

105 *Free Inside! 2 Full Size Plans*

# Aero Modeller

INCORPORATING  
**MODEL AIRCRAFT**



HOBBY MAGAZINE

May 1977

35p

U.S.A. & Canada \$1.50



**QUICKSTART**



**DART**  
.5 c.c.

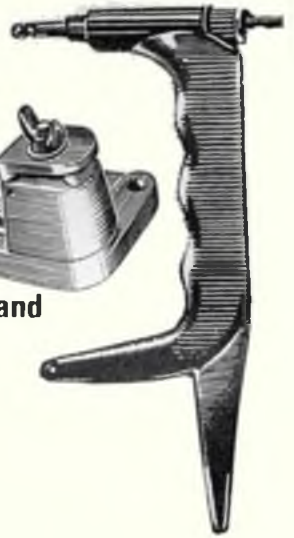


**WASP**  
.8 c.c.

**Control-line  
handle**

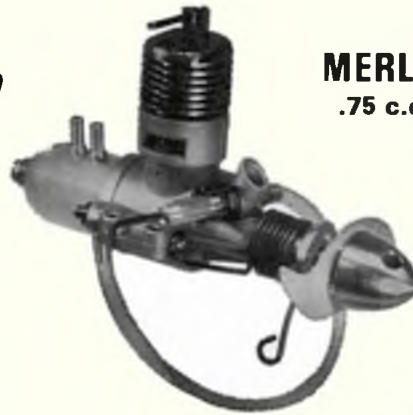


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That's progress. Or the survival of the best. But only the best because alternatives were tried, and their limitations exposed. After all, the pylon model was revolutionary when it first appeared. It just happened to be the 'right' answer, even if the idea was, in fact, based on microfilm model layout—not theory, just an idea that it could work.

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# Aero Modeller

INCORPORATING  
**MODEL AIRCRAFT**

**May 1977**

Volume XLII No. 496

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## Comment

Often maligned, accused by detractors of being self-centred, slow moving and lacking in direction, the SMAE has recently shown great enterprise in trying to improve its image. The Society can now be seen to be actively working hard for the benefit of all aeromodellers. One of the most important moves was the appointment of an Honorary Secretary in Jo Halman who is 'on call' both during normal office hours and evenings. This means that once more the Society has a 'face' — and an 'earpiece' — that the average enthusiast can readily contact. In addition the SMAE has vastly improved its PRO activities, witness the recent advertisements and regular news columns in the Model Press, not to mention the fighting spirit exhibited at the Bromley Public Inquiry as reported on page 284. Such changes do not occur on their own — people have to make them happen. Jack Hartley, having been Chairman whilst the Society weathered a very tricky period of its history, has much to be thanked for — but now the pressure of business commitments have caused him to retire from office. We are pleased to learn that Ray Favre has been appointed to that position with John Jones as his Vice-Chairman. Both names are well known to modellers — and for many good reasons. They are thoroughly dedicated SMAE enthusiasts with special concern for the Average Modeller. We are confident that they will continue to lead the Society in the right direction — upwards and onwards, with a booming membership in this Jubilee Year.

## on the cover

*A reminder of sunnier days — last year's AeroModeller All Scale Rally at Old Warden to be precise — with Alan Palfrey displaying a brace of electric powered free flight scale designs. The Bristol Bullet (right) features a Monogram E-power moduls, whilst the 1910 Hanriot Monoplane has a Mabuchi 36D motor.*

## next month

A special issue celebrating the 50th Anniversary of Lindbergh's historic flight across the Atlantic in his *Spirit of St Louis* — plans of which are provided for a free-flight replica. In addition, Trevor Faulkner suggests some practical ways of using a 'new' material for modelling, whilst all the regular features combine to produce another info-packed issue. April issue is on sale May 20th — place your order now!

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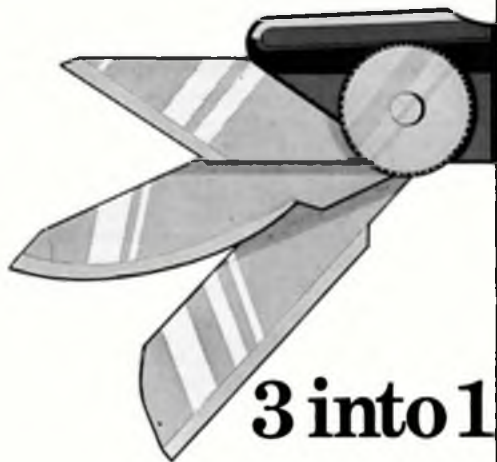
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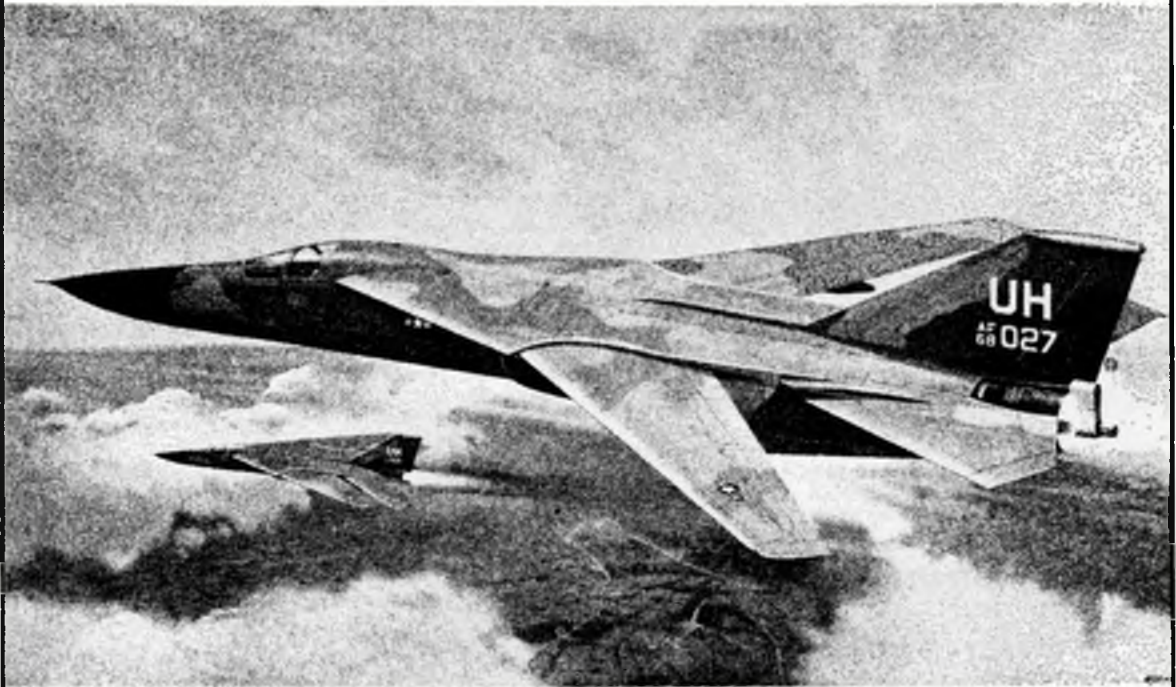
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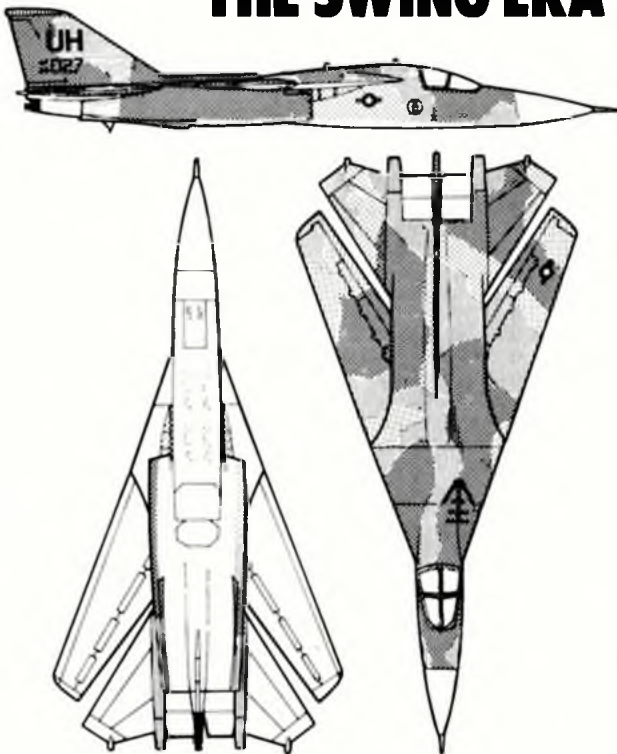
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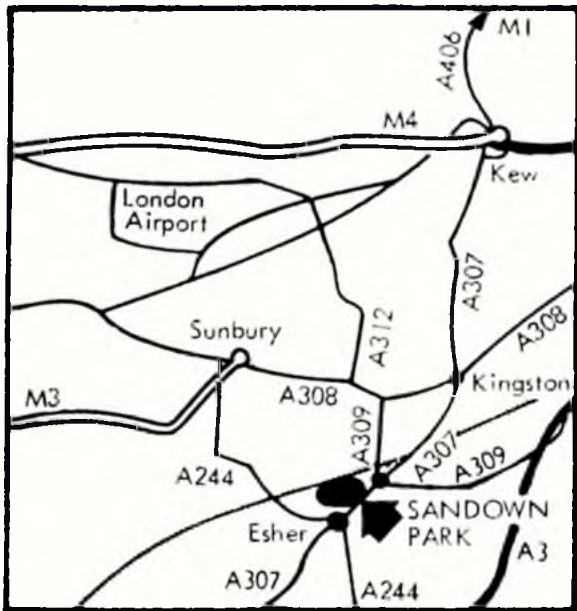
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Commentary by—

Dave Bishop of D. B. Sound

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Transmitter: 5½in x 6½in x 2½in  
Standard Rx: 2½in x 1½in x 1½in  
'Brick' Rx: 1½in x 1½in x 3½in

### WEIGHTS

Transmitter 18.7oz  
Standard Receiver 1.8oz  
'Brick' Receiver 5.3oz

### PRICES

FD2M/A Combo £37.50  
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ENFIELD, MX. now for a FREE  
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# Heard at the HANGAR DOORS

**BIGGEST R/C SYMPOSIUM** and Display in 1976 proved to be that organised by the Elmbridge Model Club at Sandown Park Racecourse, Esher, Surrey – with an attendance of over 30,000. Not content to rest on their laurels, they intend to better their efforts this year, on 14th and 15th May at the same venue. With more Trade display area available, demonstrations of radio controlled helicopters, aircraft, boats and cars, greatly increased model and small gauge railway support, control line demonstrations, electric round the pole flying, and put-your-money-in-the-slot-and-control-a-boat/tank attractions for the Public, it should be a truly worthwhile weekend visit for the modeller and his family. Better still, bring along a non-modeller, and show him just what can be achieved in our sport.

**GREAT ADMIRATION** for the model flying sequences by David Boddington used in the BBC 1 television series 'Wings' was shown by Shaun Usher, TV critic for the *Daily Mail*. In fact, Mr Usher found the radio controlled models completely convincing, though he could not say the same about the acting... indeed, in his opinion the programme was only a success when the action was confined to the skies. As a second series is already planned, let's hope that greater harmony is achieved between the models and script. Meanwhile, for those who would like to know the 'behind the scenes' story of how the models were conceived, built and flown for the small screen, then highly recommended reading will be found in the pages of our sister publications *Scale Models* (April issue) and *Radio Control Models and Electronics* (April and May issues).

**STILL** on the subject of the hypnotic box, we should remind readers that the successful *Model World* series of ten programmes will be repeated once again on BBC 2, starting at 7.05pm on April 15th and on every Friday evening thereafter. The first three episodes are the most likely to attract the attention of aeromodellers, although the remainder give a useful insight into the interest of other enthusiasts. That is if you missed seeing the programmes on both the previous occasions on which they were screened.

Derek Jackson (left), Telco Product co-ordinator, discusses two motors linked to a single CO<sub>2</sub> gastank with Butch Hadland. Behind them is the very welcome, free re-fuelling service provided by Telco at the Crawley Indoor meeting – nice to see a firm getting involved with their products, and reassuring to know that there are keen modellers on the Telco staff.



**SILVER JUBILEE** International Air Tattoo '77 will be staged at RAF Greenham Common, Newbury, Berks on 25/26th June – and this promises to be the biggest event of its kind ever staged anywhere in the World. Over 200 aircraft from 20 different air arms are due to appear – the RAF leading the displays with an impressive list of teams and aircraft. As well as the famed *Red Arrows* making their 1,000th display at the Tattoo, there will be several new aerobatic teams making their debut in this country, including the Royal Norwegian Air Force's formation of Northrop F5 fighters, a team of Cessna T-37 trainers from the Portuguese Air Force, and our own Army Air Corp's new Gazelle helicopters.

As a further attraction the British Aerospace industry will be demonstrating its latest products, including the *Panavia Tornado* multi-role combat aircraft and the *Hawker Siddeley Hawk* jet trainer, while many more aircraft and equipment will fill the ten acre grand exhibition. In all a two-day spectacular for the aviation buff and his family, with non-stop entertainment from 9am to 8pm.

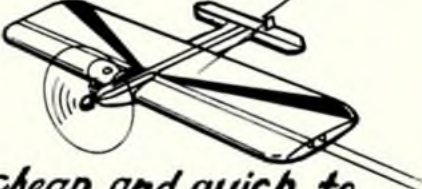
**AUSTRALIA** will be sending a full team to the 1977 World Free Flight Championships in Denmark for the first time – this being a most encouraging trend, with more and more nations being represented at this level. The teams will consist of: *Class F1A* (Glider) M. Boecardo, J. Garay and D. Simons, *Class F1B* (Wakefield) A. Edwards, P. Smith

and P. van Leuvan, *Class F1C* (Power) M. Pettingrew, W. East and H. Gostelow.

**THE CONTEST** calendar continues to grow and grow as more clubs host events for the competition-minded; clearly a welcome trend. However, contrasting this is the greater hardship involved in finding suitable sites – and the ever prevalent risk of last minute cancellations. In order to avoid wasted journeys, we would request that in future clubs organising events to be publicised in these columns also provide the telephone number of a 'contact man', so that interested parties can make a last minute check that the event is still on, and that the venue is as published. In return, we should also point out the folly of competitors or spectators in trying to evade paying the appropriate entry fee or car park charge. The South Midland Area Rally at Cranfield, for many years one of the major one-day meetings has now disappeared from the scene – largely due to a large financial loss caused by such persons. Was it really worth saving that £1 per car?

**HOLDING** a steady price for twenty consecutive months during the current financial crisis is almost a record to be proud of, but as from this issue we regret that *AeroModeller* now carries a cover price of 35p. Still we trust good value – especially when compared with the other basic necessities of modelling.

FRANK SMART'S  
 F.A.I. GLOW - DIESEL  
**HOT PANTS**  
 COMBAT DESIGN DOUBLE IN FOAM OR Balsa



*Really cheap and quick to  
 make from Polystyrene Ceiling  
 Tiles.*

AFTER NEARLY two seasons of flying with the swept wing diesel powered concept, the link up with Outlaws Club came. I had just pushed the *Titan* design, in the form of my Oliver powered *Superfly* up to 40in span using a thin section to compete with the glow jobs. The idea of using a thin section came from building a 3in flat-sectioned version of Mick Chesterton's *Jaguar* and this

particular model showed great promise at 13oz all up weight when covered in nylon.

Mick had developed the *Jaguar* to 40in span using a true airfoil section over 2in thick at the root down to 3/4in at the tips, and flew two versions at the 1972 Nats covered in nylon chiffon at 14-15oz. This amused the "old school" as they struggled through manoeuvres with Mk III Oliver Tiger motors on suction feed, but if glow motors had been installed I am sure we would have seen large models that much sooner.

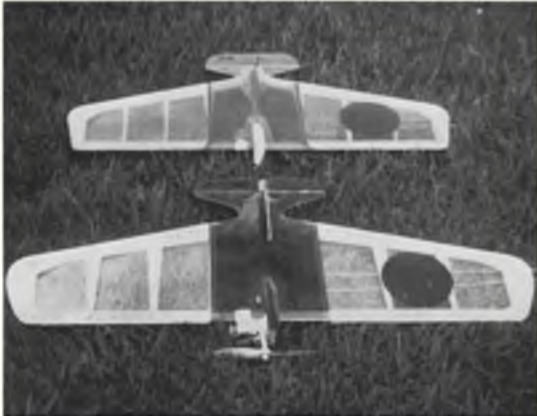


Left: Mick Chesterton won the 1968 Nats with this 'Jaguar Mk2' design - already at 36in span - and with lots of 1/16in balsa sheathing at the centre section. Below are two earlier designs by the author. At the rear is 'Copycat' - an exact replica of the *Titan*, built in 1973. In front is the development of this design, named 'Superfly', now up to 40in span (an increase of 4in) and featuring 3/4in thick section. Built in October '74 it still used diesel power and was competitive but performed superbly when re-engined with a glow. *Hot Pants* was developed from this design.

While the *Jaguar* and *Superfly* were totally different in plan shape, they had one feature in common - and that was improved manoeuvrability. Clearly, plan shape was not so important as wing area, so the change to a straight wing was obvious and the only thing found wrong with American designs for FAI combat was that they were too small. *Hot Pants* was designed about the same time as John Hammersley had success with 7 by 4in props on glow engines, which allowed the model to be flown tighter without loss of rpm.

In 1973 with the Glevum Club, Derek Dowdeswell and I got together on experiments with polystyrene foam with a design called *Aero*, which was to fulfill the roll of a practise-only model. This design was based on an American model called the *Raven* - John Shaw of FACCT was also selling foam wing blanks at the same time (and winning with them) but little interest was shown.

Re-introduction of foam came not too seriously with Richard Wilkens' early swept-wing design which stole the show at the first rally in 1975, the model running on tank pressure, followed quickly by the APS *Blasta* straight wing design, both having leading edges and tips in foam. After 'Wilkie's' visit to the USA where he met Riley Wootton, we then saw the first all plastic foam design appear at the Outlaws meet in 1976, followed by the now famous kit the *Superstar*.



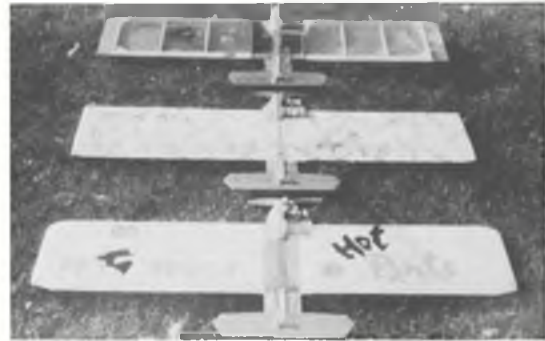
I have always strived to produce models that can be built and flown by a newcomer, but still remain competitive and strong. The straight wing gives you simple building and covering, tried and tested in the APS *T-Bird*. The removable tail was developed after losing several bouts by having both models damaged, mainly tails. Suitably prepared, it is possible to change to a new tail in a bout. I was further convinced that it was a worthwhile proposition, when while competing at Luffenham early '76 I kept one model for three rounds with a tail change after the first round. Now keeping to the same design, considerable time has been saved by re-cycling tail units from damaged models - in fact I have only had two tail write-offs in twelve models! Consider how long it takes to make a complete tail unit - there are a total of eight stages involved and taking an hour

if you are quick, not counting any glue drying time and expense involved.

With detachable tails you also have the opportunity of experimenting with different shapes without having to build a complete model. Tests so far have indicated a totally different performance by altering tail shapes – moment arms can be increased or reduced, enabling the model to be sorted much quicker for competition work. For instance, if the model is out of balance, a lighter or heavier tail can be made instead of using fore or aft lead ballast trim.

Tails can now be made *en-masse*, plus covering the tail off the model is greatly simplified. With plastic foam models "used up" at nearly 2 per round the re-cycling of parts with ease has become an important factor.

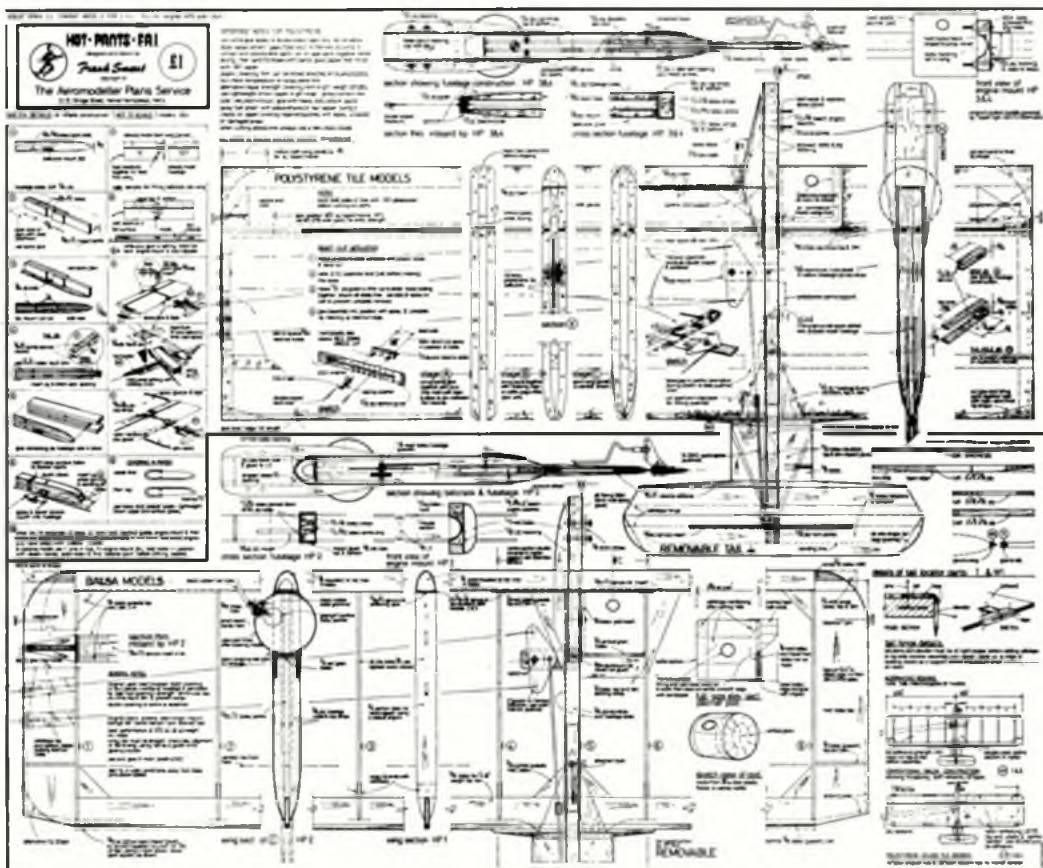
While Richard Wilkens was mastering the foam cutting technique necessary for true airfoil sections, my *Hot Pants* design was based on the traditional well tried British 'flat' section, so the development using polystyrene ceiling tiles came to mind while undertaking experimental tests on covering materials. The sandwich method gives great flexibility of *where* hollow parts were to be incorporated. Tiles are of a much denser foam than blanks used for wings and although slightly heavier are flawless, stronger and better for sanding, plus with the aid of a good flat building board wings come out warp free and straight with every model.

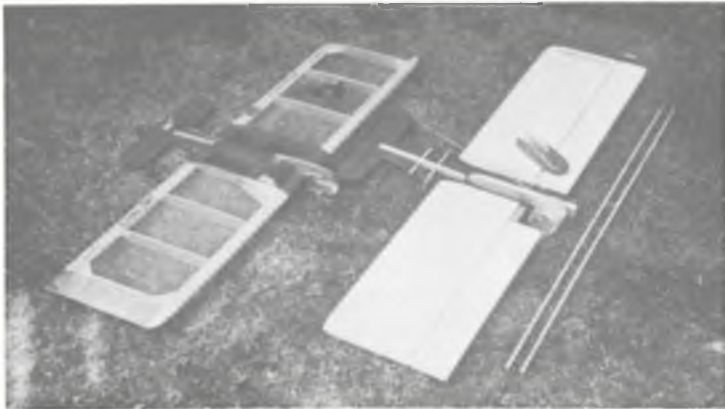


Three of the Hot Pants designs featured on the plan drawn below. In the foreground is HP4 – the hot performing contest version with polystyrene tile construction. Next is HP3 – the polystyrene trainer variant, covered with 'The Modellers Den' wrapping paper incidentally, and lastly is HP2 the conventionally structured, nylon covered contest model with 1 1/2 in. wing section.

The adjustable lead-outs were introduced when after increasing the wing section from 3/4 in up to 1 1/4 in, line tension decreased – the idea was taken from those superb APS stunt jobs by Claus Maikis, but dispensing with tinplate and soldering. This additional feature is ideal for varying weather conditions which often occur during a contest

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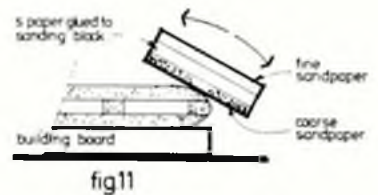
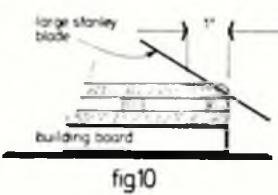
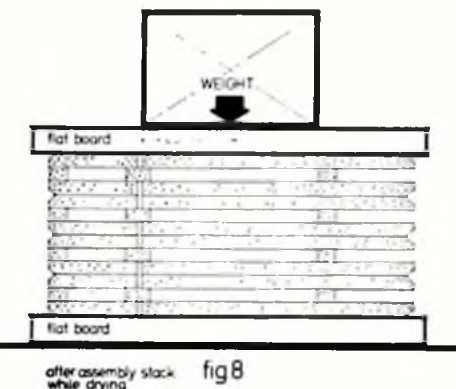
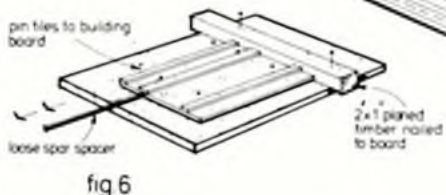
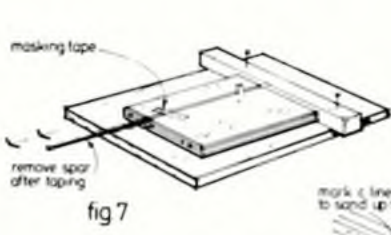
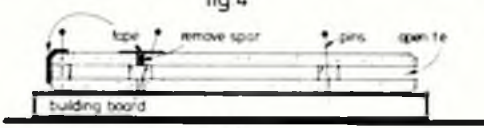
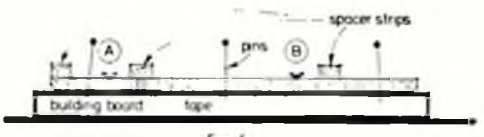
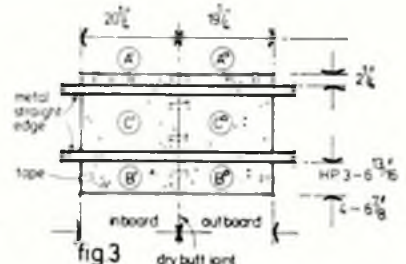
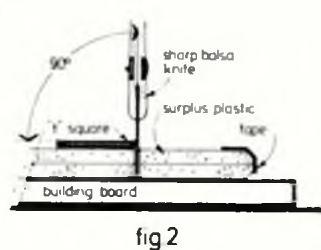
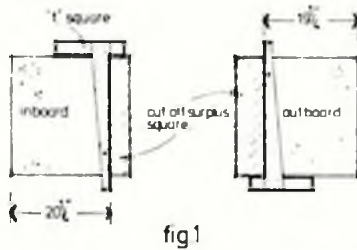




'Hot Pants' Nos. 2 and 4 – the latter still in 'kit' form. Both are very simple to make but the polystyrene model is probably quicker and certainly cheaper to construct. Polystyrene models may be covered in brown wrapping paper (one side glossy) or gift-wrap paper. Thoroughly soak the paper, allow surplus water to drain off, then attach to wing with heavy duty wall paper paste, as shown on the plan. After applying the first piece, turn model over, support it clear of the building board and cover the other side. Leave to dry thoroughly – the water will take some time to evaporate, perhaps two days, before fuel proofing.

The plan actually incorporates four design, *Hot Pants* Nos. 1, 2, 3, and 4. HP1 & 2 being the conventional balsa/mylar structures of 3/16in and 1/4in section, HP3 & 4 being constructed mainly from polystyrene ceiling tiles with a 15/16in wing section. HP3 has a reduced span of 36in,

stronger spars and square tips for ease of covering etc. – ideal for the newcomer as a trainer or initial competition model. HP4 uses lighter construction and increased wing area for improved performance at 40in span and shaped tips.





I hope the polystyrene tile version will encourage newcomers, in particular the youngsters, back into combat again as sadly we are losing their talents due to material costs, linked with the high carnage rate of models seen at rallies, plus the fact that there is a fair amount of ground and experimental work to be undertaken to perfect the hot wire cutting of wing blanks. In view of this construction details for HP3 and 4 polystyrene ceiling tile models only are provided, bearing in mind that the fuselage 'rib' is of a similar construction on all designs and that the removable balsa tails are interchangeable on all four designs. The method of construction, materials and glues described are for the *cheapest* end product, *not* for speed of construction.

For instance, wing laminations can be all stuck together instantly with double sided tape, so can all the centre packing infills. Trailing edges can be dealt with in a similar manner, or with fast setting epoxy but all these materials are far too expensive for the youngster's limited pocket money. As much construction information as possible has been incorporated on the drawing in sketch form to help familiarise newcomers to the building technique quickly, being totally different from the conventional method. After building one model there will be no stopping you – Especially when you find how little money you have spent!

#### Materials (HP3 & 4)

Before starting, those who have previously only built conventional models with ribs, leading and trailing edges in balsa, just forget they ever existed and you will be in the right frame of mind to tackle the following.

Just two 24in, 5/16in thick polystyrene tiles purchased from your local DIY shop will be sufficient for one model although for your first attempt buy 4 – it will be easier. Also purchase some glue such as Evo-Stick ceiling tile adhesive or PVA white glue – I prefer the latter as it is cheaper and better to work with. You will also need a roll of 1in wide masking tape.

Now for the tools: a balsa knife with a packet of brand new blades (preferably the straight pointed type), a metal straight edge about 40in long, a metal tri-square for 90° cuts (or small T-square), some pins, a stiff dope brush for the PVA glue plus a saucer to dilute the PVA glue in. In addition you need fine and coarse glass paper glued to a sanding block, about 28-30 old type wood clothes pegs (with weak springs if possible – select the widest opening ones!). You will need a planed 2in by 1in by 12in long piece of timber to butt the parts up to during construction, acting as a dummy fuselage rib. Finally, a good flat cutting board, two 10in wide by 48in long boards and two 10in by 24in long boards for sandwiching wing panels and total wing in final assembly. I use white plastic faced shelving offcuts from the DIY shop called 'Contiplas' as these can be wiped clean of glue after use.

#### Construction

Take 4 tiles and using fine sand paper, sand off the rough texture to both sides of the tiles – this is best done by laying the tiles on a flat board to prevent breakage, and using a circular action sand till a fairly smooth surface is obtained on all four tiles. (Do not sand parts in the house, as mums and wives won't take kindly to all the fine white dust that sticks to everything and treads through the house due to the static electricity build up.)

Brush off surplus dust and bring the tiles together in pairs with the bevels externally, and tape together. Mark inboard and outboard. Using the tri-square, cut the panels to length (20½in inboard and 19½in for the outboard wing), keep the knife blade at 90° to the tile for a good square cut – see *Figures 1 and 2*.



Top picture shows the basic materials necessary for producing a model from polystyrene ceiling tiles, namely a straight edge, 30°-40° set square, felt pen, 'Stanley' knife and the tiles themselves cut for inboard and outboard panels – the leading edge pieces being shorter to accept engine pod and fuel tank. Centre picture shows building two wing panels together. The lower parts of the centre strips are glued in place – note space for pod/tank. Also note two separate spars used, NOT running through the 2 x 1in block. Bottom picture shows HP3 ready for final assembly of the wing panels.

After cutting the panels to length, bring together at the square cut edges and tape together. Make felt pen marks at extreme tip ends; 2½in for the leading edge and 6 13/16in or 6 7/8in. (depending on model) wide rear panels behind spars.

Using the metal straight edge and sharp knife blade kept at 90° to the tiles, cut off leading edge and trailing edge panels A and B, leaving centre off-cut (C) for the packing and ½in wide centre strips, which will be at the correct length, but will need marking (C1) and (C2) respectively, all as indicated in *Figure 3*.

Lay out all the parts, outer faces down, so that you can select parts quickly when glueing together. It is also helpful



End view of incomplete wing reveals simple construction and method of obtaining the hollow 'core'. Note too the 'groove' for spars and leadout wires exiting from the core. Flat wing section has long been favoured by combat fliers.

to mark the inside surfaces (I) for inboard parts and (O) for outboard parts, as these can easily be mixed up. It is also an advantage to mark with the felt pen the glueareas to the top and bottom panels.

Start by laying face up, panels (A) and (B) divided by spruce spar laid in place (not glued). Butt square-cut edges up to the 2in by 1in by 12in planed timber, now tape across spar with two bits of masking tape at ends. Turn assembly over, butt up to block and pin to board again. The pre-marked areas can now be brush-glued with diluted PVA white glue, together with one surface to the three 1/2in wide centre strips. Repeat same procedure for the top layer, by removing spar from base to be used on the top layer panel spacing, pin temporarily the three layers while taping see *Figure 4-7*. Repeat procedure to outboard wing (wipe off any surplus glue with damp cloth) and set aside to dry between the two 24in by 10in boards with weight on top. Do not tape entire length of spar recess or fill in the ends as this will not allow air circulation for quick drying. A warm room is ideal for overnight drying.

If you decide on making two or more models, it is best to make all the wing panels together in one evening, stack and leave to dry overnight. Stack inboard wing panels together and the outboard panels together, making sure the centre three strips on all panels line through, then apply weight on the top board – a house brick or two over each stack should be sufficient. See *Figure 8*, and *Stage A* on full size drawing.

While the wing panels are drying, refer to the plan *Sketch Details Nos 1 to 6*, for the fuselage construction; again if you are making more than one, do them all together complete with bellcrank and heavyweight Laystrate leadouts, taping control wires together for easy feeding through wing slot later.

Assuming that the wing panels have been given sufficient drying time, take from the stack the first two wing panels that were put together, in-and-outboard. Using the stiff dope brush and neat PVA glue, coat both inside surfaces of the trailing edge for the entire length, about 1/2in wide and bend together and hold with wooden clothes pegs at close intervals – see full size drawing, *Stage B*. Again the glue must be left overnight to dry in a warm room or airing cupboard.

Before making the whole wing, it is best to shape the leading and trailing edges on each panel. Using a ball-point pen, draw a centre line to the leading edges at front and springing lines for the leading and trailing edge curves top and bottom. See *Figure 9*. Mark also the final wing profile on the panel ends as a guide.

Lay the panels in turn on the building board, close to the edge, and using a long, sharp Stanley blade, trim-off surplus foam using a sawing action to prevent crumbling of the plastic – *Figure 10*. Then with a coarse sandpaper glued to a large flat block, sand leading and trailing edges to shape just as if sanding a solid square balsa leading edge to shape. Use a 'roll' action when sanding over the leading and trailing edges, running over at approx 30° to the panel edge *Figure 11*. Finish off by sanding spanwise with fine sandpaper, which I glue to the opposite side of the same sanding block for convenience. As mentioned before, sanding is best done outdoors, in a garage, shed or even the garden!

Wing panels can now be assembled with the fuselage, all sandwiched between the two longer 48in boards. See sketch details (7 to 8a) on the plan. When dry the tail locator and fuselage cap strips can be added (sketch details 9 to 11) and finally covering, finishing and balancing with motor etc. (12-13).

### Test Flying

Choose a calm day, use 50ft. lines, and check correct requirements for competition work in the rule book. Keep away from turbulence of trees, and most important, away from any power cables. Make sure all controls are free and the two tail screws have been fitted. For the first flight, set the motor to maximum performance on about a half-full tank. Launch downwind and fly the model level for the first flight and note its behaviour. If tail heavy it will be difficult to keep level and will 'bounce' up and down, a nose heavy model will be rock steady and have too much line tension – adjust by adding weight to the nose or tail. Once you have level flight and good response to up and down elevator, try some loops, wide at first, starting high up for better recovery. If elevator 'shudders' it raise the pushrod a hole on the horn and try again. Take time in trimming and ask someone with experience to fly the model first if it is your first model.

Finally, there is plenty of advice available in past *AeroModellers* for the road to success, but one important fact has emerged. If you analyse the top flyers of both past and present you will find that they all stuck to one design, modified each new model in minor ways to suit their own requirements, and have not been influenced to make drastic design changes. Remember, the secret is knowing *everything* the model will do, and to be able to fly it without looking at it – to enable your eyes to be on the end of your opponents streamer to get those nice 6in cuts.

The tail units are quickly detachable, and interchangeable between Hot Pants Nos. 1-4. Many advantages from this system – not the least being re-use of tails in future models after the original model is written off!





# Model Aircraft at Earls Court

by Alwyn Greenhalgh

THE INTERESTING ARTICLE in the September 1976 issue of *Aero-Modeller* recorded the use of model aircraft as part of the Royal Air Force display at the 1976 Royal Tournament. This is not the first time that model aircraft have appeared in support of military events staged at Earls Court, and the following is a description of the spectacular Naval presentation at the Imperial Services Exhibition, held there way back in 1913.

"The British Fleet arrives off the seaport and carries out various tactical exercises and afterwards fires torpedos at a target towed by one of the destroyers. On completion of this, the fleet will anchor and the Royal Yacht will arrive and make a cruise around the fleet.

The second part of the programme opens at dusk, when enemy torpedo-boat destroyers emerge from the harbour for scouting, and in doing so they encounter one of their own cruisers which is being chased by HMS *Queen Mary* and HMS *New Zealand*, the cruiser being badly

damaged after a magazine explosion before she enters harbour. The forts of the town then open fire upon the two battle cruisers. The remainder of the British fleet then comes up and a general bombardment of the town takes place, the forts being wrecked and the town burned.

Many other incidents take place during the action, including an attack by submarines and aeroplanes."

The ships of the fleet were designed by Mr Henry Greenly and Mr E. W. Hobbs to a scale of one thirtieth full size, making them some nearly 30 feet long. Their construction was undertaken by Bassett-Lowke Ltd., and their initial trials were conducted in the River Nene.

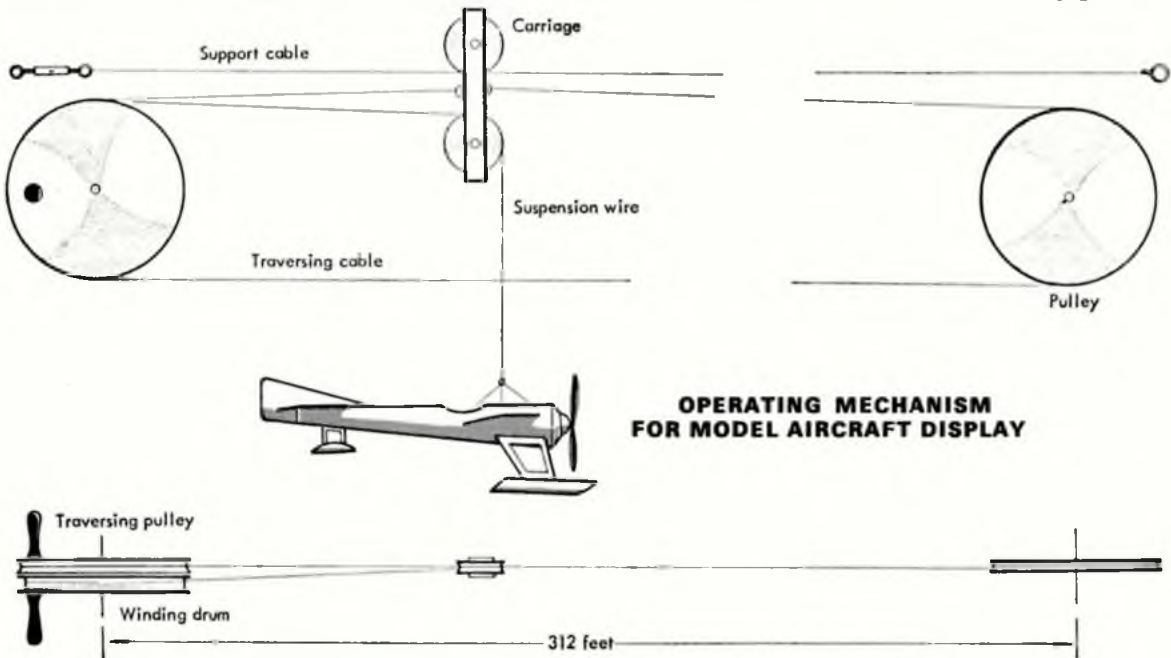
The plan of the "battle" was under the direction of Captain Raby RN. The aircraft participating in the engagement were "Class 3" scale models of Bleriot, Caudron and Deperdussin types, built to a scale of approximately one tenth full size. The person responsible for the construction and operation of the aircraft models was Mr Donald Steven-

son, a keen model builder and some of whose work is still in existence today.

During the First World War, Stevenson was Works Manager of the Grahame-White aeroplane company at Hendon and when the company closed in 1919 he went to British Aviation Ltd., and later to Airspeed Ltd., at Portsmouth. In the mid 1920s he moved to Maidenhead in Berkshire and opened a garage on the railway station approach. Still interested in aviation, he sold De Havilland Gipsy Moth aircraft at his garage and in response to his efforts, White Waltham aerodrome was opened on the 8th of June 1929. Stevenson's name is still linked with one of the more popular agencies for automobiles in Maidenhead. After retirement, he moved back to Portsmouth where he died in 1969.

The model aircraft for the Imperial Services Exhibition were constructed from aluminium sheet, covered with thin cotton fabric - assembly of the components being achieved by means

*continued on page 273*





## MODELS SHOULD FALL FROM TREES BY THEMSELVES

relates Hans Gremmer

Trees, especially those which are particularly tall and difficult to climb, have a notorious appetite for model aircraft – and this glider would appear to be a very tasty morsel! However, with the features mentioned in this article, recovery should be almost automatic, note the 'slippery' leading edge on the tailplane.

OVER THE YEARS, countless free flight models have been lost after landing in woods, or the traditional solitary, unclimbable tree. Trying to locate models hidden within the leafy tops of trees is time consuming, and the subsequent recovery very difficult or even impossible. As everyone knows, it is much easier to get a

model back from a height of 600 feet in the sky than it is from 60 feet up in a tree. In short, 'tree'd' landings are a nightmare to every model flyer.

Matters are eased when a piece of model falls to the ground thus indicating the hidden resting place. Obviously, it would be better if the

wind were to shake the complete model from the captive branches, so that it falls down like a ripe apple, or whirls to the ground like leaves in the autumn. We *should* aim to design models with this useful characteristic, but generally they are constructed in such a manner that they are very *easily* snagged by the branches, and are most difficult to unhook!

The tailplane, fin and wing must be 'tree slippery'. That means the tailplane and wing should be 'knocked-off' when hitting a tree, and the fin should be shaped in a non-snagging way. Most tricky problem proved to be the knock-off tailplane. The solution proved to be hooks which release the retaining rubber bands when the tailplane gets a slight knock – see *Figure 1*. Note that the hooks are bent backwards in a narrow bow. However, the rubber bands are slipped over the loops and not on the hooks. Why are they bent backwards? It is only to prevent punctures on the covering. In order to stop a premature tailplane release during D/T descent when a model slews around, there is a groove in the tailplane support where the rest may 'click' into place.

A 'slippery' fin was relatively easy to design – it is simply swept backwards for slipping through branches and twigs – see *Figure 2*.

Now for the wing panels. Best solution appears to be an aluminium tongue box, which is covered by thin aluminium plates on both sides – see *Figure 3*. This is nothing unusual – but the following are the important points: the tongue box is a little deeper than the thickness of the tongue itself. A 'kink' at a distance

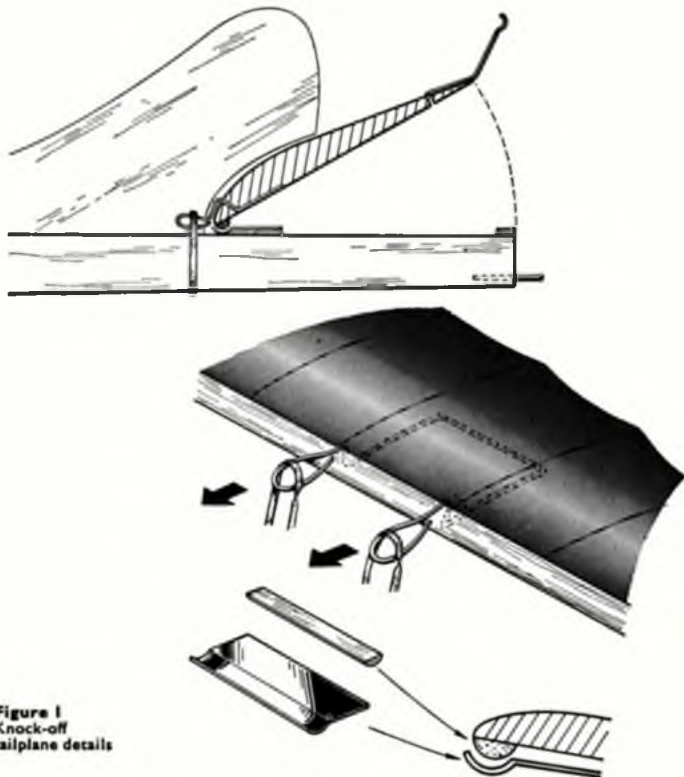


Figure 1  
Knock-off  
tailplane details

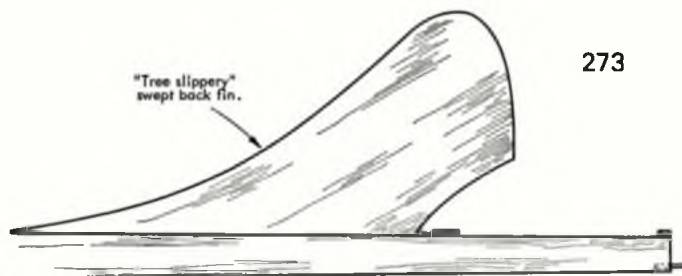
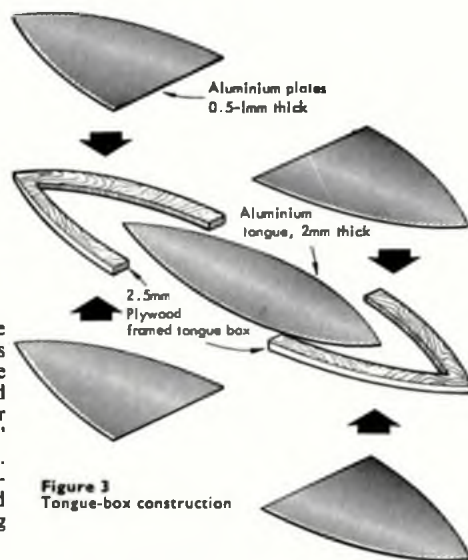
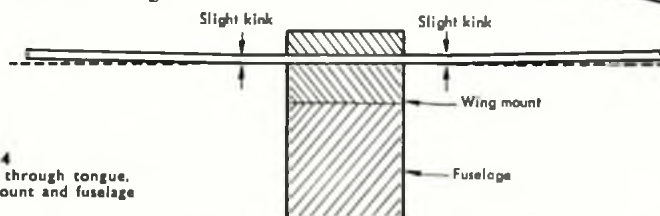


Figure 2

of approximately  $\frac{1}{4}$  in. from the wing root helps to keep the wing in place – see Figure 4. The more the wing panel overcomes this kink-zone, the less becomes the sticking resistance, and the panels fall away from the fuselage.

Being curious as to how this theoretically-designed model would work in practice, it was put to the test by deliberately overflying a wood. The first five tree-landings made the model disintegrate at once. The sixth attempt was a very exciting one: the model 'sat' in the crown of an oak nearly 75ft. high, perching very smoothly so that the collapsible parts did not give way immediately. After a quarter of an hour the wing panels were shaken off by the wind, and simultaneously the tailplane fell as

well. Taking a closer look at the fuselage position with binoculars revealed that the forward fin of the magnet-glider, the 'rhino-horn' rested on a nest of twigs. It took another couple of days until this 'sacred part' of the model slipped downwards. Rubber bands had fastened the forward fin to the fuselage and stopped the rest of the model from descending after the initial landing.

Figure 3  
Tongue-box constructionFigure 4  
Section through tongue, wing mount and fuselage

## Model Aircraft at Earls Court *continued from page 271*

of pegs, or by tongues in slots, and retained by pins.

The accompanying diagram shows how the models were operated. Each aircraft was suspended by a single wire attached at its centre of gravity. The wire passed over a pulley on a carriage and then on to a winding drum, rotated by means of a handle. The carriage itself was mounted on a tensioned fixed cable running the length of the arena, near the roof. Attached to the carriage, and running round pulleys at each end of the arena was a lighter cable and rotation of one of the pulleys by a handle caused the carriage to traverse the support cable. The pulley was mounted co-axially with the winding drum for the suspension wire of the aircraft. When both were rotated at the same rate, the aircraft would "fly" straight and level across the arena. Acceleration of the winding drum in relation to the traversing pulley speed caused the aircraft to dive, whilst retardation caused it to climb. A diving attack on the fleet could thus be made. Other evolutions were possible; for example, if the aircraft was released to one side of the support wire, it would make yawing manoeuvres while if the

carriage was stopped during a yaw, the aircraft would turn, and with a practised operator, make a full circle.

Each aircraft carried a battery-operated buzzer which made a realistic aircraft noise during "flight" and the propellers were mounted on low-friction bearings and "wind-

milled" as the aircraft moved.

It is thought that some time after the Imperial Services Exhibition the ship models were purchased by the Corporation of a seaside town and the "naval battles" continued every summer season. What became of the aircraft, except the Deperdussin Seaplane, is not known.





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

**"HOW BIG should a building board be, and what material should it be made from?"** – that is a frequently asked question, and like so many others, it is near impossible to give a definite answer! So much depends upon personal preferences – and of course the type of model you wish to build.

As for size, this obviously depends on the size of model you prefer – or are likely to choose in the future. Just because you are building 24in span control line models now, this does not mean that you won't be attempting a six foot glider next month – so a little forward thinking helps. Personally, I prefer to have a building board which rests upon a separate table rather than use a table top itself as the working surface. Why? Well, I can select a piece of truly flat wood, and if the structure needs to be moved to a warmer place for drying the glue off more quickly, then this is easily done. Also, if

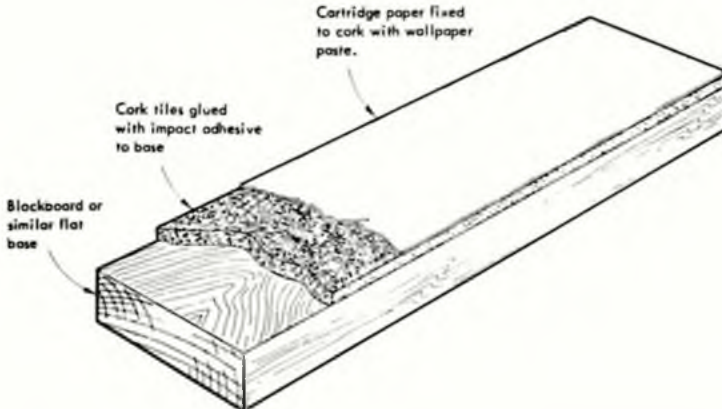
wing with a 12in chord to be built – and not many models exceed these dimensions. However an extra 3in all round will give a little more room for pinning temporary jigs in place and is really to be preferred, but basically you must judge for yourself.

Clearly, the most important point about such a building board is that it must be absolutely flat – how else can you build a warp free, accurate model? Unfortunately, many woods commonly obtainable at a reasonable price are not 'stable' and are inclined to warp. Especially vulnerable are plywood (unless around 1/2in thick – and a good quality one too), chipboard, and virtually all softwoods. However, careful hunting around at the local woodyard should result in a good piece of blockboard – a 'man-made' material, frequently used for shelving, consisting of many pieces of wood glued together with a facing material

push into your new found treasure. True, you can get over this problem by using a small tack hammer, but this is not very convenient. The best solution is to face the board with a material which will easily accept pins, and which will grip them securely too. Many people use fibre board, but I find cork the ideal material. After all, what material is used for the majority of notice boards – cork! Pins are easily inserted but the natural springiness of the material grips the pins securely. An ideal source of supply for cork is your nearest DIY store, where packs of cork tiles are sold for flooring – the thinnest variety approximately 1/4in thick are fine. These may be glued to the surface of the building board with a 'contact' adhesive. Once laid down, sand lightly with a long sanding block, to ensure that the edges of each tile do not stand proud. Incidentally, if you do use this method, then of course you could always glue cork tiles to a sheet of 1/2in polished plate glass – you will not find many materials as flat or stable as that, even if it is a little cumbersome to move around. And needless to say, do not drop it . . .

Now that you have a true, flat surface which holds pins securely, what else can be done to make this a truly 'de luxe' board? My own preference is to stick a layer of cartridge paper onto the cork, using a strong mix of wallpaper paste. Why? Well after a few models are built, I am usually faced with a few 'pyramids' of hardened balsa cement, the occasional solid 'puddle' of PVA and more than a little epoxy glue on any once-flat surface. All these seem designed to dent the balsa wood of the next project. Solution now is to dampen the cartridge paper to soften the adhesive and pull away the tatty surface, ready to replace with a clean, uncut, undamaged piece of paper. It works too . . . every time.

Finally, an old piece of carpet cut to the approximate size of the board is a useful accessory – lay it over the board whilst installing the undercarriage or engine, and then any 'solid' object still remaining on the board will not damage the finished structure or newly acquired paint scheme.



building two models at once, then that pinned to a building board can be removed and the second commenced on its own board without fear of the two getting confused or in each other's way.

Again, as I use a soft-topped board, I must be careful not to make any cuts upon it with the balsa knife – so the use of an *old* table to support the previous building surface means that this can be used when cutting out parts or drilling holes.

In most instances, a building board some 12 inches wide and three feet long is adequate – it still enables a 72in span

top and bottom. Due to this construction it is normally stable and unlikely to warp. Another good source of flat wood is old furniture – often available at low cost – where a piece of properly seasoned wood can be salvaged from a table top etc. Do choose a piece without woodworm however . . . If all else fails, buy a piece of chipboard, and securely glue and screw wooden battens to the underside to prevent it from warping.

Now you have a flat base, one problem still remains – pins, whilst so useful for holding balsa parts together, will not easily

## Help . . . .

Dear John,

I have been doing C/L stunt for a few years, and when I come to fuel-proof the models during construction, I have trouble. I use Ripmax Tulkote as fuel-proofer, and when I come to the transfers they shrivel up and peel off. This results in either an ugly model or a model with no transfers. Can you help me as I do not wish to change from using Tulkote?

Sunderland, Tyne & Wear

I. Carr

*I suspect that the fault is not that of the fuel-proofer – I certainly have never had any problems using Tulkote. Instead I suspect that you are not letting the transfers dry properly before fuel-proofing. After application, the transfers should be left to dry out overnight in a warm room before fuel proofing is attempted.*

Dear John Bridge,  
I am between 10 and 16 years of age and would like to become a member of the 'Golden Wings Club'. With this application I enclose postal order (International Money Order) for 50p to cover cost of enamel club badge, two coloured transfers and membership card.

NAME IN FULL .....

ADDRESS .....

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

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

Send to: GOLDEN WINGS CLUB, AEROMODELLER, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

5/77 15p in the £1 Rebate plan purchase coupon for Golden Wing Members  
No. ....



# THE FREE FLIGHT SCENE

this month:  
**Bob Bailey**

## SMAE NEWS

John Cooper, newly elected Chairman of the F/F Technical Sub-Committee has passed on the following comments for the benefit of competition flyers:

(1) To ensure that all the Centralised contests are run on a (relatively) smooth basis, each meeting will have an appointed contest director, thereby eliminating uncertainty as to who is actually in charge!

(2) Preliminary investigation into ways and means of travelling to Denmark for the World Champs reveals that there is no significant advantage in travelling in a large party, eg the Team and helpers, and that parties of 3 or 4 are as economic a size as any. The simplest method of travel will probably be to travel by boat to Esbjerg, drive across the peninsular and take a ferry across to Copenhagen.

(3) In view of the present uncertainty on airfield availability especially in regard to Sculthorpe and Barkston Heath, it is gratifying to know that there is a possible venue in the same county as Sculthorpe. The airfield, I am told, is of a reasonable size, but has no runways; rather a disadvantage if it is windy for retrieving with the faithful push bike. (No motorised retrieving is permitted in GB for the benefit of some American readers.)

## HINTS AND TIPS

First this month comes from Elton Drew. Those who were present at the last stage of the Team Trials will remember Elton's misfortune in having his A/2 slip off the line without the 'twang hook' being activated. Elton writes:

*"When we introduced the 'Mk2 Maxaid' with its revised non-swivelling ring connection, it was thought that accidental releases had been rendered impossible in all flying circumstances. Indeed hundreds of flights without incident using the revised arrangement confirmed this impression. However as I found at a rather inopportune occasion, our final Team Trials, it is still possible to release unintentionally.*

*"Using two nylon 'tails', one for timer start and the other for unit latch locking, connected directly to the hook in the manner described in the instruction leaflet it has been found that it is possible for the lines to take up a position in flight such that their combined stiffness can provide sufficient 'springiness' to lift the hook out of the ring with a slack tow line. The situation is entirely dependent on*

*the relative disposition of the timer switch and Maxaid unit, and the length of the nylon 'tails'.*

*"It is in fact difficult to reproduce the conditions on the ground and the chances of it occurring in flight must be remote. But it can, and has, happened in flight and just one unintentional release is one too many. Fortunately a complete cure is very easily and quickly effected. Simply interpose a length of flexible line (e.g. multifilar ent nylon) between the nylon tails and the hook such that it then becomes impossible for the stiff nylon tails to spring the hook from the ring, no matter how the tow line is inclined relative to the model."*

Many thanks to Elton for this bit of excellent advice. It emphasises one very important feature of contest flying – attention to detail. It is as often as not the 'sillies', of which the above is an excellent example, which put one 'out of the comp'.

It is no use grumbling about 'bad luck' – almost all of these are due to *bad management* and require some thought, anticipation and *care in construction* if they are to be avoided.

One basic rule is to make all actions as *positive* as possible – that auto rudder must 'snap' into position against a stop that will not bend. I can do little better than refer the reader to an excellent article by John O'Donnell in the January 1959 *AeroModeller*, which introduced a very interesting 'Experts Forum' series, on this very subject. Having just re-read it, I can vouch for its commonsense and good advice.

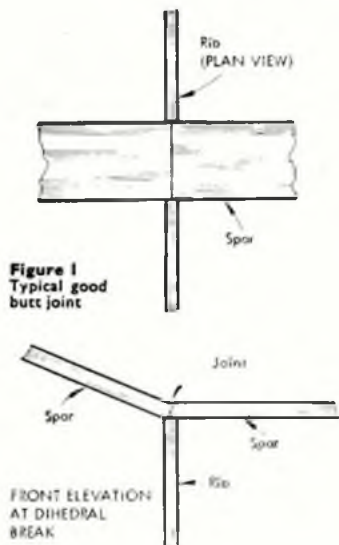
Secondly – wing tips – no pun intended. Andy Crisp pointed out a thought I had not considered, that wings with elliptical tips are less likely to shed tips than the common square-tips for one simple reason. When the model blows over on landing, the elliptical tip is more likely to slide along the ground than a square tip and will not dig in – the result is less load imposed on the wing.

While on the subject of wing tips, an important feature is the dihedral break. How many times have you examined the damage of a broken-off wing tip? You may have noticed that the spars have frequently broken at the joint which is usually a butt joint (Figure 1) and the leading or trailing edge just on one side of the dihedral brace.

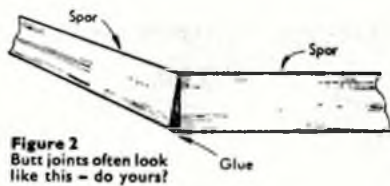
The main reason for the tip breaking off in the first place is the use of butt joints for the spars. They are easy to make but not easy to make well i.e. to have the two faces of the joints mating

Heading picture shows Ron Green launching his new ultra-light EZB design, featuring 'Vee' wing posts and high aspect ratio tail. Weight is just 1gram (0.0265oz). Tail is 12in span with root chord of 2in, tip chord 1in. Motor stick is 8in long, while prop is 12in diameter with 22in pitch and 0.009in thick blades. At right is winner of EZB event at Crawley, Laurie Barr – seen starting his stopwatch just after a low-level launch made to achieve maximum use of the available room height.

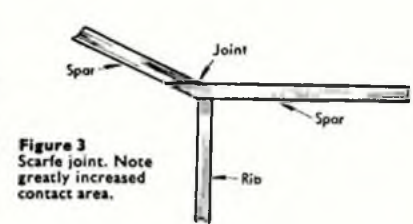




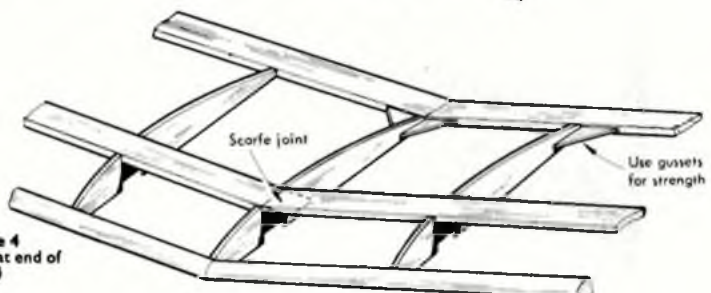
**Figure 1**  
Typical good  
butt joint



**Figure 2**  
Butt joints often look  
like this - do yours!



**Figure 3**  
Scarfe joint. Note  
greatly increased  
contact area.



**Figure 4**  
Wing at end  
of Stage 4

properly (Figure 2). When I was developing Open rubber and Wakefields models, I decided that butt joints were not strong enough to form part of a light yet strong structure, and abandoned them in favour of scarf joints (Figure 3). Scarfe joints are easy to make provided that the spars are put in after the dihedral has been set. In addition, the area of the joint is 3 or 4 times that for a butt joint - very much stronger (and scarcely any heavier) since the weak joint is eliminated. I found that knocking-off wing tips became a very rare occurrence, and only happened on a particularly severe landing. Normal blowing over on the runway was little problem. As a guide for using scarf joints, I suggest the following order of assembly for a typical open structure wing:

- (1) Build basic structure of leading edge, trailing edge and ribs which have spar slots cut for all panels (four for polyhedral wing).
- (2) Lift panels from board and attach tips to centre panels at correct dihedral angle (only two joints to line up).
- (3) Insert one centre panel spar with overlap for scarf joints (make sure spar fits snugly into rib slots and does not stick out above rib outline anywhere).
- (4) The other centre panel spar (assuming a polyhedral wing) can be scarf joined to the first spar - check for an accurate fit - very important for strength (see Figure 4).
- (5) Scarfe join the tip spars to the two centre panel spars - you should now have a complete wing spar fitted in, and the wing is now much easier to handle correctly.
- (6) Repeat Items 3 to 5 for all other spars.

Finally as a further hint on wing construction, I would suggest that the main strength from spars comes from two, one above the other, on the thickest part of the wing section - this follows from simple structure theory.

#### BRITISH MANHATTAN RULES

This is an indoor, tissue-covered duration model, the specification being known to most of the indoor 'regulars'. The class originated in the United States (somewhere around New York I suspect) but is only gradually gaining popularity over there despite having been around for 11 years. The rules are as follows:

**Wing:** 20in x 4in maximum dimensions flat (unprojected). Unbraced monoplane and mounted directly onto the fuselage (no pylons or wing posts).

**Fuselage:** Maximum length 20in excluding propeller, and which must enclose an imaginary box 2in x 2½in x 4in within its exterior dimensions. There must be a clear plastic windscreen of at least 2sq.in. area. The rubber motor must be supported by the fuselage (motor sticks and diamond fuselages not allowed).

**Propeller:** Must be all wood, fixed-pitch type (as for the EZB).

**Landing-gear:** Must be fixed, capable of supporting the model with its motor and have wheels of at least 1in diameter.

**Tailplane:** Dimensions must not exceed 8in x 3½in and rudder must not project behind the tailplane.

**Minimum airframe weight** 6 grams without rubber. Tissue or paper covering only, and the models must rise off ground for take-off.

To summarise quickly the progress to date. Several of us have built Manhattans: Ron Green and I have found them coming out rather light at 3½ to 4 grams (single covered wing surfaces) and we reckon that Jap tissue can be used for the fuselage, and doped very sparingly. Ron's has done more than 4½ minutes in Brize Norton (30-35ft ceiling) mine over 3 with only a 20ft climb or less (got it hung up when going for a big one. . .) The top American time with a 4 gram model is 8 min 10 sec in a high ceiling; I see no reason why we should not equal that or do better in Cardington when some good weather comes, with 6 gram models.

A very interesting class and great fun to fly, and also good for 'bad weather' flying in Cardington - we are looking forward to the comps later on in the year.

#### RAF CHAMPIONSHIPS (INDOOR) - Brize Norton, 12-13th February

This weekend attracted 21 RAF flyers from far and wide, including North Scotland - keen these lads! Several civilians including of course Laurie Barr and Reg Parham were invited to come and help; plenty turned up in the end so there was no shortage of assistance. Butch Hadland, although no longer in the RAF, has been voted a life member of RAFMAA - a richly deserved honour.

Saturday morning saw helicopter and HLG. Helicopter entry was a bit thin; so was the wood on Nick Zotov's microfilm entry which disintegrated on trimming! Flt Lt Graham Collins won with a three-flight total of 2:02; best time was 26 secs in quite good conditions - much better than last year when it was diabolically cold!

Saturday afternoon saw Peanut flying after judging by Butch Hadland and Bernard Aslett. Flt Lt Bob Jones from the home base won with - would you believe - a Lacey M10 (wasn't there a free plan for it somewhere?) - designed by you know who! The most remarkable model of the meeting was Wg Cdn Bob Vian's *Taube*, his first attempt at Peanut - a very adventurous project. Lacey's also took 2nd and 3rd.

The 'Civvy' guests were able to show their capabilities in EZB later on - extended till 6.30pm to give 2½ hours contest flying



**Young Michael Hadland placed third in the Indoor Hand Launched Glider event at Crawley's Sports Centre - just 8 seconds behind his father Butch. Watch out Dad!**





Thirteen year old Chris Parry of Biggles reached the fly-off at the Crookham Gala flying this straight dihedral A/2.

time. Laurie Barr proved the man to beat with a two flight total of 20:40, beating myself by about a minute (must get some better rubber from somewhere, and find the right size). He certainly earned his win, considering the effort put in with the balloon to steer his (and Andrew's) model round the girders and lights. Good conditions made for a very interesting competition – Laurie had a best time of 10:51.

Sunday morning saw RAF EZB, won by Harry French with a two flight total of 15:33 and the best time was 7:57 by Flt Lt Ray Elwell.

The weekend flying was completed by the *Sleek Streak* event in which everyone flew. A very hectic half hour saw the final between Flt Lt Pete Marsh and Mike Hadland, who won the event.

Prizes were awarded at the close by Mrs Baddeley, wife of Air Cdre Eric Baddeley to close an enjoyable weekend's flying.

**HLG** – 1. G. R. Collins (High Wycombe); 2. H. French (Binbrook); 3. CPO N. Lovente (Honington). **EZB** – 1. H. French (Binbrook); 2. G. Hart (Brize Norton); 3. R. Elwell (Wattisham). **Helicopter** – 1. H. French (Binbrook); 2. G. R. Collins (High Wycombe); 3. P. Channon (Sealand). **Peanut Scale** – 1. B. Jones (Brize Norton) *Lacey M10*; 2. R. Lovente (Honington), *Lacey M10*; 3. N. Zotov (Honington), *Lacey M10*. **Civilian EZB** – 1. Laurie Barr (St Albans); 2. R. Bailey (St Albans); 3. A. Barr (St Albans). **Sleek Streak** – 1. Mike Hadland; 2. Pete Marsh, Lindholme. **Best Novice** – H. French. **Junior Champion** – John Meeney Jr.

**CROOKHAM GALA** – *Bassingbourn, 13th February, by R. Uden*  
The weather was fine and dry with a 10–15mph wind. However, the lift was hard to find as exemplified by only a 3 way fly-off (out of 38 entries) in Open glider, won clearly by P. Harris of Sittingbourne with 3:16. Pete Williams made up for the A/2 Trials by winning combined FAI with 14:53 which was a bit too much for Roy Collins

**Stafford Screen of Birmingham checks the thermistor before flying his Super Tigre. 15 Open model at the Crookham Gala, held at Bassingbourn.**



Dave Barnes flew his Curved Air A/2 at the Crookham Gala at Bassingbourn: while at Sheffield University Dave is flying with the Vulcans club.

and Paul Bond using Power models. In view of the close tussle in FAI and Open glider, power and rubber provided rather unexpected results. Chris Batty maintained Nats form with 9:05 in the fly-off to win rubber and was a long way ahead of Phil Ball from Grantham with 6:36, not at all a bad score!

Trevor Grey surprised not a few by beating the 'big stuff' with a  $\frac{1}{2}$ A model in the fly-off to pip Russell Peers by 15 seconds.

**Open Power (14 entries)** – 1. T. Grey (Brighton) M + 5:43; 2. R. Peers (Falcons) M + 5:28; 3. P. Harris (Birmingham) M + 5:11. **Open Glider (38 entries)** – 1. P. J. Harris (Sittingbourne) M + 3:16; 2. C. James (Crookham) M + 2:09; 3. C. Parry (Biggles) M + 0:45. **Open Rubber (13 entries)** – 1. C. Batty (Bristol & West) M + 9:05; 2. P. Ball (Grantham) M + 6:36; 3. G. Ferer (Leicester) M + 4:51. **Combined FAI (23 entries 5 x 3 min)** – 1. P. Williams (Richmond) 14:53; 2. R. Collins (Anglia) 14:20; 3. P. Bond (Anglia) 12:54.

**SMAE CENTRALISED MINI CONTEST** – *RAF Barkston Heath, 20th February, by Martin Dilly*

With strong winds forecast for much of the country and general wintry manifestations like all-night rain and snow flurries during the drive north from London, this contest looked like being a blow-out and this clearly deterred a number of people from the North and North-West of Britain. However, on arrival, the drift was low and the only problem was the steady drizzle; although this failed to discourage some  $\frac{1}{2}$ A flyers, it was not until the rain stopped soon after midday that the contest really got under way. With some quite large, if a trifle chilly, patches of lift, which allowed models to max and still travel only a few hundred yards, those who braved the threats from the weatherman had a most enjoyable day's flying. As regular readers of *F/F Scene* will know, that is what competition flying is all about.

Pete Bayram, who cleaned up both HLG and  $\frac{1}{2}$ A Power at the December SMAE Mini Contest at Barkston, had a full house of

Pete Harris of Birmingham flew this K & B.40 model in the Crookham Open Power event. Note anti-warp structure, and address written direct on the fuselage side, to help the short-sighted.





Pete Farrimond of Wigan flew this triple-finned TD.051 model at the SMAE Mini contest at Barkston Heath. Fuselage uses Ronytube A/2 blank, prop is Top Flite 5 $\frac{1}{2}$  x 3, and model is called Brer Cox. Rings on photo by I. Newton.

maxes with his under-finned glider to take first in the class again but, after four maxes with his *Orbiter*, had the bad luck to have two consecutive very early power cuts, just after launch, thus losing his final flight. The previous week Pete had had an early D/T with the same model, as the knot on the D/T line came undone at launch. The resultant over-elevation kept the maximum altitude down to about six feet, as the Cox ran out its seven seconds run with the model performing tight consecutive loops.

A was the only class to require a fly-off, eventual winner Bob Wells using an aircraft with a large underfin, thickish tailplane airfoil and NACA 6409 wing section; a modified KSB timer had two discs to provide separate adjustment for auto-rudder and VIT functions. Runner-up was Jon Fletcher, a recent convert to 'St Albanism', using the model shown in this column in the February *AeroModeller*. Third placing Dave Hipperson dropped eight seconds and also took second in Coupe-d'Hiver.

Coupe winner John Godden from Leeds flew an eight year old *Garter Knight* fuselage and tail, with a newer wing using a thickened *Garter Knight* airfoil; propeller uses dowel stubs at the root and dimensions of 17 $\frac{1}{2}$ in x 23in. A straightforward tension-sensing prop fold mechanism is used and the motor is arranged as six strands. Another *Garter Knight* flyer, Ray Moore, added a VIT system using a torque sensor at the rear motor peg.

Several new A/1s made their debut at Barkston including a neat one by Brian Kenny of Vulcans who used the Hofešiči airfoil with a sheet balsa top surface, on a model with a thickish undercambered tailplane airfoil, non-circle towhook, and a short nose with quite a lot of side area to the fuselage. Brian took second place after dropping 24 seconds, behind Whitefield's Steve Philpot, five seconds short of a full house. Steve's model also had a lot of side area at the front, as well as a straight towhook, but used a rod blank rear boom, and a tissue-covered wing with a wide 1 $\frac{1}{2}$ in x  $\frac{1}{2}$ in trailing edge, top spar of 5mm x 3mm spruce right out to the tips, and a lower one of  $\frac{1}{2}$ in x  $\frac{1}{4}$ in, spruce in the flat centre section and balsa at the tips. His wing airfoil had upper ordinates of the Kester Wakefield and lower ones from the Benedek 7406-1; tailplane was flat-bottomed. Taking up third place in A/1 was John O'Donnell, using his foam-cored wing model.

Among the other models at the contest was Grimsby member Roy Smart's A/1, with a 58in span wing using the Neelmeyer airfoil, Roy used a solid fibreglass rod blank for the rear part of his fuselage with two sections of telescopic radio aerial for the forward part of the boom. The wing was shoulder-mounted on 16 swg wires, and had long, tapered tips.

Run smoothly by Brian Baines, the SMAE Mini concluded with presentation of plaques, in accordance with the current Society policy for all centralised contests; this went down well with the flyers, who are used to Dave Stapleton's high speed turnaround of results from Area Centralised events, that now gets plaques to winners within a couple of weeks, but for whom the idea of on-the-spot prizegivings at SMAE contests is still a novelty.

**Coupe d'Hiver (11 entries)** – 1. J. Godden (Leeds) 8:58; 2. D. Hipperson (Croydon) 8:51; 3. J. O'Donnell (Whitefield) 8:49.  
**A/1 Glider (14 entries)** – 1. S. Philpot (Whitefield) 9:55; 2. B. Kenny (Vulcans) 9:36; 3. J. O'Donnell (Whitefield) 9:35.  
**A Power (13 entries)** – 1. A. Wells (Anglia) 10:00-2:39; 2. J. Fletcher (St Albans) 10:00-2:17; 3. D. Hipperson (Croydon) 9:52.  
**Hand Launched Glider (10 entries)** – 1. P. Bayram (Richmond) 5:00; 2. B. Kenny (Vulcans) 4:15; 3. A. Percival (Grantham) 4:14.

**SE AREA (SMAE) INDOOR MEETING – Crawley, 6th March**  
 Once again we were very pleased to be able to use the Main Hall at the Crawley Sports Centre. The hall itself is quite large with a 'clean' ceiling, ideal for ceiling scrubbing the EZBs.

The first session (one hour) was for EZB; unfortunately these models, being the lightest (apart from microfilm which wasn't flown) are most sensitive to turbulence, and this was considerable since the previous occupants of the hall had just finished playing badminton; the EZBs were not happy so that not much useful trimming was possible. Few official flights were recorded.

The next session (one hour) was for HLG which was fast and furious with lots of models and people flying around. Models varied from a 12inch spar 2.7 gram lightweights to a 20inch span *Super Sweep* type both of which had similar potential.

This proved to be Butch Hadland's event again (he won last year with the same model), while Ron Green again placed 2nd and resolved to nail him next year!

A surprise 3rd place went to Mike Hadland with the 12in model mentioned above – his best flight of 29 secs was the highest official recorded by the top three. The standard of flying was on average, much higher than last year.

The second session of EZB followed the well-supported Peanut class (reported elsewhere) with much smoother air this time. The perennial hazard of strong ceiling drift was present and this ruined many promising flights. Those without steering aids didn't stand a chance; the one balloon provided by Laurie Barr was a great asset. Using it kept Laurie busy steering his own models and helping others where possible. Roach poles were also useful but more difficult to use. Many a model was given a surreptitious swipe up the backside with the balloon line or a pole – this urged it on to higher things – literally. A practice which is not entirely commendable but there ain't no rules against it – yet. Laurie Barr was the man to beat, but victory was never certain with Ron Green flying his unusual V-wing post EZB which is extremely light at 0.75 grams and has great potential. Time was short with three flights to count.

Thanks must go to the South East Area of the SMAE who underwrote the hall cost; and to the organisers who coped well with the large numbers – the loud hailer was invaluable.

May I suggest that for next year, EZB has a two-hour session later on in the day; it will make things much easier for the EZB men, and the air will have settled down somewhat. Does Peanut need two hours in which to fly? I very much doubt it since EZB's stay up 10 times as long!

A most enjoyable day – we all look forward to next year; it's a very nice site so come along and enjoy some flying! I'm glad to be able to report that the meeting ended with a very small profit due principally to the generosity of those who contributed to the fund.

**HLG (18 entries – best 5 from 9 flights)** – 1. C. Hadland, 134 sec; 2. R. Green, 128 sec; 3. M. Hadland, 126 sec.  
**EZB (11 entries, best 3 from 6)** – 1. L. Barr 27:55, best flight 10:13; 2. R. Green 25:20, best flight 10:01; 3. B. Aslett 23:22, best flight 9:10.

**A/1 winner at the SMAE Mini contest was Steve Philpot of Whitefield; hybrid airfoil uses Koster upper ordinates, Benedek 7406-1 lower ones. Ronytube fuselage, flat centre section to wing, straight towhook, flat-bottomed tailplane.**



# topical twists

by 'Pylonius'

illustrated by Sherry



"You blithering idiot! Richthofen doesn't crash until the last reel.."

## THE WHY FACTOR

One of the first noises I heard on the flying field, apart from the spla-a-at of crunching balsa, was the anguished cry: "What did it do that for?"

The 'it', whose errant behaviour is the cause of all the hair tearing, is usually a model plane (or was), dutifully obeying the complex laws of aerodynamics. Unfortunately, these laws all too often act contrary, in the delicate counterpoise of forces, to the expectations centred on a hopeful piece of 1/16in packing stuck in the noseblock; and the model, suffering, like a stag party audience, from too much drag, staggers out of the sky.

As model flying becomes more of a sport and less of a science, modellers tend to become more addicted to the 'rule of thumb' than Nero in the arena. Whereas the earnest modeller of yesteryear would apply formulae and slide rule to an aeronautic calculation the modern, thumbs-the-word, designer reckons 'about that much', hopes for the best, and usually gets away with it.

Now and again though, the 'rule of thumb' gets the thumbs down, and this is where the "What did it do that for?" is offered up to the skies. Often the pitiful cry could only be partly answered by a team of aerodynamicists and mathematicians working a whole year round, using specialised equipment, including a wind tunnel. Meaning, of course, that if the 'rule of thumb' flyer really did get an answer to his question it would not be why, but 'y plus x' and a whole lot of disturbing non-sporting formulae.

## DOOMWATCH

When we are asked, "Is Model Flying Doomed?", it seems to me that the keen radio flyer should not wait for an answer which, in the present depressing trend of things, is not likely to be an encouraging one (up to 36in span rubber powered models only), but to get into film making right away; working on the prop propelled props.

There is a great nostalgia for the pre-missile age of flying, and anything that just drifts gets the plaudits of the multitude, with the exception, of course, of the economy. What is needed, as an antidote to sonic booming is anything short on speed and large in surplus wing area. And, who knows, this description might just fit that biplane project you have been working on. Imagine it the star of the next telly series, batting its way gallantly over the German lines.

What makes the radio model such an attractive filmic proposition is the inflated costs of film making. Gone are the days when the Director could call upon the reserve

squadrons of S.E.5's to stand by; what sort of aerial battle scene he can now mount depends upon the resources of the North Wessex Radio Club, Scale Section. You can now sit through a whole film or telly series without seeing anything actually airborne over six feet in span, so cunningly do they switch from flying model to studio mock up.

Just think, if you were one of the lucky bods (or Boddingtons) to do the flying sequences you would not only get in umpteen days of pleasurable operating, but you could also sit back in the armchair at home and see a glorious action replay. What is more, you would be paid for it, and make as much noise as you like:

"What's all that — noise out there?"

"Keep calm, dear. They're making a television film about flying."

"Well, don't just stand there. Get out me old uniform. They might need some extras."

## OUT-BUILDING

Someone who built a full size plane in a not oversize garage poo-hooded the idea there was anything difficult about it, apart from getting it out of the garage. It was not perhaps as easy as falling off a balsa log, but quite as simple as a typical model kit.

Personally, I do not know much about kits, except that if the models could soar as well as some of their prices they could be quite good value. When I started modelling, which was shortly after Leonardo de Vinci, Dads were not the indulgent, of-course-you-can-have-a-radio-model-son, Dads you find besieging the model shops nowadays, for back in those times when children were seen and not heard your cash pleas fell on very deaf ears. This is why, perhaps, I developed a purist objection to living out of cardboard boxes. Then again, I am a great mucker up of things, and from this point of view the one chance only nature of kits seems most unsporting. They do not usually include the necessary materials for a third attempt at the fuselage.

All I do know about kits are the end products I see on the local common. I could imagine a full size product built on the same lines just making the tail end of the local carnival, discreetly draped with coloured paper, and a fairy on each wing. Square leading edges and a fuselage veing helically with the propeller can have a depressing effect on model performance, and an even more depressing effect on the chances of an airworthiness certificate.

What a shambles if, after tearing out the back of the house to get the plane out of the lounge, you find the dustman gathered round it, working out the totting value.



## KIT REVIEW

by Ian Peacock



# MONOGRAM SPEEDEE-BILT CITABRIA

THOSE MODELLERS amongst us who specialise in constructing plastic kits will recognise the name of *Monogram* as being manufacturers *par excellence* in this field. For many years their range of 1/48th scale kits were regarded as a "standard" by which other manufacturers were judged. Latterly their offerings in 1/72nd scale were to an equally high standard and their Boeing B-52 bomber at nearly 3 feet wingspan makes it one of the largest kits ever.

Less known, in the UK however, is *Monogram's* involvement in the flying model field. Quick-built, rubber powered, free flight kits have long been in their catalogue although they have not been widely available in Great Britain. This fact has now been reversed with the active efforts of importers A. A. Hales of Leicester (who handle the entire range of *Monogram* plastic kits) to promote the new revised versions of these quick-to-construct models.

Going under the title of *Speedee-bilt* the range at present stands at three models namely *Citabria*, *Piper Cub*, and *Cessna 180*.

We elected to test the *Citabria* but would stress that such a marked similarity exists between the kits that our observations would be equally valid for all the models.

### First Impressions

One is first struck by the impressive box artwork containing genuine photographs of the finished model (not an over-emphasised, artist's impression) together with another photograph showing the entire contents of the kit. Despite the shrink-wrapped exterior therefore, one is left in no doubt as to exactly what one gets for ones money.

In fact one gets a most comprehensive kit comprising self aligning fuselage halves and a one piece fully airfoiled wing moulded in pale blue

expanded styrene foam. Foam tail parts, pre-bent wire undercarriage, moulded propeller, injection moulded "goody" selection, self adhesive trims (windows etc!) and one of the most comprehensive instruction and flying sheets ever produced. Every contingency seems to have been taken care of, and such attention to detail includes modelling clay for the nose weight, a small sachet of white glue, and glass paper. The only area where wood is used is for the wing struts – surely a reflection on the current price of timber.

All foam plastic construction has been viewed with some suspicion by modellers world-wide due to its higher density than conventional structures but *Monogram* have done their homework well, and the completed 18in span model weighs only 1½ozs (including rubber motor and nose weight) and despite a disclaimer in the instruction sheet that "... is not a rugged toy", the model seems capable of taking many a hard knock.

### Construction

The sheer simplicity of the construction of the kit coupled with the extremely comprehensive instruction sheet resulted in a completed model in just 25 minutes. The simple step-by-step illustrated guide and the well thought out method of assembly should make these kits an ideal introduction to free flight for many a youngster not yet able to handle ¼in square balsa and lightweight tissue. Indeed it would be hard to imagine a way to put them together wrongly (although I'm sure some will manage it!). Basic construction consists of joining the fuselage halves with white glue and sticking the one piece wing to the fuselage top, the main U/C and tail wheel mouldings being trapped between the fuselage halves. Clever pre-forming of the U/C wire legs allows the moulded

plastic wheels to be "snapped" into place without recourse to solder or glue, although a sharp end is left protruding through the wheel. The tail parts are pressed from the pre-cut plastic foam sheet and cemented to the rear of the fuselage. Adequate instructions cover the alignment of these parts to ensure a square assembly. Trim strips, windows, serials etc are added from a pre-cut, coloured, self adhesive sheet. A neat touch here is the inclusion of a "Name and address label" should the model fly away. When the wing/fuselage joint is dry, the hard-wood wing struts are added. Apart from separating plastic wheels etc from the moulding sprue, trimming these struts to correct length was the only time that a knife was needed throughout the entire assembly.

The propeller is a pre-assembled, free-wheeling unit of good quality and the nose bearing and rear motor peg are part of the "moulded goody" pack. Two good quality rubber bands are provided for the motive power. No mention of balance point is made, although the moulded area for nose weight is filled with modelling clay and one is told to retain the surplus clay for later.

### Flying

Flying instructions come on a separate sheet obviously common to all kits. These are semi-pictorial and like the assembly instructions, remarkably comprehensive, covering all the basic requirements. Here one encounters adding or removing the clay to obtain the correct glide pattern together with launching technique and a warning against overwinding the rubber motor. Minor repairs are also covered. Finally a "Pilots pre-flight check list" is provided.

Surprisingly although turn trim is covered by an adjustable rudder tab

no mention of thrust adjustment is made, assuming, one supposes, that if its built right – it'll fly right. Ours however did not and having added ballast to obtain the correct glide, a tendency to power stall was evident on flights using maximum turns. A sliver of plywood behind the propeller bearing cured this, and flight performance was quite satisfactory.

#### Summary

Although at first glance these *Speedee-bilt* kits might seem expensive at £2.75 one must consider first what one gets for ones money. Comparison with other small scale rubber driven kits is natural, particularly as many of the home grown kits sell for less, but such comparisons on cost alone are dangerous. One must also take into consideration the likelihood of a younger modeller achieving any success, as, after all, nothing succeeds like success! Some so-called junior scale kits are well beyond junior skill, as mentioned earlier ( $\frac{1}{8}$  in square balsa is not the easiest way to start modelling!) whilst other all-balsa sheet models have a better chance of being correctly assembled, and flown. With the *Monogram* kits a much greater success/failure ratio is to be expected. It is obvious to the serious student of kit design that much deep thought and work has gone into these kits to produce as near as fool-proof a model as possible, and the results must surely speak for themselves.

#### Addendum

Hardly had the ink dried on this report when the postman arrived bringing a sample of the Telco CO<sub>2</sub> motor. Now much had been written of this device and I, like others, was anxious to see for myself, and what better vehicle for testing than the *Citabria*? Accordingly the rubber motor was rapidly removed, nose block cut-away with a sharp balsa knife and the motor mounted on a light ply bulkhead. The bulkhead was fitted and secured with PVA (white glue) as supplied with the original kit. A slight touch of both down thrust and right thrust was incorporated. Whilst this was drying I rushed to the nearest Off-licence to purchase some Sparklet bulbs (the one that comes with the motor having been exhausted at the breakfast table as I "played" with my new "toy".)

Later that afternoon, calm settled like a blanket over the village, and a rapid exodus to the playing fields was underway. Test glides ascertained that the balance was correct, and the tank was filled. From the first

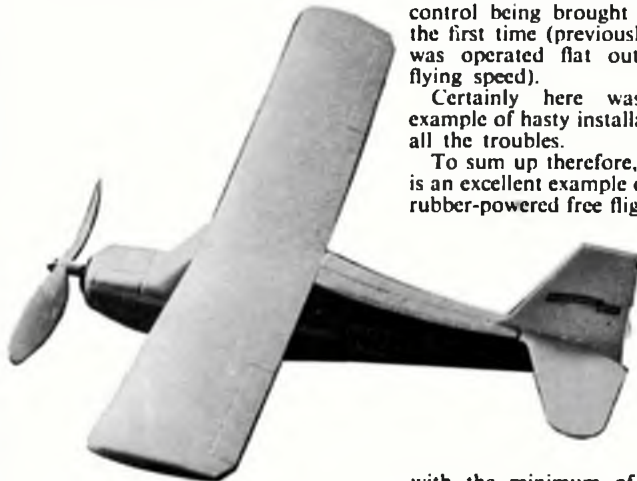
flick it became obvious that we were onto a winner – good level flights were achieved with no change in the thrust line while left and right climbing circuits were only just possible with no apparent vices. Flight duration was, however, a little disappointing and frequently the engine would ice-up (particularly as the chill of dusk descended).

Discussions with others led us to wonder if we had a low-standard unit and the instructions were thoroughly read again to check that no important points had been

fitted upright with at least  $\frac{1}{4}$  in poking out of the fuselage. The thickness of the foam at the fuselage floor was found to be sufficient to support the tank in the vertical position without additional strengthening. The lower fuselage was recemented with PVA. At this juncture it was also decided to correctly mount the filling nozzle rather than having it flapping loosely in the breeze. The new installation was much cleaner, and more professional, as can be seen – and the results show in the performance. Considerably longer flights were now achieved with the variable speed control being brought into use for the first time (previously the motor was operated flat out to achieve flying speed).

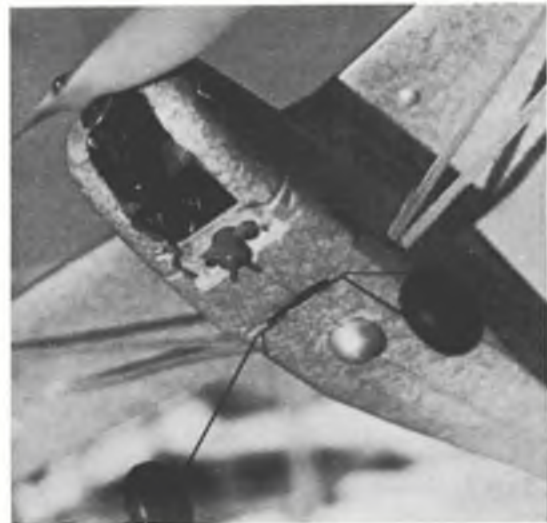
Certainly here was a classic example of hasty installation causing all the troubles.

To sum up therefore, the *Citabria* is an excellent example of the type of rubber-powered free flight kit which,



missed. Eventually the icing up was diagnosed as liquid gas discharge from the tank, which despite instructions to the contrary, was lying almost horizontally in the fuselage. At this stage it was felt that some "surgery" to the bottom of the fuselage was needed and the centre longitudinal joint was split open. A circular hole was punched through the lower fuselage (using a large *X-acto* punch) and the gas tank

with the minimum of adaptation, provides a most rugged CO<sub>2</sub> model. Flight performance, whilst not up to that obtained from the expert-style of model, is sufficiently exciting to make this simple conversion really rewarding. Should you decide to start from scratch, however, I would suggest that the tank, filler, and motor mounting be arranged *before* the fuselage halves are joined, as this saves a lot of aggravation at a later stage.



Conversion to CO<sub>2</sub> power proved remarkably easy – a Telco motor was rapidly installed. Note too the refuelling valve and end of the tank unit protruding from the underside of the fuselage. This is the correct way of mounting the tank, not as previously attempted – see text for details.

## YOUR TWO FREE, FULL SIZE PLANS

# Little Brother

BY 'RAPID RICK'  
and DICK SARPOLUS

A 26½ in. span all-sheet control-line sportster with the good looks and lively performance. Uses 0.049 cu. in. engines.



'Rapid Rick' with his attractive ¼A design - this class of flying is getting very popular in the USA, with many pilots flying 'full-stunt' ¼A models.

THIS ¼A MODEL is of all sheet construction; it can be built rapidly, is rugged, and most important it flies very well. In the past, we have considered that all sheet models of this nature are suitable only for basic training; they all flew, but not well enough for aerobatic training and they were just not capable of providing sufficient interest to a skilled flier. Several things contribute to the better flying characteristics of this model: it is big with enough wing area to permit real aerobatic flying; it is light despite being of all wood construction, and the large wing area provides a low wing loading for better performance. The Cox Tee Dee .049 used has ample power for good performance and 35 foot .008in wire control lines offer vast improvement over the commonly used dacron or terylene lines. Finally, it features coupled flaps and elevator controls, like the larger .35 and .40cu. in. powered stunt models.

¼A control line flying is growing rapidly in the USA, with many contests now being held. However, *Little Brother* is definitely not a "fullhouse"

contest model; for top competition you must go to a built-up or foam wing, full fuselage, landing gear, etc. However, *Little Brother* does make a good pattern trainer and being of all wood construction it will merely bounce from almost any sort of crash when flown over a grass field. If damaged, five minute epoxy will quickly put it back in the air. It is fast and does require quick reflexes - which perhaps makes it less than ideal as a trainer - but its cost and rugged-

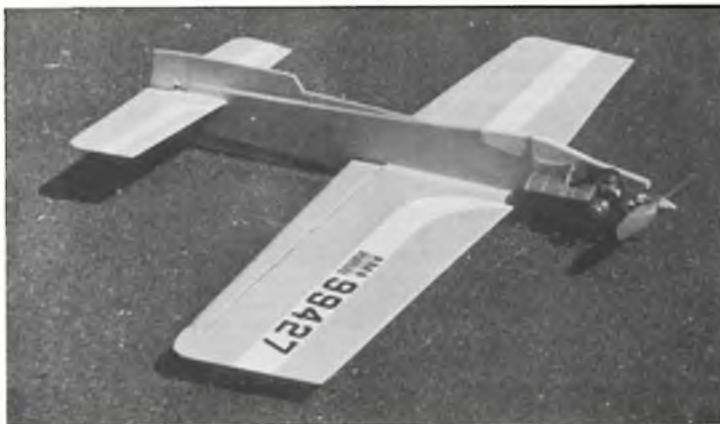
ness, we feel, enable it to serve well in a training role.

The plane was designed by my son, 13-year-old Rick. It was his idea to build a basic ¼A model with the styling and overall appearance of a 'proper' contest stunter. He selected styling features from a number of contemporary models, and combined them with the size and moments of other ¼A models we had been successfully flying.

Construction can be accomplished in a few evenings work. Only two thicknesses of balsa are required, ¼in and ½in stock. The wing is from ¼in balsa, the width being made up by edge-gluing narrower sheets together. The cross-grain wingtips help prevent warps and so should not be omitted. The tail surfaces are also ¼in balsa; thinner stock could be used but would not appreciably lighten the model. Simple cloth hinges are used but commercially available plastic bellcrank and control horns are employed.

The ½in profile fuselage is strengthened by 1/32in plywood nose doublers and the ½in hardwood motor mounts. The motor mount spacing should be made to suit your choice of engine - we feel the Cox Tee Dee .049 is ideal for this sort of model and thus this motor is shown on the plan. A 25-30cc fuel tank is mounted on the outboard side of the fuselage with a rubber band retainer over a wire hook for simplicity. The plywood bellcrank mount and

*continued on page 285*



# Sparrow

BY IAN DOWSETT

**A 23in. free-flight duration styled model, designed especially for CO<sub>2</sub> power. Uses all-sheet construction for quick and easy assembly**

WHEN ASKED to design a model for one of the new breed of CO<sub>2</sub> motors, I immediately thought of a F/F duration model. This type of model, with this type of propulsion unit, is really exciting as it is quite easy to build and also in these days of rising costs is cheap to make and fly. Being naturally of light construction they tend to 'bounce' rather than break, and are easy to trim. I really hope we can soon have some competitions for them. PLEASE do not forget the D/T - I did, and lost the first *Sparrow* out of sight after a seven minute flight! That followed just 20-30 secs. of motor run!

There seem to be two schools of thought concerning the mounting of the tanks on CO<sub>2</sub> models, some say keep the tank insulated while others say let the airflow pass round the tank. I have chosen to mount the tank in a polystyrene foam block in the pylon, the polystyrene insulates the tank and also I prefer to have a nice clean looking model with minimum drag. Which of the two ways of mounting the tank is best I do not know, but I have had no apparent troubles with mine, and I have no complaint with *Sparrow's* performance.

## Construction:

For best performance, do try to select light wood for this model, its performance relies on a low all-up weight and as I have already said they bounce rather than break so you can afford to select the lighter wood from your balsa stocks. Start with the wing by building the four separate panels pinning down the rear 1/32in sheet and gluing the ribs in place. I use PVA adhesive as this shrinks less than balsa cement and is less likely to pull the 1/32in sheet out of shape. When this is dry, lift from the plan and turn the right way up, chamfer the 1/16in sheet leading edge so that it butts up to the rear 1/32in sheet neatly, and glue in place to rear sheet and all the ribs. When perfectly dry, the wing can be sanded at the dihedral joints to get the correct angles as shown on the plan, Glue and set aside to dry.

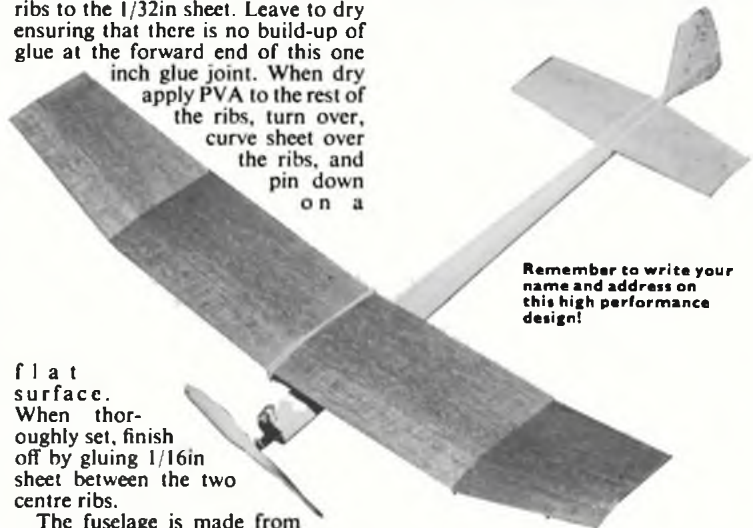
The tailplane is equally easy; cut

out the 1/32in sheet to shape and starting with the tailplane inverted, PVA and pin the REAR one inch of the ribs to the 1/32in sheet. Leave to dry ensuring that there is no build-up of glue at the forward end of this one inch glue joint. When dry apply PVA to the rest of the ribs, turn over, curve sheet over the ribs, and pin down on a

flat surface. When thoroughly set, finish off by gluing 1/16in sheet between the two centre ribs.

The fuselage is made from 1/16in and 1/32in sheet balsa. First cut out the top, bottom, sides, formers and fin. Pin the bottom over the plan and PVA the formers and ply engine mount in place. When set, PVA the top sheet to the formers, not forgetting to cut out an appropriate hole for the later mounting of tank and foam insulation. When dry take, off the plan and PVA one side in place, then the fin and finally the remaining side. Try to keep the assembly square

by use of rubber bands and pins. Next install the tank, foam insulation and filling valve. Finally build the pylon



Remember to write your name and address on this high performance design!

around the tank assembly as shown on the plan. The dethermaliser snuffer tube, line guides and wing hold down hooks are then epoxied into place.

Original models were finished by lightly spraying with *Magic Marker* spray to give good tracking visibility, and then given two coats of sanding sealer thinned 1:1 with thinners, lightly sanding down after each coat.

*continued on page 285*

A Talco CO<sub>2</sub> motor was used in the prototypes, but the plan also details installation for the Humbrol PMS-1 CO<sub>2</sub> motor and tank filter.





# THE SMAE SHOWS ITS TEETH

- and meets a £2000 Public Inquiry bill

MORE THAN six years ago a newspaper article in a Bromley local paper indicated that the London Borough of Bromley was contemplating Byelaws to control model flying – and from that innocent snippet a long, difficult, saga developed which eventually led to the Home Secretary ordering a Public Inquiry, which took place in late January 1977.

Faced with an Inquiry the Society of Model Aeronautical Engineers had to take a basically simple decision whether to stay out of the Inquiry completely or to enter the fray wholeheartedly. There was no middle road. To enter unprepared, or casually, would have been worse than not to enter at all.

The factors which had to be examined before making the decision were, broadly, (1) did the model flyers have a good case and (2) would the issues likely to be raised at the Inquiry be of a precedent-setting nature elsewhere?

The main points involved in the background were as follows:

- (a) A total ban on all power-driven models was being proposed in all 92 public parks, open spaces etc., in the Bromley Borough (London's largest borough with 300,000 inhabitants);
- (b) Several written offers of advice on the drawing up of Byelaws had been made by SMAE to the Bromley Borough over the previous six years. The offers were *deliberately* (on their own admission) not taken up by the Borough;
- (c) The Borough had agreed in writing to consult the SMAE and subsequently *deliberately* (again on their own admission) did not consult;
- (d) In the SMAE's opinion a few suitable public sites for power-driven flying do exist in the Borough, provided reasonable restrictions are imposed by Byelaws.
- (e) The Borough of Bromley was known to be briefing a barrister to represent them.
- (f) A group of residents, local to one particular park, was known to be briefing a barrister to support the total ban throughout the Borough.

N.B. Items (e) and (f) meant *two* opposition barristers to face.

Even on these scant salient points, what decision would you have taken? We think you will agree that the Inquiry had to be entered *fully*, and this was the decision taken.

## Preparations

The Inquiry was announced a week or so before Christmas 1976 and its actual start date of 24th January 1977 announced only a day or two before Christmas. The SMAE detailed its then Vice Chairman, Ray Favre (now Chairman) to lead the SMAE's dealings, with Martin Dilly, the local Area representative heavily involved also. Martin had been handling the matter over the previous six years at the SMAE local level.

A hectic month followed gathering data, speaking with local clubs, re-checking sites, briefing the solicitor and barrister, preparing evidence, examining documents etc. Although the form of the proceedings could not be predicted with certainty, the legal advice was that the Inquiry would be very similar to a layman's view of normal court proceedings, and this turned out to be accurate.

Thus the preparations and the capabilities of the SMAE two-man team had to concentrate not only on presenting a viable case, but also to be prepared, and able, to stand up to professional cross-examination on many policy issues of model flying and to generally 'think on their feet', taking into consideration the potential effects in other parts of the country. It goes without saying that both Martin Dilly and Ray Favre had to be fairly certain of being able to be constantly in attendance at the Inquiry. As it stretched to 5 days (2 days only were expected) this factor alone is an important one.

## The Inquiry

The 'opposition' presented the bulk of its case over the first two days. It did not contain many surprises in content (there were a few!) but the sheer weight and detail of it were enormous. One key witness submitted over 200 sheets of supporting docu-

mentation which had to be read as best as could be, ready for the immediately-following cross-examination by the SMAE's barrister.

The third day was primarily taken up by independent witnesses i.e. anyone who wanted to say something relevant (or irrelevant!) to the Inspector. The price one pays for this 'privilege' however, is that you can be cross-examined by the opposing side. This was therefore, a particular ordeal for any person opposing the London Borough of Bromley's view because the cross-examination would come from *both* opposition barristers, in turn. Nonetheless, a half-dozen stalwarts from local model flying clubs (plus the glamorous wife of one model flyer!) did buck up courage and put forward evidence. They put up a very good show which added useful support with a local flavour to the SMAE'S case.

The fourth day, and first half of the fifth day, were taken up by the SMAE'S case. To be more exact the bulk of that time was taken up in cross-examination of the main SMAE witness, Ray Favre, who was 'in the box' for *over one whole day* (*Think about that next time someone asks what the SMAE does for the average flyer!*)

The final afternoon and early evening saw the closing speeches by the three barristers which lasted about 1½-2 hours, each.

There will now be a waiting period – possibly several months – while the Inspector considers the evidence and writes his report and recommendations to the Home Secretary. So we have no idea yet as to whether the model flyers have 'won' or 'lost'.

## The Aftermath

For the SMAE, the work is far from completed. The Inquiry documents came to a pile 9in thick and contains some far-reaching items which are already affecting SMAE'S policy directions – and therefore will affect all model flyers. Part of the pile consists of just under 200 typed foolscap sheets of verbatim transcript of *all* the cross-examinations and anything else not submitted in writing. (The main



evidence was read and copies deposited with the Inspector – but obviously cross-examination was unscripted). This transcript alone contains the most important parts of the Inquiry and it was an SMAE decision to pay for a shorthand writer to be present for the 5 days, solely to ensure that full information is retained for posterity.

What is going to happen with all this vital information? Well the commercial model press Editors have already been given a preview briefing; while Martin Dilly and Ray Favre are now offering to give briefings to *any* genuine model flying group (i.e. club or group of clubs) provided that the travel costs etc., are met by those receiving the briefing. The contact address for this service is Ray Favre, 26 West Drayton Park Avenue, West Drayton, Middx UB7 7QA, and it is stressed that you do *not* have to be a SMAE member to make a request. All that Martin and Ray ask is that as considerable amount of *unpaid* time and effort is involved, a fair number of people are guaranteed to be in the audience' (several clubs together?).

In addition, a few selected SMAE officials in different parts of the country will be given the master copy of the documents to study in depth – to ensure that more than just two people have the total knowledge. Also the SMAE is taking positive

steps to become aware of all potential Bye-law actions, with a view to offering expert advice to local authorities at an early stage.

Why do we not put some of the details from the Inquiry into this article? Well, one of the key points which came out of the Inquiry is that the 'opposition' read the magazines also, *and* they throw well-selected material back at the flyers if the opportunity arises. Would you believe that even a 'Pylonius' column extract from *AeroModeller* was quoted against us? Well, it was! So potential ammunition will not appear in commercial magazines from an SMAE source.

However, it would perhaps be chastening to look at the following *partial* list of subjects which had to be covered in briefing, evidence or cross-examination by the SMAE team:

*The different types of model flying*  
*The flying space requirements of the different types*  
*Noise and Acoustics*  
*Safety*  
*Muffler characteristics*  
*Engine types*  
*Control of Pollution Act*  
*Electric Motors*  
*Reliability of R/C gear*  
*Home Office Guidance on Byelaws*  
*Co-ordination of Sites with other users*  
*Private Sites*

*Planning Permissions*  
*Insurance*  
*Permits to fly*  
*Interference*  
*Frequency Allocations*  
*Sports Council*  
*Byelaws operating in other areas*  
*SMAE/Royal Aero Clubs links.*

Finally if there is one overriding lesson from the Inquiry which must be learned by every model flyer and club in the country: **Do not attempt to negotiate for sites or with local authorities on your own. Expert help and experience is available and your well-intentioned efforts could literally muck it up for yourself or (worse still) others and perhaps even muck it up in another area.**

This is not an exaggerated statement; we can show you written proof. Perhaps one quote from the Inquiry will highlight this. "When I wrote that letter I did not expect to be cross-examined on it by a barrister several years later". Who said it? The key Bromley Borough witness – a senior Borough official who is used to dealing with such matters. **Are you confident that you could do it yourself?**

The SMAE will give expert advice to *any* model flyer – just contact the SMAE Secretary at 36 Tyne Road, Oakham, Leics. (or phone Oakham 56451 during office hours or between 7–9pm weekday evenings).

## LITTLE BROTHER

*continued from page 282*

lead-out guide are epoxied to the bottom of the wing, along with a small outboard wing tip weight, while the rudder is offset 1/4 in to aid tension. Mount the engine with 8BA bolts, using two washers under the front of the mounting lugs for an offset thrust line.

Our original model was slightly tail heavy so we added a piece of 1/4 in diameter solder in a hole drilled into

the front of the fuselage. The model should be balanced to suit the individual flier's preferences, but make sure that it is not rearward of the position shown for first flights! Very little flap and elevator movement is required, probably less than 1/4 in up and 1/4 in down on the elevator – the linkage can easily be adjusted, again to suit the individual flier.

For a light finish, we applied about five coats of thinned clear dope, sanding thoroughly between coats, then sprayed on two coats of colour dope. A contrasting trim design was masked and painted, followed by two

coats of clear overall. Not a best finish winner, but adequate for this type of project.

A wire landing gear could be added, strapped onto the fuselage, but we did not bother, preferring to fly this model over a grass field which will absorb those hard landings. The lead-outs may be raked back more to permit flying in quite windy weather. We find 35 feet of .012 in dia stranded cable flying lines to be satisfactory; they are more resistant to snags than the lighter .008 in cable – whatever you choose, avoid Terylene lines – they simply stretch too much.

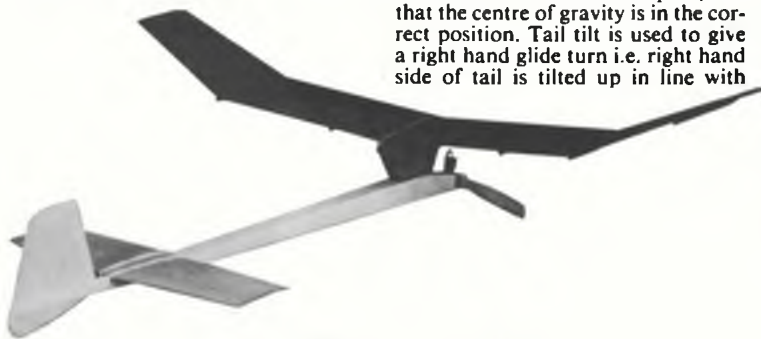
## SPARROW

*continued from page 283*

Trimming those *Sparrows* built so far has proved to be simplicity itself. First be certain that the wing and tail incidence is as shown on the plan, also that the centre of gravity is in the correct position. Tail tilt is used to give a right hand glide turn i.e. right hand side of tail is tilted up in line with

inboard panel of wing. Model should now have the correct glide angle, but optimum glide can be obtained by slight (1/4 in) movement of the CG.

The turn under power should also be to the right, and is controlled by SMALL increments of right rudder. Start with short motor runs and trim for a fairly gentle right turn under power. No wing warps have been found necessary with *Sparrow*, but as stated above DO use the dethermaliser on EVERY flight – this is a light model and does not need much of a thermal to really start soaring away.





# Scale Matters

by Alan Callaghan

Rex Oldridge launches his new Peanut scale model - an Isaacs Fury, as described in the April issue, which at first suffered from trimming problems.

*fire XIV* of Peter Frostick, and the *FW190D* by Trevor Crout. Both of these models featured fuselages formed by soaking 1/32in sheet balsa in hot water, then wrapping it around a softwood male fuselage former, binding in place, and then baking carefully in a slow oven to form two matching fuselage halves. Once glued together the halves are sanded gently and covered with Jap tissue. Several other parts on the models such as air intakes, cowlings, and spinners, were formed on a home-made vacuum-forming unit. The wings on both these models were built-up structures, sheet-covered where appropriate, but then covered in condenser paper which was made tight by spraying with gin! Build Peanut models and you will find you can afford any expense. Both models also featured built-in retracted undercarriages, but had not been fully finished in time for the contest (could have been due to the need to keep a constant check on the strength of the gin!).

THE FIRST SMAE Indoor Scale meeting for Southern enthusiasts in the 1977 season was held at the Crawley Sports Centre on March 6th. This meeting was extremely well attended as it also included EZB and HLG contests resulting in some frequently very congested airspace with organizer John Jones having the quite unenviable job of trying to persuade everyone to keep rigidly to the allotted time-slots for their own particular class of model.

In CO<sub>2</sub> scale nine entries materialised most of which, I believe, were original designs. CO<sub>2</sub> flying indoors is not for those with faint hearts, and in the main the most successful and safe flights were by Butch Hadland's *Potez* which has already been well-trimmed in the much larger spaces of

Cardington. After his first flight, which kept most people pinned to the walls, Butch tightened up the turning circle, which, causing a highly banked attitude, lost some of the realism in flight, but nevertheless kept the model intact and himself in first place. In second place was T. Barlow with a quite difficult subject, the *Sopwith Triplane*, and following on was Bernard Aslett with his semi-scale *Bleriot* which is an extremely good performer. All of these models were Telco powered.

The Peanut event drew an unprecedented 31 entries, amongst which there were some real gems of craftsmanship from many other than the well-known names and faces on the indoor "circuit". The most original models were undoubtedly the *Spit-*

Trimming out a low-wing peanut model is one of the most difficult jobs imaginable, and I think that however much it goes against the grain, a little bit of dead weight ballast fitted as low as possible in the airframe directly below the C.G. is something to try if all else fails.

Another low-winger to be seen was the *Yak 18 PS* by Howard Funnell, who also had an excellent little *Bleriot* complete with full-detailed undercarriage and spoked wheels. Rex Oldridge brought along his newly-finished second *Isaacs Fury* but seemed to be having more than his usual share of difficulties in trimming the model. After a lot of very careful checking and measurement



Left: Captioned as Rex Oldridge's Isaacs Fury in the April issue, this Peanut is actually a Fairey Flycatcher as built by Mrs Tricia Denny - very nicely too. Apologies all round - just shows the Editor cannot tell the difference between an Anson and an Elephant! Below left is David Deadman's Telco CO<sub>2</sub> powered Velle Monocoque built from the Flyline kit. Below right is Howard Funnell's Yak 18PS.





Brian Hewitt winds his Wright Model 'L' bi-plane - very slow flying device, likened to a 'fast' EZB!



Holding Trevor Crout's Focke-Wulf 190D is Jenny Grace - model features all sheet fuselage, as described in text.



Very highly detailed - and note those spoked wheels - Blarlot by Howard Funnel. Superb model.

a day or two after the contest this was eventually traced to incorrect incidence on the lower port wing. Fortunately Rex's method of attaching the wings with PVA glue meant that removing the wrongly-positioned one by painting the joint with warm water to soften the glue was a simple task and thus an accidental mistake was easily corrected.

A model that I always make a point of watching given the opportunity is the *Wright Model "L"* by Brian Hewitt (Remember his 'Stunt King' and 'Stunt Queen' C/L aerobatic designs of the early 1950's?). This biplane, covered in clear condenser paper, is the slowest-flying Peanut model I have ever seen - equivalent to a fast EZB model. It does seem, however, to be extremely sensitive to trim changes and requires some time to adjust to any given indoor conditions. Fellow South Bristol club member Doug Shepherd brought along a finely-detailed *Tipsy Nipper* but did not manage to find enough time to trim the model sufficiently well to return a good flight score.

The leader in the static section was a *D.H.60M Moth* by Derek Knight of the Lee bees Club. This version of

the *Moth* is very seldom modelled and in its all over silver livery with RAF markings this superb model was quite a rare sight. Behind Derek came Keith Miller with another beauty in the shape of a *Robinson Redwing*, which makes a very suitable partner for his *Avro Avian*. Equal with Keith in second place was Brian Hewitt with a very pretty *Farman Moustique*. In fourth place Butch Hadland's new *Monocoupe 110 Special* looked very good in its red and white decor with "Little Butch" written on the nose. As a subject, irresistible, as Butch put it. Whereas the performances of the *Moth* and the *Redwing* were not yet up to full contest standard, the *Monocoupe's* quite clearly was. Even so, there were many other excellent flight scores returned, and the *Monocoupe's* seventh position in flying together with fourth in static, giving eleven points altogether, pushed it finally into third place overall. A tie for first place resulted between Brian Hewitt's *Moustique* (5th in flying, equal 2nd in static equals 7 points), and Laurie Barr's totally reliable *Fike E* (1st in flying, 6th in static, equals 7 points). A fly-off was arranged which required a sixty second

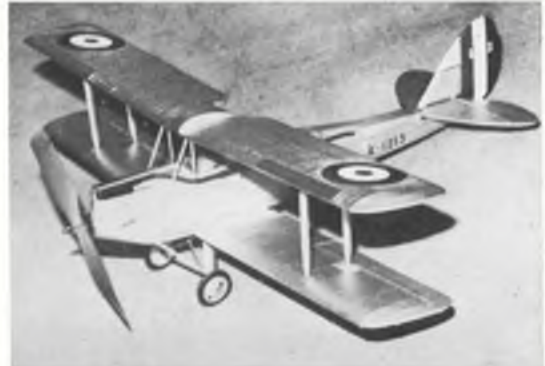
flight from a ROG, and if this still did not separate them, realism in flight was to have been judged by yours truly - what a job! With only one attempt allowed, Brian had the bad luck to have his model ground loop, thus leaving the Fike the clear winner after its trouble-free take-off. The need for this fly-off was not discovered until practically everyone had packed up ready to leave, and took us well over the agreed time limit for the hire of the hall, but it resulted in an interesting end to a hard-fought contest.

By the time this appears in print two brand new Peanut Scale kits will be available from Andrew Moorhouse of 2 Cavendish Place, Bath, Avon. These are of the *Wittman Tailwind*, and the British *Currie Wot* biplane. The *Tailwind* needs no introduction to anyone in touch with indoor scale modelling during the last few years, but of the enormous number that has appeared in fullsize homebuilt form in various degrees of trim in the United States, Andrew has chosen the very simple lines of N374 for his model. Priced at £1.75, each of these kits represents extreme-

A 1/18th scale Auster AOP - by Derek Knight, converted from his own-designed rubber model to Telco CO<sub>2</sub> power. Very nicely detailed and finished.



Another of Derek Knight's models - this time a truly beautiful DH 60M Moth, which placed first in the Static section of Crawley's Peanut scale contest.



The two latest offerings from Andrew Moorhouse are kits for those Peanut scale versions of the Currie Wot (left) and Wittman Tailwind - price £1.75 each



ly good value for money these days and they easily maintain the high standard set by his earlier *Comper Swift* and *Luton Minor*. For the benefit of anyone still unfamiliar with them, the kits come in what is to my mind an attractive box, i.e. plain white card, with a simple label incorporating a clear black and white photo of what the contents will actually make up into, and not a romantic vision of the fullsize thing. All of the effort has gone into carefully choosing the wood, making sure the balsa printing is first class, and providing a set of copiously detailed plans which not only include a scale three-view but also full-size copies of all the printed parts that would allow a duplicate model to be made, or a major repair job to be carried out quite easily. A new development is the inclusion of self-adhesive decals for the registration letters.

The *Currie Wot* must be one of the nearest to the ideal configuration for a peanut biplane model - long fuselage, high thrustline for good prop clearance, generously proportioned tail surfaces, a short strong undercarriage, and rather angular but nevertheless attractive lines. Having seen some of the pre-production models in the air I can say that if neatly finished and properly rigged, this kit will make up into a superb little model that will fly very well. Included in both kits are plastic props, nosebearings, and wheels, which takes care of the harder bits for newcomers.

\* \* \*

There must be quite a number of modellers having recently acquired CO<sub>2</sub> motors now that the Humbrol PMS-1, like the Telco, is available as a power unit in its own right, who may be looking around for a scale model kit in which to install them. One of the best I have seen over the last six months or so is the *Velie Monocoupe*

produced by Flyline Models of the USA. Although the kit is primarily intended for rubber power, a CO<sub>2</sub> conversion (showing the Brown Junior motor) is detailed on the instruction sheet.

The model is quite large at 22 5/16in wingspan, with a generous wing area, and is strongly-built to withstand the rigours of outdoor flying. In the late 1920s Willard L. Velie was a motor car manufacturer who turned to producing engines for the earlier Monocoupe types which were mainly characterized by their fully exposed radial engines. Drag rings and fully cowled motors were more typical of the later Warner and Lambert powered Monocoups of the 1930s and 40s. In the Flyline kit the basis of the 5-cylinder engine is five small corks, with exhaust pipes being made of 1/4in dia. soft reed! - an unusual but quite practical method of building a simplified motor. Being an imported product the kit is not exactly cheap at £4.75 post paid from *The Modellers Den* of 2 Lower Borough Walls, Bath, Avon, but it does make up into an extremely attractive subject. The example shown is a very neatly built version by David Deadman. It is powered by the Telco engine and always arouses a good deal of attention wherever it is flown. The kit plan shows a complete one-piece structure which David wisely modified to incorporate knock-off wings held in place by rubber bands between wire hooks set in the wing roots and all hidden within the centre section. This has the added bonus of allowing the model to stand with its wings realistically folded "in the hangar" as it were, between flying sessions. Very ingenious, but I am almost certain that this could not be done by the real one!

It seems that the world shortage of Jap tissue and Jap silk has (once again) been proved to be a complete myth. One simply has to get used to the cycle of availability. Visiting one of the better model shops revealed Jap tissue in 24in by 18in sheets at a more than reasonable 7p per sheet, plus two-yard packs of silk at £3.00 each - these items now being distributed to the trade by Ripmax Ltd. Much heavier than silk, but very much cheaper and suitable mainly for quite large models is Olive Drab nylon at 40p per yard. A good basis for a WWI colour scheme would be to use this on the upper surfaces combined with a matching quality of white on the undersides of a model. The extra weight of the nylon would be offset to a fair extent by the need for much less pigmented dope in order to achieve a solidly coloured surface, and of course nylon is extremely strong.

Northern C/L Scale fans to the fore! Harold Yates has written to inform me that the Wharfedale Scale Rally will feature a C/L Scale event this year it seems by popular demand made at last year's meeting. From experiences related by my fellow Three Kings club members there is nothing more disheartening than organising a competition, arranging for judges and helpers to be there, and then finding you are short of only one more competitor to make up the statutory number required for an SMAE comp; so let's not have the organizers let down at the last moment. Those people seriously interested in this event which will be held from 10.00am on Sunday 26th June should contact Ron Greenwood, 7 Shadwell Walk, Leeds 17, for further details of the venue.

Below is the Flying Velie Monocoupe kit, as imported by 'The Modellers Den' - a very attractive subject - whilst at right is the contents of the Currie Wot kit box, from the Andrew Moorhouse stable.



# FROM THE HANDLE + FROM THE HANDLE +



by Dave Clarkson

## R A C I N G

### THE NEW SMAE SAFETY RULES

NOTICE that couple of column inches in the last *SMAE News* announcing proposals from the C/L Committee for compulsory shut-offs for all racing models, and compulsory 'safety spinners' for all C/L models? Just in case some people are not totally in the picture, these are rules and have been for a couple of months now!

Whilst no one can argue that these rules or, at least, the principles behind them, are totally laudable, maybe one could cavil a bit about the details. The photo shows an AMA Safety Nut, and a Rossi 15 spinner blunted to the maximum practical extent, com-

sary, build new ones. Personally, I haven't built a C/L racing model without a shut-off installed for a couple of seasons now, but then I haven't built a 1/4A racer or a mini-Goodyear. Another nail in the coffin for these events?

Whilst on the subject of safety rules, why not approved line-end methods and connectors too? Why not, like the AMA do as well as the ends and connector rules, specify minimum line sizes for all classes and relate the required sizes to line type. A typical example of this is *Table 1*, taken from the AMA Rule Book for Goodyear models.

We do need safety rules, but let's do the job properly. Huh!

**1977 - A VINTAGE YEAR FOR GOODYEAR & 'B' MOTORS?** Just consider the prospect - K&B, OPS, HGK and Super Tigre all out with 3.5cc 'advanced technology' motors. Some details:

**Super Tigre X21 Speed**

Side exhaust, ABC piston/liner. Front induction 12.7mm dia shaft. Schnuerle porting with 1.0 BHP claimed at 30,000 rpm. In production and available in the UK now.

**HGK - 20 SF**

Side exhaust, ACA piston/liner. Front induction 12.0mm dia shaft. Schnuerle porting with 0.9 BHP claimed at 21,000 rpm. In production, but not yet available in the UK.

**HGK - 20 SR**

Side exhaust, ACA piston/liner. Rear induction with Super Tigre type steel disc rear rotor. Schnuerle porting and 0.9 BHP claimed at 21,000 rpm. In production, but not yet available in the UK.

**OPS - 3.5 ABC**

Side exhaust, ABC piston/liner. Front induction. Schnuerle porting. Performance figures not available, but in production and available shortly in the UK.

**K&B - 3.5 ABC**

Rear exhaust, ABC piston/liner. Rear induction. Schnuerle porting. Performance not quoted, but in production and available in the UK.

Thus far I have seen the Super Tigre X-21 (four separate examples) and one each of the two HGK variants. All of these have impressed me with their ease of handling and obvious power. Apparently in both the R/C car and the boat world the K&B 3.5ABC (a reduced scale version of the renowned K&B 40 ABC) has

Table 1

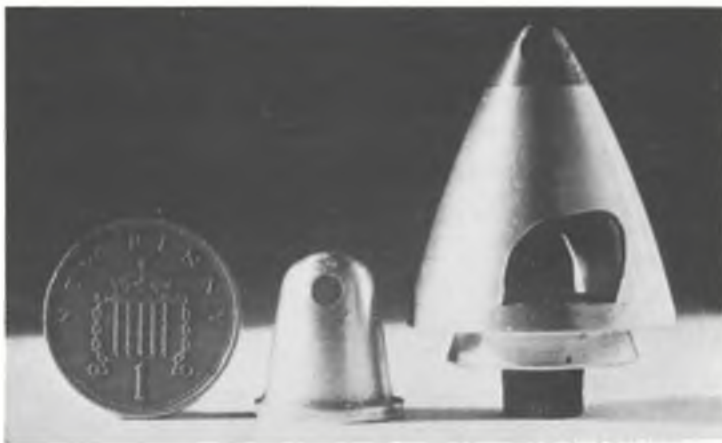
AMA requirements for Goodyear racers

Engine Size cu.ins.	Max Model Weight	Required Line Length	Required Minimum Diameter of Each Line						
			Single Strand			Multi Strand			Pull Test
			1 line	2 line	3 line	1 line	2 line	3 line	
000-1525	4lbs	52'-53'	—	.012"	—	—	.015"	—	16 G

pared with a 1p piece. The 1p piece has almost exactly the required SMAE radius of  $\frac{1}{16}$  in (9.5mm): note the difference. Obviously, to meet the new rule we will have to abandon proprietary spinners altogether and fit rather large safety spinners of dimensions currently not found in any commercial product I have seen. All right for those with lathes in the garden shed, but what about the majority? Maybe a smaller radius requirement allowing the use of BS/ISO etc, domed nuts, AMA Safety Nuts or 'blunted to the maximum practical extent' motor spinners would have been more reasonable - plus a specified future enforcement date to give the model trade time to stock approved items, and we modellers time to buy and fit them.

Compulsory shut-offs for racing models seems very reasonable but a future-dated rule may have been more suitable than a retrospective one to give people time to modify old models or, if neces-

Below are the superbly made Swedish team race accessories from Rolf Orall. At right are seen the problems facing control line models in the 'interests' of safety. The penny piece demonstrates the newly required nose radius for spinners, whilst next to it is an AMA 'safety nut' and finally a 'blunted' Rossi spinner.



# FROM THE HANDLE + FROM THE HANDLE + FROM



Charlie Johnson sent these pictures showing (above), Les Pardue (Flipper) and Phil Skew (Whipper) posing at an 'Albuquerque' contest, whilst at left Phil shows just why he wears the 'Whipper' shirt! Here he is flying in a rat race with Chuck Thomas, who combat fliers will know well as a faithful member of the Outlaws team when serving with the US Airforce in England.

still have more airspeed, but 2-stopping finals with these 3.5cc motors should prove not too difficult, so the end result could be most interesting.

Only time will tell if any of these new motors is going to dominate Goodyear or Class B – my bet is that at a minimum, all will prove to be serious threats. Definitely a 'vintage year for motors'.

Whilst on the subject of new motors, I can report that K&B intend to have ready for shipment this spring a new front induction series of 29, 35 and 40 motors. These are all based on the same crankshaft and crankcase differing only in the cylinder bore. Bill Wisniewski has indicated that these new motors look most promising on the bench, and should be very competitive right out of the box. K&B also have a new 60 and a new 15 under development. The 60, intended for R/C use but adaptable for speed, will appear first so we may have to wait a bit for the 15. Presumably the 29/35/40 FIs are the production outcome of the 40 FI which I saw at the US Nats, and the 35 FI prototype that Charlie Johnson has told me about – both very impressive as prototypes. If the 29 FI is as good as the 40 FI and 35 FI prototypes have proved, the OPS 29 TRS at last will have a really serious competitor for the horse-power stakes in Class B team race.

## SWEDISH TEAM RACE GOODIES

Just two items from Rolf Orell of Norrtullsgatan 9, 11329 Stockholm. The first is the famed *Swedish Copper Top*. This is a replacement 2-part contra-piston for Rossi 15 diesels, machined from hard copper and which is so designed that it drops into Rossi 15 diesels with no further modification of the motor required, *except* for a compression locking device which Rolf advises is necessary. Claimed advantages for the 'Copper Top' are twofold, namely (i) Improved thermal conductivity giving greater resistance to motor 'cooking'. (ii) Increased thermal capacity giving reduced

heat temperature drop during a pit-stop and therefore improved hot re-starts.

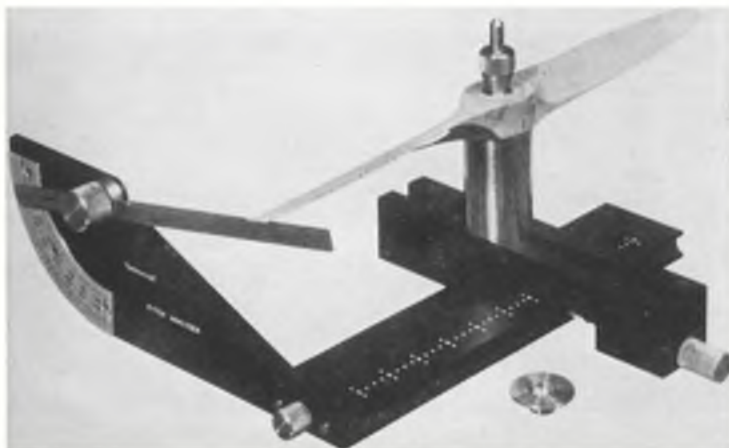
One of these heads was used to set the current British FAI team race heat record of 4:03, so maybe the claimed advantages are significant.

The second 'goody' from Sweden is a really nice wheel. This wheel is of the rubber moulded-over-a-flanged-hub variety: in this case the flange is in the centre of the wheel (so the rubber cannot fall off) and is 22mm diameter and 1.2 to 1.5mm thick with eight bored holes to reduce weight and improve rubber adhesion. Overall diameter of the wheel is 27mm and, despite its slender profile, has proved nearly indestructible in tests in Sweden including use on an 800gm (28oz) Class B racer.

Hailing from Sweden, neither item is cheap owing to the state of our £. The prices, excluding postage (allow reasonable extra payment for this) are: "Copper Top" – 50 Swedish Kroner (approx £7); T/R wheel – 20 Swedish Kroner (approx £3).

## BE NICE TO SPECTATORS THE EASY WAY

Know the feeling? You have just found the setting on your racer but, on the last practice tank only a minute or two before your race report time, you just touch the prop on take-off and you are a bag of nerves wondering what to do? Then someone politely questions "How much does one of them cost Mister?" or some other equally reasonable but gr!! x ?!! question. I would suggest that, in these circumstances, giving dusty answers does our sport no good PRO- wise; indeed was it not the SMAE Chairman a couple of Nats ago who received a very dusty answer to a reasonable question: asked perhaps at an unfortunate moment (and just how is the non-involved questioner going to know when the moment is unfortunate?). One admirable solution is to have ready a list of answers, preferably stuck to the lid of your model box or even the



Micro Mold have just taken over the UK distributorship of the superbly made Technicraft Propeller Pitch Analyser. This gauge enables propellers to be re-worked accurately, and can be used to check the pitch on any part of the blade on all props up to 12in diameter. The boss clamp screw (see below) doubles as a finger-tip balancer. Price of the complete unit is £19.95.



# THE HANDLE + FROM THE HANDLE + FROM THE

wing of your model; the questioner need only sort out which answer most suits his question and then can go away happy with the information he or she wanted without having done concentration disturbance and suffered a dusty answer.

A typical list of answers would go like:

1. It cost £—— excluding the motor.
2. The motor has a capacity of ——cc, develops ——hp and costs £——.
3. I built the model myself from a kit/a published plan/my own design.
4. I estimate that it took me ——hours to assemble and finish the model.
5. This is a competition model built to meet the FAI/SMAE ——class rules.
6. The model is built using materials obtainable from most good model shops and is basically balsa wood/glass fibre/expanded polystyrene foam.
7. I am —— (nationality) and live in —— (town).
8. This is a control line model. I control it in flight by manipulating a handle held by myself and attached to the model by one/two steel wires of enormous strength.
- 9.
- 10.

Answers 9 and 10 are not given, allowing you to fill in your own favourite answers to particularly grrlllX?! questions (but politely, remember). I suggest you cut the questions from this page after filling in the blanks and deleting alternatives as necessary, and glue it to your model box or other readily accessible place for reading. Untimely questioners can then be directed to the answers, thus allowing you to continue with our all-absorbing sport with concentration unbroken!

Smart idea. Huh? Not original but smart. And intended not entirely as a smile raiser.

## S P E E D

by Mike Billinton

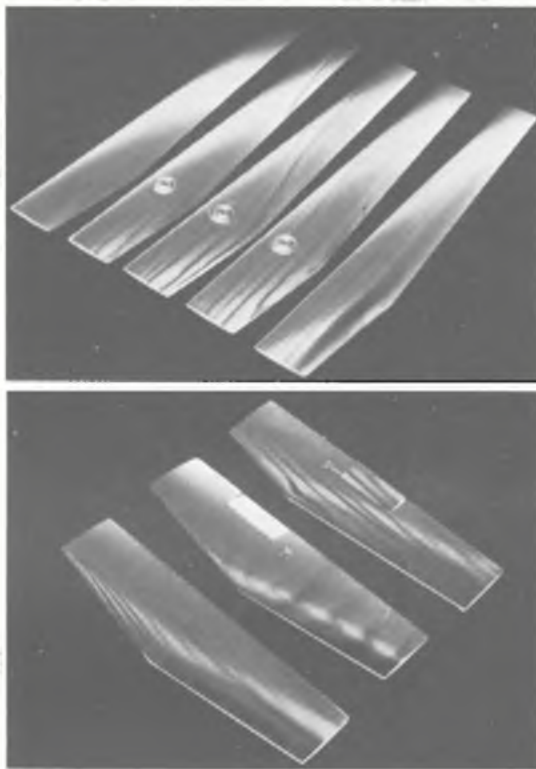


### OPEN SPEED AND/OR FAI SPEED?

IT MAY BE timely to consider the interesting fact of the variety of approaches to Open Speed adopted by several of the national aeromodelling bodies around the world, and the possible relevance of this variety to FAI class speed flying.

This situation, which has had little airing in print before, has resulted from the FAI's decisions over the years to periodically reduce the capacity limitations for International Class i.e. engines, together with their other well known restrictive parameters.

Early in the 1950s the International Contest was a three-class affair - 10cc, 5cc and 2½cc - but by 1955 the 10cc class was dropped, and in 1956 just the one class - 2½cc - existed. During this period line diameters and fuel formulae were *not* the subject of restriction. However, after adoption of the 2½cc class as the only international competition the following few years saw first the



These top German speed fliers Emil Rumpel and Jurgen Lenzen are producing several top quality specialist items on a commercial basis. Above are seen a selection of FAI class speed wings and tailplanes, with such options as being made available with or without bellcranks and elevators. Details may be obtained from Jurgen at 5600 Wupperthal 2, Germanenstr. 24, West Germany.

minimum wing area rule became mandatory, together with specified line diameters then in 1962 'straight' fuel became the requirement and lastly monoline was banned in 1968.

All these changes, instituted as they probably were, mainly to keep speeds *down*, had one other (!) undesirable effect. They 'marooned' pockets of speed fliers in each country who were reluctant to change their approach from the old FAI Class to the new maybe misguidedly maybe because of their interest in a particular size of engine, sheer inertia, or their commitment to the 'unrestricted' approach to Speed as now exemplified by the various national regulations governing Open Speed classes around the world. Some of these current regulations are shown in *Table 2*.

There may be errors due to lack of up-to-date information in this *Table*, but the main point, that of the wide variety of approach, is obvious - even anarchic some may say!

For whichever reason, loyalty to these 'no-longer FAI' classes continued, and these fliers still exist. Proportionally their numbers are hard to judge *viz a viz* the FAI flier, but they are certainly sufficiently numerous to raise the question of a possible dilution of effort that, depending on the regard with which a particular country's fliers hold their Open domestic categories of Speed, would to varying degrees affect that country's FAI effort.

Now it's certainly no wish of mine to try to convert all to FAI flying! The purpose of raising this whole question is quite different. The main interest is to consider in what direction Speed flying *could* be going, and it is for this reason that I find the proliferation of different National approaches interesting and valuable.

To revert to the FAI's most probable reason for reducing engine capacities and imposing both line diameter and model size restrictions as being - reduction of speed - then, quite apart from the niggling philosophical question of the object of Speed flying being to 'go as fast as possible' and not to slow oneself down with restrictions, it can be seen that the main prong of the FAI's 'anti-

# HANDLE + FROM THE HANDLE + FROM THE HANDLE



At left is yet another special item available from Maple Models of Luton - namely a glass fibre speed fuselage, as made and used by Pete Halman in his FAI class, asymmetric styled models. Designed to suit the Rossi engine/pan. Price is £4.05, plus 40p postage.

speed' attack is on the Drag side of the equation. Because, however, this drag is virtually a constant for a given speed (line drag being the major part of total drag) and any attempt by individuals to reduce the drag of the model/line combination is immediately controlled or banned (eg groupers, magnetised lines) while conversely, although engine capacity is restricted, engine BHP is not, then it follows that the only meaningful way one can increase speed in competition against others is by increase of BHP.

In the statement "Velocity is the product of Thrust versus Drag", we have then, via the FAI International regulations, the implication that velocity will usually be restricted to a certain maximum figure (if it goes up then they will slow it down): also the Drag will be virtually a given figure for all (by virtue of the 80% line drag and the requirement that one *has* to build a large airplane). The one area of freedom left then, is the Thrust.

Three points need emphasis here: (1) The engine manufacturer or his teams must have the advantage in this situation (I know of the exceptions which I take to *prove* the rule, and which reference to previous World Championships will support, in the main). (2) Would it not be a valid argument to say that the efficient use of power (with minimum Drag) is a more desirable aim in our present Ecology conscious world? (It would surely add great interest to have the possibility of a speed model doing 200 mph on only 1/2 bhp by virtue of the drag being so low!) (3) It should be no part of the FAI's aim to restrict the development of most of the aspects of pilot skill and model design which unwittingly their regulations have, in my opinion, led to.

If the object of the International Speed C/L class is *not* to see who can produce the most powerful motor in that capacity, then I take it that it *is* to test to the full the Aerodynamic skill, Pilot skill and Engineering skill *in combination*. No other test is really worthy of International status. I know that, in small degrees, aspects other than motor development *are* tested at present, but the FAI regulations leading to almost a fixed amount of Drag and the desire to keep speeds down, mean that they are by no means tested as severely as is the ability to extract the maximum bhp.

The International FAI class has such high standing that it will always hold the interest of the participants, whilst the efforts of the motor manufacturer will also be of absorbing interest; however, the possibility exists that the Class may be failing to attract maximum support worldwide because, paradoxically, its rules lead inevitably to concentration on development of maximum hp. Now, this would normally be the very essence of SPEED - except that in this case one could compare, in a humorous way, the present speed C/L situation with Drag Racing, where the real interest is in those classes (not always the 8 litre supercharged plus 90% Nitromethane class by the way, but often the small motorbike class of 500cc) where there is no restriction except capacity, and FAI would equivalently be the class with the mandatory unfurled parachute attached to the back - and each year the parachute has to be a bit larger! This class would certainly be a breeding ground for hp development but would be unlikely to lead to any radical interest in car aerodynamics!

I am not intending to mock the FAI class, as it is likely that equally bizarre comparisons would be made concerning the Open speed classes! In any case it is open knowledge that the standards in FAI speed flying are high indeed, and the UK flyers in this class can more than hold their own in comparison with their friends in the Open classes. No, it's an attempt to see the FAI scene clearly, and more particularly to get some discussion going on the subject that leads me to the conclusion that a worthwhile by-product of the many different approaches around the world to Open speed will be the likelihood that the finally correct approach (if such

exists) will one day become clearer as the various pros and cons of each approach become known more surely as speeds and pulls become higher. To take one of the points of difference, ie the arguments for and against the imposition of line diameters:

**FOR:** They enable speeds to be restricted. All else being equal, higher safety margins follow. Flying control is more positive (Monoline at least). They survive normal wear and tear more easily. They ensure all models have very similar Aerodynamic Drag.

**AGAINST:** Leads to over concentration on hp development. Leading from this, motor systems and therefore all-up weights are likely to be heavier and maybe more dangerous pulls would result.

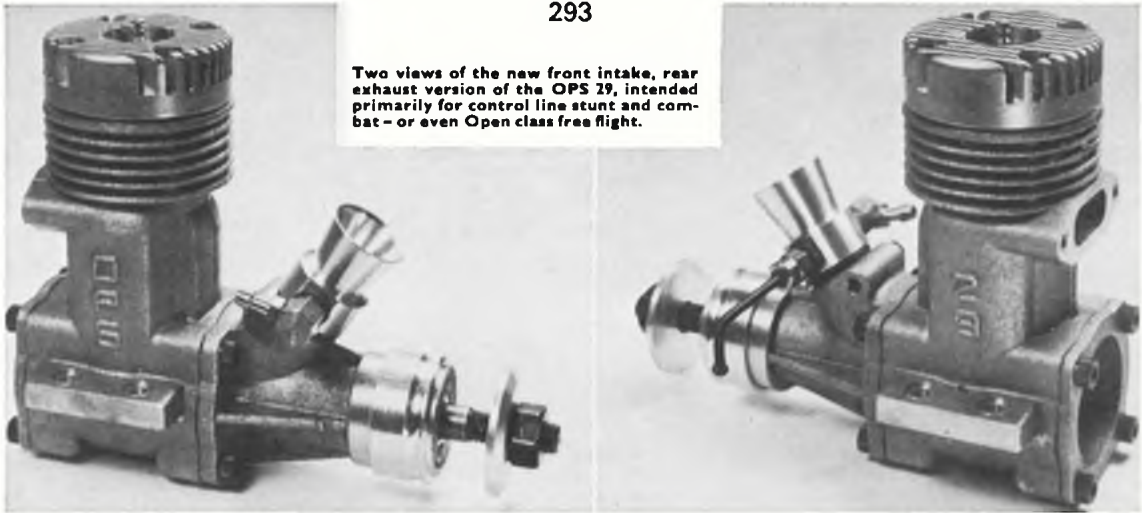
Allows a competitor's superior Aerodynamic knowledge or physical prowess to lead to success, and not just his engine tuning capability. Equally, an ideal balance of these qualities could also lead to success, whereas at present in FAI, I suggest one needs, say 10% Aerodynamics, 10% Piloting skill and 80% Brute HP. They probably make for less interesting contests without the greater variety of approaches which the unspecified line diameters plus stringent pull test leads to.

They have to be checked frequently for size. They do not necessarily lead to greater safety due to *continued on page 296*

TABLE 2

Country	Model	Fuel (Hydrazine & Tetranitromethane universally banned)	Lines	Pull Test								
Australia	Any	Any	Monoline & 2-line. Certain Dia. restriction. 1 Km course.	32G for 10 secs.								
Italy	FAI Loading size only	Straight only	2-line only. Specified diameters: 2 1/2cc is the FAI class 5cc - 0197"; 10cc - 0236" Jet - 0236". 1 Km course.	30G								
South Africa	Any	Any	Monoline & 2-line. No diameter restrictions. 1 Km course.	30G ?								
UK	Any	Any	Monoline & 2-line & Groupers. No diameter restrictions. on 6 classes. 1 Km course.	40G for 10 sec (also on Safety wrist strap)								
USA	Any	Any	Monoline & 2-line & groupers. Specified diameters. <table style="display: inline-table; vertical-align: middle;"> <tr> <td> <table style="border: none;"> <tr> <td>1/2 A - 014"</td> <td rowspan="4" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="4" style="vertical-align: middle;">Monoline sizes</td> </tr> <tr> <td>A - 022"</td> </tr> <tr> <td>B - 026"</td> </tr> <tr> <td>C - 031"</td> </tr> </table> </td> <td>Jet - 031"</td> </tr> </table> 1/2 mile course.	<table style="border: none;"> <tr> <td>1/2 A - 014"</td> <td rowspan="4" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="4" style="vertical-align: middle;">Monoline sizes</td> </tr> <tr> <td>A - 022"</td> </tr> <tr> <td>B - 026"</td> </tr> <tr> <td>C - 031"</td> </tr> </table>	1/2 A - 014"	}	Monoline sizes	A - 022"	B - 026"	C - 031"	Jet - 031"	40G Instantaneous (plus inspection of lines and connections).
<table style="border: none;"> <tr> <td>1/2 A - 014"</td> <td rowspan="4" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="4" style="vertical-align: middle;">Monoline sizes</td> </tr> <tr> <td>A - 022"</td> </tr> <tr> <td>B - 026"</td> </tr> <tr> <td>C - 031"</td> </tr> </table>	1/2 A - 014"	}	Monoline sizes	A - 022"	B - 026"			C - 031"	Jet - 031"			
1/2 A - 014"	}			Monoline sizes								
A - 022"												
B - 026"												
C - 031"												





Two views of the new front intake, rear exhaust version of the OPS 29, intended primarily for control line stunt and combat - or even Open class free flight.

# Latest Engine News

by Peter Chinn

## Front Induction OPS 29

This recently introduced OPS engine is based on the 29-Speed main casting with conversion to shaft rotary-valve by means of a 40-SLA front-end and backplate. It has, however, a new cylinder liner, with porting revised for standard (non-pipe) exhaust timing, and a small bore intake-venturi suitable for suction feed and C/L stunt.

A new feature is the engine's two-part cylinder head consisting of a bowl-and-squishband combustion chamber insert held down by a separate finned head. A composition gasket (probably rubberised asbestos) is used between the insert and cylinder-liner flange. Gaskets of such materials inevitably bond themselves to the metal and we did not therefore remove the insert from the top of the liner of the engine submitted for examination - hence the reason for its not being visible in the parts photographs reproduced here.

As with all OPS motors, an ABC piston and cylinder liner assembly is used. The ringless aluminium piston weighs a modest 5.6 grammes or 6.9 g with its 5 mm o.d. gudgeon-pin which is retained by wire circlips. The pin is tubular but solid at the rear end to prevent charge loss through it from the front transfer port to the exhaust port. The connecting rod has a plain small-end, a bronze bushed big-end with two oil holes and weighs 4.6 grammes. The chromed bore brass cylinder liner employs the standard Schnuerle port layout with three

transfers and has an unbridged exhaust port. The liner o.d. is 22 mm, giving a wall thickness of 1.6 mm.

The crankshaft has a 12mm o.d. main journal and a 9mm i.d. gas passage fed from a 13.7mm long

New OPS combines main casting of Speed-29 model with new cylinder liner and two-part head.



New OPS 29 uses front - induction OPS 40 shaft, bearings and housing, plus new small choke intake-venturi.





Fox has lapped cast-iron piston running in steel liner. New type head provides for interchangeable inserts for different compression ratios.

rectangular valve port. The 6mm o.d. hollow crankpin is an integral part of the crank disc which is 6.5mm thick and has unsealed peripheral slot type counterbalancing. The shaft is supported in a 12 x 24mm 10-ball steel-caged bearing at the rear and a 7 x 19mm 8-ball brass-caged bearing at the front. The prop driver is of machined aluminium and is mounted on an aluminium split taper collet.

The machined aluminium alloy intake venturi has a throat diameter of

6mm and, after allowing for the jet assembly and needle-valve, an effective choke area of around 15 sq.mm. — this being variable according to the extent that the jet and needle carrier are screwed into the venturi. The complete venturi assembly is secured in the intake boss by means of a cotter pin and nut.

This new OPS 29 model has a bore and stroke of 18.8 x 17.8mm which gives a swept volume of 4.941cc or 0.3015cu in. and weighs 309grammes



The latest of a long line of Fox Combat-Specials. The first Combat-Special appeared 20 years ago. Latest Mk. III model features Schnuerle porting and twin ball bearings. Capacity: 0.5594 cu. in. or 5.889 cc.



New Fox Combat-Special has tall back cover as used on current 15, 40 and 45 models. Note also massive unrestricted air intake.

(10.9oz) less silencer. (A rear exhaust silencer should be available shortly.) Its uses are C/L stunt, combat and contest free-flight.

Piero Muzio of OPS has also informed us that they plan to offer a radio-control version of the shaft valve 29 with a Perry carburettor in place of the standard venturi and needle-valve assembly. This version will be known as the 29-SPA-RCA. The first three suffix letters stand for *Scarico Posteriore - Anteriore* (meaning rear-exhaust - front intake) and the last three radio-control aircraft. It is also pointed out that the new (non-pipe) piston/cylinder assembly can be fitted to the standard rear rotary-valve Speed-29 to enable the latter to be used for Class B team-racing.

### Fox Combat Special Mk. III

Less than two years ago in this column we described the then new 1975 model of the Fox Combat-Special. This really took the development of the Combat-Special — the first version of which had appeared some eighteen years earlier — to its logical conclusion. The 1975 model, based on a modified 36X body casting, had twin ball bearings and enormous ports in the cylinder liner cleverly schemed to produce in conjunction with a flat crowned piston, a Schnuerle scavenging system. A very short crankshaft, carried in a  $\frac{1}{4}$  x  $1\frac{1}{4}$ in inner bearing and  $\frac{3}{8}$  x  $\frac{3}{4}$ in outer bearing, kept frontal overhang to a minimum in order to reduce combat model nose moments and improve manoeuvrability.

However, last autumn Duke Fox announced a completely new engine to be known as the Combat-Special Mk. III. This continues to use such traditional Fox Combat 36 features as a lightweight lapped Mechanite piston, 0.800 x 0.715in bore and stroke,  $\frac{1}{4}$ in o.d. crankshaft journal and big rectangular air-intake, but is based on a completely new main casting and most of the parts that go





The smallest engine in the O.S. range is the new 1.76 cc Max 10F-SR. It features Schnuerle scavenging and will be available in both standard and R/C versions.

into it are also new.

The casting, which, as before, embraces the crankcase, cylinder casing and crankshaft housing, has been designed to suit a conventional Schnuerle scavenging system but follows the style first adopted for the current Fox -40 and -45 engines (also the latest Fox 15) in which the crankcase backplate is extended upwards to include the rear wall of the cylinder casing. The extra tall backplate, which is secured by six screws instead of four, incorporates the rear transfer channel and, when removed, exposes the rear of the cylinder liner. This has conventional angled transfer ports each side of the exhaust plus a large third port on the left hand side.

Another new feature is the two-piece cylinder head. Like the OPS head just described, this consists of an inner component that plugs into the top of the liner (Fox calls it a head "button") held in place by a machined finned outer part. An advantage with the Fox head (it is also used on the new Fox 36RX rear-exhaust engine) is that different head buttons are available enabling compression-ratio to be altered. As supplied, the Combat-Special Mk. III has no restrictor in its vast rectangular air intake. This, intended for use with a bladder type pressure tank, is actually slightly larger than the intakes of previous Combat-Specials and has an effective choke area of more than 80 sq.mm.

The Combat-Special Mk. III is approximately the same length as the 1975 model but is about  $\frac{1}{8}$  in taller and requires a slightly wider bearer spacing. The checked weight of our particular example was exactly 250 grammes or just over 8.8oz,  $\frac{1}{4}$  oz heavier than the 1975 model.

Two views of an entirely new Japanese sub-miniature, the "G-Mark .03" which has a capacity of just under  $\frac{1}{2}$  cc and weighs 1.1oz. A neat little motor.

No performance figures for the new Combat-Special are quoted by the manufacturer but one would expect it to be at least the equal of its predecessor which means that, suitably fuelled, it should be capable of delivering better than 1.0bhp – probably at somewhere around 18,000 rpm.

#### G-Mark .03

This is an entirely new baby engine from Japan and the product of a company (G-Mark Incorporated) that, so far as we know, is new to the model engine business. The example described here is owned by Ron Moulton. The G-Mark is not at present being sold in the UK.

The G-Mark .03 has a bore and stroke of 8.72 x 8.23mm, giving a swept volume of 0.4915cc or .0300 cu in. In other words, it is bigger than Cox's .010 and .020 cu in engines but smaller than the popular .049 cu in (0.8cc) "Half-A" engines.

In general design, the G-Mark is not dissimilar to the small Cox shaft-valve motors. Like the Coxes, it has a machined (but black anodised) crankcase and front bearing, the latter having a very large rectangular intake port and encased in a moulded plastic housing that incorporates the

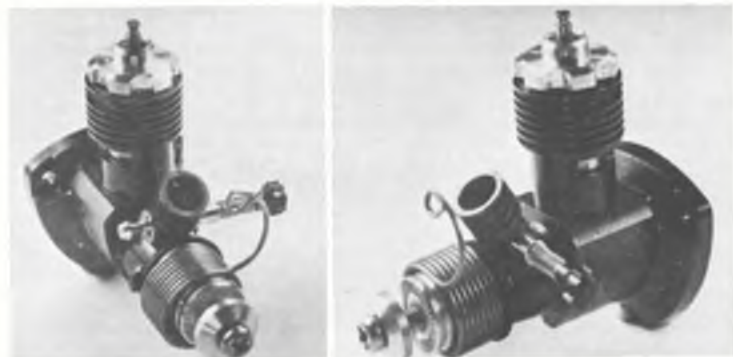
air intake and is retained by a screw-on alloy ring, the latter being surrounded by an 8-coil starter spring. As on the Cox Tee-Dee engines, the crankshaft has a very large diameter journal with a big parallel-sided valve port and has a crescent shaped counter-weight. Also, the shaft end is knurled for a pressed-on alloy prop driver and is tapped for a prop retaining screw.

The cylinder and piston assembly are again very much in the Cox tradition. The cylinder has integral fins, is externally threaded at the bottom to screw into the crankcase and internally threaded at the top to take a screw-in head with integral glow element. The cylinder has Cox type porting consisting of two diametrically opposed rectangular exhausts with two internal flute type transfer ports between them and the flat crown lapped piston is attached to the hardened steel connecting-rod with a ball and socket joint.

A strong moulded plastic radial-mount type backplate is secured to the crankcase with three screws. A pressed-in spraybar with a spring-loaded thread needle-valve is used which is smooth and positive in operation. Checked weight of the engine examined was 31.5 grammes (1.11oz) or 34 grammes (1.20oz) with the  $\frac{1}{4}$  x 2 in G-Mark prop that is available for use with the engine.

#### New O.S. Engines

Several new O.S. motors have recently been put into production and will become available from Keil Kraft stockists over the next few months. They include the little Max 10F-SR illustrated, a 1.76cc Schnuerle scavenged unit to replace the Max 10 and Pet 099 and which will be available in both standard and throttle equipped versions. A new Schnuerle scavenged twin ball bearing 4cc engine, the Max 25F-SR is also being introduced as a more powerful option to the existing Max 25 model. Full details will follow in due course.



# CLUB NEWS

THINKING ABOUT the model plane and its place in our modern environment, it occurred to me that we are largely the victims of urban sprawl; this being particularly true where noise and the general nuisance capability of the model plane is evaluated. Since the war, commons and open spaces have attracted more and more 'desirable residences' to their fringes, and from the Estate Agent point of view, and, indeed, the purchaser's, the adjacent open space is considered part of the amenity value. Now, it seems to me that the occupiers of such 'well situated' property are the first to complain about the model planes, whereas the old farm and cottage inhabitants were content to live and let live. Not that we can do much about this now, except to stand up for our rights, as exemplified in recent SMAE, actions, and to fly as quietly and unobtrusively as possible.

Our first report comes from Mr R. C. Uden, PRO, of the Crookham Contest Modellers. The membership may not be all that high, dropping to ten in 1976, but the models certainly are wherever the group puts in an appearance, for, during the past season, they picked up enough points to give them 6th place in the *Plugge Cup*. Individually, the efforts of Fred Chilton, Gary Madelin, Pete Stewart and Cliff James picked up five first places, two seconds and two thirds at the various meets. With such a record the club was deservedly lucky in choosing a mild and sunny February day for their Winter Gala at Bassingbourn. The wind was a bit blowey, but not so zealous as to be off-putting, for entries were satisfyingly high in the four events. And

speaking in fours, that is the number of new members already acquired for 1977. And no mean catch, either, for they are Pete and John Buskell, Bill Sims and Stuart Goodwin. John and Bill both exhibited at the *Model Engineer Exhibition* in January.

The club insignia at the top of the Elliott Engineering Club report informs us that the club is based at Rochester, Kent, whilst the other insignia on the headed notepaper advises us that it is affiliated to the SMAE. A brief mention of the club AGM, notes an increased membership and the presentations of Club stunt and Goodyear Trophies to Martin Filmer and Peter O'Neill/Geoff Evans respectively. The awards were based on monthly competitions held throughout the year. A fillip to club morale came with a 'Horty Charts' placing of fourth in the Club Team Race League Table. We are reminded that the club continues to encourage novices: the Ivor Roffey *Speed Newcomers Trophy* is to be competed for on two occasions in 1977. A new club event scheduled for April 3rd is a 1000 lap FAI team race.

And so to Avon calling. Or rather a newly formed club called the Avon Marine & Aero Radio Club - or AMARC for short. Tom Ince, who lives at Trowbridge, Wilts, gives us news of a club meeting held on the 1st February to which Mike Bone, former British Aerobatic champion was invited along, together with his father. They had much expert knowledge to dispense, and members were able to get the sort of advice on design selection, finishing and flying which could be of positive help. They are now looking forward to the flying demonstration which Mike promises to give in the near future.

Well, I must say its nice to see the Crawley & DMAC's *Turbulator* back in circulation. John Willats, club PRO, has been kind enough to send us along the number one issue of the new/old magazine; and a very nicely laid out and printed newsletter it is, with some extremely good illustrations. Since we last heard from the club it has been going from strength to strength. Membership has topped the hundred mark and covers all aspects of the hobby. The newsletter lists five flying sites which give wide scope for radio power flying, with special slots for the helicopters. On the contest front the club appears to be doing partic-

## FROM THE HANDLE

continued from page 292

the existence of the *many* other connections in the model/line/handle combination, any one of which may be weaker than the line itself (irrespective of its diameter).

Finally, the imposition of line diameter restrictions, particularly if they are of large size, can be the cause of a false sense of security - leading me to the conclusion that a pull test of sufficient worth is the only viable system we have, to cope with the problem of safety at least.

If all these pros and cons (on this one aspect alone) are of serious import, then the existence worldwide of the various Open Speed C/L approaches should hopefully eventually indicate whether a new approach to FAI Speed flying is necessary.

I'm suggesting that the FAI, by its actions in earlier years, have inadvertently caused the development of test programmes of various sorts throughout the world and that ultimately it may be able to select the best of them, or an amalgam of some, which could lead on to the *ultimate* World Championship Class, which I for one would dearly like to see.

My own feeling is that the best approach would be to increase the Pull test much further, whilst dropping any mention of line diameters - effectively enforcing line *strength* restrictions on all dependent on the weight of the model (which should itself be freed of restrictions). This procedure would then allow competitor's discretion as to where they could pitch their particular weight/power/drag/pilot skill combination, for of course these parameters

all interact. If the thought of a 50g pull test appalls, then I would like an answer as to why only C/L Speed seems to operate on a Safety Factor of about 1½? It is quite a common practice for a Factor of x 2 to be used, where safety procedures involving Speeds Loads and Dynamics are concerned. Quite apart from which there would be quite an incentive to develop extremely light but strong structures such that this pull test would be a fairly small load.

The essential objective fairness of this approach is exemplified by the fact that under it the factory team would be able to compete on equal terms by concentration on the engine side, whilst conversely the aerodynamics or structures man would also be able to follow his own particular strong point. In the last analysis the very best combination of all those qualities would be pre-eminent, and such a winner would certainly be a World Champion.

If as a result of these de-restrictions speeds were to rise alarmingly then there are two courses always available. Increase of the pull test (and by implication the line diameters) or reduce the engine capacity still further. In fact this latter approach would ideally have been the only method necessary at any time during the years I have mentioned - there need not then have been the necessity for the other restrictions to keep speeds down.

It may be that straight fuel will be a necessary requirement due to Nitromethane supply problems worldwide, and also to possible danger from unrestricted use of dangerous chemicals. On this point however, one could maybe foresee danger one day from enormous outputs of power from tiny engines even on quite innocuous fuels, but I assume that to ban the use of the motive power itself would be a little self-defeating!

It is hoped that the foregoing personal view of the OPEN/FAI Speed situation will be countered or followed up, in this Column in the coming months and opinions on this subject would be welcomed by the Editor.

ularly well in thermal soaring. Graham Foster took second place in the main event at the Bluebirds meeting and first in the 100in class. At the third Ashford meeting Janet Green came second in the *Radio Modeller Rose Bowl* event, and Richard Green was third in the 100in class. The club is also strong on the C/L side; members having successes in stunt at the Three Kings and Cranfield events. They also competed in the C/L World Champs in Holland.

Mr J. I. Lattaway, Secretary/Treasurer of the *Nene Valley Aeromodellers* has kindly sent along a copy of the club's first newsletter. The very first item deals with the thorny problem of collecting those club subscriptions. The prompt paying of subs is a matter of serious concern now that a substantial component of the payment is the insurance contribution. If the sub is not paid then the insurance lapses, and this could have serious consequences for the member concerned if he continues flying. To provide a spot check, as it were, on delinquent members, a yellow disc is given as a form of receipt. This to be displayed on the flying field. The club regrets any 'Big Brother' implications, but it is vital that to the club interests that unpaid members do not use the club field. But where is the club field? Well, Stanwick is still okay, but Ditchford appears to be under some threat from gravel interests. Meanwhile the precious hay crop it produces has a limiting effect on flying during the spring and summer months, ousting F/F and C/L and shrinking the radio patch.

I was not sure of the existence of the *New City Model Society*, but we are better informed now it has been re-named the *Milton Keynes Model Society*; taking the name from the new town being developed in Buckinghamshire. The Secretary, Mr C. Orchard, tells us that membership of the society is over 100, covering all aspects of aeromodelling, plus an involvement in model boats and model engineering. Still room for more members, apparently. Details from Mr C. Orchard, 105 Highfields, Towcester, Northants NN12 7EA.

A sad little note to be found in the *Buckaneers Model Club's The Scimitar*: the end of model flying at Bow Brickhill. This field has featured in these columns many a time, and the loss of a flying site is always something to be regretted. Better, perhaps, to live in the past, anyway. And you can do that in some substance as well as spirit, particularly if the substance is Mike Parrott's *Vulcan*, built from an old *AeroModeller* free flight plan. This attractive old timer appears to have some up-dated innards in the form of radio. Seems this idea of radio controlled vintage has contest possibilities. We are told that Dave Boddington is thinking of setting up a class for 30 year old designs using propo radio on one surface only.

The 1977 contest calendar which appears in the newsletter of the *Northern Ireland Association of Aeromodellers* reveals a most fulsome programme of events, mostly on the radio side of things, particularly Thermal Soaring. Free flight interest seems to have slumped quite badly. This may be due to flying field problems, but I notice, too, that there are relatively few contests for C/L on the schedule. Things might well perk up if, and when, the proposed C/L site comes into being at Sydenham.

Distance may lend charm, but reading in *Northern Area News* that only four N.A., members attended the SMAE centralised Mini event at Barkston Heath it seems to me that some re-thinking needs to be done on the whole question of country wide participation in these days of high cost travel. In winter you need overnight accommodation if you are to travel any great distance, and if you are to give this some consideration you must mount a much more prestigious event than that staged at Barkston Heath, with the attraction of a large entry and really worthwhile prizes. Again, there is no reason why a club situated over a hundred miles from the Area venue should not be able to run its own decentralised event if it has an

## 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.

**HAMPSHIRE**  
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 C. W. Learwood, 19 Darwent Road Basingstoke, Hants  
**Fleet and District MAC**  
 J. S. A. Spencer, 98 Beaufort Road, Church Crookham, Nr Aldershot, Hants GU13 0AY  
**Lee Bees MAC**  
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**Petersfield AM**  
 M. Schopp, 10 Warren Side, South Harting, Near Petersfield, Hants  
**Portsmouth & District MAC**  
 P. Dorn, 2 Euston Road, Milton, Portsmouth, Hants  
**Southampton MAC**  
 E. D. Gordon, 25 Mead Road, Chandlers Ford, Eastleigh, Hants  
**Waltham Chase Aero Club**  
 R. C. Smith, 18 Elizabeth Road, Meon Park, Wickham, Foreham, Hants

**HERTFORDSHIRE**  
**Harlow & District MC**  
 M. Beaumont, 8 The Meadway, Hoddesdon, Herts  
**Hatfield MAC**  
 D. J. Fairbank, 2 Sandpit Road, Welwyn Garden City, Herts AL7 3TN  
**Hemel Hempstead Model Flying Club**  
 D. J. Collins, 6 Warkmark Road, Hemel Hempstead, Herts HP1 3PZ  
**Letchworth MAC**  
 C. Warren, 113 Milestone Road, Hitchin, Herts  
**Rotax MAC**  
 M. Shadbolt, Inspection Dept, Lucas Aerospace Ltd, No 1 Factory, Maylands Avenue, Hemel Hempstead, Herts  
**St Albans MAC**  
 J. Dix, 1 Brampton Road, St Albans, Herts  
**Stanstead Model Flying Club**  
 F. E. Mann, 10 Fairway, Sawbridgeworth, Herts CM21 9NJ  
**Stevenage MA & MS**  
 R. Pearce, 69 Harrow Court, Stevenage, Herts SG1 1JT  
**Watford Wayfarers MAC**  
 B. G. Plumb, 205 Ebbens Road, Hemel Hempstead, Herts

adequate flying field. Better this than no participation at all. It is a well known fact that the Area had its flying field problems in 1976, and no doubt they will persist into the current season, too; bureaucracy being what it is, but they appear to have the use of Driffield, albeit hedged around with regulations by the security conscious Army. Most of them necessary, no doubt, if we were at war, but the limit of 50 people per meeting is to say the least – limiting.

You may require quick reflexes for control line flying, but you need a brave heart to try to convert the avid radio

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## Contest Calendar . . .

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 10 am. Other events start 8 am. Unlimited pre-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 Old Airfield, Nr Royston, Herts. 10 am start.
May 1st	<b>NATIONAL KITE RALLY.</b> Old Warden, Beds.
May 1st	<b>THREE KINGS C/L OPEN DAY.</b> Stunt, Carrier, Scale – from 11 am. Silencers must be fitted. Details D. Wood, 133 Ravensbury Road, Southfields, SW18. Tel: 01-947 0752. Venue: Croydon Airport Estate, of Purley Way – but phone first to confirm.
May 8th	<b>SMAE SECOND AREA CENTRALISED.</b> FAI Power (Halifax Trophy & Plugge Cup), Open Rubber (Gamage Cup) and Open Glider. Area venues.
May 8th	<b>SMAE SCALE INDOOR NATIONALS.</b> Plus general fly-in. Venue: RAE Cardington, Beds.
May 8th	<b>N. AREA (SMAE) R/C CLASS II SCALE.</b> Pre-entry/details from A. Barker, 1 Bramley Garth, Apple-tree Village, York YO3 0NQ.
May 15th	<b>SMAE INDOOR MEET.</b> 35cm Microfilm. Venue: Cardington, Beds.
May 15th	<b>SMAE C/L MEET.</b> FAI and Goodyear team race. Handicap and FAI speed. Combat, Aerobatics, Novice Stunt. Venue: RAF Cottesmore or N. Luffenham, Leics. Ring Bristol 48869 to check venue.
May 15th (new date)	<b>OXFORD MAC R/C THERMAL SOARING MEET.</b> Percentage slot scoring. Venue: Port Meadow, Oxford. Limited pre-entry (50p) with SAE to D. Powles, 47 Mark Road, Headington, Oxon.

May 15th	<b>WAKEFIELD C/L MEET.</b> FAI and Goodyear. Venue: RAF Elvington – provisional only.
May 15th	<b>N. AREA (SMAE) R/C THERMAL SOARING.</b> Pre-entry/details as per 8th May meet.
May 15th	<b>WOLVES F/F GALA.</b> Open R/G/P. Combined Mini, HLG, Class II Scale (Doc requ.) – Seniors 50p/event, Juniors 10p/event. Guaranteed prizes 1-3 plus top Junior. Details M. Brown 021-354 1449 (day), 021-329-2751 (evenings). SMAE members only. Venue: RAF Chetwynd, from 10 am (gates open 8 am).
May 22nd	<b>WOLVES C/L FLY-IN.</b> Class II scale (Carter Trophy), Aerobatics (Hobson Trophy), Novice/Junior stunt, Carrier, 3½cc Prolife Carrier, 3½cc Australian rat-race (Whitefield rules). Venue: Lucas Aerospace Ltd. Sportsfield, Fordhouses Wolverhampton. Short mown grass. Insurance & silencers essential. 9am until dusk.
May 29th	<b>STOCKPORT COMBAT RALLY.</b> Details J. Berry, 3 Cranbrook Drive, Stalybridge, Cheshire. Phone 061-303-0869.
June 5th	<b>WIMBOURNE MAC R/C THERMAL SOARING.</b> Pre-entry (£1) plus freq. and SAE to I. Matterface 59 Cutlers Place, Colehill, Wimbourne, Dorset. Tel: Wimbourne 5037.
June 5th-7th	<b>SMAE INDOOR INTERNATIONALS.</b> FAI Microfilm, EZB, Open Microfilm, Open Tissue (65cm max span), Manhattan, HLG, and 35cm Microfilm.
June 6th	<b>SMAE JUBILEE YEAR SPECIAL.</b> Venue: RAF Odiham (provisional). SMAE members only.
June 7th	<b>AEROMODELLERS SILVER JUBILEE MEET.</b> Vintage sports flying, vintage C/L (Mike Beech's 'Fireball' Trophy) plus 'hush sports' flying for F/F, C/L and R/C – using electric, CO <sub>2</sub> or super-silenced motors. Venue: Old Warden, Nr Biggleswade, Beds.
June 12th	<b>AEROMODELLER SCALE DAY.</b> All types of scale models welcome. Informal contests – just bring a scale model and fly! Venue: Old Warden, Nr Biggleswade, Beds.

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flyer to good, old steam age handle waving, but this is what a contributor to the Leicester MAC newsletter is trying to do. But its not like the old days any more when C/L models flew at 5 mph over a long grass; you are now required to rotate to the tune of a tuned up 80 mph. This has a slightly disturbing effect on those old gyroscopes you have tucked inside your earholes; they go as whacky as a compass needle in the Bermuda Triangle. But the human physiog adjusts.

Main news from the Watford Wayfarers MAC's newsletter is that the *Pilot of the Year* trophy went to Mick Wilshire. He wins the first prize of *World Engines* radio equipment – donated by himself! Further contest incentive next year will be cash prizes.

*Air Mail '76* is the newsletter of the Sevenoaks MAC. A hit out of date for topical discussion, but quite informative on all matters radio.

From *Court Circular*, the Three Kings newsletter, comes an idea of what to do on their patch during the 'powerless' days: a touch and go event with stunable kites! But why not electric powered stunters with the current fed up the wires? You'd need insulated wires though.

Nice to see a newsletter forthcoming from the Eastern Area. The Ipswich club seems foremost in C/L; the Norwich boys still dominate the F/F scene at RAF Watton, and Colchester and Newmarket seem to vie for the radio honours.

I enjoyed getting what sense I could from the French *Lollière Bulletin de Liaison*. I like the flair and style the French bring to free flight modelling – something we used to have in the past but seem to have lost.

Clubman

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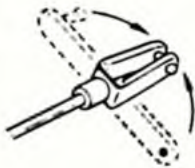
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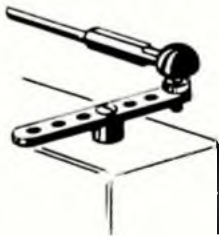
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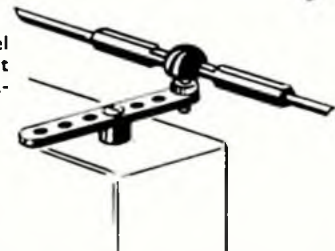
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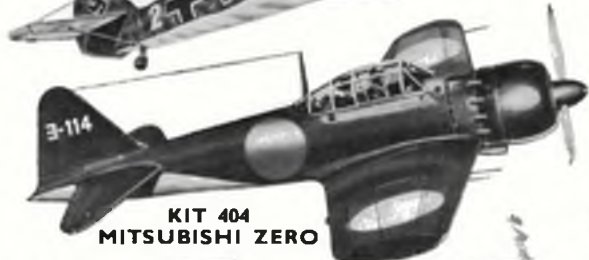
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For the absolute  
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outfit is available  
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only at £39.00

### SPECIFICATIONS :

#### TRANSMITTER—MODEL SP26T

- 1 Power—12v., from 8 pencils
- 2 Power consumption—130mA
- 3 Effective range—500m on ground, 1,000m in air  
(Subject to atmospheric conditions)
- 4 Stick-position interchangeable
- 5 Rear panel is metal screened
- 6 Interchangeable crystal facility
- 7 Dimensions—4.68 (h) x 2.28 (w) x 1.65 (d) in.
- 8 Nett weight—350g.

#### RECEIVER—MODEL SP26R

- 1 Power—6v., from 4 pencils
- 2 Sensitivity—2uV/m
- 3 Output—pulse + 3.5v.
- 4 Dimensions—0.81 (h) x 2.28 (w) x 1.65 (d) in.
- 5 Nett weight—40g.

#### SERVOS MODELS—SM321 AND SM322

- 1 Rotating direction—SM321 - clockwise  
SM322 - anti-clockwise
- 2 Torque—1Kg/cm.
- 3 Speed—0.5 sec/60°
- 4 Output shaft has 23 splines for easy neutral positioning
- 5 Rubber cushions provided on lugs for vibration absorption
- 6 Hole pitch—1.19 (l) x 0.35 (w) in.
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0.75 (d) in.
- 8 Nett weight 30g.

#### DIRECT SPEED CONTROLLER— MODELS SM331 AND SM332

- 1 Load capacity—SM331 - 5 - 8v. 2A.  
SM332 - 9 - 13v. 2A
- 2 Dimensions—0.81 (h) x 2.28 (w) x  
1.65 (d) in.
- 3 Nett weight—40g.

#### THREE VERSIONS AVAILABLE

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and one speed controller
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controllers



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# MAPLE MODELS

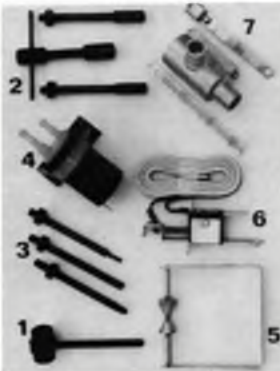
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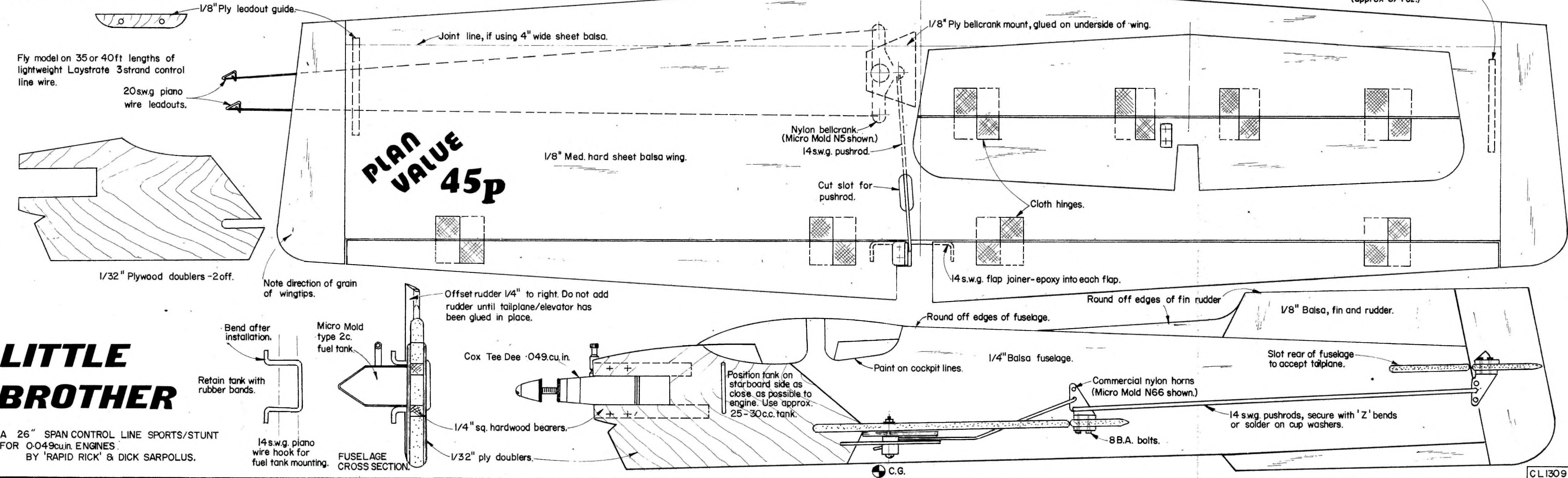
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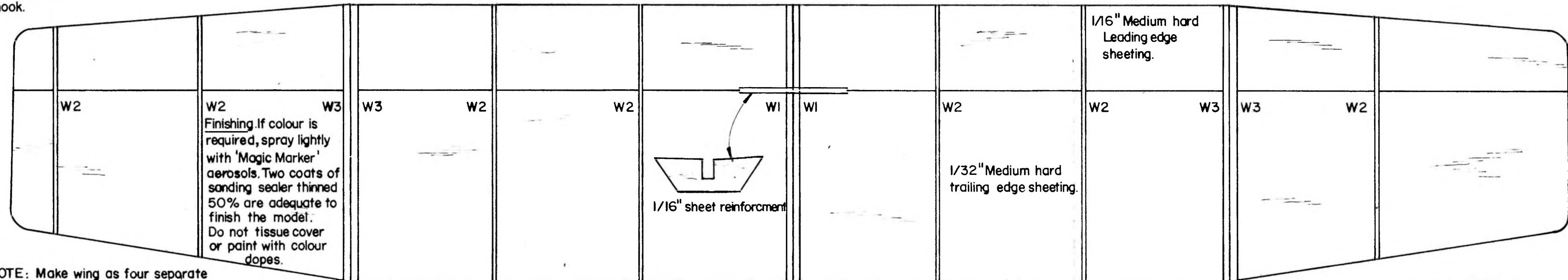
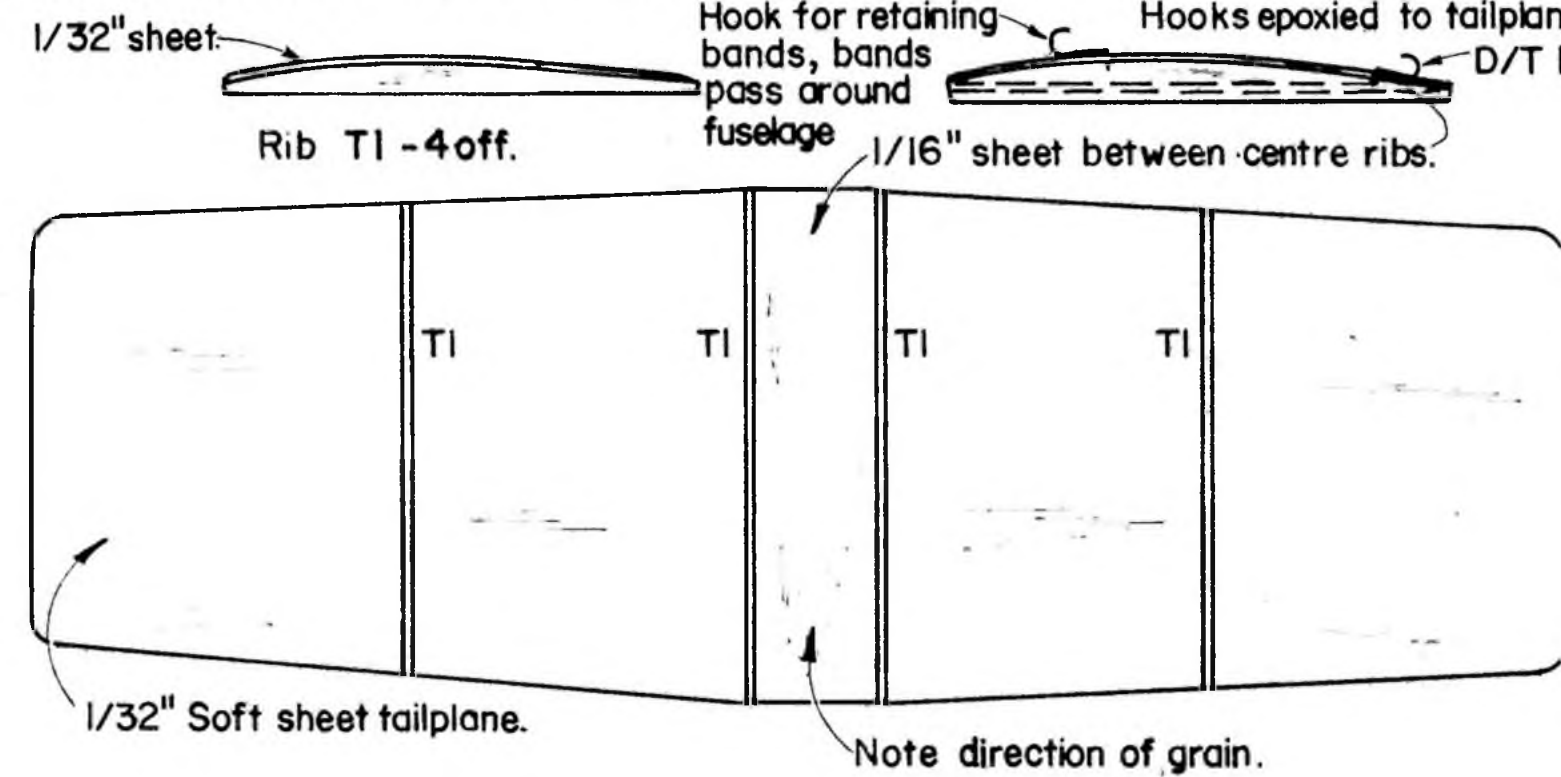
# LITTLE BROTHER

A 26" SPAN CONTROL LINE SPORTS/STUNT FOR 0.049cu.in. ENGINES.  
 BY 'RAPID RICK' & DICK SARPOLUS.

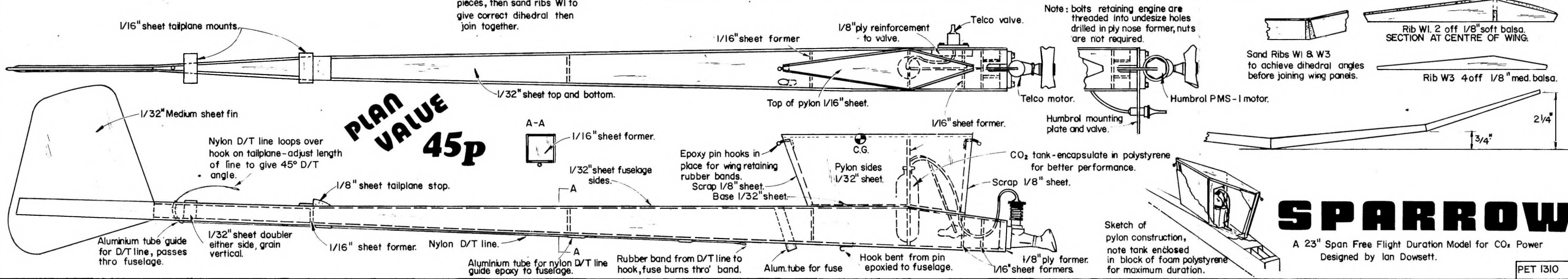
**PLAN VALUE 45p**

FUSELAGE CROSS SECTION

NOTE: WINGS & TAILPLANE DRAWN INVERTED FOR CLARITY.



NOTE: Make wing as four separate pieces, then sand ribs W1 to give correct dihedral then join together.



**PLAN VALUE 45p**

# SPARROW

A 23" Span Free Flight Duration Model for CO<sub>2</sub> Power  
Designed by Ian Dowsett.

PET 1310