at an even further disadvantage.

The successful Team members (and presumably the inevitable British proxies for the New Zealand models) are going to want to do some effective trimming before the Championships—or will this also have to be done with silencers? If so, then the effects will certainly be adverse both on our chances and on those willing to pay their own fares under this handicap. If not, then holding silenced Trials really is officialdom being officious.

1966 S.M.A.E. CONTEST PROGRAMME

March 13th	Indoor		*R.A.F. Cardington*
March 27th	=FAI Glider	(K & MAA Cup)	
	Open Power	(Frog Senior)	
	+Open Rubber		*at Area Venues*
	Coupe d'Hiver		
April 3rd	Indoor		*R.A.F. Cardington*
April 17th	=FAI Power	(Halfax Trophy)	
	Open Rubber	(Gamage Cup)	*at Area Venues*
	+Open Glider		
May 8th	Indoor		*R.A.F. Cardington*
May 15th	=FAI Rubber	(Weston Cup)	
	=Open Power	(White Cup)	*at Area Venues*
	+Frog Junior	(Open R.P.G.)	
May 29th	**British Nationals & Area Championships.**		*R.A.F. Hullavington*
	X+Open Rubber	("M.A." Trophy)	
	X+Open Power	(Shelley Trophy)	
	XØ R/C Multi	(S.M.A.E. Trophy)	
	R/C Scale	Qualifying Flights	
	C/L Scale	" (Knokke Trophy)	
	XTeam Race A	Davies "A"	
	Combat	(Heats)	
	C/L Speed Handicap		
	(*Plus* one unorthodox event)		
May 30th	X+Open Glider	(Thurston Cup)	
	R.G.P.	(Womens Cup)	
	X ØR/C Multi	(S.M.A.E. Trophy)	
	R/C Scale	Judging	
	C/L Scale	Judging	
	XTeam Race ½A	(RAFMAA Trophy)	
	Stunt	("Gold" Trophy)	
	Combat	Finals	
June 19th	*Indoor Trials*		*R.A.F. Cardington*
June 26th	*Control Line Trials*		**R.A.F. Swinderby*
July 3rd	=Team Glider	('M.E.' Cup)	
	+FAI Power	(Astral Trophy)	
	Open Rubber		*at Area Venues*
July 17th	All scale Meeting		
	Ripmax (Single Channel R/C)		
	Superscale Trophy (Free flight)		**R.A.F.*
	C/L Scale		*Swinderby*
July 31st	Indoor		*R.A.F. Cardington*
Aug. 14th	=Team Power	(Keil Trophy)	
	+FAI Rubber	(Gutteridge Trophy)	*at Area*
	Open Glider		*Venues*
	Ø R/C at one Area venue		
Aug 27/28th	**Control Line World Championships.**		*R.A.F. Swinderby*
Sept. 4th	**Northern Gala**		**R.A.F. Church Fenton*
	Open Rubber	(Caton Trophy)	
	Open Glider	(CMA Cup)	
	Open Power	(Hamley Trophy)	
	Tailless	(Lady Shelley Trophy)	
	PAA Load	(PAA Cup)	
	Ø R/C Multi	(Taplin Trophy)	
	Team Race ½A	(Budapest Trophy)	
	Team Race A	(Wharfedale Trophy)	
	Team Race B	(ETA Cup)	
	Combat	—	
	Stunt	—	
Sept. 11th	=Team Rubber	(Farrow Shield)	*at Area Venues*
	+FAI Glider	(SMAE Cup)	
	Open Power		
	Radio Control (Multi) possible Team Trials at one		*Area Venue*
Oct. 2nd	**Southern Gala**		**R.A.F. Odiham*
	Open Rubber	(Flight Cup)	
	Open Glider	(Pilcher Cup)	
	Open Power	—	
	½A Power	(Quickstart Trophy)	
	Chuck Glider	—	
	Ø R/C Multi	(Aeromodeller Trophy)	
	Team Race ½A		
	Team Race A		
	Combat		
Oct. 8/9th	*F/F Trials*		*Everleigh Dropping Zone*
Nov. 5/6th	*F/F Trials*		*Everleigh Dropping Zone*

= Plugge Trophy Points for **Champion Club**
Ø Sid Allen Points for **R/C Champion**
\+ **Senior and Junior Championship** event.
X Whitney Straight **Area Championship** Trophy
Senior and Junior Houlberg Trophies to highest placing competitors in 4 nominated events at **National Championships** (No more than 2 of which are to be in one class *i.e.* free flight and 2 C/L or scale or R/C).
* Provisional Venues.
ALL EVENTS FOR POWER MODELS REQUIRE SILENCERS

CLUB AND CONTEST *NEWS*

Formed only recently, Wilmslow M.A.C. started flying together at displays and balloon bursting contests. These Cheshire lads fly control line models of all shapes and sizes.

WHISPERING
RALLY

On arrival at Chobham, the weather was flat calm, with cloud just above ground level. The control tent was pitched at "The Clump", and all was ready for the 'off' by 10 a.m. Just 10 minutes later, there was a shift of wind by 180 degrees, the wind became gale force, and torrential rain fell. Control was then moved to the "Cross Roads". fortunately, no one having made any flights. Although later in the day, the wind and rain stopped a little, at no time were the conditions good. Because of this, hand launch was allowed in **Coupe d'Hiver**, in a hope to encourage the entry. In **A/1 glider**, Ken Smith (Croydon) proved his superiority over an entry of 14 flying a somewhat small area design, with a total of 5:35 (3 x 2 min. max's). Second place was Paul Newell (Surbiton) with his elegant elliptical tipped design "*Syncopator*" presented free, (the plan, not the model!) in the January AEROMODELLER. **Coupe d'Hiver** attracted 12 entries and was won by Pete Cameron (Crawley) 3:39 flying club mate John Wilson's design "*Orbiteer*". This model developed over the past two years is extremely simple, and strong. Smallish area allows it to cope with all weathers and had by far the best power pattern, helped by some reasonably good Dunlop rubber. But for a bad spot of downdraught in the last flight, he would have beaten second placer Jack Allen 3:38 (Brighton) by more than 11 seconds. His model sported a diamond fuselage and double blade folder, but in spite of this could not quite match the winners climb. Models have varied in design but the long motor-run slow prop combination, used by Wells (Hornchurch) and Gordon Cornell (Croydon), just could not cope with the extremely windy and turbulent conditions. Colin Greig (East Grinstead) placed 4th with an A.P.S. "*Baron Knight*" flying in his first Coupe d'Hiver contest.

Tony "The Arm" Slater was the **chuck glider** victor, and his five-flight total of 2:43 was excellent for the day. Crawley's champion chucker, Jack Darby, was second flying his "*Early Bird*" design, making 2:21. Total entries were 8, including John West, using the arm-power instead of the usual Super Tigre.

The weather undoubtedly stopped many who were there from entering. Surprisingly, not one motor was heard during the day, the meeting really living up to its "Whispering Rally" tag.

Two N.A. F.A.I. Gala shots by Ron Firth, right Bill Bailey and Terry Toolan start Bill's power job, above Brian Martin's S.T. HTL model. Below at Crawley "Whispering Rally", left C. Gregg with a "Baron Knight", right P. Cameron launches "Orbiteer".

STRENGTH TO STRENGTH

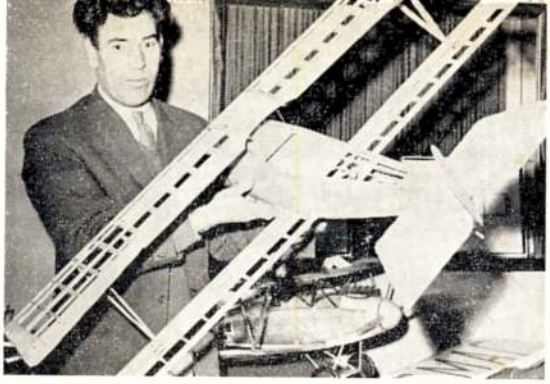
This is how H. D. Tappin describes the progress of Harrogate D.M.A.C. over the past 12 months. At present five members have multi radio control gear and they plan to enter the Nationals. Under construction at present are several interesting projects including a 7 foot span multi R/C "*S.E. 5a*", a control line "*Shackleton*" and a multi radio control "*Uplift*" M.A. designs by Chris Olsen.

NORTHERN AREA F.A.I. GALA

Held at R.A.F. Topcliffe, Yorkshire on October 24th the fifth Northern Area F.A.I. Gala was graced with good weather and some excellent flying. Unfortunately only Team Racing and the general results have been reported to date in the "N.A. News". With 18 entries the first round of team racing saw two teams break five minutes. Kirton/Peart (Novocastria) 4:57 and Place/Haworth (Wharfedale) 4:55. In round two, Place Haworth made a sparkling 4:36 for fastest time of the meeting. Balch/King (Hayes/Feltham) also reached the final with a second round time of 4:51. Also seen in round two was a non stop run by McKensie but unfortunately this could not be counted as neither of the other two models completed more than 50 laps. There was excitement in the final when after the first pit stop Place/Haworth's motor went "off" tune. Don Haworth caught it with the Eta .15 still running and turned up the compression, to win with a time of 10.05 despite this set back. Kirton/Peart placed 2nd with 11:06.1 and Balch/King 3rd with 12:01. In A/2 for the *Neasham Trophy* Mike Woodhouse (Norwich came out tops with 13:00. J. O'Donnell (Whitefield) 12:58 placed 2nd and R. Pollard (Tynemouth) 12:18, 3rd. In all 32 of 39 entries flew. **Power** attracted 18 entries and 14 recorded times. George French won with the only perfect score and John West (Brighton) placed 2nd with 14:57. A. Carter (Liverpool) 14:15. **Wakefield** was topped by H. Tubbs

Coming Events . . . .

FEB. 13	*Airtech R/C Spot Landing Contest.* Haddenham, Bucks, Single and Multi. Pre-entry 2/6 to:—T. D. Smith, 80 Belgrave Rd., Aylesbury, Bucks.
March 6	*St. Albans M.A.C. Vintage Gala.* Chobham Common. A/1 glider All-in F.A.I. Coupe d'Hiver. Vintage Event—enquiries V. Taylor, 96a, Victoria Street, St. Albans. Herts.
April 3	*Rolls Royce M.A.C.* Pylon Race. Thulston (B.5010, 5 miles south of Derby).
April 3	*Esher M.A.C. F.A.I.* Team Race, Fairmile Circuit. pre-entry limited to 25.
May 1	*Airtech Free Flight Rally.* Haddenham Bucks. Open. R/G/P. and Chuck Glider.
June 19	*Bristol Radio Rally* R.A.F. Colerne, Nr. Bath.
July 17	*East Midlands. C/L* Speed Rally.



Above, Jack Fisher holds his Nieuport that is destined to have Min-X 10 channel R/C. Albatros in background also from Clayton M.A.C. Photo taken during Five Towns M.A.C. "Those Magnificent Men in their Flying Machines" display. Left, Ed Warwick of Lee Bees ½A power winner at the Richmond Gala reported last month. Ed is only 12 years of age and this was his second contest. His first outing was an S.M.A.E. centralised meeting where he totalled 8:52.

(Baildon) Made 15:00 plus 4:00 in the three man fly-off. T. Stoker (Baildon) made 2nd place with 3:15 fly-off time and J. Shaw (Sheffield S.A.) 3:05 third place. All 20 entries flew in Wakefield. **Control Line Stunt** for the *Sheffield Shield* attracted 4 entries with Geoff Higgs the Victor. **Combat** with 4:) entries was topped by L. Scufield (Tynemouth) who defeated S. Smith of Feltham. Whitefield took home the *'Wilkinson Challenge Shield"* for the team free flight with a total of 39:57.

Pen Pals

Tadeusz Osyra, Opole, ul Kosnego 2/8 Poland would like to swap Polish plastic kits for English ones. Tadeusz can write in English very well. Billy Felton 1901 West 14 Street, Sioux City, Iowa 51103 U.S.A. is 14 years old and would like to correspond on W.W.I. Scale. Tommy Kadaz, 16 Dega Ave., East Bentleigh Victoria, Australia, would like to correspond on control line flying, Tommy is 17 years of age.

Newly Formed Clubs

Two new clubs this month, starting at home Sale M.C. in Cheshire has an active interest in all forms of boats and aircraft modelling. Locals should contact the secretary: T. Winter, 23, Mersey Road, Sale. In West Germany a club has formed at R.A.F. Gutersloh again with interest in all classes. Entering the R.A.F. West German Championships R.A.F. Gutersloh placed second in Rat Race and Combat—utilizing the same model for each event!

SEXTUPLE TAURII AND SENATORS

Southampton M.A.C. are being dominated by *Taurii* these days with 6 six channel versions under construction by members, only one having taken to the air due to servo problems. Another problem is the consistant and strong radio control interference at the Beaulieu flying site, emiting from the direction of Fawley oil refinery this having downed several models in past weeks. Other radio models constructed included a *"Crusader"*, *"Uproar"* quite a few *"Baz Bombs"* not forgetting Pete Cock's "galloping ghost' and "Ginger" the Chairman's O/D mult model that awaits delivery of Nucleonic proportional gear. A dozen members are constructing *"Senator"* rubber jobs for one model inter-club contest, especially instigated to help juniors to mix it with the older members and provide some fun flying for all. Incentive has been offered in the form of 8/9d cash refund (kit price) to all juniors who produce their completed model on the day.

SWANNEE continued from page 93

cement in place. Shape the top fuselage to as rounded a cross section as possible, taking the corners down to the edge of the $\frac{3}{32}$ in. sq. strip. Add tailplane, fin and dorsal strip, making sure the fin is accurately aligned.

Mount the escapement or actuator on $\frac{1}{16}$ in. ply and position between F4 and F5, complete the linkage to the rudder and check operation. When all is well, fit the bottom $\frac{3}{32}$ in. sheet and complete the shaping of the fuselage. Obtain a smooth surface with the aid of sanding sealer.

Radio Installation

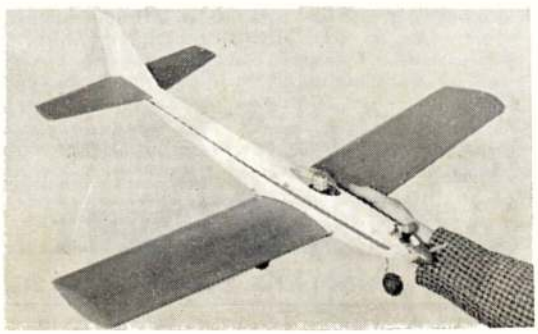
Both push-pull and torque rod systems have been used, and standard practice was observed in the linkage. A relayless receiver is used, the battery being a 3.6V DEAC 225. This is positioned well forward in the nose compartment to obtain balance with a Cox Babe Bee (radial mounting is lighter than beam). As a guide, the radio installation in the original weighs 4 ozs. all-up weight is 16 ozs. and a good rate of climb is obtained using an .049 engine and 6 in. x 4 in. prop.

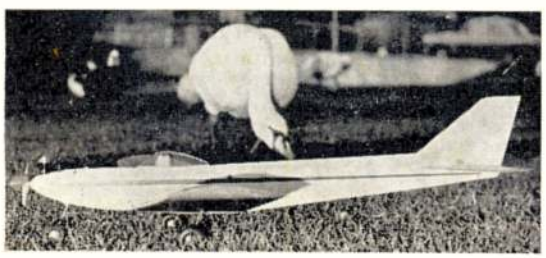
In order to keep the weight penalty to minimum, the wings and tail were covered with light coloured lightweight tissue and given two coats of clear dope. The fuselage was finished with Humbrol enamel, and the whole model fuel-proofed.

Flying

Set the rudder linkage for $\frac{1}{4}$ in. trailing edge movement each way at first. Adjust the elevator trim tab for a smooth fast glide, with no trace of stall. Run the engine rich for the first power flights, and adjust the side thrust for straight flight, executing only gentle turns when low down and giving opposite control if the turn appears to steepen. Keep increasing power, and adjust side thrust until a dead straight climb is obtained, checking any tendency to stall by increasing downthrust. The original trimmed out with 3 deg.-4 deg. *right* and 3deg. *down*, but each model will vary, and caution is advised until the correct settings are obtained.

At left, Swannee displays its elegant lines. Below, a relation inspects his/her wooden brother outside our editorial offices at Hemel Hempstead, Cox Babe in fixed wing version.





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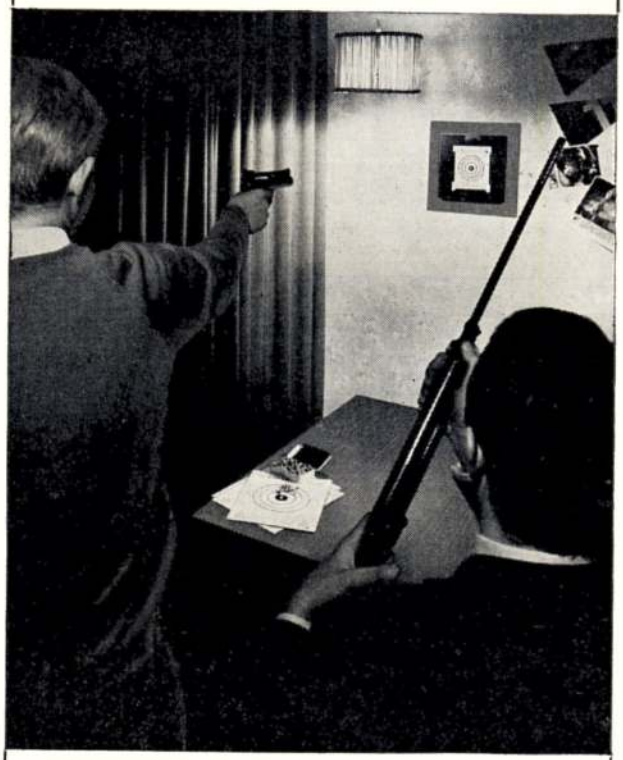

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Date: June 19, 1966 . . . **Place** near Bath . . . **Details:** S.A.E. to Dr. G. Henley, 47 Pembroke Road, Clifton, Bristol 8 . . . **Organising Club:** Bristol R.C.M.A.C.

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Goodyear Race Meeting to N.M.P.R.A. rules at R.A.F. Hullavington on April 11 *(to evaluate organisation, and allow competitors to practice under Race conditions, in preparation for Bath Festival).* Sponsored by **G. Franklin** *(Radio Control Models),* **P. Gardener** *(Aviette Kits),* **Ed. Johnson** *(Radio Control).* **Starting money** (£30) is available for distribution among all who record an Official Race Time at Hullavington on April 11, 1966!

Full details from Dr. G. Henley, as above

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B.29 SUPERFORTRESS MARKINGS

Three Variants for the Latest AIRFIX 1/72nd scale Kit of the Month

For night operations, some **B-29s** had black undersurfaces. This one, 44-61989 also carried large Buzz markings on front and rear plus a yellow band to render an unusual colouring. Upper surfaces were natural metal.

In service with the Royal Air Force as the **"Washington"** ex-Pacific Force B-29s had the individual code letter in the fin. This one (WF 443) served with 115 Sqdn. at Marham as KO-D in 1950 and appeared as WP-A of 90 Sqdn. at the same base in 1952.

42-24487 **"Bengal Lancer"** of the 468th Group with two Blue diagonal rudder stripes of the 793rd Bombardment Squadron. Note the enlarged Buzz number over the fin serial. This aircraft entered service in October 1944 with the 20th A.F.

W. WRIGHT.

NOW'S THE TIME —

TO START PREPARING FOR THE 1966 FLYING SEASON

Choose a Model Worth Building!

RADIAN
with coupled wing flaps and elevators

The latest thing in small stunt controliners for .049 motors. Kit contents include die-cut parts, stunt tank, preformed U/C, formed canopy, all hardware, full size plan and instructions, 22" wingspan. **21/-**

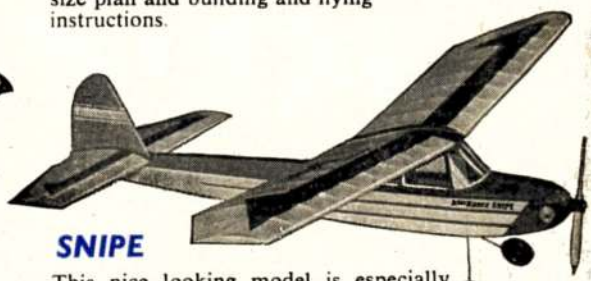
MINI SUPER

48" wingspan. For 1.5 to 2.5 c.c. engines. Single channel or intermediate R/C. **£4.18.0**

Keilkraft's newest radio control model. A real pleasure to build and fly. Kit contents include—All parts pre-cut, metal clunk tank, preformed undercarriage, three sponge rubber wheels, pre-shaped leading edge section, full size plan and building and flying instructions.

TALON

Combat design of considerable strength. Easy and quick to build. A fully aerobatic model that is great fun to fly. For 2.5 to 3.5 c.c. engines. Wingspan 32". **30/6**



SNIPE

This nice looking model is especially suitable for beginners as it is so easy to build and fly. It has been designed specially for .5 diesels and .8 glow motors and is capable of real contest performance. The kit contains die-cut parts for speedy and accurate assembly. Wingspan 40". **24/3**

FIREFLY

Stunt model with "profile" type fuselage, specially designed for engines under 1 c.c. Kit contains diecut parts. Wingspan 20". **19/11**

PHANTOM MITE

Just about the toughest model available to the newcomer to control line flying. Features all sheet construction with wings, tailplane, fin and fuselage sides ready cut to shape. Suitable for .5 to .8 motors. Wingspan 16". **17/9**

DEMON

Class A team racer to the new S.M.A.E. specification. Kit contains die-cut parts. For engines up to 2.5 c.c. Wingspan 30". **36/3**

Choose KEILKRAFT FOR A GREAT PERFORMANCE

MARK 1

MARK 1

PLANS NOTICE

Reprints of this 1/48th scale plan plus 1/24th scale dye-lines are sold as plan pack B.H. 2795, price 2s. 6d. plus 6d. postage from A.P.S. 13-35 Bridge Street. Hemel Hempstead, Herts.

MK.2 PITOT

MK.2 GENERATOR

COLOURS: SILVER OVERALL EXCEPT:- EXHAUST & COLLECTOR RING: BRONZE. FUSELAGE BAND: BLUE. BLACK OUTLINE. L.E. OF FIN TO CHAIN LINE: BLUE. CODE 6O9: WHITE ON FUSELAGE. ALL OTHER NUMERALS & SERIALS: BLACK.

MK.2 FLOATS

MARK 2

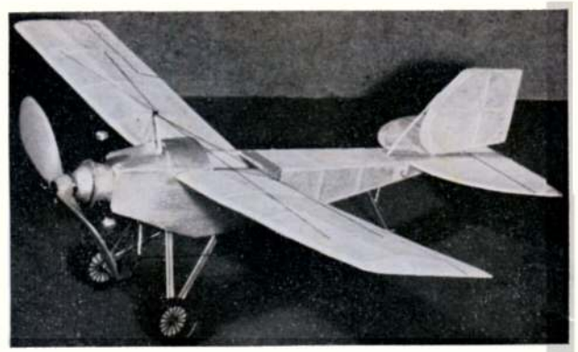
MARK 1

MARK 1

MK.2 OIL COOLER

FAIREY "SWORDFISH" MARKS 1 & 2

A wee scale rubber flyer from Ray Malmstrom



Here's a real vintage aeroplane, and one that despite its obvious suitability as a model flying machine, seems to have escaped the notice of the "scale boys". Way back in 1913 the Eastbourne Aviation Company's Monoplane turned out to be a fine little flyer. It has 29.2ft. span, 21ft. long, and was powered by a 35 h.p. Anzani three-cylinder engine. Our model of the E.A.C. Monoplane is simple and fun to build from these plans. You will get a great thrill from its realistic flight, recalling for you those early "do-or-die" days of aviation. Balance the model carefully, test glide over long grass and then after checking for correct downthrust and adding a wee mite (1/16in. approx.) of offset you'll be ready to go. Maximum turns on lubricated "run-in" rubber are about 650.

"Oh! Mary where's my cap and goggles—I'm aviating this afternoon"

1/16" x 3/16" strip

1/16" sq. strip

1/16" sheet

Bamboo

1/32" sheet gusset

3/32" x 1/16" strip

Use 5" dia. K.K. plastic propeller. Motor, 15" loop of 3/16" strip well lubricated

Brace

Cement wings to fuselage then brace with thread

Block nose plug paper & cowling

20 swg bush

Black thread

Dihedral angle

FUSELAGE SIDE (make two)

3/32" dowel

Developed card paper cowling

Cut

Bamboo strip

1/16" sheet brace

1/16" sq. strip

1/16" sheet

3/32"

F1

A

F1

Note down thrust

Tape U/C egs to 'A'

Balance here

'A'

3/32" bamboo cement to A

1/16" sheet

FUSELAGE SIDE

Fin slot

A

Thread

20 s.w.g. piano wire undercarriage

Cover in light weight tissue and apply one coat of clear dope

1/16" sheet spar

Paper gum strips

Cement

1/8" sheet wheel, spokes with ball pen

3/32" sq. Leading edge

3/16" sheet rigging blocks

Eastbourne Aircraft Co. 1913

monoplane

Designed by Ray Malmstrom

1/16" sheet tip

Angle this rib for dihedrd

10 ribs 1/16" sheet

1/16" sheet trailing edge

PORT WING

(repeat to dotted outline for starboard

Opposite wing tip

1/16" sheet

1/16" sq. strip

TAILPLANE

1/16" sheet

1/32" sheet gussets