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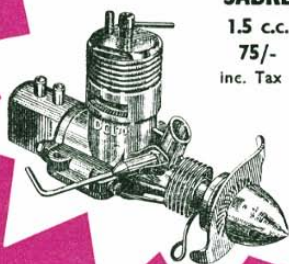
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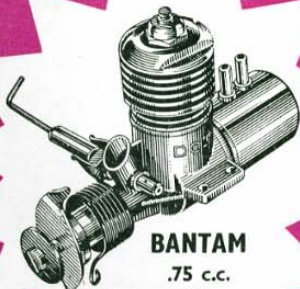




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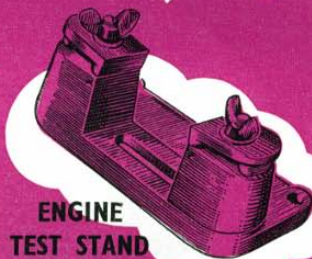
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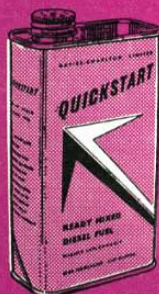
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# Aero Modeller

NOW INCORPORATING  
**MODEL AIRCRAFT**

**August 1966** VOLUME XXXI No 367

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## COMMENT

"The biggest, the best, the craziest of the National Championships—and maybe the last". That was the immediate post Nats. verdict of one harassed S.M.A.E. official at R.A.F. Hullavington on Monday, May 30th, at 8 p.m. Like his fellow officers, he had litter-picked for two hours, checked damage on two broken runway lights, packed away the paraphernalia that goes to make a Nats., the notice boards, the results, the unsold stock, and was reflecting on that perennial question—is it worth it?

The Nationals are organised by the S.M.A.E. Officers. They arrange the site, provide essential amenities, produce the paper work and programme, man the gate, secure the receipts from entries and campers, endeavour to find volunteers to run contests, and in the end, take all the brick-bats with a shrug, for they jolly well know that the critics do not share their own capacity for voluntary labour.

What was so different in 1966? Thanks to publicity in the local and National Press our hobby became a focal point of interest, attracting thousands of the general public. Nothing wrong in this, for the contribution to receipts ensured a favourable balance. But having attracted the public, how best to control and inform the spectators? There lies the weak point of a slim organisation.

There will be another Nats; but for it to be bigger, better and even crazier a lot of extra volunteers will be needed to play host to the paying visitors.

## COVER

Immaculately finished in multiple colour scheme, Joe Savini's "Faital" free flight power model in preparation for a contest flight. Powered by Super Tigre G.I.S from his native country Italy. Joe's design is available through Aeromodeler Plans Service as plan PET 881 price 8/- incl. post. It qualified the Wallacey clubster for a place in our 1965 F/F power team but his Nationality precluded him from representing G. Britain at the contest in Finland.

## next month

Pre-World Champs. issue with as much last minute info. as we can muster on what to see. Plans for the unusual North American OV-10 as a twin engine control-line scale subject. Full size plans as usual. Latest Engine News, Single Channel R/C feature, summary of World Records, return of Basic Aeromodeling and a host of informative articles to make your modelling all the more enjoyable, out on August 19th.





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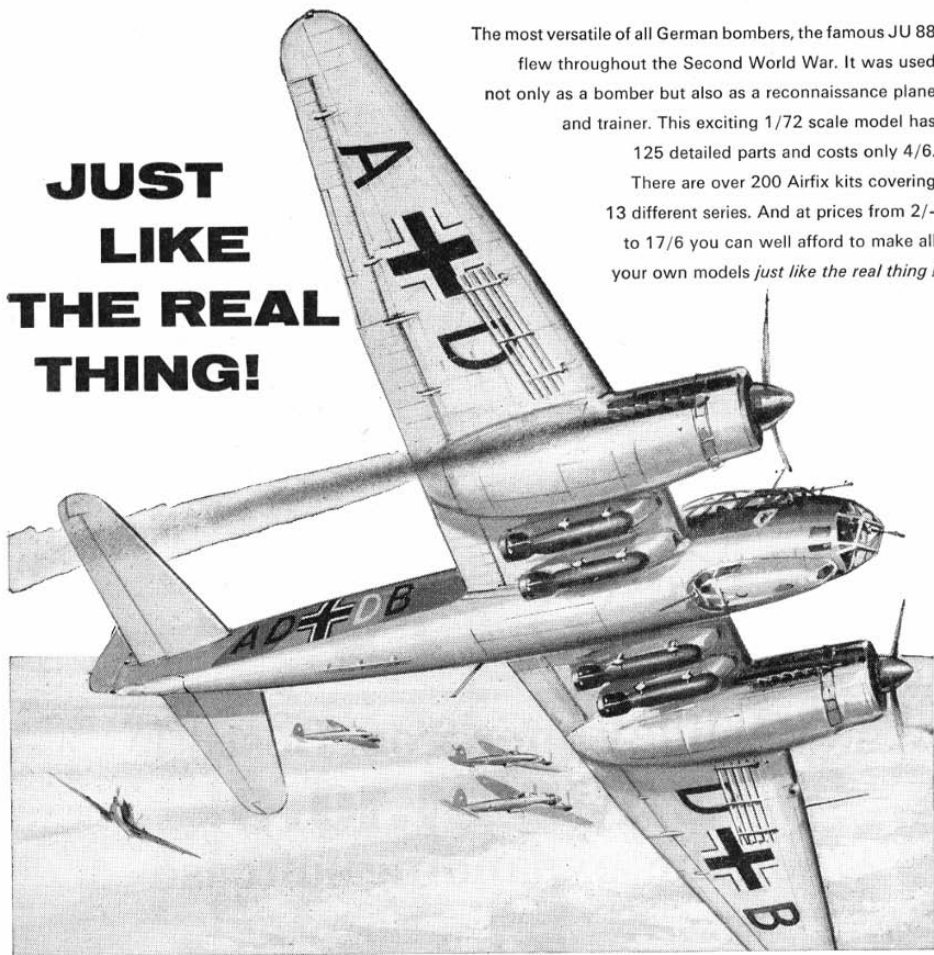


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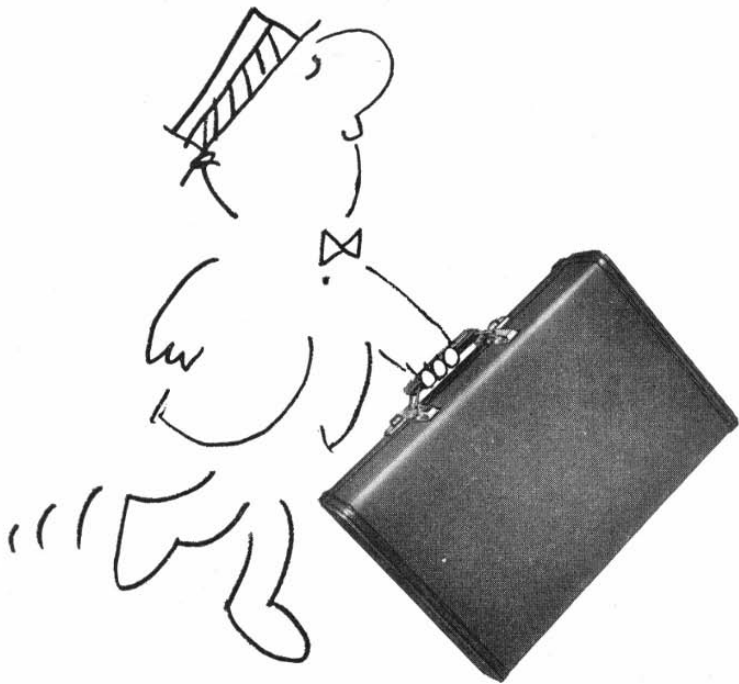
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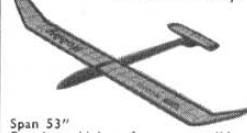
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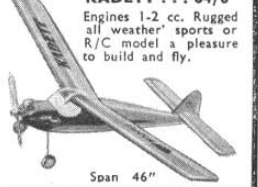
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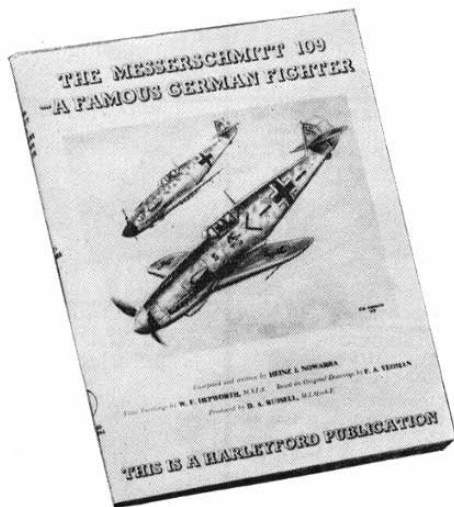
announces

an enlarged reprint of

Heinz Nowarra's

## THE MESSERSCHMITT 109

This is a new edition, enlarged by sixteen pages. New negatives were made for all the hundreds of photographs, and new artwork and printing plates were made for the eight page colour section. It has been printed, and bound with real cloth on heavyweight mill board, by one of England's top Master Printers.



A new chapter entitled "Special Versions" describes the use of the Me 109 as an air-tug, its involvement with experimental rocket projectiles, the butterfly tail, the development of external fuel tanks in an attempt to increase its limited range, and its use as a fighter-bomber.

Yet another large new chapter, "Impact on the Allies", by BRUCE ROBERTSON gives a most graphic account of the Me 109 as seen by its opposition on many 'fronts'. There is the odd revelation that it was perhaps Russia, who did not enter the 1939-1945 war until mid-1941, which first had the chance to evaluate the Me 109 in combat conditions in the Spanish Civil War. The strange case of the British Sunderland flying-boat T 9046,

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moored at Kalafrana, Malta in early 1942, that collapsed and sank in a rising swell after being strafed by an Me 109. Europe—and tales of combat between the Me 109 and Curtis H-75C-1 (Mowhawks when in R.A.F. service) of Escadrille G.C. 11/5, of Wellingtons of the R.C.A.F. homing on Wilhelmshafen, the cut and thrust of British and American long range bombers reaching out over German territory, and the importance of their targets—Regensburg Prufening, Augsburg, Meulan Les Mureaux, plants connected with the production of the Me 109! To brighter skies, and the astonishing list of aircraft abandoned to the Allies in Sicily, and the unenviable journey of three men in the cockpit of an Me 109 whilst evacuating North Africa. Yes, three men—cramped in a cockpit so small that R.A.F. pilots flying captured machines just couldn't get the 'lids' down and flew without their seat parachutes! Details of comparison flights made with an Me 109G-6 and Spitfires L.F. IX and XVI and a Mustang F III are also a part of this informative chapter that gives the book a balanced history.

## —A FAMOUS GERMAN FIGHTER

We feel sure that this new chapter will be met with the same enthusiasm that we have experienced with a similar chapter written by BRUCE ROBERTSON for the earlier Harleyford book on the Focke-Wulf 190.

Finally, still another new feature, a complete list of all Me 109s brought down during the Battle of Britain, together with pilot names and squadron details, specially compiled by P. D. Cornwell.

The book is the story of the Messerschmitt 109, the longest lived of all fighter aircraft, and commences with an introduction to Willy Messerschmitt and his early exploits in aviation. The influence of the Nazi party on his fortunes through his association with Rudolph Hess are described, along with the technical achievements in the form of his 'M' line of aircraft which led up to the Bf 108 'Taifun'. From here the story proceeds to the design and introduction of the 109 throughout its various experimental forms until, in 1937, the B-2 model appeared in use in Spain with the Condor Legion. The incorporation of lessons learnt in the Spanish War and the expansion of the Luftwaffe are described together with the appearance of the so-called '109R' Model.

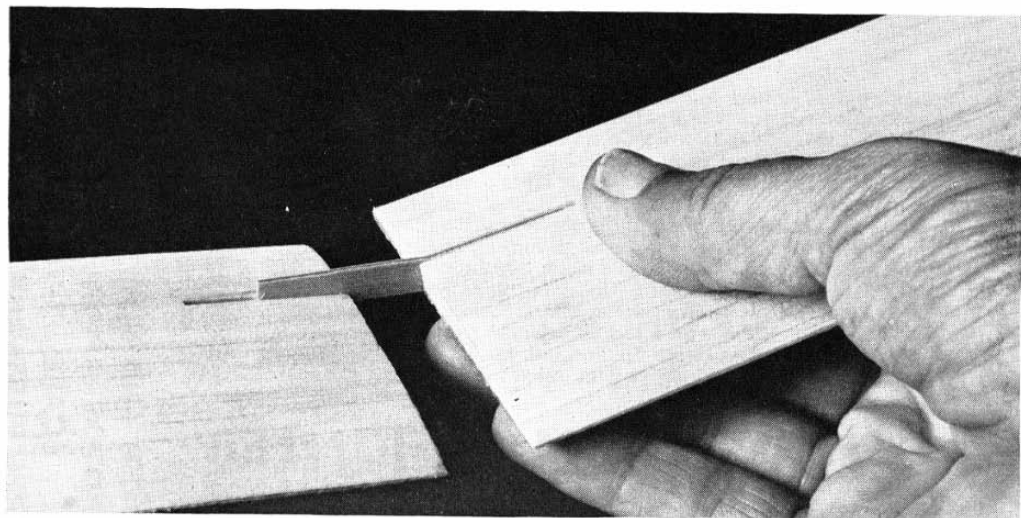
Operations involving the use of Me 109s in Poland, Norway, France, the Battle of Britain, Africa, Russia, Greece and Yugoslavia are described, and details of developments of subsequent models are given. Experimental and projected designs associated with the 109 are also a part of the text, together with the construction of derivatives in Spain and Czechoslovakia after 1945.

The book is illustrated by hundreds of photographs, many published for the first time. These illustrations are augmented by twenty three 3-view 1/72 scale tone paintings covering all the important 109 models and a number of experimental variants. In tabular form is presented full data on the dimensions and performance of each of the Messerschmitt aircraft discussed, while a complete list of the top Axis aces who flew the Me 109 is provided.

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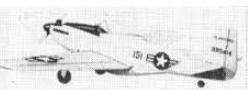
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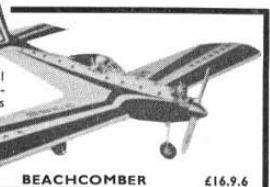
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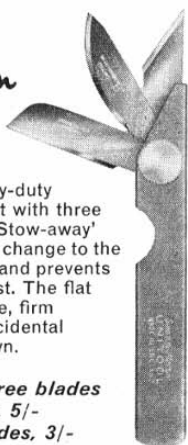
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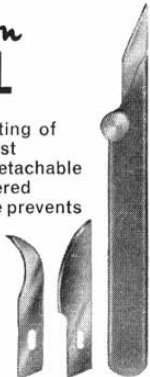
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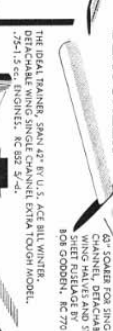


DAVE BARRETT'S LITTLE 28" SPAN, 8 cc. POWERED SINGLE CHANNEL FOR MINUTE RECEIVED AND ELEVATOR ON MONITOR. NO. 811 6/64.



DAVE BARRETT'S LITTLE 28" SPAN, 8 cc. POWERED SINGLE CHANNEL FOR MINUTE RECEIVED AND ELEVATOR ON MONITOR. NO. 811 6/64.

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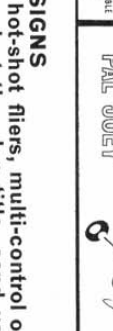


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**OHM 8**



THE LATEST IN ADVANCED SINGLE CHANNEL, WING BRACKETED, FLIES WITH KICK ELEVATOR BY REMOVAL OF WING. SIMPLE CONSTRUCTION. 12.5-15.5 cc. ENGINE. KIT NO. 746.



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BAZZ BOMB

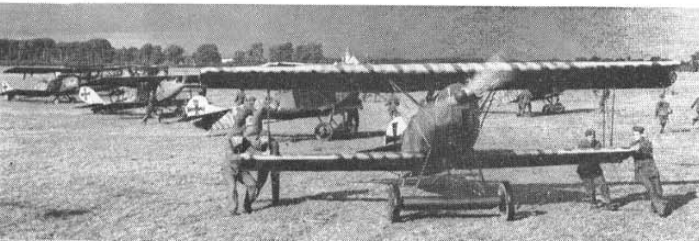
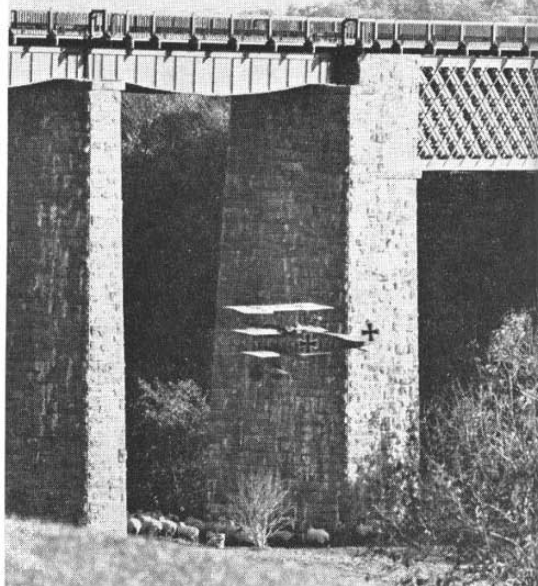
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# Heard at the HANGAR DOORS

THE BLUE MAX by 20th Century Fox in Cinemascope and superb quality colour film is something no scale modeller should miss. While the plot departs only a little from the original story, and includes what might reservedly be termed as torrid bedroom scenes to qualify for the "A" certificate, it will be the flying sequences that will grip the attention of the modellers. For as related in January issue, the Fokker D VII and DRI Triplanes, the Pfalz and S.E.5s were all hastily made in replica only a year before we were able to enjoy this completed epic drama of the air! This is full scale modelling with a vengeance. Full marks to the builders, and top laurels to the pilots whom we happen to know were Derek Piggott for the through-the-

Fokker DRI Triplane replica shoots through Eirran bridge with little to spare for Derek Piggott (ex Wakefield teamster) at the controls. Sheep don't seem to notice! Derek lined up on two poles and aren't watch his six tips! Below is another typical "Blue Max" scene as Fokker D VII, Pfalz D.III and pseudo Tiger Moths are ground handled. Bottom right; ATV interview by Derek Hart of John Simmance with Mike in threatening pose.



bridge scene and Joan Hughes for the ground level stuff. Both ex-Mag. Men pilots, we were pleased to note they and others get a credit at the end of the film, something that was amiss in *Mag. Men*. A few Tiger Moths and Stamps are identifiable in the Squadron (or should we say *Jasta*?) formations but even the purists will have to excuse the varied shapes—the action's the thing! Pity though, that the octagon—pattern camouflage happy painters who daubed the German aircraft had not seen the colour guide in our April '59 issue. Cobalt, green, pink and terra cotton would have looked much brighter than the "Horlicks and Chocolate" which has been used to "identify" the German machines. Richthofen's DRI appears all-red to stimulate the old argument which we thought had been nailed forever and use of the Pattée cross on all types up to the end of the war jangles after all this journal has printed on "Decor Detail" etc. Just as Cliff Robertson was converted to

flying after making "633 Sqdn" and imported his own Me108 and Spitfire to Hollywood, so has star George Peppard purchased the Morane 230 which appears in *The Blue Max*. George learned to fly for his leading film part, and is now thoroughly converted.

ALL DAY FILM sessions seem to be the theme of the month. It was great to see how modellers co-operated with J. A. Rank film unit at the "Nats". A crew, with sound recording specialists filmed much of the radio scale activity plus free flight, team racing, combat etc. for a colour film in the *Look at Life* series due for world wide distribution beginning soon. The Nats form but a part of the feature. Test models of the Concord, a Hovercraft and Monorail car contribute more on the world of the model-maker. Then the A.T.V. production team under Robin Brown with Derek Hart as interviewer and commentator, in the "Champion Makers" series, requested an early session with an

aeromodeller. Location and the convenience of a control-line demonstration led us to recommend John Simmance who gracefully spared the time and enabled the film crew to take no less than 97 sequences to illustrate a typical day out with a Champion and his models (John was twice free-flight scale Champ and is this year's C/L Scale Champ). Everything but everything happened! A baulky engine, an undercarriage retraction with engines in full song, (model happened to be on the ground) a near-decapitation of camera man, and all the bothers of flying an 8 lb twin engined complex scale *Marauder* on a 120 ft. diameter site with 65 ft. lines led to some very interesting sequences. John's best nut-brown voice well expressed a modeller's enthusiasm and we look forward to viewing the half-hour interview (that took 9½ hours!) when it appears one Sunday afternoon in July/August period on the National network. Even the final demise of John's free-flight *Snipe* against a downwind pylon should be worth seeing!





**MODEL ROCKETRY** is a taboo subject here, thanks to our "Explosives Act" which so far prohibits use of any unapproved propulsion unit. But in the U.S.A. it's not only big in support but also big in business. It was a real pleasure to meet Vernon Estes and his wife Gleda who with daughter Betty and Leroy and Betty Piester were on their way through London from the first International F.A.I. recognised Rocket contest in Czechoslovakia back to their homes in Colorado and Arizona. Even our reputedly unimpressible ears made a double-taking when Vernon spoke of producing 5,000 rocket units daily. His 55 employee factory working day and night shift produces 35 different kits in a modern plant which is constantly expanding and this year is to have a 18,000 sq. ft warehouse addition. This makes Estes Industries bigger than our largest manufacturer in the aeromodeling field! Top of the rocketry poll in Estes Kits is the Camroc—a unit that soars to several hundred feet and exposes a film as it turns over for recovery. Photos come out extraordinarily well.

**NATIONAL GLIDING RESULTS**, brought ex-Outlaws clubman almost top when George Burton came only 27pts behind Mrs. Ann Burns the leader. George was flying a Slingsby Dart the same type as he used in the 1965 World Gliding Championships. Derek Piggott flew to 4th place in the "Standard" class with the new *Osprey*.

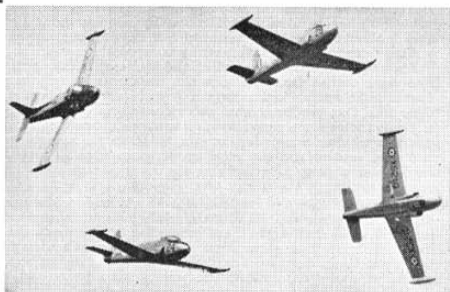
**ANOTHER EX-MODELLER** coming into the news is Colin Rogers who was once a St. Albans "Cement Squeezer"—yes that really was the club name! Colin has made his *Turbulent* 'PWP' into just the sort of real aeroplane we have always wished to see here. For one thing, the finish is model-class with filled surface and high gloss white epoxy paint and black trim. Then the engine is cowed, and efficiently too, so that it runs faster and better than the common exposed Volkswagen *Turbulent*. But best of all, Colin has used a glider canopy and his O/D spring steel undercarriage so that the speed gain is enough to clearly make it the fastest in the country. Add to this, a prop with endplates, a trim servo (R/C type) in the elevator itself and a bolt-on wing so he can tow the outfit behind his "Mini" and you'll realise why we and so many others are decidedly jealous. Clearly it is the best home-built in the country.

**ZAMBIA** television "Wings Club" flourishes with a newsletter, including plans for a small stunt trainer, designer of which has appeared on East African goggle-boxes to explain the why's and wherefors. Prizes for leading fliers at a contest offer stimulus to this venture which Don Sweetenham is encouraging much as he can. Such success may inspire other T.V. Stations to take up similar activity—why not put the suggestion across, some of you modellers with local T.V. Stations.

**TIMEKEEPING** always was a vexed question when it came to that last desperate fling, the fly-off; but this season it seems to be festering into an uncomfortable malaise that calls for quick medicine. At an early rally this year we overheard a modeller volunteer to time "X" in Rubber and "Y" in Glider. He was naive enough to imagine that the organisers did not realise he was from "X" and "Y's" club and had blackened his already questionable reputation by selection of anyone as his timing exercise. He was given timing cards for both fly-offs—certainly not his fellow club member's but we wonder what reliance

could be placed upon his results? Later we heard a timekeeper say "Lucky you've got me—I timed so and so in the blank fly-off and so and so etc." Timekeeping is not a matter of luck. It can and must only be a subject of honesty. Our man who considers his part in winning the previous events sufficiently provident to brag about them is hardly qualified to operate a watch. At the Nats we saw three fly-offs, which gave rise to question. Those who see these minute making minute specks before the eyes for so long are proving little to us. How many of them add a little to avoid being considered no good at the job? How many allow themselves to be swayed by the back-chat patter we know so well? We best liked the attitude of that great all-rounder Ray Monks who was in Rubber and Glider fly-offs plus 5th in Power this year. Ray simply set his dethermaliser for 3 minutes on his glider just to get the satisfaction of the fourth Max—which he did without climbing on anyone else's back, long after the pack had muddled three dozen timers as to whose was which in the biggest mass launch our Nats has ever seen.

Watch out for RAF aerobatic team at the World C/L Championships. Four jet Provosts will execute formation aerobatics followed by a solo performance. This team was caught by our camera when breaking formation at an Elstree display, June 4th.



**WORLD C/L CHAMPS**, approaches rapidly. 23 Nations including for the first time, Canada and Israel, will send about 230 of the best control-line fliers in the world to R.A.F. Swindon next month. Besides the four main events for speed, team race, aerobatics and scale, there will be a model exhibition, trade show, gliding by the R.A.F.G.S.A. and at 3 p.m. on the final day (August Monday) a twenty minute air display by Jet Provosts from R.A.F. Leeming. Admission will be by purchase of the souvenir programme, listing all competitors who will include all the leading engine and model designers in the control-line world. The U.S.S.R. is sending a full 17 member team, and new engines with high speeds are expected from the Italian

and U.S.A. teams. Make a note of the date—three dates in fact!! August 27th, 28th and 29th at R.A.F. Swindon. Those who want to camp economically in a properly supervised area, with security protection and all toilet, showers and other facilities can use the special site arranged through Lincoln authorities over the 3-day period. Reserve space and send for details to Mrs. F. Shirt S.M.A.E. Accommodation Officer, 27 Athorpe Grove, Dinnington Nr. Sheffield.

The actual list of Nations entered so far is:—Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Hungary, Ireland, Israel, The Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey, U.S.A., U.S.S.R. and Yugoslavia.



# BRIGHT 1966 CHAMPIONSHIPS

MAY 29-30th

NUMERICALLY speaking, the 1966 National Championships held at R.A.F. Hullavington by permission of the Station Commander Sqdn. Ldr. J. W. Monsell M.B.E. was the most encouraging for many a year. Entries indicated that the decline appears to have been arrested and thanks to publicity, record crowds came to watch the fun and enjoy two days of solid sunshine. Facilities at Hullavington were, apart from an unfortunate and unnatural wind direction which affected free-flight, ideal in all aspects. Campers spread their tent and caravan village along the perimeter, NAAFI catered for the hungry and numerous model shops set up their market stalls for booming sales.

Truly it was a solid two day festival of aeromodelling (for some campers 3½ days!) which will be remembered largely for the impact of the two scale events.

The upsurge of interest in **SCALE** comes in two ways. Reliable radio control has produced in its wake a demand for something "out of the rut" (A demonstration of Pylon Racing illustrated another challenging avenue) and in consequence the R/C scale subjects have become refreshingly varied. Then in the control-line class, there is a challenge to make more parts work, to add engines and to produce the spectacular. A result of the demand to cram detail into the model is that the wing loadings established for conventional models (24½ oz./sq. ft. in R/C and 32 oz./sq. ft. in C/L) become restrictive where the retractable U/C is fitted. In fact each of the winning models had this feature and were over-loaded but the loading rule was waived prior to this contest pending consideration.

As he was to be a judge (with Doug McHard) of the control-line scale entries Dennis Thumpston was pressed into flying first in radio control just as he did in '65 to win with his D.H.9. This time, Den produced what we can only term a masterpiece, not only for its scale perfection and workmanship which extended to individual bullets for the gun, lenses in the sight, a fuel cap that worked and the most realistic covering effects we could ever wish to see; but also for the sheer cleverness of the design. Study the *Bristol M1C* monoplane, view its short nose, long fuselage and thin, wire braced wings plus enormous spinner and if you've tried to make a full-multi model under 5½ lbs. with a .49 engine you'll appreciate the achievement. As a model it deserves a glass case. Yet only a week earlier the flying wires said "enough" on the first flight and the lot plummeted to earth from 200 ft. The repairs were impossible to detect.

This opening flight was not "on form". Power was down and the average was half marks for the pattern plus a stall turn, Immelman and only one loop. Being so busy with C/L for the rest of the day, Den declined the 2nd flt. as he thought it "would disturb his continuity of judging standards".

There was a trio of Spitfires. G. Ford produced a Mk. XXI which emulated the real thing wonderfully and performed in exceptional reversal and Cuban eight and, a Devonshire's Mk. IX also excelled in the reversal. But it was K. Baumbars 'Kit Spit' which thrilled most with a fine 3 turn spin followed by landing approach and touchdown that might well have been the fullsize but for the exposed engine. Strangely, this model was not produced for scale judging. Another not to appear was C. Charlesworth's 60 in. *Hawker Fury* a noisy biplane, but not powerful enough for aerobatics. It was A. Lally who scored highest in this section of the judging on his first ever flight with the Kraft KP6 proportional control gear in his *Chance Vought Corsair*. Nose tipping landings were not exactly realistic; but this seemed to happen to most of the 2-wheelers. Dr. Henley's *Stampe SV4C* in Tiger Club colours, R. Yato's *Bevo Howard Jungmeister* and M. Charles' *Jungmeister* prototype each had their bothers at take-off. Yates' spectacular cowl-brake effectively wrecked his aerobatic chances when the cowl opened its jaws like a yawning pelican. Doc. Henley's *Stampe* was still on test when it flew and after kicking its tail high for take-off

attempts, treated us to the only full-marks landing of the day! It was closely rivalled for this by Lees' *D.H. 60 Moth*, a most realistic flier. But most spectacular, and involved of all were the two "trikes". P. Anderson's *Cessna 172* was fully furnished, carpet, doors and all. Flaps and down trim were set for a superb long take-off—quite the best of the meeting—and the pilot promptly forgot to take out that trim for the rest of the flight! This effectively improved the lift of the wing but made control a real fight. On the other hand Dave Platt's *North American T.28B* which boasted a retractable gear made no such error (apart from losing a cowl section on take-off at one attempt). The flame and white monster was a crowd stirring thriller from take-off to bump-down (no other way to describe its effective 'plomp' of 11 lbs. on the three wheels) and Dave's showmanship with stall turn, Immelman, reversal and roll admirably positioned to consume yards of cine film deserves full acclaim. Streaming white exhaust against the clear blue sky, the clean lines of the T.28 with wheels "tucked up" was an inspiration for all scale enthusiasts.

Come the scale and workmanship judging on the next day and a few surprises. Though all entries had reminder notes of what they should supply, several could not state the scale of the model, or supply judging data. In consequence, and rather than eliminate, these models were judged on a restricted basis by the hard working and very qualified John Simmance and Cesare Milani.

John was in a similar position to Den Thumpston, he too wanted to fly in the **CONTROL LINE SCALE** class (a penalty of sub-committee service). His turn came at the end of the day when the all working *Martin B-26* with lights, flaps, retracting gear, throttles and brakes racked up a total that took him to first place. So we had the situation where two of the judges each flying in "opposite" classes opened and closed a memorable pair of contests with leading flights. During the day it was E. Potter's 1/18 th. *Lancaster* which appealed most for realism in flight. Had he flown on all four engines he might have caught up with Simmance's flight score. The impressive flights were R. Ivan's huge *Potez 63* which touched down with throttle control, D. Day's aerobatics with the *Fokker D VII* and the bursting of tyres on A. Brigg's large *Hallfax* which was at top weight of 15½ lbs. including about 3 lbs. of retract gear! For impressive appearance, P. Ball's *Gulfhawk* now with Merco 61 (which clipped the prop for a shaft run!) and Scot J. Anderson's *Stearman Kaydet* had the kind of detail that makes the biplane so obvious a type to select. Yet is this true?

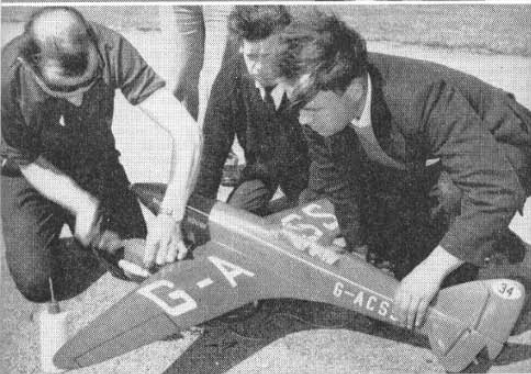
A feature of scale discussion is that the rules are biased in favour of either World War I Bipes, multi engine bombers, retract gear works wonders, or not quite-scale models that fly through the schedule with ease. All of which proves that wing loading apart, the rules are equitably "open" in most respects.

Use of two light lines for **MULTI CHANNEL R/C** with a prospective 45 strong entry (33 actually flew) enabled competitors to make two flights each before a different set of judges. Splitting of the all-superhet entry over two flying areas made it very difficult to see progress since it was only possible to follow one section at a time. Competitors were divided according to frequency.

The large number of new names among the entry list indicates an upswing of interest in multi competition flying. Some of the local club ground duty-pilots and regular display fliers were pressed into having a go and in particular Brian Burt must have given the "aces" something to think about.

Flying began at 9.30 a.m., with Merco-maker Dennis Allen first to fly, using the same low wing model as last year, now equipped with the popular Kraft K.P.6. proportional and the original prototype Merco 61 modified Mk. II standard.

Peter Waters flew his new high performance "light" *Saracen* design through the new, difficult schedule, with a nice clean



Top: A Loose backplate foxed H. Carter to prevent qualifying flight with Merco 35 Meyer "Little Toot" olive and yellow 4 lb biplane. Centre is Scot T. McKay of Dumbarton starting Eta 29s in one-eighth scale De H. 88 Comet racer. Lowest is Stan Perry's "Flycatcher" which failed take-off. Later discovered the U/C was out of track, a fine impressive model with Merco 61, weighs 9 lb, uses combined flaps and elevators. Right is a VK "Cherokes" entered by Ken Marsh of West Essex, one of many 'new-look' models. Below is Jack Morton starting his Tiger Moth, flown in multi (NOT scale!) Ran out of time so executed an inverted spin for spite! Good for Jack!

double stall turn, good loops in the almost still air and masterly consecutive rolls executed downwind. He managed a tail slide, produced a quite recognisable top hat, but eventually lost his landing pattern points when the motor cut during the three turn spin. Reward for this performance was a 1185 point score.

In third place after the first round was Terry Cooper, another up and coming name, followed by David Read and in fifth Ed. Johnson. Frank Van den Bergh was sixth place and another Nationals newcomer Derek Hammant was seventh.

Round two in the afternoon was the signal for judges to change ends. Waters and V-d. Bergh improved and K. R. Jones leapt the field from 11th to 5th. Ray Brown flew his McCoy 60 powered *Beachcomber* well to gain a final 6th position, and Dennis Allen also managed a second round improvement. But others had second round disappointments, particularly Terry Cooper with motor trouble that cost him 16 places. Ed. Johnson

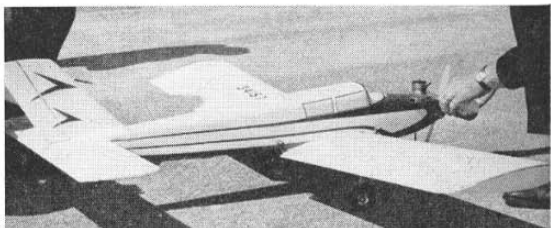
dropped from 5th to 15th place and a sick motor set Derek Hammant on the downward path to 14th place. Final scores gave Peter Waters the victory, comfortably ahead of Frank Van den Bergh with Brian Burt in a very creditable third place.

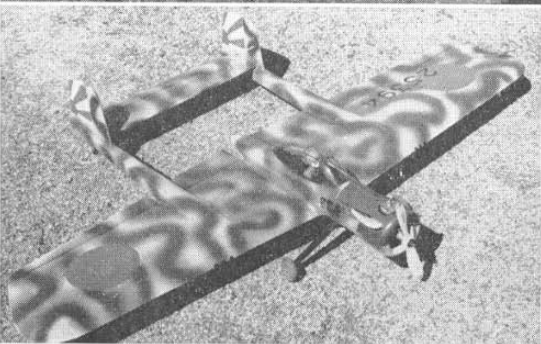
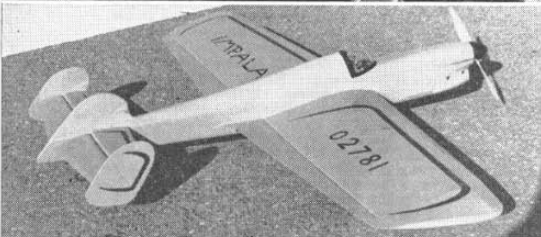
**CONTROL LINE** suffered for the first time we can recall, from a large loss of spectators to the radio contests being flown on an adjacent runway. Things looked generally empty and not at all like a National Championship meeting, "just like another rally" commented several competitors, with many of the contestants away watching the radio.

With 36 entries it was hoped **SPEED** would present an action filled event, this was not the case as only 11 recorded times. The slowest speed went to T. Taylor (Rolls Royce) with 56 m.p.h. in the 1.5 cc. class. Mike Billington (Brixton) returned to the speed circle after two years to take first place with 158.7 m.p.h. (94.3 per cent) flying his Checkfield Dooling .61. Bill Bessant (Southampton) last years winners could only make second place this year using the same old wing, sidewinder mounted engine model powered by a Cox TD .09. His 97.3 m.p.h. returned 93.5 per cent. Ivor Roffey had some difficulty getting around the pylon and used his old model shown last month in preference to his 'stovepiped' new model. With a rich run the Carter Dooling .61 recorded 154.3 m.p.h. (91.7 per cent) good enough for third place, in the overall handicap results, i.e. all the classes are flown together, then the percentage of the National record speed obtained decides the final "all in" results.

**AEROBATICS** got off to a delayed start with its 19 entries (of whom 18 flew) as Mike Hawkins who had all the 'gear' unfortunately had some trouble with his car on the way and was further delayed by a good samaritan act. The standard of flying was good and several new names were in the results list. A shifting wind was an annoyance but this did not affect the results. Tom Jolley (Whitefield) flew his good manoeuvres throughout the schedule to take top position with 1,089 pts. His deep fuselage *Nobler* style model placed 2nd last year and 1st the year before that, not a bad contest record from one model. Harold Dowbekin (Horwich) and Dave Day (Wolves) had a tussle for second place with Harold taking the advantage and scoring 1,031 flying the same O.S. Max -S 35 powered model as last year. This was the most popular stunt engine.

Poor on squares, his model seemed too fast, stretching the loops and bunts to an egg shape. Dave Day's modified *Veco Chief* also had an O.S. Max -S 35 and he improved a lot on his second flight but it still looked rather ragged and needed polishing. Ray Brown (Lee Bees) returned to the stunt fold after a lapse of several years to collect 4th place with a Mk. 8 *Coy Lady*. His flying showed a lack of practise, pulling out to high on squares, tight on inside manoeuvres, and overcorrecting, for 976 pts., making a surprise place. Only two points behind came Mick Reeves (Wanstead) flying his giant 70 inch span *Mew Gull* with a Merco .61 turning an 11 x 6 propeller for an all up weight of 70 ounces! Mick covered the wings in white *Monokote* and the effect was very good with racing numbers added. In the air it was poor on squares and rocked on most corners,

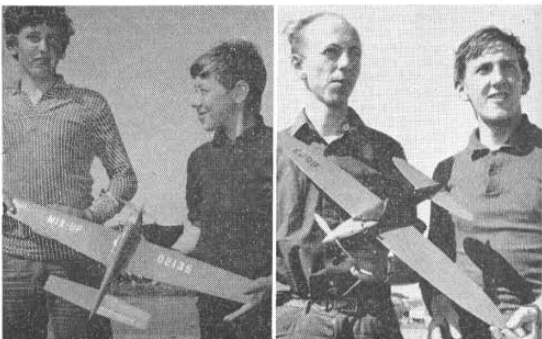




Top to bottom, M. Gagg (Handsworth) with semi-scale 620 sq. in. D.17 Beechcraft stunter, has O.S. Max-S 35. Mick Reeves (Wanstead) with Merco .61 powered Mew Gull stunter in black and white, spans 70 ins. Impala by E. Sharp (C.M.) has Merco .35 finished in pink and black placed 6th after crashing best model. Twin boomer by Dave Christopher (Weston Super Mare) has radial cowled O.S. Max 35, Japanese markings. Right, 1st team race finalists C. Brown/S. Smith (Feltham/Hayes) and R. Heaton/M. Ross (Leigh) who were placed 2nd and third respectively with Oliver Tiger Cub engines.

other fliers remarked that it seemed underpowered, however Mick assures us his is staying with the big 'uns for the time being. E. Sharp (C/M) flying an *Impala* pranged his best model on the Saturday night in practice so had to resort to his second *Impala* this being good enough for 6th place with 922 pts. and indeed beating Jim Maanal (Lincoln) who forgot his triangles so losing points and then tried to insert them back again out of sequence later so he also lost his pattern points this being a potential 100 points loss to give 916 pts. Lister showed promise but was disqualified for using lightweight lines with an engine over 6 cc. and on his second flight suffered with the now acquired heavy weight lines dragging badly and wagging the model about, unfortunately he also mixed all his manoeuvres up. T. Brownlow (Horwich) showed an improvement and also used an O.S. Max 35-S this time with a Tornado 10 x 4 three bladed propeller in a modified *Frank Warburton Tony* finished in red and black. Three other models not flown in the contest are worthy of note being Harold Dowbekin's *Batmobile* complete with large size batman image painted across fuselage and wing underside. Span is 72 in., weight 72 ozs., (That's an inch an ounce Harold) and the power is looked after by a vintage black crackle finished McCoy .60 that started on the first flick. Being rather new it was saved for calmer weather conditions that never arose, U/C legs are mounted in the wing on a torque rod system. M. Gagg (Handsworth) who placed 12th after crashing due to an inverted engine cut in the second round also had an interesting semi-scale *D.17 Beechcraft* finished in yellow, with an O.S. Max-S 35 for power. C. Elliott was there with a 57 in. span semi-scale *P8 A Crusader*, the wings are as normal stunt practice but the fuselage is scale including the tandem Crusader undercarriage that has a nose wheel, and the two rearward wheels behind the wing trailing edge sprouting from the fuselage, in all, a most impressive model. C. Green, one of the judges, had a *Magister* inspired fuselage model on display complete down to the small lettering, and twin pilots, with a Merco .35 up front. (Incidentally, his pal Ed Wright (U.S. Army) did a stalwart job of score adding, he came over from Germany specially to see the Nats.).

Run by *Worthing Bald Eagles M.A.C.* the **COMBAT** event to the provisional F.A.I. rules that stipulate a four minute duration and no re-flights in the event of a mid air collision was the main control line crowd drawer. A high standard of flying was seen throughout and the rules kept things moving fast, with pit crews waiting on the ground with a spare model complete with lines and motor running. Richard Wilkens (Sidcup) was ousted in the first round by McArthur (Northwood) flying a *Webrab Mach II* powered model. Richard was flying with an Oliver Tiger. Pete Smith (Outlaws) and reigning *European Combat Champion* was also ousted in the first round! Flying non-stop all day, all reserve entries were soon incorporated through the non-appearance of other contestants. By the end of the day round two was half way through. On Monday several free flight models landed in the circles and Robertson (Evesham) aroused some interest with his robust nylon covered *Early Bird* with a Super Tigre G.15 up front. Fast and highly manoeuvrable the hot weather affected it and a little more reliability is needed. Sue Miller (Cambridge) —yes Mrs Miller—managed to get through to the third round until she was defeated by Flockhart (Mad Mac) from Scotland. Mad Macs pit crew use a tactic that could help many other teams, instead of standing around in one bunch the three man crew spread themselves out at equal distances around the circle and the nearest crew man to where the model lands or crashes starts and launches it. Shaugnessy (Luton) and Roper (Maidenhead) are both relatively newcomers who made it to the semis, Shaugnessy using a *Razor Blade* type wing and Roper a *Dominator* based model. Mick Davis (Outlaws) the *Dominator* designer went through to the final. Baz Bumstead (Northwood)

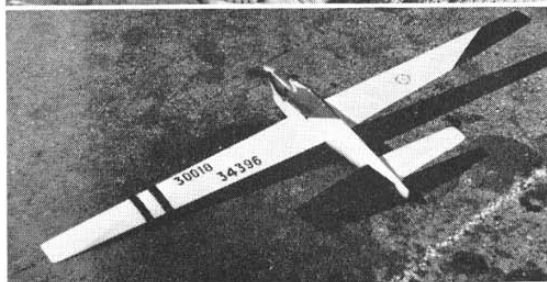




had a tough time with Shaughnessy (Luton) hot on his heels through every manoeuvre, the pace became hotter and Bumstead hit the ground breaking the engine and bearers clean off! His reserve model was in the air immediately, then by the third minute the Luton flier was ahead on cut points and ground time. Then Bumstead crashed, again breaking the engine and bearers right off at the leading edge! So it was all over, they shook hands and the crowd applauded. Roper (Maidenhead) then defeated the Luton entry with quick clean cuts, this bout was notable for its good pitting and flying.

This left Davis (Outlaws) v Roper (Maidenhead) for the final, both with *Dominator* models and Oliver Tigers. Davis managed to get Roper to attack and overshoot so he could nip in and have a quick snip at his steamer as Roper went past. The Maidenhead team made a rather slow stop and then made an effort to catch up on Mike Davis's two cut lead. Davis changed a propeller then crashed and changed his model and went on to win with a convincing lead over the Maidenhead team. Reflections on the event show the Webra Mach II gaining popularity, still lower aspect ratios, even greater popularity of the "wing" and the very few contestants who used models with wing spars. Above all the F.A.I. rules have been well and truly proven, for the best.

Held on the Sunday **F.A.I. TEAM RACING** attracted 78 entries of whom only 31 flew in the event, the conditions were excellent so why the flying rate was so poor we just can't fathom. Administered by Dennis Nixon, Peter Freebrey, and Dave Balch things ran smoothly throughout the day and few incidents of bad flying, tangles or prangs were heard of. Dick Place and Don Haworth (Wharfedale) were flying a new *Nova* with a longer wing/tail moment and a shorter nose, i.e. the wing has moved forward, Dick relates it improves ground handling. In the heats they made a very fast 4:37 in the first round then everything went wrong and the second round was 6:07. Turner/Hughes (Wharfedale) had a new model with an internal silencer but it lacked airspeed, though very quiet in operation. The fastest nine to go forward to the semi-final rounds comprised of two Wharfedale teams, two Wanstead, two Feltham, two Novocastria and one Leigh team. The semi-finals were poor to say the least and practically every team had minor problems come up to slow them down. The fastest time of 5:08 went to Rudd/Longhurst (Feltham/Hayes) using an Eta 15 powered racer, next fastest went to Franklin/Ives (Wanstead) with 5:18 after a very slow second tankful, in the heats Bob Ives' pitting



Top: Gordon Farnsworth (N. Sheffield) with Super Tigre G.20 F.A.I. model and tuned length exhaust pipe. Les Davy and John Hudson's latest F.A.I. Eta 15 team racer, note high aspect ratio. Second place F.A.I. team racer by Rudd/Longhurst has Eta 15 mounted on metal plate. Left: second place combateers (L-R) B. Mills, K. Roper (pilot) and C. Pike (Maidenhead) with Copeman tuned Oliver powered "Twister 4" based on "Dominator". Below: Dick Place's latest 1/4A, finished in hotel the night before! Silencer drops 700 r.p.m. at 17,000.



enabled them to make a two stop 4:34 though they had a warning for not walking round. Place/Haworth were right out of luck and had their model roll in but fortunately for them Manser/Green (Wanstead) and Heaton/Ross (Leigh) collided and the race had to be re-run. Manser/Green made 5:24 and Place/Haworth 5:28. The three fastest teams then had their models checked for the final, where the Franklin/Ives fuel tank was found to be 10.3 cc. Place/Haworth came into the final as fourth fastest team. It's interesting to note that the two new teams in the final have only been flying together for a short while, Rudd/Longhurst since the Esher meeting and Green/Manser since the Burton Criterium. Came the final and there were less spectators present than at most small rallies so it tended to seem an anti-climax. Place/Haworth broke two of their Tornado 7 x 8s

warming up and were still cold at the start, Manser/Green's Copeman tuned Oliver Tiger started well each time but the model did not have very good ground handling due to a springy under-carriage leg, they started off at 23 laps to a tank this gradually improved to 44 laps at 90 m.p.h., Rudd/Longhurst were very consistent if not fast, but the real surprise was the progress of Place/Haworth, they took off 1 minute 5 seconds after the race had started, doing about 95 m.p.h. and Dick Place managed to carve his way through the opposition and win by 67 seconds at 10:14 over Rudd/Longhurst with 11:08 in second place and Manser/Green with 11:19 in third position. So ended the final with the refreshing results that two little known teams had come





Sqdn Ldr. J. W. Monsell, M.B.E., Station Cdr. of R.A.F. Hullavington, a wartime navigator in Wellingtons, examines Edmund Potter's 1/18th scale Lancaster which has a mixture of two A.M. 25s one each A.M. 15 and Frog 150. Flew well on 3 engines only, weight 8½ lbs.

through to the top just to prove it's not a closed shop of regular winners. Glass fibre propellers by Bartel were used by many teams including the 4:34 time, fewer Miss F.A.I. and other commercial plan models were seen, most teams flying own design models and we did not see any two wheelers or retracting undercarriages.

Organised by the R.A.F.M.A.A. **JA TEAM RACING** was extremely close fought and had far more activity than F.A.I. Plenty of new young faces were 'having a go' and the Oliver Tiger Cub engine once again dominated the results, and indeed the whole event. Unfortunately most heats were two up and nothing outstanding went on in the heats with the exception of the very fast times all grouped together. King/Balch (Feltham/Hayes) recorded 4:15 with Place/Haworth (Wharfedale) right on top of them with 4:16, next came Royle/Salmon (Priory) with 4:18 who repeated this exactly in the second round as did Heaton/Ross (Leigh) who made 4:20 twice. Turner/Hughes (Wharfedale) were as consistent as one could get making two 4:34s in the heats and 4:35 in the semi-finals. Brian Turner releases the model with the engine running extremely lean and it just about pulls itself off the ground to perform its 40 lap range.

Place/Haworth missed the final by one second at 4:36, Royle/Salmon by 1.5 second and King/Balch by 2 seconds. So the finalists were Turner/Hughes 4:35, Smith/Brown 4:33 (Feltham/Hayes) and Heaton/Ross 4:33. After the start Smith/Brown were up on speed, then Heaton/Ross came down for a stop with Turner/Hughes, Turner/Hughes then ran in on take off and a re-run was called for. Turner/Hughes were last away this time, Heaton/Ross were down for a long stop, then up to a popping run Turner/Hughes were fastest at this stage, then Heaton/Ross were down again and ran in but the mechanic retrieved, then tuned engine. Turner/Hughes down for a good stop but with slow acceleration, Smith/Brown popped for two laps then cut, a tweak of the needle engine cut then he missed a catch and the other teams, Turner/Hughes came down and they were lapping both the other teams, Turner/Hughes landed, fuelled and adjusted compression with pliers at Turner/Hughes segment and also needle valve, Smith/Brown's engine popped again for 4 laps landed and broke a propeller. After frantically shouted advice from his fellow clubbers he released the model to fly on a shattered propeller. Then both Turner/Hughes and Heaton/Ross missed a catch and the Heaton/Ross team retired at 167 laps, leaving Turner/Hughes to take first place with 9:10 and Smith/Brown 9:20. Dick Place's latest JA racer is a scaled down F.A.I. with yellow tissue covering and Heaton/Ross were using a glass fibre propeller, it looked like a 7 x 8 F.A.I. type cut down for JA use.

## RESULTS

(subject to confirmation)

### THURSTON CUP (Fly-off times)

Open Glider		(194 entered)
1. A. Russell	(C/M)	+10:14
2. J. Bailey	(Bristol & W)	+8:24
3. D. White	(York)	+8:19
4. C. Martin	(W. Coventry)	+8:04
5. A. Wisler	(Croydon)	+7:22
6. J. Smith	(Croydon)	+7:02
7. P. Jellis	(Croydon)	+6:51
8. R. Howarth	(Whitefield)	+6:40
9. M. Wainhouse	(Norwich)	+6:38
10. R. Lennox	(Birmingham)	+6:35
11. D. Whitlock	(Southampton)	+6:35
12. J. O'Donnell	(Whitefield)	+6:29
13. J. Wright	(Hornchurch)	+6:20
14. A. Wells	(Hornchurch)	+6:09
15. C. Foss	(Brighton)	+5:38
16. M. Baines	(R.A.F.M.A.A.)	+5:27
17. E. Drew	(Bristol & W)	+5:22
18. G. Lowe	(Wallasey)	+4:55
19. R. Wotton	(Hayes)	+4:51
20. P. Perry	(Birmingham)	+4:47
21. B. Cooper	(Croydon)	+3:23
22. R. Marks	(Birmingham)	+3:19
23. R. Brownson	(Timperley)	+2:02
24. G. Cornell	(Croydon)	+1:30
25. H. Willis	(Essex)	+0:51

### WOMEN'S CUP (Fly-off)

		(13 entered)
1. Mrs. K. Allen	(Brighton)	9:00 + 6:41
2. Mrs. M. Day	(C/M)	9:00 + 5:48
3. Mrs. S. Horton	(Crawley)	9:00 + 3:01

### 'MODEL AIRCRAFT' TROPHY (Fly-off times)

Open Rubber		(103 entered)
1. M. Parrott	(Whitefield)	+6:39
2. R. Elliott	(Lee Bees)	+4:37
3. R. Marks	(Birmingham)	+4:35
4. H. Tubbs	(Baldon)	+4:10
5. C. Jackson	(Surliton)	+2:49
6. B. Day	(Walsall)	+2:48
7. R. Lennox	(Birmingham)	+2:43
8. R. Goddon	(Cambridge)	+2:04
9. J. Wright	(Hornchurch)	+2:02
10. R. Bailey	(Surliton)	+1:48
11. R. Boxall	(Brighton)	+0:04
12. C. Foss	(Brighton)	9:00 + 0

### 'SIR JOHN SHELLEY' TROPHY

Open Power		(128 entered)
1. G. Rowsell	(C/M)	9:00 + 3:38
2. R. Bassett	(Birmingham)	9:00 + 0:53
3. J. O'Donnell	(Whitefield)	8:52
4. P. Manville	(Bournemouth)	8:47
5. D. Miller	(Cambridge)	8:45
6. R. Monks	(Birmingham)	8:43
7. K. Smith	(Croydon)	8:27
8. G. French	(Cambridge)	8:15
9. G. Fuller	(St. Albans)	8:13
10. B. Hooley	(BAC Warton)	8:06
11. M. Lowe	(Lee Bees)	8:03
12. D. Bailey	(Swindon)	7:57
12. J. Savini	(Wallasey)	7:57

### S.M.A.E. TROPHY RADIO CONTROL

Name	1st flight	2nd flight	Total	Model
1. P. T. Waters (South Wales)	1185	1364	2549.5	O/D Saracen
2. F. Van den Bergh (Bromley)	949	1362	2311	O/D Vertigo II
3. B. Burt (Surrey R/C Club)	1172	1079	2251	O/D
4. D. Reed (Rolls Royce)	968	1268	2236	Interceptor
5. K. R. Jones (Sutton Coldfield)	693	1077	1770.5	O/D Buccaneer
6. R. Brown (Lee Bees)	755	950	1705	Beachcomber
7. B. Purvill (LARCAS)	846	837	1683	Mod. Taurus
8. P. Newitt (LARCAS)	626	999	1625.5	Nimbus
9. J. Bickertafle (Rugby)	520	988.5	1508.5	Taurus
10. D. Allen (West Essex)	518	807	1325.5	O/D

### R.A.F.M.A.A. TROPHY (JA TEAM RACE)

	1st Rd.	2nd Rd.	S. Final	Final
1. Turner/Hughes (Wharfedale)	4:34	4:34	4:33	9:20
2. Smith/Brown (Feltham/Hayes)	4:19	5:05	4:33	9:20
3. Heaton/Ross (Leigh)	4:20	4:20	4:73	167 laps
4. Place/Haworth (Wharfedale)	4:16	4:16	4:36	
5. Royle/Salmon (Priory)	4:18	4:18	4:36.5	
6. King/Balch (Feltham/Hayes)	4:15	4:40	4:37	

ALL Oliver Tiger Cub

### DAVIES 'A' TROPHY (F.A.I. Team Race)

	1st Rd.	2nd Rd.	S. Final	Final	Eta. 15
1. Place/Haworth (Wharfedale)	4:37	6:07	5:28	10:48	
2. Rudd/Longhurst (Feltham/Hayes)	5:22	5:06	5:08	11:01	
3. Manser/Green (Wanstead)	—	5:08	5:24	11:19	Oliver Tiger

### RADIO CONTROL SCALE

	Scale	Flight	Total
1. D. Platt (Wanstead)	NAT 288	358	488
2. D. Thompson (C/M)	Bristol MIC	493	337
3. A. Lally (Bristol)	F4U Corsair	2013	501
4. G. Ford (W.E.A.)	Spitfire XI	148	493
5. A. Devonshire (Mansfield)	Spitfire IX	136	400
6. J. Morton (C/M)	G. Gamecock II	141*	454
7. M. Dunn (Kiver)	Hurricane	157	335
8. P. Anderson (Wigley)	Cessna 172	376	113
9. Dr. Henley (Bristol)	Stampe	97*	385
10. B. Lees (Mansfield)	D.H. 60	143	303
11. R. Yates (Eastcot)	Bucker 133	166	239
12. W. Nield (LARCAS)	Miles Magister	53*	306
13. J. Dumble (Richmond)	Wittman Bonzo	198*	19

\* Failed to supply sufficient information for scale judging—craftsmanship points only awarded

### COMBAT

1. M. Davis (Outlaws)	Oliver Tiger
2. K. Roper (Mansfield)	Oliver Tiger
3. Shaugnessy (Luton)	
3. Flockhart (Mad Mac)	

### SPEED

	H'cap	Class	m.p.h.	Checked/Doing
1. M. Billinton (Brixton)	94.5	10cc	158.1	81
2. W. Bessant (Southampton)	93.5	1.5cc	97.3	Cos T-D 89
3. I. Roffey (Brixton)	91.7	10cc	154.3	Carter Dooling 61
4. B. Jackson (Workop)	87.5	2.5cc	121.0	Super Tigre G.15
5. W. Firbank (Workop)	84.4	3cc	129.3	Super Tigre G.27
6. G. Farnsworth (N. Sheffield)	79.7	F.A.I.	100.8	Super Tigre G.20

### GOLD TROPHY—AEROBATICS

1. T. Jolley (Whitefield)	1089	Fox 35
2. H. Dowdell (Horwich)	1031	O.S. Max-S 35
3. D. Day (Whitefield)	1014	O.S. Max-S 35
4. R. Brown (Lee Bees)	976	Merco 35
5. M. Reeve	914	Merco 61
6. E. Sherrin (C/M)	922	Merco 35

### KNOKE No. 2 TROPHY C/L SCALE

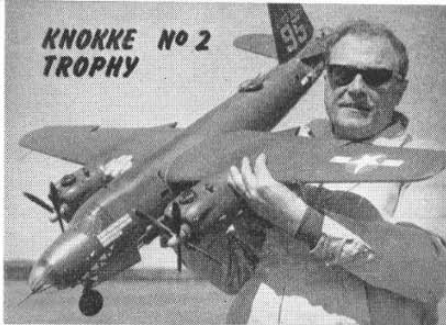
	Scale	Flight	Total
1. J. S. Sillman (C/M)	Marlin B26	376	72
2. P. Ball (Wanstead)	Gulfhawk	375	72
3. S. Anderson (E. Retford)	PT17 Kaydet	360	60
4. E. Potter (Cambridge)	Landcrafter III	317	62
5. R. Ivans (Handsworth)	Poter 63	251	115
6. A. R. Davis (Handsworth)	Fokker D VII	264	74
7. M. Bodley (Heswall)	Halifax VII	150	263
8. T. McKay (Dumbarton)	D.H. 88 Comet	231	62
9. P. Howe (Rochester)	Seamew	65	203
10. D. Day (Wolves)	Fokker D VII	150	263
11. I. Birch (Leicester)	Averger	167	60
12. C. Eastough (Dumbarton)	Spitfire II	97	69



**SIR JOHN  
SHELLEY  
CUP**



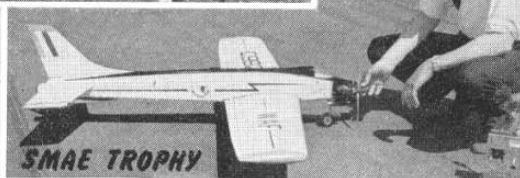
**THURSTON  
CUP**



**KNOCKE No 2  
TROPHY**



**'MODEL AIRCRAFT'  
TROPHY**



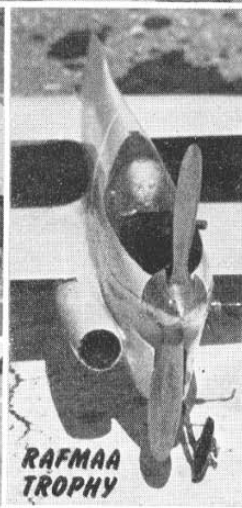
**SMAE TROPHY**



**DAVIES 'A'**



**R/C SCALE**



**RAFMAA  
TROPHY**

Steeley winner G. Rowley from S. Wales flew std AM 35/Dixie-lander. Migrator flown by A. Russell (Berkhamstead) is his first for 15 years. J. Simmance's B-26 Marauder has everything working in C/L scale. M. Parrott's open job took rubber and P. Waters kept S. Wales to fore in R/C multi. JA t/r went to popple in Turner/Hughes model with venturi silencer. World Champs Place/Haworth maintained form in FAI t/r. D. Platt's beauty of a T-28B and T. Jolley's stunt winner were fine models. At bottom, the 'Outlaws'. M. Davis' 2nd left, and right 'Les Girls' who flew off. Mesdames Day, Allen and Horton.



**COLD  
TROPHY**

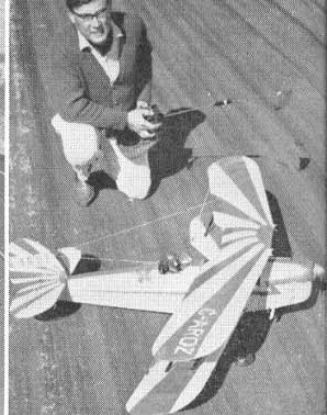
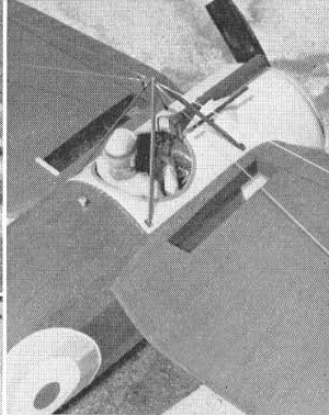


**COMBAT**

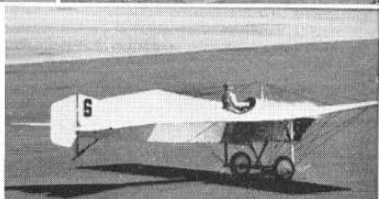
**★  
THE  
NATS  
WINNERS  
★**



**WOMEN'S CUP**



Top left, B. Lees (Mansfield) made stunt converted DH60 Moth look like Amy Johnson's "Jason", has Merco 49, Min X radio. Centre, leather clad pilot covers Bellamatic servos in Den Thompson's superb Bristol Monoplane. Top right is Doc. Henley and Stampe SV4C which test flew through contest made best landing. Left is M. Dunn's Super Tigre 60 powered "Hurricane" (Digimite gear) and right, J. Collins' fine Blackburn Mono which did not take-off despite this picture!



## FREE FLIGHT REPORT by John O'Donnell

First impressions of Hullavington and its surrounds were not at all favourable to the free-flight participant. The airfield was comparatively narrow and there were several dense-looking woods nearby. Subsequent and closer acquaintance with the woods did not improve opinions.

Advance publicity and information regarding facilities had failed to mention the airfield's suitability for free-flight. It was certainly inadequate (for free-flight), especially as the "Nats" are supposed to be the most important event in the British contest calendar. There is a growing impression that, administratively, free-flight is rapidly becoming the poor relation of aeromodelling. One S.M.A.E. official questioned about the size of the 'drome' is reported to have said "well its really R/C and C/L that matter". I suppose it could be true that free-flight is not spectacular enough for the public and not profitable enough for the "trade".

Events had been rearranged compared with the last few years so that rubber and power were held on the **Sunday**. The

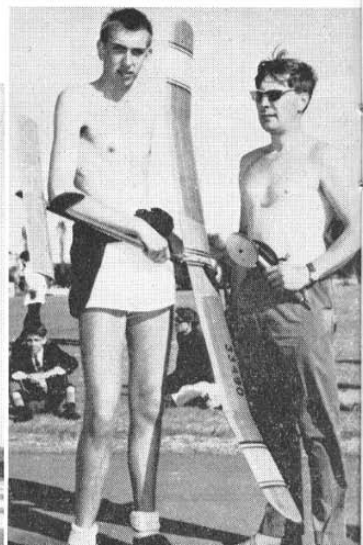
contests ran till 7 o'clock which was a distinct advantage for those competing in both events. Holding the flyoffs later makes them less of a thermal assisted affair.

Conditions were sunny and bright enough, but with about 12-18 m.p.h. wind straight onto the nearest wood. This was at just the right distance to catch models D.T-ing after a max. The airfield was too narrow for a crosswind move of the contest control point to be effective.

Many entrants were discouraged by the recovery prospects and several well-known people did not fly at all. Lots of those who did fly found it was an expensive venture due to lost and broken models. The standard of flying suffered in consequence and the first treble in **RUBBER** was not recorded until well into the afternoon—although eventually about a dozen materialised. My name got on the list, for a short while only as I hadn't qualified. My first flight ended in the middle of the wood. Rather drastic returning methods got it back but with a two piece fuselage.

This went back together well enough to lose the model (overnight) on the second flight. After all this the reserve model found sink on the final flight!

Left: Dave White lost his "Rolling Stone" to qualify for fly-off, used this Glider to place 3rd. Centre is Godden Cornet with A/I which was luckily tangled down as the timer had stuck and it would otherwise have certainly been lost! Hot climate calls for sun-tan! G. Downing and Geoff Lowe of Wallasey wait for thermal. Geoff placed 18th.





Others had their own troubles. Chris Foss missed the flyoff as his Boxall influenced free-wheel model ended up on top of a hangar on his third max. Ray Monks, Reg Lennox and Fred Boxall all lost a model getting to the flyoff. Brian Day had fared even worse with one model lost and the other so badly damaged that he did well to repair it in time.

The rubber flyoff was quite spread out as some participants walked upwind right to the perimeter fence to try and gain a bit more distance. Others preferred the convenience of flying from near their cars. There was presumably sink about from the number of two minute old flights recorded. Fred Boxall's reserve model, unflown for ages, spiralled in after launch—without damage but finishing his chances.

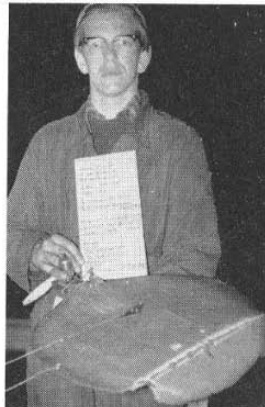
John Parrott proved to be the winner with a convincing lead even though his timekeepers said the model was easy to see right down to the tree-top skyline. Being one of my club, his model naturally displayed "Maxie" influence—but was much modified and simplified. The model had been damaged early in the day through being blown over and all the official flights were made with wings borrowed from his reserve model. This didn't appear to affect the trim.

Second was Ray Monks whose model climbed well but only recorded about 41 minutes, just a few seconds more than Ray Elliot's pastel coloured model. Henry Tubbs was fourth with his special flyoff model—large and dark coloured. A broken rubber band allowed one propeller blade to hang loose and perhaps spoil the glide. The rest of the flyoff scores were much lower.

**POWER** is definitely suffering from a lack of interest and the general standard is worse than a few years ago. This is reflected in the scores. Only two trebles were recorded—although there were lots of near misses.

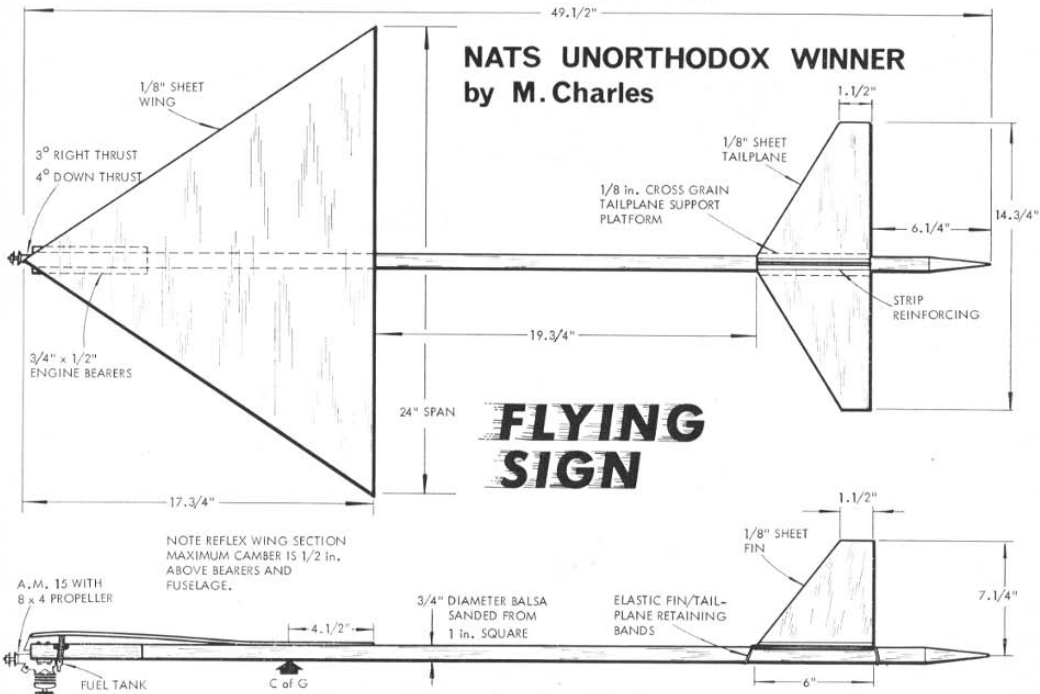
The power flyoff was held earlier than scheduled (to avoid clashing with or holding up the rubber flyoff). I consequently missed it, but from what I heard winner Graham Rowsell flew well to clock a respectable 31 minute flyoff with his lightened "Dixielander". It was powered by an AM35 complete with AM silencer. This was reported to be his first contest and he was certainly very inexperienced in competition—even to thinking the prizes might be awarded at the close of the Nationals. It is a long time since I've seen anyone so obviously thrilled at winning.

Baggott had trim trouble develop on the flyoff as his model



Sunday evening's unorthodox event was a riot! R. R. Hepple of Sunderland produced genuine Ginger biscuit flying saucer with recipe, 10 oz. flour, 6 oz. sugar, 4 1/2 oz. syrup, 2 oz. water, 2 oz. fat, 1/2 teaspoon ginger, 1/2 teaspoon baking powder, cooked one hour at 350 degrees, also needs one Eater 15! Tasted good too! Sue Miller's entry (or was it a Cambridge Club effort) was a most unmentionable. Cast Live in glass fibre, they were bright red and frilly edged. Back pressure called for elevator extension.

Mick Charles won outdoor unorthodox with almost genuine low Flying Sign. So many asked for plans we decided to give details as below. The sign goes up at a fantastic rate after javelin launch and glides reasonably well. Section of wing, offsets and C.G. position are only critical factors.



## Aero Modeller

over-rolled, went left, and lost most of its height in recovering. I can't criticise as my Veco 19 "Pendleton Fault" was also displaying heat warp troubles, and didn't really respond to adjustments till the final flight. This however was the only one not to max and placed third—top of those without trebles.

Other near misses were recorded by Peter Manville (back in circulation after a few months' lay-off) and Ray Monks who had a busy weekend totting up scores towards the season's overall F/F Championship. George French started well with 2 thermal max's off very short engine runs - but was only able to repeat the short run part on his final flight.

Conditions on the Monday were certainly more encouraging with less wind and a better direction—straight down the longest runway. There was another wood two or three fields outside the 'drome but few models got that far. Sun, breeze and lots of lift made max's commonplace.

The use of the 100 metre square launching area in these conditions produced a very fair imitation of the World Championship glider event at Kauhava. There was the same waiting for someone to fly, and the same mass launches underneath a thermalling model. This made quite a spectacle and was entertaining enough but is a very far cry from the old idea of a GLIDER contest.

The 25 who reached the glider flyoff (four of whom had been also in the rubber flyoff) was less than many expected—and led to quite a pantomime. With the early (4.45 p.m.) close traditional on the Nationals Monday (to allow those not looking for models to travel home) the flyoff was all set to be another thermal flight. The number involved gave some organisational difficulties finding timekeepers, rechecking towlines, and assembling everyone in the launching area. There was apparently no check to see if models bore S.M.A.E. numbers. Al Wisher told me afterwards that 7 out of the 25 hadn't any.

Eventually all was ready, the start of the 15 minute flyoff period announced and towlines run out a few feet apart. A long wait was expected for someone's nerve to break. This however was not to be as Al Wisher very soon decided to go—and towed upwind eagerly watched by everyone else. Thus encouraged Bobbie Howarth followed, and almost immediately released. One circle on glide was all it took to tell me there was appreciable lift. Dave White apparently shouted to his launcher just as I did, as we were just in front of everyone else.

With around 18 or 20 A/2s being launched almost simultaneously there was pandemonium. About four people came to grief with crossed lines or collisions—and it could well have been more. All who got away got the thermal and were soon part of the big group of rapidly climbing models.

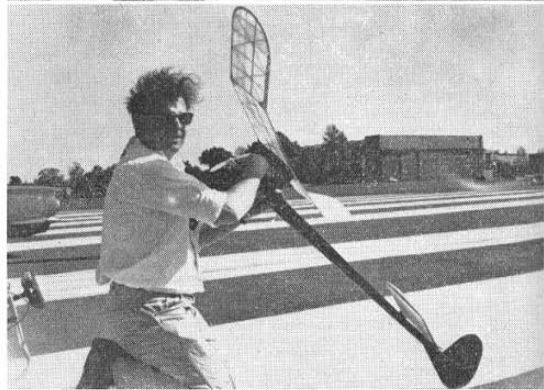
The predictions of this flyoff being a timekeeper contest were soon proved. How the timers could keep track of the particular model they were watching, and how they eventually decided when they could no longer see it (or anything else) was matter for conjecture. Out-of-sight scores varied from 5 to 10 minutes. Explanation of the winning time (Alan Russell) was reported to be that the model D.T.'d at 6 minutes and then came down in a flat spin. The next three (John Bailey, Dave White, and last year's runner up Graham Martin) all got over eight minutes, followed at close intervals by the rest. I managed 6 : 29 (being the average of 5 : 08 and 7 : 51 a phenomenon illustrating the difficulties of timing under these conditions) and placed just halfway down the flyoff list.

One or two fliers decided to "sit out" the scramble and fly on their own afterwards. These included Reg Lennox who did a genuine 6 : 35 O.O.S. with no other model in the air to confuse the issue, Geoff Lowe who had to refly with a damaged tail after suffering in the line tangles, and Ray Monks who made a nominal 3 minute D.T.'d flyoff rather than risk losing the model.

All-in-all, and with all respect to those in top positions, this was not a satisfactory flyoff. Some have called it a farce! The one bright feature is that most models were recovered the same evening.

The LADIES' event had more interest and better flying than in previous years. The light had dawned, at long last, that rubber is the solution to a mixed class open event, and all top placers were taken by rubber models. There were three trebles and there could easily have been more e.g. Wendy Smith (née Bennett) who found a downdraught after two initial max's.

Eventually Kath Allen, Mary Day and Shirley Horton came out for what was to prove a very hotly contested, if friendly, flyoff—and placed in that order. Kath Allen had lost her new folder model on its third flight despite being seen almost down by husband Jack. She then lost her last year's free-wheeling model on a D.T.-less flyoff. Mary Day's turquoise and white duplicate



Free flight variety. At top, Henry Tubbs has a special model for fly-offs. It is obviously large and is dark coloured for better visibility. Centre, our columnist John O'Donnell, dropped 8 socs. to miss the power fly off. Bottom, a Jedelsky wing on A.P.S. Sans Egal by Den Roberts of Bournemouth, about to be launched by Mrs. Roberts.

of her husband's open design was very impressive as regards pattern and performance, but disappeared a little too quickly on the flyoff. There was no doubt about Mary being able to handle the model which is not something that can be said about some other entrants, who looked and acted as if they had never launched a model before in their lives, never mind in public!

Final place in the flyoff went to Shirley Horton, well known after last year's win and Crawley publicity, who still turned in a very respectable score. A fourth max in fact.

Senior Champions		Pts.	Junior Champions		
R. Lennox (Birmingham)	173.8		Ledger (Folham)	83.1	
J. O'Donnell (Whitfield)	133.4		Taylor (Rois Royce)	75.2	
D. White (York)	98.4		S. Smith (Northwood)	70.6	
D. Day (Wolver)	85.3		Hooper (Elliot)	44.2	
Mrs S. Miller (Cambridge)	30		Cooper	43.9	

Area Champions			E. Anglian			S. Eastern		
London	856*		Mitland	470		Northern	434	
Western	479			458			375	

\* Includes R/C & C/L—others did not nominate other than free-flight.



"What's that about silencers?"

## Exhausted Subject

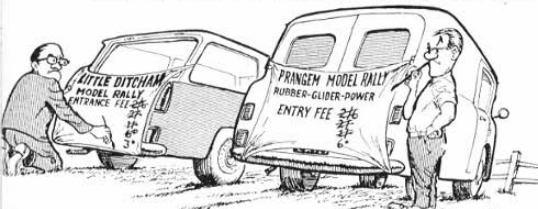
THE silencer campaign has now become known as the Great Bore. And are some of those silencer bores great! In fact, it could be said that the increase in bore is in direct ratio to the yearly reduction in flying field acreage. It could be said, but would hardly be relevant, since the occurrence of a silencer and a flying field is now a rarity seldom to be met with. We do, however, see the occasional trace of a silencer conscience; some evidence of an effort to conciliate the ardent campaigners. As a case in point I saw some such evidence a short while ago. A radio modeller, anxious to demonstrate the extent of his public spiritedness, pointed out the archaic hollowing of a recess in his model's cowl. A recess which, he proudly claimed, at one time housed the exhaust of a silencer.

This, however, was the only meagre sign of the Great Silencer Campaign to be seen on the flying field that day. Most of the radio flyers were fairly new to the model flying hobby, as they invariably are (they think downthrust is sticking your hand in your money pocket), and could be excused for not having heard of the obsolescent gadget. Some of the older hands, whose three months radio service gave them something of a veteran status in a hobby where the turn over rate is the envy of the pop chart compilers, were dimly aware of the existence of sound reducing devices, just as they were dimly aware of such vague, improbable things as model insurance and radio licences, but were content to leave these awesome things to the expert.

I will say, though, that the flying on the family size field is all chummy informality. There is always a cheery nod as the model is launched in the direction of your unprotected left ear, or right ear, according to which exit you may be using. And the free for all flyers are not wholly unmindful of your comfort. They generally have the good grace either to prang the model or fly it away on the first flight.

## Controlling Interest

According to the opinion expressed in a contemporary R/C journal, any 'image' the movement may have acquired is wholly due to the aura of affluence and respectability which surrounds the radio modeller. The world of the toy mad boy,



# TOPICAL TWISTS

by 'Pylonius'

illustrated by 'Sherry'

scrambling over the countryside in pursuit of his flimsy, tissue covered contraption, has gone forever; the free wheeling kite has been replaced by the electronic, therapeutic flight simulator, and anyone not able to sport out two hundred quid on the gear sort of gear is neither with it nor a gentleman.

Seemingly, the anachronistic, chuck-it-and-run types have become 'the unspeakable in pursuit of the uncontrollable'. Not switched on, as it were, All the same it is a chastening thought that radio flying might be like pop music, all the current, with it rage, but too frenzied to have any real survival value. Perhaps when the last electric guitar and the last Americanised accent have both twanged, we shall hear a dying, fin-de-siècle bleep from an out-moded transmitter. The Rubber Modeller will then turn to the Glider Modeller and remark:

"Have you noticed how quiet the flying field has become lately?"

"Yes. Might be something to do with that toy aeroplane craze dying out."

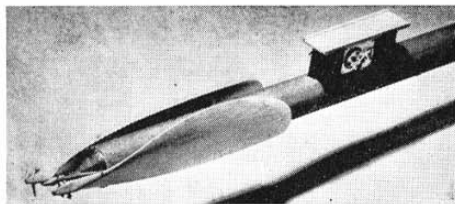
## Contestiness

Contest flying has now become merely the survival of the fittest. That is, the ability to attend the right rally at the right time at the shortest possible notice.

"There was only one entrant for Power (disqualified for not having a silencer) and two entrants for Rubber. A splendid turn out considering the contest had only been organised the previous evening, and no airfield was at that time available. Modellers who attended this meet did not suffer the keen disappointment of those who elected to go to the South Cotswolds Rally, booked for the same day at R.A.F. Scrapen, Northumberland. The meeting was cancelled due to a last minute switch of a march past parade of guard dogs from R.A.F. Winalot."

Often there is a resounding clash of contest dates. This we have attributed in the past to lack of integration within our movement, but which we now know occurs more through design than accident. If a group of anarchical contest flyers spot a meeting on the contest calendar which they deem to be of the organisers' picnic variety, with the model flyers allowed in only on extreme sufferance, they immediately put up one of their own free for all efforts for the same day. Thus much of the contesting that goes on nowadays is between rival groups of rally promoters.

Generally speaking, the contest organiser of today is allergic to crowds. Anything more than a handful of competitors and he starts getting cantankerous, petulantly refusing to take entries before two o'clock in the afternoon, and then doing so in the utmost secrecy. When put to it his genius for siting the launching area to give the worst possible visibility and the greatest number of hazards is of a rare order. In fact, any contest flyer who gets through a day's flying without at least six blazing rows with the officials is imposing an unfair handicap on himself.



## Carving Rubber Model Propellers

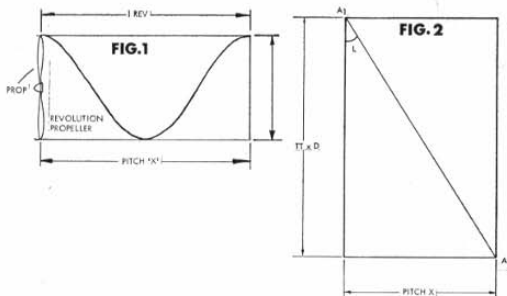
by Dave Hipperson

SINCE the silencer regulations for power models came into being, the rubber side of contest modelling has had a slight boost in interest. However, many newcomers to the hobby don't really understand propellers or how to carve them. Those who do, seem very reluctant to let their secrets seep out to the beginners, so many a novice has to make do with propellers made of sheet and wrapped around tin cans etc. These are not only less efficient, but also take longer to make than solid carved propellers, described here in detail.

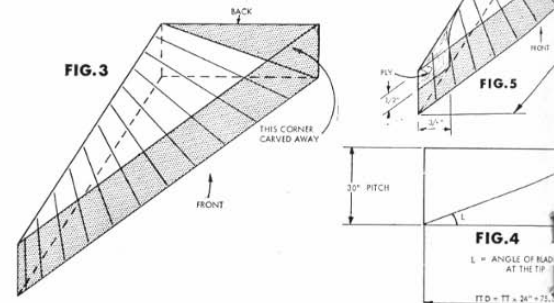
Every propeller has two main variables; *diameter*, which can easily be measured, and *pitch*, which is not quite so easily appreciated. The pitch of a propeller is said to be the theoretical distance it moves forward in one revolution, *fig. 1*. For all of the propeller to move forward the same distance at the same degree of efficiency the angle at the tip must be different to the angle halfway along the blade and at the hub.

In *fig. 1*, a propeller tip traces out a cylinder after one revolution which, when cut down line AA, forms the rectangle in *fig. 2*. When the cylinder is opened out to form the rectangle, this spiral becomes the diagonal of the rectangle. As the tip of the propeller was being considered, the angle  $L^\circ$  will be the tip angle for a propeller of diameter D to give a pitch of X. This angle will not be true for the rest of the blade. The problem is to find a way of arriving at the angles for the intermediary positions on the blade. A very simple method is the X blank or "Bilgri" system. Briefly, if a triangular block has the surface carved away as in *fig. 3*, the pitch along the whole of the carved surface will be constant when the block is revolved about its apex. We arrive at a given pitch/diameter ratio propeller by referring back to *fig. 2*. Find the angle of the blade at the top for a given pitch and diameter and apply to the rectangular end of the blank.

*Typical example*; a propeller of 24 in. dia. and 30 in. pitch. Hence the pitch X in *fig. 2* is 30 in. and the circumference ( $\pi \times D$ ) becomes  $\pi \times 24$  in. = 75.5 in.



Streamlined fuselage on Dave's rubber job shows blades fold flush with fuselage for less drag during the glide to give a higher duration time. Note the clockwise dethermaliser mounted in wing pylon.



Thus the diagonal formed becomes angle  $L^\circ$  of the blade at the tip. The block then must be in the proportions of 30 in. to 75.5 in. This scaled down to a reasonable value, gives a block width of 3.8 in. and a depth of 1.5 in., *fig. 5*.

At this stage two pieces of 1 mm. plywood should be glued on to the block as in *fig. 6*. This plywood is drilled square with the horizontal and also the top of the block. Now pin blocks together side by side and slide a piece of 16 swg aluminium tube through the two drilled holes and Araldite it in place. This method ensures that the two blades hinge on the hub at *exactly* the same angle.

When the tubes are dry, they can be filed to length, and the back face can be carved away. We are now left with a solid shape as in *fig. 6*, which is a flat base blade, rear surface with exactly the amount of twist required to give the 30 in. pitch wanted. The rear face can either be left flat or have some undercamber shaped in, but this is left to personal preference as nobody seems quite sure whether it is worth it or not!

The top surface can now be carved to give a thin blade at the tip thickening up to about  $\frac{1}{4}$  in. at the hub. We now have a blade of triangular shape, which must be narrowed eventually to something about 2 in., *fig. 7*.

The true "X" blank can be awkward to make as block balsa up to 4 in. wide is not easy to obtain. A variation on this method offers a reasonable compromise.

Considering the same propeller specifications as before, the block is this time cut to a 2 in. width *before* carving. The depth remains the same as before, and the V angle at the hub end also remains the same, *fig. 8*.

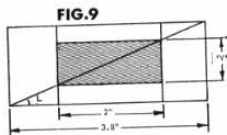
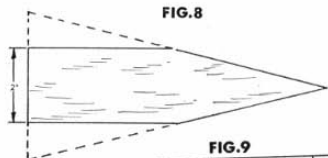
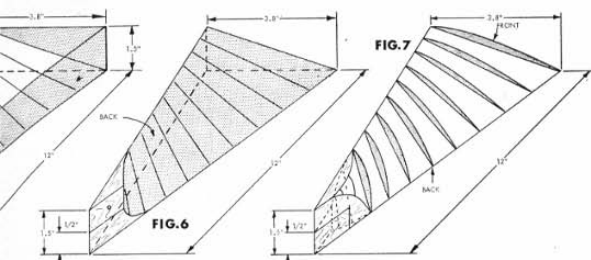
As the end of the blank has parallel sides, the front and back along this length are tapered to accommodate the twist. First draw a full-size diagram of the end of the propeller block, *fig. 9*. Here the dimension Y is the necessary depth at the tip, and is found by simply superimposing the end of the 2 in. block over the diagram of the end of original 3.8 in., the block can then be sawn to correct taper, and the shape this forms is shown in *fig. 10*.

To give a perfect 30 in. pitch with this type of block it is necessary to curve the tapered surfaces. The depth of the curve depends on the size of the propeller being carved, but for this size it is around 3/16 in. in the side elevation.

We have now obtained two similar blades in two different ways. As can be seen, the second method is less expensive on balsa but it is not quite as straightforward. Both types, however, need further attention in that they are too big in the wrong places in their unshaped form.

With the blades from true "X" blank many variations in the shapes are possible, *fig. 11*. The finished shape can



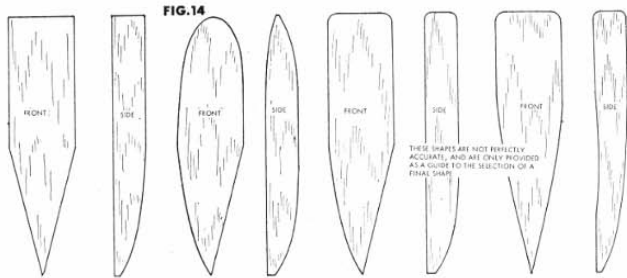
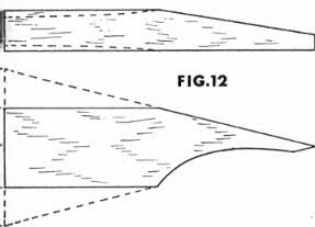
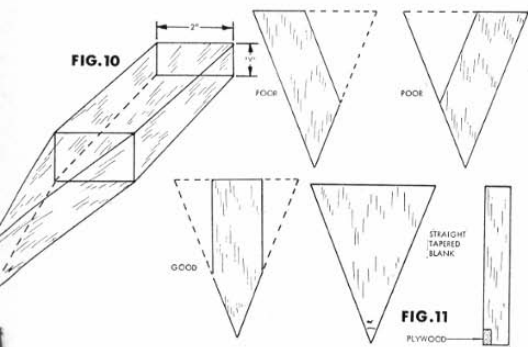


be laid out along the leading edge, centre, or trailing edge of the triangle. Aerodynamically, there is little to choose between them, but in practice, the blades laid out on the leading and trailing edges are very awkward to get to fold properly, without having to revert to what are known as skewed hinges. For this reason the blades should be laid out along the centre of the block. When the corners are cut off, the curves which had to be estimated will be noted.

The blades are still 1 1/2 in. deep at the hub, and this must be thinned down. The author's preference for hub shape is to cut the corner off with a straight line as seen from the side view of *fig. 12*. This results in a rather strange but unavoidable plan view. To avoid this peculiarity, a curve, instead of a straight line is used, *fig. 13*.

This opens up an infinite range of blade shapes which could be tried. Some examples are shown in *fig. 14*. After the blade shape is decided, the surfaces can be recarved to section, sanded and filled with sealer. This completes the blade construction.

Once the blades have been made from these methods, front and side view templates, *fig. 15*, can be drawn. Then any future blades can be made very much more simply.



Final stage in the construction of propeller assemblies is the hub and noseblock. *Fig. 16*, shows a simple method which has been proved to be light and reliable. The brass bush can be replaced with a length of brass tube, but it must be held in very firmly with Araldite to prevent it being pulled out of the back of the block by the tension of the motor. The advantage of this built up noseblock is that it ensures the bush or tube for the shaft is square in all directions with the back or the block.

The hubs are made from 16 swg wire, the same as the shaft, and are formed to the shape in *fig. 17*. This is the method originally published in April 1960 *Aeromodeller*

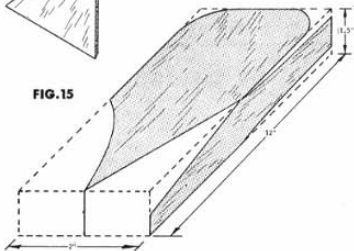
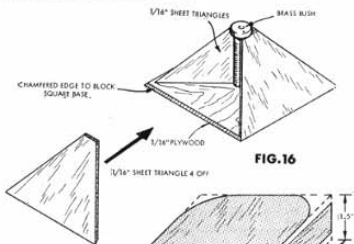


FIG. 14

FIG. 15

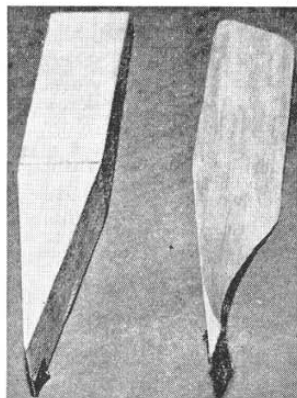
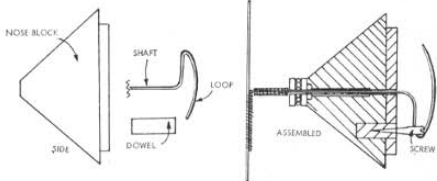
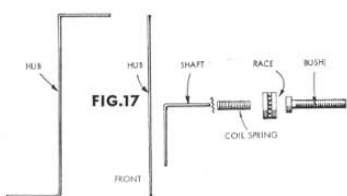
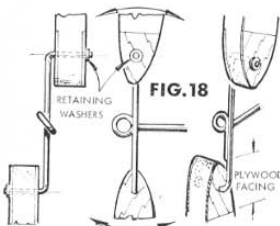
FIG. 16

FIG. 12

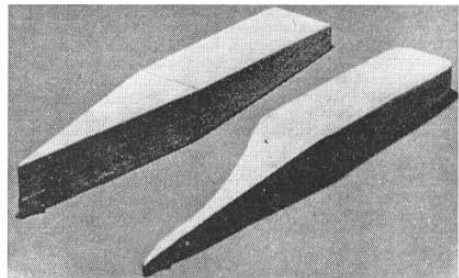
FIG. 13

FIG. 11

THESE SHAPES ARE NOT PERFECTLY ACCURATE, AND ARE ONLY PROVIDED AS A GUIDE TO THE SELECTION OF A FINAL SHAPE.



At left the square cut balsa block blank with the semi-finished blade beside it, note curvature as mentioned in text. Right, an intermediate stage of carving with only the root shaped and the tip still uncarved.



in the feature by Derl Morley, *fig. 18*. Many people make their wire hubs far more complicated than need be. They should be kept as small as possible, so as to be rigid and hold their shape under the load of full turns. No winding loop is shown, as it is considered to be dangerous practice to wind with the propeller fitted, not to mention the strain it places on the soldered joints.

The propeller recommended has been designed with easy folding in mind. Therefore, no special angling is

necessary to achieve perfect folding. The only consideration is the diameter of the hub and this will depend mainly on the size of the fuselage onto which the blades are to fold.

A short length of  $\frac{1}{8}$  in. dia. dowel should be let into the back of the noseblock to a depth of about  $\frac{1}{2}$  in. and glued firmly in place. When dry, a small wood screw can be screwed in to act as an adjustable propeller stop. A length of spring is positioned on the shaft, to tension the propeller against the pull of the motor. When the pull of the motor dies off at the end of the propeller run the spring pulls the shaft forward to engage the screw stop to the loop of the shaft. Thus the hub always stops in the same position and, therefore, the blades always fold in the identical place alongside the fuselage.

## Design or Guess?

Dear Sir,

When, oh, when are the majority of aeromodelers going to realise the full significance of the centre of gravity position? The central gravity has as much bearing on the longitudinal stability (normally just referred to as stability) of the model as do the tailplane area, wing area, fuselage length or wing sweepback and its position must be determined from the basic geometry of these items on the aircraft and the particular type of flight being required.

How often do we hear the words "The centre of gravity was chosen at  $\frac{3}{4}$ " as this was thought about right" or "the model was nose heavy and so tail ballast was added" when people are talking of their designs?

In these days when new designs, both for training and for high performance are being contemplated we must be prepared to put a little mere science into our ideas if we want to get them fairly near correct straight off the drawing board. Surely the days are over when we have to build two or three models to prove a new design. This is not very

difficult, even for a beginner, if he is first able to accept logical reasoning and perhaps cast aside some of the less relevant "rules of thumb" that seem to have grown up in the very early days of modelling. It is not surprising, perhaps, that some of these rules of thumb do not apply to all models as they were involved around models that were all basically similar in design. The low winged free flight seems to be a glaring example of failure to respond to the old rules of thumb with ease. It was thus sadly neglected.

Reading D. Boddington's review of *L'il Roughneck* in April *Aeromodeller* I was interested in his conclusion that the design was bound to be neutrally stable, spirally that is. From the description of the flying I would even conclude that the model was negatively stable. If it tightens up in a turn in either direction when left to its own devices this is most certainly the case. The remedy as suggested in modification (d): To extend the rudder below the fuselage may get one out of trouble but it could equally well make matters worse, even a lot worse. The best thing to do, if building in a little more dihedral is too much work, is to remove—YES REMOVE! some of the

fin leading edge say  $\frac{1}{4}$  in. all along and perhaps  $\frac{1}{2}$  in. off the top as well. The rudder area should be left as it is, and the deflection only increased if control response is low.

From the photographs the wing dihedral seems of low order and apart from anything else this will mean that the rudder is not very good as a turning device unless the model can be flown very fast. This may need a little more downthrust or a slightly reduced wing incidence. The trouble with most, single channel modellers is that they won't appreciate that it is not the rudder on the aircraft that actually does the turning although it is the rudder that controls the turn. It is the uneven lift distribution set up when the aircraft yaws on the model with dihedral that causes first a bank and then a turn. If it doesn't bank on rudder application it will not turn under power or on glide. We must all know that a chuck glider can be made to turn either direction by just a banked launch. Build a single channel model with polyhedral and it will bank and turn easily off very small amounts of rudder.

Sandy. Beds.

C. F. Bashford.

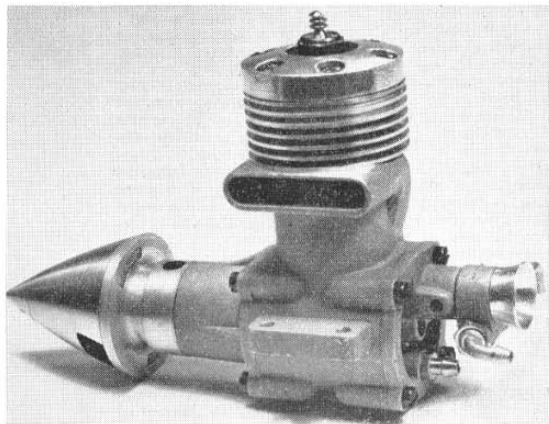
# ENGINE TEST

by Peter Chinn

## K&B 15R

(Series '64)

"outstanding performance . . . equal to the best with any 2.5cc engine tested to date on straight fuel."



IN 1961, the K&B Manufacturing Corporation of Downey, California, departed from a practice they had pursued during 15 years of model engine production and introduced the first Torpedo disc-valve engines, the "Series 61" 15R and 29R models, aimed primarily at the control-line speed and competition free-flight classes. For many years, K&B had enjoyed periods of success in both classes with their plain-bearing shaft-valve engines but, by 1960, it was becoming increasingly obvious that a more complex and specialised type of design would be necessary to re-establish the K&B reputation in these spheres.

The "Series 61" 15R and 29R reverted, so far as basic design was concerned, to the layout most widely considered to be the accepted formula for racing type performance, namely a loop-scavenged, disc-valve engine with twin ball-bearing crankshaft, separate front and backplate assemblies and a lined cylinder integral with the crankcase barrel. To this, designer Bill Wisniewski added his own special features, the result appearing, in its production version, as an extremely powerful, yet docile and pleasant handling engine. It is, however, rare that a new model, in the light of actual field experience in many hands, is not improved by further development and, during the next two years, several modifications were evolved by the factory. These were successfully put into practice for the 1963 U.S. Nationals where Bill Wisniewski flew a 15R, so modified, to first place at 143.94 m.p.h. Models powered by similar engines took second and third places. These modifications were incorporated in the now current version of the 15R, introduced a year later, known as the "Series 64" model and it is with this engine that our present report deals.

### "Series 64" Features

Outwardly, the new 15R has two obvious points of identification to distinguish it from the Series 61. Firstly, the cylinder head is plain and no longer carries the short cooling fins of the original model. Secondly, the crankcase/cylinder casting has been modified to substantially widen the transfer passage.

Internally, there are many more changes. The modified crankcase casting has enabled the interior width of the transfer passage to be increased by 40 per

cent. The inlet port in the cylinder liner is the same width as before, but is no longer masked at the sides by the casting. The liner is much shorter than on the Series 61 engine and the piston skirt ports and matching cylinder ports are omitted. Exhaust and transfer port timing is slightly modified and, with the use of an 11-degree interval between the opening of the exhaust and transfer ports, Bill Wisniewski has shown no inclination to follow the present trend towards an ultra short exhaust lead, or a non-existent one as on the Super-Tigre. Actual port durations, as measured on our test engine in terms of shaft rotation were: exhaust, 136 degrees; transfer, 114 degrees. Timing is disposed symmetrically each side of BDC, there being no cylinder offset.

The piston is now of hardened iron instead of hard-chromed steel and has a slightly larger lapped surface now extending to below the gudgeon-pin, instead of only to the axis of the pin. The piston continues to feature a flat crown with straight baffle filleted at its root and couples to a hot-forged aluminium alloy connecting-rod via a fully-floating gudgeon-pin. Incidentally, the cylinder-head which, as we have said, is now of the plain non-finned type, is also slightly modified internally, retaining the basic hemispherical shape of the Series 61, but with a narrow squish band.

One of the most interesting features of the Series 61 K&B's, since copied by Moki, Rossi and Super-Tigre and continued in the Series 64 models, is the crankshaft design. A description of this has been given in previous articles but, for the benefit of readers unfamiliar with it, will bear repeating.

Unlike the normal type of crankshaft, the Series 61/64 is made in three parts. The main component, machined from high-tensile steel, consists of the actual shaft complete with a full disc or flywheel type web. This latter is  $\frac{1}{4}$  in. thick and has an aluminium rim shrunk onto its periphery. Appearance, therefore, resembles a non-counterbalanced shaft, but, in fact, counterbalancing slots are milled in the periphery of the flywheel each side of the crankpin, which is a separate, hardened component, pressed in. Covering the counterbalancing slots with a rim seals them off from the main crankcase volume, thereby increasing crankcase compression for better charge transfer.

Since a rear-rotary valve is used and the shaft does not have to accommodate a gas passage or weakening valve port, the shaft diameter is quite modest and has two  $\frac{1}{4}$  in. dia. journals with a relieved section between them. It is carried in two ball-bearings in a separate diecast housing attached to the crankcase with four screws. A similar method of attachment secures the backplate assembly. On the outside of the backplate a machined venturi section intake draws fuel via six jet holes from an outer collar containing the needle-valve. The complete carburettor assembly is retained in the backplate by a grub screw and the needle-valve can therefore be located vertically, horizontally, or in any other position convenient to individual installation. From the .250 in. bore carburettor choke, the intake gas enters a smoothly contoured backplate sector and thence through the ultra-lightweight valve rotor which is bronze bushed and runs on a pressed-in pin. Valve timing measured on our test engine was 35 deg. ABDC to 45 deg. ATDC.

The 15R is equipped with a spinner assembly that is part of the engine. The spinner backplate is integral with the drive hub and is secured to the end of



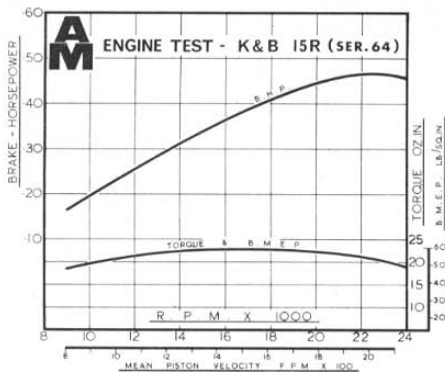
Three-quarter front view of the Torpedo .15R, shows bolt on front housing and peripheral six jet carburettor mounted on backplate. Note the unfinned cylinder head and large transfer passage.

K&B do not at present offer a silencer unit specifically designed for the 15R.

The trend, with modern high performance 2.5 cc. glowplug engines, is towards higher and higher b.h.p. peaking speeds and it is essential, if their full potential is to be realised, to prop them for such speeds. Maximum torque, in fact, is now being developed at speeds (16-18,000 r.p.m.) corresponding to b.h.p. peak speeds a few years ago and below such speeds, performance can be quite disappointing.

Anyone checking the bench r.p.m. of the Series 64 15R on an 8 x 4 prop with straight methanol/castor fuel, might be tempted to assume that it had no more to offer than the Series 61 model or, for that matter, a good 2.5 diesel. In the air, the Series 64 would, of course, pull away, as greater power would be released as the load was taken off the prop, but the true potential of the Series 64 cannot be appreciated until it is allowed to turn at 20,000 r.p.m. or higher. This can be checked by comparing the bench performance

Revised parts of the Series 64 engine include a new crankcase, cylinder liner, piston and cylinder head. Performance is substantially up on that of earlier model.

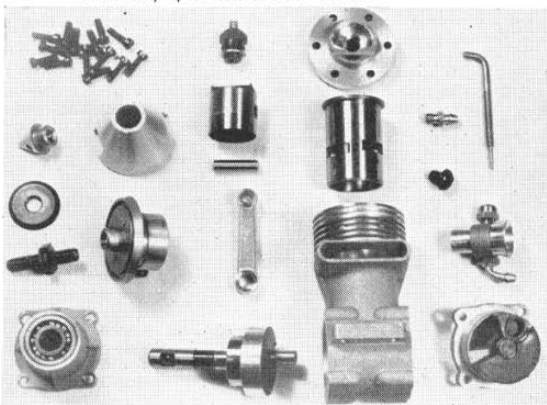


the crankshaft with an Allen grub screw. At the front, the hub is threaded for the prop stud and the projecting end of the stud provides the means of retaining the spinner shell by a conical spinner nut, after the prop has been secured with a steel washer and hexagon nut.

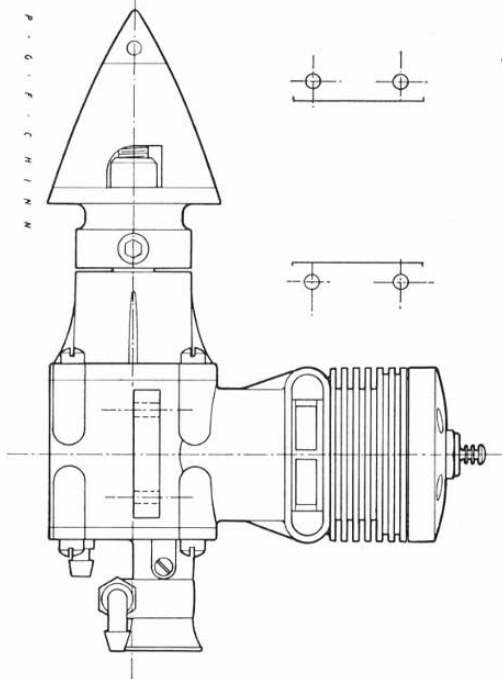
The engine is intended for operation on a pressurised fuel system and is supplied with a backplate nipple to permit tapping crankcase compression to pressurise a sealed tank. Alternatively, a bladder tank may be employed. Recommended glowplug for the 15R is the K&B KB-1S short-reach. Tests indicated that this can be relied upon to give a performance as good as, or better than, any other type of plug in this particular motor.

## Performance

Our torque and power curves show the performance of the Series 64 15R on regulation FAI fuel (straight methyl-alcohol and castor-oil) since this is now required for international free-flight as well as speed competition. No silencer was used as these are not yet required for international events and







of the Series 64 with other engines on 7 x 3 props. Our 15R achieved speeds of between 20,900 and 22,200 on various PAW and Top-Flite wood props. For free-flight, one assumes that the optimum prop sizes would be somewhere around  $7\frac{1}{2}$  x  $3\frac{1}{2}$  (on straight fuel) but this is obviously something that can only be settled by individual experiment.

Under the conditions existing at the time of testing, our 15R indicated a maximum output of 0.47 b.h.p. at just over 22,000 r.p.m. This is an outstanding performance and equal to the best we have achieved with any 2.5 cc. engine tested to date on straight fuel. Tests on nitromethane content fuels indicated that the b.h.p. figure may be raised by at least 20 per cent on 50 per cent nitromethane, where the use of such fuels may be permitted as in normal open free-flight contests.

Starting, we thought, was a little less easy than with the Series 61 model, due to its greater sensitivity to correct starting mixture strength, but in general, handling and running qualities were excellent. Plug life at peak speeds was, surprisingly, better than with the Series 61.

Inevitably, the performance of individual examples of the 15R Series 64 will vary to some extent, but on the basis of tests of our sample and of other racing type glow 2.5's, the K&B appears to have the potential to equal the performance of other highly regarded engines in this very competitive class.

*Power/Weight Ratio* (as tested): 1.47 b.h.p./lb.

*Specific Output* (as tested): 189 b.h.p./litre.

#### SPECIFICATION

**Type:** Single-cylinder, air-cooled, loop-scavenged two-stroke cycle glowplug ignition with ball-bearing crankshaft. Rear disc type rotary-valve induction.

**Bore:** 0.600 in. **Stroke:** 0.537 in.

**Swept Volume:** 0.1518 cu.in. (2.488 c.c.)

**Stroke/Bore Ratio:** 0.895 : 1

**Weight:** 5.1 oz.

#### General Structural Data

Pressure diecast aluminium alloy crankcase/cylinder-block unit with drop in cylinder liner. Pressure diecast aluminium alloy main bearing housing secured with four screws and containing two  $\frac{1}{4}$  x  $\frac{1}{8}$  in. Fafnir ball journal bearings. Counter-balanced crankshaft of "Stressproof" steel with pressed-in hardened tubular, 0.178 in. dia. crankpin. Cast-iron, lapped piston with baffle and annular stiffening rib above gudgeon-pin bosses. Forged Alcoa 2014 aluminium connecting-rod, unbushed, with two lubrication holes at lower end. Hardened, 0.156 in. dia. tubular fully-floating gudgeon-pin with aluminium end pads. Pressure diecast aluminium alloy cylinder head secured with six screws. Valve rotor of special moulded material, bronze bushed and rotating on steel pin pressed into pressure diecast aluminium alloy backplate. Machined aluminium alloy carburettor venturi with separate needle-valve body containing brass fittings and stainless steel needle. Integral pressure diecast aluminium alloy spinner assembly. Provision for high pressure crankcase pressurised fuel supply via screw-in brass nipple in backplate. No gaskets—metal to metal joints throughout. Beam mounting lugs.

#### TEST CONDITIONS

**Running time prior to test:** 2 hours

**Fuel used:** 75 per cent I.C.I. Methanol, 25 per cent Duckhams Racing Castor-oil.

**Glowplugs used:** Maker's KB-1S 1.5 volt platinum filament as supplied.

**Air Temperature:** 70 deg. F.

**Barometer:** 30.10 in. Hg.

**Silencer Type:** Nil (see text).

## Scale Viewpoint

### Suggestion for Judgement of Realism

Sir,

A point of principle concerning the judging of models in scale events which has always interested me is what—for want of a better term I like to call "The Critical Distance?"

The scale modelling is to some extent the gentle art of fakery. The point at issue—and a very relevant one it seems to me—is at what distance should the fakery be convincing?

The old joke "The private cleans his rifle with the naked eye and the officer inspects it with a microscope!" has a certain relevance.

Quite obviously, no model will maintain scale illusion under the very closest inspection or if it did, it would hardly be likely to fly.

As a means of initiating informed discussion I should like to propose through your columns that the following be incorporated in the rules for scale events.

"Scale illusion shall be judged at a standard distance of 18 inches, a sighting-stick of appropriate length being employed for this purpose. Details, notably of undercarriage and cockpit interiors may be of necessity inspected more

closely but shall be marked according to the illusion presented at the standard distance."

The distance I specify of 18 inches is of course only a suggestion and it may be that trial will reveal the necessity to alter it either in or out. The intention is that scale modellers should have a clear idea of just what they are aiming at in competitive events. The announcement in the entry forms of "Scale event—power—C.D. 18 inches" would give the entrant a very exact appreciation of what to put in and what to leave out—the most difficult of all decisions for the scale modeller and the one which leads to the majority of unflyable scale models.

Surgeon Lt.Dr. D. C. J. Wilkinson, R.N. Leydene, Nr. Petersfield.

# GOLDEN WINGS CLUB PAGES



Are you between 10 and 16 years of age? Then don't delay, join today

Dear Sir,

Can you give me some advice on a model to choose from your plans range. I have been flying control line for six months and I want to enter some combat competitions. The model I have picked is *Razor Blade* as it seems to have won lots of contests and it is designed by the Northwood club. Is it too hard for me to build, as I have only built one trainer kit before and will my AM 25 have enough power to fly it like the *Oliver Tigers* do. Also how do I find out where the competitions are and how can I enter them? I have just joined the S.M.A.E. with a friend so I am insured for this type of flying. I am 13 years old and at school. Aylesbury, Bucks.

P. Stewart.

The *Razor Blade* combat model is an easy to build flying wing and you should not have any trouble providing you cut all the parts as drawn on the plan with care. Very robust and aerobatic, this is your best choice from our range and it will not present you with any problems as you have already constructed a trainer and appear to be proficient at control line flying. The AM 25 will be well suited to this model, though it will not be as fast as an *Oliver Tiger* powered *Blade*. You can find out where the contests are being held and the events from *Contest Calendar* published each month at the back of *Aeromodeller*. If you have to enter in advance of the meeting we give the address, if not, you enter on the day.

Dear Sir,

At the World Control Line Championships can I take my *Keil Kraft Phantom Mite* along and fly it outside the event. All my friends and I are looking forward to this event, the models we want

to see flying are the stunter models that fly upside down and loop the loop. Surbiton, Surrey.

A. Neil.  
Unfortunately you cannot fly your models on the aerodrome at Swindon as full size gliding will be in progress most of the time. The arrangements are for spectators to watch the exciting events, see the exhibition, the air display and perhaps take glider joy-rides. Also if you were to fly your model, you may miss one of the best flights, you never know when they are coming up in stunt so you have to watch this event all the time.

Dear Sir,

Please could you explain to me the use of a turbulator on model aircraft, as I have recently built a glider which has one. Midhurst, Sussex.

M. J. Cowan  
A turbulator as used on a glider wing is usually a thread mounted just in front of, and slightly above the leading edge. Sometimes it is attached directly to the upper wing surface just behind the leading edge. As its name implies it is used to turbulate the air, i.e. to break the smooth flow over the wing top surface so that it clings to the wing surface and does not break away so early, thereby improving lift and efficiency.

Dear Sir,

I have now been flying control line models for two years, although I often build gliders and rubber powered aircraft. I got a Ready-to-fly P.T. 19 *Flight Trainer* one year ago, which crashed and its fuselage was smashed, but it was soon replaced. My *Champ* has served me faithfully for two years now and is still going strong. I also have a C/L *Phantom Mite*, a *Phantom* and *Veron Nipper*. Bishop Auckland

Co. Durham.

W. Emmerson.

Dear Sir,

I am having trouble trimming my K.K. *Ladybird* for flight. I launch it over long grass to prevent damage if it crashes. The trouble is that it flies too fast for trimming with the engine running, even when the engine is going very slowly. I thought of putting another propeller on but I can't afford one yet, so what can I do to solve this problem. Colchester, Essex.

K. Longman.

You are power trimming your model in the correct manner and you should not have too much trouble as this model is a fine flier. To slow the flight down under power fit the propeller backwards, this greatly reduces the efficiency of the propeller and will therefore slow down the model, enabling you to make trim adjustments safely.

Dear Sir,

I was pleased to read about the stretching of plastic in 'Scale Comment' (June). I used some, finely drawn out for rigging an SE5a which was fairly successful. I have another method, however, which is by using 'stringing' cement. A minute quantity is placed at the end of a strut and the tube of cement is pulled away onto the next point.

Incidentally a 'Sea Tiger' which was shown on the rear cover of the April edition can be made with the floats off an 'Auster Antarctic' and a 'Tiger Moth', both Airfix 1/72nd scale kits. The Auster is not wasted as skids and wheels are also provided in the kit. Bexington, Cheshire.

J. Lee.

Dear John Bridge,

I am between 10 & 16 years of age and would like to become a member of the "Golden Wings Club". With this application I enclose postal order, (International Money Order) for 2/6d. to cover cost of the badge, transfers and membership card.

NAME IN FULL .....

ADDRESS .....

YEAR OF BIRTH.....SCHOOL .....

NAME OF ANY OTHER CLUB OR CLUBS TO WHICH I BELONG (if any) .....

SEND TO:- GOLDEN WINGS CLUB, AEROMODELLER, 13-35, BRIDGE STREET, HEMEL HEMSTEAD, HERTS.

## How to Join...

To join, fill in the handy membership coupon and send with a postal order/money, order or cheque to the value of 2/6d. made payable to "Aero Modeller". Post to Golden Wings Club, Aero-Modeller, 13-35 Bridge Street, Hemel Hempstead, Herts. Each member will receive his own badge—depicting "Golden Wings", a membership card, and two transfers to decorate his model or model box, and will make him a member of the largest modelling club of all time. John Bridge

Dear Sir,

Each month I read the *Golden Wings Club* page and find it very interesting. I have learned a lot from the answers you give to Wings Club members letters. The question I would like to ask is rather a little point, but I thought your answer might help other readers as well as myself if it gets into print. Flying my own design control line model last month, with a Merco .35 in it, I have been having trouble with the wheels each time I land it. Nearly every time the tyres come off the wheel hubs and the model noses over, now they are slippery with fuel they come off even

more easily, how can I prevent this. They are the sort of wheel with solid metal hubs and solid rubber tyres.  
Runcorn, Cheshire.

T. Talbot.

This problem can be overcome by the following method. Clean the rubber tyres and metal hubs free of oil by washing in ether, then roughen the hub and tyre with an old modelling knife blade. Drill three small holes around the hub, spacing them at equal distances and also three holes in the rubber tyre to match them. Now Araldite the tyre onto the hub and also bind it with strong thread through the holes, (three separate bindings). Smear some

Araldite over the bindings and you should have a very permanent tyre-to-hub joint.

Dear Sir,

I have been modelling for about two years and have just recently acquired an Enya .18, 3.2 cc. and am busily engaged in building the *Peacemaker* advertised in the plans handbook. I like reading a model magazine mostly because of what I read about fellow Wingmen and I would like to see more space in the book used to publish articles written by them.  
Cheltenham, Glos.

J. Roberts.

## Your Full Size Free Plan—HORIZON

A 26½ inch wingspan free flight power model for .010 cu in. engines designed for you by—

R. Malmström.

THERE have been many attempts to build a cheap, safe aeroplane for the thousands of would-be fliers who, bubbling with enthusiasm, lack the resources of a millionaire—or a Pools winner! For many reasons these attempts have failed.

This month's full-size plan for "Horizon" is the author's idea, in model form, of course, of such a "Mini" of the air. Bearing in mind fibre-glass, plastics etc., full-scale designers might like to look it over. However, even if you do not want to get airborne in a full-size aeroplane, you will certainly want to build and fly "Horizon". Quick to build, simple to fly—dare we say this model could open up new "horizons" for you! (The Editor will never forgive that one!)

Now, main points in construction. Cut two identical fuselage sides, join together with Formers 4, 5, 6, first. Bend undercarriage wire, bind and cement to ply F3, and assemble into fuselage. Drill the holes for the .010 engine bolts in ply F1 before assembly. Check downthrust angle. Cover fuselage top and bottom with ⅜ in. sheet. Cut engine access opening at front and fin slot in top sheet at tail end. Bend tailwheel wire. Fasten to fuselage with linen tape, liberally cemented. Build wing in two separate panels. When joining check for equal dihedral. Sheet in top and bottom of centre section, cut cockpit opening



and add details (pop in a balsa sculpture of yourself for realism?—and fun!). Accurately cement incidence pieces under wing. Cover and finish as plan. Per-lease! avoid warps. Cut fin and tailplane parts from sheet. Give two coats clear dope. Dope one side at a time and pin to board while drying. Assemble completed fin-tailplane unit to fuselage. Add cowling block, after cementing wing in place, and add other details. Trim with colour tissue to taste and fuel-proof.

Before any test gliding carefully balance model. If you do need some nose or tail ballast, the rear of the engine bulkhead or the tailcone afford good hidden places. Choose long grass and a calm day for tests. Obtain a straight glide. The tiny Cox TD .010 really winds up, so you may need to fit the propeller on backwards to cut the thrust a bit for first "power-on" flights. You could use a larger propeller too. I'm told that the .010 with an .049 propeller becomes real docile! You may need to adjust the downthrust and offset angles a little. Try and get a gentle climbing turn to the left on take-off.

If the model stalls (this is unlikely) add downthrust. If it flies gently downwards from launch remove some. If model banks steeply to the left add a little offset (⅜ in. approx.). For final adjustments you can bend the rear of the fin, or the rear edges of the tailplane. But remember coarse adjustment on fin or tailplane can lead to trouble—quickly! Experiment with propellers if you like, and do take time with your trimming, and then, as the old song says:

"Just keep your eyes on,  
The distant Horizon".

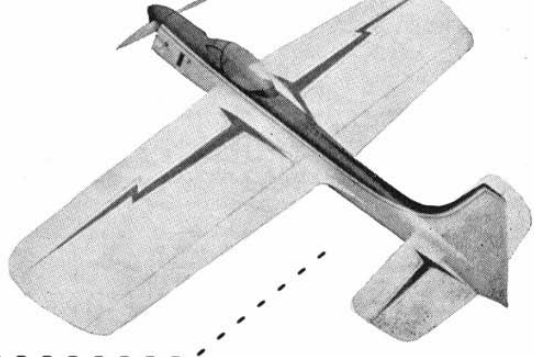
Good luck!



# SPACEBOUND

A 33½ in. wingspan control line stunter for 1.5 cc. engines

By M. Constant



DEVELOPED through three models *Spacebound* has its lines drawn from *Spacebound* the large Russian stunter in "Aeromodeller Plans Service". A prime design consideration was a light wing loading and for this reason its 33½ in. span wing has 200 square inches of area for an all up weight of only 13 ounces with a P.A.W. 1.49 cc engine. To obtain this sort of weight wing ribs must be lightened, and be very careful when selecting the wood, bearing in mind the function of each section of the model that the wood is required for.

Flying performance leaves little to be desired with smoothness a notable feature, though it still performs "squares" and "triangles" with ease. Of course, it has limitations, as being lightly loaded it is best not to fly in anything stronger than a moderate breeze, and secondly it was not designed as a crashproof brick, so make sure the ground does not come up and hit it, or something like that!

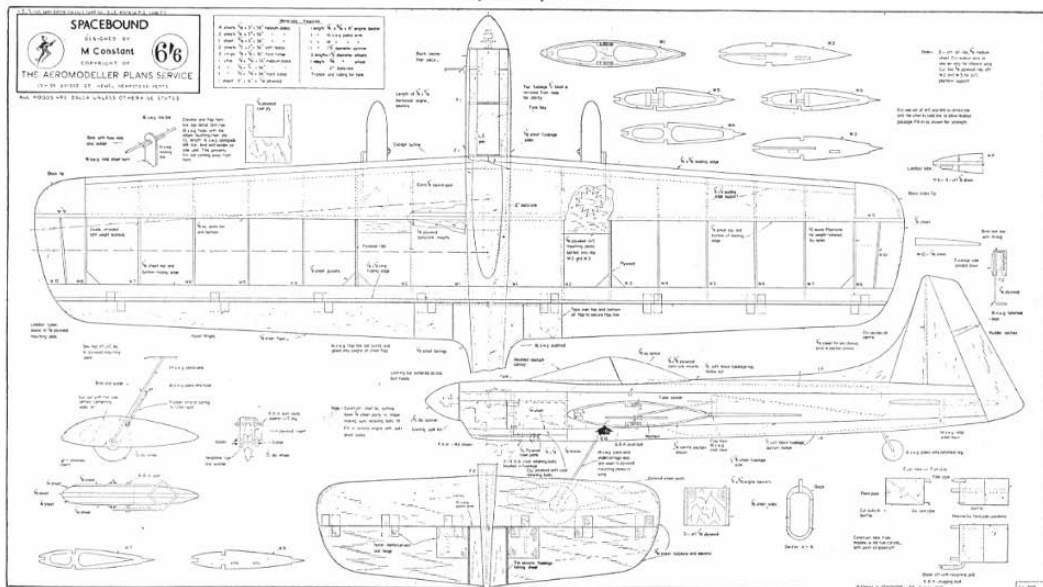
Any 1.5 cc engine should give a sprightly performance and the wheel spats are an optional extra for those who want a sleeker model. Note that the spats can have a detrimental effect on performance if they are bent in a landing and then flown without adjustment. In the air their large side area will cause the model to yaw in or out of the circle according to which way they are bent, this of course gets progressively worse as speed increases.

Commence construction with the fuel tank. Cut from

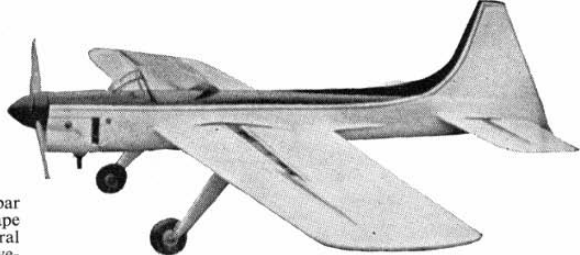
tinplate and solder the pipes as shown. Some engines may require FI to be further back so check this as the tank length may have to be changed. Cut both FI's from 1/16 in. plywood, cut bearers to length, drill engine mounting bolt holes and Araldite tank, formers and bearers together as one unit. Cut all wing ribs, noting the reinforcements on W5 and W6 rib centres to clear the inside (left) wing leadouts. Drill sewing holes in plywood undercarriage mounting plates and cement balsa and plywood W2, W3 ribs on each side of it. Pin the lower ½ in. sq. spar to the plan, crack at centre pack up ½ in. at W8, then cement ribs W1 and W8 in position and add ¼ x ½ in. leading edge support followed by all other ribs and undercarriage mounting plate assembly. Next add upper trailing edge and top spar, remove from building board and insert the secondary spars between W2's, lower trailing edge sheet, leading edge braces at centre and ½ in. tip plates.

Carefully cement ½ in. plywood bellcrank mounts through ribs W1 and along ½ in. sq. spars. Bend wing mounting end of undercarriage leg to shape, sew and cement to plywood mounting plate in wing, leaving the wheel axle ends unbent, so the leading edge sheeting only has to have a neat hole made in it. Install controls, spacing the bellcrank with fuel tubing for correct position. Assemble wing flaps with flap link to which a 16

Full size copies of this 1/6th scale reproduction are available through Aero Modeller Plans Service, Plan CL 906. Price 6/6d. plus 6d. post.







s.w.g. horn is soldered (see sketch for locking bar soldering method), then add flaps to wing with tape hinges making sure the flap horn is aligned at neutral bellcrank position with equal up and down flap movement. Loop and solder leadouts to the bellcrank thread through ribs and tip tubes bound to plywood plate which is in turn cemented to tip plate. Now cement  $\frac{1}{4} \times \frac{3}{8}$  in. leading edge strip in position and  $\frac{1}{4}$  in. trailing edge strip, W9, W10 and block tips. Add centre section, upper and lower leading edge 1/16 in. sheeting.

Now the wing is completed cut the two  $\frac{1}{2}$  in. sheet fuselage sides with cut outs for the wing (allowing an extra slot for the flaps which is filled in afterwards) and tailplane and then slide them over the wing, i.e. over each tip to the position shown. Now insert the engine bearer, tank assembly and cement formers F1 to fuselage sides. Draw rear together, hold with clothes peg and fit F2 with tailwheel.

Sand tailplane parts to section. Solder elevator horn to link bar. Place link bar and horn in the elevators and secure with cement and bandage or tape making sure that the elevators are level with one another then slide through fuselage. Slide tail through fuselage slot then add the nylon or tape hinged elevators to the fixed portion. Solder the carefully measured pushrod from the flap horn to the elevator horn making sure pushrod clears F2. It is most important that the elevators are neutral to the flaps so that each moves in unison through in opposite directions. Cement the tailplane and wing as fixtures.

Next add engine mounting bolts with piano wire locking strips soldered across the screw slots to prevent

them turning. Rough shape the top and bottom fuselage blocks and hollow out the inside for lightness. Cement in place making sure the lower one clears the tail mount and the upper one, the engine bolts. Cement the forward fin sections together then roughly shape prior to cementing to the model.

The cowl section is constructed as follows, cement  $\frac{1}{2}$  in. sheet below tank bay and Araldite 1/32 in. plywood bolt retaining sheet in place with two bolts. Next slot the lower  $\frac{1}{2}$  in. sheet to take 1/16 in. plywood and drill clearance holes for the two 8 B.A. nuts, then cut in two at the separation line. Add  $\frac{1}{2}$  in. side plates and a block above which will be hollowed out to clear engine, needle valve etc. Bend wheel axles solder wheels on, cement fuselage/flap fairings, tailplane fairing and fin in place.

Sand the entire model smooth, add shaped rear end of rudder with some offset to retain line tension and smear some oil on the tape hinges to prevent them stiffening up when the dope is applied. Give the whole structure two coats of sanding sealer, rubbing down between coats. Cover the entire model with lightweight tissue, apply three coats of clear dope to the wings and two on fuselage and tailplane. Final finish was enamel on the prototype, eliminating the need for fuel proofer but do use it if a glow engine is to be installed.

Fly on 40 foot lines using 8 x 4 or 7 x 4 propeller and *Spacebound* should soon get you proficient at aerobatics.

## WHAT TO DO WITH RUBBER MODELS?

Dear Sir,

Being a keen open rubber enthusiast, I am rather disgruntled by the present system of holding contests for these particular models. A contest should decide who has the best high performance, most consistent machine. However, it very often decides merely those who choose the best timekeepers. To reduce the chances of models being blown downwind, out of sight before they land, the potential performance must be cut. (If someone knows how to eliminate the usual contest-day gale, speak now!) The big problem is how to cut performance without (a) Causing lack of interest. (b) Making complicated rules regarding model specifications. (c) Creating inefficient designs. (d) Producing a new order of ham-fisted, "Let's use a bit more wood in it, there's plenty left!"...modellers.

Let's analyse the problems (a)... Caused by (b) (c) and (d). Firstly (b) The Wakefield rules reduce performance, but typical open rubber enthusiasts, by nature don't like to be restricted to specific sizes and weights—don't want to be bothered by them when building, and don't enjoy checking models in at the contests. (c) Cutting rubber down by various means (e.g. One third model weight, 50 grm., percentage of wingspan), does produce inefficient designs. (Explained later.) (d) The open rubber enthusiast is expert at producing immensely strong lightweight structures. A fixed weight rule will cause a loss of this art.

I suppose this statement will produce comment that Wakefield modellers are still hard pushed to build light strong models. Nonsense! If you are left

with only one and half ounce to build a wing and tail after producing a barn door fuselage and a triple ballrace H'yduilgnum propeller assembly—more fool you!

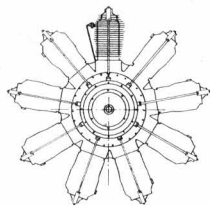
Right! What do we do then? John O'Donnell nearly came up with the answer. His suggestion was ballast in proportion to rubber weight be carried, and at first recommendation, be equal weight to it. Very good. That would definitely cut performance so as to eliminate the invariable mass (hit or miss) fly-offs, and to substantially reduce the number of lost models and the amount of trampled corn. Just think! There may even be a contest won by a total of less than nine minutes !!! (Here I may point out my approval of the three minute max. with restricted models.)

However, judging by the absolute lack of enthusiasm for contests held using the rules suggested by J. O'Donnell there was something in them after all. I thought of problem (c). After a great deal of thought I realised that the percentage of ballast should be not of the amount of rubber weight, but of total weight. (Model with rubber.) This may at first seem absolutely trivial, but I shall attempt to explain it, along with explanation (c).

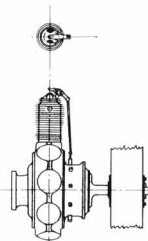
One very great factor in producing a top rubber model is the amount of actual rubber that it can handle. It is relatively easy to make a model with 50/50 rubber/airframe weight perform satisfactorily and consistently. I myself used to think it smart to be able to do five minutes using only 50 grms. of rubber, (in a 1.5/8 oz. model). But, the more rubber a model can carry (up to about twice airframe weight so I've heard), the better it will perform. So here lies the secret of enthusiasm for the grand

"Open" contest. If the modeller is allowed to use as much rubber as he likes, without extra penalties, he's satisfied. But, you may say, if, with O'Donnell's rules he uses more rubber, he gains, admittedly he carries extra weight, but he's got more power. Well, with those rules he pays a weight penalty of 1 to 1 for any extra rubber he adds. It just doesn't seem worth it to me. Nor to John. It seems, as he straightforwardly mentions halving the rubber. Only to convert an existing model you say? No. It's far easier to add lead. Spoil the climb? Sure, so would half the amount of strands. Halve the original motor length? Then the rear end of the fuselage is wasted. Make it shorter then (less drag)? Why make it long in the first place then? Carry disposable ballast equal to half weight of sum of rubber and airframe weights. How would the rules make it any different? Well, any extra rubber added would be at a ratio of 1 to 1. Look at it this way. Modeller A's airframe weighs 2 oz. carried 2 oz. rubber. Under J.O.D.'s rules he must carry another 2 oz. Total... 6 oz. Under my rules he carries the same. Modeller B's airframe weighs 2 oz. carries 4 oz. rubber J.O.D.'s rules he totals 10 oz. Under mine... 9 oz. Don't see it? Try this... "A" decides to make his airframe stronger, he adds 1 oz of wood (Zow!) J.O.D.'s rules... he merely totals an extra 1 oz. (huh!) Can't have that, so we give him my rules and make him pay for it. Result, he weighs an extra 1 1/2 oz. (1/2 oz. more with my rules than with J.O.D.'s.) Hal Hal Gottim. Shouldn't make flying bricks. That means that he's carrying as ballast, another 1/2 oz dead, useless weight! Lincoln.

D. Furbank.



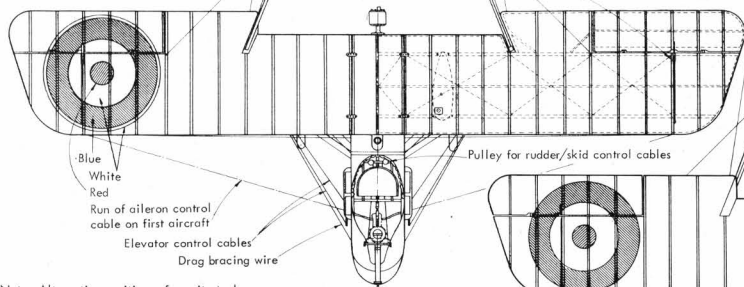
Sketch of engine x 2 1/4  
100 h.p. Gnome Monosoupape  
Note: Some aircraft were fitted  
with 110 h.p. Le Rhone.



Spacer strut between  
lower booms only



Propeller, dark polished wood



Blue  
White  
Red  
Run of aileron control  
cable on first aircraft

Elevator control cables  
Drag bracing wire

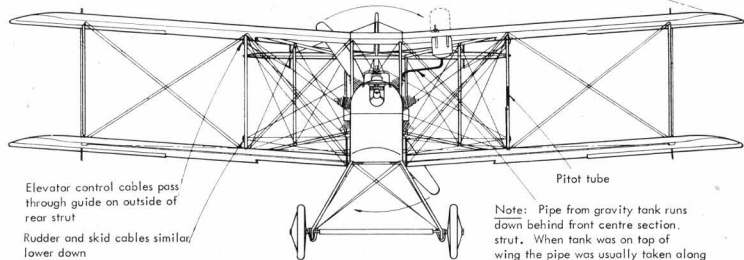
Coil spring on control cable

Pulley for rudder/skid control cables

This area not covered

Note: Alternative positions of gravity tank -  
on top of wing - as shown dotted or under  
centre section on centre-line of aircraft

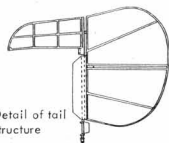
Aileron control cable on most production A/C



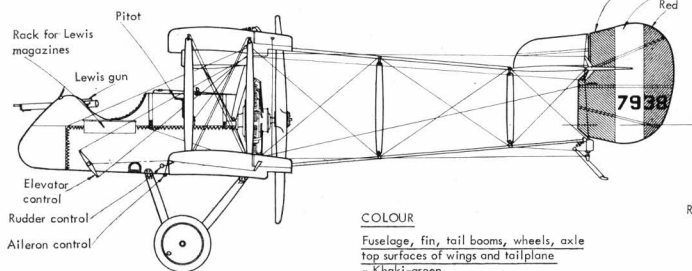
Elevator control cables pass  
through guide on outside of  
rear strut  
Rudder and skid cables similar  
lower down

Pitot tube

Note: Pipe from gravity tank runs  
down behind front centre section.  
strut. When tank was on top of  
wing the pipe was usually taken along  
the underside of the leading edge  
and then down strut.



Detail of tail  
structure



Rock for Lewis  
magazines

Lewis gun

Elevator  
control

Rudder control

Aileron control

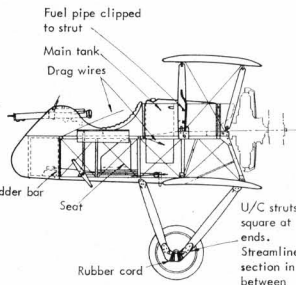
Pitot

Blue  
White  
Red

#### COLOUR

Fuselage, fin, tail booms, wheels, axle  
top surfaces of wings and tailplane  
- Khaki-green.

Under surfaces of wings and tailplane  
- clear doped, light buff  
Struts - polished wood



Fuel pipe clipped  
to strut

Main tank  
Drag wires

Rudder bar

Seat

U/C struts  
square at  
ends.  
Streamlined  
section in  
between

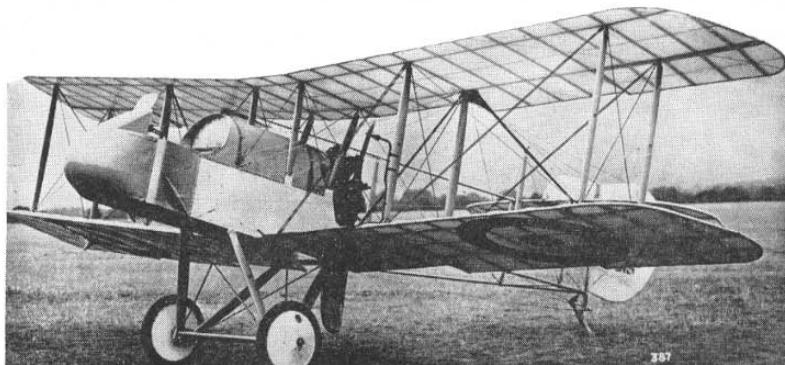
Rubber cord

## AIRCRAFT DESCRIBED

NUMBER 153

# De Havilland D.H.2.

drawn by  
Ian Stair



ONE of the earliest considerations for the aeroplane as a fighting machine was that it should offer the pilot and gun aimer the widest possible field of view. There were in addition serious problems attached to the conventional tractor engine machine as far as guns were concerned, for the very simple reason that the bullet had to pass through the aircrew disc! The result was a series of twin boom pusher designs with the crew foremost in the small nacelle. This produced a light structure of considerable strength and one of the finest examples was the second De Havilland design made by the Aircraft Manufacturing Co.

Initially, the pilot was asked to aim his Lewis gun on an independent mounting but later the conception of a fixed gun platform was adopted, and the D.H.2 was used most effectively. It was first employed by 24 Squadron commanded by Major Lanoe Hawker, V.C. This unit, known as "Hawker's Squadron" became very famous for its aerial battles against numerically superior odds and many combat reports of 1916 record how small formations of three, four or five D.H.2s attacked as many as eleven, seventeen or twenty enemy fighters. The type continued in service through to 1917 by which time it was becoming considerably out-classed.

Most famous of the D.H.2 battles were those recounted by J. M. Bruce in "British Aeroplanes 1914-18".

"On October 28th, 1916, Oswald Boelcke, victor in forty aerial combats, led his flight of six Albatros D.Is to attack two D.H.2s of "C" Flight of No. 24 Squadron; the British machines were flown by Lieutenant A. G. Knight and Second Lieutenant A. E. McKay. Boelcke dived to attack Knight at the same time as one of his pilots, Erwin Bohme, selected the same D.H.2 as his objective. Bohme's undercarriage struck Boelcke's upper wing, and the

German leader dropped away with his Albatros apparently under control; but the wings later broke away and Boelcke went down to his death.

"One of the German pilots of Boelcke's flight on that day was Manfred von Richthofen, who succeeded to the command of Jagdstaffel 2, and who, in less than a month, was to avenge his former leader's death by depriving No. 24 Squadron of their Commanding Officer. On November 23rd, 1916, the D.H.2 of Major Lanoe George Hawker fell to Richthofen's guns after one of the longest individual air combats of the war.

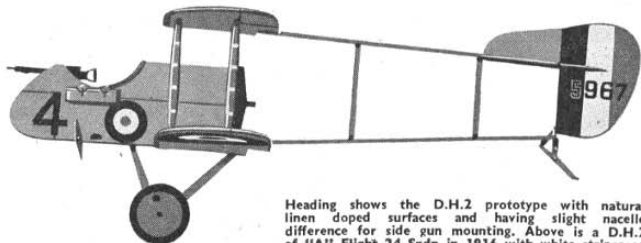
"Shortly before Hawker's death one who was to prove a worthy successor began his fighting career flying the D.H.2. This was Flight Sergeant (later Major) J. T. B. McCudden, who was a member of No. 24 Squadron. From a combat on 9th November, 1916, he brought his D.H.2 back with twenty-four bullet-holes in it—a greater number of hits than he sustained in any of his subsequent fights".

At one time it was known as the "Spinning Incinerator" as the result of several inexplicable crashes which were really due to sensitive controls and one case resulted in the engine catching fire during the spin to coin the unfortunate nick name. A greater hazard was the vulnerability of tail booms to breakage when hit by any detached part of the rotary engine. The early engines were subject to losing cylinders.

Generally considered to be a most effective fighter, it eventually saw trainer service through to the last days of the War and many of the famous fighter pilots have cause to remember the D.H.2 with fond affection.

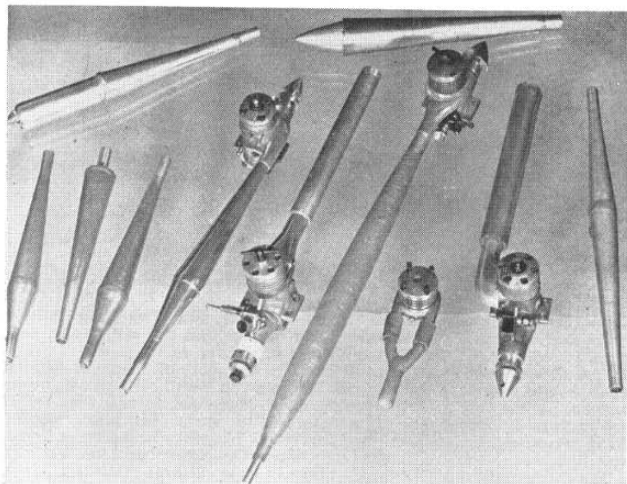
Dimensions: Span: 28 ft. 3 in. Length: 25 ft. 2½ in. Height: 9 ft. 6½ in. Chord: 4 ft. 9 in. Gap: 4 ft. 9 in. Stagger: nil. Dihedral: 4 deg. Incidence: 3 deg. Span of tail: 10 ft. 3 in. Wheel track: 5 ft. 9½ in. Airscrew diameter: Gnome 8 ft. ½ in., Le Rhone 8 ft. 2½ in.

Reprints of this feature plus 1/36th scale dye-line prints of the original are available as plan pack FJ 2833 price 2s. 6d. from AEROMODELLER PLANS SERVICE, 13/35 Bridge Street, Hemel Hempstead, Herts.



Those who wish to model the D.H.2 will find a Revell 1/72nd Kit at 2/6 and a Merit 1/48th scale kit at 5/-.

Heading shows the D.H.2 prototype with natural laminar flow surfaces and having slight nacelle difference for side gun mounting. Above is a D.H.2 of "A" Flight 24 Sqn in 1916 with white stripes on red struts, red numeral and wheel discs.



## Silencers and Noise

Part three of a series on advanced design silencers and tuned length exhaust pipes by: K. Lindsey, D. Balch and M. Larcombe.

Some of the experimental silencers built by the authors—from left to right: KL1 oddity, KL1, KL2 on G20, KL3 on MVVS, MLI on Eta .15 alternative manifold setup used with MLI (see text), another modified KL3 on G15 oddity. In the back row KL2 with diffuser (no good), conical type double wall KL3.

THE idea of scavenging the exhaust gases by means of a wing or venturi to increase B.H.P. can be taken one stage further by means of a tuned-length exhaust pipe. This can extract the exhaust gases and offers a cycle of action which enables the engine to re-ingest quite a lot of fresh fuel/air mixture drawn into the silencer manifold. This fresh mixture returns back into the cylinder via the exhaust port before the exhaust closes.

Very simply, the tuned-length exhaust (or "stovepipe") works thus: the hot exhaust gases rushing out of the cylinder into the "stovepipe" causes a high pressure pulse to run down the pipe. When a high pressure pulse meets an increase in area or expansion, it reflects back a low pressure pulse towards the engine exhaust, and also

carries on itself down the pipe. We can stretch this low-pressure pulse by having a steady, long expansion; in other words, a divergent cone. This low pressure alongside the exhaust, extracts the exhaust gases and some of the fresh charge. We make use of the original high-pressure pulse which is still rushing down the "stovepipe", by putting on a short contraction in the form of another cone. This contraction causes the high-pressure pulse to be reflected back down the tube pushing the fresh charge in the manifold into the cylinder. All this has to happen in the very short time the exhaust port is open.

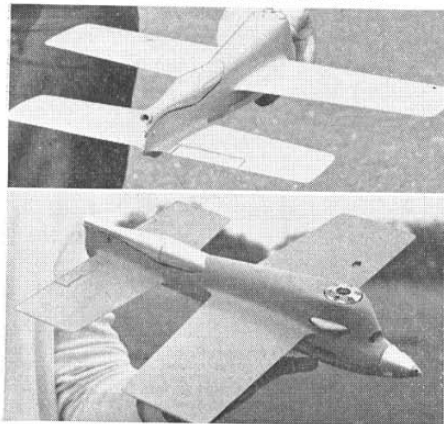
Remembering that the positive pressure wave is going to lose some of its strength doing all this, we have to conserve it by not letting too much escape through the final exit. So we have a small tailpipe. Bill Wisniewski uses a pipe only about  $\frac{1}{4}$  in. bore and 2 in. long on a 2.5 c.c., and the motor cycle designers go even further with  $\frac{1}{4}$  in. holes on 50 c.c. works machines giving 12 or so B.H.P. Certainly "stovepipes" work best with these tiny tailpipe diameters, but become very critical on needle setting, plug type and compression ratio.

The smaller the tailpipe, the quieter the motor will be, as less of the high-pressure pulse (the real offender, noise-wise) will go straight out of the back, instead of being reflected. So most of the exhaust gases come out in the 230 degs. of the 360 degs. of rotation that the exhaust port is closed. During this "quiet" period the pressure pulses get so mixed up by multiple reflection from expansions and contractions and by meeting each other, that the gases come out of the back pretty well at a steady pressure and since noise is caused by sudden changes in pressure, or pressure pulses this means that the device makes an effective silencer. Figures quoted in Part 1 do show that "stovepipes" can be quieter than most present commercial silencers. The noisiest observation position is alongside the "stovepipe", this can be drastically reduced by making the unit of thicker material.

In order to calculate the length of the pipe we must know, (a) the time the exhaust port is open (about 135 degs. of crankshaft rotation), and the operating r.p.m. (b) the speed of the pressure waves (in other words, the velocity of sound in the exhaust gases).

The speed of these pressure waves can be quite different in various exhaust gases but we have found that it is safe

Kevin Lindsey Stuppi models with KL2 tuned length pipe. Top picture shows MVVS 2.5 RL powered version that has recorded 131 mph at Hayes on FAI fuel. Below: the Super Tigre G15 version, note magnesium manifold protruding through cowling, by G. Copeman recorded 127.1 m.p.h. at trials.





to assume it is 1,500 ft./sec. If you also assume the exhaust is open for 135 degs., the total distance from the exhaust port to the back of the rear cone, in inches, is  $\frac{200,000}{r.p.m.} = L$ , as at 20,000 r.p.m. the length is 10 in.

The inside diameter of the front pipe should be such that its cross-sectional area is the same as that of the exhaust holes cut in the liner, e.g. with ETA 15 and Super Tigre 15 it is about 5/16 in. dia.

There are two practical assumptions in general use:— (a) that an expansion ratio of more than 10 times is not worthwhile (this is from aerodynamic sources and means that on this basis the maximum inside diameter of the cone should be 1 in. for ETA 15, S.T.15), (b) the total volume of the "stovepipe" should be 12-15 times the cylinder capacity (from the motor-cyclists).

The second suggestion does not seem to be a very hard and fast rule, as Mike Larcombe's latest experimental ETA 15 "stovepipes" have much greater total volumes than this and perform reasonably well. KL2 total volume is about 14 times the cylinder capacity. (See Part 1—June issue).

KL3 type hybrid tuned exhausts (sketched in Part 1) are, to some extent, lucky. We built all sorts of devices before deciding we knew enough to actually design a "stovepipe" and this was one of the original designs. But it turns out that we can now apply some of our present theory to explain why KL-ML-3 works quite well. The perforated section tends to act as a conservative expansion system and the solid flank at the end acts as a positive pressure-wave reflector, so we have a crude "stovepipe". The "stovepipe" is effectively "lagged" so that the "panting" does not get transmitted as noise, and the exhaust gases get very diffused going through 6 in. of steel wool on the 2.5-3.5 size and 10 in. on the 7-10 c.c. size, so the device is very quiet. And since it can be made from two lengths of ordinary aluminium or aluminium alloy tubing it is an easier proposition for an aeromodeler with limited workshop facilities.

The inside of the manifold connecting the motor to the "stovepipe" should be smooth and the inside cross-sectional area kept as near constant as practicable. The distance from the motor exhaust to the "stovepipe" should be as short as possible.

### Dutch Developments

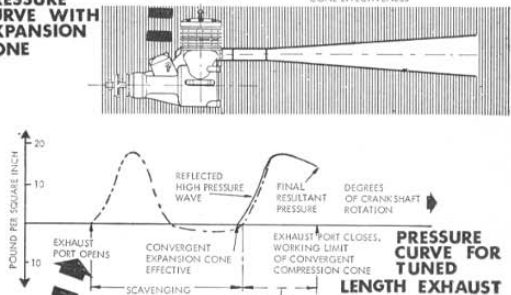
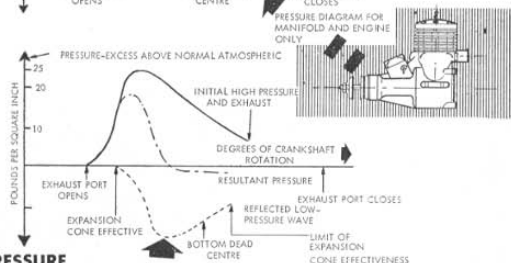
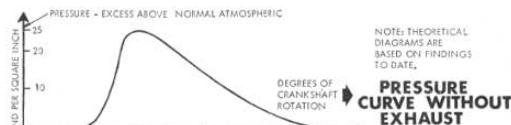
Developments with tuned length silencers in the Netherlands, where the silencer is also obligatory have led to some interesting results, especially those obtained by record holder Winfried Holle of Enschede.

First and most important, his unit does not need special machining facilities! The tuned system for a G 15 powered F.A.I. speed model has a glass-fibre moulded expansion chamber and a thin steel plate built-up exhaust

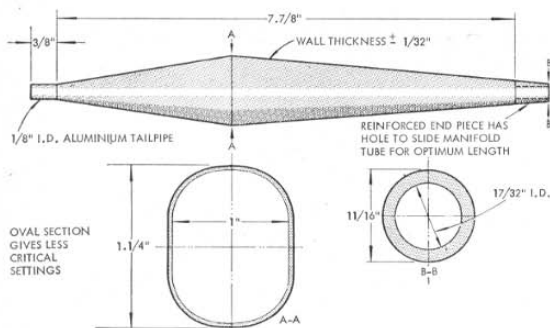
Brian Jackson's FAI speed model with Lindsey tuned length pipe on Super Tigre G15. Model is a Lauderdale design.



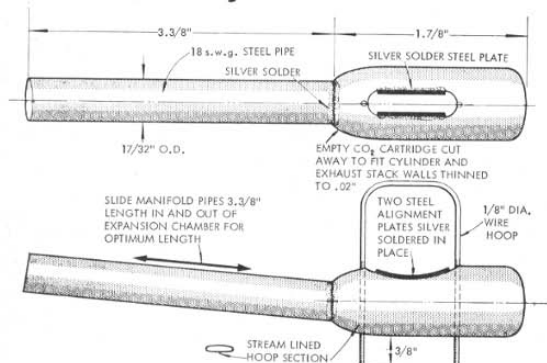
Ivor Roffey with latest Carter Dooling .61 speed model for Mono line control. Not flown at the Nats., this gives a relation of silencer/model size.



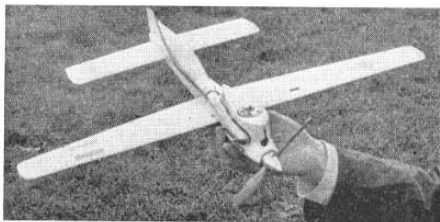
K.L.2. PROPORTIONS - S.T. 15. AND PRESSURE CHANGE POSITIONS



## Holle System Details.



duct can be silver soldered together. The exhaust is attached to the engine with a draw bolt around the crankcase. Much of the heat is released to the air via the thin steel duct. As a result of this the glass-fibre expansion



Winfried Holle's simple to make tuned length pipe fitted to his Super Tigre G15 model, gives static gain of 600 rpm, and is moulded from glass fibre.

chamber stays very cool, even during static running. The complete tuned exhaust can be made in a short time without special tools, length (measured from the middle of the motor exhaust port to the extreme rear) is 12 in., tuned for 24,000 r.p.m. The static r.p.m. gain is about 600, r.p.m. noise is considerably "softened" internal diameter of the outlet pipe is 9/64 in., weight of unit complete (with straps, etc.) is about 2 ounces, frontal area is almost the same as without a silencer!

The only problem arising lies in finding the right needle setting. One can no longer depend on the ear and has to find the best setting by test flights.

The engine exhaust duct is rounded to fit the speed cowl, after that, the 'dent' in the CO<sub>2</sub> cartridge must be shaped so that there will be a metal fit between the cartridge and the engine exhaust. This is difficult but it must be done correctly otherwise the gas leakage will prevent the system from working properly. Any oil leakage will indicate a gap. The Glass-Fibre moulded duct is made around a balsa mould with two very thin cloth layers. After hardening, saw through the mould over its length and gently extract the two balsa cores. Then re-assemble the two shells with one layer of thin glass cloth strip.

In order to test static tuning for best r.p.m., let us first assume that you will run the engine at 24,000 r.p.m. in the air. Now fit a prop that will let the engine wind up to  $\pm 23,500$  r.p.m. without the exhaust, then fit the exhaust until you have found the length with the best r.p.m. gain. Finally cut off the excess pipe length which is in the moulded expansion chamber.

## SQUEEZE FUEL BOTTLES

### A word of warning for the unwary

Dear Sir,

Could I through your columns relate an unfortunate accident I have just had in the hope that it may prevent anyone else doing the same.

I bought a bottle of Nitro-Methane glo-fuel and the sequence went like this: I took off the screw cap and the polythene stopper which appears to be perforated to allow the fuel out. It is in fact a solid stopper. Anyway I was foolish enough to squeeze the bottle to see; with the result that the stopper popped out and covered my face with glo-fuel and incidentally filling both eyes and putting me in hospital. You can take my word for it that it is extremely painful and I thought for a time that I had blinded myself permanently.

Stupid you may say; but ever so easily done, if this warning prevents anyone else from making the same mistake it was worth writing.

Macclesfield, Cheshire. Gerald Rowley.

We asked Dr. M. F. Hawkins for his comments on this and he writes:—

The correct First Aid action for any fluid splashed into the eye is worth remembering.

- (1) Immediately irrigate the eye with large quantities of tepid water, even for oily fluids.
- (2) Cover the eye with a pad.
- (3) Go and see the Doctor or Hospital Casualty Dept. Luckily most of the chemicals used in dopes and fuels are irritants rather than poisons, and while they might give a very sore eye, are unlikely to do permanent damage.

Modellers should also be careful of using these substances in an unventilated place, as with a high concentration of vapour there is:—

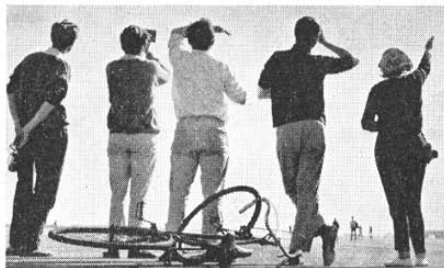
- (a) a high fire risk—and a spark of static from a nylon shirt would be enough to cause an explosion,

- (b) poisonous effects. Amyl nitrate is particularly dangerous and one breath of concentrated vapour could cause loss of consciousness.

I would advise:—

- (i) When mixing fuels always do it in the open air or at least in the garage with the doors open.
- (ii) When doping a model in a small workshop, always have a window open.

Mr. Rowley was sufficiently concerned about his accident to write again emphasising the risks involved. We visited a Model Shop and checked a batch of bottles. The first four caps unscrewed easily exposing an open neck. The next exposed a clear plastic stopper with an indented stem which Mr. Rowley (and ourselves) mistook for a tube. When the bottle was squeezed the stopper popped out with force and fuel splattered everywhere in a dangerous manner. Obviously the clear stopper which is tapered, should remain attached to the screw cap and is there only to seal the bottle instead of the old style cork washer—Be warned!



Away in the wide blue yonder . . . are 21 A/2 gliders, among them columnist John O'Donnell's model. This unusual Nats view by G. Gosling shows John in centre and June O'Donnell (right) sweating out what was to become a most controversial fly-off—see text!

## Raised Eyebrows

There will be many raised eyebrows when and if the results of the Weston Cup (held at the area-centralised meeting on 15th May) get into print. As reported last month this was the first real flyout for most Wakefield enthusiasts of the 40 gram rubber restriction—and it is now known that some people coped very well indeed. John West proved he could fly other events than power by recording a perfect 15:00 score and a disappointing 1:28 flyoff.

This, however, was rather eclipsed by Roy Wotton flying at Chobham who went on to clear the 4, 5 and 6 minute flyoff flights before dropping to a 2 minute odd flight. Chobham for all its drawbacks is ideal for thermal flying and Roy certainly made no mistake that day. (See *Club News*)

Roy's model had an all sheet circular fuselage, low pylon, constant chord wings of Benedek 6405 section with anti-vortex tips, fuse D.T., and very strong construction. 14 strands of Pirelli turning a 22 in. dia. by 21 in. pitch, 2 blade out-rigger folding propeller gave a 30 second motor run.

I can only hope that those reading the scores will recognise them for what they are—a fine demonstration of consistent thermal detection and utilisation. In these circumstances duration bears no relationship to the model's still-air capabilities. This was well demonstrated at Kauhava—but a rubber reduction still followed. I can see that we are not yet "at the end of the line" especially if future World Champs. are held in thermal conditions.

Certainly any more curtailment of the Wakefield rubber allowance will leave it merely a larger edition of Coupe d'Hiver. After which the next move is only too liable to be the elimination of one class!

## Unrestricted Comments

From Wakefield rules it is only a short step to the problem of what to do with unrestricted rubber. There is no doubt that some people like to build lightweight structures, but the resultant performance is far too high for the current three minute max. Consequently in good conditions a high percentage of the open rubber enter reach the flyoff, and the event becomes a one-flight affair.

Dave Firbank has plenty to say on this subject in 'Readers' Letters' and perhaps a few comments on his ideas would not be out of place here. I am very pleased that my suggestions of carrying detachable ballast have been remembered. Either Dave's recommendation (ballast equal to half model plus rubber) or mine (ballast equal to rubber) would certainly cut performance effectively enough and to about half what is currently attained. Which is the better scheme depends on many considerations. Dave's is better from the processing angle as it is merely a matter of weighing a complete model (as distinct from separate motors) against ballast. On the other hand a model's weight is not constant and increases as it gets older, repaired or wet. This is liable to mean increasing ballast as well and perhaps upsetting the trim.

I could "run a slide-rule" over the theoretical implications in model performance between Dave's and my ideas, but it is probably enough to say that Dave's idea favours a model with light structure and plenty of rubber (with my ideas giving the reverse) with a changeover point when structure and rubber weights are equal.

# John O'Donnell on Free Flight

What, however, is more important is whether other rubber fliers are interested or willing to give the ideas thought and perhaps another tryout. The N.W. area did run an annual event for three years to my rules, but with practically no response from competitors. The timing of the experiment may have been wrong, but it certainly suffered from inadequate publicity and from coinciding with other contests. I would far rather see it tried again than ignore the problem and hence have rubber contests slowly drift towards an all-Wakefield situation.

## Flyoff Problem

The flyoff problem is obviously in the news at the moment especially after the glider event at this year's Nationals. The actual contest report has covered what happened—but not the implications and possible solutions. As tactical flying is apparently here to stay so is the flyoff problem. The 100 metre square launching area is worse than useless and there are rumours that it might be scrapped. There would seem no point in delaying this decision.

The actual flyoff is not so easy. Unrestricted flyoffs have made some recent events nothing but a timekeeper contest. The most obvious alternative is the F.A.I. progressive max, but this too has its drawbacks. The time it takes can upset the organisers even more than the competitors. (I can remember the fuss about postponing the prizegiving dinner at Kauhava.)

If conditions remain thermally (as can easily happen in summer with an early contest finish) for the flyoff then a row of progressive maxs. can be recorded—until either the lift gives out or the timekeeper's vision again becomes critical. This is certainly what would have happened if a progressive max had been used at this year's Nationals.

The visibility trouble can be avoided by using a fixed (non-progressive) max. This could be satisfactory for F.A.I. but for open rubber would simply be an endurance test. I once flew to this scheme at a P.A.A. Festival at Abbotsinch and had to put in eleven maxs. between two events! The 1960 World Power Championship is an even better example (17 rounds). More contest flights have been suggested but suffer from the same drawback.

The Americans have recently gone over to the progressive max. for their domestic events. Starting with three flies, fliers have already reached and cleared the 10 minute max. They appear to start flying off as soon as they complete the treble, but even so it has taken all day.

The only way to make a single flyoff reflect model performance is to hold it under relatively still conditions. This would appear to mean late evening or early morning. This could be managed at some events, particularly two day events like the Nationals—but is a bit impractical for one-day Galas. It would appear worth a tryout at some suitable event—organisation difficulties notwithstanding.

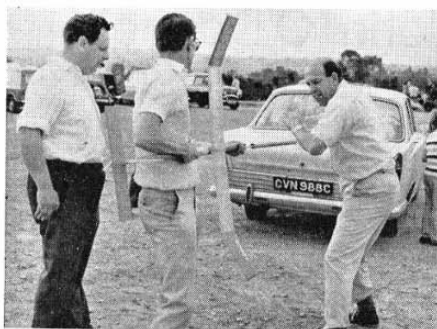
If anyone can think of any real solution to flyoffs—without model specifications killing performance altogether—I will be delighted to publicise it.

## Croydon Gala

The only contest, apart from the Nationals, requiring report this month was the Croydon Gala held at Chobham on 12th June. Weather was breezy, with bright periods and clouds alternating. There was plenty of lift and all classes needed flyoffs.

Roy Wotton qualified for the rubber flyoff with a Wakefield using his first three flights in the East Anglian decentralised F.A.I. event. As he went on to a 14½ minute total his thermal detection is certainly on form.

Despite all I have already written, only the rubber event proved other than clearcut. In the power flyoff John West certainly outclimbed Mike Brown although glide performance was similar. Glider was held in a cold spell and only Elton Drew found reasonable air—to record almost double my second place score. Rubber had neither pronounced up or down, although Dave Hipperson's winning flight was seen to D.T. Following scores (myself and Ray Paveley) were very close.



### HAYES MEMBER FLIES OFF

On Sunday the 15th of May, the Weston Cup was flown for at various area venues. The London lads turned out at Chobham Common on a very hot still day, the wind only becoming light towards midday. Roy Wotton of the Hayes club topped the area with 5 x 3 min. max's, flying a new Wakefield of outstanding performance. It has a Benedek wing section, and a wrapped Balsa front and rear fuselage tube(s) 14 stands of the best Pirelli, giving a motor run of approx 30 sec (Aided by a athletic javelin type throw) which is followed by a superb glide. The day was one of alternating lift and sink, and it was very difficult to detect the desired variety. The model is capable of the full 3 mins without lift, so the object was to fly at times without the "sink". Roy managed his "full house" of max's, losing the model on the last flight over woods some 1 mile beyond the edges of the common in very rough country. One of the Hayes club happened to be "spotting" and a later compass check used with a 2 in. scale ordnance map found the model after only 5 mins search, right on line! The fly off time came in the evening, and he flew increasing mass starting at 4 mins, then 5/6/7 etc. By this time all the Hayes club had rallied round, with spotters, retrievers, helpers etc. Upwind various people were flying gliders, and the Hayes group attempted to get down wind far enough to do a very quick wind, should a model coming over, be in lift. The whole operation went like clockwork, the model doing its duty in faultless style, always climbing to a good height, and due to the difficulty of accurately timing a fuse D/T, many of the flights were well over the required maximum 4-7 mins etc. At about 8.30 in the evening it cooled off considerably, and any way, they had long since run out of downwind space within the common, and the model eventually failed to make the 7 min. maximum. It is estimated that the model consumed ten or twelve, 40 gramm motors in the process. Since then the model has had another outing, for the East Anglian Area postal comp. on June 12th, doing 4 maxes and a 2.29 in rough air, thus showing that high times are still possible with the reduced rubber weight.

### LIFE MEMBERSHIP

Sheffield M.A.C. announce that after 15 years of faithful service to the club, Ray and Freda Thirt declined further office. The club are expressing their thanks for this by extending their life memberships. Anyone in the Midlands or Sheffield area who wants to take up speed flying, should contact Gordon Farnsworth, 28 Balaclava Road, Sheffield.

## CLUB and CONTEST NEWS

Wakefield team member of last year, Alan Arnes watches fellow Clubmen Laurie Barr and Roy Wotton preparing for latter's long sequence of Max. flights on 40 gms with Wakefield model. (See below)

### Sutton Coldfield R/C A.C.

The present membership of the club is 33, most of these being multi fliers, with a swing to proportional going on at the moment. At present they have three 'Orbit' analog systems, one 'Bonner' digital and two 'Citizen Ship' the rest of the club keeping to reeds for the time being. Having given flying displays to the R.A.F. and U.S.A.F. they intend to give some charity displays for local hospitals during July, in response to a local press offer they made to support any worthwhile cause in the Sutton area. After discussion the club have decided not to hold a rally this year as they don't seem to serve their full purpose in interesting the public, therefore it has been decided to substitute this event with a demonstration day to include a pylon race and balloon bursting competition. A party of eight members are hoping to compete in the Nationals, radio events of course. Their airfield flying field site has been improved with the removal of obstructing trees and hedges, also the runways are being widened, and they have now offered this site to the S.M.A.E. for radio contests should it be needed.

### IS IT A RECORD?

Tony Slater and Tony Rogers of Leatherhead M.F.C. placed 4th and 2nd respectively at the South of England Glider and Chuck Glider class and hope to have an attempt at the British Indoor Record at R.A.F. Cardington sometime. Tony "the arm" Slater lost a model from Epsom Downs the model flying 12 miles in 10 hours, wonder if this is an unofficial Chuck Glider distance record?

### News from Ireland

Cork M.A.C. have given several public demonstrations and filmed a club session for their members to show them what they really look like. Dublin M.F.C. members have test flown two 10 lb. biplanes recently and one of these, a six foot span *Gipsy Moth* is guided on its way with Dublins very first feedback proportional radio system, by Tom Lampitt who is a little short of experience with radio control. Tom does not find that a life time of experience of full size flying (from Hawker Hunters to Air Lingus Boeings) is of the slightest help to him with models. The club committee have placed the seal of disapproval on all radio *except* Superhet and are keeping a stern eye on the club frequency situation. Belfast M.A.C. report members have travelled 700 miles during the past few weeks to contests and other modelling functions.

### PEN PALS WANTED

Leouides Ugrumov from the U.S.S.R. would like to contact a British aeromodeller. He is 26 and can write in English, he builds from kits and also collects plans, books and photos. His address is U.S.S.R., Zhitomirskaya obl., Ovruchskiy r-n, S. Priluki, yep—that's right! Nigel Goole is 14 and interested in Free Flight, Gliders and Radio Control. He would like a pen pal in America, Australia, or any other English speaking country, write to him at 2 Somerset Road, Langland, Swansea, Glamorgan. John Braidwood is 26 years old and interested in all aspects of aeromodelling, he wants to correspond with fellow modellers, write to 5 Capri Court, King George Road, Avondale, Salisbury, Rhodesia.

### FEARED THROUGHOUT THE ORIENT

Number three of "The Message", journal of the N.W. Area S.M.A.E. comes written all over no less than twenty three pages of assorted blue and white paper, included between the front and back covers. There are many plans and news of interest to all modellers. Page 16 relates that they have been awarded British aeromodelling supreme accolade—a mention by "Pylonius" in Aeromodeller. It nearly escaped their notice altogether, except that somebody inadvertently read the article, mistaking it for the Karate advertisement. "Now that his secret has been revealed, perhaps Pylonius will tell us how, after putting out of action within a few minutes 20 hand picked members of the IMPERIAL GUARD he then went on to the equally daunting, but possibly more rewarding task of similarly dealing with 20 hand-picked members of the famed IMPERIAL GEISHAS. Most of all though, I'd like to see one of those 'five armed persons' mentioned in the ad." Message Editor Peter Branigan will now duly be summoned to Hemel Hempstead and notice will be given of the hanging by ye editorial types, but we will make sure it does not clash with any good rallies. Mind you, we could do it on the spot at Woodford if the weather's right!

### SOUTHAMPTON NEWS

Since their last mention in Club and Contest News, Southampton interest in free flight has waned towards glider, so the comp. sec. is trying to stimulate rubber interest with some Coupe d'Hiver contests. Bert Turner has been getting around with his A.P.S. Aiglet which is getting rather old now, winning the Southern Area A/I contest and placing second at the St. Albans Gala. Bill Bessant known in the team race circles as "Mr. Whippy" (lolly stick too?—ed.) was unhappy to see the tatty bits of tin hanging on models to meet the silencing rule at the Nationals and thinks that it must be a waste of time trying to make a *silencer*. The glider fans attending the Nats agreed the mass fly off in glider was spectacular to watch, but chaotic for the fliers. D. Whitelock finished up with a birds nest of a line but was highly delighted with the 6:35 O.O.S., the timers gave him. Radio flying is still more on the ground than in the air and interference is a problem and it will be quite a while before they produce a good competitive flyer from the fold.

### MODEL FOUND

Found in a meadow on the Kent/Sussex border, one diesel powered free flight model in mint condition. Will owner please describe. Contact: R. W. Stevens, 38 Beverley Road, Whyteleafe, Surrey.





Pressurised team race filling system by Sid Peart (Novocastria) was seen in action at R.A.F. Tern Hill. An empty (discharged) Aerosol can is pumped up to 45 p.s.i. with fuel in it, via a car foot pump. The filling and pressure valves are off a car tyre and the joints hooked to prevent them blowing off. Note the finger tip filling socket that allows fuel to pass into the tank whilst the model is being held at a pit stop. Note: novices should not attempt to open an Aerosol can.

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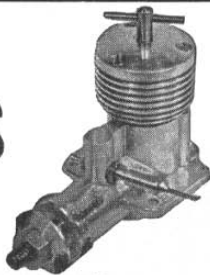
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## Events This Month

- July 17** East Midland Speed and Combat Open Meeting, R.A.F. Barkston Heath. All classes of speed, open prize for percentage of record flights. Combat trophy to be held for one year. S.M.A.E. Insurance required.
- July 17** Devon Free Flight Championships. Woodbury Common, R/G/P. Only open to competitors normally resident in Devon.
- July 17** S.M.A.E. Scale Meeting, R.A.F. Swindley. "Ripmax" Single Channel R/C. "Supercal" F/F and C/L Scale.
- July 24** Ardrossan Rat Race and Combat Contest. Auchenhavrie, Ardrossan, Ayrshire.
- July 24** South Coast Gala, R.A.F. Tangmere, Nr. Chichester, Sussex. F/F, C/L, and R/C. Send S.A.E. for details to:—N. F. Couling, 52 Dover Road, Polegate, Sussex.
- July 31** S.M.A.E. Indoor Meeting, R.A.F. Cardington, Beds.
- July 31** Woodford Rally. Avro Airfield, Woodford, Cheshire. Open R/G/P, combined Tail-less R/G/P, Chuck Glider, F/F Scale, Combined F.A.I. R/G/P, A Combat, F.A.I. & 1A T/R, C/L Scale, R/C Multi Stunt, R/C Goodyear Pylon Race.
- August 7** Glasgow Hornets C/L Rally. College Milton, East Kilbride. Team Race 1A, F.A.I. and R/R.
- August 7** Hayes Free Flight Gala. Chobham Common, Surrey. Open R/G/P, 1A Power, Combined R/G/P tailless to "Lady Shelley" rules, except 30 second run for power models.
- August 7** Uxbridge D.M.A.C. Control Line Rally. Charville Lane, Hayes, Middlesex. S.M.A.E. A Combat, B Rat Race. Pre-entry 3/- to R. Shelve, BA, Station Parade, Denham, Bucks.
- August 14** S.M.A.E. Event. Area venues, Team Power (Keil Trophy), F.A.I. Rubber (Guthrie Trophy), Open Glider.
- August 14** S.M.A.E. Event. Radio Control Multi, Recreation Ground, Leigh Flats, Leigh-on-Sea, Essex.
- August 14** Control Line Scale. College Milton, East Kilbride. Scale and Concours. Pre-entry 10/- G. McCrea, "Siloch" Langrig Road, Newton Mearns, Glasgow.
- August 21** East Anglian Area Open Meeting. R.A.F. Upwood. Open R/G/P, Combined F.A.I., Coupe d'Hiver.
- August 27, 28, 29** World Control Line Championships. R.A.F. Swindley, on A46 between Newark and Lincoln. International-Speed, Team Racing, Aerobatics, and Scale. Model trade exhibition. Admission by programme 5/-.
- August 28** Kirkcaldy R/C Rally. Donibristle, Fife. Single and Multi, pre-entry 10/- A. Morrison, 185, Clair St., Kirkcaldy, Fife.

## Coming Events

- September 25** Northern Heights Gala, R.A.F. Halton. Open R/G/P, F.A.I. Power (Queen Elizabeth Cup) 1A Power, Helicopter, Concours, Combat, A & 1A and radio time nomination spot landing.
- October 26** Imperial Control Line Rally. College Sports ground, Sison, Leam, Harlington, A Combat and B rat race. Pre-entry 3/- to 10/-, Keynes, 11 Parkside Road, Sunningdale, Berks.

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2. S. Perry (Wolves)	Hawker Henley, Nordec	171	148	64	383
3. R. Ivans (Handsworth)	Potez 63, 2 x Enya 60	131	99	136	366
4. H. Carter (C.M.)	Little Toot, Merco 35 140	116	44	300	
5. D. Day (Wolves)	Fokker DVII, Frog 500 72	72	69	147	288
SPEED	m.p.h.	engine			
1. K. Lindsey (Hayes)	131.6	M.V.V.S. 2.5 RL			
2. B. Jackson (North Sheffield)	128.4	Super Tigre G.15			
3. W. Firbank (North Sheffield)	128.4	Super Tigre G.15			
4. G. Copeman (Hayes)	127.1	Super Tigre G.15			
5. R. Gould (RAFMAA)	126.3	Super Tigre G.15			
6. R. Gibbs (Southend)	95.9	Carter Special			

#### STUNT

1. J. Mannall (Lincoln)	1009	1034	1074	2108
2. T. Jolley (Kidderminster)	988	1025	1062	2087
3. H. Dowbekin (Horwich)	920	732	1001	1921
4. D. Day (Wolves)	904	946	965	1911
5. M. Reeves (Wanstead)	724	896	948	1844

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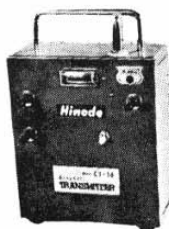
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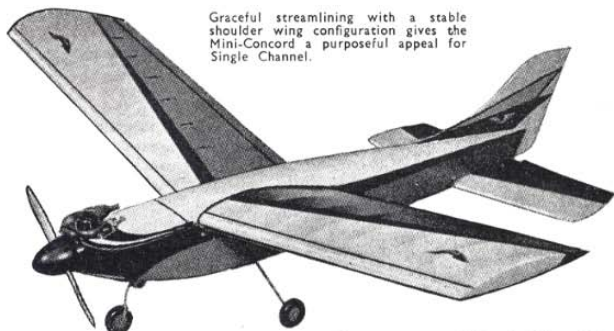
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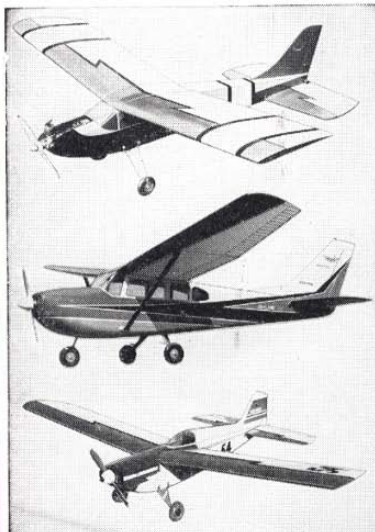
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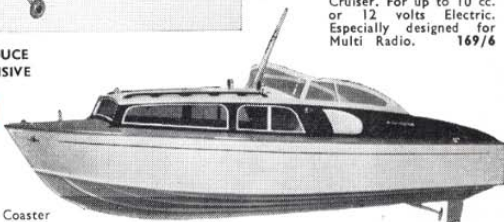
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