

Aero Modeller

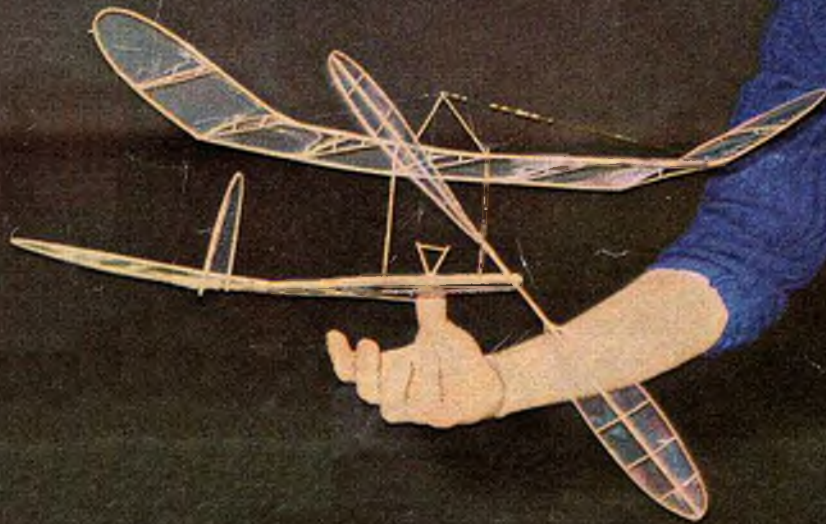
INCORPORATING
MODEL AIRCRAFT

JUNE 1976
30p
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MAP HOBBY MAGAZINE

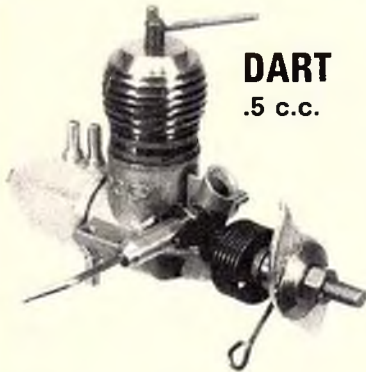
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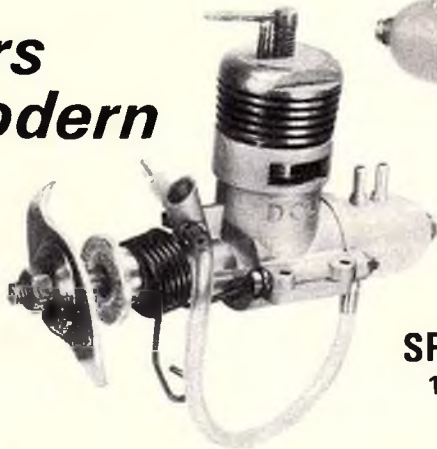


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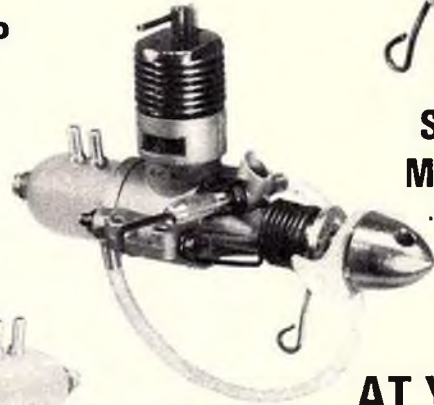


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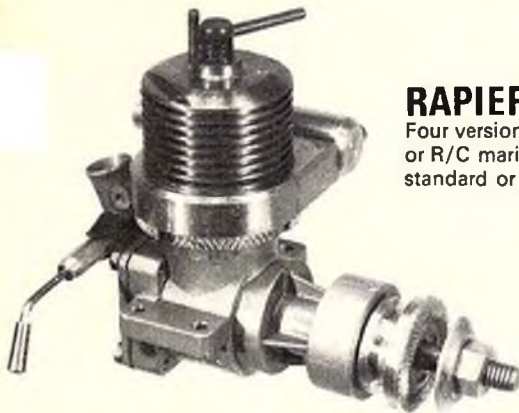


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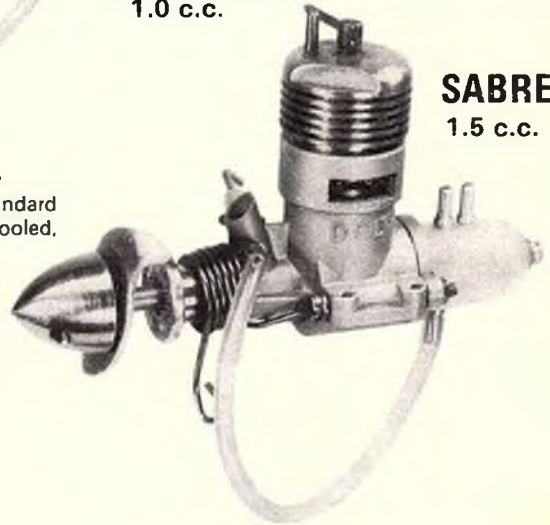


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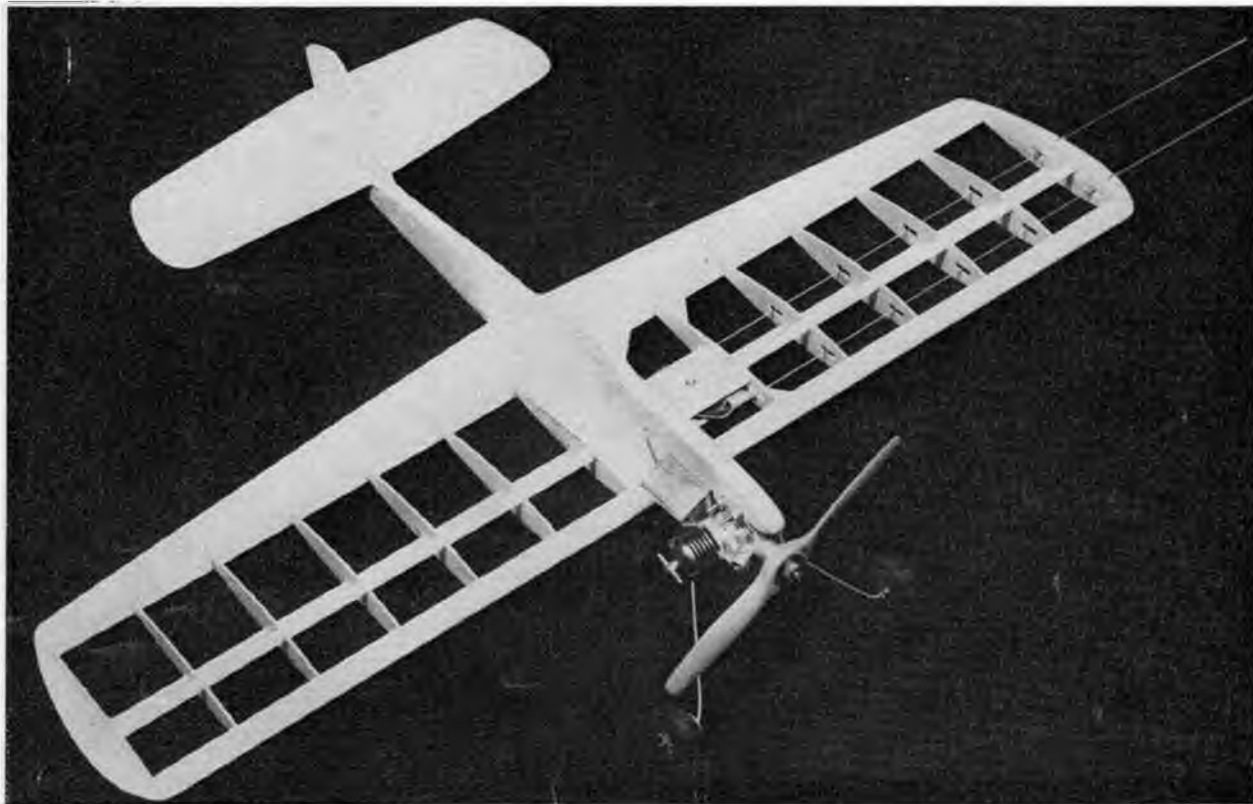
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June 1976
CONTENTS

Volume XLI No. 485

HANGAR DOORS	317
'SWEEToR'	318
LATEST ENGINE NEWS	321
THE FREE FLIGHT SCENE	324
BOOK REVIEWS	328
WORKING SCALE COWLS	330
BLASTA FAI	332
TOPICAL TWISTS	334
BETWEEN THE LINES	335
SMAE AND YOU	338
EASY B - JUST HOW EASY? Part 2	339
FLYING SCALE COLUMN	341
CLUB NEWS	344
CONTEST CALENDAR	345



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Comment

Thanks to the diligence of indefatigable John Worth, Executive Director of AMA (USA) and Secretary of the FAI Models Commission we have news of far reaching importance for all who compete in FAI events. As a matter of fact we had this news as early as 3rd April which may not appear remarkable until one realises that John displayed the details at the Toledo Ohio R/C Expo for Canadian and USA modellers to read - 4,000 miles away and only 12 hours after the decisions were taken in Paris on 2nd April!

First and most important, the 1975 printing of the FAI Sporting Code is 'frozen' until 1979. *Thus the rule changes adopted at the 1975 CIAM meeting are set aside and will *not* apply over the next four years. Exceptions are those changes affecting *safety*, or clarification. This means that the only significant alterations to the Codes are (1) Introduction of an attempt rule for glider line tangles. (2) Application of 50 penalty points against Combat mechanics who do not withdraw models to flight circle for re-starts.

(3) Institution of maximum noise level for F3A, (R/C aerobatics) of 84 dB(A) at 10m. Perhaps it is just as well that the SMAE had not circulated the changes which could otherwise have affected over half the new rule book!

Second important proposition is the recycling of World Championships which means that free flight must wait until 1978 (not that any Nation was volunteering to host it earlier!) The new 3 year programme is: 1976, Control-Line Speed, Aerobatic & T/R, R/C and C/L Scale, Indoor. 1977 R/C Aerobatics, R/C Soaring, Space models. 1978 Free Flight, Combat, Pylon. 1979 will be as '76 when the cycle continues. This is not final and has to be ratified next December but it should go some way toward relieving the work load and expense of the present arrangement.

*Copies via SMAE Comp Secretary, D. Rudd, 21 Beech Tree Avenue, Englefield Green, Egham, Surrey.

on the cover

Geoff Lefever of the Norwich club launches his FAI class microfilm model at the 1975 East Grinstead Indoor Meeting. This class of model is the logical 'next step' after gaining experience with the tissue-covered Easy B models described within this issue, and reputedly, not as difficult to build as they would appear - technique being more important than skill. Photograph by Trevor Grey

next month

Plans for a rather different type of free(?) flight model, review of two glider kits, details and comments on indoor flying in the North West, drawings of Georges Matherat's Coupe d'Hiver model plus plenty of news, views and information on all aspects of aeromodelling - all in the July Aero-Modeller, on sale 18th June.

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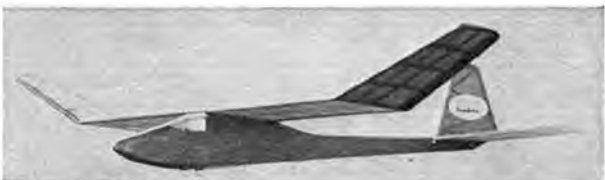
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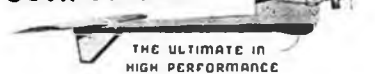


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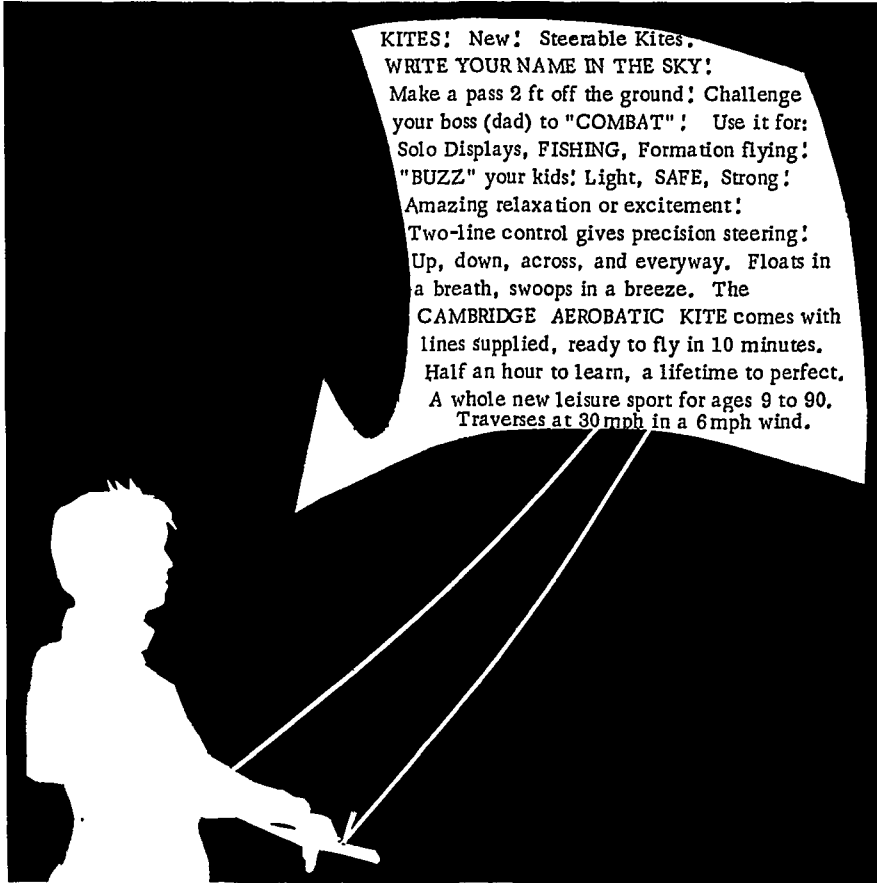
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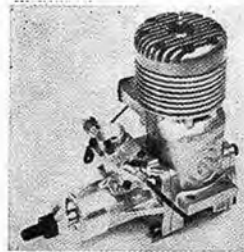
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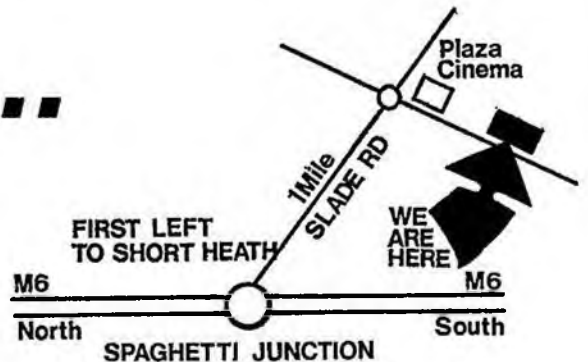
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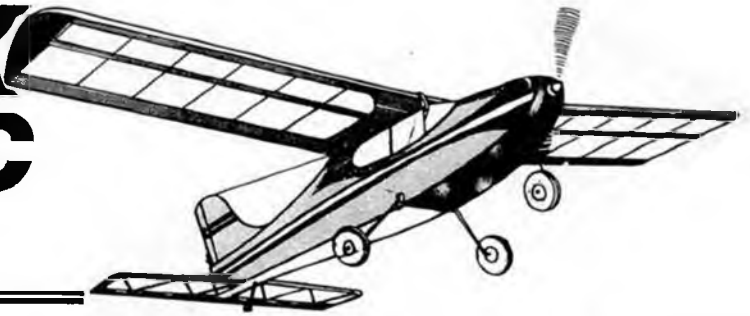


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'29' POWER BULLET 30

yes, it develops the same power as a "29" glow motor! It will fly power models up to 72" span (or 60" span with full-house radio!) with 6-8 minutes motor run! 10,000 RPM on a 10 x 4 PROP!

Size: 3.1" long
1.9" dia



motor weight 14 oz.

SUPER-POWERFUL 12-pole motor with $\frac{1}{8}$ " shaft adaptor to take standard "29" size power props. Uses two RIPMAX HI AMP NICKEL CADMIUM FLIGHT BATTERIES which are RECHARGEABLE DIRECT FROM A 12-VOLT CAR BATTERY right on the flying field! Batteries and motor fully protected by in-flight fuse (and fuse in charging lead). Total weight of the installed system is 46 ounces.

'15' POWER CYCLONE 15

This smaller motor is powered by a single 9-6 volt RIPMAX HI AMP NICKEL CADMIUM FLIGHT BATTERY which reduces the INSTALLED WEIGHT OF THE COMPLETE SYSTEM TO ONLY 21 OUNCES.

equivalent to a '15' glow motor!
11,000 RPM on a 7 x 4 prop!



$\frac{1}{2}$ " adaptor takes standard "15" props

2 $\frac{1}{2}$ " x 1.4" dia
motor weight 5.3 oz

The CYCLONE 15 will fly typical power models up to 60" span - or the largest powered sailplane you are ever likely to build! It is also suitable for powering R/C power models of light construction up to 54" span. Power-on duration is 5-6 minutes on a single charge.



Each system consists of the appropriate MOTOR fitted with INTERFERENCE SUPPRESSION Shaft Adaptor and Allen key, motor fuse holder and flight fuse, heavy-duty toggle switch, all prewired to heavy-duty leads and connector; battery pack connector; charging lead with fuse holder, charging fuse connector and crocodile clips. Spares and other accessories are also available.

BULLET 30 SYSTEM £44.50
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MABUCHI A1

recommended power for
lightweight models
up to 36" wingspan

Weight (complete with two RECHARGEABLE SUPER CELLS) is only 2 $\frac{1}{2}$ ounces! Motor run up to 40 seconds on a single charge. Motor unit incorporates battery case and clips onto simple motor mount for simple, easy installation. Complete with $\frac{1}{2}$ " dia. plastic prop.

A1 AEROMOTOR UNIT £2.40
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(works off dry batteries, recharges in 60 seconds!)



ADVANTAGES

- No engine starting problems - just switch on and go! No starting skill, no starter or separate battery required!
- Smooth SILENT FLIGHT - well below the legal noise level which enables you to operate from sites where normal powered models are banned!
- CLEAN! No liquid fuels-to mess about with, or clean off models after use! Models do not require fuelproofing, either!
- ECONOMIC OPERATION because once you have bought the system your Battery Pack can be recharged time and time again from your car battery. Operational time costs you nothing for 'fuel'!
- LOW MAINTENANCE COSTS since there are no expensive glowplugs to burn out and the system is fully fuse-protected. Only brushes need replacing when they eventually wear right down.
- VIBRATION is almost non-existent, so servo mounting can be more rigid, simplifying installation and giving a more positive linkage for exact control response.

*** SEE THEM AT YOUR MODEL SHOP ***

KINDLY MENTION AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Heard at the HANGAR DOORS

Look out, here come the Martians! Actually, this hot-air ship was made by Cameron Balloons of Bristol for an American customer. The envelope, holding 96,000 cubic feet of hot air is made of rip-stop nylon, and the whole craft is powered by a 1600cc Volkswagon engine, converted to run on propane gas, giving a top speed of 15 knots.

HOLIDAYING in Cornwall? Then why not visit the new Aeronautical Park at Helston which opens in June this year. Situated on the outskirts of Helston off the A3083 Falmouth - Lizard road, some seventy years of flight are depicted by the under-cover and open air exhibits - which include both full size aircraft and large scale models. In addition there are engines, ejection seats and relics from both World Wars on display. Admission from Good Friday to June 1st is 11 am - 7 pm, June 2nd - September 15th 10 am - 8.30 pm, September 16th - October 31st 11 am - 6.30 pm.

THE ITALIAN OPS concern, well known for their very powerful motors, are sponsoring a contest to be held from 18 - 20th June in Milan. Control-line speed and FAI team race will be held on the first two days, while R/C FAI class pylon racing will be flown on 19/20th June. In the speed category two contests will be run side-by-side, one to Italian rules for 2.5cc, 5cc, 10cc engines plus jets to be flown on two lines and straight fuel, while the second is for 2.5cc, 5cc, 6.5cc and 10cc engines to be flown on either monoline or two-lines with no fuel restrictions.

For just 15,000 lire per day, the organisers can provide hotel accommodation with full board (lunch at flying site) and transport will be provided between the hotel and the contests. Tempted? Then send an SAE to this address for further information.

HELP REQUIRED No. 1 The following letter was received from Brian Robinson, Information Officer for the *British Aircraft Preservation Council*:

"As the majority of your readers will be aware, prodigious efforts are being made by many undertakings, National, Service, Commercial and Voluntary, to restore historic aircraft to flying or exhibition condition and the membership of the *British Aircraft Preservation Council* covers the major-



ity of the organisations involved in work of this nature.

On a number of recent occasions the completion of very worthy aircraft has been frustrated or delayed by the inability to obtain some vital component. As examples one might quote the problems experienced by the Shuttleworth Trust and the Fleet Air Arm in keeping in the air aircraft powered by engines which have long ceased to be in production or for which it has become almost impossible to obtain replacement parts.

In an effort to go some way towards meeting this problem and in the general interests of historic reference and research, I am compiling on behalf of the Council a record of those engines and major aircraft components which exist in such diverse places as general and technical museums, colleges, universities, Air Training Corps units and Service and Training establishments.

Direct approaches are being made to many possible sources of information but there is no guaranteed response to this type of approach and I should like to seek the assistance of any of your readers who might be aware of relevant items in places which, whilst familiar to them, may well house material which is not generally recorded outside of its immediate locality.

I am confident that a valuable and useful register can be compiled and should be grateful for any information which will assist the project, which should be sent to myself at 25 Cromwell Grove, Manchester, M19 3QD."

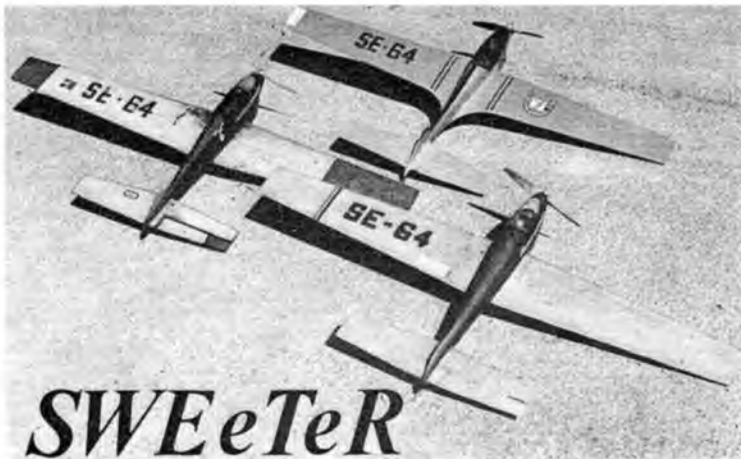
HELP REQUIRED No. 2 *Research into Child Blindness Ltd.*, have asked us to point out that three common items frequently thrown away could in fact be of great benefit to them.

The items concerned are old photographic negatives, either black and white or coloured; keys of any type, or size (even rusty); old spectacles - no matter how old or shabby. All these items are sold via specialist outlets, and the profits used to buy medical equipment to investigate the causes of blindness in children. The address to send these items to is: Garrick House, Drysdale Street, London, N1. Please note that the RICB do not accept money under any circumstances, only scrap materials.

JAPANESE NM 75 Man Powered Aircraft, which weighs only 80lbs and is covered in Japanese tissue, flew for 446 metres in 57 secs on a recent test flight. A drawing of this machine appeared on page 143 of March issue.

CLANG!! If the wandering Man. Ed. had not been collecting data for future articles in a visit to the USA, it wouldn't have happened but we young'uns were not to know that the personalities in 'Magpies' heading photo last month were Harry Hills and Ed. Bennett of the Croydon SMAE, along with Stan Rushbrooke who was correctly identified. The year must have been considerably earlier than the quoted 60's. In the previous issue (April) we credited the Red Zephyr design to Maxwell Bassett. Not so - this was a Herb Greenburg creation. Learn all the time don't we?

1976 BRITISH NATIONAL CHAMPIONSHIPS will be held on 14/15th August at RAF Little Rissington, Gloucestershire. Camping facilities will be available - more details (hopefully) next month.



Heading the trio of racers is the 1970 glass fibre version, while the '73 model is at left and the current (1975) version is seen at right.

Top Swedish FAI class team racer which placed third in 1975 European Champs. Only 'gimmick' is its simplicity!

by ULF LARSSON

IN TEAM RACING, the model is of course only part of the winning formulae, but to my mind it is of much greater importance than is generally realised. *Sweeter* has been developed over a period of six years, with the aim of producing a really reliable design. Reliability, with respect to the model itself, means:

1. Good flying and ground handling characteristics in any type of weather. For example, the draw for starting segments must *not* be allowed to affect the heat time; you must be able to put in an equally good time whether you take off into wind, or have to deal with a tail wind.
2. Simple construction and easy building ensures that the resultant model will be as close to the calculated ideal as possible, and accurately reproduced.
3. No complicated or unnecessary gadgets, because these are seldom reliable.

To get these desired handling characteristics, the model was designed with long moment arms, generous span and wing area, small tailplane and rudder area, plus a forward centre of gravity.

The design immediately proved itself by winning a lot of Swedish contests. Drawbacks to the 1970 version were strength problems with the moulded glass fibre fuselage then used, and troubles with the landing gear which was a simple non-sprung, paino-wire type. Having fulfilled the above mentioned points (1) and (3), but failed with (2), I proceeded to the 1973 version, built solely of wood.

The landing gear was copied from Americans Hodgkins-McCollum, and may seem unnecessarily complicated, but in fact has proved to be worth the elbow-grease involved. It seems impossible to wear out, produces smooth landings, and the spring action seems just about right to prevent the model from cracking up.

No other changes concerning wing, tail or moment

The filler valve mechanism is let into the crutch for ease of (and strength) of installation. If machine tools are not available, a commercial filler valve could be used.



arms were made, and the proof of the '73 version is that it has been flown in some 17 contests (winning most) without repair, and is still with us. It is now, of course, suffering from being slightly overweight, but this I believe is not uncommon, even with the maturing team members . . .

The current version is identical to the '73, except that more careful material selection and building has brought the total weight down to 460 grammes, a saving of some 40 grammes.

As for weight, I believe that the best possible strength-weight ratio of this design lies at around 450 grammes total. If it is built any lighter then strength problems will arise (for more details, see the weight list appended). Some points may be mentioned, though. The tailplane must be as light as possible so as not to impart undue stress to the fuselage. Use light quarter-grain balsa, and do not accept a finished tailplane weighing more than 15 grammes. The wing, on the other hand, must not be too light as it has to withstand catching forces. A finished wing of 90-110 grammes is strong enough.

Do not use any paint for the finish. The method I employ is to cover everything with lightweight Jap tissue, then clear dope and finish with one coat of fuel-proofer on top. For fuel-proofer, choose some two-part lacquer as recommended for floors, as these are much lighter than the polyurethane types used for boats (Ripmax *Tufkote* is equally suitable). The total weight of this finish is as little as 20-30 grammes.

Use magnesium-plate throughout for the metal parts - avoid aluminium as the weight penalty is about 30%, while dural of course is worse still. Take care with the metal work, as it is much easier to save a few grammes on metal than it is with balsa wood.

Just for the record, the currently used Rossi 15 weighs

Fuel cut-off is a simple tube-crusher (shown here in activated position). The two holding screws form a rest for the fuel line.



165 grammes, which is quite light, and of course helps towards the low total.

Building

Building is simple, and not very original! It's not easy to be 'different' in this business, as most things have been tried before.

The crutch is made of 3in. magnesium plate – plate is better than cast magnesium, as this tends to be rather porous. While a lathe and a mill are helpful, they are not at all essential as both the crutch and the landing gear can be made with files, hacksaw and a 'Wolf' type drill.

The filler valve is drilled into the crutch. Drill sizes and drilling depths are as shown on the plan. Tolerances for surface finish are not critical with this ball-type valve, a tolerance of 1-2 tenths of a millimetre, is acceptable.

The gasket between the valve and the cover is best made *in situ* with self curing silicone rubber, and therefore tolerances for the cover are not critical either. The cover has to be turned. It is a simple piece of turning, but can of course still be hard to get. If so buy a readymade valve and bolt it on top of the crutch. One advantage of having the valve machined into the crutch is that there will be no weakening holes in the canopy or fuselage.

When the crutch is drilled and filed to shape, use a fine file to get the top and bottom of the crutch as flat as possible. Next, grind the bottom surface absolutely flat on a piece of glass, using carborundum paste.

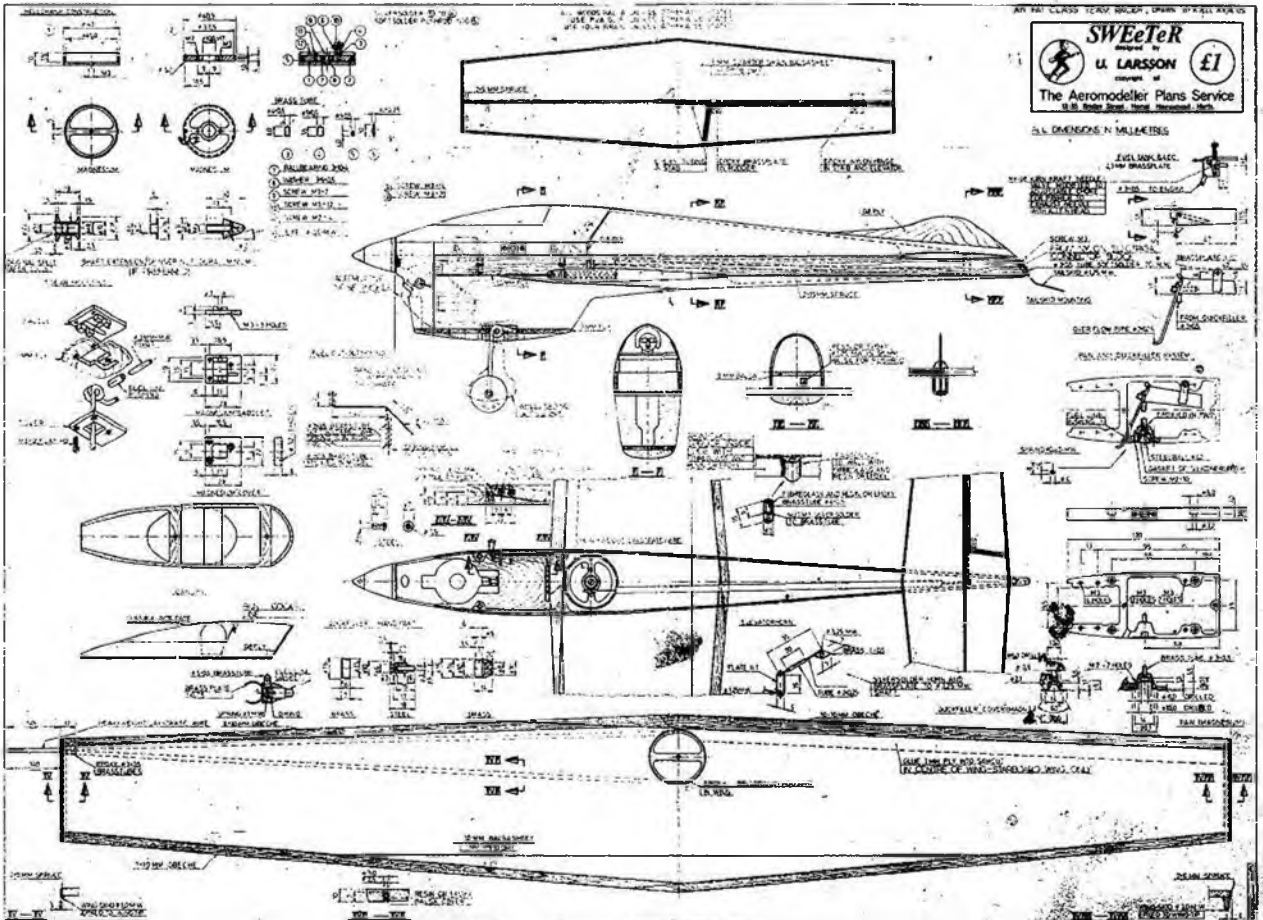
Before making the crutch, you must of course firstly

FULL SIZE COPIES OF THIS 1/6TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. CL 1285, PRICE £1.00 INCL. EXCLUSIVE OF VAT AND POSTAGE) FROM AEROMODELLER PLANS SERVICE, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS. HP1 1EE.



The team of Rylin/Larsson have always produced good consistent times at Internation and World Championship level. Key to their success is simplicity of equipment, thoroughness of preparation and, naturally, good teamwork.

decide which engine to use, partly because of the engine mounting holes (plan suits Super Tigre, Rossi, K&B, Kosmic), but also because anything heavier than the earlier mentioned Rossi will move the CG too far forward. A Bugl, for instance, would have to be moved about 10-15mms back, and then you have to move the rear hold down bolts forward so as not to interfere with the bell-crank.



The landing gear saddle and cover are made from scrap pieces left over from the crutch. See plan for details. The only important tolerance is the fit between the piano-wire shaft and the groove in the saddle – if too loose, the shaft will rock and enlarge the groove even more. Make sure that the cover fits snugly on top of the shaft when all the pieces are mounted together. As the saddle is epoxied in place, the surface facing the plywood does not have to be absolutely flat, and therefore it is possible to produce this item without machining facilities.

To bend the gear, you need a really big vice. Put two short pieces of 3mm wire about 20mm apart in the jaws, one extending about 5mm and the other some 15mm. The short one is a former, and the other is used to wind around it. Try to wind the loop all the way in one steady action and use a long piece of wire, as quite a lot of leverage is needed. If you can wind around 3mm dia., the result will be just about right to accept the fuel-line bushing.

The bellcrank and its housing is turned from 2in. square magnesium plate. Other types of bellcrank will also work well, but I feel that this ball-bearing variety is worth the extra trouble because of smoother action and longer life.

The wing is made from 10mm sheet balsa and has leading and trailing edges of obechi. The outer leading edge is reinforced with 1 x 20mm ply glued into a groove cut in the centre of the wing with a circular saw. A symmetrical section is used, having the high point at 25% of the chord. I remove very little material in front of the high point and form a very rounded leading edge. This is for the benefit of the pitman's (my own that is) right hand, but it also strengthens the wing and makes the model fly smoother.

If you want to use a circular bellcrank, there are numerous ways to make the grooves for the leadout wires. The method I employ is to cut two 3 x 7mm grooves with a sharpened piece of 3mm dia. piano-wire in the unshaped wing. Next, put a waxed 2.5mm dia. piano-wire in each groove, pour on glass fibre resin or epoxy, and put on a cover of 3mm balsa, previously cut from 3mm balsa sheet. When set, twist the wire loose with a pair of pliers, and you have a very fuel resistant leadout groove – an important point, as the bellcrank is not built-in for reasons of accessibility. While on the subject, it should be mentioned that I fuel proof the complete interior of the



fuselage at appropriate stages when building.

I also profile the centre section of the wing and tail, then jig these into recesses in the main crutch. The jig is nothing more complicated than two pieces of board about 2 x 4in. and a table. Fasten the wing to the pieces of board with rubber bands, and use balsa wedges under the leading and trailing edges to get the wing at exactly zero degrees of attack. It is now easy to measure from the table to get the motor crutch and tail also aligned at zero degrees.

I employ this method for two reasons. Firstly, the main crutch is seldom absolutely true over its entire length, and secondly the wing profile seldom comes out *perfectly* symmetrical around the geometric centre-line. Therefore I determine the true profile centre line for zero degrees of attack, after the wing is finished and jig it in position accordingly. Having everything aligned at zero degrees ensures good handling and high speed characteristics.

The general idea of the fuselage construction is to create a box going throughout the whole fuselage, so do not cut or join strips and sheets other than indicated on the plan, as joints in the wrong places or directions will induce fractures. The engine pod is also a box design in order to transmit the landing shocks over as large a surface as possible. See the fuselage cross sections on the plan for details.

The main crutch must be finished before the wing and tail are glued in place. Start by making four nuts according to the plan. Solder a 7mm long 9mm o.d. brass tubing to an M3 nut and screw this onto a waxed (about 25mm long) M3 screw. Wind strips of glass fibre around, and soak it with resin or epoxy. Trim off excess when set, and cut the

continued on page 346

Wing		1mm ply engine compartment floor	4g
10mm balsa sheet, weighing	100g/10dm ²	3mm rear balsa spacer	3g
Obechi strips	45g	Rear balsa bottom	3g
1 x 20mm ply in outer wing	7g	Hollowed rear balsa top block	5g
Leadout grooves	3g	Shaped engine pod blocks	10g
Wing before profiling	135g	Fin	1g
Wing after profiling	85g		
Outer wingskid	5g	Landing Gear	
Bellcrank mount	3g	Plywood mount	4g
Bellcrank plus ballbearing	5g	Piano-wire	8g
Leadout wire and bellcrank screws	3g	Magnesium saddle and cover	7g
Finished wing	105g	Screws	3g
		Wheel	3g
		Total weight	25g
Tailplane			
5mm C-grain balsa sheet		Cut-out	
weighing	40g/10dm ²	All parts	5g
Balsa	8g		
Spruce strips 5 x 2mm	9g	Magnesium crutch	22g
Tail before profiling	17g		
Tail after profiling	10g	Tank exhaust prime valve	14g
Horn	1.5g		
Finished tailplane	12g	Cabin finished	11g
Pushrod 5 x 5mm balsa plus		Lightweight tissue finish plus one coat of fuel-proofer	25g
1.25mm dia. piano-wire	4g		
Fuselage		Finished and complete model, minus engine	280g
Crutch from 2 x 15mm spruce strips with tailskid mount and four glass fibre nuts	17g		



Latest Engine News

by Peter Chinn

The Russian Raduga-7 C/L aerobatics engine. It has a capacity of 6.92cc or 0.42cu.in. and weighs 9.6oz. A silencer is also supplied - this has a plain un baffled expansion chamber with a large (10mm i.d.) outlet.

More about the Cox Conquest 15
Just as we were about to begin this month's article, two production type Cox Conquest 15 engines arrived from the United States for evaluation. These will be dealt with in more detail in the next *Latest Engine News* column but, in the meantime, it is worth noting that one or two changes are evident compared with the pre-production model described in the April *L.E.N.*, the most obvious being the much longer intake venturi which also has a larger throat i.d. This is now $\frac{3}{8}$ in. instead of $\frac{1}{4}$ in. and increases choke area by over 26 per

The Russian stunt engine uses a one piece main casting with screw-in backplate. Extra head gaskets allow compression ratio to be altered easily.

cent to 40sq.mm., a very large area indeed for a 2.5cc motor. Needless to say, the engine requires pressure feed. There is a pressure outlet nipple in the centre of the backplate that can be brought into use by drilling a $\frac{1}{8}$ in. dia. hole through it. This latest engine is also very slightly heavier: 181 grammes or 6.38oz.

The Cox company is marketing the Conquest in two models only at the present time: the standard (F/F and C/L) model and an R/C version with conventional head, modified porting and a Perry carburettor. The standard model leaves the factory set up

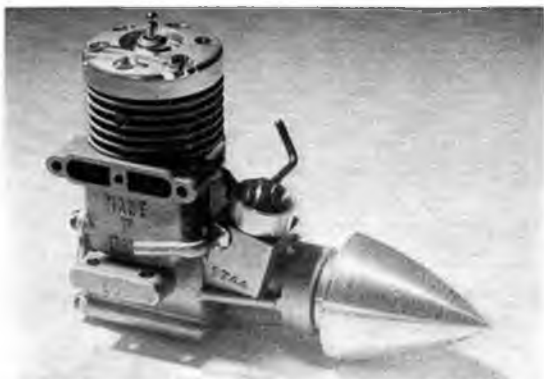
for operation on straight FAI fuel. Extra head gaskets are used for adjusting compression ratio to suit high nitro fuels and/or very hot and/or humid conditions.

Super Tigre 15s for 1976

According to factory literature, the production of 2.5cc Super-Tigres is now being concentrated on three basic models. First, contrary to another recent report, the G20/15 in both glow and diesel form will apparently continue to be produced, virtually unchanged.

Parts of the Raduga-7. Integral spinner assembly is unusual feature for C/L stunt motor. In C/L stunt tradition, motor has plain bearing and lapped piston.





Bearing a strong 'family' resemblance to the G15 is the new Super Tigre X15 - FI which should prove popular with the combat fliers. Crankcase is certainly more robust than before, a very useful feature for this type of flying.

Secondly, the G15 is replaced by the X15-FI, a side exhaust, front induction glowplug engine based on a new casting and for which an output of 0.8bhp at 29,000rpm is claimed. This model has Schnuerle scavenging and an ABC piston and cylinder liner is listed among the spare parts as an optional assembly.

The third model is the X15-RV (based on another new casting marked *Serie X*.) This has a rear exhaust and rear disc valve and is obtainable in speed (piped) and diesel versions, outputs of, respectively, 1.08bhp (at 32,500rpm!) and 0.47 (at 18,500) being claimed. The speed version is Schnuerle scavenged and, again, an ABC option is included in the spares list.

This may not be the whole story however. Long experience of Super-Tigres has taught us to be wary! For example, just to add to the confusion over Super-Tigre nomenclature, some recent engines sold as G15 models actually have the new X15-FI casting. In other words, they have G15 cylinder/piston assemblies in castings plainly marked "Super-Tigre X15-FI" while boxes are marked G15-FI. . . Oh dear. . .

Raduga 7

The "Raduga 7" was first mentioned in this column in 1974 soon after its appearance in the USSR. We have now been able to examine one of the engines in detail and to photograph its component parts.

Intended primarily for C/L stunt flying, the Raduga is a fairly lightly built, plain bearing, lapped piston glow engine having a capacity of 6.927cc (0.423cu.in.) derived from a bore and stroke of 21mm. x 20mm. It is sold complete with a diecast aluminium silencer, plus, like so many other Russian production engines, a number of accessories, including a 250mm. x 150mm. nylon prop, a combination spanner for the prop nut and a couple of extra head gaskets to enable compression ratio

to be adjusted. Checked weight of the sample examined was 272 grammes (9.6oz.) bare and 321g. (11.3oz.) with silencer.

As the photos show, the Raduga uses a one-piece main casting with screw-in backplate. The front end is bronze bushed for the 12mm. o.d. crankshaft. The latter extends well beyond the bearing to carry a large (41.5mm. dia.) spinner assembly. Rare for a stunt type motor, the Raduga has Schnuerle porting consisting of fore and aft main transfers and an inclined third port opposite the exhaust. The cast-iron piston is plain with a flat crown and the aluminium connecting-rod has plain unbushed eyes. The combustion chamber shape is a shallow bowl without squish area.

The intake is fitted with a venturi insert which, after allowing for the spraybar, has an effective choke area of 15sq.mm. - small enough for a 7cc engine to exert really vigorous fuel draw through stunt manoeuvres. The silencer is of diecast aluminium and attaches to the engine's exhaust stub with two screws.

Some improvement in overall quality is evident when the Raduga is compared with earlier Russian C/L stunt motors. For example, the 5.8cc *Poljot* of a few years back was really rough and the 7cc *Akrobat* of 1969-70 was not much better, but the

Raduga is a marked improvement although, like all Russian production engines, its construction and finish leave a lot to be desired by comparison with the high standards that we have come to expect from the leading model engine manufacturers in the West.

New Glowplugs

The *Glo-Bee* and *Magnum* glowplugs shown in one of the photos were sent to the Editor by Pat Lloyd, with comments from the well-known American modeller Jim Kloth who has been giving these two new makes a pasting in notoriously plug-crunching C/L rat-racers with up to 55 per cent nitromethane. It seems that the *Magnum*, in particular, is quite promising. Jim reported that he is able to get through two 70 lap heats and a final on a single plug and he rates the *Magnum* the most durable commercial plug he has tried to date. The *Glo-Bee* has not quite matched this performance but only two had been tried at the time he wrote and Jim says he would like to conduct further tests before offering an opinion.

As the photo shows, the *Glo-Bee* is unusual in that it has a flat coil element (like an electric boiling ring) close to what appears to be a glass seal, instead of a cylindrical coil in a cavity. This is not the first time that a different element design has been tried. In America there have been "W" shaped elements and, in Japan, double coils and elements coiled around a central insulator. The *Magnum* plug, on the other hand, has a conventional element form.

The *Glo-Bee* plugs are made by the Fusite Division of the Emerson Electric Company of Cincinnati, Ohio. The *Magnum* plug come from former C/L stunt champion turned engine-tuner, George Aldrich, of San Antonio, Texas. Both plugs are rather more expensive than most and seem likely to cost between £1 and £1.50 each, if and when imported into the U.K.



Two new American competition glow-plugs. On the left is the Emerson 'Glo-Bee' showing its distinctive flat coil element. On the right is the more conventional 'Magnum' plug produced by George Aldrich.

COLLECTOR'S CORNER

Dear Sir,

Please find enclosed a photograph of an unusual petrol engine that I am restoring.

Is it possible to identify this engine? I think it is American as all screws are American threads. The capacity is 8cc and it has an unusual rotary-valve inlet working like a rotary-valve in reverse. It has been suggested that the motor is a "Rocket" of about 1946, but I have not found any pictures to substantiate this.

The engine is in virtually new condition except that the exhaust stack and carb assembly is missing. I would be very pleased if you could identify and sketch the missing parts for this fine old motor and I have included a stamped addressed envelope for the return of the photo.

I have asked Col. Bowden of vintage era fame if he could identify this motor but he said that he could not, even after looking through his extensive collection of old books. The only identification on the motor is Serial No. 10024.

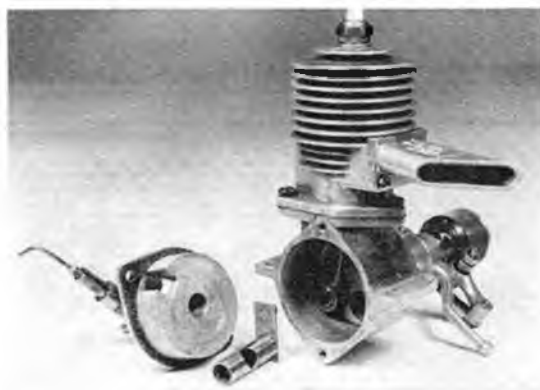
D. W. Bates, Dorset

ANSWER The person who suggested to you that this motor is a "Rocket" was not far wrong. The design dates back to 1939. It was actually the subject of a U.S. patent application filed in November 1939 and the applicant, Ashton LeRoy May, was granted a patent on its design in August 1941. At that time, the engine was known as the May *Silver King*. It was first manufactured by May Motors Inc., of Detroit, Michigan and subsequently by the Rowley Woodcraft Company, also of Detroit.

After the war, the engine re-appeared, now renamed *Rocket* and was marketed by Corporate Products Inc. of Griswold Street, Detroit-26. I owned a May Silver King nearly twenty years ago (see photos) which was later donated to the Underwood Model Engine Collection in Columbus, Ohio. Bruce Underwood told me at the time that the post-war Rockets were actually manufactured for Corporate Products by yet another Detroit firm: The Metal Parts Machine Company. The Rocket was finally withdrawn from production in 1947 but the interesting point is that the name lived on. The vast General Motors Corporation actually bought the trade-name "Rocket" for an engine of their own, a new Oldsmobile V-8 car engine. The Oldsmobile Rocket subsequently gained considerable distinction in production car racing in the U.S.

It is a pity that the exhaust stub is missing from your engine. These were embossed: "May Motors" and

Two views of the American May 'Silver King' spark ignition petrol engine first made in 1940. It became better known just after the war as the 'Rocket'. It had a bore and stroke of $\frac{1}{2}$ in. x $\frac{1}{2}$ in., giving a swept volume of 0.454 cu. in. or 7.43cc.



"Rocket Motor" and would establish whether your engine is a Rocket or one of the very much more rare May "Silver King" models. One thing is certain. Your engine is not one of the last models of the Rocket: these had an enclosed contact-breaker assembly in place of the open type fitted to your motor.

One might expect the serial number to provide a clue as to the date of the engine. My own engine carried the serial number 497 and was believed to have been made in 1940 or 1941 but two 1946 model Rockets known to me had no serial numbers at all. It seems highly improbable that the combined production of Silver-King and Rocket models exceeded 10,000: therefore the number 10024 on your engine does not help us very much. As regards the appearance of the missing parts, you can, perhaps, get some idea from the accompanying photographs. Unfortunately, as this engine is no longer in my possession, I cannot help you with a drawing of the parts.

Can any reader add anything more to the above?

Apologies

Apologies to the reader who telephoned from Sweden recently to ask for the address of the factory or



workshop in the USSR responsible for the production of the Russian KMD 2-5 team-racing diesel and who was told that we had no further information on this engine. In fact, as I remembered afterwards, the engine was accompanied by an instruction leaflet (in Russian) but this does not contain the information required. However, enquiries have been set in motion to try to discover a source of supply and if the gentleman concerned cares to send his address, I will pass on any further information received.

Two new glass fibre propellers from the moulds of Jurgen Bartels - a new deep cuff team race prop named 'Metkemeyer Brothers' and one for the speed men - the Rumpel 6 x 6 1/2 in. Team race prop is available only to those in official teams for 1976 World Championships at present. Prices are 15DM each from Postfach 553, 29 Oldenburg, West Germany.





THE FREE FLIGHT SCENE

THIS MONTH:
MICHAEL WARREN

View of the superb venue for the South Eastern Area's Indoor meeting – the Crawley Sports Centre. Contest fliers really appreciated the 30 foot ceiling which was totally 'clean', the lights being placed behind smooth transparent covers. This enabled EZB models to gently nudge the ceiling, while some Peanuts would have benefited from wheels placed on top of the wing to enable them to 'run' more smoothly across the top of the hall! To enjoy their sport, indoor fliers are going to have to dip their hands further into their pockets – these sports halls are very expensive to hire.

I USUALLY manage to be fairly positive about model flying and about free flight in particular. After all, it is a sport that gives me, and many others, a great deal of pleasure and satisfaction. But it is difficult to be anything but depressed when, in the space of only a few weeks, we find out that:

- a) The traditional Spring Bank Holiday Nationals is cancelled and the alternative, apparently, is for a meeting in the late summer (i.e. when the crops are at their worst) on a small airfield and only a few days before the increasingly popular Pierre Trebod contest in France.
- b) The dates of the Easter two-day FAI meeting have been altered – at barely three weeks notice and without formal SMAE notification to its members.
- c) The free-flight rule changes introduced at last December's CIAM meeting in Paris have been declared null and void by the FAI – I gather that there is a four-year 'freeze' on the rules of all FAI-run sports and the December meeting was, in effect, a waste of time and money.
- d) One of this country's best-known free-flight sites has very nearly been lost to us as the result of what seems to have been some irresponsible behaviour by a radio-control flyer. (At the time of writing, mid-April, this danger seems to have been avoided, but it could have been extremely serious.)

I have not the space available to go into each of these items in any detail, nor would it necessarily be appropriate at the moment. I am not allocating blame either. There has undoubtedly been some bad luck, particularly in the planning of the Nationals, but there has also been bad management, confusion, lack of communication and sheer apathy. Apart from the destructive effect this has within the sport, we cannot hope to be taken seriously by a wider public whilst our own affairs are in such chaos. Our models are more efficient and flown better than ever before: our administration must now be brought up to a similarly high standard.

John Godden, ex Northern Area Comp. Sec., getting back into flying with an A/I – a standard 'Asteroid' kit from St Leonards Model Supplies.



CHUCK GLIDERS '76 (Part 2)

1. Trimming

I spent part of last month building my first-ever chuck glider. Having devoted a fair amount of my last *Free Flight Scene* column talking about them it seemed reasonable to try and put some of the theory into practice. Being a complete beginner to HLG flying I chose a kit – the *Eaglet* from FAI Supplies Ltd of Phoenix, Arizona. The wood was good (though the wing leading edge was perhaps a bit on the soft side), the wing section was partly pre-shaped and the plan and instructions were clear – so the construction at least was straightforward. The only problem in the building was with me rather than the kit – my usual tendency to try to get the model finished quickly but at the expense of accuracy and neatness. Anyway, the end result was pretty good. And then I took the model out to the local recreation ground for its first flights. . .

It would be easy to say that after a few trimming and adjustment flights the model was OK and turning in anything from 40–50 seconds regularly. It would be easy . . . but it would be a lie! My first-ever session with a chuck glider was fairly depressing. Luckily I went out early in the morning when there was virtually nobody about, otherwise it would have been embarrassing as well. To cut a long story short, I got the thing to fly properly (i.e. to climb firmly and steeply away from the launch, to turn into the glide with little or no loss of height and to circle back down to earth) on perhaps one in five or one in six of the flights.

On the remainder, the model climbed well, then turned over, plunged back to earth and buried its nose in the ground. Incidentally, the ground was quite wet, so there was no damage: flying it over longer grass would probably have been sensible, but I was lucky and got away with it. There was obviously something wrong somewhere (and since the model *sometimes* flew quite promisingly, it was clearly me that was at fault and not the model) so I went back to my stack of books and magazines to look for more advice. . .

By a strange coincidence, later the same day I bought the February edition of that fine American magazine *Model Builder*, and there, in Bob Stalick's free flight column, I read the following: "*Hand launch gliders are notoriously tricky to launch. The usual beginner's pattern is a strong vertical launch, followed by a 180 degree transition and a fast vertical dive. This is not only damaging to the model, but doesn't do wonders for the ego of the builder/flyer. . .*"

This, obviously, was something I needed! I read on. . . "*So, a word to the beginner. If you are just starting in free flight stay away from outdoor hand launch gliders, unless you've got someone who can help you, or unless you are willing to have a few ego-deflating experiences.*"

You can forestall this ego-deflation, or maybe bypass it altogether, if you follow this advice:

1. Build the model from a good kit . . . Build it exactly, and I mean exactly, as shown and described on the plans.
2. When it is built and finished make sure that it balances exactly as shown.
3. Warp in a bit of left rudder turn ($\frac{1}{16}$ to $\frac{1}{8}$ in. is usually sufficient).
4. Warp in a bit of wash-in in the right main inner panel of the wing . . . trailing edge down about $\frac{1}{16}$ in. at the polyhedral break.

Now you're ready to launch it. Do not throw the model straight up. It should be banked to the right and made to spiral up in a right-hand

Steve Marriot's new-look A/2, using an offset 'twang hook', the tapered wing spans 72in., with an 8in. root chord on the 14in. parallel centre panels. Uses Ekhentov airfoil and undercambered tailplane. Immaculate tissue trim is achieved by covering complete wing in white tissue, then double covering with red for the pattern.

circle. If it doesn't, practice the throw until you get it to spiral to the right. Throw it with all of your strength, just as you would pitch a baseball."

(Those of our readers not in the habit of pitching baseballs may take it that 'throwing a cricket ball' is a fair substitute!)

"When you can get the spiral climb correct, the next thing to work on is the transition to glide. This should be a figure 'S' turn from right climb to left glide. No loss of altitude should be noticed. The glide should be flat and in wide circles, with no indication of spinning-in."

Adjust stab incidence by breathing on the trailing edge and bending it in the correct direction. This will flatten out the glide. Spinning-in can be corrected by reducing the amount of rudder offset. Glide turn can be induced by stab tilt. Transitions can be improved by moving the C.G. forward or by varying the launch angle or speed."

This is all good advice and certainly a fine basis for learning to trim an HLG. On the other hand (and as regular readers will have noticed) it contradicts to a certain extent the trimming advice given in my last column. . . . This may be a bit confusing for the beginner, but it is not really surprising. Every model and every flyer is different; everybody develops their own technique and the advice they give varies accordingly. I think there are two things to be learnt from the mass of information that is available on flying HLGs:

- a) If at all possible, get an experienced flyer to guide and assist you.
- b) Even if no suitable help is available you can still have an enormous amount of fun and be successful by:

- i. persistence — keep trying, chuck gliders can fly and fly well,
- ii. planning — if you are adjusting the model, only alter one thing at a time: when a flight goes well, try to find out *why* it went well and then try to repeat it: take account of *all* the variables — the strength and angle of your launch, its relation to the wind direction and speed and so on and so on.

Since that first fairly unsuccessful outing with the model, I've been out flying with it again, and though I'm nowhere near ready for competition yet, I am getting better every time. It has been hard work but very rewarding. Why not try it?

2. Strength versus technique

Though it is undoubtedly an advantage to be on the strong side if you are going to fly chuck gliders seriously, strength in itself is not enough; it must be combined with technique. Andy Crisp — who does a fair amount of rowing, which must help — wrote in an article in the May '75 Free Flight News: "Strength isn't as important as rhythm. It is a good idea to practice throwing stones into the river or sea, then you can see which run up, action etc. gives the greatest distance."

Ian Allen, chuck glider winner at the '75 British Nationals, does not do any special training for HLG flying, but feels that the nine years rock climbing he has done, has given him a lot of arm and finger strength. "I don't do any exercises, but having been flying HLG for over ten years I think I've developed all the right muscles by now. My basic timing of the throw was learnt as a javelin thrower at school . . . I am of the opinion that HLG is no longer a pure strength

Henry J. Nicholls & Son Ltd are importing these Dubro glow plug connectors — and very good too at just 45p each. Both feature spring loaded arms to retain stem of glow plug — no chance of these clips falling off accidentally. Larger size is supplied without leads, but smaller unit is for 1/4A motors and is supplied complete with flex to suit dry battery.



event. Technique, consistency and the ability to spot thermals are of far greater importance."

In his letter to me, Ian made another point worth passing on (though again it conflicts with something suggested by Bob Stalick). Ian wrote: "In outdoor HLG I never throw flat out. I only ever use 3/4 strength. That is the only way to be throwing the same way at fly-off time as you have been during the day. 'Flat-out' effort all day can result in a complaint known as 'chuckie elbow', very similar to tennis elbow, due to the rapid snapping of the elbow joint on follow-through. It can be very painful."

And finally on the question of strength versus consistency, here is the training schedule suggested for serious HLG flyers by Curt Stevens of California, from the 1957 Frank Zaic Yearbook:

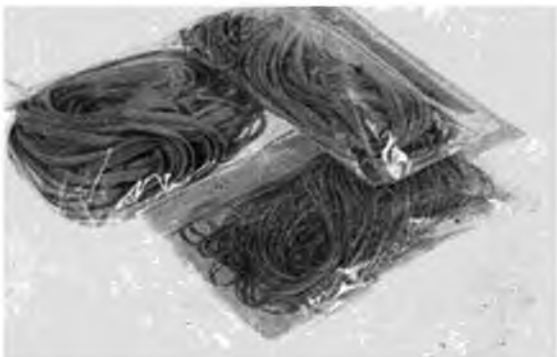
"Do push ups until you can do 50. Then start swimming, at least five miles a week to lengthen your arm muscles. At the same time keep doing the push-ups but only 25 at a time, and do these 25 as fast as you can. About three months before the meeting, start throwing tennis balls for an hour or so each day. . . !"

Now that is what I call taking the sport seriously! And before we leave chuck gliders for a while, here are a few thoughts from Roy Clark of Lincoln, who was kind enough to write to us after reading the article in my March column:

"1) Weight

In the middle 1950s I experimented with a number of different models, to find the optimum weight for HLGs. These models were built light. I then ballasted them up to the optimum weight, which appeared to be approximately 1 1/2oz. to 1 3/4oz. I now build all my HLGs to between these limits.

Maple Models of Luton have a stock of genuine Pirelli strip rubber. Three sizes are available: 1 x 1mm (50gms, price £1.82), 4 x 1mm (100gms, price £3.19), and 6 x 1mm, (100gms, price also £3.19). Approximate lengths of rubber are 48, 24 and 15 metres respectively.





Trevor Grey displays his slightly unusual EZB model at the very successful SE Area meeting – it features a 'V' tail boom to support the tailplane.

2) Centre of Gravity

I do not think that enough thought is given to the *vertical* position of the CG. The higher the CG the larger the looping radius on the launch. This can be used by the really fast throwers to assist trimming on the climb.

3) Tailplane Section

I have found that a $\frac{3}{4}$ in. symmetrical section is easier to trim for the climb

4) Grip and Launch

My grip is unusual but I find it most effective; the index finger is placed behind the left wing, the second finger behind the right wing, and the thumb in front of the left wing; this gives a good firm grip with full control until the launch. The throwing tabs and the rear of the wing should be cut away so that the fingers fit into them without slipping. At the moment of launch both index finger and second finger can give a good hefty flick. If only one finger is used the thrust applied is to one side of the CG but if two fingers are used the thrust is symmetrical to the CG. The run up for the launch should be long and smooth and reach maximum speed at the point of launch (I take approximately 14 strides). At the stride before launch, the left foot should stretch forward, the right arm back as far as possible with the body inclined backwards. Look at the place in the sky where you intend the model to go. The weight should then be transferred to the left foot, the body straightened and arm accelerated to reach maximum speed at its highest point as the model is released. The arm and body should continue to follow through.

5) Footwear

This is an important part of HLG flying. On hard surfaces I prefer training shoes but on grass spiked cricket boots are best.



Mike Woodhouse and his approach to tapered tips – his new A/2 features Benedek 6354/b airfoil, Maxaid circle towhook, and is called 'Whiffler'.

6) Other factors

I find straight dihedral quite sufficient (2½in. on an 18in. span). I have tried longer wing spans but do not think they offer much improvement in performance. The big advantage of 18in. wing span is economy – two wings from a 36in. sheet!

Use very hard balsa for the fuselage, with a straight top and tapered bottom. Weight, wing, tailplane and fin all on top. The shock of a crash landing seems to disperse through this type of fuselage better.

7) Adhesives

For many years I used Araldite but with the coming of the five minute epoxy resins I changed to these. However, on my latest HLGs I have used Cascamite. This seems as strong as epoxy resins but is much cheaper.

8) Finish

A really smooth high gloss finish is important. This, combined with the extra weight, gives quite a surprising gain in height. My method of finishing is to use a mixture of 50/50 dope, thinners and add one teaspoon of Castor oil to a 4oz. tin of this mixture. Apply about 4 or 5 coats of dope, rubbing down with fine wet or dry emery paper between each coat. After the final coat, rub down with Holt's rubbing compound until a really high gloss finish is obtained, then finally, add a coat of Turtle Wax. The night before a contest I give my HLGs a coat of Turtle Wax and a good polish, I also polish them before every contest flight.

NOTES

In his summary of last year's World Championships (in the December '75 *AeroModeller*) Martyn Cowley suggested that model performance would soon have to be limited again. "The exceptionally good weather obviously played its part in the record numbers in the fly-offs," wrote Martyn "... (but) when a competitor drops 1 second from a possible total of 1.260 and places 43rd as happened in glider, then the limits for deciding a World Champion are too fine."

As far as I can see, it must be debatable whether, in the long run, any significant improvement is actually possible. That sounds defeatist, but in fact it is only realistic. Whatever is done to the rules, standards of flying will continue to improve, and improve fast, particularly with the international exchange of ideas as rapid as it is now. Reduce model performance and thermal hunting will become yet more important and/or models will be reduced to the level of toys: disallow thermal hunting – or fly only in the early morning – and catapult launches, delayed-release propeller systems and other gadgets will become increasingly significant.

In model flying as in everything else it is now the letter and not the spirit of the law that is important. For example – the theory of A/2 competition, *in spirit at least*, is that models of broadly equal size and weight, and launched from a limited height, should be flown in competition together to establish which stays airborne the longest. If this is accepted, then surely the catapult launch is as much against the spirit of the sport as it would be to fly an under-weight model or get away with an over-long towline? But of course it is not against the letter of the law ... and before I start getting attacked for living in a dream world, having my head in the sand or whatever, I should say that I'm not actually serious in putting forward this view. Not quite. For better or worse, model flying is just not that simple.

But in almost any competitive international event, the margin between victory and defeat is small. In many cases, it is smaller than in model flying. One example from earlier this year – the Winter Olympics. The difference between the Gold and Silver Medals, between being the name in the headline and an also-ran, was, in some cases, hundredths of a second.

Another example. Last year, the Royal Aeronautical Society devoted an evening to the work of the FAI (Federation Aeronautique International) and, apart from the model flying contribution to the evening, there was also a mass of information on other sports – gliding, ballooning, hang-gliding, free-fall parachuting and so on. I forget the exact details of the parachute competitions, but what it amounted to was that each competitor jumped out of the plane at, say, 10,000ft. (they must be crazy!) then had to perform a series of stunts and then open the parachute and do a spot landing. The point being that the spot landing target was not something sensible like a ten-metre diameter circle, or even a two-metre circle. Oh no! The target is about six inches across – the size of a large saucer – and to miss it is to put yourself out of the first 50 places in any World Championships!

I think we must learn to live with the present razor-edge between success and failure. And this makes it all the more important that the scoring system we use is accurate, fair and foolproof. And at Plovdiv last year, the system was all too fallible. There were major

errors of judgment and rules were misinterpreted. As American team-member Don Chancey wrote in a recent letter to *Free Flight News*: "It's kind of rough to give up two years of your life, travel half way round the world, put up six maxes make no mistakes - and just flatly be cheated of the opportunity to make the fly-off by an illegally timed flight." Nobody could argue with that, and it is to be hoped that the organisers of the next World Free Flight Championships will learn the lessons, both good and bad, from Plovdiv.

* * *

Winter, with its dark evenings and cold, inhospitable flying fields, is the time when model flyers get down to the hard and sometimes tedious work of model building. That's the theory anyway. What tends to happen is that those who are organised, build and repair steadily throughout the year or when they need to, while the remainder - and I suspect it's the majority - build very hard when they get the urge or when the first bright March day suddenly reminds them that summer is on its way.

One British flyer who put at least part of his winter to good use was Biggles Club member Steve Marriott, whose new A/2 - shown on these pages has caused a fair amount of discussion in and around the London area.

It's a recognisably modern model, in that it has the now trendy long tapered tips but it is remarkable in that the chord of the centre section is no less than 8 inches. This centre section extends out for approximately a foot on either side of the fuselage and the remainder of the wings taper steadily down to a chord of some 3½ inches at the tips. It must be a long time since an A/2 has been built with such a substantial centre section.

The model is of course Steve's answer to the age-old problem of building a model that will cope with the worst of our British weather, yet will perform well. So the tough centre section, with its wide trailing edge, is combined with carefully designed tips, with leading and trailing edges and all the spars being tapered. Tom Hutchinson, in his article on Windy Weather Nordics in the February 1973 *National Free Flight Society Digest*, wrote:

"As far as structure goes the key points seem to be a wing that is very strong in bending, with enough flexibility to provide some 'give' when the really big gusts hit. Just as important as the absolute value of bending strength is its spanwise distribution. It should taper gradually . . . with no sharp drop-offs in strength anywhere along the span . . . I don't believe the ultimate windy weather Nordic requires any drastic change in configuration from the Nordics currently being flown. It does require a bit of thought to come up with optimum structures and construction techniques, but the whole process is more a matter of refinement than revolution."

But to get back to Steve's A/2. It has the now conventional Biggles Club set-up of offset ring circle tow and a spring release system, and also has a variable incidence tailplane. (As one leading Wakefield flyer commented recently: "I could take up FAI power quite easily, but FAI glider is really getting too technical!")

VIT is not new to gliders of course. The usual system is to increase the difference between wing and tail incidence during calm weather circle towing to give the model a more buoyant circle and make thermal hunting easier. Steve's system - more logical for use in this country - is to decrease the variation by having the trailing edge of the tailplane lowered by about ¼ in. for towing in windy weather. The model does not then pull upwards as much during the tow and it certainly reduces the risk of broken wings in our normal gusty conditions.

Unfortunately the model was one of several to suffer damage at Bassingbourn during the Area Centralised A/2 contest on 21st March. It flew into the side of one of the disused brick-built ammo stores that are dotted round the airfield, and no A/2 is made to withstand that sort of luck! Anyway, it was repaired and by mid-April, at the St. Albans FAI Gala, was again flying well and could be a major threat in A/2 contests this year. (At the St. Albans Gala it was one of my A/2s that flew into the side of an ammo store. You would have thought that with all that airfield to fly over we could manage to miss them, wouldn't you?)

* * *

With coloured Modelspan tissue no longer being manufactured and now becoming something of a collectors item, model flyers are looking round for new covering materials. Latest import is a light-

Wide box spar of composite spruce/balsa construction used on centre panels of new A/2 by Malcolm Wood (Croydon). Note staggered, Draw-type paired trailing edge gussetts.

weight tissue from the Tern Aero Company of Chicago. Ten different colours are available, including black and white, and each sheet is neatly and separately packed. Sheets, by the way, are 20ins. by 30ins. It has only just arrived in this country but first indications are that it could be very useful.

Dave Hipperson and I got hold of some almost as soon as it arrived and Dave has started testing it, stripping down part of an old tailplane and recovering it with the new tissue. His first reaction is that it "seems very good. It's stronger and slightly heavier than lightweight Jap tissue, but it's much lighter than Modelspan and certainly needs less dope. One other thing - though I haven't tried it on a wing yet I get the feeling that it isn't going to sag between the ribs as much as some tissues do."

If you want to try some, the tissue is available, at 12p per sheet excluding postage, from Michael's Models (no relation!) of 646 High Road, Finchley, London N.12.

SOUTH-EAST AREA INDOOR MEETING - 4th April 1976

My thanks are due to Tony Grantham for the following report of this meeting:-

"The Crawley Sportscentre proved to be an ideal venue for the South Eastern Area indoor meeting on 4th April. The walls and ceiling are very "clean" although some models did fly out of the hall through the first and second floor viewing areas. Seven people flew in HLG. C Hadland of RAFMAA made top score with a five flight total of 147 seconds.

Peanut scale rules were intended to stop a model winning on flying performance only. Scale points were out of 120 and 3 flights with a 40 second max. gave a total of 120 flying points. The first seven models all scored maximum flight points and places were therefore decided on scale points. Laurie Barr entered two models and took the top two places. His excellent model of the ultra low aspect ratio *Fike Model E* scored second highest scale points.

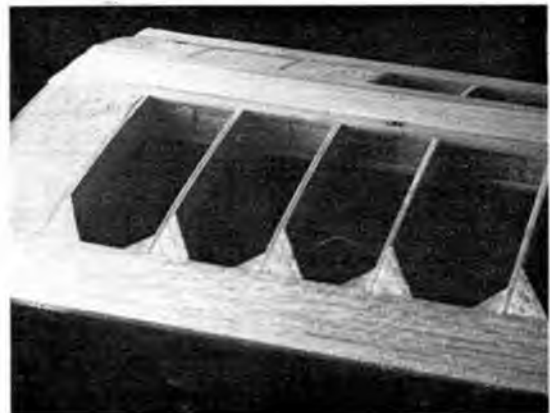
Top static scorer was R Oldridge's *Fokker III*. Flight performance from this model left something to be desired, but 41 seconds from a brand new model with no dihedral and scale areas is not a bad start. Harry Hutchings of East Grinstead was the only entrant in CO₂ scale. Flight performance was quite good from a model which the builder will readily admit is only a semi-scale sports model.

Easy-B produced an exciting finish with Bob Bailey's model still in the air and needing over 12 minutes to win, when the prize-giving for the other events was in progress. The model was down in just over 10 minutes for second place. Laurie Barr's 1 gramme model took top place with a three flight total of nearly 36 minutes.

Only 35 people entered this event and although the meeting was very successful from a flying point of view, it was a financial disaster for the South Eastern Area. Unless more support is forthcoming next year, it seems unlikely that this event will be repeated."

RESULTS

HLG 1 C Hadland (RAFMAA) 147 2 R Green (St Albans) 135
3 R Bailey (St Albans) 118 Peanut Scale 1 L G Barr (Hayes)
Fike E 91 +120=211 2 L G Barr (Hayes) *Lacey M10* 83 +120=203
3 C Hadland (RAFMAA) *Lacey M10* 72 +120=192 CO₂ Scale
1 H Hutchings (East Grinstead) *Comper Swift* 9 +46=55 Easy-B
1 L G Barr (Hayes) 35:55 2 R Bailey (St Albans) 33:22 3 R Green
(St Albans) 29:31.



BOOK REVIEWS

a round-up of some recent publications – plus a record

MAKING AND FLYING KITES by Lloyd, Thomas and Mitchell, John Murray, London. £2.95

Upsurge of interest in kites through extensive publicity for the controllable two-line versions (of which there are now six different makes in production!) make any new publication welcome. This is one that tends to play down to the elementary. Dimensions and basic construction details are sketched for 16 different kinds of kite, but though the Sled is included, there is nothing on the 2-line type to represent current fashion. Essentially dealing with its title brief of 'making' kites, and carrying an explanation of aerodynamics as they might apply to some sorts of kites, the book will encourage those who wish to make their own. We hesitate to recommend that the so-called Marconi rig be followed as drawn. Taken from a yacht rig with double jibsails this Marconi kite must not be confused with the one used to elevate the famous aerial for the first transatlantic radio transmission. As drawn, it is back to front. In any case it's a rotten flier and should be credited to Reinhold Platz who used the concept for hang gliding in the twenties. It flies better without a line attached.

This book is going to provide a useful contribution to the Kiting fraternity who appear to be growing rapidly in numbers. RGM

SCALE MODEL AIRCRAFT IN PLASTIC CARD by Harry Woodman, Argus Books, 148 pages, liberally illustrated A5 size, paperback £2.95. Those who have had opportunity to



admire this author's models, and who have read his contributions to our sister magazines, *Scale Models* and *Military Modelling*, will know what to expect of the maestro of what's peculiarly known as 'scratch' building. For the less-informed Harry Woodman can best be described as the scale modeller for whom the words 'difficult' or 'impossible' do not exist. He makes his subjects using styrene plastic 'card' as a basic material, and converts it by cutting, moulding, folding and shaping to follow the shape of full size counterparts to perfection. But the hitherto 'secret' techniques are only part of the story and this book contributes the other reason for such expertise in a liberal context of photos of actual aircraft. This side of research is all important. Each illustration has been carefully chosen to reveal a feature that provides the key to realism in modelling. Close-ups of radiators, rigging, rivets or cockpits, covering and collector rings provide perfect references for the keen scale enthusiast. The author's sketches and extensive captions make it a book that needs to be handy on the shelf at all times, and for all scale modellers, static or flying. RGM

SOUNDS AT SHUTTLEWORTH Following their introduction of 8mm colour sound films of aircraft from

the Shuttleworth Collection, Flightstream Productions of Tiptree, Essex have now released their first stereo LP record. Titled *Wings of History Vol 1 1909-42*, it is a double-sided disc which gives 40 minutes of exciting sounds from the past. General Manager of the Collection, David Ogilvy, introduces each aircraft – or rather, each engine note. But it is not simply a cacophony of noise. One can hear the backchat of spectators, the pilot-to-prop swinger instruction, the slow pick-up from a first cylinder firing and even the rumble of tail-skids on the famous Old Warden grass. Opening with the 3 pot Anzani in a Bleriot, it takes one through the small Gnome of the Blackburn, the Le Rhone in a Pup to the throb of the big Mercedes in the LVG. Sweet purrings of a RR Falcon or geared Mercury contrast with the *put-put* of the Bristol Cherub. The recording is something to treasure, perfectly stereophonic and well worth the £2.95 retail price. RGM

AIRCRAFT MUSEUMS DIRECTORY – Compiled by Gordon Riley, *Battle of Britain's Prints International*, 32 pages 7 x 4½ ins. Card covers 50p. Second edition of this pocket guide has eight extra pages and a full up-to-date listing of the aircraft in 44 British collections. There is no index, but hunting through the names of the aircraft can produce pleasant surprises. Among these are a *Sopwith Dolphin*, *Fairey Battle* and the fuselage of a *Westland Wallace*. For scale modellers who are seeking subjects to study 'in life' this is an ideal and inexpensive directory. RGM

NORTHROP FLYING WINGS by Ed Maloney, *World War II Publications*, Buena Park, California 90620, 56 pages, 11 x 8½ ins., illustrated, plans, paperback.

In most technical endeavours there are unsung heroes and hidden talents. This book brings out the little appreciated story of John K. Northrop's



flying wing from the NIM to the X-4 and covers the subject with the photography and drawings. Some of these illustrations are rare first-timers – one of nine B35/49 wings in a row is amazing when one considers this was over 25 years ago. The Northrop wing concept was nipped in the bud by a politically misplaced contract to Convair for the B-36 and the book says so. Tragically, not one of the big bombers remains but the Smithsonian Institute has the original NIM and the MX 324 in store for later display. Modellers will relish the ten 3-views any of which would provide inspiration for a scratch-built static or even flying scale model. U.S. price is \$4.95. RGM

LUFTWAFFE AIRCRAFT AND ACES by Ed Maloney, *World War II Publications, PO Drawer 5428, Buena Park, California 90620. 152 pages, 11 x 7½ ins. illustrated paperback.* Originally published in 1969, this volume deals with a much hackneyed subject in picture-book style. Though most of the aircraft are given only one photo with their description and data, the subjects covered embrace almost all the types used by the German Luftwaffe, and even some which never left the development test centres for service. But it is the inclusion of sections on bombs, bomb-sights, guns, engines, and jets, missiles, and – very important – cockpits, which go to make this a unique work. Captions may be short, and reproduction not always distinct, but the selection of the photos is excellent. A four page colour section gives artwork for markings of the aces, and due credit is given to German leadership in the He 178, Ar 234, Me-P1101 and the axial flow Jumo 004, which have been conveniently overlooked by many other historians treading the same track. RGM

BUILDING AND FLYING CONTROL LINE MODEL AIRPLANES by Walter A. Musciano, Robert Hale & Company, 192 pages, 9 x 5½ in., illustrated, hardbound. £3.80. It is all too rare that we receive a 'pure' aeromodelling book, and it is even more unusual to find one written for the would-be control line flyer. The author has obviously been involved with C/L flying service since its inception – and perhaps this is the basic 'fault' with this publication; it is rather dated. True the basic mechanics and model requirements are unchanged, but the book has been subjected to only a partial updating (and Anglicised) and whilst all the information contained is useful, the tyro would in many instances be rather confused when seeing 'modern' designs for the first time.

By 'partial updating' we refer to the pictures of currently available tools used in model construction plus an appended chapter describing modern team racing complexities, illustrated by many photographs of recent team racers (taken by this reviewer incidentally!) while throughout the remainder of the publication are pictures of 20 year old aircraft – in some cases complete with spark ignition engines.

Despite the anachronisms, the book could be useful to the beginner (though would he appreciate the chapter on jet models?). The provision of drawings and building instructions for a trainer – sensibly using a 0.19cu.in. motor, modern stunt model (not photographed), and a carrier deck design should also prove interesting.

Flying is dismissed in just 46 lines with the aid of seven diagrams – and there is no mention made of operating engines, surely the heart of a control line model? PSR

TO FLY LIKE A BIRD by Keith Sherwin, *Bailey Brothers & Swinfen Ltd, Folkestone. 182 pages, illustrated, hardbound £3.95.*

If ever proof were needed to substantiate the seriousness of attempts to achieve Man Powered Flight, it could be found in this book. Non-technical, and written as an account of all the trials and tribulations associated with the many aircraft built thus far, Keith Sherwin's new title is a perfect mate for his other well established work 'Man Powered Flight', in the Argus Book range. For just as one takes the reader into the realms of design, this latest book concentrates on practical experience and the lessons to be learned therefrom. There is an appeal for man-powered flight as a sport, with duration aided by taking advantage of atmospheric lift. Sound advice is given for educationalists on the use of MPA as an excellent student subject. Illustrated with many diagrams and photographs (which include the Smolkowsky biplane and Cde Hurel's Aviette in towed flight, plus rare illustrations of the late Don Perkins' three inflatables) this book takes us one step further toward achieving the goal of regular and consistent MPA flight. The future is summarised in the last paragraph on Operational Aspects where the smaller machine that can be operated in Force 3 winds is advocated. Two such aircraft are in their last stages of pre-flight testing. We may yet see the elusive 180 degree turn achieved in 1976 and subject to such success, man may soon fly like a bird, using no more than his own human power.

DISCOVERING OLD AEROPLANES by D. Ogilvy, *Shire Publications Ltd. Fifty-six pages 7 x 4½ in., illustrated paperback.*

David Ogilvy, well known to readers of *AeroModeller* as the General Manager of The Shuttleworth Collection, has written this excellent little paperback. Aimed at the lay reader, the author details the many historic aircraft that can be seen throughout the UK in museums and private collections. Full size exhibits are, of course, the ideal reference source for flying scale modellers, and if you are making an RE8, Lysander or Avro Avian – this book will tell you where to find the real one.

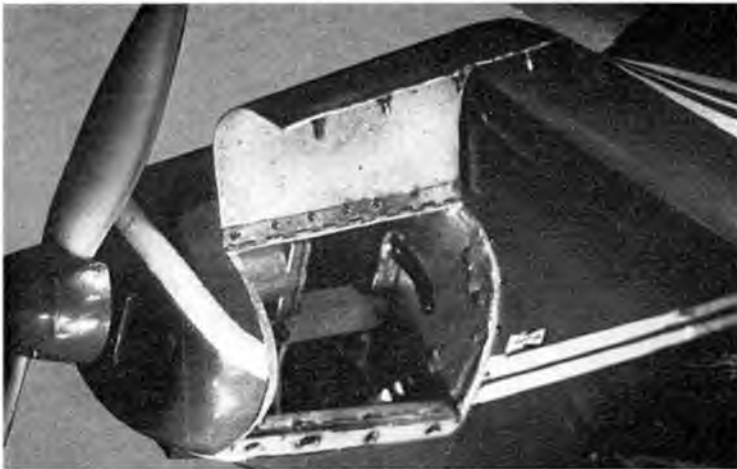
Complete with 32 half-tone illustrations, the book also contains chapters on preservation, historical development of aviation, and aircraft restoration. Extremely good value at only 50p. RLR

JANE'S POCKET BOOK 6 – LIGHT AIRCRAFT. Edited by John W. R. Taylor, *Macdonald and Jane's Ltd, 260 pages, 7 x 4½ in. Soft PVC covered edition, price £2.25.*

A pocket Jane's makes a superb reference source and this latest edition on Light Aircraft is no exception. It lists scores of the world's smaller general types and provides each description with a photograph and a three view drawing. Some of the latter are not very accurate, and should be treated with care by the modeller desiring to scale them up.

Austers, Bells, Pipers, Robins, etc, they are all here in this book. How sad that de-Havilland, a name once synonymous with light aircraft, now no longer qualifies for inclusion. Available in limp PVC and hardbound editions, this is a handy spotters' guide and directory for 'civil types'. RLR





AS AN EX AIRFRAME fitter I have always been irritated at being forced to use non-scale cowling panels and fasteners on my scale models. Now I do not pretend to be a good scale modeller, in fact I am very much a 'Class II' type, but this is one area that always niggled me, so when I started to build a 1/6th scale *Pitts Special*, I decided to make the two hinged engine cowlings exactly true to life.

The model had all panelling made from .010in. aluminium sheet, held down with an impact adhesive and 12 BA round head screws, the two hinged panels being .015in. aluminium.

The piano hinges were the first big problem, and after several frustrating attempts to solder lots of little bits of brass tube to pieces of tin, I realised

that I was wasting brass tube, solder and time to say nothing of patience. I then tried the method illustrated with instant success.

The only tools needed are a flat file, about 1/4in. thick (it can be thinner for smaller scales) and a set of bend bars. These are made from two 6in. lengths of square steel bar known as key steel; 3/8 x 1/2in. is a good size. These are held together and drilled at each end for a 3/8in. bolt which should be fitted with a butterfly nut. Incidentally, these bars are very useful for bending up fuel tanks as well.

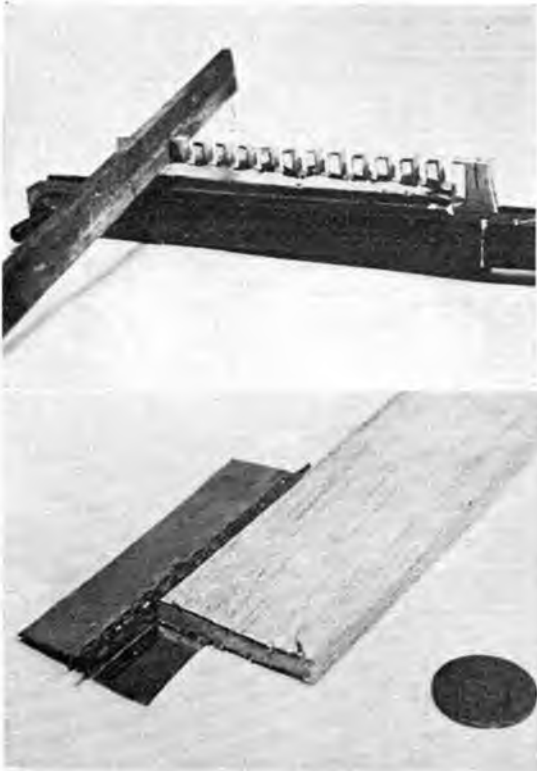
The hinges are made in the following way: first, cut two strips of thin tin about 1in. wide and longer than the required hinge length. Cocoa tins are nice and thin! Next, cut two pieces of 1/4in. ply the same length as the tin, and as wide or wider. Now clamp the

WORKING SCALE

revealed by Peter Miller

two pieces of tin between the two pieces of ply with about 1/8in. standing proud above the bars; the top of the tin should be flush with the wood. Starting at one end of the hinge, file a slot down to the bars with the edge of the file; move along the width of the file and file another, leaving a strip the same width as the file. Repeat this over the full length of the strips. A fine hacksaw could be used, but care must be taken or the wood will break and allow the metal to distort.

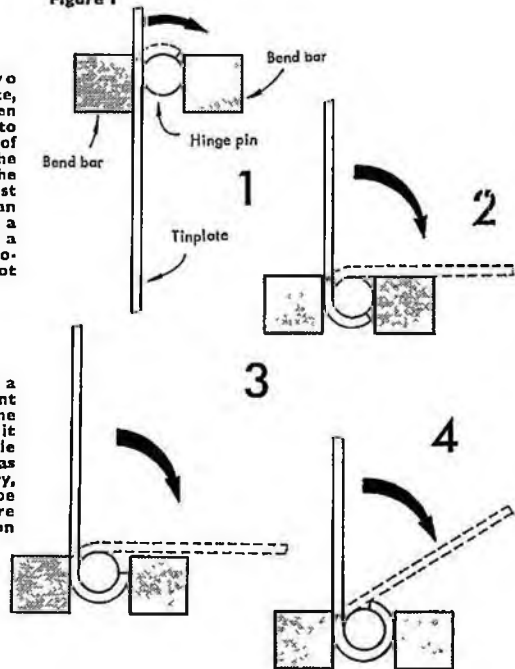
Having made what I term the 'combs', take one and clamp it in the bars with a length of 18 or 20 swg wire as shown in step one of *Figure 1* with the teeth of the comb just showing over the wire, and everything parallel. Tap each tooth over the wire. Now the comb can be reversed as shown in stage 2, clamped and bent over, the process being repeated until the teeth are fully closed. This half of the hinge is now tapped close to the wire if necessary, and the wire pulled out. Repeat for the second half of the hinge, then interleave the two halves and insert the wire. Some filing may be needed to adjust the width of the gaps and possibly the depth to allow free working of the hinge. The wire may be held in place with a drop of solder, though mine were just nipped at one end with pliers and have shown



Filing the two strips of tinplate, clamped between strips of 1/4in. ply to form the 'teeth' of the combs. The plywood holds the tinplate firm whilst filing. 'Teeth' can be cut out with a fine hacksaw if a file of the appropriate width is not available.

If required, a 'step' can be bent into one half of the hinge by bending it around a suitable piece of wood as shown. If necessary, the 'teeth' can be filed a little more to ease operation of hinge.

Figure 1



COWLS

— AN OPEN AND SHUT CASE

no signs of moving.

The hinges are now ready to attach to the cowling, the method of doing this will vary depending on the material; I used 12 BA nuts and round head screws as I was using aluminium panels, but they could be soldered to tin or epoxied into place.

Fasteners

Full size aircraft make great use of *Dzus* or *Oddie* fasteners which are a quick release button which require a half turn of a screwdriver to undo;

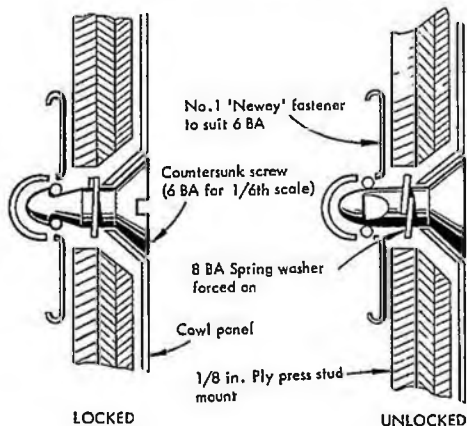
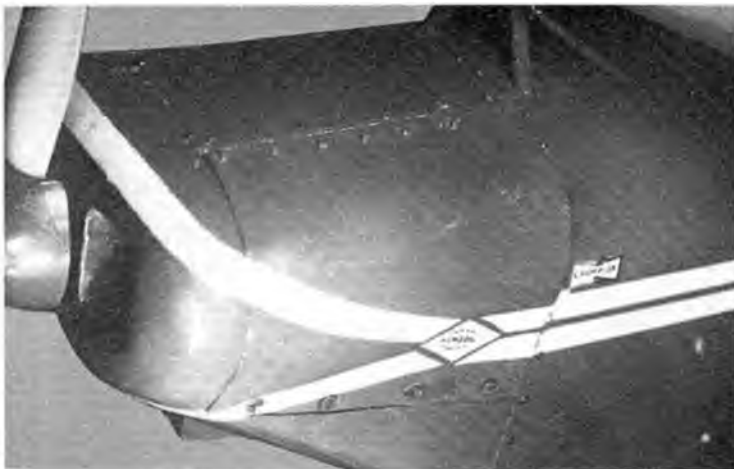


Figure 2

the *Dzus* fasteners need a screwdriver to do them up, but the *Oddie* type only need to be lined up and pushed home till they click. Both types can be either countersunk or mushroom headed. This latter is a very flat dome, NOT like a round head screw. On aircraft these fasteners can either be arranged so that all slots are parallel to the side of the panel or have two paint marks that align with the slot when they are locked. In some cases both systems are used, this being so that a quick look will show if any fasteners are not locked, and woe betide the airframe man who leaves a panel loose!

To make a working *Oddie* fastener (which can be used to represent a *Dzus* type) one needs a countersunk screw, preferably with some plain shank length though these are very rare, and the female portion of a press stud. For 6BA bolts a *Newey* No 1 is perfect, and this is just about right for 1/6th scale. The screw is



cut to the length that will go through the cowl, the ply press stud mount and into the press stud. The end of the screw is filed to a bullet shape and two notches are then filed one each side to mate with the wire in the press stud, these notches should be parallel with the slot in the head and should be adjusted so that they engage the wire with the cowl fully home. The female half of the press stud is attached to the inside of a piece of ply, preferably $\frac{1}{8}$ in. to allow for the countersinking, and in such a way that the screw slot is lined up parallel with the edge of the panel when locked. (See Figure 2).

The cowl is dimpled to accept the screw head and the fastener can be held in place by forcing an 8BA spring washer over the screw in the case of 6BA, or a turn of wire wound

round and a touch of solder applied. To undo the panel a quarter turn of the fastener allows the slots to disengage from the press stud wire and the domed end forces it out. To close the panel one merely aligns all the screw slots and presses them home until a click is heard or felt.

These details can be used anywhere that there are panels on the 'planc, but of course they are most useful for access to the engine or a fuel filler etc. In use, any paint will soon wear off and assorted scratch marks will be made by slipping screwdrivers. Do not worry! It will be *dead* scale, as in service all aircraft have these scars, and I include many private planes. Also, a fastener may be lost and the replacement will certainly not be painted over — on a service aircraft at least.

The completed hinge, shown a little larger than actual size. This may now be bolted to the cowl material using bolts of 10 or 12 BA (depending on scale). Alternatively, they would be epoxied or soldered to the cowl, according to material used.

Shown some four times larger than actual size, an *Oddie* fastener made as per Figure 2. When fixing the dress fastener stud to the panel, make sure that the screw slot will lie parallel with the edge of the panel — or else paint aligning marks on the finished article.





Now that you have built a new style combat model (or rather a small 'stock') from the plans published in the June issue, Richard Wilkens passes on those invaluable, practical tips in this concluding feature.

Repairs

These models break when they hit the ground because it is almost impossible to design a 13oz, 360sq.in., simple to construct wing out of conventional materials that holds up under a 90 mph crash. It is possible however to encourage the wing to break where it *suits* you; that is where it is easy to repair. The model therefore features spruce centre section strengthening strips to stop very abruptly along the wing half way between the ribs, and the LE and TE are supposed to snap fairly cleanly at these points. You may even like to encourage a clean break by notching the LE web and TE at these positions. Repairing the TE is simply a matter of adding a $\frac{3}{4} \times \frac{1}{4} \times 2$ in. ply plate top and bottom of the TE and clamping with a bulldog clip which will force the TE to remain straight while the epoxy sets. Sometimes the LE and tips get crushed in a heavy landing and to eliminate the wrinkles simply add a mylar or 'clingfilm' patch to the damaged area. Streamer string will cut through the LE to the spar, and these cuts should be patched in the same way before the next match.

Test flying

Take some steam generating equipment, like a stove and kettle, to the flying field to remove warps. This is the glow motor/pacifier operation for those new to it:

Open the needle $1\frac{1}{2}$ turns. Fill the pacifier, using a full squeeze bottle of fuel. Clamp the tube with a bulldog clip and connect to motor. Prime the motor through the venturi and turn it over a few times. Prime it through the exhaust port, then connect the glo clip and check the ammeter; remove the bulldog clip and squeeze the tube by hand. Turn the motor over until it 'bumps', then hit the prop forwards and backwards - when the motor starts count to one and release the tube. Needle setting is very critical and by experiment you must find the running limits. It will either run O.K., stop lean, stop rich or run backwards.

A 'lean' stop is where the motor peaks and dies, sometimes several times before it stops altogether. Open the needle $\frac{1}{2}$ turn and try again. A 'rich' stop is where it peaks then 4 strokes for a second or two after releasing the fuel tube before stop-

ping. Squeezing the tube for a second every 2 seconds will keep the motor running while you tweak the needle $\frac{1}{8}$ of a turn between pipe squeezes. If it runs backwards the crankcase is flooded - do not release the tube until it runs forward. The correct setting for launch is as rich as possible, but not 4 stroking. This can be checked by a $\frac{1}{2}$ second squeeze of the tube where the motor will run slightly faster for a second or two, before resuming an off-peak 2 stroke.

"Gripright Soothers" (what a lovely name!) are the best pacifiers to use but in very cold weather even they do not fully deflate, and warming the fuel is the only answer we have come up with so far. Boil a saucepan of water and stand the fuel in it for a while to achieve this.

Do not ever stand with your face alongside the rotating propeller; if the prop throws a blade, it may cut or blind you.

7in x 4in. Tornado nylon props boiled in water for 10 minutes are the safest to use. Most other nylon props of this size are dangerous on Super Tigres, or any other engines, running at these rpm's.

Engine fires are rare but sometimes occur when priming through the exhaust port with the glo clip connected. If a fire occurs, squeeze the tube and blow the fire out. Do not panic and drop the model because the pacifier tube could disconnect and squirt flaming fuel anything up to 10 feet.

Fly the model level and look to see if the wings are level. You should not be able to see the outboard wingtip above or below the inboard tip. If you can, then the wing is warped and you should land and remove it before doing any manoeuvres. If it looks OK, fly a wide wing-over to inverted and check again. If the line tension is different now or the outboard wing tip is visible, you missed removing the warp. Land and remove it before flying any tight turns, otherwise the model may crash. Never ditch one of these models when test flying as it will probably break; land it gently when the motor stops. When all warps have been removed fly wide consecutive loops downwind, progressively tight-

And away! Another 'Blasta' takes the air - or does it! In fact this is an all-foam version with hollowed out cores and known as 'Super Star II', plans of which are available direct from the designer - see Classifieds for details. Meanwhile, those who prefer the more conventional 'Blasta' should send £1.10 to AeroModeller Plans Service, quoting Plan No. CL 1284. A thick and thin-winged version are drawn on the same sheet, with full details for mass producing these highly successful machines. End of commercials!



ening them until you are holding on full up elevator. Note whether or not the outboard wing suddenly drops and flies wider loops than the inboard wing, together with an immediate 10-20 per cent reduction in the model's airspeed. If all this happens the wing has stalled because there is too much elevator movement.

Before landing, fly outside loops and try the same procedure. If the model drops a wing in one loop direction only, bend the pushrod next to the elevator horn to reduce the elevator movement in the stalling direction and re-fly. Move the pushrod into a higher horn hole if the model still stalls. You will need more elevator movement on windy days.

Test fly until no stalling occurs, then if you are not satisfied with the turning radius add tail weights (solder wrapped round the elevator horn) until you are, but make sure you can steer the model accurately and that you can fly it rock steady level.

It takes many hours to become accustomed to the higher speed of a glow-powered model and flying really is a matter of learning what flick of the wrist produces which flight pattern that fits into whatever gap is between the model and the ground. You may find the following helpful. From a wingover fly a standard 'wiggle' (Figure 1) a dozen times and check the gap (I hope there is a gap) then aim to reduce it to a foot or so by starting the same pattern a bit lower each time. Try wiggling up and down an axis of 45° (Figure 2) and then fly 5, 4, 3-sided and round loops in quick consecutive succession to learn which wrist flick is required to produce which directional change. Then do it with eights. Square vertical eights and horizontal hour-glasses are a bit of a joke.

Do not fly wide downwind loops on windy days as the motor may over-speed and shaft run after throwing

the prop blades. If the pitch of the motor noise quickly fluctuates and the motor sounds like two motors running at slightly different speeds, then the prop is loose.

Contest flying

If you have just 'converted' to glow flying, you will need to form a well organised team as glow motor operation is not so straightforward as the more reliable diesel, but it is a lot more fun when things are going right.

If you are part of a team, aim to standardise everything: use the same lines, handles, props, motors, pacifiers, streamer hooks, engine plates and fuel as everybody else and the whole outfit will work much more smoothly than one where every member of the team uses personal items. The only thing that should be personal is the model, or if you are very lucky, just the model colour. Plugs, lines, props and pacifiers are items that need constant replacement and a system needs to be worked out whereby members constantly check and replenish the stock. The *Outlaws* last year had a line box, an equipment box and a pit box that everybody used. This year, model leadout lengths and handle sizes will be standardised so that lines are fully interchangeable and odd lines salvaged from a line tangle will be reusable.

Before each match make sure that the pit box contains two separate accumulator systems with ammeters and best quality glow plug clips (not the push on type) four new and tested plugs, four new pacifiers, three bulldog clips, two full fuel bottles, one syringe full of fuel connected to a pacifier, four new and sanded 7x4in. nylon props, two plug spanners, pliers, wire cutters, screwdriver, nut driver for motor nuts, prop nut and washer, spray bar assembly and streamer clips.

On the edge of the circle you need the team's equipment box, from which the pit box is replenished and extra items suitable for cleaning motors and repairing models during the match should be kept, as well as the line box containing spare lines and handles. A spare pit box for practice flying is useful, as is a spare accumulator, should either of those in the pit box run down.

There are two problems with flying the Super Tigre glow powered *Blasta*: one is that '100%' Oliver reliability we are so used to no longer exists, the other is that of speed difference between the *Blasta* and its diesel powered equivalent is still quite a problem, especially on windy days when the speeds of both models



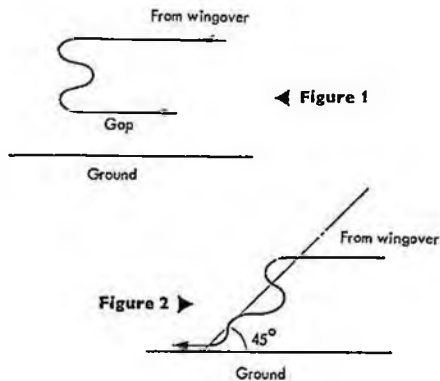
You do not have to have rubber legs to succeed, but if you can vary your height from dwarf to giant in one easy manoeuvre, then it helps!

increase by about 20 per cent. Learning *not* to follow slower models takes time and new techniques have to be mastered.

Surprisingly perhaps, flying against the Rossi diesel is easier as the speed difference between models is reduced to about 5 mph, in the Super Tigre glow's favour, and flying against last year's American models which were faster than the *Blasta* in level flight (which is unimportant) became a straightforward conventional following exercise.

The lower the prevailing wind speed, the more chance you have of success as the model which is really only a precision streamer cutting tool becomes more useful and manageable, and there is less chance of overshooting the streamer and cutting the string, especially when trying to follow wiggles. This year, however, more of the opposition will be flying faster so the problem should not be so great.

Surprisingly, hitting the ground is quite a rare occurrence because once having made the decision to fly destructable models you develop very quickly a sixth sense which prevents you from flying risky attack and evasive manoeuvres, and most *Blastas* have been destroyed in mid air collision. Providing you are an optimist, you should find that using *Blastas* in competition is considerably more exciting than the usual heavier diesel powered efforts, because everything happens much more quickly. There are some clever champions around that fly slower models, and still win contests, so do not expect instant success, but *do* expect instant fun!



topical twists

by 'Pylonius'

illustrated
by Sherry



Boys Will Be Boys

EFFORTS AT presenting a septuagenarian aeromodeller with a special birthday award were somewhat frustrated by the sept etc, gentleman's insistence on turning cartwheels across the reception room. Not the most appropriate time to get an attack of the Olga Korbets you may think but vintage type aeromodellers can be as fascinating in their way as the models they flew. Now, the only time I aspired to a similar gymnastic feat was when I did a full back somersault with a one and a half twist upon clutching a red hot Jetex motor. But that was back in my youth when individualists, given to eccentric quirks of behaviour, were more in evidence than they are today.

The individualist flowered in an age when model flyers actually spoke to each other, waving a wing in a sort of freemasonry recognition signal, and when it was possible to bring something different on the flying field. Nowadays everyone flies the same plastic glider or polystyrene pylon racer, and the only machine on the field with any character is the ancient grass cutter. But if, in the old days, you wanted to know what was new in the model world you did not have to go to the Toy Fair, you waited for the individualist to bring on the latest in flying machines, even though the flying part may not have been all that much in evidence. It wasn't the results that mattered, that the model did or did not fly like an angel, it was the style, the panache, that really counted.

Now, how do you turn a cartwheel? Left hand down . . .

Pot Luck

Time doth wrought strange things, but none stranger than it has done to the contest trophy. From the classical vases they handed out to Ben Hur and his Charioteers we have come to something for a control line event which looks like a hoe sticking out of a compost heap, and which, for some inexplicable reason, is called *Fireball*.

Generally, model trophies have been getting more bizarre over the years. By long tradition we, in this country, were conditioned to the customary electro plated egg cup, and the first inkling we had of a greater trophy world beyond was the American mag picture of huge, skyscraper trophies being handed out to sundry *Cement Squeezers* and *Balsa Bashers* for 'Hand Launched Glider' prowess. Since everything American was a sort of preview of what was coming our way eventually our trophy prospects were considerably raised, but though we got the muggings we never got the mugs. In fact the mug hand out deteriorated rather than improved, making the electro plated era something of a golden one.

"He doesn't know whether to present it for the chuck glider event next Sunday, or sell it to the Tate Gallery."

Lucky the contest winner who now gets a nice, old fashioned silvery cup. What is more likely to be foisted upon him is some hideosity made up from scrap metal by a self-styled club artist, or worse still, a piece of modern sculpture produced by the chairman's wife at the Ladies' Institute. There are now hundreds of such trophies knocking around, so ghastly that they are locked away in remote places like mad spouses in Victorian novels. Whereas the old type champion had all his trophies a-gleam on the polished sideboard, his modern counterpart has only a few tatty plaques suitable for open view. For the rest, even the junk man refuses to touch them.

I can only advise the winner of the Fireball Trophy to dig a hole in his garden in readiness.

Secret Code

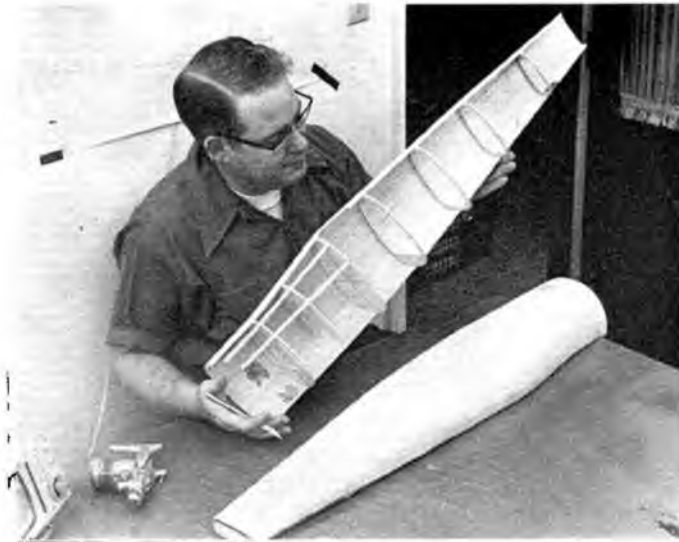
Noise, like beauty exists, if not in the eye of the beholder, at least in the ear of the listener. To the power model flyer the sound of his sweetly tuned engine is the music of happiness, whilst to a diehard of the anti model lobby it is intrusive, objectionable and all things uncivilised. So, where does pleasant sound end and noise pollution begin? There is no hard and fast criteria - you not only feel the width, that is the volume, but also judge the quality, the kind of sound emitted. One small, droning engine, gimletting its way through shutter and airbrick can unnerve a soundproofed populace more effectively than the battering ram of hundreds of cc's at full belt.

Then again, it's a matter of individual reception. A white faced, red-eyed resident stumbles down the garden path clutching his bottle of tranquilisers, and cries hoarsely to the next door neighbour:

"Can't we do something about these ——— model planes?"

"Is that what the noise is?" replies the unperturbed neighbour, "and I thought it was this dratted hedge trimmer going wrong again."

It is what you call Code comfort.



BETWEEN THE LINES

with Dave Clarkson

American stunt flier Al Rabe, noted for his scale designs which have a habit of beating 'conventional' stunt models, displays a fuselage built in two halves over a mould before the formers are added. Light and strong – see 'Stunt Scene' for details.

A SECOND COMBAT CLASS?

After the 'Outlaws Combat Rally' on 28th March this year quite a few were muttering about the necessity for a second Combat class. The problem, as reported to me, is that FAI models have become too fast and fragile for the 'average' or 'novice' pilot and that model destruction rates may discourage the many newcomers that seem to be entering Combat at the moment. Therefore some say that newcomers should have the opportunity of competing in a less carnage-prone event with slower, tougher models giving the less experienced more time to correct errors in the air, and reduced likelihood of uncorrected errors resulting in 'confetti'.

Personally I am not convinced about the necessity for a second Combat class – one windy weather contest is not enough to judge by. After all there is *always* additional carnage in wind, and there is nothing like wind for exposing the inexperienced. Before saying that today's FAI Combat models are too hairy for newcomers maybe we should look at quite a few contests in all conditions and then make a judgment. I suspect that very many of the new faces seen at the Outlaws 'do' have come into Combat because they find today's fast and manoeuvrable models so much more exciting than the old fashioned variety. If we did have a second Combat class requiring 'old fashioned' models, would many actually fly it competitively? I suspect not, the appeal of the 'real thing' would prove too enticing.

My other reason for being cool on the introduction of another class is that of rule proliferation. We have too many control-line categories already as the Nationals show every time, and yet whenever a new class is introduced it gets added to the Nats programme, causing extra congestion etc. It is one thing for the SMAE to promulgate 'advisory' rules for the use of clubs in running

club and local contests; it is quite another thing to pass full rules and organise events for them at the important contests. In my own opinion, 'Mini-Goodyear' and 'Junior Stunt' should never have been formulated as official SMAE events, the correct place for such events is on the club field not in the middle of a congested airfield miles away from anywhere. If people do want a less hairy second Combat class, let us realise that the place for such contests is, as with 'Mini-Goodyear' and 'Junior Stunt', at the local level not the National level. After all, the vast majority of Combat models are flown down on the club field, and are of the 'second class' variety i.e. slow and tough. By all means, if rules for a second Combat class are necessary, let the SMAE formulate *advisory* rules for use on a local level (and at the same time re-classify the 'Mini-Goodyear' and 'Junior Stunt' rules as 'advisory to clubs'), but do not congest our overstuffed calendar with it as well. People do not want to see the 'learners' performing at our Nationals, they want the real thing – you don't go to Brands Hatch to watch 'L-drivers' passing the driving test do you?

After all of this philosophical rambling, let us consider some possibilities for second Combat class rules as alternatives.

1. Suction Fuel Feed?

Yes, makes everything easy and simple but *not* necessarily slower – Rossi diesels work on suction!

2. 10in. wing leading edge to elevator hinge limitation?

Yes, eliminates fancy models and encourages tough, heavy construction so get the CG right. However, half the kits currently available would be illegal!

3. Nylon covering?

Not on really, we are in the 'plastic film' era now. Many newcomers

Pictures from the Outlaws Combat Rally, held courtesy of farmer Alan Sarll at Standlake, Oxon – a meeting eventually won by Paul Strudwick, and dominated by 'plastic' glow powered models. At left is Cosmo's neat method of transporting sufficient models for one day's contest flying... Below, Mick Tribe launches for brother Peter – one of the few using a diesel engine on this very windy day. At right is a certain R. Wilkens with Martyn Cowley of Biggles. Biggles? Yes the F/F club... and he placed 3rd.





Our columnist has just received this HGK 15 glow motor from Japan with a plea of 'will it make a good diesel?' Time will tell, but the motor looks interesting - there is no separate liner, piston runs directly within the (plated) casting.

start off with the stuff and forcing them to use nylon would not be popular.

4. *Bin, dia, props only?*

A good way of killing the 'hot doggies' and easily enforced. Still allows variety in motors, but speeds will be reduced to a pretty uniform level.

5. *One model per bout?*

Halves maximum carnage rate, and favours tough, survival type models. Emphasises good team-work.

6. *Mufflers?*

Got to be really, since it is the club field we are looking at and most clubs have silencer rules. Another 'hot doggie' killer.

You can see from this that I favour as performance limiters the last three since the first three all have flaws. However, not being either a club field or big-contest active Combat pilot, I may have gone a bit off the beam. So your views are welcome.

MODEL AIRCRAFT NOISE - A CODE OF PRACTICE

Under the provisions of the *Control of Pollution Act 1974* and the February 1976 Regulations made to this Act of Parliament by the Department of the Environment, the noise made by our models would appear to have come into the realm of the law. Therefore the Department of the Environment has requested the SMAE, via the CCPR, to draw up a 'Code of Practice' with regard to the control of the noise our models create. If approved by the Secretary of State, this Code of Practice will be recognised by Local Authorities when it comes to the noise from our flying sites. However, it should be emphasised that the 'Code' will not be law - compliance with it will not guarantee retention of a flying site. Conversely, non-compliance with the 'Code' will not necessarily result in loss of a flying site. It is merely a guideline for all concerned, though strict compliance would provide a useful defence in the event of a restraining order being applied for.

I am sure that most, if not all of us, will agree that if a Code of Practice acceptable to we aeromodellers and to the Secretary of State can be agreed, then the existence and recognition of such a code will be both in our and the public interest, and should be of assistance in obtaining and retaining our flying sites. Therefore the SMAE has been working on a Code for some months now and a general Code has been at last - now that the members have had their say via the Area Delegates through the SMAE Council - submitted to the CCPR. The SMAE proposed Code will incorporate Appendices giving methods of controlling noise for each different type of model aircraft (R/C, F/F, C/L etc) and the Technical Committees of the SMAE are, at this time, working on these Appendices. As far as we control-line people go, the relevant Committee is the C/L Technical Committee under the chairmanship of Bob Horwood and the Committee is meeting in early May to draft the Appendix to the Code dealing with C/L model aircraft and will take into account all of the views and evidence it has from its members, and presumably from any other SMAE member and SMAE affiliated club that is prepared to help.

Many people find the SMAE slow moving and inefficient in its workings, but this is almost inevitable because of its essentially democratic nature. Every member has the right to have his say via his club delegate to the Area Committee and via the Area Delegates to the governing Council. For technical matters the route is via the



Harvey Westland of New Zealand built this '29' for Class B racing - and may eventually go into limited production with it. Already several examples of this (and his '15') are being flown in NZ - and remember Bruce Turner won the Class 'B' event at their Nationals with it.

Technical Committees (whose members all SMAE members have the right to vote for) through the Committee Chairmen to the Council. All SMAE members do have the right to become involved if they wish and when matters like the Law become involved, the only way aeromodellers can have their say is by being a member of the SMAE and exercising your rights of membership. Noise affects us all so if you care about the future effects of existing laws on the flying of your model aircraft, there is very little time left to have your say, and the only way you can have your say is to join the SMAE right NOW and exercise your right. I am having my say on the noise question as an SMAE member via my SMAE affiliated club in the proper fashion; are you? There is no other democratic way for the ordinary aeromodeller.

MAKE IT EASY - GLASS COVERING MODELS

Almost by coincidence at a recent NORWEST club meeting we had Heaton/Ross, Sutherland/Woodside and Clarkson/Daly all producing either glass-cloth covered wings, or in one case a completely glass-cloth covered model and each telling the other how incredibly easy it had turned out to be! Those in the past who have wrestled with polyester resin, that does not seem to want to 'go off' fully in thin films, or tried to get hold of epoxy resins that do not have the consistency of treacle, will probably not agree that glassing models, especially fuselages, could ever be incredibly easy. But all of us agreed that using the technique described here was much easier and quicker than 'dope and tissue' finishing methods, and the results were possibly lighter and certainly gave a much stronger, more rigid model. Quite a breakthrough seems to have happened.

The essentials of this new technique for glassing models are as follows:

1. Before covering, sand down the item to be covered carefully using fine glass paper to give smooth, ridge and dent-free surfaces. Remove all dust etc.
2. Lay suitable glass-cloth over the bare, sanded balsa and brush on epoxy paint. Allow to cure and then give the surface a gentle sanding. Finally apply one more coat of epoxy paint.

That's it folks! The finish quality can be improved, if desired, by applying further coats of epoxy paint rubbing down gently between each to give a mirror finish, but all you do by this is add unnecessary weight.

So far we have tried K&B Super Pox paint using the brushing catalyst supplied, and Humbrol Epoxycote paint with equally satisfactory results. The K&B paint has the advantage that a clear (and very thin) variety is available for those who like clear finishes, and also this brand seems to cure to a greater hardness than the Humbrol product. Humbrol Epoxycote paint has the advantage that it is (relatively) cheap, and is available from most retail outlets. Both paints seem to handle exactly as the instructions say, i.e. they cure to touch dryness in about 4-6 hours and fully cure to a 'flyable' state in 2-3 days. Pot life seems good at around 1-2 hours before the paint starts thickening and becomes a little more difficult to use.

My phrase 'suitable glass cloth' applies to untreated (in trade terms 'loomstate') glass cloth with a weight in the range 1/2 to 1 1/2 oz per square yard. Sources for such cloths have been publicised in this Column before now, however suitable glass cloth is becoming available through normal retail outlets. In my part of the country

many model shops are now stocking rather superb quality 0.6oz per square yard cloth of British origin. This particular cloth goes over compound curves effortlessly — I did a complete fuselage using just two pieces (could have done it with one piece if the wing and tail had not been there). In this respect it seems slightly superior to the nationally available imported glass cloth of 2oz per square yard weight. I hope this British 0.6oz cloth gets national distribution through normal retail outlets, because it is just about the best cloth I have ever seen.

Give this epoxy paint/glass cloth finishing method a try. You will be as amazed as I was to find just how easy it is to do, and just how good the results can be.

AMERICAN TASTIES

Gary Frost Makes MACA President

Those of you who met Gary at the '75 Nats when he came over to fly Combat could never forget him. Gary has been re-elected mostly because of his personal (and successful) efforts to have FAI Combat recognised as a World Championship event and get the FAI Combat rules changed to MACA's liking. He has also agreed to become *AeroModeller's* US Combat correspondent — keep up the good work Gary!

The Plug Scene Hots Up

Last year the revolutionary *Glo-Bee* horizontal flat coil/glass seal 4v plug swept the Speed board in the USA and was the choice of some of the top racing and combat people too. The battle has hotted up now with the introduction of new plugs from Cox and George Aldrich. George's 'Magnum' 1½v plug was used to set a new 2.5cc speed record and to quote Jed Kusik (noted Californian racing man) 'We intentionally tried to destroy the plug. The *Glo-bee* lasted for half-an-hour. The Cox, under the same conditions, lasted for over four hours.'

More on the Cox 15

'Our testing of prototypes, including flight testing by several of the Californian FAI flyers, indicates that we have a better-performing engine than any of those now on the market. It is our hope and expectation to again dominate this class of competition as we did some years ago with our TD 15', by Bruce L. Paton, Director of Engineering at Cox Hobbies quoted in the *Duke City Dope Sheet*, newsletter of the Albuquerque Thunderbirds.

Taylor Plugs Win in the USA

Taylor 'Competition' 1½v plugs won Rat, Goodyear and Slow Rat at the Tucson Invitationals this year. To quote Aldon Kelly 'I had three consecutive runs over 180mph on one Taylor plug; no other plug has done this for me. The British now make the best plug in the World.' Considering the other plugs available now in the USA, the Taylor seems a good one — well done Charlie!

Glow Combat Suppliers

From Bill 'Moose' Allen at 418 Fairmont Drive, Dekalb, Illinois 60115 come Pacifiers (10 times better than a Binky) at 35 cents each, Bladder/Pacifier Pinchoffs at \$1.00 each, Spring Loaded FAI Streamer clips at 50 cents a pair and many other useful sounding goodies. Allow at least \$1.00 for overseas postage if you want to try these.

TOCC SPEED IN AUSTRALIA

In case any of you are wondering just how Andy Kerr managed to get 190.6mph out of his Super Tigre G60 RV ABC to win at the

More accessories for the dedicated control line enthusiast from Maple Models of Luton. Below is the Graupner 'Meister B' control line handle, best described as a simplified version of Jim Walker's invention. Lines stored on the larger drum may be let out in flight thanks to the equal pay-out of line length, plus readily accessible 'brake'. Price is £7.64.



Australian Nats, I quote Andy on how he set the motor up.

'Only mods are a steel jacket around the top 20mm of the liner with the case bored out to suit and a high compression head of conventional ST pattern set at 12 thou squish clearance. Fuel is 70% Nitromethane, 10% Propylene Oxide, 20% Ucon LB625 synthetic oil and a Top Flite narrow blade 9 x 13½in. wooden prop. The mini-pipe extends 3 inches back from the end of the standard ST exhaust elbow'.

Maybe there is more to it than this because Andy is a strong believer in setting up his piston/liner sets tight with a severe taper at the top of the liner, matched to a similar severe taper at the top of the piston wall.

Andy Keiller (ex-British speed flyer) reckons he will have the Australian record back soon with the motor shown in the photo on page 338. To quote Andy:

'Construction is OPS 60 case bored out to accept a Super Tigre 60 RV back-plate/rotor assembly and a home-made bar-stock front housing with ST 60 RV shaft, rod and spinner assembly. A modified OPS 60 ABC piston/liner set is used with a home-made head. So far in a 40oz model the engine has only had four flights. First time was 202mph, and then two of the slow and rich variety. Fourth flight was at the Melbourne Festival Model Aircraft Show — a public display. Speed achieved was 204.44mph. The engine turns the 9 x 13½in. MVVS pattern flying prop at 20,500rpm, burning 70% Nitro, 20% Oil 10% Propylene Oxide fuel.'

In case any of you regard these performances as being 'tricky', it should be remembered that the Australians fly on grass, and have to use a 70 foot x 28 thou line for mono-line.

SPEED '76 by Ivor Roffey

On 4th April 1976, the Elliott Model Engineering Club Handicap Speed Meeting was held at Rochester, Kent. The weather was very mild and fairly calm for most of the day. The sun even managed to shine at times. The meeting was very well attended even though it was the first speed meeting of the year. In fact there were 18 entries who between them managed 24 flights and 33 attempts. The EMEC Newcomers Trophy that was donated by Ivor Roffey to encourage newcomers to speed flying was won by Graham Hornsey, who did in fact make his first flight in a pylon in this contest. Graham, helped by Dave Chambers, flew a very practical 2 line, conventional design, K&B 15 powered open model.

He made two flights, the fastest being 117.1mph which was very commendable. This enabled him to gain 72% of the record. His nearest rival for the trophy was Ian Skinner who did 129.3mph with a monoline Super Tigre 40 model which achieved for him 70% which was very close. This is the first time a Newcomers Speed prize has been awarded, and it looks as though it was very successful.

Meanwhile the old timers, some nitro-stained, some just FAI-thful were fighting it out with their sophisticated, technological machinery with built-in problems and excuses. The irrepressible Dave Smith made the first flight of the day, 122.9mph with his FAI model. Martin Radcliffe had erratic motor runs but managed to get 177.5mph to win first prize. Paul Eisner flying in his first contest since his return from South Africa after making a couple of attempts did 135.5mph with a Rossi powered FAI model for second prize.

Mike Billinton had take-off trouble and his Billinton/KB 50 broke

Graupner control line wire, also available from Maple Models, is sold on neat wooden reels and comes in 0.2mm, 0.3mm and 0.4mm diameters for single strand lines. Contest fliers take note! In addition, multi-strand wire is available, both 7 and 19(1) strand, the latter being ideal for really heavy duty purposes. All wire is of very high quality and is supplied in 50 metre lengths.





Andy Keiller's much modified OPS 60 which uses many Super Tigro parts as well as home-made front housing. Already bettered 204mph, with promise of more to come. See text for details.

a con-rod during a shaft-run. However Mike swapped his 50 for an Irvine drum-valve - 40cu.in. and did 170-7mph for third place, using a 7 x 12in. carbon fibre propeller.

The Powell/Sullivan team are getting faster and they achieved 153.2 with their K&B 40 machine. Ivor Roffey frightened the life out of everybody including himself when he started his OPS 60 on mini-pipe on 65% Nitro. The motor turns an 8 x 13jin. as though it is nothing. However the con-rod could not stand the high power output, and decided to bend, causing the motor to go tight. As this happened when starting the motor in an attempt at making a flight it saved Ivor the job of changing his underwear, had the missile become airborne. The missile, weighs only 33ozs, this being 15ozs lighter than his last one.

As an experiment a 45.G pull-test was tried on all safety straps. This was put on in the form of an instant pull to simulate the condition if a model crashed thus jerking the line. There were no failures and it would appear that all safety straps used at this contest were VERY SAFE.

1. M. Radcliffe	(Feltham)	177.5mph	96%
2. P. Eisner	(Feltham)	135.5mph	94%
3. M. Billinton	(Elliott)	170.7mph	92%
Newcomers Trophy			
G. Hornsey	(Elliott)	117.1mph	72%

THE STUNT SCENE by Glen Alison

Al Rabe, the noted American stunt flier visited England recently and brought with him an interesting set of photographic slides, illustrating his building techniques. Of particular merit is his moulded fuselage construction, which although the preparation may be tedious the final result is an extremely light but rigid form. The hard bit is the making of a male mould similar to the finished fuselage, less the thickness of the wood used for the skin, which is then split vertically down the centreline. Sheets of 3/4" balsa are pre-butted jointed together using waterproof glue and then soaked in the bath for several hours before applying to the mould. Starting at the centre, bandage or tape is wrapped round, binding the balsa to the mould and working outwards to the ends slowly, the wood can be formed in to compound curves ideal for scale type models. This is allowed to dry for a few days before removing and inserting the formers. The photograph on page 335 shows the principles involved.

Hanlow Stunt Competition

Run by the St Albans club under contest director Ted Fowler, this - the first contest of the season - proved to be a great success. A total entry of 27 included 4 novices (self nominated) and 2 juniors (under 14) was greater than some National I can remember, and contained a good proportion of new faces to the competition scene. It was decided to run Novice/Junior as a separate event and because of the unfamiliarity of the new novice schedule, they could elect to fly that or the 'normal' schedule. Scores were then adjusted by a factor of $\frac{1310}{500}$ to equalise. (Being the max score in each class.)

Weather was blustery and overcast at the beginning brightening later. One heavy shower about mid-day did not spoil things though. Judge was Peter Rivens, score girls were Sandra Tindall and Margaret Fowler. Prizes for 1st, 2nd and 3rd went to Pete Tindall, Jim Mannall and John Lynch. Best novice proved to be Mike Chapman flying an Enya 35 in an APS *Spacehound*, the Russian design. Youngest competitor was Barry Eusten at 13, and the Concours d'Elegance went to Pete Tindall's *Chipmunk* with impressive cockpit detail and rivet lines.



YOU & SMAE

THIS IS the first of what we hope will be a regular information column in this magazine. It is prepared and issued by the Public Relations Committee of the SMAE with the express intention of reaching YOU - the average model flyer - to show you exactly what the SMAE is doing for its members (and also non-members) and to demonstrate how SMAE's power and effectiveness depends a great deal on the size of its membership. We hope to show you that all model flyers ought to regard membership of SMAE as a *basic requirement* of their activity.

Firstly, we must introduce the SMAE: The letters stand for the *Society of Model Aeronautical Engin-*

ers and it is the oldest National aeromodelling body in the world, having been founded in 1922.

It is the *only* organisation with the authority and responsibility to regulate model flying activities in Britain. This authority and responsibility is formally delegated to the SMAE by the *Royal Aero Club* - the body responsible for all the British sporting aviation.

The SMAE's biggest strength (and perhaps at the same time its main weakness) is that its work is carried out by volunteer model flyers in their spare time, all over the country. This ensures that the work is done by people who *know* and *care*. The weakness is that nobody is working

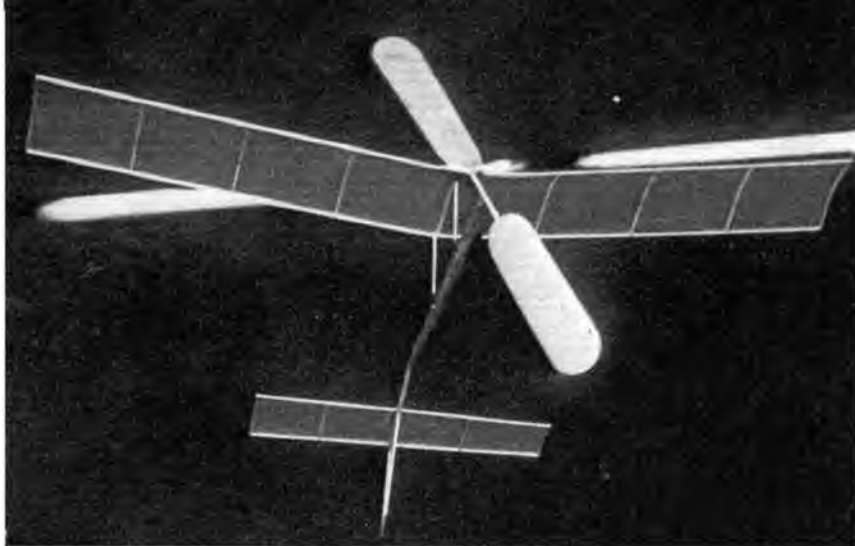
for SMAE full-time and everyone has a limit to the amount of work they can handle. However, the SMAE hopes to be in a position to employ a full-time official within a year or so to supplement and co-ordinate the voluntary efforts.

* * *

Interested in joining your National organisation, and thus enable it to grow in size, strength and efficiency? It's very easy, and the only condition is that you *must* provide proof of Third Party Insurance cover for claims up to £100,000 resulting from the flying of model aircraft, as the Society requires all its members to be so insured. It's a matter of common-sense to be adequately insured in any case.

Just send this and full details of your name, address, age (if under 16) model club (if any), plus a cheque or postal order made out to "SMAE Ltd" for the appropriate amount to the Membership Secretary, 54 Belgrave Road, Wanstead, London E11 3QW.

Fees for 1976 are Seniors: £4.50, Juniors (under 16): £1.50, while in addition there is a £1 joining fee for all new members.



EASY B

— JUST HOW EASY?

Part 2: Flying

FOLLOWING COMPLETION of the Micro X EZB beginner's kit, as detailed in the May issue, the only remaining problem to be overcome before taking to the air consisted of finding a suitable winder. A normal hand drill provides a ratio of only around 3½:1, and so it would obviously take a long time to apply even the 200 turns for testing purposes. However, a couple of solutions were soon found. Firstly, an old grindstone with a mechanical advantage of 12:1 was discovered in the tool-shed, so the grindwheel itself was discarded and the shaft drilled to accept a piano wire hook. Instant winder! Many different grindstones are available, ranging widely in price and ratios, so try before you buy. Fortunately, most are supplied with an integral clamp – most useful for anchoring to table tops, chair legs etc.

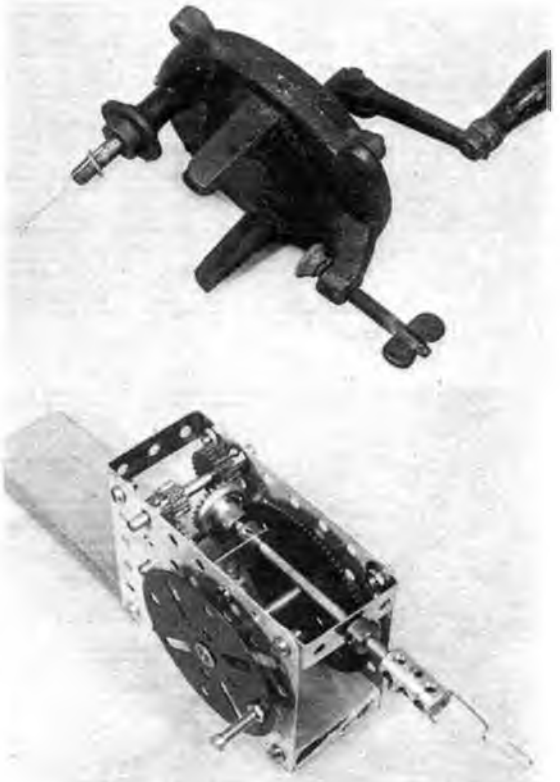
A different approach concerned the inventor's friend – Meccano. A study of the current Meccano catalogue reveals a whole host of useful gears and other sundry parts – many of which may well be found in younger brother's/son's possession. The device I constructed after playing around for a couple of hours has a ratio of 20:1, and features a wooden handle which serves two functions, namely (a) it enables the winder to be fixed via a G-clamp to most surfaces and (b) it prevents the Meccano side plates from distorting, causing the gears to bind. Enjoy yourself by reverting to childhood and invent a 'better mousetrap' from whatever is available. Meccano spares at present are hard to come by, although the situation should change by the middle of the year. Meanwhile, try M. W. Models of 165 Reading Road, Henley on Thames, Oxon or Beatties of London, 112 High Holborn, London WC1. If no luck, write to the sales department of Meccano Ltd.

And so to the flying site. Initial attempts were not too encouraging as firstly the nose bearing came unstuck (despite a dab of 5-minute epoxy being used). This was

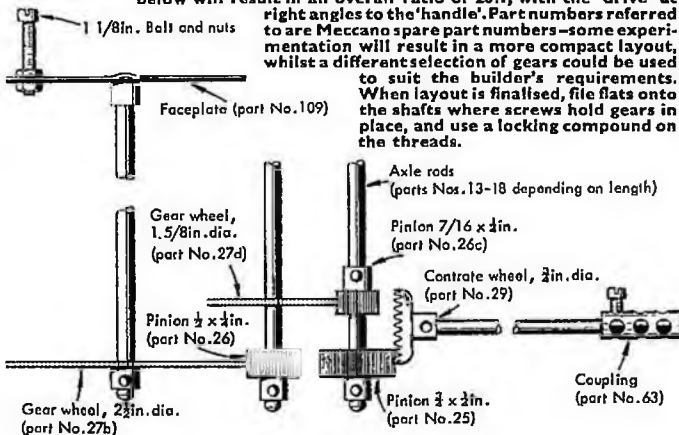
quickly corrected thanks to Hot Stuff – and later the job was reinforced by a thin strip of glue impregnated Jap tissue as suggested in the instructions. Some 200 turns were then applied and a flight attempted. Result was a long straight, slow descent to the ground. More wing incidence was added by pushing the rear wing post further into its socket, but the next flight was little better. More incidence needed, but fumble-fingers fudged it – and the wing post buckled. Home for repairs.

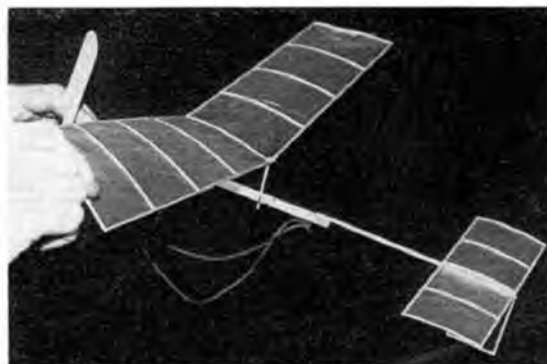
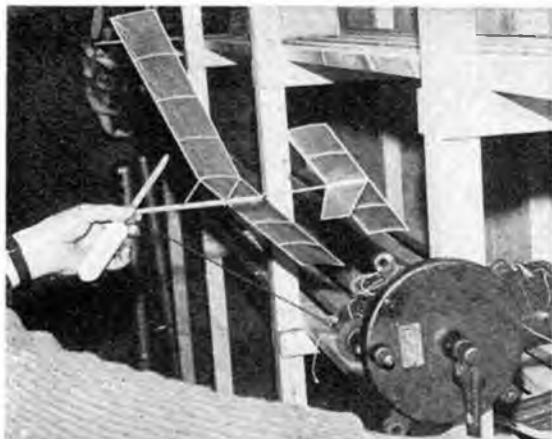
The problem was that the ¼-in. square post did not like going into a ⅜-in. dia. hole, despite rounding the ends with glass paper. Fortunately a piece of ¼-in. I.D. brass tube was to hand, and when this was pushed over the end of the new wing post, it formed a nice round end. Just right – now the post could be pushed easily into its

Two forms of rubber motor winder. Below is an old hand grinder, with grinding wheel removed and the shaft drilled to accept an 18swg piano wire winding hook. Clamp is a very useful feature. At bottom is the 'Meccano Special', built using the items drawn at left, but in a more compact arrangement.



Using the Meccano gear wheels, pinions and contra as sketched below will result in an overall ratio of 20:1, with the 'drive' at right angles to the 'handle'. Part numbers referred to are Meccano spare part numbers – some experimentation will result in a more compact layout, whilst a different selection of gears could be used to suit the builder's requirements. When layout is finalised, file flats onto the shafts where screws hold gears in place, and use a locking compound on the threads.





Left: When applying the turns, grip prop hub/shaft and bearing between thumb and forefinger to avoid undue stress. Above: Applying wash-in to the inboard panel - after licking the trailing edge to moisten the wood.

socket without slipping, and without being broken. Progress!

Next time out it was much better - and the craft proved easy to trim. A left turn was introduced by wetting (licking) the rear boom and bending it accordingly, while the wing incidence was juggled around until the model climbed slowly in a steady left-hand circuit. This caused the inboard wing to drop, so wash-in was introduced by damping/bending. Wing incidence now looked excessive, so the tail boom was bent to provide a couple of degrees of negative incidence.

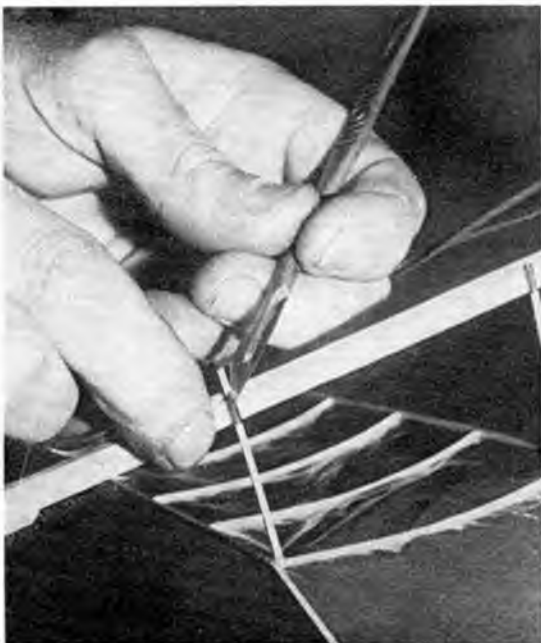
By now she was flying reliably in fairly tight left hand circles, climbing steadily and in general looking "right" to these inexperienced eyes, although much faster than the "norm" for competition models - the natural result of excess weight and possibly too thick a motor. Obviously performance could be greatly increased with a better propeller, more time spent on trimming, and experimentation with different sizes/lengths of rubber, but I must admit that this has not been done - nor will it probably

ever be attempted.

Why not? Remember, this is a beginner's design, intended to get people used to thinking small/light, and to provide a certain amount of flying. In short, a demonstration model - or in my case, bait. You see, the model had performed its function perfectly . . . I was hooked! Rather than spend considerable time getting the most from this design - an admittedly challenging prospect - I instead knew that I could now do better, and build a lighter model. As proof, I therefore constructed a second model from the pages of *Free Flight News*, being that for Laurie Barr's novice/semi expert design. At first glance the construction seemed daunting, but in fact it was quite easy, and in a few hours of work, my No. 2 design was finished - and initial outings show that it has promise. Perhaps it was "cheating" to ignore the first model, but a comparison of weights shows that the decision was correct i.e:

	Micro X Kit	Laurie Barr Design
Wing	0.79gm	0.42gm
Motor Stick/Tail	1.07gm	0.59gm
Prop	0.71gm	0.33gm
	<u>2.57gm</u>	<u>1.34gm</u>

continued on page 343



At left, cutting the end of the wing post when the trimming has been successfully completed - next time out, reassemble model so that wing post is flush with bottom of tissue socket. Below: A very important accessory is a stout carrying box - the models are fragile. A large cardboard box was used with small pieces of expanded polystyrene glued to the base to hold the parts - although foam rubber would probably have been better.



FLYING SCALE COLUMN

by Eric Coates

Topping the R/C scale team to represent this country at the Swedish World Championships later in the year, is Brian Taylor with his Vultee BT 13. A brand-new model, Brian overcame initial problems to gain highest static and flying points.

THE 1976 SMAE Scale Contest season opened, as has been customary in recent years, in the calm of the Cardington Shed on March 14th. Competitions were scheduled for both Peanut and Open classes, and in the current vogue most interest was shown in Peanut with 11 entries, although only 8 managed qualifying flights. Open scale attracted just 4 entries and then only 2 of these managed qualifying flights. I personally cannot understand why so many people prefer the Peanut model. Apart from the actual entries, scores of Peanuts were to be seen in the Shed that day but very few of them flew very well, if at all. Most of them, including many entered into the competition, were too heavy ever to achieve much duration. If one wants a sports-type scale model, that is not so critical on weight to give a reasonable duration, then something around 18ins. span (the American "Walnut" class) is a much better bet. One could also use it for Open Scale class competitions where duration is not of such paramount importance. In this class of model, as in any other, light weight always pays off; as I rediscovered to my cost recently with my open-class *Hurricane*. Many readers have, over the years, seen my old black "Hurri", built from a standard Keil Kraft kit, flying really well. It regularly put in flights of 30secs. or more from a proper R.O.G. take off. Scale wise, however, it was rough, covered in black Modelspan tissue and possessing dog eared, all-sheet tail surfaces; it could be guaranteed to be placed bottom in the static section of any competition! Even though it's superb flying performance lifted it a few places it was never competitive. Last year I decided to try and improve matters and rebuilt it with new wings, built up tail surfaces plus sheeted fuselage and centre section. The whole thing was then airbrushed in intruder camouflage.



The improvement in appearance was considerable . . . and so was the increase in weight. Now weighing 2oz. it required 4 strands of $\frac{3}{16}$ in. flat rubber to provide sufficient "urge", but is now practically untrimmable. With the marginal stability provided by the low wings and small tail surfaces one just cannot cope with the power surge of this powerful motor. It is possible to trim to handle the initial power surge, but only to have the thing fall out of the air 10 seconds after launch, or trim for an under-powered flight which never rises more than 2 feet above the ground. I, therefore, now have just the opposite type of model: one which would score reasonable static marks and fail to make a qualifying flight! As in most things in this world, one just has to strike the happy medium. The only hope left for the *Hurricane* now is CO₂ power.

Some interesting new Peanuts were entered in the competition. Butch Hadland had a 1911 *Bristol Racer* - a biplane with a huge tailplane and a complex skid type undercarriage. Unfortunately the unyielding Cardington floor took a dislike to the undercarriage and Butch joined the ranks of the non qualifiers. K Miller had a very neat all blue *Avro Avian IVm*, which topped the static scores with 36½ points. Although possessing only a moderate flight duration it still was sufficient to come in overall second.

Outstanding flyer was the ultra low aspect ration *Fike* of Laurie Barr, recording consistent flights of well over a minute and placing third in the static section, this model was the undisputed winner.

Laurie entered the same model in the open event and was clear winner in that too with a much superior flight score than Andrew Moorhouse's *Sopwith Tabloid*; the only other competitor to qualify.

Peanut

	Static	Pos.	Flight	Pos.	Overall
1. L Barr <i>Fike</i>	32.5	3	133	1	4
2. K Miller <i>Avian</i>	36.4	1	46	5*	6
3. R Oldridge <i>Comper Swift</i>	24.5	8	49	4	12
3. R Fordham <i>BAA</i>	29	5	32	7	12

Open

	Static	Best Flight	Total
L Barr (<i>Fike</i>)	73	92	165
A Moorhouse (<i>Tabloid</i>)	73	58	131

Harry Hutchings of the East Grinstead club with his CO₂ powered *Comper Swift*, which he flew at the SE Area Indoor meet. First attempt produced great amusement as it 'flew' in large diameter circles - firmly on the ground! A trim tab cured matters, but he was the only 'gas' entry.



London indoor fliers will be pleased to note that Alan Callaghan is organising another meeting in the Crofton Leisure Centre, Brockly, S.E.4. on Saturday 5th June commencing at 6p.m. A novices peanut competition will be featured. Only people who have never been placed higher than 4th in any previous Peanut competition in the U.K. will be eligible to enter.

The outdoor scale competition season opened a little earlier than usual this year, on April 11th, with the World Championship Team Trials held at Little Rissington. In the morning the wind was gusting up to 20 knots and it was very cold. After lunch, however, the wind moderated to less than 10 knots, and very pleasant flying conditions prevailed.

Entry into the R/C class was light with only 6 entries, including your scribe. Several well known names were notably absent, possibly the high cost of travel to Sweden for the World Championship being the major deterrent. The standard of the leading three models, however, was exceedingly high. Entry in C/L can only be described as abysmally low – just two in fact. Support for C/L scale, in the U.K., at this standard, has been falling for several years now; most top scale modellers preferring the less restrictive medium of R/C these days. The low entry, therefore, is only a reflection of the state of play in the country as a whole.

"Ven" Venables had a very nice *MFI 9B Malmo*, incomplete in details, but extremely well built, with all flying tailplane and working flaps. Powered by a 10cc motor it roared round at a very unscale speed and, unfortunately, collapsed its noseleg when landing. "Ven" was not happy with it and although repairable, declined

Vic Willson with his Zlin 526A which will form the sole British C/L representation at the World Champs. At right is his special control handle, as described in the text.

team membership. The U.K. control line interest, therefore, will be solely represented by the *Zlin 526A* of Vic Willson.

This really is a very fine piece of engineering. The model is virtually a replica of the machine with which Mick Reeves won the 1970 C/L World Championship at Cranfield. Instead, however, of the plethora of auxiliary control lines, which connect the usual top class control liner and used by Mick on the original, Vic has managed to revert to a two line system; one normal and the other insulated. Retract gear, flaps and throttle are all operated by R/C type servos. Vic's handle contains a modified Micron R/C transmitter with a spring loaded plunger for throttle control, a rotary lever for flap control and a switch to operate the undercarriage. Signals from the transmitter are fed, as electrical signals, down the control lines to a modified receiver fitted to the model. Deacs are carried both in the model, for the servos and receiver and in the handle for the transmitter. Oh by the way, the elevator is controlled by a conventional bellcrank from the mechanical movement of the control lines! An HP40 R/C, exhausting into an expansion chamber, provides ample power for aerobatics with a nice subdued note. This is one of the most impressive control line models I

At left is Laurie Barr with his current Peanut – a Fike Monoplane, with vast wing area, thanks to its low aspect ratio. Laurie has won every Peanut contest entered, for at least the last two years – some record! Below: Ex SMAE Secretary, but still Chairman of the South Eastern Area, Norman Couling has been bitten by the indoor bug – seen here launching his Micro X kit of the Piper Cub.



have seen airborne, and should pile up an impressive flying total in Sweden.

Best of the new R/C models was undoubtedly Brian Taylor's *Vultee BT 13*. This was only test flown a week before the Trials, so that Brian's handling of the machine was not as calmly efficient as we are accustomed to seeing. At the first attempt, the engine failed to start. The second attempt had the model airborne, running rich and prematurely terminated when the needle valve vibrated out. There was no mistake with his second flight, however, all the old "Taylor polish" was there to return the highest flight score of the day at 547. This, combined with a high static mark made Brian the winner of the Trials by over a hundred points from Mick Reeves, flying a quarter scale *Fournier RF4*. This is an entirely new Class 1 model developed from his highly successful Class 2 machine of last year. A little smaller, Mick reports the handling characteristics to be entirely different. They looked alright to me though with the usually smooth flying one associates with Mick. All manoeuvres were executed with the minimum of altitude so that the judges could have a close look. Only error made, which could have been disastrous, was when he opened up again after an overshoot, without retracting the spoilers immediately. Third team place was taken by David Vaughan, flying his *Wirraway*, first seen at last years Nationals. This beautiful model has been dogged with engineering problems which have prevented it making its mark in competitions to date. First poor engine starting, then collapsing retract gear and finally, at the Trials, aileron glitches. Notwithstanding this latter affliction, David put in a reasonable flight which terminated in a crash landing, to score 349. This combined with the top static score, was sufficient to hold third place.

I flew the *Elephant*, making its first public debut since



Mick Reeves has produced a brand-new Fournier RF 4, this time to Class 1 scale requirements, and this placed second at the Scale Team Trials.

the great prang last October. I returned a fair flight score of 452 but the model is not in the same class as the leading three. Final placings were taken up by Ted Mellish's *Hurricane 1* which flew extremely well despite being tail heavy and D Hutson's *Jodel*.

Radio Control Results

	Best Flight	Static	Total
1. B Taylor <i>Vultee BT13</i>	547	496	1043
2. M Reeves <i>Fournier RF4</i>	489	428	917
3. D Vaughan <i>Wirraway</i>	349	504	853
4. E Coates <i>Elephant</i>	452	330	782
5. E Mellish <i>Hurricane</i>	500	188	688

Ted Mellish was appointed Team Manager at the conclusion of the meeting. I am sure all readers of this column will join me in wishing him and the team the best of luck at the Championships to be held at Dala airfield between the 18th and 25th June of this year.

EASY B – JUST HOW EASY?

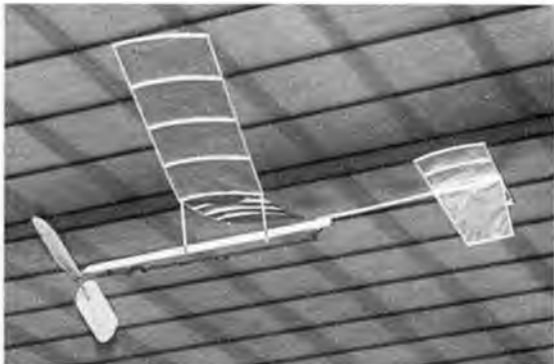
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Thus with the "new" model weight being nearly half that of the original it *must* fly better – as lightness is the secret to Indoor success. Not that this "new" model is light enough – I could certainly better it (hope to prove that soon) but the important thing is that the "kit" initially seemed incredibly light and delicate, but now it is a veritable "barge", to be handled almost casually compared with the Mark 2, which to my eyes is fragile. Mind you, since seeing how the "experts" build, this too is a robust machine!

And as a footnote, to all those who are still sceptical, remember you will never know *how* easy it is until you try it, and the models are much stronger than you would imagine. Despite several (relatively) heavy "prangs" with the lighter, hence weaker, design – due to using too thick a motor – no damage has been sustained. On hitting the floor with the outboard wing tip, the whole wing merely deflected and absorbed the shock completely unharmed. Try cartwheeling your outdoor free flight model sometime and see if you can equal that!

In fact, apart from the initial damage (repaired in five minutes) incurred by rough handling, no damage has occurred, and no "maintenance" been required. Personally I can hardly remember the last occasion when I have been flying and not had *some* repair work to perform . . .

Above right is the proof of the pudding – the *Micro X* beginners kit flying quite nicely and looking like a 'real' Easy B model! At right is the model which resulted after experience/enthusiasm gained by building the *Micro X* product. Without question, this second model would not have been attempted if its predecessor had not provided so much confidence – and enjoyment. Definitely recommended.



CLUB NEWS

NOW WE KNOW. After a long period of uncertainty the model plane has been brought within the strictures of the *Noise Pollution Act*. The inclusion appears to have come upon us with surprising suddenness, without the sort of widespread discussion which would have given to the SMAE's proposed Code of Practice the weight of common consensus. Just how it will work out in practice, in the interplay of established rights and public objections, we will have to wait and see, and also what teeth the new law has. Naturally, it will behave every model flyer to observe the Code of Practice, although you may be sure that more people than enough will be ignorant of its requirements.

If the law proves effective then, in my opinion, the future of power flying will much depend on the efficiency of the silencers we use. Perhaps it is a good thing that many clubs have been tightening up their silencer rules lately.

The code, or rather the uncovering of this somewhat secret document, takes up much of the *Northern Area News* and Jim Mosely is to be congratulated on a fine piece of reporting. Coming to other matters in the newsletter, one impression we do get is that Indoor flying is making quite a comeback after years in the doldrums. The Northern Area found a most remarkable site for its first ever indoor meeting: a hall 226ft. x 122ft., with a 40ft., almost unobstructed, ceiling, which is the training site of the Sunderland Football Club. To give an idea of the potential of this piece of indoor spaciousness, Alan Jack of Southampton did over 12 minutes and Ron Pollard of Tynemouth over ten in the EZB class. Outside these calm environs the chill winds of winter did devastating things to the Winter Rally at Elvington. The few who were prepared to fly well deserved the placings on offer. All the important news coming from the North, notably the fillip to model flying from the Leeds Metro, which has given over a 20 acre area of land specifically to model flying pursuits. Ideal for R/C and C/L, but a wee bit cramped for all out F/F flying.

Just what is the optimum size to which membership should be limited? That was the problem confronting fast growing **Buckaneers Model Club** of Bletchley, Bucks. In his letter, Mike Parrott goes on to say that the committee gave the issue long deliberation, then decided to freeze membership at 100 for a trial three month period. Membership pressure is high because of the influx of people into a new township but, fortunately, there is another club in the district able to absorb some of the overflow. I would like to make the general point here that optimum club size is related to two main factors. One: It should not be so large that a too onerous burden falls upon the club officials. And two: to the extent to which the members use the club facilities. One thing that any club needs, though, is a decent meeting place, and here the Bow Brickhill Village Hall is proving popular. Always plenty going on: lectures, demonstrations, Concours events and Bring a Model nights. The warmer weather will bring evening fly-ins, complete with barbecue, while Mike Parrott talks of new aeroplanes waiting, like newly hatched butterflies, for the first sunny day to take-wing.

John Goodwin of the **Finchley & DMAC**, tells us that their treasurer of long standing (time he got the chair?) Charles Crawley, put the club on the map by getting a commended certificate at the ME Exhibition with his C/L *Aristokrat*. And a further boost to club pride comes from Bob Morgan's *Combat Jaguar* getting published in the USA. This comes by way of a reward for a successful 1975, winning the Nats and the Dutch Combat International. Less welcome news is an increase in the club Gala fee, but only by 50p, and then just to ensure bigger prizes down to three places. Club evenings are considerably enlivened by electric rtp, flying. Film shows, too, are proving popular as was a Twenty Questions interlude on aero-modelling.

Neil Brindle has asked us to give a few details of the **Chorley & D Model Society**, of which he is Secretary. The club meets at 7.30 pm at St Alban's High School, Bolton Road, Chorley (A6) in the Science Lab on the 1st and 3rd Wednesdays of each month. R/C flying and boat sailing take place at the Park Hall Leisure Centre, Charnock Richard, at prescribed times. Subscription rates are £5 for Seniors, including insurance, and £1 for Juniors under 16. Members can telephone Mr Neil Brindle at Chorley 72424.

Fittingly, the emblem heading the report we have from the **Epsom Radio FC** is a flying horse, and suitably, the club got away to a flying start in 1976 with an increased membership and club finances well in the black. Peter Bragg, who sends in the report, is the club treasurer (cannot afford a PRO, he claims). Just one setback to the new season, though: the loss of chairman, Jack Williams, who has moved to Dorset. He was noted for helping radio beginners over those first few uncertain flights. Peter stresses that members are not particularly competition minded, but enjoy a spot of 'fun' style contesting. All the usual fun events are popular and Club 20 Racing is now taking on. Adding to the contest fun is the friendly interchange that goes on with the Esher Club. At one recent Esher meeting the Epsom boys took home the Fitzwilliam Novices Cup. The trouble with club comps, as far as radio is concerned, is that they inhibit general flying for the day. The Epsom club compromises by holding mostly fly-for-fun contests, like Spot Landing and Simple Manoeuvre events. At a recent meeting Alan Furse won the Spot prize by strewing pieces of his model nearer to the bullseye than anyone else. It was thought he might be qualifying for one of the 'Crash of the Month' trophies. Donated by Peter Darch to the member making the most spectacular crash during the month, they are neat little tankards suitable for holding a consoling beverage.

In the current issue of the **Three Kings' Court Circular**, Wal Cordwell implies that, in the March issue, we gave the impression that Three Kings and Elmbridge use Croydon by some joint arrangement. A slight misinterpretation here, methinks, for my reference to 'dual membership' merely meant a modeller holding membership of two separate clubs at the same time - a common practice. Three Kings members only, then, in the hectic bout of Goodyear racing that got the year off to a busy start. Weather, in wintry mood, put league events off until February but no less than seven teams participated, making for some exciting racing, and some impressive scoring by Dick Large to top the league and add to his *Modeller of the Year* laurels. He went home laden from the AGM, with three cups and a kit. Models on show this month, Ken Gardner's *DH4* biplane had that old craftsman's look as a welcome change from the sleek, plasticised whatnots. This is a WW1 plane with plenty of external detail to catch the eye. Another example of the modelling art, quite different, was Ian Black's cabin stunter. Beautiful in green and white. Super Tigre 46 powered with throttle control.

It is a pity that club mags all too often rely upon the hard work and enthusiasm of just one person. In the case of Wharfedale DAC's *The Circle* it is the resignation of PRO John McAlroy that has terminated its existence. John has been good enough to thank us for the support and mentions of the club over the past few years. He goes on to claim, albeit modestly, that the Wharfedale club, with a membership around 150, must be one of the largest in the country. It is also one that caters to an ever widening diversity of interest. Latest addition to the list is electric rtp, and whilst Radio is still very much on the upsurge activities like free flight scale have their adherents. But, of course, Wharfedale is best known for its prowess in the C/L circle, and the Horton/Hayworth and other teams are preparing for another competitive season.

The big talking point in the South Eastern Area's *Seadog* is the tantalising prospect of using the large West Malling field which has recently been given over to the Kent County Council. Needless to say, the demands upon it are coming in from all quarters, but the model flyers are still hopeful. Just in case all those acres become available, a series of articles is giving precious insights into the mysteries of contest free fighting. Modern noseblock assemblies call for good judgment and strong wrists – difficult but rewarding.

George Eastell, writing in the *East Anglian News*, gives his views on that now famous special Council meeting in which the equally famous Code of Practice was agreed upon. He does not think the delegates in general were prepared to see the public's point of view, thus showing a determination to go on losing flying sites. And he could not see why F/F Power models should be immune from the muffler requirements. He certainly may have a point here, as they have long noisy tune up runs on the field which must have a nuisance value, if only to other model flyers. He was very unimpressed by the standard of discussion as well as the inflexible attitudes. Meanwhile back on the flying fields we have left comes a suggestion for Radio contest between clubs with a programme utilising 2 aerobatic, 2 thermal soaring, 2 Class 2 scale and 2 pylon racing aircraft. And with each club providing two judges apiece also, the results could be worked out on a points system. Good idea.

Few radio modellers know what goes on inside their little boxes of tricks; so for their edification Robert Pritt undertakes a simple to follow teach in on the mysteries in the pages of the *Penrith & DMC Fellside Falcon*. Still looks complicated to me. Allan Spooner, the chairman, has decided to award Australia as first prize in an R/C contest – perhaps because so many try to take the short route to same.

Clubman

Contest Calendar

- May 23rd * **SMAE INDOOR MEETING.** FAI microfilm. Venue: RAE Cardington, Beds.
- June 6th * **SMAE INDOOR MEETING.** FAI microfilm contest plus Team Practice. Venue: RAE Cardington, Beds.
FINCHLEY C/L GALA. Stunt and combat at Glebelands, Summers Lane, Finchley. Pre-entry (50p) to J. F. Goodwin, 77 Gallants Farm Road, East Barnet, Herts. Telephone: 01 361 0085.
- June 13th **AEROMODELLER ALL SCALE RALLY.** All types - R/C, F/F, C/L - Scale models welcome. Informal day with many prizes. Bring the family! Venue: Old Warden, Near Biggleswade, Beds.
FELTHAM C/L RALLY. Goodyear, FAI team race, combat at Charville Lane, Hayes.
N. AREA (SMAE) R/C FLY FOR FUN. Venue: RAE Driffield, SMAE members only.
N. AREA (SMAE) C/L MARATHON. One hour C/L Goodyear race at RAF Driffield - SMAE members only.
SMAE 3rd AREA F/F CENT. MEETING. FAI Rubber, Open G/P. Area Venues.
- June 19-20th **CLWYD SLOPE SOARING MEETING.** Saturday: R/C Intermediate, Sunday: R/C aerobatics, Pylon, Scale. Also magnet steered (or non-controlled F/F) - Senior & Junior. Limited entry for R/C events - pre-entry 60p/event (3 or more £1.50) to C. R. Fitness at 26 Raymond Street, Chester, by 7th June. Venue: Mold Farnau, Near Mold, N. Wales.
- June 19-20th * **INDOOR F/F DURATION NATIONALS.** EZB, Penny Plane. Open and FAI microfilm, HGL. Venue: RAE Cardington, Beds.
- June 20th **N. BERKS R/C CLUB 20 PYLON RACE** for Irvine Trophy. Pre-entry plus SAE to T. Franks, 46 Edwin Road, Didcot, Oxon OX11 8LE.
SMAE C/L CENTRALISED MEETING. FAI and JA team race, Speed, Combat, Mini Goodyear, Junior/Novice Stunt. Venue: RAF North Luffenham, Leics. SMAE members only.
- June 27th **ELLIOT C/L RALLY.** FAI and Goodyear T/R, Stunt. Details: R. James, 21 Rochester Crescent, Hoo, Rochester, Kent. Venue: Elliot Bros. Airport Works, A249 off M2.
OXFORD MFC R/C THERMAL SOARING. Pre-entry (50p) with SAE to D. Powles, 47 Mark Road, Headington, Oxon. % Slot rules, I & L proof required. Venue: Port Meadow, Oxford.
SMAE CENT CLUB CHAMPIONSHIP. Venue: TBA.
- July 4th **LONDON AREA C/L CHAMPIONSHIP.** FAI and Goodyear team race, plus Combat at Charville Lane, Hayes.
***BUTCH HADLAND PEANUT CONTEST.** Venue: RAE Cardington, Beds.
R/C THERMAL SOARING, at The Roodee, Chester. Cash prizes to 4th place. Limited entry. Pre-entry (60p) to C. R. Fitness, 26 Raymond Street, Chester by 21st June.

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AT YOUR MODEL SHOP

SWEeTeR

continued from page 319

'nuts' to 15mm lengths, taking care to get the top end absolutely flat. Bolt the nuts to the finished and waxed motor crutch, and fasten the two 2x15mm spruce strips with glass fibre and resin or epoxy.

When set, work backwards and connect the tailskid mount between the strips at the rear end with epoxy. The tail skid mount is made from a conventional electrical connection block.

Now, glue the rear 3mm balsa spacer and the 1mm plywood engine compartment floor into space. Do not remove the engine crutch until this is set, or else everything will fall to pieces! At this stage jig the wing in place. Before gluing the tail to the crutch the pushrod must be attached to the horn. Make the pushrod from 1.25mm piano-wire and stiffen it with a 5x5mm balsa strip epoxied on top.

Now, install the bellcrank followed by the cutout. Epoxy a 3mm o.d. brass tube and 0.55mm brass plate, complete with 0.5mm piano-wire spring and M2 nuts into the model. Bend the cut-out spring approximately as shown on the plan, and force into position in the model (do not forget the additional 3mm o.d. brass tubing) and out through the knob hole. Hold the spring in position against the wall with a pair of pliers and solder the small brass-tubing. Put on the knob (do not solder yet) and test the action. If too strong or too loose, disassemble, re-bend and re-solder until satisfactory. Then solder the knob and the heavyweight Laystrate wire from the bellcrank. Cut-out operation between 5-10° down elevator works well.

The engine pod is made of two balsa blocks. Shape the interior first, and take care to shape the cooling duct according to the plan. Mount the engine and bind the fins with masking tape to increase the diameter by 3mm, and glue the balsa blocks in place. Glue the 3mm plywood floor, complete with previously described landing gear saddle in place, and shape the exterior. The nose is best made from a separate balsa block instead of being carved out of the blocks making the pod.

The somewhat unusual nose shape dotted on the plan is due to modern, deep-cuffed propellers wanting to interfere with the 45° raked Rossi carburettor. Trying to avoid this, I use a cut down Cox 0.49 venturi, but there is still not much room left, and the nose design was a compromise to accommodate the carburettor more easily. A better solution may be to use a shaft extension, as this will enable the use of a full length venturi, which theoretically will give better suction. A suitable extension design, that has been used to good effect by other Swedish Rossi operators, is drawn on the plan. If you use some other brand of engine, or a rear-valve Rossi the problem will of course not arise, and a normal nose-design can be employed.

The rest of the construction is simple and straightforward and will not need any detailed explanation.

The motor currently used is a dieselised Rossi R15 Normale F.1 with no other modifications apart from the obvious contra-piston and small diameter teamrace choke of 3.5mm. It has proved to be a very potent team-race engine and is of course part of the success of this model. The rest lies in the aforementioned reliability. This model will not put in faster heat times than any other design might have done, but it will *go fast more often* than most other designs, and this is a quality that will win many competitions.

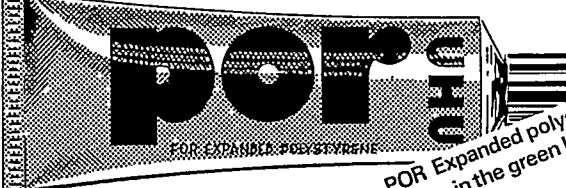
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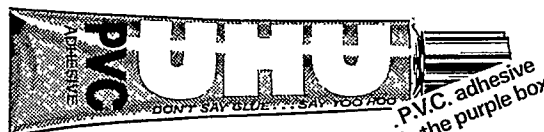


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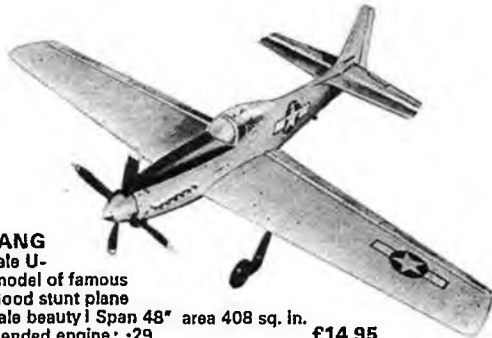
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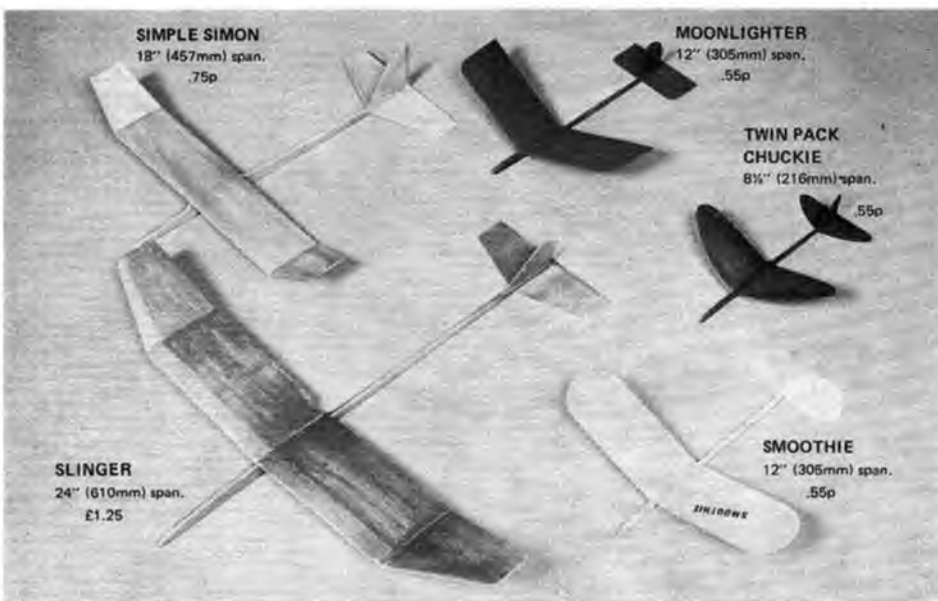
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