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AERO MODELLER

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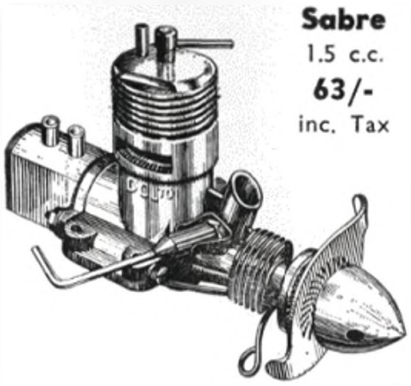

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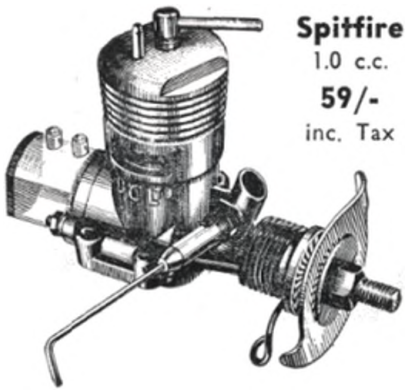

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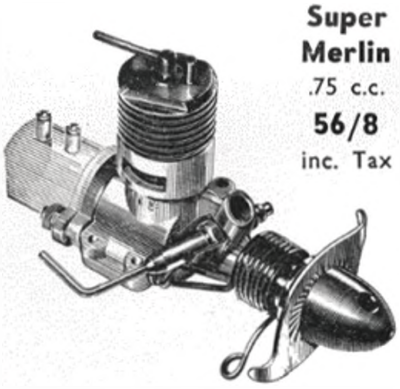

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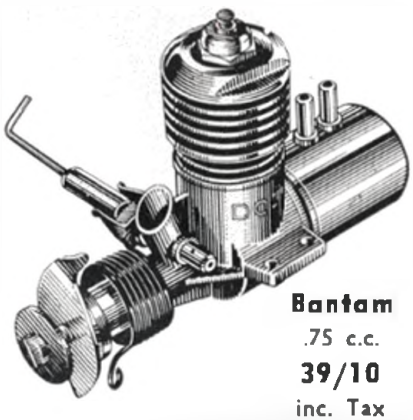

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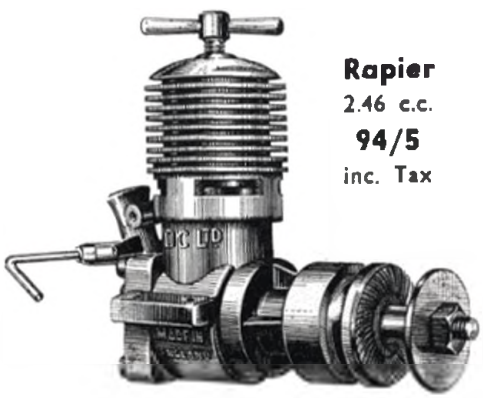

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R. G. MOULTON

other modelling angles . . .

The "Do it Yourself" brigade should welcome October issue of **Radio Control Models & Electronics**. . . . For the first time they will have the opportunity of building a British all transistor multi transmitter suitable for competition work and supported by commercially available sets of parts. Biggest feature is the full-size plan—a great little model for single channel which commemorates a fine personality. It was P. E. Norman's last design and in his memory we have called it "Penfriend".

Model Maker for October has another 18 in. yacht as a full-size plan. Called "Minnow", it is a most elegant and attractive racing type model whose performance belies its size. Other features of the issue are drawings for H.M.S. "Resolution" 1918 battleship, M.S. "Worcestershire", the last steam Customs cutter on the Thames, and an Egyptian State Barge ; there are also articles on making hulls from gummed paper, model boating overseas, the A class yacht championships, how to use a centre-punch, crossing the Solent with R/C models, the National R/C Speed eliminating rounds, an Italian armoured car, using timber to best advantage in hull building, and many other well-written and well illustrated articles.

October **Model Cars** carries a bevy of fine scale drawings—among them the AC Cobra, the 1964 F/1 Ferrari V8, 1908 Austin Grand Prix Car and M.G. Magnette K3 of 1933-4. Satisfied ? Steering Geometry explained, visit to the Newport Track. Listing of Lotus cars by type number, the Ferrari Berlinetta and Mercedes 220 SE Coupe detailed for modelling—all these 'plus' current news—now on sale.

Editorial and Advertisement offices

38 Clarendon Road, Watford, Herts

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

AERO MODELLER

MAP HOBBY MAGAZINE

October 1964

VOLUME XXIX No. 345

contents

cover

A spray of Gladioli, two gold medals and a pair of bright neckbands are just part of the honours bestowed upon Don Haworth and Dick Place of Wharfedale M.A.C. for their magnificent victory in the World Championships for Team Racing. Held at Budapest, Hungary, the final on August 2nd was a true milestone in the progress of British aeromodelling and we feel sure that their victory will help to stimulate further enthusiasm for the class in this country. A full report on the meeting will be found on pages 500 to 505 of this issue. To quote from an overseas newsletter F.A.I. T/R News—"No two more deserving World Champions could be found and certainly these unassuming and all too modest men represent, both technically and as sportsmen, all the best our hobby can produce."

next month . . .

Slope Soaring has become a great pastime among the radio control fraternity and there is an obvious demand for a model which is not only tough enough to withstand heavy impact but also pretty enough to pass for semi-scale. We believe that K. G. Humber's **Mini Kema** fills the bill admirably. This 84 in. span model will be a popular addition to Plans Service. Pictorial report on outstanding models at the **U.S. National Championships**, Analysis of the **Merco 61 R/C** engine and actuator maintenance in the **Getting Started in Radio Control** series will be popular reading. For scale aircraft fans, another milestone is D. H. Cooksey's fine drawing of the English Electric (we cannot get used to calling it B.A.C.) **Lightning F. Mk. 1A**, which will also be the cover feature and will have Sketch page details. All this plus a full-size plan for a popular style model, plus current gen and topical features, out October 16th price 2/- per copy.

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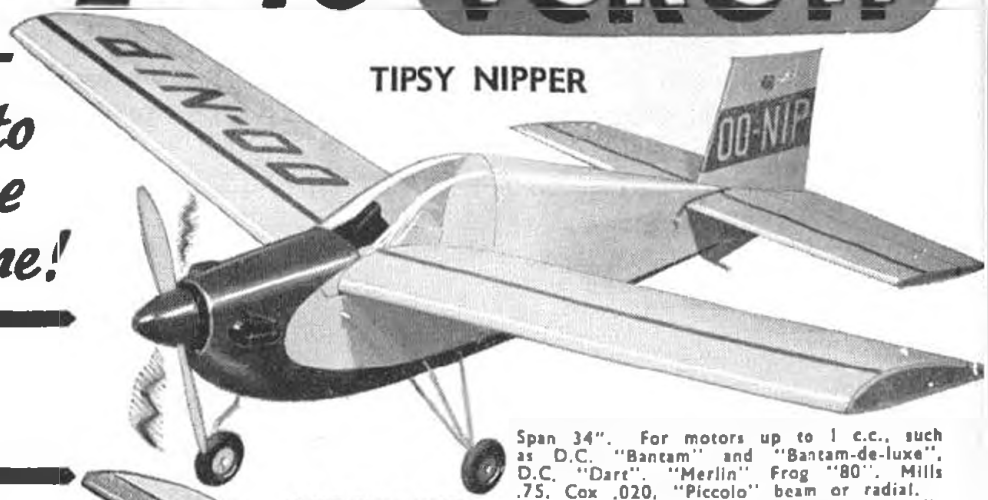

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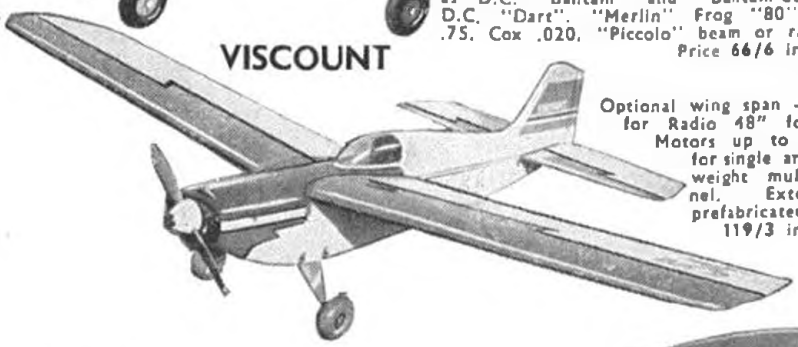

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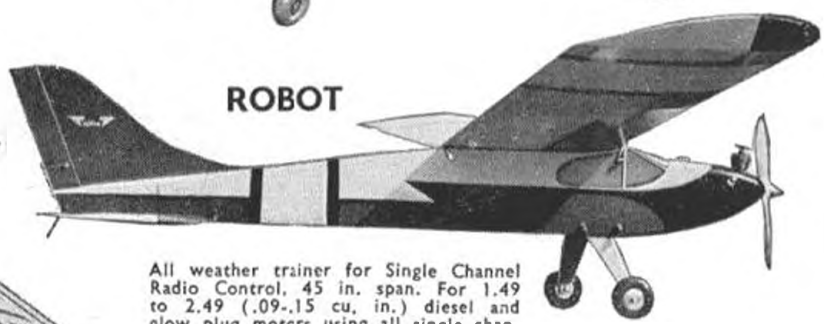

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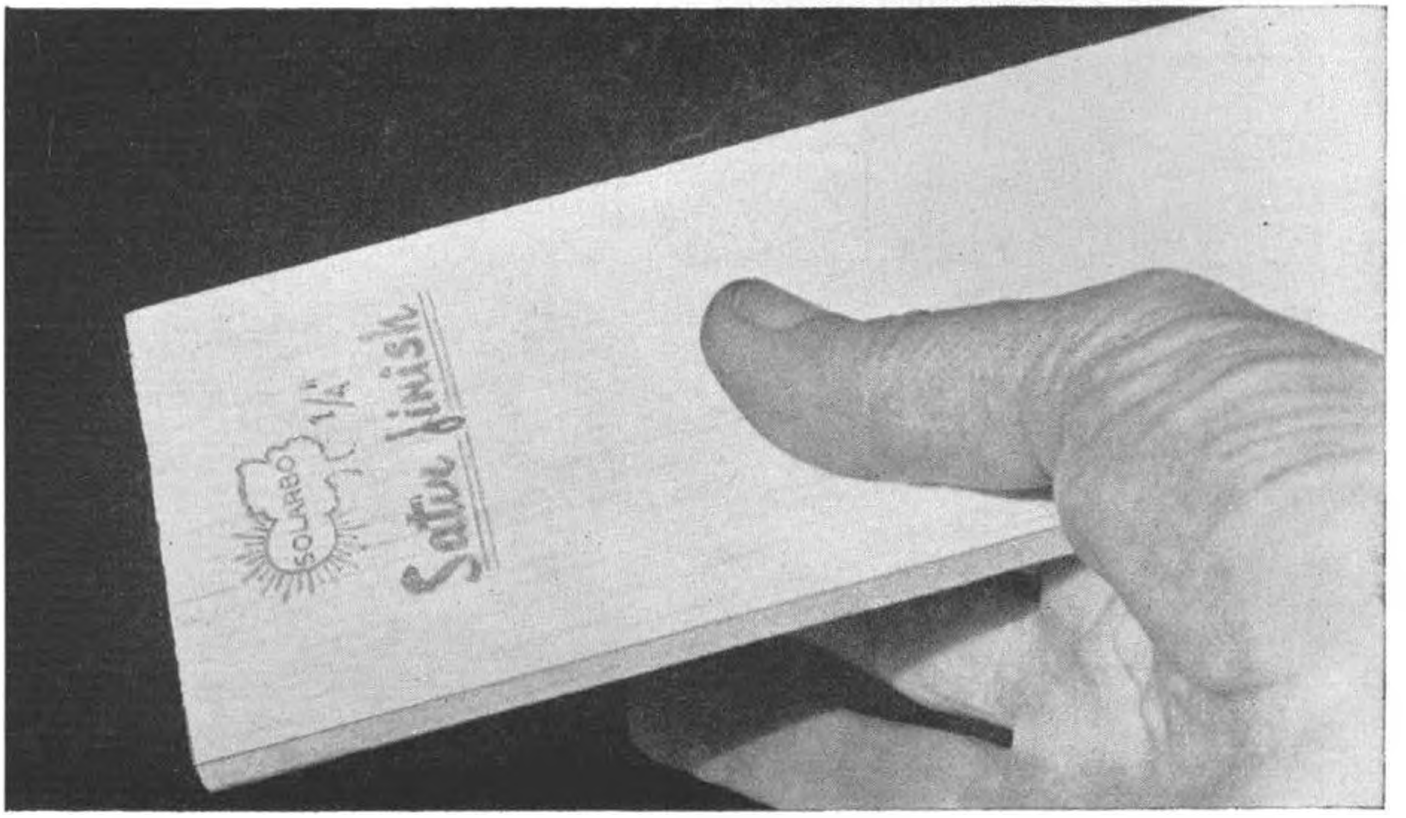

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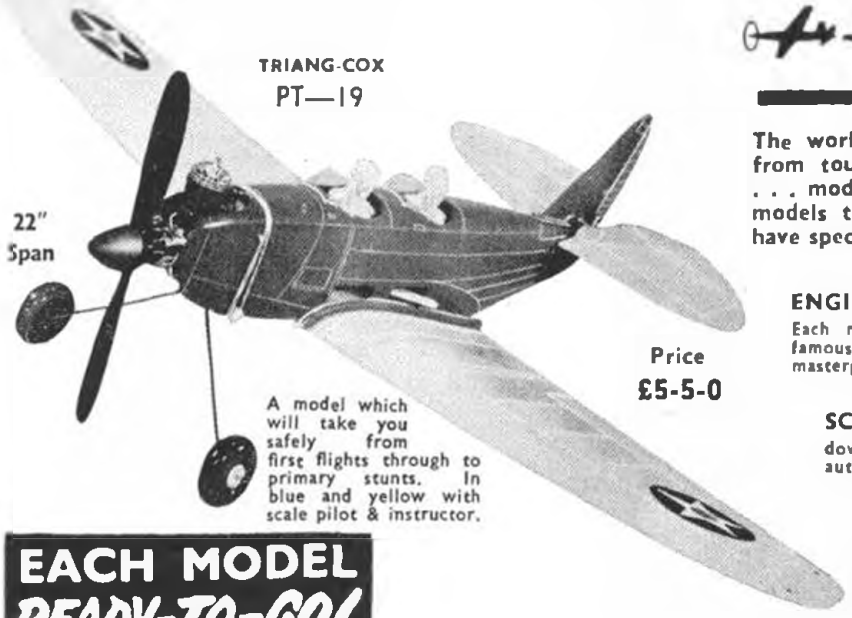

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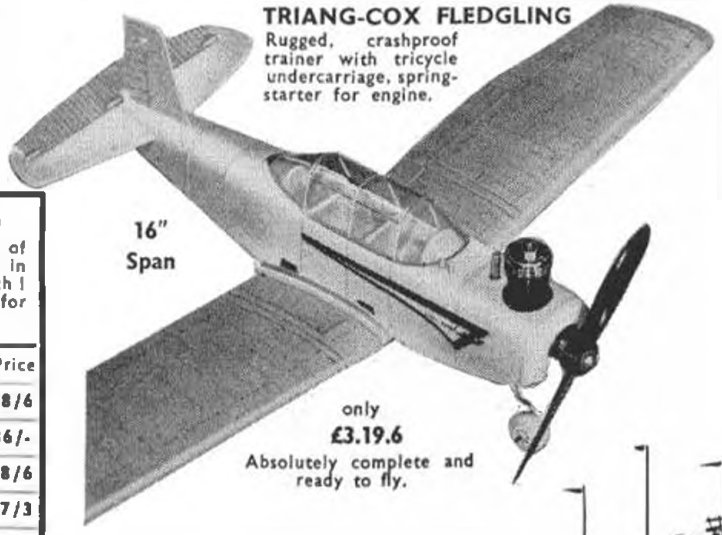

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Spirit of Budapest

We simply could not resist using the above photograph taken by professional photographer Istvan Vagy of Budapest during the World Championship team race heats at Budaors aerodrome. In one frame he has captured the very spirit of endeavour which prevailed at this wonderful meeting. The three pilots, J. Trnka of Czechoslovakia, R. Varjacsics of Yugoslavia and K. Fischer of Hungary are applying all the wiles (and skills) of team race techniques in a critical 15th heat of the first round. As it happened, the times they returned were respectively 5 : 17, 5 : 14.8 and 5 : 24.9. Trnka and his highly skilled pitman went on to make the fastest heat of the day during the second round (4 : 23.7 with M.V.V.S. 2.5 T/R diesel). Varjacic was flying the most adventurous design of the whole meeting with all-moving tailplane, anhedral wing, *plus* his own designed and fabricated engine. Both he and Fischer were penalised for their exuberance in the second round to the extent of returning zero scores but Fischer's model, pitted by the redoubtable Erno Frigyes, was one of the most attractive in appearance at the meeting.

In the heat of the moment sometimes caution is thrown to the winds. Flying with people who speak another language and have travelled from another country far distant from the championships introduces a great temptation to apply every possible trick in the book to gain advantage.

We're not singling out these three skilled pilots for any critical purpose, it just so happens that Mr. Vagy's photograph has caught them in a moment of tension with their enthusiasms fully exposed as they momentarily face his long focus lens.

Heard at the Hangar Doors

As in team racing, so did speed and also stunt have many similar moments of intense excitement.

Above all, superb organisation and facilities made this 1964 Control Line World Championships a memorable affair, very much to the considerable credit of the Hungarian Aero Club Model Section and its officials.

Treasure Trove

A 1 in. thick, 229 page, 8½ in. x 12 in. duplicated catalogue just issued by the Ministry of Aviation offers a treasure store of drawings for scale modellers. Officially titled *Catalogue of original tracings of aircraft and engines designed and built at the Royal Aircraft Factory* 1911-1918, the listing was compiled by Wing Commander N. H. F. Unwin and L. G. Savage. Copies can be obtained through the Ministry of Aviation, ATP4, Leatherhead Road, Chessington, Surrey and the cost is £1/2/- per copy. Money should *not* be sent with requests, repayment instructions are issued with copies supplied. The catalogue includes drawings for components as well as general arrangements of aircraft in the B.E., C.E., F.E., R.E. and S.E. series sufficient in many cases for complete reconstruction of the full-size machine. In an appendix, contractors' aircraft are listed and a range of a few useful drawings are available of Bristol, Cierva, De Havilland, Hamble, Handley-Page, Short and Sopwith aircraft. The drawings are ordered according to code number in the catalogue from the same address and charges vary according to the size of prints. These range from 5d. for a 13 in. x 8 in. to 7/6d. for a 37 in. x 70 in. For those interested, the charge for supplying a complete set of S.E.5a prints is approximately £49. The prints are blue/black line, made from the original drawings and samples we have already ordered and received confirm their extraordinary usefulness for aeromodellers in particular. For the first time one can obtain scale drawings of the rotary engines as well as standard component parts which have hitherto been the subject of pure guesswork for size and proportion.

† Peter Drewell

The untimely death of Peter Drewell at the early age of 30 has robbed Great Britain of one of its keenest control line speed enthusiasts. Since his days as a junior in those immediate post war years at Fairlop, he was always closely connected with those engine wizards, Fred Carter and Ron Checksfield and using re-worked engines, consistently established new records. He represented Great Britain several times in important international meetings, the most recent of which were the 1962 World Championships held at Kiev. Our sympathies are extended to his wife and young daughter.

Attention Retailers

For a relatively small subscription, bona-fide model shops are given considerable advantage through membership of the *Model Trade Federation*. We are sure that there are many shops who remain unaware that this organisation exists to protect their interests and offer mutual assistance. Applications for membership or enquiries concerning the *Retail Section* of the M.T.F. should be submitted to M. A. King, 156 Marine Parade, Southend-on-Sea, Essex.

Old Soldiers Never Die

A statement has been issued by Mills Brothers (Model Engineers) Ltd., of Woking, Surrey to the effect that owing to constantly growing production commitments in other fields, they have found it necessary to cease manufacture of the Mills range of diesels. Spare parts will remain available but spares for the .75 and 1.3 Mark I versions and the 2.4 c.c. types are likely to cease after January 1st, 1965. These three engines became obsolete in 1948/9.

However, Mills Brothers did not perhaps appreciate the widespread regard for their products regardless of age, and we understand that they are now actively engaged in trying to establish manufacture elsewhere and there is a distinct possibility that their efforts will prove successful. For the moment, their statement stands and thus the faithful .75 and 1.3 side-port engines will now gradually become treasured collectors' items until other manufacturing arrangements can be made.

Co-operation

By courtesy of *M.A.R.S. Pulse* Newsletter of the Model Aeronautic Radio Specialists of Montreal, Canada, we hear of remarkable co-operation offered by the town council of St. Foy, Quebec (population 16,000). The city fathers called the local modellers, asked them to measure off the area they needed for model flying and next day, a bulldozer was on site levelling a landing strip. Special chemical was applied to keep the dust down and a grader provided to help the flyers keep the strip level. Eventually the city will pay for the strip and local businessmen have already offered donations towards improving the site.

Gala opening of the St. Foy Mini-Port took place on June 7th with 5,000 spectators watching everything from plastic ready-to-fly control line models, control line stunt through to proportional radio control. . . . Shows what *some* people can manage!

As Others See Us

A good presentation of the aeromodelling case against illegal use of voice communication walkie-talkie radio was in the *Daily Express, Daily Mirror, Daily Sketch, Daily Herald* and *Daily Mail* of August 31st. The more publicity issued on this subject, the better it will be for radio control modelling. Interference has already caused the destruction of many models and it still does not seem to be appreciated that although the walkie-talkie sets are available throughout the country, their use is entirely illegal, on the frequencies which have been specifically allocated by the Post Office for model control. Application was made to the Post Office by the S.M.A.E. R/C Sub-Committee for additional frequencies to avoid these difficulties; but these requests have now been turned down and it remains for the aeromodellers to protect their interests and retain the almost exclusive frequencies they have been able to use since allocated in 1949.

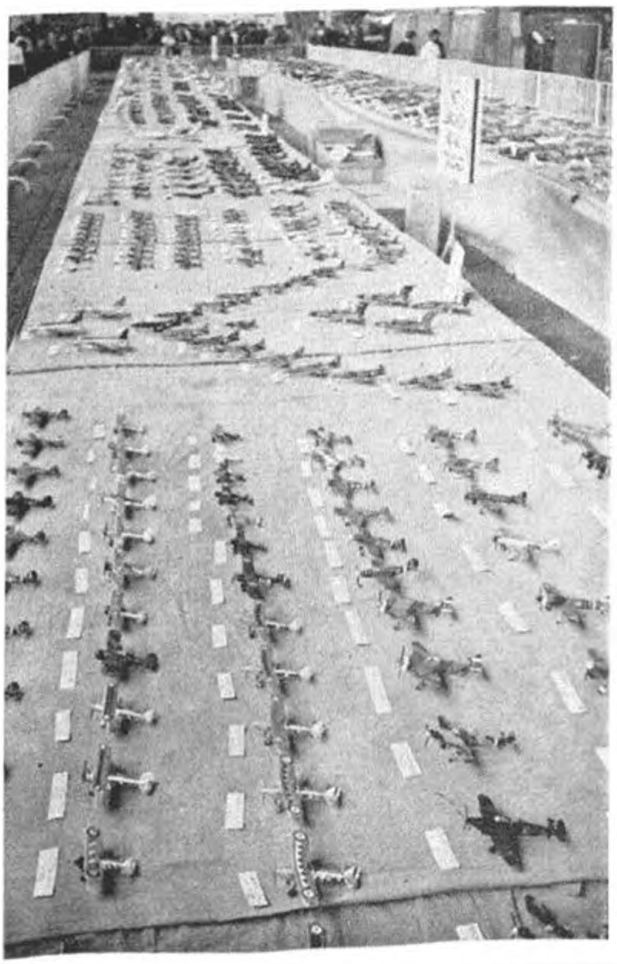
An interesting point is that if a radio shop retailer demonstrates voice communication with a walkie-talkie set, *he is breaking the law and liable to prosecution.*

National coverage of the above news item meant that virtually every household in the country is now aware of radio control aeromodelling whether it be classified as a "toy" activity or not.

A few days before on August 26th, the *Daily Express* also carried a story from its New York correspondent describing how a 6 lb. R/C model crash landed in his garden. It incorporated an automatic camera which takes a sequence of 16 photographs and the model had apparently been flown by the next door neighbour. Quoted as the "latest prestige toy" in America, the model is advertised as built to glide over sports contests, neighbours gardens, private pools, etc. We have not yet had the good fortune or otherwise to see one of these private I-Spy objects but would welcome more information from readers.

No Analysis

We apologise to readers for the absence of Engine Analysis this month. Ron Warring has moved to a most pleasant and quiet south coast address and the delay incurred in establishing a new soundproof workshop has meant that he could not complete his tests on the latest engine (Merco 61 R/C) this month . . . Back next month.



The extent of Peter Farrar's collection of 1/72nd scale models can be appreciated in this view of the show at Melsbroek, Belgium, reported in these columns last month, remembering of course that the photograph only covers a part of the show and not the whole !

BAZZ BOMB

by BASIL MURLEY

37½ in. Wingspan Single Channel Radio Control Aerobatic Model

ABOUT TWO YEARS ago the author decided that some serious reconsideration was required concerning the type of rudder-only R/C aircraft that was needed to eliminate those frustrating delays on the ground through damage or unsuitable weather. The result was *Bazz Bomb*. A highly manoeuvrable design was required to facilitate landing approaches and also for the sheer fun of being able to throw it around the sky. On the basis that the undercarriage was merely a tripping-up device, introducing extra weight and drag —it was eliminated from the project, a move that has not been regretted. *Bazz Bomb* will make a good landing on any soft surface from mown grass to a ploughed field without overturning or damaging the under-surface.

Designed to have maximum longevity and crash resistance (the author does *not* like building aeroplanes!), weight became a secondary consideration.

As the designer is a radio enthusiast *first*, and aeromodeller second, great attention was paid to the "innards"—nothing less than 100 per cent reliability was the aim, and so far this has been achieved as no failures have been experienced in over 3,000 flights spread over two years. (Basil Murley's engine consumption and air time in R/C flying possibly exceed those of anyone else in Great Britain.—ED.) Of many receivers of all types made and tested one was really outstanding—this was the "U.K." (*R.C.M. & E.* June, 1961), adapted to relayless, it scored on all points: range, reliability, selectivity, freedom from interference and swamping. Only drawback for some modellers may be the slightly more complex battery supply, but as large capacity batteries have been used, they were wired in and virtually forgotten for months. It was felt that *Bazz Bomb* could not be flown with a compound escapement as they are usually a trifle slow in operation and in any case it will be found that after a turn, opposite rudder is required to straighten the model. With a sequential escapement it is there waiting for you—no thinking required about which is left or right! Therefore, the actuator used was the Elmic "Conquest". This was given a thorough inspection to ensure that everything was functioning before and after installation, also that it would pull in when the rubber was fully wound when using only a 3 volt battery supply. This gives a very good safety margin. The actuator has also never failed and has so far performed an estimated 1¾ million operations!

Rugged lines and swept fin are clearly shown in this view of Bazz Bomb. Note the O.S. Jetstream silencer on the O.S. 15 R/C. Model was very fast on this engine and 1.5 c.c. should be the maximum power limit for initial flights.

Construction

This is fairly straightforward, the accent being on strength throughout Tailplane and fin are made from hard balsa free from warps and are given two or three coats of clear dope before tissue covering and final doping. It is as well to pin these down to the building board to ensure that they dry flat.

For the wing, cut all sheeting, spars, L.E. and T.E. to correct length, pin bottom sheeting to board, add L.E., T.E. and bottom spar, add ribs then top spar. Now add dihedral braces and join wing halves together, the webs and top sheeting can now be added. It will be found much easier if the top sheeting from spar to L.E. is fixed with Evo-Stik impact adhesive or similar. Tips may now be added and sanded to shape also slots are cut in the leading and trailing edges for the piano wire reinforcement which is stuck in with balsa cement and held in place with a strip of tissue and more cement. After sanding, wings may be covered with tissue or nylon before final doping. Do not forget the nylon tape over the join at the centre section.

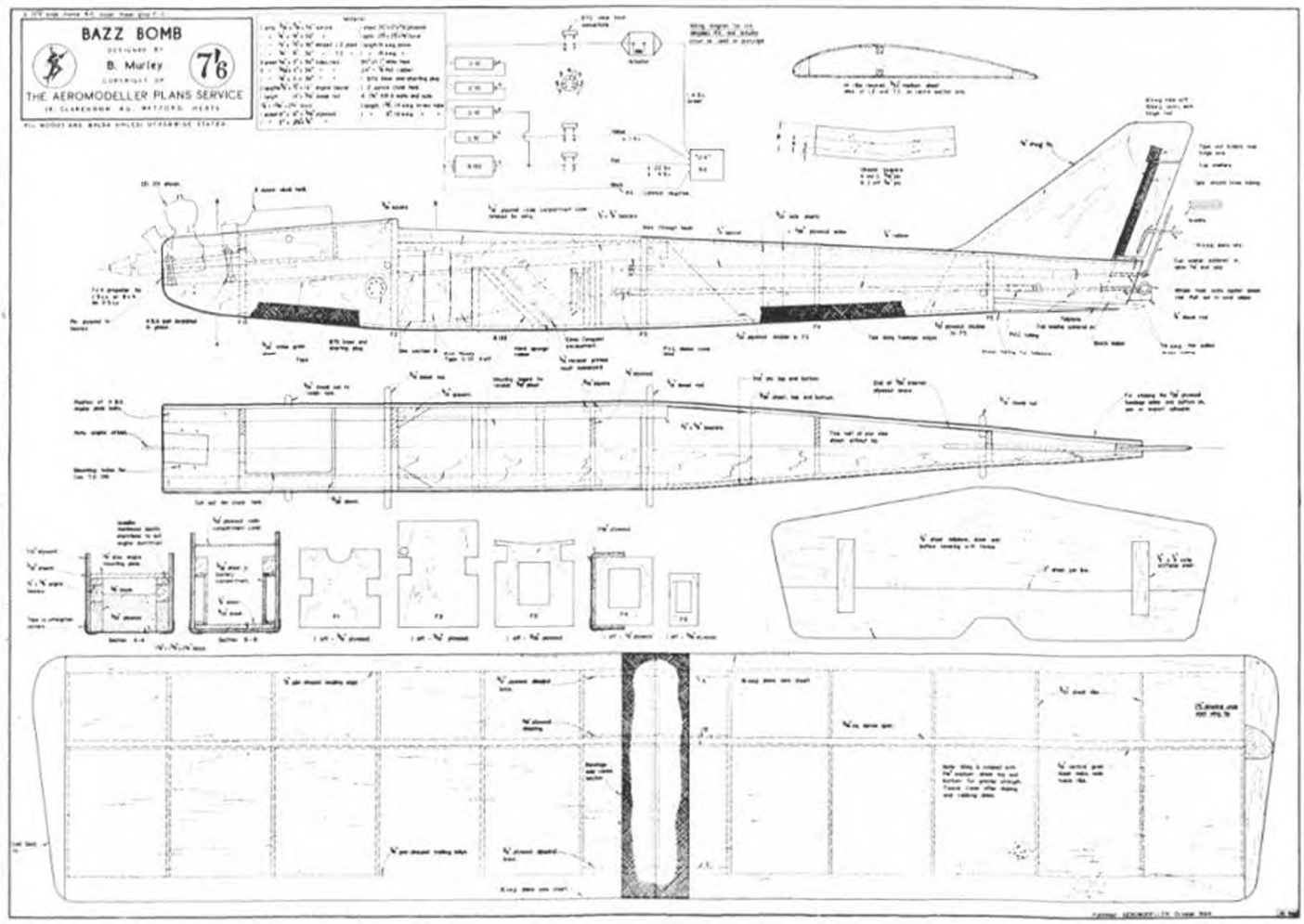
Left, Wanstead Warhawks club members proudly display six Bazz Bombs some in different National markings. Designer Basil Murley is second from left. View at right illustrates small size of rudder and square drag strip on wing tip of this version as a trimming device.

The fuselage is "different". Cut sides from $\frac{1}{16}$ in. *ply* sheet, *also* cut out the $\frac{1}{16}$ in. balsa sides — remember that with the exception of the side cheeks at the engine compartment and the wing and tail platforms, this balsa is $\frac{1}{16}$ in. smaller all round than the ply side. Laminate the two together using Evo-Stik. Make up the assembly of the first three bulkheads together with the engine bearers and add the two fuselage sides, making sure everything is square. The front half of the fuselage may now be completed except for the under sheeting. The wiring harness and actuator are also added at this stage. Now join the rear of the fuselage together and add the remaining bulkheads. It is now easier at this point to add the torque rod and winder for the actuator rubbers. Construction of these and the rudder hinge will be clear from the plan and all bearings should be a "rattling" good to to prevent seizing. Remember to leave enough room between the winder spindle and rear dowel for the tailplane bands. Now cut the top and bottom $\frac{1}{16}$ in. sheeting for the fuselage and glue in place. Sand top and bottom flat then cut top and bottom $\frac{1}{16}$ in. ply roughly to size, make sure outer grain of ply is across the fuselage. Bottom ply may now be steamed to roughly follow the contour round the nose. When dry, both pieces can be "Evostuck" in place. Pin the bottom sheet at the front to the engine bearers. Sand a slight radius on all four longitudinal corners of the fuselage and cover with 1 in. wide nylon tape—this will prevent the fuselage bursting in a high speed crash. Now add the fin and rudder. The amount of rudder movement shown on the plan is right for all normal aerobatic flying.

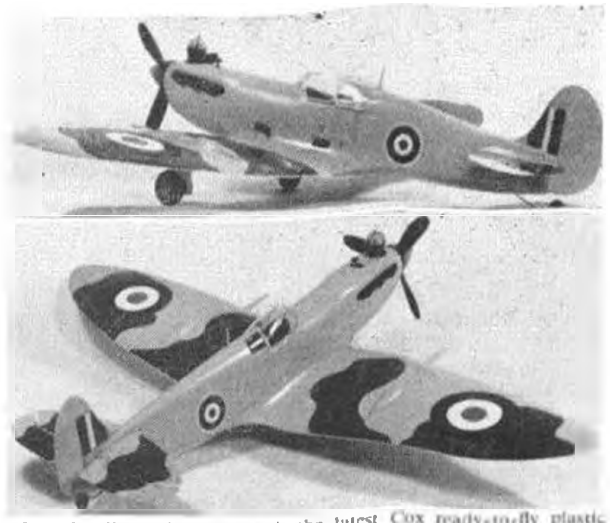
Use $\frac{1}{4}$ in. flat rubber and wind on about 600 turns —these will last about three or four flights, then by placing both thumbnails under the winder eye and disengaging it the remainder may be run off and a further 600 wound on. This ensures that the rubber is never overwound. Correct trim to aim for with this aircraft is a fast level flight pattern with very

Continued on page 499 . . .

FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE THROUGH A.P.S. AS R/C 868. PRICE 7/6d., PLUS 6d. POST



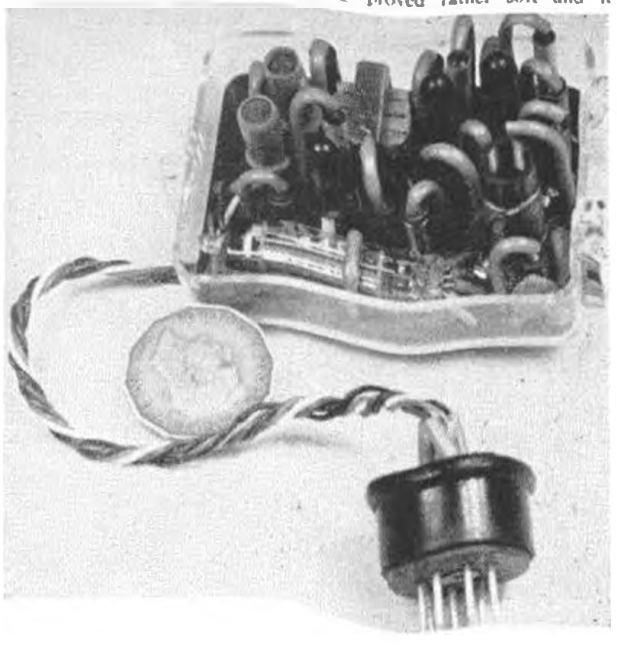
Trade Notes



The Cox ready-to-fly plastic Spitfire with 049 engine is supplied camouflaged in two tone green and carries yellow code letters on fuselage. It flies as well as it looks. Costs £6.19.6d.

Due for September release is the latest Cox ready-to-fly plastic model distributed by **A. A. Hales Ltd.** We rate this replica of the Spitfire V as the best ever in its field, from both the construction and flying points of view. Careful attention has been given to scale shape and details which include dummy exhaust stubs, fully detailed cockpit with instrument panel, throttle levers and seat plus sliding canopy. With a wing span of 23 in. the light green plastic mouldings are neatly detailed with riveting and R.A.F. markings plus silk screened dark green camouflage pattern. These markings are technically those of 607 "County of Durham" Squadron who operated Spitfire Vs coded "AF" in Burma during the latter war years, but there the similarity remains for the colours used are far removed from anything authentic. The plastic handle has three sensitivity positions and using the mid-setting, take offs were long and smooth. Though quite stable, the Spitfire takes its time to "groove" again after a manoeuvre is performed. We were surprised at this as the elevator does not appear to have any "down" motion at all! At £6.19.6d. this latest Cox product should give lots of fun and the flexible wings will take plenty of knocks from the novice. The instructions wisely recommend a few training flights on a trainer first, as the "Spitfire" is rather quick on control response. Its tailplane has been increased in scale area and a metal weight built into the short scale nose to achieve stable flight. A realistic 5 in. x 3 in. three-bladed black nylon propeller is fitted to the Cox "Silver Bee" engine and a red moulded spinner attaches to the special prop nut, as on the Cox "Spook". The short starter spring is rather awkward to get at especially when one has only hands, but the .049 engine starts after a few manual flicks anyway. One function of the short starter spring is that it remains hidden behind the nylon spinner.

In air tests the torsion bar U/C proved rather soft and it tended to bottom in a hard landing, with the air scoop on the cowl underside then scraping the ground. The two fuselage halves are rather a loose fit together even with all the screws done up, and in consequence the tail wheel leg jumped out of position.



A new range of waterslide transfers are now on sale under the name of **"Transletters"**, in a range of both alphabets and numerals with gloss finish. Of good quality and nice proportions these transfers are available in sizes ranging from ¼ in.-4 in. in gold (also cased in black), Red and Blue. Sold individually, the ¼ in. costs 1½d. and the 4 in. are 10d. each.

At the recent World Control Line Championships in Budapest we were fortunate enough to secure some prototypes of a new **Top Flite** propeller. These are intended for control line speed and team race and seem to be made from the same wood as the well known "Power-Props". Of an unusual shape with blade area concentrated at the root, they are of thin section, hub is ⅛ in. thick and the cuffs on the root extend approx ¼ in. behind the front face of the propeller driver when fitted to an engine. Several U.S. team members were giving these propellers a trial, in both speed and team racing. Messrs. **Ripmax** have now established a British agency for Top Flite and will soon have stocks of all the very popular products of this famous U.S. company.

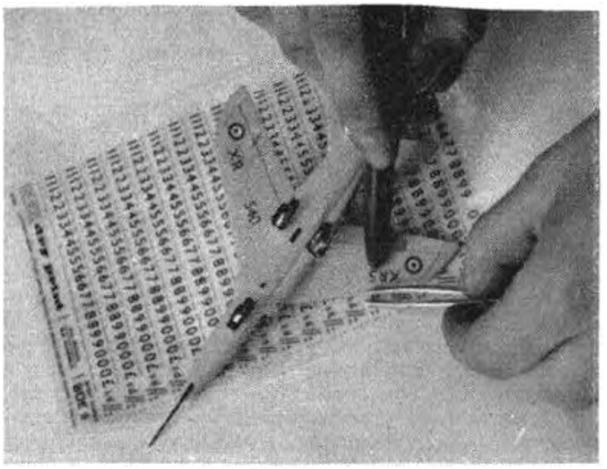
Not a transfer as we understand it but intended to obtain the same effect in smaller sizes, **Blick** "Dry Print" is a pressure sensitive lettering, which is boned into place on the model. It is ideal for name labels on flying models and also for plastic kits. The letters or numerals are bonded to a backing sheet. To apply, the transfer is placed over the model and the backing sheet, in the area of the letter is rubbed over with a rounded object such as a pen end and the plastic backing sheet is then lifted off. This of course is not a new product, having been commercially used for some time in art-studios, etc., but until now it has only been available in larger sheets. Costing 2/3d., a packet contains several alphabets or sets of numerals. They can be obtained from most large national stationers, Wyman's, W. H. Smith's, etc., and it will soon be on sale in your local Woolworths store. Available in sizes from ⅛ in. to ¼ in. in upper and lower cases the type faces are both modern and identical to those used on full size aircraft. The back of the packet includes comprehensive application instructions.

Spate of new releases from **Airfix** include the "Curtiss P-40 Kittyhawk 1.A" which goes together well apart from difficulty experienced when applying the glazed rear cockpit side panels. Great care must be exercised here to keep cement off the clear glazing. Otherwise a neat and scalish model—transfers were particularly impressive with shark's mouth embellishments going on to the finished kit very easily. Some touching-in with black and white under the spinner was required but this caused no problems and finished effect was good. Price is the usual 2/-.

Airfix's "Folland Gnat Trainer" is slap-bang up to date and we predict that many of these will become modified as replicas of the all yellow Gnat equipped aerobatic team from 4 F.T.S. as demonstrated at Farnborough, to convert the standard Airfix Gnat

Left, the completed "U.K." relayless receiver made from a £4.15.2d. Harrogate Radio Co. kit. This is the receiver used in prototypes of "Bazz Bomb" featured on pages 490/1 of this issue and highly recommended for reliability and range. Below is the new Airfix Curtiss P-40E 1A Kittyhawk in Desert Squadron markings.

Airfix's Folland Gnat trainer in the markings of one of No. 4 F.T.S. aerobatic flight, all yellow as described in text. Serials have been changed using the new Blick Dry-Print lettering as at right. Letters are best cut from sheet with the square of backing then held in place over model and impressed in place with the end of a pen as on this example of aerobatic flight Gnat.



the rear ejector seat should be removed and underwing holes for weapon pods, long range tanks, etc., filled with a suitable plastic filler (we used Pactra's Body Putty). The pod root fairing should be filed off flush to wing. The overall yellow takes the form of a semi-gloss finish best achieved by careful use of Humbrol flatting agent over Humbrol yellow gloss. Yellow gloss paint as canned by Humbrol is slightly incorrect, however, being just a bit too "daffodilly" (beg pardon!) for comfort. Best way round this obstacle is to add a small proportion of Humbrol matt white to the gloss yellow and mix until the accurate 'trainer' yellow has been achieved. This way you should arrive at a realistic semi-gloss finish without resorting to the use of flatting agent which is, in itself, often a risky business.

The kit itself goes together beautifully—cockpit canopy fit is excellent and wing anhedral is pre-set in the mouldings. You can't go wrong—the degree of anhedral is accurate too. Incidentally, the aerobatic team's Gnat's (we've heard it rumoured that they're to fly under the name "Yellow Jacks") serial numbers are dark blue on the yellow, not black. The five team aircraft are drawn from XR,540, XR 986, 987, 991-996 inclusive. Long nasal pilot tube is silver and smoke, making apparatus consist of twin tubes about ¼ in. in diameter, one each side of the lower tailpipe outlet. These are painted yellow and are carboned up where they curl to enter the jetstream from the tailpipe. Useless sump oil is forced under pressure into the hot exhaust stream and ignites and smoulders thus producing the smoke effect. The effect of coloured smoke—the yellow Gnats plan to use a red, white and blue system at Farnborough—is most impressive. Fin flash of red/white/blue takes the form of a parallelogram positioned in line with the leading edge of the fin with its top and bottom edges parallel to the stabilizers. And there it is. The kit provides lots of scope and is tremendous value at 2/-.

Frog's 1/72nd scale "Blackburn Skua" goes together precisely but leaves much to be desired in overall finished appearance. Main grumble would seem to be the transparent cockpit cover moulding which, although fairly correct, falls short on cockpit frame lines which are far too heavy and in the wrong position. Rear section of the canopy fairs in to the fuselage moulding a little too low down the fuselage for scale. A file wiped round the top edges of the canopy moulding (which are too square and sharp) to round off these edges which should be fairly smooth and curved, especially the head of the windscreen in front of the pilot, would be a modification worthy of note. Frog sell their Skua for 3/-.

Finally, an all pre-coloured "An-2" of 9¾ in. span from East Germany's **V.E.B. Kunstoffverarbeitung Zschopau** concern. When compared with the recently assembled Tu-114 from the same factory this kit crashes down below accepted standards.

Complete re-styling of the **Frog** range of engine, accessory and kit boxes has brought a neat standardisation along with better presentation. In particular, the boxing for the engine range and new metal fuel tanks which cover practically every possible demand, make up a fine display. Messrs. **A. A. Hales** are distributors of Frog kits and engines and have set a most reasonable price for the new tanks at 3/6d., 3/9d. and 4/- for 10 c.c., 15 c.c. and 30 c.c. respectively in their various versions.

Many new radio control accessories have just been introduced by Messrs. **Ripmax,** ranging from small, nylon fittings to Pocket Meter testers. These have been reviewed in our companion magazine "R.C.M. & E." but our own readers will appreciate special mention here of the most useful four-wired battery clips for 1289's etc., at 2/8d. and the set of six plastic transistor clips for 2/-, these from the MacGregor range of accessories. Ten colour plastic covered flat strip hook-up wire for multi channel installations is another boon in the Ripmax range that we have found specially useful.

Deep cuffs on new blade shape from Top Flite as seen at the World Championships, note how propeller is cut-away at centre. Below it is the East German plastic An-2 in civilian markings with large cabin windows. Right, latest from Frog, the Skua in 1/72nd scale in early wartime camouflage and bottom right, the "new look" in Frog packaging, in this case for the large range of 10, 15 and 30 c.c. fuel tanks of various types.

PZL 101 Gawron

AIRCRAFT DESCRIBED No. 136

Drawn by Witold Szewczyk

DURING EACH OF the 1960 and 1964 World Championships for Control Line models held at Budaors aerodrome near Budapest, Hungary, the editor has noted the considerable activity of agricultural crop spraying aircraft using Polish built and designed Gawron (rook) aircraft. The current fleet is of about 30 aircraft and in four years of operation they have produced unforeseen results in agricultural improvement.

The aircraft was developed from the Russian Yak-12, which were originally licence-manufactured in Poland. The PZL Works (Polskie Zaklady Lotnicze) developed the Gawron as a special purpose machine, which has proved to be remarkably stable at very low altitude and capable of carrying a very large disposable load without effect on the general handling. The large area wing with 4 deg. 30 min. sweep back and dihedral of 2 deg. 15 min. together with the general configuration, which is designed to be inherently stable, makes the Gawron an ideal subject for flying scale modelling and we hope that the details produced by our Polish contributor as opposite will inspire many modellers.

At present in service in the U.S.S.R., Hungary, Austria, Spain, Finland, Turkey and, of course, Poland, the PZL-101 has been in production since 1959, but the type drawn is known as the model 1962, shown in the spray version. It can be supplied with spraying systems for water or oil based solutions or, alternatively with a dusting system with a large venturi tunnel underneath the hopper throat at the base of the fuselage tank. This tank or hopper has a capacity of up to 1,320 lb., which provides sufficient flow for the aircraft to cover 154 acres in one hour flying time. Since the aircraft are dispersed from the main base to small farm strips, it will be appreciated that one aircraft can quickly cover the ground at a far greater rate than other mechanical methods and at a cost estimated to be $\frac{1}{8}$th that of the old established methods.

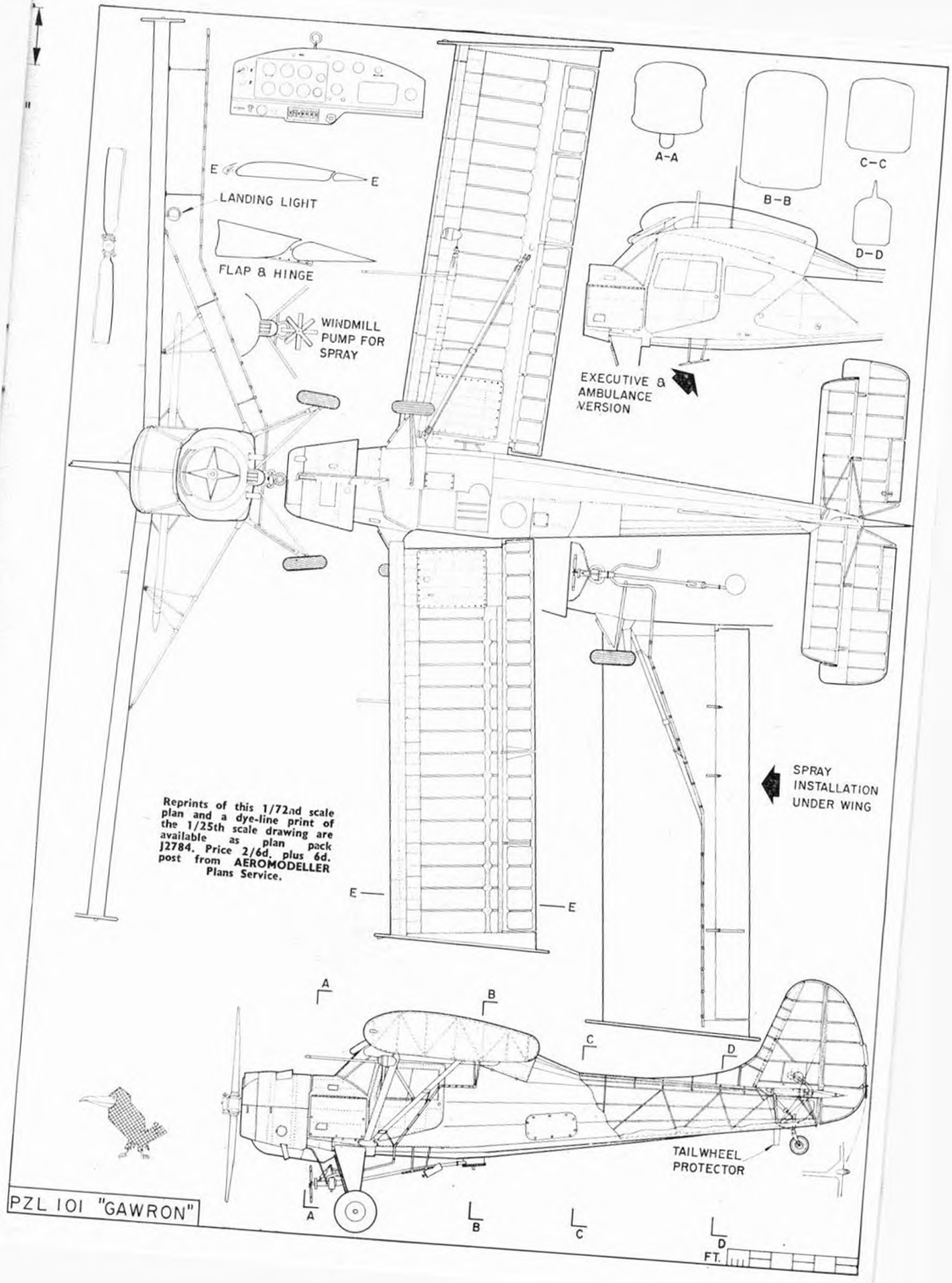
There are also ambulance and executive conversions of the standard aircraft, these having a large triangular shaped door in the port side and windows for visibility from the fuselage section originally fitted with the agricultural hopper. Powered by a 9-cylindered AJ-14R engine of 220 h.p. driving a constant speed two-blade propeller, the Gawron is naturally enough a steady worker and operates at a spraying speed of 80 m.p.h. By virtue of the full-span, fixed leading edge slats and slotted ailerons and flaps, the stalling speed is a mere 26 m.p.h.—hence the claim for remarkable low level operation. Large end plates at the wing tips further improve the lift co-efficient near stall speeds. Cockpit interior is very clean and roomy with a solid floor, excellent ventilation and a wide field of vision from the pilot's seat, which of course is very important during spraying operations (cable cutters are an optional extra in the purchase price).

One feature which has contributed to the excellent safety record of the Gawron is its fixed, well sprung and most robust undercarriage. This is of the split type, with the upper ends of each "V" strut hinged to the underside of the fuselage and the axle linked to a simple shock absorber and hydraulic damper in a central position. Powerful brakes improve the short field performance for landing and it is possible to land using 40 per cent flaps in 60 yards, while the take-off run with 20 per cent flaps is only 164 yards.

Structure is of metal, with the welded rectangular steel tube fuselage fabric covered over the rear section, and light alloy skin over the forward section. The wings are two-spar with duralumin struts and external stiffeners, the inner section of the wings carrying the fuel tanks. Standard colour finish is in black and chrome yellow but there are several notable exceptions, in particular the vivid red and white ambulance version operating in Poland.

Wingspan : 41 ft. 7.1/5 in. **Length :** 29 ft. 6½ in.
Height : 10 ft. 2 in. **Wing Area :** 256.79 sq. ft.
Tailplane Area : 54.03 sq. ft.
Wing Incidence : + 30 deg. 30 min.
Tailplane Incidence : — 4 deg.
Undercarriage Track : 7 ft. 2½ in.
Empty Weight : 2,127½ lbs.
Loaded Weight : 3,880 lbs.
Maximum level speed (prolonged) : 106 m.p.h.
Landing Speed : 49 m.p.h.
Spraying Speed : 80 m.p.h.
Practical Ceiling : 7,900 ft.
Range at max. payload : 150 miles.
Take-off run : 164 yards.
Landing run : 60 yards.
British agents : Norco Engineering Ltd., 62 Church Road, Burgess Hill, Sussex.

Hungarian PZL101 Gawrons go through the alphabet from PZA to PZZ and then in to the PXA-PXH series. All yellow with black trim, later versions differ slightly with cowling scoop. Note hopper and spray bar versions.



Reprints of this 1/72nd scale plan and a dye-line print of the 1/25th scale drawing are available as plan pack J2784. Price 2/6d. plus 6d. post from **AEROMODELLER** Plans Service.

PZL 101 "GAWRON"

Let's go FLYING

—with John Barker

Part 6

Flying Gliders

You probably feel that the title of this series is a bit of a hoax but we really have got round to it at last! Let us assume that you have just finished one of your first glider models and wish to get it safely into the air. One necessary ingredient for success is a thorough check of the model before you leave home.

Pre Flight Checks

Carefully examine the wing and tailplane for warps. These are usually easiest to detect if the surface is looked at from the front or rear and the leading and trailing edges visually aligned. Slight symmetrical "wash-out" on a wing or tailplane is not usually harmful and may even be an improvement. It is usually better to leave this alone unless trouble occurs later. Remove any unwanted warps in the following manner: twist the surface until it is slightly warped in the opposite direction and hold it like this in front of a source of heat—say about 18 in. from an electric fire. After a short time the framework will appear to "give". At this juncture move away from the heat but still hold the twist for about half a minute until the surface has cooled. After some minutes re-inspect and make any necessary corrections by the same method.

Now assemble the model and check that all parts sit squarely and firmly in their proper positions. If they don't, get to work with the sandpaper, or cement in packing pieces until correct alignment is achieved.

It is most important that all free flight models are equipped with a name and address label. This is courtesy to any possible finder as well as common sense for yourself. In this connection John O'Donnell assures me, and he should know, that finders prefer to use the 'phone so if you have a telephone number include that as well. Print the label neatly and dope it on with an extra coat of dope on top for protection.

Next, check that the model balances at the correct C.G. position as shown on the plan. We would mention here, contrary to what has often been written in the past, that a glider built from a reputable kit or plan is *not* trimmed by altering the noseweight. An "own design" may need some alteration of the C.G. to get the best performance but on a published plan the correct position should already have been found. Do not alter it!

It is wise, particularly with a high aspect ratio, to check the lateral balance. Add a bit of lead or an extra coat of dope to the lighter wing half. Well, that's got the model ready but there are a few more things we need to take with us to the flying field.

Field Kit

The recommended items for the field kit are: dethermaliser fuse, matches, modelling knife, cement, balsa and ply for packing and repairing, rubber bands, small amount of dope with brush, tissue, pins, thread and a winch complete with towline. One or two of these items merit further comment. Firstly, rubber bands. Don't fall into the trap of the assorted packet of rubber bands, most of the assortment will be no use to you at all. Go to a good model shop where bands of any particular size can be bought by weight. About three sizes will suit almost all model requirements. Some tiny ones for dethermaliser bands. Some about $\frac{1}{16}$ in. wide by 14 long for tailplanes and small wings and some $\frac{1}{8}$ in. by 2 for larger wings. Remember a fixing band usually works best when stretched about two or three times its original length. Carrying tissue is a problem unless you know how to do it. Fold the tissue and place it between the leaves of a book. The competition rule book does the job nicely. There is no need to take a whole lot of pins. A dozen pushed into a piece of quarter balsa will be enough and are much easier to handle than from a tin.

The usual way of carrying all these items is a battered old attaché case.

Helpers

Although an expert can tow launch a glider single handed a helper is almost essential for the novice. A regular partner whom you can trust is a great help but don't expect your assistant to be clairvoyant. Tell him what you intend to do and exactly what you wish him to do. Agree some signals and such things as who lights the dethermaliser fuse and when.

Hand Launching

Traditionally we always start to trim a model by glide tests from a hand launch. This is certainly the proper procedure but do realise that hand launching trimming really only ensures a safe trim for the start of tow launch flights. It is nearly impossible to reach optimum trim by hand launches alone. For this reason there is no necessity to spend too long on hand launching beyond getting a reasonably smooth glide without a vicious turn. The essential in hand launching is to start the model off with its nose pointed slightly downwards at its normal gliding angle and at the normal flying speed as shown in figure 6.1. The reason for this is that if the model is launched with its nose too high or at too fast a speed it will stall even if the trim is corect for normal flight. Similarly if launched too slowly or too nose down it will dive despite a correct trim. Obviously then, bad launches will disguise the true characteristics of the model. Unfortunately we can write nothing more to help with this. Practise is the only way to get a feel for hand launching.

Perhaps we should mention that test glides are always made into wind. There is nothing magical about this. We launch the model at its normal speed relative to the air. If we launch downwind

Figure 6.1 illustrates how to perform a text book launch as described in John Barker's article. J. A. Hulme's helper is releasing a semi-scale Bergfalke radio controlled slope soarer at this year's Clwyd rally in North Wales.

the airspeed will be the same but the groundspeed will be higher with consequently greater risk of damage.

At this point you may like to refer back to part 4 in August issue for some of the reasoning behind the methods of trimming and also for the technical terms used. Let us clear up one little matter before going further. If a glider has its C.G. in a certain position it will come to its best trim with a particular value of longitudinal dihedral. It does not matter if this is arrived at by positive incidence on the wing or negative incidence on the tail or some combination of the two. (Strictly speaking these different arrangements will align the fuselage at different angles to the airflow but for most practical purposes this can be neglected.) As it is usually more convenient to add packing to the tailplane we shall refer all incidence changes to the tailplane for the rest of this article.

Returning now to the hand gliding. If the model stalls, i.e., puts its nose up and then dives into the ground we put packing under the leading edge of the tailplane. If it dives straight from the launch we put packing under the trailing edge of the tailplane. The Golden Rule with adjustments is to make them one at a time and in small amounts. One-sixteenth or 1/32 sheet would be the usual packing material at this stage.

A couple more definitions: if a model tends to stall it is often called *over* elevated and if it tends to dive it is called *under* elevated. It is much safer to finish hand launch testing with the model slightly under elevated. A model that looks only slightly over elevated from hand launch tests may build up a really bad stall when released from towline height, and consequently suffer damage on landing. The only other thing to check on the hand launch tests is that the model has a tendency to turn in the direction of the trim tab.

Tow Line Launching

The first towline launch can be a bit nerve wracking so the best thing to do is get straight on with it. Check that the dethermaliser is set and hook on the towline together with any auto rudder fittings. Give the model to your assistant to hold with the nose slightly upwards as shown in Fig. 6.2. Actually the amount of "nose up" will depend on the wind strength. The windier it is, the less nose up required.

Now walk off directly into wind unwinding the towline as you go. When the line is all out take a comfortable hold on the winch and, if you are sure you are ready, give the signal to your helper that you are starting to tow. Immediately move off upwind at a speed to suit the wind conditions and the model. In the quite calm conditions you will be using for trimming, a trot will probably be about right. As you start the tow your helper must go along a few steps with you and release the model as he feels it trying to lift from his hand. Your assistant should never throw the model as the tow ring will almost certainly fall off the hook. These first few seconds are the critical ones so if you want to keep your friends, keep your temper and remember you will probably need quite a bit of practise before you can get the model away smoothly every time.

Shortly after release the model will start to climb very steeply. This is the time to smoothly ease off your towing speed. You may be able to stand still or even walk slowly towards the model and still maintain sufficient rate of climb. It is generally best to tow a model as slowly as possible whilst still maintaining line tension. When the model is overhead ease the line tension and the model should release itself. If the model is reluctant to release haul down a few feet of line and then let it go upwards suddenly.

In the above we have assumed a perfect tow with the model flying straight up and overhead. This doesn't always happen! Sometimes the model will veer consistently to one side. This is most likely caused by a warp. It may be possible to correct the veer with rudder offset and this can be tried before trying to remove the warp. If a model veers to either side equally readily the tow hook is probably too far back although this is not likely to happen with published plans or kit models. A bad veer can be dangerous in that the glider keeps going faster and faster sideways until it hits the ground hard. If this starts to happen release the glider as soon as possible. The line tension will be high so that you must run towards the model or in extreme cases throw the winch towards the model providing that there is nobody around to be hurt.

The other form of towline instability is "hunting" where the glider weaves from side to side. In bad cases the oscillations can increase until the glider either releases itself or hits the ground. Hunting can be caused by the towhook being too far forwards but again this is not likely with a well designed model. Most gliders will hunt to some extent but they can usually be corrected by the following method. As the model starts to swing over to one side the line tension is eased, which allows the dihedral to right the model. When the glider has straightened up the line pull can again be increased

(Continued overleaf)

Let's go FLYING

(Continued)

and the tow continued. A technical explanation of these characteristics was given by Jim Baguley in AEROMODELLER for October 1963 and makes an excellent reference for the enthusiast.

Final Trimming

Final trimming from towline height is quite easy to accomplish if the model is watched carefully. Remember that we are trying to achieve minimum sinking speed which usually occurs just below the stalling point.

Gradually increase the packing under the trailing edge of the tailplane until the undulations just prior to a stall start to appear. Then decrease the packing slightly to give smooth flight. At the same time adjust the rudder offset to give the required amount of turn. You will find that an increase of turn requires a little more negative on the tailplane to maintain trim. A fairly tight turn will make the glider less sensitive to gusts but a wide turn will give a slightly higher performance. After everything seems right try stalling the model off the tow, by extra speed or a jerk, and ensure that it recovers after a few oscillations.

Winches

A winch for storing the towline is almost essential and it must work well or you will spend more time sorting out line tangles than flying. There are a few ready made winches on the market. One of these at least is very good but the price is high. Most modellers make their own usually with a cheap grindstone as the basis and with varying degrees of success. A winch of this type is shown in figure 6.3 and the construction is obvious.

In the interests of cost and simplicity we are giving here a sketch, Fig. 6.4, showing a winch of the self-winding variety. As you will see, the body of the winch carries a rubber motor which is wound up as the towline is run out. The spool is held so that it cannot rotate during the tow. This looks awkward perhaps in print but comes perfectly naturally in practice. After release the rubber motor quickly rewinds the towline on to the spool.

Figure 6.2. How to hold a model ready for tow launching. Miss Barker is supporting the "Downbeat" A/1 design described and drawn in last month's feature with the towing ring hooked over the launching hook on the model, and the nose held slightly upwards in order for the model to "kite" into wind as the launcher begins to run into wind.

Figure 6.5. A self winding, rubber driven winch, as sketched in Figure 6.4, and used by the author. This type of winch was originally devised by Cyril Mayes one time member of West Essex Aeromodellers, now a resident of Canada. Simple square balsa tube holds the rubber motor which returns the line automatically after it has been paid out.

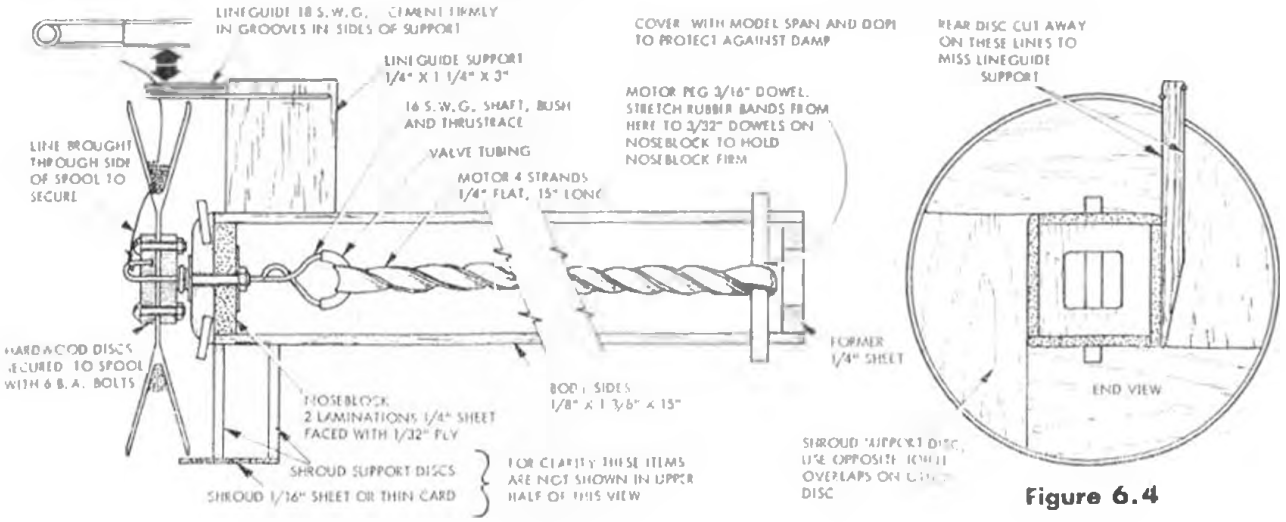


Figure 6.4

BAZZ BOMB

(*Continued from page* 491)

little tendency to climb. However, it needs a considerable amount of practice to control a model in this trim and is rather like flying a multi-model on rudder only, it would therefore be advisable to start off with the aircraft slightly over elevated for the first flights and apply down trim at a later stage. The Centre of Gravity position is very important. Bazz Bomb *can* be trimmed to fly if this is too far back but when put into a dive the aircraft will not pull out! So be warned—either position the C.G. as on the plan, or build a stack of models—one for each flight! Tailplane packing should be inserted $\frac{1}{4}$ in. at a time.

Flying

When the model is in its correct trim, a very fast slightly upward inclined launch is required ; but for the first few flights an average level throw is recommended. If the model proceeds straight and level you have luckily hit correct trim "first" attempt. It will now be found that if you give a quick right, left, right, sufficient to bank about 15 deg. right, 15 deg. left then back to level (hereinafter termed a "wiggle") this will put the aircraft into a climbing attitude and provided you have sufficient power up front it will continue to climb at this angle. When the model has enough altitude a gentle 180 deg. turn by pulsing the rudder will put the model into level flight. Provided you have plenty of altitude, it is as well to see what the dive characteristics are. By applying rudder put the model into a shallow diving turn. If the aircraft does not look like pulling out in a reasonable time a turn into wind and a few "wiggles" should save the day. Do not try any further manoeuvres until you have moved the C. of G. forward and given the tailplane some up trim to compensate. Cure any natural turns by placing a piece of $\frac{1}{16}$ in. square balsa on the top of the opposite trailing edge near the wing tip. Continue further trimming flights until near level flight is attained, but remember that in this final trim the model will take at least 500 ft. to pull out from a vertical dive

Having completed the trimming, the following are a few of the manoeuvres which may be accomplished with this aircraft:

Climb. — Turn into wind and 'wiggle'.

Diving turn. — Hold on rudder for 180 deg. then tap opposite to correct turn.

Slow Roll. — Fly into wind, apply right for 180 deg., tap left to correct turn, blip through right, wait until nose rises 5 deg. or so from the horizontal then hold on left to roll through 360 deg., release for a few seconds for straight flight then apply right to turn the model through 180 deg. back towards you.

Barrel Roll. — As above but reverse rudder positions.

Climbing Roll. — As slow roll but start with a 540 deg. turn and wait until nose rises 45 deg. or more before rolling.

Inverted. — As slow roll but release signal when model has rolled through 180 deg. If model is corrected to keep it level it should stay inverted for at least 10 seconds or so.

Continuous circling at low altitude. — Keep blipping alternate left and right signals one slightly longer than the other to keep the model in a banking turn. It will be found that by controlling the diameter of the circle any altitude can be maintained quite accurately. Decreasing the circle diameter will lose altitude and vice versa.

Reversal. — Is as with inverted flight, but invert before model reaches horizontal position. This manoeuvre can be followed by a very nice slow left roll as the aircraft levels out at the bottom.

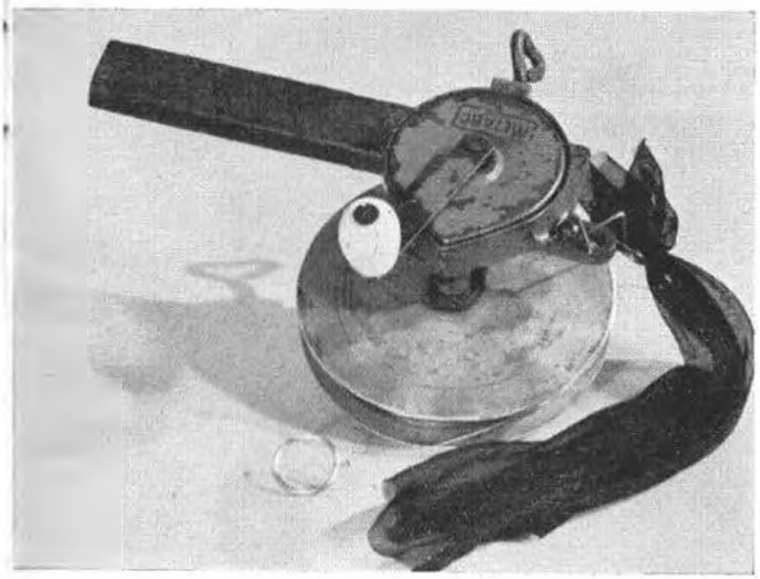
Spin. — Build up speed in a dive, turn into wind, give a few "wiggles" and the model will climb vertically, as it stalls off the top apply left rudder and hold on, if you are lucky, the Bazz Bomb will do a two or three turn spin before pulling out on its own—if it doesn't apply right rudder.

Stall turn. — You usually get this when trying for a spin.

Loop. — Don't bother, the model will not loop unless "wiggled" all the way up and over the top. This looks unsightly and leads to disparaging remarks from the spectators!

(*Continued from facing page*)

Construction is not difficult and the dimensions given need not be adhered to too closely. The shroud around the spool is perhaps the most difficult part but it can be omitted complete with its two supporting discs although it does help to prevent the line tangling around the rear of the spool. The spool used is the one on which the line was bought but an alternative can easily be made with two plywood sides glued on to a hub. The rubber motor should be lubricated from time to time with castor oil. It will require a few turns to just maintain tension when the line is all reeled in. The rubber bands from the noseblock to the motor peg pass through small holes in the shroud support discs if the shroud is fitted.



The towline usually used is nylon monofilament fishing line about .02 diameter often sold as 30 lb. strain (size 60). This is very durable but rather expensive and a cheaper thread will probably serve you just as well at this stage. When you make up your towline add a streamer of some light material about a foot from the hook as shown in the photographs. This allows you to see clearly when the line leaves the glider.

Figure 6.3. Most commonly used type of towing winch is the Woolworth's grind stone converted with a simple line drum attached to the shaft instead of grinding stone and the grinder gear case itself, clamped to a stick of wood to be used as a handle. Bearings do not last forever but the gearing is good and the cost relatively inexpensive.

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1, Youthful new Russian stunter Sviatkin uses his own engine in Sirotkin influenced design. 2, Czech Trnka placed 13th with Veco Hurricane kit, M.V.V.S. powered. 3, Outstanding flyer Juhani Kari with new model made finest flight. 4, Gabris (Czech) was impressive, assisted by Bartos, his regular rival. 5, Lew McFarland placed 6th with "Shark" immaculately prepared with trike u/c and 3-blade prop. 6, Semi-scale bulky stunter, amazingly light by Italian Bagalini strangely impressive. 7, Dutchman V. D. Hout, an honourable 7th with enlarged "Olympic" using twin fins, 8 Impressive models, Sirotkin's new Merco 49 semi-jet and Gialdini's 3rd place "Sting Ray" Merco 35. 9, Drazek's 2nd place F.A.I. racer features new style rearward wheel, plate mounted engine, natural finish. 10, Fabrizo and Claudia Marcelli from Rome with especially neat Italian designs, using Super Tigre G20D and rearward wheel. 11, Extreme streamlining and beautiful surface finish evident on Russian Zolotoverch/Kobets racer with low mounted wing. 12, Pete Soule with typical bright red/white/blue finished U.S. racer.

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World Championships for Control-line models

BUDAORS, HUNGARY, July 28 - August 2nd

A deliberate fill of the tank, a slow pull on the prop . . . then, WHACK ! That is Don Haworth's Eta 15 start procedure in a pit-stop, which helped him to win the coveted individual World Championship along with pilot Dick Place in this memorable event.

JUDGED BY ANY STANDARDS, this marathon competition to discover World Champions in the F.A.I. Acrobatic, Speed and Team Racing classes will go down in modelling history as the most memorable yet held. It was exhausting for its long days, each with a 6 a.m. departure from the fine accommodation in central Budapest (and once only thank goodness at 5 a.m.!), and it was stimulating for the variety of new designs and techniques to be seen. It was impressive for its 21 nation participation (Might have been 22 if the Canadians had arrived) and largest ever field in each event. It was notable for its spirit of camaraderie, the interchange of ideas and thorough sportsmanship shown in many ways. It was the scene of new, higher standards than before. Above all else, from the check in on arrival, through the imposing opening ceremony — with 1,000 pigeons released to flutter over a parade of teams and colourful national flags right on through five days of concentrated top World Class controlining to the prize-giving banquet, the organisation was impeccable. The Hungarian Aero Club has every right to be proud of a job extraordinarily well done. Particular thanks are due to Organising Director, Reszo Beck, himself a long experienced flier.

Add to this a British individual victory in Team Race and one's sense of satisfaction becomes absolutely complete.

Team Racing

Drawn in the 1st, 2nd & 4th out of 19 heats in the **FIRST ROUND**, the British lads arrived early on the field by specially arranged coach for the first practice. Disaster was almost immediate and only our enforced accustom to pre-race tragedy maintained a stiff upper lip. The Place/Howarth models fractured each of their monolegs in turn and the Nixon/Ellis engines decided to "dry-up" with vibration. This may well have been due to the 8 a.m. temperature of 85 deg. F. but anyway Kevin Lindsey's glass fibre outfit and the Nixon piston polishing scheme was soon in operation. Two hours later, the wind having risen to 10 m.p.h. and thunderclouds brought temp. down to 70 deg. F. all was ready to go. Drawn with two fair flying Finns, Dick Place had a good chance but a false start and line catch on the inner circle gravel soon put paid to any optimism. Heat 2, and Nixon faced the Swedes who won the Varteks cup a week before and a Jugoslav pair. Time was a moderate 5:09 for the Hinkley lads. Heat 3 and first warnings from the jury who were watching pilots closely. Their green and amber lights went on for the West German pair Stuchter/Fromm who escaped a "red" and were first to break five minutes with 4:52. Now our third try as Humphrey/Turner got away first in heat 4. Matched with the U.S. team Brandt/Soule who had a burpy run, the blue British racer gave us great hopes. The stop was good—a catch and fast re-start but at 46 laps. Could it make another 54? It did, and cut as it passed the post for fastest yet at 4:46.9. At last we were in sight of the final and with a whole three days practise before the 2nd round.

Heat 5 saw the Austrian Kominek Bros red-lighted out after two warnings for handle lifting in pit stops and bumping. In Heat 6 the Sundell twins showed off their centrifugal retracting gear in a fast 4:47.9 two stopper, also finding time to have a tussle with their Danish opposition pilot on the way. This served to slow up the third, Italian team Fontana/Amodio who had a mysterious head pan and no cooling intake! Heat 8 was a big one. Past finalists Purgai/Katona lost a wheel on landing after a fast run, and Gelman/Bulkin went into the lead with 4:46.3, their second stop being clocked at 6 secs. from pick up to release. With them was a most elegant racer by Pole, Jan Tomaszewski, long and lean in look but low in laps. More warnings in heats 9 and 10 then in 11 the Czechs had really bad luck when Hartinger's beautiful racer crashed in an accidental brush with Italian, Marcelli/Fabbri whose "Shark" was possibly an even prettier design (included a deflector to turn Super Tigre exhaust aft, multi laminate prop with root cuffs and Italian red racing finish matched only by team track suits). Heat 12 and more Czech contretemps, this time re-run, then in 13, Kroff of Austria found flying backwards gets a hoot from the crowd and in 14 the U.S. Le Crone/Mobley team missed a catch which sent the model into no-mans land. Heat 15 was a potential hot one but proved to be a great personal victory for Yugoslavs, Varjacsies/Kmoch whose fascinating most scale like jet fighter with anhedral, all-moving tail and twin tailskids plus a self made engine eclipsed notables Trnka/Drazek and Fischer/Frigyes (see Hangar Doors pic.). Those Swedish aces Bjork/Rosenlund lost 15 secs in a pitstop overshoot, yet still returned 4:49 in Heat 16, then in 17, came a 4:46.3 from Zolotoverch/Kobets and a brilliant one-stop 4:40 from Favre/Fabre . . . and our best team was now in fourth place. This was a race of champions. The Frenchmen used a retracter, and the Soviet lads excelled in two 7 sec. stops which were only beaten by the fantastic Jones/Burke system of banging the model on the circuit as soon as the engine stopped in Heat 18. The U.S. team never extended the glide more than one-third of a lap and but for one miss would have done far better than their 4:49.4. Re-runs for Italians and luckless Czechs terminated the first round with the sure knowledge that at least 12 teams had potential to beat the obviously fully stretched limit of the U.S.S.R. racers in tied 2nd spot with 4:46.3 each.

Overcast and dull with a suggestion of rain, the weather was almost homely for us as **ROUND TWO** opened in great expectation. Rosenlund was matched with Gelman but Swedish luck was gone. Everything happened from a fluffy engine to a missed catch and a stuck retracter. The Soviet team were 3 secs. slower than before. Rain fell and in heat 2 Trnka/Drazek had tremendous advantage of being at least 15 m.p.h. faster than their opposition. Constantly overtaking and marginally legal, they returned the best time of the meeting, 4:23.7. In the next heat Fontana/Amodio also improved considerably, backing up where possible, whipping off at pit stops and making 4:33.8 in the process. At this rate it was going to be a great day!

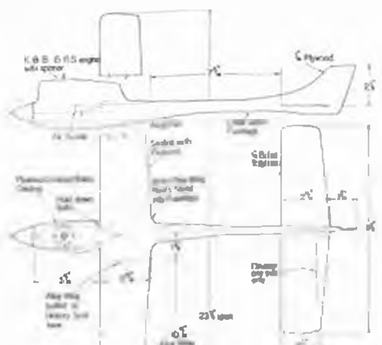
With Humphrey/Turner and Nixon/Ellis drawn in the next two heats, the wind now chose to build up to about 45 m.p.h. First the H/T pair asked for a better take-off point more downwind but were refused. On release directly into the blast, the engine missed and one British hope went kiting into the circuit. Next the N/E pair found themselves carving through a set of Danish lines on the end of another kiting model, and after a session that left Nixon trussed in wire and Alsehy so handicapped he had to release the handle, this heat (6) was abandoned. No. 7 took place strangely without incident but after then the wind was so strong that further attempts had to be delayed.

Meanwhile, appeals for both British teams to have re-runs were upheld, and the amazingly strong Alsehy free-flight model (all glass-fibre) had a cowling dent repaired with the aid of a special portable heater, also used to warm the Eta at pit stops.

Heat 8 saw the second U.S.S.R. hope dashed as Zolotoverch overdid his efforts to beat 4:40 and got himself a red light. No. 9 was to be "it". Place-Sundell-Soule were three hard triers but the U.S. team had two extra stops and a zero for pulling with extended arm. Sundell improved by 2 secs., just good for 5th, as at last the Union Jack could fly proud for Dick Place and Don Haworth made their norm at 4:35. This third best time would take some beating, but not until the very end of eleven more races and re-runs did the Yorkshiremen accept their place in the final. Two models were de-tailed in the latter races. West German, Lutkat Bros broke theirs off with little more than exuberance, and Pinotti (Sweden) lost his off the fastest model there when it hit pitman Hagel while landing. Others suffered blow-ins including the luckless Magne/Malfait of France and Le Crone/Mobley (U.S.A.). Techniques were sharpened. The U.S.S.R. team produced a powerful hailer to instruct the pilot, Hungarians adopted the "derriere" pilot scheme of always following the other two then taking a big overtake swipe and spinning back into "derriere" again, and in squeezing the needle, Nixon/Ellis ran for 85 laps non-stop in 50 m.p.h. wind, bringing a crowd to the wire expectant for the World's first non-stopper. The Eta was well cooked for the restart, and in the next race,

(*Continued on page* 504)

FULL RESULTS 1964 WORLD C/L CHAMPS



PINK LADY 15 — 1964
By W. WISNIEWSKI, U.S.A.

[illegible] with [illegible] metal finish on the wing panels and the remainder in cloth, the winning model was much larger than average and very stable in flight. Note that there is no provision for air cooling the engine apart from its exposed cylinder head. The engine is the racing special version of the latest K & B 15, incorporating a piston timed boost port after the manner described in "Aeromodeller", April, 1963.

SPEED (M.P.H.)

1.	W. Wisniewski	U.S.A.	138.0	—	141.1	K & B .15 RS.
2.	G. Krizsma	Hungary	135.5	131.1	139.8	Moki S.3.
3.	G. Lee	U.S.A.	138.6	138.6	138.0	K & B .15 RS.
4.	J. Sladky	Czechoslovakia	138.6	138.0	—	M.V.V.S. 2.5 R.L.
5.	W. Carpenter	U.S.A.	136.1	136.7	—	K & B .15 RS and Super Tigre G.15.
6.	I. Toth	Hungary	126.8	133.0	136.7	Moki S.3.
7.	E. Mosyakov	U.S.S.R.	—	136.1	134.2	Super Tigre G.20/15G.
8.	M. Sebestyen	Hungary	129.3	136.1	134.2	Moki S.3.
9.	A. Prati	Italy	—	135.5	—	Super Tigre G.15.
10.	J. Magne	France	132.4	133.6	—	Super Tigre G.20/15G.
11.	G. Ricci	Italy	125.5	133.6	133.6	Super Tigre G.15.
12.	R. Mosbach	W. Germany	129.3	133.0	127.4	Super Tigre G.20/15G.
13.	N. Turkin	U.S.S.R.	128.0	—	133.0	Start
14.	Z. Pech	Czechoslovakia	130.5	128.0	126.8	M.V.V.S. 2.5 R.L.
15.	H. Ferandt	Austria	130.5	—	—	Bugl. 2.50
16.	A. Malik	W. Germany	121.5	129.3	126.8	Super Tigre G.20/15G.
17.	J. Valo	Finland	118.7	129.3	—	Super Tigre G.20/15G.
18.	P. Nasalenko	U.S.S.R.	126.8	128.0	—	Start.
19.	R. Grandesso	Italy	—	—	128.0	Super Tigre G.15.
20.	R. Dolejs	Czechoslovakia	—	126.8	109.4	M.V.V.S. 2.5 R.L.
21.	R. Ekholm	Finland	124.3	114.3	125.5	Super Tigre G.20/15G.
22.	J. Frohlich	W. Germany	—	125.5	124.3	Super Tigre G.20/15G.
23.	K. Lindsey	Great Britain	121.8	—	124.9	Super Tigre G.15.
24.	E. Purice	Rumania	119.3	124.9	—	Super Tigre G.20/15G.
25.	A. Rachwal	Poland	118.7	—	124.3	Super Tigre G.20/15G.
26.	D. Ehlers	Denmark	118.1	111.9	122.4	Super Tigre G.20/15G.
27.	R. McGladdery	Great Britain	113.2	114.3	122.4	Super Tigre G.15.
28.	S. Purice	Rumania	—	122.4	118.7	Super Tigre G.20/15G.
29.	O. Kjellberg	Sweden	—	—	122.4	Hybrid (E.& D.-S.T. Cox).
30.	M. Polner	E. Germany	121.8	—	81.4	O.D.
31.	J. Verbaere	France	—	121.2	120.6	Super Tigre G.20 (Mod).
32.	K. Raschkov	Bulgaria	—	113.71	121.2	Super Tigre G.20/15G.
33.	K. Jensen	Denmark	—	—	118.7	Super Tigre G.20/15G.
34.	R. Dedogen	France	—	115.0	—	O.D.
35.	H. Fiedler	E. Germany	112.5	108.7	107.5	Super Tigre G.20/15G.
36.	K. Heinsius	Holland	—	103.2	111.9	Super Tigre G.15.
37.	I. Vassilev	Bulgaria	—	—	111.9	Super Tigre G.20/15G.
38.	B. Jackson	Great Britain	—	—	111.9	Super Tigre G.20/15G.
39.	L. Meinhardt	E. Germany	—	105.6	107.5	Moki.
40.	S. Skotniczny	Poland	—	103.2	—	M.V.V.S.
41.	G. Tinev	Bulgaria	100.7	—	—	Super Tigre G.20/15G.
42.	O. Pawko	Poland	—	—	90.1	M.V.V.S.
43.	N. Gluysen	Belgium	—	80.8	—	Super Tigre G.15.
44.	G. Golingnon	Belgium	—	68.7	—	K & B .20 R.

Five others did not complete a flight.

Model controlled by 100 to 1 geared unit converting conventional control line handle motion into torque control on the flying wire—again similar in some respects to the Uniline system.

WORLD CHAMPION in the speed category, Bill Wisniewski of California, U.S.A., after his tremendous 141 m.p.h. flight. All credit to Bill for his efforts for he is designer and maker of the engine, has had a hand in the propeller design and won, of course, flying his own design model as seen at left.

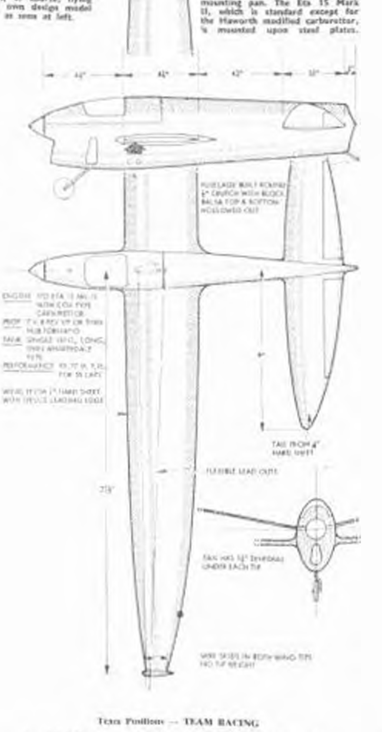
PAST WINNERS

In 1960 when free-formula fuels were permitted, Rossi won with 146.8 m.p.h. Wisniewski 2nd at 142 m.p.h. and Pech 3rd with 141 m.p.h. In 1962 with standard fuel, order was 1st Krizsma 135.5 m.p.h., 2nd Bitti 133 m.p.h. and 3rd Toth and Prati tied at 131 m.p.h.

SUPER NOVA

By RICHARD PLACE

This high aspect ratio red and white racer (as on this month's cover) won the World Championships by the tactical employment of the one-stop technique. It is the development from a long series of F.A.I. racers by Dick Place and somewhat unusual in not employing a cast metal engine mounting pan. The Eta 15 Mark II, which is standard except for the Haworth modified carburettor, is mounted upon steel plates.



STUNT

						Total	
1.	J. Sirotkin	U.S.S.R.	1,049.3	1,052.3	876	2,101.6	M.V.V.S. 5.6
2.	J. Kari	Finland	988	1,018.0	1,053.0	2,071.0	Veco .35
3.	R. Gialdini	U.S.A.	975	1,003.6	1,024.3	2,027.9	Merco .35
4.	O. Lengyel	Hungary	970	996.6	1,023.3	2,019.9	Veco .35
5.	J. Gabris	Czechoslovakia	986.6	931	1,031.3	2,017.9	M.V.V.S. 5.6
6.	L. McFarland	U.S.A.	1,020.6	976.6	975	1,997.2	K & B .45
7.	L. Van Den Hout	Holland	994.0	982	990.6	1,984.6	Veco .45
8.	G. Mauritzit	Hungary	963.0	960	1,003.0	1,966.0	Moki .35 & Fox .35
9.	R. Gieseke	U.S.A.	965.3	963	989.6	1,954.9	Fox .35
10.	H. Svatkin	U.S.S.R.	838	976.3	960.0	1,936.3	O/D
11.	E. Kondratenko	U.S.S.R.	991.3	943	943.3	1,934.6	O/D
12.	H. Turk	Austria	909	975.0	941.6	1,916.6	Fox .35
13.	J. Trnka	Czechoslovakia	944.3	951.6	915	1,895.9	M.V.V.S. 5.6
14.	T. Veltai	Hungary	848	938.3	954.0	1,892.3	Moki .35
15.	K. Seeger	W. Germany	954.0	936.6	935	1,890.6	Fox .35
16.	J. Bartos	Czechoslovakia	927	930.0	960.6	1,890.6	M.V.V.S. 5.6
17.	J. Bonnet	France	815	931.3	926.3	1,857.6	Fox .35
18.	P. Puttiala	Finland	898	948.6	902.0	1,850.6	Veco .35
19.	O. Sundell	Finland	880	942.3	907.6	1,849.9	Merco .35
20.	A. Kaminski	W. Germany	847	919.6	902.3	1,821.9	Fox .35

For the remainder only better two scores are shown.

					Total	
21.	G. Sbragia	Italy	908.0	908.0	1,816.0	Fox .35
22.	F. Mothwurf	Austria	923.3	885.3	1,808.6	O.S. .35
23.	H. Hediger	Switzerland	896.0	904.0	1,800.0	Fox .35
24.	W. Bugalini	Italy	896.3	903.3	1,799.6	Super Tigre .35
25.	M. Simlak	France	906.6	884.3	1,790.9	Fox .35
26.	A. Rasmussen	Denmark	865.0	916.6	1,781.6	Merco .35 & O.S. .35
27.	P. Tupker	Holland	862.0	872.3	1,734.3	Fox .35
28.	K. Sauer	W. Germany	861.6	867.6	1,729.2	Fox .35
29.	M. Vanderbeke	Belgium	923.3	804.0	1,727.1	Veco .35
30.	M. Tricke	E. Germany	844.0	873.3	1,717.3	M.V.V.S. 5.6
31.	R. Lauton	France	851.6	843.3	1,694.9	Veco .35
32.	J. Brodenhoff	Holland	819.6	856.0	1,675.6	O.S. Max .35
33.	W. Goulbier	E. Germany	808.3	726.3	1,534.6	Enya .35
34.	S. Marinov	Bulgaria	741.6	779.3	1,520.9	Fox .35
35.	Kazmierowski	Poland	781.3	728.0	1,509.3	Fox .35
36.	Kaiser	Austria	719.6	734.3	1,456.9	Fox .35
37.	Kujawa	Poland	712.3	733.0	1,445.3	Fox .35
38.	A. Milanov	Bulgaria	730.0	664.0	1,394.0	Fox .35
39.	Salantha	Switzerland	732.6	660.0	1,392.6	Fox .35
40.	Jenkov	Bulgaria	616.6	758.0	1,374.6	McCoy .35
41.	P. Cohen	Belgium	675.6	647.0	1,322.6	Fox .35
42.	Buisch	E. Germany	608.6	688.6	1,297.2	Enya .35
43.	G. Golignon	Belgium	539.6	590.0	1,129.6	Fox .35
44.	C. Soderberg	Sweden	442.0	—	442.0	Merco .29

Team Positions—SPEED

1.	U.S.A.	416.3
2.	Hungary	412.6
3.	U.S.S.R.	397.1
4.	Italy	397.1
5.	Czechoslovakia	393.8
6.	W. Germany	387.7
7.	France	369.7
8.	Great Britain	359.2
9.	E. Germany	341.8
10.	Bulgaria	339.9
11.	Poland	317.5
12.	Finland	254.8
13.	Rumania	247.3
14.	Denmark	241.1
15.	Belgium	145.4
16.	Austria	130.5
17.	Sweden	122.4
18.	Holland	111.9

PAST FASTEST HEATS

Kiev 1962

Strelkin/Chkourzki	4:38
Gelman/Rudchenko	4:41
Purgai/Katona	4:40

Genk 1963

Zolotoverch/Kobets	4:47
Trnka/Drazek	4:48
Babichev/Radchenko	4:49

Team Positions—STUNT

1.	U.S.A.	5,960
2.	U.S.S.R.	5,972
3.	Hungary	5,878.2
4.	Czechoslovakia	5,804.4
5.	Finland	5,771.5
6.	W. Germany	5,441.7
7.	Holland	5,394.5
8.	France	5,343.4
9.	Austria	5,182.1
10.	E. Germany	4,549.1
11.	Bulgaria	4,289.5
12.	Belgium	4,179.5
13.	Italy	3,615.6
14.	Switzerland	3,192.6
15.	Poland	2,954.6

TEAM RACING

					Final	
1.	Place-Haworth	Great Britain	0	4:35.0	4:51.2	Eta 15D
2.	Trnka-Drazek	Czechoslovakia	5:17.0	4:23.7	4:58.4	M.V.V.S.-TR
3.	Fontana-Amodio	Italy	7:19.0	4:33.3	5:08.8	Super Tigre G.20D
4.	Fabre-Favre	France	4:40.2	0		Eta 15 II
5.	Sundell O.-Sundell G.	Finland	4:47.9	4:45.4		Oliver Tiger
6.	Gelmann-Bulkin	U.S.S.R.	4:46.3	4:40.6		Start
7.	Zolotoverch-Kobets	U.S.S.R.	4:46.3	0		Super Tigre G.20D.
8.	Humphrey-Turner	Great Britain	4:46.9	5:05.2		Eta 15 II.
9.	Bjork-Rosenlund	Sweden	4:49.0	5:15.6		Oliver Tiger.
10.	Burke-Jones	U.S.A.	4:49.4	5:08.1		Eta 15 II.
11.	Saporalov-Radchenko	U.S.S.R.	4:49.4	5:11.2		Super Tigre G.20D.
12.	Schlachter-Fromm	W. Germany	4:52.0	5:08.2		Oliver Tiger.
13.	Schliewa-Wampe	W. Germany	4:54.0	4:58.0		Eta 15.
14.	Purgai-Katona	Hungary	0	4:59.0		Moki-TR 6.
15.	Alsoby-Hagberg	Sweden	5:01.0	6:10.5		Eta 15 II.
16.	Mohai-Toth	Hungary	5:03.3	5:10.9		Moki-TR 6.
17.	Raatikainen-Tottila	Finland	5:08.0	7:16.8		Oliver Tiger.
18.	Nixon-Ellis	Great Britain	5:09.0	5:23.0		Eta 15 II.
19.	Stoyl-Rachkov	Bulgaria	5:10.3	5:32.2		Super Tigre G.20D.
20.	Gafner Ch.-Gafner	Switzerland	6:20.3	5:13.0		Oliver Tiger.
21.	Varjacic-Kmoicz	Yugoslavia	5:14.8	0		O/D.
22.	Marodli-Fabbri	Italy	5:15.3	5:16.5		Super Tigre G.20D.
23.	Aarnipalo-Jarvi	Finland	5:18.0	5:36.4		Eta 15 II.
24.	Fischer-Meusburger	Austria	5:18.3	7:20.8		Oliver Tiger.
25.	Fischer-Frigyes	Hungary	5:28.9	0		Moki-TR 6.
26.	Brandt-Soule	U.S.A.	5:26.9	0		Eta 15 II
27.	Hartinger-Necker	Czechoslovakia	0	5:28.8		M.V.V.S.-TR.
28.	Zabe-Willberg	E. Germany	5:31.0	0		Oliver Tiger.
29.	Lalchev I.-Lalchev L.	Bulgaria	5:34.7	0		Super Tigre G.20D.
30.	Kroff-Russ	Austria	5:35.0	0		Oliver Tiger.
31.	Latkat D.-Latkat H.	W. Germany	5:35.7	0		Oliver Tiger.
32.	Ivanček-Spoljaric	Yugoslavia	5:37.5	0		Oliver Tiger/Eta 15 II.
33.	Meyer-Saner	Sweden	6:41.2	5:41.1		Oliver Tiger.
34.	Hasling P.-Hasling O.	Denmark	5:55.7	5:47.0		Super Tigre G.20D & Oliver Tiger.
35.	Tomaszewski-Rachwal	Poland	6:25.1	5:59.0		M.V.V.S.-TR.
36.	Pinotti-Hagel	Sweden	6:00.5	0		Super Tigre G.20D.
37.	Marsman-Konigshoorn	Holland	7:34.9	6:01.3		Eta 15 II.
38.	Wilke-Wolf	E. Germany	0	6:01.8		Moki TR 6.
39.	Kominek H.-Kominek R.	Austria	0	6:05.4		Bugl.
40.	Kacibo-Kacanal	Yugoslavia	7:07.6	6:10.0		Oliver Tiger.
41.	Mainhardt-Jenich L.	E. Germany	6:25.2	6:15.3		Moki TR 6.
42.	Svensson-Geschwendtner	Denmark	0	6:17.2		Oliver Tiger & Eta 15.
43.	Vlaitchev-Vassilev	Bulgaria	6:24.0	7:07.6		Super Tigre G.20D.
44.	Pudelko-Sawe E.	Poland	6:37.0	6:26.5		Eta 15 II.
45.	Bador B.-Bador D.	France	6:27.5	6:30.4		Micron 15D.
46.	Nesin-Creola	Belgium	0	6:28.0		Oliver Tiger.
47.	Patriarche-Chale	Belgium	0	6:53.2		Eta 15 II.
48.	Vanderryken-Vaderbeke	Belgium	6:51.0	0		Super Tigre G.20D.
49.	Gurtler-Klemm	Czechoslovakia	0	7:05.3		M.V.V.S.-TR.
50.	Ehlers-Jensen	Denmark	7:26.2	0		Super Tigre G.20D.

Four others did not complete a race.

Team Positions — TEAM RACING

1.	U.S.S.R.	14:21	7.	Czechoslovakia	16:36
2.	Great Britain	14:30	8.	Austria	16:48
3.	Finland	15:11	9.	Yugoslavia	17:08
4.	W. Germany	15:21	10.	Bulgaria	17:08
5.	Hungary	15:26	11.	E. Germany	17:43
6.	Sweden	15:50	12.	Denmark	19:30
			13.	Belgium	20:14

At left, the formidable French Favre/Fabre team, Maurice and Louis from Lyon, with their Eta 15 retracting gear racer. Though leaders in the first series of heats, they finished in 4th place just 5 secs. short of qualifying. At right, focal point at prize-giving banquet and most certainly the most respected stunt flyer on the field, 18 year old Juhani Kari from Finland modestly signs autographs for a queue of admirers. He has now been placed 2nd twice in the World Aerobatic Championships.

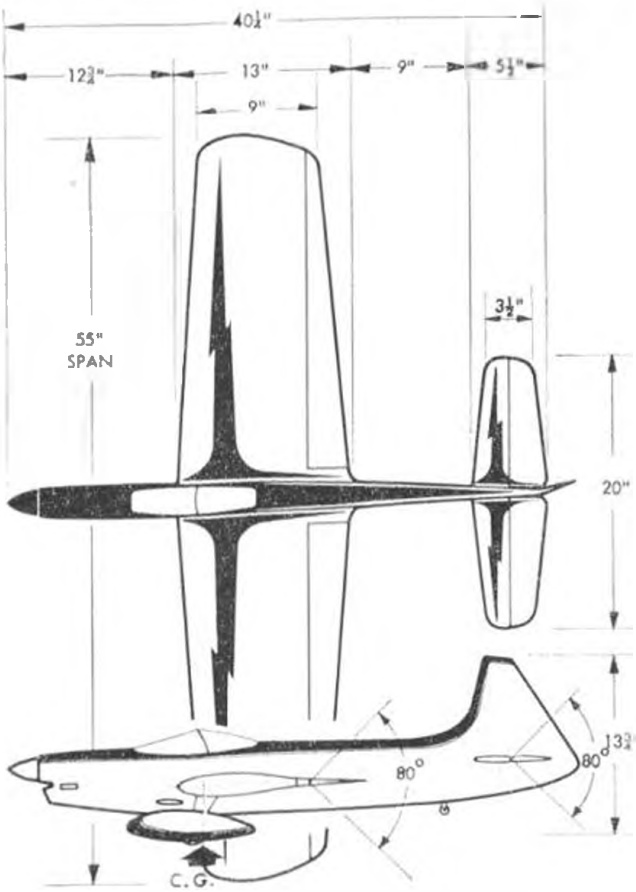
(*Continued from page* 501)

last chance Turner/Humphrey's hopes for slight improvement went with a 98th lap second stop.

A Win for Britain

Qualifiers for the FINAL, matching M.V.V.S., Super Tigre and Eta were pre-briefed by the judges, told what they were allowed to get away with in the heats—and wished all the best for a race full of tremendous promise. Fifteen minutes are allowed before a final for a warm up flight and this serves both to relieve tension as well as getting matters set right.

Hard working multi - linguist Mr. Sugar of the Hungarian Aero Club congratulates Juri Sirotkin on his success in the World Aerobatic Championships. Juri flew his 1962 model which was placed 5th at Kiev, available through A.P.S. as "Spacehound", plan CL.846 price 10/-. General dimensions of the winning model are in 3-view drawing below.



At the whistle there was a simultaneous "yang" as the M.V.V.S. and Eta were started first flick by Drazek and Haworth, and a split second later, Amodio sent the Super Tigre off. Initially the blue-grey Italian model made slow progress with a burping engine but within 10 laps all were circulating at practically identical speed about the 90 m.p.h. mark. The pilots were impeccable. With the eyes of the World's top control liners on them, they had no option and the result was an object lesson of how Team Racing should always be flown. The pace was exciting to the point of being almost unbearable for anyone with British, Italian or Czech blood in their veins. Frnka Drazek were a shade faster, about five laps ahead of the others when their engine cut at the 33rd lap. Extraordinarily quick, Drazek released again with matters even, and Amodio came in to lag three laps behind on re-starting. The red and white "Super Nova" raced on, at times matching the speed of the Czechs and when Don Haworth, caught, refuelled and released it at the 54th lap practically as quickly as this can be read, one appreciates the spontaneous applause that came from all nationalities. From now on it was a battle to see if the speed of the Czechs would cancel the extra stop which came at their 68th lap. Drazek had two tries at starting, re-primed and lost perhaps one more lap. On our reckoning this put him 7 laps behind the British pair as he released, and the Italians, who also had a delayed stop and lost speed were trailing.

When the Eta coughed, British hearts pounded. It came in even faster after clearing its throat and when the 100 was up, the Czechs were still a matter of three laps behind.

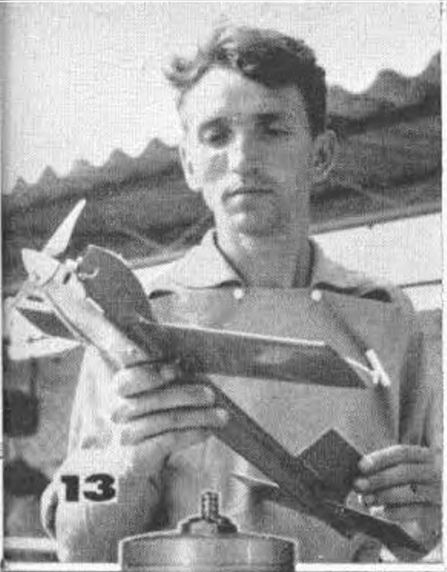
For Dick and Don the situation was strangely unreal. This unassuming pair of true sportsmen had a far greater appreciation for the most enjoyable race they had ever run than for the fact that they had won. We sincerely believe they would have been just as happy to have been 2nd or 3rd and for that reason among many others, their service to British modelling prestige overseas is incalculable.

Speed

Operating simultaneously with T/R on the opening day, Speed started with a real shaker of a target set up by that remarkable character Glenn Lee. Flying in slippers (he "turned chicken" and cast aside the boots and spurs) "old blue" reeled off 138.6

(*Continued on page* 520)

13 Fastest G.20/15G type Super Tigre was E. Mosyakov's entry with specially designed pan which surrounds front end of engine for rigidity. Note wide cuffs on prop blades used by this Moscow modeller. 14 G. Kriszma's latest "Cyclone" placed 2nd after a brief spell in the lead. 15 Glenn Lee flew a Lauderdale design into consistent 3rd place using his novel handle to be detailed in Aeromodeller Annual. 16 Low aspect ratio (4:1) Super Tigre entry by R. Miebach, West Germany, was one of the design surprises and a refreshing change from the general proportions of Wisniewski's 1960 "Pink Lady" which has been so widely adopted by others. Model made 133 m.p.h. for 12th place. 17 & 18. Two views of the latest Wisniewski designed K & B Torpedo 15 RS, unkindly referred to as the "Wart" by virtue of its excrescencies. These cover Schnurle twin transfer ports and the central piston timed boost port, as taken from M.Z. motorcycle design. Bore is .623, stroke .498 in. 19 Typical of the Uniline handle principle employed by most of the speed leaders was this one by I. Sladky, has fibre primary quadrant driving steel bevels over 200:1 ratio offering 40 line turns. 20 The new M.V.V.S. RL engine as used by Sladky with large capacity chicken hopper tank, Schnurle ports and rearward facing exhaust. Definitely an engine to watch in future. 21 Always the bridesmaids, the Sundell twins from Finland were 7th at Kiev, 4th at Genk, 5th at Budapest. Olaf demonstrates retractable leg on his "Joker". 22 Fastest of the "amateurs", the effervescent J. Magne of France placed 10th with 133.6 m.p.h. using self modified Super Tigre and an unusual handle system employing the "backwards" type fitted vertically into pylon. 23 Fibre glass repairs by Hagberg and Alseby after their fly-away. Same propane gas heater with impeller is employed to pre-warm motor before flights and pit stops to keep Eta 15 hot. 24 Amodio warms his Super Tigre the conventional way before placing 3rd in T/R final but has cooling intake blanked off. Engine said to be oil cooled, but we saw no evidence of a radiator! Note rearward wheel on Russian influenced design. 25 One of many self fabricated engines was Reno Varjacsics' radially mounted T/R engine with rectangular cylinder fins and head, Schnurle porting, rear disc intake. Placed 21st in most realistic team racer entered.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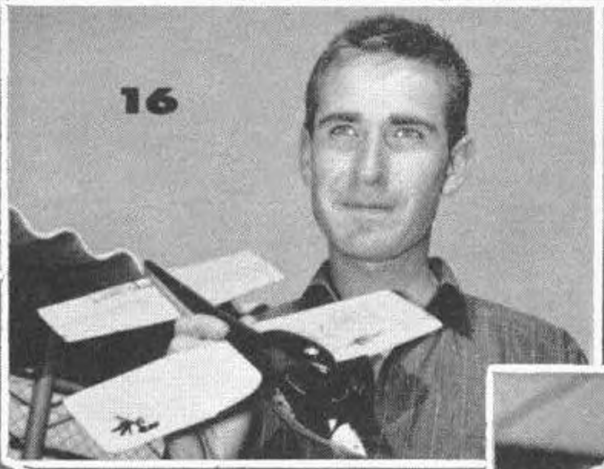
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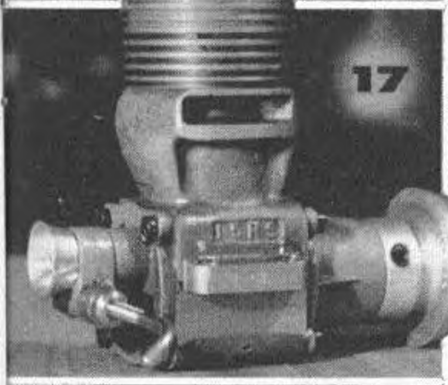
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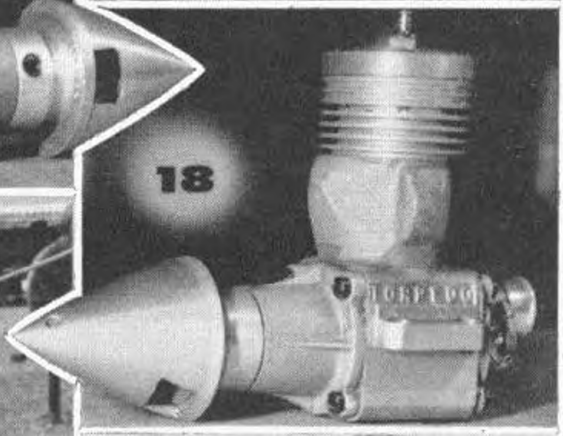

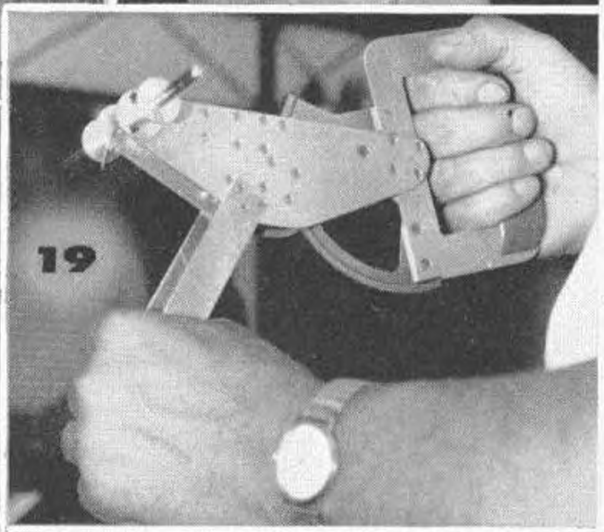
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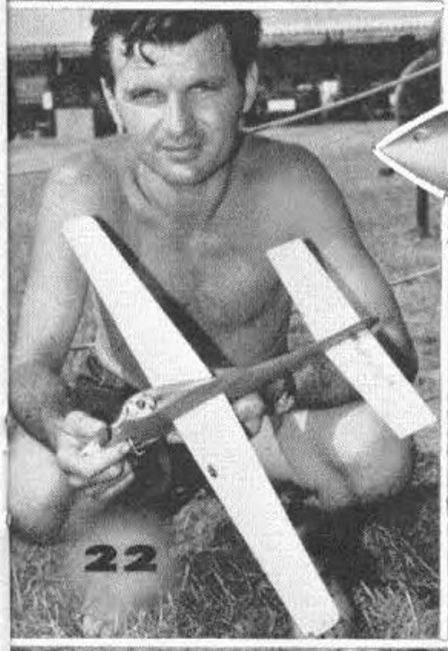
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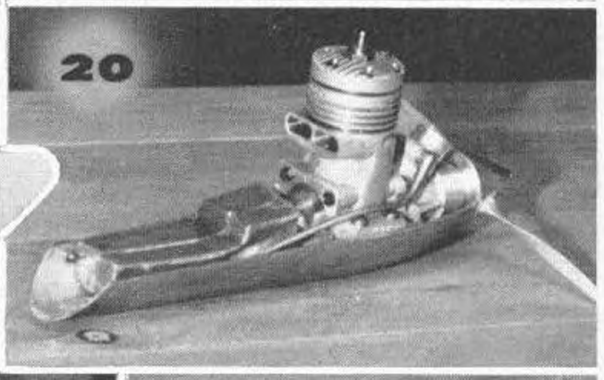
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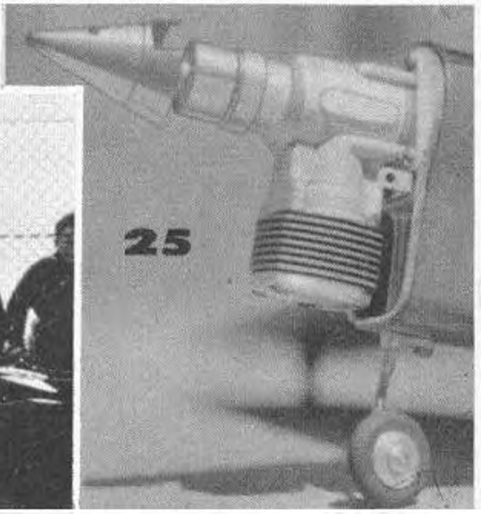
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TIPPING FUSELAGE DETHERMALISERS

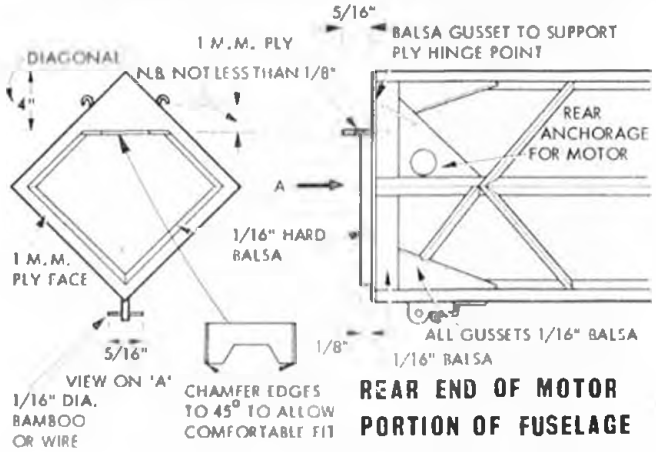
explained by Derl Morley

THE TIPPING FUSELAGE dethermaliser as applied to both open and Wakefield class rubber powered models, has been labelled the "Lincoln gimmick". Although the occasional rubber model has been noticed employing this mode of action, it is generally confined to the Lincoln A.C. Needless to relate, the club does not look upon this approach as a gimmick but realises its obvious advantages and utilises it accordingly.

The first model to use this method was a small lightweight rubber model in 1958 by the author. It was employed in an effort to be like Ray Monks', as the design of the aeroplane was strictly Birmingham style. There was one essential difference in the set-up, that being the two fuselage halves, detachable from each other. This was arrived at more by accident than design since it was thought that Ray Monks' models *were* of this type! The design of the hinge portion of the fuselage on the early layout was a rather clumsy and complicated affair because unrealistic problems were foreseen. By a gradual process of development with several club members using this system, it was made reliable and foolproof. Lou Roberts employed the idea on his early 50 gm. Wakefields. It was partly because of this that he confounded the pundits by packing two Wakefields and rubber motors into a box measuring 27 in. x 8 in. x 8 in. Early in 1960 the tipping fuselage dethermaliser was used on a diamond fuselage lightweight and on a diamond fuselage Wakefield. Because of higher wing loadings on the Wakefield. the hinge joints had to be more substantial to stand the necessary increase in rubber band tension.

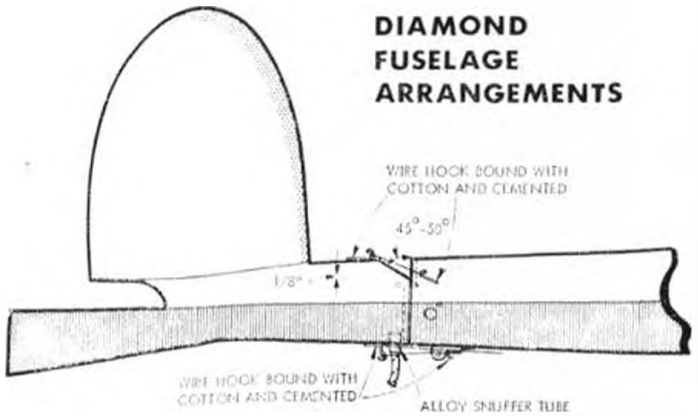
The following are *some* of the advantages of the tipping fuselage d/t. They are practical and have been proved many times by Lincoln rubber flyers.

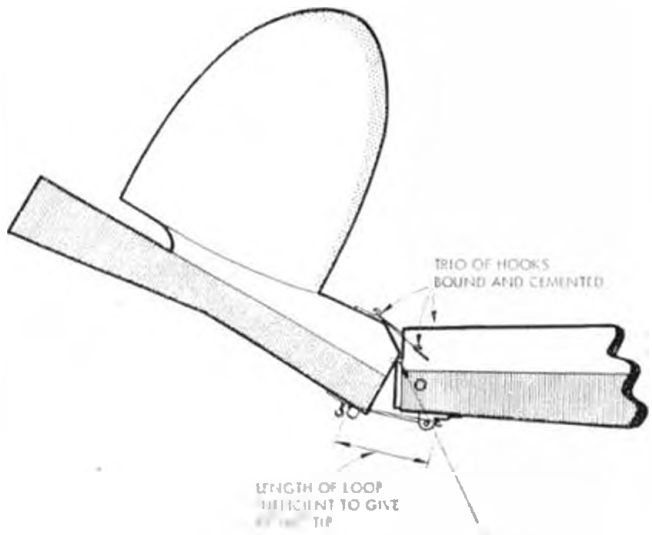
1. The inclined attitude of the rear half of the fuselage gives better chance of recovery when down in crops or long grass. This is more evident on long boom Wakefields.
2. Ease of transportation.
3. The tension of rubber bands is kept away from delicate tailplane and rear end structures, i.e., extreme tensions for positive tailplane d/t. action.
4. On Wakefields (using sheet motor tubes) it enables easy removal of broken motors via rear end of motor tube.
5. Easily recognisable in the dethermalised attitude.

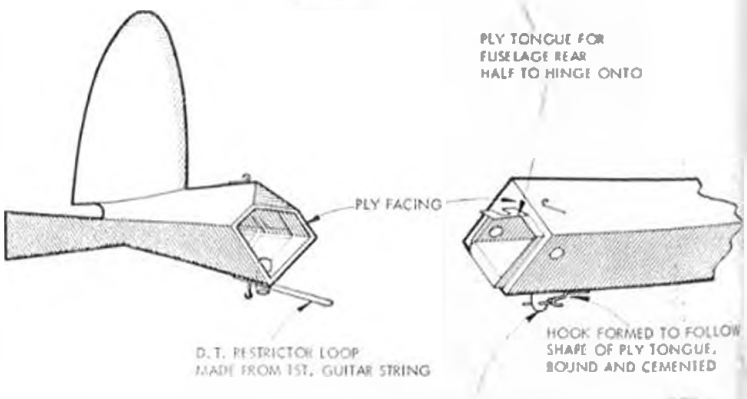


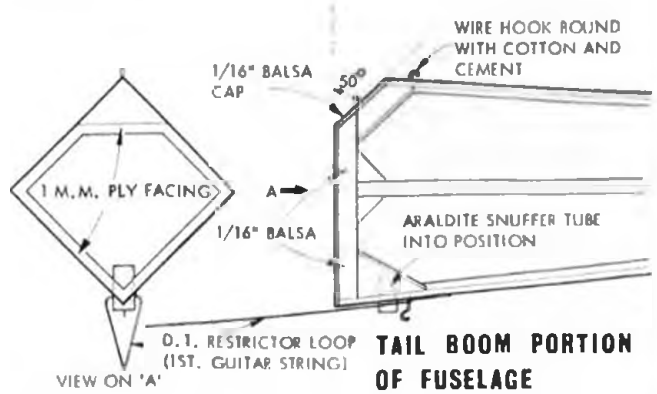
REAR END OF MOTOR PORTION OF FUSELAGE

DIAMOND FUSELAGE ARRANGEMENTS

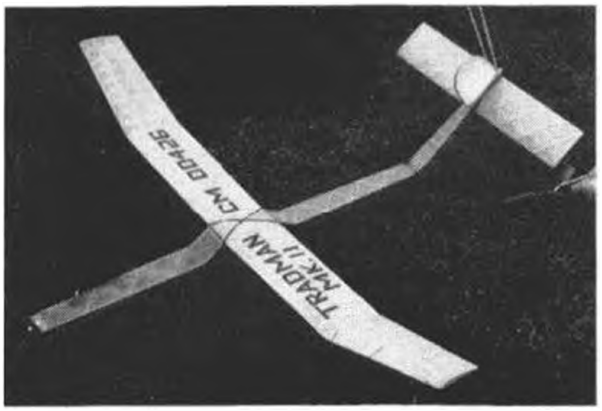








TAIL BOOM PORTION OF FUSELAGE



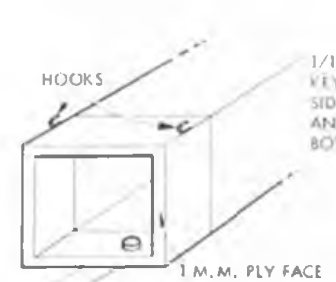
"Tradman" Mark 2 by J. Clements (Basildon) seen at last year's Northern Area Winter Rally with tipping rear fuselage. Top right is an illustration of the simplicity of tipping system on square fuselage, in this case Lou Roberts' new Wakefield "Hunky Dora". Below, a typical diamond fuselage set-up. Note facings on joints, fuse arrangement and position of hooks above hinges. This on a 2.95 oz. 48 in. lightweight.

6. The tailplane and rear end structures are free from ground obstructions when the model has landed under d/t.
7. Lighter tailplaire, fin and rearward structures can be used.

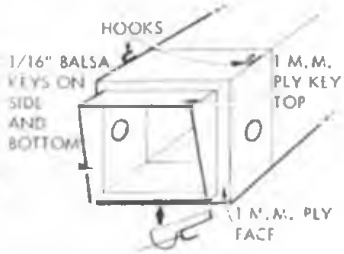
Some disadvantages may be envisaged by intending users of this system. The most obvious being the one of complicated building. The complication involved is no more than that involved in making a propellor nose plug fit snugly in a nose former. Others may be critical of the additional weight that may be involved. The answer to the weight critics is a quotation of weights of previous models having the "tipping" system!

1. Models using:— 40 in. x 4½ in. wing, fuselage length 46 in. and two blade folding prop.; total weight 2¾ oz.
2. Wing 44 in. x 4½ in., fuselage length 46 in. and two blade prop. weight 2.3/16 oz.
3. Wakefield area model and two blade folding prop-weight 2.65 oz.
4. Wing 48 in. x 5 in., fuselage length 53 in. and two blade prop. weight 2.95 oz.

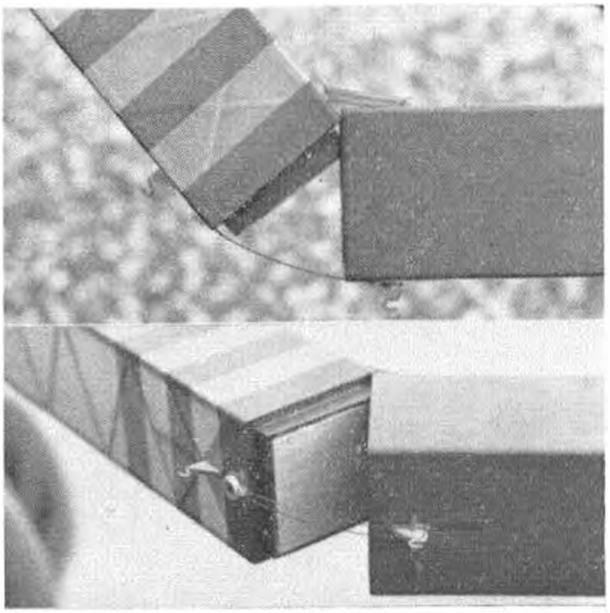
The best method of building a fuselage having the "tipping" section is to commence by constructing the fuselage full length as normal, then at the determined point of hinge, cement on all the additional pieces. This does not include the keys and tongues, as they are added later. Separate the two fuselage pieces cleanly using a sharp razor blade. Face both halves with 1 mm. ply. Cement the keys and hinge tongue. As indicated in the sketch the position of the hooks for hinge purposes must not be less than ¼ in. above hinge line. Finally fit the bottom hooks, and "Araldite" into position the ⅜ in. long dethermaliser fuse snuffer tube.



TAIL BOOM PORTION OF FUSELAGE

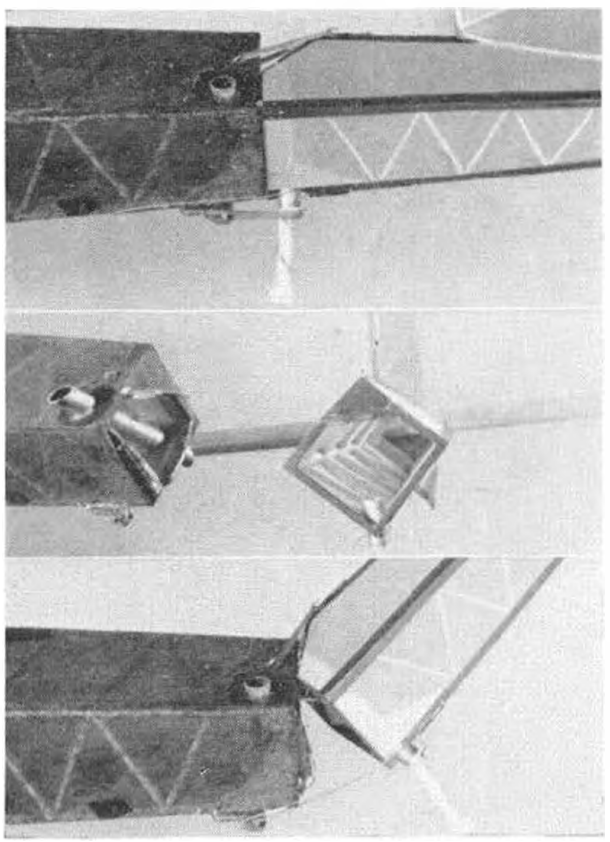


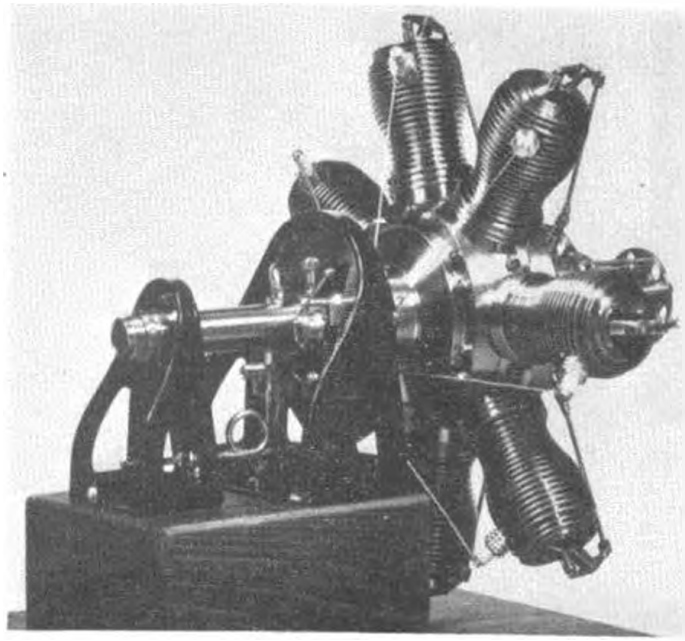
REAR END OF MOTOR PORTION OF FUSELAGE i.e. SLAB SLIDER



Some doubts have been expressed about the possibility of unreliable seating of the two fuselage halves and the subsequent adverse effect on trim. Don't believe it—it just never happens!

The reliability of the system is only as reliable as the workmanship. If care is taken on the joint, the set-up of the d/t. cannot fail and in the author's experience has never failed yet.





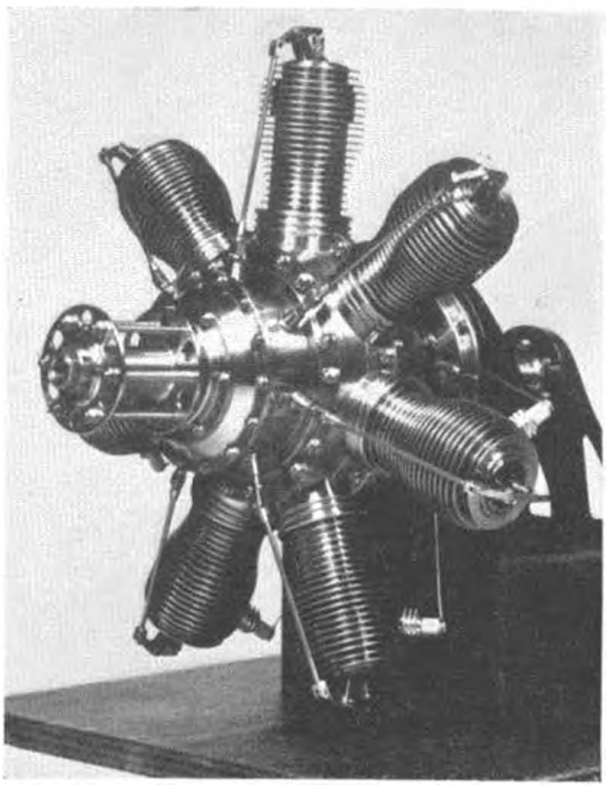
Scale Gnome Rotary Engine

Remarkable example of model engineering endeavour by F. Boler

Rear view above illustrates the method of mounting the engine on its main shaft, which also acts as a central carburettor. The cylinders rotate around the shaft.

THIS REMARKABLE PRODUCT of a skilled model engineer was the focal point of the Leatherhead & District Model Flying Club stand at the Model Railway & Engineering Exhibition held at Dorking in 1963.

Front aspect confirms the extraordinarily careful work by F. Boler in the construction of this Gnome rotary engine.



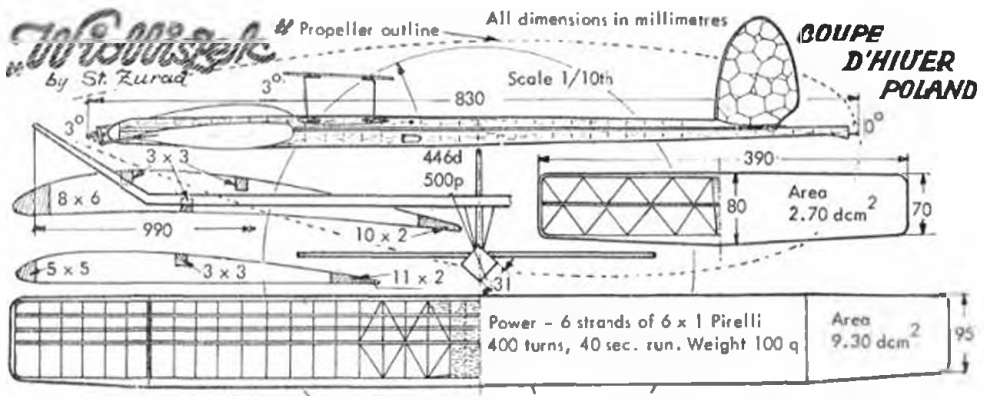
It was made to a scale of approximately one-fifth full-size by Frank Boler of Leatherhead and was created as a scale working model of the 1913 Model "A" 7 cylinder 80 h.p. Gnome Monosoupape Rotary Aero Engine, which powered many of the famous World War I aircraft. The engine is about 7 in. diameter and works in exactly the same way as did its full-size counterpart, even to the critical fuel feed characteristic and the method of controlling engine r.p.m. by "blipping" the ignition. Since the model engine has been made from mild steel, the Gnome is never run at high speed and always for limited duration exhibition runs. Over 3,700 hours of skilled effort were involved in its construction and even the nuts, bolts and washers were specially fabricated. A scale size magneto contains a contact breaker and the engine is mounted just like the real unit, in a pair of mountings so that it is free to rotate. Cylinder stroke is exactly 1 in. and bore .718 in., giving an overall displacement of 47.6 c.c. Operating r.p.m. is between 850 and 1,000 driving a laminated mahogany 21½ in. diameter propeller. The cylinder firing order is 1, 3, 5, 7, 2, 4, 6.

Single Valve

Gnome engines had a spring-loaded differential pressure operated inlet valve in each piston head and it was this single valve that gave rise to many operational difficulties. When the valve did not work properly the engine tended to backfire into the carburettor and since the carburettor was inside the fuselage, the flames were directed towards whoever rode in the cockpit. It was suggested that this was the reason why instructors always rode in the rear cockpit, a procedure adopted even up to the present date.

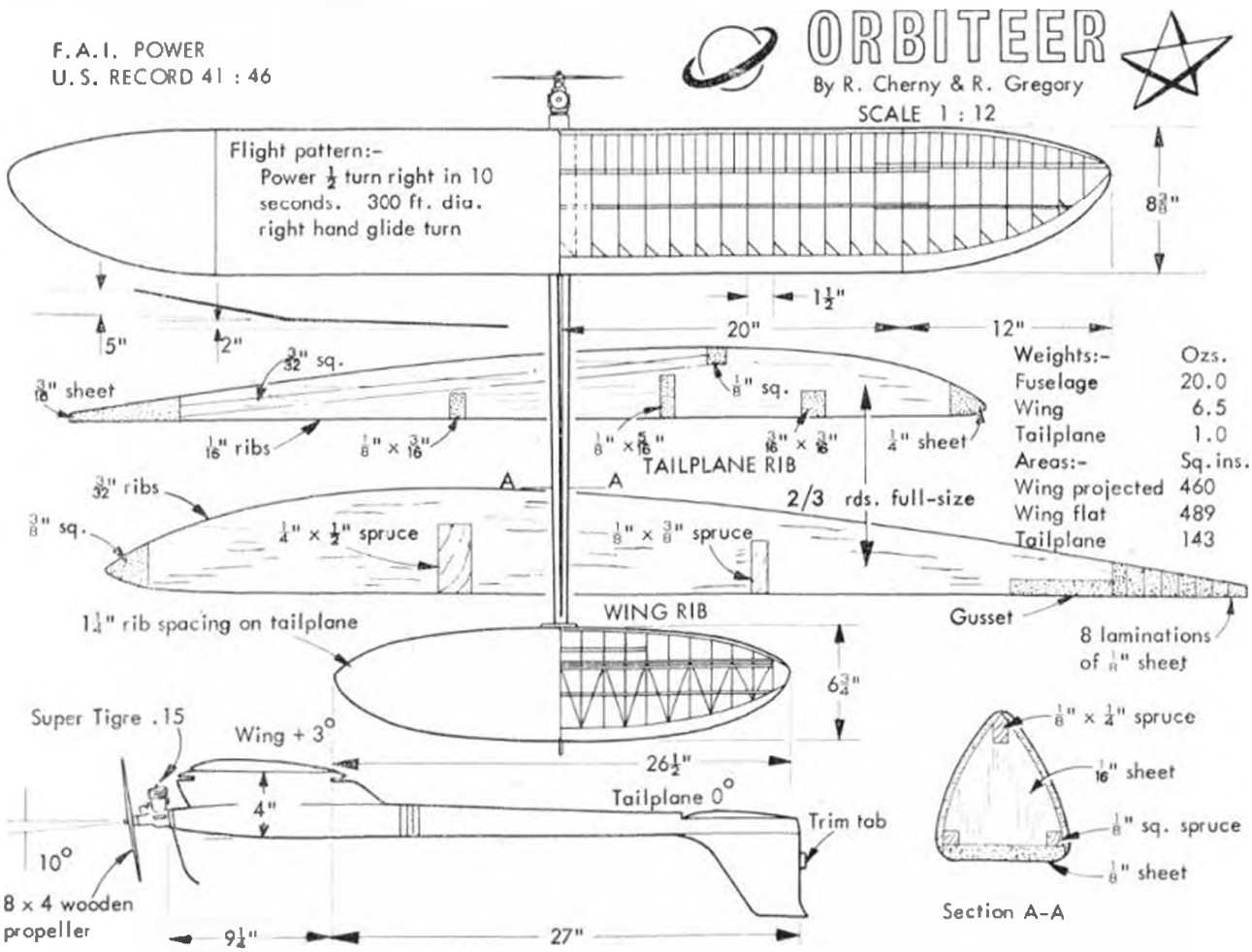
We understand that the engine is now the prized possession of a prominent aviation enthusiast-pilot in the south and we are pleased to learn that it will be preserved in excellent order for, to our knowledge, it is the only working model rotary engine in Great Britain, and Mr. Frank Boler is to be congratulated for his skills.

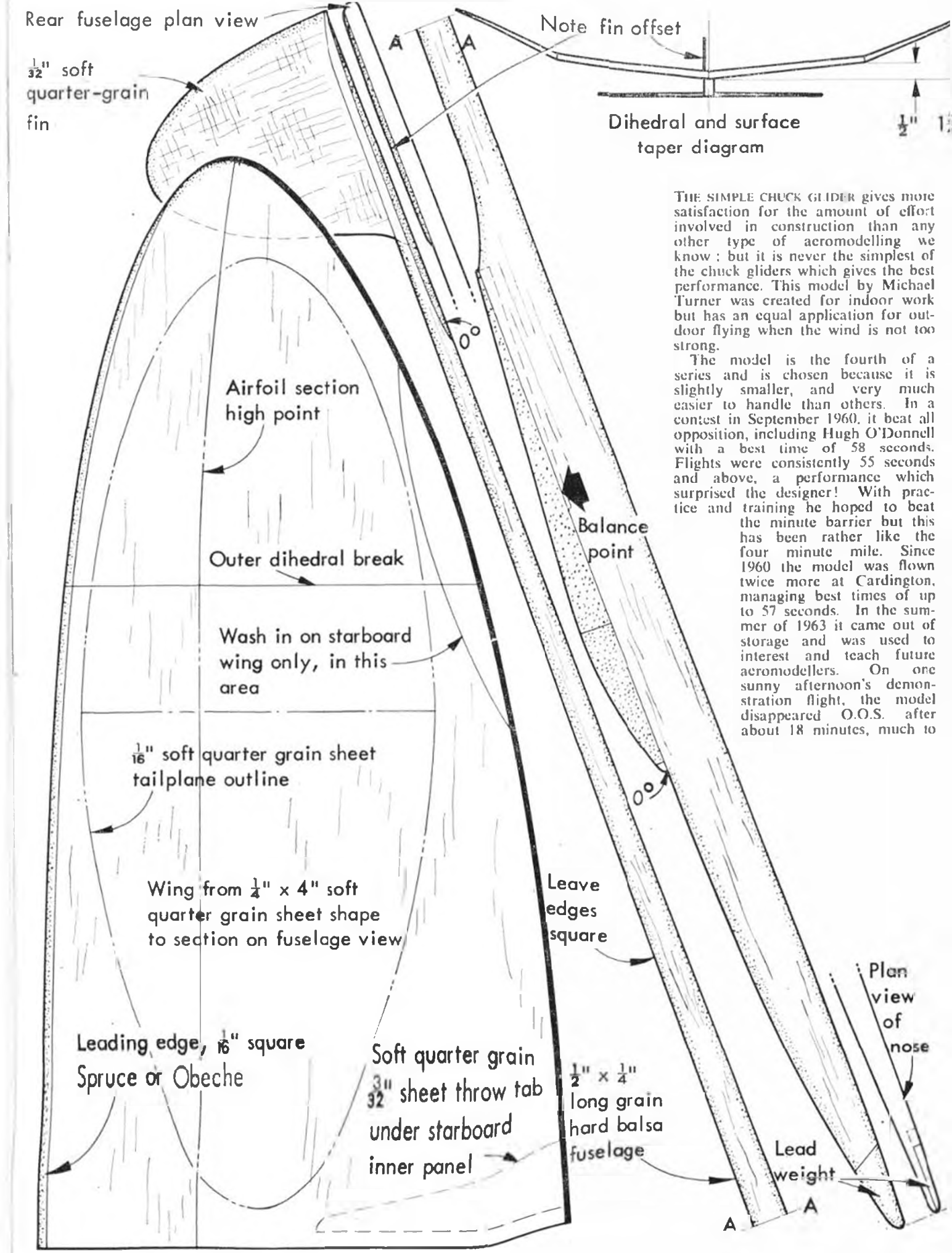
CONTEST DESIGNS



THE ACADEMY OF MODEL AERONAUTICS has a record category which permits models in the free flight F.A.I. classes to make continuous maximum flights for an accumulated time which naturally terminates when the model fails to make a flight of three minutes. During a record trials, Bob Cherny of Sacramento, California, managed a most creditable total of 41 minutes 46 seconds using **Orbiteer** — a development with elliptical surfaces of the model which was flown by Doug Galbreath in the 1963 World Championships. A photograph of Bob launching this model, together with initial comment was published in "Heard at the Hangar Doors" of June this year. For the actual record flights the new Rev-Up 8 x 3¾ in. propeller was employed.

Winter Cup or Coupe d'Hiver rubber driven model events are gaining international popularity and this month we have a Polish design by Stanislav Zurad with high pylon supported wing and created for relatively low power run. Known as **Widliszek**, (Mosquito) the model features a 2-blade folding prop and characteristic short motor extending to just behind the trailing edge of the wing. Winter Cup activities will soon be resuming throughout Europe and we hope once more to conduct our part in the annual Anglo-French challenge event again early in 1965. All British modellers interested in our postal event are invited to register their names and addresses at the Editorial Offices for the first new circular.





THE SIMPLE CHUCK GLIDER gives more satisfaction for the amount of effort involved in construction than any other type of aeromodelling we know : but it is never the simplest of the chuck gliders which gives the best performance. This model by Michael Turner was created for indoor work but has an equal application for outdoor flying when the wind is not too strong.

The model is the fourth of a series and is chosen because it is slightly smaller, and very much easier to handle than others. In a contest in September 1960, it beat all opposition, including Hugh O'Donnell with a best time of 58 seconds. Flights were consistently 55 seconds and above, a performance which surprised the designer! With practice and training he hoped to beat the minute barrier but this has been rather like the four minute mile. Since 1960 the model was flown twice more at Cardington, managing best times of up to 57 seconds. In the summer of 1963 it came out of storage and was used to interest and teach future aeromodellers. On one sunny afternoon's demonstration flight, the model disappeared O.O.S. after about 18 minutes, much to

BOMARK

16 inch chuck glider
by M. A. TURNER

Picture below shows author's launching stance and close up at left emphasises the attractive lines of this glider.

the amazement of the onlookers.

Bomark is stable so it can be flown outdoors with little or no trim change. Similar models have had very good handling characteristics and delighted the beginners who made them.

In summer 1962 a model with larger wingspan and elliptical wing plan form was constructed, this was flown at Cardington, giving two flights of 59 seconds and one of 61.5 seconds. The model was damaged on a girder so the record was not officially broken.

Selection of materials. Time should be spent on choosing wood since this makes all the difference to performance and strength of the model.

A very soft $\frac{1}{4}$ in. sheet should be selected for the wing, 4 in. wide and quarter grain if possible. Avoid long straight grained stock as this warps. On the original a 3 in. sheet (.25 oz. per sheet) was joined to give correct chord.

The plan shape is cut out carefully with a balsa knife then tapered in thickness spanwise as shown. The leading edge is $\frac{1}{16}$ in. sq. spruce, glued into position.

The flat rear part of the wing section is carefully sanded down to section using a block and an edge to make sure the highpoint is not lost. Now shape the leading edge section.

The partly finished wing is now placed on newspaper or a foam pad. The wing is smoothed down with 200, 320, 400 "wet and dry" paper. Talcum powder is rubbed into the grain and lightly doped with 50 per cent dope/thinners. The wing is rubbed down with 320, 400 paper and another rubbing down treatment given. A final coat of thin dope is rubbed down to a glass finish with 400 and "Crocus" paper. Positions of dihedral breaks are carefully marked on the upper surface of the wing. The tips are cut off using a flexible straight edge and a balsa knife. The centre edges are bevelled to the dihedral angle on a table edge using a sandpaper block. Joints are pre-cemented and packed up to the dihedral angle, then the two parts are cemented. The centre dihedral break is treated similarly *after* the tips have dried. When the joints have dried, extra cement fillets are added. A final polish is given with sandpaper at the joints and a soft cloth overall. Proceed same way for tail.

A piece of hard long grained $\frac{1}{4}$ in. x $\frac{1}{2}$ in. stock is carefully selected for the fuselage. Avoid wood which is warped and has a short grain. Choose several possible strips and test the ends for strength.

Cut out the profile after joining the plan half lengths, using a balsa knife and straight edge, sand in tapers and progressively smooth to shape with edges left square. A coat of thin dope is applied and rubbed down when dry. Cut a shallow V shaped recess to seat the wing, tailplane has a recess made with a sandpaper block.

The fin is cut from soft quarter grain $\frac{1}{32}$ in. sheet sanded to section and smoothed with 400 paper.

A throw tab is cut from soft $\frac{1}{16}$ in. sheet with the centre edge bevelled to fit the fuselage side. The tab is smoothed so that it fairs into the wing leaving the part on the trailing edge at full thickness.

Assembly. All areas of joints are pre-cemented then the wings are carefully aligned and pinned in place to dry. Cement gussets are added in the angle between wing and fuselage. The tailplane is pinned in place after cementing. Similarly the fin is glued to the side of the fuselage as shown on plan. Cement gussets are added to angles and throw tab is glued in place. Linen strips were glued at the joints for extra strength. Finally coloured tissue strip can be added and numbers if needed.

When dry, the model is balanced. Lead sheet is trimmed to approximate nose shape until model balances 1.75 in. from wing trailing edge. Linen is glued over the lead after it has been recessed.

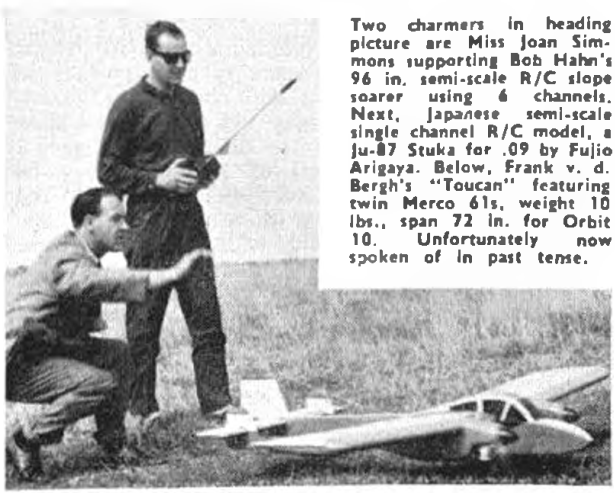
N.B.—pure lead sheet must be used, balsa cement tubes are not dense enough.

If correctly aligned the model is ready for flight tests. Alignment and accuracy is as important in hand-launch gliders as it is with any power model.

Flying. Test on a calm day. If all is well a slow left-hand circle will result. The fin is offset to give a left circle. Small amounts of Plasticine may be used as additional trim or very small changes in the trailing edge of tailplane or fin to achieve this trim.

Wash-in is carefully applied to the right wing trail-trailing edge by pressure and heat.

The model should now be launched in a right bank so that a half right spiral occurs, the transition to a left hand glide may occur without a flick roll. Final trim has to be made by varying: glide circle, nose weight, tailplane, trailing edge and wing wash-in. This really has to be practised—each 'plane is different. If you want to lose a chuck glider, fly around mid-day on a hot summer's day!



Two charmers in heading picture are Miss Joan Simmons supporting Bob Hahn's 96 in. semi-scale R/C slope soarer using 6 channels. Next, Japanese semi-scale single channel R/C model, a Ju-87 Stuka for .09 by Fujio Arigaya. Below, Frank v. d. Bergh's "Toucan" featuring twin Merco 61s, weight 10 lbs., span 72 in. for Orbit 10. Unfortunately now spoken of in past teme.

Over the R/C waves

WHEN SQD. LDR. JOHN CRAMPTON took his flying boat to Seaview, in the Isle of Wight while on a fortnight's holiday he had a secret hope he might be able to fly it across the Solent to the mainland. A lot of factors have to be "green and go" for such a sortie to be successful, and a certain quota of luck element is essential.

During the first week three successful local flights were made from the water in front of his hotel. For two of them John was in an outboard dinghy 300 yards from the shore and the third was controlled from the sands when the tide was well out.

On Sunday evening—August 9th—John nearly wrote CFB-1 off. There was a light off shore breeze and so the take off run had to be towards the beach. As the model accelerated and rushed towards the shore he suddenly realised that he had not allowed sufficient distance for the take-off run. Whereas he *should* have throttled back and cut the take-off, John hauled the flying boat off in a semi-stalled condition just before it reached the shore. At about 15 ft. it flipped on its back and dived straight into some stoney sand!

The crunch and terrible silence that followed was awful. The bow of the hull was stove in and the hull itself split open at the waterline right back to the step. The starboard wing close to the centre-section was busted open.

Twelve hours later all was repaired—and it was a calm Monday morning, August 10th.

Also staying at the hotel was Mr. Fank Trentham and his son Martin. Frank has a 25-knot speed boat and very kindly suggested that it be used as a mobile transmitting platform.

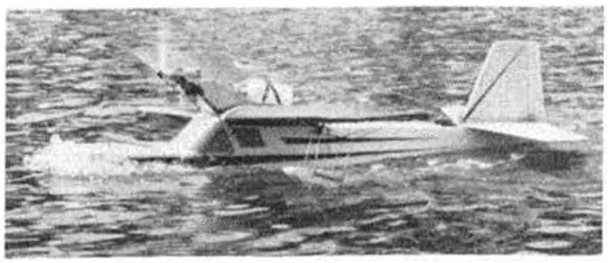
And so the Merco 49—which mercifully suffered no damage in the prang—was started and once again the model was racing across the water. It climbed to about 200 ft. and John was just stooging CFB-1 around when Martin Trentham said it was a splendid day for the crossing.

The crossing! it was only then that the thought of doing it became more than a project. Everything *was* "green and go".

So they set course for Southsea—about 6 miles away! At maximum speed the model was gaining on the boat and so John had to fly it in a series of "dog legs", keeping it just ahead and at about 75 per cent power setting, it was slowly gaining height. About 15 minutes after leaving Seaview the model was circling over Southsea Pier at about 400 ft.

That's all there was to it!

Instead of landing there and then the crew set course back to the Isle of Wight. They had reached the halfway point when the model started its descent —with an empty fuel tank. It landed smoothly on



Above and left, John Crampton's Flying Boat showing extended rudder for steering in water and at right, effect of new strake on nose deflecting bow wave. Right, F. L. Schweigel and his remarkable aerobatic Delta used to win Argentine National Championships.

the Solent and was hauled on board. What had been a bundle of busted balsa the previous evening had actually flown across the Solent — quite an achievement — John's beautiful old "Rhapsody in Blue!"

Aerobatic Deltas

The fact that a large area Delta won the Argentine multi channel aerobatic contest does not seem to have produced many exclamations of surprise. The Delta is normally accepted as an over stable device but as Ing. F. W. Biesterfeld proved at Genk last year with his Delta 707, a fast Delta gives magnificent smooth manoeuvres. (Incidentally Biesterfeld now has a *twin* engined model capable of vertical take-off!)

Frank Lothar Schweigel emigrated from Germany to the Argentine four years ago and for the last three years has concentrated on Delta projects progressing from .049 through .15, .29, .35 and now .45 cu. in. engines, his models have also increased progressively in size and weight. His latest is no less than 1,860 sq. in. in area if our information is correct, powered by Veco 45 and equipped with Hercules/Midas radio with transmite servos. Wing thickness on the bi-convex section is 11 per cent at 33 per cent root chord, increasing in thickness ratio toward the tip. Weight is approximately 8½ lb. and span 54 in., length 49 in. A unique feature is the two position undercarriage which allows the nose-wheel to extend so producing larger angle of attack for take-off and landing. Construction is a mixture of expanded polystyrene and balsa.

Below, one and a half times enlarged "Pylon Duster" by Dennis Helford, modified with dorsal cockpit and reshaped fin with Merco 49 and F & M R/C gear seen with S.M.F. club.

Changes in R.C.S. Gear

Significant improvement has been introduced by R.C.S. in their 2-10 channel Super-Regen receiver. Whereas the early version was designed to operate from a 9v. supply and was not intended to use a single battery for both receiver and servos, the latest version has now been arranged to operate from a 6 to 7.2v. DEAC pack, preferably 7.2v., which is *also* the supply for the servo pack.

This brings the R.C.S. Super-Regen equipment into line with their Superhets, permitting a simpler and lighter airborne installation without any sacrifice of range. The receiver is in their new slim-line case.

Also aimed at improving their Super-Regen outfit is their decision to introduce the "Sports 10" outfit which features the 2-10 receiver just as described matched to a transmitter of the type at present available with their "Competition 10 Superhet" outfit. This features an integral R.F. Meter and high power R.F. stages.

Packing it in

Suitcase models are hardly new, but radio control brings with it complications which make transportation difficult even at the best of times. Norman W. Pachasa manages extraordinarily well by packing a Ken Willard "Pageboy" design, complete with all accessories, fuel, spare batteries and Citizen-Ship radio in a case 11½ x 17 x 3½ in.. The case is standard except for two pieces of ¼ in. elastic, used for retainers. Just the thing for the travelling man!

World News

AUSTRIA. Fifty competitors from Austria and Yugoslavia met in an international A/2 glider event at Zeltweg, July 18/19th. The contest was run over 10 rounds in calm hot weather. Manfred Koller dropped 40 secs. on just one flight for a 1,760 secs. total to take 1st place, followed by Austrian compatriot and Wakefield Ace Horst Wagner, only 6 secs. behind. Top Yugoslavian Ljubo Sofesic was 3rd, all these three making perfect 900 secs. score during the five rounds of the second day. Austria took the team event (see picture).

Sixth International contest for the Alpen Cup took place July 11/12th at Wiener-Neustadt. This combines F.A.I. power and glider with three rounds of each. Gliders flew first in chilly strong winds. Gerd Kirchert led the glider event with a 469 secs. total, but it was that wise World Champ Erno Frigyes who gained the best combination time, although he did not lead in power thanks to a downdraught. This was an inter-city event, Vienna winning glider and Budapest both the power section and the combination. Six cities from Austria, Hungary, West Germany and Switzerland were represented.

YUGOSLAVIA. The 10th international Varteks Cup for A/2 glider and Team racing took place at Varazdin, July 25-28th. Of 120 individual entries in glider representing Yugoslavia, Czechoslovakia, France, Great Britain, Hungary, Ed. Hudak from Czechoslovakia was the winner with 855 secs. John Cartwright of G.B. raised 749 secs. for an honourable 19th place in so large a field. Only eight teams, representing Austria, Sweden and Yugoslavia took part in the T/R event which was notable for Alseby/Hagberg reeling off 4:18 with their Eta 15 powered all glass fibre vee-tail model. They went on to take the final with 4:35. Spectacular approach by this pair is of a propane gas heater for pre-warming the engine, which also came in handy for quick F/glass repairs the next weekend at the World Championships!

SPAIN. Long distance team racing is the latest fashion. 200 and 500 lap races are typical and fastest time so far reported over the 500 lap distance is 26:16 by Hernandez/Perez at the 10th Mir Trophy meeting, Barcelona. Over the normal 100 lap distance, fastest time in Spain appears to be 4:35 by Gayer/Gayer in the Guiu Trophy held in March. Spain always was a very keen nation for team racing and it is hoped that we shall see their teams back in the international sphere during 1965.

FINLAND. Scandinavian championships held at Kasuhava resulted in a win for the Swedish team by virtue of their lead in F.A.I. power and 2nd national placing in A/2 and Wakefield. A number of models were lost in surrounding corn despite air search and no perfect scores were made in any of the three events, which attracted all top names in Scandinavia. Individual winners were (A/2) Kekkonen, Finland, 769 secs. (Wakefield) Hakansson, Sweden, 887 secs.

Left column top to bottom, Erno Frigyes prepares his glider in the Alpen Cup event for combined glider/power, which he won. Next is George Murphy of Rowley, Mass., releasing Coupe d'Hiver entry in Yankee Championships. Below him is John Bell, who won Old Timer event with "Gutteridge Trophy" model from A.P.S. plans. Hand launch was permitted due to strong wind conditions. Bottom is a 4-channel R/C, 71 in. span J3 Piper Cub on floats by Tord Segerdahl of Sweden. Difficulty in taking off makes hand launch from a small boat hazardous! Below, first three in Austrian International at Zeltweg are Horst Wagner (2nd), Manfred Koller (1st) and Ljubo Sofesic of Yugoslavia (3rd).

At Ukraine International, Kiev, Sirotkin's IL-18 being "doctored" by Sokolov used portable electric starter in foreground. Right are team race winners Larinov/Suchov from Leningrad who won with 4.36 deciding flight made before tying at 4.34 with Czechs Klemm/Gurtler in final.

(F.A.I. Power) L. Laxman, Finland, 846 secs.

SWEDEN. National control line championships held at Bromma Airport, August 22/23rd, resulted in yet another win for Rosenlund/Bjork in team race with a final time of 1:56 using a rebuilt "Miss FAI", now referred to as Mark IVB. In speed, Rolf Hagel, who had one of the fastest motors in the World Championships, made 202 Km/h for an official time and later, after the contest 207 Km/h which is most commendable for a two line model. The stunt winner was Tehler with a total of 1,785 points just one point ahead of Tennstedt with a total of 1,784.

BRAZIL. The 5th control line championships held at Curitiba July 17-19th covered all F.A.I. classes, plus scale and combat. Fastest speed was 169 Km/h by Tanigawa and fastest team racer an Oliver Tiger model by Campos/Borel at 5:24. Fox 35s were universally used in stunt and a Johnson special powered standard "Voodoo" won combat for Priolli (see photo).

YUGOSLAVIA. The 11th European Criterium for free flight power more than ever proved that the critical factor today is the power available from a 2.5 c.c. engine. 25 eager competitors came from 10 countries and included all the leading names in Europe from past World Championships. Luckily the thoughtful organisers arranged for an extra spare day and were thus able to compensate for a day and a half waiting in downpour before the contest could start. Under a high overcast, the first to fly easily flashed maximums, but by round 2, thermals were difficult to locate. Frigyes and Cerny collected second maximums and a number were chopped off just a few seconds short. Downdraughts were abundant by round 3, Frigyes d/t'd 2 ft. above the ground to lose 6 secs. and Cerny was now only man with a perfect triple max, chased by East German Reda and Hungarian Meczner. As the 4th round progressed, Dave Posner shot up the list with a max, Cerny fell lower and Reda took over the lead. He was most unlucky to score only 88 secs. to drop into 9th place by virtue of his 5th flight. Frigyes and Meczner were running neck and neck with only a second between them and ended that way as each scored a max, so the "Taitos" equipped Hungarian team gained a clear lead in the team results and also 1st and 2nd places in this all important power contest. British competitors Dave Posner placed 6th and Vic Jayes 14th, thoroughly enjoying themselves in the process by combining a holiday with an excellent international contest.

WEST GERMANY. Winner of the individual classification in the 1st West German decentralised competition for Coupe d'Hiver was a junior, Uli Schmid from Reutlingen, making a total of 894 secs. His club also gained leading team place. Results have been issued for first 12 places and addresses quoted for four model flying clubs which took part in this event, indicating good support for the initial launching of C.H. in Germany.

NEW ZEALAND. The New Zealand M.A.A. is helping with the national airline N.A.C. in organisation of a model aircraft competition. Classes will be for control line flying scale where the aircraft must be one that is, or has been, in the Service of national airways and has to bear N.A.C. markings (this accounts for a flush of orders for A.P.S. Viscount plans!). Second event is for control line team racing with the final to be incorporated within the N.Z. Nationals after local semi-finals at Auckland, Wellington, Christchurch and Dunedin. Winners of the semi-finals are to be flown by N.A.C. to the Nats and will be the guests of the N.Z.M.A.A.

U.S.S.R. Teams from Russia, Ukraine, Poland and Czechoslovakia took part in a control line international at Kiev. Sirotkin won both stunt (followed by Kondratenko and Bartos, Czechoslovakia) as well as scale where he flew an IL-18 (see photo). Points advantage given to multi engine models also resulted in Babicev taking 2nd place in scale with an LI-2 Dakota, while Horak of Czechoslovakia was 3rd with a Tipsy Nipper. In speed the order was Mosyakov with 216 Km/h ahead of Pech from Czechoslovakia and in team race a very close result gave Larinov/Suchov from Leningrad 1 sec. advantage with 4:36 over Klemm/Gurtler of Czechoslovakia with 4:37. In fact these times were their best heat times. In the final there was a dead heat with both of them at 4:34 according to report from Poland.

U.S.A. "A historical model rally" was run at the Naval Air Station, South Weymouth on August 8th calling for models from kits or plans prior to December 31st, 1942. H. John Bell won the rubber event with a "Gutteridge Trophy" model from A.P.S., just beating Ed. Dolby with a 1939 Wake and Lee Renaud flying Frank Zaic's "Miss New Yorker 4". Two minute maxes were the order of the day and John Bell made 288 secs. in windy conditions. The "Yankees Championships" held at the same time included a Coupe d'Hiver event, indicating more recognition for this class in the U.S. though we are given to understand from the Illinois M.A.C. that the number of entries in C.H. have consolidated to about half a dozen regular enthusiasts in that club.

Brazilian team race champions in F.A.I. categories after their National Championships held in July. See text.

Squadron Markings

Described by Leslie A. Rogers Part 21
Drawn to 1/72nd scale by K. McDonough

49 Squadron R.F.C.

The unit went to France on November 12th, 1917, equipped with D.H.4's, changing them for D.H.9's in the latter part of 1918.

Sqdn. Marking (carried from November 1917 to March 1918) was a white 'Dumbell' painted on the fuselage sides behind the cockade.

Flight and Individual Markings.

One flight probably 'A' used letters A. B. C. D. E. F.
One flight probably 'B' used numbers 1. 2. 3. 4. 5. 6.
One flight probably 'C' used letters U. V. W. X. Y. Z.
painted in white on the sides of the nose below the exhaust manifolds and repeated on the top wing on the centre line.

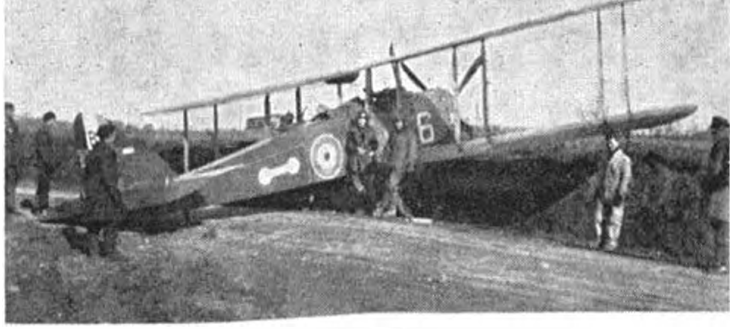
Using D.H.9's. No Sqdn. markings were used.

Individual Markings were by large white letters painted on the fuselage sides behind the observer's cockpit and repeated (also in white) underneath the nose. The letters used most likely went from A. to S. with I. missing.

Flight/Cmdrs. aircraft were identified by a fabric streamer, usually two coloured, fixed to the rear port outboard interplane strut.

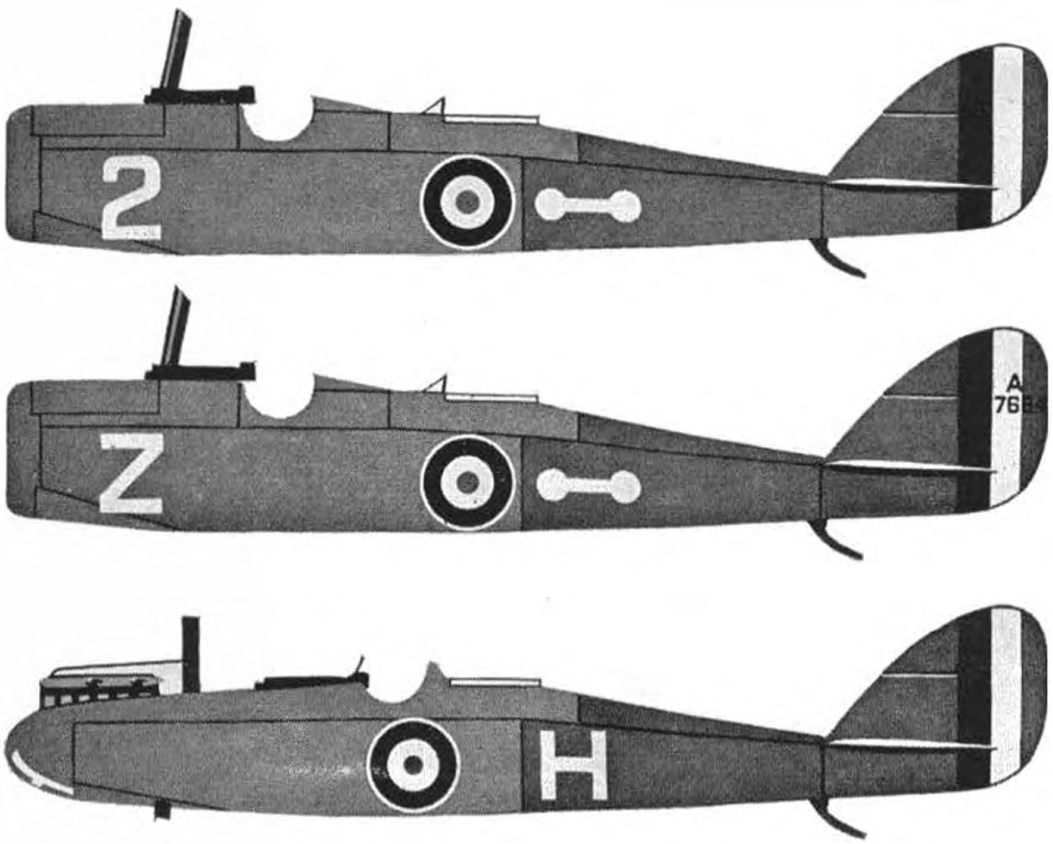
Personal Marking on D.H.4—B'7747—Aircraft 6. Pilot—Lt. A. H. Curtis. An artist drew a number of very 'eyeable' girls, one of whom was called 'Miss Greencap'. Lt. Curtis had a metal cone made and fixed to the propeller boss as a spinner, painted it Green and called the aircraft 'Miss Greencap', and that is how some markings were born!

Many thanks to Mr. A. H. Curtis for much of this information.



NOTE: It was common practice in No. 49 Sqdn. to cross-post pilots and machines from one Flight to another to make up vacancies caused by casualties and write-offs. This means that the sequence of Flight marking was often disrupted. If there was time, the new Flight letter or number was painted over the old one—in fact, D.H.4 "Z", A'7694 was flown by a Lt. Morris, when he was given one of the Fiat engined D.H.4's; his aircraft "Z" was transferred to another Flight and the "Z" was overpainted "6". This indicates the case of serial numbers having no bearing on the markings.

D.H.4 No. B'7747 individual letter 6 of No. 49 Squadron was piloted by A. H. Curtis carrying 2/Lt. V. Gordon as an observer and ended up this way on 16.2.18. Below is a D.H.9 of the same Squadron with Serial C'6114, pilot again Lt. A. H. Curtis whose co-operation is appreciated in preparation of this feature.



1/72nd scale drawings at right represent at top a D.H.4 of "B" Flight between November '17 and March '18. Aircraft Z is probably from "C" Flight of the same period and the D.H.9 below is of the late 1918 period showing how the letter "H" is also carried on the underside of the nose.

Stevenage lottery idea is Cox .049 powered arm with scale Hurricane which stops at the lucky "airfield" for prize-winner—gives publicity to aeromodelling as well as earning hard cash for deserving cause.

Lincoln & Wigsley Rally

The Lincoln and Wigsley Rally held at Wigsley on July 19th, had wind gusting up to 20 m.p.h. and hazy conditions, and J. O'Donnell wore out a pair of bicycle clips, to get three placings. A good attendance was recorded but several decided not to fly due to the high wind, because of this events were re-programmed. Multi R/C started first at 11 a.m. and the single took place at 5.30. Undisputed single control winner was M. Ward, a magnificent take off, good flight pattern, a long, long final approach, dead stick, with a perfect touch down in the landing circle. Scale R/C was the final event with G. Franklin winning, flying his Spitfire. The schedule arranged gave more points for **scale finish** and less for flying, as it was a scale contest, not a second multi event. Results: 'Open Power'. 1 J. West (Brighton) 8:56. 2 D. Hipperson (Croydon) 8:17. 3 J. O'Donnell (Whitefield) 7:55. 'Open Glider'. 1 J. Baguley (Hayes) 8:05. 2 D. B. Spencer (Ashton) 7:57. 3 D. White (York) 7:19. 'Open Rubber'. 1 D. Poole (Birmingham) 9:00. 2 J. O'Donnell (Whitefield) 8:50. 3 D. Morley (Lincoln) 8:22. 'Combined F.A.I. Event'. 1 J. O'Donnell (Whitefield) 9:00—Rubber. 2 M. Dilly (Croydon) 8:06—Glider 3 J. Baguley (Hayes) 8:05—Glider. 'Chuck Glider'. 1 D. G. England (Leicester) 1:55. 2 R. Clark (Lincoln) 1:24. 'Multi R/C'. 1 S. Foster (Lincoln). 2 M. Elmer (Lincoln). 3 G. Franklin (L.A.R.K.S.) 'Scale R/C'. 1 G. Franklin (L.A.R.K.S.) 2 J. Archbold. 3 T. Devonshire. 'Single Channel R/C'. 1 M. Ward. 2 E. Scoles. 3 A. Bird.

WANSTEAD & NORTHWOOD
Second F.A.I. Rally

Second in a series of F.A.I. control line meetings was held by the Wanstead Warhawks and Northwood M.A.C. at the Hayes flying site on August 9th. Entries were good with 27 in team race and 32 in combat. For once the combat finished first, this was mainly due to the fact that, the F.A.I. rules virtually eliminate a re-fly. This meeting was graced with much better conditions than the last, and the combat rules more strictly enforced, but there were still a few entries expecting to by on 50 ft. lines. Combat winner D. Sizmur from Sidcup, was flying a low aspect ratio Oliver Tiger powered wing, that was very fast and highly manoeuverable, as several other cimpettors found to their cost. R. Sibbald also from Sidcup placed second. "Moggs" Morris of Northwood had trouble in the semi final and was beaten by D. Sizmur. A. Ytrey a visitor from Norway flew for Northwood and did well to reach the semi final.

After several hours of practice team racing was off to a good start. Fastest heat time went to Alan Dell of Feltham/Hayes with 5:13, second by a mere half second were Franklin/Ives with 5:13.5. Several disqualifications were recorded, and in one race all three teams were ruled out! The semi finals were run off but no fast times emerged. The third and final, semi final comprising of Lambert/French, Gillow/Laye, and Manser/Wilson ended in disaster. Both Lambert/French and Manser/Wilson were airborne when the Gillow/Laye model took off and flew in. This soon wrapped itself around the Lambert/French lines and both mode's crashed also involving Manser/Wilson. All the models were badly damaged and two motors wrecked. The 200 lap final was uneventful with the exception of the wheel coming off the "Espadon" racer flown by the Franklin/Ives team from Wanstead Warhawks. Results: 'F.A.I. Team Race'. 1 A. Dell (Feltham) 10:27. 2 Green/Knight (Wanstead Warhawks) 11:1. 3 Franklin/Ives (Wanstead Warhawks) rtd. 'Combat': D. Sizmur (Sidcup). 2 R. Sibbald (Sidcup).

and CONTEST REPORTS

HAYES GALA

Hayes D.M.A.C. banned their own members from flying in the Gala held at Chobham Common on August 9th. One notable point is that A. Turner from Southampton won both classes of glider. John O'Donnells effort is worthy of mention for the way he flew a half-A model in the Open Power fly-off. His own model was wrecked, as when launched, it tried to get assistance from 164 ft. of glider tow line attached to an open glider, sliding up the full length of the line which managed to alter its incidence, and send it back whence it came, ending up in several pieces. Results: 'Glider'. 1 A. Turner (Southampton) 9:00 + 2:42. 2 W. Trotter (N. Kent) 9:00 + 0:42. 3 A. Young (St. Albans) 8:45. 'Rubber'. 1 D. Wells (Hornchurch) 9:00 + 4:38. 2 J. Manth (Croydon) 9:00 + 3:34. 3 R. Ward (Crawley) 9:00 + 3:02. 'Power'. 1 J. O'Donnell (Whitefield) 9:00 + 3:34. 2 H. Ramsey (Colchester) 9:00 + 3:24. 3 G. Head (Portsmouth) 9:00 + 2:22. 'A-1 Glider'. 1. A. Turner (Southampton) 7:20. 2 D. Morley (Lincoln) 7:12. 3 C. Hayward (Croydon) 5:55. 'A Power'. 1 J. Boxall (Portsmouth) 8:04. 2 V. Taylor (St. Albans) 7:44. 3 D. Hipperson (Croydon) 7:42.

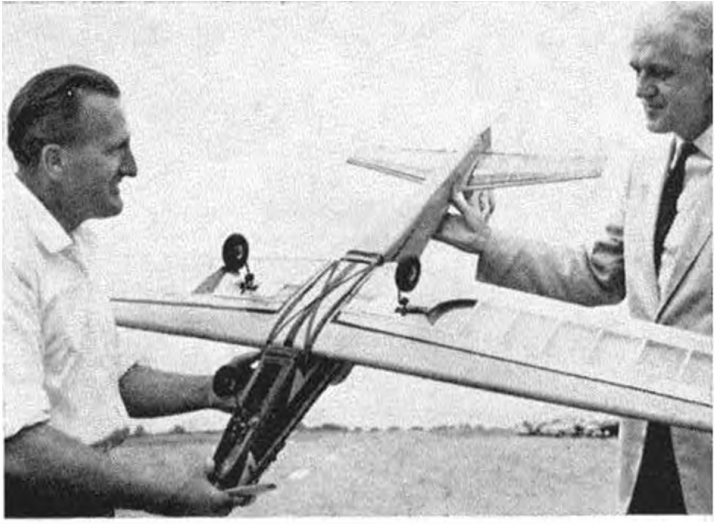
Nomads News

North Kent Nomads are a club with a wide range of interests, as shown in their recent club contests. In a radio contest George Michalski won both the F.A.I. pattern and the spot landing with his "Taurus" using F & M equipment and Transmite servos. Tony Mattin was second in the F.A.I. pattern also flying a "Taurus". Jack Horner was third flying his "Tauri". Altogether a Top-Flite kit benefit event. In tailless Bill Hubbard came out tops with 7:10, despite setting fire to his new model after the second flight. We hear he now has the D/T's! John Giffen won the "Rotarian" glider competition flying an A.P.S. "Floridian", beating Bill Hubbard by nine seconds. John Giffen has just been notified that an A.P.S. "Patches", lost at the Surbiton Gala, has been found **inside** a combine harvester on a farm at Reigate. The timer is reported to be in working condition.

Bill Hubbard's Tailless before burnout, see Nomad's News

LEICESTER CLUB ROOM

That energetic Leicester club now use their own club room and have decorated it to their taste. The painting and all the other decorating jobs were done by the club members, one section painting while the rest scraped windows, etc. The final job is now painted red and white with such non-modelling things as a record player and a dart board installed. We hope these won't prove too great a distraction from aeromodelling!



Above left: D. Pymm and his first indoor model which he worked up to a creditable 11 min. at Cardington on August 23rd. Right: G. Franklin demonstrates de Bolt retracting u/c to G/Capt. J. E. Hunter, O.B.E., O.C. R.A.F., Upwood.

Typhoid Display

An exhibition of control line flying was given by the Aberdeen Aeromodeller's in connection with Aberdeen's "Bon-Accord Fortnight", a thanksgiving for the end of the recent typhoid outbreak. Forfar M.A.C. and a bus load from Moray M.A.C. helped them out at very short notice. Highlight of the display was a combat joust by the Forfar and Moray clubsters.

RADIO CONTROL TROPHY RESULTS

Chris Olsen 1964 Winner

Results of the 1964 Aeromodeller Radio Control Trophy held on July 26th at R.A.F., Upwood, are as follows, with Chris Olsen taking the trophy.

		Round 1	Round 2	Total
1	C. Olsen	1644	1666	3310
2	S. Foster	1594	1682	3276
3	G. Franklin	1317	1431	2740
4	J. Wingate	1342	1239	2581
5	G. Ford	1168	1110	2278
6	J. Bickerstaffe	1088	1136	2224
7	M. Elmer	519	1513	2032
8	R. Yates	823	1175	1998
9	R. Payne	1162	712	1874

Signal News

From "Signal" the quarterly review of the Gravesend and District Model Engineering Association comes some news of their recent activities. Noel Lovatt is flying a 27 in. span "Microwave" powered by a Cox Tee Dee 0.010, using a Kraft receiver, Elmic Conquest escapement and 3.6 volt Deac pack. All up flying weight of the model is 8 oz. The "Hannibal" built by Mike Jackson and John Hockey, which was not quite ready for their open night, has now been completed and test glided. The free flight flights are yet to come and then the model will be preserved for the Northern Heights Gala. Roy Weeks, one of the club's most active radio flyers, has just pranged his "Taurus", and is now flying his old and faithful "Orion".

Surbiton Gala

Held at Chobham Common on July 12th, Surbiton Gala had a day starting with rain and strong winds blowing towards the tank factory, but by late afternoon the wind dropped. Glider competitors tended to fly throughout the day, and so did not get the advantage of the better weather in the late afternoon, and as a result a fly-off was not needed. The majority of competitors in the other events flew later in the afternoon and 13 triple max's were recorded. Dave Hipperson from Croydon flew in both the ½A and open power fly offs, with two ½A power models. The rubber fly off was thermal influenced with the top three all getting into lift and D/T'ing. The power fly-offs did not appear to be affected by the lift. Entry fees were distributed as prizes and a cup award to the Gala Champion. Results: 'Rubber'. 16 entries, six in fly-off. 1 R. Wotton (Hayes) 9:00 + 10:25. 2 R. Paverley (Hornchurch) 9:00 + 6:32. 3 D. Poole (Birmingham) 9:00 + 5:35. 'Glider'. 23 entries. 1 N. Noel (Stevenage) 7:34. 2 D. Tipper (St. Albans) 7:11. 3 J. Baguley (Hayes) 7:06. 'Power'. 15 entries. 1 J. West (Brighton) 9:00 + 3:48. 2 D. Welch (Brighton) 9:00 + 3:12. 3 G. Fuller (St. Albans) 9:00 + 2:30. '½A Power'. 6 entries. 1 G. Cornell (Croydon) 9:00 + 3:52. 2 G. French (Essex) 9:00 + 3:28. 3 D. Hipperson (Croydon) 9:00 + 2:23. 'Gala Champion'—D. Hipperson (Croydon).

East Grinstead Rally

The first East Grinstead Rally was a great success. Held on July 26th at Ashdown Forest it had to start at mid-day due to the conservators of the Forest charging them £5 5s. a day. With very hot weather, little drift, and chancy lift, models were being tree'd with alarming regularity. Results: 'Rubber'. 18 entries. 1 A. Wells (Hornchurch) 9:00 + 6:04. 2 F. Boxall (Brighton) 9:00 + 5:16. 3 J. Allen (Brighton) 9:00 + 2:34. 'Glider'. 38 entries. 1 J. O'Donnell (Whitefield) 9:00 + 3:48. 2 M. Dilly (Croydon) 9:00 + 1:57. 3 P. Newell (Surbiton) 9:00 + 1:16. 'Power'. 35 entries. 1 D. Welch (Brighton) 9:00 + 3:40. 2 G. Head (Portsmouth) 9:00 + 1:53. 3 S. Miller (Cambridge) 8:13. '½A Power'. 22 entries. 1 J. Boxall (Portsmouth) 9:00 + 1:47. 2 R. Cummins (Bristol) 9:00. 3 A. Younge (St. Albans) 8:31.

LONDON AREA CONTEST

55 Entries

A few weeks before the August Bank Holiday weekend, a small group of London Area club members decided to run an impromptu contest on Chobham Common. This was to help fill the gap caused by the cancellation of the N.W. Area meeting. Publicity was by word of mouth at Wigsley and Ashdown Forest, and on the day 55 entries were received. With a light wind conditions were good. The St. Albans club report, that all they could do was loose models. Prizes were given down to third place in the ratio of 3:2:1, using all the entry fees. R. Fleetwood of Hornchurch was subsequently left reeling under the weight of 1/4d. for his third place in Chuck Glider. Results: 'Rubber'. 1 A. Wells (Hornchurch) 9:00 + 7:59. 2. Dyke (St. Albans) 9:00 + 6:23. 3 Blount (Croydon) 8:52. 'Glider'. 1 James 9:00. 2 M. Dilly (Croydon) 8:36. 3 P. Newell (Surbiton) 7:37. 'Power'. 1 J. O'Donnell (Whitefield) 9:00 + 8:53. 2 Glynn (Surbiton) 9:00 + 6:45. 3 M. Dilly (Croydon) 6:32. '½A Power'. 1 Pepperell (Maidenhead) 7:28. 2 Brown (Maidenhead) 6:58. 3 D. Hipperson (Croydon) 6:27. 'Chuck Glider'. 1 A. Young (St. Albans) 2:53. 2 Stalen 2:43. 3 R. Fleetwood (Hornchurch) 2:35.

CRAWLEY REPORT

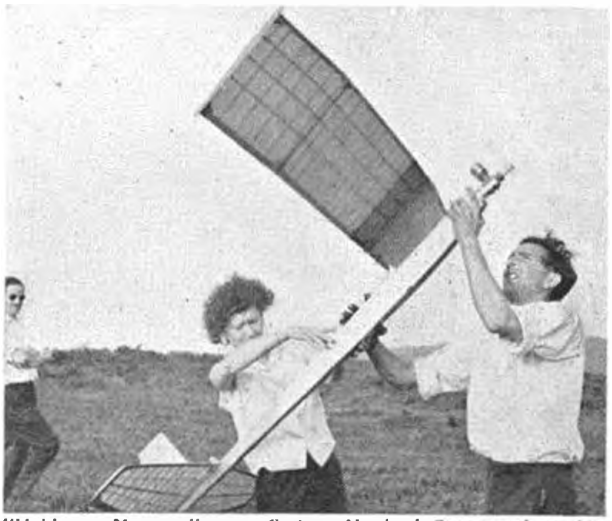
On Saturday, July 11th, the club gave a combat and stunt display at a local fete, some of the fliers having joined the club after their last fete display. There was plenty of action in combat and some more new members were acquired. The U.S.A. results of the postal Coupe D'Hiver competition have now been received and show that the New England Wakefield group had a win with 15:56 over Crawley's 14:17. Stan Colton made the best time of 5:24 and Jack Darby was Crawley's best with 5:11. Another event is being arranged, as so much good fun and information comes from such competitions. The most popular motor was eight strands of 4 mm. Pirelli rubber. On Sunday, July 19th, at Ashdown, the annual club contest was held, final winners being: Jack Darby with his ½A, Half Crown in power. Bill Horton took glider with a Keil Kraft Caprice and John Oulds won Wakefield with his Fevair.

New R.A.F. Club

Service personnel at R.A.F. Lyneham have recently formed their own club, and have about 25 members and a good club room. Control line flying takes place at Lyneham but free flight has to be flown at Hullavington. Their interests range from multi radio control to chuck gliders, with the accent on free flight. They have entered two contests so far, both inter R.A.F. and have had encouraging success. New members are always welcome and should contact Sgt. French, Sergeants Mess, R.A.F. Lyneham, Wilts.

Flying Carpets

Peterborough M.F.C. report some rather odd goings on in their part of the country in recent months. Local club members are flying carpets, so to "beat" this they soon hope to have the proverbial "brick" flying.



"Hold on, Maureen", says Graham Head of Portsmouth as his McCoy 60 "Ramrod 900" strives to become airborne. Though new and barely trimmed the model placed 2nd in E. Grinstead Gala at Ashdown, July 24th. In the S. Coast Gala, August 30th, Graham won power with his .35 "Ramrod", making over 14 minutes in the fly-off!

Contest Calendar

Sept. 20th *Second 1964 Hayes Speed Rally.* Charville Lane, Hayes. All speed classes + .049 class. Entry on field 2/6d. Trophies for most outstanding flight. Enquiries to: K. Lindsey, 53 Guildford Ave., Surbiton, Surrey.

Sept 26th & 27th *R.A.F.M.A.A. Championships,* R.A.F. Debden. All classes.

Sept. 27th *Crawley Rally.* Great Buckswood Farm on A264, turning off A.23. Open R/G/P, ½A Power, Chuck Glider, Combat. Pre-entry 2/6d. and S.A.E. to Neil Tidey, 64 Reigate Rd., Brighton 5, Sussex.

Sept. 27th *South Midland Area Rally.* College of Aeronautics, Cranfield. R/G/P, Chuck Glider, Coupe D'Hiver, F.A.I. and ½A T/R, Combat, Single and Multi R/C. Enquiries to: D. McQue, 6 Laburnam Grove, Bletchley, Bucks.

Oct. 4th *Luton M.A.S.* Slope Soaring, Ivinghoe Beacon, Beds. Starts 10.30. F/F chuck glider, Multi and single channel R/C. New rules from D. Bateman, 14 Ridgeway Drive, Dunstable, Beds. Pre-entry only.

Oct. 4th *3rd Wanstead & Northwood Rally.* Hayes C/L Circuit, Charville Lane, Hayes. F.A.I., T/R, F.A.I. Combat and ½A T/R. Pre-entry by 27.9.64 2/6d. to J. Franklin, 82 Grove Hill, South Woodford, London, E.18.

Oct. 4th *South Coast R/C Rally,* Golden Cross, nr. Lewes, Sussex. Details from Area Secretary, 52 Dover Rd., Polegate, Sussex.

Oct. 4th *Dunfermline C/L Rally,* Pitreavie Playing Fields, Dunfermline. 1,000 lap Rat-Race, Combat Stunt, ½A, F.A.I., and B T/R, Scale, Chuck Glider.

Oct. 11th *Uxbridge C/L Circuit,* Hayes. S.M.A.E. Combat, Class II Rat-Race (56 ft. lines). Pre-entry 2/6d. by 4-10-64 to: I. Hutchinson, 17 Denham Green Close, Denham, nr. Uxbridge, Middx. Field entry 3/6d.

Oct. 25th *Handsworth Combat Rally,* Hill Top Farm. Class A & B. Pre-entry in class A 2/- to G. Bryant, 61 The Broadway, Handsworth, Birmingham 2, by October 1st.

Oct. 25th *Annual Northern Area All F.A.I. Contest,* R.A.F., Topcliff. F.A.I., R/G/P, T/R, Stunt and Combat. Pre-entry by 18.10.64 to: G. Stringwell, 111 Green Lane, Wickersley, Rotherham.

S.M.A.E. Contest Programme

Sept. 19th & 20th First F/F Trials, First R/C Trials — R.A.F. Hemswell.

Oct. 4th *Area Championships.* R.A.F. Wigsley.

Oct. 10th & 11th Second F/F Trials, Second R/C Trials — R.A.F. Hemswell

Oct. 18th *Keil Trophy.* Team Power; *Farrow Shield.* Team Rubber; *Open Glider.* — Area venues.

Irish Capers

Shankhill M.F.C. has a new flying field on the Dublin side of Bray and Sunday morning meetings are in full swing. Seven single channel R/C jobs, all under 1.5 c.c. were airborne at a recent session. Mike Greer's Schuco "Styrofix" 'is' strong—he proved this twice! Highlight of the day's flying was by John Evans when the DEAC pack dropped out of his 18 in. Cox .010 job and dangled on the ends of the leads —talk about a variable centre of gravity, or perhaps it was to prevent the batteries overheating? He celebrated this by losing both himself and model O.O.S. in the gorse. Tommy Short has almost finished what may be his best yet—a R/C version of the Mercury "Tiger Moth" kit. An inter club Slope Soaring contest was held by Belfast M.A.C. and this attracted the biggest entry in a club event for some time, with some 20 members participating. Weather was rather windy but not unsuitable. Most models were normal gliders trimmed to fly straight, a few power or sport models, and one or two wierdies. T. D. Wilson had a queer one made from the chopped fuselage of a power model, the wings of another power model, and the tailplane of a sports model, plus a forward fin with an automatic rudder on it, as well as a normal rear fin. On its first flight it did over two minutes! R. Armstrong's forward fin model also made over two minutes on its first flight and since these models are only hand launched down a slope into the prevailing wind, these times are quite good. By the end of the day most gliders were sporting an additional forward fin, necessary to keen them heading straight into wind. Junior winner was T. O'Callaghan flying an A/1 glider. Senior winner D. Black used a 44 in. span all sheet A/2 with an additional forward fin.

Forced C/L

The activities of the Torbay M.A.C. have been forced to lean towards control line recently as the harvest season has restricted their free flight flying. The team race types in the club are getting down to some good times and all they need now is some local competition, but unfortunately all their local clubs seem to be free flight minded. They attended the Devon rally but their free flight team was out of luck. Roy James (no, not the train robber) aired his 13 ft. span glider but had to spend all day trimming the monster.

Wakefield Revived

Heath Aeromodellers from Wakefield has been reformed from the remains of Wakefield F.C. Control line is the main interest, most of these being stunters. They are now all set to make a start in class B team racing, and have an Eta 29 powered "Razzamachas" under construction. At the moment members are trying to beat the club 110 m.p.h. R.T.P. speed record, set up using a Cox Tee Dee .010 engine. A.P.S. "Razorblades" are in abundance, and also several Princesses in use. A "Consolidated Catalina" was used last year to give gala displays powered by the two A.M. 2.5s. Scale-wise, a "Spitfire Mk. V", "Focke Wulf 190 A-3", "Tempest", and a "Mustang" are under construction.

Pen Pals Wanted

Wanted by Stephen Hull, 20 Wentworth Avenue, Papatoetoe, Auckland, N.Z. Aged 14. Greg Pemberton of Main South Road, Geraldine, South Canterbury, N.Z., age 14½, interests are F/F, Sport and Scale also C/L Stunt. Zdenek Titz, Krizikova, 1 Olomouc, Czechoslovakia, would like to exchange plastic kits, magazines, photos, etc. Age 34. Milan Frisco, Nitra, Zilinska 32, Czechoslovakia, would like to exchange magazines, etc. T. Adams of Ward A, Chelmsford and Essex Hospital, New London Road, Chelmsford, Essex, would like a pen pal interested in control line flying. A U.S.A. 25-year-old, scale enthusiast would like to correspond and exchange information, drawings, etc., with W.W.II German special interest. Write to Jerry Campbell, 32539 Cherry Hill, Garden City, Michigan, U.S.A. G. Cox age 16, of 10 R.D., Waimate, South Canterbury, New Zealand, would like a pen pal in the U.S.A. to swap kits, etc. His main interests are glider, F/F and C/L scale. John Power aged 30, of 20 Victoria St., Eaglehawk, via Bendigo, Victoria, Australia, would like a pen friend in Italy, interest in speed and T/R.

Wharfedale Display Team

This famed team race club has an active display team and are expecting repeat orders for the dozen displays made last year. They have just formed a radio display section for static work (and flying if possible). Their radio chaps are also looking for a flying site, so if anyone local knows of a few spare ones!!!

WORLD CHAMPIONSHIPS

(*Continued from page* 504)

m.p.h. with his Lauderdale designed "Dizzy Bug" and new type K & B 15 RS which remained a leading speed for most of the day. This was faster than Kriszma's best in the '62 World Champs by 2¼ m.p.h. and 0.6 m.p.h. faster than Grandesso's winning speed at Genk last year! Bill Wisniewski was a shade slower at 138 m.p.h. and Bill Carpenter, flying a conventional shape instead of his half-wingers made 136.1 m.p.h. The only man in the entire field who had the capability of interrupting this K & B supremacy was Czech Josef Sladky. Most experienced speed flier present, and one with an intimate knowledge of his new type M.V.V.S. 2.5 RI and its rearward facing exhaust, Sladky tied Lee's speed with a beautifully "grooved" flight. All four leaders, and many others behind them were using variations of the "Uniline" principle wherein conventional two line hand e action is converted to rotary motion on the flying wire. Of the much vaunted new Super Tigre G.15, only Ricci completed a flight, and that at a conservative 125.5 m.p.h. Fastest Super Tigre operator was Frenchman Jean Magne using a self modified Jubilee version for 132.4 which was good for 6th place and exceptional both for leading "amateur" place and the use of his "le plus sexy" slide control handle.

A number had trouble getting into the pylon fork correctly and staying there for ten laps after the initial two used for settling down. One of the German fliers got in such a state that he was flying with the fork attached to his handle but out of the pylon! He managed this contortion by lifting the rotating part bodily out of the fixed vertical tube in the circle centre.

During the **second round** of flights, Bill Carpenter had difficulty and called an attempt, after which he swapped to a Super Tigre G.15 and gained .6 m.p.h. This was showing the makers what to do with their engine and the scene in the Bologna-in-Budaors camp was one of continual 25,000 r.p.m. screech and tach testing. Most engines were striving for this scale, driving around 7 in. pitch props ranging from cuff rooted 5½ to high aspect 6 in. diameter. Once we watched 27,000 on the dial but we had more concern for our eardrums so did not stop to see if there was any more to come! Not all the screech was from the Italian team G.15s. Jaures Garofali was aiding many of the entries devoid of national or factory support, and tach ran anyone's Tigre. Fastest by far was Rolf Hagel's now ancient G.20 which almost tore the wings off his free flighter at Leutkirch in '61. Packed inside with balsa, re-raced and shafted, we hope this engine will last until Rolf learns how to fly control-line.

For the Mokt team, Sebestyen came into 5th place with 136.1 but Kriszma's best was still his first round 135.5 and he dolly tripped in the second round for one attempt. In fact of all the flights in the second round, the only notable efforts were Glenn Lee's duplicate repeat of 138.6 with Sladky only .6 m.p.h. behind. In the British camp, Brian Jackson found difficulty in setting his Tigre Jubilee, and the climatic changes bothered Kevin Lindsey. Dick McGladdery improved to a modest 114.3 and eventually the round was abandoned in favour of a violent wind squall.

At 06.45 the next day, Ricci, Sebestyen and Pech, all renowned names made early flights and none of them faster than 135 m.p.h. American domination seemed a certainty so that when a loud cheer and broadcast acclamation heralded the announcement of Kriszma's fine flight at 139.8 m.p.h. (blowing the plug out of the head in the final process) one could excuse the partisan enthusiasm. But his was a place not to be held for long. An hour later, Wisniewski capped the fastest speed with 141.1 and this remained unbeatable. Carpenter changed back to K & B, chose the wrong prop and lost a blade but unlike similar experience at Kiev, did not get a time. Another to have history repeat itself was Natalenko whose model got a trifle out of hand but unlike Genk where gymnastics saved the day, he lost his model against the safety barrier. Toth improved, to bring the Hungarian team into second placing and for Britain, a change of plug gave Kevin Lindsey a personal best ever at 124.9. His was not the only new National FAI record set with the clean Hungarian fuel and fair weather. Only lady flier, Elvira Purice of Rumania; D. Ehlers of Denmark (using a novel balanced "Uniline" system); Jean Maune (he claims a new fuselage added 5 km/h) of France; H. Freundt of Austria (with impressive new Bugle engine) all set new National records.

The honours go entirely to Bill Wisniewski and his use of the boost port, coupled with American "know-how" and two fine supporting fliers in Lee and Carpenter.

Stunt

In retrospect it has been said that the winner of Aerobatics was predetermined as it was "his turn", or that he won because his physique and stance through manoeuvres make him a veritable Adonis among ununiformed anglo-saxon scruff, or that the judges were so blind they did not see his faults. Writing as one beyond that pale of isolation which seems to render a judge into a candidate for mental instability, we hasten to contradict the "vox populi" theories and write directly from notes made as the flights progressed.

Five judges are appointed, and each will inevitably have his own standards and opinions. When the difference in points over the first six places is in the order of 5 per cent of the leading score then one cannot expect total agreement of order. Hence our one-fifth part view of what is to be reported must not be taken as any more than one personal opinion.

If it were the case that the better flight only counted, our personal order in scores would have been: Kari 1,121, Gieseke 1,095, Sirotkin 1,073, Gialdini 1,067 and McFarland 1,057. But the event is for the total of the better two flights out of three, and not having the industry to copy down all our scores in the limited time available (try judging 15 flights before breakfast and running on to total 67 flights judged in one day!) we must await release of all the judge's scores at the C.I.A.M. meeting to find how far our view differs from the official result.

The event started with a "ballet des Juges" as the wind direction veered through more than 180 points of the compass and each strived to get a realistic view of what the pilot wanted them to see. Gialdini, reigning U.S. Stunt Champ was 2nd on, but he scissored the wingover, shifted his sq. 8's and only excelled in outside loops and the high scoring hourglass. Svenson of Denmark and his "Ares" was an impressive newcomer, Soufiac's triangles were excellent, Basalini's ultra light twin cockpit model seemed to overcome its many built in headwinds and made some surprisingly good, slow loops, Swiss Heidinger performed in exactly opposite fashion as though the end of the World was nigh, and then we came to Kari.

Clearly best so far; but by no means nearly perfect, Juhani Kari was the victim of a swing in the wind. His square manoeuvres were fine, but the rest lacked either shape or superimposition. Belgium's invalided Colignon, flying with the aid of a stick was in trouble as the wind buffeted his silenced model around, and next flight by Christer Soderberg of Sweden terminated in instant garbage as his model was snatched into the ground at the base of a sq. eight. The event was abandoned forthwith, but as we left the airfield, the hardy British, Dutch, Finns and Swedes were making use of otherwise deserted circles.

A 6:05 a.m. re-start next day in absolute calm found Gieseke, the quiet pipe-puffing meteorologist for Braniff making as clear cut, well positioned flight as any yet seen. One wonders why he did not score more. Dutch Bredenhof went inverted so low he stopped the prop on the tarmac. Gabris showed top form with the finest cloverleaf seen for many a day. Another impressive newcomer was the young Finn Pattiala, especially in his sq. 8s. Kondratenko's monowheel semi-U2 was followed by Cohen's Spinaflo silenced Fox. Philip may not be a top class stunt flier but he left a firm impression of peacefulness after the raucous noise of the others. Then came McFarland, ex-U.S. Champ, with the big 64 oz. "Shark" . . . very impressive with perfect loops. Not until Sirotkin made a hasty flight with fast revving M.V.V.S. and racked up no less than 13 9/10 scores on our card including the valuable Hourglass was Lew's flight in any way rivalled. With one round gone, the supremacy of the U.S. team was already evident.

Gialdini, Soufiac, McFarland, Gieseke, Bartos, Kari, Olaf Sundell and of course Sirotkin were those who left a firm impression in the second round. Since for both Kari and Sirotkin this could be called the decisive round, let's examine their score build-up. Sirotkin gained over Kari on the wingover, loops, vertical eights, hourglass and clover. Kari gained over Sirotkin on inverted, square loops, triangles, sq. 8s, and landing. The rest are even. It's a matter of K factor every time. On our card, Kari had 14 9s and four 10s while Sirotkin collected nine 9s and one 10. What matters most is what these scores were for.

In the third round, McFarland tended to mix his levels, entering at one height, coming out at another etc. Bill Gieseke impressed us even more—this was his best, trouble is he makes those superb loops and vertical 8s seem so casual. Van D. Hout, Gabris, Bonnet all had dashes of excellence but it was the succession of flights by Gialdini, Kari and Sirotkin in continually rising wind which made the day and left an impression among watchers that caused them to forget what had gone before in two other rounds.

This was Gialdini's best. On our card there were ten 9s and two 10s for 1,067. Kari had fierce wind to contend with (Trnka called off an attempt just before because it was too tough for him) but as at Kiev he was at his best after two variable rounds. Seven 9s and no less than six 10s for perfection went on our card or 1,121 in a display that drew applause from all camps. In contrast, Sirotkin's display was Sunday flier stuff. Unnerved by the task and the wind he disappointed at the worst possible time after such a great flight by the 18-year-old Finn. Only consolation was that immediately afterwards, everyone fled to shelter from a tempest which de-roofed the buffet! In the damp anti-climax after the storm passed, Dr. Geza Egervary produced the ancient "Hopp" with its multitude of processing stamps and shattered everyone with a flight score that surprised himself. Enough to lift him to 4th place it indicated more than ever that Stunt fliers, like judges, onlookers and the weather are subject to temperamental fluctuations and for these very human reasons, we have to bury our differences of opinion and abide by the judicial arrangements of the F.A.I. Sporting Code.

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PRESS DATE for issue November, 1964, September 21st, 1964.

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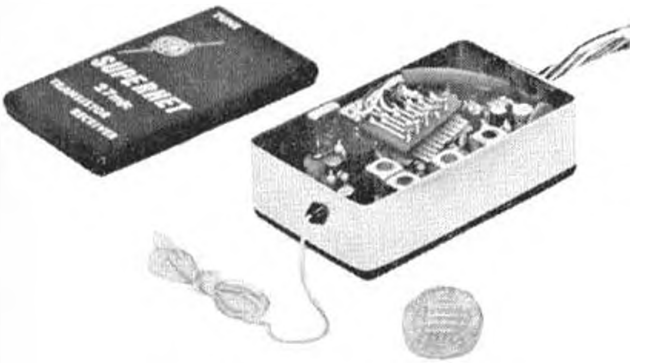

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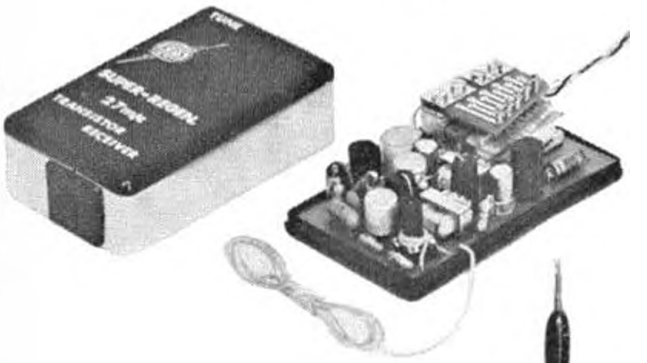

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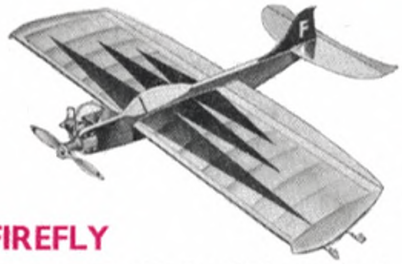

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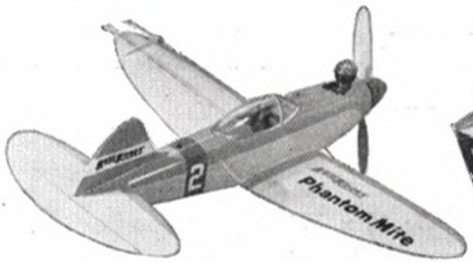
18/2



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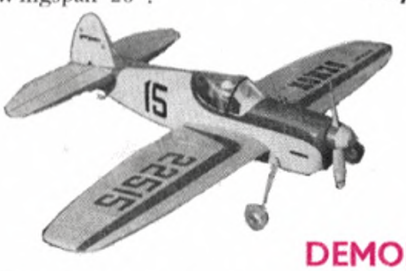

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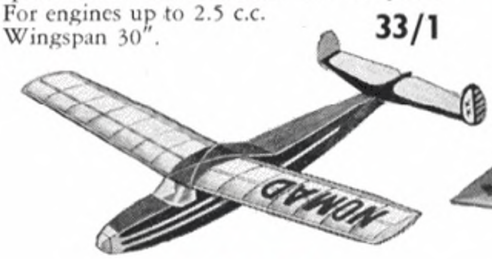

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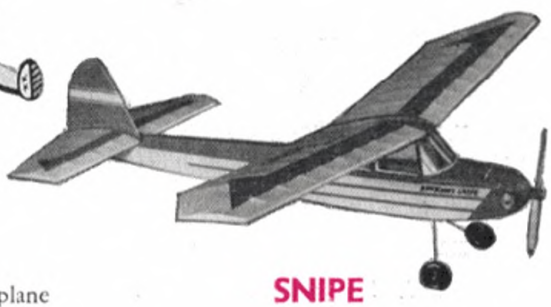
5/6



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22/1

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Towline glider for beginners, with a very good performance. Kit contains die-cut parts. Wingspan 30".

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All these Keilkraft kits contain die-cut parts for speedy, accurate assembly, and full size plans plus building and flying instructions.

KEILKRAFT ***Right from the Start***