

# Aero Modeller

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INCORPORATING  
MODEL AIRCRAFT

MAP HOBBY MAGAZINE

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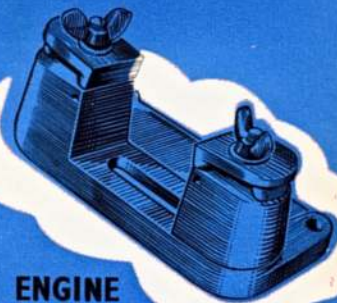


### MODEL DIESEL HANDBOOK

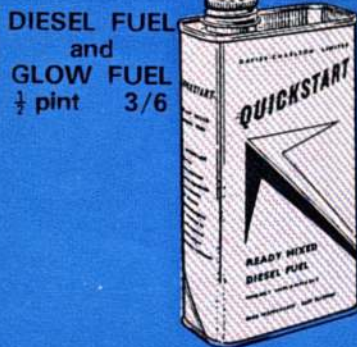
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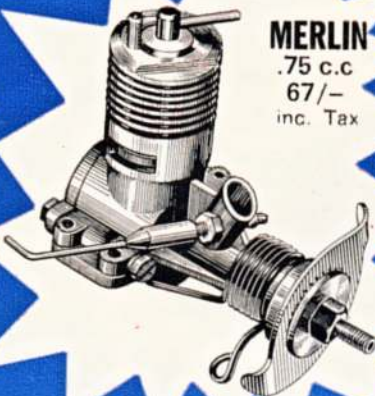
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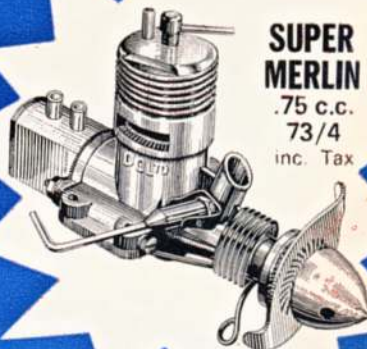
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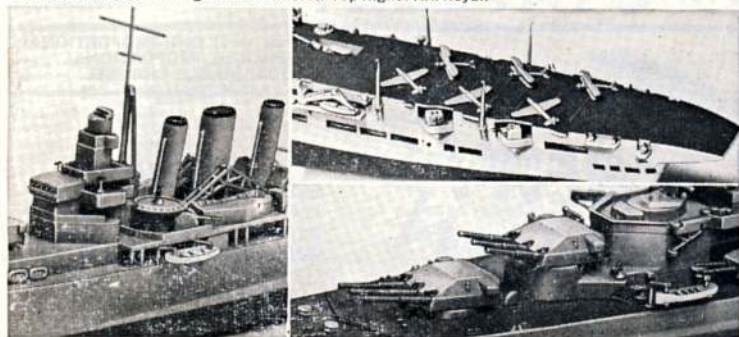


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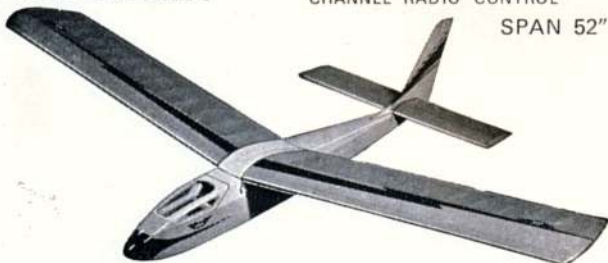
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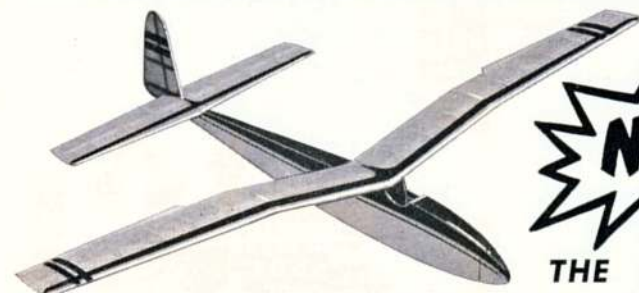
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# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

June 1970

VOLUME XXXV No. 413

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**HOBBY MAGAZINE**



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Advertisement and Subscription Offices: Model & Allied Publications Ltd, 13/35 Bridge Street, Hemel Hempstead, Hertfordshire, Tel Hemel Hempstead 2501-2-3.

Direct subscription rate 41/- per annum including December edition and Index.

CORRESPONDENCE anticipating a reply to addresses within the United Kingdom must be accompanied by a stamped and self addressed envelope. News reports should be submitted to arrive not later than the 15th of each month for publication in the next immediate issue. Photographs should be accompanied by negatives where possible and can only be accepted for use on an exclusive basis for British Copyright.

AERO MODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and MODEL AIRCRAFT and is published on the third Friday of each month prior to date of publication by:

**MODEL & ALLIED PUBLICATIONS LTD.**

**13-35 Bridge Street, Hemel Hempstead, Herts**

**Tel.: Hemel Hempstead 2501-2-3 (Mon.-Fri.)**

Editorial Director **D. J. LAIDLAW-DICKSON**

EDITOR **R. G. MOULTON**

Advertisement Manager **ROLAND SUTTON**

## COMMENT

This mid-year issue carries a bonus as many of our astute readers will be quick to detect. Besides the now regular alternate month feature of a pull-out plan (this time a pair of very useful designs) we have an extra eight pages covering a broad variety of aero-modelling topics. Among these, the reader will find a well-reasoned personal viewpoint on the vexed subject of silencers by the most active competition modeller in the United Kingdom. John O'Donnell has been National Champion in the demanding Free Flight category for more years than he cares to remember. He now creates a lead in dealing with a topic that many of his fellow competitors prefer to shun.

Perhaps the opinions of an expert in their midst will serve to provoke other competition modellers into making plausible suggestions for the Society of Model Aeronautical Engineers to consider. But whatever is to be decided as a future National policy on the noise problem will not become effective until the 1970 contest season is over.

Visitors to the National Championships this month would do well to partake, watch and listen before reaching their own conclusions on the acceptability or otherwise of a noise limit.

## on the cover

Ian Dowsett returns to the scene, and introduces a giant among rubber driven Helicopters. This awkward-looking device packs 24 strands of 1/4-inch rubber and has a 44 in. top rotor. Entered at what is now the only Helicopter contest in the U.K., the Thurston Trophy at the South Midland Area Rally, Cranfield, last September, it is more than likely to reappear at this year's event on September 20th.

## next month

Colin Read, well known for his free flight sports models, produces his 'Isabel'. Photos and description of the new breed of American speed engines. Report on the first of the 1970 World Champs (Indoor) from Roumania. Second part of the Fox engine story, plus a Nats report, with full results, out June 19th.



# find the Model-and win a RADIO CONTROLLED CAR -in

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Minimum of five crosses and a maximum of 130 crosses per coupon. You may enter as many coupons as you wish. Members of the family may send their coupons in one envelope with one postal order to cover all the entries.

Payment must be made by Postal Order payable to Roland Scott Ltd. and crossed. Stamps are not acceptable.

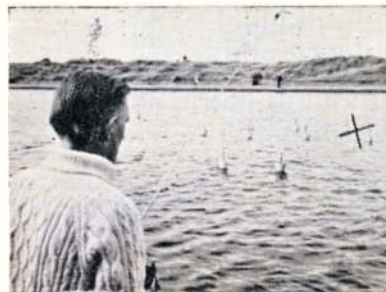
No responsibility is accepted for late, mislaid or lost entries.

THE COMPETITION EDITOR'S DECISION IS FINAL. NO CORRESPONDENCE MAY BE ENTERED INTO.

Employees of Roland Scott Ltd. and its associated companies and their families may not enter.

**ENTRIES CLOSE FIRST POST JUNE 6th (two month contest).**

Newsletter and lists sent Free to all competitors.



**WINNER OF 'FIND THE MODEL' No. 4** Harold Sharp, of 16 Henry Street, Goole, Yorkshire, who receives a Staveley 4 Proportional unit. Near-miss prizes of Navigator II Single channel units were won by D. Thomas, 129 Ashampstead Road, Southcote, Reading, Berks.; B. Innes, Inverisla, Huntly, Aberdeenshire; R. F. Knowles, 71 Cranbourne Avenue, Wanstead, E.11.



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I agree to abide by the rules of the competition and to accept the Competition Editor's decision which shall be final and legally binding.

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MANCHESTER. Tel: 061-790 6707

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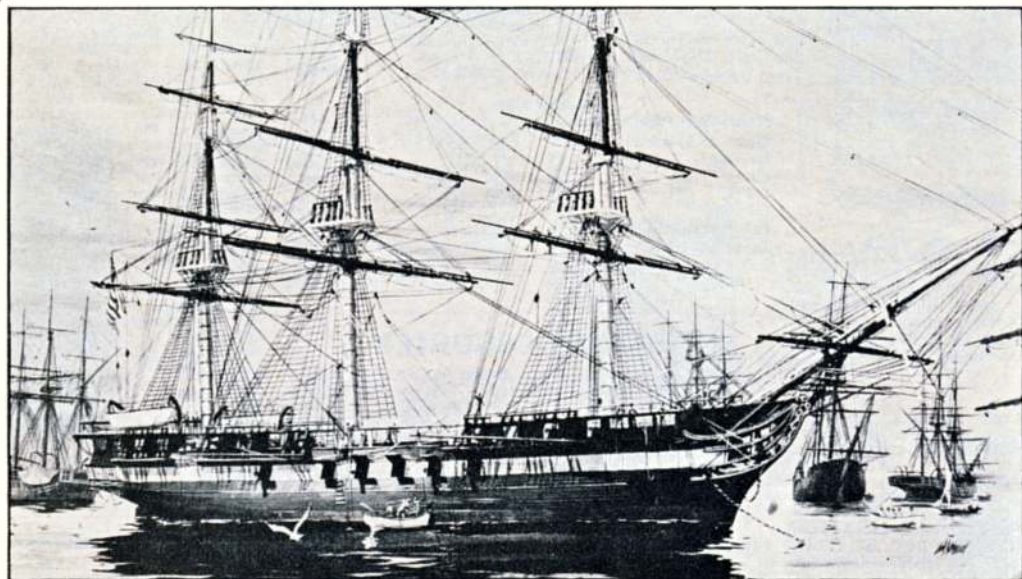
RESULTS WILL BE PRINTED IN AEROMODELLER JULY ISSUE

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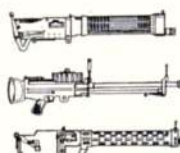
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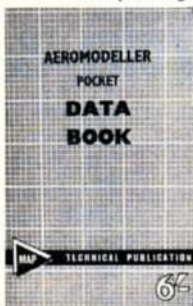


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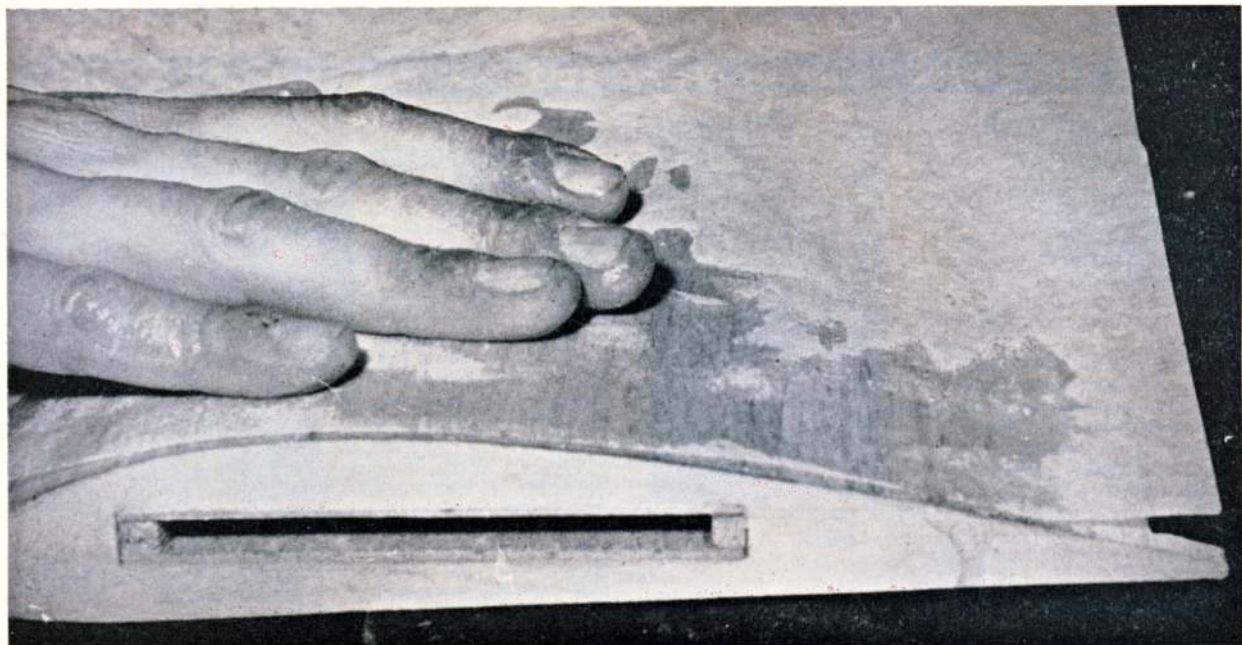
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## Heard at the HANGAR DOORS

**POPULAR FLYING ASSOCIATION**, which controls amateur construction of aircraft, and has the unique position of carrying full authorisation from the Board of Trade and Air Registration Board to recommend the issue of 'Permits to Fly', is now issuing bi-monthly *Practical Notes* for constructors. These well produced booklets alternate with supply of the alternate monthly magazine *Popular Flying* for all PFA members. First issue dealt with Glass Fibre reinforced plastics, protective finishes for metal fittings and a milling tool for wooden parts.

**LARGE AIRWHEELS** are in demand, or so we are led to believe from the number of enquiries we receive. This was highlighted at the Esher Radio Control Symposium where David Boddington's big parasol-winged prototype was the most frequently admired feature of our stand. Those who remember the 'ZN' pneumatic airwheels of 6 in. diameter will be pleased to know that there is every possibility of them going back into production if sufficient serious demand exists. The moulds now belong to Michael Lipscombe of Greenford and we'd be happy to pass on genuine enquiries.

**RADIO CONTROLLED** demonstrations of a 'different' kind have been suggested in the National Press. Someone has contemplated that a well-directed R/C model could disrupt a cricket match and so aid the campaign to stop the 1970 tour by the South African team. Whoever thought up this 'war of the Transmitters' would be well advised to think again for a more hazardous, and expensive project would be difficult to imagine.

**WHO LOST** a 'Schoolmaster' with single channel at Chobham earlier this year? Free flyer Jim Baguley will pass it back to the rightful owner on identification of engine, radio and escapement. Claimant phone Bourne End 20774... and put your insurance number on it next time!

**TEN POUND** entry fee for a free flight contest sounds astronomic, but maybe it's a sign of the times for the Detroit Balsa Bugs have announced their 'Gathering of Eagles' seven-round F.A.I. event at Bong on July 26th for just that

Sheila Greenhalgh presents a completed Reeves 'Gangster 48' with Fuji 35 engine and covered with Solarfilm to Fred Body of Southampton on behalf of lucky winner Ian Steele at the end of the successful R/C Symposium at Weybridge. Made on the S.M.A.E. Stand by kit donor Don Baxter, Mick Charles, Roy Yates, Ian Peacock et al, all components including accessories were given by exhibiting agents and manufacturers as a fund raiser for the Society.



price per entrant on the basis that the winner takes half the entry fees and 2nd, 3rd, pro rata. Who said free flight was a lottery?

**CLWYD** slope soaring organisers Chester M.F.C. report that they are hoping to improve their rally somewhat this year (21st June). The statement is not qualified with any definite promises, for example a ski lift to the top; but perhaps the fact that the club has had an influx of more members in the 40-60 group than juniors has something to do with the undertaking. Incidentally this club also holds a found model - a Slicker Mite discovered near Northop, Flintshire. Claims to 26 Raymond Street, Chester. Why don't people put their numbers on models?

**WORLD CHAMPS** for indoor models took place on 9th-12th April in a Rumanian Salt Mine and attracted ten National teams. None from Great Britain! The huge underground hall normally has superb flying conditions but as our full report next month will show, the presence of large numbers of people, press and television activity created drifts which appeared to limit the capacity of some experts. Best flight of the meeting was made early by Jiri Kalina of Czechoslovakia and was 37 minutes 52 seconds. Jiri was the contest winner and is now the World Champion while his team mates in 7th and 8th places backed him up to collect the top team award. Second in individual and team was the U.S.A. with the last

World Champ Jim Richmond just topping 32 minutes on two flights. Most creditable performances were by Rumanian Aurel Popa (3rd) and Hungarian Andras Ree (4th) with veteran all-rounder Vilim Kmoch of Yugoslavia 5th. Big question of the event was 'Where are the British?' and 'When will we be able to fly again in Cardington?' Odd, isn't it, that the nation with the finest facilities in the world (meetings organised there again this year, thanks to Stan Wade) cannot raise an international team.

**LATEST MERCO NEWS.** D. J. Allen Engineering Ltd., the makers of Allen-Mercury and Merco motors, are now concentrating their manufacturing capacity on Merco R/C engines only. It has been announced that A-M diesels have been discontinued and it appears that production of the standard Merco Stunt 35 and 29 has also been suspended - at least for the time being.

Mainstream Productions have recently taken over the sole distribution of Merco and list retail price increases of around 12 per cent. Six Merco models will be available. These are the 29 R/C, 35 R/C, 49-III R/C and 61-III R/C, plus water-cooled versions of the 49 and 61. This makes Mainstream's entry into the quality engine market. Hitherto their offerings have been limited to the well-established but rather unexciting Fuji range and to the low-priced Chinese Silver-Swallow diesels.



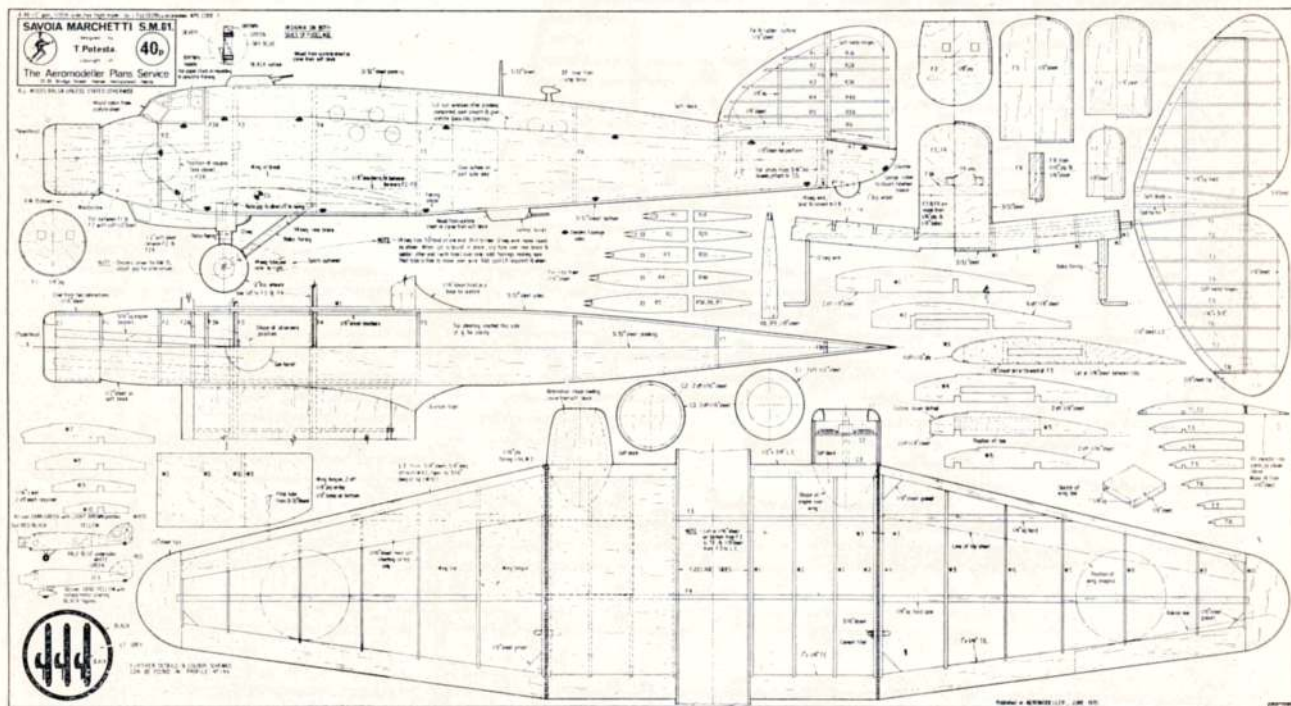
A 'single' engine



# SAVOIA — MARCHETTI SM81

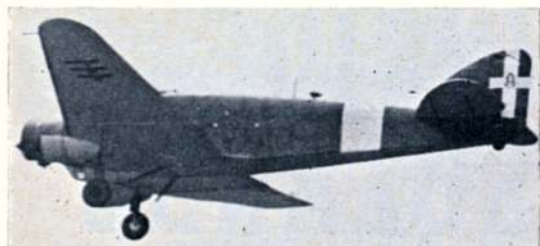
Free flight scale model for 1.5 c.c., adaptable for control line or radio control. Designed by Flight Lieutenant T. C. Potesta, R.A.F.

Full size copies of this 1/8th scale reproduction are available as Plan FSP 1077, price 8/- plus 6d. post, from Aeromodeller Plans Service.





## novelty for sports flying



Away on a cruise around the field, the S.M.81 'Pipistrello' looks extremely realistic when dummy engines are distant. The 48½ inch wingspan model is a gay deceiver in more ways than one for it refutes all the ancient arguments over low wing instability.

**WHAT'S THAT!** A three engined free-flight scale model? Yes—we too were easily deceived when we saw Terry Potesta's S.M.81 fly past at the 1969 R.A.F. champs—the answer was, of course, a single A.M.15 turning a 7 in. x 4 in. propeller, housed within the central nacelle! For complete realism and an unusual choice, this model should be hard to beat. It would seem an ideal model for conversion to single-channel R/C and the more adventurous control-line enthusiast could, by strengthening here and there, produce a two- or even three-engined version.

The Savoia Marchetti S.M.81 was introduced to the Italian Air Force in 1934, and saw continual service until the end of World War II, in operational theatres ranging from Ethiopia to Russia, and in roles varying from bomber, transport and reconnaissance to air ambulance! The model depicted is of an example using Alfa Romeo engines, as used by the Italians on the Russian Front in 1943.

### Construction

Although construction of this model is straightforward, it should not be regarded as a beginner's project. After familiarising yourself with the plan, cut out all the fuselage parts. Laminate formers F3, 4 and 8 as indicated, then bend the undercarriage to shape, binding and cementing to the formers. Make sure that the holes for the bearers are spaced to suit your engine. Mark the former positions on the fuselage side, and add the ½ in. sheet doublers between F2 and 5. Next, lay one fuselage side flat on the bench, and add formers F2, F2A and F5—checking with a set square that they are vertical. Add the opposite side and allow to dry thoroughly. When dry, add formers F3A, F3 and F4. Chamfer fuselage ends, add sponge rubber, and draw together, checking for alignment—then add the remaining formers. Epoxy engine bearers in place.

Plank top and bottom of fuselage with 3/32 in. med. soft balsa strip. Install fuel tank, then add soft ½ in. sheet between formers F1 and 2. Cut out ribs W1-3 and cement in position—followed by leading and trailing edges.

The wings may be built directly over the plan. Pin the ¼ in. sq. hard spars in position, taper the L.E. as indicated, then pin it too in position packing up 1/16 in. to suit the camber. Notch the T.E. pin down, then add ribs W4-10, followed by the ¼ in. steel gussets. Finally, sheet the upper surface of the L.E., remove from board, and add the 1/16 in. ply facing rib W3. When quite dry, laminate the wing tongues and construct the wing boxes—making sure that they are a tight fit. Cement the tongues to the centre

section. Next place the boxes in position in the tips, add to the tongues then adjust to give a dihedral of 3½ in. under each tip. Leave to dry for at least 24 hours. Sheet the top surface of the wing with 1/16 in. sheet, and let in 1/16 in. sheet on the underside, back to F.4.

The tail and fin are of conventional construction, but care should be taken to avoid warps. The rudder and elevator should be hinged for adjustment and trimming—and should not be permanently cemented until an ideal flight pattern has been achieved. Cement the fin into the slot between the tailplane halves, and fill in with block, sanding to the profile of the fuselage. Finally, cement entire unit to the tail platform on the fuselage.

### Cowlings

Make three engine cowlings of the type required—fitting the outboard cowlings with peg fittings to ensure that they will 'knock-off' in the event of a hard landing. The fuselage engine cowling is shaped to fit around the engine chosen, and is retained by a small woodscrew as shown. If dummy engines are to be installed, make and fit them before completing the cowlings rings. Add the wheels and complete the u/c detail. Mould cockpit, turrets and observer's panel from acetate. Complete construction by adding tail struts and aeriels.

Sand the whole model and give all sheeted areas two coats of sanding scaler—sanding lightly between each coat. The entire model should then be covered with lightweight tissue and given two coats of clear dope. At this point the portholes should be cut out (ensuring that none fall inside the fuselage!) and acetate discs fitted, to give a smooth external finish. The model should then be painted or sprayed in the colours required and the insignia details added. Finally, give the whole model one coat of matt fuel proof.

### Flying

The S.M.81 is a rugged model, but like all models requires a certain amount of trimming. Make sure that *really* long grass is available for gliding tests, remembering that the flying speed for a model of this size is fairly high. The original model weighed 29 ounces, and was powered by an A.M.15 driving a 7 in. x 4 in. nylon propeller. A small trim tab was added to the port wing. Adjust the elevator until a smooth glide results, then start powered flights with a reduced engine speed until the model is finally trimmed.

The S.M.81 is an unusual model and a sure crowd puller at the local field.



# INSIDE SOLARBO

GREAT MOUNTAINS of precious balsa greeted our eyes on a recent visit to the famous works at Lancing whence comes the precious product which is the staple diet of all aeromodelling. We were in the stock sheds of Solarbo, looking at huge bales of part prepared timber as it awaited the kiln treatment.

Since our last visit to the firm, there has been a tremendous expansion. The sheer volume of wood being processed at this pleasantly located south coast mill leaves one with the firm impression that there cannot possibly be another plant so big or well equipped in all the world. Bearing in mind the International nature of Solarbo's direction, and its tremendous record for export of machined balsa, it is undeniably correct to state that Solarbo is very largely responsible for the well-being of our hobby in this and many other countries.

How comforting it was then, to meet Managing Director John Peak and to get at first hand, the story of balsa as it stands today. With John during our visit was Prem Gary, President of the International Balsa Corporation of the U.S.A. and the comparatively new Director, Ian Davies. Though new to Solarbo, Ian has a lifetime of experience in handling balsa wood through his company of E. Law and Son of Sutton. He has now merged his interests in 'Equado' balsa with Solarbo so that he brings long experience and his marketing knowledge to strengthen the Solarbo brand. Incidentally, Ian has also the asset of being an experienced aeromodeller—and was the donor of the S.M.A.E. Team Racing Trophies.

Aside from the processing of all its selected grades of balsa through kilns which are cycled regularly to ensure that all Solarbo is adequately dried, and the expected machining of the standard sheet and strip sizes we know so well, there is much other activity of interest. We asked why balsa from the U.S.A. was so often pink and smelled differently, we learned that this is due to additives in the kiln stage which Solarbo do not find necessary.

One major activity is the machining of special sizes. These include metric for export, kitting parts, packs for educational use in schools (which forms a large part of the business) and special sections. Balsa dowel is produced 'half and half'—machined first one side and then the other. Wing airfoil sections are formed in solid sheet by specially prepared cutters, and trickiest parts of all go into a very well-known American Scale model kit for a famous U.S.A. manufacturer!

At one time, all curved sheetings had to be made by heat, or steam treatment. Nowadays a 'Slicer' machine with an oscillating guillotine blade works its way through block balsa, slicing off a shaped wing for ready-to-fly models completely cambered as it is cut from the block. Such a time-saving process is the only way in which low cost sheet models can be produced. But the actual machine must represent a small fortune in investment!

Another aspect, and one which is widely appreciated by the many manufacturers who make use of

## We visit the World's largest single source of Balsa wood

the service, is Solarbo's print and die-cut department. Here one can find blocks and cutting dies for almost all the famous names among kits. As the machines wheeze and clank, the sheets are fed in to be colour printed and stamped for that easy assembly job the novice appreciates.

Elsewhere we 'discovered' another industry within the industry of producing End Grain Balsa Sheets for special purposes such as aircraft floors. Laminated edge to edge, huge sheets of balsa with the grain 'all the wrong way' (to our viewpoint) are prepared to demanding specification. The balsa is surfaced either side with metal—or ply, and is employed for many purposes, including high-speed launch decks where it is strengthened with glass fibre. This is one of the latest developments in shipping, but another, of even greater importance has been on the way for some time.

This is the use of balsa for tank linings in transport of methane gas. We are told that with the size of today's liners, a single order for a large tanker could amount to the total production of the plant for months!

Happily, the Directors of Solarbo will never lose sight of the hobbyist and industrial temptations are regarded with one very considerate eye on the regular modeller's market.

Due to the war in Viet Nam, industrial demand for balsa has escalated tremendously in the last few years. Balsa is used for pallets to carry air cargo and for parachuted drops. It has many applications, and one is naturally tempted to ask if the supply of balsa from Equador was stable and likely to remain so despite potential changes out there.

John Peak, who has spent many years of his very active life in Equador (and has a terrific souvenir in the shape of a Ford Model 'T' Taxi colourfully decorated to prove it!) told us that life in the turbulent country could never be regarded as completely stable but supply of the raw material was assured.

There was a time when, of all things, the banana crop influenced supply. To explain, we must first emphasise that balsa is used primarily as a raft on which to float the products of the highlands down to the coastal ports. When the banana crop was ready, the native hacked down his balsa—or 'raft' and away he went down-river. The type of banana produced in Equador was one we do not know in the U.K. It was big—known as the *Dollar Banana* and usually exported to the U.S.A. or Germany. The demand for these bigger bananas dropped. Fruiterers preferred the smaller variety so the planters in Equador were faced with the dilemma of changing the breed, so to speak. This takes time and the rafting operation naturally declined while the plantations were restocked.

Are there other sources of balsa? None good enough to be utilised commercially. We are reminded of a tale once told us by a modelling policeman in





Stockroom with bales of balsa rough sawn from Ecuador, ready for kilning and weight selection. Each piece is measured and purpose-graded before use.



The 'Slicing' machine which produces contoured sheet balsa wings for ready-to-fly models from a block. The operator is holding three wings.

Lae, New Guinea, and is well worth the re-telling right now . . .

*I must mention at this stage that surely our club is among the unique in that as before stated, we were running very short of balsa when we started, and on reading up a few magazines on how to get the most out of your balsa, noticed that it came from very humid places. Well, if there is one thing Lae IS, it's humid. So I approached the forestry department and low and behold a miracle was born, FREE BALSAs. It grows in New Guinea. But where was the wooden gold, that was the burning question? No one could tell us a thing. Indeed, few knew the wood at all up here, so Club members went out into the bush and searched everywhere. Two or three weeks went by and still no sign, then all of a sudden a 2/- piece gave us the clue we were looking for. Fact was, what we were looking for we couldn't find because we didn't know what to look for . . . But a native would . . . and 2/- talked within 2 days.*

*Soon I had talks with a plantation owner with a few balsa trees growing, only a few, but as I walked along the plantation track I could see all sorts of planes and models sticking out of a certain very nice balsa tree. The Club organised a truck and a work party to cut it down. Once again 2/- did the job and in next to no time we had a number of natives trimming the tree and finally lifting most of it on to the truck. Later the local saw mill cut the tree up for us and after it had dried we were busy making models. When it's dry it's quite odd to see a youth carry a*

Dowel and other miscellaneous shaped balsa parts less well-known to modellers, which are produced for kits, etc.



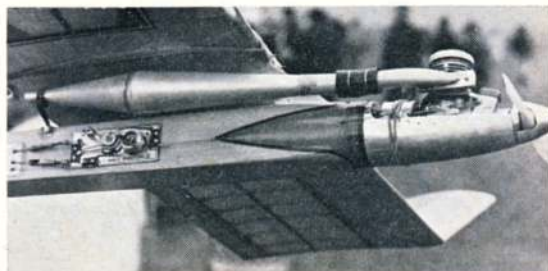
*log that in most other timbers would crush a man severely. Balsa seed pods are beautiful things to behold; they look like fox tails, and glisten an iridescent brown in the sun. The pod complete is silky soft except the stalk attached to the main branch. The pod itself measures approximately 8 in. long x 2 in. in diameter. The pod to look at is sort of segments sewn together to form a tail and has the appearance of being a number of small, expensive furs sewn together with unbelievable accuracy. The seeds themselves are enclosed around a centre core which is hard and bony and once shed or stripped of its bounty the seed pod core looks rather like a pointed stiletto knife and is of a bony structure. If one touches a mature pod and strokes the fur, the fluffy, furry segmented strip will, in a lifelike manner, snake and twist itself away from the core; it is inside the fur that the seeds lie. So I am told, if the seeds are not sown or strike themselves they die in approximately 3 months. The seed is approximately 1/64 in. long x 1/32 in. diameter, roughly the size of a raspberry seed or strawberry seed. Nature packs her cargo tight, for in one pod there would be approximately 500 seeds; the seeds are black in colour.*

Such information is fascinating. There were other experiments in Ceylon and the West Indies: but the only reliably useful source of balsa is Ecuador—and thanks to Solarbo, with their own mill out there, and their skills in maintaining supply in quantity at highest quality—we can look forward to a secure future. That Solarbo sun is still rising!

Vic Smeed of 'Model Boats' and Tony Dowdeswell of 'R.C.M.&E.' examine the Solarbo print and die-cut process.







THERE CAN be little doubt that the 'Silencer Rule' is the most controversial topic in present-day aero-modelling. It is also one of the most important and far-reaching ideas ever advanced in our hobby—in that it concerns *all* power fliers and not just the contest enthusiast.

Without dwelling too deeply upon the detailed history of the silencer and its application, certain developments are apparent. During the course of the various on-off-on-off decisions, culminating in the recent E.G.M. of the S.M.A.E., the original concept of a 'blanket' silencer requirement has been watered down quite noticeably. The case for exempting certain types of model or motor from requiring silencers has not only been advanced—but also seems generally acceptable in principle. In the contest world, the F.A.I. have compounded the situation by prohibiting the use of tuned pipes and, indeed, any form of silencer in free-flight F.A.I. Power. Furthermore, tuned pipes, once advocated as power-increasing silencers, are now becoming considered as too noisy!

Most discussion, and there is certainly plenty, revolves round the merits or otherwise of 'conventional' silencers, and/or the desirability of exempting some class of model of particular (or personal) interest. Not infrequently, I am asked for my views on the silencer questions as regards free-flight. Whilst this is the category on which I am most qualified to comment, I do not consider that it can be discussed in isolation. Not only does free-flight (and its various sub-divisions) have different characteristics, and hence requirements, compared with control-line and radio control—but the different categories often share the same flying ground.

Even more fundamental is the fact that silencers are a *solution* (and by no means the only one) to the problem of noise complaints. It is unfortunate, to say the least, that discussion has revolved round the advocated cure rather than the disease.

At the moment the situation is in a state of limbo, as the various sub-committees have been given until mid-June to report their recommendations to the S.M.A.E. Some suggestions known to have been made to the sub-committees would seem to be outside their jurisdiction—however good the idea might be. Prolonged running-in of engines is a case in point. All-in-all, this would seem to be a most appropriate time for an objective evaluation of the whole situation.

Consequently, an attempt will be made to spell out the various steps in a logical consideration of the problem, requirements, possible solutions, implications, and recommendations. To present this material in a concise form, the argument has been laid out in a point-by-point sequence. Quite obvious points have been included to provide continuity and completeness. Similarly, the beginning is right at 'square one'.

# STARTING FROM SQUARE

A discourse on model aircraft noise

## Problem

- a) Noise from model aircraft engines causes actual or potential complaint in certain (perhaps widespread) circumstances.
- b) The direct solution is to reduce noise.
- c) The details (e.g. size) of the engine, and the means of reducing noise are of no direct relevance to the person offended. It is the effect (noise, or less noise) that is important to him.
- d) Possible means of reducing noise are numerous and include the use of smaller engines, diesels instead of glow motors, slower engines, inherently quieter engines, less flying, different time and place of flying—as well as silencers.
- e) Any of these means could alleviate, or cure, the problem—and some might be more acceptable to the flier than the use of silencers.
- f) Silencer legislation concentrates attention on a particular *means* rather than on the desired *end*.
- g) Compliance with silencer legislation is possible *without* solving the problem. Increase of engine size to compensate for power loss can largely offset the noise reduction. A large well-silenced engine can still be noisier than a small unsilenced engine—and can still cause complaint.
- h) S.M.A.E. legislation tends to be regarded as a contest rule—and can only be *enforced* on contest entrants. Unsilenced sports fliers at a silenced contest venue are an embarrassing problem.

## Solution

- a) Solve the problem *directly* by defining and introducing a noise level (or levels) requirement for those circumstances that *require* it.
- b) Such a noise level (or levels) is independent of source, e.g. engine size and type. Whilst compliance will be most difficult for those with the noisiest engines this is only poetic justice.
- c) The level(s) should be realistic in the light of requirements. It should not be either blindly or casually chosen—and certainly should not automatically be set at the level of a current silenced .60 glow engine.

## Application

- a) The 'needs' of R/C, C/L, and F/F are different. R/C flying has long engine runs, sufficient height to spread the noise, and often large engines. Simultaneous flying of several models is becoming common. C/L lacks the height, but often involves several models flying simultaneously. F/F has inherently short engine runs, but probably the most use of engines with high revs.
- b) Different grounds need different considerations and maybe regulations. Pointless restrictions are often



# ONE

—by John O'Donnell

ignored, and inhibit compliance with even worthwhile requirements.

- c) Clubs, whatever their speciality, often fly near built-up areas. Continual use can cause long-term trouble. For their own salvation clubs have to find a solution that their *members* will accept. This has to consider all circumstances. The best answer can be simple (such as relocating flying to a more remote corner of the field) or otherwise. Local knowledge is essential.
- d) At club grounds, the concept of a *subjective* noise level can be employed. Whilst a member's (or jury's) decision that a particular engine is 'too noisy' is sure to be unpopular, it can be useful at times. Standards, however, are liable to drift. The technique should be regarded as an expedient at best.
- e) Contests are often held at venues not regularly used for model flying. Potential trouble can only be 'guesstimated'. This and the decision to apply restrictions should be the responsibility of the contest organisation. Compliance is then obligatory on those attending. Over-stringent regulations would be reflected in the entry, and this *should* concern the organisers.
- f) Major rallies to which the public are admitted should give no real troubles regarding noise. In fact the public probably expect and even welcome noise (as per motor racing). The local population will probably accept the noise once per year.
- g) Free-flight events at contests should present few problems. If restriction on noise is *genuinely* required then I would doubt if the venue is really suitable (i.e. large enough) for free-flight in any case.
- h) 'Field discipline' can be extended, where appropriate, to include ground running of engines, numbers of models flown simultaneously, etc.

## Co-ordination

- a) The S.M.A.E. should establish and publish one or more 'noise levels'. That this may be difficult technically is evident from even a cursory inspection of any scientific text on the subject. However, it can hardly be insurmountable — and even a rough



Opposite: Too powerful for the F.A.I. and now becoming regarded as too noisy to be a silencer! Tuned pipe was almost standard at 69 World Champs. This was model of St. Agner (Denmark) see plans, April 1970 'Free Flight News'. Above: the mobile tent stand for prolonged running will no longer be acceptable on the flying field, especially when concerned with high revving contest engines as this Mike Gaster example.

(but objective) approach, such as a decibel rating, might be adequate. Revision is always possible.

- b) Co-operation between engine and silencer manufacturers would then be required, so that publication of combinations (of engines and silencers) and their noise levels could result. Even if not comprehensive this would enable practical guidelines to be established.

## Summary and recommendations

The concept of a complete or partial 'silencer requirement', applied to stated types of model aircraft or engines, regardless of where or how they are flown, should be discarded.

Instead, it should be the accepted responsibility of clubs and contest organisers to apply whatever measures are considered appropriate to their particular circumstances.

To make this a practical idea, the S.M.A.E. should define acceptable noise levels, and ensure that the performance of commercial 'hardware' is both measured and published.

## Conclusion

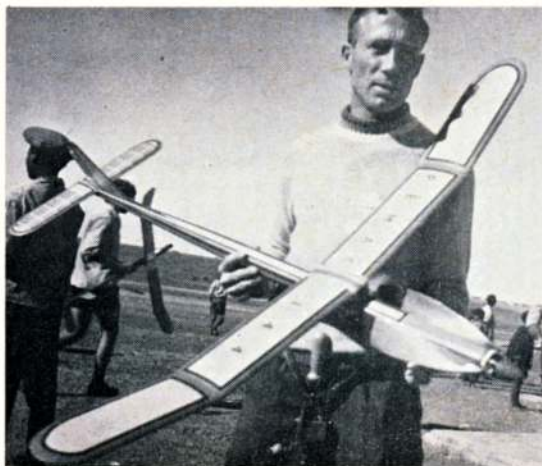
The flier, whilst having to comply with his 'local' requirements now has a choice as to *how* he does so. Should his tastes run to noisy motors, then theoretically at least he can travel to some suitable site elsewhere. Furthermore, with both organisers and fliers having to 'live with' the regulations there is adequate (and intended) opportunity for feedback of ideas in both directions. The appreciation of how much noise is reasonable, and the techniques for avoiding more, should then evolve naturally.

## QUOTE . . .

'IN 1964, a muffler committee was appointed to study the technical aspects of noise abatement. And in 1965, an engine silencer testing programme was launched. To date, no muffler regulations have been passed as a result of these programmes (because a satisfactory muffler has not been developed) and no specific muffler has been recommended by the A.M.A.'

*It would appear, however, that only in a very limited number of cases can it be argued that noise mufflers are not technically feasible. There are mufflers available which reduce the noise, or at least make the sound less annoying. Although these mufflers are not entirely satisfactory, wherever the quantum of noise is a critical factor in the noise complaint situation, their use should be attempted; or their future use should be offered as a means of alleviating the problem.* — from Memorandum of Law on Modeler Noise Complaints, A.M.A. \$2.





# 1970 SOUTH AFRICAN NATIONAL CHAMPS

Reported by **BASIL MOORE**

KINGWILLIAMSTOWN, 37 miles from East London, Cape, with a population of 17,782, was the venue for the 1970 National Championships. The local airfield was used by kind permission of the local flying club and the Borough of Kingwilliamstown who, at great expense, resurfaced a dumbell so that the control line events could have the best possible surfaces. Rumour has it that the original estimates were well exceeded! A water bowser for campers was in attendance throughout the weekend. As in 1967 there were many 'fetcher-mites' in attendance and great was the mortality rate of models entrusted to the tender mercies of too-young retrievers who were invariably tackled by their older brethren for possession of a model. The weather, however, was the greatest leveller and had it not been for that wonder of the 'adhesive age' Epoxy, it is doubtful that there would have been a Nationals to speak of! A cry prevalent throughout the free flight events was 'Get some 5-minute epoxy'. Winds of up to 38 m.p.h. were common and it says a great deal for the courage of the modellers that they had the temerity to fly A/1 gliders in weather like that.

F.A.I. POWER opened the proceedings with an entry of 9. Competitors battled in rising winds and 3 were eliminated before they could even get going. Wisely, these people did not fly their reserves. Two of the first off had their tailplanes blown right round the fuselage on launching! Mike van Eyk (that builder of the beautiful models) took the event with a Super Tigre G 15 own-designed model with a time of 682 secs. This is an indication of conditions, not Mike's ability. Last year's winner could only rack up 429 secs. On its sixth flight the model was lost.

Results :-

1. M. van Eyk	60	60	154	180	129	109	Total	682
2. J. Carswell	107	94	10	38	180	—	—	429
3. D. Pettifar	70	45	44	116	63	—	—	340
4. B. Moore	5	27	73	180	52	—	—	337

Ten entrants braved the elements for OPEN RUBBER. With the cool conditions 'blow-ups' were few and far between. Flying well in shocking conditions John Cowlin (seen in action in Sazena in 1967) managed 3 max's in his total of 773 secs. Had Vic Hoxley (the original lone modeller from Port Elizabeth - now joined by three more members) not lost his o/d ship on its third flight he would have taken the event as he is well experienced in flying in the windy conditions prevalent in Port Elizabeth.

Results :-

1. J. Cowlin	63	170	180	180	180	Total	773
2. V. Hoxley	180	121	180	—	—	—	481
3. M. Silkstone	62	127	101	75	92	—	457

Next event up was A/1 GLIDER with 18 entries. This was very much an event where the ability of the modeller to get beneath his model before the wings cracked under tow was all-important. Horrible noises were heard as the models went up, and when what was left came down, all that could be heard was - 'Well, it will be easier to pack now'. Juniors were manfully trying to cope with the elements but they suffered to a great degree. *Top Kicks, Aiglets and Hybrids* (Wakefield wings on any fuselage) were in evidence, Horst Wagner (previously of Germany) won the event with an o/d ship and in his total recorded 2 max's in quick succession.

Results :-

1. H. Wagner	120	120	45	68	92	Total	445
2. L. Godwin	57	120	80	120	54	—	431
3. J. Roux	120	48	120	120	—	—	408

Top left: Vic Hoxley of Port Elizabeth and his O/D Wakefield placed 3rd. Right is Basil Menges' TWA powered speed model. Below left: Mike van Eyk and his all sheet 'Dolphin' A/2. Centre is Basil Menges with Team Racer and Right, Bill Gunnell with 'Albatross' A/2.





Horst Wagner was heard to remark that he had never thought it possible that the standard of flying could be so high in conditions that obtained and also that modellers could push themselves to fly so many events in one day.

After a night of rain and heavy wind the next day dawned overcast with the inevitable wind still blowing at 30 m.p.h. plus, and 29 entrants presented themselves for A/2. Once more the cry 'epoxy' was heard as wings folded on tow and bodies splintered on return to earth. The most popular models were *Talons*, *Baguleys* and a fair sprinkling of own designs. M. Silkstone, flying a vintage *Baguley*, set the ball rolling with 2 max's in succession and one more on his fifth flight; Horst Wagner was close on his heels but dropped alarmingly on his third and fourth flights which put him right out of the running.

M. van Eyk, flying an all sheet *Dolphin* (beautifully constructed), flew consistently but did not place. The tip flex in the wing of this model is provided for by constant taper to the spars, which go right through to the tips.

Results :-

	Total
1. M. Silkstone	180 180 158 177 180 51 161 1,087
2. J. Calefato	147 156 180 180 180 50 69 962
3. J. Cowling	172 123 180 180 180 55 70 960

A clean sweep for the Western Province Club. Running concurrently was 1/4 A POWER with 13 entries, which proved unlucky for some. What impressed most was that this event has now progressed to the stage that the models are more robust and better powered, and also are now capable of being flown in adverse conditions - *Star-dusters* predominated the scene and at least one 1/4 A Train was seen but did not shape due to technical difficulties.

Results :-

	Total
1. A. Bennie	180 151 118 126 118 778
2. H. Wagner	180 140 102 180 — 602
3. B. Partridge	180 121 66 58 77 502

CHUCK GLIDER attracted 19 entries of which 10 flew. Best three of six flights counted.

1. C. Roberts	299 secs.
2. R. Nevin	169 secs.
3. M. van Eyk	134 secs.

WAKEFIELD attracted 9 entries of which 8 flew. As is usual the best modelling was in evidence in this, a premier event. Mike van Eyk and Horst Wagner turned in beautiful models, Horst with a variable incidence job and turned aluminium nose plus a wide variety of props for various conditions. Weather was ideal at the start of the day but local prophets foretold high winds by noon. How right they were and by 4 p.m. our old 'blow guts' was his usual explosive 25/30 m.p.h. again. Lift was still in evidence though and those in the know were finding it.

Results :-

	Total
1. H. Wagner	180 180 180 180 168 136 92 1,116
2. M. van Eyk	180 180 61 132 180 180 8 921
3. V. Hoxley	180 91 180 180 153 122 95 901

Mention must be made of the excellent flying of Vic Hoxley, recovering from three displaced vertebrae. Not only did he fly Wakefield but A/2 in heavy winds and his steady towing was a joy to watch.

OPEN POWER, flown concurrently, attracted 12 entries, of which only 6 were available for flying, the wind having taken its toll during testing. Again it was a Western Province flyer who led the field due to his ability to cope with heavy winds. Horst Wagner was close on his heels and proved that he was not shy to fly in conditions which are seldom encountered in the Johannesburg area.

Mark Morrison, a junior from Durban, excelled to place third.

Results :-

	Total
1. M. Silkstone	170 180 180 180 180 890
2. H. Wagner	180 114 174 60 66 594
3. M. Morrison	52 125 105 180 76 548

Also flown concurrently was OPEN GLIDER, with 37 entries. It seems that the glider events are the most popular, perhaps due to their grace, challenge and relatively easy construction. Kingsley Appleby of Durban gauged the weather correctly after having a natter with the locals and put in five perfect max's before 'old man gusty' got going. Other contestants who were flying Power and Wakefield were not so fortunate and No. 2 was 167 secs. behind him. Dave Pettifar picked out lift for his last two flights where none appeared to exist. In fact, his last two flights required helpers at the wing tips as well as shielding at the tail. Launching was slightly 'tricky'! Both of his last flights were o.o.s. and were well up at the time.

Results :-

	Total
1. K. Appleby	180 180 180 180 180 900
2. D. Pettifar	98 180 130 172 153 733
3. J. A. Roux	180 180 58 131 180 729

FREE FLIGHT SCALE had an entry of 5, but owing to conditions and misunderstandings regarding the postponements only 1 flew. Bill Gunnell of East London M.A.C. put up a Piper Cruiser (R/C) minus the R.C. and the take-off was a joy to behold - full scale in miniature, followed by a beautiful, gentle, climbing turn and a thermal flight on motor cut-off. Landing was as impressive with a 'flared out' landing. In fact, the judges doubted whether the R/C

equipment had been removed! Four members of the local flying club taxied down to watch the flight and spent 20 minutes discussing this side of our hobby and they were most impressed.

Meanwhile, over at the 'Circle Ranch', the round and round boys had been steadily going round and round in circles and arriving at their results. Basil Menges (member of the 1968 S.A. Team) topped 1/4 A PROTO SPEED with 25.4 secs. and 24.5 secs. followed by D. Masters with 24.7 and 25.5 and a junior, R. Masters, 27.1 and 27.7. 1/4 A Team Race was a ding-dong battle with Alan Duncan and J. Wellman pit-stopping almost simultaneously. The weather was reasonable for a change.

Results :-

1. A. Duncan (Oliver Tiger Cub, o/d)	10 mins. 45 secs.
2. J. Wellman (P.A.W., o/d)	14 mins. 48 secs.

The other two teams had to retire. RAT RACE was won by J. Bilyard, 7 mins. 43 secs. followed by R. Flanagan, 8 mins. 28 secs. with A. Duncan taking third place.

The result of the F.A.I. TEAM RACE was thought to be a foregone conclusion but the Rhodesian contingent upset the apple cart and Alan van Breda, after knocking at the door too long, beat Basil Menges into 1st place. A most popular win by a very popular flyer.

Results :-

1. A. van Breda
2. B. Menges
3. J. Wellman

OPEN COMBAT - always a crowd pleaser, went to R. Flanagan with J. Bilyard second. F.A.I. COMBAT went to R. Flanagan too; quite a belligerent chap this! CLASS B TEAM RACE went to T. Scholtz with J. Wellman second and A. Duncan third.

Standard of flying was the best seen for many years and can be attributed directly to the energies of Basil Menges, who has devoted all his energies to control-line since his return from Finland, and for his services to modelling has been made a Fellow of the South African Model Aeronautic Association.

STUNT. There were no real outstanding flights this year, although the interest has shown a marked improvement.

Results :-

1. N. R. Koch
2. E. Becker
3. R. Nevin

Basil Menges set up a National Record in 1/4 A Proto Speed with 127.1 m.p.h. in very gusty and cold conditions. A pleasant buffet supper preceded the prize-giving, which was held in a local hotel and many tired modellers agreed that the Nats. were well worth it - and started making plans for the 1971 Festival Nationals at Cape Town.

FOOTNOTES: On the road back to Cape Town we passed a notice which said 'Beware of Elephants! Shades of darkest Africa. Surely the highest launch for a 'chucky' must be given to A. Austin, who threw to height of over 400 ft. Seems he launched from a bridge spanning a gorge over 400 ft. deep. Pity his max didn't count.



"I can't help thinking you spend a bit too much on your hobby."





## INDIAN NATS

by  
P. Bannerjee

Left, Sekhar Dutta releases a 'Swiss Miss' in the Power event. He won glider for second year running. Right, Mrs. Ratnesh Singh starts her Taifun Hurrikan engine in a Graupner 'Kadette', below is well finished 'XL-58' Wakefield, held by rubber event winner D. K. Bhowmic.



THE 21st Indian Nationals, held at Behala airport, were marked by almost unbelievable good public attendance, efficient organisation and perfect flying weather—generally calm conditions with a light variable wind. Recovery was no problem and very few models were actually lost in the wooded area about  $\frac{1}{2}$  mile downwind. All the events were keenly contested and the competition-controller had a busy time coping with the large entry.

One disappointing feature of the Nationals was the decision to limit the number of flights in the free flight events to two.

There were quite a few maxes in the first round of OPEN GLIDER, although lift was rather weak and 'patchy'. However, the unprecedented fly-off did not materialise as only one flier, S. Dutta, who was last year's winner, managed to max out. A few seconds behind came D. K. Bhowmic whose lightweight *Meanderer* made a spectacular thermal flight in round 2, the model going O.O.S. upwards after a D/T failure.

Most popular model/engine combination in OPEN POWER was the *Eliminator* and Frog 1.49, many entrants using this combo. Despite several 'prangs' (mainly due to warps) the standard was quite high and we saw some exceptional flights from the Indian Airlines contingent (flying model aircraft for a change!).

This year's *Aero Modeller Challenge Cup* (Open R/P/G) dominated by gliders. Lift was rather sparse and no one managed a full house although there were several near misses. Models were mostly A.P.S. designs with a few own-designed gliders.

OPEN RUBBER, held in the late afternoon was hardly spectacular. The rather low scores were mainly caused by

the poor quality of the locally produced rubber, used by the majority of contestants. Average times were around two minutes. Winner, D. K. Bhowmic, had only to make a couple of short flights (about 30 per cent turns) with his 50 gramme Wakefield to win the event. His model, an A.P.S. XL-58 is immaculately finished and is capable of doing 3:25 in 'still' air.

Concurrently run were PAYLOAD and PRECISION. In Payload an interesting design was entered by S. Dutta. It had straight-dihedralled wings, a long tail moment arm and

Our reporter from Zell, illustrates the perils of A/2 contests in snow! Come up Claus Maikis! Below, Wake winner Hofsass who outclassed all else. Right, Britain's Best Dressed gentlemen, Messrs. French and West in polythene gaiters.





incorporated lots of anti-warp structure. It was powered by an O.S. .09 engine and displayed a consistent climb pattern. It took the first place followed by a Veron *Deacon* and a Graupner *Kadette*. Last year's winner, Mrs. Ratnesh Singh, was let down by her off-trim model, another *Kadette*. Precision went to T. Sreivastava of the Indian Airlines, compensating somewhat for his loss of a well-trimmed *Eliminator*.

A revival of interest in STUNT was noticeable. Top place went to Indrajit Mazumdar with his D *Golden Galaxy* design. He flew a beautiful pattern and thoroughly deserved the first place. His efforts were particularly creditable as he is a newcomer to precision aerobatics. The rest of the entrants were hardly impressive.

Largest crowd 'drawer' was F/F Seaplane. Things were not very 'lively' this year and only a couple of fliers managed to make the qualifying flight - with 'stretched-out' *Tomboys*.

Last event of the day was single channel Radio. This was won comfortably by veteran modeller N. Ghose with his slow-flying, own designed, model.

Organisation this year was on the whole very satisfactory and we would like to thank Mr. G. C. Roy of the All India Aeromodellers' Association for his fine efforts which made the 21st 'Nats' a happy success.

## and Zell International

THE WEATHER at the Zell am See Internationals, held over was just short of mad! On the first day there was one hour's sunshine, one hour snow-storm, and so on, while on the second day it was sunny throughout and warm, though virtually no thermals were to be found. The snow was knee-deep (well - at some points it was just a little bit higher - see photo - the author turning into a mole to demonstrate what nordic flyers are capable of!) so the runway was crowded. This resulted in some gliders just falling off the line due to the tower being unable to make his way through the masses. There was, luckily, almost no wind, and this was, in fact, a boon; retrieving a model only once took so much energy that you were 'finished' for about an hour and a half (or one round!). The organiser, afraid of exhausting (or losing!) all the competitors, decided to fly only 5 rounds.

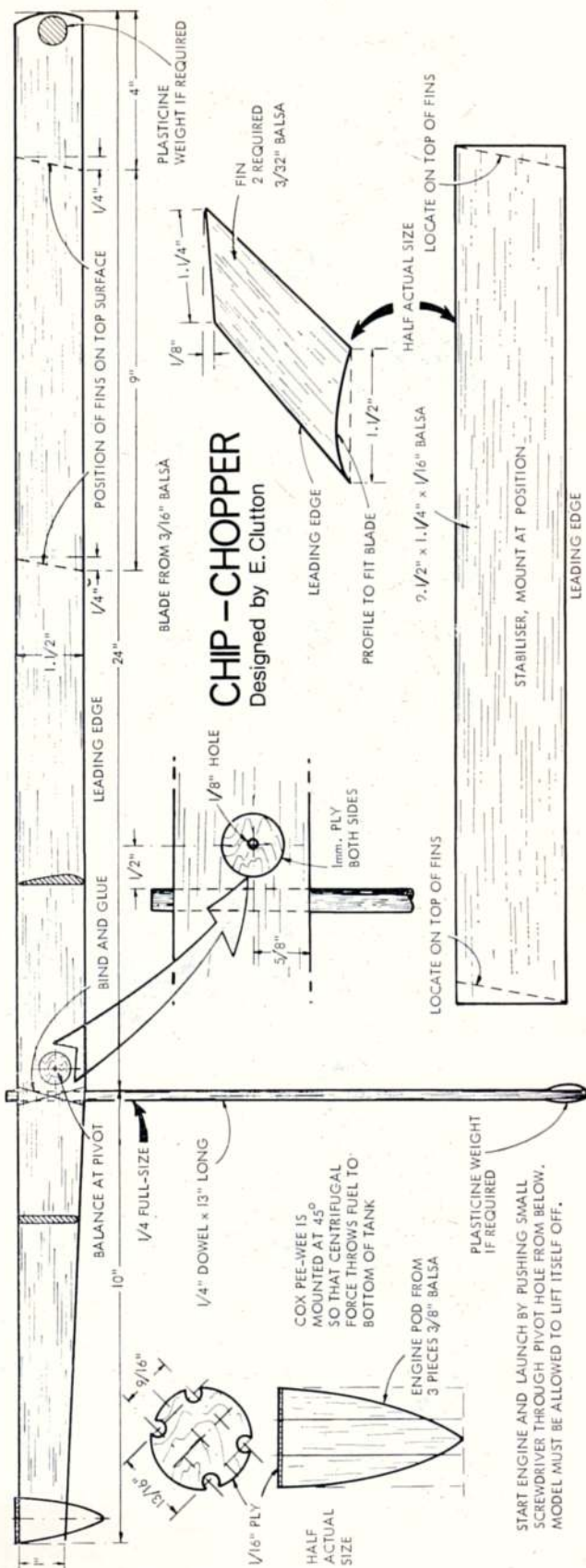
Conditions certainly favoured the Wakefields (Hofass said so as soon as he arrived at the field) and, of course, the power flyers. Competitors came from Denmark, France, Switzerland, Italy, Yugoslavia, East Germany, West Germany, U.S.A. (the Simpson twins) and, of course, Austria. One competitor, Peter Allnut, had even come from Canada just for this contest. Last, but not least, Great Britain was represented by George French and John West. All the European elite were present with 6 world champions (old and new), two runners-up champions and one European champ.; Löffler, Hirschel, Oschatz, Koster, Seelig, Baumann, Ricke, Martin, Mildner, and just too many other well-known experts to name.

The only flyers with full scores were Hofass in Wakefield and the three men in the power fly-off. Unluckily Reid Simpson lost his model in this his last contest in Europe before returning to Texas in May. The most enjoyable part of the contest was that one had enough time to talk with all the flyers present and so meet old friends, and make new ones.

A/2 (83 entries) 1. Gaensli (Switzerland) 810; 2. Sporer (Austria) 805; 3. Pressler (Austria) 795.

Wakefield (34 entries) 7. Hofass (W. Germany) 900; 2. Löffler (W. Germany) 885; 3. Surina (Yugoslavia) 871.

Power (24 entries) 1. R. Simpson (U.S.A.) 900 + 305; 2. Zimmer (France) 900 + 281; 3. Hobinger (Austria) 900 + 216; 7. G. French (G.B.) 871; 12. J. West 832.

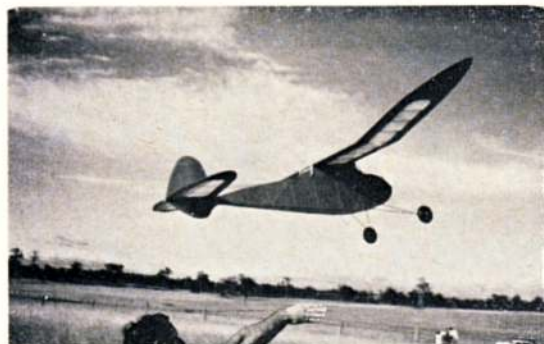




## OVERSEAS NATIONALS

## —AUSTRALIA

Report by M. J. Mildren



Top, Barry Lee's Kayo with Frog 500 placed 4th in the Old Timer event. Winner of this event was Ford Lloyd, shown centre with his Enya 15D powered Eastern States Gas Champ. Next, the Senior Rat-racer placegetters - M. & G. Bourne, S. & P. Ratten, Kerr/Lane - all used Super Tigres. Bottom left, Ernie Holden's *Stinson Reliant* featured working flaps, lights, doors and throttle, to take second place in C/L scale. Bottom right, Ken Jack with his 3rd placed model in Novice Multi - using home-built glass fibre fuselage and conventional wing. Enya 60 powered.



**T**HE 23rd AUSTRALIAN NATIONALS were held between 28th December 1969 and 3rd January 1970 at Wallacia, New South Wales. Situated forty miles due west of Sydney, and just within the Blue Mountains, this little town features just one large hotel, but this and a large caravan park provided adequate accommodation for the 180 modellers who attended the Nationals.

The meeting got off to a rather shaky start when none of the processing committee had been sighted by early afternoon. However, they eventually arrived and the voluntary processing system got under way. This meant that processing was not obligatory, but spot checks were held during the contest and each place-getter was automatically measured.

The free-flight events were held on a very small field some six miles from the town. The field was surrounded by trees, and even had some isolated trees within its boundaries; thus was only suitable for calm conditions, which did, in fact, prevail for the three significant F/F contest days - most models landing within 200 yards of the take-off point.

The first day was clear, calm and sunny, but this turned overcast, while remaining calm, and still with plenty of thermals for the next two days. An A/1 glider was launched (without its D/T fuse being lit!) on the second day, and circled overhead for five minutes, before disappearing into cloud. Coming back into vision seven minutes later, it circled for a further quarter of an hour over the control point. Two more watches were started, and the model followed in anticipation of a new duration record. Landing eventually in the top of a 40 ft. tree, just half a mile from take-off point, the model achieved a duration of 34 minutes - two minutes short of the existing Australian record.

During the 'briefing' period, the modellers had voted to fly **F.A.I. free flight** events to five rounds only. Roy Summersby, flying an M.Z. Super Tigre G.15 powered *Night Train* in the Power event achieved a perfect score after five rounds, and asked the timekeepers to time him for seven rounds in order to break the Australian record. In the sixth round he failed to max - but examination of the motor-run watches showed 10.0 and 10.1 seconds respectively.







Left, Maurice Mitchell's magnificent *Crusader*, which took third place in the control-scale event, featured variable incidence wing, controlled in flight, plus arrester hook, retracting undercarriage and both leading and trailing edge flaps.

### 23rd NATIONAL MODEL AIRCRAFT CHAMPIONSHIPS

#### Results:

Event	No. of Entries	No. of Contestants	First	Second	Third
A2 Sailplane	46	30	Allamby NSW(732)	Neville ACT (731)	Summersby NSW (724)
A1 Sailplane	41	24	Lee NSW(545)	Borriil NSW(513)	Holmes NSW(509)
Chuck Glider	36	26	Murray ACT (145)	Cavenagh NSW(129)	Healey NSW(121)
Wakefield	14	10	Beashel NSW(821)	Butler NSW(795)	Cox NSW(668)
FAI Power	15	7	Summersby NSW(900)	Pettigrew VIC (834)	Lloyd VIC (791)
Open Power	33	15	Lloyd VIC (795)	Sherlock NSW(786)	Borriil NSW(776)
Duration Scramble	50	25	Sherlock VIC (1444)	Hegarty (1347)	Follett (1269)
FAI Speed	12	5	Finneran NSW (208 Kph)	NSW (188 Kph)	NSW (188 Kph)
Class II Speed	12	7	Kerr NSW (163 mph)	Buck SA (158½)	Carey VIC (158)
Class III Speed	9	4	McGee NSW (164 mph)	Tilley NSW (156)	Armour WA (134)
½A Team Race	17		Wilson VIC (11:11)	Bourke (12:8)	Munro (13:46)
FAI Team Race	20	7	House WA (11:11)	Tilley NSW (11:30)	Lee NSW (12:10)
Proto Speed	12	5	Logan NSW (32.6)	Bell (34.0)	Tilley (34.3)
FAI Combat	35	21	Summersby NSW	Rowney WA	Sherlock NSW
Open Combat	31	23	Summersby NSW	Bell NSW	Georgiandis; VIC
Stunt	27	16	Hanna NSW	Sutton NSW	Towell NSW
Novice Class III	18	15	Lysaght NSW	Green VIC	Jack NSW
Radio Class III Radio	18	15	McGrane VIC	Prosser NSW	Turton NSW
Pylon Race	9	6	Green VIC	Healey NSW	Murray WA
Radio Control Scale	12	6	Woodcock NSW (Widgeon)	Martin (PT17)	Wallace (Corben Super Ace)
Control Line Scale	11	9	Newnham QLD (Lancast.)	Holden NSW (Stinson)	Mitchell ACT (LTV Crusader)
Free-Flight Scale	13	8	Mitchell ACT (Cougar)	Dippel NSW (Currie WOT)	Jackson NSW (Fok. D7)
Jnr. A1 Sailplane	10	4	Court NSW (376)	Everingham; QLD (328)	O'Reilly SA (281)
Junior Rubber	7	4	Staples ACT (138)	Hudson NSW	Rayner NSW
Jnr. Chuck Glider	12	8	Jones ACT	Rayner NSW	O'Donnell NSW
Jnr. FAI Combat	10	8	Ratten VIC	Wilson NSW	Phippen NSW
Jnr. Stunt	4	3	O'Donnell NSW	Liband NSW	Harvison NSW
Coupe d'Hiver	16	5	Butler NSW(545)	Beashel NSW(331)	Hegarty NSW(325)
Class I Power	13	7	Lloyd VIC (711)	Nyberg VIC (524)	Summersby NSW(496)
Old Timers' Event	15	5	Lloyd VIC (277)	NSW(157)	Darr NSW(133)
Night Scramble	39	35	Holmes NSW	Birkin VIC	Sherlock NSW
2½ c.c. Rat Race	30	19	Bourne/ Bourne VIC (580)	Ratten/ Ratten VIC (459)	Lee/Kerr NSW(420)
Jnr. 2½ c.c. Rat Race	13	10	Hall NSW(467)	Wilson NSW(423)	Phippen NSW(204)
Class II Team Race	9	5	Tilley NSW (6:42)	Kerr NSW (6:52)	Logan NSW (7:05)

He claimed an attempt for this over-run, but after much discussion and consulting the rule book and Sporting Code, it was discovered that times must be recorded to the nearest whole second below that which is read. This, of course, implies that a motor run of 10.9 seconds is legal - not what the rules intended! (Roy's 10.1 secs. was an over-run - he was fully entitled to a re-fly - Ed.)

On the fourth day a slight breeze sprang up, but the only classes affected were **chuck glider** and **'Old Timer'**, both of which found the field sufficiently large - the organisers being very lucky in this respect.

**Control line aerobatics** and **combat** were held at the caravan park. Stunt attracted a large entry of 27 competitors although only 16 flew. Most popular models were *Noblers* and *Thunderbirds*, mainly powered by O.S.35s, although winner Herb Hannen used a Merco 49 powered *Peterbird*. Combat was divided into two classes, Open and F.A.I. - both being taken by all-rounder Roy Summersby, who attained the title 'Champion of Champions'. The remaining C/L events were held at a further site some 7 miles away as they required a smoother surface. The **Scale** class was hotly contended between 9 competitors - first place being awarded to Max Newnham's superb *Lancaster*, powered by four O.S. 30's! The undercarriage was fully sprung and retractable, whilst the 6 ft. span, 15 lb. model also featured working flaps and throttled engines. Third place model was equally impressive - a *Crusader* built by Maurice Mitchell. The 33½ in. span, 46 in. long model was powered by a throttled O.S. 40 and featured retracting undercarriage, arrester hook and in-flight controlled variable incidence, as well as leading and trailing edge flaps.

An interesting class was the 2½ c.c. **Rat Race** event. The rules required that the pilot must make at least one pit stop per heat and final. Only two models fly at a time, and heats are held over ten minutes, finals over 30 with six up! Pilot with the most laps to his credit is the winner.

**Radio Control** events were held at yet another site, this time less than a mile from the town, but the uneven ground caused considerable trouble to the scale modellers, although the stunt flyers seemed able to cope. Aerobatic events were divided into two contests, Novice and Open, each attracting eighteen entries. John Lysaght won the Novice event and came fourth in the Open with his *Kwik Fli III*, powered by an Enya 60 and equipped with *Silverstone* R/C. Gerry Mussen and Jim Davie of Dandenemy Club (Victoria) produced a couple of conventional-looking models, constructed of cardboard-covered foam wings and fuselages of cardboard covered, hardwood framed structures.





by  
Peter  
Richardson

At left, Sirotkin's latest stunter finished in white, red and yellow, plus a multitude of transfers, is the model with which he placed fourth at the 1969 Russian Nationals. Wing is sheet covered. Right, a 'toast rack' full of combat models—latest idea from the Scunthorpe club. Light, medium or dark, sir?

THE S.M.A.E. CENTRALISED control-line meeting at R.A.F. Cottesmore on 22nd March got the 'contest season' off to a good start, as was evidenced by the high attendance, no doubt partially due to the fine weather. As could be expected from the first contest of the year, there were several new ideas in evidence, no doubt hatched out during the winter 'recess'.

The team-race flyers produced the greatest number of new features, in particular the team of Kirton/Horton with their most unconventional model, which featured an anhedral tail with *no elevators*—control being entirely by the use of wing flaps. This system worked extremely well—in fact, were it not for the uncanny sensation of seeing the model land with flaps fully down, the casual observer would detect no difference in performance. Pilot John Horton reported that it was inclined to be a little tricky on take-off, but was otherwise very stable. In answer to the question 'why?' the reply is that this set-up was introduced to stop the nose from pitching up when overtaking—with the associated loss of airspeed. Another hoped for advantage is that by stopping the nose from lifting, fuel surge will be prevented. By using a collector ring on his Oliver III a range of

Below, N. Kirten starts the Oliver of his unconventional model—note the 'down flaps' ready for take-off. At right, Frank Bradley's Dive Bomber—a very clean, fast model, although the staky undercarriage led to a few problems.



56 laps is possible, although to be more competitive some extra m.p.h. will have to be found.

Having learned their lesson from the '69 Criterium that fuel cut-outs are here to stay for faster pitstops, both the Place/Howarth and Heaton/Ross teams are now so equipped—and although each have approached the problem in a different way, they were equally effective. During the F.A.I. team race final the Heaton/Ross team used their new system to good effect—securing a worthwhile lead until they were disqualified, when Derek momentarily stepped outside the pilot's circle. It is unfortunate that whipping—a deliberate move to increase airspeed—is penalised by a warning, whilst an unintentional act such as Derek's, which could not conceivably have shortened his race time, results in an outright disqualification. Agreed, rules are rules, but should not the punishment fit the crime?

Incidentally, although Don Haworth's cut-out worked effectively, it was of no help to him on this occasion as his home-built motor was low on laps (around 30 per tank). Their reserve, or rather 'hack', model showed evidence of experimentation with wheel position—apparently its position relative to the wing leading edge is more critical than proximity to the centre of gravity. They certainly seem to have benefited from this research, the model landing fast and 'sitting' neatly on the ground with no bouncing tendency—although a wire nose-skid is now em-







ployed to protect the propeller should this idealic situation change!

**Rat racers** seemed to have changed little, except perhaps that there is a more widespread change to the use of full-length pans, but in the main the models were the same ones as used throughout last season – albeit somewhat tattier, and some definitely rough! Frank Bradley's *Dive Bomber* suffered from 'turn-over' troubles on landing – but could provide interest later in the year, as it is now fitted with an MZ centrifugal fuel switch – presumably in anticipation of a tuned pipe to be fitted to his K&B?

The most apparent aspect of the **combat** event was the lack of 'names' entering – although, of course, Steve French of Scunthorpe, the eventual winner does not fit into this category. A certain Mr. V. Hunt had pre-entered, but did not appear to have arrived. John Shaw was in attendance, but now seems to have abandoned combat flying in preference to Rat and Goodyear racing, whilst John Duncker has been flying in the multi R/C events for nearly a year. With such a rapid desertion of the top names, this should leave the way wide open for the 'new crop' of flyers to fill the vacuum – but it would be a pity if the quality of flying diminishes. However, competition being what it is, no doubt before the end of this season several 'new names' should have become established – but to anyone on the brink of deciding whether or not to fly combat this year, the best advice must be to jump in with both feet and try to make a name for yourself!

The **handicap speed** event produced little new on the scene, except that Ron Irvine with his unpiped K&B 40 (what else!) is likely to shatter some of the established .60 flyers this year – in whose class he is forced to compete. On one flight the engine really picked up – sounding superb – but a little 'pilot error' put it out of the running, breaking the pan but leaving the motor undamaged in the process.

### Jousting Continued

Again on the subject of combat, this Cottesmore meeting was to be the first occasion at which the F.A.I. rules were to be used, since their adoption by the S.M.A.E. However, despite organiser Graham Howard starting off with such good intentions (he even had notices outlining the rule differences on display) the competitors had other thoughts as they signed a petition demanding the use of the old S.M.A.E. rules, claiming F.A.I. ones to be unworkable. Are they really that bad? Agreed, a non-zeroing type (accumulative) of stopwatch is required for counting the penalty points on the ground, but this is not an insurmountable problem – perhaps it is the lack of sufficient organisers that is at the real root of the trouble. It seems that the Vernon Hunt dis-

qualification at the '69 Criterium has been inflated out of all proportion, and is widely misunderstood. He was disqualified purely by the contest-director's own interpretation of the rules – there is no specific rule stating that 'thou shalt not place one's arm across another's chest', etc., etc.

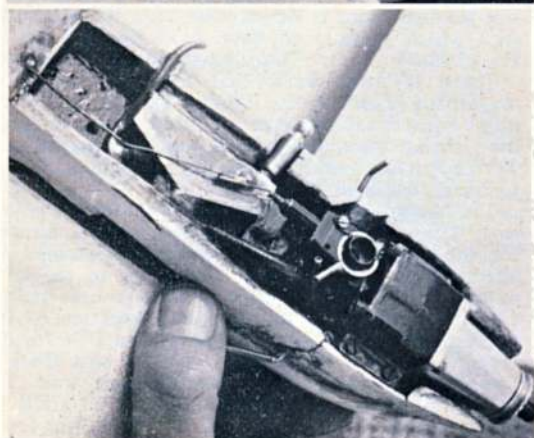
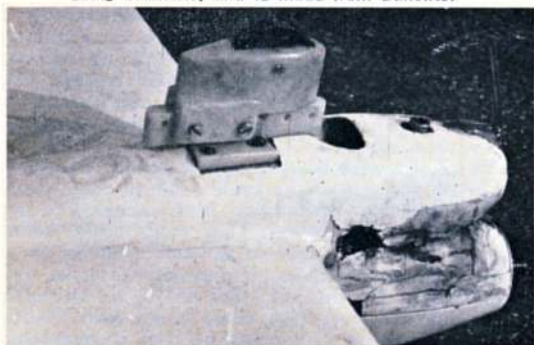
On a brighter note the Belgian organisers of the 1970 World Championships inform us that there are to be **two** separate contests for combat. The first, the *Concours international de combat* is purely an international event (combat not yet having World Championship status) and is open to teams of three contestants per country, who have been selected by their country for representation. The second is the *Grand Prix du Gouverneur* – virtually a duplicate event with the same number of entries from each country. This could prove particularly interesting – although of course, both contests will be to F.A.I. rules...

These two events will be held concurrently with the Championships, and it is permissible to fly in both events if desired – the results of each being kept entirely separate.

### Wanted

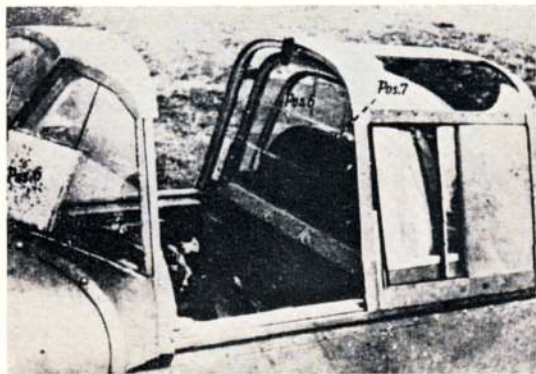
Has anyone seen the reputed latest 'Bugl 15' team race motor? One person particularly interested is a keen Australian team race flyer, who last March sent nearly \$60 (Australian) following a letter advising cost. To date (13 months later) neither an engine, nor a reply have been received. Start again. Has anyone seen the reputed Paul Bugl?

Two views of the Place/Howarth reserve model. Top view shows the adjustable nylon undercarriage mount, whilst below their cut-off is shown in the 'fired' position. Revolving the lever on the outside of the fuselage resets it. The unit is a little bulky, due to the restriction in the size of oil-seals available, and is made from Bakelite.





Right, an IL-2 m3 suitably protected from the elements, while below the windscreen and sliding cockpit canopy of the single seat IL-2 is shown. Structure was identical to later marks, except that fixed side runners were more substantial in IL-2m series.



DURING the late 1930's, aviation journalists and writers faced with a dearth of reliable information on Soviet and Japanese military aircraft, would, after frantically pawing through the latest *Janes* always resort to the 'odious comparison' technique to fill their columns. Almost every Japanese aeroplane was, according to them, a copy of an existing American or European prototype and similar remarks were made about Soviet machines. Such conclusions were usually based on fuzzy photographs and even fuzzier eye-witness accounts.

The implication that the copies were inferior to the originals was no doubt comforting to their readers and these would appear to have included military personnel in high places. They ought really to have been a little more cynical of such material. Somewhere amongst the mass of informative articles which appeared at the time that the Soviet Union became our noble ally overnight, there is one gem. Under a picture which is so touched-up that it resembles a Van Gough there is the caption '... the *Stormovik* (sic) which appears to have been inspired by the *Fairey Battle* ...'. Comparisons are indeed odious!

There is little doubt that the four ton flying juggernaut known as the Ilyushin Il-2 was one of the finest military aircraft ever produced. Crude in design the *Ilyusha* was meant to give and take punishment. To the Russian soldier it was the 'flying tank'. To the German, 'the black death'.

The design originated from a requirement in the early 1930's for a specialised ground attack aircraft, for the Soviet military authorities had studied the effects of low level attacks on troops in the latter months of the First World War. So of course had the German High Command who had experienced this form of attack. During a contest held in 1938 for this type of machine, Sergei Ilyushin's two seat CKB 55 competed against a Sukhoi design and won. The successful machine was developed into the CKB 57, the prototype of the single seat Il-2 which was found

AIRCRAFT DESCRIBED No. 194

## ILYUSHIN IL-2m3 'Stormovik'

described and drawn by H. Woodman

to be somewhat underpowered. A 1680 h.p. AM 38 engine was fitted and a marked improvement was noted. A series of test trials was held in October 1940 and the machine passed its final acceptance tests in March 1941. It went into production as the Il-2, and 249 were completed before the German invasion of the Soviet Union.

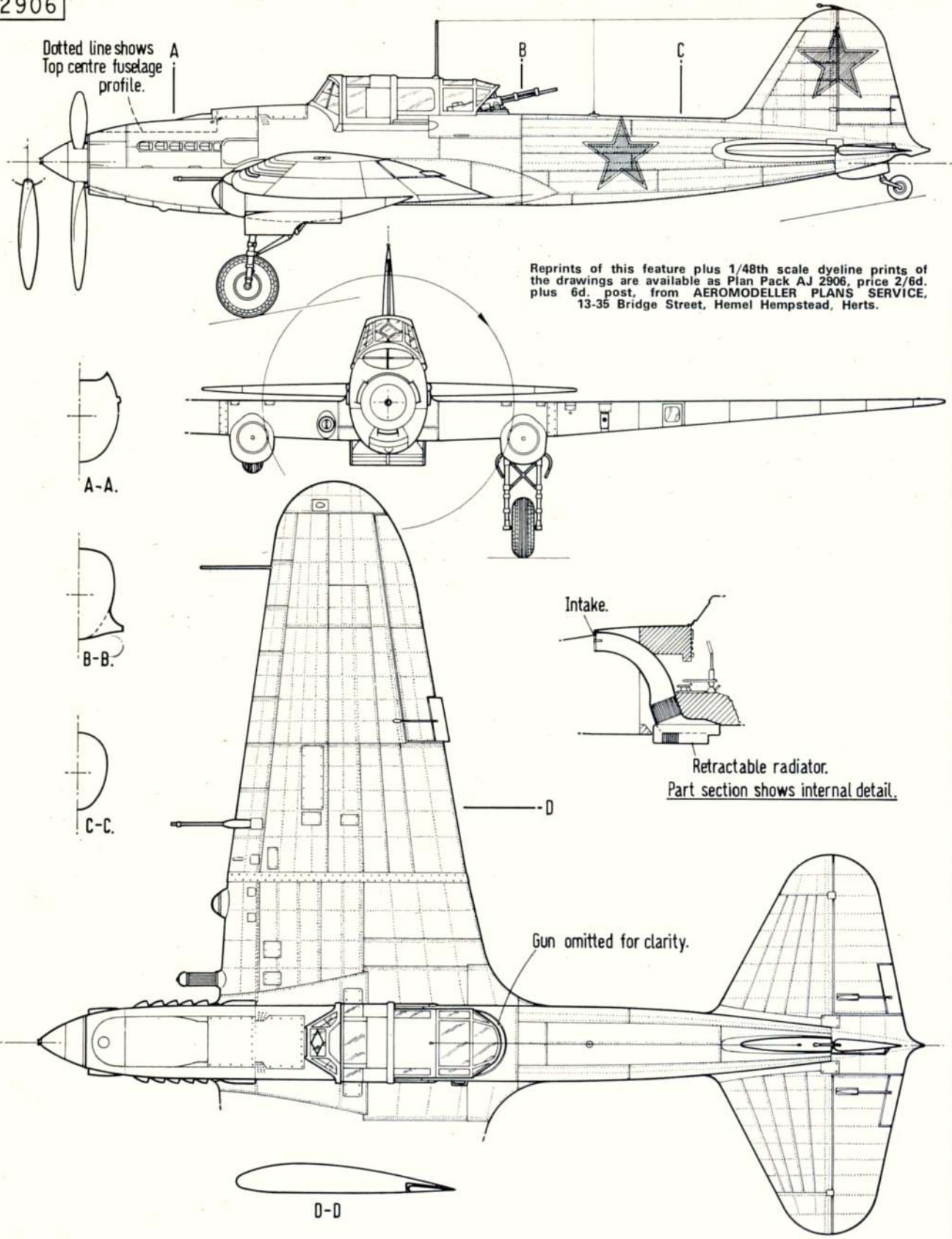
The first batch of Il-2s were thrown into battle against the invading forces and immediately proved their worth although as might be expected with a new machine under service conditions, certain defects were revealed. One of these was the lack of rear armament whilst another was the ineffectiveness of the 20 mm. cannons against the new German armour. In the Spring of 1942 design modifications were made in the light of experience gained on the front, and although an improved single seater Il-2 emerged, a new two seat version known as the Il-2m went into service. The production model, the Il-2m3 was issued to front line squadrons from August 1942 onwards and despite the additional crew member and equipment the machine achieved a top speed of 404 k.p.h. (251 m.p.h.) whilst handling qualities were improved.

The name 'flying tank' was well deserved for the *Shturmovik* was not only well armoured and capable of taking a great deal of punishment, but it was also able to carry a whole range of weapons. The forward fuselage was built as an armoured bath with panels up to 12 mm. thick. Protection was thus given to the crew, engine and radiator which was flanked by two armoured panels, and could be retracted. Armament

A flight of Il-2 m3's - the lettering on the fuselage side of the nearest aircraft reads 'Avenger'.





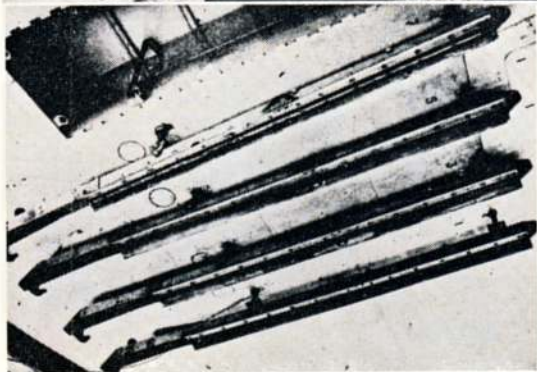


ILYUSHIN IL-2m3.

Drawn by:- HARRY WOODMAN.  
Traced by:- A. A. P. LLOYD.

SCALE: FEET. 0 1 2 3 4 5 6





of the Il-2m3 consisted of two VJa 23 mm. cannons and two Shkas 7.62 mm. machine guns in the wings with a heavy 12.7 mm. BS machine gun in the rear cockpit. Eight RS 82, or four RS 132 rocket projectiles were also carried in launching rails under the wings or alternatively 600 Kg. (1321 lbs.) of bombs could be carried in concealed racks in the centre section. In a later version of the Il-2m3, N37 or P37 anti-tank cannons were substituted for the VJa guns plus 200 2.5 Kg (5½ lbs.) anti-tank bombs.

The Il-2m3s played an important part in the great tank battle at Kursk. Massed squadrons attacked the 9th Panzer Division and knocked out 70 tanks in 20 minutes on 7th July 1943. After a two hour continuous attack on the 3rd Panzer Division, 270 tanks were lost whilst the 17th Panzer Division lost 240 tanks out of a total strength of 300 during a sustained four hour attack.

Well earned decorations were showered on *Shturmovik* crews which frequently included women such as Senior Lt. Anna Yegorova who was navigator of her Regiment. She completed 260 missions and was awarded the Red Ensign twice and the Gold Star. The latter was awarded posthumously as it was thought that she had been killed, however she had been captured and managed to survive the treatment she received in a German prison camp.

The *Ilyusha* was to the Russian citizen what the *Spitfire* was to the British, and it was most appropriate that the surrender ultimatum to the German Army Group in the South Ukraine was dropped from an Il-2m3.

#### Specifications: Ilyushin Il-2m3

##### Powerplant

AM38 engine (modified). Take off power 1770 h.p.

##### Dimensions

Span: 14.6 m. (48 ft.)

Length: 11.6 m. (38 ft.)

Wing area: 38.5 sq. m. (414.4 sq. ft.)

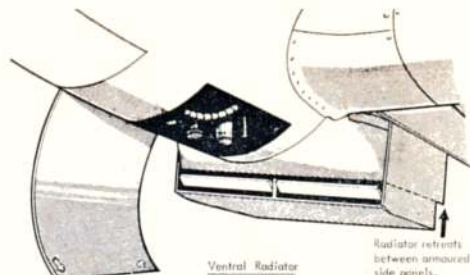
Weights: Empty 4360 Kg. (9604 lb.); Loaded 5510 Kg. (12,136 lb.)

##### Performance

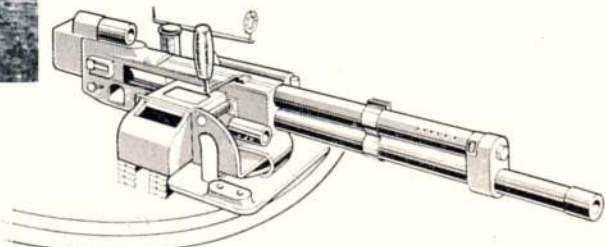
Ceiling: 6000 m. (19,500 ft.)

Range: 600 km. (375 miles)

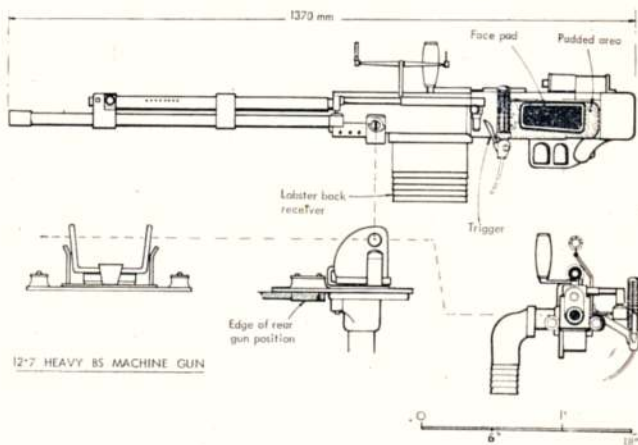
Max. speed: 404 k.p.h. (251 m.p.h.)



The radiator 'rides' up and down between the two side plates.



This gun, because of its weight and length required the operator to adopt a special attitude when firing. The rear of the gun was placed on the crewmembers' right shoulder, he held it steady by holding the grip on the bottom of the gun with his right hand and placed his head on the pad on the left side of the butt (hence the face pad). The trigger was mounted on a vertical grip with a rubber cover on the left side of the gun and the crewman held this in his left hand and pressed the lever type trigger with his forefinger. The gun was in fact supported in a similar way to the U.S. Army 'Bazooka'. Above left, a line up of Il-2 M3s. Note the open rear cockpit of the second aircraft in line. At left, the underwing rocket projectile racks with numbered firing sequence. Chamber on left is for wing gun, with slotted panel and gun removed.



#### Colour Schemes: Il-2m3

a. Standard day scheme: Dark brown and dark green camouflage pattern on upper surfaces (similar to early British day scheme) with pale greyish-blue undersides. Some machines had an overall dark green on upper surfaces.

b. Night Intruder Scheme: Overall matt black.

c. Winter Scheme: A flat white wash over all upper surfaces frequently crudely applied with patches of the original dark paint underneath showing through.

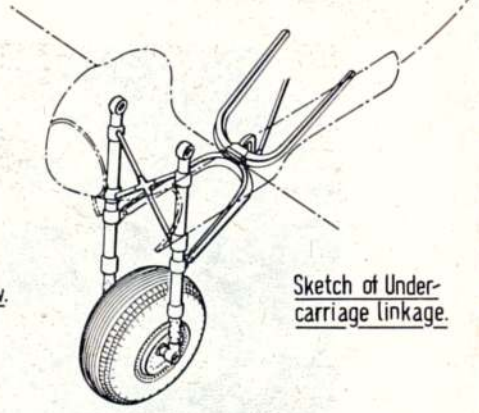
**Insignia:** Red five pointed star on sides of fuselage and vertical tail surfaces; not on upper surfaces of wings. Star had a white surround on dark surfaces except on Night Intruder scheme.

The author would like to acknowledge the generous assistance of Mr. W. B. Klepacki who provided reference material and his own sketches for this feature as well as photographic illustrations.



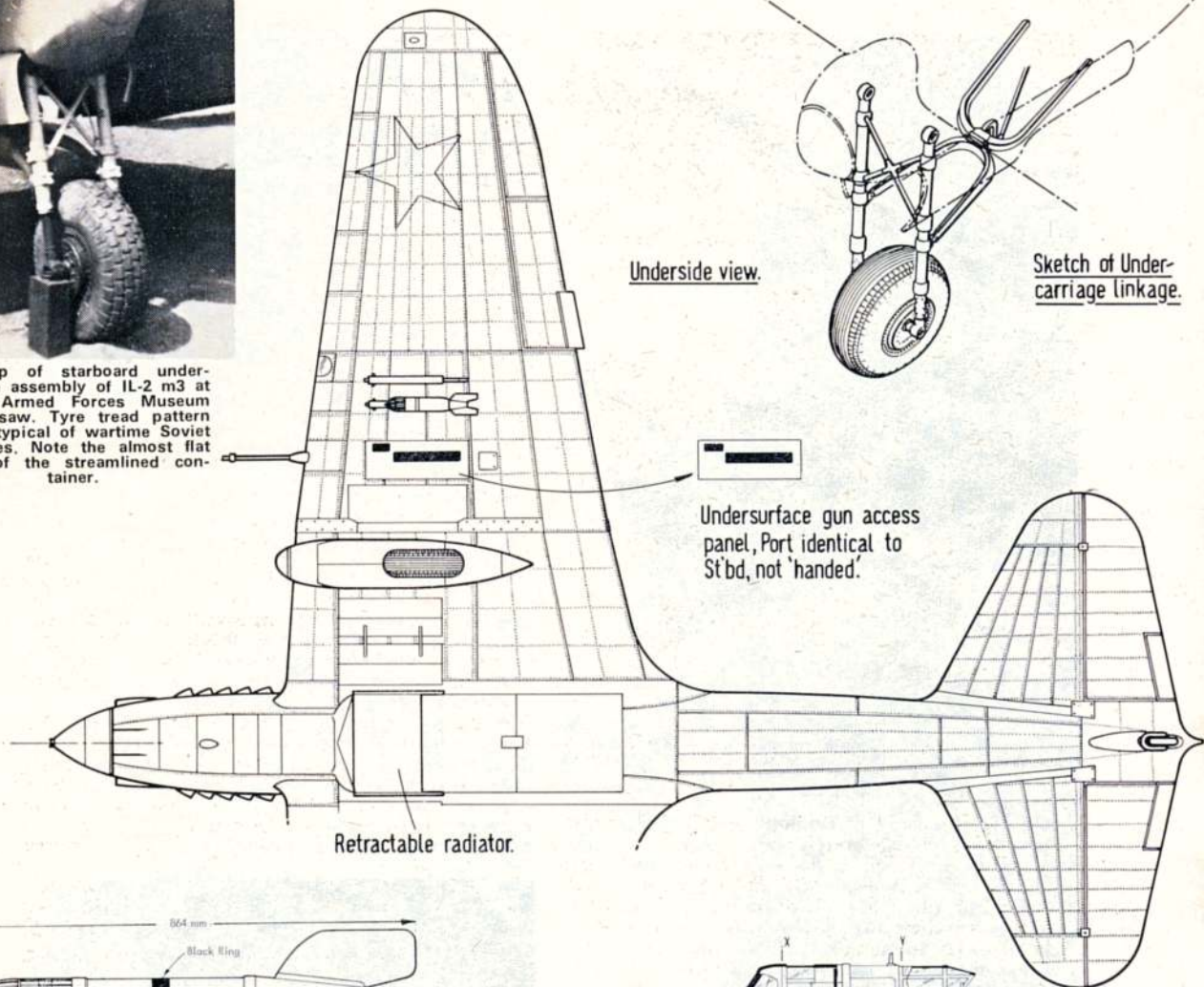


Close-up of starboard undercarriage assembly of IL-2 m3 at Polish Armed Forces Museum in Warsaw. Tyre tread pattern is not typical of wartime Soviet machines. Note the almost flat sides of the streamlined container.



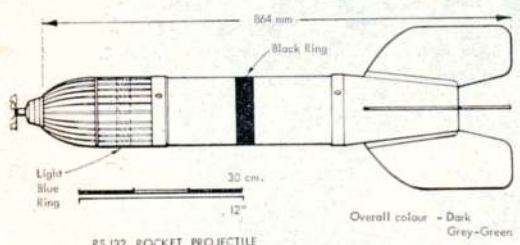
Sketch of Undercarriage linkage.

Underside view.

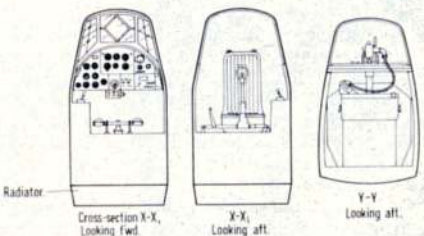
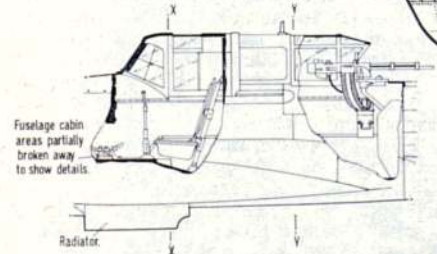


Retractable radiator.

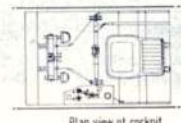
Undersurface gun access panel, Port identical to St'bd, not handed.



RS 132 ROCKET PROJECTILE



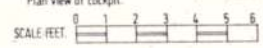
Radiator Cross-section X-X, Looking fwd. X-X, Looking aft. Y-Y Looking aft.



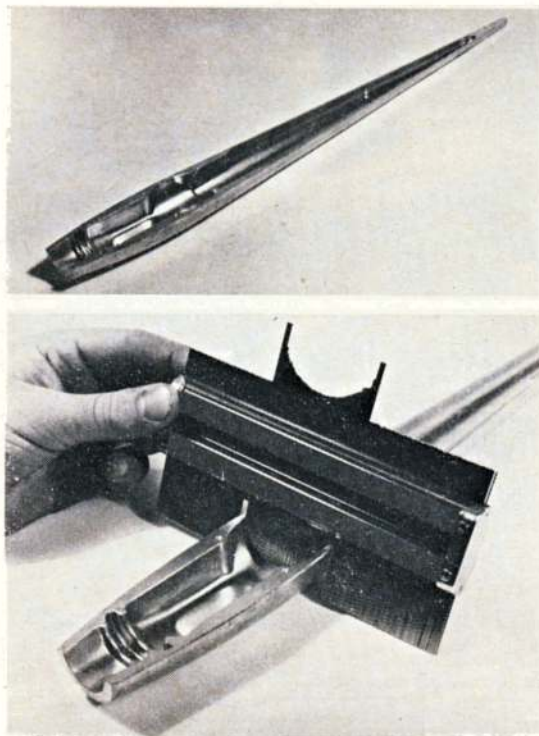
Plan view of cockpit.



ILVUSHIN IL-2 m3.







Top, the Harters full length rat-race pan - now available from World Engines, and below the Copydex 'Mimic' is seen in action measuring the internal cross section of this pan.

Although the name of **Dunlop** normally brings into mind the vast range of tyres manufactured by that company, among their many other interests lies that of the adhesives industry. By no means newcomers to this field (they have been producing industrial adhesives for some twenty years) their new range of eight adhesives are designed to cover practically every job that the 'home handyman' encounters. Of particular interest to modellers will be their *Epoxy* (price 6/- for two 20 c.c. tubes), *Woodworking* (a P.V.A. glue, price 3/6d. per 4 oz. tube, 5/- for 8 oz., 51/6d. per gallon) and *Clear Household* (an impact adhesive, price 2/3d. per 40 c.c. tube). The P.V.A. glue is contained in a large 'soft' plastic tube, and is ideal for use when coating large areas, but rather unweildy for normal applications. The epoxy resin is supplied complete with a plastic mixer - very useful, as when the surplus adhesive has set it may be 'cracked off' simply by flexing it.

The remainder of the range may also be of use to modellers, especially those with demanding wives who require various 'little jobs' to be completed around the house. These include adhesives for carpets, wall tiles, ceiling tiles (polystyrene foam) and flooring materials, as well as a general purpose contact adhesive. All of these products are colour coded for ease of identification.

Turning from the sticky stuff to the material on which it performs, we received from Jim Scott (of **Complete-A-Pac** fame) a box full of assorted formers, both ply and balsa. This we discovered was a sample

Right, the new Humbrol spray gun and 'precision oil', as described in the previous issue.

## TRADE NOTES

of the type of finish and accuracy that his newly acquired band-saw is capable of, as is now used in the production of his many varied scale kits. The cutting was really remarkable - the edges being perfectly clean and crisp with no sign of tearing or saw marks as is so often the case with lesser quality equipment. The balsa was of first class quality, and if his kits are to be judged by the quality of this work, then they should be really good - especially as he modestly disclaimed our sample as consisting of rejects!

Also from Complete-A-Pac was a set of plans for their 56 in. span version of the Gloster Gladiator, designed for multi R/C equipment and a 10 c.c. engine. The plans reveal a most impressive model, clearly drawn with full constructional detail, plus colour schemes and registration markings for the example seen at Old Warden. Whilst we would not rate this a '100% pure scale' design, it is nonetheless very impressive and doubtless close to this mark. Price for the plan (drawn on two sheets) is 35/-, and a moulded canopy is available for 13/6d. A pre-cut kit with canopy costs £16/10/0 or a complete set of materials are available for £8/12/0.

When you think about it, how often do you risk a minor burn in the workshop? Whether you are using a soldering iron, a blow-lamp, or even removing warps with steam, a small slip can often result in scorched skin, and it is for this reason that a can of **Burneze** should be kept within easy reach. This is an Aerosol spray, which when applied to the affected area





chills the burn and the local anaesthetic included soothes away the long-lingering pain. Another advantage claimed is that its application reduces the over-release of histamine, which is the cause of blisters and ultimate festering. The small size of the can (4½ in. long x 1½ in. dia.) enables it to be carried even in the most crowded of tool-boxes. Price of this pain reliever (3 oz. can) is 7/3d.

From the British end of **World Engines Ltd.** we have received an example of the *Harter's* cast magnesium rat-race pan. This pan is superbly made, only requiring a little polishing work on the exterior to produce a mirror-like finish. Overall length is 20 in. and the weight 4¼ oz. according to our none-too-accurate letter scales. Strengthening ribs are integrally moulded at the nose, whilst local thickening at crucial points result in the greatest strength possible for the lowest weight. Price is just 50/-, but stocks are rather limited, and no other sizes are available.

Yet another new product from **Humbrol** is their brush cleaner. This item not only cleans enamel and cellulose dopes from brushes, but it will also remove wet paint, oil or tar from skin and clothing. Brush cleaning time is now considerably shorter, it being simply a matter of shaking the brush in the cleaner then rinsing in water and drying before using another colour. Available only in 5 oz. tins, at a price of 2/6d. each.

The *Copydex Mimic* is an interesting little gadget, described as an 'instant shape tracer'. It consists of a metal frame 6 in. long, through which some 165 steel rods are inserted as a push fit and is used to reveal the exact profile of an object, simply by pushing it gently against the object in question. This action of course moves the needles through the holder, thus revealing the contours of the subject. Potentially extremely useful to the model maker, especially when fitting block balsa to the exterior of a rounded fuselage, etc., or even for checking profiles when sanding, the degree of pressure required could easily mark soft balsa, and the depth-limitation of the tool is rather restrictive. Normally, the depth of the template is restricted to approximately 1 in. but if the needles are pushed 'en bloc' to one edge of the metal frame, this is naturally doubled - although efficiency decreases when moulding round surfaces, as the rods tend to splay outwards rather than be pushed back uniformly to represent the desired shape. Packaged in a transparent plastic wallet, the *Mimic* retails at 29/6d.

An up-dated, Anglicized version of Howard McEntee's book *The Model Aircraft Handbook* is now available, published by **Robert Hale and Company** at a price of 35/-. Living up to its title, this most certainly is a 'handbook', covering as it does the whole spectrum of model aviation, from rubber models to rockets. The novice to the hobby is taken through easily understood stages concerning the relevant aerodynamic principles, preparation of working drawings, construction and then onto further details of propellers, tanks and motive forces. Chapters are

also devoted to each form of model flying, giving the beginner a good idea of what may be achieved as he advances, and may well answer many of the questions that he encounters at rallies, etc. Many line-sketches are included, giving useful hints and clearly explaining so many techniques which although familiar to the more experienced, can appear to be like 'black magic' to the newcomer.

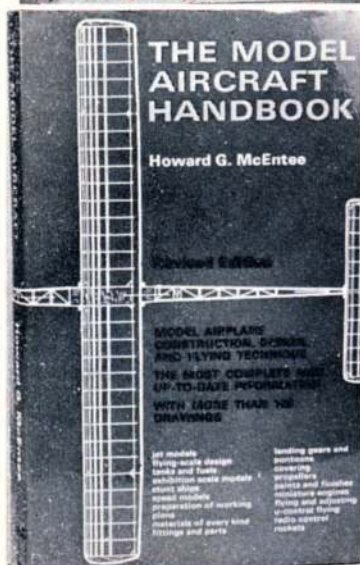
Humbrol 'Brush Cleaner' offers a significant reduction in brush cleaning time, coupled with greater versatility as it removes both enamel and cellulose dopes.



Dunlop's new comprehensive range of adhesives is attractively packaged. The large tubes are very pliable and are ideal for use when covering large surfaces.



Right, excellent beginner's guide-book by Howard G. McEntee, now available in this 'Anglicised' version. Very useful for the newcomer to the hobby, whether young or not-so-young. At left, a pocket clinic in the shape of a can of 'Burneze', pain is rapidly diminished by its unique spray.





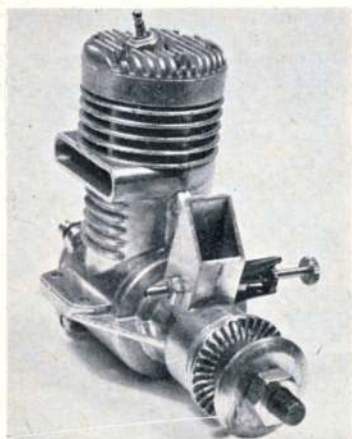
Peter Chinn's

# Latest Engine News

## FOX ENGINES PAST AND PRESENT

### Part 1

1965 Fox 36X-BB. A ball-bearing equipped tuned version of the 36X, itself a development of the 35X.



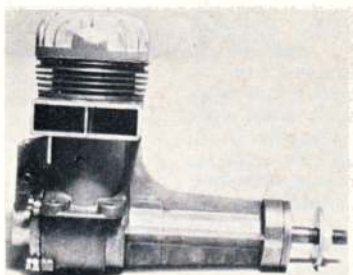
WITH THE RECENT acquisition by *Irvine Engines* of the U.K. distributorship for Fox engines, more of these noted American motors will undoubtedly be seen in Britain in future and we therefore propose to devote both this month's and next month's L.E.N. to a brief review of Fox engine history and development.

#### Fox 59

Fox is now one of the oldest surviving names in the American model aircraft engine industry. It was in 1947 that the original Fox 59 'Hi-Torque' engine was put into production by the Claude C. Slate Company of Los Angeles. This was a 9.7 c.c. spark-ignition engine combining high performance with a layout embodying many features considered desirable in a modern engine. Employing a very long crankshaft mounted in two ball journal bearings, rear rotary disc-valve induction and a rear-mounted contact-

1963 Fox 59 R/C. Current model is similar but has improved carburettor.

Fox 59. 1952 stunt version with ball bearing shaft and rear rotary drum valve.



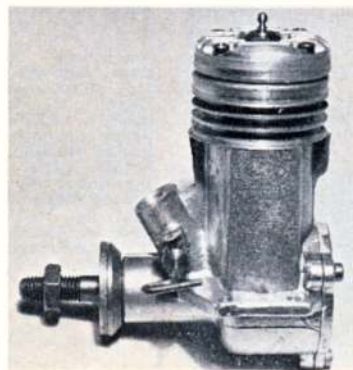
breaker assembly, together with provision for re-locating the needle-valve and ignition lever when the engine was installed in the inverted position, the Fox 59 had distinctive lines, well suited to streamlined cowlings or to the needle-nose styling of contemporary speed models.

Designer Duke Fox has rarely shown any inclination to merely follow in the footsteps of others and this was never more obvious than in the design of the 59. This engine resembled neither the better-known free-flight and stunt motors of the period such as the Super-Cyclone, Atwood Champion and Ohlsson 60, nor the successful speed motors such as the McCoy and Hornet 60's.

With an overall length of nearly six inches, it was, for a start, an unusually long engine. It was of quite moderate overall height, despite extremely deep head fins and its sparking-plug was located in the side of the head instead of the top. It used a Desaxe, or offset, cylinder and its beam mounting lugs, instead of being positioned on its horizontal centre-line, were placed  $\frac{1}{2}$  in. higher. (This latter gave rather better balanced support but is rarely used nowadays as modellers generally prefer the installation simplicity of centre-line mounting.) Construction embodied a lapped Meehanite piston running in a steel cylinder with integral cooling fins. The crankshaft was unorthodox in its use of a separate crank disc of nickel-chromium steel brazed on to a chrome-molybdenum shaft.

This first model Fox 59 had a bore and stroke of 0.937 in. x 0.860 in. and was rated by the manufacturer at 0.80 b.h.p. at 10,000 r.p.m. on an

Fox Stunt 35. 1951 model with gravity cast crankcase.



ordinary petrol/oil mixture.

Today, twenty-three years after the first production model, Fox still makes a 59. It no longer has disc-valve induction, spark ignition or a long thin crankshaft supported in ball bearings, yet it still bears an unmistakable resemblance to its famous ancestor. Its crankcase casting is much the same: it has merely had  $\frac{1}{8}$  in. chopped off the front end, a front intake added and the beam mounts strengthened. The cylinder and cylinder head are very little changed outwardly.

Development from the original disc-valve, ball-bearing petrol engine to the present shaft-valve plain bearing glow-plug motor has been in several stages. The first major change came in 1951, following the switch to glow ignition and the abandonment of the original backplate assembly with its disc-valve and contact breaker. This was replaced by a new backplate with drum type rotary valve and vertical intake and the engine's bore and stroke were changed to 0.920 in. x 0.906 in. Three years later a change was made to front intake, a bronze bushed main bearing and a shorter, stronger crankshaft. In this form, the engine was aimed at the control-line stunt enthusiast but the immense success of the Fox 35 for stunt work eventually resulted in the 59 being withdrawn from production for a while. In 1962, however, the 59 was given a new lease of life as a result of the then newly-developing demand for large R/C engines. A ringed aluminium piston replaced the earlier lapped cast-iron type and the cylinder ports were suitably modified. The bore was reduced to 0.907 in., giving a capacity of 0.585 cu. in. or 9.59 c.c. In this form,

1960 Fox Rocket 35. First low-priced Fox engine, it was based on original plain bearing Fox Combat 35 of 1957.







Fox 29R of 1956. This was a single ball-bearing racing engine for C/L speed.

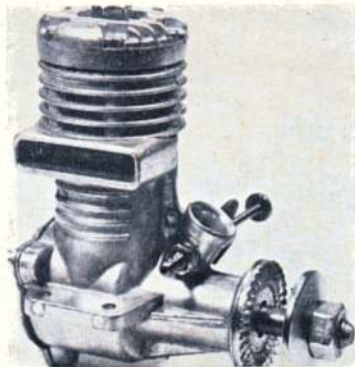
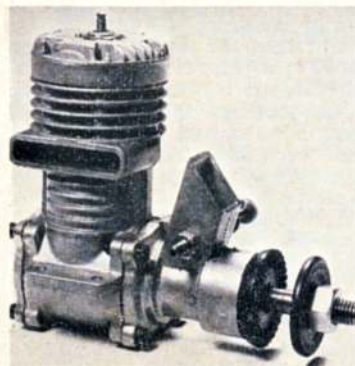
with some improvements, the 59 has continued in production both as a throttle-equipped R/C engine and as a standard C/L stunt motor.

### Fox Stunt 35

Unquestionably, the most famous of all Fox engines is the Fox Stunt 35. Designed in 1949 and produced by the Arnold & Fox Engineering Company of Hollywood, this engine powered the winning stunt model in the U.S. Nationals in 1950 and quickly became established as the world's most popular control-line aerobatics motor. Now in its third decade of production, it is still winning major contests. No other model engine has ever enjoyed such success over a comparable period.

Insofar as it has remained a shaft-valve motor with one-piece body casting, bronze-bushed main bearing and a bore and stroke of 0.800 x 0.700 in., the Fox 35 is much the same as it was twenty years ago. There have, however, been quite a few structural changes. Early models used gravity die castings, cylinder heads secured with only two screws. There were fewer fins on the cylinder and head and no strengthening webs on the crankcase nose. In the current model, pressure castings are used and the front end is braced by triangular webs each side and below the main bearing. Six head screws and a three-screw backplate are used and various minor improvements have been made, including the adoption of better materials.

On test, we obtained an output of 0.45 b.h.p. at between 11,500 and 1961 Fox Combat Special with dual needle bearings in separate front end.



1967 Fox Stunt 35. 1970 model is identical except for vertical rib in centre of exhaust duct.

12,000 r.p.m. (on 5 per cent nitromethane fuel, less silencer) for the current model Fox Stunt 35, which is still very good for a stunt engine weighing only 6½ oz.

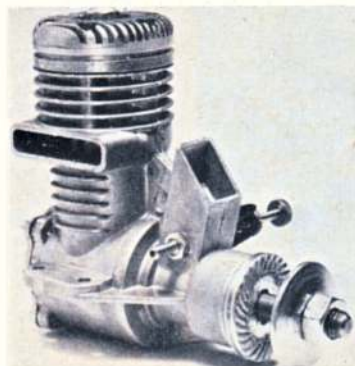
A full report on the Fox Stunt 35 was published in the December 1967 *Aeromodeller* Engine Test article.

### Fox 'Combat' Engines

During the mid-fifties, following the establishment of the present Fox Manufacturing Company plant at Fort Smith, Arkansas, several new engines were introduced. The emphasis remained on control-line units and these included the 29R, 29X and Combat-Special models. The original Fox 29 Racing Special, announced in 1951, had been a hot-upped version of the old Stunt 35. However, in 1956, a completely new design, known as the Fox 29R, was put on the market. Intended solely for speed work on pressure feed and very heavily doped fuels, it was much heavier and bigger in overall dimensions, had a half-inch shaft running in a single ball bearing and a massive intake fed from a backplate mounted needle-valve assembly. Some quite fast times were put up with the 29R, but after considerable factory experiment, through 1958, on tuning both the 29R and the more orthodox 29X, it was found that the latter offered the highest potential.

The original 29X and its companion Combat 35 model, announced in January 1957, were rather more closely identified, in appearance, with the Stunt 35. However, they were actually completely new engines with a heftier

1968 Fox 29X needle-bearing engine. This is the most recent C/L-F/F unit to be derived from the 35X casting.



1961 Fox 40. 1962 crankcase had wider mounting lugs and was also used for later Rocket 35's.

main casting, a full ½ in. dia. crankshaft and the emphasis on improved breathing at high speeds. The Combat Special, in particular, enjoyed a considerable number of contest successes and it was this design that Duke Fox chose as a basis for his first venture into the low-priced, medium-sized general purpose engine market in 1960.

The new motor was known as the Rocket 35 and was 40 per cent cheaper than the Combat Special. Outwardly, it could be readily distinguished from the Combat-Special only by its red-painted (instead of black) cylinder head. It was, in fact, virtually a detuned version of the Combat-Special with a smaller intake, smaller shaft bore, reduced induction period and lower compression ratio.

Following the successful launching of the Rocket 35, much development work was carried out on the Combat Special to raise its performance and the culmination of these efforts was eventually seen in the 1961 model of this engine. Unlike previous Fox 35s, this had a separate front housing with a very large rectangular section intake and two needle bearings to support the crankshaft. The combustion chamber shape was revised, as were the cylinder ports, everything being aimed at achieving the highest level of performance in the .35 cu. in. engine group. We tested a factory-submitted example at the time and recorded an output of 0.87 b.h.p. on 30 per cent pure nitromethane fuel which was certainly a good deal higher than had been recorded by any .35 to that date.

(to be continued)

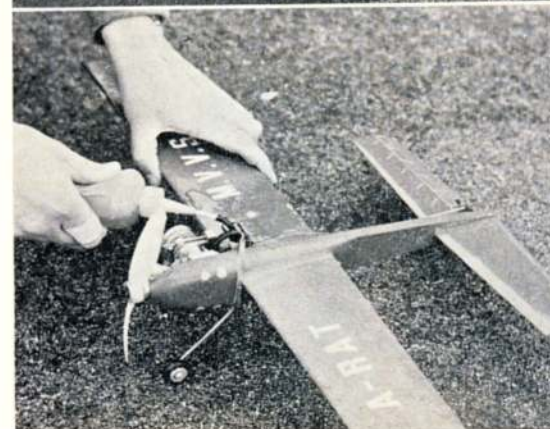
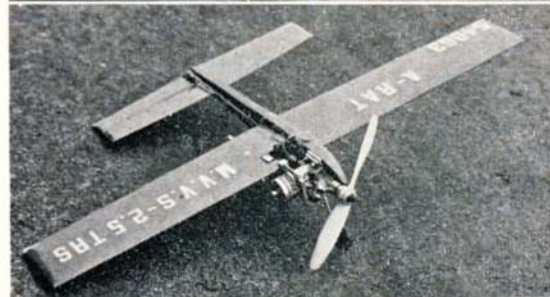
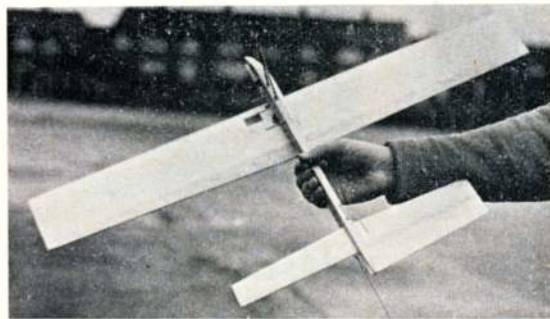
1963 Fox 35X. Successor to the Rocket 35 and a breakthrough in low-priced engine performance.





# A-RAT

By D. C. CLARKSON



**Your  
BIG  
FREE  
issue!**

THE AUTHOR'S interest in A-class rat racing started with a contest run by Avro Lancaster MAC last summer at Woodford. The rules for this contest are compared below with normal A-class rules and are worth serious consideration for club contests because organisation required is minimal, and a large entry is not essential.

	Normal Rules	Avro Rules
Models	No limitation	No limitation
Engines	3.5 c.c. max.	3.5 c.c. max.
Lines	52 ft. 3 in.	50 ft. 0 in.
Heats	100 laps (10 km.), 1 stop	82 laps (5 miles), 1 stop
Finals	200 laps (20 km.), 2 stops	—
Starts	Le Mans type	Le Mans type
Circles	5 ft. 0 in. rad. piloting 10 ft. 0 in. rad. landing 62 ft. 3 ft. rad. pitting	No markings required
Pitmen	2 maximum	One helper only for pilot. Helper can hold model and do nothing else.

This contest was enormous fun and the designer returned the winning time of 4.10 for the five miles. A run later on the same day using one pit-man gave a time of 3.46 for the five miles. The fastest model in the air at the contest was G.15 powered, and was timed at 103 m.p.h. compared with a timed speed of 86 m.p.h. — obtained using the author's old 120 sq. in. flat-bottomed wing model which was 'crawling' with drag. These results set his brain working — if he could build a really clean model, 100 m.p.h. should be possible using a standard MVVS 2.5 TRS (now on its third con-rod) and a 3.10 five-mile time could be attainable. Borrowing constructional and design features from 'big' rat racers, and aiming for a 15 oz. all up weight with a 90 sq. in. wing resulted in *A-RAT*.

Since A-class rat racing is still in its infancy no great strings of contest successes can be claimed for this model. However, it has proved to be a reliable and sturdy machine — very important in the rough and tumble of competition flying. One word of warning concerning this model is that it was designed for flying over tarmac, and although landings on smooth grass are possible, anything other than this will produce cart-wheeling. Although *A-RAT* is tough enough

*continued on page 330*

Functional design permits wide range of engines and developments. On this prototype one can see the Czechoslovakian M.V.V.S. 2.5 special used to such good effect by the designer, D. C. Clarkson.



# TWO PLANS with this



**A 30" Span Lightweight  
Rubber Contest Trainer  
by CYRIL WEST**

THIS MODEL is designed to follow-on from the elementary trainer stage, and gives an insight to those contemplating competitive work in the rubber driven category. The construction follows very closely the principles laid down and explained in the building of the *Tutor* elementary trainer but some refinements of design will be evident, these being incorporated to permit a competition type of performance. Building time should be less, however, as all unnecessary features are deleted in favour of lightness and simplicity.

Begin construction by cutting out the fuselage sides, not forgetting to mark the positions of the uprights. Using a P.V.A. type of glue to avoid warping, add the 1/16 in. x 1/2 in. uprights - making sure that two 'handed' sides are being prepared, not two identical ones! Glue the tail ends together clamping with a clothes peg, then cut out all the cross braces which are of identical length. Insert two or three cardboard rectangles between the sides and hold with rubber bands while the crossbraces are glued in, making sure that the latter are flush with the outer surface and well glued at the corner overlaps. Fit the crossbraces on the tapering portions and glue in the nose and motor anchorage reinforcements not forgetting the ply doublers.

When dry remove from board and cover top and bottom with 1/32 in. sheet cross grained.

To complete the fuselage add the 1/32 in. ply nose former, cut the access holes at the tail end, drill out the motor peg holes to 3/16 in. dia. and lightly glass paper all over ready for the tissue covering.

The wing requires 33 ribs cut from medium 1/16 in. sheet balsa by means of an accurate template. Make the template from thin plywood following the profile on the drawing.

Select the strips which form the leading and trailing edges carefully as the wing has no spar for constructional reasons.

Glue the dihedral joints with the leading edge laid flat and apply the braces across the joint rear faces. Cover the plan with cellophane sheet (Woolworths) and position the leading edge and centre section trailing edge on it with pins. Do not pin through the wood. The front of the trailing edge is raised by a 1/16 in. x 1/4 in. packing strip which is best placed under the cellophane.

Glue in the ribs using a small card square and angle the dihedral joint ribs with the card template as shown on the drawing. When this portion has dried, raise it from the board so that the leading edge of the tip panel comes down on the drawing, and while supporting the completed part with blocks, repeat the trailing edge and rib fitting procedure.

The tip panels should have 1/4 in. washout; this is to say that the trailing edge should rise towards the tip by 1/4 in. when compared with the leading edge. This is important to lateral stability on a blunt tipped wing with undercamber. Finish the wing by adding the tip fairings and shaping the leading and trailing edges carefully to agree with the profile as drawn.

The tailplane may be built flat over the plan and should present no difficulty. Add the dethermaliser details after covering. Now cover the fuselage in four strips of lightweight tissue, doped on. When dry, cut out the fin and apply the anti-warp panel and fillets before glueing to the fuselage in the position shown. Give a slight offset (about 1/4 in.) to the fin when glueing on, for right hand turn.

Cover the wing and tail plane with lightweight tissue. Watershrink the tissue and when dry, dope with thin clear dope with a trace of castor oil added, i.e. one drop per fluid oz.; stirred in well. This prevents over-shrinking and avoids warps; it also gives a nice sheen to the covering and air proofs it well. One coat is sufficient.

The propeller is of the two blade folding type commonly used on contest models. A firm grade of balsa is advised and the blocks may be cut to blank shape by means of templates for consistency. The method of carving, stage by stage, is the same as for the *Tutor* trainer or for that matter almost any propeller. Fit the ply plates at the root before carving. Remember to fit the metal tubes leaving a slight protrusion at each end.

The shaft is a two piece affair and requires carefully shaping as accurately as possible. Bind the hinge arms to the main shaft with 10 amp. fuse wire and solder the joint solidly.

Carve the nose block, fit the bearing bush and with a suitable spring plus a ball bearing thrust race, thread the shaft through. Refer to the drawing and shape the hook in the horizontal plane. To get the 'S' in the rear portion, hold one corner of the hook at a

(continued on page 330)



## A-RAT

(continued from page 328)

to withstand this treatment, it is a most undignified way to 'arrive'!

Construction is straightforward, but remember that accuracy is directly related to strength. Begin by cutting out the  $\frac{1}{8}$  in. sheet wing core and glue on the hardwood leading and trailing edges. Using a sharp modelling knife, cut the  $\frac{1}{8}$  in. x  $\frac{1}{8}$  in. lead out grooves - a piece of bent tinplate can be used as a gouge to remove the excess material. Epoxy  $\frac{1}{8}$  in. lengths of brass tubing in the relevant positions for lead-out guides, then insert lengths of 14 s.w.g. wire. Cover over the wire with soft balsa packing, then remove the wire, thus leaving two small diameter holes for the lead-outs.

Shape the wing to a symmetrical section, but leaving the centre section at the fuselage square. Insert the  $\frac{1}{8}$  in. ply plate for the tank mount, add the tin-plate tip protectors and cut-out to suit bellcrank, tank, u/c and shut-off wire.

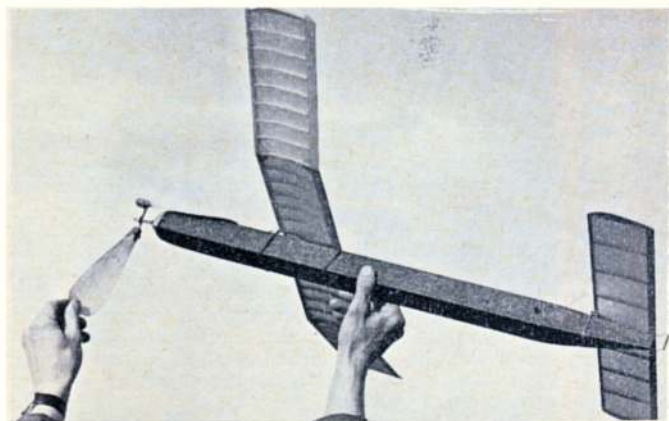
Cut and plane the engine bearers to shape, then epoxy the top one in position. Now make up the bellcrank as shown on the plan and pivot on a 6 B.A. bolt, epoxied in position. Complete the remainder of the fuselage by adding the remaining pieces of  $\frac{1}{8}$  in. square balsa, plus the lower bearer. When dry, shape to the correct profile and add the  $\frac{1}{8}$  in. soft balsa nose block. Sandwich the 14 s.w.g. tailskid as shown, and cut away the left-hand fuselage side to incorporate it. Drill holes for the engine mounting, tank and u/c clamp, then countersink and epoxy bolts in position. Taper the fuselage aft of the tailskid before cementing on the 1/32 in. ply sides. Cut the tailplane from very

hard  $\frac{1}{8}$  in. sheet, then epoxy to slot in the fuselage. Epoxy elevator horn in position, then sew elevator to the tailplane.

Attach the pushrod to the bellcrank and elevator horn, checking for freedom of movement. Assemble the tank, checking to see that it slots through the wing correctly and does not foul the pushrod. Bend the u/c to shape and clamp to the fuselage side. Cement the  $\frac{1}{8}$  in. soft balsa nose fairing in position, followed by the 1/32 in. ply cover over the bellcrank. Finally, add plastic wood fillets to the inboard wing/fuselage joint before sanding down the whole model. Apply a coat of sanding sealer, then cover the wings and tail with heavyweight tissue doped on. Apply sufficient sealer to provide a smooth surface (rubbing down between each coat) before adding colour - but do remember the weight penalty. This model should not weigh more than 15 oz. - any more and the wing loading becomes excessive. The original model was finished in polyurethane yacht enamel - a finish which is very hard, abrasive resistant, and fuel proof.

When completed, add the cutout and mount the tank. Connect the cut-off wire to the pushrod with heavyweight Laystrate - adjusting for the operation to work on approximately 10° down elevator. Bolt the engine in position - checking G.G. location - then connect all the 'plumbing', making sure that thin-wall rubber tubing is used for the fuel and pressure lines, and that they pass beneath the trip wire.

This model is fast and similar to its 'big brothers' in flying characteristics. Air speeds of 95+ m.p.h. should be expected with a good motor and using pressure feed and a cut-out, pit-stops can be very fast. Don't regard this as a 'trainer', after all it is of  $\frac{1}{4}$ A team race size with more than twice as much power available. Take off low and fast, overtake as much as possible, and cut the engine as near to your pitman as he (or she) will allow ( $\frac{1}{4}$ -1 lap out seems best). Keep your model and gear in fine fettle and you could go places. Class A-rat racing is wide open, and could well be the first real glow v. diesel contest class.



## CLOUDMITE

(continued from page 329)

time in a small vice (a hand vice will do) and tweak the rear bar to give a backwards 'S' shape (see drawing). Thread on protective tubing. Leave an extension on the hook to engage the stop-screw in the back of the nose block in such a way that it clears when the spring is compressed. Now slip the blades on and solder the cup washer in position.

Check the blades for folding along the fuselage sides with the stop engaged - adjustments can be made

by twisting the shaft slightly. Do not, however, bend the hinge arms so that the pitch angle is changed.

If the adjustment required is too large for correction by twisting remove the stop screw, plug the hole and reposition the stop. Fit a hook in the back of each blade root and pass a small rubber band between the two to hold the blades in the folded position.

The dethermaliser details are arranged for fuse operation to a well-known formula; the hinge, how-



## Rocketry support?

Dear Sir,

After reading the paragraph in *Heard at the Hangar Doors* in the April issue of *Aeromodeller*, on model rocketry at the Nürnberg Trade Fair, I decided to write this letter.

I am a keen aeromodeller and interested in all aspects of our hobby. I became very interested in model rocketry after reading articles on the subject in the November 1965 *Aeromodeller* and in the 1966-67 *Aeromodeller Annual*. Furthering my knowledge I recently purchased a copy of G. Harry Stine's 'Handbook of Model Rocketry' (2nd edition).

Model rocketry has an excellent safety record in the U.S.A., without an accident since its inception in 1957. This is due to the use of commercially prepared solid rocket engines, recovery devices, the limitation of the size of model rockets, and the adherence to the N.A.R.'s (National Association of Rocketry) safety rules, most of which are common sense.

I am not conversant with the laws regarding the ban on model rocketry in this country, but would like to see this hobby established here. I am afraid though this country will trail further behind others unless some positive steps are taken in the near future.

I feel that it will be necessary to form a group or body similar to the N.A.R. and to organise model rocket flying demonstrations to arouse the interest of would-be rocketeers.

The forming of this body will be dependent largely on the intensity of the support for model rocketry. It would be interesting to know how much support this space age hobby has here in the U.K.

A. R. Perry

Lightwater, Surrey.

*Precisely how many people in the U.K. are anxiously awaiting an exemption to the Explosives Act for Model Rocketry is a matter for conjecture. It might*

*amount to 2 or 3,000. There are, however, ten times that potential of interested persons whose participation would be aroused by commercial support if propellants were to be manufactured under the terms of the Explosives Act and their operation made legal. What is needed is for a Company to have a sample propellant approved by the Home Office for manufacture and distribution - then the Rocketry can proceed and a U.K. version of the N.A.R. be established.*

## READERS' LETTERS

### French Racer

Dear Sir,

In the February issue of the *Aeromodeller* you featured drawings of an unusual team racer, **Griffon 111**, designed by Regine Curt, and wondered what advantage the layout might have. After looking at these I am tempted to speculate as to the reasoning behind the design.

I would say that the design is extremely logical, as most French designs are. The development might be as follows:-

1. The engine is inverted giving a short undercarriage and low ground angle.
2. This puts the engine bearers in a shoulder position, so the bell-crank and wing root follow suit.
3. The anhedral has four effects, at least
  - (a) Just as swept-back lead-outs conform to the backward bow of the lines which is caused by line-drag, so the 'swept-down' lead-outs conform to the sag of the lines caused by line-weight. This should make them more free in operation.

- (b) The lead-outs being inclined downwards will reduce the rolling moment into the circle caused by the weight of the lines. This is present in all but low-winged models.
  - (c) If line-tension is reduced causing the model to nose into the circle, the action of the anhedral is to pick up the inner wing and roll it out again.
  - (d) Side gusts will roll the model out of, instead of into, the circle.
4. For the push-rod to be horizontal the tail has to be either above or below the wing, so it has gone down to the widest portion of the fuselage. There it is out of the wing wake but well in the slipstream. As the model flies higher the tail will move further out of the wake instead of dropping into it. This is for two reasons. Firstly, flying high needs more lift to overcome the vertical component of line tension, so the model flies nose up. Secondly, as the plane banks, circular airflow, acting as Frank Zaic has explained for free-flight models, has an effect as if the fuselage was being bent, like a banana, with the tail down.
  5. The underfin, necessary for the tail-skid which protects the low mounted tailplane, also gives a nice nose out moment under the influence of the twisting slipstream. As the fin area is sufficient no upper fin is added, but the fuselage follows a streamline to the rear and has sufficient height to house the elevator horn.

Altogether a well thought out design, feminine logic added to the Gallic variety seems to be a potent combination. It does show that following a design through without being inhibited by preconceived notions of what a plane should look like can bring rewards, and counter that 'distinct dearth of originality' complained of! Who knows perhaps some more articles on aerodynamics might ignite the creative talent of Englishmen - and women!

Barnsley, Yorkshire. *John Booker.*

ever, is original and has been well proven on the author's models. The best way to align the hinge is to set up all the parts except the hinge base which can be glued to the fuselage last while engaged with the tailplane plate; this will ensure correct positioning. The retaining thread comes out through a hole under the fuselage and hooks over the lower fuse band anchorage. The actuating band passes under the fuselage and up to the peg on the upper tail surface. Two layers of  $\frac{1}{8}$  in. sheet form the wing incidence block and fairing, which should not be glued to the fuselage until trimming flights have been carried out.

Make up the motor by laying out 7 yards of washed  $\frac{1}{4}$  in. x  $\frac{1}{24}$  in. rubber on a clean dry surface, arranged in a skein of 8 strands. Join the ends with a fisherman's knot and two half hitches. Loop up the ends with small rubber bands and lubricate with medicinal castor oil. This motor will be automatically pretensioned after the first run so install it as it is and wind a further small rubber band around the neck of the 'S' hook.

Hold the wing on the fuselage and incidence block with rubber bands and slide it along until the whole model with motor pretensioned, balances under the wing trailing edge. The total weight should not be more than  $4\frac{1}{2}$  oz.

Pencil mark the wing position on the fuselage and proceed to the flying field on a fairly calm day for trimming flights. Test glide into wind and adjust tail

incidence by packing until a satisfactory glide with a slight right turn is obtained. If everything is correct you should end up with about  $\frac{1}{16}$  in. packing under the tail trailing edge.

Get a friend to hold the model while you stretch wind with a drill brace hooked to the propeller loop. About 100 turns on the prop. (check brace gearing) will do for the first flight. Launch into wind and watch for transition from power to glide.

If initial climb is steep and almost stalling into the glide apply  $\frac{1}{32}$  in. packing to the top of the nose block and try again.

Should the climb be straighter than the glide try a slight packing to point the shaft to the right. Gradually increase the number of turns to a maximum of 800, watching for further adjustments at each increase. Finally try slight movements of the wing to improve the glide time until the optimum position is found when the incidence block can be glued to the fuselage. Do not forget that rate of turn can also be controlled by slight warping of the trailing edge of the fin. Nose block angle can be made permanent by slicing off the seating surface to eliminate the temporary packing.

The experience gained from this model should enable the builder to design a better one to his own requirements but in the meantime performance will not be found lacking and incidentally, that D/T was not put on for fun; the designer has been very glad of it on many occasions.





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

**Junior Kit Contest at 1970 Nationals**

If you have been watching this column each month, you will have all the details concerning the Kit Contest - except how to find R.A.F. Hullavington (see page 337 in this issue), and how to actually enter the contest.

Having arrived at the airfield on the Sunday (24th May) make your way to the Kit Contest control tent (or vehicle) which will be situated somewhere in the upwind half of the airfield, from around mid-day onwards. After paying your 2/- entry fee and showing your proof of insurance - either a current S.M.A.E. membership card, an M.A.P. insurance card, or certificate from an equivalent scheme - collect your flight card. Remember, no proof of insurance, no flying.

Next, check that you are familiar with the contest procedure, i.e. return your flight card to control after each contest flight - then away you go, and enjoy yourself!

Don't forget to bring all your equipment with you - it's amazing the number of glider enthusiasts who always neglect to bring a towline - and some spare glue and tissue may well come in handy for on-the-spot repairs.

Dear John,

On many plans which I have seen, advice is often given to use plastic wood to form fillets, etc., and to fill the many dents and bumps in the airframe which occur when building. However, I have had great difficulty using the plastic wood - fillets are left very uneven and do not sand down smoothly without hollows being formed in the adjacent balsa wood. Also, when used to fill in the bumps, the material is too hard, and sometimes even comes loose.

Kensington, S.W.7. P. Barrett

A smooth surface can be obtained on a plastic-wood fillet, simply by putting the putty-like substance in position,

licking your finger, and then running this down the joint! The result is a smooth, concave fillet. Alternatively, a small torch bulb dipped in thinners will obtain the same result, and is rather more hygienic!

Actually, there is a much cheaper, and easier-to-use substitute for plastic wood. Simply add some french chalk to a tin of dope - stirring well until it is a very thick paste. This can then be used as a filler, and you will find that it sands down easily - thus when applied in the middle of a sheeted area, the excess will be sanded off, without the surrounding wood being abraded away. Alternatively, if just a little french chalk is added to thin dope (approx. 1-2 teaspoons per 2 oz. tin) a good substitute for sanding sealer results.

Dear John,

I have read your address in a periodical Aeromodeller from May 1967. I am an aeromodeller too, and want a letter-friend in Great Britain.

1221 Vogelsang, Peter Thiermann  
Strasse der Jugend 33,  
German Democratic Republic.  
How about it, lads? An ideal opportunity to correspond with a German enthusiast - and perhaps exchanges of magazines and kits would be possible.

Dear John,

I seem to be always buying 1½ volt batteries, and I have read in a book that if you put a long cable on a 2 volt accumulator the resistance would bring the current down to 1½ volt. If this is so, how much cable would I need? Warrington, Lancs. Kevin White  
Buying 1½ volt dry batteries is certainly more expensive than buying a 2 volt accumulator, which is rechargeable and will give many years' service if looked after properly.

Many of today's plugs are, in fact, 2 volt, but when using a 1½ volt plug, leads of approximately 5-6 feet of 'bell wire' will drop the voltage sufficiently. To check this, remove the glow-plug and connect to the battery. A bright orange glow should be visible. If the

element glows a dull red the leads are too long, and should it glow practically white, then the leads are too short.

Dear John,

I have two questions I would like to ask you, they are: Would it be possible to fit a Frog 3.49 diesel (rear drum) into a Jefe II or Mistress team racer as I would like to build a rat racer to the (Smaller Rats for Smaller Pockets) Specification in April Aeromodeller and would it be possible to use a 7 x 4 or 7 x 6 prop on my D.C. Sabre powered Slick Schick?

Gosport, Hants. Graham Burfitt  
Fitting the Frog 3.49 into a team racer such as the Jefe II or Mistress designs would be quite tricky, due to the physical bulk of this motor. Even the 'A-Rat' racer (as presented in this issue) would not be suitable as the longer nose necessary to accommodate your engine would move the C.G. too far forward. Perhaps you would be best advised to design your own model, based on the 'A-Rat', but with approximately 25 per cent more wing area, and a longer tail movement.

A 7 in. x 6 in. propeller would suit your Sabre/Slick Schick very well.

Dear John Bridge,

I have been an aeromodeller for the past four years, and in that time I have built mainly gliders and rubber-powered aircraft. About a year ago I turned to building powered aircraft, one of which is the Beagle Pup 150 featured Aeromodeller, October 1968, and I have had reasonable success with it at the local recreation ground; but unfortunately I cannot get the full enjoyment from it as the field is hardly large enough.

I would be very grateful if you could tell me of any suitable flying fields around Poole and Bournemouth.

I am also very interested in building a Sopwith Camel Round-the-Pole aircraft for display at the local Air Scout group, of which I am a member. I would be pleased if you could send me a plan or tell me where I could obtain the plan for this aircraft.

Poole, Dorset. Michael Lee

I'm very surprised to learn that you do not know of a larger area for power model flying as I know this to be quite a strong area for free flight sports activity with the New Forest so close. You should contact P. Mullinger of 59 Dorchester Road in your own town of Poole who will advise on behalf of the West Hants Aeromodellers - and if you have no co-operation please let me know. There are four other clubs within easy reach. About that Camel - we use a modified KK rubber-driven kit model with Mabuchi 16D and gears as described in March 1969 issue. A very interesting feature on electric RTP models will appear in the next Aeromodeller Annual.

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 enamel club badge, two coloured 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 HEMPSTEAD, HERTS.

6/70 2d in the 1/- rebate plan purchase coupon for G.W. No. ....



# topical twists

by 'Pylonius'  
illustrated by 'Sherry'



'What I like about model flying is the sense of doing something individual.'

## Tarnished Glory

The greatest nuisance factor in any competitive activity is not as you might think, the eternal griping, but the pervidious pot. Not the pot you get high on, but the pot you get for getting high. The chap who makes his mark in the model world lives in something of a fool's paradise during the early years of his success. Then his rewards are simple and consumable: a plastic Cutty Sark kit, two gallons of congealed orange dope, ten shillings (five if you discount the entry fee) and two gallons of racing fuel (for that Glider win). But when he hits the big league he comes up against the hardship of the hardware. For that scintillating win, involving fourteen ankle breaking treks across Chobham, two lost models and a sunken gumboot, he is given the yearly custody of a pot of hideous contour, a low or non-existent silver content, a superlative rate of tarnish and the still discernible impress of its 'Untethered Kite Steering Championship' origins.

After receiving the monstrosity from a well meaning lady who is still slightly baffled why only one of the nice boys flying their toy aeroplanes should be given a big cup, the contest winner realises, to his horror, that he is stuck with the tatty trophy for a whole year. What is more he must take some measures to safeguard it, even if only for the value it might have as a piece of Victoriana. Worst of all he must somehow return the thing at the end of the year, and as the organisation which gave it will have had six new committees and ten different secretaries during that time and perhaps been disbanded and reformed under another name, he hardly knows where to begin. However, there is always someone with a nose for these things who will ultimately track him down and threaten him with legal action for unlawful possession. And it is here that our proud pot holder gets really frantic, for he cannot remember whether he stuck it in the attic, hid it in the garden shed or lent it to the kids for a game of Crusaders.

Whilst, sensibly, the recipients of these hunks of hardware do their best to lose the things, they have a nasty way of turning up, though not perhaps the following year and not always in the same club or Society. Thus the free flihter who has moved up North and taken to Speed flying, may well encounter an old friend at the prizegiving table. He might even blush to hear someone remark on the nitwittedness of the bloke who cleaned it up with coarse sandpaper.

## Blasted Nuisance

Americanisation is alright up to a point, but, like the Red Indians, you may have some reservations. Much of it is, no doubt, only too inevitable, like ten lane highways, supermarkets and jumbo jets. We might quail a bit at the thought of Pylon racing at the local church fete, but mostly we accept the frightening innovations in the fair name of progress. We did hope, however, and continue to do so, that in one particular instance we should be allowed the luxury of a little hesitance in getting space capsuled into the 1970's. I refer to our olde worlde reluctance to come to death defying grips with what we are told we should now be enjoying as a rightful penalty of being a leading industrial nation: model rocketry.

Now, next to mugging, the model rocket is about the worst hazard you have to face across the pond. Some aver that it is safer to cross Central Park at night. What makes matters worse is that with the smoke emission and the general rush for cover, a rocketry meeting is hardly distinguishable from a campus riot.

Fortunately, we still have a little breathing time, literally. A wise authority still continues to restrict rockets to those we launch from milk bottles, although after watching a recent free flight power contest I am not all that sure.

## Club Type

I suppose by modern standards you could call me something of a Stone Age modeller. Not that I actually use flint headed tools in my model work, however the results may fit such a theory, but certainly the tools of my trade are of very much those of early model man. Had I developed in a proper evolutionary way I would now be equipped with all those super tools of the modern age of modelling, like multi bladed knives, electric mini drills and balsa planes, instead of which I am still stuck with single edge razor blades from Woolworths, an antique fretsaw and an archaic jack knife.

Whether I should make some effort to advance into this technical age gives me cause for concern. To keep up with modern trends you have either to set up a pretty sophisticated sort of workshop or fork out commercially for all the elaborate gadgets and appurtenances that are now considered basic to the hobby. But whether you make them or buy them it is all horribly expensive, so like it or not its the Fred Flintstone life for me.





## FREE FLIGHT comment

by John O'Donnell

The free-wheeler is not quite dead. Alan Nobbs still uses no other style. This model features separately carved blades joined by paxolin tube. Did second best flyoff at Topcliffe on 22nd March.

THE OFFICIAL start of the contest season is usually taken as the first S.M.A.E. area-centralised event. Often enough it is notable only for poor (if seasonal) weather with scores and entries to match. 22nd March was, however, quite exceptional throughout much of the country, and had results in keeping.

By their very nature these contests cannot be reported comprehensively. Even a brief description of the happenings at each area venue would fill my monthly allowance! Nevertheless, it is appropriate that both Barry Halford and Deri Morley let me know just how fortunate East Anglia were at R.A.F. Watton. The day commenced with a light wind, bright sunshine and not a cloud in the sky. Contrary to the weather forecast, the wind dropped and by 2 p.m. it was dead calm. An increase in cloud cover did not prevent there being plenty of lift, especially at the critical time for flying off.

The East Anglian flyoffs were flown concurrently. Their two rubber qualifiers, Bob Walls and George Sharp, launched together with the latter climbing faster and higher. Both had very conservative fuse settings, and George, in particular, looked well set for a potential 15 or 20 minutes - only to 'give' the contest to Bob. In Power both 'Dusty' and Sue Miller flew a bit later than Pete Lawson, and hit the lift that he missed. Dusty's model got higher and D/T'd eventually, whilst Sue's landed for just over 6 minutes. The lift was apparently fairly high and out of reach of Steve Bowles flying-off alone in A/2.

These scores proved sufficient to top all three events. There were plenty of trebles elsewhere - but apparently a shortage of lift late in the day. It must surely be the first time that husband and wife have placed first and second in a national event!

The North certainly had very good weather - on both sides of the Pennines. I went to fly with the Northern Area at Topcliffe, but have heard in detail (from Russell Peers) how the N.W. fared at Chetwynd. At both venues it started a little breezy - and then calmed off - only to start pretty liftless at fly-off time. Tactical flying is 'accepted' at both the Northern venues - although everybody made one mistake in A/2 often through flying too early. In contrast, E.A. seem proud to scorn such a method, and endeavour to find lift independently. The relative success of these approaches can be judged from a perusal of the whole result sheet.

Much attention in the N.W. is given to their domestic events. Open rubber, glider and power, plus chuck glider, events are held at each of the area-centralised meetings. Apart from *guaranteed* prizes at each meeting, these events (not the S.M.A.E. ones) are used to compute the area's individual championships for the whole season. In comparison the Northern Area has decided to restrict its additional events to one per meeting - but to use them in the same way for the season's championship. As some of their additional events are for 'minority interest' classes, I understand this scheme has caused a certain amount of furor. Whilst such extra events may not be a universal, or even widespread practice, it does indicate a certain lack of appeal in the basic S.M.A.E. programme. There is a very good argument for flying against opposition that you can see - rather than that which *might* exist elsewhere in the country.

It is not often that I can attend a contest without having to drive an appreciable distance. Easter Sunday provided

an exception however. In an attempt to bridge the gap left by the absence (due to airfield difficulties) of a N.W. Easter Meeting, my club decided to stage a 'Whitefield Gala' on moorland outside Rochdale. The site, though hardly ideal, offered plenty of space. It did, however, necessitate walking from the 'car park' across the moor to a suitable launching position.

The meeting was intentionally only advertised to N.W. and Northern Area clubs, as it was felt that long-distance travellers might be critical of the field. Nevertheless a worthwhile meeting was envisaged, and guaranteed prizes offered as encouragement. Taking a leaf out of Wigan's book (see March's *Comments*) cash plus hampers were the attraction.

In the event, both the space and the prizes were needed. Whitefield have not been lucky with the weather for their contests - and Easter Sunday excelled itself. The day started with a stiff breeze and low cloud. The latter lifted as the wind freshened - and it ended up very windy by any standards.

The first two to fly, both in rubber, were Roy Roberts and Russell Peers. Both climbed into the mist and disappeared in under a minute. Russell persevered, despite a crash attempting his third flight, to end in second place. I won with three flights of around 90 seconds - and lost one of my Wakefields (with extra rubber I should add) in the process. Its disappearance was rather mysterious as it should have been in the middle of a stretch of flat empty-looking moor. It was found the next day by a local inhabitant exercising his dog - at the bottom of a well-concealed pothole!

Power was convincingly won by Brian Hooley flying an unipiped F.A.I. model on straight fuel. Its straight power climb speed coped admirably with the wind. In comparison Russell Peers had a very roly and dangerous climb on his ETA 29 *Pendleton Fault*. It blew over after its second landing and was not flyable thereafter. Brian Worthington had similar climb problems but survived three flights with his F.A.I. model.

Glider was an expensive event to fly. John Boon had two very good flights D/T'd at about 2 minutes, and the contest 'in his pocket'. His third flight, eventually proved unnecessary, landed heavily and broke the wing of his scaled up (factor of 1.2) *Caprice*. Wayne Pritchard and Terry Dilks had to fly two models apiece.

Not surprisingly chuck glider was the most popular event. Flown as a 'best three out of six launches' basis it was very closely fought. Winner Mike Duce clocked the day's only max with a rather late thermal flight. Another chuck glider in the same lift spiralled down. Runners-up were Barry Kershaw (with a *Sweepette* style winged model) and Congleton's Alan Moss.

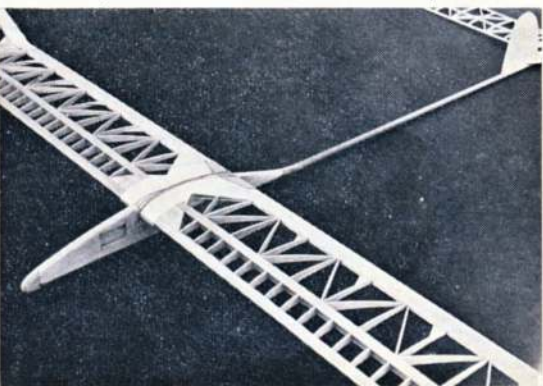
In retrospect the club consider that the site is adequate for this type of contest - and that the prize list had a significant effect in inducing participation.

### WHITEFIELD EASTER F/F GALA, 29th MARCH, 1970

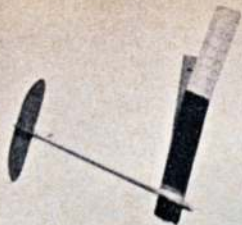
Rubber: 1. J. O'Donnell (Whitefield) 4:24; 2. R. Peers (Congleton) 3:52; 3. J. Carter (Spitfires) 1:10. Power: 1. B. Hooley (Whitefield) 4:22; 2. R. Peers (Congleton) 2:52; 3. B. Worthington (Whitefield) 2:46. Glider: 1. J. Boon (Congleton) 4:49; 2. W. Pritchard (Spitfires) 3:32; 3. T. Dilks (Spitfires) 2:16. Chuck Glider: 1. M. Duce (Liverpool) 1:50; 2. B. Kershaw (Wigan) 1:47; 3. A. Moss (Congleton) 1:44.

Current design practice in A/2 has become pretty standardised, and on the whole is a fairly satisfactory answer to the requirements. However, a certain windy contest recently made it apparent that some commonly used techniques are structurally unsound, and can lead to embarrassing wing breakage on tow.

Close up of new O'Donnell A/2 certainly illustrates sheeting layout. Also shows tubes attached to spar.







Perhaps not the picture to use! But it does show what John is trying to prevent - Martin Dilly's A/2 at 1964 Nats fly off.

The trouble starts from the purely practical considerations that A/2 wings are too large to be left in one piece. Joining of the two halves is the difficulty. A majority of models employ two lengths of piano wire, usually 10 or 12 gauge, as wing joiners. Sometimes the wire fits into brass or aluminium tubes and sometimes not - but in either case the holes in the root ribs are invariably positioned well clear of the wing spars.

No-one will dispute that the bending moment (due to flight, towing or other loads) at the wing centre-line is carried by the wire joiners, or that the bending moment several inches outboard is carried by the wing spars and edges. That load has to get from the joiners to the basic structure would appear obvious - but the provision of adequate means for this transmission is often overlooked.

I trust that the accompanying sketches successfully illustrate how a one-piece wing bends smoothly through having continuous structure - whilst a two-piece wing tries to deflect relative to the joiners. Restraint has to be provided by the ribs which deform in the manner shown.

Plywood root ribs are often employed and, together with sheeting or block fill-in, provide an answer of sorts. However, since 10g. wire and brass tube are heavy there is a temptation to employ only short lengths to join the wings. It is then very easy to produce a wing with a very strong and short root section, suddenly changing to normal spars, LE and TE. This sudden change in strength produces an effect known as 'stress concentration' and an inherently weak spot. Furthermore, the place where the wing breaks, although predictable, is difficult to repair!

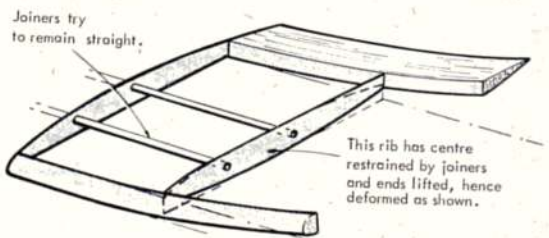
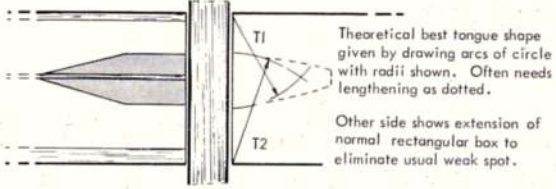
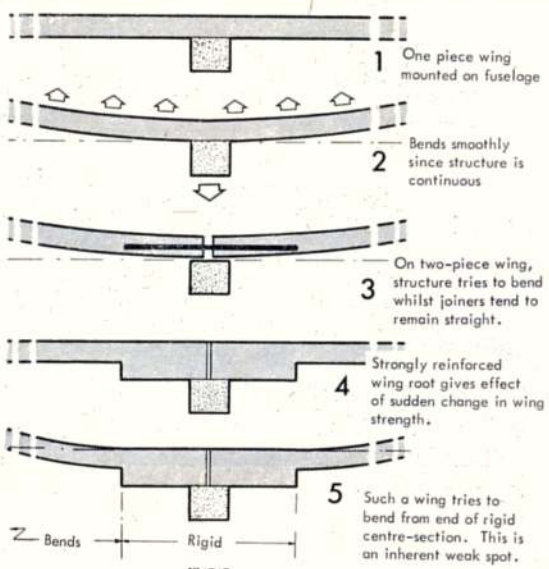
Fortunately, these difficulties can be overcome, in a quite straightforward manner. The problem of transmitting load through the wing ribs can be side-stepped by not involving them. The tubes carrying the joining wires can be stuck (using epoxy) to the wing L.E. and spars. Load is then transmitted directly to the spanwise members of the wing. This process can be further assisted by the use of joiners of adequate length. As a guide, I use two 12 in. lengths of 10g. wire on my A/2 wings.

Sheeting at the wing root is now only for the purely practical needs of handling and can be relatively small in extent. Again, to reduce discontinuities, the sheet can be disposed as shown in the final sketch.

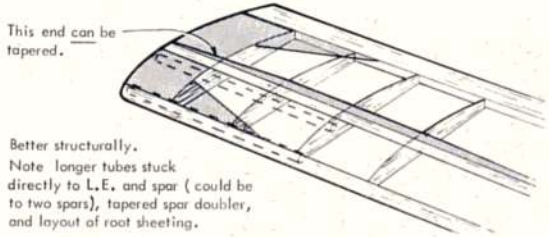
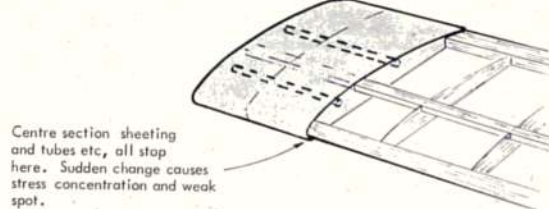
The other common method of joining wing halves is by means of flat tongues, often affixed to the fuselage or pylon, plugging into boxes in the wing roots.

Whilst the usual combination of a dural tongue and plywood boxes has been proved satisfactory, it will hardly be a surprise if I say that I do not like the alternative of merely running the tongue through slots in ply ribs! If it is necessary to lighten the tongue then this should be confined to the tip. Finally, could I emphasise to anyone new to the game that 'dural' means a hard, springy grade of light alloy as commonly employed in the full-size aircraft industry. It is very different to the much more readily available aluminium sheet sold by D.I.Y. shops but of very limited use in our hobby.

Labour of love. Involved lightening of wing tongues seen many years ago (63 Nats). Weight better saved by one large hole near tip of tongue.



Shows how a two-piece wing, with joiners passing through holes in ribs, bends upwards under tow loads and deforms ribs in the process.





# CLUB NEWS



Members of Hemel Hempstead at their 'Long Mile' field, Water End, illustrate variety of sports flying interests.

HIGH PRIORITY on any model flying agenda is the where-withal to operate. For this reason, the few established flying areas that we have are regarded as indispensable components of the model movement, and any threat to them the cause of much agitation in our ranks. Proposals, then, to chop up Chobham, or rather its motorway bisected remains, into an urbanised playground, have been received with dismay by model flyers in the South of England. Fortunately, they are not alone in their misgivings. Quite a few people these days are concerned to protect the natural beauty of our countryside from excessive urban encroachment, and Chobham Common, a wild piece of natural landscape, comes high on their list of deserving causes. Not that the model movement is leaving all the protesting to others. Well-known free flyer, John Mabey, is Chairman of a London Area Sub-Committee, which is putting forward the model flyers' case in the most forcible terms. Grist to their mill is the high attendance achieved at the first F/F meeting of the season at Chobham, the Crookham Gala: 104 entrants from 21 clubs.

Flying space, however, does not seem a particular problem of **The Exeter Radio Control Club**, which, during its most successful year to date, 1969, bountifully acquired its own club house and a hard landing strip on its own private field at Heldon. Certainly, this is the way to do things in this bureaucratic day and age. Why go cap in hand to disdainful authority if you can acquire your very own piece of flying territory? Needless to say, such indulgences make a large hole in the club kitty, but Mr. Addyman, the Club P.R.O., tells us that successful displays at the Exeter Air Show and the Lymstone Traction Engine Rally (they take some flying!) has made for fair replenishment, not to mention the commission from a member's surplus stock sale. Final event of the season was plush Dinner and Dance, where trophy presentation went mainly to Royq Allum, whose perfectly built models perform as well as they look. And, speaking of looks, the Chairman's *Mighty Mambo* seaplane makes for a water spectacular. Take-off area is the club boating pool near Bovey Tracey. The club now looks forward to an even more lustrous season in 1970. Plenty of comps on the menu, plus the event of the year, the club's very own Air Show at Topham Barracks on 7th June. A word of praise given to the Chairman, John Haytread. In spite of his seaplane antics he is not all air and water, for his leadership has been largely responsible for the club's success over the past year.

Ashdown Forest has always been a thorny flying site in all the senses of the term. Latest news of what should be known as Shakedown Forest comes in the **South East Area Seadog**, where, we are informed, the Conservators now demand a licence fee of £1 per flying visit, issued on a basis of twelve only licences per year. This is in addition to the 5/- licence fee required for Area Meetings. Is there an Ombudsman in the house? Best thing Dave Welch was able to report at the February S.M.A.E. Meeting was the attractive qualities of the young lady taking the minutes. He did not envy the senior officials their task of keeping the combatant factions from each other's throats. And, on the subject of throats, I dare say that same on Power Duration models is much too raucous for my liking. I know the apologists claim that the racket, whilst obtrusive, is of but short duration, but they seem to take no account of prolonged engine testing stints and tactical hanging on.

Just like the knockers in our own midst, critics of model flying affairs in South Africa's **Cape District** are only to be seen as a dust cloud on the horizon when called upon to use anything else but their tongues. In fact, out there, the knockers so outnumber the doers that *Flysheet* is currently

without an Editor—sticky situation. Discussed in the sheet is the role of model flyer as family man or vice versa. Must be still pretty feudal in those parts because it suggests that the wives should have a say in club affairs, if only as recompense for the times when they have to go without new dresses so that their hobby hubbies might buy new engines. In our matriarchic society the new dresses are well out in front. (Perhaps I should re-phrase that last bit.)

The Newsletter of the **Grantham & D.M.A.C.**, says that the arrival of the 70's finds the club in good fettle. This seems very evident in the heavy and varied comp programme for the season. Events seem to give equal weighting to the three main branches of the hobby, whilst Barkston Heath, the club flying field, would appear to provide ample scope for much good fettleing.

Main news from the **Debdens M.F.C.**, of Loughton, Essex, is of a fascinating visit to R.A.F. Northolt, where they were shown the inside workings of the R.A.F., in all its aspects, with information given by the officers in charge of each section. Highlight of the visit was a 'live' display by the fire fighting unit, realistically dressed up with flames, bodies and stacks of foam. As a sequel to the visit, Wing Commander J. D. Edwards was kind enough to come along to the club and give a film show and talk. The Wing Commander is the officer in charge of personnel at Northolt, and his entertaining programme covered life in the service throughout the world. Next film show and talk is to be given by our own Ron Moulton, described in the report as 'that ubiquitous friend of all aerobods'. A full house is hoped for. Amongst a number of club fixtures is the annual tourney with the **Newcastle Club** of New South Wales, also an Open Flying Day to be held during the Chigwell Sports Week. This will be the Sunday before Whitsun. Might even look in myself. Report from the Chairman, R. G. Harris.

What adds zest to model flying, though often anguish too, is that the model plane, like human nature, is a frail and uncertain thing. Thus, when members of the **Watford Wayfarers M.A.C.** are asked to assemble their latest creations at the outset of the season, it is in the sure knowledge that that crusty old character, terra firma, will take its due toll of the glistening array. On the R/C front the whizz kids are extending the club superhet band from six to twelve spots. To differentiate between the spots will require a highly developed colour sense, but at least with such a brilliant assortment of pennants the Vicar will hardly need much bunting at the garden party.

We are sorry to learn from Mr. M. K. Stagg, Chairman of the **Blackheath M.F.C.**, that his historic club is very much in the doldrums, and in danger of sinking into complete oblivion. We would certainly be most sorry to see a club with such fine tradition go under, particularly as it provides a definite link with perhaps the greatest day of aeromodelling. I am thinking of the pre-war period when flyers like Chasteneuf, R. N. Bullock and E. F. H. Cosh, did so much for the movement in design, competition and organisation. Today, the club is best known for the **Bill White Memorial Trophy** event, which is still keenly competed in after 22 years. Despite a much diminished membership, we note that Laurie Burrows is still on the club list. He, as one of our foremost Wakefield flyers, maintains the high standards of craftsmanship and flying finesse of his noteworthy antecedents. Like to come to the rescue of this club? Then, if you are a lone hand, or developing a deeper interest in model flying, why not drop a line to Mr. M. K. Stagg, 85 Winerton Road, Sydenham, S.E.26, or ring 778 0939 any evening. New members are assured of a wealth of advice.



Down Gosport way is to be found the Lee Bees M.A.C. Mr. L. A. Groves, the P.R.O., sends us a clipping of the club newsletter from the local community journal. The letter mentions various talks which have been given to the club during the winter recession. One that I thought to be unusual and intriguing was given by Mr. V. H. Bellamy on the construction of flying replica aircraft for film production. Mr. Bellamy incidentally, flew a Spitfire during the filming of the 'Battle of Britain'. Mr. Groves tells us that the Hon. Sec., J. Turvey and the Chairman, Eric Coates were largely responsible for the successful and clubbable winter programme, and it is hoped that their plans for the summer will be equally fruitful.

The Crawley & D.M.A.C. is currently in the throes of a publicity drive. Objective: to increase membership. Whatever the outcome of the campaign, members old and new should enjoy the full and varied summer programme arranged for the club's school field. Events scheduled include Scramble, Chuck Glider, Stunt, Free Flight Scale and Jetex. The club meets at Hazelwick School, Crawley, every Thursday evening. Prospective members most welcome. Report from John Oulds, P.R.O.

The newsletter of the East Anglian Area expresses concern over the number of lone wolves roaming that historic part of old England. Their integration into the movement, it suggests, will help to give it teeth, as too, would the more active participation in Area affairs by the twenty-one listed clubs in the Area. In these days of sensitive public reaction and a shrinking flying field situation, the movement needs all the strength it can muster in order to survive. If, therefore, you are a lone wolf, and perhaps doomed to extinction through lack of foraging space, why not give Ken Collins, the Area Controller, a ring at 01-530 2102? He will be pleased to advise you of a near-to-home club. Don't forget that the East Anglia Area has access to some very fine flying fields. Might involve a journey out—but worth it. Mr. Collins, incidentally, is trying to gather as much up-to-date information as possible on clubs in the Area. If, therefore, you are a club secretary and have not got his March newsletter questionnaire to hand, he would like to hear from you. From flights of verbiage to flights of models. We hear from a little bird—no, not the first cuckoo—of a fine day's flying at the March Area Meeting. High drama of the day came in the Rubber fly-off between Bob Wells and George

Sharp. They launched into air that was moving only in the vertical direction, and after attaining a fair height, began to circle immediately overhead. Just how long they would have remained in this state of suspension we can only guess, for eventually the D/T's came into operation to bring the models down to within a hundred yards or so of the point of launch. Time: 9 mins, 42 secs., accredited to last man down, Bob Wells.

Bobbing up again we have the Cork M.A.C., wherein, after a reshuffle of posts in the A.G.M., the new Treasurer, Maurice Walsh, gets on the track of £40 or more in overdue subscriptions. Meanwhile, the Chairman, Brian Barrett, is getting the club meetings back on a properly-run basis. I should not have thought that in a low, unpressurised country like Ireland there would be a shortage of flying space, but nevertheless, the loss of the local R/C field gives cause for lament. We are told that the loss can be put down to mischance and not to misdemeanour. C/L flying, however, remains unproscribed, and the boys are out on any reasonable Sunday morning opposite Blackrock Castle, doing their own thing on their own bastion. The club meets every Wednesday evening at the 'Orchard Bar', Bellinglough Road, at 9 p.m.

After the model-confining rigours of Winter, the Three Kings Aeromodellers excitedly wait for the balloon to go up. The balloon in question being but one inflated spheroid that Balloof Busting Champion, Dave Morbin, hopes to burst during a hectic season of club displays. It's a case of the right sort of aggro towards the skinheads. Plenty of other delights, too, in store for the viewing public. Norman Chapman's *Hoppy Hot* autogiro, for one thing. And it flies! Altogether the Three Kings hope to put on better displays than ever this year, but always with the safety factor in the forefront of their programming. We can but hope that other clubs are equally conscious of this responsibility both at public displays and club get-togethers. Club buffins are scratching their ovoid crania over a proposed set of rules for Scale Goodyear Racing. A 25 per cent increase in fin area is likely to be tolerated, but heads shake dubiously at the mention of monowheels.

Quite an idea in the Valkyries M.C. newsletter is a competition for models of any description built within a materials cost of ten shillings. Might be a bit difficult to measure and



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#### DAILY PROGRAMME OF EVENTS

#### Sunday, 24th May 1969

Radio Control Events	9.00 a.m. to 6.00 p.m.
Free Flight Events	10.00 a.m. to 7.00 p.m. (Fly offs from 8 p.m. at 15 min. intervals in the order of Glider, Power, Rubber, Tailless, Frog Junior)
Control Line Events	9.30 a.m. to 6.00 p.m.

#### Monday, 25th May 1969

Radio Control Events	8.00 a.m. to 6.00 p.m.
Free Flight Events	(F.A.I. in rounds) 9.00 a.m. to 5.45 p.m. (Fly offs from 6 p.m. at 15 min. intervals in the order of 1/4 A, Glider, Power, Rubber)
Control Line Events	9.00 a.m. to 6 p.m.

Sir John Shelley Cup	Knokke No. 2 Trophy	Women's Cup 1/4 A Power
Model Aircraft Trophy	R.A.F.M.A.A. Trophy	Wakefield F.A.I. Power A/2 Glider
Thurston Cup	Navy Carrier	
Lady Shelley Cup	Gold Trophy	
Frog Junior Trophy	Handicap Speed	Davies 'A' Trophy
S.M.A.E. Trophy		
Radio Modeller Trophy	Combat Mouse Race	Vintage Junior Kit Contest Houlberg Trophies F.A.I. Speed
R/C Pylon	Unorthodox	



#### NORTH SURREY AEROMODELLERS INDOOR MEETING held at R.A.F. Chessington, Sunday, 29th March, 1970

Possibly the toughest branch of the hobby is that which is most fragile. The only just heavier-than-air microfilm model is demanding of the utmost in patience and finesse if you ever hope to see the roof through its transparent membrane of a wing. Trouble is finding a sufficiently high roof and a fair amount of space around. The answer here was an aircraft hangar, which, next to St. Paul's Cathedral, is about the most uncluttered open space you will find.

Sure enough, the microfilmies commanded the greatest attention in spite of the class attracting only a few entries; providing an almost hypnotic fascination as they flitted ghostly betwixt rafter and skylight. And just to show that the old hands had not forgotten the ancient techniques of featherweight flying, Laurie Barr, veteran Hayes flyer, put up the highest time in the microfilm class. Even so, the coming generation was not all that far behind. Third man, or should I say master, was 15-year-old Martin Shepherd of St. Albans, who clocked a very creditable five minute plus flight.

Good times, too, put up in the tissue class, although the best supported event was the chuck glider scramble.

The organisers hope to run similar events at fairly regular intervals. Would-be entrants are asked to contact Dave Digby or Malcolm Lambert at telephone numbers given in March *Aeromodeller*.

cost account each entry, particularly the wastage margin, but it does seem to offer scope for ingenuity. Geoff Stent, who has prepared himself for the Soaring Season with a *Suzey Que*, reports favourably on the use of Solarfilm, and is happy to consign dope and nylon to the dustbin. Reason he gives for the sudden upsurge of interest in Thermal Soaring as opposed to Slope, is the popularity of the latter tending to overcrowd the local hilltops with band hogging models. He talks of having a modified *Inch Worm* at the latter part of the season, but cooling air cut down on the thermal riding. Having flown an S/C soarer, A/2 size, may I strongly advise him to fit a large, wide hinging rudder, as getting out of a thermal needs plenty of hefty spiral.

Yet another club that keeps a well-polished public image is the **Bilston M.A.C.** of Wolverhampton Wanderers. No lone wolves these boys, but highly gregarious, particularly where carnivals, garden fetes etc. are concerned, for it is at such public revels that they put on their splendid displays. All models taking part in their well-prepared spectacles are purpose-built for the job. For instance, one set piece calls for a mock battle between three *Spittires* and one *F.W. 190*. All models are throttled so that an "attack" on a model airfield can be made, and a scramble to intercept the intruder effected. The whole sequence is thoroughly worked out and rehearsed for best dramatic effect and interaction of manoeuvres. Having been evicted from their palatial club premises, members looked dismally forward to a homeless future, but the local Council again turned up trumps by allowing the club the use of a disused school. Plenty of room, central heating and access at all times. What could be better? Another piece of luck for the club was the acquisition of a retired ambulance (the reward of patient endeavour?). Very useful for carting members and models to club displays. Interested in becoming a 'case'? Then contact the Secretary, J. Marsh, 33 Priors Mill, Upper Gornal, Dudley, Worcs.

Youthful enterprise has brought into existence the **Syke M.A.C.**, entirely without adult assistance. Just to give an idea of the age level prevailing, the Chairman and Acting P.R.O., Keith Lord, is but a tender 14 years. Even so, the club is very much full-size in every particular. Regular meetings are arranged, officials duly elected, illustrated talks given and arrangements going ahead for a Charity Display and Exhibition and also a contest, complete with prizes. In spite of a wealth of engines and a couple of sets of R/C equipment the youngsters are not wholly given over to mechanics and gadgetry for there is a definite swing towards free flight, particularly rubber. And just by way of making the complete club a newsletter, *Aero Flying*, comes out each month. Fees are set at an enticingly low rate of 5/- per annum. If you are a modeller of the younger generation, why not get in touch with Keith Lord, 1 Dewhurst Road, Syke, Rochdale, Lancs.

Point made in the **Southampton M.A.C.** newsletter is that the recent Silencer debacle was wholly due to interested parties not attending Council meetings. Had a full representation been in attendance on 29th November, when the silencer rule was introduced, the measure could not have been pushed through. Reason why Southampton make this censure is that, although the club has no fervent interest in the contest scene, the issue was given adequate discussion, both at club and Area level. They also feel strongly about the present grading system, which generally separates contest flyers and others into full and associate members. When issues are raised which are of general rather than purely contest interest, then the matter is decided by the



Red Eagle on white rectangle provides identity for Congleton Club transfer.

voting rights of the Contest or Full Members, making for minority rule. Thus, the implication is, that the club would like to see the Silencer rule universally enforced, and they applaud the stated intention of the Chairman of the Pylon Racing Association to see that all participating models are effectively silenced.

You may have heard of the Goldfish Club, but do you know of the *Down Elevator Club*? Entry, according to the Wharfedale Club report, is via an uncompleted leg of a Radio Pylon Race, wherein all failures of nerve, piloting and dicy equipment are firmly attributed to radio interference. Subject arises from a club visit to R.A.F. Topcliffe for a practice run for a Northern Area Pylon Event. Enjoyable day for all in spite of membership of aforesaid club being increased by three. Slight friction engendered at the April club meeting when the Chairman, John Horton, proudly announced that the club had achieved 14 firsts, 7 seconds and approx. 20 thirds in contests last season. What about our two wins? cried the R/C boys. Nobody told us, etc. Quite abrasive friction in struggle for survival on Rufforth, where the club holds a tenuous tenancy. Noses must be kept scrupulously keen, but even more so the afield of litter. The odd stray fuel can is enough to get the model flyers the blame for everybody else's rubbish.

Girding their lines for another onslaught in the flying field battle, the **Handsworth M.A.C.** are not put off by the fact that a budding T/R team came to nothing through lack of a tarmac site. Nought to stop Combat, though, and the club is keen on running a limited entry (say 32) F.A.I. comp this year. Interested club secs. should contact G. Bryant, 61 The Broadway, Handsworth, Birmingham 20.

When is a Pelican not a Pelican? When its a Phoenix, according to the **Bristol Phoenix M.F.C.**, who wish to be known by the name of the hot seat bird in the future; the Pelican to join other extinct wildlife.

More flying field bother. The **Bath M.A.C.** tells us that delegates put in an appearance at an enquiry into the conversion of their Newbridge Meadows flying field into a caravan site. They joined in protest at this grisly defilement of a pleasant amenity with the Newbridge Residents' Association. All protesting to no avail, alas; the club being immediately banned from flying on the Meadows. Such is progress. One good thing to emerge from the affray was the rapport achieved between the club and local residents; the latter giving their support to the club largely because it had never given any cause for complaint. At the March Area Meeting Paul Baker got a second in Glider, and juniors Tim Cobbold and Peter Walls really got lapping in the 'A' Rat Race to come second to South Bristol with a 5.51.5 for 100 laps. The club meets every other Thursday at Percy Boys Club. Report from Tony Rudkin.

Model flyers can be sticklers for punishment. From **North Western Area's The Message** comes a report of the Whitefield Club's Easter Free Flight Gala. Just to give an idea of the frightful conditions, John O'Donnell's winning time in Open Rubber is given as 4.24. Still, the fact that people turned up and flew says much for the free fliers' enthusiasm. From that blasting wind to a blast from Chetwynd where model flyers are queering their own pitch by giving the field a top dressing of modellers rubbish aggregate. The complaint follows the March F/F meeting. Were you one of the culprits? Its all too easy to lapse, but you could think about it next time.

A good start to the season reported from the **Belfast M.F.C.'s Nitro**. Again a reference to a fine day's flying at the March Area Meeting. This year the club hopes to make a change from the usual handout of cups and plaques by introducing pennants. Good idea. These can often provide good background decor in bedroom and den.

Just to round off the monthly round up, Marek Mlynczak, of Poland, who builds 'reduction models', would like to contact an air-modeller in Britain. His address is Wroclaw, Pl. Kosciuszki 10/10, Poland.

The Clubman.



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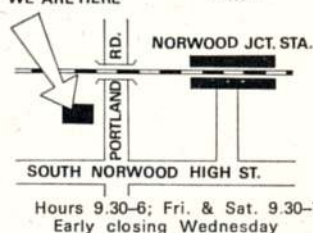
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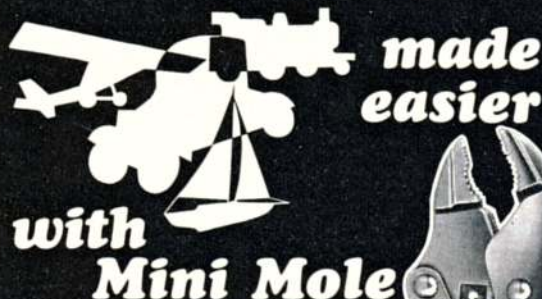
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For R/C boating enthusiasts, our bi-monthly boating Geoff Dallimer's pleasant little KLEINE BIPE, a small W.W.I style biplane for multi R/C which has excellent aerobatic capability. For small engines and lightweight radio gear, it should be very popular.

For R/C boating enthusiasts, our bi-monthly boating column WAVELENGTHS, returns this month with a roundup of news from the R/C boating field, while RADIO MOTOR COMMENTARY this month departs from the normal fare to provide a detailed analysis of current popular 10 c.c. R/C engines in SIXTY ROUND UP.

In this issue too, will be a full report on the WEYBRIDGE SYMPOSIUM, and also a description of a home-made R/C pilot seat from which to control R/C aircraft in the manner of the full size.

Regular features include TEST REPORT, which analyses the O.S. 3 digital, STRAIGHT & LEVEL, SPORT & SINGLE, plus THROTTLE BENDERS' UNION for R/C pylon racing enthusiasts.

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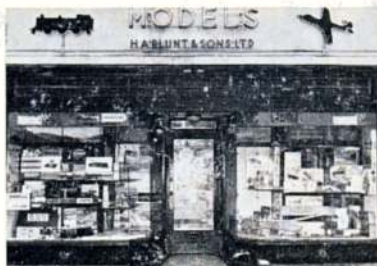
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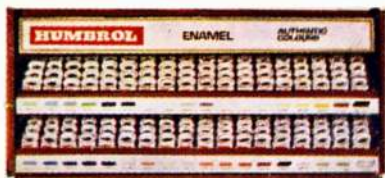


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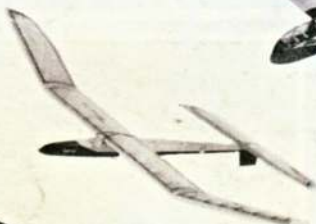


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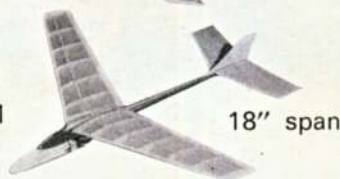
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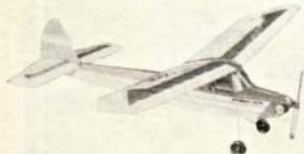
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