

April 1977

30p

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# Aero Modeller

INCORPORATING  
**MODEL AIRCRAFT**



HOBBY MAGAZINE



# QUICKSTART



**DART**  
.5 c.c.

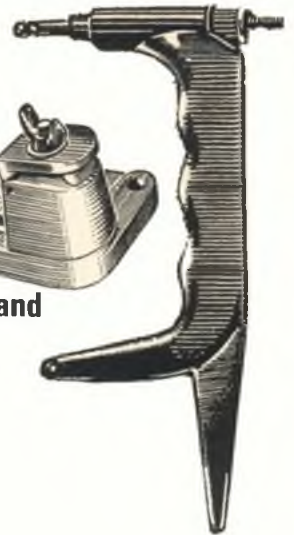


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handle



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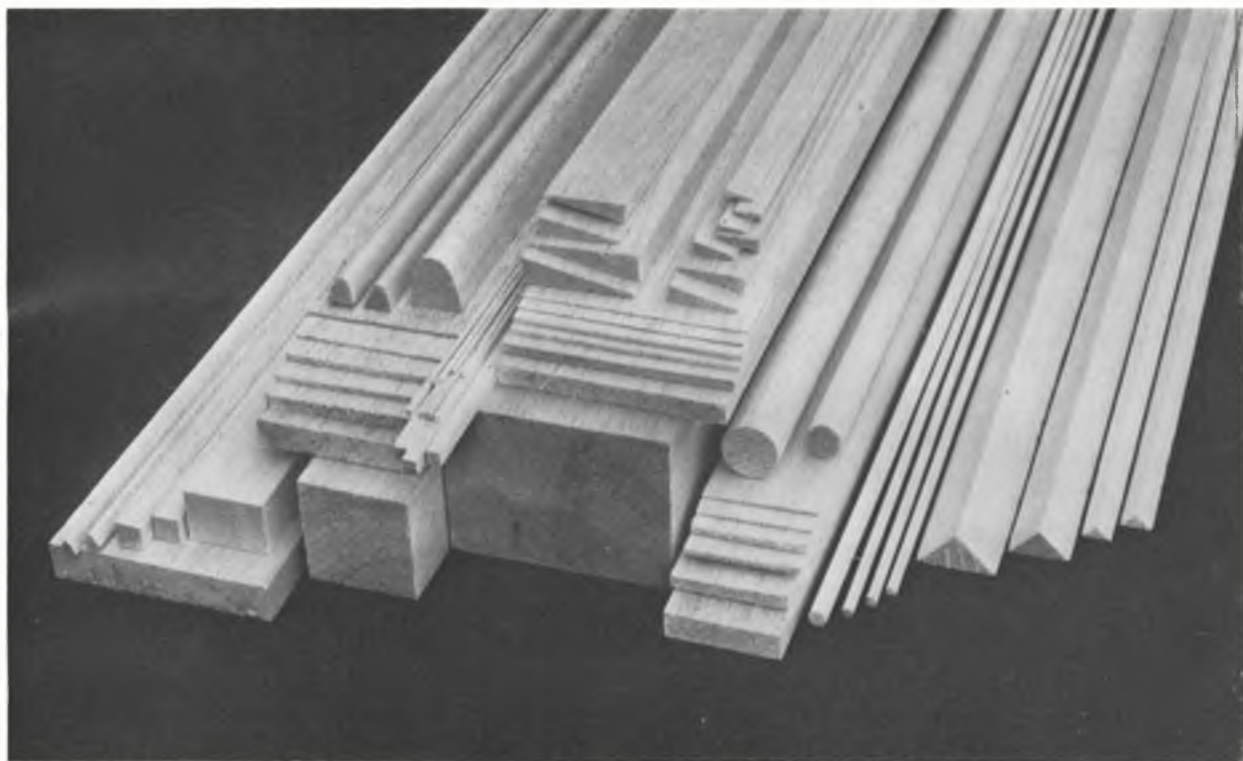
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\*Yes, you can rely on Solarbo to produce the goods (in Balsa). With, of course, the knowledge that every piece is cut from carefully selected and graded Balsa. True *aeromodelling quality*. That's why Solarbo is the name for Balsa, throughout the modelling world.

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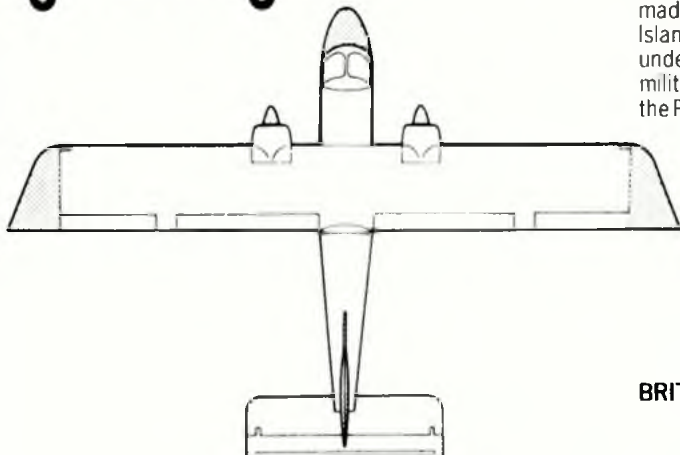
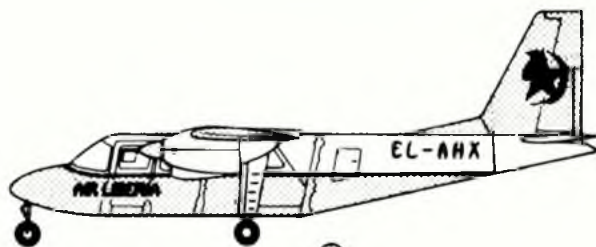
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Armed with machine guns and bombs, the Defender is used by the Philippine Navy to hunt down smugglers and insurgents. But an endurance of 15 hours makes it ideal for air-sea rescue operations. While Air Liberia use the Islander to carry passengers.

Now faithfully reproduced in a superb Airfix 1/72 scale kit, the Britten Norman Defender can be made as either the Philippine Navy or Air Liberia Islander version. The kit features moveable propellers, underwing fuel tanks and bombs and both civil and military pilots, as well as markings for Air Liberia and the Philippine Navy.

### Technical details

Fuel Load:	2 × 56 gal drop tanks
	Endurance of 15 hours
Engines:	Two Lycoming 10-540
Cruising speed:	160mph
Wing Span:	53ft
Length:	35ft 8ins
Height:	13ft 8ins

**BRITTEN-NORMAN DEFENDER**  
1/72nd Scale



# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

April 1977

Volume XLII No. 495

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## Comment

By now we are well accustomed to two-day Model Symposiums, whereby the organisers provide facilities for members of the model trade to display their goods and demonstrate model flying (R/C) before the general public. However, there are several noteworthy differences concerning just such an event to be held at Lingfield Park Racecourse on 10th-11th September. Certainly there will be a pair of marquees full of traders but only two hours per day will be allocated to commercial flying displays. The remainder of the time will be given over to competitions—five for radio control and five for control line. Details of the actual contests have yet to be decided, but the R/C contests are likely to include Class II scale, thermal soaring, helicopter, Club 20 pylon racing and static scale, while in C/L most probable classes will be scale, aerobatics, novice aerobatics, combat and a racing event. Major innovation here are the prizes—£100 per contest to be shared between the first three, making a total prize fund of £1,000. In addition, there will be a trophy for the overall champion—to be presented on an annual basis—known as the 'Ladbroke Challenge Trophy'. And that is the clue to this new-style event. Ladbroke, perhaps best known for their chain of betting shops, are sponsoring the whole affair—from advertising it in all of their commercial outlets plus the Press, putting up the prize money and supplying the venue. Actual organisation is being put in the hands of the Elmbridge Model Club, who judging by the success of their own Symposium, will provide a first class result.

### on the cover

*C. Crawley's delightful vintage Veron Stunter, powered by a Mills .75, serves as a useful reminder that this year's Fireball Trophy contest for pre 1950 control line aircraft will be held during the "Aero-Modeller" Silver Jubilee "Hush" Rally on June 7th at Old Warden Aerodrome, near Biggleswade, Bedfordshire.*

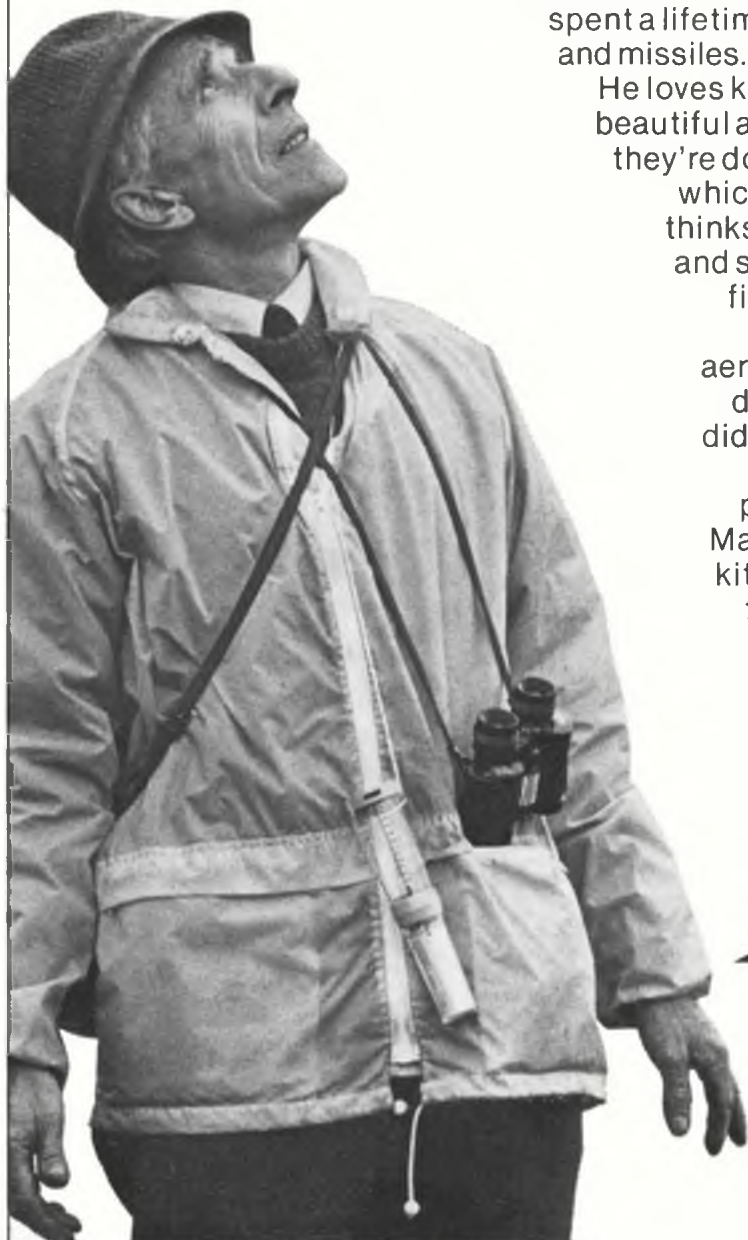
### next month

An all-foam combat model, ultra cheap and requiring no hot-wire cutting! That's *Hot Pants*, our plans feature in the May issue—just one of many varied articles to please all interests. As a "bonus" two free full size plans are provided for sports C/L and F/F models. A really great-value issue, on sale April 15th—you can't afford to miss it!



# The dream of Squadron Leader Dunford

Don Dunford is an aeronautical engineer. He has spent a lifetime in the RAF with aeroplanes and missiles. He loves the wind and the sky. He loves kites too. But they have to look beautiful and move as if they know what they're doing in the sky. "Look at a bird which is the nearest thing and one thinks of a floating dream of cotton and sticks..." It took Don Dunford fifteen thoughtful years and 90 prototypes before he had an aerobatic kite that lived up to the dream. That used the wind and didn't fight it. A two-line kite that can be controlled with great precision. The Dunford Flying Machine— from £7.95 at leading kite and model shops. Have you flown this dream of a kite yet?



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# DAVE RICHARDSON WINS IPMS AWARD WITH THE NEW "MATCHBOX" TOMCAT F-14A.



Tomcat F-14A assembled by Dave Richardson from "MATCHBOX" 1:72 scale Red Range kit (PK 406 Price £1.10p\*)

Dave Richardson is a member of the Essex branch of the International Plastic Modellers' Society.

Motorcycling and aeroplanes are among his other interests, and both helped him win a 'First in Class' at the November branch meeting with his model assembled from the new "MATCHBOX" Tomcat F-14A kit.

Dave motorcycled to the last Paris Air Show where he saw a Tomcat at close range.

"When assembling models like this you can never see too much or know too much about your subject" Dave maintains.

## LANDED CONFIGURATION

"The kit is moulded along the lines of the prototype, but I assembled my model based on the actual production aircraft.

"This meant I had to cut down and re-shape the overwing fairing, which is too large for a production model.

"Also, I wanted a landed configuration and this necessitated the biggest single modification: cutting out and adding leading and trailing edge flaps for the wings."

Dave stresses that attention to detail is all important and a close

inspection of his model shows just how he applies this principle in practice.

Miniature white hydraulic jacks have been made from sprue to add realism to the re-positioned leading and trailing flaps.

Incidentally, Dave tells us you can now buy ready-made sprue in various lengths and thicknesses; a boon for modellers who find stretching their own sprue tedious and time-consuming.

"Sprue was also used to make ejection handles over the seats and for the pointed nose probe and Pitot tubes."

## INVENTIVE DETAIL

Dave discarded the pilot figures supplied with the kit in order to concentrate on cockpit detail.

The outcome is a fine example of Dave's inventiveness.

"The windshield is cut from a strip of black & white film negative. The seat straps are narrow cuts from a roll of masking tape. And the rear view mirrors are simply tiny pieces of silver foil."

The external detail includes the addition of painted-in formation and navigation lights. Much is a result of

Dave's having seen the Tomcat at close quarters.

But he also relied heavily throughout on technical drawings.

"I have a collection of 'Flight' magazines dating back over seven years. In my opinion their technical cutaway drawings are unbeatable."

In fact, it was from a drawing in 'Flight' that Dave identified the tail fuel dump which he then hollowed out, like the gun barrel, with a small drill.

## FRIENDLY HELP

US Navy paint plans are supplied with the kit.

Dave decided however that the Imperial Iranian Air Force colour scheme would lend a more aggressive appearance to his model.

"The Grumman Aerospace Corporation in New York were very helpful with information on this when I contacted them.

"And a friend gave me a useful tip which was to tone the colours down for the small scale."

"I think this proved very successful and effective."

Dave meets other modelling enthusiasts through IPMS. He suggests that prospective new members should contact the National Secretary, 35 Clares Green Road, Spencers Wood, Reading, Berks. RG7 1DY.

And Dave had plenty to say in praise of "MATCHBOX" kits.

"There are a number of unusual marques in the range. For instance I don't know anywhere else that you could get a 'Siskin' or a 'Heinkel 115' in kit form.

"The Tomcat F-14A is an excellent detailed kit, yet offering lots of scope for an enthusiast."

"I'd estimate it took up about 45 hours of my time in all from start to finish."

We think it was time well spent Dave.



Lesney Products & Co. Ltd.,  
Lee Conservancy Road, London  
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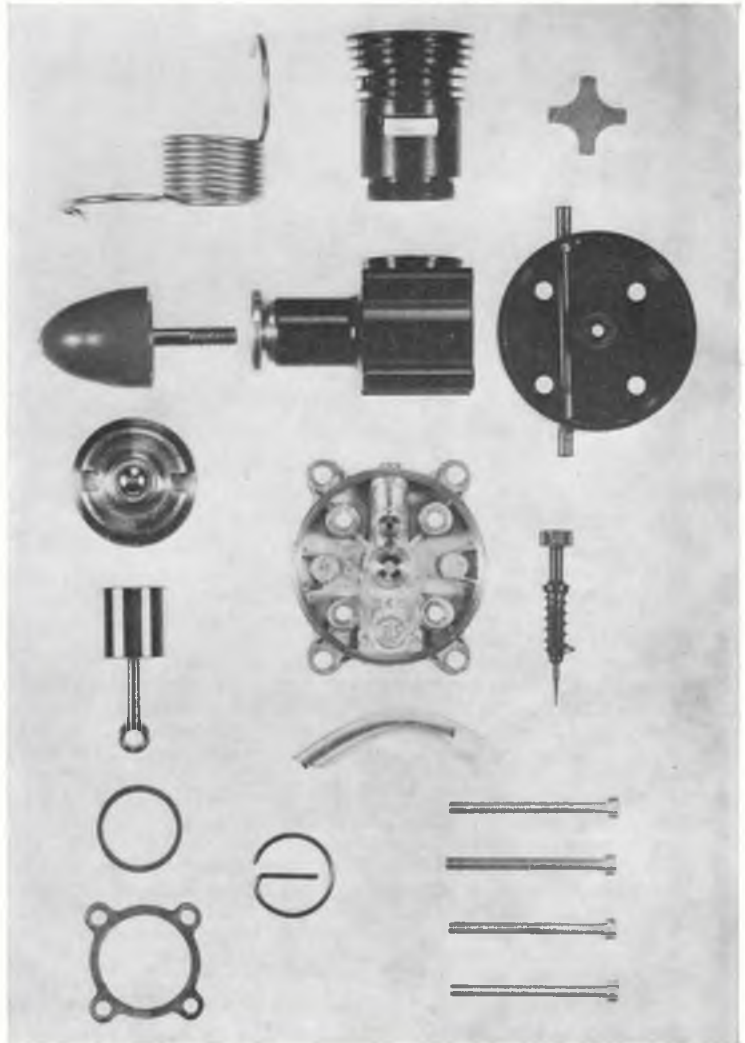
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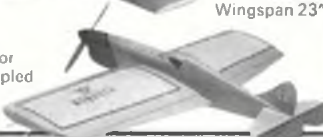


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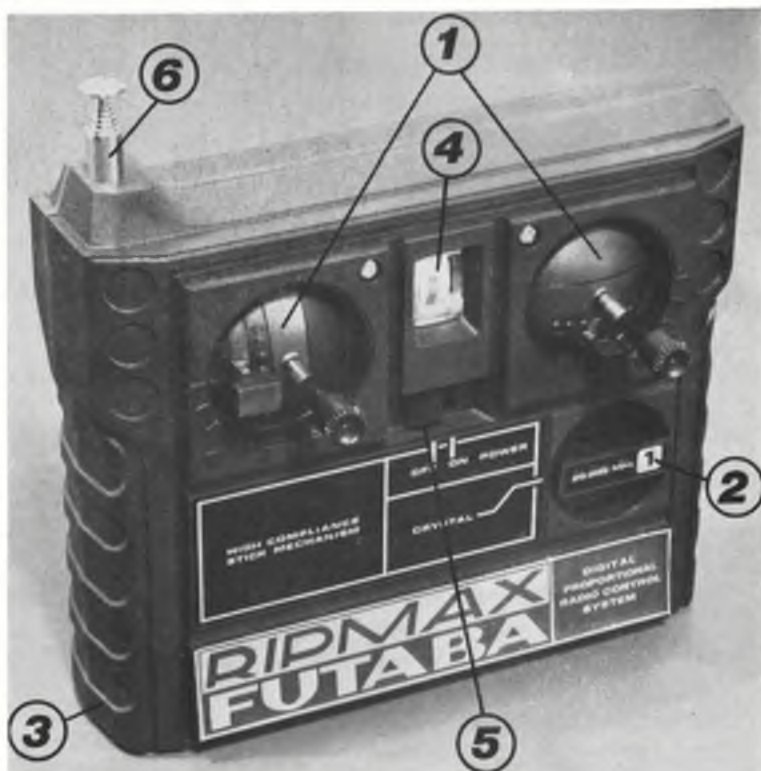
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## Heard at the HANGAR DOORS

**FLIGHT FANTASTIC**, the film made by Freddie To at the 1976 World Championships for Indoor Models at Cardington, had its first major showing on ITV. Visitors to the Model Engineer Exhibition who saw the SMAE's copy of the film in the continuous cinema show there were unanimous in their praise. Now F/F for *Flight Fantastic* has hit the high spot with a viewing audience of millions – and all thanks to cancellation of a horse race! *Sports Special* needed a quick filler at 1.45pm on Saturday, February 5th and produced F/F as a 'different kind of sport' viewing – we liked that bit – also the inevitable comment on 39 minutes off one rubber band which followed!

**LONG ESTABLISHED** readers of *AeroModeller* will be sorry to learn that C. Rupert Moore, whose many contributions over the years, and long series of cover paintings which made his name synonymous with ours – suffered a stroke which initially paralysed his left arm and leg. After leading so active a life, his setback could in normal circumstances, have a most depressing effect on one's personality, but not so Rupert. Already, St Peters Ward at St Albans City Hospital is ringing to his spirited comments on the world at large. He is determined to recover use of his limbs and is undergoing remedial exercises which we all hope will restore him to activity. Progress so far is most encouraging.

**THE MODEL SECTION** of *Avon Cosmetics* is holding its second Model Exhibition at its Nunn Mills Road, Northampton venue on June 25th and 26th. As before, many aspects of modelling will be featured, together with Trade displays. Harry Butler (Models) have confirmed that they will be in attendance and providing a display of electric rtp flying in the main hall. In addition a competition for the best rtp model flown by a visitor at the show will be organised.

**CONTROL LINE SCALE** modellers who would like to try their hand at an International contest will be interested to learn of just such a meeting to be scheduled over 28th-29th May in Belgium. Hosts are the PAT Club, which hails from near Liege, and those interested should write for details, before April 1st, to F. van Hauwoert,

These cloth jacket patches, designed by Ian Dowsett, are now available to past SMAE British team members at a cost of £1.50 each from Ray Favre at 26 West Drayton Avenue, West Drayton, Middlesex. They will be presented free of charge to future team members, while the event and year will also be displayed.



Grand 'place, 1/52 Flemalle Haute, B-4110, Belgium.

**AEROMODELLER INDICES** for 1976 are now available at a cost of just 30p including postage, from our Sales Department. Save yourself hours of thumbing through all those pages and acquire one! Incidentally, we are still able to supply indices back to 1969. End of commercial.

**TOPICAL TWISTS** page in the February issue of *AeroModeller* made comment regarding the quality and availability of Pirelli rubber strip. The facts are that Pirelli rubber strip is still available from FILATI LASTEX, that it is made by the original Pirelli Company process and distributed by Filati Lastex, and that the quality of the strip is maintained as far as is technically possible when dealing with a natural product that is subject to seasonal changes in quality. The Company has issued the following clarifications:

- (a) *The strip we supply is the same quality and made by the same process as the original Pirelli.*
- (b) *Our Company really sells the Pirelli Company's strip.*

**FILATI LASTEX ELASTOFIBRE**  
S.p.A.

Ing. I. Comenoini.  
Henry J. Nicholls & Son Ltd., have been importing Pirelli rubber strip for more than fifteen years. They have asked us to point out these facts which we readily admit are contrary to the impression given in *AeroModeller*. We apologise for any inconvenience or misunderstanding this may have caused Henry J. Nicholls & Son Ltd.,

who assure us that they take every reasonable precaution to ensure that any Pirelli strip they offer for sale is up to specification by having it tested independently immediately each fresh batch is received.

**MAN POWERED AIRCRAFT** Symposium at the *Royal Aeronautical Society*, February 7th, proved to be scintillating experience for all serious followers of this challenge. Sessions ranged from the fascinating explanation by Prof. D. R. Wilkie on how muscles produce energy to film of the STORK making its long flights and even three-quarters of the hitherto 'impossible' figure of eight turn. For acromodellers, the paper by Prof F. X. Wortmann from the University of Stuttgart, which dealt with aerofoils was possibly the most useful. The latest Wortmann FX76 MP series were described in detail. Remarkable film of boundary layer turbulence indicated by enormous magnification of the flow of hydrogen bubbles was specially revealing. Wortmann emphasised the importance of adherence to profile and clean surfaces over the entry. Separation at 70 per cent of chord on the upper surface of the new aerofoils was said to hold the pressure distribution over the forward part and thus maintain constant overall lift. The FX76 MP is steeply arched with slight trailing edge deflection. The TE is extremely fine and contrary to most opinion in the modelling world, the sharpness of the edge was said to be very important. In general appearance, the aerofoil now recommended for MPA is close to that used by the Danes in their A/2 glider designs about 25 years ago.

# OSPREY VI

Designed by Peter Halman



EARLY IN 1976, the SMAE sub-committee for control line speed decided to try to encourage more people to fly in what they consider to be the greatest contest class. In order to achieve this, some kind of newcomers event was clearly needed, and after a great deal of thought, it was decided to base the event on the current SMAE Class 6, which calls for engines of 5.01cc to 7.00cc to be flown on line(s) of 19.90 metres length, and with a recommended minimum diameter of .020in for monoline, .0148in for two lines. For this new class however, two .018in diameter lines are required and in order to qualify for entry in this event, a competitor must not have scored more than 80 per cent in any SMAE handicap speed contest, other than Class 6N. The record for this new class has provisionally been set at 150 mph.

This class, which in effect means that 0.40cu in engines will be used was chosen because (a) there is a wide choice of engines available (almost any of the current crop of rear valve .40s, and one or two front valve units, are suitable) and (b) by flying to Class 6 rules, which have the longest lines used in SMAE events, the speed of rotation of the flier would be reduced. This makes flying much easier!

The model has been made deliberately large to make flying easier, and semi-asymmetric to cope with the weight of the two .018in wires. This layout has proved better at the critical take off stage as the large inboard wing lifts the wires at slow speeds. *Osprey VI* has been kept simple, avoiding the use of exotic materials whenever possible, although five minute epoxy was used throughout the construction.

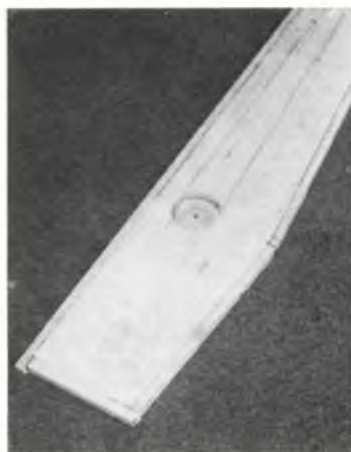
A full length pan was chosen to give both ease of construction and strength. Of the pans currently available, namely the Harter and OPS, the OPS unit was chosen and this is easily available through Irvine Engines or their stockists.

An ideal introduction to control-line speed flying. Use any 'hot' 0.40 cu. in. engine, fuel of your choice, and try your luck around the pylon in the new Class 6N contests

#### Wing

Start by cutting the basic wing shape from  $\frac{3}{8}$ in medium balsa sheet, then cut out the centre of the inboard wing as shown on the plan. Groove this piece for the lead-outs and cut the bellcrank hole to give  $\frac{1}{8}$ in clearance round the bellcrank.

Epoxy the cutout back into the wing, taking care to ensure that the grooves remain clear - this is easily achieved by pushing 14swg piano wire through the grooves, but do not forget to take the wire out before the epoxy cures. Use masking tape to hold the wing together. When the epoxy is cured, relieve the centre section to accept the bellcrank mounting plate. Epoxy the plate into the wing.



Below are the basic wing and tail units being assembled. The platform is first cut to shape, then the  $\frac{1}{2}$ in. sq. spruce outline is glued around the balsa - being held in place with adhesive tape while the epoxy cures. At left is the wing with bellcrank recess cut-out. Note the segment of balsa which has been removed, grooved for the leadouts, and replaced prior to shaping the airfoil section.



Cut the 1/4 in x 1/4 in spruce to size to fit around the wing. Drill the inboard tip piece to accept the lead-out guide which is made from flattened 1/8 in brass tube. Epoxy the spruce surround onto the wing and secure with tape; then epoxy the lead-out guide in place. When the epoxy is cured (after about one hour for "five minute" epoxy) carve and sand the wing to section. A semi-symmetrical section is used, set at zero incidence. The section centre line is set at 40 per cent thickness, the upper centre of curvature is at 30 per cent chord, while the lower section is semi flat-bottomed over the centre third, curving smoothly to the leading and trailing edges. Leave the centre area flat to assist in wing alignment. Rough sand the wing with a coarse grade of production paper (as sold for orbital sanders.)

Drill the bellcrank bolt hole and trial assemble the bell crank to ensure clearance all round. Remove the bell crank for the time being, leaving the pivot bolt fitted.

**Tailplane**

Begin by cutting the basic outline from 3/16 in medium grade balsa sheet. Cut the slots for the spruce strengthening pieces and half cut the elevator hinge line. Epoxy the 3/16 in sq spruce surround onto the tail plane and temporarily secure with tape. Cut the spruce stiffeners to size and drill to clear the brass tubing. Cut out the elevator, and the tail plane to accept the hinge bearings and relieve the centre to clear the elevator horn.

After fitting the inner bearing, tube and stiffener, solder the elevator horn and "pins" to the torque rod. Bind the pins to the torque rod with thin fuse wire. Slide on the outer bearing tube plus stiffeners. This assembly is now epoxied onto the tailplane, along with the rear portion previously cut and grooved. *Take care that it is*

*straight.* Do not use too much epoxy because, if it runs into the tubes, you will not be able to free it. Lightly grease the torque rod before assembling, and hold it all together with tape. Trim the elevator to fit over the torque rod and epoxy into place. This may seem complex but is, in fact, quite easy and it makes a very smooth, slop-free hinge. I have used it on many models and have never had a hinge failure yet! Note the elevator horn is best silver soldered onto the torque rod, but soft solder will do providing that care is taken.

When the tailplane assembly has cured, carve and sand to section. This is symmetrical, with the centre of curvature at 30 per cent chord. After initial sanding with production paper, sand down the wing and tailplane with 280 grade paper.

**Engine Pan**

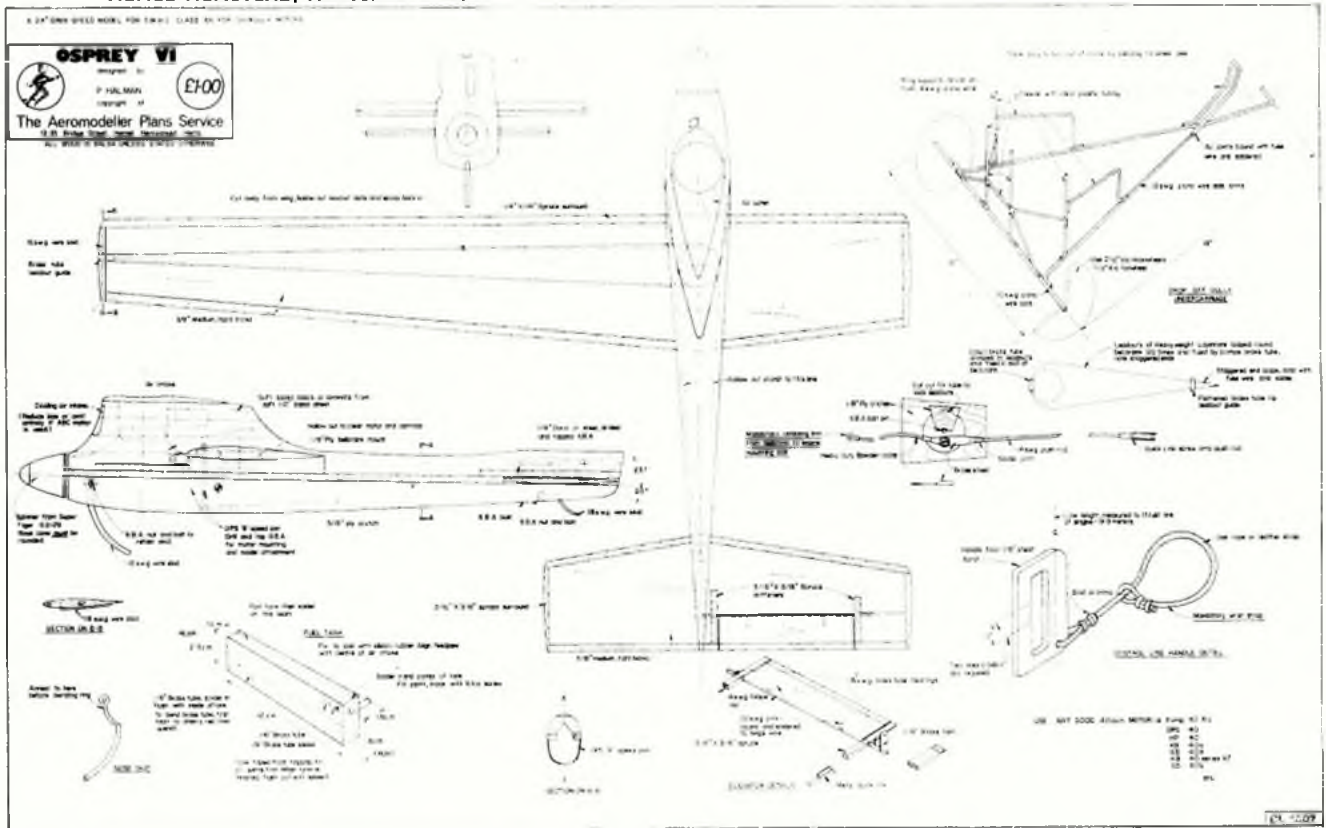
The OPS pan used for this model is cast from magnesium alloy and is, therefore, very easy to work. Begin by making the top of the pan flat with the aid of a piece of plate glass (such as an old TV front). Initially, rub the pan down with 180 wet and dry paper (used wet) which is held against the plate glass. To finish off, spread fine valve grinding paste onto the glass and lap the pan onto it.

Before drilling any holes in the pan, mark it out extremely carefully. Remember: CHECK TWICE AND DRILL ONCE. Tap all holes 6BA. Magnesium pans are very easy to work, provided that a generous quantity of TLC (tender, loving care) is used.

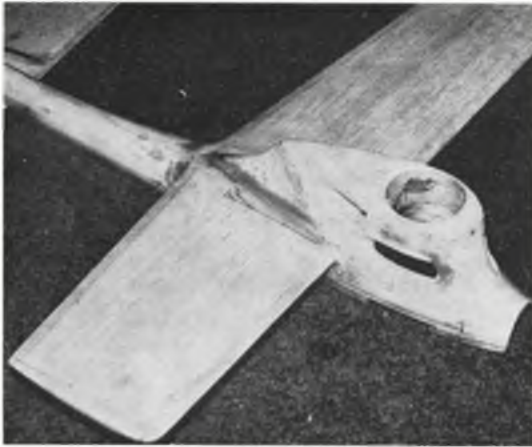
**Skids**

Bend the nose skid from 12swg piano wire. To bend the loop for the attachment bolt, first soften the end of the

**FULL SIZE COPIES OF THIS 1/6TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. CL1307, PRICE £1.15 (INCLUDING OF POSTAGE AND VAT) FROM AEROMODELLER PLANS SERVICE, P.O. BOX 35, BRIDGE STREET, HEMEL HEMSTEAD, HERTS. HP1 1EE.**







wire by heating to cherry red and allowing to cool slowly (take care not to soften more than necessary or the skid will collapse.) Bend to shape, then drill the pan to match the skid and bolt it in place. The rear skid is made in the same way, but from 16swg wire. For a piped engine, use a 2in skid; for an open exhaust, 1in will suffice. These skids may seem longer than is normal for speed models, but they save many, many propellers.

#### Fuselage

By using a full length pan, the top of the fuselage can be kept simple and light – the pan provides all the strength required. The  $\frac{3}{8}$ in ply crutch is first cut to match the pan, and then hollowed as shown on the plan. The ply doublers at the engine and tailplane are next epoxied in place. Cut the  $\frac{3}{8}$ in hardwood wing support to size and epoxy it to the crutch.

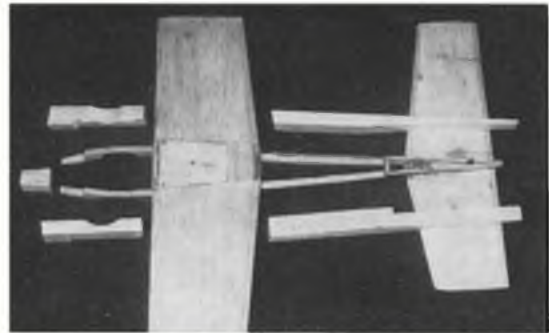
The next stage is very important. Lay the crutch on a flat board and hold it down with tape. Offer the wing and tail to the crutch and check that their centre lines are set *zero to the thrust line*. If you get this wrong, it will not fly properly! Trim the centre areas of wing and tail to adjust this. When it is right, epoxy the wing and tail in place, checking again as the epoxy cures. Hold it down with tape until it is fully cured. Next align the fuselage to the pan and mark the position of the hold-down bolts – again drill the holes carefully.

Blank off the intake and exhaust of the engine and seal around the front bearing with tape. Fit the engine to the pan and bolt it to the crutch.

Cut out, drill and tap the rear hold-down nut from dural or steel  $\frac{3}{8}$ in thick. Epoxy it in place and fit the bolt (grease the bolt before fitting).

Make up the pushrod and the commercial quick-link assembly, and fit to the elevator horn. Lay the pushrod under the wing. During this process, the pushrod should be bent to shape.

The rest of the fuselage is now basically a fairing to cover the engine, wing joint and tail. It is constructed from  $\frac{1}{8}$ in soft balsa sheet – cut the first layer approximately to size and hollow it to clear the motor and pushrod. After checking for fit, epoxy it in place. The rest of the laminations are fitted in the same way. When the epoxy is cured, dismantle and clean up the inside of the model to give smooth contours. The outside can now be carved to shape. Take care *not to reduce the wall thickness to less than  $\frac{1}{8}$ in, especially around the cylinder head*. If you do not take care, the cowl will be too fragile. Cut the cooling air inlet and outlet holes as per plan. If an ABC engine



Above is a 'kit of parts' for the Osprey VI – note how the ply fuselage crutch is 'stepped' at both front and rear. At left is the cowl after shaping – take care not to make the sides too thin and fragile. If using an ABC motor, remember to make the cowling slots much smaller – see text.

unit is used, either a much reduced inlet hole, or no hole at all, may be acceptable. Also, cut the hole for the air intake as shown.

#### Finish

The model should now look something like a speed model! Final rubbing down is done with 320 wet and dry paper used dry. To finish the model, I decided to use a traditional tissue/dope finish, but if you have the materials – glass cloth and epoxy paint (as per Dave Clarkson's instructions in the June 1976 issue) or glass cloth and finishing resin of the K & B type, these will provide an excellent finish.

For the tissue/dope finish, first apply two coats of clear dope and rub down with 320 wet and dry paper, used dry. Apply two coats of sanding sealer, rubbing down *lightly* between each coat. When the last coat is dry, rub down, finishing with 400 wet and dry paper used dry, to ensure a completely smooth surface. Any dents or holes must now be filled and sanded down. Cover the entire airframe with lightweight tissue and apply two further coats of sanding sealer, rubbing down with 400 wet and dry (used dry), between each coat. Finish off with one full strength coat of clear dope and lightly rub down with 400 wet and dry, used wet. A little soap wiped onto the paper does not lessen the paper's effect, but does prevent scratching.

Colour paint to your choice and complete the trim including your SMAE number. REMEMBER: you will be using *high nitro fuels* so a good quality fuel proofer is essential. The whole of the plane *must* be proofed: give the inside of the fuselage two or three coats. A two pack polyurethane paint is recommended for this purpose.

If using the glass cloth/finishing resin method follow the instructions with the resin and you will not go far wrong. This will give you a very strong and durable finish and it also adds to the strength of the model. It is very much easier to apply than most people seem to think: just as easy as dope/tissue but quicker and stronger. It is suggested that you have a container of thinners handy to wash the brush as soon as you finish, as the resin cures very quickly! When the finish is complete, bend the 16swg tip skid and epoxy it into the inboard wing tip.

You can now fit the bellcrank assembly into the model. The bellcrank is retained by a  $\frac{3}{8}$ in ply plate epoxied in, as shown on the plan. The brass pushrod connector is secured to the bellcrank, along with the engine retaining strap, by a 6 BA bolt. The pushrod is soldered to the connector. The leadouts, which are heavy weight Laystrate, are fixed to the bellcrank by wrapping round one and a half times and passing through a small brass tube

which is then crimped into a recess in the bellcrank Bind and solder the loops at the wing tip, staggering the length of the leadouts to avoid fouling of the connectors.

### Fuel System

Although this has been left until last, it is by no means least! Basically there are three systems to choose from: suction feed, crankcase pressure and bladder tank. Of the three, suction feed is the easiest to make, but it is only suitable for a rear valve motor and then only if the intake hole is reduced in size to approximately  $\frac{1}{16}$ in diameter.

Crankcase pressure, tapped from a low pressure source, is also a fairly simple system but more care is called for in tank construction or leaks will occur causing 'burpy' runs which can burn out plugs and engines.

A bladder tank, which is made from a length of special surgical tubing, gives the most consistent runs, but for the newcomer, may prove difficult to handle.

I suggest, therefore, that a crankcase pressure tank, as drawn on the plan, is tried first. As you become more familiar with your model and motor, then try a bladder tank. However, before fitting a bladder tank, fix a shield over the bellcrank and pushrod, or they will jam.

### Dolly

The dolly drawn on the plan is of the basic design I have employed for some years and has proven easy to use. The model is located by the 'posts' at the leading edge and nose, and rests on its wings on the two horizontal bars. The back of the model is held down by a wire loop. Use 10swg wire for the front axle, 12swg for the 'A' frame base and 14swg for the rest. Do not forget to fit clear plastic tubing *before* assembling the dolly. All the joints must be bound with fuse wire prior to soldering. The front wheels are  $2\frac{1}{2}$ in diameter low bounce and the rear is  $1\frac{1}{2}$ in diameter. The rear axle is bent to track the dolly to run out of the circle and to set a slight nose down attitude to the model.

Before you use your dolly, wrap the two front wheels with tape to extend the tyre life. (Most dollies spend a great deal of their life running sideways!) White tape helps to find the dolly more easily.

### Handle and Lines

The plan shows a sketch of a typical speed handle made from  $\frac{1}{8}$ in dural. Most fliers prefer to construct one to their individual requirements, but it is important to have the lines close together to de-sensitize the control response.

Take great care with all the connections, lines, leadouts and handle. I suggest that you follow the AMA patterns as described by Dave Clarkson in the January issue of the *AeroModeller*. Remember, your *complete* control assembly will be tested to *forty times the weight of the model for ten seconds*.

### Safety Straps

Handle safety straps have been required for SMAE speed events for some years. I have drawn a simple slip loop as a basic type of strap although a proper leather unit would be much better. *Remember*: your strap has to take a 40g pull test while fitted to your wrist, so make it comfortable !!!

Motor safety straps are, however, very new having been introduced only this year. It is now a requirement to fix the motor to the bellcrank. The plan shows a heavy Bowden cable bolted to the bellcrank; the other end may be either slipped over the motor, or fixed to a motor bolt.

**Underside of the completed model, ready for finishing and bolting on the engine/pan unit. Take great care to thoroughly fuel proof the whole model - high nitro fuels will soon seek out any weaknesses in your finish!**

### Flying

This should not present too many problems; the relatively large areas help to make a stable flight path. If left alone it will fly in a straight line - and no cracks about it being supposed to go in a circle!

For the newcomer to speed, the pylon may appear as a big problem, but I think most people will be able to cope with it. Practice is the name of the game. I would suggest that fliers wrap their wrists in foam plastic to prevent bruising or burning by the pylon yoke. There will be lots of people at contests to advise you at which height to have the pylon, but as a guide, I suggest the pylon be sited fairly high to allow you to stand upright while flying. I have found this more comfortable for two line models.

### Fuel

Make your first flights on a mild fuel (10 per cent nitromethane; 20 per cent oil; 70 per cent methanol). As you become more experienced in handling your model, and knowing your engine, you can increase the nitro content up to 40 per cent. Before you go any higher talk to an expert like Mike Billinton to discover what other ingredients you may need. Remember that if you use a synthetic oil in your fuel, then wash your engine with petrol and then oil it after a day's flying, otherwise severe corrosion may occur due to the action of some synthetic oils.

### Propeller

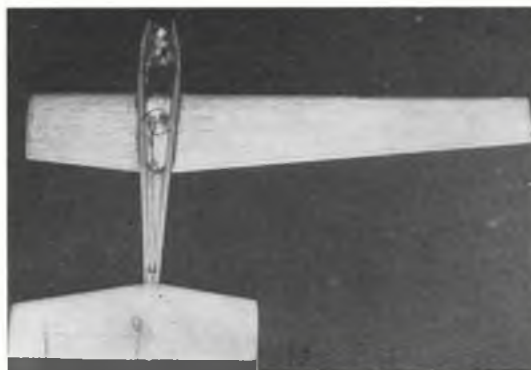
This is one of the most important parts of your aeroplane and is far too complex for the confines of this article. For a start, I suggest you try either an 8in x 9in or a 7in x 10 $\frac{1}{2}$ in of the Topflite pattern in wood or glass fibre. You will have to experiment with diameter and pitch to suit your particular engine.

### Special Equipment

Some difficulty may be experienced in obtaining specialist items such as the .018in wire for the lines, or surgical tube for the tank. The .018in wire can be obtained from piano shops, or contact myself. The tube for the tanks must be carefully selected. Once again, contact me or come over to the speed circle at any contest. Supplies of both wire and tube can be arranged.

I hope I have explained the construction of *Osprey VI* satisfactorily; the experienced flier will probably change processes (as I do if I build from a plan). However, as we are not only trying to encourage expert fliers into speed, but also new fliers, I have made the instructions as detailed as possible. One of the cardinal rules for building any model, but especially a speed model, is tender, loving care.

The new Class 6N will be flown at all control line meetings where Handicap Speed is flown such as SMAE Centralised meets, the Nationals, Woodford Rally, Elliot MAC rallies, etc. so . . . start building!



# Nürnberg Trade Fair

a look at some manufacturers' latest products

THE ANNUAL Toy and Hobby trade fair at Nurnberg has progressively reflected the growth of European enterprise, and this year's function was no exception. In a way the 1977 Show was an object lesson for the rest of the world as far as the West German model industry is concerned. For never was the strength of the Deutsch Mark more apparent. Everything, from the 52DM carburettor to the 2,000DM 'Pro' R/C outfit (divide by 4 for pounds sterling) has been uplifted to a level of sophistication that is almost mind-boggling. Our sister magazine *RCM & E* is covering that field which occupies over 85 per cent of trade activity; suffice to say that the standards set by the *Deutschen Bundespost* for 27.35 and 40 MHz bands have led to FM equipment of such complexity it takes a full briefing to understand what all the switches on the Tx are for! Latest Graupner/Grundig 'Export' set even has the choice of visible LED countdown time display or audio blipper for the dead-serious contest flier. Similarly, the R/C kits are deeper and deeper into super plastics. Injection mouldings, glass sheathed wings, huge spans over 5 metres, beautiful scale sailplanes, yet more electric designs are but part of the fantastic West German R/C market scene.

The marvel is that most of all this invention is for the domestic market, not even produced for English language export even if it could be brought down in price. And therein lies the irony for the D-Mark situation is highly unfavourable for export, and these admirable innovative creations, from a fully controllable hang glider to a scale *MRC A Tornado* are going to be thin on the ground

this side of the Rhine unless something radically changes the monetary situation.

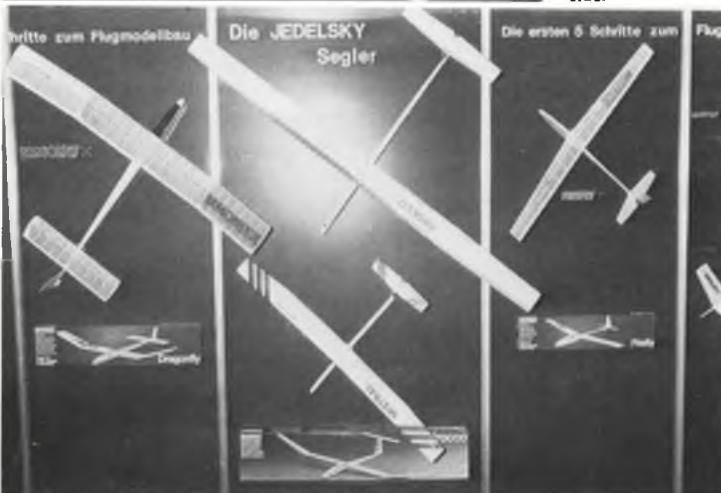
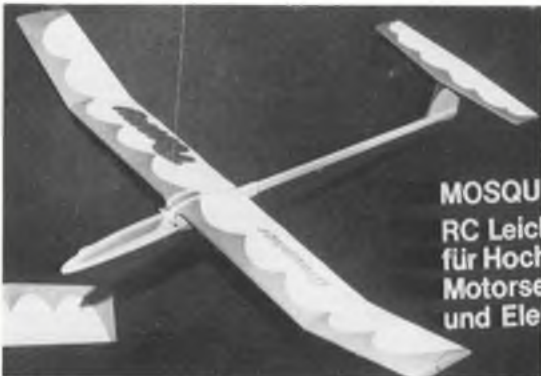
However, the long established agencies for imported engines and kits are bound, with all their experience, to find ways of overcoming the price barriers so there are distinct hopes of the poor British aeromodeller getting something out of this wealth of advancement. And one only has to stop for a £1 coffee to realise the significance of 'poor' in this connection. We live on a pricing scale where every-thing is either 2-2½ times more expensive on the Continent, or conversely, it is 40-50 per cent cheaper here. But enough of economics, what is new for the aeromodeller?

**Webra** are first to break the 15cc barrier with an impressive .91cu. in. motor that claims 2.6hp at 13,000rpm. Schnuerle ported, it weighs 670g. In appearance it is like an enlarged .61 and for marine application it has an upper cylinder jacket. Incidentally, Webra also quote the .91 at 1.91kw, which is how full size performance ratings are detailed these days in Jane's *All the World's Aircraft*. A new "Dynamix" carb from Webra has a slide choke reminiscent of the Amal on early postwar motor cycles and is suited to the .40 and .61 engines. The .20 (3.5cc) size has also been targeted by Webra with R/C. Marine and straight carb versions (0.7hp at 16,500rpm). **O.P.S.** already had a 3.5cc unit but announced new innards this time in a very business like unit, obviously designed for high speed work.

Two .40s for general use are the **Cox Conquest** and **HP**, each with long throat intakes indicating potential for C/L stunt. HP have twinned both their .40 and .61 experimentally as alternate firing in-line units, with a mixing valve on a single carb between. Initial tests are said to be very encouraging. Another really new .40 was tucked away with **MVVS** examples from Czechoslovakia. Designed for R/C, it has its own special silencer Schnuerle porting and follows the successful line of 2.5cc units, diesel and glowplug, also shown.

Really new is the **MVVS CO<sub>2</sub>** unit which was demonstrated with a stock McCoy 6 x 4in plastic prop at commendable revs. Capacity is .027cu. in. which makes it several times the Telco and Shark, but it still managed 3 or 4 good runs from a standard East German bulb (or 'bomb' as officially known!) Still in early days of production, the motor could have booked big orders if immediately available. The

**Graupner's** new 'Penny' glider (shown at left) is practically in the ready-to-fly category, with Jedelsky wing, plastic front fuselage and a multitude of moulded plastic fittings. Below left is, believe it or not, part of Humbrol's display. These four gliders, first shown at Birmingham, include two with Jedelsky flying surfaces, two with built-up structures. Superbly packaged too. Below right is the **MVVS CO<sub>2</sub>** unit - note the (relatively) large size.





Shark marine variant was an eye opener. Few could credit the rpm attainable in a free running flywheel, variously stated around 20,000! Believe us, even driving a water screw, the Shark can screech like a tiny glow engine!

Nurnberg, was saddened by news of Helmut Bernhardt's fatal air crash on the eve of the opening, so he was not there to see his impressive updated **HB** range including the '12 and the PDP porting system with fuel pump and special Perry carb for all the larger R/C engines. A resonance silencer and the new radial mount to cover the overhang of the rear pump were revealed.

**O.S.** now have the 4 stroke in production and have gone fully Schnuerle on the '10, '25 and '60 SR engines, the '25 being particularly handsome and possibly hitting a fresh capacity demand at 4cc where it will ideally suit some of the new trainer kits.

Apart from R/C, Nurnberg had very little to offer on the shape of the new designs for the 'other' aeromodellers. Both **Carrera** and **Graupner** introduced simple gliders, each with extensive use of plastic mouldings and Jedelsky wings. **Schuco-Hegi** is now under the **Revall** umbrella and is consolidating with just 3 new R/C kits, so it was left to **Humbrol** to produce the only display of a completely new programme for free flight. The *Mistral*, *Sirocco*, *Firefly* and *Dragonfly* gliders offer a choice of built up or Jedelsky wings, while the quartet of designs for the PMS-1 CO<sub>2</sub> unit are all-sheet.

**Tern** kits in the USA have been taken over by **Hi Flier**, better known for kites and a branch of the big Daman Industries Co. Neatly presented, all the ten favourites for Walnut Scale etc., plus the novelties for sport rubber are to re-appear in the new image (and without price increases we're told) during the year.

Czech kits are almost all for free flight gliders, the most clever being in expanded polystyrene for which separate wing sets are available. With packaging and instructions to suit the English speaking world, we are sure these products would find a ready market.

Finally, to the RTF all plastic control line 'trainers'. Bill **Cox** and **Testor** seem to have taken a long hard look at actual performance for each has produced something that would pass for a 1/2 A team racer. Testor's *Cosmic Wind* and Cox's *Hustler* are purposeful designs that will fly well. Cox also have an *F.15 Eagle* to fit the demand for long-nosed swept wing types that just go round and round. It seemed sad that the biggest trade fair ever known could produce only these few C/L models.



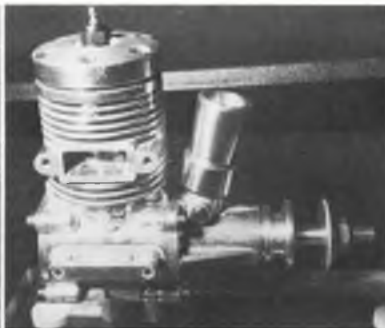
**Testor** have extended their range of ready-to-fly plastic aircraft, all powered by the same spring-starter equipped .049cu.in. motor. Shown above is the 'Spirit of '76' Racer'.



**Cox** too have greatly increased their range of all-plastic control line planes - example shown at right being an F-15 Eagle.



**OPS** have re-designed their .19cu.in. motor that was exhibited in '76 - should show promise in Goodyear racing.



Well known Austrian manufacturer, **HP**, displayed their 0.40cu.in. motor with C/L stunt venturi.



**Cox Conquest 40** was shown with plain venturi and standard-plug head, indicating C/L stunt or sport flying potential.

**MVVS** displayed several new models - including this latest version of their 2.5cc glow motor.



Unmistakable familiar appearance of **Webra** engines extends down to their very neat Schnuerle ported 1.8cc glow motor.



# Scale Matters

by Alan Callaghan

John Lovell makes the maiden flight with his huge North American Bronco - while Phil Bolderson stands by just in case line tension proves too great!

SUNDAY February 6th turned out to be a high-drama day at the *Three King's Club's* home flying ground, on what remains of the tarmac runway at Croydon Aerodrome. Here after many months of careful preparation occurred the first test flights of member John Lovell's enormous North American *Bronco* control-line model. With what seems, on paper, a deceptively small 66 inch span by 12 inch chord wing, this model has occupied most of John's spare time for approximately nine months. An entirely original retractable undercarriage, flaps, and throttle system is fitted in complete contrast to the modern trend in electronic control-line function systems popular at the 1976 World Champs and as used in the UK by Vic Willson in his Nats-winning *Zlin*.

John devised a system in which the various in-flight functions are operated through a third line connected to a pre-programmed master cam unit operating the following modes: (a) Model static - slow throttle + flaps full down. (b) Engines at full throttle. (c) Flaps then undercarriage retract. (d) Slow throttle. (e) Flaps then undercarriage down. All of these are worked simply by pulling the third line through approximately two inches of travel at the handle. The speed at which the functions operate is directly controlled by the speed at which the line is pulled, which means that they can be operated either very slowly or quickly as required in emergency. The complete system is carefully counterbalanced so that a minimum of effort is needed to set things in motion, and it took

John only three weeks to get the system working smoothly. Although it may be argued that a programmed device does not leave much leeway for coping with unforeseen flight contingencies, the very rapid speed at which the system can be made to work more than accounts for this, as does its inherent reliability factor. Without batteries, circuitry, wires that work loose, or temperature sensitive electronic components, there is much less to go wrong.

The *Bronco* is powered by two Merco 61's (they're British, folks!) with standard Merco throttles. As they are brand new, these motors are still being carefully run-in, and also being mounted inverted, at this stage they could only be made to idle properly without extinguishing themselves by fitting Fox glowplugs; a tip recommended by Wal Cordwell who had encountered the same problem some time ago on his large, similarly-powered, *Avro Tutor*.

After approximately one and a half hours of careful testing and engine matching, the model was taken to the

tarmac circle, started up, and quickly left the ground after less than one quarter of a lap take-off run using full flap deflection. Not taking too many chances John had main helper Phil Bolderson (dare I say the right man for the job!) standing with him in the centre, but the model, being flown on 70 foot of 021 thou. Sullivan stainless steel lines proved to be quite manageable for one.

Without access to a good compressor and preferably a proper spray-room, the painting of such a large model is always a problem unless it can be done outdoors on a warm dry day, which like marvellous wind-free flying days never occur when most needed. John overcame this by covering the entire model (undoped) with silver heat-shrink film, and sprayed a colour overlay using car spray aerosols, and quite a number of them, no doubt. When dry this was then carefully and strategically attacked with a used pan-scouring pad to give in the process a very realistic battle-worn appearance with the silver showing through quite con-

Some idea of the Bronco's size may be gleaned from comparison with its designer/builder John Lovell. The weathered appearance was achieved by scratching the paint off the silver coloured plastic film covering.



vincingly as metal. Although John is an experienced control-line flyer this was his first attempt at a scale model, and the result is most impressive.

Nothing could be further removed from the *Bronco* in terms of scale modelling than the new Peanut *Isaacs Fury* at present being built by Rex Oldbridge. This is the second *Fury* to be built by Rex, his first one itself being no mean performer in that it can regularly achieve well over the minute mark in flight duration. The new one is being built much lighter as the following weight breakdown of various uncovered components clearly shows:

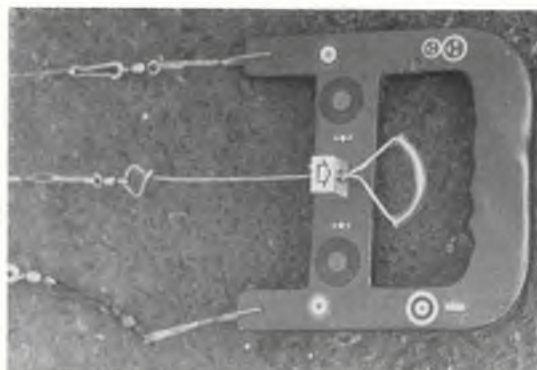
<i>Fuselage</i>	2.36 Grams
<i>Upper Wing</i>	.6 Grams
<i>Lower Wings</i>	.45 Grams
<i>Tailplane</i>	.12 Grams
<i>Fin + Rudder</i>	.06 Grams
<i>Wheels</i>	.78 Grams
<b>Total</b>	<b>4.37 Grams</b>

A truly remarkable achievement. Doubtless the addition of the prop/noseblock assembly and covering plus finish will quickly push the figure up, but nevertheless, the gross weight of the finished model will I am fairly sure probably give the lightest wing-loading figure of any proper scale Peanut model yet seen in this country. Note that at the same time this model has built-up ribs with rib-for-rib (and riblet) spacing, together with correctly built control surfaces. No drawn-on bits here! The main fuselage longerons are of basswood and the rear undercarriage legs are of bamboo – the front ones being of wire – all to be faired in with balsa. I'm glad it's Rex who has the job of covering this one, but in some ways sad that such exquisite workmanship will eventually be covered up and unseen by many.

\* \* \*

I was able to examine the *Fury*, amongst other models, at a very pleasant evening spent at the home of David Kew who hosted an informal gathering of F/F Scale Model enthusiasts from the London Area. This was arranged under the auspices of the newly formed *Free Flight Scale Association* known as "2FSA", which is affiliated to the SMAE, and which evolved mainly as a means of bringing together F/F Scale modellers who regularly fly at places such as Epsom Downs and whose main concern is simply the building and flying of scale models on a non-competitive level, although several of its members do regularly take part in contests. Most

John Lovell's control handle used to fly the *Bronco* is very simple – a tug of the third line actuating the cam unit.



The *Bronco's* cam plate control unit is accessible via an inspection panel on the (detachable) wing. A full range of operations are actuated by this pre-programmed motor unit – see text for details.



of the evening was given over to slides and films with the usual idea swapping and entirely scale model chat going on non-stop. Anyone within an hour's drive of South-West London who is interested to know more about the association and its activities should get in touch with Cedric De La Nougerede, telephone Horsham 61321.

\* \* \*

Two months ago I said that basswood was not generally available in this country. Well now I am happy to be proved wrong, having recently been sent some samples from *The Modellers Den* of Bath – the UK's main specialists in small flying scale model supplies. Various small sections, e.g. 1/32in x 1/32in, are available in two feet lengths at 8p each, and apart from its obvious uses on Peanut scale models and the like, I am sure many other uses can be found for it wherever smooth, cleanly-cut

small sections are required, even on quite large models. Another extremely useful item from the same source is 1/64in balsa available in two feet by two inch sheets at the very reasonable price of 25p per sheet. This is ideal for wing ribs on small models especially where scale rib spacing is required. Used instead of the generally standard 1/32in sheet it will give a very useful saving in weight and is quite easy to work with after a little practice. Another application is in sheeted areas on fuselages where the weight build-up can be proportionally quite large on a small model if the wood chosen is either too thick or too heavy, or even worse, both of these things!

By coincidence, with seeing the use of bamboo on Rex Oldbridge's *Fury*, I recently came across another source of very useful sizes in this material as an alternative to buying it from a garden supplies shop or



nursery and cutting it down to size – no mean feat in itself as anyone who has tried it may agree. It came in the form of an Oriental table mat eighteen inches wide made up of 180 twelve inch lengths of roughly 1/16in square bamboo sticks, all for the princely sum of twenty-five pence! Being slightly damaged, it was found at this price in a sale, but the normal price is only ten pence more. In small sections bamboo is immensely stiff compared with balsa or obechi and since it is relatively easy to bend when gently heated over a candle flame, is ideal material for making noseskids as found on many pre-WWI aircraft.

Vintage and Pioneer aircraft are not every scale modeller's cup of tea, and I think a lot more modern or WWII aircraft subjects would be built if it were not one of the major problems to produce an accurately moulded cockpit canopy. These items can make or break an otherwise good model and a fair amount has already been written on how it can be done. The usual advice is to begin by carving a former from a hard, close-grained piece of wood – not easy if all the tools you have are a modelling knife and glasspaper. It can be done very much more easily in the following way. Carve the former from medium-soft balsa, sand to shape and finish smooth using 400 grade wet and dry paper used dry. A coarser grade of paper only makes for more work later on. Now apply two coats of glass-fibre resin (no matting) without sanding between coats, and allow to harden thoroughly. Next sand this smooth using the 400 paper, wet this time, and an extremely smooth, hard, and heat-resistant surface can be achieved. A third coat may be added if required but if the former was made smooth enough in the first place it really ought not to be necessary. Make absolutely sure that there are no specks of dry dust on the surface as you begin to mould, by blowing them away and using an antistatic cloth, since these will show up like rivets on the Forth Bridge on the

**Nose details of George Worley's Armstrong-Whitworth Siskin. The Mills 1.3cc engine is neatly disguised in this free flight model.**

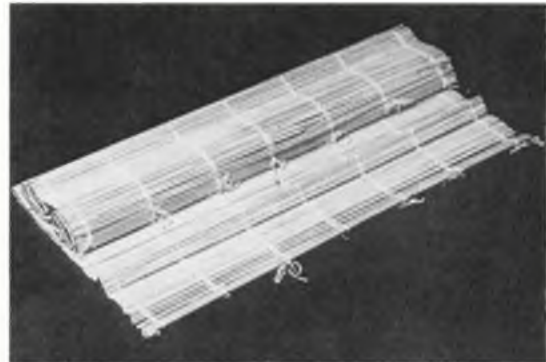


finished canopy. I used this method on a Peanut scale Bolkow Junior and was very pleased with the result.

Indoor scale fans living in the Nottingham area will be interested to know of a meeting to be held on March 26th at the Kimberley Sports Centre, near Exit 26 on the M1. The

meeting will run from 10.00am until 6.00pm featuring a Peanut event amongst other things, and is mainly a try-out to see what enthusiasm can be generated within the area. The Hall size is 90 x 60 x 35 feet, soft footwear is essential, and further details can be obtained from Barry Hotham, telephone Mansfield 34127.

**An ideal source of pre stripped pieces of bamboo may be found in these table mats (right) available very cheaply from many stores. Below left is the superbly built (and finished) Peanut Scale version of the Isaacs Fury, made by Rex Oldridge. Below right is the author's Bolkow Junior with canopy mould - as described in text.**



# READERS' LETTERS...

## Help Please

Dear Sir,

I am presently the Bulletin Editor of the *Auckland Model Aero Club* and I am organising celebrations for our 50th Anniversary in 1978. I am writing to you in the hope that you can help us with a point of interest that has been tossed around in our club for some time.

It is the opinion of most of our older members that our club ranks among the oldest continuously operating clubs in the world in that we have been operating continuously since 1928. Could you possibly do a little bit of research for us and find out just how many other clubs have reached this grand old age both in your country and overseas? I must point out that we consider that a club should have operated continuously over the years to qualify. If it does turn out that we do rank among the worlds "oldies" then it is possible that we can get the news media interested in our hobby as a responsible sporting activity and drive yet another nail in the coffin of the "Toys for Boys" attitude of a great majority of the general public.

As the date of our celebrations draws nearer I will keep you informed of our arrangements as it may be of some small interest to your readers. Due to the small numbers involved in this country we feel that our club has created yet another milestone in the history of Aeromodelling and we intend not to let the event go by un-noticed.

189A Titirangi Road,  
Titirangi, Auckland 7  
New Zealand

M. L. Adams

## Thank you — Part 1

Dear Sir,

I would like to say a very big "thank you" to the *Society of Model Aeronautical Engineers Ltd* for the effort, time and money spent in defending the rights of all model flyers in the Borough of Bromley.

As you may know there has been a Public Inquiry in this area, brought about by the weight of opinion of a double-pronged attack to enforce a bye-law banning power model flying in all open spaces.

The SMAE have been more than helpful over the last seven years or so, helping us to create a defence of our hobby against some very influential people, and finally have supplied us with a very good barrister, and a back-up service second to none. If we win our point, which means power model flying can continue in Bromley (of course with restrictions of some sort) it will be mainly due to the very good relations we have enjoyed with members of the SMAE. If we lose, then I can only say that we did not give the SMAE enough material to work with, they really have been magnificent.

I have always been very pro-SMAE but have often been disappointed by the apparent lack of drive, but I now get the feeling that they are going places. It is up to all modellers to join in this new awakening and do something to justify their place in this pleasant healthy hobby.

I would like to stress that, in this particular instance it is a test case for the rest of the country and if our cause is lost, I think that many flying sites would be in jeopardy. I feel that the case as put by the SMAE was such that we have a very good chance of success. Remember that we need the SMAE as much as they need us, after all, we are the SMAE, so please join and help your fellow fliers.

Bromley, Kent. B. E. "Bunny" Newman

## Thank you — Part 2

Dear Sir,

Now that Eric Coates has handed over his long borne *Flying Scale Models* column to Alan Callaghan, I am writing to you on behalf of the recently formed **Free Flight Scale Association**, "FFSA".

We should like to offer our sincere thanks to Eric for the hard work which he has put into his articles and to the *AeroModeller* for giving him the opportunity to publish them. I am sure that we all know what a large sacrifice of precious modelling time must be made in order to present such a series and for any one person to do so continuously for almost six years is no mean feat.

The series has done a great deal to stimulate interest in Free Flight Scale in general, but has been particularly marked on the competition scene, the average number of entries having more than doubled over the last few years until they actually exceeded R/C Class 1 at several meetings last year. Along with the rise in numbers has also come a rapid rise in general standard of models, again I feel sure largely as a result of Eric's hints and tips. The *How to do it* part of the series was quite invaluable and we should very much like to see it published as a complete book so that it may continue to draw people into Free Flight Scale by offering an up-to-date guide on construction.

Although we realise that Eric still has considerable commitments as Chairman of the Technical Scale Committee and in judging R/C Scale etc., we hope that this well earned reduction of duties will enable him to spend more time at the building board and may be produce a successor to the venerable DH9a.

Having offered our appreciation of Eric's good work we should like to extend a warm welcome to Alan Callaghan who steps into fill the gap, we are most pleased that the column is to continue and look forward to meeting him and reading his works.

Guildford, Surrey A. J. Coker.  
Free Flight Scale Assoc.

## New F/F Contests?

Dear Sir,

After over 30 years in the sport, with interest covering every branch apart from Radio, more and more I find myself looking back to the "Golden Days"—days when flying was for fun, when a contest day was for enjoying. If you were successful great, if not, it had been a good day, and no doubt you had a good laugh.

Today it seems every contest day has got a bit too serious—nobody smiles, "shady" tactical flying is the order of the day, and winning is the name of the game.

Don't get me wrong, at National-International level this is probably as it has to be and I would be the first to encourage anyone with ambition to get to the top in one's sport.

It is at the lesser meetings I feel we are missing out. The present free flight classes have got too specialised, all the FAI and Open classes are now so sophisticated and expensive as to be beyond my ideal for a clubman's pleasure — sports-contest machine.

What is needed is a "Clubman's" class for relatively simple inexpensive models which present a challenge offer variety but can still be recognised as adult contest machines to be flown at a less intense level than the international classes.

I have in mind a scheme which would group all three classes—rubber, power, glider—under one roof, hopefully with similar performance.

The regulations would be simple. For power they cover only: Wing span (48-50in), engine size (.049cu in) and prop diameter (8in). For rubber only: Wing spans (38-40in) and prop diameter (13in). For glider only: wing span (48-50in.) and tow-line length (150feet). All gadgetry would be banned except for dethermalisers and engine timers for power. D/T plus auto rudder for glider and D/T plus simple fold or free wheel for rubber. Nose block would be one simple thrust race and bush.

Processing would need only a tape measure. I think a 12 second engine run for power, as much less tends to take the 'power' out of this form of flying.

I see prop diameter as the equaliser, and the suggested ones could be changed if only one class had an obvious advantage. A 50in span glider can have a very useful performance and would be the yardstick for the powered models. The trick would be to tame what would virtually be a simple Open Rubber and a 1/4A power model down to similar performance. A 13in prop would limit the rubber model and an 8in .049 power.

Ideally I would like to see some pilot models built or converted to evaluate performance before regulations were finalised.

Time wasting "tactical flying" would be frowned upon. All flights would be made from the same spot on the field in rotation and rounds: all models to be launched within 3 minutes of calling a time keeper, and with a maximum towing time of, say, 2 minutes.

This would tend to keep competitions together, keep things moving and be a centre point for any spectators.

I see no reason why anyone with more than one type of model should not change type for second or third flights if it seemed advantageous. Alternatively each competitor could be required to fly two types of model — fly off with model of competitor's choice.

Flights would be either 3 or 5 with a three minute max—with all three classes competing against each other.

The whole object of the formula would be to encourage sporting competitive flying of a good standard and humour. What do you think? Could it work?

Doncaster, Yorks.

Gordon Beal

# The Free Flight Scene

This month: **Mike Fantham**

## IS PREPARATION THE DIFFERENCE BETWEEN SATISFACTION AND DISAPPOINTMENT?

I SUPPOSE it is inevitable that *The Free Flight Scene* should concern itself mainly with contest matters, since the writers Bob Bailey, Martin Dilly and myself are heavily involved in that area, but I sometimes wonder if we cater for the non-contest flyer as well. Please notice that I say "non-contest flyer" rather than "sport flyer" or "fly for fun aeromodeller" because any contest flyer will tell you that he gets a tremendous amount of fun from his sport. Why else would he drive hundreds of miles a year to contests? Certainly not for the prizes or prestige!

Many of the non-contest flyers I have spoken to are interested in contest matters, and quite a few even fly contest-type models, probably because they fly better than many "sports" models. I have often said that the average beginner would be better off with a simple contest model (fitting a smaller engine if it is a powered type), than many a so-called "beginner's model". Contest models are usually stronger, lighter and more stable! By all means build something that looks more like the "real thing", but learn to trim first.

It seems to me that, although the aims may be different, the ingredients for a successful day's flying are the same whether you are driving a hundred miles to a major contest or just going over to the local park for a flying session. One word describes the requirement: *Preparation*. Preparation starts before you buy the kit, send for the plan or put pencil to paper and draw up your own design, it goes on through construction and testing and does not even stop when the day's flying is over, because the model must be carefully stored ready for the next outing. Preparation ranges from just remembering the fuel can to making sure that you are doing enough press-ups when you are an American chuck glider flyer. It can start months before a contest, or be a "last moment" check before your launch.

In spite of careful preparation, I suppose "luck" must play some part in deciding how things will turn out "on the day", but a quote from the famous American golf pro., Jack Nicklaus, sums up one view on this subject, Jack had just sunk a particularly long and difficult putt when someone shouted out, "That was lucky!" Jack's reply was: "You know it's funny, the more I practice the luckier I get!"

In the early days of contest flying an event would often be won by a single "lucky" long thermal flight, nowadays, with a maximum time for each attempt, the emphasis is on a consistently good series of flights. Quite often, rather than winning by doing one good flight, the reverse is true and one bad flight can spoil your chances of success.

As an example of the kind of thinking that should be involved in your preparation, let us consider one aspect of one part of the overall system. When I say overall system, I mean the model and all the other things you may need to operate it, such as winch, winder, starter, batteries, bubble generator etc. One thing you must have to ensure repeatable results is rigid, consistent, assembly of the aero-plane components – which must themselves be of a consistent shape with no changing warps. The assembly of the flying surfaces to the fuselage has to meet two conflicting requirements: first that they should not move in flight, and second that they should knock-off in an accident. The wing mount must fit the surface of the wing closely so that the wing does not "wobble": do not be tempted to cure a wobbly wing by strapping it down tighter because even if this seems to work, you will distort the wing and the built-in stresses may cause warps. The wing mount must also be stiff enough not to distort when the wing is attached. One method of making the wing mount a good fit is to build it directly on the wing surface. For my A/2 glider wing mounts I use three laminations of ply, 0.4mm thick with the grain running chordwise for the outer layers and 1mm thick with the grain spanwise for the centre layer. The laminations are assembled with PVA, and while the glue is wet the mount is sandwiched between the wing and the lower surface jig on which it was built. So, reading down through the sandwich we have wing, polythene sheet (to prevent adhesion of mount to wing), wing mount, polythene sheet, ½in foam sheet (to spring the mount against the wing), and wing jig. If you do not build on a lower surface jig, the method can still be used but it is more difficult to get the mount to follow the undercamber. When the mount is dry, it is carefully fitted to the fuselage, being sure not to distort it in the process. We also need something to locate the wing fore and aft on the fuselage, and I achieve this by having an extension of the fuselage over the wing leading edge under which the wing fits. Both the wing and tail mounts are 2in wide and the tail leading edge is against an ½in high spruce stop which is the full width of the mount. Where the wing



The team selected to represent Britain at the forthcoming Danish World Championships in the FAI power category will consist of (left to right) Dick Johnson, Stafford Screen and Martyn Cowley - the latter in appropriate 'Biggles' headgear! All showed remarkable consistency, especially Dick and Stafford who only dropped a total of 21 and 33 seconds respectively over a total of eleven rounds. All use Rossi 15 motors, fitted with mechanical brakes to achieve a clean shut off, plus auto rudders and variable incidence tailplanes.





bands cross the edges of the wing there are spruce inserts and the tail has a spruce leading edge insert and 0.4mm ply plates above and below the trailing edge.

Power models are the most sensitive to inconsistent assembly and the method of "keying" the wings to the mount currently being used by some flyers is of interest. The wing and mount both have light alloy tubes set in them vertically so that when the wing is fitted to the mount in the correct position the holes line up and a cocktail stick is passed through. This effectively locates the wing and in a heavy landing the "pegs" can shear off. Two "pegs" are required in a one piece wing, and two in each half of a two piece wing, where they also serve to keep the panels together. The mounting of the tubes in the wing must be strong enough not to "pull" if the pegs are sheared: ply reinforcement helps here.

So if you are getting inconsistent results take a long look at the way your model assembles, it might be the source of the trouble!

John Bailey of the Bristol and West Club used this 'Russian' hook equipped glider to help secure his second place in the British team. His system is unusual in that it combines a spring loaded impulse release with the 'all-action' hook, thus preventing accidental unlatching in gusty conditions.

#### FREE FLIGHT TEAM TRIALS - THIRD MEETING

The final three flights of the selection trials for the 1977 World Championships took place on Sunday the 6th February at RAF Barkston Heath in Lincolnshire.

In view of the time of year, windy conditions were a strong possibility and the weather over the last half of the week before the event promised a fair blow for the Sunday. I expect many flyers had been out testing their windy weather models . . . I know I had. It was a pleasant surprise, however, to arrive at the airfield and find only a light breeze which did not exceed 10 mph all day. It was not too cold, and occasional sunshine gave an almost Spring-like atmosphere at times. Attendance was well down on that of the first meeting, as might be expected, since some people had 'no chance' of making up lost time by this stage. Notification of the meeting was by letter to each competitor, with a contact phone number for venue confirmation in the week before the event. This arrangement and the event itself, under the direction of Brian Baines, ran smoothly. Debbie Collins helped Brian with the score cards.

The contest started at 9.00am and three forty-minute rounds were run for each class in a Glider, Power, Rubber sequence. At that stage the leaders were Pete Williams in Glider, Jack Allen in Power and Alan Jack in Rubber, but none of these were to finish in the eventual top three.

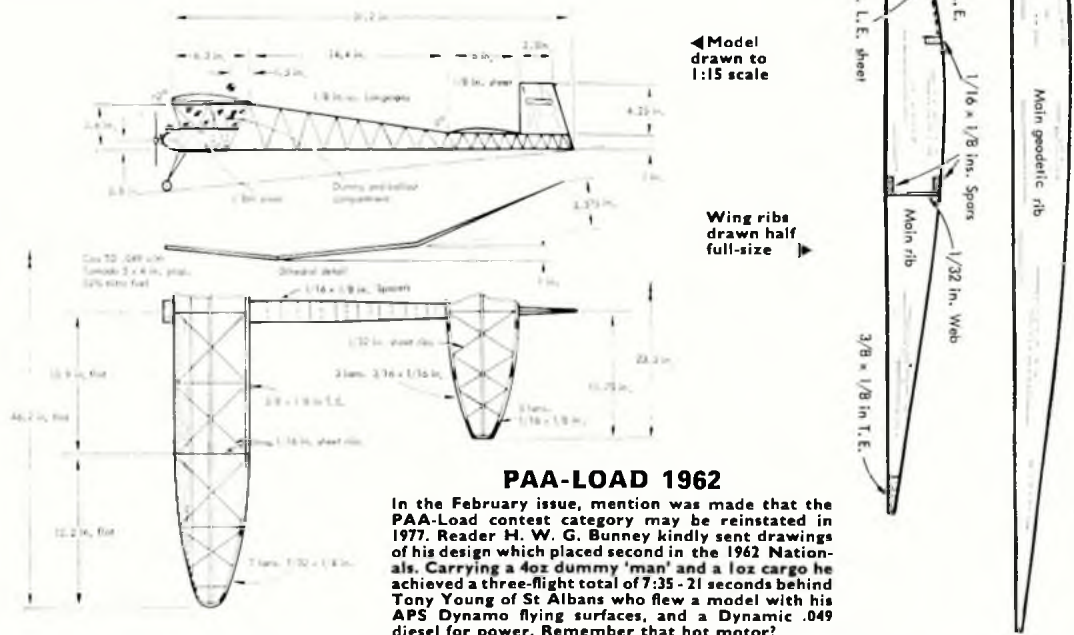
The first Glider round saw some glider flyers launch early to move downwind of the pack and play the waiting game with their circle tow models: among these John Cooper waited right through the round and flew for a max on his own at the end. After about fifteen minutes of the round, a mass launch was started and Pete Williams towed slightly upwind of the bunch to get a normal release from his catapult hook, circle tow model. After one circle the glider soared into the wind for a few seconds and the air looked quite helpful, but after the next circle of the glide any sign of a thermal had gone and the model dropped for a score of 1:29. Disaster! Only five maxed in that round including new leaders Andy Crisp and John Cooper, more than half the field did less than two minutes.

In the power contest Jack Allen dropped from first to seventh when a mis-launch and bad pattern gave a score of just twenty-two seconds: three seconds less would have been an 'attempt' with a re-fly allowed. All but one of the other power flyers maxed, with Dick Johnson taking the lead.

Alan Jack, the Wakefield leader, went the same unlucky way as his Glider and Power counterparts and found himself eighth after the first flight of the day, although he was only twenty-three seconds



Looking after British interests in the Wakefield class at Roskilde will be (left to right) Mike Woodhouse, Ron Pollard and Pete Williams. The Wakefield Trials provided a very close finish, with no less than nine flyers in strong contention for places on the team. Peter's model which topped the results, is basically a very simple design devoid of any gadgets - in contrast to Ron's Vitar II which features some really first class engineering and superb workmanship.



**PAA-LOAD 1962**

In the February issue, mention was made that the PAA-Load contest category may be reinstated in 1977. Reader H. W. G. Bunney kindly sent drawings of his design which placed second in the 1962 Nationals. Carrying a 4oz dummy 'man' and a 1oz cargo he achieved a three-flight total of 7:35 - 21 seconds behind Tony Young of St Albans who flew a model with his APS Dynamo flying surfaces, and a Dynamic .049 diesel for power. Remember that hot motor?

away from a team place and forty-four seconds behind new leader Dave Hipperson. Things were very close at the top in Wakefield.

The second Glider round was flown in a nice patch of weather and brought no change in the top positions with seventeen of the twenty two flights being maxes. In Power, third placed Stafford Screen dropped six seconds but maintained his position. The second Wakefield flights brought more upsets with Hipperson going back to fifth and Brian Kenny coming through to the top position with one of the five maxes scored. Conditions seemed worst during the Wakefield rounds and the falling quality of the rubber in use is not helping to provide high scores: these factors led to a very close contest and meant that it would all depend on the last flight.

In the last Glider round John Cooper started to tow early on and circled downwind to catch any marked thermal that might pass. I think he must have been twitching under the tension by now, because he let Elton Drew's model pass him in a thermal. I suppose he was not certain of the lift: anyway he eventually missed out with a 2:07 flight but still made the team in third place. John must be congratulated on this his third consecutive glider team place, a very consistent and creditable performance. First and second places

were taken by Andy Crisp and John Bailey - Andy dropped just two seconds over the eleven flights and John less than a minute, very impressive performances.

The final power flight saw maxes from Johnson and Screen to take first and second places and although Martyn Cowley dropped to 2:11 he held onto third place.

On the last Wakefield flight Brian Kenny made a disastrous 1:43 to cancel out his half-minute lead and fall to fourth place after performing so consistently well through the event; Commiserations. Pete Williams made one of the three minute maxes to win the event with Ron Pollards 2:40 and Mike Woodhouse's 2:20 being enough for second and third places. With scores so close (the top nine were in the same minute) it was not clear who had won until all the times had been added and checked. Pete Williams did not realise that he was in the team until he returned with his model the news certainly eased the disappointment of missing the Glider team by such a narrow margin!

The top three in each class, subject to SMAE Council approval, will represent Great Britain in the World Championship to be held at Roskilde, Denmark, in July.



Mike Woodhouse got his 'Whiskas' Wakefield design away with a spirited launch.

- F1A Glider (11 x 3 mins, 22 flew at 3rd meeting)** 1. A. Crisp (Biggles) 32:58, 2. J. Bailey (Bristol & W.) 32:13, 3. J. Cooper (Biggles) 31:39, 4. C. P. Williams (Richmond) 31:29, 5. M. Fantham (Richmond) 31:18, 6. J. B. Spooner (Croydon) 31:17, 7. E. Drew (Bristol & W.) 30:41, 8. C. Batty (Bristol & W.) 29:52, 9. G. Madelin (Crookham) 29:50, 10. R. L. Bailey (St. Albans) 29:19.

- F1B Wakefield (11 x 3 mins, 19 flew at 3rd meeting)** 1. C. P. Williams (Richmond) 30:04, 2. R. C. Pollard (Tynemouth) 29:55, 3. M. J. Woodhouse (Norwich) 29:53, 4. B. Kenny (Vulcans) 29:45, 5. D. Hipperson (Croydon) 29:41, 6. J. Cooper (Biggles) 29:28, 7. A. Jack (Tynemouth) 29:21, 8. B. Kershaw (Wigan) 29:10, 9. A. Wells (Anglia) 29:05, 10. I. Kaynes (Croydon) 28:31.

- F1C Power (11 x 3 mins, 8 flew at 3rd meeting)** 1. R. Johnson (St. Albans) 32:39, 2. S. Screen (Birmingham) 32:27, 3. M. Cowley (Biggles) 31:46, 4. T. Smith (BAC) 30:51, 5. P. Harris (Birmingham) 30:46, 6. R. Collins (Anglia) 29:53, 7. J. Allen (Brighton) 26:17, 8. K. Faux (St. Albans) 22:20, 9. P. Bond (Anglia) 21:36, 10. A. Jack (Tynemouth) 21:26.

**FREE FLIGHT TRIALS - THE WINNING MODELS**

The winning flyer in glider, Andy Crisp, built his low aspect ratio model *Flashback 3* to show that it is not necessary to have a so-called sophisticated model to do well in normal British conditions! The model is deliberately "different" with 6.8in chord, 64in span and 80sq in tailplane and the appearance is generally "old-fashioned". Andy

says that the compact layout gives a good "bouncy" flight pattern and good stall recovery. Wing section is the Shoaf profile used by Brian Baines, in fact *Flashback 1* was a cross between a low aspect ratio version of the Baines' *Sunshot* design and Hansons *Red Swan* from the July '53 *AeroModeller*.

Still air time is round 2:10, but this can be pushed to 2:30 with a good catapult launch. Dual towhooks are fitted, a normal one for straight tow and an offset hook for circle tow. When circle-towing, a 5in diameter 18 swg wire tow ring is used to give the energy storage required for the impulse release which is achieved by plucking the tow line. Andy would have had a perfect score at the Trials but for an early D/T on one flight, from about eight feet, which lost him two seconds!

Andy has other types of glider available for use in Denmark, including a 92in span 5½in chord model with tapered tips, for which he claims 2:25 - 2:45 in still air and there is a 5in chord model in the pipe line with a tail area below 60 sq in but this will not be used unless the necessary confidence can be gained by much early morning/late evening flying before the Championships.

John Bailey, the second place glider team member used two models for the final three flights, one a double timer equipped straight tow job with a 'bent wire' tow-hook and the other a circle tow hook model. The latter is unusual in having a Russian-type hook with a ring fitted to the bottom and uses a spring loaded impulse release on the tow-lines (see photograph). This system is said to overcome the "problem" of the standard Russian hook which can unlatch in a gust. John's models are based on a Mike Burrows design of the early sixties as published in a Frank Zaic Year Book around 1965. The wing section was scaled up from that publication, and is used at 5.8in chord.

Third man in the team John Cooper uses models that are developed from Dave White's *Rolling Stone A/2*. The model in the team photograph is a 5½in chord Shoaf sectioned aeroplane with an 81in span and 74 sq in tailplane. A Russian style circle hook is used but with the difference that the catapult rudder comes on all at once as the hook unlatches, rather than being dependant on line tension. Nothing outlandish is planned as a "special" model for the World Championship: John tried a 5in chord Thomann section model before the '73 event but could not make it perform consistently. However, a new model is being tested with the B6356 section that many successful A/2's are using just now.

Power winner, Dick Johnson, flies a 7.5in chord B8353 b2 section model with fully sheathed surfaces and a box fuselage. Motive power is the inevitable Rossi 15 which is stripped, cleaned and carefully assembled before use. The draft comes from a home-made glass fibre copy of the Kretschmer propeller, which was itself based on the Cox 7 x 3.5in. Dick uses it at 6.75in diameter. The motors are fitted with his own make of brake, and various types of venturi extension. Dick noticed that there was some variation in the depths of the Rossi heads which could lead to compression changes, so he has matched all his liners to give the same piston depth at T.D.C. and matched all his heads such that any head on any motor gives the same clearance.

All this means that if a head burns out and must be changed, simply swapping the shims to a new head gives the same compression ratio.

For the Danish trip Dick has another model identical to his trials winner, and also a slightly stretched version which has not had much flying yet. The existing models can just max without lift. The week before the trials Dick was rushed into hospital with a kidney stone and had visions of having to employ a proxy flyer, but a sympathetic doctor let him out for the weekend and will be pleased to hear of the victory!

Stafford Screen, our number two in the Power team, has only been back in model flying for two and a half years after a twenty year absence - he says that power flying is much more of a challenge now than it was in the fifties. The model used at the trials was based on the Ray Monks *Veterano* design and can manage 3:20 in dead air from a 6½ sec engine run. Stafford reworks his Rossi's and mounts them in his own make of square backed pans, he also makes his own brakes and props which are glass fibre and based on the Cox 7 x 3.5in with pitch reduced to 3in. A new model is being built to the same design as his trials model and a fully cowled and stretched version is undergoing flight tests.

Martyn Cowley will be busy over the next four months because he currently has only one FAI power model. The *Hot Rats* design that took third place has the highest aspect ratio of the three models in the team photograph and is also the only one fitted with the fashionable triple fin layout.

All the power team use Rossi 15 motors fitted with brakes and have auto rudder and variable incidence tailplane systems.

In contrast Pete William's winning Wakefield model is gadget free and even has a "spring and woodscrew" propeller stop, although the woodscrew is in this case part of a cup hook! The 4.25in chord wing is covered in 1/32in sheet and uses the Gard section copied from the March 1970 *AeroModeller*, span is 57in (measured flat). The propeller is 22in diameter and is driven by 14 strands of FAI Supplies rubber. Pitch is 25in plus 3 degrees and based on Roy Wooton's ideas. The fuselage is a Laurie Burrows-produced glass fibre item, also used by Pete's fellow team member Mike Woodhouse. Pete is building a new model with slightly smaller tail and larger span, but most of his effort before the event will go into propeller trials.

The other Wakefield team members Ron Pollard and Mike Woodhouse flew the models that they used in Bulgaria in 1975. Ron's *Vitar II* design was detailed in the May 1975 *AeroModeller* and is rapidly becoming a classic. This is Ron's third consecutive team place and is very well deserved. The *Vitar* is far from an extreme design, having a 5in chord wing, but the engineering is very sophisticated and features variable incidence tail and auto rudder worked from a Seelig timer. Mike's model is his *Whiskas* design which was published in *Free Flight News* (Nov '75). The model has an auto-rudder worked from the prop stop but is otherwise a quite conventional and thoroughly well tried design.

Let's hope for plenty of good trimming weather so that our nine representatives can further improve their flying techniques and models ready for the World Championships in July.



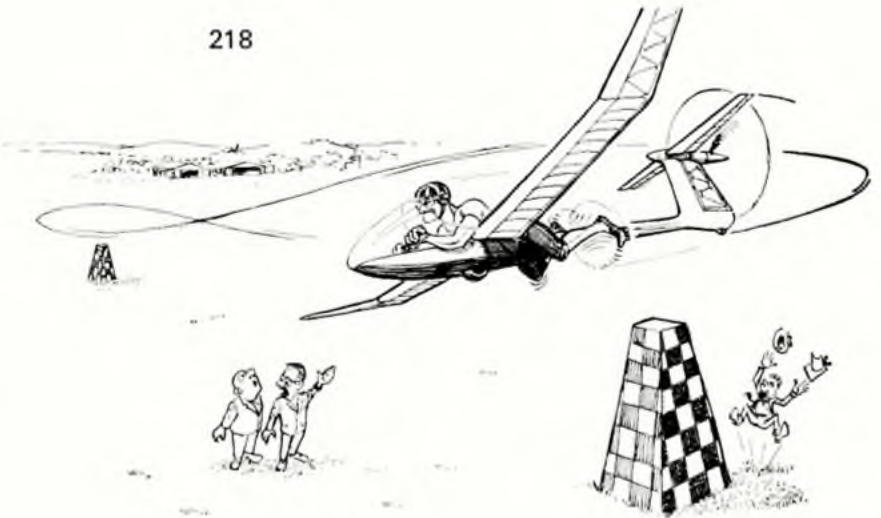
Battling their way to fill the top three positions at the third (and last) 1977 Glider Team Trials at Barkston Heath were, left to right, Andy Crisp who dropped a mere 2 seconds over 11 rounds, John Bailey who himself dropped just 47 seconds and John Cooper who has now qualified for his third consecutive glider team place.



# topical twists

by 'Pylonius'

illustrated by Sherry



"I think our bionic man will win the £50,000, but it cost us sixty million dollars to produce him"

## Man and Superman

A CYNIC ONCE said that if man were intended to fly he would have been given wings. Such a cynic would, no doubt be in raptures over the extravagant but unavailing attempts of *homo pedalo* to win that coveted £50,000 prize for man powered flight. Attempts, generally, have been more risible than risable, with national hysteria resulting when a gentle breeze wafts a fragile, tissue covered giant inches off the ground. If it were all happening in telly land instead of the harsh, real world, then Bionic Bert would be pedalling through the sound barrier in no time at all, out to catch up with Concorde for some implausible reason or other. As it is, hopes must now surely centre on a microfilm covered machine, operating in a vast, windless astrodome.

Altogether the signs, after years of futile pedalling in huge paper bags, are that poor homo saps lacks the necessary muscle power to get him up there with the birds. To give an idea of what is required, some time ago an anatomist-cum-aerodynamicist worked out what an angel would look like if it had to rely on sheer wing power rather than divine levitation. It turned out to be quite a hideous monster: a cross between Mr Universe and Ferdinand the Bull, unable to stand upright because of the colossal size of the wings, and needing a hundred yard ramp in order to get airborne. So you can forget all about Icarus: he would not have made it even if he had used epoxy instead of wax as a fixative. The only thing the sun ever melted was his brain.

The one satisfying thing as far as we are concerned is that these huge, lightweight contraptions look like model planes. But we can thank our lucky stars that this is where the resemblance ends.

## All Under Control

When I was young I used to watch boggle-eyed as the ignition coil, petrol powered model lumbered noisily and uncertainly into an air that had known nothing more disturbing over the years than the tinny whirr of frontal geared rubber motors. The models were impressive, but just a bit ludicrous, in that they used to drift across the flying field, all roar and rattle, until some obstacle, natural or otherwise, terminated the flight. This gave plenty of work to the local carpenter who carved out the large mahogany props for the power club, and plenty of trade to the model shops-cum-timber merchants which supplied the chunky planks of spruce and birch.

That such models, like huge, shaggy dogs, should have endeared themselves to the vintage cognoscenti, must go

without saying. I can almost swear to have seen the faithful old beasts sit up and beg at the sound of a kind word.

Now, modern man, if called upon to walk several hundred yards to pick up the pieces, would find his legs buckling just as surely as the legs on his hapless vintage model. But modern man has the technology to overcome his sedentary disabilities, and uses single channel radio control to keep *Brontosaurus Mk II* in a comfortable overhead position where it can be suitably worshipped.

From a pure vintage point of view this radio business seems to be a bit of a cheat, like equipping a Bleriot monoplane with an inline Merlin - but I suppose its all good, clean fun.

## Comic Cuts

"But the ribs don't touch the trailing edge, and that fuselage looks a bit dodgy with half a longeron missing, and it is by no means customary in model design for dihedral to be limited to one side of the wing only."

"Well, I built it from the kit. I can't help it if the ribs were all too short, I cut them out correctly. As for the fuselage, that's all the wood I got for it. And what's this about the wing? I thought the plan was a bit funny."

Now, I don't suppose you get that sort of thing from the reputable kit manufacturers where, given a bit of commonsense and the right end of a balsa knife, a flyable machine can emerge. It is, of course, a well known fact that the only flight made by most kit models is from the kitchen table to the dustbin. Which isn't such a bad thing when you come to think about it, for if they all got built you wouldn't be able to move over the flying field. Not that you would have a flying field very long, anyway.

I presume and hope that the grotty kit market is a fringe affair, and that all models that go into the dustbin have full length ribs and an adequate timber supply.

## Don't Be A Dope

If you want to avoid developing an acute inferiority complex keep away from Scale meetings. There is nothing more demoralising than to compare the glistening pieces of modelling perfection with your own tatty efforts. You may have thought you had done a pretty nifty job on your last fuselage, with that flashy streak of dope up the side, then you see what can be done by the real artists, and realise your own work looks, by comparison, a piece of urban vandalism.

So keep the Scales on, not off, your eyes, and stay blissfully ignorant.

*Buy and Fly the Best...*

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8in. dia. x 6in. pitch ...	49p	11in. dia. x 5in. pitch ...	75p
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# trooping



Humbrol is the world's leading brand of enamel paint for the modeller. It is used by professionals and amateurs alike in most countries of the world. Not very surprising, we think, since it really is the best available.

After all, we've had over 40 years experience to give us the ability to anticipate every new use that today's modeller and new model-making techniques are likely to demand from enamel paint.

The very concept of the small tinlet was initiated specifically by Humbrol to give the modeller the correct quantity needed for the work involved.

The model paint industry leaves no room for complacency. Today we are planning for tomorrow, constantly developing, improving and researching. Humbrol Enamel is laboratory tested to be non-toxic and really safe for use by all age groups.

We have doubled the size of our laboratories to provide the best facilities for experimental work as well as applying the stringent tests that all our paints undergo to ensure their constitution and quality are of the highest standard. All stages of manufacture are tested. Dispersion of pigment, colour matching against the standard shade, viscosity and weight per litre are checked before the manufacturing process is completed. Before being packed into tinlets tests on the degree of gloss, flexibility of coating, hardness and length of drying time are also carried out.

The authentic range is checked and approved by the appropriate military authorities, railway companies, museums or government departments in the countries of origin. We even have sections of aircraft on our own premises for the ultimate 'live' comparison.



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We consider the conditions in which our paint will be used. We must be certain it will work as well in Alaska as in the Persian Gulf. Drying time, texture and thixotropic qualities are all important factors. Furthermore it has to work fluently on an ever-increasing range of materials including modern plastics and polystyrene, new modelling clays and metal alloys – And Humbrol does.

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# RIPMAX MODELS

## RIPMAX ELECTRIC FLIGHT



### BULLET 30

develops the SAME POWER as a 29 glow engine! 10,000 rpm on a 10 x 4 prop! Flies models up to 72" span. 6-8 min. power run! Motor weight 14 ounces. Motor only, price £12.95



Super-powerful 12-pole motor takes standard '29' size power props. Uses two RIPMAX HI-AMP NICAD FLIGHT BATTERIES (rechargeable on the flying field direct from a 12 volt battery). Total weight of installed flight system 46 ounces.

### CYCLONE 15

equivalent power for a +15 motor! 11,000 rpm on a 7 x 4 prop! Flies models up to 60" span. Installed weight 21 oz. Price £4.95

### RIPMAX ELECTRIC FLIGHT SYSTEMS . . .



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 wired 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 . . . . . £48.50**

**CYCLONE 15 SYSTEM . . . . . £24.50**

### 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! be cause once you have bought the system your Battery Pack can be recharged time and time again from your car, but they 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 rapid, simplifying installation and giving a more positive linkage for exact control of movements.

## MABUCHI A1

recommended power for lightweight models up to 36" wingspan

Weight (complete with two RECHARGEABLE SUPER CELLS) is only 2½ 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 4½" dia. plastic prop.

**A1 Aeromotor Unit £3.30**  
**A1 Flight Batteries £2.05**  
**Battery Charger £4.80**

This charger works off dry batteries (four HP II cells) and recharges the A1 Flight Batteries in seconds!



## HERE'S TELCO!

DISTRIBUTED BY RIPMAX

EXCITING NEW BRITISH-MADE CO<sub>2</sub> MOTOR

UP TO 45 SECS (min) MOTOR RUN ON A SINGLE CHARGE

SEVEN — or more refills from only one Sparklet bulb.



This tiny (0.6cc displacement) motor drives a 5½" dia prop at up to 3,500 rpm. Speed is adjustable to suit conditions and size and weight of model. Weight of motor, gas tank, tubing and recharge nozzle only ½oz. Clean, silent and smooth in operation. Starts with a flick of the prop! Operating costs average only just over 1p per flight!

Complete with tank and recharge nozzle connected, prop, Sparklet holder, 1 bulb, spanner, etc. **£8.45**



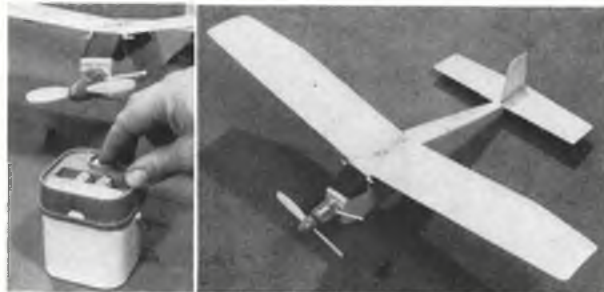
## STERLING PEANUT SCALE ideal type and model size for powering by Telco CO<sub>2</sub>

Diecut parts in selected balsa, plastic prop, wheels, fittings, coloured tissue, etc. Each kit BUILDS TWO MODELS. Each model 13" span.

SESA and FOKKER D-8 MONOCOQUE and CITABRIA INTERSTATE CADET and WACO

2-in 1 kits Price **£3.30**

Ask your model shop to show you the STERLING 6-WAY and STERLING rubber-powered FLYING SCALE kits. All, again, ideal for powering with the TELCO CO<sub>2</sub> motor!



## QUEST WISPER

24" span all-balsa model SPECIALLY DESIGNED for the A1 AEROMOTOR. Flying weight 4 ounces. Power-on time 40-50 seconds. WISPER is readily capable of long thermal flights!

All wood parts preshaped. Kit also includes wheels, dowel, rubber bands, u/c wire and A1 motor mount. Really easy to build. **Price £2.60**

The WISPER is also readily adapted to CO<sub>2</sub> engine power, as shown in this photograph.



# SEE THEM ALL AT YOUR MODEL SHOP

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



**Boyd Felstead describes the trials and tribulations of being Australia's sole representative at the 1976 World Indoor Championships, held at Cardington, Bedfordshire**

## ANTIPODEAN AMBASSADOR

IN ORDER TO represent Australia at the 1976 Indoor World Championships, one had to place at the Australian National's indoor contest. In my usual procrastinating form, I readied five models just before the event, and despite stiff competition from indoor newcomers Helen and Dave Tongway I managed to place first – but in the process wrote off four of the five models in hang-ups on the many suspended lights. The only way we could get them down was to direct a blast from a hand held electric fan: it got them down alright, but the effect was lethal!

Having thus qualified, I decided to attend the Championships in person this time. My wife Betty and daughter Lisa decided to come too and make it a world trip, so the stage was set. New models were needed – only the Nationals winner was left – so the decision was made to change design to an angled wing-post set up following a recent

trend. Now the hassle! What chord? In my usual form, much time was spent taping and writing letters to overseas friends debating the merits of lower versus higher chords. While this was going on, Betty was planning the trip itinerary which was to take in the USA, England and Europe, but during the year my resident in-laws died in rather quick succession and the domestic upheaval thereby contributed to a further delay in our getting to grips with the preparations. Time was spent making a new, rather elaborate, wing bracing jig to allow for the symmetrical wing to go with the angled wing posts, and film was poured. My usual *Aerolite* was unavailable owing to shipping problems, so I reverted to *Micro-X*. Lo and behold, out of the blue some of *Aerolite's* new film arrived with only three weeks to go, and not being able to resist using it, more time was taken pouring this new film. I had finally decided to have two designs – one a 170 square inch wing for more penetration, the other a 185 square inch wing for better days, but with a 7 1/2 in. centre chord for interchangeability.

The building programme was also delayed while I remained undecided about wood density and grain to be used, and awaited new stocks of wood from overseas. Therefore July was upon us before the actual wood cutting commenced and the midnight oil was burned consequently, copiously to complete the eight models planned – four to go direct to England and four to accompany us through the USA.

By midnight on the night prior to our departure (1st August) I still had to establish the C of G of the models, install tissue tubes and pack the models into two boxes using a new stick assembly packing method. This important aspect of preparation needed care, so I decided to have a couple of hours sleep, arise at 2 am and press on until the hour of departure. Only trouble was, I woke at 1.30 am, switched off the alarm, and promptly went back to sleep! I *did* wake again at 4.00 am and got on with the job, but the two hours lost was time I could ill afford, so come 10.30 am I was still in pyjamas finishing off packing with Betty and Lisa ready and waiting to depart at 11.00 am. We *did* make our plane

including two packed model boxes, but things were rather hectic, to put it mildly.

Our first destination was Los Angeles. My two model boxes travelled well, and immediately I sent the "England" box to Laurie Barr to be passed on to Reg Parham who had agreed to be my team manager/helper. In California we enjoyed the hospitality of the Randolphins, Rodemskys and the Romarks and I test flew in the NASA wind-tunnel (132 foot ceiling) on Sunday 8th August, surprising myself and the local flyers when one of my new models made a first flight exceeding 32 minutes! We flew then to the century-heat of Las-Vegas. Despite the "special handling" tag our first view of the model box was on the luggage turntable; an indication it had "shot" out of the chute (fortunately, on examination later, no model damage).

*continued on page 225*







## QUIETEN IT!

being sub-titled:  
 "How to knock 13dB  
 off your noise level  
 for £1 – or less"  
 by Dennis Long

The author's R/C Tyro Major fitted with an Enya 19 glow engine, Enya silencer and his home-made "add-on" silencer clipped to the fuselage side, which has resulted in a very worthwhile noise-drop.

I HAVE READ with interest many articles and reviews on silencers, and concluded that there is one main snag. To be really efficient, a silencer must contain acoustic wadding to absorb the higher frequency noise levels. The snag is that the wadding becomes soaked with castor oil, and in many cases the commercial silencers will not only become very heavy, but their efficiency will be impaired, because they cannot be cleaned out.

Having spent a few weeks pondering the problem, I decided to build

an add-on silencer which could have a very cheap replaceable wadding, and this unit is the result.

### How effective?

On my Enya 19 glow engine I obtained the following results using two large Kleenex tissues as the wadding:

Background noise level	40 dB(A)
Full revs with standard silencer	80 dB(A) (7 metres)
Full revs with standard silencer plus my unit	67 dB(A) (7 metres)

### Is power lost?

It probably is. I had to cut back on the needle valve, mainly because of increased back pressure causing the

pressure in my fuel tank (I use a silencer-pressurised fuel tank) to increase giving a rich mixture. However, I have not been able to detect any difference in the performance of the engine in the air.

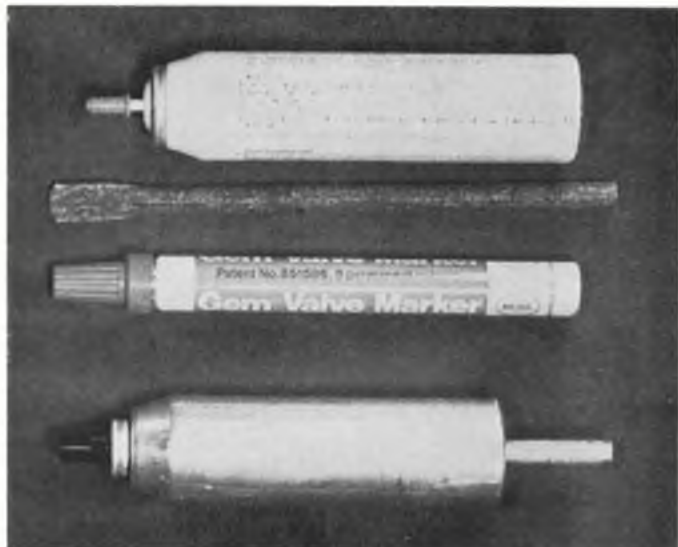
Should peak performance really be needed, you could try leaving out the second stage expansion chamber, or drill larger holes in the baffle tube. The noise attenuation will obviously not be so great.

### What are the snags?

(1) The plastic nozzle on the pen tube may deteriorate (mine is fine after five hours flying time); if it does fail you can always epoxy in an aluminium tube.



Below are the basic components of the add-on unit, namely the Ronson gas refill, piece of aluminium tube (old TV aerial), plus Pentel felt pen. At bottom is the completed, assembled unit. The 'modified' components are shown at left, together with the Kleenex tissue wadding.



(2) If you cannot get a can seal for the end of the silencer, you can use the end of the gas refill tube. The tube will have to be expanded slightly first.

#### Components required

'Ronson' gas refill	..	23p
'Pentel' pen	..	35p*
Grommet	..	5p
<b>Total</b>	..	<b>63p</b>

\*There are other types, some much cheaper.

You will also need some silicone tubing, say 3in at 29p.

**Total price 92p.** (Only this much if you waste the pen and the gas.)

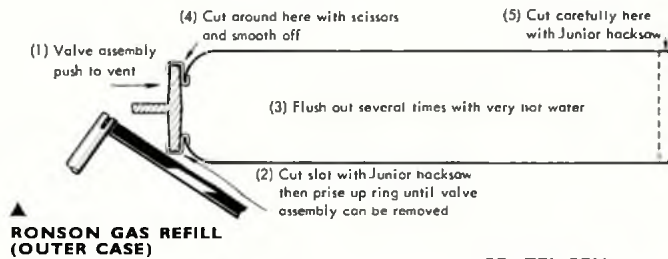
#### Caution

(1) When breaking into the gas refill, depressurise it outdoors several times first and allow it to come to room temperature between each venting stage. An extra precaution would be to cut the slot and prise open the valve end of the tube under water. I did not bother to do this though, I just worked slowly and gently.

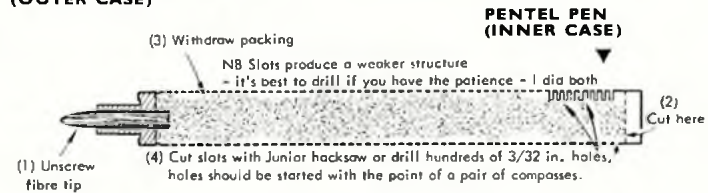
(2) When the valve is out, fill the gas refill with hot water and empty it several times to de-gas it before cutting the end off.

#### Wadding

I use large Kleenex tissues - two, folded on the third way lines then rolled onto the outside of the pen before insertion into the gas container. Without the wadding the silencer weighed 3oz.

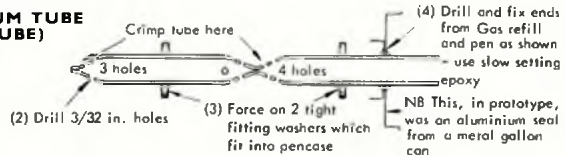


**RONSON GAS REFILL (OUTER CASE)**

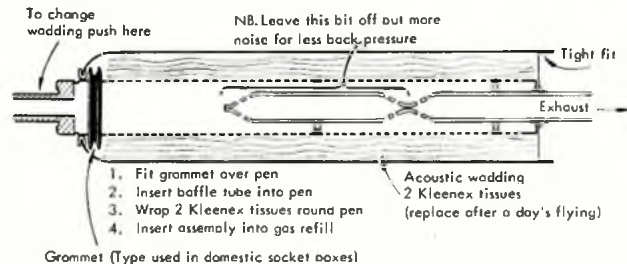


**PENTEL PEN (INNER CASE)**

#### ALUMINIUM TUBE (BAFFLE TUBE)



#### FINAL ASSEMBLY



## ANTIPODEAN AMBASSADOR continued from page 223

Next stop was Detroit where we met Plotzke & Co. of the *Balsa Bugs*. Kowalski took me to the flying session at Akron on August 14/15th where I test flew, and he set a new world record of 50 minutes 41 seconds with his beautiful "D" class model.

On then to New Jersey, where we stayed with the Radoffs, apart from several days in New York. In company of Manny and John Triolo I flew to the Lakehurst session on August 21/22nd and was pleased to meet other well-known indoor fliers with whom I correspond.

August 24th saw us depart for London by TWA. Laurie Barr was kind enough to pick up my "USA" box, so unencumbered I enjoyed a few days in London before driving to Cardington with Reg Parham. With two model boxes at Cardington I had a good selection of models for the World Championships. On day 1 our selection exceeded 31 minutes in two flights and with a change in

stick assembly, a new propeller and slightly heavier rubber on Day 2 we did 32:18 on the fourth official flight, hung in the roof at 20 plus on the fifth (looked set for 35 - 38) and did 35:45 on the sixth with the same model, which fell free from roof, with wing folded, but which "flipped" back up without damages. If the fifth had not hung I *might* have been second - if I'd steered flight six clear of pile of bales on which it landed I could have upped time to give me a 69 minute total and a fifth position IF..... like other contestants, who had the models but not the luck!

It was a happier Betty the day after, when the model boxes were air freighted back home (together with a case of surplus luggage) at a cost of £145! Her expressed view was that I had been nursing at least one model box all the way thus far, leaving it to her and Lisa to manage the rest of our bags. Cad, sir!

With the flying over, we were then able to drive to the North of England, back to Bath and Bristol and then fly to Amsterdam for the start of our three week European tour culminating in three days in Athens after which we flew home via Singapore.

A trip of a lifetime, during which I must have set some sort of a record - four consecutive weekends flying in four different high ceilings (NASA wind-tunnel, Akron, Lakehurst and Cardington). A tribute here to Reg Parham - he capably carried out some minor repairs to damage to structure and film in the "England" box, and his expertise and experience in winding and testing largely contributed to "our" quite reasonable performance at Cardington.

Incidentally, my model boxes got separated from the case of luggage on the way home and finished up in Victoria. The hassle in tracking them down and getting them home .... but that is another story.

# SNOOPY

## GOES ELECTRIC

(round the pole, that is)

Designed  
by  
JETTE LYNKGILDE

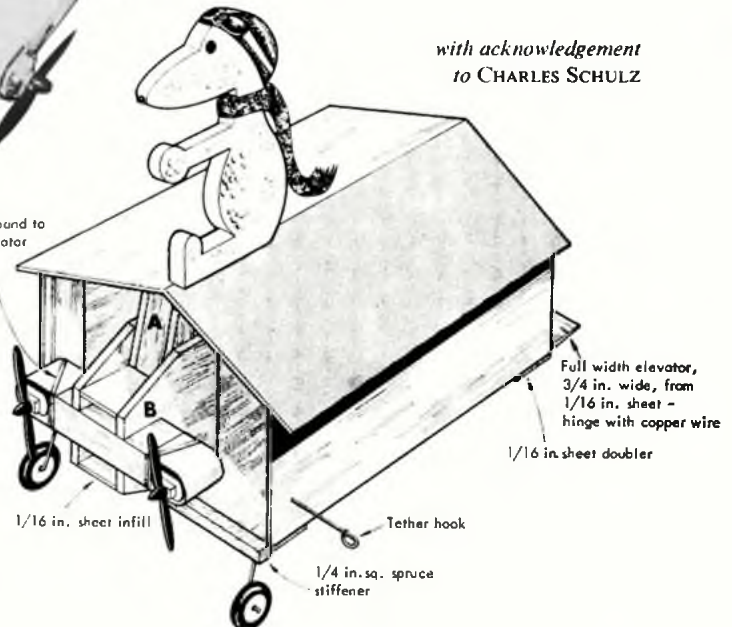
with acknowledgement  
to CHARLES SCHULZ

THE ELECTRIC round the pole scale aircraft may have impressed visitors to the 1977 Model Engineer Exhibition, the combat models may have excited them, the 'disasters' may have cheered them, but above all, the model which they *really* wanted to see was Snoopy, riding atop his famous doghouse!

And they were not disappointed! When Ib and Jette Lyngkilde make their annual trip from Denmark they always bring something out of the rut for RTP flying. On this occasion Ib flew a ducted-fan *Lockheed Starfighter*, whilst his wife Jette produced the crowd-stopping Snoopy. The flight – despite a lack of any form of airfoil or other aerodynamic aid – was spectacular to say the least. A full power take-off proved necessary, whereupon Snoopy climbed steeply at a 45° angle to quickly reach a good altitude, at which point the craft levelled off suddenly to fly around safely, with a nose-up attitude.

Construction, as shown in the

Elastic band to  
retain motor



accompanying drawings, is very straightforward – the main 'kennel' being built from  $\frac{1}{8}$  in sheet balsa, while the framework supporting the engine unit is from  $\frac{1}{16}$  in sheet. The elevator is 'hinged' to the kennel's floor with copper wire, epoxy glued on the underside thus permitting easy trim adjustment, while it is protected from accidental movement on landing by a small 1mm ply tail skid. To aid line tension, an aluminium foil rudder is glued to a strip of  $\frac{1}{8}$  x  $\frac{1}{16}$  in. balsa which runs from the floor to the apex of the rear of the kennel.

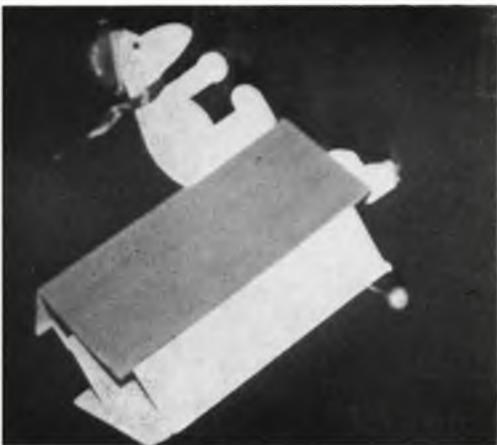
The centre of gravity position shown is correct – it really does need to be that far forward! Likewise, take care to keep the tether hook as shown – this may be bent to aid trimming.

The motors themselves (a pair of Mabuchi 26Ds – Harry Butler (Models) Catalogue No. M1) are simply held to the soft-balsa block cross piece by  $\frac{1}{64}$  in ply straps which

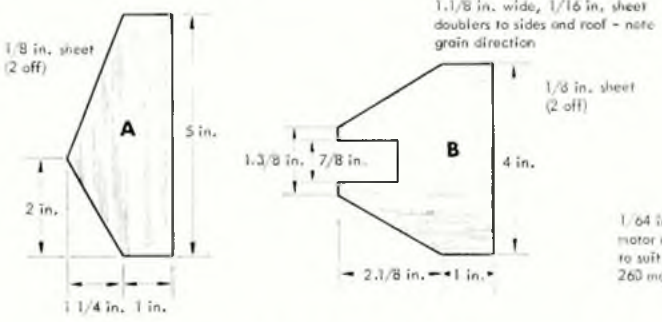
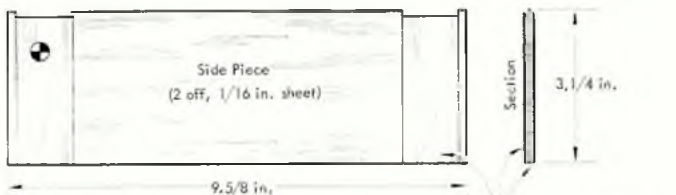
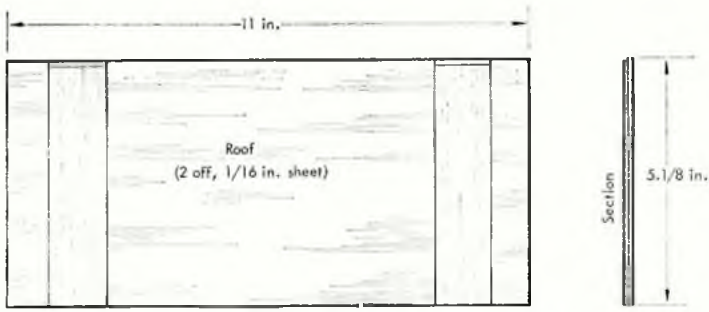
wrap around the motors. Engines can then simply be removed by sliding forward. A slot cut or drilled in these ply mounts to aid armature cooling would not be amiss.

Snoopy himself was cut from a piece of expanded polystyrene foam approximately 1in thick (laminated from a ceiling tile if you prefer) and was 'dressed' with the items illustrated. Colour scheme of the 'aircraft' is all white with a red roof – but as always, keep the weight down as much as possible – Snoopy sits aloft, held securely in place by a pair of dowels plugging into the roof, readily detachable for easy transport.

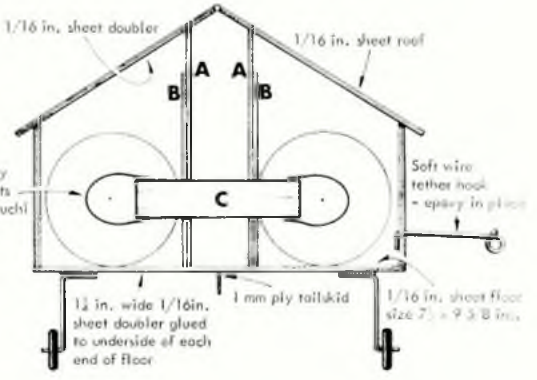
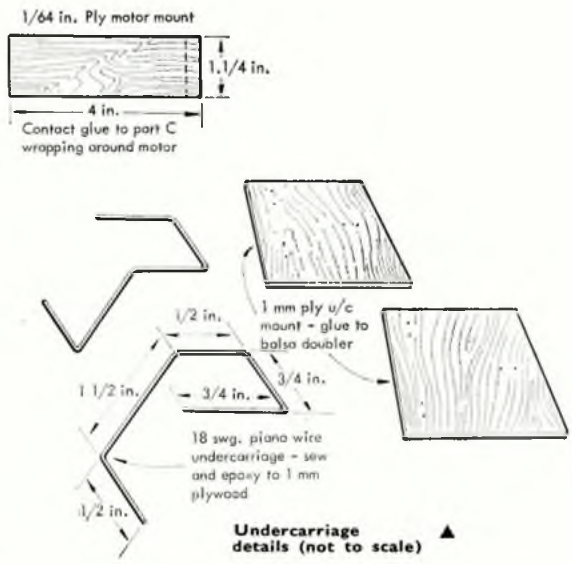
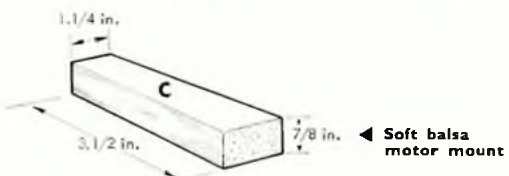
When flying at the Exhibition, quite a lot of power was required for flight. The Mabuchi 26Ds, fitted with the red plastic Harry Butler props (3 x 2in) were wired together in series, and it took 50 volts at the controller to provide a good performance on the 17 feet of lines used.



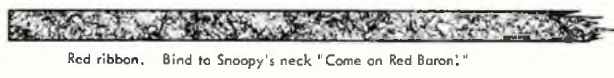
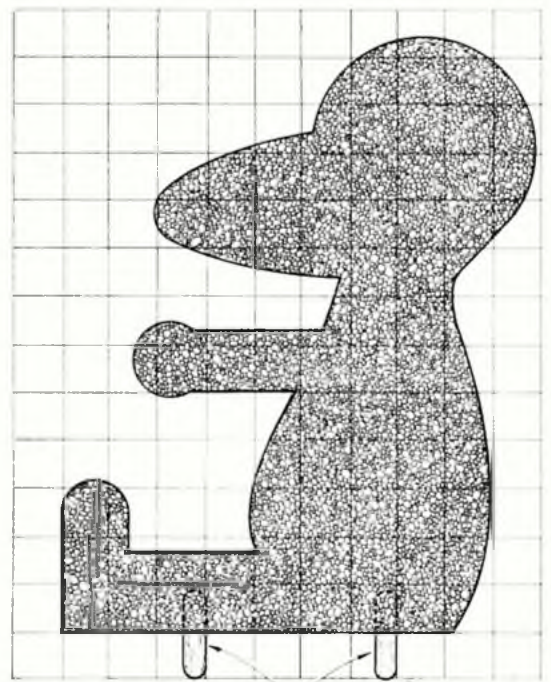
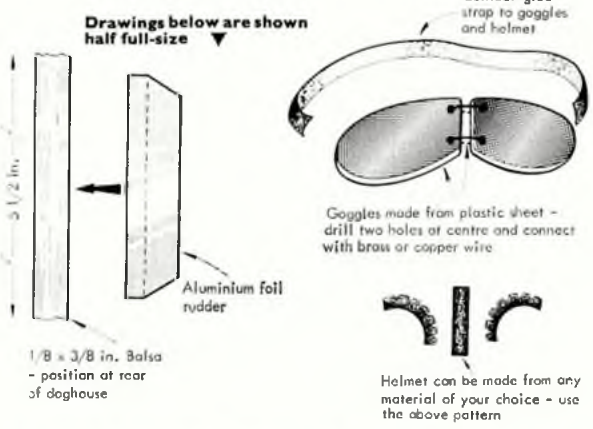


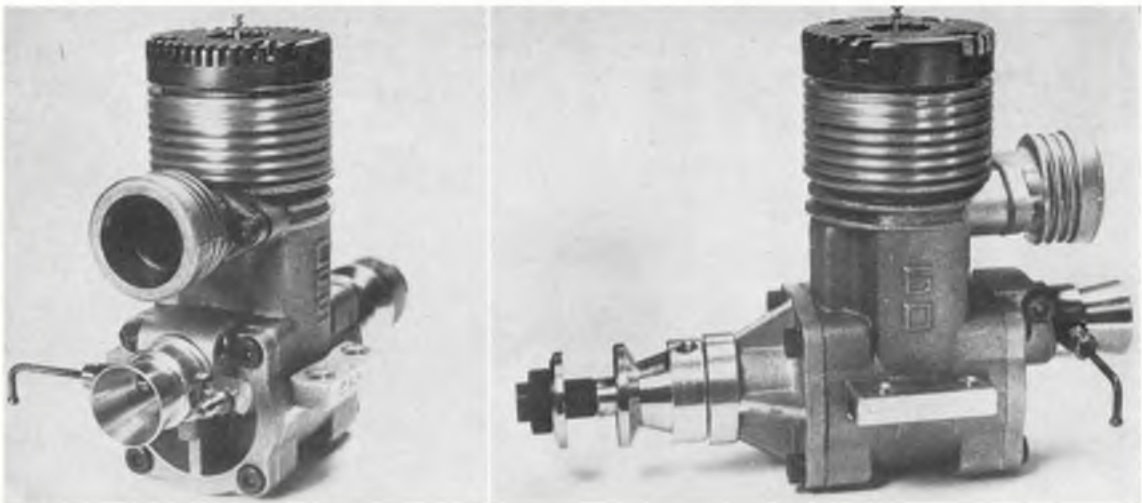


All parts cut from sheet balsa. Drawings are one-quarter scale unless otherwise stated.



Cut 'Snoopy' profile from 1 in thick expanded polystyrene using broken razor blade. Drawing is shown half full-size





## Latest Engine News by Peter Chinn

### OPS Speed 60 VAE

For this latest version of the very successful Italian OPS 10cc control-line speed engine, the manufacturer is now claiming over 3bhp at around 23,000rpm when using the recommended OPS tuned pipe. The OPS Speed-60, which is also made in a marine version with the crankcase/cylinder-block unit turned through 180 degrees to bring the drive take-off to the rear, has enjoyed considerable international success in recent years, not only in C/L speed but also in racing boats and cable cars.

The 60-VAE (*velocita-aero*) is, of course, a rear exhaust design and, like all other OPS motors, employs a Schnuerle scavenged ABC type piston/cylinder assembly. The chromed-bore brass cylinder liner has a 2mm wall thickness and an unbridged exhaust port timed to open and close at 82 degrees each side of BDC. The angled transfer ports each side remain open for 128 degrees of crank

angle which is slightly less than the third port period which, by measurement of our specimen, opens 2 deg. earlier for a total of 132 degrees. All three ports are fed by full length channels in the main casting. The ringless aluminium piston has a flat crown and plain skirt. It is coupled to a forged aluminium connecting-rod by means of a 6mm o.d. gudgeon-pin. The pin, retained by wire circlips, is solid at one end to prevent charge loss from the third port to the exhaust. The conrod is unbushed at the small-end, but has a bronze bush and oil hole at the big-end.

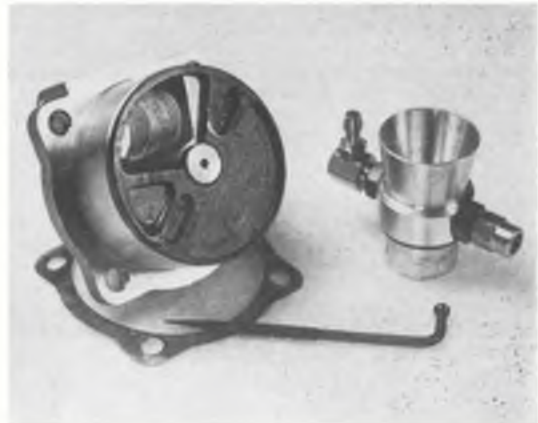
Like other OPS engines, the Speed 60 has a deep hemispherical combustion chamber with a wide squish band. The head is machined from bar stock and is secured to the cylinder casting with four Allen screws. The measured combustion chamber volume of our sample was 0.85ml., which gives a nominal geometric compression ratio of 12.5:1.

Where this new version of the OPS Speed 60 differs most from earlier versions, is in the type of rear rotary disc valve used. Nearly all previous models used a thin steel rotor disc running in its own separate chamber between the back of the crank chamber and a separate backplate carrying the carburettor. This distinctive type of valve, resembling the Zimmermann type rotary valve used by some full-size high performance two-strokes has, however, been discarded by OPS for the Speed 60 which now uses a conventional disc valve within the crank chamber, a change made necessary by the need to enlarge the intake area (for increased top end power) which could not otherwise be done without a complete redesign.

The new disc valve is of hardened steel, counterbalanced and 2mm thick (unlike the OPS 29 and 40 rear induction models which use a valve of Tufnol type material) and is mounted on a 4mm pin in a very deep backplate

Heading picture shows the latest OPS Speed 60 - the "Series 76" 60-VAE C/L speed version. Below is seen the crankcase, now open at rear to take conventional backplate.

Unlike previous OPS Speed-60 engines, the current model has an orthodox disc valve within the crankcase, instead of enclosed Zimmermann type valve.





casting containing a large well-shaped intake aperture. The rotary-valve opens fairly early and closes very late – on our example it was timed to open 35 deg. ABDC and to close at 68 deg. ATDC. The C/L speed type intake fitted has a choke bore of 11.5mm and gives an effective choke area of some 75 sqmm after allowing for the needle-valve assembly.

At the front end, the front housing contains English size, rather than metric, ball bearings, a  $\frac{3}{8}$  x  $\frac{1}{16}$  in. 7-ball brass-caged bearing at the front and a  $\frac{1}{2}$  x  $1\frac{1}{4}$  in 8-ball brass-caged bearing at the rear. The crank disc has a diameter of 35mm (crankcase i.d. is 35.5mm) and has an integral 7mm o.d. x 7mm crankpin with a 3mm o.d. x 1.1mm drive spigot for the rotary-valve. Counterbalancing is by means of unsealed peripheral slots.

All OPS 60 engines have a slightly smaller bore than the 24mm common to most "metric" 10cc units. Measured bore and stroke of our example is 23.9mm x 22.0mm., giving a swept volume of 9.870cc or 0.6023 cu in and a stroke/bore ratio of 0.922:1. There is a choice of three types of tuned pipe for this engine: one for C/L Speed use with FAI fuel and one for C/L Speed with nitro fuel, plus a muffled pipe intended mainly for marine use.

Like all OPS engines, this latest Speed 60 is a well engineered motor of robust construction. It weighs 533 grammes (18.8oz) bare and 549 grammes (19.4oz) with exhaust stub. The tuned pipes push these figures up to around 24-25oz.

### Shark CO<sub>2</sub>

To conclude the comments begun in our last L.E.N. on CO<sub>2</sub> motors, we have a description and photos of the latest of these, the Powermax Shark. It appears that this engine, assembled from parts made in Eire and the UK, will actually be known under two names: ie Shark when marketed (presumably for export) by Harden Associates and Humbrol PMS-1 when distributed by Humbrol. Our particular sample was a Harden version. This, packaged in a rectangular expanded-polystyrene block, comprises the motor ready plumbed to tank and filler valve, plus a propeller, four mounting screws and nuts, one Sparklet hull, and a charging gun.

The motor is similar to the Telco CO<sub>2</sub> described last month insofar as it uses a plastic crankcase, backplate and piston but the steel cylinder also has a plastic finned jacket instead of integral fins and a different method of speed control is used. As was noted

**OPS Speed 60 has peripheral counterbalancing slots in crankweb without sealing rim. Integral spinner assembly is available in place of orthodox prop driver.**



last month, the Telco is unusual in that it employs an eccentric crankshaft bush to vary the top-dead-centre height of the piston and thereby control the length of time that the cylinder-head intake valve remains open, whereas the Shark reverts to the more common method of rotating the screw-in cylinder in the crankcase to raise it or lower it in relation to the piston spigot.

Both motors weigh approximately the same, i.e. they both checked out, with tank and plumbing, at 13.4 grammes (0.47oz) less prop. but, with

their respective props, the Shark was slightly lighter: 15.5 grammes (0.55oz) instead of 16.5g (0.58oz).

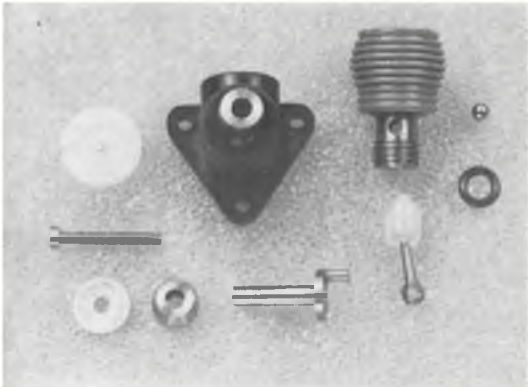
The Shark's crankcase has a three-point radial mounting flange at the rear and, in place of the Telco's eccentric crankshaft bush, is fitted with a bronze crankshaft bush. The crankshaft itself has a 2.5mm (nominal) journal diameter and a 1.5mm crankpin on a 6.3mm dia. crank-disc.

In contrast to the quite comprehensive information leaflet issued with the Telco engine, the Shark has a very simple diagrammatic instruction



**Shark (otherwise Humbrol PMS 1) CO<sub>2</sub> motor complete with prop and CO<sub>2</sub> tank. Engine has slightly larger capacity than Telco and Brown units.**





Parts of the Shark CO<sub>2</sub> motor. Coarse external thread on cylinder screws into crankcase and rotates to vary gas admission through valve in head.

sheet with no technical data whatsoever. However, it was observed on stripping the Shark that it had a longer crankthrow than the Telco and we therefore took the trouble to check its stroke with a 0.01mm depth micrometer. This indicated a stroke of 4.63mm (say 4.6mm nominal) compared with the Telco's advertised 3.8mm (measured 3.7mm). The Shark's bore was also fractionally larger at 4.6mm instead of the Telco's quoted (and checked) 4.5mm.

The effect of these differences is to increase the swept volume of the Shark's cylinder from the .060cc (quoted) or .0588cc (measured) of the Telco, to .0764cc (measured) an increase of approximately 30 per cent. This may mean that the Shark will be capable of delivering greater power than the Telco on a wide open speed setting but, of course, a greater volume of gas would be consumed in so doing, which would mean a shorter power run, although the Shark has a very slightly larger capacity tank: it has a fractionally smaller o.d. (12.5mm instead of 12.9mm) but is longer (44.8mm instead of 41.6mm) and checked out at 3.1ml capacity against 2.8ml for the Telco).

Actually, it has not been easy to accurately establish performance levels obtainable with either the Telco or the Shark due to the fact that the CO<sub>2</sub> content of individual Sparklets bulbs varies a great deal. Some variation in the performance of the motors themselves has also been evident with early production samples. It seems that this has mostly been due to unforeseen manufacturing difficulties with the nylon pistons, the dimensions of which must be controlled to within extremely narrow limits. A piston which "grows" after removal from the mould will be too tight in the bore causing excessive frictional loss and a reduction in power. On the other hand, if the piston is not a close fit within the cylinder and allows gas to escape

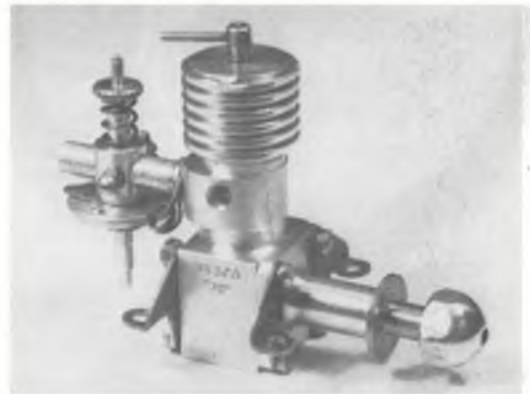
past it, this, obviously, will also cause a loss of power.

However, we are assured that these problems have now been overcome with changes of material and better quality control and, seemingly, one can look forward to more consistent performance with these fascinating little power units from now on.

#### COLLECTORS' CORNER

In the December L.E.N., a passing reference was made to the Wilsco .79cc diesel. This prompted John Neal, of Ernesford Grange, Coventry, to send along his own example of this

A little-known British diesel made nearly 30 years ago, the Wilsco "79". Plastic bowl type fuel tank missing on this specimen.



Parts of the Wilsco "79". No castings were used in its construction, all major parts being machined from aluminium, steel and cast-iron.

engine, recently acquired, with a request for further information about it, so we are publishing some photos of a Wilsco "79" which we examined back in 1956. Even then, the engine was practically unknown but it appears that not very many were made, the unit being "in production" for a few months only during the summer of 1948. It was built at Balsall Common, near Coventry, by a Mr Williams and a Mr Scott (hence the name "Wilsco") and was sold by F. C. Parks & Company of Leamington Spa.

The Wilsco was, as the photos show, a 3-port type two-stroke, as were many earlier engines, induction being via a piston controlled port at the rear of the cylinder, the transfer port being at the front with an exhaust port each side. The engine was of machined construction, no castings being used and had a nominal bore and stroke of  $\frac{1}{2} \times \frac{3}{16}$  in, giving a swept volume of .0483 cu in or .7918cc. Among the engine's unusual features were its separate mounting brackets and a novel cutout-cum-throttle device.

John Neal mentions that if any collector is interested, he is open to offers for his "almost original" Wilsco. His address is 16 Joe Williams Close, Ernesford Grange, Coventry CV3 2CC.

# FROM THE HANDLE + FROM THE HANDLE +



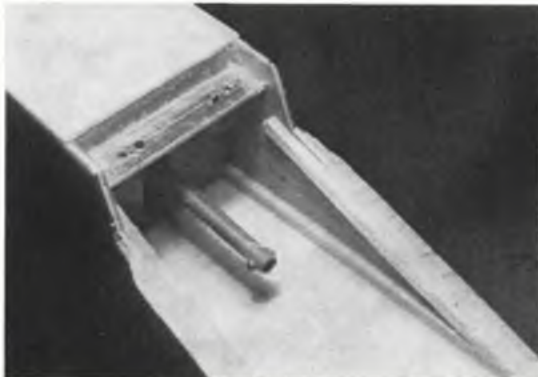
## AEROBATICS

by Glen Alison

AS A FOLLOW ON to last months feature encouraging you all to enter stunt competitions, you may find that a great help in this direction is to use an ammeter as an aid to engine starting. Nothing looks sillier than a competitor furiously trying to fire-up a reluctant motor, and conversely nothing gives greater moral support than a first flick start, and an ammeter can help you achieve this confidence boost. The best ammeter to choose is one with a range of 0-5 amps for full scale deflection, although other ranges can be used. So what does the ammeter tell you?

- | Symptom                       | Cause  |
|-------------------------------|--|
| 1. No reading                 | <i>Circuit incomplete</i> due to:<br>a) Plug blown<br>b) Bad connections to plug, engine or battery<br>c) Fractured lead.        |
| 2. Full scale deflection      | <i>Dead short</i> caused by:<br>a) Plug clip touching cylinder head<br>b) Bad insulation on leads<br>c) Faulty co-ax connection. |
| 3. Higher than normal reading | <i>Plug wet with excess fuel</i> (cold element draws more current).  |

Arrow shaft pushrod seen on the author's stunter- note the brass bushing used, as shown in Figure 2. In the case of detachable wings, the narrow slot in the fuselage former is used to retain pushrod on flap horn - otherwise use soldered cup washer.

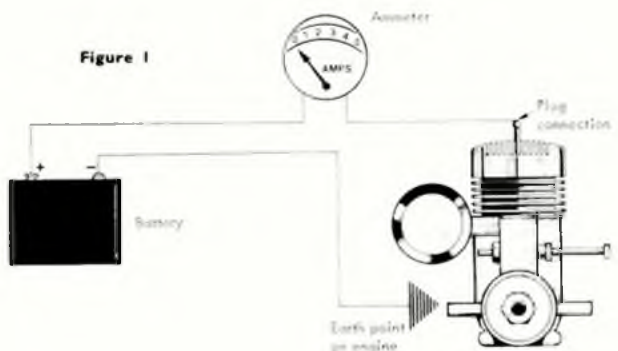


- |                   |   |
|-------------------|---|
| 4. Low reading    | <i>Battery condition low</i><br>Meter may read correctly initially but reading moves slowly down. |
| 5. Normal reading | Learn from experience with each type of plug.   |

It usually pays to settle on one particular brand and type of plug that you find satisfactory in order to fully familiarise yourself with its normal current consumption, and thus be able to recognise the deviations listed. Typical readings are 2-3 amps, which is why I recommend a 0-5 amp scale. If you use a meter with a larger scale, then the needle movement for recognising a wet engine becomes too small. A suitable meter can be purchased from a good model shop specially for this purpose. Cost is quite low at around £1.25 - but avoid car accessory shops, where most meters cover a 0-50 amp range. *Figure 1* shows how easy it is to wire up the meter.

### PUSHRODS

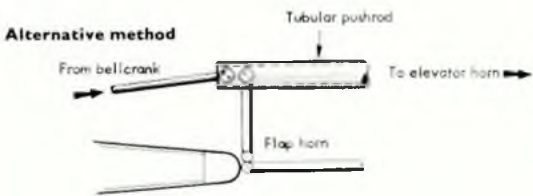
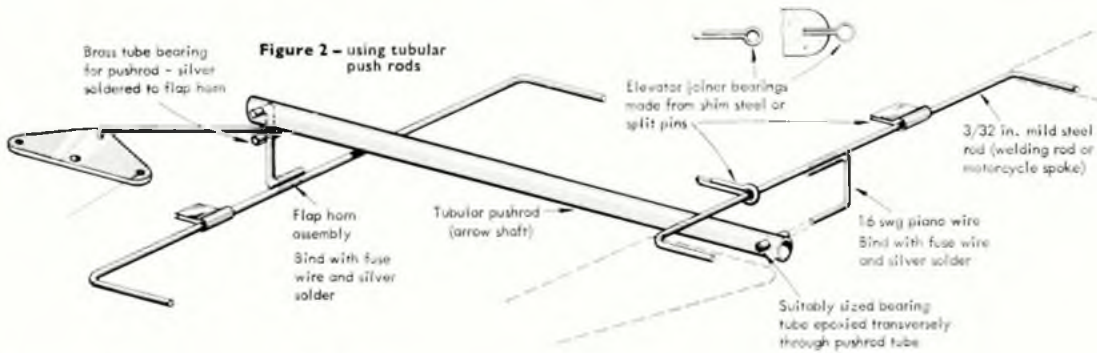
Elevator pushrods are usually made of piano wire, which although strong and ideal for pulling loads, suffer from bowing when pushing because of their relative lack of stiffness. This can cause disastrous consequences, for although the controls may seem satisfactory when testing on the ground, the elevator can be 'blown down' by air pressure when flying due to the pushrod bowing, and thus the aircraft loses its turning capability. This is most noticeable when, for example, flying consecutive loops in wind, when it will be found that the loops will tend to increase in size no matter how much movement you put on the handle. You do not need me to tell you what the results of that will soon be! So what can be done? Firstly one can incorporate guides in the fuselage to support the rod and prevent the bowing by effectively sub-dividing it into shorter, and thus stiffer, lengths. The only trouble with this system is that if not carefully done it can lead to excess friction and binding of the controls, due to the



An ammeter built into the tool box is a very useful accessory - see how the plug being tested shows a 3amp reading. If it were wet (i.e. engine flooded) a higher reading would be shown. Use the same brand of plug and learn its characteristics.



# FROM THE HANDLE + FROM THE HANDLE +



Note: pushrod may be retained on flap horn with cup washer soldered on

pushrod rubbing on the guides. A more sophisticated solution is to use a tube, which is far more efficient as a strut (which after all is what a pushrod really is) for a given material weight. The larger the diameter of the tube, then the greater the stiffness. But where do we get these nice light stiff tubes, and do we use them? Toxophilly is the answer! Well aluminium and glass fibre arrow shafts to be precise. They are ideal, at about 5/16in diameter, and can be bought without the 'point' and 'feathers' in suitable lengths.

A suitable method of forming the ends is to insert a brass tube transversely through the tube and to secure it with epoxy glue. (Figure 2) This has the added advantage of providing a much better bearing for the horn to run in, and thus gives a longer life. It also simplifies the horn itself.

## TRIM ADJUSTMENTS

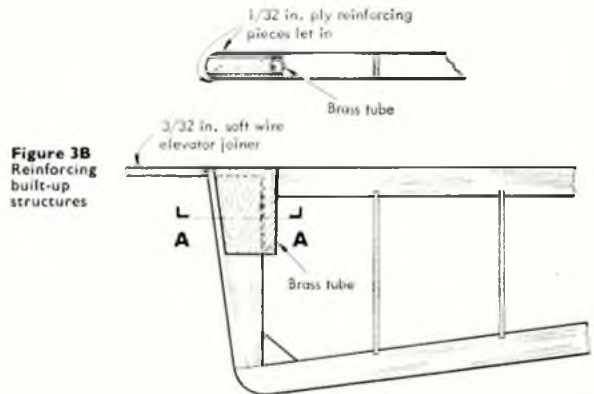
I make my horns/elevator joiner using 3/32 in mild steel welding wire, which again has the advantage of providing stiffness without the springiness associated with piano wire. This makes adjustments much easier to carry out when one has to 'tweak' the elevators or flaps to get a trim change. However, always silver solder the two pieces of wire: you will only use soft solder once...

While on the subject of making a trim change by tweaking the control surfaces, have you ever had the frustrating experience of the horn joiner breaking through the surface, or at least coming loose? One must reinforce the area locally so that the forces are evenly distributed - Figure 3 shows a practical solution.

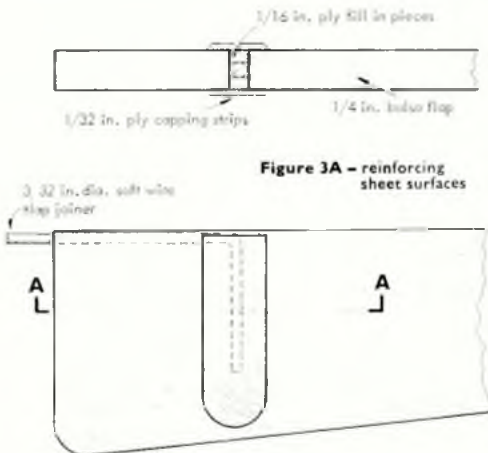
Brian Dyke of St Albans likes large stunters but also has a large family, so to overcome the problems of transport with the big models, he not only makes the wings detachable, but on his

latest aircraft the wings are two-piece as well. This has been achieved by using aluminium stubs protruding from the fuselage which fit into appropriate sockets in each wing - the assembly is locked together with screws top and bottom. He has devised a clever method of driving the flaps which require a special linkage as they are detachable with the wings.

The model, named *Cutlass* has a Merco 61 and features a 23 per cent thick Al Rabe type wing section. The area is 830 sq in and it features twin fins plus a tricycle undercarriage.

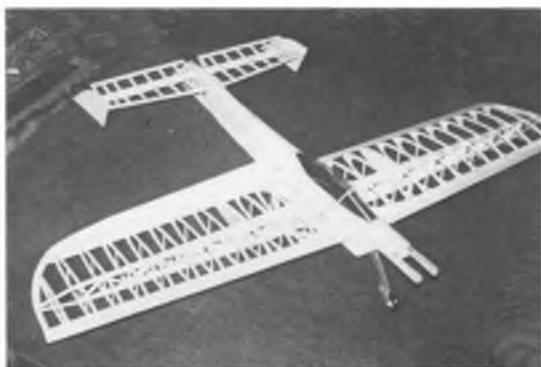


Marco Beschizza of the St Albans club has converted the Micro Mold Centrefire R/C aerobatic model to control line stunt use - a very straightforward operation. The kit features an ABS moulded fuselage and veneered foam wings, so construction is definitely in the quick-build class. Very attractive model - accentuated by the stylish colour scheme.





# FROM THE HANDLE + FROM THE HANDLE



Top left is Brian (Mr Stuka) Dyke's latest 'biggie', conforming to the current trend of twin fins and tricycle undercarriage. To the right is shown one of the detachable wing panels - and just take a look at that beautiful structure. A work of art. Below that is a close-up of the fuselage, revealing the aluminium stubs onto which the wing panel is bolted. Note too the holes for the locating dowels at both leading and trailing edge positions. At left is the Super Tigre 46 mounted on Marco Beschizza's MM 'Centrefire' kit. The engine mount (supplied in kit) bolts to a plywood former bonded to the ABS fuselage. Note horizontal joint lines of fuselage - easily disguised by the paint trim.



## COMBAT

by Richard Wilkens

TAKING OVER the combat section from Dave Clarkson's Column is quite a challenge, as I think we have all regarded him as a good, accurate reporter of current control line trends in the past - I only hope I can match his performance!

As the combat season has not yet begun, perhaps a few words are necessary as to the developments we can expect to see in the coming year. I do not think that there will be another complete wing-material revolution for some time; the change from balsa, spruce and nylon covered wing frames to a foam polystyrene, balsa spruce and paper covered wing was a major advancement. Flight performance was greatly enhanced by the efficient aerodynamic shapes made possible by the use of foam, while the spruce spars at present look after the "clap hands" problem of model wings folding during loops. Balsa, spruce and ply combinations remain easy ways of constructing a centre rib. However, these elements will no doubt be refined and we should see the "combat pan"; a re-usable centre rib made from wood, alloy, nylon or glass and carbon fibres onto which the motor, bellcrank and tail unit will be fixed. Easily replaceable wings and spars will then be attached to this centre rib and replaced when damaged.

The same centre section could be used to compare wings of different area and section. Tapered wings, which should prove more efficient, will become more popular. Covering the wings with paper adds a good deal of strength, but still takes time and we may soon see uncovered foam wings sprayed with polyurethane fuel proofers. These will disintegrate at the slightest knock, but will save an ounce

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# FROM THE HANDLE + FROM THE HANDLE -

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High rpm and nylon propellers do not mix - and the situation is aggravated by high temperatures too. Not only is the prospect of a blade breaking off daunting from the safety angle - but the resulting vibration is a model-killer too. Note how a flung-off blade has caused the engine bearer assembly to break clear of the model - complete with trusty Super Tigre. There is a growing demand for safety straps anchoring engines to bellcrank assemblies.

or two on model weight and thus increase the performance - if only for a few moments.

The new Cox Conquest is now available in Britain and the Fox 15 BB will shortly follow. John Hammersley will soon be reporting on the Cox's performance and its suitability for FAI Combat, while the new Super Tigre X 15 ABC has yet to be tried, along with the new straight 7 x 4in Tornado nylon props.

Charlie Johnson's article in *Model Aviation* reports that an 8oz FAI combat plane has been built in the USA with a 280sq in wing powered by an old style Fox 15 on 60 per cent nitro fuel. I wonder if you can feel it on the end of the lines? It features old style balsa/nylon construction. The article also indicates that the Americans are already building foam models along the lines mentioned above and at last they are getting bigger. The wildest fast combat ship at the moment is Rich Brashers *Rotation Station* which is supposed to fly 100 loops per minute with a Fox 35 at 120 mph - its foam wing has an area of 460 square inches.

Dan Rutherford won combats biggest prize - \$1200 at the *Bladder Grabber* contest in Seattle, and the organisers expect to put up a \$3000 prize next September! That is enough cash to sponsor and support a four man British team on a 2-3 week tour, if they win, so if you fancy a trip to little old USA - get practising Fast combat.

**Commercial:** There will be an Outlaws combat shop full of goodies next to the combat circle at all big contests this year, so look out for it, and when the *Superstar 5* plan becomes available it will include details of a new control modification whereby the amounts of up and down elevator movement can be set independently of each other in seconds on the flying field enabling the model to be trimmed for minimum-turn radius, just off the stall, in all wind conditions.

## DISPLAYS

A stunt and combat display will take place in Wembley Stadium as pre-match entertainment for the FA Cup Final on 21st May, along with an American 200 - 300 piece band. The stunt display will be flown by Jim Mannall and other CLAPPA members, and the combat by Richard Evans, John Hammersley, Mick Lewis etc plus about 16 helpers - with pilots, models and streamers in the colours of the two teams playing in the final.

A small demonstration has already taken place there for the benefit of the Football Association, Wembley Stadium officials and both television companies, as well as the members of the display team. The Stadium seemed surprisingly small and two circles with models on 60ft lines can only just be squeezed in between goal posts. Large, Slow Combat planes with 35 glow motors will be used and the show will be 'fixed' so that it contains all the best combat action, including some nice crashes, to please the 100,000 strong crowd.

Meanwhile, John Berry and members of the Stockport Club have already performed a combat display for a football crowd, and he provides the following information:

"On a cold November night ten members of Stockport Model Aircraft Club found themselves standing in the middle of a Football Stadium surrounded by a bemused crowd of football supporters.

It all started when I, in the course of my work, was talking to a director of Stockport County Football Club. As our club desperately needs some good publicity to help negotiations with the Local Council I asked if he would let us give a display to the waiting crowds before one of Stockport County's football matches. The offer was received with interest, and I was promised the matter would be put before the board at their next meeting.

At the next model aircraft club meeting the chance of doing the display was discussed. Initial reaction was good especially from those who realised the potential of such an exercise, but there were some who thought it would be a flop. A quick count of heads of people willing and able to provide a good display was made, and a decision taken to provide a display if invited, which we were.

The game was to be a "friendly" with a top first division club (Manchester City) and there would obviously be a large crowd. The problem was that the date only gave us two weeks to prepare.

As Stockport are 100 per cent control line competition flyers, it was decided to show a simulated control line competition. Most club members fly team racers but clearly the general public would not find them interesting - combat was naturally the best choice.

Ian Hutchinson, then our club chairman met the directors of Stockport County to discuss the display and look over the ground, and was surprised when they asked him what times and facilities he wanted, there was even talk of extending the half-time period to suit our requirements (this was possible due to the match being a friendly), an offer we did not take up. It was felt that a half-time demo would be too complicated with combat models, especially as this was our first display of this kind. It was decided to fly before the match, and that we would make up our own schedule. A problem that was highlighted when standing in the middle of the football pitch was the closeness of the stands making safety of paramount importance.



# FROM THE HANDLE + FROM THE HANDLE

We sorted out the details at our next meeting. Our team would consist of four pitmen, one reserve pitman, one carnage collector (hopefully for bits of cut streamer), a PRO, a co-ordinator and one reserve pilot, the latter being one of the original pitmen. Graham Hayes and myself were to perform the flying.

The display schedule turned out as follows.

- 6.45pm Enter ground through player entrance, set up models, prime motors and check all glow plugs, and most important, carry out safety checks on all equipment, especially lines and connections (no warm up).
- 7.00pm Start motors and commence combat flying.
- 7.15pm No more models to be launched from this time.
- 7.20pm Clear pitch for oncoming players. All loose material to be gathered and models and lines taken to one side for winding up.
- 7.25pm Store all gear.
- 7.30pm Take seats to watch football match.

Simplicity was to be the key word. We decided on having no warm up period as we thought that the crowd would not appreciate noise and no action. Engines had thus to be set up beforehand, and of course be reliable motors. We used five Super Tigre G15 F1's and one Cox 15 Conquest; all proved extremely reliable.

Graham and myself test flew several models on the Sunday before the match, and selected six models with the best characteristics for the display. Graham is an ideal partner for a combat display for although he is a fine flier (he won a major competition in the States this year) he is a non-aggressive pilot. Anybody who has tried friendly combat knows that sooner or later the loser tries every trick in the book to get on his opponents tail to take cuts . . .

One thing the test flight did show up was that British pacifiers do not like cold weather – fortunately when Graham was in America he swapped some British dummies for American ones, which proved to work well in cold weather without the need to pre-heat the fuel.

On the night, we were ready to fly by 6.55pm after unpacking and setting up in 10 minutes. The next five minutes seemed like an eternity but the crowd (who were just filtering past the turnstiles and filling the ground) did not give us any "stick".

We did get an immediate reaction however when we started flying – I was first up and to my misfortune I found that I had a bright red streamer on my model – not the sort of thing to wave in front of a thousand light-blue clad Manchester City Supporters . . . The day was saved when Graham came up with a blue streamer on a few seconds later. After a sample of usual football crowd "humour", they actually were quiet, watching the models brilliantly picked out in the stadium's floodlights, and cheering as the red streamer was cut to ribbons. The biggest cheer came when Graham ran out of ideas and put his model vertically into the ground; this was after a solid ten minutes flying and really came on cue. The spare that was kept running all the time was quickly put in the air and the display continued. At the end we packed up quickly and many people clapped us off the pitch.



Ira Keeler's WAM Class A combat design shows current US approach (models flown to FAI rules but with up to 3.5cc engines). Single boom tail mount and large sheeted leading edge still popular - but giving way to foam.

We all decided afterwards that the display was well worth doing if only for our own enjoyment. We could have used "props" such as specially coloured models and streamers, or borrowed suitably-labelled tracksuits for each team to give the crowd more to cheer for, but these things would only have complicated the successful display which was carried out at such short notice."

## DUTCH COMBAT INTERNATIONAL 1977

The sixth consecutive such meeting will this year be held on August 6/7th, courtesy of the host clubs of EMC, Elst with de Vleermuizan, Rotterdam and of course Daedalus, Amsterdam. Venue for this most popular and successful contest will be the municipal sports park of Ameroregen, which lies in the rural wooded area not far from Utrecht. Just 100 yards from the contest site is the town's open air swimming pool (with showers) to which contestants and supporters have free access – and if the weather is like last year's 'do', then that is good news indeed! For further information and entry forms note the new address: Rob Olijve of Oranjestraat 51, Elst (Utrecht), Holland.

Let's hope that there will be even more competitors from an even greater number of countries to make this a truly memorable contest. Certainly the organisation is more than capable of providing an excellent competition.

I welcome any reports on model developments and other points of interest related to combat flying. These should be sent to R. Wilkens at The Laurels, 3 Rack End, Standlake, Oxon., but I am afraid I cannot enter into any private correspondence or become a combat's "Marjorie Proops"!

At left: all that empty space, and not a model in sight! Actually this is to be the venue for the sixth Dutch Combat International - see text for details of new venue/organiser. At right is a scene from Merced, California. Doss Porter and Grant Miller (finished 4th in Senior Combat at the US Nats) are ready for action before the judges' table.





# CLUB NEWS

NOW IS THE TIME of year when the countryside comes alive. The warm sun glistens on the newly laid stretch of motorway, along which the juggernauts merrily judder: a new string of gleaming pylons march briskly over the prairie-ised fields; and the urban sprawl livens into a quick gallop. The problem is to find room to fly a model in all this fearful congestion, where every open space is under some sort of threat or other. All we can do, I suppose, is to keep a low profile on noise and nuisance, and be ever more resourceful.

Jim Dobson, PRO of the Nottingham MAC, has been kind enough to thank us for the write up we gave the club in the January issue, for it had the positive result of roping in a few new members. This reassures me that people do actually read these columns! Anyway Mr Dobson informs us that the club intends to hold a mid-Winter Stunt Competition. By the time we appear in

print this piece of news will seem just plain historic, but we include it in order to demonstrate the sort of enthusiasm generated in the club, for members were intent on holding the event even if it meant the use of snowploughs. Also following the example of another well known Midlands club, they intend to hold a building competition to be judged in three stages: construction, finish and flight proving. Such projects can be very useful in giving members a central interest, and in encouraging the less enthusiastic to build a model. Not much encouragement needed, though, for members to get weaving on the AeroModeller EZB indoor model feature. They find it quick to build and fun to fly, just the right kind of initiation into the delicate Indoor arts. Another venture about to be launched by the club is a quarterly newsletter. We look forward to seeing it.

From Norman Ashford, Chairman and PRO of the Broadlands C/L Group, we get a somewhat despondent plea: how to hold on to members? Seems that about a dozen each year vanish into the great beyond in spite of all the attractive ways they are beguiled throughout the year: demonstrations, talks, quizzes and what have you. But we may relieve some of Mr Ashford's gloom by telling him his situation is far from unique. It is a fact of model life that a club, be it large or small, is only as strong as its nucleus. For it is that keen, hard core that does all the administrative work and most of the flying. But it depends what you want: a social club or a model flying group. Most of the keen flyers I know do not give a hoot for quizzes and demonstrations, only the shortest distance to the flying field. I do not say that the casual or semi-committed modeller has not a place in club life, but it is not likely to be a permanent one. Meanwhile we hope the club will carry on cheerfully with its programme of building lessons, displays and demos. The Broadlands club, by the way, is based at Norwich.

Whatever the C/L situation might be in Norfolk we can only hope it is full of promise in the central Somerset area, for we have a request from Mr W. A. Higgins, of 21 Orchard Way, Shapwick, Nr Bridgewater, Somerset, for any C/L types in that pleasant part of the world to get in touch with him. All age groups invited: sport and contest.

Bath MAC, in rhythm with the state of the national economy, spent 1976 largely in the doldrums, confesses Mr Stuart A. C. Lodge, the PRO. But all did not go down the plughole, we are assured. Much did take place in all that fine flyable weather, not least two public flying displays at school fetes. Much appreciated, and no noise complaints – the decibel department being under strict control. Back to drought level bath water on the contest front, though, with nothing much achieved in either F/F or C/L – the only exceptions being a high placing in the Dutch Combat International by Ernie Burles, and the string of successes of indoor star, Andrew Moorehouse. Taps full on for 1977 it is hoped, with plenty of contest activity, and a commensurate increase in club flying, which, as Mr Lodge points out, is the basic function of the club. One encouraging sign in the club is the way members are diversifying their interests to cover a wider spectrum of the modelling scene. This should make for more all round participation in club events, and give reason to polish up the club store of silver trophies.

Arthur Dempsey, the newly appointed PRO, for the Tynemouth MAC, admits that the poor coverage the North East receives in these columns is due to lack of information supplied and not to any dereliction on our part. By way of making amends he sends in a quite long club report which, he hopes, we can reproduce in full. Club membership has now risen to 50, thanks to regular

## YOUR CLUB ?

If your club is not listed – or if the secretary has changed recently – then please let us know and enable an accurate listing to be achieved. Amendments will be printed at the soonest opportunity.

### EAST YORKSHIRE

#### Bridlington & District M.A.C.

Allan Stork, 8 Victoria Cottages, Flamborough, Bridlington, E.Yorks YO15 1JU

### ESSEX

#### Anglia MFC

A. R. Tims, 66 Highlands Drive, Maldon, Essex

#### Brentwood Model Flying Club

G. D. Cullis, 14 Ongar Road, Brentwood, Essex

#### Colchester MAC

D. G. Sargent, 17 Old Heath Road, Colchester, Essex

#### North Essex Radio Control MAC

D. J. Hewitt, 1 Church Street, Sible Hedingham, Nr. Halstead, Essex

#### Southend RFC

B. E. Sounes, 1 Avondale Road, Rayleigh, Essex SS6 8NJ

#### Southend & Area C/L MFC

L. J. Heinrich, 58 Briarwood Drive, Leigh-on-Sea, Essex SS9 4LD

#### South Essex Model Aircraft Society

A. Lloyd, 5 Recreation Walk, Ramsden Heath, Billericay, Essex

#### Witham MAC

Peter Burgess, 12 Debden Close, Witham, Essex

### GREATER MANCHESTER

#### Sharston MAC

A. Morris, 49 Knowsley, Crescent Offerton, Stockport, SK1 4JB

#### Bramhall & District R/C MFC

D. E. Beaumont, 74 Osborne Street, Lower Bredbury, Stockport SK6 2DA

#### Oldham & District MAC

S. Witherford, 39 Cheltenham Road, Alkington, Middleton, Gt. Manchester

#### Stockport & District MAC

M. Daly, 26 Castle Street, Edgeley, Stockport SK3 9DA

### GWENT

#### R. T. B. British Steel Co. Ebbw Vale Model Engineer Club

F. O. Probert, 20 Heathfield Close, Garnlydan, Ebbw Vale, Gwent NP3 5EG

club meetings of the 'live' variety, that is, slide shows, lectures and novelty competitions. Contest wise, the club is right up there nationally at the moment, with Alan Jack leading in the Wakefield Team Trials with a 22:25 min. score after 8 flights. Ron Pollard, twice British Team member and model builder par excellence, is lying in with a chance in 9th position. There are still three flights to go – should be an exciting finale. Forsaking Wakefield for FAI Glider – and a Russki designed model at that – Ron Pollard was again on form at the Northern Area Winter Rally in January. He placed first with a three flight total of 8 min. 10 secs. Alan Brown was 3rd in Hand Launched Glider at the same event. On the C/L front Dick Wilson and Ian Gardner won the FAI team race at the Northern Area Rally, whilst another first place. Class B, went to Alan Smith and John Hudson. They were bang on form again at the Rufforth 1000, where, in winning, the Wilson Gardner team beat the old record by 4 mins 6 secs. The Smith/Hudson team, who repeated their last year's second place success, broke the heat record with a time of 8 mins 36 secs. Now to something much less rumbustious: the Indoor competitions which Jeff Anderson has been so industriously organising at the 'Sporting Club of Washington'. By way of showing his versatility, Ron Pollard pulled off a second place in EZB, splitting the redoubtable opposition of Ron Green and Bob Bailey. The club, regarded as the premier one on the N.E. Area, has a wide catchment zone, and welcomes new members from all over. Beginners, sport and contest flyers are asked to contact PRO, Arthur Dempsey, 4 Laburnum Avenue, Whitley Bay, Telephone 534406.

Phil Bolderson, PRO, of the Sevenoaks MAC, sends along some issues of the club newsletter 'Air Mail' – a name quite new to us. From a general reading it would seem that the club is wholly or mainly Radio. They appear to be fortunate in having a farm flying site, for they do not pay rent but make a healthy subscription to a charitable organisation. The field is nicely covered with a £250,000 insurance, and no doubt with grass, but is strictly limited to members only, with guests only allowed to fly if they have the right sort of insurance – something not so easy to establish. Meetings are held at the Women's Institute, Westerham, and mention is made of 'Bring a Model' night, filmshows and lectures. Plenty of flying enthusiasm in the club – even the winter snows, lying 4 inches deep on the flying field, have been no deterrent.

Following a very unsettled year of flying field upheaval, the Watford Wayfarers MAC, are accepting with resignation the situation as it is, according to their current newsletter. They have settled down on their new field and are learning to live with the restrictive bye-laws. Membership has fluctuated throughout the past year in sympathy with the flying field situation. Membership has now settled at around a cool 55: a nice acceptable level that does not put too much pressure of the Chenies flying site.

The January issue of *Court Circular*, the newsletter of the Three Kings Aeromodellers, is largely taken up with a report from the hard-working Sport Representative, Norman Chapman, and some headway seems to have been made in certain directions. One definite success, though: there are good prospects of a C/L display prior to the Cup Final kick off at Wembley. But what models would the public like to see? Well, certainly something on the lines of the two contenders at the January *Model of the Month* competition. There was Colin Swain's highly detailed *Me 109E*, nicely finished in light grey with chrome yellow nose. But the cup went to Ricky Brake-spear's *Sting*, an own design high wing monoplane, coloured dark blue with white flashes. High gloss and wheel spats put it in an above average category. Built straight from a sketch, it has yet to be flown.

Quite a lot of ground covered in *High Flyin*, the news-

## Contest Calendar

March 20th	<b>SMAE 1st AREA CENTRALISED.</b> Open Rubber, Open Power, A/2 (Plugge Trophy). Area Venues.
March 27th	<b>SMAE SPRING SCALE MEET.</b> R/C Class II (Blue & Brown frequency), F/F Class II (experimental). Venue: RAF Little Rissington, Glos. ( <i>not confirmed</i> ). SMAE members only.
March 27th	<b>ELLIOT C/L SPEED MEET.</b> All classes handicap speed – including Class 6N. Best newcomer award in any class. Details: I. Roffey, 283 Burnt Oak Lane, Sidcup, Kent. (01-302 5201). Venue: Elliot-Marconi, Rochester Airport, A229 off M2 Motorway.
April 3rd	<b>ELLIOT 1000 LAP FAI TEAM RACE.</b> Venue as above. Details: R. James, 21 Rochester Crescent, Hoo, Rochester, Kent.
April 3rd	<b>ST ALBANS SPRING F/F GALA.</b> FAI R/G/P (5 flights in rounds), Open R/G/P. 10am start at Bassingbourn Old Airfield, Nr. Royston, Herts. SMAE members only.
April 10th	<b>SMAE C/L MEET.</b> FAI, ½A and Class B team race, Handicap & FAI Speed, Combat, Aerobatics, Novice Stunt. Venue: RAF N. Luffenham, Leics. ( <i>not confirmed</i> ). SMAE members only.
April 16th & 17th	<b>SMAE SPRING FAI MEET.</b> KMAA Cup F1A, Weston Cup F1B, Halifax Trophy F1C. Venue: Sculthorpe – <i>confirmed</i> . Pre-entry essential. (Points for Senior and Junior SMAE Champs.)
April 24th	<b>BIGGLES GRAND APRIL-SHOWER DEFYING EXTRAVAGANZA.</b> Open R/G/P, C d'H, ½A, A/1, HLG. Venue: Bassingbourn Old Airfield, Nr. Royston, Herts. SMAE members only.
April 24th	<b>SMAE INDOOR MEET.</b> EZB Beginners/Expert. Venue: RAE Cardington, Beds.
April 24th	<b>BUNGEE/GARTH/PEERS GALA.</b> Open R/G/P HLG, Venue: RAF Chetwynd. No engines to be run before 10am. Other events start 8am. Unlimited re-entry. SMAE members only.
May 1st	<b>CROYDON F/F RALLY.</b> Open R/G/P, A/1, C d'H, ½A. SMAE-type rules. Venue: Bassingbourn Nr. Royston, Herts. 10am start. SMAE members only.
May 1st	<b>NATIONAL KITE RALLY.</b> Old Warden, Beds.
May 8th	<b>SMAE SCALE INDOOR NATIONALS.</b> Plus general fly-in. Venue: RAE Cardington, Beds.
May 8th	<b>SMAE SECOND AREA CENTRALISED.</b> F1C (Plugge Trophy). Open R/G. Area Venues.

letter of the Anglia MFC and this expression of particular oppo- site to the free flight section which, after a year of extensive contesting, were rewarded with second place in the nationwide Plugge Cup. But first, good news from the AGM, where it was announced that the subs for 1977 would not be increased above the present £11. A notable success during the year was the Thermal Soaring competitions staged by the club. Entries were quite staggering: 54 in the first event and 70 in the second. The upsurge of Thermal Soaring interest within the club seems to have put a moratorium on other, engine powered, contests: aerobatic and scale getting little or no support. On the free flight side the series of successful one design Coupe events has been followed by one for that tubby wonder: *Raff V*. Already eight or so of these vintage machines have been built, and all merrily flying.

'Models on page three of the Sun' is an intriguing heading, but those thinking in pneumatic terms will be deflated when I explain that the 'Sun' in question is a provincial newspaper, and the models, flimsy but not quite starkers, indoor jobs. It's all part of the publicity given to Jeff Anderson's Indoor programme at the Sporting Club of Washington up in the North Eastern Area. here J. O'Donnell put up a record flight of 9 mins 35 secs. Good flights are around the 7 and 8 minute mark, and to lift yourself out of the novice class you need to do over six minutes with a tissue duration model.

To fly models on the Isle of Wight you do not need to dress in schnorkel and flippers – the sea is not always

that close. Anyway, the **Skyryders MGC**, who are centred on the town of Ryde held a completely dry H.G. contest recently, and this seems to have promoted an interest in free flight. Dennis Wise tells us that the club is quite an old established one, and was quite a club in it's day. To restore the glory new senior members are needed. The club meets every Monday, Wednesday and Friday evenings at Puckpool Park. Full particulars, though, from Dennis Wise, 9 Trinity Street, Ryde, PO33 2BT, Isle of Wight, Ryde 67405.

Mr K. B. Turner is a young man with a problem. He is a lone flyer – not by choice, but because of the seeming lack of kindred spirits in his neighbourhood. He has a fine flying site all to himself, with permission to form a club if members could be found. His address is 89 Skelwith Road, Sheffield 4, Yorkshire

Next, a new club that has established itself: the **Mitchell MAC**, of Stoke-on-Trent. Interests, at the moment, are confined to C/L and F/F, but a few Radio flyers would not come amiss. Club nights are Monday and Wednesday for Seniors, Saturdays for Juniors, at the Methodist Church, Bethesda Street, Stoke-on-Trent. Club Secretary is Mr A. Edwards, 290 Colbridge Road, Stoke-on-Trent ST1 1JJ.

Another relatively new club is the **Waltham Chase Aeromodelling Club**. R. C. Smith is the Honorary Secretary and he informs us that the club has been in existence for about two years, and in that time has expanded rapidly to its present membership level of 45. All aspects of the hobby are covered by the members, including rtp flying, and Indoor flying in a local indoor riding school. The club has three flying sites at its disposal – all farms.

I notice in the **Leicester MAC's Bulletin** a hint of new organisational methods in the up-to-date club: Group leaders for the various sections. An excellent idea. Two recent club events were a Stunt comp and a Pylon Race. Four members turned entered Stunt, in spite of the very cold conditions, and eight in the Pylon Race.

We now have a most welcome revival from the **North Western Area: The New Message** newsletter. Featured is a report on the Northern Area Winter Rally, held in January. A good turn out in Open Glider and Combined Mini, but why no Coupe entries in the latter? Are they all that disadvantaged by the 'K' factor? I liked the very clear illustration of a Wakefield prop hold system, I've often wondered how they work.

And that's about all I can pack in this month.

Clubman

## FORMING NEW CLUBS

by Frank Allanach, the SMAE'S new PRO

"Could you outline the first steps towards setting up a Model Flying Club?". That was the question put to me during a discussion at the Model Engineer Exhibition this year, whilst manning the SMAE's stand. As this subject attracts a lot of interest, I have decided to set out briefly the main steps necessary in forming a club.

The more formal way to establish a club is of course, to call a public meeting and invite those interested to attend. This could be done by means of advertising in the local press, the model press and in the windows of the local model shops.

An easier and more popular way is for model flyers who meet regularly at a site to get together and appoint a provisional committee to set up the club.

In the case of the public meeting however, a suitable venue has to be booked and it is necessary to have a good chairman. An authoritative speaker is also needed to introduce model flying as a club activity – the SMAE could probably help here. This introduction could be followed by an open discussion after which the meeting could be rounded off by the Chairman's summing-up and asking if there is support for the idea. Assuming there is, a provisional committee could at once be selected, then names and addresses of possible club members noted.

Once the provisional committee is formed, the next step is to decide on a suitable club name and also to appoint club officers. The three essential officers are a Club Chairman, a Secretary and a Treasurer – though the last two positions can be held by the same person. Other officers who might possibly be appointed are a competition fly-in secretary, a press officer, a newsletter editor, etc.

It is important when selecting your Club's Chairman to see that you choose a person who is respected by everyone, able to control meetings with tact, capable of summing up opinions briefly and able to keep strictly to an agenda.

The Secretary has a key position

as he has the everyday running of the club. He has to deal with all correspondence, call General and Annual Meetings regularly, and unobtrusively guide the club in the right direction.

The Treasurer on the other hand, is responsible for collecting all money due, ensuring that it is spent only on services rendered to the Club and on projects approved by the Committee. He is also responsible for guiding the committee on financial matters.

For more detailed information on SMAE Membership and affiliating your club to the SMAE, please contact Mrs Jo Halman, Honorary Secretary, SMAE Ltd., 36 Tyne Road, Oakham, Leicestershire LE15 6SJ. Tel: 0572 56451 – office hours, or 7-9 pm evenings.

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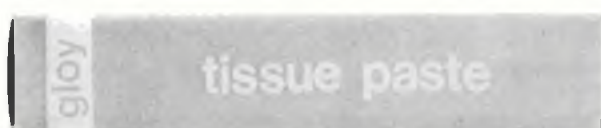
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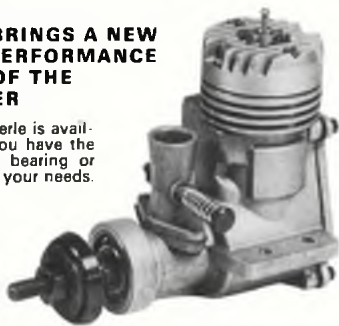


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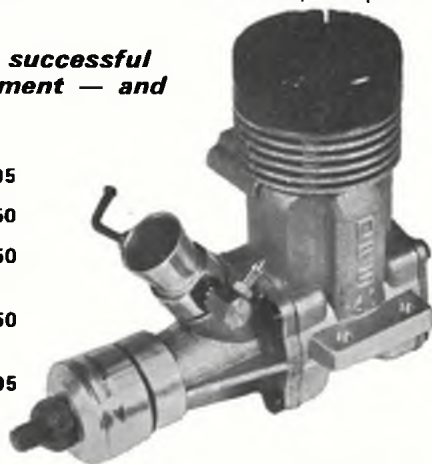
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