

AUGUST 1980 50p

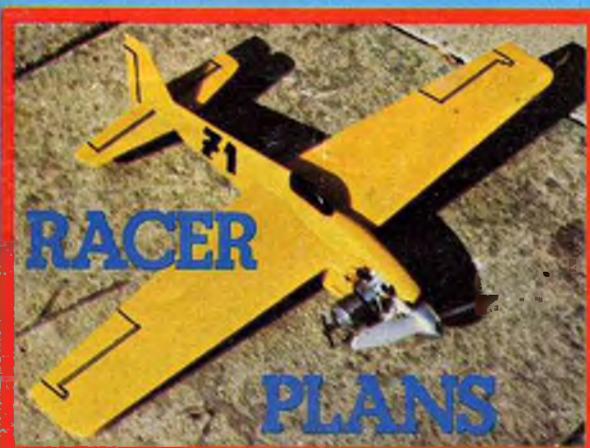
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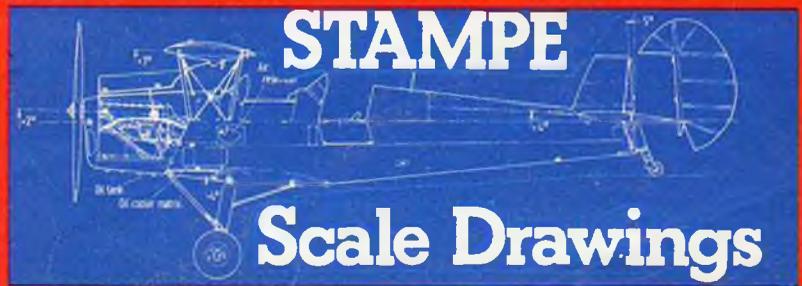
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AUGUST 1980

MAP

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MODEL DIVISION MAGAZINE

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Comment

IT IS NOT VERY OFTEN we have the opportunity to praise a local authority for initiative in providing facilities. The more usual case is one of fighting restrictive bye-laws and protracted negotiations for alternative flying sites after eviction by bureaucratic action. All the more credit therefore to Epping Forest Council who have actually purchased an aerodrome so that it can continue to be used for air

sports – including model flying! They invited all local associations to show just what they wanted to use North Weald airfield for, and on June 15th we witnessed a splendid presentation of gliding, land yachting, parascending, kite flying, R/C cars and aircraft. A consortium of eight clubs joined to fill the open end of a hangar with 150 model aircraft of as fine a variety as one could wish to see, and throughout the day, the R/C models were put through their paces to impress visiting officials. Recreation Officer, John Burgess, and his assistant, Jenny Filby,

are to be congratulated for their enterprise in seeking the co-operation of so many different interests. The vast space is well suited to provide harmonious participation of so many diverse activities, and even where conflict occurs over shared use of radio frequencies, North Weald proved that cars and aircraft can be operated in alternate hours. Full marks to all concerned and special congratulations to the far sighted Councillors of Epping Forest District Council under Chairman Ian Beattie, who have set an example which many others could better afford to follow.

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Next Month

Full Report on FID World Indoor Champs held at West Baden, Indiana. APS Plans range introduction, Chris Pinn's Profile Aerobatic trainer *Cleptrap*, winning model in CLAPA Novice Stunt Design Competition. Photo report on the recent highly successful Aeromodeller All-Scale Two Day meeting. R/C Sport Flyer deals with how to repair inevitable crash damage plus lots more news on Free Flight, Control Line and Scale flying. On sale August 15th.



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On the Cover

This Renault powered *Stampe SV-4C* G-ATIR, owned by Mitchell Aviation, finished in french blue and white, appeared at the 1978 Strathallan Air Display. Plenty of bright colour schemes make the *Stampe* an ideal modelling subject and our Aircraft Described feature P436-439 gives full details to supplement the original article which appeared on P602-605 September '79 *Scale Models*. Photo: Ray Rimell.

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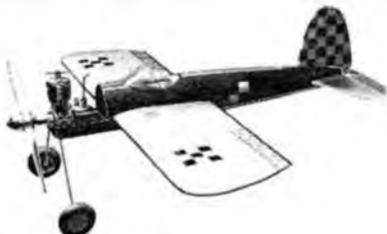


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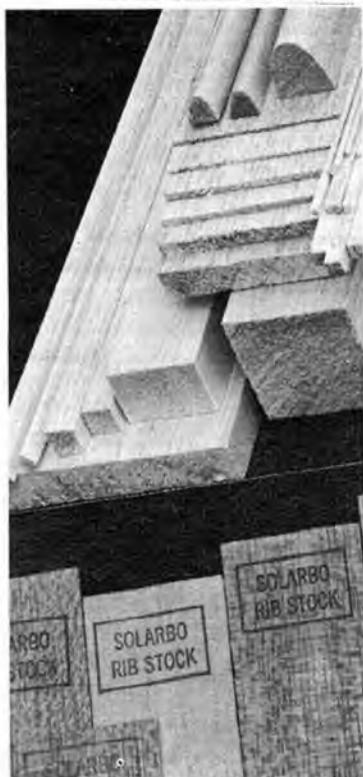
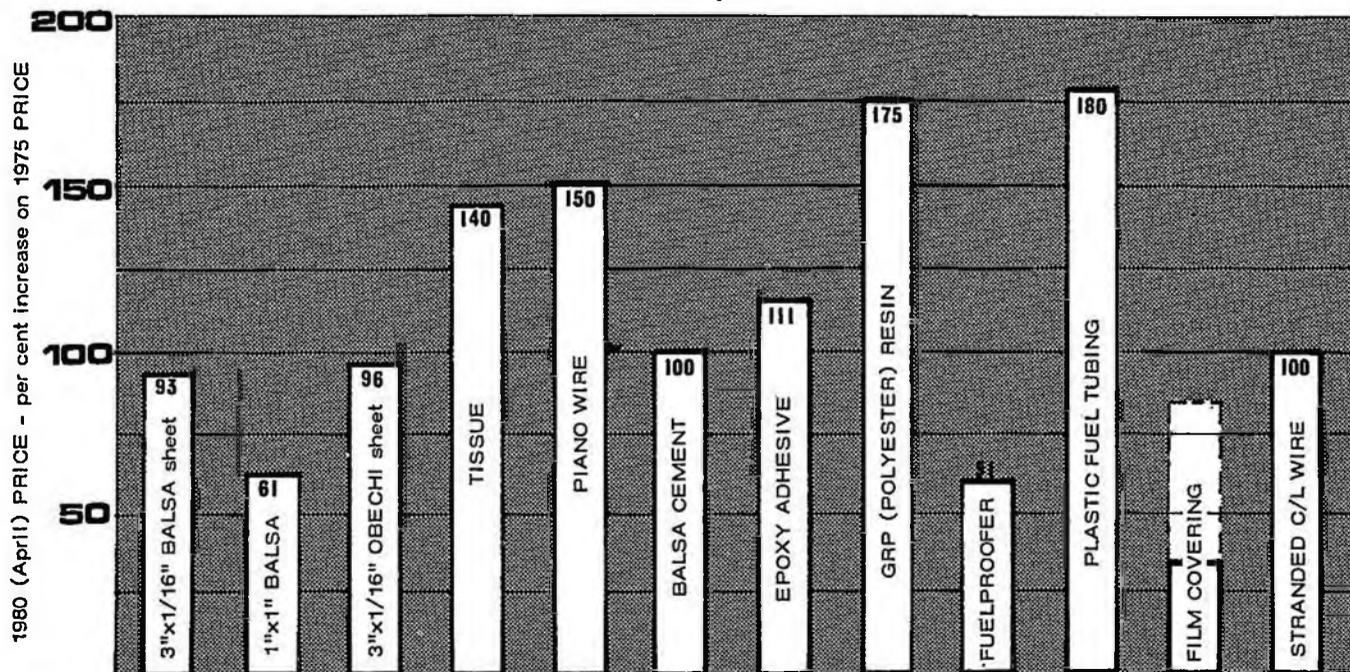
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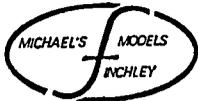
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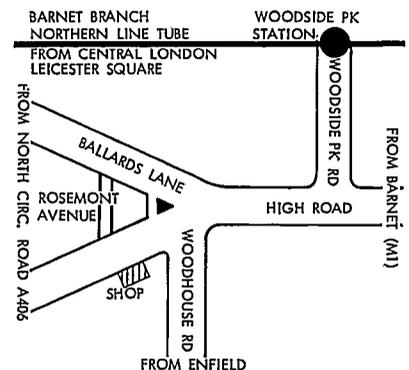
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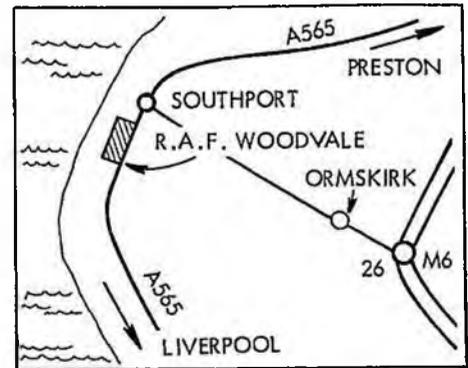
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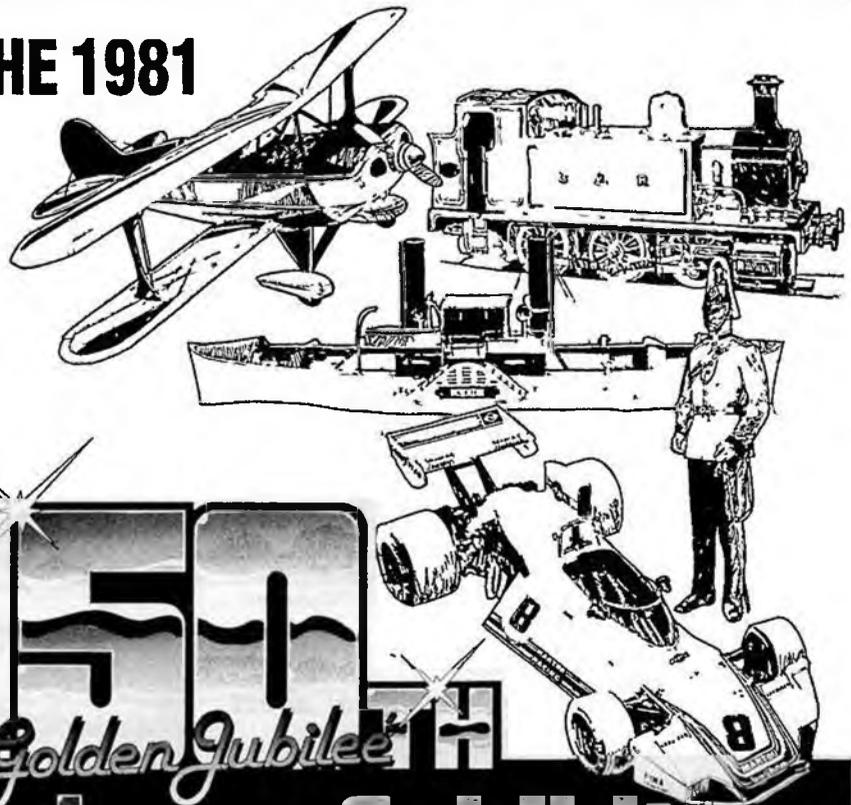
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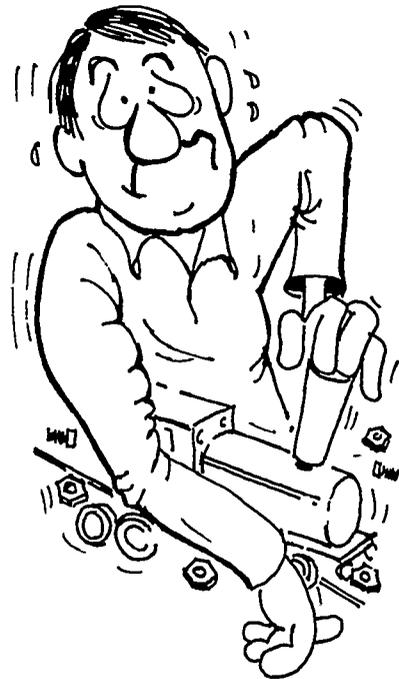
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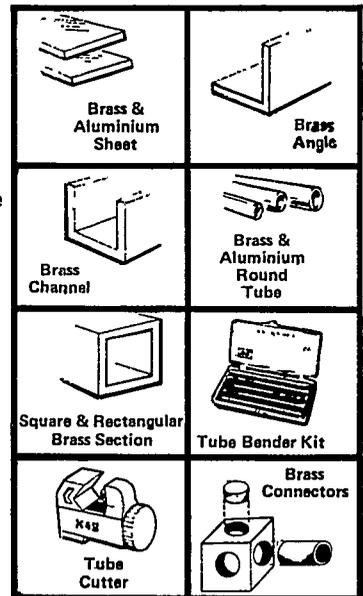
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Michael's Models, 646-648 High Rd., North Finchley, N12 0NL. Tel: 01-445 6531
MC & WT

The Model Shop, 190-194 Station Rd., Harrow, Middx. Tel: 01-863 9788
MC & WT

Manchester:

The Model Shop (Manchester), 209 Deansgate Manchester M3 3NW Tel: 061 834 3972
MC & WT

Newcastle-upon-Tyne:

Boydells Models & Hobbies, 2 High Friars, Eldon Sq., Newcastle-upon-Tyne. Tel: Tyne & Wear 28701
MC & WT

The Model Shop, 18 Blenheim St., Newcastle-upon-Tyne NE1 4AZ Tel: Tyne & Wear 22016
MC

Portsmouth:

Ray Brown Models, Boats, R/C Planes, 10 Kingston Rd., Portsmouth, Hants. Tel: Portsmouth 25043
MC & WT

Street:

Somerset Tool Services, 169A High St., Street, Somerset. Tel: Street 46061
MC & WT

Taunton:

Morrison Tool Co., 30 Station Road, Taunton, Somerset Tel: Taunton 73224
MC & WT

NOT THE EGG RACE

Following the popular example of Television's 'Great Egg Race', the Somerset Education Committee have devised a similar competition for youngsters with an inventive mind, titled 'The Great Ping-Pong Ball VTO Race'. The competition is sponsored by Westland Helicopters, H. A. Coombs Rubber Bands and Halex Table Tennis Balls and is open to all schools in the Somerset area. Entrants are required to build a flying machine that will lift a ping-pong ball vertically into the air, without a take-off run, for the longest possible duration, using two standard 4 x 1 x 125mm rubber bands. The VTO Race has already attracted over 600 entrants from various schools in the area and we eagerly await details of the final competition results.

PIPE DREAM

Don Cameron, the Bristol based balloonist, who made the first sensational attempt to cross the Atlantic in 1978 has just completed a unique advertising balloon for Erinmore pipe tobacco. Cameron Balloons are responsible for many of the current unusually shaped hot air advertising balloons. Each shape represents a different problem in adapting it into a proper flying machine; the Erinmore balloon for example has the stem split internally to control the amount of hot air inside and prevent unwanted droop or upward tilt of the stem. The registration for the balloon not surprisingly will be G-PIPEI

Below: Trans Atlantic Balloonist Don Cameron with model of proposed Erinmore Pipe Balloon.



Right: A helicopter, supplied courtesy of H. A. Coombs Rubber Bands in conjunction with Air Hanson, visited Somerset schools to distribute raw materials for 'The Great Ping Pong Ball VTO Race' being organised by Somerset Education Committee. Above: Official 'handover' to pupils at Blue School, Wells.



NO FLYING PLEASE

Irresponsible flying of model aircraft at Frensham Country Park, Surrey, contrary to the local byelaws, is endangering the good work being done by the Godalming District MFC, who are negotiating sites for model flyers within the district of Waverley. The secretary of the club is appealing to all model flyers in the area to respect the valuable wild life conservancy area at Frensham in the interests of the goodwill shown by the local council in the future establishment of flying sites.

ACCELERATED SUBSCRIPTIONS

A new arrangement for accelerated surface post and bulk Airmail post will in future speed monthly issues of *Aeromodeller* to overseas subscribers. Delivery time to USA, Canada, Australia or the Far East will in future take only 10-14 days instead of the current 8 week delay for surface delivery. Because all subscription issues are in fact posted one week prior to advertised publication date here in England, this now means that readers outside Europe will receive their magazine only days after modellers here at home can purchase their copy.

NATIONAL MODEL MUSEUM

A site has now been chosen for phase one of a National Model Museum at Poole in Dorset, with an opening date scheduled for Autumn 1980. Exhibits will include model aircraft and future developments will include an area for flying models.

CONTINENTAL CONTESTS

The fine sports ground at Amerongen in Holland will again be the venue for the 9th Annual F2D Combat International on August 9th-10th. Entry fees for the event, which last year attracted 12 nations, is Hfl. 15 under 18; Hfl. 22:50 for seniors, Hfl. 10:00 camping for supporters, and meals are available. Contact: Annemarie van de Weerd, Beethovenlaan 95, 6815 BL Arnhem, Holland.

In Belgium, a follow up to their Combat International is to be held, this time for F2A, F2B and F2C models, on August 23rd-24th, entrance fee 250 B fr. Contact: Fons Beckers, Paalseteenweg 10, B-3950, Beringen.

1981 F/F TEAM TRIALS

Sculthorpe has now been confirmed as the venue for the first two of the three meetings to decide the 1981 Free Flight World Champs Team Trials.

The closing date for pre-entries is the 13th August 1980; late entries will be accepted at double price but it is *essential* that *all* those wishing to attend the contest, pre-register their names and those of *all* of their passengers by the above date to satisfy USAF security requirements. Send SAE plus £3 registration and 80p entry per class per meeting to Alan Jack, 8 High Heath, Blackfell, Washington, Tyne & Wear.

There will be a get-together in the camp cinema on each Saturday of the first two trials between 8 and 10pm. The first should contain an illustrated report of the 1980 European F/F Championships. The second a discussion on team selection and performance opened by the F/F Subcommittee.

Letters

REFORM THE RULES

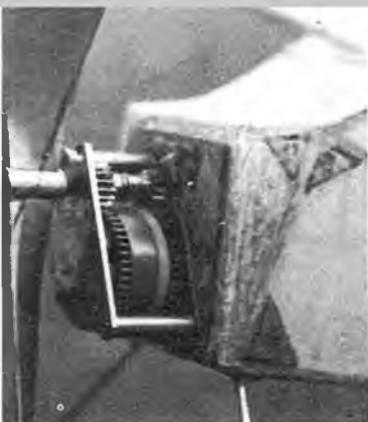
Dear Sir,

Whatever the SMAE Council may decide about the Nationals Vintage result*, it is to be hoped that sad saga will bring forth a new and clarified ROG rule.

As the rule stands at present, one can hardly quarrel with Dave Goodwin's decision. Given the conditions, the need for a reduced maximum and all that lovely smooth tarmac, enforcing ROG was obviously sensible. On the other hand, I have good reason to sympathise with Gerry Farer. I wrecked my best model in the kind of accident Gerry refused to risk. Having damaged my reserve during trimming the previous day, I ended up with a zero score.

The disputed result, Mark Hinton's disqualification, my own misfortune and the widespread illegal pushing at take-off which was going on—all these factors seem to me to point to the same conclusion. The question of whether or not to ROG is too important to be left to a "last minute decision" by the contest director. We need to know where we stand *before* the actual day of the event.

I would like to see two major reforms. First, the undercarriage rule should be tidied up by specifying 'undercarriage as in the original design'. The present rule permits all sorts of liberties which are quite out of keeping with the spirit of the event. Secondly, if the ROG rule is to apply at all, it should apply to all events. At some sites that will necessitate provision of take-off boards. It will also mean granting dispensations for models such as Mark Hinton's *A-Frame Pusher* which cannot ROG at all, and for the many *Bazookas* and others which need a push to get off safely. If all that adds up to too much



Interesting modification to KeilKraft Elf converted from rubber power by Godfrey Knight of Portsmouth. Motor originates from toy car and fuselage is shortened to compensate for extra weight at nose. Duration is short but model, not surprisingly, "flies like clockwork".



administrative complication, the ROG rule should be abandoned. That would be regrettable, but the present confusion is more regrettable still.

Nottingham

Tony Brookes

*See Nats. report, p. 442.

FRIENDLY CLUB

Dear Sirs,

We noted with interest the remarks (July 1980 *Aeromodeller*) regarding newcomers to our hobby. We too, are particularly concerned about the apparently low number of juniors participating, and a glance at our own club membership shows that we currently have 45 senior members and 5 junior members. A ratio which we are sure is not untypical.

Whilst not wishing to tout for members, we would like to draw to the attention of any junior living locally the facilities we have to offer. Membership fees are within the reach of most people's pocket money and our more experienced members can offer help and advice on most aspects of the hobby. We have access to two club sites in

addition to private locations. We have also recently acquired the use of local MoD property (full SMAE membership required) which is ideal for free flight.

If any junior in the Newbury area, reading this letter, would like to learn more about flying model aircraft, they should contact our club secretary, Mrs S. Whitehead, 4 Berrys Road, Upper Bucklebury, Nr Newbury, Berks or phone Thatcham 63687.

Newbury & District MAS

John Winfield

HOLIDAY EXCHANGE ?

Dear Sir,

I am a 14 year old Belgian boy interested in Radio Controlled Gliders. This summer, during July or August, I would like to spend two weeks in England to learn the language, living with an English family with a son of my age also interested in R/C gliding. In return I can offer two weeks in Belgium with my family. Would anyone interested like to write to me at: rue de Herve 354, 4030 Grivegnée, Belgium.

Belgium

A. Phillips

What's Happening?

EVENTS

July 19th-20th

BOURNEMOUTH AIR PAGEANT, displays of Military and Civil aircraft. Venue: Hurn Airport.

July 20th

SHUTTLEWORTH MODEL GROUP OPEN DAY - Free Flight, Control Line, and Stand-off Scale. Venue: Old Warden, Shuttleworth, Beds. Contact: M. Staples, 11 Whitehill Road, Cambridge CB5 8LT.

August 3rd

MODEL FLYING DEMONSTRATION DAY by High Wycombe DMAC to raise funds for mentally handicapped children. Venue: Kingsmead Recreation Ground, High Wycombe, 2pm.

August 10th

BOGNOR BIRDMAN RALLY. Would be Icarus' jump off the Bognor Pier attempting to fly 50 metres or more for £3,000 prize, plus Marlboro Aerobatic Display Team, Free Fall Parachuting, Hot Air Balloons etc. Enter as Birdman or simply spectate.

August 17th

AEROMODELLER ALL-VINTAGE DAY. R/C, FIF & C/L. All the famous old time models flown for fun in a friendly atmosphere, plus Fireball Trophy. Venue: Old Warden, Beds.

CONTESTS

July 20th

WESTERN AREA GALA. Venue A: Woodbury Common. Contact: Brian Silcocks Tel: Bristol 641101.

July 20th

ELLIOTT SUMMER RALLY. F2C, GOODYEAR, CARRIER, 1/2A TR, 1/2A COMBAT. 1st-3rd Trophies all events.

Venue B: Marconi Avionics, Rochester. Contact: Pete O'Neill Tel: 0732 57899.

July 27th

FF MINI CENTRALISED. A11, C,D,H, 1/2A, HLG, CO. DURATION. Venue C: Bassingbourn. Contact: Mike Fantham Tel: 01-736 7163.

August 2nd-3rd

WOODVALE RALLY. CLASS 1, CLASS II R/C SCALE, LARGE R/C SCALE (1/4 PLUS), FIF SCALE, RUBBER POWER & CO. International R/C Aerobatics. Public Displays. Venue D: RAF Woodvale, Nr Southport. Contact: R/C - A. N. Searle Tel: Parbold 2000. F/F - B. Sinclair Tel: 051-207 0111

August 3rd

BRITISH COMBAT CHAMPIONSHIPS 2nd ROUND. CLASS A DIESEL. 10am start. Venue E: Peterborough River Embankment. Contact: Nell Gill Tel: 0733-25 2645.

August 3rd

RICHMOND/CROOKHAM FF GALA. F1A, F1B, F1C, OIG, OIR, OIP. 10.00am start. No Rounds. Venue F: Everleigh Dropping Zone. Contact: C. P. Williams Tel: 0252 (Yateley) 871120.

August 3rd

THREE KINGS NOVICE STUNT. Venue G: Old Croydon Aerodrome, Purley Way, Croydon. Contact: Derek Bird Tel: 01-874 6394

August 10th

FREEBIRD FREEKOUT. F1A, F1B, F1C, OIG, OIR, OIP. 10am start. Venue F: Everleigh. Contact: Martin Gregorie Tel: 01-674 5811.

August 16th-17th
SCOTTISH NATIONALS. R/C & C/L EVENTS. Venue H: Strathallan Museum. Contact: L. A. Nicholls Tel: Airdrie 63712.

August 23rd-25th

NATIONAL CHAMPIONSHIPS. C/L & R/C. Venue I: Barkston Heath. Contact: SMAE Sec. Tel: 0533 58500

August 24th

WOODBURY RALLY. OIG, OIR, OIP, COMBINED MINI, HLG, VINTAGE. Sponsored by Free Flight Model Components. Venue A: Woodbury Common, near Exmouth. Contact: Chris Chapman Tel: Plymouth 881 460.



On MoD property, model aircraft may ONLY be flown by FULL SMAE members or contest entrants. All SMAE members (Associates and Juniors) and their families are welcome as spectators, and non members may be admitted by prior arrangement with contest director. For SMAE membership details Tel: 0533-58500.

FLEXI-WING CANARDS



Small Free Flight version uses butterfly canard foreplane to aid flight stability. Similar to the CO₂ version this model was powered by electric motor. Pipe cleaner pilot 'Ben Twire' seen at the controls.

THESE MODELS represent a projected full size powered hang glider design, therefore several unusual features should be borne in mind in model terms. The two most important are that the machines are designed to be completely de-riggable for transport, which has great benefits, in that even the largest models are transportable by bicycle or motorcycle (the .8cc version fits into a shoulder bag along with transmitter, fuel, etc!) This means that all the rigging is functional, and that a suitable sailing material must be used which may be rolled and unrolled without damage or impairing flying trim. Remember also that hang gliders have strange weight distributions, in that the glider weighs less than the pilot, who is low down in my design so that the CG is somewhere near the thrust line. This is why I recommend CO₂ or electric power for small versions, where the energy store (i.e. tank or battery) can take the place of a pilot or the radio gear in the case of the powered models. This means that a powered F/F version may tend to power loop or do exciting spirals unless CG is kept low!

I have drawn up one of my small CO₂ models so that you can get the feel of the construction and do some playing about with the flight trim before going on to larger versions.

Cut out all the parts and assemble the main power pod complete with the root or keel rib, the paper tube with dowel plug inside and the hole to take the bowsprit pigot. Set the leading edges over the plan and attach the cane tip rib with glue at the correct "toed in" angle. When dry, plug in both leading edges to the pod and turn it

upside down.

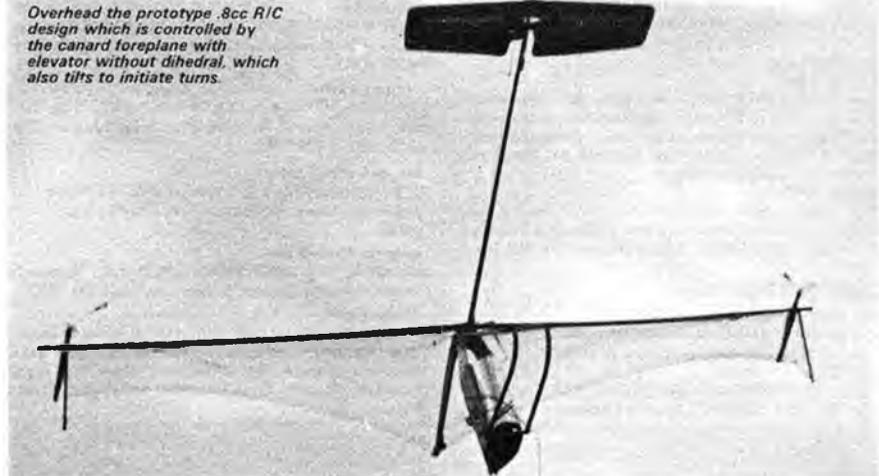
Using strong thread, tie a knot round the root rib with sufficient thread each side to go along the trailing edge of each wing, slit the very ends of the tip ribs to take this thread, and lead it on to the extreme leading edge tips. Adjust the wing planform by lining everything up with the plan and when satisfied, lock all connections with cement or cyanoacrylate. Next set up the dihedral by using a continuous length of thread that passes right under the pod — first getting correct dihedral angle, and then after checking for symmetry, recess the thread into small notches cut in the underside of the pod, and cement it into place. Plug in the bowsprit, and tie on it's vertical flying wire to the pod, keeping the bowsprit at the angle shown. Take a length of thread, and knot it to the bowsprit nose. Slit the leading edge tips again, and draw the thread through. At this stage

William Brooks concludes his account of the development of his unique flying machines with plans and construction techniques

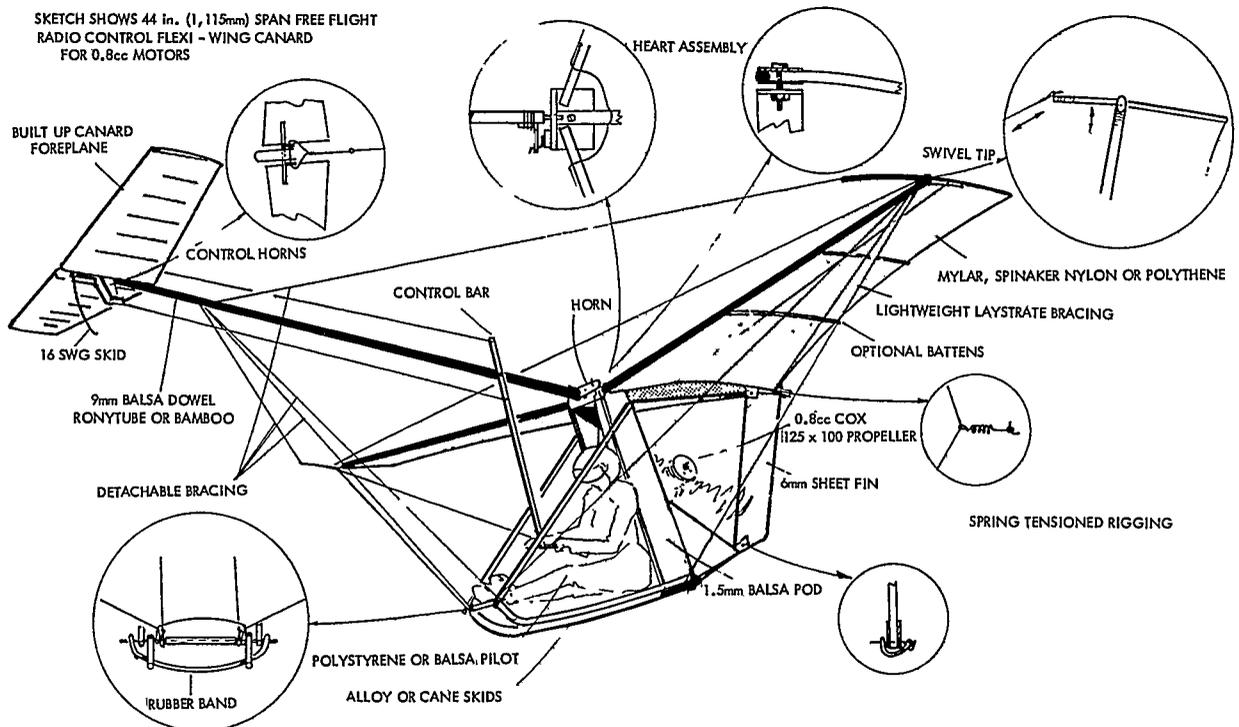
everything should become rigidly braced, so pull the thread tight, check that everything is straight and lock the connections. Add the tip skids and trailing edge pieces at the correct angles and you are ready for covering.

The mainwing is covered in one piece apart from the tip fins which are a little tricky and should be done separately. Pull the cling film off the roll and lay it on top of the wing, overlapping the leading edges by about an inch. Cut the film with a scalpel either side of the bowsprit and carefully overlap the film around the LEs and underneath, making as few wrinkles as possible. No glue is required here, apart from stress points near the root. Pull the film over the root rib, and attach with UHU adhesive used sparingly, and at the tips, having pulled the film out spanwise. Apply a touch of glue, at around mid-span on each wing, to the trailing edge, pull the

Overhead the prototype .8cc R/C design which is controlled by the canard foreplane with elevator without dihedral, which also tilts to initiate turns.



SKETCH SHOWS 44 in. (1,115mm) SPAN FREE FLIGHT
RADIO CONTROL FLEXI - WING CANARD
FOR 0.8cc MOTORS



thread in about 10mm and attach it to the film. Progressively attach the rest of the TE pulling the thread into a smooth curve, symmetrical on each wing. This provides some chordwise tension throughout the span. Cut the tip pieces to size and glue the film onto the structure. Trim off the surplus film at the trailing edge.

Now for the magic bit! Take a hairdryer or other heat source and gently warm the film, which should tension up to a shimmering tight appearance like the commercial iron-on plastic covering – it's very satisfying to watch.

Cover the foreplane area, being sure to get it symmetrical and on the large side if anything – you can always cut bits off if required during trimming. Attach the foreplane rib trailing edge to the bowsprit temporarily so that the incidence may be changed; a piece of scrap with a pin will do for now. Now pull out the bowsprit, fold everything carefully and try rigging again – if satisfactory, fold it up and wait for a calm day, take plenty of sparklet bulbs and pipe cleaner pilot (you can hang him by his toes from the rigging!) and head for the field.

TRIMMING

This is completely different from most models. Being a canard layout, the foreplane stalls before the main wing and may be set up with large positive incidence so as to be almost permanently stalled and some kind of glide can be expected straight away. Now gradually reduce the foreplane incidence until a fairly fast glide results – if this occurs with the foreplane at neutral or negative incidence compared to

the main wing a dangerous divergent trim results – it means the CG is too far back and probably too high as well.

Set the motor to low power, and give it a gas charge. The model should take off almost vertically and spiral upwards. Adjust any turns with the trim tab in the propeller slipstream, or put in some right thrust to counter torque effects. If all is satisfactory, the foreplane may be set at the determined angle, fine trim afterwards is done by moving relative position of the gas bottle to the CG.

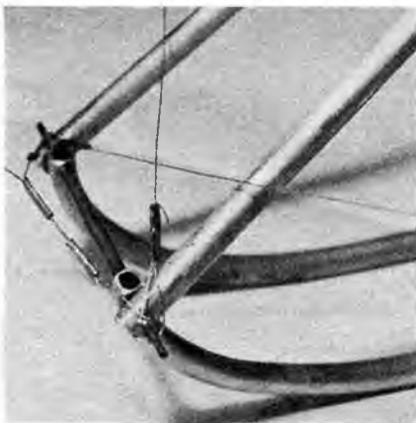
If you want to experiment with the foreplane area, the idea is to get the foreplane to a size where it will only just stall before the main wing. This set up gives the best performance but if overdone the model may stall in gusts. If the foreplane is small (therefore highly loaded) faster penetrating flight results with the foreplane stalling well before the main wing, but performance will suffer especially on the glide. If the foreplane is so small as to be permanently stalled, requiring 15° incidence or more to maintain flight, it will still be safe but the model will be seen to bob about as the main wing flies through the turbulence from the foreplane and the drag will be high, making the glide a parachute type mush.

The moment arm on this model is I think about the shortest practicable before aerodynamic interference between the foreplane and the mainplane takes effect, as in the case of the *Flying Flea*. A longer bowsprit makes the bracing system more rigid and reduces the size of the foreplane required which is a good feature where a full size machine is concerned for trans-

port reasons, as it reduces bulk and weight.

The large model is far more representative of the full size machine and I can recommend flying it with Radio Control – it is quite a revelation. For Free Flight more dihedral will be required, but longitudinally as well as laterally.

In the larger sizes, models like these become a gadget maniac's dream, but it is necessary to have such details considered for everything to work properly. The 1200mm version is around the smallest size that makes it worth dismantling the pod assembly. The aluminium tube for the skids can sometimes be obtained from DIY shops but a good hard alloy is required rather than soft pure aluminium. If not available, straight sections of spruce or fibreglass tube may be used. The tube I use for the leading edges comes from a good fishing tackle shop at around £1.50 per 1.2 metre length, three are required. As the tubes are tapered, this gives the model a more refined appearance. The alloy tubes used for the larger models are really difficult to get in thinner than 18swg wall section, which is really far too thick – 20 or 22swg would suffice. Alloy tubes in small diameters are used in such things as rucksacks, tent poles and ski sticks. Bamboo cane is excellent for models, being strong, light and springy and very cheap as there are no joints to be made between structural members on the model – it is all nuts and bolts and glued bindings for fittings. Be careful of drilling holes in the tubes – bound on and glued tangs are a much better idea – areas around holes should be reinforced by binding and glueing.



Above: Wire bracing formed into loops with crimped brass tube swages, hooks over anchor points on alloy tube pod.

RIGGING

As with the small model, it pays to have everything built before rigging up. I tend to get the pod assembly completed and then fit up all the booms with rigging attachment tangs, tip assemblies, spring shock absorber on the bowsprit, elevator mountings etc, although it is best to leave the attachment of the lateral control horn

until after rigging. Rig up as for the CO₂ version, pulling the stranded wires through and holding them by looping through swages. After everything has been checked for alignment and tension (the compression spring should be of around 22swg, 6mm dia and about half compressed in the rigged state), crimp up everything. It is quite easy to undo these rigging wire connections later if required for retensioning etc.

This method works even on heavyweight laystrate 7 strand wire which I have used on my big model, which has been stressed to 3G (the model weighs 5kg with payload), although I have seen nylon covered stainless steel trace wire with special ferrules in fishing tackle shops which looked very interesting. A sign that a bracing wire has been overloaded is when the wire curls up into spirals after the tension is released. The theoretical breaking strain required of the wire can be calculate by simple trigonometry, but only becomes important for really large models as the strength of lightweight laystrate is well up to the purpose for models up to 2 metre span, and the heavier type is good for anything larger that can still be called a model (N.B.

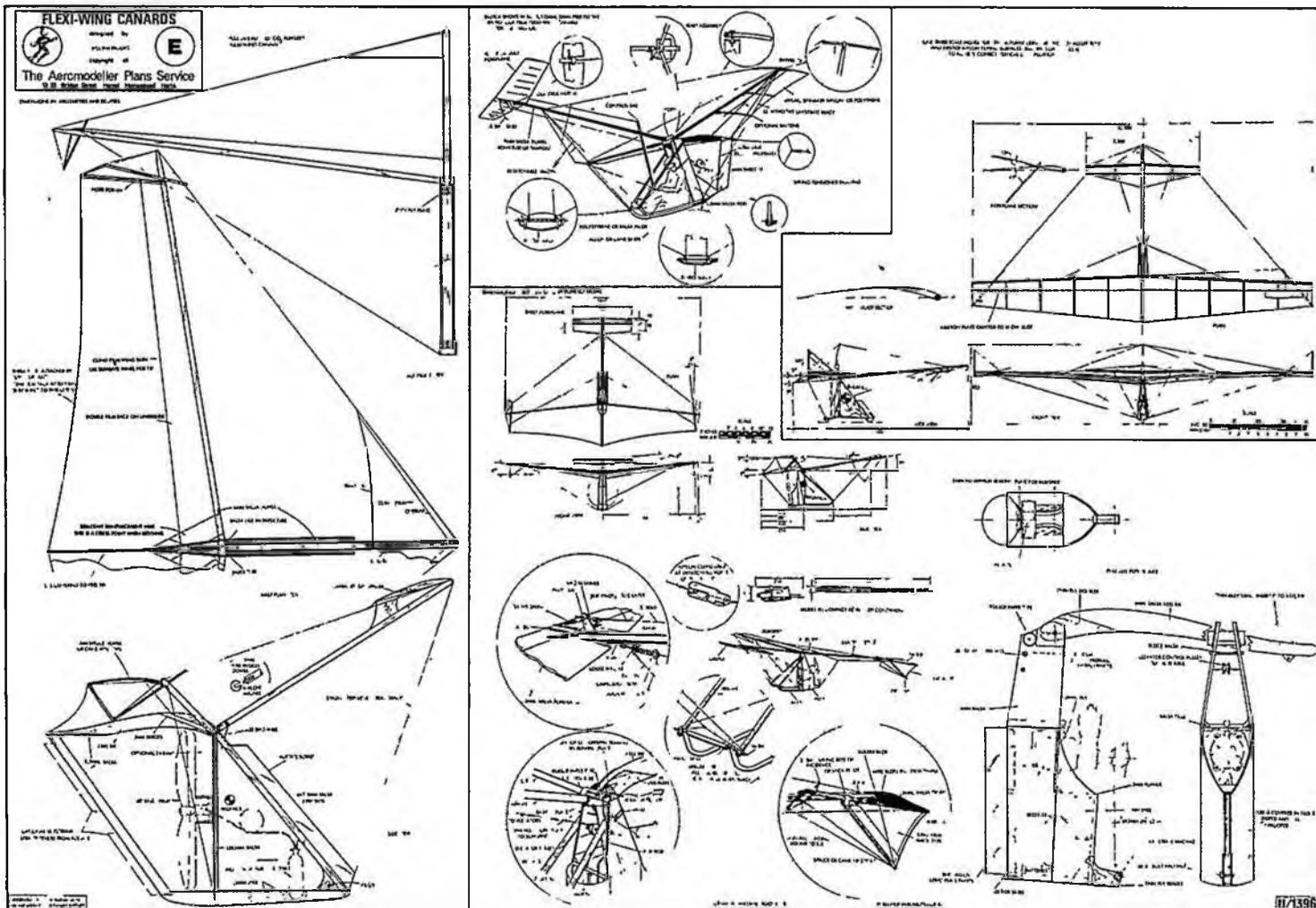
use a kingpost for large models).

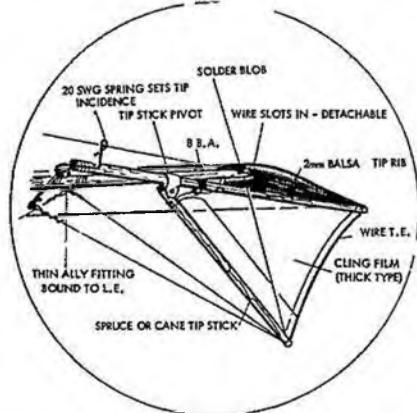
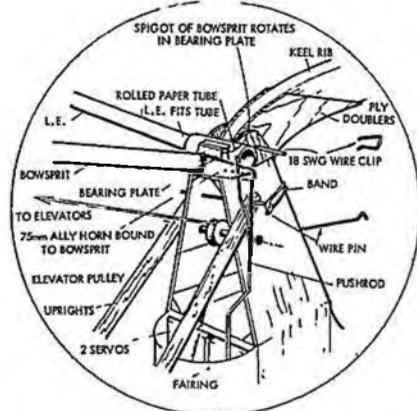
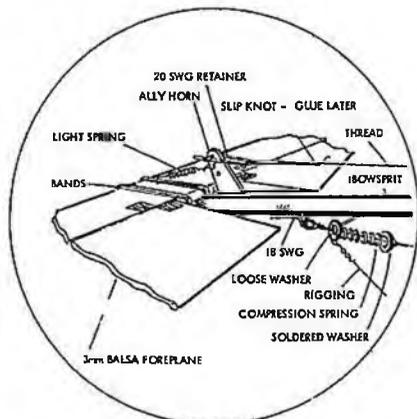
COVERING

A lot of problems with the .8cc model were solved when I discovered double thickness cling film, sold as Alcan Freezer film. It comes in 450mm rolls and may be attached with UHU or Bostik clear adhesive, which is fast acting and dissolves the film, and I have never had glue failure. This film has a slightly elastic quality, distributing the stresses beautifully. When the wing has been opened out after storage it will appear creased but, like a butterfly left to air, these creases soon go away. The covering and glue are also fuel proof.

The only other decent alternative I have found so far for small models is proofed ripstop nylon, as used by kite enthusiasts. This can generally be obtained only by mail order but it works very well and comes in a very wide range of colours, and can be joined easily by using contact adhesives such as Evo-stik. Do not glue the covering to the leading edge, instead use a large pocket around the tube, as this allows the covering to adopt a smooth aerofoil section. Get the warp of the material running parallel with the trailing edge

Full size copies of the plan, reproduced here to 1/6th scale are available as Plan U 1396 price £2.00 plus 35p postage and packing. Overseas readers may obtain copies from their local agents, full details of which can be found on page 357 June issue, or from Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE.





Above: Side view of huge 4 metre span machine shows leading edge tube curved to correspond with billow in wingsail

The ends are squeezed flat with the thumb so that the ends of the battens blend into the leading edge.

On large models, the panels should be cut to a plan, the seams glued up and sewn, apart from the leading edge pocket, which should be sorted out and glued on the model, after which it should be removed for stitching. Thread such as Gutterman Drima polyester thread should be used, with a medium sized zigzag stitch to prevent puckering. Ripstop nylon should do very well for models up to 2.5 metres span and 3kg weight; beyond this terylene should be used which is very strong and non-stretch.

Try to strive for a well finished wing without creases or stress points, with a good aerofoil section preserved along the span. Having said that, the major performance increases are to be found in increasing the aspect ratio, reducing wing twist and good wing tip design along with general drag reduction rather than special aerofoil sections, I suspect.

FOREPLANE

I have tried about a dozen different foreplanes, trying to get the best compromise of high pitch stability in normal flight with a good flare out when landing. By far the best type has proved to be a small fixed part of thin section, with large elevators. With the area shown, it is possible to fly the model continuously on full up elevator (just!) yet giving an excellent glide and landing flare-out. Don't bother with "all flying" foreplanes or thick section ones - they are not much good. I think what is happening is that the foreplane section should be thin and low drag during normal flight, and thick and undercambered when flaring out for the landing. The present arrangement gives a pretty near approximation. Symptoms for too much or too little foreplane are described earlier.

FLYING

Set up control movements as on the plan and try a test glide over long grass. Once again if in doubt, err on the positive side for foreplane incidence. Do not have too much control if using foreplane tilt - it is surprisingly effective! Use a large diame-

ter fine pitch propeller on the engine. If Radio Controlled, use full power straight away, for Free Flight obviously start on low power first and work up.

Do not be alarmed at the sudden gain of altitude after launch if there is any wind - it is the model climbing up the wind gradient - since it is a canard it will take advantage of the increase in airspeed, climb and then recover airspeed by stalling the foreplane after the climb. Fascinating to watch! Remember that it won't penetrate like a pylon racer so keep it up wind - the payoff is in the near vertical take-offs and landings! Beware of the wind gradient when landing so keep the speed up till it's time to flare out.

So there it is. Please remember that these models are still under very active development, especially in their larger size, and although it is already pretty good now, I don't see why it can't be improved upon still further. I am going to satisfy myself that the 4 metre version is alright first, before building a full size man carrying version, which with funds permitting should be in the air in the very near future. The bicycle of the air is coming soon!

Some terms relating to flex wing technology:

Battens - stiffeners that slide into pockets in the sail to preserve aerofoil section and stop fluttering.

Bowspit - a forward extension of the keel to brace the leading edges outwards.

Broadseaming - variation in overlap between panels to give the desired camber in the sail - usually more overlap at the trailing edge to make it tighter.

Keel - root rib of a flexi-wing.

Kingpost - a compression strut on top of the wing, used to brace the structure against negative "G" loads.

Luffing - a fluttering state in the sailing wing when at neutral angle of attack - sometimes called "flagging".

Roach - an area of sail totally supported by the battens, usually at the tips to give lighter handling.

Tuck - a divergent diving condition where the nose tucks under and the glider bunts. Usually results in structural failure - caused by bad design.

for least stretch.

Over 1200mm span, problems arise with producing a decent aerofoil section along the span of the wing and preformed battens have to be used which slide into chordwise rib pockets in the wing, produced by overlapping wing panels. A technique known as broadseaming is used where the panels overlap to give a tight trailing edge compared to the cloth at the point of maximum camber of the wing section. This reduces the twist along the wing, which can also be reduced by using gull wing leading edge booms, or flexible ones.

I have made very satisfactory battens for my monster model from channel section *Swish* curtain rails. These come in black extruded polystyrene and may be formed to an aerofoil section over an electric fire or cooker using protective gloves.



Seen at Old Warden, this Stampe is painted in camouflage with yellow under-surfaces to represent the famous OO-ATD, used by Donnet and Divoy to escape to Britain in 1941, later impressed into RAF service, now resting in Brussels Air Museum.

STAMPE SV-4B&C

Drawn by A.A.P. Clloyd

LATE IN RECOGNITION, although so much better an aerobatic mount than its contemporary, the *Tiger Moth*, Jean Stampe's now famous SV4 has become a classic in its own right. For years this Belgian design, manufactured extensively in France, was strictly a Continental mount. Widely acclaimed in French-speaking nations as being even better than the *Bucker Jungmeister*, it was not until Rollasons imported one to give British pilots a chance in the 50s and Manx Kelly formed the original Rothmans Aerobatic Team, that the type became acceptable in the UK. This late approval was largely due to the preponderance of ex-service *De Havilland Tiger Moths* which were already quite well established. But the advantages of prolonged inverted flight, outside loops and stressing for more violent manoeuvres in display flying, clearly made the *Stampe* a better prospect, especially when available secondhand at reasonable prices.

The similarities between the two aircraft are obvious. Jean Stampe had been the *Moth* Agent in Belgium for years. He developed his version of the *DH60 Moth* into one with a swept upper wing to make the first SV4 and then swept the lower wing and added ailerons to all four panels in the SV4B which was to equip the training units of the Belgian Air Force. This had the 120 HP Gipsy Major engine and when French versions were made by SNCAN they used the 140 HP Renault. About 500 survivors from wartime production went into French flying clubs and as many again were popular with the French training schools. The SV4C also impressed British

pilots by its performance in the Lockheed International Aerobatic Trophy competitions.

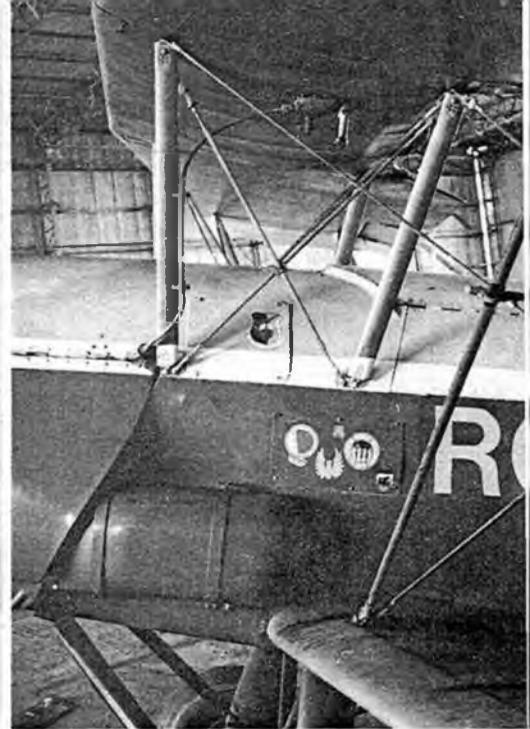
When Rothmans decided to sponsor their team they acquired a mixture of SV4B and C types and after modifications for single seater display work, there was little difference between the Gipsy and Renault versions apart from the cowlings. Many other SV4s have since come into Britain and, thanks to its more attractive shape, it has ousted the *Tiger Moth* which has become more of a preservation subject.

In the same way, the *Stampe* appears to be intruding into the model kit market! Two 1/4 scale model kits have recently appeared, and it will not be long before

others follow! The curvaceous tip and tail shapes which bring a trace of *Bucker* into this otherwise British based design, can also be very deceiving. Although we had original manufacturer's drawings for construction of full size to work from, our first attempt at getting the true profile of the rudder outline (*Scale Models* Sept 79) proved to be nothing short of disastrous and French enthusiasts were quick to point out our errors. Quoted dimensions simply did not agree with shape, so here the *Stampe* shares much in common with the *Tiger Moth* because we were similarly obliged to redraw the *Tiger Moth*, measured from life, after frustrations with factory drawings. Thanks to the co-operation of Spencer Flack, the aeromodelling

Renowned for his masterly scale drawings, Pat Lloyd, tape measure in hand, seen here checking dimensions of the blue and white 'Elstree Airforce' Stampe.





owner of the "Elstree Air Force" (now including a flying *Hawker Hunter*) we were able to get matters right.

As a modelling subject the *Stampe* has considerable attraction, quite apart from an infinite variety of bright colour schemes from which to choose. Cockpit variations range from either single or double open cockpits or the special canopy and even a coupé variant. Its four wing panels are almost identical, the only difference being the cutaway on the upper panels at their roots, and the fuselage lines are relatively straight and simple to build. Control surfaces are generous and that cowling can accommodate most model engines. Unlike the *Tiger Moth* with its undercambered airfoil, the *Stampe* has a bi-convex section of increased thickness ratio which permits a heavier spar and gets rid of that unsightly droop on the lower wings where the trailing edge hangs below the line of the fuselage. Similarly the control runs are internal with the exception of the rudder cables.

These features add together to make a *Stampe* very attractive. Now that we have produced these definitive drawings by Pat Lloyd, perhaps we shall soon be seeing free-lance designs for flying scale models of all sizes?

Dimensions

Wing span: 8.4 metres (27 feet 6½ inches)

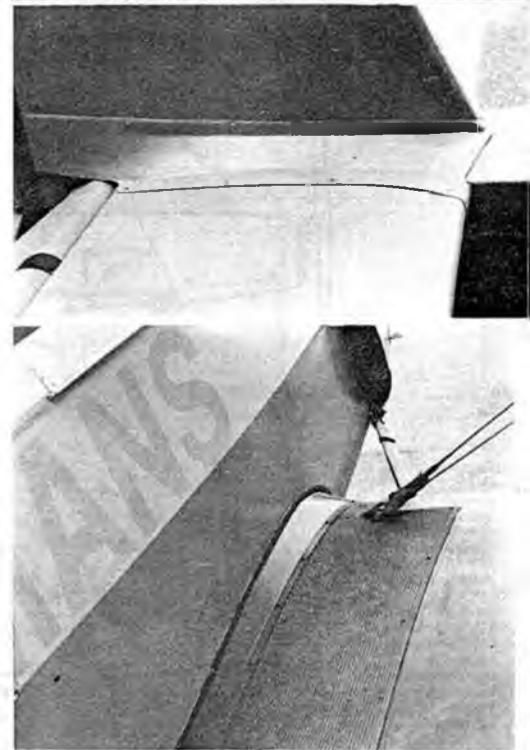
Lower wing span: 8 metres (26 feet 3 inches)

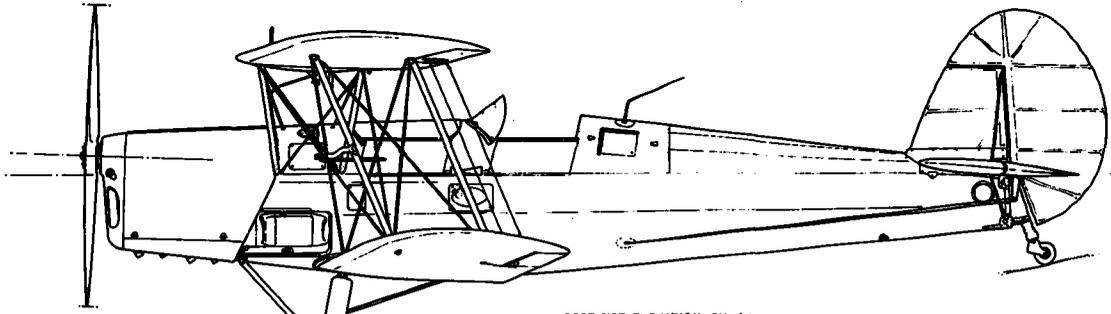
Length: 6.8 metres (22 feet 4 inches)

Height: 2.45 metres (8 feet 6 inches)

Wing area: 18 square metres (193 sq. ft.)

Top left: Engine cowling close-up of Renault powered SV4C. Above: Tiger Club pair of *Stamper* in brilliant red and yellow sunburst colours performing mirror aerobatics with smoke trail. Top Right: Side view of Rothman's machine shows strut detail. Note enlarged oil tank and covered front cockpit. Right: Tail and fin root fairing rivetted in position. Lower Right: Textured metal non-slip wing tread area. Below: Rothman's crest in gold with red shield and white border. Bottom Left: Richard Goode's *Stampe* G-OODE finished in black and white. Bottom Right: Line up of the first Rothman's Aerobatic display team.

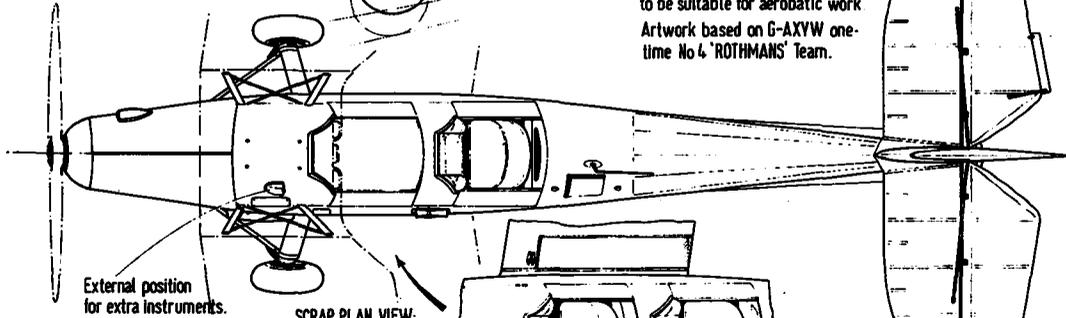




PORT SIDE ELEVATION SV-4C.

Renault engine.
Single-seat conversion of SV-4C,
to be suitable for aerobatic work
Artwork based on G-AXYW one-
time No 4 'ROTHMANS' Team.

N.B. This drawing replaces the
previously published drg.
No. 3001 and updates all
dimensions & geometry.



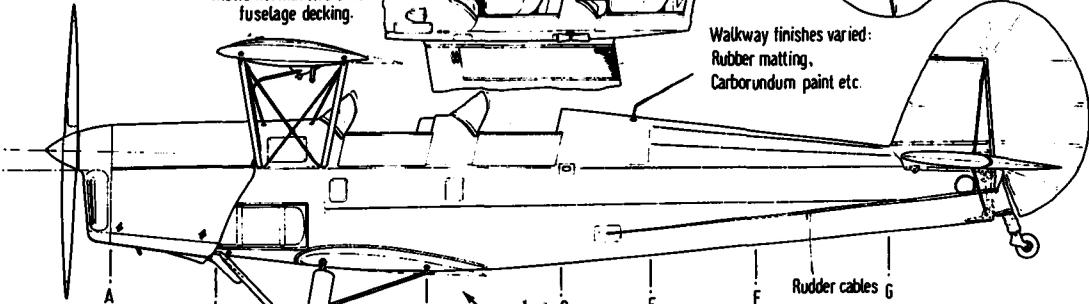
PLAN VIEW: SV-4C, ABOVE.

Mainplanes & Upper centre section
Fuel tank removed to show details
of forward fuselage decking.

SCRAP PLAN VIEW:
Shows normal two-seat
fuselage decking.

External position
for extra instruments.

Walkway finishes varied:
Rubber matting,
Carborundum paint etc.



Mainplanes removed to
show fuselage detail.

PORT SIDE ELEVATION: SV-4B

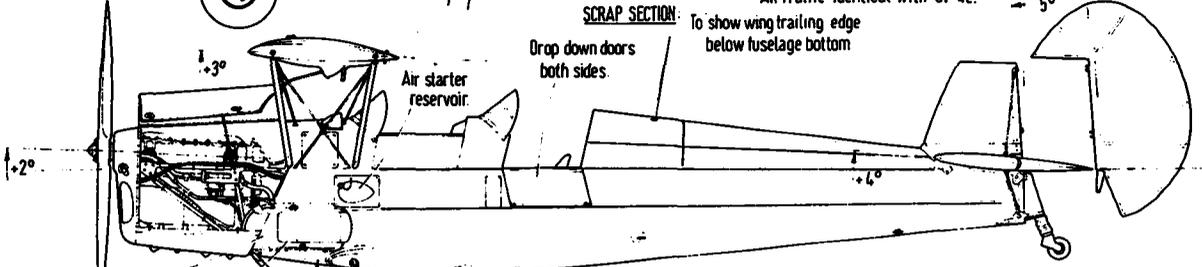
D.H. Gipsy engine.
Airframe identical with SV-4C.

Fuselage to Wing fairing

SCRAP SECTION:
To show wing trailing edge
below fuselage bottom

Drop down doors
both sides.

Reprints of the
Sept. '79 Scale
Models feature
with 1/72nd scale
drawings plus
dye-line prints of
the 1/24th scale
originals are
available as plan
pack 3001 price
£2.35 inclusive of
VAT and postage
from
Aeromodeller
Plans Service, PO
Box 35, Bridge
Street, Hemel
Hempstead, Herts
HP1 1EE.

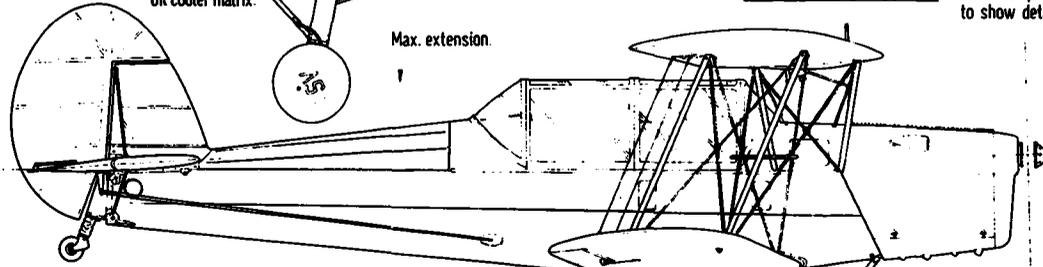


PORT SIDE ELEVATION: SV-4C.

Some components detached, etc.
to show details

Oil tank
Oil cooler matrix.

Max. extension.



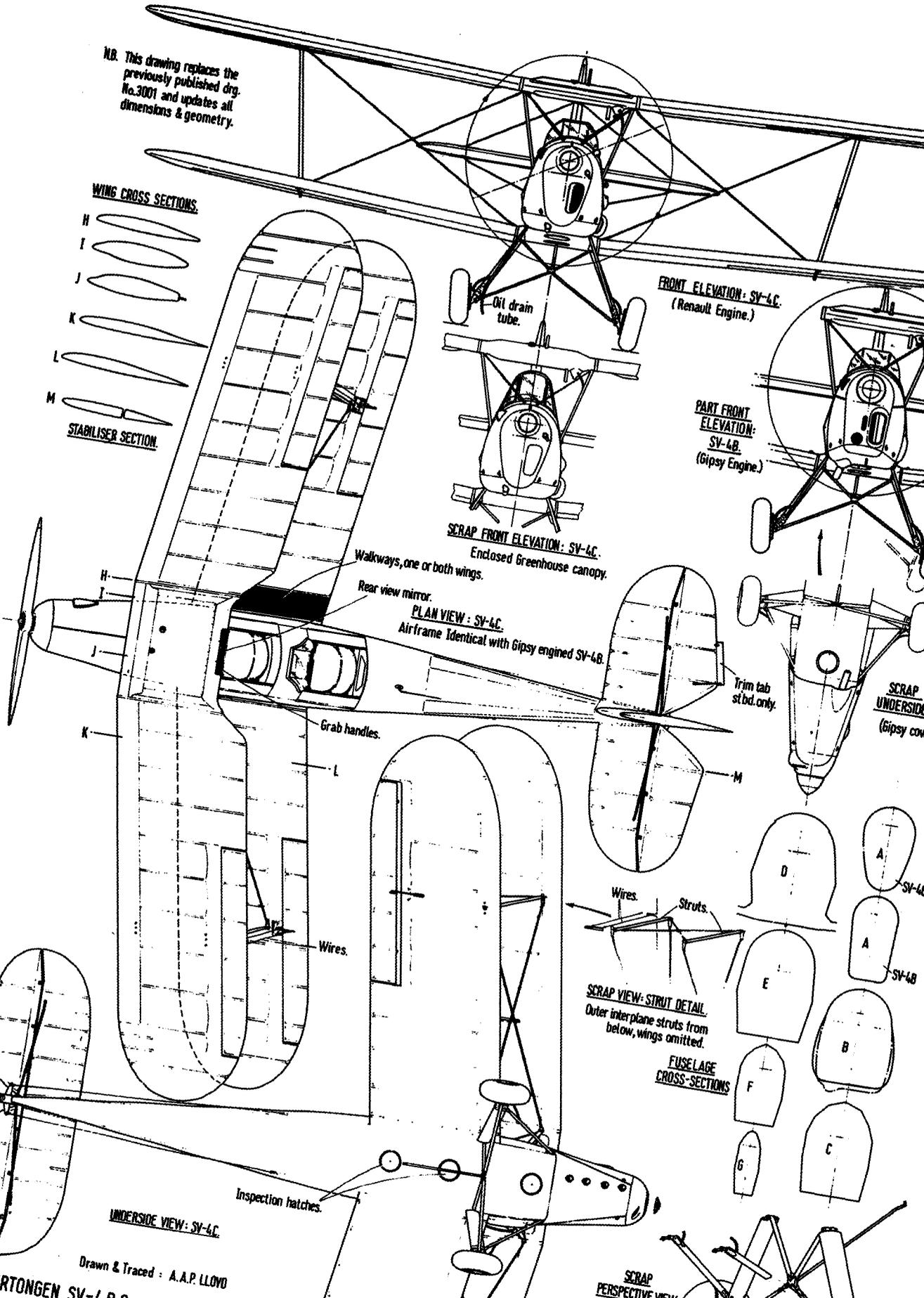
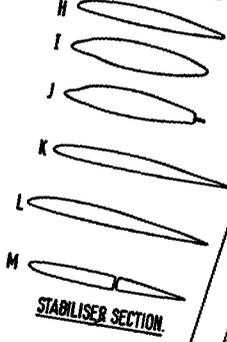
STARBOARD SIDE ELEVATION: SV-4C.

Enclosed cabin modification Drawing
based on G-AZUL & Belgian Air Force trainers

Two part canopy
slides aft to open.

N.B. This drawing replaces the previously published drg. No.3001 and updates all dimensions & geometry.

WING CROSS SECTIONS:



FRONT ELEVATION: SV-4C.
(Renault Engine.)

PART FRONT ELEVATION: SV-4B.
(Gipsy Engine.)

SCRAP FRONT ELEVATION: SV-4C.
Enclosed Greenhouse canopy.
Walkways, one or both wings.

PLAN VIEW: SV-4C.
Airframe Identical with Gipsy engined SV-4B.

SCRAP UNDERSIDE:
(Gipsy cowling)

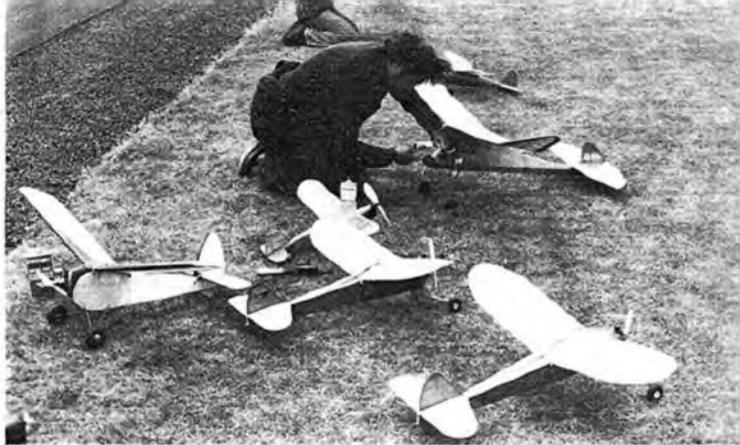
SCRAP VIEW: STRUT DETAIL.
Outer interplane struts from below, wings omitted.

FUSELAGE CROSS-SECTIONS

UNDERSIDE VIEW: SV-4C.

SCRAP PERSPECTIVE VIEW:

Drawn & Traced : A.A.P. LLOYD
STAMPE & VERTONGEN SV-4R C



Free Flight NATS

24-26 MAY
BARKSTON
HEATH



Top Right: Plenty of sport flying in evidence throughout weekend from Vintage F/F enthusiasts. Top Left: Mrs G. M. Foster, Mayor of Grantham with Councillor S. T. Measures were pleased to see youngsters enjoying themselves at the Junior Workshop. Above: Proudly sporting her T-shirt "I KNOW DANNY SHEELDS" Mrs Ann Humphries with her recently completed 1938 Vintage Valkyrie. Below: David Hutchison down from Scotland to enter Chucky, also flew his Boomerangs. Below Right: Over one hundred youngsters built and flew their first ever model, under the guidance of Dave and Janine Rawlins at the DPR Models' 'BUILD AND FLY JUNIOR WORKSHOP'.

SOMETHING FOR EVERYBODY was the philosophy of this year's split F/F Nationals, with emphasis once more returning to a more sociable event, catering for a wider audience of modeller as distinct from the pure competitor. Full credit for this must go to Dick Pavey, coordinator of the hard working Nationals Planning Committee, who persevered with the theme that this year the F/F Nats should be more than just another competition. Kath Watson efficiently dealt with the many hundreds of competition entries and near ideal weather conditions encouraged record levels of participation in all of the 20 separate classes of Free Flight competition, with calm weather at Fly-Off time producing exceptionally high scores and easy model retrieving.

The format of the Nats has been the subject of much discussion over recent years - the need for a separate event from R/C and C/L; the problems of securing a suitable venue; the timing of the championships in relation to growing crops; which this year culminated in what must be one of the most successful and enjoyable F/F events ever. The "formula" for the event was pretty nearly perfect; centrally located airfield with sufficient tarmac for easy retrieving and mobility of competitors; on-site camping for convenience and Nats atmosphere allowing traditional dawn 'til dusk flying activity; and additional events to the competitions providing a pleasant weekend's flying for general sport modellers.

For the first time ever at a Nationals, youngsters were encouraged to join in the fun, with classes on simple model construction and flight trimming in the hangar. The 'Build & Fly Junior Workshop' was organised by Dave and Janine Rawlins of DPR Models and turned out to be a great success. During the weekend over one hundred youngsters built their first ever chuck glider, or rubber powered model or entered the daily clip-together Sleek Streak contest. It was encouraging to see these juniors, aeromodellers of only a few hours, already beginning to master the art of adjusting and trimming their models with some impressive flight patterns to be seen. The competitions held after each building session

were both exciting and closely fought.

Other attractions in the hangar over the weekend included trade stalls (albeit very poorly supported by the British Model Hobby Trade). Maurice Hassel, the General Secretary, was on hand at the SMAE Stand providing information or instant membership. Indoor model flying demonstrations including Microfilm models each afternoon were also very popular with public and modellers alike, and together with the junior activities, were favourites with the visiting VIPs being escorted around the Nationals by SMAE PRO Bill Blake and Vice Chairman Norman Coulling, who did a first class job of promoting Free Flight activities over the weekend.

Vintage fans were well catered for with unique films of the 1949 and 1950 Wakefield Cup shown in the evening and a wide array of old time models brought along by members of the Society of Antique Modellers of England, who ably demonstrated the nostalgic attraction of both Free Flight and R/C Assist Vintage modelling.

The Hangar also provided a focal point for the daily prizegiving at the close of each day's contest flying which was followed by suitable film shows. "Flight of Imagination", the official record of the preparations and eventual successful Channel crossing by Dr Paul Mac-Cready's *Gossamer Albatross* Man Powered Aircraft, was the highlight of the programme which also included C. S. Rushbrooke's early colour film record of the Wakefield Cup at Cranfield and Jarmijarvi in 1949 and 1950, and "180 is Max" and "Wings and Things" from the SMAE Film Library.

Another innovation at the F/F Nats was the provision of a good quality public address information service manned almost continuously by hard-working Martin Dilly. A running commentary detailing the different types of model being flown and the object of each competition were broadcast and the minute by minute results service, especially at Fly-Off time, helped stimulate an air of excitement. Local newspaper, radio and television coverage of the event also helped publicise the meeting.





SATURDAY 24th MAY

A fresh wind soon dropped to produce ideal conditions for the three Mini events being flown, plus Hand Launched Glider, and an abundance of weak thermals and mass launches would obviously lead to large Fly-Offs. Even those unlucky enough to have D.T. failures were barely going outside the airfield for 5-6 minute flights. Afternoon events included Wigan 70 and CO. Scramble. Wigan 70 was the first 'public' appearance of these little contest models, which basically require no dimension greater than 70cm with all up weight 70grms, for any type of gadget free model. Certainly the rate of climb of the little rubber models rocketing skywards on standard plastic props surprised all who saw them, and it was these models which dominated the small gliders requiring a three way fly-off between Peers, O'Donnell and Godden. The 1/2 hour CO. Scramble certainly sorted the boys from the men, proving once again the superior stamina of the juniors to out-run and retrieve their more seasoned competitors.

The HLG Fly-Off promised to be a showdown between past Champions Buskell (78 Sweepette), Ball (78 Nats) and Tipper (74 Nats). John Buskell was soon away for a superb throw that simply maintained height in obviously good air to score 2:20. Meanwhile Phil Ball who had earlier had a 15 minute flight on his first max with D.T. failure, after the jambed weight eventually fell off at 14 minutes, was limbering up with equally impressive practice throws just downwind of the box. When he finally made his official flight, although in buoyant air, he could not match Buskell. Tipper had waited most of the round watching soap bubbles for signs of lift, but his smaller American "Poly" design was simply not up to the task of outflying the larger higher aspect ratio models. However Tipper's score exactly matched that of Leicester's Andy Tailby at 55 seconds and, with remarkable consistency, he made 56 seconds on a second Fly-Off to just take 3rd place.

One of the first away in the Coupe D'Hiver Fly-Off was Dave Greaves whose model quickly climbed to more than normal height indicating sufficient lift to prompt J. O'Donnell to fly under him, followed by John Brookes, whose large 4-strand model was flying best of the three. Mick Chilton, the 1972 Nats Combat Champion, maxed out at this his first CD'H event, despite losing his APS Artoo twice on long flights, his model was returned by other competitors! Meanwhile Dave Hipperson had launched his model into another even better thermal. His model climbed slowly to a great height and then simply continued to glide without any loss of

height. Ten minutes later with all the other flights down, Dave's model was still clearly visible to all, cruising at several hundred feet over the edge of the airfield. A truly classic flight, eventually clocked off on the horizon at 17:10 to land near Dave waiting below.

CO. Duration also produced an interesting flyoff with last year's winner Phil Ball conspicuous by his absence. Ian Dowsett having lost one model on a hanger, used an even larger fly-off version and launched just on the edge of Dave Hipperson's CD'H thermal for an impressive 5:00 flight. Although other scores were good, no one could match Ian's flight.

Fifteen competitors had reached the 1/2A Power Fly-Off and the near calm conditions were ideal for competitors to make last minute check flights to make sure the models were spot on trim. In an attempt to get maximum performance, Jon Fletcher leaned on his Cox Tee Dee 049 so much that the motor died half way up the climb during practice, and the model dived back to earth breaking the fuselage in half with just 10 minutes to go! Panic repairs with instant cyanoacrylate adhesive left him with no time for further test flights, and it was with great relief to Jon that the model was eventually launched into a good climb for the Fly-Off - even better, the model was clearly thermalling for what would obviously be a good score. Others were less lucky; Pete Bayram had more terminal problems when the shaft of his TeeDee snapped mid run. New Zealander Martin Gregory, runner-up last year, had an over-run, then flew his reserve which was obstructed by another competitor and made a third flight just for luck. Despite which, as no second attempts are allowed, he scored a zero!

After these massive fly-off scores, the evening conditions were now cooling for the start of the A1 Glider Fly-Off. John Foster launched early and towed his model way up wind circling to sample the air using an offset hook with an extending wire loop tow ring. He found some assistance but his flight was soon coming down before it reached others still waiting downwind. Father and son Pete and Alex Cameron had both managed full scores so far, thanks in part to Harry Hutchins who had retrieved Pete's model from a hanger roof after some masterly casting using the fishing tackle he just happened to have brought along in his car! Tony Cordes had chosen to fly by himself away to one side but could find little to help his flight, while Elton Drew had the misfortune to snap his towline, which had obviously become weakened and therefore, returned a zero. Time was running out and so had the lift, leaving John Foster the winner with 2:10.



Top Left: Dutch modellers over for the Nats, Herman Lammerts, Arno Hacken, Geoff Higgins and Peter de Boer, left early to catch their ferry! Top Right: The Commanding Officer of RAF Cranwell, Air Vice-Marshal B. Brownlow, OBE (centre) watches slow motion fly past of Bob Bailey's F1D microfilm model during indoor demonstrations in the hangar with SMAE PRO & National's Co-ordinator Bill Blake (left), and SMAE Vice-Chairman Norman Couling who worked hard to promote the sport. Above: Peterborough's Mike Page with yet another tailless glider. Below: Sue Coy managed half hour "practice" flight with her Keikraft Caprice the evening before the Women's Cup. Below Left: Mark Hinton winds his Vintage A-Frame pusher assisted by his father Ken.





SUNDAY 25th May

By comparison to the extraordinary conditions the previous evening, Sunday dawned bright and breezy, giving the organisers their first headache of the meeting with models potentially overflying downwind crops. To their credit they immediately took the appropriate action by declaring that all the Open events would be reduced to a 2:30 max. A crosswind flight line was introduced near the upwind boundary of the airfield upwind of which all contest flights were to be launched, including the release of gliders from the towline. Any flight released downwind of this line was credited with a non-scoring attempt. The idea was to keep all flights as far as possible within the airfield – however for those few flights making long descents under D.T. and overflying the crops, teams of spotters were organised downwind to locate the landing position of wayward aircraft. Altogether these measures proved acceptable and effective and helped ensure continuing good relations with surrounding farmers.

But for the organisers Sunday was turning out to be a difficult day. In the Vintage event they had decided to insist upon ROG take-offs, only to be confronted by Mark Hinton's entry – an *A-Frame Pusher!* Last year's winner Gerry Ferer pointed out to the organisers that SMAE Council had rescinded the ROG rule as long ago as 1978 in an attempt to overcome the unsporting activity of fitting "extensively modified undercarriages" and "pushing models at take-off". Because the rules now allowed models originally designed without undercarriages to be hand launched, he chose to do so with his *Lanzo Stick* entry. The reduced max made getting into the Fly-Offs much easier for all concerned especially in *Tailless* with its lower performance models. The battle once again was between the glider flyers, encouraged by the allowance of a 250ft towline and the rubber powered models, which yet again proved their worth with two in the Fly-Offs!

In the Open events Ray Monks had a lucky escape when his "40" Power model went into D.T. mode at launch, performing an impressive series of consecutive loops before descending undamaged when the engine cut. Not so lucky was Dave Hipperson, whose Rubber model spun in for 23 seconds keeping him out of the Nats Fly-Off for the first time ever! The day was soon characterised by mass launches from the flight line into really big thermals with groups of circling models mere

dots against the clouds. By the afternoon though, a cold wind was blowing, and certainly those in Glider who had missed the opportunity to fly earlier were beginning to regret it, facing a long wait with no thermals.

Once again the Fly-Offs were a major event with even the *Frog Junior* producing four full scores. Chris Parry, last year's winner, was first away with his now familiar *Vee Dihedral* model scoring 1:59 followed by Tony Nicholson and David Hearn, also flying glider, with 1:37 and 1:30 each. But it was young Jonathan Walker who sensibly flew an Open Rubber model who scored a convincing victory with 4:27.

Vintage had attracted a very healthy entry and now a record nine flyers lined up for their turn. The *Vintage Fly-Off*, with models ROGing for the tarmac attracted quite a crowd of spectators. Dave Hipperson looked set for victory with his Norman Marcus designed *Bazooka* high up on the climb in lift, but hammerhead stalls soon brought the model down on the glide. If points were awarded for quality of flight then surely Brian Yearley would have won the event. His "Concours" standard *Flying Minutes*, made a majestic take off followed by an equally impressive climb, much to the appreciation of the gathered crowd, scoring 3:11. By contrast Ewan Jones' *Mallard* actually looked 30 years old but nevertheless, took full advantage of the 15 sec motor run with a flight of 3:25. John O'Donnell topped that score, with 3:35, to come out on top of the ROG flights. Gerry Ferer managed a higher time but awaits the official verdict on his hand launched flights.

Open Glider as always, continues to be the event at the Nats in which everyone 'has-a-go'. This year 119 competitors actually flew with 41 achieving a perfect score to reach the fly-off. Chris Edge was one of the first to tow up, and despite launching into poor air, took several others with him as they piggybacked his flight. Maurice Gilmore towed for his own lift on the extreme left of the line and looked set for a good score but was soon followed by another group in even better lift which included Alan Williams who was last to land after DTing his model down well in sight for just 5:46! Peter De Boer, one of the visiting Dutch party, had continued to tow throughout the round and together with others still waiting, was now running out of both time and lift, and in fact no one bettered Alan Williams' score.

If glider was something of a disappointment in terms of ultimate flight performance, the same could not be

Top Right: Man of the Meeting Jon Fletcher, won both Open Rubber and 112A Power, each with massive 11 minute plus fly-off times and also placed 3rd in Open Glider. Top Left: Ian Dowsett achieved the double, by adding outdoor CO₂ Duration to his Indoor Nats title. Above: Champion Chucker John Buskell used model fitted with D.T. wing pivotted near wing trailing edge to win Hand Launch Glider.

Below: Practicing what he preaches, Free Flight Scene columnist Dave Hipperson won Coupe d'Hiver with a historic fly-off flight. Below Centre: John Foster circle towed for his own lift using this Jedelsky wing model to win the A1 glider fly-off. Below Right: John O'Donnell won ROG Vintage with his diminutive Scram.





said of the other two Open events. **Open Rubber** is the classic unlimited event. The more rubber you use, the more payload it becomes to handle the power, and the more difficult there is for the glide. The sight of 24 flyers launching these high climbing models in quick succession was an exciting climax to the day's flying. Russel Peers started badly with a very tight power pattern for the first half minute before gaining height late into the run. A large group of models was away gliding in circles together downwind, but Jon Fletcher was again proving that more often than not, it pays to fly away from the pack with a great flight still well up away to one side. Phil Ball, last year's winner, was definitely one of the favourites to again take the Model Aircraft Trophy. He held his newly-built super large model fully wound for some time waiting for signs of lift before launching for a massive 2:25 prop run leaving the model to float away at great height. But it was here that misfortune overtook Phil when his timekeeper momentarily lost sight of the model and unable to resight it within the required 10 seconds, had to clock off at 6:49. The tragedy for Phil was that other unofficial observers managed to keep track of the flight for an amazing 13:59 down to tree top level! So it was that when all the scores were in, it was Jon Fletcher's 11:48 flight that topped the results.

On then to the last event of the day, the **Open Power Fly-Off** – the real brute force event of model flying with the majority of models using 6.5cc motors. Amongst the 23 competitors lined up was "Team Smith", the dedicated trio of father Tom and sons Tony and Jeff. All weekend they had been putting up some really impressive power patterns with their K&B40 powered *Super Nogs*, but once again fate, and not performance, was to be the deciding factor. It appears that Jeff's timekeeper, when changing over to binoculars during the flight, may have picked up one of the other *Super Nogs* also in the air, by mistake. Despite timing this model to the ground, the 5:44 recorded bore little relation to Jeff's estimated flight time of around 10 minutes! Julian Hopper, another favourite for the event also suffered in the fly-off. His go-for-broke lightweight approach came unstuck when his *SuperJacker*, powered by an OS40 equipped with tuned mini pipe, started fluttering its wings with the model still climbing vertically! The strain was just too much for the airframe and the model blew up in mid-air, dashing Julian's hopes. So it was that a very surprised and delighted Ray Monks became this year's winner

backed up by club mates and indeed fellow 79 Taft Team members, Pete Harris and Stafford Screen, to make it a 1-2-3 for Birmingham.

The **Women's Cup** also had a higher entry than for many years with five ladies after the title. Sue Coy was flying a KeilKraft *Caprice* and having made one flight of 31 minutes the previous evening when she decided not to use the DT, was alternating her flights with Open Glider. After scoring three maxes she towed in during a line cross, damaging the model and despite repairs and test flight dropped her last Women's Cup flight with 1:12. An equally arduous day for Stella Twomey, who soon had husband Dick scrambling up a downwind tree to retrieve her first max – a feat he accomplished with little damage. Stella went on to score another max plus 1:36 for a clear win with Jessica Nash, last year's winner, a few seconds behind Sue in 3rd place.

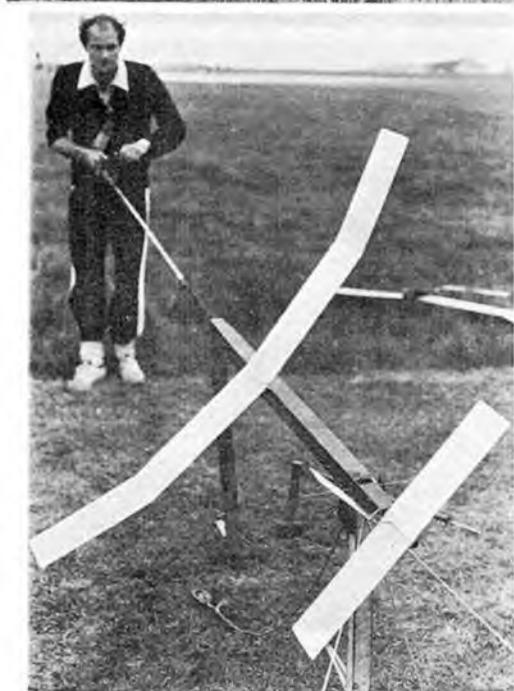
The afternoon was enlivened by another masochistic half hour, this time the **Hand Launched Glider Scramble** in a sponsored event with the object of raising funds for Team Travel for the European Champs. Naturally all the members of the European Team participated, sponsored by friends and relatives all in a good cause. Fleetest of foot turned out to be Andy Tailby with an amazing 12:11 total which raised £10.69 while Alan Jack, although only scoring 8:27, by virtue of higher level of sponsorship raised £64.62. Altogether over £310 was collected and everyone wishes the team, under the able management of Martin Dilly, all success at this Autumn's Championships in Yugoslavia.

Junior Kit reported by Gary Dowsett. When the competition started at 12.30pm, it was decided that because of the distance many models were travelling, and the lack of length in many of the entrants' legs, the max should be lowered to one and half minutes. Entries this year were good, 10 in Glider and 9 in Rubber including two young ladies, Ruth Abbey and Sophie Beaumont. The fear of long distance flights proved right as a max could still just reach the boundary of the airfield. Both Nigel Dixon and Ian Peppereil decided to get their three flights in quickly and produced the first full scores in Rubber and Glider respectively. Ian was soon joined by Frazer MacKay who had travelled down from Edinburgh, so there would be a Fly-Off in Glider and one in Rubber also looked certain with several people already having 2 maxes. Nigel Dixon was eventually joined by Graham



Top Left: Visitors from Scotland, Ron Sabey and young Frazer MacKay, who won the Junior Kit Glider fly-off with this St Leonard's Satellite. Top Right: They "Throw-Up for Britain"; left Andy Tailby highest airtime with 12:11 and right, Alan Jack with highest sponsorship of £64.62 after the HLG Scramble. Above: Graham Brown won his second consecutive CO. Scramble using this converted KeilKraft Cub glider fitted with Telco motor. Below: No hard feelings as expert John Pool, right, congratulates "newcomer" Russell Peers on taking Tailless by just 4 seconds after Fly-Off. Below Centre: Andrew Ball flew his St Leonard's Performer into first place Junior Kit Rubber after near 5 minute Fly-Off. Below Left: Smiling Stella Twomey won the Womens' Cup after husband Dick retrieved first flight from downwind tree.





Neil, Richard Anderson and Anthony Ball, who showed true grit when winding his model!

The Glider Fly-Off was first to go. Frazer MacKay managed to beat Ian Peppereil but both had very good times. That left the four-way Rubber fly-off. Anthony Ball went first and after a hairy start his model was seen to climb away very well. The other three followed in quick succession but unfortunately last year's winner, Nigel Dixon, was unable to make a time. Scores were collected and Anthony Ball, probably the smallest and youngest entrant of all, had won with a time of nearly five minutes!

So ended another Junior Kit contest with entrants getting younger, and increasing female interest, Sophie Beaumont just missing the fly-off to place 5th in Rubber, a fine performance. If pre-publicity could match the enthusiasm shown, then we would have an even better contest next year.

Prizes, which were kindly donated by Eddie Cosh of KeilKraft, were presented by Norman Couling, Vice-Chairman of the SMAE. The two winners will receive one of the superb Norman Foster Trophies at the Annual SMAE prizegiving later this year.

MONDAY 26th May

The final day, and a five round contest to decide the three FAI classes, and light winds allowed the full 3:00 max to be used. **F1A Glider** had a terrific entry with 98 flyers taking part. With such calm conditions, mass launches into thermals marked by other models, became a regular feature in each round. Often as many as 30-40 models were launched in as many seconds, and it was not unusual to see models collide mid-air. On one occasion two models flying in opposite directions collided wing tip to wing tip and locked together, descending in a flat spin like a giant sycamore leaf. Mike Coombes suffered a mid-air, only to find the clockwork timer was missing, having been knocked out by the collision! By the end of the day 20 competitors had maxed out in Glider and were now lined up for a 4 minute max fly off. All that is, except for Arno Hacken, over from Holland, who had to leave early in order to catch the cross-channel ferry back home! Lift was still abundant and half the field had no difficulty making well over 4 minutes. Junior Chris Parry who had reached the Fly-Offs in three events with his glider at the Nats, had the misfortune to have his model fly into a downwind tower at 3:27 on what would other-

wise have been a max. In the 5 minute max round, conditions had cooled off. John Cooper launched early and looked promising but the lift soon faded for 2:58. Kiwi Martin Gregory towed in trying to chase John and later had insult added to injury when a car ran over his model! Brian Baines was down for 2:24 having lost a model on a 6 minute plus flight during the previous round. Mike Fantham towed for almost all the round before releasing, but his lift also decayed for 3:30. Tony Cordes scored 3:41 but it was Jervis Shephard who topped the results with 3:55, flying a modified *Wichita*. This Mike Woodhouse design (APS Plan G/1280, price £2.35 inc p&p) continues to have a remarkable contest success; on Saturday Alan Williams flew one into 1st place Open Glider and it is basically the same design with circle tow fitted as used by Mike Fantham.

F1B Wakefield saw some of the top competitors making early mistakes. Ron Pollard dropped the 1st round with 2:25 after a new wing he had just completed changed warps to give a stalling flight. Joe Barnes fell just 1 second short of a full score with a 2:59. Favourite in the fly-offs must have been George Foster after his recent performance in the European team trials but he only scored a disappointing 2:17. Fellow Biggles John Cooper, who had reached both F1A and F1B fly-offs, and Mike Evatt scored 2:21 and 2:34. But it was Crookham's Phil Uden who took the Fred Boxall Memorial Trophy with a flight of 2:42.

F1C Power saw a surprising number of dropped scores despite the apparent performance margin of this class. John Bailey equipped with a brace of Koster *Square Creams* didn't even get started after timer troubles. Ken Faux, very much on form this year, DTed onto some rocks and broke his balsa tube fuselage in half, electing to retire after just 2 maxes. Surprisingly only two competitors survived the five rounds, Birmingham's Roger Baggot and Stafford Screen. Roger just missed his fly-off max by 1 second with a 3:59 but Stafford made no mistake to finally win F1C after five years of near misses.

In conclusion, thanks for one of the best Nats for many years are due to the F/F Sub Committee; members of SMAE Nats Planning Committee; the local modellers who put the meeting together, and to the Control Line flyers who gave up their weekend to help run the F/F event - don't forget it will be your turn to help them run the C/L Nats in August!

Top Right: Even Wigan 70 required a Fly-Off, duly won by Russell Peers. Top Centre: Ray Manks pleased with his win in Open Power. Top Left: Alan Williams with girl Ireland Pat, won the Open Glider Fly-Off with this APS *Wichita* despite DT'ing the model down early for 5:46. Above: Phil Ball self-winds his huge Open Rubber model prior to dramatic Fly-Off. Below: Another victory for the APS *Wichita*, Jervis Shephard winner of the 5 minute F1A Glider Fly-Off. Below Centre: F1B Wakefield Winner Phil Uden from Crookham after very close Fly-Off. Below Right: Stafford Screen, top in F1C Power after five years of near misses.





Brian Yearly with concours finish Flying Minutes reached Vintage Fly-Off.



Unlucky Jeff Smith, with father Tom and brother Tony in background, lost Open Power Fly-Off after time-keeping dispute.



Frog Junior winner Jonathan Walker from Birmingham sensibly used an Open Rubber model to outfly his rivals.

FREE FLIGHT RESULTS

BARKSTON HEATH, 24th-26th MAY 1980

F1A GLIDER (98 flew)

1. J. W. Shephard	MFFG	15:00+4:00+3:55
2. A. Cordes	Whitefield	15:00+4:00+3:41
3. M. Fantham	Richmond	15:00+4:00+3:30
4. J. H. Cooper	Biggles	15:00+4:00+2:58
5. B. Baines	RAFMAA	15:00+4:00+2:24
6. D. Hearn	Edinburgh	15:00+4:00+2:20
7. S. Philpott	Whitefield	15:00+4:00+1:48
8. C. P. Williams	Richmond	15:00+4:00+1:35
9. D. J. Wain	B & W	15:00+4:00+1:30
10. J. B. Abbey	Leicester	15:00+4:00+1:20

F1B RUBBER (48 flew)

FRED BOXALL TROPHY

1. P. M. Uden	Crookham	15:00+2:42
2. M. A. C. Evatt	Biggles	15:00+2:34
3. J. H. Cooper	Biggles	15:00+2:21
4. G. S. Foster	RAFMAA	15:00+2:17
5. K. M. Taylor	E. Grin.	15:00+2:15
6. M. Woodhouse	Norwich	15:00+1:47
7. J. F. Barnes	Liverpool	14:59
8. J. B. Spooner	Croydon	14:38
9. R. L. Elliott	Croydon	14:35
10. B. V. Rowe	St Albans	14:28

F1C POWER (20 flew)

1. S. Screen	B'ham	15:00+4:00
2. R. Baggot	B'ham	15:00+3:59
3. P. K. Bond	Anglia	14:08
4. P. Buskell	Crookham	13:47
5. D. Reader	B'ham	13:40
5. F. G. Chilton	Crookham	13:40
7. P. R. Harris	B'ham	13:23
8. R. Monks	B'ham	13:21
9. D. Cash	E. Grin.	13:16
10. R. J. Taylor	E. Grin.	13:06

VINTAGE (26 flew)

1. J. O'Donnell	Whitefield	7:30+3:35
2. E. B. Jones	Tynemouth	7:30+3:25
3. B. J. Yearley	St Albans	7:30+3:11
4. D. Hipperson	Croydon	7:30+2:48
5. J. B. Mayes	S. Bristol	7:30+2:33

TAILLESS (6flew)

LADY SHELLEY TROPHY

1. B. R. Peers	Falcons	7:30+2:42
2. J. B. Pool	NYFFG	7:30+2:38
3. K. Attwell	Calderdale	6:35
4. S. Philpott	Whitefield	6:04
4. M. Page	Peterboro'	6:04

CO₂ SCRAMBLE (12 flew)

1. G. Brown Jn	Wharfedale	16:28
2. C. Parry Jn	Biggles	15:55
3. P. Carner	Croydon	15:37
4. M. Coomes	Grantham	15:24
5. P. Cameron	Crawley	13:39

SPONSORED HLG SCRAMBLE

(18 entries) £310 raised

1. A. Tailby	Leicester	12:11	£10.69
2. B. D. Jones	C/M	11:27	£5.18
3. A. Godden Jn	Leeds	10:11	£9.50
4. C. Kirby Jn	Leeds	9:38	£13.40
5. B. Spooner	Croydon	9:26	£7.00
1. A. Jack	Tynemouth		£64.82
2. J. Bailey	Biggles		£34.00
3. M. Woodhouse	Norwich		£32.00
4. G. J. Percival	Grantham		£28.10
5. J. Cuthbert	Scunthorpe		£26.00

OPEN GLIDER (119 flew)

THURSTON TROPHY

1. A. Williams	C/M	7:30+5:46
2. C. Shepherd	Wolves	7:30+5:01
3. J. E. Fletcher	St. Albans	7:30+3:51
4. A. Cordes	Whitefield	7:30+3:16
5. P. A. Owens	Liverpool	7:30+3:13
6. C. Edge	Welling	7:30+2:50
6. M. B. Gilmore	Grantham	7:30+2:50
8. K. Smith	Croydon	7:30+2:48
9. G. F. Le Vey	NYFFG	7:30+2:45
10. P. De Boer	Holland	7:30+2:44

OPEN RUBBER (48 flew)

MODEL AIRCRAFT TROPHY

1. J. E. Fletcher	St. Albans	7:30+11:48
2. T. Chambers	Darlington	7:30+8:30
3. I. Taylor	Wolves	7:30+8:13
4. B. Stout	Grantham	7:30+8:09
5. J. H. Cooper	Biggles	7:30+7:44
6. D. J. Wain	B & W	7:30+7:34
6. G. Ferer	Leicester	7:30+7:21
8. N. G. Marcus	Croydon	7:30+7:09
9. P. Putnam	C/M	7:30+6:53
10. P. A. Bell	Grantham	7:30+6:49

OPEN POWER (40 flew)

SIR JOHN SHELLEY TROPHY

1. R. Monks	B'ham	7:30+7:07
2. S. Screen	B'ham	7:30+6:05
3. P. B. Harris	B'ham	7:30+6:04
4. A. T. Smith	BAC	7:30+5:55
5. T. Hargreaves	Leeds	7:30+5:44
5. T. W. Smith	BAC	7:30+5:44
7. R. Baggot	B'ham	7:30+5:18
8. J. K. Smith	BAC	7:30+5:04
9. R. Johnson	St Albans	7:30+4:58
10. J. Bailey	Biggles	7:30+4:42

WOMEN'S CUP (5 flew)

1. S. Twomey	Northwood	6:36
2. S. Coy	Freebird	6:12
3. J. M. Nash	Anglia	6:07
4. B. J. Tyson	Crookham	6:04
5. A. Brown	Wharfedale	1:48

FROG JUNIOR TROPHY (8 flew)

1. J. Walker	B'ham	7:30+4:27
2. C. Parry	Biggles	7:30+1:59
3. T. Nicholson	Liverpool	7:30+1:37
4. D. Hearn	Edinburgh	7:30+1:30
5. F. McKay	Edinburgh	4:56

BUILD & FLY JUNIOR WORKSHOP

Saturday		
Sleek Streak	Colin Tregellas	
Glide with Gloy Chuckie	Martin Tregellas	
Sunday		
Sleek Streak	Jeremy Pressnell	
Glide with Gloy Chuckie	Chas Campen	
Senior 'Glide with Gloy' Chuckie	Mark Hinton	(26:9 seconds)
Monday		
Sleek Streak	Nigel Moore	
Glide with Gloy Chuckie	Grant Hutchison	
Rubber & Duration	Frances Beaumont	

A1 GLIDER (63 FLEW)

BRITISH AIRWAYS TROPHY

1. J. H. Foster	MFFG	10:00+2:10
2. A. Cameron	Crawley	10:00+1:49
3. A. Cordes	Whitefield	10:00+1:47
4. P. Cameron	Crawley	10:00+1:40
5. J. Ashmole	Grantham	10:00+1:17
6. T. Chambers	Darlington	10:00+1:16
7. S. Oldfield	Leicester	10:00+0:15
8. E. P. Drew	B & W	10:00+0:10
9. P. J. Harris	MFFG	9:53
10. C. Edge	Welling	9:40

COUPE D'HIVER (61 flew)

THE 308 TROPHY

1. D. Hipperson	Croydon	10:00+17:10
2. J. Brookes	Louth	10:00+3:57
3. D. Greaves	Cirenc'tr	10:00+3:23
4. M. A. Howick	E. Grin.	10:00+2:59
5. J. O'Donnell	Whitefield	10:00+2:33
6. J. E. Billam	Grantham	10:00+2:30
7. M. Chilton	Crookham	10:00+2:25
8. F. G. Sharp	Croydon	10:00+2:22
9. D. Dent	Grantham	10:00+1:32
10. D. C. Roche	Anglia	9:58

1/2A POWER (40 flew)

THE COX TROPHY

1. J. E. Fletcher	St Albans	10:00+11:19
2. D. J. Wain	B & W	10:00+7:19
3. A. G. Jack	Tynemouth	10:00+4:43+3:44
4. G. Blair	Edinburgh	10:00+4:43+0:00
5. T. F. Payne	Biggles	10:00+3:45
6. P. Gibbons	Peterboro'	10:00+1:48
7. M. C. Gregorie	Freebird	10:00+0:00
8. R. J. Kenward	Croydon	9:55
8. R. J. Taylor	E. Grin.	9:55
8. B. R. Peers	Falcons	9:55

HAND LAUNCH GLIDER (29 flew)

1. J. Buskell	Crookham	5:00+2:20
2. P. A. Ball	Grantham	5:00+1:45
3. J. K. Tipper	Lee Bees	5:00+0:55+0:56
4. A. J. Talby	Leicester	5:00+0:55+0:29
5. P. Davies	Richmond	5:00+0:38

JUNIOR KIT GLIDER (10 flew)

NORMAN FOSTER TROPHY

1. F. MacKay	Edinburgh	4:30+2:29
2. I. Pepperell		4:30+1:01
3. A. Walker		4:12
4. T. Nicholson	Liverpool	3:51
5. C. Miller	Northwood	3:45

JUNIOR KIT RUBBER (9 flew)

NORMAN FOSTER TROPHY

1. A. Ball	Grantham	4:30+4:42
2. G. Neil		4:30+2:26
3. R. Anderson	Tynemouth	4:30+1:38
4. N. Dixon	B'ham	4:30+0:00
5. S. Beaumont		4:17

CO₂ DURATION (26 flew)

SPARKLETS TROPHY

1. I. Dowsett	Northwood	10:00+5:00
2. S. W. Fielding	Morley	10:00+4:00
3. A. C. Gibbs	Wolves	10:00+3:36
4. A. Moorhouse	Bath	10:00+2:02
5. S. Philpott	Whitefield	10:00+1:36

WIGAN 70 (8 entries)

1. R. Peers	Falcons	4:30+2:51
2. J. Godden	Leeds	4:30+2:19
3. J. O'Donnell	Whitefield	4:30+2:09
4. J. Heyes	Bolton	4:28
5. P. Farrimond	Wigan	4:25

57" span **RIPMAX TRAINER**

for
.19-.30
engines and
3-ch Radio

It's the ideal size, giving you a wide choice of lower-cost engines to match. It's good-looking. Very easy to assemble. Above all, it has superb 'safe' flying characteristics that makes it really easy for you to pilot.

**BRITAIN'S
TOP-SELLING
R/C KIT!**

The kit has been very carefully planned to give you EVERYTHING you need in one box (except engine, radio and covering material to your choice). Extensively pre-fabricated parts. Complete hardware. No extras to buy.

price
£34.85

NO OTHER KIT GIVES YOU THIS!

1. All balsa parts pre-cut numbered & bagged in groups.
2. All ply & hardwood parts pre-cut, and bagged in groups.
3. Plan litho printed on cartridge paper.
4. Polythene sheet to cover plan plus drawing pins.
5. Modelling knife.
6. Wheels (3).
7. Wheel retainers+Allen key.
8. Pre-cut engine mount.
9. Engine mtg. bolts & screws.
10. Set of downthrust wedges (1°, 2° & 3° for larger engines).
11. Hinge material.
12. Throttle cable and outer.
13. Throttle cable links.
14. Packet of wing bands.
15. Pushrods plus 2 adjustable, 2 static connectors.
16. PVA glue.
17. Pre-formed undercarriage.
18. Undercarriage bolts & clamps.
19. Modelling pins.
20. Sandpaper.
21. Spinner suitable for use with electric starter.
22. Fuel Tank.
23. Fuel Tubing.
24. Rudder and elevator horns.
25. Instruction book in English, French & German containing full building instructions, step-by-step photographic guide and flying notes. A complete building & flying manual.

AILERON TRAINER (shown below)

Full-house version featuring ailerons as well as rudder, elevator and throttle control for flying on .19-.35 engines and 4-ch radio. Fully aerobatic. A superb advanced trainer or sports model. Kit contents as standard Trainer except for foam wings, plus strip ailerons and links.

£35.75

AILERON CONVERSION kit only £9.00



FROM ALL RIPMAX STOCKISTS

Lil Quickie



510mm span for 1.5cc motors

MINI-GOODYEAR RACING

by Bob Walker

WHEN YOU CAN OPERATE your basic model with reasonable efficiency the next stage could be to try for better potential performance.

There are three main avenues to explore: (1) Reduce drag; (2) Increase thrust; (3) Improve fuel system.

The first means design points such as built-in control systems and tank fairings. Care with wing carving is also worthwhile. A less obvious way to reduce drag is to reduce weight. This is because producing lift causes drag. For flight, lift must equal weight and therefore less weight means less drag will be generated. If reduced weight brings weakness and loss of rigidity, it has the reverse effect to that intended however.

If you are going to have buried leadouts, make the ply braces, mark the pivot point and tightly hold the whole lot together with a 6BA screw and nut. Score round the

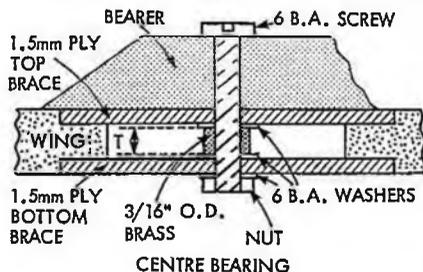
10cc fuel tank fitted behind motor with streamlined balsa fairing behind tank under wing.

braces with a sharp knife and mark them so that they can be re-assembled the right way round. A sharp 6mm wood chisel used upside down is then used to excavate wood so that the braces fit flush with the wing surface. Make a hole right through just giving clearance for the bellcrank, then mark the leadout positions. Using the steel rule and keeping the knife blade vertical cut out the narrow triangle of wood. Offer up the bellcrank assembly and braces to the triangle of wood and mark the position of the alloy lead out tubes so that they line up with the bellcrank. Let in the alloy tube and glue the triangle back in again pinning the wing down to keep it true.

Damage to wings with buried leadouts showed that too much stress can be concentrated where the ply braces end; the solution is to extend the plywood and taper off the strength. If you are using buried leadouts, put the 6BA bolt in, assemble the bellcrank details and make

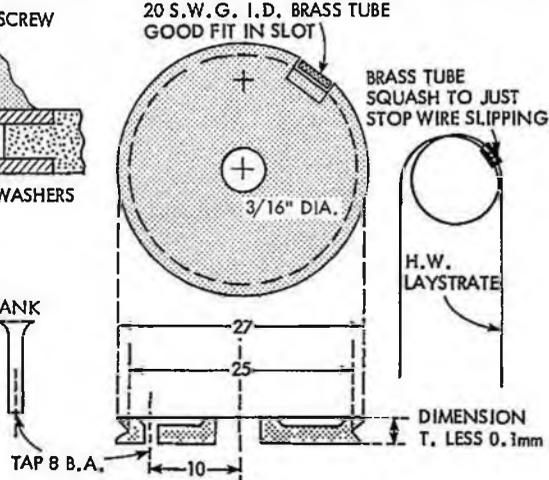
sure there is no binding before gluing the braces. Keep a bolt through the braces or you will have the washers loose inside! The pushrod can be held along the wing with a rubber band during the remaining construction.

Increasing thrust can be accomplished in two ways. The obvious one is to increase engine power; this implies tuning and is not the sort of thing that everyone is good at. If you would like to modify your motor, it is an interesting occupation but to avoid disappointment you should expect failure; unless you are skilled and already know what you are about you would be well advised to leave your motor well alone. The other way is to make proper use of the power your engine gives already and to make sure it gives its best. The first thing is to mount your motor firmly without distorting the crankcase. Metal blocks screwed and epoxied to the bearers can be faced flat with fine emery paper on a piece of plate glass. The



6 B.A. SCREW ARALDITE INTO BELLCRANK
PUSHROD SOLDERED TO 8 B.A. NUT
RUNNING ON SCREW

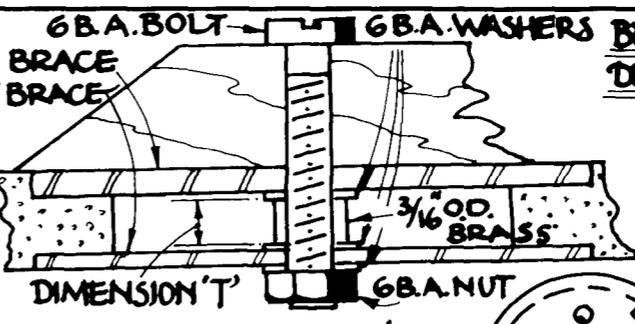
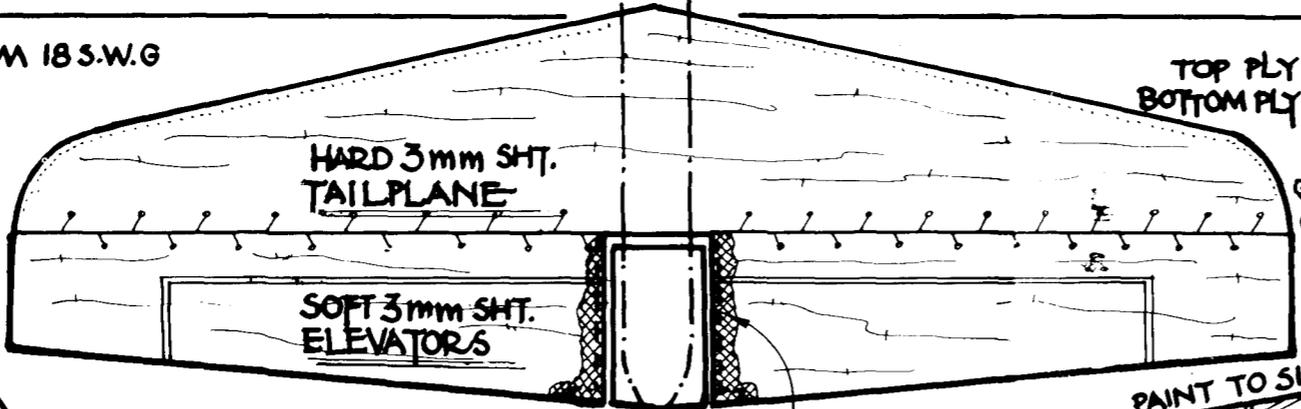
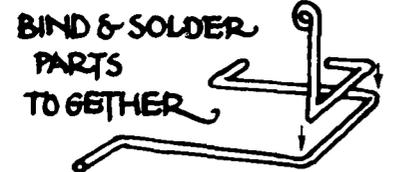
CIRCULAR BELLCRANK



TAP 8 B.A.

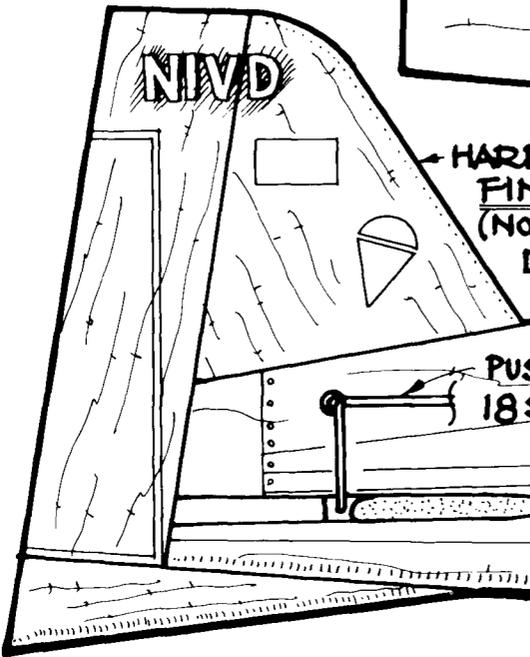
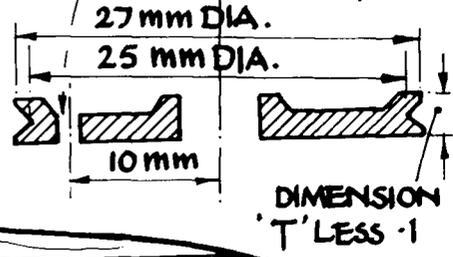
DIMENSION
T. LESS 0.1mm

ELEVATOR HORN FROM 18 S.W.G



BELLCRANK & MOUNTING
DETAIL 2x FULL SIZE

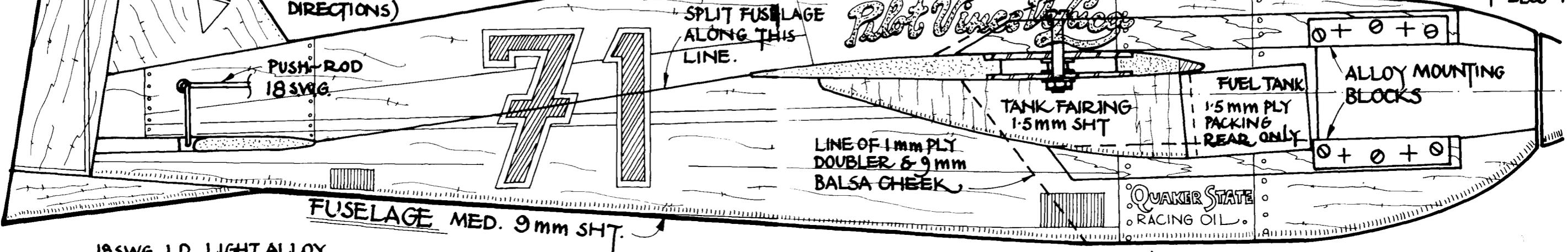
ARALDITE 8BA BOLT
INTO HOLE. PUSHROD
SOLDERED TO 8BA
NUT RUNNING ON
BOLT.



HARD 3mm SHT. FIN
(NOTE GRAIN DIRECTIONS)

EPOXY ON HORN
& BIND WITH GAUZE

PAINT TO SIMULATE PILOT AND COCKPIT
CIRCULAR BELLCRANK
3/16" DIA.



PUSH-ROD
18 SWG.

SPLIT FUSelage
ALONG THIS
LINE.

Pilot View of Race

TANK FAIRING
1.5mm SHT

FUEL TANK
1.5mm PLY
PACKING
REAR ONLY

ALLOY MOUNTING
BLOCKS

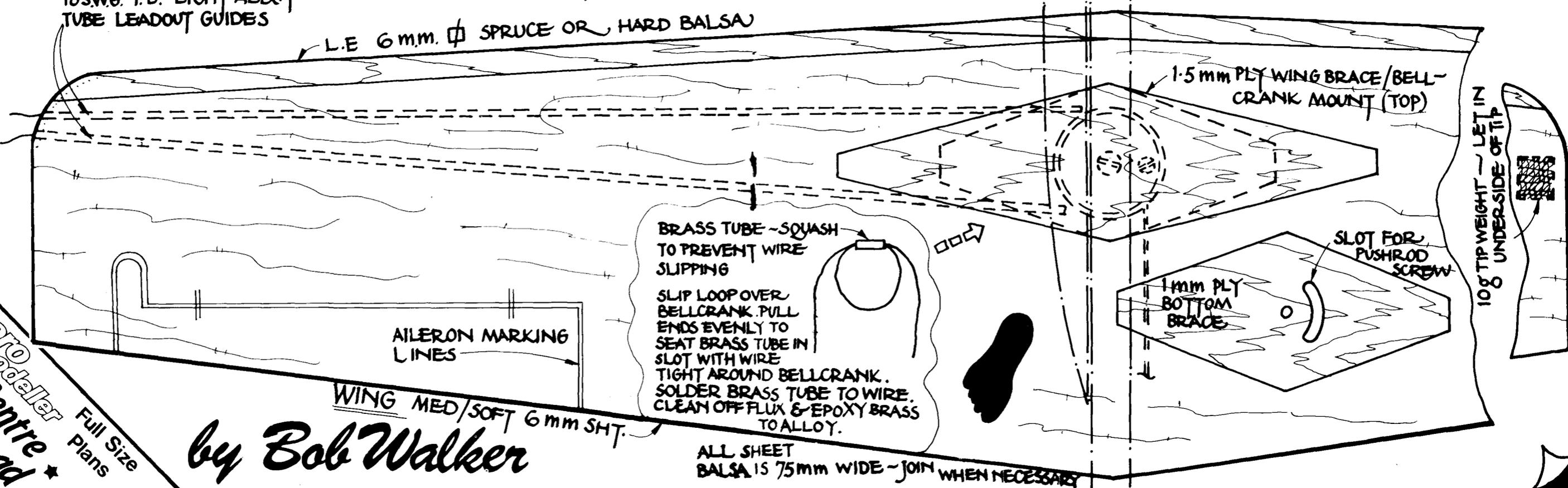
LINE OF 1mm PLY
DOUBLER & 9mm
BALSA CHEEK

FUSELAGE MED. 9mm SHT.

QUAKER STATE
RACING OIL

18 SWG. I.D. LIGHT ALLOY
TUBE LEADOUT GUIDES

L.E 6mm. Ø SPRUCE OR HARD BALSA



1.5mm PLY WING BRACE/BELL-
CRANK MOUNT (TOP)

SLOT FOR
PUSHROD
SCREW

1mm PLY
BOTTOM
BRACE

10g TIP WEIGHT - LET IN
10g UNDERSIDE OF TIP

BRASS TUBE - SQUASH
TO PREVENT WIRE
SLIPPING
SLIP LOOP OVER
BELLCRANK. PULL
ENDS EVENLY TO
SEAT BRASS TUBE IN
SLOT WITH WIRE
TIGHT AROUND BELLCRANK.
SOLDER BRASS TUBE TO WIRE.
CLEAN OFF FLUX & EPOXY BRASS
TO ALLOY.

AILERON MARKING
LINES

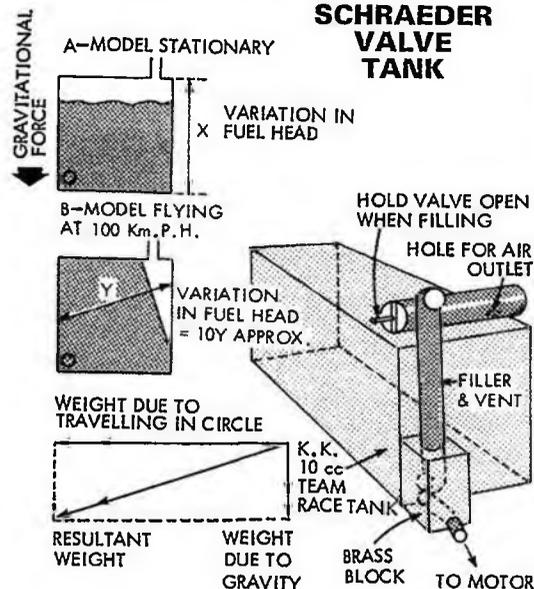
WING MED/SOFT 6mm SHT.

Aero
modeller
Centre
Spread
Full Size
Plans

by Bob Walker

ALL SHEET
BALSA IS 75mm WIDE - JOIN WHEN NECESSARY

SCHRAEDER VALVE TANK



engine mounting lugs may need scraping to ensure that the engine sits snugly in place without any shake. Next turn your attention to reducing vibration because a vibrating model is using engine power to shake itself about. It is not possible to perfectly balance a single cylinder engine but there is no need to make matters worse with an unbalanced propeller. A badly made or damaged model will also be likely to waste power in this way. The propeller is a very important link in the chain. Our best results so far have been with a standard 175 x 150 *Tornado* cut down to about 165mm diameter. The reduced diameter allows RPM nearer the peak power speed of the motor but without too much increase in fuel consumption. Propeller design is an area where much fruitful work is waiting to be done.

The ideal function of the tank is to provide the engine with a steady feed down to the last drop of fuel. Syphoning of fuel out of the vents is the first thing to stop by directing the tubes into the airstream. Making sure that all the fuel is used comes next. If the feed is from the front corner of the tank, pack the front end out about 1.5mm compared to the rear end and vice versa if fuel feeds from the back corner.

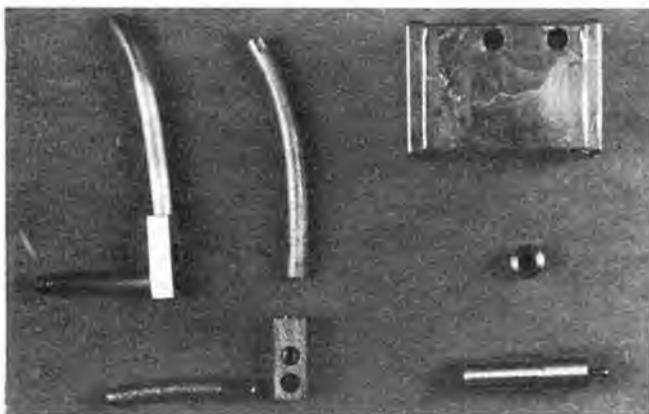
Schraeder car tyre valve being turned down in school lathe, or file by hand.



The position of the fuel surface relative to the spraybar hole affects the mixture strength taken in by the engine. Try bench running your engine with the tank on a long piece of tubing and find out how the position of the tank affects the minimum needle setting. When the model is stationary the fuel head variation is obviously distance X in the diagram but when flying in a circle, the fuel is acted on by forces other than gravity and seems to be much heavier. Also 'downwards' for the fuel is no longer vertical. The result of this is a leaning out equivalent to moving the tank, with model stationary, about 10Y lower down, for a speed of 80mph. The 'uniflo tank' is one way of reducing this effect. The air inlet is placed close to where the fuel is taken out. Therefore the pressure at that point is constantly the pressure at the open end of the pipe. If the pressure in the

Schraeder valves from motor tyres are most suitable. They are regularly replaced by tyre fitters at garages who are usually quite happy to let you have handfuls. Get the rubber off and file, saw, turn or chew the brass housing down to a suitable size for attaching to your tank, in a horizontal position, so that it comes conveniently under your thumb when you are holding the model whilst fuelling it. An ingenious valve seen on one model, is produced by blanking off one of the standard vents, cutting a shallow slot half way down it and slipping a suitably cut piece of flexible tubing over the top to act like an old type bicycle valve. The sketch shows the front feeding version of the tank. It uses soft copper tubing for the pipes locating in a suitably drilled piece of brass. 15 amp plugs are a good source of material for this. The tubing can be obtained from K. R.

Parts laid out prior to modifying standard commercial 10cc Team Race Tank, shown top right with all brass pipes removed. Replacement feed and vent pipe with brass block filed from electric plug terminal shown to left, with reworked Schraeder car tyre valve and brass tube seating shown lower right.



tank feed increases because of circular motion, air cannot get in. The engine continues to take fuel, expanding any air already in the tank, and reducing the pressure in the feed pipe until air can enter. An equilibrium is thus achieved. The problem comes when filling the tank. It is alright with a combat model to turn it inboard tip and nose down but that is not 'on' with a racer. The solution is some sort of one way valve that lets air out whilst filling the tank but does not let air in during flight.

New vent position being drilled for Schraeder valve, with two feed and vent holes at front.



Whiston, New Mills, Stockport SK12 4PT. They will send their catalogue if you send an SAE. In it you will find lots of useful items including materials for making bell-cranks, mounting blocks etc.

The *Lil Quickie* is based on the drawing in the October 1977 *Aeromodeller*, and is potentially faster than the *Owl* because of its smaller bulk and higher aspect ratio wing but this also makes it weaker. It is not a fragile model but hitting the ground at 90mph will usually break it!

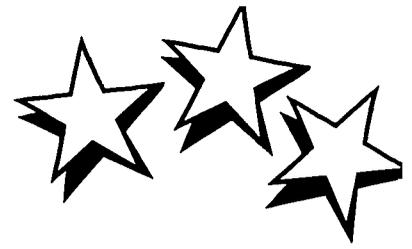
Modified tank gives more consistent feed without risk of syphon fuel loss.





BRITISH NATIONAL CHAMPIONSHIPS 1980

23-25th August



DON'T MISS THE NATS

THE SECOND HALF of this year's SMAE 1980 National Championships, for Control Line and Radio Control flying, will take place at the twin airfield venue of Barkston Heath and Cranwell over the August Bank holiday. It is the biggest event of its kind organised for aeromodellers in Britain, so if you are a model flyer you owe it to yourself to be there.

ACCESS for campers from 18:00hrs on 22nd August, until 18:00hrs on 25th August by which time the site MUST be cleared for the RAF.

ADMISSION. Adults £1.50; under 14 year olds 50p; under 5 years old free. SMAE Member benefit from reduced charges for advance bookings. Tel: 0634 41429 for details.

VEHICLES charged pro rata per passenger; Parking free of charge; Speed limit 15mph. STRICTLY NO VEHICLES ALLOWED ON RUNWAYS, perimeter track only may be used. KEEP OFF ALL GRASS AREAS.

CAMPING with full facilities at Barkston Heath £5 per person advance booking, £6 at the gate. Camping at Cranwell limited to competitors only. Accompanied under 14 year olds, free of charge.

FREE CAMPING for enterprising modellers able to assist SMAE distributing advance publicity posters, contact Bill Blake SMAE PRQ: Tel: 01-761 1502.

BUILD & FLY JUNIOR WORKSHOP for all youngsters, come along to the hangar and build a simple model under expert instruction from Dave and Janine Rawlins of DPR Models, then learn how to fly it. Special Junior events organised daily with super prizes for clip-together *Sleek Streaks*, "Glide-with-Gloy" *Chuckie* Hand Launch Gliders and Rubber powered models.

GENERAL FLYING. Saturday 23rd and Sunday 24th 08:00-19:00 hrs, Monday 25th 08:00-16:00 hrs. On MoD property model aircraft may ONLY be flown by FULL SMAE members or contest entrants. Tel. Membership Sec: 0533 58500.

INDOOR FLYING, do not miss this unique opportunity to see super lightweight Microfilm, EZB and Peanut Scale models flying in the hangar. Demonstrations each afternoon.

TRADE STANDS. Come along and see what the Model Hobby Trade has to offer at the many stalls in the hangar, or visit the SMAE information display stand.

DAILY ATTRACTIONS. Keep up to date with special attractions and flying displays publicised daily on the SMAE Control Notice Board.

PRIZEGIVING for all events will be held in the hangar at Barkston Heath 16:00hrs Monday 25th. Presented by John E. B. Jones, F SMAE, Chairman of the Society.

CONTEST CALENDAR

RADIO CONTROL BARKSTON HEATH

Aerobatics - 08:00-12:00 and 16:00-18:00 Sat, 16:00-18:00 Sun, Fly Offs 14:00-15:30 Mon.

Club 20 - 12:00-16:00 Sat, 14:00-16:00 Sun, Finals 12:00-13:00 Mon.

FAI Pylon - 08:00-14:00 Sun, Finals 13:00-14:00 Mon.

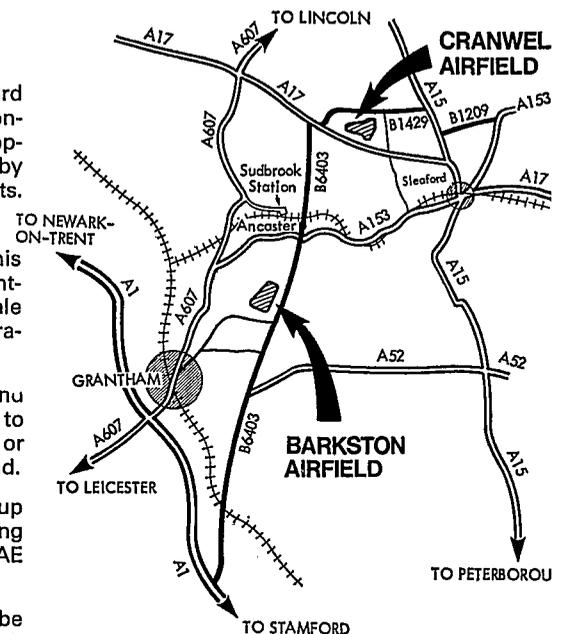
Helicopter - 08:00-11:00 Mon.

Scale - 08:00-18:00 Sat, 08:00-18:00 Sun, Fly Offs 11:00-12:00 Mon.

RADIO CONTROL CRANWELL

09:00-18:00 Sat, 09:00-18:00 Sun, 09:00-15:30 Mon.

Open Thermal; F3B Multi Task; Scale; 100S.



CONTROL LINE BARKSTON HEATH

Speed - 08:00-19:00 Sat, 08:00-19:00 Sun, 08:00-16:00 Mon.

F2B Aerobatics - 08:00-19:00 Sat, 08:00-19:00 Sun, 08:00-16:00 Mon.

Novice Stunt - 13:00-18:00 Sun, 09:00-14:00 Mon.

F2C Team Race - 11:00-15:00 Sat, 15:00-18:30 Sun, Semis and Finals Mon.

1/2A Team Race - 08:00-11:00 Sat, 11:30-14:30 Sun, Semis and Finals Mon.

'B' Team Race - Start at 08:00 Mon.

Goodyear - 15:00-18:30 Sat, 08:00-11:30 Sun, Semis and Finals Mon.

Mini-Goodyear - 14:00-18:00 Sat, 13:00-18:30 Sun.

F2D Combat - 08:00-19:00 Sat, 08:00-19:00 Sun, Finals Mon.

1/2A Combat - 08:00-19:00 Sat, 08:00-19:00 Sun.

Carrier - 12:00-18:00 Sat, 12:00-18:00 Sun, 09:00-14:00 Mon.

IT'S THE RADIO EVERYONE IN THE KNOW CHOOSES!!

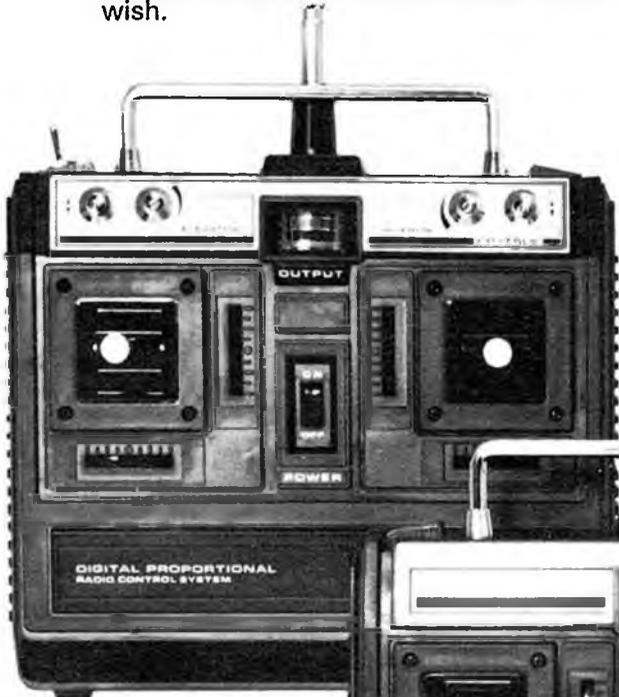
★ Because it's from RIPMAX-FUTABA for a start. World leaders in digital proportional radio controls. That's your automatic guarantee of **QUALITY, PERFORMANCE . . .** and **OUTSTANDING RELIABILITY.**

★ The ALL NEW 'L' SERIES COMBOS operate on drycell batteries OR Nicads. That means YOU CAN SAVE ON INITIAL COSTS by buying a Drycell Combo. Convert to Nicads later, if you wish.

★ Also by buying a Tx-Rx Combo, you need only add the number of servos you actually need for a particular model—ANOTHER WAY YOU CAN CUT INITIAL COSTS.

★ What's more, the 'L' Series Combos can be used with ANY of the 'M' Series Servos, giving you a really wide choice of types (and Servo prices!). Receiver and plug systems are pre-wired to match.

★ Drycell Combo prices start from only £22 . . . and a COMPLETE 2-CHANNEL OUTFIT NEED ONLY COST YOU £44. HIGH PERFORMANCE at a LOW PRICE. And the same applies to the 4-ch and 5-ch Combos. That's why people 'in the know' go for the new 'L' Series.



**RIPMAX
FUTABA**

**DRYCELL
or NICAD
COMBOS**

L SERIES

DRYCELL COMBO PRICES*

2-ch £22.00

4-ch £44.50

5-ch £55.50

Combo prices include Tx and Rx battery boxes, wiring harness with switch, 1 pr crystals, and frequency pennant. Dry batteries and Servos are extra.

5-channel

For ultimate coverage of aircraft controls. The 5-ch Transmitter also features **DUAL RATE SWITCHING** on the two main functions.

4-channel

For full-house coverage—ailerons, elevator, rudder and throttle control.

2-channel

Twin-stick controls for rudder and elevators on gliders.

All transmitters feature easy-access crystal change.



★ **RECOMMENDED COMPLETE OUTFITS** ★

2-chan +	4-chan +	4-chan +	5-chan +	5-chan +
two FD32 or FD33M Servos	four FD32 or FD33M Servos	four FD17, 21 or 26M Servos*	four FD32 or FD33M Servos	four FD17, 21 or 26M Servos*
£44.00	£88.50	£116.50	£99.50	£127.50

**Nicad conversion recommended when using these Servos.*

*NICAD CONVERSION is dead simple! Just replace the Tx and Rx battery boxes with Nicad battery packs and mount the prewired Tx battery charging socket on the Tx case. Complete Conversion Pack (matching the 2-, 4- or 5-ch Combos) £24.00.

AT ALL RIPMAX STOCKISTS

THIS MONTH:

SIMPLE CONTESTS TO SHARPEN UP YOUR R/C FLYING SKILLS

THE ADDED CONFIDENCE and improvement in your standard of flying from practising simple aerobatics may lead you towards simple competition with fellow R/C sport flyers. None of your national class competitions though, just some simple events which are easy to organise, and judge – fly for fun events.

SPOT LANDING

In its simplest form the model has to touch main wheels – for the first time – as close to a pre-determined spot as possible. The judge notes the actual point of initial contact and his assistant then measures from that point to the 'spot'. The measurement is taken as the pilots score and after three rounds have been flown, the scores totalled for final positions, the winner having the lowest total score.

The draw back is controlling the length of time between take off and spot landing. It is therefore as well to stipulate a time during which a specific pattern must be flown eg. take off, two loops or a figure of eight circuit, then land within 120 seconds. It does not sound long but you will be surprised how much fun spot landing events can be. Any seconds over or under are added, as units, to the landing distance to give each score.

LIMITED ENGINE RUN AND GLIDE

A limited power run is agreed, perhaps 120 seconds. This is timed from release of model; at the end of the period the engine is throttled back to stop. The model then has to glide back and as soon as it touches terra firma, the watch is stopped and the number of seconds elapsed taken as the score. Obviously the highest score wins.

A wide selection of different types of model can compete effectively and equitably. The high wing trainer will not reach such a high altitude as other models but will glide, power off, for much longer. Of course, it is possible to combine this competition and many others, with a spot landing at touchdown.

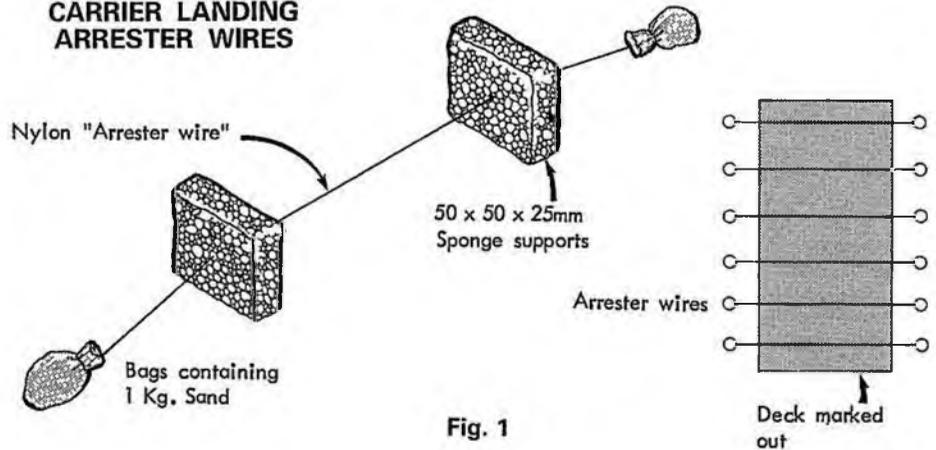
Right: Having learnt to fly with a typical R/C trainer, like this Waterhouse and Ely foam wing Super-Fli, why not really put your flying skills to the test with some simple competition flying amongst friends and clubmates.

by Chris Pinchbeck



R/C Sport Flyer

CARRIER LANDING ARRESTER WIRES



NUMBER OF SPINS

Not for the chicken hearted. After a timed engine run of say 120 seconds the model is put into a spin and each complete revolution counted. The winner is the one with the highest score. Once again this can be followed by a spot landing. In this type of competition the more advanced model with aileron control is at an advantage since spins from this type of aircraft will be flatter and consume less air space than a trainer model in a spiral dive, so a handicap for rudder and elevator models may need to be introduced, ie their number of spins multiplied by 1.5 to give final score.

CARRIER LANDING

This is best run when a smooth hard landing area is available. Each model must be fitted with an arrester hook, which can be bent up from 16swg wire and fitted to the tail unit with rubber bands.

The deck is marked out and arrester wires fitted up as shown in Fig. 1. The object is to land within the confines of the 'deck' and pick up a wire. Under and over shoots may be corrected and another attempt made provided that the model does not actually touch the 'water'. Scoring can be based upon which wire is picked up and how many attempts are made.



MARKER "BOMBS"

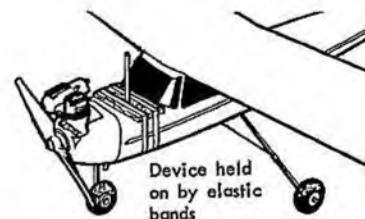
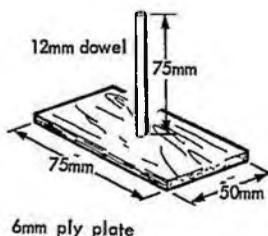
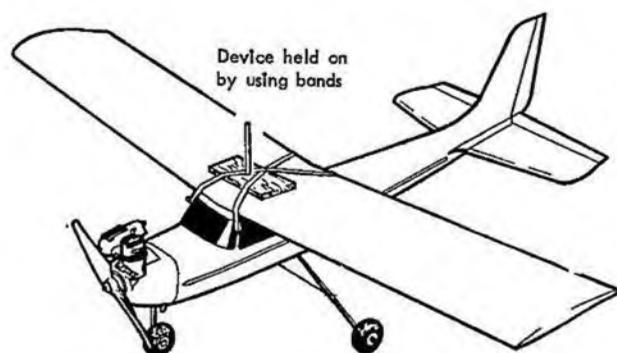
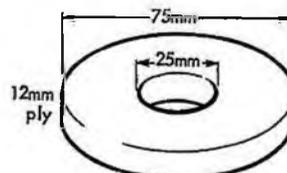


Fig. 2



BOMB DROPPING

A target is marked out and the 'bombs' (plywood doughnuts) are dropped from the model. A measurement is taken from point of impact to centre of target and this acts as the score. After a number of rounds the lowest score is the winner.

A typical 'bomb' can be cut from 12mm plywood. The bomb release is simply a dowel and fixing plate fitted to the model using rubber bands. In practice it has been found necessary at times to extend the release pole with a bicycle spoke as the propeller slip stream can otherwise blow the 'bomb' off.

Release is effected by looping or rolling the model. When it is inverted the bomb will slide off the release mechanism.

model can compete effectively since although an advanced model can fly the first part of the course faster than a trainer, it cannot fly back up the course nearly so slowly, thereby reducing the differential.

GLIDER EVENTS

The above competitions are of course based upon power models, but all bar the carrier landing, can be adapted for either thermal or slope soaring gliders.

The power/glide competition can be flown by a glider from a tow line, towing time being the equivalent of power on, although if a power pod is fitted this can be used. A set amount of fuel, usually 7.5cc, is put into the tank and used to get the model up. The watch is then set running to time the glide.

MULTI TASKS

The internationally recognised F3B rules for thermal soaring competitions can be used in a slightly simplified form for club contests. Three rounds are involved.

The first round is pure duration and spot landing. The watch is started from release of model from the towline or bungee. The model then has to land in a circle within 6 minutes. Any seconds over or under are deducted from the MAX score (360 seconds) and bonus points are added depending upon metres error from the landing circle.

The second round is distance. The course set out with upwind and downwind markers.

The model is towed up on a 150 metre line. It then flies back and forth along the course between the sighting posts, each pass is signalled by a flagman and the judge counts the number of 'laps'. Parts of the last lap are judged up to the point of touch down by using the distance markers.

The final round is speed. The model is towed up as per the duration event, then flies two 'laps' of the same course, being timed from its pass through the first gate until it returns through the same gate, the turn being included in the total time.

There are many variations and combinations of the above, but hopefully the competitions mentioned will enable you to devise simple events to give added enjoyment and confidence when flying your model.

Since aerobatics and competitions, not to mention general sports flying, often lead to over enthusiastic spot landings, next month we will consider repairs. Until then, happy landings.



Left: Stan Rose constructed this Galaxy Models Escort powered by trusty Enya 19 specifically for the R/C Sport Flyer series. Although the all-balsa built up construction took a little longer to assemble than other "prefabricated" kits, the Escort nonetheless proved an ideal R/C trainer and is definitely the type of kit for the modeller who really enjoys a bit of building.

FASTEST, SLOWEST

A course of 100 metres is set out with two sighting poles at each end approximately 30 metres apart. The model is flown at full throttle down wind between the first set of posts and the flagman signals as it passes between the posts so that the judge can start the watch. When the model passes through the second 'gate' the watch is stopped and the time noted. The model then returns along its previous course but this time into wind and at its slowest possible speed. Again the run is timed and the difference between the two time periods taken as the score.

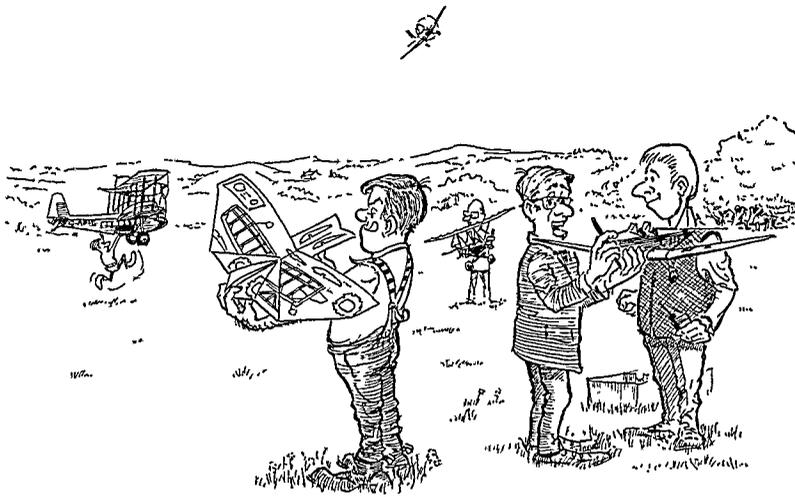
The pilot and model with the greatest differential is the winner. Various types of



Left: Close up detail of Enya 19 fitted with mandatory silencer neatly installed in the nose of the Galaxy Escort.

TOPICAL TWISTS

by Pylonius
illustrated by Sherry



“HE DOESN'T SEEM TO HAVE THE PATIENCE
TO BUILD A MODEL”

WAVE BANNED

Philosophers may say that, in the widest sense, all human activity is futile, but personally I can think of nothing more absolutely futile than Citizen Band Radio. Some people may say that it does a certain amount of good in knocking those noisy model aeroplanes out of the sky, but the only real use anyone has found for it is the rather anti social one of warning fellow drivers of speed traps ahead. True, it might occasionally help in a 'May Day' call, but even then it brings so many sightseers to the scene that the rescue services can't get through. It is a sort of electronic Tower of Babel.

To what extent do the CB enthusiasts interfere with our model guidance systems we do not know, but a call from White Bear to Tiger Ron might account for quite a bit of wreckage. On the other hand, who knows that the club aerobatic champs was won not by the skill of the operator, but the lively patter of Honey Bee, CB King of the local highway. Which brings us to another possibility. In the future the two interests may, perhaps, be combined. It might not be long before all that, learning to fly radio, is old hat. The receiver of the future will not be just the simple, bleeping thing it now is; it is likely to be a mini computer, with every manoeuvre in the book stored in its memory. It might well respond to the human voice just like a sheepdog, so the CB transmitter could be deliberately used to operate your model, between friendly chats with your neighbour.

What is CB radio though, but a glorious toy? Whatever deprivations a government will inflict upon the citizen he will not be denied his toys. Which is the reason why the CB pressure looks likely to prevail. But if CB Radio is a toy it is easily out-toyed by the radio controlled model aeroplane. The model plane may not have much prestige when it was produced by the eccentric in his back room, but with the ready to fly model available to anyone with a fat cheque book it really has taken off – at least at the social level. And this is a bit of luck for us, for the radio model is given the status of a protected species, and it looks as if the yowling CB addicts may have to be content with a waveband other than the coveted 27 MHz.

PLAN MADNESS

There's nothing I find more fascinating than a model plan. The skeletal layout looks so enticingly simple that I find it irresistible. I must have assembled thousands of models from plans; models of all types, size, big or small, no object – and many a pleasurable hour it has given me. Trouble is, I build them only in my head. Whilst I am full of bold resolution at the time, as the thought of the spreading wings takes hold of my imagination, somehow the project never gets as far as the building board. Some spoilsport at the back of my mind always raises an objection like "What would you do with a ten foot span soarer, anyway? You haven't even got a radio to put in it". Or "Not another Scale Biplane! you didn't have anywhere to store the last one you didn't build, so just watch it". And so it goes on.

Another trouble I get with plans is that the more I scrutinise them the less my enthusiasm. You are often presented with a feature of unbelievable complexity, which is only hinted at on the plan and

not even mentioned in the text, but here is the ten year old boy all smiles as he holds up the completed model, showing that it can be done. Then you have the designer who is a whizz as a builder and expects we old dabblers to be equally proficient. His favourite is the multi slotted wing rib to take a multi spar arrangement of exactly the balsa sizes you haven't got and which are usually not obtainable. He is equally skilled at moulding sheet balsa around the parts that others just can't reach.

But what makes me suspicious of plans is that people who build the best models rarely use plans; they just make the models up as they go along, having only a vague idea at the start, of how the model will turn out at the finish. If they do get down to making up a plan of a model they often forget exactly how they built it. On the other hand I am equally suspicious of people who design models not for themselves but for other people, particularly when the models are ones they would not normally fly. I remember some years ago it was difficult to get top model flyers to publish plans of their successful models in case other people were to beat them in contests with their own designs. Things are different nowadays, though, mainly because contest flyers more or less all build the same models anyway, competing with each other on technique and knowhow. It is quite possible for a colour blind modeller to retrieve the wrong model and go on to have a successful contest. "I had a feeling there was something wrong about the noseblock."

Mostly I never get around to building from those fab plans because I miserably come to the conclusion that my style of model building is never quite the same; so out comes the roll of grease-proof paper on which to rough out one of my own grotty products, the saving grace of which is that the wing rib lengths invariably agree with the plan.

BY THE BOOK

I notice on the bookstalls yet another of those huge, glossy 'all about aeromodelling books'. It starts off with the usual Leonardo De Vinci model helicopter. A device which, incidentally, couldn't fly in a thousand years (and nearly four hundred have gone already). And comes to a breathless conclusion with the obligatory 1/2 scale Lancaster. A model which should not be allowed to fly in a thousand years, or not at least until our civil defence is better organised.

The need for such super aeromodelling books had me puzzled at first, then I thought of the sort of deprivation of the non-flying dilettante suffers from these days (The active model flyer being, of course, a Dilly-tante). At one time he could involve himself with model flying by going over to the local park or common, but since the model flyers have been pushed out into the remote countryside his actual visual contact with the hobby is exceedingly slight, and the technicoloured, coffee table book offerings do help him get a sense of involvement.

C/L SUPERFORTRESS

Within a very short space of time following the publication, in the April 'Scale Matters', of details of a *Boeing B-17* for control-line scale by Peter Miller, news of another C/L *Boeing* bomber arrived in the postbag. This time the subject is the *B-29 Superfortress* – an aircraft that is very rarely tackled in flying model form – which is being built by Mart Stonelake of Hampton Hill, Middlesex. I have always considered this to be one of the most elegant of WWII bombers, if one can accept that elegance can be associated with bombing, that is, and from the photographs Mart's model certainly appears to be a neat piece of work.

The model is built to 1:24th scale which brings the wingspan down to approximately 1800mm, and the weight is around 3kg. Power units will be four Oliver Tiger diesels without throttles, so the model will certainly not lack power. Throttling a diesel engine to work as well as a glow motor is a very difficult task that no manufacturer seems to have achieved, but with the motors used in this model the disadvantages of using a 'straight' powerplant is more than overcome by the superb starting and handling qualities that are characteristic of Tigers.

The main structure of the model is balsa and ply with engine cowlings moulded in glass fibre, and the undercarriage is fixed. Like Peter Miller's *B-17*, the outer wing panels are removable to make transporting and storing the model more convenient. With the arrival of a full size *B-29* in this country Mart is hoping that some accurate scale drawings may eventually be produced, although measuring and surveying an aircraft of this size will not be a job for the faint-hearted!

S.A. BULLDOG

As mentioned in this column last month, the winner of the CL scale event at RAF Upwood on 27th April this year was a *Scottish Aviation Bulldog* built by Derek Bird of the Three Kings Aeromodellers. This model was, in fact, built from a RCM&E plan, not a kit, and this month I am able to include a photograph of the model in action. This was taken at the Three Kings Open Day last Autumn on the *Bulldog's* first day out. Snapped just following release for take-off on its second official flight, it looks rather well against a fuzzy



Impressive Boeing B-29 Superfortress by Mark Stonelake is powered by four Oliver Tiger diesels for Control Line Scale. Approx 1800mm span.

background of Croydon Aerodrome hangars. Since the photo was taken additional detailing has been carried out for the undercarriage legs and the model is now fully finished.

WESTLAND WOODPIGEON

Also following last month's mention of a new Peanut Scale *Westland Woodpigeon* of my own, I am including two pictures of the model to show some of the construction as well as the finished result. All of the wing and tailplane outlines are formed from .8mm square basswood. They are all in one single piece, i.e. leading edge, curved tip, and trailing edge, formed around cardboard templates. The basswood is allowed to soak for about half an hour in hot water, gently wiped down with a tissue to remove excess liquid, and held in place around the template with small pieces of Sellotape. The outlines are then left to dry overnight before building the wings and tail proper. I prefer to use this

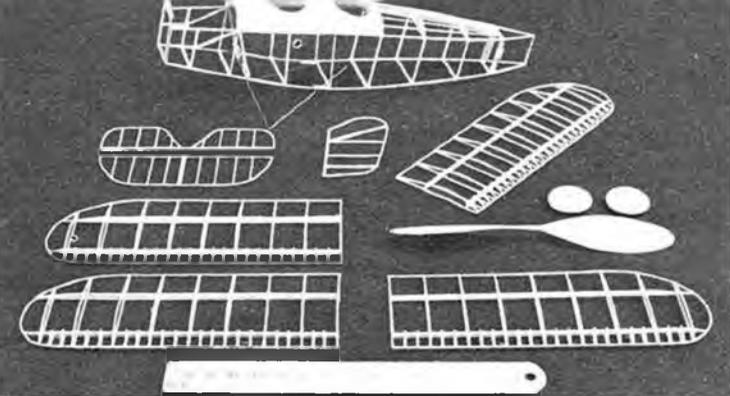
method rather than heating the mouldings to speed up the drying because the application of too much heat by any method tends to cause the cardboard to buckle and distort the desired outlines.

The balsa components in the wings and tailplane are built from indoor quality wood. The two spars in each wing panel are from .022 sheet, whilst all the ribs (and riblets!) are from .024 sheet. This type of wing construction closely follows fullsize practice in principles and when the model is fully assembled and rigged a very strong and rigid structure is achieved. Although it may seem a rather tedious and fiddly technique, the 'sliced' rib method of building is in fact relatively quick to carry out, as well as being a great weight-saver. The flying surfaces shown in the framework photograph together weighed less than 1.25 grammes.

The fuselage was also built of 0.8mm square basswood, with 0.4mm balsa sheet used for the formers and decking. To



Derek Bird's SA Bulldog converted from an RCM & E plan won C/L Scale at Upwood. 65in span model powered by a MERC0 61 weighs about 3kg.



Westland Woodpigeon framework shows lightweight construction with 'sliced' ribs and twin spar wing structure. Materials are basswood and indoor quality balsa. Total weight of these components is 5 grammes.

further save weight, all of the square section material was filed to triangular section after the structure was completed and the glue thoroughly dry. This may be seen to be taking things to ridiculous lengths, but one thing that is guaranteed to spoil the performance of any indoor model is unnecessary weight, and the crafter the way to lose it, the better it is!

It will be noticed that there is no front decking or noseblock in the framework photo. These components were eventually moulded from Plasticard sheet to emphasise the difference between the aluminium cowling panels on the fullsize aircraft and the rest of the airframe. It also allowed the scale engine to be correctly shown with a crankcase and separate cylinders, etc.

Completed and correctly balanced for flight, but less motor, the model weighs 10.5 grammes. Not exactly an ultralight, despite the condenser paper covering but, considering the close to scale construction, about as light as one can go using these materials. Basswood, by the way, is available in these very small sections from The Modellers Den at Bath, Avon.

TISSUE TECHNIQUE

Reader Mr J. Lawson of Helston, Cornwall wrote in a little while ago also on the subject of weight-saving in model finishing. Mr Lawson experimented by covering three similar wings with different kinds of tissue: Modelspan, American Silkspan,

and Jap. Each of these was sprayed with clear dope thinned down to see which would provide the lightest acceptable finish. Not surprisingly, the Jap tissue gave the best finish for the least amount of dope applied, whereas the others seemed to carry on absorbing the dope with little effect.

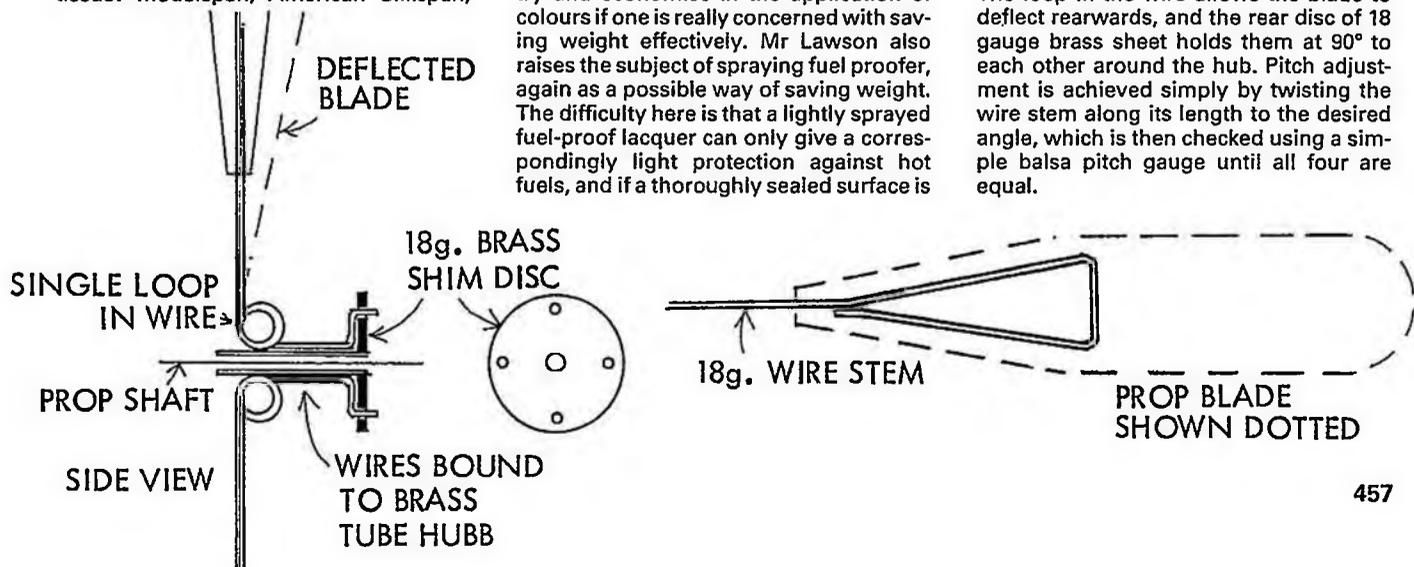
The problem here lies in the method of application. Basically, one is simply trying to seal up the open pores of the tissue, and Jap Tissue, by its nature, has a much more closely grained structure than the other two. Hence it requires less dope to seal the surface. Ordinary tissues require the dope to be literally forced into the pores so that a continuous film surface may begin to build up. If the dope is only lightly sprayed without allowing a really wet surface to build up, the stuff simply dries out before it has a chance to penetrate, and a rather dusty, prickly surface is the result. The answer is to simply accept that tissues require a certain amount of dope to fill the grain properly, and if they are to contribute as a covering to the strength of the finished model, one should not be too wary of applying clear dope at least to form a surface good enough for a subsequently applied colour scheme. Two or three coats of 50/50 dope/thinners well brushed in will seal all but the heaviest of tissues, and I should not think it wise to try to get away with less than this on an engine powered model. It is far better to try and economise in the application of colours if one is really concerned with saving weight effectively. Mr Lawson also raises the subject of spraying fuel proofer, again as a possible way of saving weight. The difficulty here is that a lightly sprayed fuel-proof lacquer can only give a correspondingly light protection against hot fuels, and if a thoroughly sealed surface is

required then the fuel proofer has to be quite liberally applied either by brush or quite heavily sprayed. Having myself flown in recent years a number of control-line models to the extent that accumulated *airtime* can begin to be measured in hours, I have found the most durable fuel proof finishes to be the two-part epoxy mixtures such as K & B Hobbyepoxy, which can be thinned slightly for application by spraygun, and with two evenly applied coats being the safest minimum against hot glow fuel containing nitromethane. These finishes *can* be applied in one thick coat, but as with any kind of paintwork it is not the best way to do it, and on a nicely built scale model the risk of ruin is too great to make it worth attempting.

FLEXI PROPS

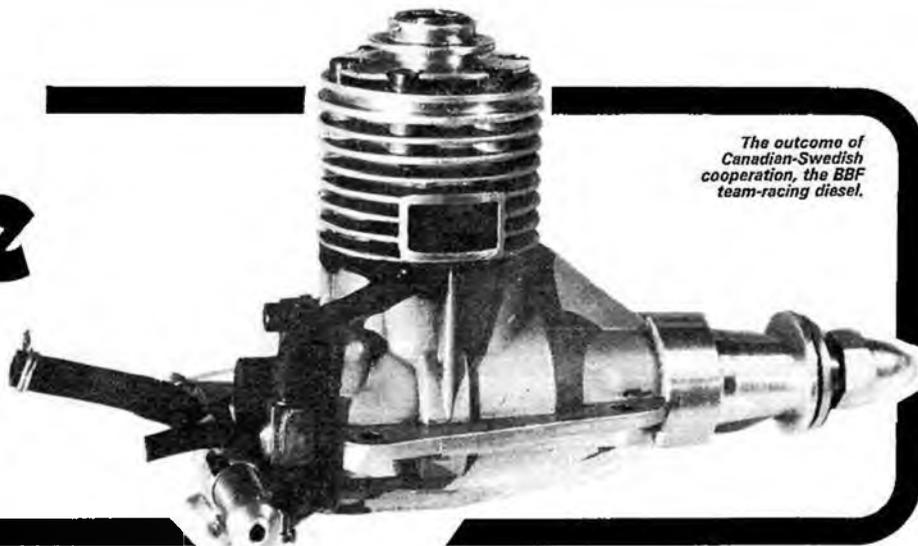
By the time this appears in print my *Grumman Guardian* built for rubber power, detailed in the March issue, ought to have taken to the air. The full size subject features a large four-bladed airscrew that simply begs to be simulated on a flying prop on the model. As well as requiring a unit with fairly flexible blades to absorb general wear and tear, I wanted to have the pitch of the blades adjustable for trimming purposes and so the following design was used.

The blades themselves are laminated from two pieces of 0.4mm plywood, with the wire stem sandwiched in between. The loop in the wire allows the blade to deflect rearwards, and the rear disc of 18 gauge brass sheet holds them at 90° to each other around the hub. Pitch adjustment is achieved simply by twisting the wire stem along its length to the desired angle, which is then checked using a simple balsa pitch gauge until all four are equal.



Peanut Scale Westland Woodpigeon by Alan Callaghan is finished in condenser paper with a sprayed natural linen colour in matt enamels with black lettering.

Peter Chinn's Engine News



The outcome of Canadian-Swedish cooperation, the BBF team-racing diesel.

BBF TEAM-RACING DIESEL

Brian Fairey of the *Equipe Canada* has sent along photos of, and some data on, the BBF racing diesel which is making its debut at the 1980 World C/L Champs in Poland. The engine is a combined development effort by the Swedish Bengstar/Bohlin and Canadian Fairey/Fairey teams and is an extension of their previous work on the RAM and Bohlin/K&B engines.

Brian Fairey writes "The engine is of conventional design with the exception of the mounting lugs which extend the full length of the crankcase and therefore obviate the need for a pan or crutch, the engine being bolted directly into the model. Every effort has been made in the design of the engine to keep it small and light. Therefore, although the stroke is 0.587in, the connecting-rod centres are only 0.964in. Also, to keep the overall height of the engine down, the head is not spigoted into the sleeve but forms a face to face seal with the sleeve flange."

The BBF has rear rotary drum valve induction and is, of course, of the Schnuerle loop scavenged type with third port and a twin ball bearing shaft. It has a bore and stroke of 0.572 x 0.587in, giving a swept volume of 0.1508 cu. in or 2.472cc.

Structurally, the engine features an aluminium piston running in a chromium plated aluminium drop-in liner. The piston is cast in a high-silicon alloy, has a flat crown and is fitted with a 4mm gudgeon pin. The connecting-rod is machined from 2024-ST6 alloy and is bronze bushed at both ends. The engine uses a one-piece investment-cast crankcase/front-housing/cylinder-casing. This contains one 8 x 19mm ball journal inner and one 1/2 x 5/8in ball journal outer bearing supporting a chrome-nickel-molybdenum steel crankshaft having open counterbalancing and a 4.5mm dia. crankpin. The hardened steel drum valve runs in a backplate that is machined from a phenolic based material. The cylinder head, featuring a bowl-and-squishband combustion chamber, is of machined aluminium alloy with a high silicon content contra-piston controlled by a push-pull socket head adjusting screw.

The weight of the BBF racing diesel is given as only 115 grammes but this may be a misquote. Even allowing for the engine's aluminium piston and liner, small shaft diameter, plastic back door and compact size, this weight figure appears to be a bit optimistic: perhaps it should have read 155 grammes rather than 115. Be that as it may, the engine looks promising.

Left: parts of the BBF engine which has aluminium piston running in chromed aluminium sleeve.

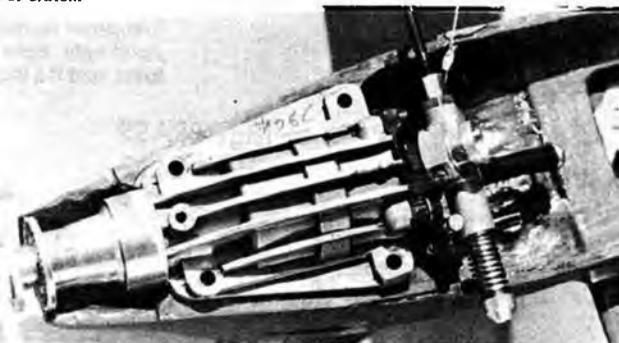
Below: special full-length mounting lugs which dispense with the need for a pan or crutch.

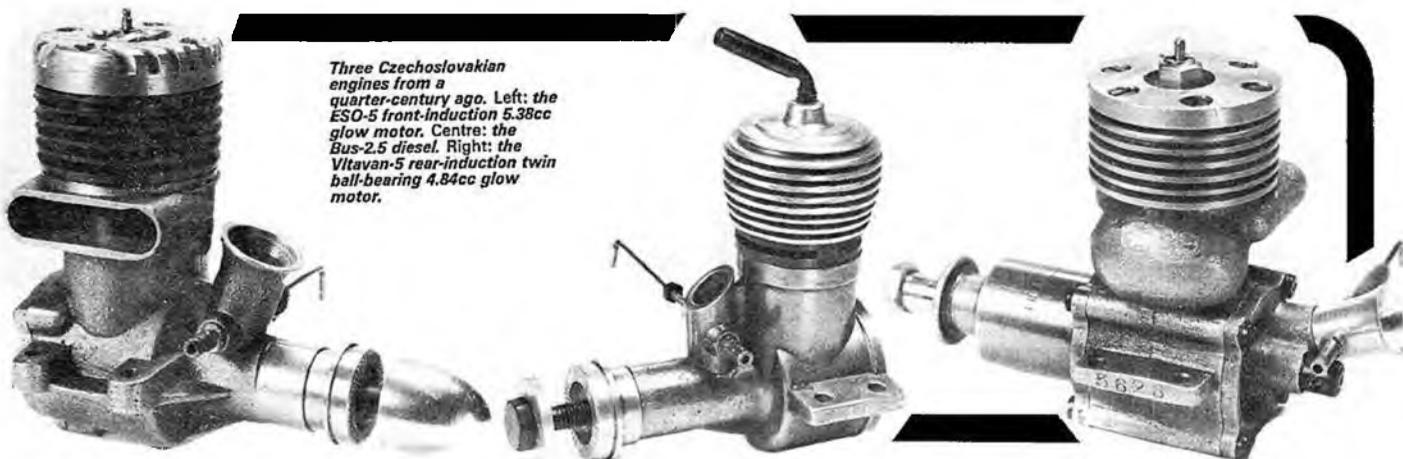
MILLS 75 GLOW

Readers of this column will know that, although, when anyone mentions 'Mills 75', he usually means either the P.75 model made in the UK between 1950 and 1964 or the more recent Indian made version of that engine, there have been at least four other versions; namely, the original and very different 1948/49 Mills 75, the S.75 cut-out equipped version of the P.75 and the limited production Australian made 'Doonside' Mills, originated by Ivor F. Stowe, which itself, was made in two versions.

Few, however, will be aware of the existence of a third Doonside Mills, namely the glowplug version shown last month P.405. This particular engine was brought over to the UK last year by Ivor F. and is one of a handful made after the 1000-off run of Doonside diesels. Apart from the glowplug head, the engine is distinguished by a black anodised spinner-nut, backplate and carb assembly and an attractive touch is the finish of the cylinder jacket which is red anodised, set off by polished fin edges. Ivor says that the engine is not quite so powerful as the Doonside diesel but, as so few were made, it will doubtless become quite a valued collector's item in the future.

Incidentally, Ivor, in co-operation with former Taipan engine manufacturer Gordon Burford, is planning to offer another limited production special next year. Details will follow in this column in due course.





Three Czechoslovakian engines from a quarter-century ago. Left: the ESO-5 front-induction 5.38cc glow motor. Centre: the Bus-2.5 diesel. Right: the Vltavan-5 rear-induction twin ball-bearing 4.84cc glow motor.

COLLECTOR'S CORNER Three Old Czechs

As we have said before, this column is not a trading post for collectors. However, a few months ago, Stanislav Weber, one of our readers in Czechoslovakia, sent three old engines for our inspection together with a request for help in finding homes for them... So, for the benefit of collectors in general and in the expectation that someone might be interested in acquiring one or more of these motors, we are including photos of them.

Twenty-five years ago, one of Czechoslovakia's best-known producers of model engines was Gustav Busek of Prague. A popular type of European engine made during the nineteen-fifties was the shaft-valve radially-ported 2.5cc diesel and the Bus-2.5 was just such a motor. It had a gravity-cast beam-mount crankcase with plan bearing, screw-in backplate and screw-in cylinder. The latter had three radial slit type exhaust ports and was topped by a machined, finned jacket, threaded to screw over the upper part of the cylinder. The engine had a bore and stroke of 14 x 16mm, giving a swept volume of 2.463cc and the example shown in the photograph checked out at 133 grammes.

The ESO-5 is a rather more rare Czech engine that was apparently made for two or three years some time between 1952 and 1956. It was an attempt to produce an engine in the 'glow .35' class then so popular for C/L stunt in western countries and typified by motors such as the Fox, K&B, OS and Veco .35s of that period. The ESO had a lapped cast-iron piston running in a one-piece steel cylinder with integral fins. Its crankcase was of sand-cast aluminium with a bronze bush for the 10.2mm crankshaft. The measured bore and stroke of the example shown is 20.2 x 16.8mm, giving a swept volume of 5.384cc or 0.3285 cu. in. Check weight is 230 grammes or 8.1oz.

The remaining engine in this Czech trio is the Vltavan-5. This is a 5cc glow motor in the traditional racing engine style: twin

ball bearings, rear rotary-valve induction and an ultra lightweight ringed aluminium piston running in a crossflow scavenged cylinder. The design of this engine dates back to 1954, specifically to the MVVS 5/1954-D which, modelled on the American Dooling 29 of 1949, was made at the State-sponsored model development centre at Brno. The MVVS 5/1954-D was produced in small numbers only, for the exclusive use of Czech national and international C/L speed teams, and was a very good engine. The Vltavan-5, which appeared a year later, was an attempt by the Czechs to use this basic design for the production of a factory-built version. The experiment was not exactly an unqualified success.

As one might expect, these production versions, made at a state factory that had had no previous experience of manufacturing i.c. engines, fell well short of MVVS standards of quality. Nevertheless, while the engine was unlikely to win any speed events, it performed tolerably well by general standards of the time. Ours, for example, was easy to handle and, on test, produced 0.54 bhp at 15,000 rpm on 25 per cent nitromethane fuel.

A very short-stroke engine, like the Dooling, the Vltavan-5 had a bore and stroke of 20.0 x 15.4mm, giving a swept volume of 4.838cc or 0.2952 cu. in.

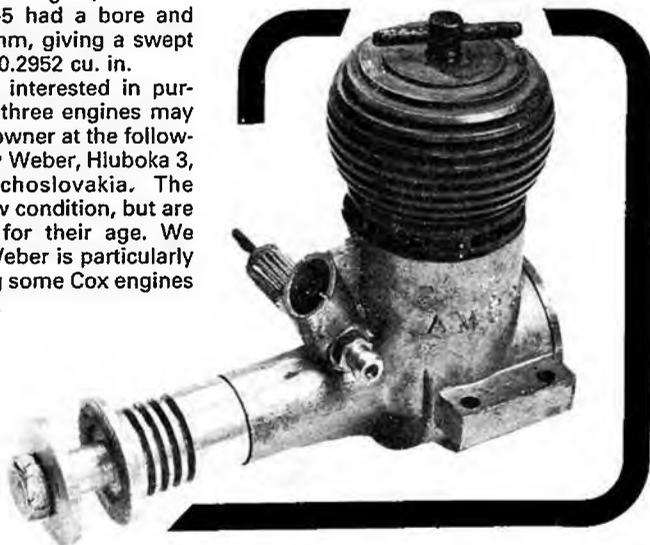
Collectors who are interested in purchasing any of these three engines may get in touch with the owner at the following address: Stanislav Weber, Hluboka 3, 345-06 Kdyne, Czechoslovakia. The engines are not in new condition, but are in reasonable order for their age. We understand that Mr Weber is particularly interested in acquiring some Cox engines in exchange for them.

A popular British C/L stunt diesel of thirty years ago was the Amco 3.5. Does anyone know the whereabouts of any spare parts?

Amco 3.5

R. W. Watson of Wylam, Northumberland writes: *Recently I discovered a small hoard of engines from way back in the early 'fifties and although I have managed to get most of them running, one, alas, has a cracked crankcase. The brochure mentions that repairs are carried out by Mercury Models of 308 Holloway Road, but I've had no reply from that address. Do you know of any alternative source of spare crankcases? Is the firm of Anchor Motors, Chester, still operating?*

The Amco 3.5 was first made over thirty years ago. Anchor Motors discontinued producing it in 1952, selling the manufacturing rights to a firm in Alperton, Middlesex. However, by the mid 'fifties, Amco engines had gone off the market, so one must presume that all factory spares for these engines were exhausted years ago. The only hope, therefore, is to find another, otherwise unserviceable Amco with a good crankcase. This is not so very improbable: Amcos had a habit of breaking crankshafts, gudgeon-pins and con-rods, so there might well be a few sound crankcases still in existence. Can anyone help our correspondent?



SPEED

by Dave Clarkson

HOW TUNED-PIPE EXHAUST SYSTEMS WORK

One of the best illustrations I have ever seen of how tuned-pipes work was published recently in *The Control Line Speed & Racing Gazette*. This newsletter, better known as *da Gaz*, must be about the most informative newsletter published on CL Racing and is highly recommended. Details from the publisher 'Doc' Laird Jackson, 306 Yardley Commons, Yardley, PA.19067, USA.

Despite the classic articles published in the *Aeromodeller* by Kevin Lindsey (pages 343, 398, 458, 554, 1966 and page 78, 1967), I have always had more than a bit of difficulty, together I suspect with many others, in understanding what is actually going on in a tuned pipe exhaust system. The illustrations here reproduced from *da Gaz* have helped me understand: I hope they help you too! The explanations are entirely self descriptive and do not include any theory or mathematics – great for understanding but not much good if you want to design your own system – ah well, nothing is perfect.

Six different exhaust systems are shown. For each is plotted graphically crankshaft rotation (or time) horizontally and exhaust pressure vertically. With each graph is an explanation of what the graph actually means, and I hope they supply the desired understanding as they did for me.

1. UN-TUNED EXPANSION CHAMBER

As the piston comes down and uncovers the exhaust port, the hot burnt mixture in the cylinder rushes out to fill the expansion chamber and the pressure at the exhaust port leaps up. As the exhaust gases leak out of the expansion chamber into the atmosphere, the pressure at the exhaust port leaks down to atmospheric pressure (the horizontal line in the graph). This sequence is typical of the pressure variation for each cycle of the motor for all untuned silencer systems. The positive pressure pulse at the exhaust, occurring as it does when fresh mixture is trying to get into the cylinder, makes it more difficult for this fresh mixture to enter from the transfer ports and thus less fresh mixture gets in each cycle, resulting in reduced power output. On average, the pressure in the expansion chamber is positive and therefore, 'silencer pressure' can be used to effectively pressurise the fuel tank.

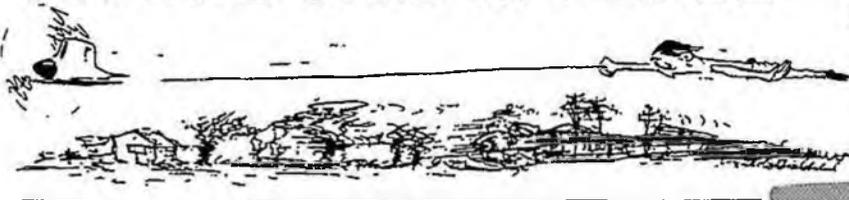
2. TUNED MINI-PIPE

Now we have replaced the untuned expansion chamber with a straight tuned pipe. Initiating a sonic disturbance at one end of such a pipe (as happens when the piston uncovers the exhaust port) the pressure wave travels from the port along the length of the pipe until it reaches the open end. After reaching the end of the pipe, this wave will be reflected back towards the piston, but its phase will be such, when it reaches the exhaust port, that it will create a low pressure (partial vacuum) condition. If the pipe is of the correct length, in other words if it is correctly tuned, the low pressure pulse arrives at the exhaust at or near piston bottom-dead-centre (B.D.C.) when the transfer port is fully open, thus 'sucking' fresh mixture into the cylinder. The more fresh mixture that gets into the cylinder, the greater the power output from the engine. The 'mini-pipe' therefore is the simplest of all tuned-pipe exhaust systems. The assistance it can give to the transfer of fresh mixture into the cylinder can result in quite significant power-increase. To get more transfer assistance, a bigger low-pressure pulse is needed, thus the 'megaphone' exhaust explained as follows.

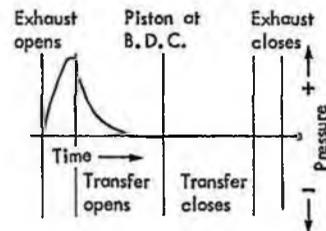
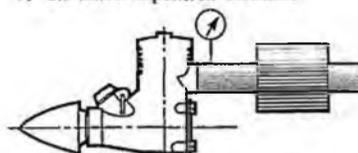
3. TUNED MEGAPHONE

The megaphone works on the reflected wave principle, just like the mini-pipe, but with a difference. In this diverging pipe, the pressure wave acts, in effect, as though the pipe is composed of an enormous number of microscopically short mini-pipes of varying diameter. Thus the reflected low pressure wave comprises of an enormous number of waves coming at differing times.

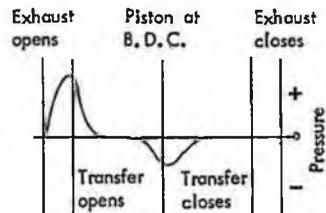
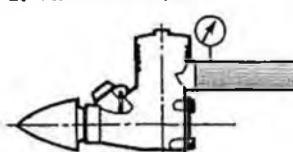
FROM THE HANDLE



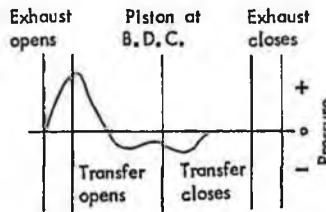
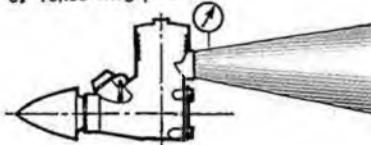
1. Un-tuned Expansion Chamber



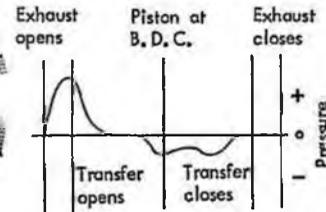
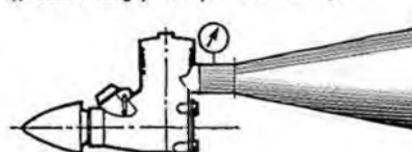
2. Tuned Mini-Pipe



3. Tuned Megaphone



4. Tuned Megaphone plus Header Pipe



This amounts to a much extended low pressure pulse and thus the 'suck' during transfer lasts longer so even more fresh gas gets into the cylinder and even more power results. It would, however, be nice to separate the high pressure and low pressure pulses to try and separate the escape of exhaust gas from the transfer of fresh gas into the cylinder so as to minimise mixing of exhaust gas with transfer gas. Such mixing of burnt gas with fresh gas dilutes the fresh gas thus reducing its energy content and therefore, the power output of the engine. The following modification gives the desired separation of pulses.

4. TUNED MEGAPHONE PLUS HEADER PIPE

Adding a straight pipe before the megaphone adds time between the high and low pressure pulses, this time between the pulses, moves the 'suck' to the part of the cycle where most of the fresh gas transfer to the cylinder is taking place. This well timed suck plus the separation of the pulses so as to minimise burnt gas and fresh gas mixing, gives the maximum assistance to cylinder scavenging that any pipe can give. A significant power

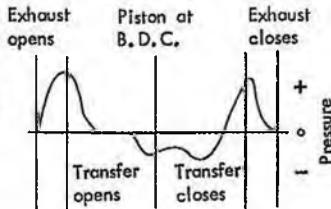
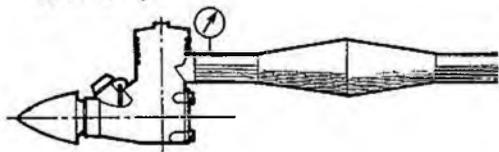
increase is the result, however it can also result in over-scavenging – pulling fresh gas right through the engine and out into the atmosphere. Fuel consumption is also significantly increased because of this.

5. TUNED PIPE

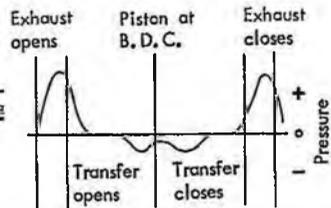
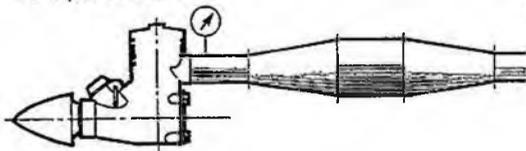
Instead of exhausting, as in system 4 above, directly from the megaphone to the atmosphere, the classic 'tuned pipe' exhaust system has a second megaphone added facing in the opposite direction. An interesting phenomenon results for this second megaphone gives a second reflected wave but this time it is a high pressure pulse.

The graph shows the sequence; exhaust port opens and the pressure leaps upwards and then drops in the way characteristic of any exhaust system; then the divergent megaphone sends back its long low pressure pulse; finally the convergent megaphone sends back its sharp high pressure pulse. (It is a short sharp pulse because a convergent megaphone compresses the pulse as opposed to the extended pulse given by a divergent megaphone.)

5. Tuned Pipe



6. Improved Tuned Pipe



This burst of high pressure given by the convergent megaphone is called a 'plugging pulse'. Timed correctly, it produces high pressure at the exhaust port just when the over-scavenging given by the divergent megaphone is coming into play, thus preventing transfer gas waste. Even better; if this 'plugging pulse' comes after the transfer port has closed but before the exhaust port has closed, the pressure in the cylinder of the fresh gas is raised - in other words, the engine is 'super charged'. More power and better fuel consumption than we can get from a divergent megaphone is the result. However two reflected waves are involved and both have to be timed correctly to get the desired results.

6. IMPROVED TUNED PIPE

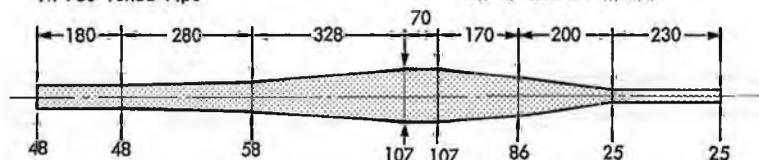
The position of the 'plugging pulse' in the time cycle is very important. Again, as with the sucking pulse, its timing can be altered by adding a straight pipe between the divergent and convergent megaphones. The graph shows that the 'plugging pulse' is moved back so that we get both the sucking and plugging pulses just when we want them thus maximising the super charging effect of the tuned pipe system.

It has been 2-stroke racing motor cycle development where most, if not all, of this knowledge has come from. Therefore it should be relevant to study where the motorbike men have got to now. Their problems are worse than ours, for they require a broad power peak because their motor revs are continually being changed. In contrast, we operate at almost constant max revs with the only real variation coming during take-off and acceleration to top speed. Therefore their pipe shapes should give us the flexibility we need to give acceptably simple pipe handling. Sketched below are scale pipe shapes from the Yamaha TZ250 (1975) and the Suzuki TR 750. The cylinder timings of those successful racing motors may also be of interest.

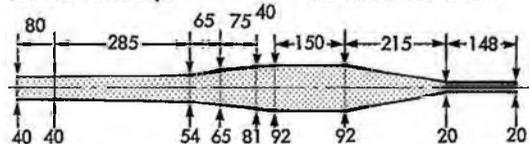
	TZ 250	TR 750
Exhaust	202°	200°
Transfer	138°	136°

Much food for thought here I suspect, especially for B-T/R followers, and perhaps also for Goodyear men. Don't forget, B-T/R has to have 'silencers' in 1980 (and tuned pipes are good 'silencers' too) and Goodyear in 1980 will need more horse-power.

TR 750 Tuned Pipe all dimensions in mm



TZ 250 Tuned Pipe all dimensions in mm



(Note that the entrance of the pipe is shown at the piston face)

MOTOR CYCLE TUNED PIPES

Below: Latest aerobatic model from Cosmo's Keith King inspired by Piper Cherokee.



2ND SMAE CENTRALISED, 18.5.80

by Jo Halman

The second SMAE centralised meeting was held at RAF Barkston Heath, on 18th May 1980. Barkston Heath is a particularly good airfield for speed flying, but the anti-skid runways make landing very difficult, wearing skids away fast and bringing models to an abrupt halt.

The weather was sunny, hot with low humidity and a slight breeze which strengthened a little through the early afternoon and then died away completely, and the hot weather seemed to encourage the fliers' families to come along for the day.

Speed had about 25 entries. Although there were two FAI speed fliers there, Brian Jackson and Peter Halman, they spent the day practising for the forthcoming World Championships in Poland and did not enter the contest. Their practising was extremely successful with Brian getting his engines sorted out to within reach of the speeds he requires for Poland. Peter did a lot of experimenting with propellers and was very pleased with the results. Indeed, had he entered the contest and repeated his practice times, he would have won handicap speed!

Ian Skinner of Christchurch took first place with 95.47% of the .29 record with his rear exhaust Super Tigre X.29. This was run on 77% nitro using a 7 x 8 Puncillio prop and an OFS pipe and the winning second flight speed was 180.99mph. Ian was very pleased with the result and said he had returned to last year's form which had disappeared when the motor went lethargic. Ian certainly did have a good day. His Rossi .60 did very well too, putting in two official flights and ending up with 174.69mph, which was 91.83% of the .60 record. This engine was run on 10% nitro with a re-worked two blade 8 x 11 wood Topflight prop. The needle setting was by courtesy of Martin Radcliff's fingers.

Ken Morrissey, of Sharston, took second place with his Lee .60. He recorded a speed of 174.77 which was 92.19% of the .60 record. He only put in one official flight but was seen putting in some more practice flights further down the runway.

John Allcock, of Bliston, was placed third with his Super Tigre .40 gaining 89.91% of the .40 record after recording three official flights.

Needle settings were very critical that day, generally because of the low humidity, although the Open Speed boys seemed to suffer from this malaise more than the FAI fliers. Mike Billinton was a prime example, he just could not find a good setting and had an extremely lean ground run. Mike uses a 'rat-trap' dolly, where speed has to be attained on the ground enabling the dolly to drop away. But because the ground speed just was not there, he consequently burnt out his motor trundling round and round on the ground - a bitterly disappointing thing to happen.

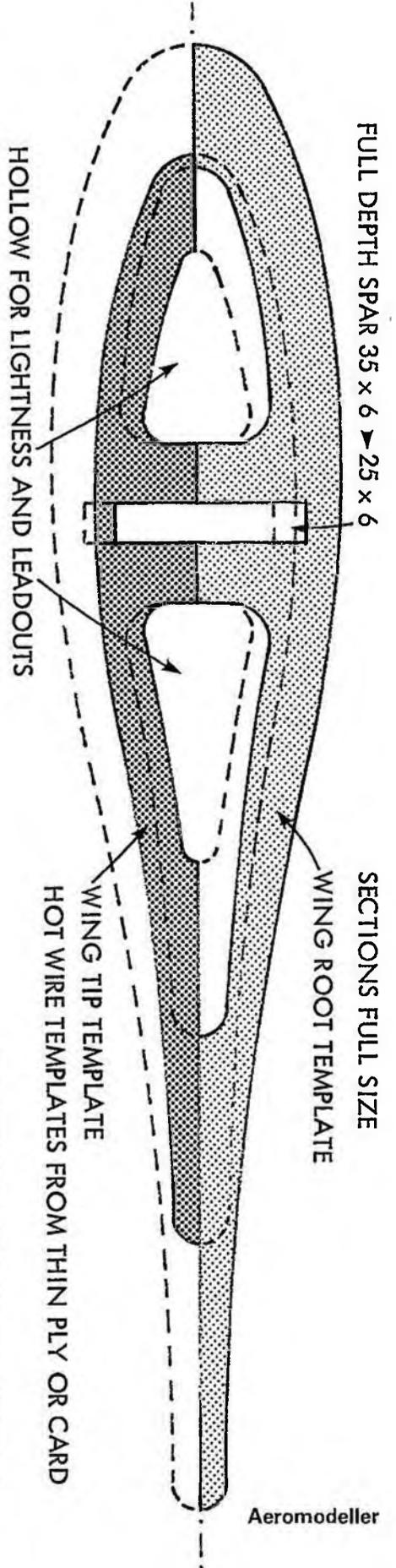
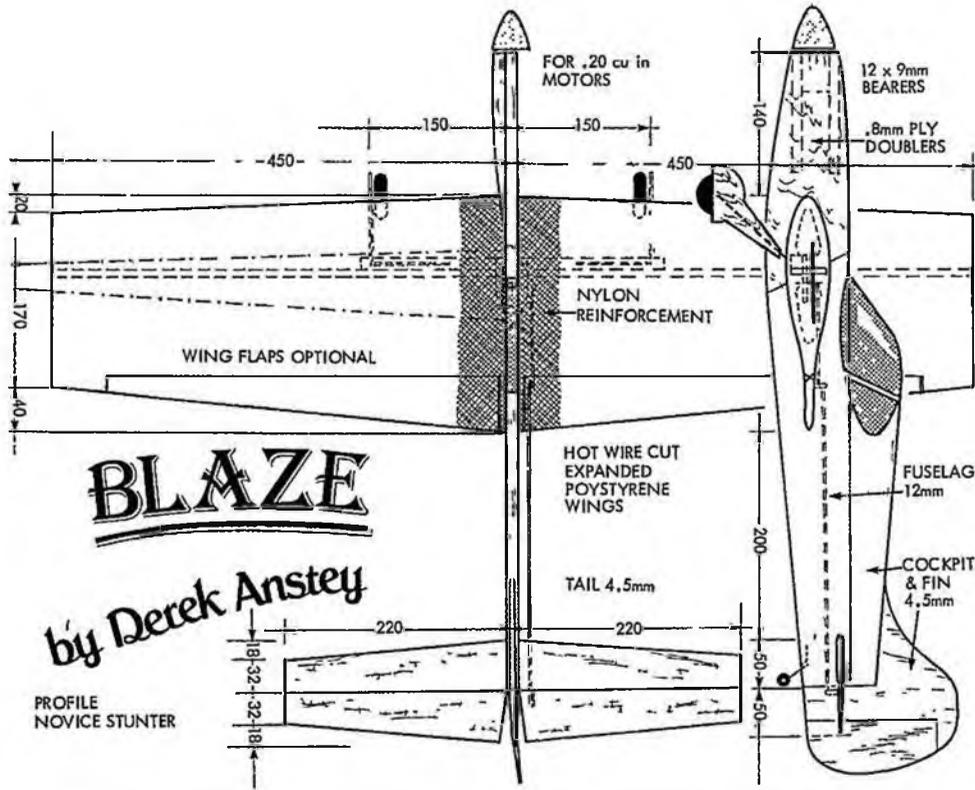
Our thanks must go to Owen Warboys, of Christchurch, who was contest director for a very enjoyable day's flying.



BRETONS KNOCKOUT COMPETITION, 12.5.80

At last here was a stunt contest with a difference. Well-known fliers Pete Tindal and John Lynch of the Bretons club near Dagenham, Essex, ran an event on a pyramid 'knockout' basis rather like a combat contest.

After an initial random draw, pairs of fliers flew 'against' each other in consecutive flights in order to decide a winner and a loser. In the second round the winners fly against winners and losers fly against losers. As the competition progresses from round to round, fliers are eliminated when they accumulate three 'losses', so therefore everybody is guaranteed at least three flights as one would expect in most competitions but the winners might get up to six or seven flights as the contest reaches its climax. It was very exciting as pilots 'fought' through the early rounds trying not to 'lose a life' and tension built up as fliers were 'knocked out'. Because of the sheer number of flights required, this type of contest needs at least two circles and puts a greater emphasis on organisational ability.



Unfortunately for the contest directors, the event was somewhat spoiled by very high winds which caused several crashes and indeed deterred some fliers from continuing even before they had been otherwise 'eliminated'. This placed extra strain on the organisation and necessitated a redraw but nevertheless it was a bold attempt to liven up the competition scene, which worked and I hope to see it used elsewhere in the future.

The final winner was Bill Draper from Nottingham with 4 wins, with myself second with 3 wins and 1 loss, and third was Rob Ethernon with 2 wins and 2 losses.

BLAZE - Novice C/L Stunt Proposal
by Derek Anstey

Blaze is my latest design in a series utilising expanded polystyrene hot-wire cut foam wings which I have used successfully in elevator only Control Line flying display models. Blaze however incorporates coupled flaps, cut from the trailing edge of the foam wing, a simple idea which in practice works very well.

The wing itself consists of 4 pieces of hot-wire cut foam, with a horizontal join line, giving unique access during assembly, for detailed attention to the controls.

The leading edge has a small amount of taper, 2 degrees, the trailing edge more, 5 degrees, this coupled with a thickness taper from root to tip results in a thick but pleasing wing in both planform and front views.

The vertical spar cut from 6mm stock balsa, slots into a groove along the entire span; a slight taper is required to match the thickness taper of the foam. The U/C member, of 12mm sq ramin, accepts 10swg main legs and 0.8mm ply reinforcement is provided across the ballcrank aperture.

Assembly is straightforward and warp free, using the remainder of the foam block from which the wing was cut as alignment packing. Centre section is covered with two layers of lightweight nylon fixed with PVA adhesive and wings are finally covered with fine surface cartridge paper or similar, stuck in place with heavy duty wall-paper paste.

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FROM ALL

KEILKRAFT STOCKISTS

CLUB NEWS

THE TECHNICAL ADVANCES made in the hobby over the last few decades oblige the modern model flyer to become much more gadget conscious than his predecessor, and also to acquire certain technical skills unknown to a simpler age of model building. This, however, is not so oppressive as it may seem, for the model flyer of today has a lot of commercial assistance he can call upon, and a wide range of tools at his disposal. He also has a lot of accumulated knowhow to help him with his problems, and new ideas are forever coming forward. For example, I was told the other week that the way to strip a tissue covered model is to place it – or rather the components – in a plastic bag together with a quantity of thinners, then to give it a good swishing around to circulate the thinners and allow it to 'cook' for about ten hours, though do not leave it in the bag too long or the thinners will attack the cement joints. Another idea, less uncertain, makes for a more accurate way of producing wing tips, formers and similar shaped pieces from sheet balsa. Place the carbon paper and plan over the balsa in the usual way, but instead of uncertainly tracing it through just prick the outline with a pin, the carbonised pin points showing up much better on the sheet balsa.

I start off this month suitably adorned with sackcloth and ashes, for I have committed a bungle. Ted Young, PRO, of the East Grinstead MFC, points out that, estimable club as it might be, Brighton did not come out tops in the prestigious South Eastern RAFA Shield in 1979. That particular glory was reserved for the East Grinstead MFC. In order to ensure that such was the case a select committee was formed to visit the home of Tony Grantham, leading East Grinstead pot collector, to ascertain the authenticity of the trophy in his possession, purported to be the RAFA Shield. Seems in culling my information from the Area newsletter I had misinterpreted a not too explicit contest report; something that can happen when you are not privy to the complete information. May I say, though, in apologising, that this incident underlines my amazement at the behaviour of the modern PRO, in his contacts (when we're lucky) with the model press. Had Mr Young spent as much time and as many words in exploiting my gaffe as he might have done in submitting a report covering the club's RAFA success, he would have been nearer to fulfilling the duties of a PRO. Sec.: T. Young, 7 Stephenson Drive, East Grinstead, Sussex.

However, Jeff Smith, of the Wharfedale & DAC, keeps the PRO, end up by reporting a possible British record (and mayhap a world one, too) in a 1/4A Team Race at Church Fenton in March. A time of 3:54 was put up by Bernie Langworth and John Broadhead. There is also a claim for a British record forthcoming from the FAI, Team Race at Cosford in April with 7:33.5 in the final. Very much a C/L club, Wharfedale is obviously not involved with the modern Radio trend, and there is some concern in the club over juniors moving away to other districts and finding nowhere to continue a promis-



ing apprenticeship in the C/L arts. In our now more maturely peopled hobby it does seem hard to cultivate youthful talent. *Sec.: John Broadhead, 3 Lea Terrace, King Lane, Leeds 17.*

Mr N. H. Goodman, PRO, of the **Coventry & DMAC**, in sending in the usual *Wings & Fins* newsletter, says he is grateful for the assistance he has received with his APS *Rolling Stone* glider which is now at least towable. Other gliders in the club, which cheat by having a built in trimming device known as Radio Control, have been active in many of the big contests. No top honours but some useful placings achieved. *PRO: N. Goodman, 23 Berwyn Way, Stockingford, Nuneaton.*

News now of a new model club, or rather group that rejoices in the gratuitous name of **Freebirds**. As the name would suggest the aim of the group is the promotion of Free Flight activity, and it is not surprising that the members enlisted so far have strong competitive inclinations. The group is an all SMAE, affair, and is loosely based in the London Area. Organisation is described as fluid, equivocally so, since the club meetings happen when members feel like it, usually in a handy pub. Look out for the group's first big event, the Freebird Summer Freeout at Everleigh on August 10th. Moving force appears to be *Martin Gregory, 71A Clarence Avenue, London SW4. Telephone 01-674 5811.*

Principal piece of news in the **South Bristol MAC**, newsletter is of a Club Display/Open Day to be held at Hanham Hall on Saturday, 12th July. This is not the usual display slot but a whole afternoon of events to promote aeromodelling in general and the South Bristol club in particular. Hanham Hall is also one of the club's Indoor venues, and although the last event held there was not particularly well attended it provided a most enjoyable evening with some very promising flying, with initiates to the Indoor arts getting good results with their first models. Glider-wise, Grahame Stephans broke the club endurance record, not with some huge, super soarer, but flying his small Graupner *Amigo* – a friend indeed! *Sec.: Gordon May, 4 Burchells Avenue, Kingswood, Bristol.*

One of the prized assets of the **Grantham & DMAC**, is the use of the splendid Barkston Health Airfield which they have at their disposal. Discussed in the club's excellent, booklet form newsletter are the requirements deemed necessary to safeguard this flying field amenity. It may well be that a small, well vetted membership is necessary in order to achieve the high standards of discipline needed. This could mean restricting the size of the club catchment area, at least for Radio. Proudly emblazoned across the cover of the newsletter is the news that Grantham are the SMAE Free Flight Team Champions for 1980. Again in April the Free Flyers were out to do battle in the dear old Gamage (Damage) Cup. And Damage Cup is was, with a 20 knot wind gusting to 30, it was a case of fly or bust, which is exactly what happened – that 'finger sticking good' substance, cyanoacrylate, much in evidence. Finally, just to give members the feel of what it is like, to be up there like a model plane, they have been offered passenger trips in full size gliders at £1.35 a tow up. *Sec.: John Ashmole, 8 Harrox Road, Moulton, Spalding, Lincs.*



Members of Three Kings Aeromodellers, famed for their Control Line Scale activity, at their recent prize award day. Interested modellers should contact Secretary D. G. Woods, 133 Ravensbury Road, Southfield, London SW18 4RY.

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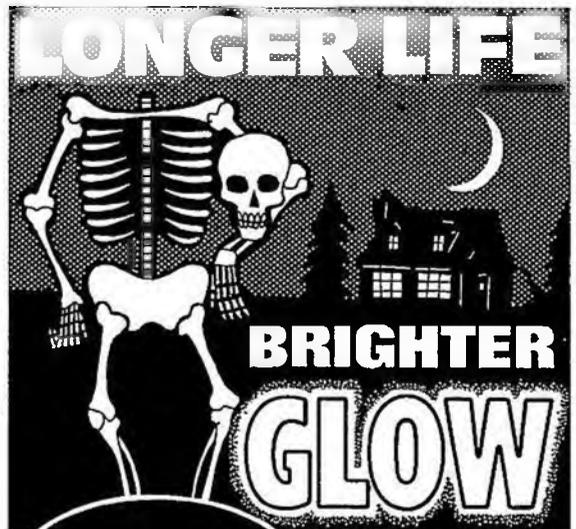
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Well, its contest results all the way in Jim Moseley's **Northern Area News**, but he is at least happy to get enough input for a substantial newsletter - lack of copy being the constant Editors' nightmare. Exactly what the tenuous flying field situation is like up North now we are given no specific information but Dreadful Driffield hosted the 2nd Area F/F meeting. Since gale force wind warnings were in operation most of the flying took place in the local pub. A few bad weather specialists did try to get the odd glider launched but there's some rule about parts of the model coming adrift, like the wings. Mostly, though, it is Church Fenton that gets the favourable billings. This was the venue for Thermal Soaring and Control Line events.

The main topic in the **Hemel Hempstead MFC's** May newsletter is the flying field situation. As reported in this column previously, the Bovington site is now lost to the club. Other sites are available to the club, though, but only on a restricted basis. But, as pointed out, no site is of any value without that rarest of birds 'Modullus Free Flightus', and a goodly sprinkling of these summer visitors are expected on Studham Common. Next to the conviviality of the flying field there is nothing like adding a bit of social zest to the club proceedings, and the Hemel Hempstead way is a series of coach trips to all those places which you might not otherwise visit, like the Sandown R/C Symposium - Cheaper than taking the car and with lots of laughs. There is a story circulating in the club concerning two junior members, Adam Baldwin and Mark Smith, who started building a 'Cambria Eagle' on Tuesday and flew it successfully on Thursday at Studham Common. Take some modelers that time to get the cement out of the tube! *Sec.: Russell Attwood, 63 Crouchfield, Boxmoor, Hemel Hempstead, Herts.*

The **Leicester MAC**, newsletter publishes the results of the covered stage of the Winter Building Competition, leaving only the flying to complete the event. The twenty-seven entries gave a good cross sectional display of the modeller's art, covering a wide range of models. Naturally it is the detailed Scale model that must catch the eye, like the *Yak 18* of Dave Face that holds the leading position, but the judges' job is no easy one as they are obviously not to be

**CAPTION
 CONTEST**



over influenced by gloss and fetching detail, but make their evaluation on overall workmanship. The club also has its share of radio aerobatic experts, and four of these were the Leicester Model Centre's pilots for the Sywell Expo 80 displays. They gave the crowd an excellent display. *Sec.: I. McKeeggie, 12 Pochin Drive, Burnmill Park, Market Harborough.*

The newsletter of the **Sheffield Clams** (Control Line Aero Modelling Society) reports a successful start to the season at RAF Cosford in spite of the turbulent air making for some hairy flying. Club teams did well in all events but only John James in $\frac{1}{2}$ A Combat got a placing: third. Meantime practice goes on apace at RAF Dishforth, and every Sunday afternoon at Richmond Park. *Sec.: John James, 22 Hooton Road, Kilnhurst, Rotherham.*

Very much involved, too, in C/L is the **Belfast MFC**, and a number of events are covered in the *Nitro* newsletter. $\frac{1}{2}$ A Combat seems to be the theme this month, and a plan of one of these simple craft is included in this issue. *Sec.: R. J. Johnson, 11 Ailesbury Crescent, Belfast.*

Still in Northern Ireland we have the newsletter of the **Banbridge Aeromodelling Club** where the theme is that less tethered form of control: Radio. Some fetching new models have made their appearance, notably a *Kalypso* Biplane, a *Traveller* and a really scale looking *Mustang* – all of which flew beautifully. Unusual club event was an egg dropping contest (shells rather than bombs!) Only one member is reported to have chickened out. On a less happy note there is a report of the demise on Brian McCartan's fine twin *Islander* that has received national as well as local publicity, when it spun in after an engine failed. *Sec.: D. Cheney, 16 Hayes Park, Seapatrik, Banbridge.*

Torque, the newsletter of the **Christchurch MAC**, reminds us that there is a lot of aeromodelling action going on immediately below us. In a reminiscence, it is stated that D/Ts were not invented until 1952. They were, in fact, in use long before that – at least during the war.

Keep those reports, photos and newsletters rolling.

Clubman



JUNE WINNER – MART STONELAKE, MIDDLESEX

Runners up to the June Caption Contest were: "I SAY, I DO BELIEVE IT'S LAID AN EGG" Alan Duffy, Somerset; "EXCUSE ME – I THINK I'VE TRODDEN ON THE PILOT" D. Keaney, Taunton; "IT'S NO GOOD, WE'LL HAVE TO TELL THESE PEOPLE THERE WON'T BE ROOM FOR ALL OF THEM IN HERE" John Ashmole, Spalding; "MECCA'S THE OTHER WAY, GEORGE" R. Saunders, Cannock; "IT'S THE PILOT – HE WANTS MORE MONEY!" J. Dean, Hull; "WON'T BE FLYING – THEY'VE LOST THE CAN OF FUEL!" R. Wilson, Stockport. And finally "WHERE DID THAT IGUANA GO REG?" M. Appleton, University of Lancaster.

The scene depicted, is of a certain Mr A. P. Briggs at the 1955 All-Britain Rally at Radlett Aerodrome attending to his Control Line Scale Lincoln, before the up line broke – Ouch!

Why not try winning yourself a year's subscription to *Aeromodeller* by entering this month's *Caption Challenge* – just send your entries to *Aeromodeller, P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE* – Results October Issue.

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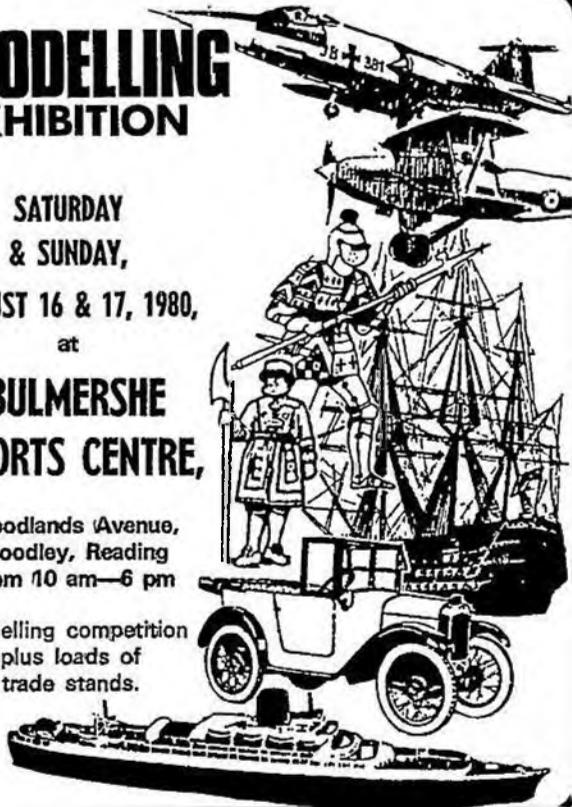
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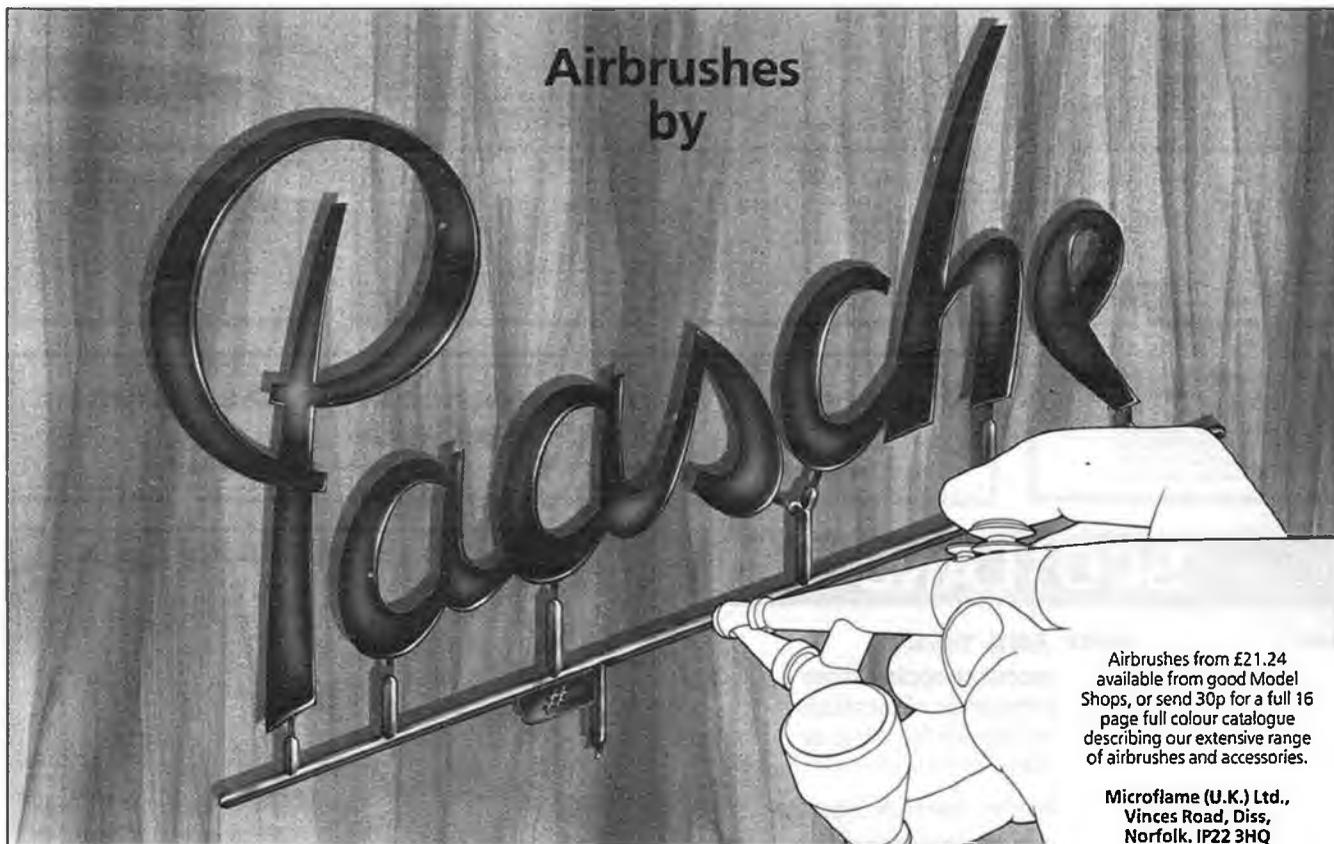
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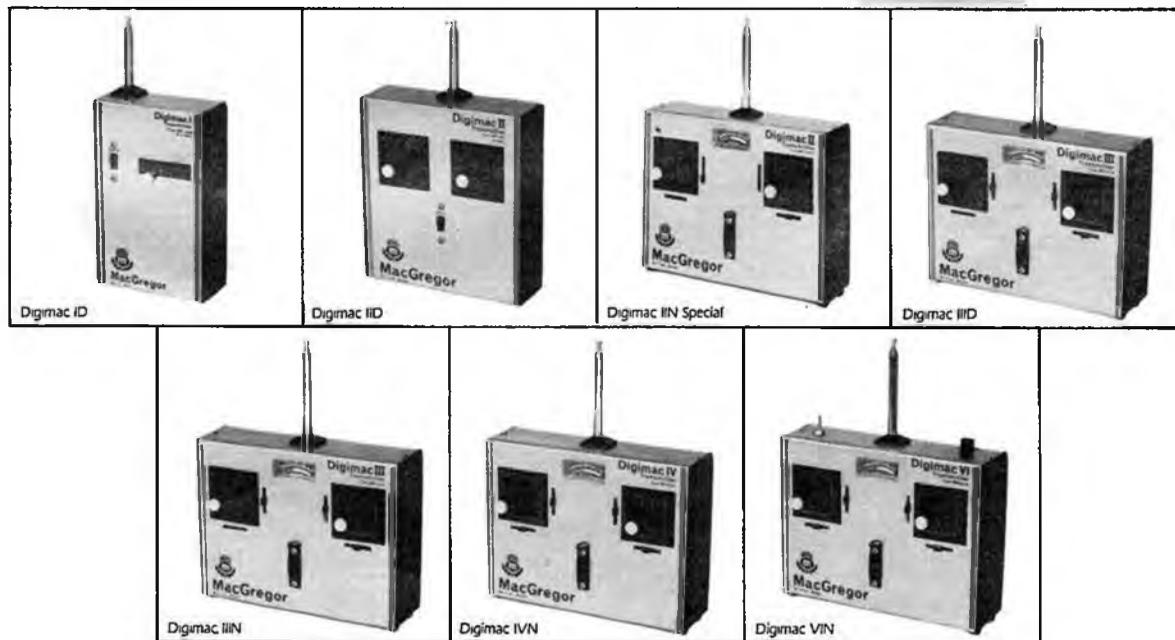
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