

Aero Modeller

INCORPORATING
MODEL AIRCRAFT



HOBBY MAGAZINE

OCTOBER 1976

30p

U.S.A. & Canada \$1.25

**F-16 CATAPULT
GLIDER PLANS
INSIDE!**



C/L World Champ's Technicalities

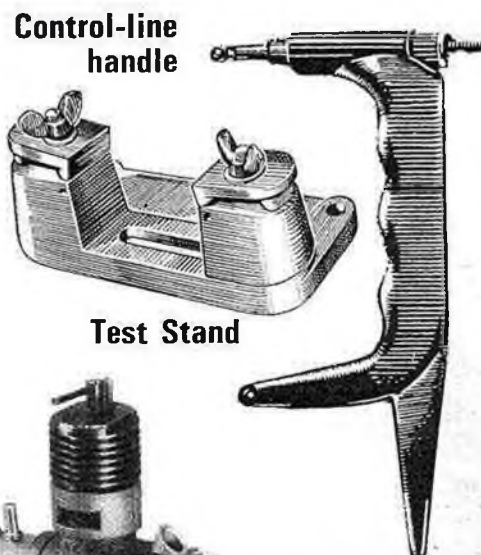
QUICKSTART



DART
.5 c.c.

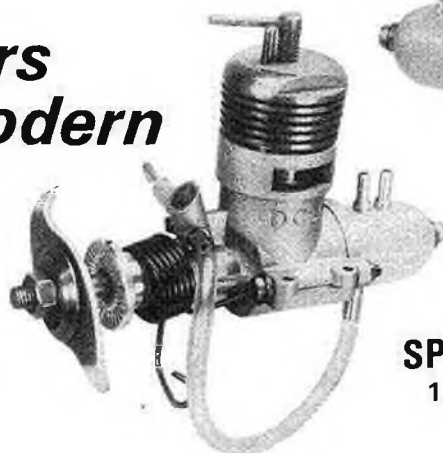


WASP
.8 c.c.

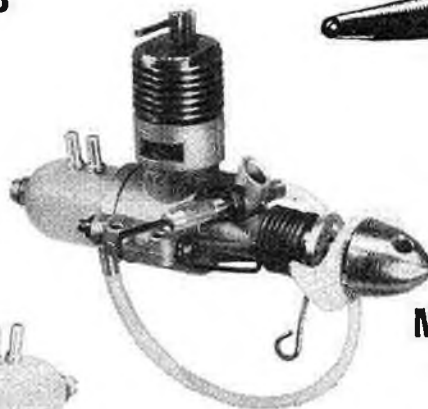


Test Stand

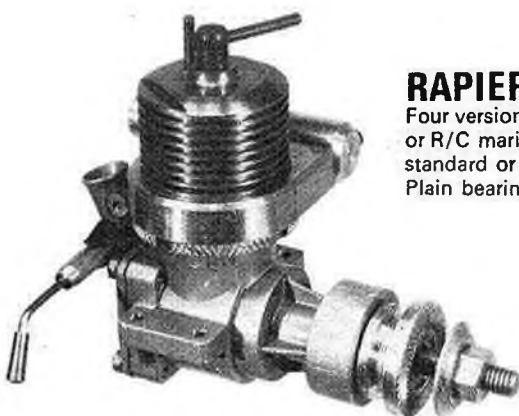
***The Motors
for the Modern
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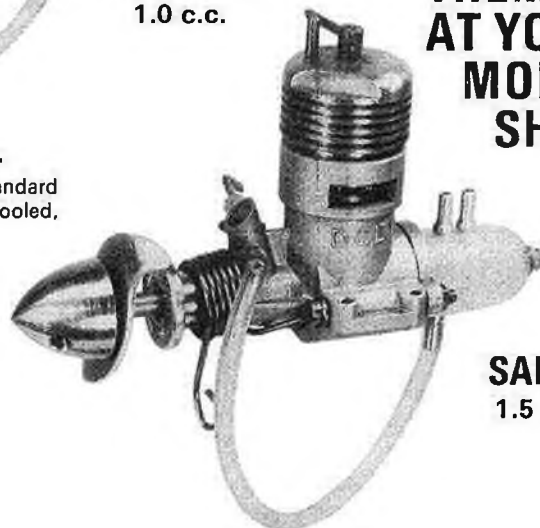
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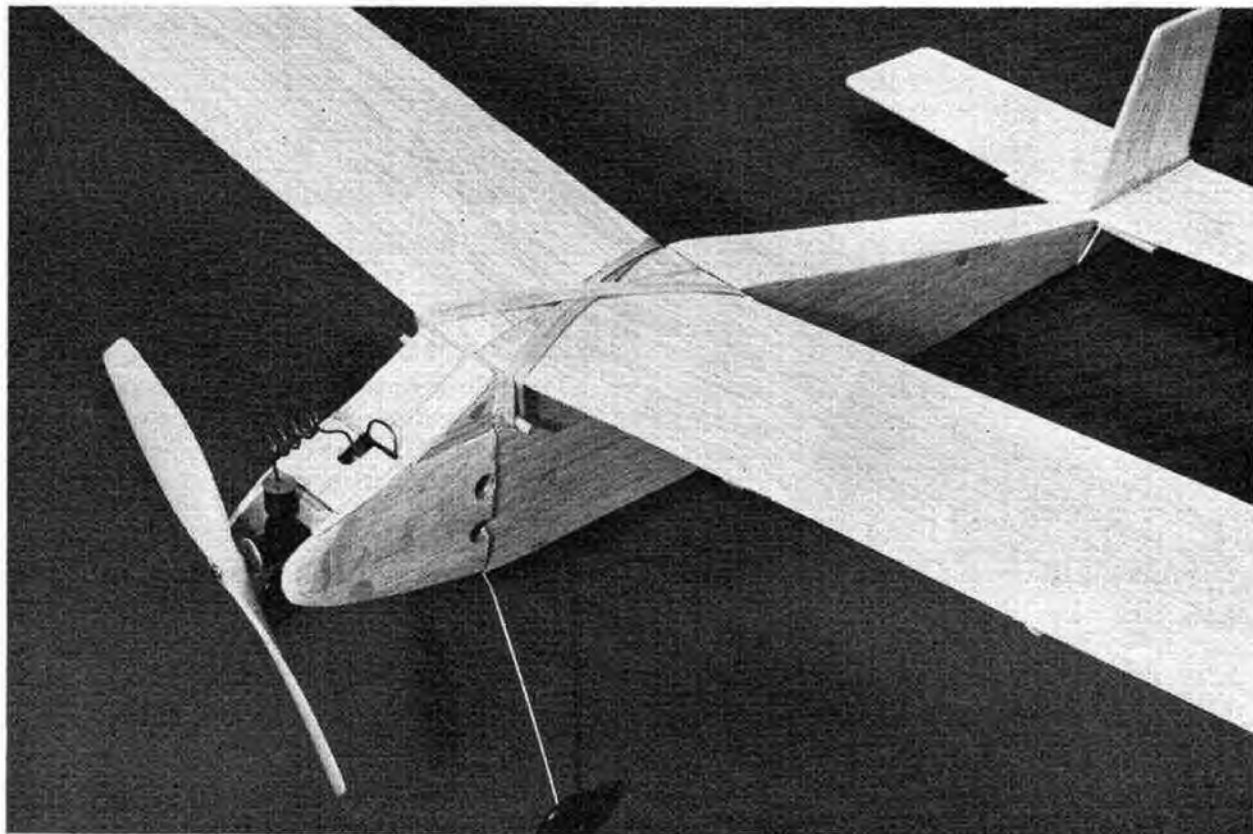
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Aero Modeller

INCORPORATING
MODEL AIRCRAFT

October 1976

Volume XLI No. 489

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HOBBY MAGAZINE



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Comment

After all the earlier confusion and cancellations, the 1976 British National Championships eventually took place at RAF Little Rissington on August 14-15th; a major departure from its now 'traditional' end-of-May, three-day-meeting format. The result? - a qualified success.

It was a good meeting in that the weather was excellent and both the ground administration and arrangements were much improved over previous years - these being assisted enormously due to the fact that the SMAE had early access to the site, thus avoiding the usual last minute panics. It was a first rate meeting in the respect that the enthusiasm and the standards set by the competitors were greater than ever, aided to no small degree by the large number of foreign enthusiasts.

Less fortunate was the fact that several events had drastically reduced entries (R/C in general, and C/L combat being particularly hard hit) and that attendance by the General Public was down by nearly one-third; hence the potential revenue must suffer.

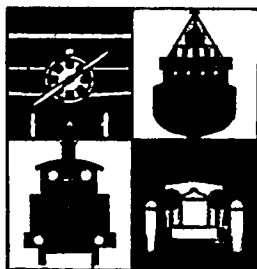
Overall, the view seems that an August meeting is more than acceptable, but it *must* incorporate a Bank Holiday in order to restore the meeting to three full days of flying activity.

on the cover

Parched grass at Old Warden in midsummer proved ideal for flying boats and seaplanes at our scale rally. Derek Collin of Bristol has a new version of his SM55X 'Balbo' with a single Davies Charlton Merlin replacing twin Dart diesels. He is also admiring Jack Jansen's (Croydon) Dornier Do 18 which is also single engined with an AM 35, leaving the rear prop to freewheel. Photo by Ron Moulton.

next month

It's Nationals time (at last), and we give a full report in words and pictures of the highlight of the British Calendar. In addition, there will be a detailed account of the Indoor World Championships, plus plans for a pair of free flight autogyros. Another issue of varied contents to please all and sundry. Or so we hope! Order your November issue now - on sale October 15th.



46th Model Engineer Exhibition

JANUARY 4—15th 1977

(not open Sunday)

At Wembley Conference & Exhibition Centre

LOCOMOTIVES, BOATS, AIRCRAFT, TRACTION ENGINES, MILITARIA, WOODWORK, CRAFTS

BIGGER, BETTER

The 1977 Exhibition moves to the brand new Wembley Conference & Exhibition Centre, right next to Wembley Stadium and the Empire Pool. It will be on two floors, each of which is greater in area than the total space available at our home for the last few years, Seymour Hall, and there will be over 100 trade stands and many society and association displays.

Conveniently situated just off the North Circular Road, between the ends of the M1 and M4, there is car parking for 5,000 cars (or 2,000 coaches) and there is the chance to combine a visit to the Exhibition with the ice show at the Empire Pool or the Christmas show at the new 2,700 seat theatre. Catering facilities are excellent — the Bridge Bar, in the Exhibition, seats 500, and there will be a snack bar and restaurant. Even if twice the numbers of previous years attend on any one day, there should be no real crush.

On the upper floor will be most of the engineering and marine stands and exhibits, including the SMEE workshop and track, plus a Gem Craft section (popular with the ladies!), while downstairs will be military modelling and wargaming, aircraft, the central display area (electric aircraft, R/C cars and tanks, live steam traction engines, etc, etc) plus, for the first time, a special Woodworker area, with famous tool suppliers, demonstrations, competition entries, etc.

Throughout, demonstrations are planned, including lathework, brazing, milling, and other workshop practices, lapidary, enamelling, wargames, miniature weapon-making, cart making, wood turning and machining, boatbuilding — a real feast of how to do it.

COMPETITION CLASSES

Entries are invited in the following categories:

- A Locomotives. 2½ in. gauge and over.
- A1 Locomotives — to any L.B.S.C. design 2½-5 in. gauge (Including steaming).
- B Locomotives. In gauge 1 and 0.
- BA Locomotives. In gauges smaller than 0.
- C Rolling Stock and Accessories. Gauge 1 and 0 or larger.
- CA Rolling Stock and Accessories. Gauges smaller than 0.
- D Steam and Motor Ships of any period. (Non-working.)
- E Power Driven Boat Models. (Complete with power plant.) Scale or Freelance.
- F Sailing Ships of any period. (Non-working.)
- G Working Yachts and Sailing Ships.
- H Hydroplanes and Speedboats.
- I Miniature. Length of hull not to exceed: 9 in. for ½ in. — 1 ft. scale or larger; 10 in. for ⅜ in. scale; 12 in. for 1/25 in. scale; 15 in. for 1/32 in. scale. No limit for smaller scales.

- J General Engineering Models (including stationary and Marine Engines).
- K Internal Combustion Engines.
- L Mechanically Propelled Road Vehicles (Including tractors).
- N Tools and Workshop Appliances.
- O Engineering Scale Models (Non-working).
- P Scenic and Representational Models (Including Architecture).
- Q Horological, Scientific and Optical Apparatus.
- R General Craftsmanship — not otherwise classified.
- S For any type of model (other than military) or mechanical work by a junior under the age of 16 by 31st December, 1976
- AA Flying models of all types: (a) free flight, (b) control-line and (c) radio control.
- AB Scale flying models of all types, rubber, glider, power, control-line or radio control.
- AC Scale non-flying models.
- AF A piece of radio control equipment built to a design published in Radio Control Models & Electronics, Aeromodeller or Model Boats, from a commercial kit, or of original design.

- MA } Classes covering miniature
- MB } figures, dioramas, artillery
- MC } etc., detailed on official
- MD } entry form.
- MJ1 }
- MJ2 }

Woodworker Section

- WA Cabinet making.
- WB Wood carving
- WC Wood turning
- WD Musical instruments.
- WE Marquetry
- WF Fretwork, pyrography, miscellaneous.

Entries for these classes should use special entry form in September or October 1976 issues of Woodworker magazine. Note that these particular classes are open to both amateur and professional craftsmen.

Junior Prize additional in each class with three or more entries. (Under 16 on 31st December, 1976.)

In addition, there is a competition for hot air engines, a special classification for model boats built from a kit, and a one-subject Colonial 1857-1900 military modelling class. Details of all these in the appropriate magazines and/or on the entry information forms, available after mid-July. Loan (non-competitive) entries will also be considered.

This is *your* exhibition as much as ours, and we hope to have the favour of your full support — lots of models, volunteer stewards/demonstrators, etc, to make this first major exhibition at the new venue a resounding success which will further the interests of modellers nationally.

Write now for Entry Forms to:

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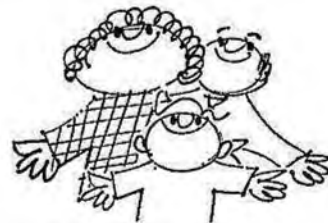
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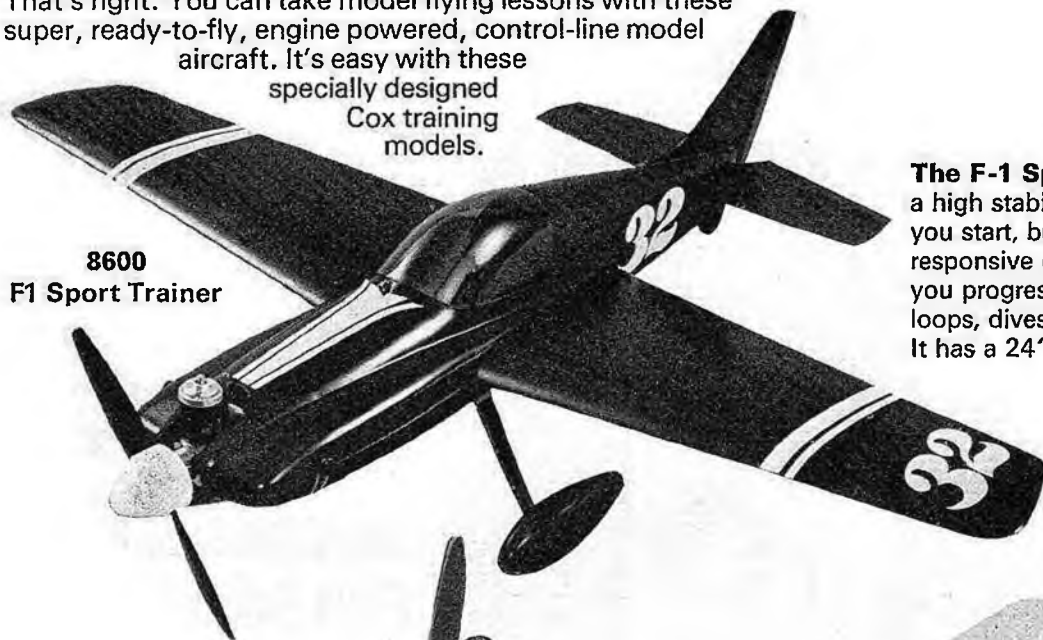
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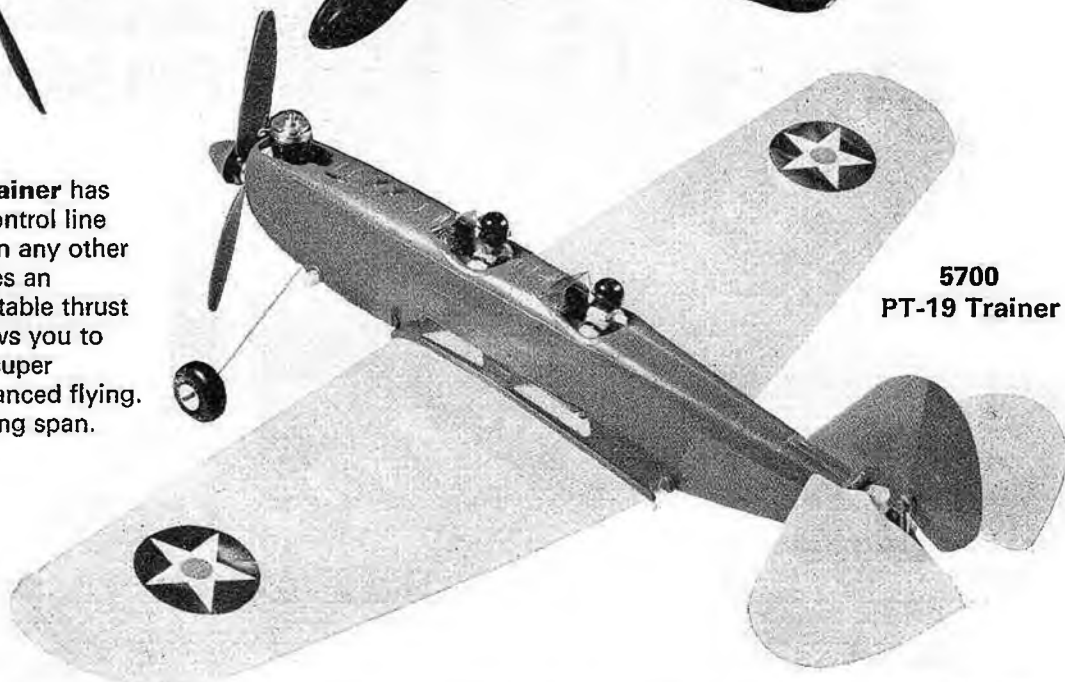
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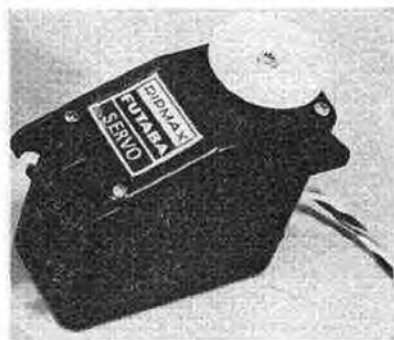
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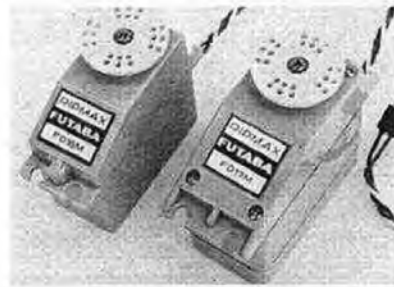
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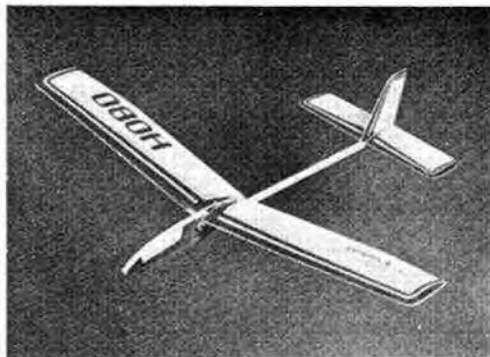


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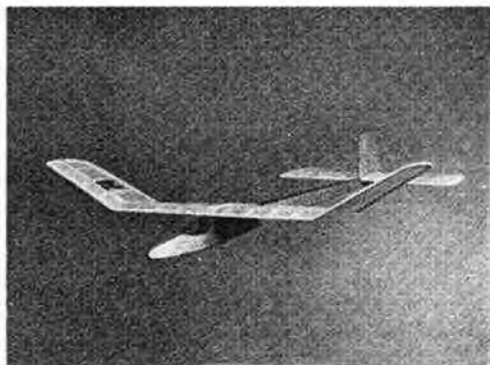
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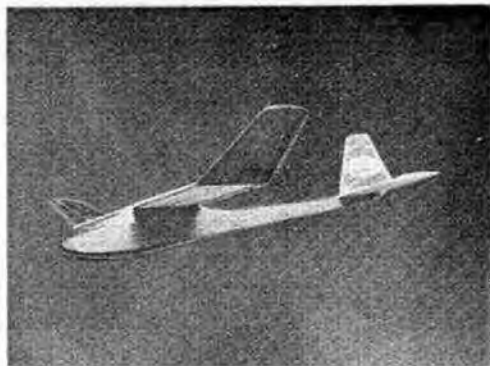


Just check these kit contents for value (and study the photo below)! Fuselage is fully shaped from balsa sheet, with additional moulded cowling blocks, and other plastic parts. Tail parts are pre-cut from balsa sheet. All wing ribs are die-cut. Shaped ply parts, formed wire parts, bellcrank, horn, wheels, acetate sheet for canopy, tissue (for wing covering), and even scale-type transfer markings are all included. Plus a really detailed plan.

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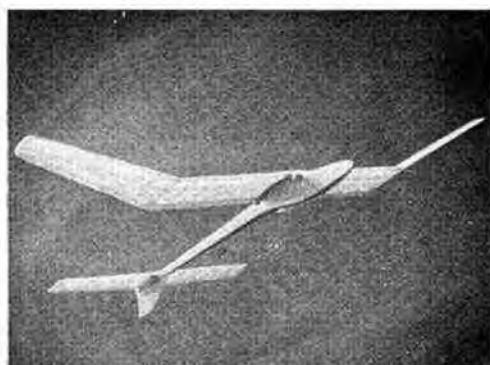
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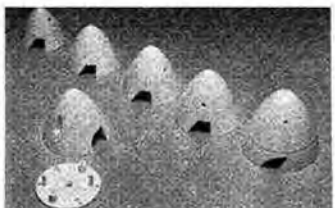
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62mm £1.90 70mm £2.20 (prices per pair)
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Note: For converting metric diameters to English sizes, here are the equivalents:

45mm - 1 7/8", 47mm - 1 7/8", 50mm - 2", 55mm - 2 1/8", 60mm - 2 1/4", 65mm - 2 1/2", 70mm - 2 7/8", 75mm - 3", 80mm - 3 1/8".



RIPMAX-MK ACCESSORIES

Photo shows the MK WHITE NYLON SPINNERS, a really first class production, in five diameter sizes:

1 1/2" 65p 2" 70p 2 1/2" 78p
2 3/4" 85p 3" 90p 3 1/2" 1.25

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75mm (3") 64p

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'IP'
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'IM' Full Length Scale Pilots (Unpainted) in 2 sizes:

1/8th Scale £1.65; 1/10th Scale £1.35; 1/8th Scale Painted Pilots (Bust): Standard 85p; With Visor 90p; 1/12th Scale Painted Pilot with Visor 70p.

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Hard-to-get items at low prices!



'IP' Latest items include wing bolt sets (small and large) and heavy duty wheel collets (2mm-4mm).

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Heard at the HANGAR DOORS

Cool! What a whopper! Ron Green displays his enormous (48in. wing span) Open-class microfilm model, which he flew at the Indoor Nationals held at Cardington, 19-20th June.

NOTICED all the (excellent) publicity that indoor model flying has received prior to the British-hosted World Championships? With three separate screenings on television at peak viewing time, plus reportage in the National Press, it is evident that the SMAE's Indoor Committee and Public Relations' departments have been working to good effect. Despite the enormous handicap of the general public not being able to see microfilm models, the media have really latched on to the fact that this is a highly complex sport – easily filmed, and easily appreciated by those to whom switching on 'the box' is the limit of their technical expertise.

Naturally, any publicity for one sphere reflects well on other branches of aeromodelling – although it is a little strange that while Joe Public has (relatively) easy access to watching R/C flying, it is the super-light-weight models that have really captured his imagination.

APOLOGIES are due to two of our F/F columnists – namely Michael Warren who was *not* credited for writing the September *Free Flight Scene* and Martin Dilly who was! Thus it should be Michael who receives the bouquets/brickbats for his opinions, sentiments and reports in that issue, whilst Martin deserves neither praise nor criticism. Whilst not wishing to put the blame for the error on any one individual, it should be made clear that . . . oh well, yes, you guessed it – ye Editor boobed. Who said *again*?

TWO RETIREMENTS this month in the London area will remind many long-standing readers of valuable contributions to the Model movement over the years.

Ted Setterfield has been running HESSET MODEL SUPPLIES on the Brighton Road at Croydon for more years than we dare to remember, was



Secretary of the Croydon & D. MAC, back as far as 1946 and has been responsible for encouraging countless numbers of youngsters on the right path towards successful aeromodelling. Now Ted is obliged to retire 'early' (as he says) on doctor's orders. All of his customers and many of his old SMAE and Model Club associates will wish him the happiest of retirements with plenty of time to take it easy.

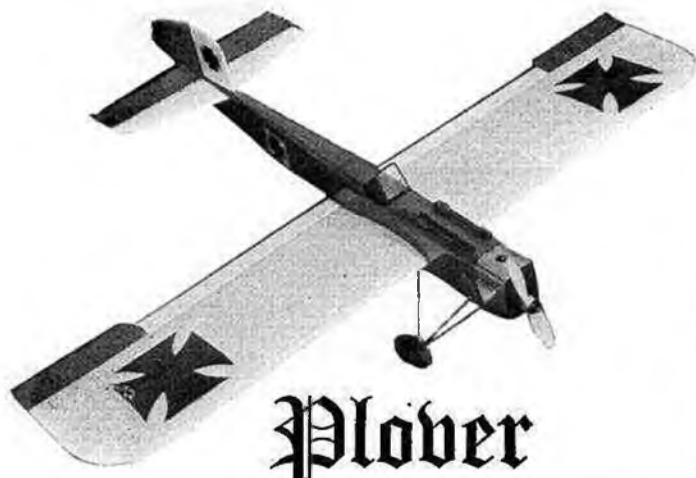
George Honnest-Redlich is internationally renowned for his pioneering of Radio Control in Europe. For many years, G. H-R, was synonymous with model radio control. Designer of ED equipment and his own 'REP' single channel and multi outfits, George and his permanently attached pipe, were to be found at every R/C meeting. Among his early achievements were the first crossings of the English Channel with a model boat and a model plane. In the latter case, he followed the plane in a French home-built aircraft on the first attempt, and could keep one spell-bound with his endless stories of the complications that were involved. His successful crossing was made with an Auster and he probably also set a record for being among the first ever air-to-air formation control achievements.

His inventive genius took him into early schemes for R/C model yachts, closed loop systems for indoor R/C car racing, and then into the big outside world of remotely controlled garage doors etc. George retires, having done much more in his three score years and ten, than many of us ordinary mortals could hope to cover, and we are sure all readers

wish Edna and George a very happy retirement.

THE MODEL FLYING FIELDS ASSOCIATION, a group which was formed recently in the London Area, but which is now spreading its wings further afield, is beginning to reap benefits for its members. Firstly, they have found a venue located less than 7 miles from the centre of London which is suitable for radio control and (possibly) control line flying. One flying session has been held at this site and two more are scheduled to take place in the immediate future – these sessions being carefully watched and monitored by the land owners. If the results are satisfactory, in that there are neither noise nor danger problems, then permission will be granted for regular use of this site. Following the more than satisfactory first flying session, the MFFA is confident of success – the area already has a high ambient noise level due to other activities in the vicinity, and in fact the models (which must comply with an 80 dBA – at – 7 metres noise level requirement) were inaudible at the nearest housing area. In addition a sea-plane site has been firmly established, and negotiations are in hand for several other new sites.

Naturally, these flying areas are only available to MFFA members, so if you wish to join an organisation whose sole aim is the establishment or retention of suitable venues, then write to the General Secretary, Philip Bond, 54 Cascade Avenue, Muswell Hill, London, N10 3PU. Individuals may join for a fee of £3.50, although should a club wish to become affiliated then all its members must join, at a reduced fee of £2.00 per person.



Plover

an out-of-the-rut sports control-line
stunter for 2.5–3.5cc motors,
designed by John Stroud

MANY CONTROL LINE stunt men spend hours and hours looking for full size aircraft designs to crib, and to make a good stunter that looks different. Development along logical paths seems to lead to models that look alike and I have never found designs that look like a jet fighter and fly like a Tiger Moth very attractive. After building a couple of crop-duster like models I still yearned for something more unusual. During the First World War and just after, a few full size aircraft were built which looked like *Plover* – the Junkers *D.IV* is a good example and with just a little licence, I think I have produced a model with the 'atmosphere' of that era, and an excellent performance. The basic proportions and construction follow accepted practice – only the fixed 'ailerons' and undercarriage construction are unusual. I have tested the undercarriage *fully* (once during test flights for the Editor!) and consider it well worth the time and effort involved. The fixed ailerons worried me before I flew the model as I was sure that they would incur an aerobatic penalty.

My friends who profess to be aerodynamics experts agreed, but would not put a figure to the loss of performance. To my delight there is no loss in performance, and there may even be an increase. My friends then set about explaining *why* it flies well . . . the desirable increase in thickness/chord ratio is achieved by the fixed ailerons. Certainly the model is light (280zs) and the OS15 produces ample power. Whatever the reasons, it flew straight off the drawing board and needed no trimming. My one regret is that I did not wait for the local shop to get some transparent plastic covering – the solid colour has hidden the structure and lost some of the 'atmosphere'. My original drawings were for a .35cu.in. stunter and anyone preferring this size model only has to add 25% to all the dimensions. The construction is straightforward and will present no problems to anyone who has made a few



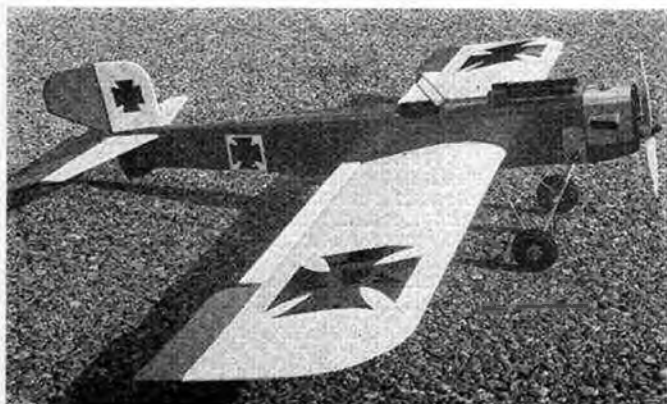
models beforehand. Select medium to light balsa unless otherwise stated on the plan – a good stunter *must* be light, be accurately built and have a free moving control system. Time spent on achieving these objectives on a successful design is never wasted. Strength comes from a simple but sensible structure with good joints and glue – I prefer PVA glues and find the longer setting times acceptable if one works on several components at a time.

Construction

For some reason I prefer building wings, and thus always start with this component. Cut two rib templates from scrap $\frac{1}{8}$ in. or $\frac{1}{4}$ in. plywood, as shown on the plan. Cut $18 \times \frac{1}{8}$ in. and $2 \times \frac{1}{4}$ in. rectangles of quarter grain balsa and sandwich them between the templates, then carve and sand the resulting block until a complete set of ribs is formed. Cut spar notches, and file to an exact fit on the spar, then carefully drill the block of ribs to make the leadout holes. Now select two $\frac{1}{8}$ in. ribs and the two $\frac{1}{4}$ in. ribs to make two ribs R2 & R3 respectively. Mark a line on these ribs $\frac{1}{4}$ in. from the edge contour by the 'thumb gauge' method. Trim away the surplus wood to produce ribs $\frac{1}{4}$ in. undersize (to be covered with $\frac{1}{8}$ in. sheet centre section covering later).

Carefully cut out the bellcrank box components from $\frac{1}{4}$ in. ply and assemble as shown in the sketch. Make bellcrank from paxolin or dural and mount on a suitable piece of brass tube which provides a good bearing on the pivot bolt. Fit bellcrank between top and bottom of the box and ensure that it is free but not sloppy.

Add R3 to each side of the bellcrank box using PVA glue, and check for squareness all round – I leave mine to set lightly held in a vice. Cut out leading edge and trailing edges and select mainspars. Note that wing is built to 36in. wing span but that the left hand wing is 1in. longer than the right hand (tips added later, bring the span up to 43in.). Pin down bottom trailing edge and glue all ribs, including bellcrank box, in place using bottom spar as shown to support ribs until dry. Add top spar and LE and top trailing edge. Finally add $\frac{1}{4}$ in. square rear cap. Use PVA glue throughout as this allows time to check everything is square before leaving the structure to dry overnight. When dry remove from plan, add bottom spar, $\frac{1}{4}$ in. wing tips and false 'aileron'. Make wing tip gussets from $\frac{1}{4}$ in. and $\frac{1}{8}$ in. balsa as shown and add $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strips top and bottom at the LE of tip. Fair all these gussets to match LE mainspars etc. Connect leadout wires (from heavy Laystrate) using double loops for safety and sheet the wing centre section. Epoxy leadout guide tubes to inboard wing tips. Check that leadouts do not foul on any of the ribs.



Bend flap horn/joiner from 16 swg piano wire as shown and add the tinplate fittings. Drill flaps and insert flap joiner with a smear of epoxy. Add pushrod to bellcrank and check for 'free' and 'equal' movement. Sand entire wing smooth with fine garnet paper on a large sanding block. (I haven't forgotten the tip weight - that comes later).

Fuselage - Cut $\frac{3}{16}$ in.sq. engine bearers as shown with a gradual taper from F1 to F2. Shape bearers to fit engine with 3° right thrust, drill bearers and bolt on engine. Use tinplate straps beneath bearers and solder bolt heads to these straps to avoid bolts from turning on finished model.

Construct tank as shown from tinplate and soft copper tube, or buy an equivalent suitable commercial tank - tank should be firmly glued between F1 and F2 sitting on top of the engine bearers. Cut out the fuselage sides and ply doublers and glue together to make a 'handed' pair. Leave to dry under an even weight. Build up rear fuselage sides over plan from $\frac{3}{16}$ in.sq. strip. When front and rear fuselage sides are dry, cut splice joints in $\frac{3}{16}$ in.sq. longerons to fit onto front fuselage side. This should be done with care to ensure that the rear fuselage taper is correct. When satisfied, glue front and back halves together, remembering again to make a 'handed' pair. Now glue fuselage sides to edges of engine bearer assembly adding F1, F2, F3 and F4. Pin down to the building board and double check that everything is square before leaving to dry.

Remove bottom part of fuselage and check that wing fits square in the fuselage. Trim if necessary to achieve a good fit, wings should be at 0° incidence. It is useful to mark the wing with the fuselage position (taken from the plan) to aid in alignment. Glue wing to fuselage and when dry, glue together rear fuselage adding $\frac{3}{16}$ sq. cross braces. Cut out tail skid and fit to rear fuselage - brace with scrap $\frac{3}{16}$ in. sheet and epoxy wire reinforcement in place.

Cut out tailplane parts from light grade $\frac{3}{16}$ in. sheet, hinge with sewn thread or linen tape as preferred and fit elevator horn. Glue tailplane in place and add elevator pushrod. Neutralise elevators, flaps and bellcrank and solder tinplate fittings to the pushrods adjacent to the flap horn - it is easy to resolder these fittings to ensure perfect line up. Flap angular movement should be the same, or slightly less, than that of the elevator - select

the hole in the elevator horn to give the required movement. Now add the remaining formers. Sheet or plank top of fuselage back to F3 and add stringers from F3a to F7. Cut out fin and rudder (noting grain direction) and fit in place. Fill in each side of fin with scrap block and ensure adequate rudder offset.

Cockpit area may be painted black later on, or if preferred, may be cut out and a floor added to accommodate a pilot. Bind and epoxy u/c pivot tube to $\frac{3}{16}$ in. ply cross brace. Fit inside fuselage flush against bottom of wing as shown. Insert large bore rubber band tube in fuselage behind F1 and under engine bearers - I used a disposable syringe body but a rolled paper tube will be fine. Replace lower fuselage sides below wing and cover bottom of fuselage with $\frac{1}{8}$ in. balsa (note - grain goes crossways). Fill in below engine bearers with scrap block. Wrap tinplate protection plate around underside of nose and epoxy into place; the holes for the rubber bands can be pierced in later resulting in neat rounded holes. Prepare the wire u/c parts from 12 swg piano wire. One axle, one front spreader bar, one rear spreader bar, and two 'handed' V-shaped supports. Assemble them on the model and bind all joints with fusewire. Do not struggle with inaccurate bits - throw them away and make a new one - it's less effort in the long run.

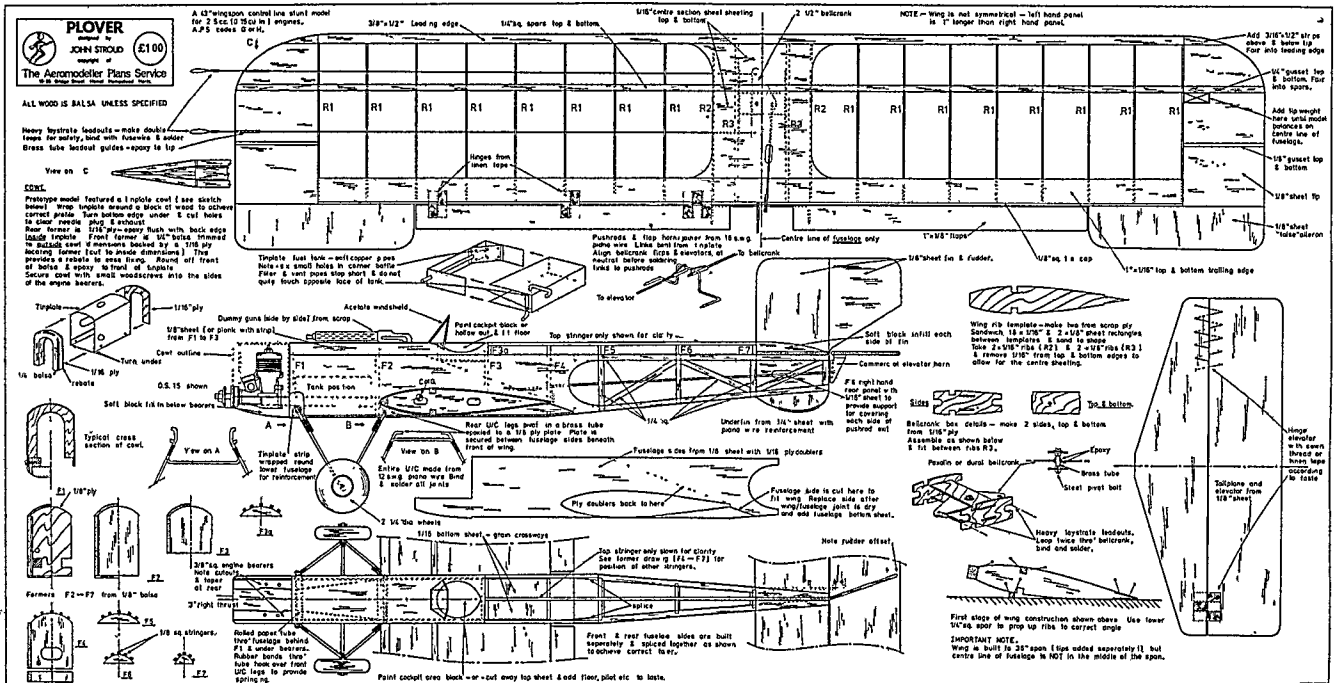
When the u/c is satisfactory and pivots freely, tack solder each joint, checking for correct movement at each step - the u/c should pivot freely without any sloppiness. When you are completely satisfied, finish the solder joints and fit the wheels (retain with a washer soldered on to the axle). Smooth the entire structure with fine garnet paper.

Make a cowling to suit your engine, either in balsa or as shown. This was the first tinplate one I had ever made and proved to be much easier than I anticipated. This is the point where I normally add the tip weight. The amount of the weight should be sufficient to just tip the model when balanced on the engine crankshaft and tail skid.

Covering

As stated previously, I think the most suitable covering is the transparent type of heat-shrink plastic. However, lightweight tissue would also be suitable for the gentle flyer, provided he does not put on too much coloured dope,

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You've heard of King Kong? Now meet the Menacing Moggie... well the 'plane is called 'Plover', so how do you expect a dumb animal to know that it's made of balsa and plastic film, not meat and feathers?

thereby increasing the weight considerably. I find that tissue can be lighter, but the final weight of the plastic is more predictable as it requires neither dope nor fuel proofer. Finally, add the dummy guns and windscreen and it is ready to fly.

Flying

Always test fly on a calm day – not because *Plover* is a calm weather flyer, but because one needs to identify model characteristics free from wind effect. First flights should be made on 50 feet of lightweight stranded lines, but I have gone onto 55ft. ones with no problem. If in doubt about the suitable prop pitch, go for the finer one, as light models will fly quite fast. I use an 8 x 4in. on the

OS15. Carry out a pull test on the lines and controls and check that you have two good elastic bands in the suspension system. Set the motor slightly rich and off you go. If you have built it right and have a good motor, she is a charming performer.

N.B. No silencer is shown on the photographs and although the tinplate cowl has a good quietening effect, I suggest that one is fitted for the two basic following reasons:

- (a) The increased back-pressure exerted by fitting a silencer produces a 'flattening' effect on the needle valve sensitivity. To achieve good stunt performance the motor needs to four-stroke in level flight and change to a two-stroke upon sudden change of altitude. The needle settings for this effect are always critical and *any* reduction in this sensitivity can only be welcomed.
- (b) Noise Annoys!! With the advent of current legislation, all rightminded aeromodellers should consider others. Fly quietly – it might help save a flying field.



YOU & SMAE

INSURANCE

This bulletin follows on from the 'You and SMAE' Column in the July 1976 issue, where we introduced the four common ways of obtaining insurance.

In this feature, two of those methods are examined further:

Householder's Insurance – Many adults are insured under a 'Householders' policy – indeed it is a condition of some mortgage arrangements that such a policy be held. The policies' main aim is to protect the structure of the householder's home against damage, e.g. by fire, etc. The premiums on such policies are usually a percentage of the value of the house and are commonly in the range £10-£25 per year.

If you have a Householder's policy it is well worth the trouble to at least investigate whether it also provides third party cover for your model flying activities, or could be extended to do so. In some cases the cover has been found to exist already and in other cases the insurance company has offered a special clause for the purpose (sometimes without additional charge).

Apart from the obvious incon-

venience of such an arrangement it is also quite normal for these insurances to provide similar cover for *members of your family* without extra charge, provided that they are residing with you. So, if you are a model-flying family, the attraction is substantial.

There are a couple of points to watch, however: firstly, insist on a written statement from your insurance company that any such cover does indeed apply to the flying of *model* aircraft. Some small-print on policies includes (or excludes) 'aircraft' and it is by no means clear whether 'model aircraft' are meant to be covered (or excluded). The definition of model aircraft that is used by the SMAE is that used by the UK Civil Aviation Authority in defining 'Small Aircraft' in the Air Navigation Order. In a nutshell, if it weighs 5kg (11lbs.) or less, it is a 'model aircraft'. (SMAE members receive an official Rule Book free, and it contains the full definition.)

If you wish to join the SMAE and offer a householder's policy as proof of insurance, our Membership Secretary will certainly also want to see the firm assurance indicated above.

The second point to watch is that

cover for your children by such policies *may* be restricted to occasions when they are operating model aircraft under your supervision. Clearly that is a vital matter to clarify and you would do well to judge such a restriction as unsuitable for your son's/daughter's activities. Again the SMAE would *not* accept this condition if your children wish to join.

Commercial Modelling Magazine Scheme Model and Allied Publications Ltd, who produce this and other modelling magazines, offer a very attractive Third Party insurance scheme for regular readers. It is attractive in several ways:

- (a) It is fairly cheap – if you are going to buy one of the MAP magazines regularly anyway.
- (b) It is very easy to join.
- (c) It has always been acceptable to the SMAE.
- (d) It is specially designed for your needs.

A disadvantage, if you can call it that, is that the MAP scheme is available only to *individuals* on individual application. Despite this, many clubs use MAP insurance by everyone simply joining as individuals – the administrative convenience of the scheme has a lot going for it.

Next time we'll cover the final two types of insurance, and some vital factors to watch with *all* insurances.

* * *

For information regarding joining the Society of Model Aeronautical Engineers, the only officially recognised body for model fliers, send an SAE to the Membership Secretary, 22 Blackheath Rise, Lewisham, London.

THE FREE FLIGHT SCENE

This month: Bob Bailey

NOISE POLLUTION

My comments here are based on the assumption, fair or otherwise that the SMAE Code of Practice now submitted to the DoE in its final draft form, will have some influence on what finally appears. As far as free flight is concerned, the SMAE is doing its best to avoid the compulsory fitting of mufflers (the official term) to free flight models. Such a restriction will of course be very unpopular; it will kill off our competitiveness in FAI completely. In 1964-65 when silencers were enforced, the popularity and quality of free flight competition power fell off alarmingly; we don't want to see this happen again.

It is the SMAE's contention that free flight power models do not cause much noise nuisance; it is up to *all of us* to ensure that they continue not to do so. The major contributions we can make in this area are:

1. Do not fly within 150 metres of occupied buildings.
2. Make sure your free flight model has a means of restricting the engine run in the air to a short time e.g. 30-40 secs for sport models. Competition models automatically comply with this because of the contest rules we use.
3. If you do any running of engines on the ground, please keep the run time to less than 1 minute, and make sure that you use natural obstacles to minimise carrying of noise to occupied buildings.

We must all ensure that these precautions are observed at all times; remember that *one person* can initiate a complaint, and all the legal processes that go with it.

THE INDOOR SCENE

Quite a lot has happened in Cardington this year due to more use of this magnificent site than in previous years – the forthcoming World Championships having had quite a lot to do with this.

As a result, the standard of indoor flying in this country has continued to rise in the main classes at present flown, these being EZB, FAI Microfilm (max span 65cm) and 35cm max span microfilm. Pennyplane—18in. max span, 18in. max length, min weight



Welshman John Bailey and Wakefield with alloy prop hub, two piece wing and fuselage, built while he was teaching in Zambia. one pence piece (3.2g) – remains at a low level, hence the minimal entry in Pennyplane at the Nationals.

The principal achievements are:

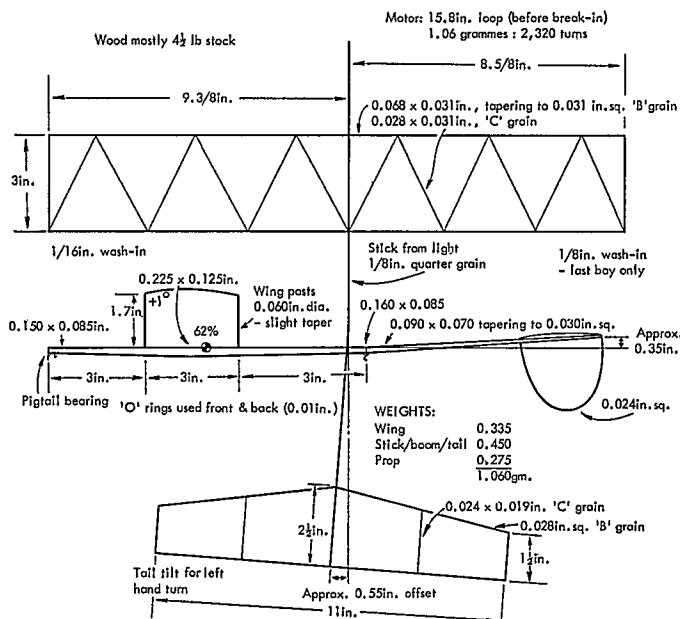
(a) **35cm record.** This was held by Martin Shopper for several years, with a time of 19:40. At the contest in June, Butch Hadland beat it, in good conditions, finally pushing it to 21:32. His model featured a long (12in.) motor stick, a large chord wing (5in.) and lots of rubber – about 1 gramme. Comparing this with Martin's model which used a small wing and short motor stick, his appears to be the way ahead for future development.

(b) **Highest overall time in British FAI Contest.** Roger Melville managed the magnificent 70:44 total; this would have been enough to win the last two World Championships! Superb conditions prevailed, Roger making both flights using the same motor from some of my 1968 Pirelli. Although good by today's standards, there is better rubber around, but very difficult to come by. Some assistance in steering saved Roger's model from going through the roof on the first flight; the second required no assistance. The motor used weighed about 1.5 grammes, was 21in. long and taking about 1900 turns.

(c) **EZB Record.** My record time of 17:34 went on 4th July to Dave Pymm with a magnificent time of 19:43. The model featured a very slow revving 14in. prop with enormous blades which required about 1.1 grammes of rubber to turn it (rather more than I used – about 0.85g) and with approximately 2300 turns. The rpm was so low that there were still plenty of turns left, indicating an average of about 100 rpm, very low indeed for an EZB. Low rpm is probably the way forward to breaking the 20 min barrier, which must be just around the corner; high pitch (24in.) and powerful rubber is needed – the difficulty with fast revving propellers concerns applying the required number of turns; with a short motor stick, bunching becomes a major problem with the long rubber needed.

Stripping rubber is another problem; the thinner the motor, the more accurate the stripping requires to be to avoid weak spots where the strip is a bit thin. The extent of the problem depends primarily on how 'crinkly' or wavy the rubber strip is; some batches are rather worse in this respect than others.

The vast areas of concrete at Sculthorpe made bicycles popular at this venue for the two-day FAI meet. Here Tony Grantham of East Grinstead club brings back his Rossi model.



(d) A new British Microfilm record. On 25th July during the Two Day FAI contest at Sculthorpe reported elsewhere, the British FAI Microfilm record, held at around 35½ mins by John Blount finally went in good conditions at Cardington. I am told that there was no inversion layer in the Shed - to explain, a layer of colder air sits above a layer of warm air, the result being a model requires more torque to climb in the colder air than in the warm air, so that if it is climbing very slowly, there may not be enough torque available to climb in the colder air; the model just stops climbing almost as if it has hit the ceiling. An inversion layer can cause considerable problems in trying to judge the launch torque.

Laurie Barr managed a 36:45 flight, the best by any British flyer and held the record for just three-quarters of an hour! Derl Morley then proceeded to go a bit better to record 37:02. Laurie, needless to say, was not best pleased! Derl's flight was a long way above his previous best, using a motor of 1.5g about 20in. long with more than 2000 turns on. A great achievement.

DAVE PYMM'S EZB

The basic model was derived from mine which held the record until Dave took it; the wing and tail dimensions are identical to mine. Dave writes:

"The aeroplane was made up on the day from a stick retrieved from the model lost at the Nats, and a spare tail assembly. Rubber used was some 1967 Pirelli, left from my Wakefield days. Although I have done some torque testing, I don't think that my figures are good enough to make absolute comparisons with other published specific-energy figures.

Possibly because of the relatively low burst torque of this rubber there was no danger of hanging-up on the 19:43 flight. After losing an aeroplane on each of the last two visits to Cardington, this was quite a relief. Judging by the number of turns left, a 20 minute flight should be possible.

Since starting to fly EZB, I have gradually increased propeller size (mainly pitch). This allows a better rubber/airframe ratio to be used and I think that further improvements along these lines are possible."

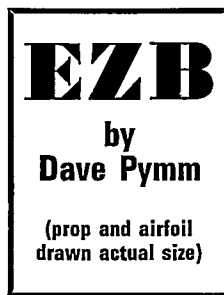
INDOOR WORLD CHAMPIONSHIP PREPARATIONS

Although written while there are four weeks to go to the 1976. World Champs, they will be over by the time this appears in print!

Laurie Barr, as well as being in the team, is also the prime mover in the preparations; he has told me that 15 nations have formally entered, and this number, in conjunction with the relative cheapness of the accommodation at RAF Henlow, is sufficient to ensure the financial success of the Championships. Laurie has also produced a very attractive motif of the Union Jack superimposed on a side view of the Shed.

The team members are busy building and testing, taking full advantage of the number of meetings. Laurie has six models, four of which have done 34 mins plus, and one has done almost 37 mins; he is, therefore, not too unhappy!

John Blount, always a very consistent flyer, also has six models; he's been pretty busy recently. He has done most of his testing on half length motors, where a piece of wire is made up to half the length between hooks and has half the estimated motor weight. Nominally, half the number of turns means half the duration;



Spar 1/16in. hard
- rounded off and
tapering to 0.024in. dia.

Wing 4% arc

Taper thickness from here

4% arc

0.012in. shaft

Prop : 14in. dia. x 22.5in. pitch + 4° (approx. 25in. pitch at r=0.7)
Blades: 0.015in. tapering to 0.011in. from 1/32in. Sig. contest balsa

however, John estimates that the duration obtained on a half length motor is 45 per cent of that from a full motor; the difference being due generally to warmer air at the top of the Shed. Potential time I reckon to be in the 36 mins region - hope I'm not doing John too much of an injustice with this estimate!

Ron Green, to whom I hope to be helper, has six models too at present. Potentially they are very good indeed, but Ron has not realised it all yet. For instance, he has achieved 35 minutes, and landed with 600 turns left - about 10 minutes worth of surplus turns!

Incidentally, a programme is being prepared, thanks to generous Trade support, giving the 'careers' of each flyer, and will be available to all competitors and others - it will be a fascinating souvenir.

TWO DAY FAI MEETING -- RAF Sculthorpe 24/25th July 1976

This meeting was loosely billed as an International, although not listed on the FAI Calendar. Hans Van Rij from Holland was the only overseas entrant (as was the case at the *Free Flight News* contest late last year), and he pleaded for more advance publicity for next year's event -- a thought the Technical Committee will keep in mind!

For once, substantial prizes were available on the field; these having been generously donated by Ripmax, Solarbo, MicroMold and Roy Collins. As a result, the entries were good for a meeting of this nature, with 47 flying in A/2, 26 in Wakefield, and Power with 17 participants.

The contest was run jointly by the members of the SMAE Technical Committee, namely John Cooper, Martin Dilly, Dave Hipperson and myself; I am very grateful to them for their assistance. As a result, only minor organisational problems, caused by wind direction changes, occurred.

The weather was warm with a light wind, producing very pleasant flying conditions on the largest airfield in the country. A civilised 10am start brought 10 maxs in power, including Laurie Burrows who landed on a hangar roof. I did the same, but only for 2.20 (robbed again!). Wakefield saw a lot of maxs, but some were caught out by the odd patch of short-lived lift.

Joe Barnes was particularly unfortunate when his 'clit' auto-rudder tripped soon after launch on two attempts; the models dived in, breaking the beautifully built basswood props which are natural colour and highly finished -- hence a 'zero'. In A/2 Steve Marriott had his 'twang' hook release early when the towline caught in the grass; the sudden loss of tension when the line freed, released the model at 12 feet altitude in a very gusty thermal. The model was almost thrust into the ground but stayed up for 1:10.

The next two rounds saw a very sharp decline in Power maxs; only Stafford Screen maxed in the third round. This decline was accompanied by much prangery in Power which included myself; the model which hit the hangar roof had been hastily repaired with balsa cement (too busy organising!), but the tissue on the wing became too weak, allowing the wing to flex. The result was two complete rolls (reminiscent of EZB at times) after a normal start to the climb; this unusual pattern was terminated by the concrete which abounds at Sculthorpe.

Wakefield and A/2 fared rather better than Power which saw well-known names like Ray Monks goof badly; he retired to get some trimming done! Good thinking with the Pierre Trebod just round the corner.

By the 6th round, eight had max'd in A/2, three in Wakefield and just Stafford Screen in Power. During the Wakefield Round 6, a spectacular willie-willie swept stubble from the field just upwind more than 300 feet into the air; two launched near it, did not get into it, but max'd although the air was a bit bumpy! During the contest a certain competitor, who shall remain nameless, was suspected of having an overlong towline; he submitted for checking a *clubmate's* line which was 18in. over length. When asked to produce his own line, it proved to be 'legal' on checking. Funny?

By fly-off time, six remained in A/2, three in Wakefield and just Stafford in Power with full houses. The competitors with time-keepers were driven to another part of the field in the control van -- almost enough time to get a sing-song going...

The Wakefield fly-off started with ominous cloud and threatening rain. Alan Jack was very unlucky to slip out of the lift for 3:36; Brian Picken although much lower than Ron Pollard each made 4.00 dead, timed on both watches to within 0.1 sec! Hence another round was needed; preceded by glider. The poles were moved downwind to allow the straight-towers plenty of leg room; the



threatened rain arrived but was not too heavy. John O'Donnell came out on top with an original A/2, 12 years old which everybody thought (hoped!) had been lost for good; he was closely followed by Mike Fantham with Gerry le Vey a presentable third after towing all the way to the boundary fence. The last Wakefield flyoff saw Ron Pollard come through comfortably thanks to a superior climb.

Much of the hard work of running the contest was done by Dick Johnson's 12-year-old daughter Suzanne who coped magnificently and who actually *asked* to help! She was also delighted to give away the prizes.

John O'Donnell's first prize included a Radio scale kit so we may see a free flight invasion of 'eyeball scale' yet!

Wakefield (26 entries) -- 1. R. Pollard M+4:00+2:46; 2. B. Picken M+4:00+2:23; 3. A. Jack M+3:66. **Glider (47 entries)** -- 1. J. O'Donnell M+3:21; 2. M. Fantham M+3:08; 3. G. le Vey M+2:23. **Power (17 entries)** -- 1. S. Screen 21:00; 2. P. Bushell 18:40; 3. R. Baggott 18:14.

SCULTHORPE TECHNICALITIES

A quick digest of two of the leading models at Sculthorpe; firstly Stafford Screen's Power model:

Stafford was flying a Ray Monks' *Veterano* (as was Jack Allen) -- a very good all weather model. He used a home made polyester/glass strand Cox-pattern prop which gave him a very steady, consistently good, climb. His prop brake was home-made from aluminium alloy

At top, Dutch entrant at the 2-day FAI meet Han van Rij dropped an early flight in Wakefield -- here he watches as clumps of hay take-off from a stubble field in a strong thermal.

Left is Roger Baggott with one of a number of triple finned Power models seen at Sculthorpe. All sheet construction with box fuselage and prop brake built by clubmate Stafford Screen.

INDOOR W/CH RESULTS

1. Bud Romak (USA)
2. Ed Clapala (Poland)
3. Laurie Barr (UK)
4. John Blount (UK)
7. Ron Green (UK)

TEAM PLACINGS

1. USA. 2. UK. 3. Canada



of the shoe-type/Bill Kerr pattern as reported in a previous Column. A spring steel circlip gives a very strong action and a clean stop.

Incidentally, the spring-type brake is a possible cause of crankshaft failures, when they have been opened out a bit — Ken Faux has lost two in this way. I have had no trouble with mine yet, but the crankshaft has been left standard since the motor was my fastest at the time.

Alan Jack's Wakefield was as high climbing as any and is similar to Ron Pollard's with both VIT and auto rudder. I am grateful to Alan for the following brief details:

The wing features a Gard section on a fairly high aspect ratio; a Schwartzbach 560 x 700mm prop provides the climb. The prop is covered with thin glass cloth and epoxy. The finish on this item is superb, being light and quick to obtain (could be good for HLG — I must investigate). The sequence of operations is VIT 4 seconds after launch, rudder at 27 seconds, motor run 31 seconds. The centre of gravity is set at 70% of the root chord.

EUROPEAN TEAM SELECTION

This process has been beset by problems from the word go; it is not unfair to say that nothing has gone right! The problems started less than two weeks before the event, when the lack of an August Bank Holiday for the USAF caused the meeting to be brought forward, this automatically led to the inevitable protest during the contest.

Discussions at an SMAE Council meeting the following week as to whether the results for both days or one should stand, led to the matter being referred back to the F/F Tech Committee, who recommended to Council that the results for both days (seven flights) should stand. Offers were made to those placed highest in the seven flight contest to find out who was able to attend the Championships.

This process was rendered very difficult by the statements from the SMAE Chairman and Vice-Chairman/Acting Treasurer that no money was available for entry fees or travel to the contest. This means considerable expense for the individuals, and there was consequently lack of enthusiasm from the invited contestants. In addition there was a complete lack of information regarding dates, entry fees etc for the European Championships — so called — the airfield for A/2 and Wakefield is not worthy of the name.

The next Council meeting reversed the situation completely. Council in its wisdom (?) saw fit to turn down the F/F Tech Committee recommendation on team selection, and ruled that the four flight total should stand for Senior Championship and plaques, but that the F/F Tech Committee should carry out the team selection process. At the same time, money was mysteriously made available for entry fees! Meanwhile further attempts had been made to find out who was willing to travel, and this list was discussed at the next Tech Committee meeting.

The time available for selecting the team was by then *negative* for Power; and was virtually nil for the other two events. The A/2 team selection caused the most difficulty; the Committee eventually decided that as an *emergency measure*, a team, not just three individuals, who would work together well when flying from one pole should be selected. This was done on a straight vote; not a satisfactory procedure, but time did not permit any other course of action. A strong majority voted for the team of Messrs Williams, Fantham and Warren.

At the time of writing, Brian Baines, who was very unfairly treated during the above events has, since he was the first to be offered a team place, been offered the choice of a team place or Team Manager with expenses.

As a footnote I must emphasise that the above events resulted in an *emergency measure* for this occasion only and *not* to be taken as a new procedure for determining a team.

WORLD CHAMPIONSHIP F/F TEAM SELECTION

In view of the current uncertainty of the date of the next World Championships, some statement of the function of the Trials is required. The F/F Tech Committee has agreed that the forthcoming events at Sculthorpe labelled as the '1st and 2nd Team Trials', shall proceed as planned. The results of these two weekends of flying shall be used to determine the teams if the *World Champs* are held in 1977. However if the Champs are delayed until 1978, these results will *not* count for team selection; further Team Trials will take place in 1977. Unfortunately of course, the fate of those who place well this year will not be known until some little time after the event.

TORBAY RALLY 5 Woodbury Common, 1st August by C. J. Chapman

The day started with a moderate breeze. Very strong thermals abounded throughout the contest but unfortunately, the wind steadily increased in strength as the day progressed. The warm temperature tended to disguise the true wind speed and it soon became apparent that models would be going a long way. A number of models were in fact lost, some in tremendous thermals, and a particular disappointment was the loss of John O'Donnell's A/2 glider.

Several well-known names attended but support for the Rally, particularly from the Western Area, was rather less than last year.

Conditions were not easy and survival was a question of avoiding both the very strong lift which could result in a lost model, and the turbulent downdrafts.

All classes were keenly contested. Dick Cummins mastered the conditions to win both Open Glider and the Torbay Trophy for All-in-FAI. Russell Peers walked a number of miles across the Common as did everyone else, and managed to win Power with an ETA29 *Woodpecker* after re-entry when he had already completed three flights.

All in FAI (five flights) — 1. R. Cummins (Bristol & West) 11:03; 2. R. Woodruffe (Swindon) 9:16; 3. E. Drew (Bristol & West) 7:27. **Open Glider** — 1. R. Cummins (Bristol & West) 8:05; 2. J. O'Donnell (Whitefield) 7:38; 3. P. Davies (C.M.) 6:06; E. Drew (Bristol & West) 6:06. **Open Power** — 1. R. Peers (Falcons) 8:40; 2. J. Hopper (Stanstead) 8:20; 3. P. Ward (Torbay) 8:09. **Open Rubber** — 1. J. Hopper (Stanstead) 8:20; 2. B. Hyde (Torbay) 7:12; 3. C. Chapman (Torbay) 6:00.

4TH SMAE AREA CENTRALISED MEET — 13th July, Area Venues

Model Engineer Cup — Team Glider (126 entries, 16 in fly-off) — 1. J. Abbey (Leicester) M+8:45; 2. St. Stevens (Tynemouth) M+5:30; 3. T. Payne (Biggles) M+3:21; 4. L. Brambley (Norwich) M+2:59; 5. C. Hickmott (York) M+2:26; 6. B. Halford (Norwich) M+2:20; 7. A. Wells (Anglia) M+2:15; 8. B. Miles (St Albans) M+2:05; 9. D. Roche (Anglia) M+2:02; H. Tubbs (Leeds) M+2:02. **Model Engineer Cup — Team Results** — 1. Biggles 'B' (Brawn, Parry, Parry, Crisp) 34:21; 2. Anglia 'A' (Wells, Roache, Harper, Read) 33:32; 3. Biggles 'A' (Payne, Cooper, Marriott, Cowley). **FAI Power 172 entries** — 1. J. Allen (Brighton) 18:30; 2. A. Child (Brighton) 18:12; 2. R. Collins (Anglia) 18:00. **Coupe d'Hiver (55 entries)** — 1. I. Kaynes (Croydon) 10:00+1:06; 2. S. Marriott (Biggles) 9:13; 3. R. Paveley (Anglia) 9:10; 4. M. Sanderson (Grimsby) 8:56; 5. R. Johnson (St Albans) 8:50. **Plugge Cup after 4th Event** — 1. Biggles 997; 2. Anglia 882; 3. York 786; 4. Norwich 767; 5. Leeds 719.



Anglia's Paul Bond looks on as St Alban's Bruce Row looks on the prop — meanwhile, Dick Johnson watches to see if he'll swallow the knitting needle used to hold the S-hook.

READERS' LETTERS . . .

Dear Sir

re NOISE

As I see it our main problem stems from the fact that a single complaint from our local community can lead to an injunction to stop flying. This means that any code of practice produced should provide us with guidance on the noise levels which we can inflict on the nearest habitation without causing a complaint.

There is no point in crying about stringent limits or excessive separation from habitations because these figures are derived in an unbiased manner and are presented to us as 'voluntary' regulations. The flyer who disregards them is taking a risk that his site will be taken away from him.

The question which most people seem to be asking then, is how realistic are the figures used in the codes of practice and what is the likelihood of a complaint?

British Standard 4142 says that a 10 dB increase in noise level will lead to complaints, 5 dB is marginal. If a site is rural then a basic level of 45 dBA is to be expected although during the hours 8 am to 6 pm an increase of 5 dB to 50 dBA may be used. This means that our aircraft should not produce more than a 10 dB increase in this noise level. BS 4142 also allows a little more noise if the source is intermittent but this is probably offset by the reduction to be made if the sound has an annoying characteristic, e.g. whine or screech.

From the foregoing we arrive at a noise level of 60 dBA maximum for rural sites. If we accept that the models we use are to be silenced to 80 dBA (at 7m) maximum then we can see from Figure 1 that to achieve the required attenuation of 20 dB our model must be 290 metres away from the nearest habitation if flown CL at an average height of 5 metres. Now this is very close to the DoE code of practice 300 metre figure. If you take the SMAE distance of 150m (even with muffler) the attenuation is reduced to 16 dB giving 64 dBA at the nearest dwelling, 14 dB above the background and a dead cert for complaints.

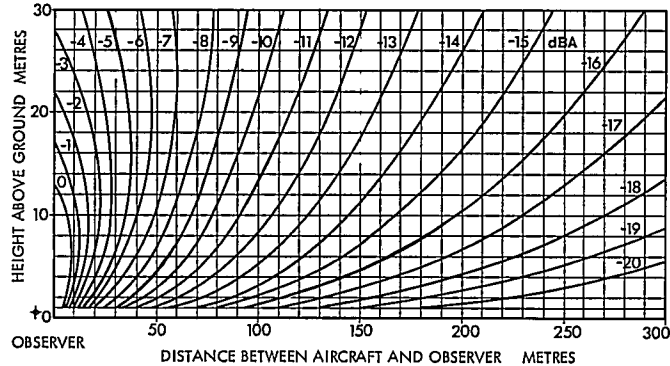
Why should R/C models be flown so far away? Well another look at Figure 1 will show that the higher we go the lower the attenuation. At 30 metres high the noise perceived by the complainant would be 3 to 4 dB higher than the same model at 5 metres high, and to lose that 3 to 4 dB we have to double the distance.

On the face of it then the DoE code is very sound advice and with any luck adherence to the code will prevent complaints and allow us to enjoy our hobby/sport. There is a snag, so far we have only considered one model actually flying at any one time.

If one model (80 dBA at 7m) produces 60 dB(A) at a house exterior 290 metres away, then:

- 2 models produce 63 dB(A)
- 3 " " 64.9 dB(A)
- 4 " " 66.1 dB(A)
- 5 " " 67.0 dB(A)

Figure 1. Graph for determining sound attenuation as a function of horizontal distance and height of an aircraft (model) from an observer or building facade over grass land.



This graph is based on one designed to predict traffic noise attenuation by the DoE ("New Housing and Road Traffic, Design Bulletin No. 26, HMSO"). As such it is not precise for the predictions which reader D. V. Long has made. It would take an expert to sort out what errors there are in using it for this purpose.

Figure II

Site Type	Max. noise tolerated corrected for intermittency and area type between 8am and 6pm	Distance per No. of models in the air at the same time - metres				
		1	2	3	4	5
1	60 dBA	290	600	900	1,200	1,400
2	65 dBA	130	225	280	450	600
3	70 dBA	60	100	130	160	180
4	75 dBA	30	45	60	70	80
5	80 dBA	0	15	25	30	35
6	85 dBA	0	0	0	10	15

NB - This assumes that every model is silenced to 80 dBA at 7 metres, and that 10 dBA added to the background level will not lead to many complaints. To be absolutely safe it would be necessary to use the distances in the next lower category of site type, it would also be necessary to move to the next category if flying after 6 pm.

Now we are getting noise levels well into the complaint zone and the only remedy is to move further away still, and since 3 dB in the air requires a doubling of the distance; even 1 Km will only allow three models to be flown at the same time, on control line, to ensure that the noise level at the nearest housing is not raised by more than 10 dB.

Of course there will be sites where higher noise levels will be tolerated and the DoE code seems to have ignored this fact. The BS 4142 gives the following correction to background level for the type of area in which the noise is to be made (50 dBA is taken as the background level).

- 1 Rural - 5 dBA
 - 2 Suburban (little road traffic) 0 dBA
 - 3 Urban (residential) + 5 dBA
 - 4 Urban with light industry and main roads +10 dBA
 - 5 General industrial and urban +15 dBA
 - 6 Mainly industrial +20 dBA
- Bearing in mind that we can add a further

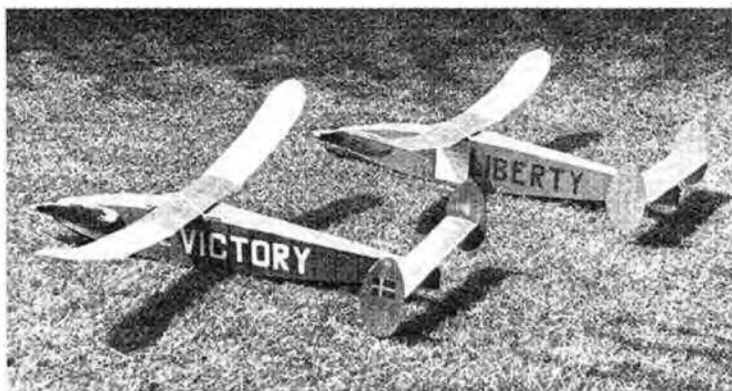
5 dB for operating between the hours of 8 am and 6 pm, we can end up with the distances shown, for each of the above areas, flying C/L at 5 metres; these distances should be doubled for R/C (Figure 2).

To sum up: The codes of practice so far produced do not cover all the different types of site that are in use. The DoE code assumes that all sites are very rural and the SMAE code assumes that they are all light industrial, neither of which fits the situation. It's quite clear that the code should contain a table similar to mine, based on BS 4142, which will show all our modelling/flying friends that adequate noise control can be achieved if you choose the right site, and major events should clearly be held in the middle of an industrial complex.

Finally let me state that I have no connections with any organised body or the DoE, I am just a lone flyer with a small very rural site and a silenced motor.

* Rochester, Kent

D. V. Long



A pair of Wakefields, some thirty years old, which faithful Danish reader John Larson flew at the First International week at Eaton Bray — see letter below.

MEMORIES

Dear Sir,

I have not been in touch with *AeroModeller* since your most kind and gentle 'Rushy' left us.

Rushy was a dear friend of mine, and I am taking the liberty of writing to you because this year (1976) is some sort of an anniversary for British aeromodelling — and for me personally.

In August 1946, now 30 years ago, you British held 'The First International Week' at Eaton Bray, and I happened to be there, flying Wakefields. On this occasion I met Rushy and Mr Laidlaw-Dickson.

We were just two Danes in the 'team' — so we had very little chances to stand up to anything in competition, especially the French team which was about 60 strong, plus wives and fiancées.

But the two of us had a wonderful time being in England for the very first time, and abroad for the first time after the war.

I flew my two Wakefields — *Victory* and *Liberty* — but except from a wonderful action shot from a take off with *Liberty* — we did not win anything but experience. That picture of *Liberty* can be seen in *AeroModeller*, Vol XI, No. 131, page 2, from October 1946. Unfortunately I did never get a real photograph of that, but only that print in *AeroModeller*.

Today, 30 years after, I have still my two old Wakefields, and they are both air-worthy.

By the way, the name *Liberty* meant more to me in 1946 than you possibly knew at the time the picture was taken. I named it *Liberty* because I finished it in the summer of 1945, after coming home from a German POW camp.

I am thinking of starting an 'Oldtimer Society' here in Denmark, already being the only Danish member of the Swedish 'Oldtimer Society' run by Sven-Olov Linden of Hovstavägen 15, 703 63 Örebro, Sweden.

I enclose a brand new picture of the two Oldtimers — hoping you may be able to use it in *AeroModeller* — which I have known since its very first volume.

Please receive all my sincere good wishes for *AeroModeller* in the years ahead — and for your staff — and thank you very much for many years most interesting reading.

Folehaven 11,

3520 Farum, Denmark

John M. Larson

CONVERTED

Dear Sir,

Some readers might be interested to know of my conversion of the *Kan-Do* to electric RTP flying.

I found the plans in an edition of *AeroModeller* (April 1976) and decided that I would scale them up twice and the power-plant would be a 'Rikomix' motor. I made a few modifications to the plane and also added hinged flaps. The model was flown on 10 foot lines and flew very well even in breezy conditions. It flew relatively fast, but lowering the flaps made it nice and stable and landing it was very easy. This model has given me hours of pleasure and I hope it will do the same for others if they make it.

Evington, Leicester

Andrew Smith

ENGINE TEST

continued from page 589



torque curve shows, the test engine produced its maximum torque (22oz.in.) at around 15,000 rpm (in contrast to most general-purpose 2.5cc glow engines which achieve their best torque at much lower speeds) although, in fact, there is quite a wide useful performance range. We would suggest that a 23 x 10cm (nominally 9in. x 4in.) Taipan glassfibre reinforced nylon prop would be about the largest practical size. The Fuji turned this at 11,500 rpm. The

engine was not happy on some of the other 9x4s which have greater torque absorption, such as the Top-Flite (10,000 rpm) and Tornado (9,600 rpm).

Other prop rpm figures obtained included 11,750 on an 8x6 Power-Prop, 13,000 on an 8x5 Power-Prop, 14,500 on a 7x6 Taipan glassfibre nylon, 14,800 on an 8x4 Power-Prop, 15,000 on an 8x4 Taipan glassfibre nylon, 16,400 on a 6x7 Bartels glassfibre-epoxy and 18,200 on a 7x4 Taipan glassfibre-nylon.

The Fuji silencer, having a relatively large escape area, is not particularly quiet but has very little effect on power output over much of the engine's performance range. In fact, power loss caused by the silencer was not apparent until the engine was running at speeds in excess of 17,000 rpm. Removal of the silencer added only about 300 rpm when the engine was propped for its peak output.

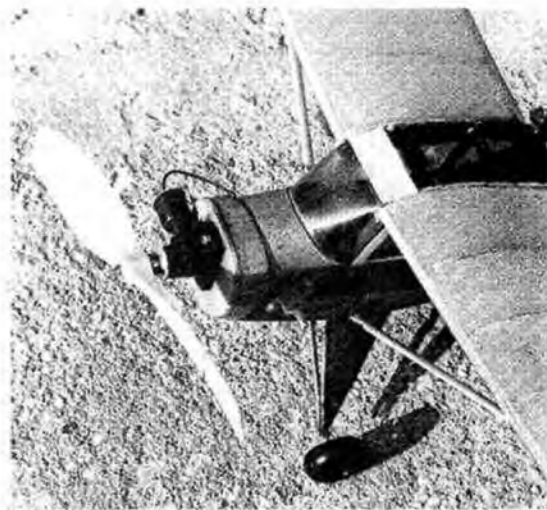
No problems were encountered with the Fuji during testing. Stripped and examined after the completion of the tests, its working surfaces were found to be in excellent condition. The single OS No.3 plug used survived all tests including operation at speeds of up to 22,000 rpm.

Power/Weight Ratio (as tested): 0.94 bhp/lb (with silencer)
Specific Output (as tested): 153 bhp/litre (with silencer)

FLYING SCALE COLUMN

by Eric Coates

The new Telco CO₂ unit installed in the nose of a Tern Porterfield Collegiate kit. Motor was mounted side-winder fashion in order to avoid damaging the otherwise vulnerable copper pipe on rough landings.



FOLLOWING MY report on the new Telco CO₂ motor in the August Column, I can now continue the saga which had to be interrupted by my visit to the Scale World Champs in Sweden.

When I stepped off the air-conditioned boat at Felixstowe, it was like walking into an oven, while the following week was probably the hottest and calmest I have ever known in England. With an evening air temperature of about 80°F, no more favourable weather for flying CO₂ powered models could ever be experienced.

Regular readers will remember that the first sample of the Telco engine I tested in my 20in. span *Hurricane*, through no fault of the manufacturers, was defective. A further sample was provided but had not been test flown when my last report terminated: flight trials with the second engine, therefore, coincided with the aforementioned heatwave. I must admit that I was initially slightly disappointed. The *Hurricane* weighs 1½oz. and, of course, is a far-from-stable F/F scale subject, and I find that no matter what the motive power, be it rubber, diesel or CO₂, the safest and also most realistic way to fly these unstable low wingers is *fast*.

The *Hurricane* proved to be no exception. With plenty of power on she was fast and stable; but as the power fell off so the tendency to drop a wing increased, making the rudder/sidethrust settings very critical indeed. In order to provide the necessary power to climb the "Hurri" the engine had to be run flat out, a condition easily determined with a CO₂ motor as it is the point where expansion takes place so fast that ice forms at the exhaust ports, so restricting the speed. Naturally maximum speed is thus very dependant on ambient temperature. Flat out in 80° temperatures was therefore just about the absolute maximum speed one could ever expect to extract from this particular engine, and it only just flew this model for about 20 seconds. On a normal summer's evening with a temperature of around 60°F, it is unlikely if sufficient power to climb the Hurri would be developed. I flew the Brown powered *Curtiss Robin* the same night, and one flight clocked 2min. 35secs. with the engine running at about half the speed of the Telco. Throttling back the Telco to about the speed of the Brown produced runs of about 1 minute (with a new bulb) but the power was, of course, completely insufficient to fly the *Hurricane*. I do not know how the swept volumes of the Brown and the Telco compare, but they look about the same. They were both swinging 5½in. dia. props — a Telco on the Telco motor,

and a Williams on the Brown. The Williams looks to be a little coarser pitched than the Telco prop, which is described as a 5½in. x 6½in., but against this the Telco has more blade area. Comparative ground runs with the props turning at approximately the same speed (as near as I could judge visually, aurally and by the thrust developed) gave runs of 55 secs. for the Telco and 1min. 15secs. for the Brown, both off the second fill from a new cartridge in each case. I always find that it is the *second* fill which gives the longest run, and not the first. The third is nearly as good, then duration starts to fall off rapidly.

To date, apart from the *Hurricane*, I have flown CO₂ motors in three models: a 17in. span *Ryan PT20*, built from a Tern Kit, and powered by one of the original Mk.I Brown units. This engine was subsequently fitted into my own designed 18½in. span *Puss Moth*. The other machine being the 18in. span *Curtiss Robin*, also built from a Tern Kit, powered by the current Mk.II Brown engine with which the current comparison tests have been carried out. Now all these models weighed about 1oz. — considerably less than the *Hurricane*. In order to carry out truly comparative flight trials of the two engines, it was considered essential that a similar airframe to the Robin was required. Luckily just such a model was available — a 17in. span *Porterfield Collegiate*, built from a Tern Kit, initially as a rubber model and reviewed in this Column in March 1974. Conversion was simple as can be seen from the accompanying photographs. I decided to side-wind mount the Telco this time, as it gives better protection to the copper feed pipe than when an inverted installation is made. I guessed that about 3° right sidethrust and a similar amount of downthrust would be required, and angled the 1/16in. ply firewall accordingly. Subsequent trimming proved this to be about right. The model was a bit nose heavy so the tank was installed toward the back of the cabin — aft of the CG (I removed the upper cabin glazing for the initial trimming flights so that the tank could be moved about to alter the longitudinal trim). Even with the copper pipe at full stretch and the tank aft of the trailing edge, I found that a bit of up elevator still needed to be applied to get a flat glide — weight turned out at exactly 1oz. so at last I had a truly comparative aeroplane in every way to the *Robin* — length and span being within ¼in. of each other.

Flight trials were much more satisfactory than the *Hurricane*; the model being high wing and lightly loaded



Another view of the Tern Porterfield Collegiate, very simply converted from rubber to CO₂ power by the addition of a ply firewall, and the Telco unit retained by a pair of bolts. With the motor mounted on its side, not only was the thin copper pipe protected, but downthrust could easily have been adjusted by the addition of washers beneath the mounting lugs. Sparklet CO₂ bulbs can vary enormously, thus exact power comparisons are impossible.

was stable throughout the entire flight. The thrust line proved to be correct without any engine shimming, and a nice slow left hand climb and glide trim was achieved, although I was a little surprised by how much 'throttle' was required. Duration was never as high as the Brown-powered *Robin* but satisfactory flights of a minute are easily achieved in warm conditions with a new charge.

Final verdict: A nice engine and really good value for the money. The Brown motor appears to be more efficient in that it will run longer and produce more power: I do not know the present price of the Brown Junior with the current exchange rate of the US Dollar, but I would expect that the complete package of engine, prop, charger etc would be well over £20, or getting on for three times the price of a Telco, and the availability of these motors, at least in the UK, is at best uncertain. Provided one restricts oneself to light, small models of around 18in. span (the Tern kits are ideal) then the Telco should prove to be a most satisfactory power unit.

* * *

With the difficult airfield situation prevailing this year the Scale Calendar has been rather threadbare for the early Summer. In fact apart from a few informal fly-in types of meeting there has been nothing for the serious contest flyer for several months. Traditionally Scale competitions have tended to be towards the end of the season and this has been counterbalanced by the Nationals, always the major event of the year, being held over the Spring Bank Holiday. With the unavoidable postponement of the Nats to August this year, the whole programme has had a really lopsided look. Unfortunately press date is just too early for a report of the Nats to appear in this month's edition, although I can report on the meeting which in the last few years has grown, as far as the R/C flyer is concerned (and particularly if he lives in the North) into a meeting rivalling the SMAE Nats. I refer, of course, to the Woodvale Rally, organised by the very large Liverpool club, on 7th and 8th August. This was the first time I have attended this particular meeting and was very impressed by the professionalism of the organisation. Contest flying was conducted between 9.30 am and 2.00 pm, the afternoon being left free for demonstrations to the huge crowd assembled. It is not my brief to report on the extensive displays put on by the various clubs and commercial enterprises, but I cannot but make a passing

Two of Terry Melleney's superbly realistic R/C models - the top in his Class II Miles Hawk which scored highest static points at the Woodvale Rally, although placing only fifth overall, while below is his Moth Minor on its landing approach. This machine won the Class I event at the same rally.

mention of the massive quarter-scale *Spitfires*, and an *ME109E* powered by 55cc industrial engines and also the huge 1/7th scale *Lancaster* powered by a pair of similar units. All were very stable in the air but only one of the Spits featured a retracting undercarriage, which somewhat destroyed the flight appearances of the rest. The fighters also looked too slow - that's a change for a scale model - I estimated their flying speed to be about 50 mph giving a scale speed of 200 mph.

The competitions were well supported with about ten in Class I and 25 in Class II. Outstanding new model present was the *PZL Wilga* of Phil Moor which had the highest static score of 1,500 and this was followed by the venerable *Moth Minor* of Terry Melleney, still looking very smart despite its years, which scored 1,460. Third in static was my *Elephant* at 1,430. I don't know what system of scoring was used - it wasn't the SMAE schedule because the static marks in all cases (in Class II also) were much higher than the flight scores.



The flight schedule was identical to the SMAE's but whether the same 'K' factors were utilised I know not. To judge from the flight scores, adding the two judges' marks together, they cannot have been far away. The weather on both days was well nigh perfect – plenty of sun, but not unbearably hot and the wind ranging from nil to 10 knots max at times. I flew early in the day and surprisingly topped the flight scores in Class I with a moderate 844, closely followed by Phil Moor's *Wilga* at 829. This high wing model looked superb flying slowly in the calm conditions, but with all the 'slottery' I reckon it would be a handful in the wind. Terry Melleney flew surprisingly badly, for him, and only recorded 742. At the end of round 1 on Saturday, therefore, the order was Moore, Coates and Melleney. The next day Terry was back to his usual precise form and made a corking flight to record 1059 and trample the opposition to death! Phil Moore put in a similar flight to his previous one to score 815, and I made a bit of a bash of it! At the end of my taxi, prior to take off, the split pin holding the port wheel on the axle decided to fall out and the wheel bowled off, to finish at the judges' feet, while the *Elephant* stood on its nose. On the second attempt the engine stopped just as I was about to taxi and took a bit of restarting. I was, therefore, short of time to complete the flight and flew the thing a bit fast throughout the schedule. Coming in to land I approached through a mammoth thermal and couldn't seem to stop it climbing no matter how much I pulled the throttle back. Surprisingly I managed a rather bumpy landing in the inner circle, but not surprisingly only scored a total of 686. This meant I naturally fell back to third.

Class II was a very close-run affair with Terry Melleney, flying his *Miles Hawk*, only managing 5th place with a total of 2,209 whilst the event was won by Brian Taylor, flying his favourite *Spitfire 1a*, with 2,269. Although his flying was to the usual high standard, Brian made a mess of both of his landings. On Saturday he completely over-shot and nosed over; on Sunday he seemed lined up well when he flew into the same thermal that I encountered earlier and got into such a position that he had to completely abort and go round again. Fred Coulson, flying the *P36A*, put in the best flight of Saturday, at 996, but suffered engine failure halfway through the schedule on Sunday. This probably cost him the contest as he was going very well at the time and was lying a close second with his first flight; as it was he finished fourth.

Best flight in Class II was put up by the *Pitts* of M. Rawlins whose precise aerobatics earned him 1,052 and pushed him within 7 points of Taylor. Only 6 points



The Bucker Bestmann superseded the Jungmann as Germany's primary/medium/advanced trainer around 1939/40 - this example having been built from the Krick R/C Class II scale kit.

behind Rawlins was the *Wellington III* of Eric Evans. This model literally was stripped to the bone to meet the weight requirement – no guns, aircrew or dummy engines were carried. This twin, however, flew superbly; especially on Sunday. It appears to be a little tail heavy (no doubt the nose ballast has been trimmed back also) but flies quite stably in calm conditions. Major fault, however, is the undercarriage – this flicks up and down far too quickly and unfortunately, as at the Nats last year, one leg collapsed on landing after the second flight. Nevertheless it scored a well earned 936 points on Sunday to take third slot.

		Flight 1	Flight 2	Static	Total
Class I					
1.	T. Melleney <i>Moth Minor</i>	742	1058	1460	2519
2.	P. Moor <i>PZL Wilga</i>	829	815	1500	2329
3.	E. Coates <i>Elephant</i>	844	686	1430	2274
4.	G. Smith <i>Pomilo</i>	407	741	1360	2101
Class II					
1.	B. Taylor <i>Spitfire 1a</i>	959	914	1310	2269
2.	M. Rawlins <i>Pitts</i>	754	1051	1210	2262
3.	E. Evans <i>Wellington III</i>	818	936	1320	2256
4.	F. Coulson <i>Curtiss P36a</i>	996	519	1250	2246
5.	T. Melleney <i>Miles Hawk</i>	785	849	1360	2209

Swedish competitor at the recent R/C World Championships, Goran Kalderen with his highly detailed, unusual subject – an OV-1 Tummelitan. Despite soaring very highly in the static-judging section, he was plagued with engine trouble and never achieved a flight score which approached its true potential.



Peanuts by Post Mark 2

Related by Bill Hannan

Photographs by courtesy of Warren D. Shipp



REGULAR readers may recall an article in the October, 1975 issue of *AeroModeller* detailing the results of the *Premier Parcel Post Proxy Peanut* contest, sponsored by the American magazine *Model Builder*. The concept involved sending tiny flying models from many parts of the world to California, for static judging and proxy-flying. This year, the event was repeated with receipt of over 100 entries. Postal damages took their inevitable toll, but an emergency repair crew, utilising 'miracle' adhesives, managed to restore quite a number to airworthy condition, and some 93 models actually participated.

Countries of origin included Canada, Czechoslovakia, France, Germany, Rhodesia, Saudi Arabia (*Model Airplane News* roving columnist, Dave Linstrum), the United Kingdom and USA. The two-day affair was conducted by Contest Director Carl Hatrak, ably assisted by Chief Judge Russ Barerra. Static Scale judges and proxy flyers included Bob and Sandy Peck, Curtiss and Walt Mooney, Fernando Ramos, Bill Stroman, Don Eble, Fred Reece, Dick Baxter, Clarence Mather, Jack McCracken, Ken Hannan and your scribe.

Chuck Conover, of Busch Gardens, negotiated the use of the site, a gymnasium on the campus of Long Beach State College, and the school officials were exceptionally co-operative, even providing tables and a separate room for judging and model storage.

The logistics involved in such an undertaking are no small matter, and it was fortunate that the *Model Builder's* mobile home vehicle was available to serve as a Peanut 'mass transit'.

The individual shipping containers themselves were worthy of close examination, embracing virtually every imaginable form of package, including cardboard and styrofoam boxes, wooden containers, suitcases, and even one elaborate aircraft quality sheet metal magnesium construction, combining light weight with great rigidity. One enormous packing crate was equipped with screened 'breathing vents', and stencilled with the imposing legend: "RARE BIRD BREEDERS AND TRAINERS INCORPORATED" . . . a scheme obviously calculated to elicit more than the usual amount of care by postal employees!

Contest rules specified only written instructions permitted for proxy flyers, thus local entrants had no special advantages over more distant competitors. After static judging, model numbers were drawn at random to determine flyer assignments. In the case of models which could not be readily qualified, a second or third selection

was made, in order to allow different proxies a chance to try solutions to unusual problems. This worked well, with a few seemingly 'hopeless' aircraft eventually qualifying. It was indeed an education to watch various proxy flyers applying their extensive skills to stubborn cases — often a few minor 'tweaks' resulted in almost magical duration improvements. Although some instructions were extremely comprehensive (entrant Walton supplied directions in comic book format!), others amounted only to fortune-cookie type quips, such as "Lots of Luck!"

Perhaps the most intriguing aspect of Peanut Scale contests is the variety of entries attracted. Since the entire idea is intended to be fun, builders are often willing to produce off-beat designs, in the interest of seeing something 'fresh' in action. Among the more unusual types noted, in addition to those illustrated, were a *Libellula M-35 Canard*, by Pedashenko of Rhodesia (who had entered two canards the previous year, from Australia!), a *Wibault 170 C-1* by Castle, USA, a *Breguet Laboratory Eiffel*, by Francesco, USA, and a *Leduc RL-21*, by Waciawick of Czechoslovakia.

A spirit of goodwill and levity prevails at these meets, helping to lighten the load of the hard-working judges and proxy flyers. Witness these actual conversation extracts:

"This model is more accurate than its 3-view!" "Anyone check for 13in. span?" "What do you do about a model with LESS than scale dihedral?" "This model is so light, its structural members must have been hollowed out by trained termites!" "This model couldn't possibly fly . . . its cowling must be hogged out of solid lead!" (surprise, it did). "Next time let's come up here a day early, so we can play with and study these . . . we don't have enough time to appreciate them!"

The judges were spared an embarrassing decision regarding the tongue-in-cheek entry of Roald Tweet, a 13in. span model-of-a-model Korda Wakefield. Seems Professor Tweet had studied the rules carefully, and found no requirement for the subject to be based upon a real aircraft! However, the model did not feature a pilot, as clearly specified, thus meriting disqualification. As might be expected, the model proved a superb flyer.

The magnificent (several feet high) trophy sponsored by airline pilot Ed Toner, unclaimed last year, for the best multi-engined qualifier, was captured by Ringle, USA, with a *P-38 Lightning* Peanut. Another twin, a *Dornier Push-Pull*, by Haight of Las Vega, failed to qualify by

Clarence Mather's *Comper Swift* placed first in the 'Golden Age' class — features sprung landing gear and Snoopy in the cockpit.

a narrow margin, in spite of the best efforts of several proxies. Other results were as follows:

Pioneer Class

- | | |
|-------------------|-----------------|
| 1. Blackburn Mono | Krekovich (USA) |
| 2. Bleriot IV | Mooney (USA) |
| 3. Bleriot-Nyrop | Schafer (USA) |
| 4. Blackburn Mono | Blair (USA) |
| 5. Santos-Dumont | |

14 Bis

- | | |
|--------------------|------------------|
| | Martin (USA) |
| World War I | |
| 1. Fokker E-II | Stewart (Canada) |
| 2. SE5 | Hall (USA) |
| 3. SE5a | Blair (USA) |
| 4. DH6 | Kriebel (USA) |
| 5. Hergt Mono | Mooney (USA) |

Golden Age

- | | |
|-------------------|-----------------|
| 1. Comper Swift | Mather (USA) |
| 2. Jungmann | Krekovich (USA) |
| 3. Travelair 2000 | Blair (USA) |
| 4. Kalanin K-5 | Stott (USA) |
| 5. Cessna A-W | Martin (USA) |

World War II

- | | |
|--------------------|-----------------|
| 1. Piper L-4 | Hutchison (USA) |
| 2. Curtiss Seagull | Walton (USA) |
| 3. Piper L-4 | Blair (USA) |
| 4. Fairchild PT-26 | Hinkle (USA) |
| 5. P-51 | Little (USA) |

Modern

- | | |
|----------------|---------------|
| 1. Lacey M-10 | Gerz (USA) |
| 2. Lacey M-10 | Martin (USA) |
| 3. Cougar | Eble (USA) |
| 4. Luton Minor | Johnson (USA) |

Top Scale points: Blackburn Mono (Krekovich, USA)

Best Workmanship (foreign): Hirondele (Frugoli, France)

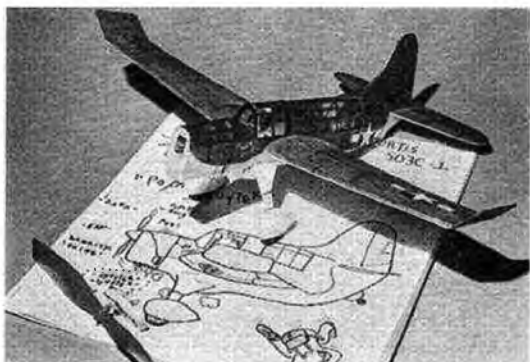
Best Workmanship (domestic): Jungmann (Krekovich, USA)

Even a casual scanning of the results will reveal that multiple entries were fairly common, and certainly increased one's chances of success.

After the event, a tired but happy crew adjourned to the lovely Lido Isle home of Bill and Anita Northrop, for debriefing and refreshments . . . a fitting conclusion to a fascinating experience.

Note: We understand that proxy entries are now being invited by groups in France and Czechoslovakia, with details appearing in the magazines of each country. In France, Peanuts have received tremendous response, with entries in a recent Paris event numbering over 100, and the proceedings garnered television coverage!

Such participation offers a great deal of fun and satisfaction for relatively low cost.



Left: Walton's Curtiss Seagull featured a cartoon book of instructions for its proxy flyer! Above is Walt Mooney's Blériot IV, which placed second in the Pioneer Class.

Even with high postage rates, it is a bargain compared with personal attendance. If any readers may contemplate such an idea, the following suggestions, based upon several years' experience are offered:

1. Pack models securely! Try to allow at least a modicum of 'crush space' between outer walls and the model. Some feel an inner box to be a good idea. Protect or isolate the model from the transmission of pressure applied to outer box walls. Carefully secure the movable parts, such as propeller and nose block and rubber motors in separate compartments. Ditto proof-of-scale materials, which if left loose can destroy a model.
2. Include COMPLETE directions for the

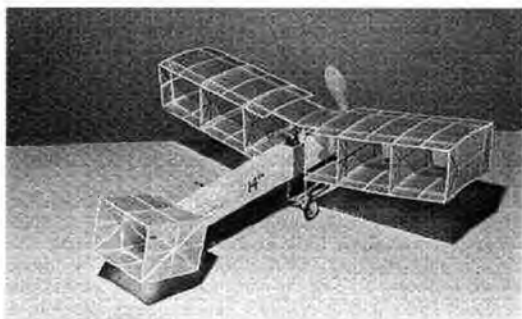
proxy flyer. Never assume he will understand your ideas instantly. (He may not even read your language, so include a translation, or sketches.)

3. Assume the worst, and include spare parts, repair materials, tissue, etc.
4. Design the model to be rugged enough to withstand handling and at least minor impacts, particularly the nose assembly and landing gear.
5. Mark balance point on model itself. In-transit changes of moisture content can easily alter the centre of gravity. A percentage of models entered in the MB contest arrived tail-heavy.
6. Be certain that your proof-of-scale material is adequate. Most contests require at least a 3-view (NOT model

construction plans). A photo or two of the parent craft plus colour information should improve your chances of receiving proper credit for your work.

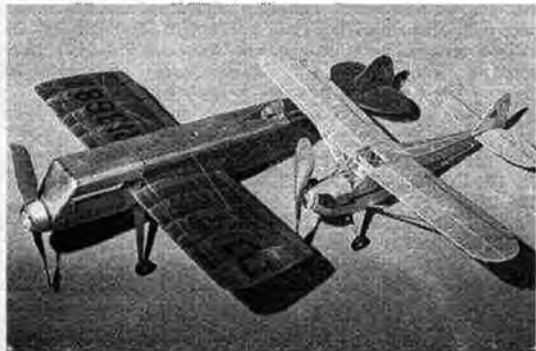
7. Last but certainly not least, construct a nose assembly with sufficiently large opening for insertion of rubber motors with minimum bother. Old-fashioned tiny 'nose buttons' are NOT a good answer. Ensure that the propeller shaft bearing is a snug running fit in the thrust bearing, and that the nose block fits well enough to enable precise thrust adjustments to be made if required.

We think you will enjoy Peanut Scale participation on the international level, and wish you "Lots of Luck!"



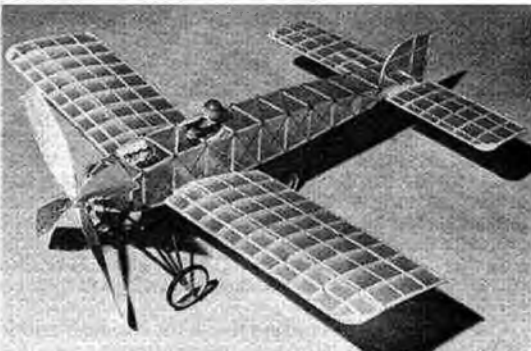
Santos Dumont 14-bis, by Dr John Martin (Florida) was outstanding flyer, besting many of the 'ho-hum' planes in duration.

The result of rules specifying a maximum wing span - Czech enthusiast Waciewicz's Bonzo Racer appears enormous alongside a Piper Cub.



Outstanding Ganagobie, entered by 'Peanut Parson' Ms Jill Peck. Note the profile pilot.

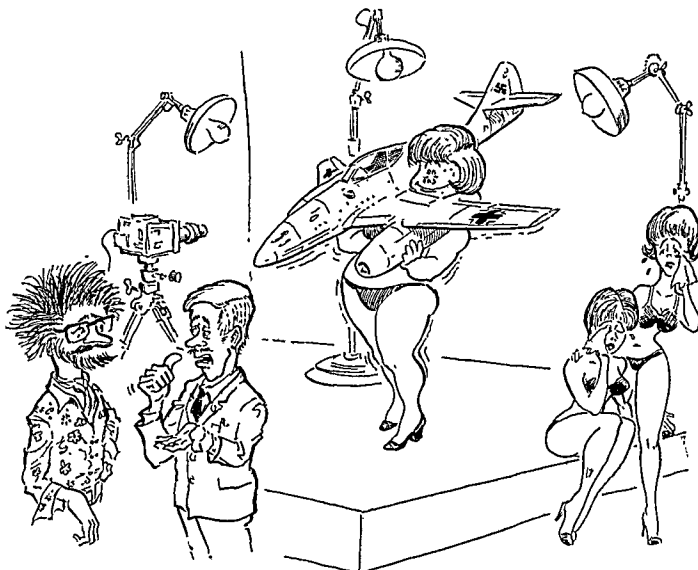
This superb Hirondelle by French builder Frugoli, not surprisingly won the 'Outstanding Workmanship' award. Note superb spoked wheels and 'fancy' prop;



topical twists

by 'Pylonius'

illustrated
by Sherry



"But she's the only one who could pick it up".

A Like-ly Story

In common with most old sentimentalists – and not a few young ones – I have nurtured the nostalgic idea that, in the golden age of yesteryear, the oldie models were so full of individual character, all so glowingly different each from the other, with only a slight tendency to potbelliness to betray a common descendency. But that picture taken at Fairey's Aerodrome way back in 1936 gives our vintage visions something of a jolt, for the models so proudly paraded are every bit as alike as the stick and wing ultimates of today – perhaps even more so. A quick look at the picture and you might get the impression that this was a *Northern Star* vintage comp, but for the Fair Isle pull-overs and the short back and sides haircuts.

But these Brylcreemed flyers of an earlier generation may have seen their models as quite different and distinct, each full of characteristic quirks which our modern eyes cannot perceive, like offset tailskids and cantilever undercarriages. You get the same thing with Chinamen. They all look alike to us westerners, but Ma Jong can tell Pin Hi from Pin Lo just as easy as any British mum can distinguish between Fred and Jim. Odd thing, though. It is not only the models that look alike, the 'thirties flyers themselves are very much of a muchness. They all look like Fred Astaire.

Another odd thing, too. If you were to see a modern cluster of Wakefield men and machines, the men would appear much plumper and the machines much slimmer. Now the haggard look of the 'thirties could have been due to a smaller intake of protein but was more likely attributable to the worrying absence of D/T's – they had more fly aways than hot dinners. But there were compensations. Modellers in those days used to boast of producing a potential Wakefield winner 'in a couple of weeks of evenings', whereas it takes the modern hopeful that much time to design the noseblock assembly. And then look at the bountiful rewards for finding a single thermal: pots and vases of monumental proportions for all and sundry. Think, in contrast, to those seven perfectionist flights now required for a mere plastic plaque – if you're lucky.

No Holds Barred

A common sight in our model magazines these days is of nubile young women grappling with enormous models. Some of them are really gigantic – the models I mean – and the poor girls have a tough job in projecting a competitive quantity of alluring anatomy through the sheer screening mass of model. Some get over the problem by propping the model on its wing tip and striking a sort of pose that clearly indicates the most desirable CG position and exhibits the bodywork and undercarriage to their best advantage.

Our latest cover girl picture shows the curiously entitled 'Miss Weak Signals 1976' with two enormous ones – Pitts

Specials, I hasten to add. This girl, who obviously believes in the snatch and lift approach, seems to have made a clean hoist, and is gamely gritting her pearly teeth with the effort. You can almost hear her saying, "I may have the body of a poor Weak Signal girl, but I have the spirit of *Mr Universe*."

It would be interesting to know how they pay these popsies: by weight or yardage.

Girl Talk

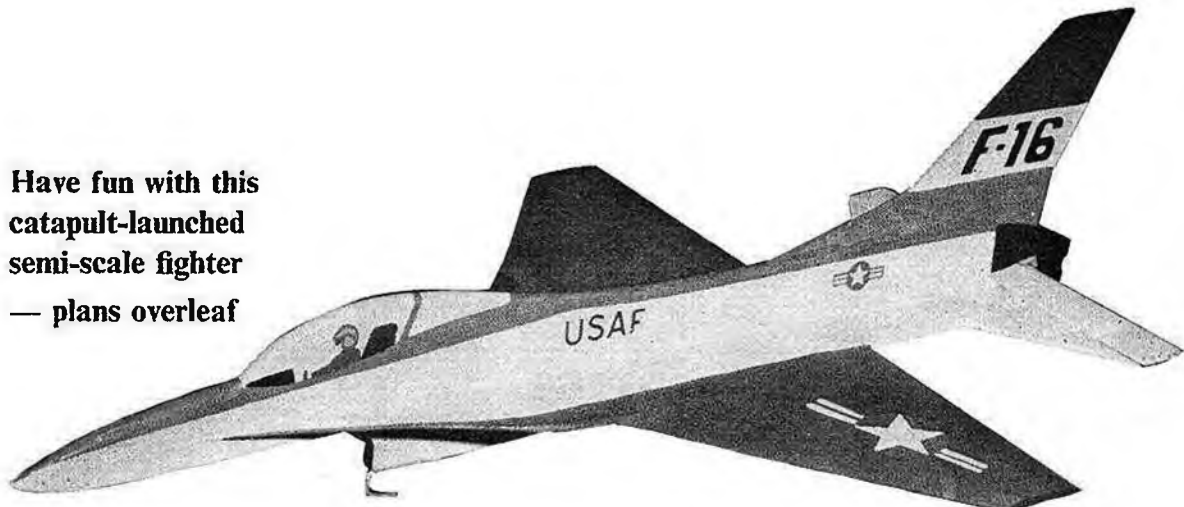
Generally, though, we have virtuously kept our homely hobby, repeat hobby, free of all this nasty sex stuff, although a couple of months back I was deploring the way the young recruits to our hobby, repeat hobby, were cut down in their modelling prime by the now all too untrammelled female of the species. I harked back nostalgically to the days when a model was a model plane and Miss England a speedboat, but now I see I am taken to task for all these nasty anti-lib comments. I am asked to believe, in the face of all evidence to the contrary, that the trendy m/s of today is enthusiastically involved in model flying, instead of being reluctantly dragged to the flying field by some masterful male.

I decided, therefore, to put aside all the male chauvinistic piggery of which I stand accused, and take a quite detached and analytic look at the role of the female at a typical model meeting. At the end of the day my notes read as follows: 1. The m/s content of the attendance was about 10%. 2. Not one m/s flew a model, either in or outside the contests. 3. Two only m/s's were seen to time models. 4. Not more than half a dozen were involved with the model flying in any way. 5. One m/s was actually heard to say, "If you can't beat 'em join 'em".

Armed with this information we contacted the well known female magazine, *Woman's Weekly*. They said that they were aware of the plight of ladies attending model meetings, and following their successful series of articles on how to amuse the children on long car journeys, they were about to produce a similar series on means of allaying the boredom of a long day's model flying. The first article will be on how to embroider a 'Biggles Chest Cosy'. This will be followed by such ideas as corn dolly making for the late summer meetings, flight card bingo, and for the younger ladies, fifteen things you can do with long grass.

And I still insist that model flying is, by definition, a hobby. A sport is something quite different, and is usually concerned in the hunting down of defenceless creatures, as in the case of predatory M/s after young modellers. But wait, I have just seen the (un)cover girl on the front of *Radio Control Models and Electronics*, and must after all concede that aeromodelling is a sport.

Have fun with this
catapult-launched
semi-scale fighter
— plans overleaf



GENERAL DYNAMICS F-16 by B. A. Manners

THE GENERAL DYNAMICS F16 fighter really hit the news when, following its appearance at the Paris Air Show, orders were placed by no less than four NATO countries — much to the annoyance of the European aircraft industry, the French in particular. No doubt this degree of publicity impressed the design in my mind, and when my eight-year-old son decided that he wanted a semi-scale model to make for his Cubs Hobbies badge, it seemed a good choice. Why? Politics apart, the F16 is a really straightforward, compact design which easily lends itself to adaptation as a catapult-launched glider. Also, the bright colour scheme of the two prototype machines is most attractive and easily applied — important points when designing a model for youngsters, as is the fact that it is economical in the use of materials. Two models can be built for a cost of around £1.00.

Keen observers will note that the original design has been modified somewhat in the interests of simplicity and flyability — for example, a flat tailplane with an elevator is used instead of having two differential, all-moving, anhedralled 'tailerons', while belly fins and missiles have been left off before they get knocked off . . .

Construction

1. Measure the plan-form of the aircraft, then draw out parts 1, 2 and 3 *twice full size* onto a sheet of 3in. wide $\frac{1}{8}$ in. thick medium hard balsa as shown. Cut out with a sharp balsa knife, using a steel rule as a straight edge.

2. Assemble and glue parts 1 and 2 together.

3. Again, double up the dimensions of parts 4, 5, 6, 10 and 11 then draw onto a sheet of $\frac{1}{8}$ in. balsa. Part numbers 7, 8 and 9 may be traced directly from the side elevation on the plan. Arrange on the sheet of

balsa as shown, and cut out.

4. Shape outer wing to sections A1-A1 and A2-A2, then sand part 3 to section C-C.

5. Shape tailplane to sections B1-B1 and B2-B2. Cut along elevator hinge line and round off the edges, then rejoin with tape hinges.

6. Assemble and glue parts 3, 4, 5 and 6 to parts 1 and 2. Cover with polythene, then place weights (such as books etc) on top and leave until the glue has fully set. A PVA type of glue is recommended to prevent warps.

7. Assemble and glue fin parts 7, 8 and 9; use weights to keep it flat, and leave to dry.

8. Using tracing paper, draw out the shape of the complete fuselage, then transfer to the hard $\frac{1}{8}$ in. sheet balsa, cutting out parts 12, 13 & 14, using the straight edges of the sheet for the straight edges of the parts.

9. Round off the leading and trailing edges of the fin assembly, then glue to fuselage (part 12).

10. Make four triangular gussets 9in. long, from a strip of $\frac{1}{8}$ in. x $\frac{1}{8}$ in. balsa.

11. Glue fuselage top (13) and fin to wing/body/tail in the correct position, and add the top two $\frac{1}{8}$ in. gussets, one on each side of the fuselage.

12. Bend 16 swg piano wire catapult hook to shape.

13. Complete lower fuselage by adding the catapult hook, covered by a piece of bandage, well cemented.

14. When wing/fuselage assembly is completely dry, add parts 10, 11, 13 and 14, plus the two remaining gussets.

15. Make the $\frac{1}{8}$ in. ply elevator horn and cement in position, reinforcing the joint with balsa gussets.

16. Recess the nose and add a strip of lead, so that the model balances at the position shown on the plan. When satisfied, secure lead with a cemented bandage.

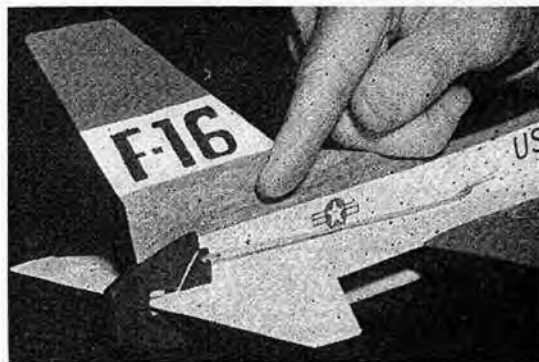
Finishing

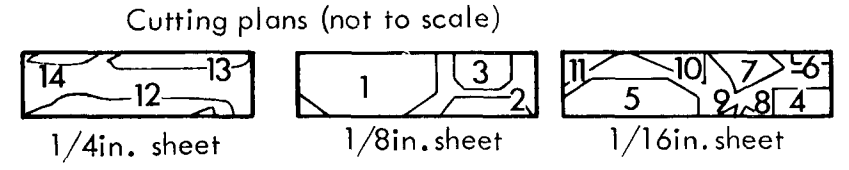
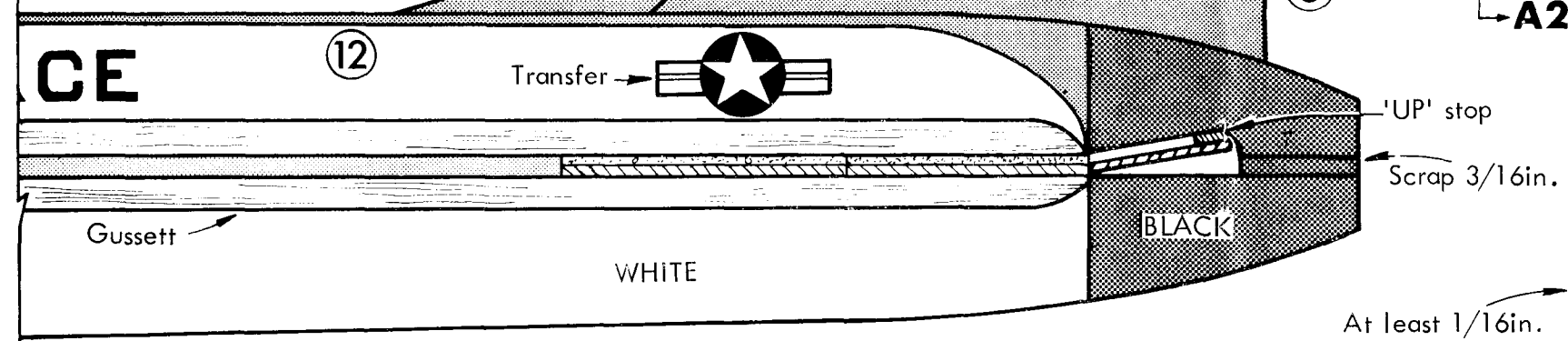
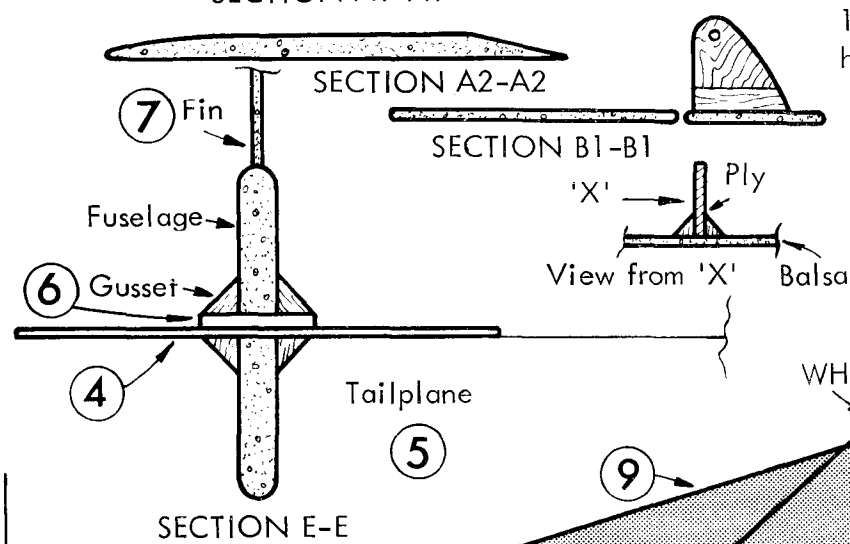
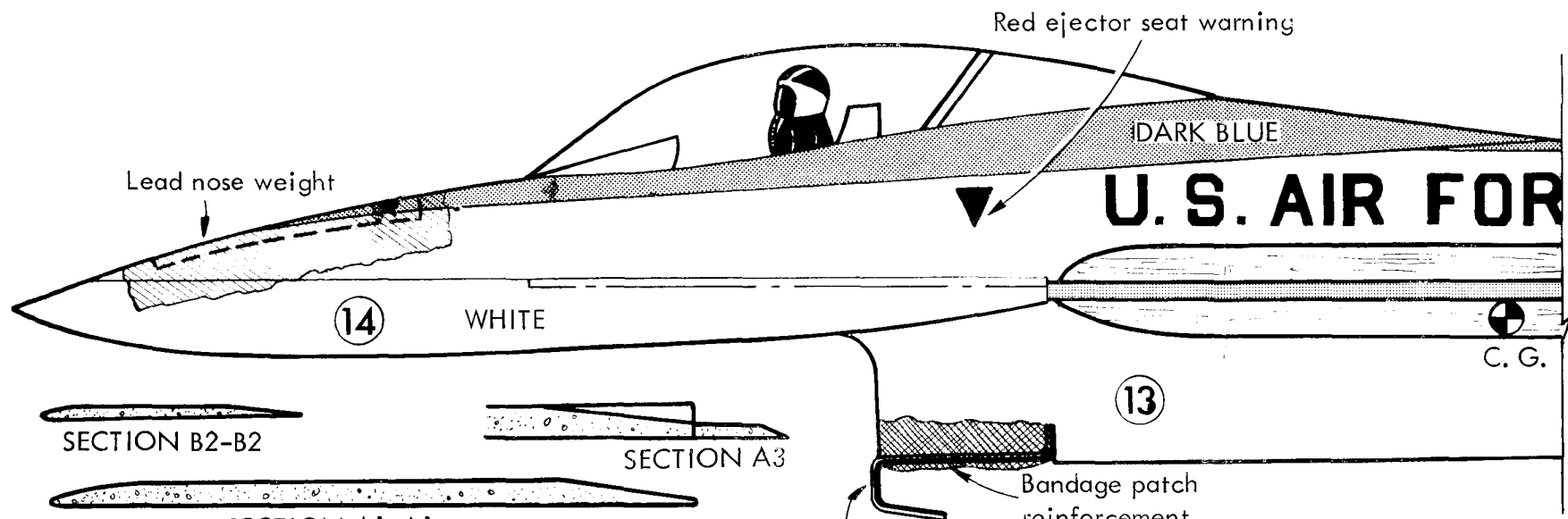
Sand all surfaces smooth with fine glass paper wrapped around a sanding block. Dust off, and then apply a coat of thinned clear dope, to which talcum powder or French chalk has been added to act as a filler. When dry, rub down with fine wet and dry paper. If necessary, apply a second coat to fill the grain of the balsa wood, and rub down smooth once again. Now, using thin colour dope or enamel sparingly, apply the colour scheme as indicated on the plan.

Transfers can be used for the insignia, while the lettering may be applied with a brush, by transfers, or even with Letraset.

continued on page 583

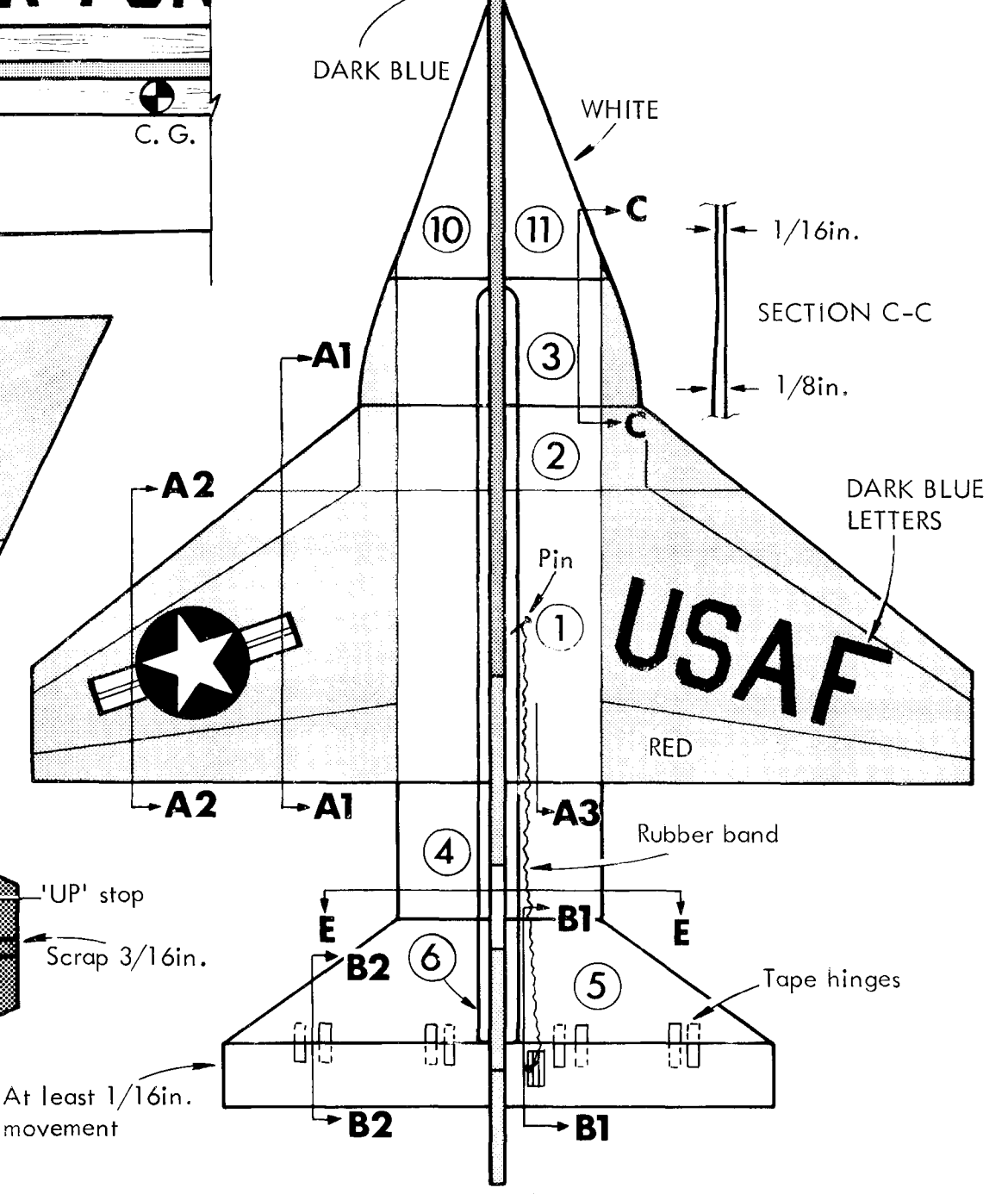
The 'blow-down' elevator is tensioned by an elastic band, and permits a fairly steep initial climb followed by a loop as the air-speed decreases.





F-16

Air Combat Fighter



NOTE: PLAN VIEW OF AIRCRAFT DRAWN HALF FULL SIZE
Measure drawing, double dimensions of each component
and draw direct onto balsa wood before cutting out



QUITE A FEW combat kits are now available on the market, so a new one has to be a bit 'different' in order to sell well. As the photos show, the *Sho-Gun* is quite conventional in appearance looking very similar to the APS *Ironmonger*. However at £4.32 it is one of the cheapest combat kits around, and certainly must have about the simplest structure. This cheapness and simplicity make the *Sho-Gun* ideal as a 'first' combat model, and it is from the viewpoint of the inexperienced flyer and builder that I have reviewed this model.

Actually in the hands of its designer Dave Wiseman, *Sho-Gun* has a respectable contest record - in 1973 it won at Cranfield and was second at the Nationals. Not as comprehensive as the Pegasus *Warlord* for example, but showing nevertheless that it has the potential to be used at top levels of competition with some prospects of success.

The Kit

This is the only combat kit to be sold in a plastic bag rather than a cardboard box. Besides helping towards the highly competitive price, in my view this unusual method of packaging has quite a few advantages for both retailer and purchaser, perhaps the greatest being that the contents can be checked for quality, completeness etc, without having to open the package. No problems with bits falling out of the box during examination or when taking it home on the bus! Also previous prospective purchasers, when examining the kit, will not have covered the contents in finger and/or nail marks. Of course

the plastic bag does not protect the contents from crushing type damage, so the retailer will have to exercise a bit of care about storage and display, but the purchaser can at least see if the contents have been damaged before money changes hands.

The kit is fairly complete, containing most parts pre-shaped for easy construction; no die-cutting is employed, all pre-cut parts appearing to have been band sawed. Whilst this does not look quite as 'clean cut' as the best die-cutting can give, the cutting quality given by band-sawing is very consistent with none of the crushing that can result from die-cutting. The full-size plan is simple and uncomplicated. I found it easy to follow and especially appreciated the isometric presentation of the centre rib and bellcrank mounting area. Building instructions are separate from the plan, in tabulated form. My only criticism of the plan is that it assumes that only motors 1½in. wide between the mounting lugs will be used. Whilst the Oliver Tiger is the obvious choice of motor to fit in the *Sho-Gun*, many builders may want to use a cheaper motor such as the PAW 249 with its narrower lug spacing. It would therefore have been nice to see some advice on how to accommodate different motors.

Construction

The leading edge is from a solid, pre-shaped balsa section (the one in my kit was a little on the heavy side), to which is glued the central spruce reinforcing strip. Because this spruce strip is the key for locating the ribs to the leading edge, it is vital that it is located very accurately and glued

KIT REVIEW

Deco Models

SHO-GUN

a proven, contest-winning,
FAI class combat model
reviewed by
Ian Hutchinson

Our reviewer finished the *Sho-Gun* to his usual high standard - looks too good for combat use! Model would be an ideal introduction to combat for the inexperienced - it is plenty strong enough to withstand severe abuse.

securely - but the instructions did not emphasise the importance of this.

The trailing edge is provided in five pre-cut parts - a full span main piece, a full span spruce reinforcer, a trailing edge extension and two extension gussets. All of these parts fitted together well and were easy to assemble; I particularly liked the accurate pre-cutting of the extension gussets and the attention paid to maintaining correct grain directions. I always sand the top and bottom of glued-up trailing edges like this one so that the glue-lines do not interfere with the ribs during assembly and feel that the building instructions could have mentioned this point.

The pod is assembled onto a pre-cut ¼in. ply core. On one side is the balsa side-cheek (nicely pre-cut from ½in. sheet), on the other goes a pre-cut ½in. sheet balsa nose block and ½in. x ½in. beech bearers. Whilst these bearers were cut to length, they did not have the profile pre-shaped and were of nominal size; a bit of a disappointment in an otherwise comprehensively pre-shaped kit.

The centre rib is assembled from two pieces of ½in. x ½in. balsa sandwiching a suitable length of ½in. ½in. spruce. I liked this spruce down the centre of the rib - obviously a design feature resulting from contest experience. This is one centre rib that is most unlikely to fail even after repeated vertical crashes of the model into the ground. Two pieces of ½in. ply going into notches on the top and bottom of the centre-rib provide the bellcrank mounting. The other ribs (5 of ½in. sheet and 3 of ¼in. sheet) are pre-cut as is the ½in. sheet elevator

The centre rib went together very easily; the isometric drawing on the plan being very clear to follow on this point.

The assembly of ribs to the trailing edge, and then glueing of the leading edge to the ribs was easy because all of the parts fitted well. However the instructions were a bit bare and the inexperienced could end up with misaligned ribs if following the normal 'off the board' assembly practice. A few words on how to mark the leading and trailing edges before glueing to the ribs to ease alignment would have helped. However, I stress again that the *Sho-Gun* does have a very simple structure and goes together very easily, I certainly had no problems and expect that, provided this is not your first control-line model, any builder should find assembly as easy as I did.

To finish the model, I decided to use nylon covering, preferring in this instance strength and longevity to lightness. In fact nylon covering only involves a weight penalty of less than 1oz. when compared with plastic film covering. Therefore, except for

contest use where weight is critical (to get the best flying characteristics possible), nylon covering is preferable for 'sports' flyers and for the newcomer to combat. With my usual complex paint finish (my models have got to look good even if they don't fly good!) and the nylon covering, my *Sho-Gun* came out at 17oz. including my Oliver Tiger and a *Tornado* 8 x 6in. nylon prop. Not bad really, because the *Sho-Gun* has perhaps more wing area than most of the FAI combat kits currently available. Given lighter wood and plastic film covering, I would not be surprised to find a 14oz. all-up weight.

Criticism

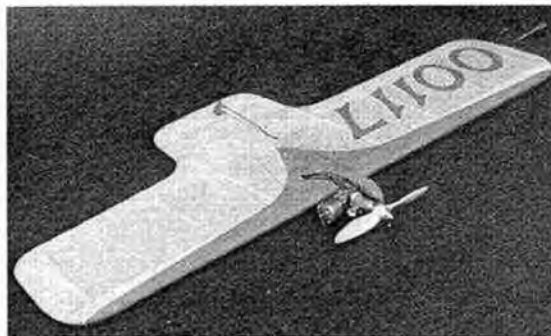
Maybe I have pushed my 'beginners' glasses on a bit hard, but I did feel that the inexperienced beginner might find the building instructions a bit bare. Whilst all necessary are given, very little attention is paid to explaining why doing some things are vital e.g. dowelling the pod through the centre-rib after assembly. Not a major criticism, but a significant one. Too many beginners skim important,

even vital, details because they have not yet gained the bitter experience that forces attention to detail. Perhaps there is no substitute for such bitter experience, but in my view building instructions should always try to help as much as possible. The *Sho-Gun* building details are far from unique in being merely instructions with inadequate explanations; indeed I have yet to come across an adequate set of building instructions. However, this does not excuse this deficiency. Otherwise I have no complaints, indeed the *Sho-Gun* is an excellent kit and certainly builds up in a minimum of time into a highly practical model which has an excellent performance.

Flying

I put the 'criticism' bit before the flying report because I liked the way my *Sho-Gun* flies! It has more line tension than most modern designs and is very stable and easy to fly. You cannot have it all ways, i.e. stability plus sensitivity. Obviously my *Sho-Gun's* 17oz. all-up weight pushes it towards stability rather than ability to 'jump' at the slightest movement. However it is as manoeuvrable as any of the combat models currently kitted and no doubt trimmed with the centre of gravity at the recommended 1 1/2 in. back from the leading edge position and a few ounces lighter, it could 'wobble' with the best of them. For the beginner though, the stability would be a godsend. A thoroughly recommended kit.

The *Sho-Gun* has only been available for a short time so if your retailer does not yet carry a stock, ask him to contact the distributors: Javis Manufacturing Co, 42 Lower Hillgate, Stockport, and order some.



Covered in nylon in the interests of durability and with a relatively heavy finish the completed model weighs 17oz. - which bearing in mind the relatively large wing, is not bad for a commercial product. Plastic film wing would provide a useful weight saving for contest types.

GENERAL DYNAMICS F-16

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Flying

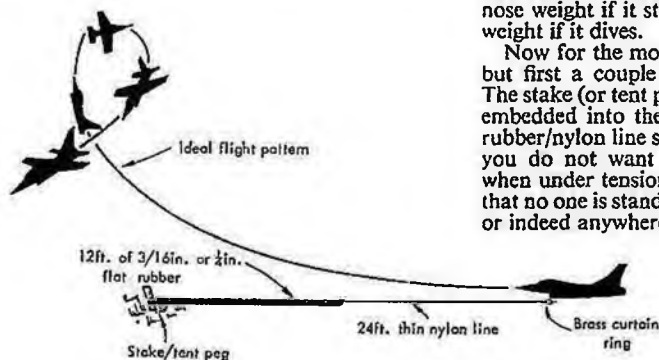
Attach a thin rubber band to the elevator horn, looping the other end over a pin pushed into the fuselage, so that tension just pulls the elevator

to the 'up' position. Cement a shim into the gap over the elevator to allow 1/8 in. up elevator (see plan). With the centre of gravity in the position shown, test glide into wind. Aim for a fast shallow glide; add Plasticene nose weight if it stalls, remove nose-weight if it dives.

Now for the moment of truth... but first a couple of safety checks. The stake (or tent peg) must be firmly embedded into the ground, and the rubber/nylon line securely attached - you do not want anything to part when under tension. Also make sure that no one is standing in front of you or indeed anywhere near you - these

models are fast. Best of all, fly these models in an open field with no spectators around.

If all is clear, face into wind and pull back on the catapult (shown in Figure 1) for some fourteen paces. Check that it is safe to launch once again, then making sure that the wings are parallel to the ground, release. You should be rewarded with a terrific climb to altitude, a loop (or wing over) off the top and a long steady glide. This is created by the 'blow-down' elevator - as the model accelerates away from the launch, air pressure will keep the elevator at neutral, but as airspeed decreases so the elevator moves to make the model loop. Therefore, if your model does not provide the ideal flight pattern at first, try adjusting the rubber band tension and/or the amount of elevator movement.





A CONTROL-LINE RACING ORGANISATION?

It has long been apparent, through talking it over with several team-race flyers, that there is a need for control-line racing people in this country to organise themselves into a 'Body' in the same way as the stunt flyers. Model flying in this country has reached a critical stage in its history, and the advantages of such an organisation would be many. Graham Bryant, who has been a team-race pilot for many years, has offered to sound-out opinion as to the desirability among his fellow team-racers of such an organisation and has suggested the following objectives:

- (1) To liaise with, and assist, the SMAE in fulfilling its functions concerning:
 - (a) Rule formation and revision
 - (b) Contest organisation
 and any general SMAE activities concerned with control-line racing.
- (2) To provide a means whereby all persons interested and/or active in any form of control-line racing can communicate together to:-

BETWEEN THE LINES

with Dave Clarkson

High speed action from the World Champs during the first semi-finals round of the FAI team race event. At left is Krasnorutski (USSR) - note microphone in right ear to receive messages from his pit man - while leaning backwards at an impressive angle is Petersen (Denmark) in front of Onufrienko, the tall Russian pilot. After the race was more drama - the Danish team having recorded a superb 3:56.7, and Krasnorutski/Kramarenko being disqualified for having an oversize tank.

- (a) Co-ordinate the scheduling of contests.
- (b) Provide reliable and experienced personnel for the organisation of contests.
- (c) Publicise equipment and services availability.
- (d) Keep mutually informed of technical development.
- (e) To promote the interest of beginners to the sport.
- (f) To promote the interests of control-line racing in general.
- (3) To provide all necessary support for the compilation of:
 - (a) A register of names and addresses of all persons interested in, or active in, control-line racing.
 - (b) Listing of contest results.
 - (c) Performance records.
- (4) To promote and improve the image, interest and performance levels of control-line racing by the observance and expansion of these objectives.

The suggested name for such an organisation is **CLARA**. This is derived thus: **C**ontrol **L**ine **A**ircraft **R**acing **A**ssociation

Maybe additional objectives could be to maintain interests in the securing and upkeep of flying sites suitable for control-line racing; to endeavour to secure a *permanent* site for the continuance of C/L racing in the UK; and to ensure that the SMAE and other interested bodies are kept aware of the special requirements of C/L racing models (example: silencers).

As an SMAE member, I can find only benefits in Graham's suggestion. This is because the first proposed objective is 'to liaise with and assist the SMAE...' - surely something the SMAE badly needs at this time, suffering as it is under the massive loads of airfield problems and our possible extinction due to the Government proposed Noise Control Regulations. This works both ways for not only should the SMAE wish for all the assistance we C/L



MEET THE PEOPLE

The Outlaws club consists of many flyers, but the mainstays are (left to right) Richard Wilkens, Bill Grypton, Bill Colledge, John Hammersley, John Strudwick and Frank Smart. Surely qualifying as the top Combat club at the moment, they pioneered the 'foam plus glow' trend now sweeping British (and World!) FAI combat - and are perhaps just as famous for their off-field activities! A really great bunch, but now, sadly missing is their 'foreign' member, Sgt USAF Chuck Thomas who has recently returned home to Seattle in the USA. Chuck, a key member of the Outlaws, is seen in repose at right (R.I.P. Chuck!) - let's hope he makes it back to Ill ol' England some time soon.



Above is a 'new look' in stunt models, provided by American enthusiast Bill Rutherford. Based on Mig 21 it features a moulded balsa fuselage (using 3/32in. sheet) some 43in. long, while wing span is 60in, and a Super Tigre 46in. used for power. Both canopy and spinner were custom made. Above right are US combat flyers Rich Ryan and Chuck Rudner - note the visual explanation of the term 'bellcranking'! Below right is the inevitable - and expensive - result of a head-on collision suffered in US Fast Combat.

racing people can give, but we should also wish to assist the SMAE as much as we can in protecting our interests.

In the USA no less than 16 organised groups of people with 'special interests' operate as independent organisations under the umbrella of the AMA, and I have heard of only good resulting. I hope we can follow their example and that improvements in decision making and communication will result for improvements are desperately needed.

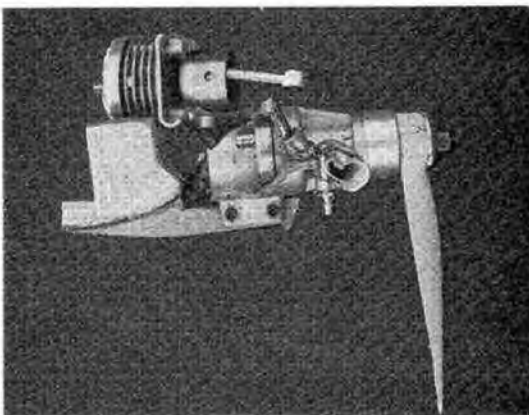
To gauge interest in the proposed formation of CLARA, Graham requests all interested people to contact him at 31 Woodridge, Birchfield, Birmingham B6 6LN, saying YES/NO and adding any comments, opinions etc that you may wish to make.

FROM OUR CORRESPONDENT

Kicking off his term as the *AeroModeller's* Combat Correspondent in the USA, MACA President Gary Frost has sent in the following tit-bits.

The photo shows one of the by-products of combat US-style in which head-on passes and 90 deg attacks are common ways of getting into the 'kill zone' - remember in AMA 'Fast' Combat if you take a string cut (thereby removing the whole streamer intact) the bout terminates immediately and you are the winner - unless the enemy 'killed' you first. A head-on attack is really a chicken-run, for the first to turn out of the line exposes the string beautifully, a following turn by the courageous one gives him the 'kill'. Now if both flyers are ultimately courageous, the resulting head-on meeting of motors gives the result shown. Nice one, Gary!

In the 90 deg attack, you aim for your opponent's string and dive into it from above. If your aim is not too good, it is possible to



'bellcrank' your opponent - one of the highest arts in US Combat, for to be defeated by being 'bell-cranked' is to suffer the ultimate indignity. Gary's photo shows the result of a perfect 'bell-cracking' performed by Rich Ryan on the 1974 MACA No. 1 flyer Chuck Rudner in Cincinnati, Ohio. Note how little damage Rich's model has suffered in so neatly removing the bell-crank from Chuck's model. (What are you grinning for, Chuck?)

Finally Gary reports that the new Fox 36 Combat motor, based on the Fox Schnuerle 40 motor, is a vast improvement over the previous model and looks like re-establishing Fox at the top of the AMA Combat motor market. Gary's example of the new Fox 36 BB gives him 130 mph on 30% nitro fuel, excellent hot re-starts and is averaging 5 flights per plug - a performance as good, if not better, than that given by any 35 size motor currently available.

THE GOODYEAR MARATHON - RAF Driffield, 13th June
A hot and sunny day at Driffield, East Yorkshire, marred only by a stiff breeze, saw a new record for the 1 hour, 20 compulsory stop, 7th Annual Goodyear Marathon. Quite a few top teams were absent this year including previous winners Heaton/Ross and Everitt/Cooke. Daly/Howard were also absent, Graham Howard attending something a little more important - the birth of his second daughter Penny. Because of this, not as many teams beat the 1,000 lap mark as last year, as the results show.

	Laps	Motor	Design
1. Horton/Haworth (Wharfedale)	1,318	Taipan 3.5	Ginny
2. McMahon/Myska (Wolves)	1,313	Rossi Diesel	Argander
3. Allcock/Chambers (Wolves)	1,228	Rossi Diesel	BooRay
4. Clarkson/Daly (Norwest)	1,171	MVVS TRS	Ol' Blue
5. Haworth/Horton (Wharfedale)	1,079	PAW 3.5	Johnson Spl.
6. Goddard/Temporal (Wakefield)	1,048	G15/19 Diesel	Ginny
7. Fitzgerald/Pickles (Wharfedale)	1,008	Oliver	Argander

Both of the first two place teams exceeded the previous record distance of 1,285 laps achieved last year by Clarkson/Daly. Possibly



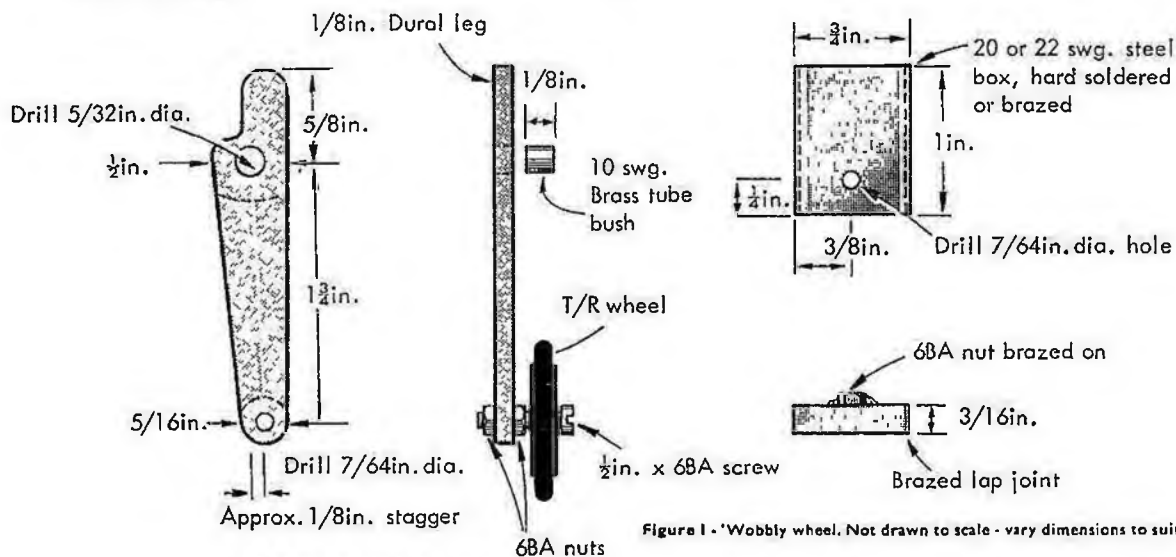
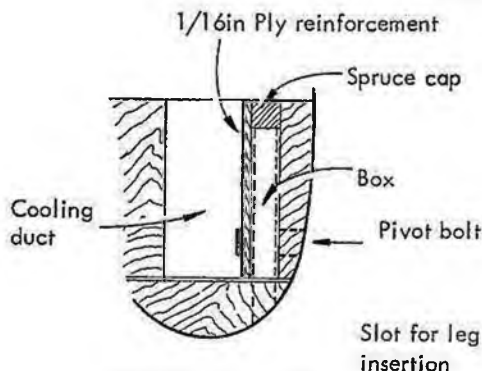
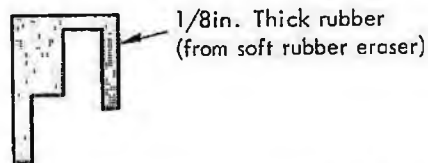


Figure 1 - 'Wobbly wheel. Not drawn to scale - vary dimensions to suit.



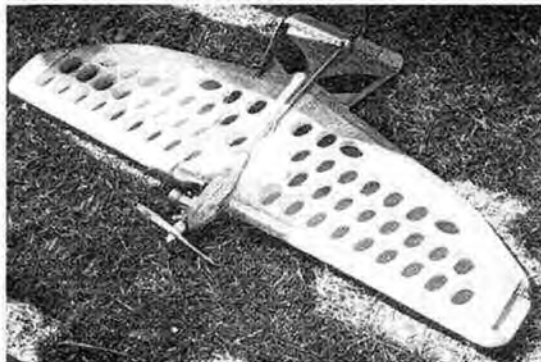
Fuselage cross section



Equipment-wise it was much as before with diesels dominating - not a single glow in the first ten finishers. The Wolvas Club Rossi 'Combat' diesels sounded really sweet on the Taipan 7x8in. glass-nylon props they were spinning - quite obviously a very happy combination for they were not over-revving in the air. John Allcock was full of praise for the characteristics of this prop - as fast as any glass fibre props but its peculiar de-pitching under abnormal load characteristic giving greatly improved take-off acceleration and also considerable resistance to obstruction.

A lap counter malfunction was responsible for Allcock/Chambers not joining these 1300+ lap men for they flew their race with clubmates McMahon/Myska and overtook them quite a few times towards the end. On the ground Frank Chambers and Joe Myska were equally good so to me it looked like a big 'unlucky' for Allcock/Chambers.

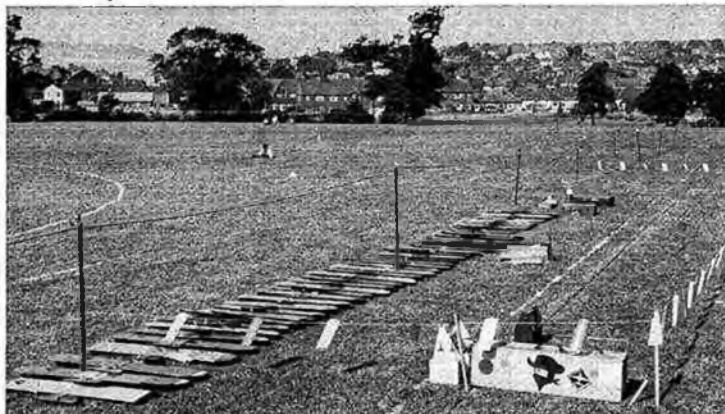
For almost the first time, the consistency of Clarkson/Daly's venerable MVVS TRS (now coming up for its sixth re-bore) deserted them, for it was giving range varying unpredictably between 40 and 60 laps which meant a lot of untidy landings because of the stiff breeze, plus quite a few lean and slow, and rich and slow, tanks - ah, well, we cannot win every time.



That's not fair! Fred Meljer (right) really upset the appreciators when he popped across from Holland and won the Derby Combat International. Don't these foreigners know the rules? The British are supposed to dominate combat, and we have proved the point, winning all the major events so far held - then these Dutch flyers came and beat us on our own ground. Definitely not cricket. Anyway, congratulations Fred - just don't make a habit of it! At left is the winning model (Rossi diesel powered) which uses a foam wing and has lightening holes cut with the aid of a hot mustard tin. Er, let's rephrase that - a tin which was designed to contain mustard, and which has been heated so as to melt foam.



Quite an impressive line-up really - for just one club! When the Outlaws go out on a 'raid', they reckon that there is safety in numbers! Alternatively, you could say that once you are into 'foamy' models, there is no stopping you...



caused cooking.

We all went home sunburnt and tired - much better than a day at Blackpool. Hey ho! for next year.

MAKE IT EASY - The 'Wobbly' Wheel

It may seem a bit odd for a 'sophisticated modern development' like this to appear under the 'Make it Easy' banner, however on C/L racing models a wobbly wheel is almost as easy to make and instal as the conventional fixed, bent wire type and, in my experience anyway, the actual in-race performance and durability are significantly superior.

The principle is that of mounting the wheel on a sheet metal leg that is free to pivot, restrained only by a piece of rubber in the model. When set-up with the wheel axle a little behind the leg pivot in the vertical axis, landing shocks are absorbed by the rubber (thus protecting the model from impact strain); also the heavier the landing, the more the wheel swings back thus killing unwanted bounce.

Figure 1 shows the essential parts which consist of a sheet metal box glued into the model, a shaped dural leg and a rubber block. The box should preferably be hard-soldered or brazed up from 20 or 22 swg steel, but hard brass may well be satisfactory. Onto the inboard side of the box is brazed a 6BA nut into which the 6BA steel leg pivot bolt is screwed, once the rubber and leg have been inserted. The leg pivot is bushed with a length of 10 swg brass-tube slightly longer than the leg metal thickness, such that the bush is a push-fit into the box. It is essential that the bush does protrude slightly out of the leg so that, when the pivot bolt is screwed securely home, the leg remains free to pivot.

For simplicity, I have shown a cantilever wheel attachment not the (possibly) more common type attachment. The method shown has been proved quite satisfactory by club-mate Graham Howard, and is certainly much easier to make than any yoke type.

Team racing is certainly world-wide. This picture shows Eli Liebermann of Israel with his diesel converted K&B 15 powered machine. With only two active teams in his country, and just one year's experience, the sub-five minute times achieved are encouraging, but a trip to Europe is hoped to provide extra insight on current technical expertise.



THE DERBY COMBAT INTERNATIONAL - 24th and 25th July 1976

Belper Sports Centre, a few miles north of Derby in Derbyshire, hosted this year's Derby Combat International. With a bar, restaurant, showers, a camping area and sufficient grass for two contest circles and numerous test flying circles, the site proved ideal. Coupled with warm, calm and sunny weather, and efficient and well-mannered organisation by the Alfreton and District MAC, few if any of the SI competitors, including combat friends from Ireland, Holland and Sweden, could say that they did not thoroughly enjoy this contest.

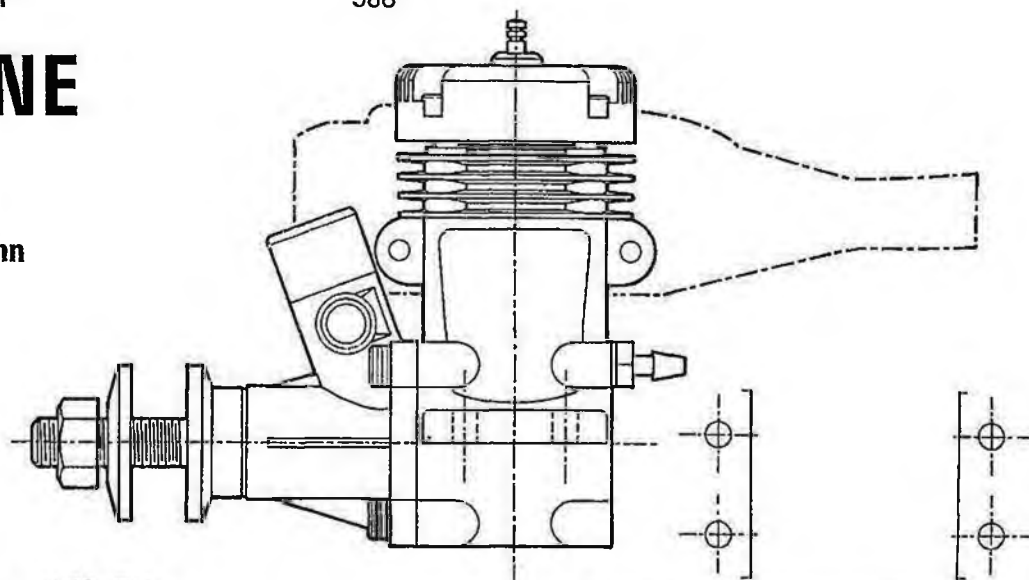
The 'glow-and-foam' trend continued with at least half of the entry using foam models (mostly Wilkens *Wonder Wings Superstar II's*) and about three-quarters of the entry using glow motors. Now that combat equipment seems to be settling down back into uniformity and most pilots have now got used to the extra manoeuvrability and speed available, old-style minutes-long continuous manoeuvring following battles are becoming the norm again. But now we see these at least 20 mph higher airspeed and with considerably tighter models than in the old 'Oliver' days - great stuff for spectators and participants alike.

The Saturday saw the first round and the losers' fly-off. The usual 'sorting out the chaff' stuff except for a notable battle between John Hammersley and Stoo Holland - a high speed following classic with Stoo coming out the winner. John found his way back into the contest via the losers' round, but early drawing of 'favourites' together became a feature of this contest as the Sunday saw. Sunday opened with a series of eliminators to get the numbers in the second round down to 32 thereby allowing a straightforward triangular knock-out to the final. Notable matches in the eliminators were Hunt v Morgan (the winner to meet Richard Wilkens in the second round!). So Vernon Hunt had to beat both Bob Morgan and Richard Wilkens to keep in the contest and showing great determination he did so but the required effort coming so early in the contest seemed to drain him for it was a lack-lustre Vernon who lost clearly to Mick Lewis in the third round. Dave Wiseman adopted old-fashioned 'hard flying' tactics to get through his obstacle course; but, after getting his third consecutive victory over Richard Evans and having to re-fly against John Hammersley following an in-bout streamer confusion, he got himself disqualified for the non-rule book offence of 'deliberate line tangling' a peculiar decision for it takes two to make a line tangle.

After this early drama with much of the meat having dropped out of the contest, flying proceeded mildly to the semi's where Bill Collidge (Outlaws) beat Mick Lewis (Posse) and Fred Meijer (Holland) beat Dave Wood (Posse). Posse? Yes, a new combo consisting of Richard Evans, Mick Lewis, Bob Morgan and Dave Wood whose aim in life is to round-up the Outlaws (go on, laugh! Well I thought it was worthy of a giggle at least). In the final Fred Meijer clearly won aided by good pitwork from Ron van Zyppe and Vernon Hunt - not easy to do with Rossi diesels on crankcase pressure. Fred flew his unusual foam models very well and deserved his win and £50 first prize. Bill Collidge seemed happy with his £25 second prize as did the other 35 prize-winners including Mark Thomason (Ireland) who raised a laugh by selecting a bundle of ladies' tights from the goodies table as his prize - 'won't fit over your Wallias', a comment in broad 'Brummie' improved the merriment. And so another Derby Combat International ended with a foreigner taking home Britain's biggest combat prize for the very first time.

ENGINE TEST

by Peter Chinn



FUJI 15 Series IV-S

FUJI ENGINES, which have been marketed in the UK, off and on, for about twelve years, have never, in the past, been noted for high power. Quite correctly, they have been regarded strictly as 'sport' type motors of conventional design and construction, moderately priced and well suited to the requirements of the beginner.

The recently introduced 'S' version of the Fuji 15 Series IV, however, sets new levels of performance so far as Fuji motors are concerned. A glance at our performance curves will confirm this. The average plain bearing 2.5cc glowplug motor develops a gross output of between .25 and .30bhp on 5% nitromethane fuel when using a standard size intake venturi. This is the sort of level that has been with us for the past dozen years despite the enormous strides that have been made in 2.5cc contest engine performance where power outputs 2-3 times sport engine levels are now common.

On test, the Fuji 15-IV-S actually topped 0.40bhp running on 5% fuel and without silencer. Our curves show the performance with the Fuji 'venturi' type silencer fitted which reduces power only very slightly. After making due allowance for the fact that the 15-IV-S has an intake of large effective area, requiring pressure feed, this is still a very good performance. It can be attributed to a combination of design features that separate the 'S' series from the standard Fuji 15-IV model, including the special 'IBS' cylinder porting system, the relatively high compression-ratio and clean combustion chamber design, plus the generous intake porting and rotary valve timing.

The 'IBS' porting system consists of three internal flute type transfer ports in a very thick (2.75mm) cylinder wall: two wide ones placed fore and aft and a single narrower one between them (i.e. diametrically opposite the single exhaust port). The two main transfers are angled so that all three channels converge towards the top, a system very similar to that successfully used by the Cox 15 Special MkII made in 1965.

'IBS' stands for 'Inner Bypass Schnuerle'. Porting does not exactly come within the generally accepted meaning of a Schnuerle scavenging system, but it obviously works in a similar manner and enables a symmetrical deflectorless piston to be used, together with a smooth head shape that does not have to be slotted for piston baffle clearance.

The checked cylinder port timings of our test engine were: exhaust period 147° of crank angle; main transfer



ports (average) 136° and third-port 126°. Nominal geometric compression ratio was measured at approximately 12 to 1. The rotary-valve timing was checked at 45° ABDC to 60°. ATDC, mixture being admitted through a rectangular valve port and parallel sided intake aperture (for quick opening and closing) to a 7.3mm i.d. gas passage in the shaft journal.

Intake air is drawn through a 7.8mm i.d. choke which, after allowing for the 3.4mm o.d. plated brass spraybar, gives a generous effective choke area of approximately 22sq.mm. This is too large for most applications when using suction feed, and a crankcase pressure take-off nipple is therefore provided to enable a pressurised fuel system to be employed. For C/L stunt use one can assume that it would be necessary, at the cost of some reduction in power, to approximately halve the effective choke area (e.g. by means of a thin-walled restrictor) to enable suction feed to be used.

Performance

Supplied with our test engine was a Fuji 15/19 size silencer but no glowplug. The silencer is an air-scavenged type, the screw-in trumpet-fronted nose section having a 4mm i.d. central tube which passes through the middle of the silencer, stopping just short of the 7mm i.d. tailpipe section and giving a total outlet area of some 51sq.mm. The silencer is of pressure diecast aluminium and butts against the engine's exhaust duct to which it is secured with two screws. Like the Enya silencer, this Fuji silencer has a steel plate on the outside that can be swivelled to allow access to the engine's exhaust port for priming.

The engine's cylinder head is tapped for a standard Japanese medium-reach (4.8mm) glowplug and we therefore fitted an OS No.3 for running-in and test, which appeared to suit it very well.

In the past we have handled several of the smaller Fuji engines (.09 and .12cu.in.) and found them to be docile, quick-starting units. The 15-IV-S was easy to start when cold but somewhat slower to restart hot and this persisted throughout the tests. It was, however, very even running at all times and there was virtually no power loss on warming up, even when the 15-IV-S was loaded for relatively low speeds.

To enable the Fuji 15-IV-S to deliver its maximum or near-maximum performance, it must be given its head and should not be held back by an oversized prop. As the

SPECIFICATION

Type: Single-cylinder air-cooled, glowplug-ignition two-stroke with crankshaft rotary-valve and bushed main bearing.

Bore: 15mm (0.5905in.)

Stroke: 14mm (0.5512in.)

Stroke/Bore Ratio: 0.933:1

Measured Nominal Compression Ratio: 12:1

Checked Weights: 144 grammes - 5.1oz. (less silencer)

184 grammes - 6.5oz. (with silencer)

GENERAL STRUCTURAL DATA

Pressure die-cast aluminium alloy *crankcase/cylinder casing* unit with drop-in internally-ported steel *cylinder-liner*. Pressure die-cast aluminium alloy detachable *front housing* with cast-in bronze main bearing and secured to crankcase with four M3 x 0.5 Allen type cap screws. Hardened counterbalanced *crankshaft* with 10mm dia. journal, 7.3mm bore gas passage, 4.9mm dia. solid crankpin and M6 x 0.75 prop-shaft thread. Lapped cast-iron *piston* with flat deflectorless crown and shallow skirt cutaways fore and aft. 4mm o.d. tubular *gudgeon-pin* retained in piston bosses by wire circlips. Machined aluminium alloy *connecting-rod* with plain unbushed eyes. Machined, black-anodised, aluminium alloy finned *cylinder-head* with 10mm dia. bowl-shaped combustion chamber and flat 2.5mm wide squish-band and secured to cylinder casing with four M3 x 0.5 Allen screws. Head joint made with one 0.2mm copper *gasket*. Pressure die cast aluminium alloy *prop driver*, keyed to flat on crankshaft and with 0.5mm steel washer between nose of front bearing housing and prop driver to prevent excessive wear when using electric starter or gusher prop. Nickel plated brass *spraybar assembly* with flexible needle-valve extension, reversible for left or right hand installation. Beam mounting lugs. Brass pressure nipple in rear of crankcase for fuel-tank pressurisation system.

OPTIONAL EXTRAS

Fuji vented-front air-scavenged type silencer.

TEST CONDITIONS

Running time prior to test: 1 hour approx.

Fuel used: 5 per cent nitromethane, 25 per cent Newton R castor-oil, 70 per cent methanol.

Glowplug used: O.S. No.3 (medium reach, platinum filament, 1.5v rating).

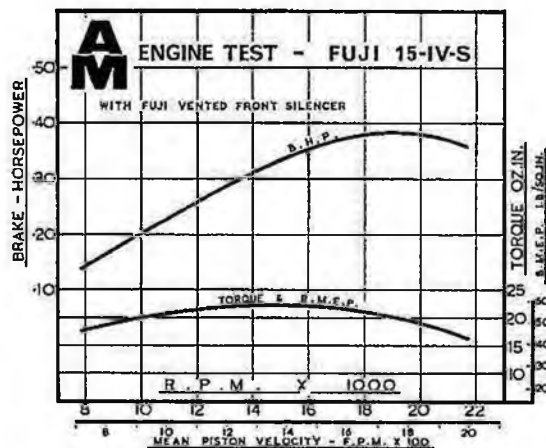
Fuel system used: Sealed fuel tank pressurised from crankcase nipple.

Air temperature: 11°C (52°F)

Barometric Pressure: 1016 mb (30.00in.Hg.)

Silencer: Fuji vented front air-scavenged type (51sq.mm outlet area).

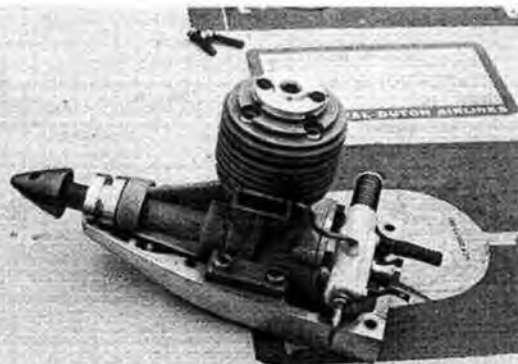
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TECHNICALITIES

FROM THE 1976 WORLD C/L CHAMPS

All the Canadian team race flyers used this RAM motor - the handiwork of Kenny Parent and Brian Fairey. Crankcase is exceptionally well cast - equal to the best commercially produced items ever seen. As yet to reach its full potential.



Combat

It could be said that there was *no* major development apparent at Rotterdam - this being because the 'revolution' happened a few months earlier! When Richard Wilkens introduced the use of expanded polystyrene in combat models and popularised the large-area glow powered machine, he created more than a ripple of change - it was a tidal flood.

He quickly developed his *Blasta* into the now 'standard' combat weapon - the *Super Star II*. This machine of 'Blasta' dimensions uses hollow-cored foam wings, weighs around 14oz. and is very, very manoeuvrable. And it is cheap, quick to make and simple to duplicate *exactly*. Plans of this design had reached the Dutch flyers (via *Aero-Modeller* classified ads!) and they too have joined the plastic brigade - with great success.

Covering can be plastic-film, but brown wrapping paper, cling film and - most popular of all - gift wrap paper are cheaper and perfectly adequate. These papers are applied using wallpaper paste, and at around 8p per sheet are cheap - while some of the gift-wrap papers look wild!

But a few words of caution: the models are certainly vulnerable - many breaking on just light contact with the ground. Covering paper should be double-wrapped around the leading edges to prevent streamer strings from cutting through (adhesive tape along the LE before covering helps), and a wide strip of nylon or bandage along the centre section of the trailing edge helps keep the model together.

Engines? The Super Tigre G15s and G20/15 reign supreme at the moment - and many are awaiting the arrival of the new Schneurle port X15 FI from the same manufacturer. Rossi diesels are now popular,

although many are experiencing difficulties when operating them on crankcase pressure. However, it seems that the standard venturi provides plenty of suction, and that a pressure system is really an unnecessary complication. Caution: before machining off the exhaust stack on these motors, remember such things as thermal distortion of crankcases. Although the rear facing exhaust does abut the leading edge, leave at least $\frac{1}{16}$ in. of stack to prevent distortion troubles arising.

Where development *is* needed, is in the organisation of pit crews; some were highly efficient, with each member well aware of his duties and able to operate accordingly. In contrast, some crews were laughable - errors varying from crash-hats falling off (is a piece of elastic too much trouble?) to models being launched without streamers! A good pit crew is essential when flying glow motors - the days of the pilot starting his own motor have surely gone for good.

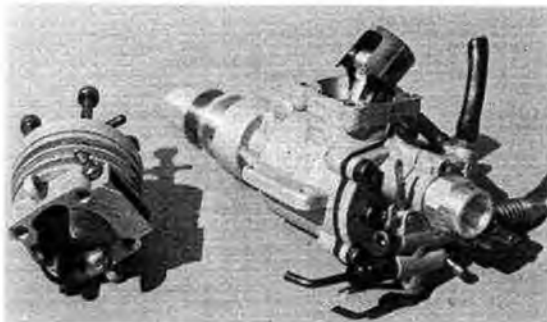
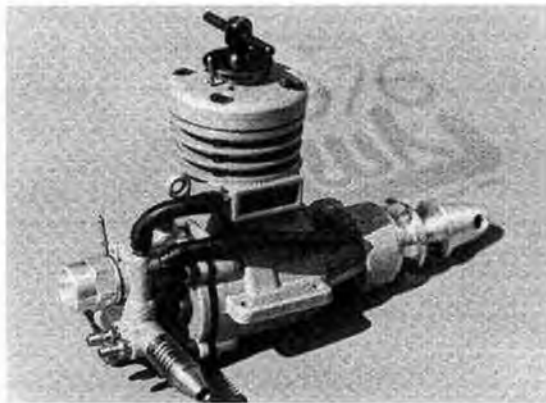
Team Race

As remembered last month, there was nothing remarkably new to be seen in this sector, much of the improved race times coming from gradually refined techniques.

Surprisingly, only four teams used retracting undercarriages - despite several successful units having been used over the years. Krasnoruitsky's was perhaps the neatest with its rearward retracting wheel hidden by a close-fitting door, but Malcolm Ross has a very neat lightweight design which retracts into the fuselage. One advantage of this system is that even if the leg fails to come down again, a portion of the wheel remains outside the fuselage. Certainly sufficient to land on, but would the Jury accept it?

Modern racers use thin wings (around 6mm) and these flex quite alarmingly at times. Lightweight glass fibre cloth covering prevents them from breaking with little

At left and below left are two views of the Spanish diesel made by the Pares brothers, and known as the P 15. Note the complicated back-plate/valve unit, which apart from incorporating the shut-off and re-fuelling functions also provides exhaust prime and additional front ball race lubrication. Note too the severely cut-away piston. Unit may go into production if it proves competitive. Below right is one of the glass/carbon fibre reinforced fuselage shells used by Onufrienko.



weight penalty — some teams using up to four layers of cloth on the outboard panel, with just a single layer over the remainder of the machine. Onufrienko, in company with one or two others, uses glass fibre (and in his case carbon-fibre stiffened) fuselage shells for the best possible strength/weight ratio.

Propellers are still undergoing scrutiny. Most popular numerically were Bartels products, with the new *Metkemeyer Brothers Special* catching on fast. However, John Gray is rapidly making a name for himself and the fastest heat time (3:56.7) by the Geschwendtner brothers fell to one of his glass fibre items. Until now John's props have been for 'special people only', but now they will be available in limited quantities (see Classifieds!). John has a very good reputation for accurate, well made products, and they should prove popular. Jim McCann too has a good following and his carbon/glass fibre items were to be seen fitted to many of the quick-boys' models. Larsson/Rylin flew a prop made by Jim (to their design) and this should be commercially available later in the year. They use a big diameter (7½ in.) high aspect ratio design — and their final time of 8:10.6 from a motor giving a 50 lap plus range shows its potential.

This Swedish pair have also proved trend-setters with the cooling system employed on their racer (described in the May issue) — and everyone reports most satisfactory results despite rear-exhaust motors being notoriously hard to cool evenly. This system, you may recall, takes the cooling air around the back of the cylinder to cool the exhaust — the top of the cylinder head being shielded from a direct air-blast. Others have a deflector plate in the centre of the conventional cooling slot to direct the cold air away from the front of the cylinder. Pentti Nore (Finland) is experimenting with yet another system — the conventional slot in the front of the cowling is dispensed with, and 'racing car' style scoops — which have a very low drag coefficient — take the cool air to the rear. A miniature fan mounted behind the props on an extended prop driver provides a secondary supply of 'refreshing' air.

A couple of 'pilot tuning' goodies were also seen. Firstly the use of a handle grouper is becoming more widely used (it helps prevent 'unwanted' controls being given to the model 'accidentally' by other

Dutch combat flyer Rob Olyxe shows some of the detail points of his Super Star II — note the covering doubled over at leading and trailing edges for additional strength and string-cut resistance. Also visible is the extra reinforcement to trailing edge at the centre position of wing, and yet more nylon joining the two wing halves either side of the centre rib.



pilots' shoulders etc!) and secondly the appearance of 'Elton John' boots. Non pop-music aficionados may not realise the significance — but imagine an 'average height' pilot who can suddenly put himself into the tall-pilot league by stepping into a pair of shoes with soles well over 2in. thick . . .

Aerobatics

It would be a little unfair to say that these days stunt is a stagnant event, however much it might appear to the casual observer — there is a process of slow refinement in the models and systems in use that improves the breed. There are very few innovators in the stunt world, most of us prefer tried and tested ideas and designs rather than risk money, and more importantly, time in trying to develop something new. A popular view is that until one can fly a conventional or standard model to the limits of its aerodynamic abilities, then there is no point in producing a 'better' model. This view is confirmed when you see such conventional models being flown expertly at a World

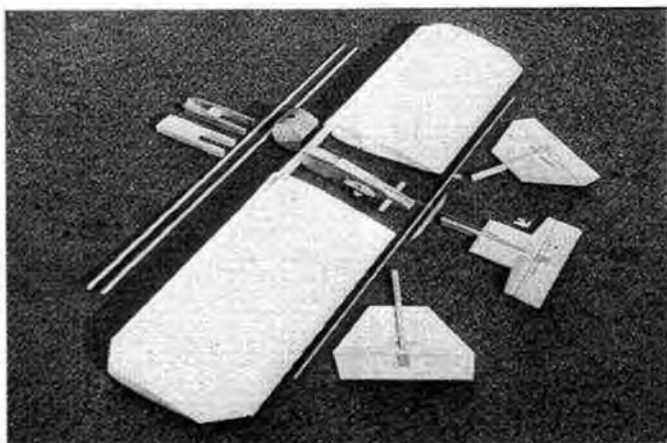
Championships, but look deeper and you will see the refinements that make Gieseke's *Nobler* just a bit better than your kit version.

There are two basic items which make a model fly well, and these are trimming and accuracy of construction. Many of the experts' models incorporate adjustable trimming devices, the most popular being lead-out position at the wing tip. Two methods in use are the sliding block which moves both lines together and is locked by a screw, or the individual plug in line guides, which can also give variable line spacing if required.

At the other end of the wing is the tip weight, the amount of which affects line tension and square manoeuvres; this will also be affected by the type of lines being flown on. Flyers are now fitting a small box with a hatch in the tip so that weight can be added, or subtracted, to suit their trim.

Flap/elevator trim adjustment should be unnecessary if the model has been built accurately enough in the first place, with the wing and tail plane jugged into position during construction. The trouble that some top competitors go to in order to get this perfect is considerable, with elaborate surface tables and height gauges being used. Although in England two piece models are commonplace, and therefore access to the controls easy for adjustments, they are relatively rare elsewhere and this enhances the need for the controls to be right first time.

An aid towards more accuracy is the use of warp-free foam wings, which is increasing, although the very top flyers say they are still heavier than a good con-



Frank Smart is working towards making a re-usable centre section and easily detachable tail for his otherwise standard Super Star II. However, he has found some interesting results from using a different shaped tail unit (in centre of photo). Despite the same elevator and weight — i.e. model CG, the delta tail gives a jumpy/marginal stability model, whilst the 'T' tail produces a more stable model that has to be flown most deliberately to turn tight. Ultimately, both give the same manoeuvrability, but with the 'T' tail, you have to work harder to get it.



ventional structure, properly built. The use of foam wings is still being developed and experiments using different densities of foam, various glues and veneers continue; also the foam itself is being hollowed out of the centre of the core, this alone can save 2 ounces.

The use of pressurised fuel tanks is becoming more widespread. Most use an old spray bar or similar fitted into the silencer with a piece of fuel tubing from this to the tank. The other vent is of course blanked off for flying. It is important that the pipes are secure because the engine would run very lean if the pressure were lost by a tube coming off, and apart from upsetting the flight, may well damage the engine.

There is an increasing use of fuel metering i.e. having a tank which is too large but removing a measured amount of fuel by a syringe or measuring cylinder according to the length of engine run obtained with a test flight on the day. Atmospheric pressure, or humidity, definitely affect engine runs and it is as well to be able to cater for this variation especially at this level of com-

Japanese stunt pilot Yashikawa used this nylon thread turbulator mounted $\frac{1}{2}$ in. ahead of the leading edge in an effort to improve performance in the square manoeuvres. Arthur Keller of Switzerland also used the same idea.



petition where the landing points lost by having an over-run could be disastrous. Less popular, but used by a few flyers, is the use of a clockwork dethermaliser timer to activate a fuel cut off device, such as a spring clip on the fuel tubing, after the schedule is completed. It is something else to go wrong, of course, but they seem reliable so far.

Very little change is apparent in the aerodynamic design of the models but there are some slight trends to be seen. Moment arms are getting longer (flap-hinge line to elevator-hinge line) and this is combined with a centre of gravity position further forward than usual to give greater stability and smoothness. Control surfaces are larger but use less movement. There are two methods of getting more lift from a wing, one can either increase the area or the thickness and this latter method is gaining in popularity. Sections of up to 25% thick on normal '35' sized stunters being powered by '46' engines, definitely a new avenue of development pioneered by Al Rabe.

One serious attempt to improve things

One of several ways of providing line rake (and spacing) adjustment. The tip is drilled with a series of large diameter holes, joined by slots. A plastic plug, threaded onto the leadouts, then slip into the holes of one's choice.



At far left is the nose of Penti Nore's racer, with fan mounted on an extended shaft of his Rossi, behind the McCann prop. Note too the low-drag racing-car style cooling duct. Left is a close up of Onufrienko/Shapovalov's wing tip, showing how both the lines exit from a single, tightly wound wire coil. Aluminium cover hinges back from leading edge to aid line connection.

was made by Yoshikawa of Japan who used leading edge turbulators on his wing. This was a nylon thread supported on short posts about $\frac{1}{2}$ in. in front of the leading edge for most of the span. Theory is that it improves the lift characteristics of the wing at high angles of attack, as in square manoeuvres. It is of course very difficult to ascertain the effectiveness of such a device by observation as his model would no doubt have flown very well anyway.

All of these things must be kept in proportion and are relatively minor compared with the effect of the pilot on the final schedule performed. As some prophet said 'It ain't what you've got but what you do with it that counts'.

Speed by Jo Halman

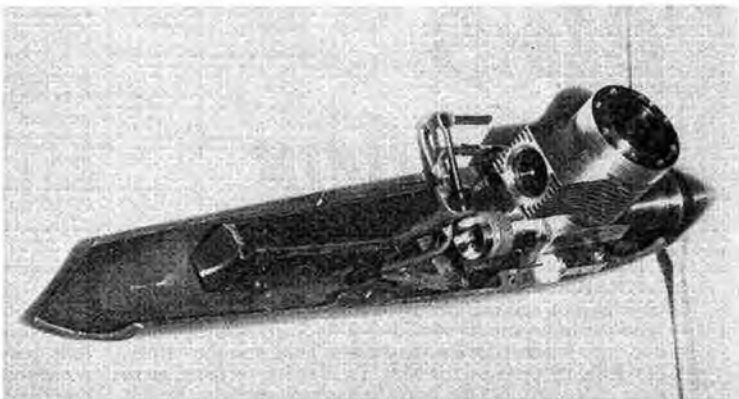
The main Speed model design trend seems to be towards slidewinder-asymmetric models, with the majority of these having the engine mounted on the outboard side.

Within the slidewinder fraternity, the wing size and shape seem to be matters of personal preference — they ranged from comparatively short stubby wings to incredibly long thin ones. To illustrate this, Peter Halman used wings 4in. wide at the root; 2 $\frac{1}{2}$ in. wide at the tip and the span is 22in. The Poles, on the other hand, used a wing with a 2in. root chord; 1 $\frac{1}{2}$ in. tip chord and a 36in. span. While in flight, this wing had a lovely, but frightening, ripple running up and down its length. The Poles also had a Cox head in their Rossi!

Chuck Schuette had an interesting innovation on his models — instead of using gauze over the air intake to turbulate the airflow like most people, he had the air fed in at the top of the cowling into a plenum chamber above the intake. Conse-

Ingo Schmidt (West Germany) used a plastic tube facing directly into the airstream to force air down the venturi of his Rossi — the exact opposite approach to Chuck Schuette who draws the air from a plenum chamber.





Left - highest placed British speed flyer was Pete Halman (seen here with personal team manager, wife, and AeroModeller speed reporter for these Champs, Jo). Peter not only placed 11th overall, he also broke the existing British record - twice! Above is Carl Dodge's superb, hand-built speed motor (less head, due to processing being in progress at the time!)

quently, there was no ram-air effect on the intake. Any ram-air went into the plenum chamber, and the engine took what air it needed from this. Schuette maintained that this prevents the engine from 'hunting' in and out of wind.

It should be pointed out though that some flyers having flown without any gauze at all, found no loss of speed. This, however, is not recommended practice as British runways are not the cleanest places in the world and nothing is more calculated to wreck an engine quicker than putting stones down the air intake!

The sidewinder design is really only a means to an end, in that it is the only design in which a joint induction, suction feed fuel system will work. With the engine on its side, the venturi is both horizontally and vertically in line with the fuel tank. No way will the suction system suck fuel up an incline! This system has very few fuel problems and settings are easier to find than on the CFS and pipe pressure system. None of the air bubbles so frequently found in the pipe pressure system ever (?) find their way into a suction feed system. In fact some Speed flyers had the tanks fixed by rubber grommets to further eliminate vibration - the cause of those bubbles.

The CFS (centrifugal force switches) are notoriously difficult to set in variable weather conditions, such as Britain suffers and even the experienced German team had some difficulty in finding settings in Holland. The CFS is difficult to set, the pipe pressure system has those bubbles and the suction system limits model design, so... take your pick. But think on this: out of the top half of the competitor's final results table, five used pipe pressure, six used CFS and thirteen suction feed. In the lower half of the table, one used CFS, seven used suction feed and fourteen pipe pressure. Some conclusions can be drawn from that.

Although the fuel system is important, it is the best engine that counts as Emil Rumpel proved. Rossi engines dominated the contest with the most successful exception being Carl Dodge's home built. It is a four-port, machined barstock ABC, rear valve/rear exhaust, with a bore and stroke as per TWA, and is particularly interesting as it has a *one piece* crankcase from barstock. Most barstock crankcases have a bolt on front assembly end, probably, a bolt on

exhaust stack. This looked just like a cast crankcase; in fact, if he shot-blasted it, one would not be able to tell the difference.

The transfer ports are *not* machined into the main crankcase - the crankcase is machined hollow and round, with a slightly larger bore. A sleeve with the transfer ports cut into it slips over the liner; apart from anything else, this allows one to change the shapes of the transfer ports and see which work! It features two ports in the now conventional position and, instead of one Schneurle boost port, there were two transfer ports angled sharply upwards at a little over 45 degrees, at the front of the engine. Similar, in some respects, to the normal loop scavenging used on Super Tigre engines, which transfers the gases rapidly to the top of the cylinder head. Carl uses a K & B short reach plug, in a head that did not project far into the liner, and was shaped very much like a TWA. Unusual in this day and age when Rossi heads are bolted into everybody's motors!

It worked very well in that the first flight reached 146.3 mph on a one blade prop without too much effort. This must have been its fastest run, because Dodge used two bladed props for the next two flights to try for an improvement. However, his last two flights sounded lean so perhaps he had difficulty in finding settings.

The new ABC set-up for the Rossi was not, as people had hoped, the instant answer to going faster: this is a totally different animal, and needs a lot of work and research. There were one or two exceptions, and they aren't telling!

One blade props seem to be making a comeback. The Italians and two of the Americans used glass fibre ones: the other American (Dodge) used a hand carved wooden one. Whether they are any faster seems to be a matter of opinion. Certainly

you avoid the problem of producing two identical blades, but retaining the counter-balance weight securely is not so easy.

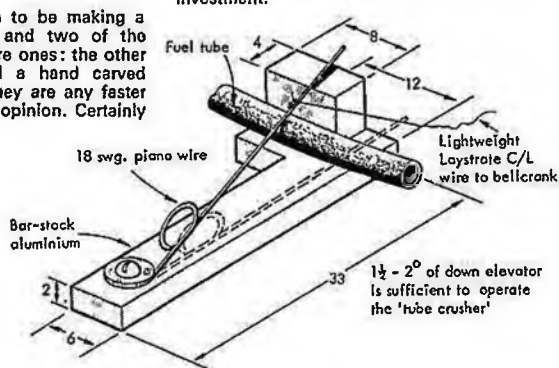
The ordinary two bladed prop still holds its own with the emphasis on home made glass or carbon fibre. Shapes vary with the individual, ranging from Topflite copies, to the swept, under-cambered blade Rossi type. The winner used a two bladed prop...

More shut offs appeared this year but not as many as one would expect for such a useful feature. They all seemed to be copies of the Italian shut off as brought to our attention by Ricci; a rather complicated system using two springs.

The shut off that Peter Halman used is a much more simple affair based on that used by Goodyear and Rat racers and is of the 'tube-crusher' variety (see sketch). It is operated by 'plucking' the down line - the close spacing on the FAI speed handle, built for insensitivity precludes the use of a flick of the wrist.

Stainless steel appears to be the best type of line to use as it can be polished better for (hopefully) less drag. Some of the competitors had the lines polished down to the minimum tolerance allowed. Every little helps!

Finally a word about electric starters: they were much in evidence at these Championships and the opinion seems to be that they are easier to carry and use (that's not opinion, that's fact!) and that they do not damage the bearings like the hand cranked starters can. Although a little expensive, they are readily available, and a worthwhile investment.



Speed model fuel shut-off (all dimensions in millimetres)

CLUB NEWS

A CHARACTERISTIC feature of the very uncharacteristic long hot summer we have just sweated through has been the huge, model swallowing boomer, against which our once fail-safe D/T's are useless. This, and the rotting of rubber motors and the buckling of flying surfaces, gives us a disturbing insight into the hazards of flying in hot climate countries. It also suggests that our usually reviled climate, with all its winds and wetness, is not all that bad for model flying, and the sooner we get back to our climatic normal the better.

These hot summers may have something to do with the general apathy in free flight contesting which is discussed in the latest issue of *Seadog*, the newsletter of the South Eastern Area (SMAE). But there must be other factors involved, for we are told that an Area indoor meeting earlier in the year got virtually no support from area members. It is suggested here that a vicious circle is set up by poor organising causing lack of interest, and this in turn producing even less organisational interest. We are also warned that, unless a solution is found to this malaise very quickly, there will be no patient, that is free flight, to treat. A point here I would like to make is that the various National trophies do not carry the prestige they once had, and what is sadly missing from the contest scene are acceptable prizes. More support would be forthcoming if, for instance, Area prizes were presented in the Area Centralised events. Even so, flying still goes on apace at the controversial Ashdown Forest site, although more trouble now looms in the form of words in the new bye laws. Unless an amendment, hastily lodged by the Area, is accepted, it will mean that *no* model, not even rubber and glider, will be allowed to fly in the Forest without the licensed consent of the Conservators. This really is throwing out the baby with the bath water, as models of these types have been flown in the Forest area since the year dot without any possible reason for complaint. From the doldrums of free flight there is an encouraging article on the growth in popularity of thermal soaring, giving six good reasons why. Two of these will suffice: relative low cost and small flying area.

You do not need vast spaces either for control line flying, but you do need prepared sites. Jim Dobson, PRO, of the Nottingham MAC, reports a majority club interest in favour of C/L, and we must suppose that the circular flying facilities are reasonably good. Throughout the summer members have been busily involved in all the national events with a number of local demo's thrown in just for luck. Of late there has been a welcome influx of new members, with a useful number of youngsters amongst them, out of which, it is hoped, may spring some future champions. Already a few of the new members have been showing their mettle in the circles, putting the pressure on top stunt men like Bill Draper. This will add strength to the club contest element which includes such doughties as Mike Chapman and Rex Stevenson. Free flight, however, is not overlooked. In a recent F/F comp Ken Oliver was the winner, although we are told he is wont to enjoy a spot of handle-waving on Sunday mornings. The club stunt contest was won by none other than

Bill Draper, with Frank Fearn hotly contesting the outcome. Rat Race winner was Mike Chapman.

Somewhere in the Buckaneers Model Club someone with a gift for homespun philosophy is quoted as saying that each model's flight is one nearer its last. I could not help linking this in my mind with an editorial comment in the newsletter on the lack of competition flying in the club, for if you build a model for no other reason than sport flying is there not the risk that the last flight will come earlier than anticipated, merely because the novelty of flying it has worn off? Where a small, cheaply produced model is concerned there is no problem, you can build something entirely different, but if you are committed to a large costly model carrying all your radio gear what then? All human activity is subject to the law of diminishing returns, and variety and variation are necessary to a long term enjoyment of the hobby. It might be worth remembering this before putting too many eggs into the one basket. Of course, many models terminate their careers in mid-flight, as it were, going out of control for some quite inexplicable reason. Seems a club member lost his model just this way on a full-on rudder pile in, due, it would appear, to external causes. Significantly two colour frequencies were off because of interference from a local hospital, and this might have been responsible for the 'yellow' casualty. News editor, Dave Mayne, has a few useful things to say on display co-ordination. He suggests that pilots should always be within PA range, so that they may the better synchronise with the commentator, and also that the performer should see that the commentator has full details of his model and his schedule. Another good idea, where space permits, is for a radio soarer to go up for a record attempt. It could be floating overhead as the more active items proceed, and provide a continuity during the 'dead' spots.

A report from Mr E. W. Young on what is going on in the East Grinstead MFC, indicates that there is still room for the small, well knit club in this megalithic day and age. Membership is a very vigorous eighteen, and since all turn up on club nights, or else, a newsletter is not required as a means of communication. Interests cover the board, although R/C is limited to glider because of problems in finding suitable flying sites. I think we have dwelt before on a notable lack of venues in the South East corner of England, although recently hopes have been set of acquiring some use of the old West Malling aerodrome. Anyway, what the club excels at is the staging of C/L displays, and members have had a very full year circulating the local fetes and shows. A good variety of craft are aired for the benefit of the public, including a semi-scale *Mustang*, but the firm favourites are a Scale *Spitfire* and a 1½ *Strutter*. To add to the spectacle the club has a very industrious special effects crew. Through the efforts of club chairman, John Jones, the club is affiliated to the East Grinstead Sports Council, and meetings with other minority groups in the area has allowed the club to put model flying in a realistic perspective, particularly where the vexed question of noise is concerned.

The good news blazoned across the front of the *Three Kings' Court Circular* is that the gypsies have at last left Croydon Airport. This means that the club is back in business on the site – once they get the rubbish shifted. On the opposite polarity to rubbish we have the sort of super-Scale models that only the Poles and Russkies can produce. Vic Willson, who went with the British contingent, was wowed by the *Yak* 18 of Yougov of the USSR (described in the September *AeroModeller*). No need to ask where poor Britain came with this sort of opposition. Back to mundane and drought ridden England where, thanks to that very dry weather the Three Kings were able to hold the second of the Doug Blake Memorial events, club stunt, over the grass at Mitchum – Gypsy

infested Croydon not being available. Alan Callaghan brought along an impeccable APS *Thrift* but, alas, picked up a set of stray lines on take off and sustained quite a bit of damage from the flying handle. He flew his second string model, an Oliver powered *Peacemaker*, into fourth place. Winner was Mike Sexton, but this still leaves Alan Callaghan in the leading Trophy position.

Still plagued by flying field problems the Watford Wayfarers MAC has decided to abandon the new field at Hutton Bridge, according to a report in their latest newsletter. The option was on once the crops had been harvested, but it was felt that it was too near to Leavesden Aerodrome, and this could cause legal and insurance problems, quite apart from the discomfort of low flying aircraft. It has since become known that parts of the old Radlett field are privately owned and there may be possibilities here. The ingenious *Glide Time to an Applied Formula* contest was held in late June. There were eight entrants with an assortment of radio models. Winner was Mick Wilshire with a powered glider, seemingly the most suitable craft for such an event.

Lots of contest news in the *Fellside Falcon*, the newsletter of the Penrith & DMAC. Several members went along to Cark Airfield back in June for the Furness club's R/C contest, then came the club Combat comp for the Chris Bowman Trophy. Perfect weather for this event, as for the Open Pylon Contest in July. The latter was won by Mike Thistlethwaite. A contest of quite another kind was the Car Treasure Hunt. Six teams burned up the local countryside, but all found their way unerringly to *The Sportsman*.

Although model types, particularly contest classes, are fairly standardised throughout the world, different nations have their various quirks of nomenclature. For instance, looking through Australia's *Free Flight Down Under*, a contest is described as 'A/2 Sailplane'. This was part of the New South Wales F/F Champs, which attracted some 44 competitors, many from other provinces. Weather was perfect and there were plenty of maxes on the scoreboard. On the subject of F/F contest weather in hot climates, like GB has become of late, I wonder how other peoples cope with the fly away problems we have been getting this summer. I notice that way back in the early fifties, Austin Hofmeister of Baltimore, got fed up with the way the big thermals sucked up the tip up tail D/T models and made the whole of the tail end of his models detachable, held on D/T-ing by a thread. A possible with those highly susceptible Coupe d'Hiver models is to introduce a rudder or fin swing, so that the model spirals in - damage would be fairly minimal and better than a lost model.

That's all for this month. More reports and newsletters would be welcome.

Clubman

Contest Calendar . . .

- September 19th **SOUTH MIDLAND AREA RALLY.** F/F: Open R/G/P, Combined Mini, Wakefield (Ted Evans Memorial) HLG, Junior Kit. C/L: FAI & Goodyear team race, Carrier, Stunt, Speed, Combat, Junior/Novice Stunt. R/C: Club 20 and Thermal Soaring. Scale: R/C (blue or brown freq only) F/F and C/L. Pre-entry (50p) for R/C events to W. Burkinshaw, 14 Mowbray Road, Aylesbury, Bucks. (Club 20—ROYG freq only, Thermal Soaring to be flown on split frequencies only). Venue: Cranfield College of Aeronautics, Bedfordshire.
- September 19th **SMAE INDOOR MEET.** General flying at RAF Cardington, Beds.
- September 19th **SMAE SOUTHERN GALA.** Open R/G/P, 1/2A power Cd'H, HLG, A/1. Class 2 R/C Scale, F/F and C/L Scale. R/C Aerobatics. Also bring anything with electric power that flies! Pre-entry (SMAE & RAFMAA members only) to N. F. Couling, 7 The Green Walk, Willingden, Eastbourne, East Sussex BN22 0RB. Venue: RAF Odiham, Near Basingstoke, Hants.
- September 25th/26th **SMAE 1977 WORLD CHAMPS F/F TEAM TRIALS.** First weekend. Venue: Sculthorpe, Norfolk.
- September 26th **ELLIOTT C/L RALLY.** One hour endurance race for FAI and Goodyear races. Details: R. James, 21 Rochester Crescent, Hoo, Rochester, Kent. Venue: Elliott Bros Airport Works, Rochester A.249 off M2.
- October 3rd **ELLIOTT SPEED RALLY.** All classes handicap speed. Details: M. Billinton, 99 Canobie Road, London SE23. Venue: Elliott Bros, Airport Works, Rochester.
- October 3rd **SMAE NORTHERN AREA RALLY.** At RAF Rufforth, Yorks.
- October 10th **SMAE 6TH AREA CENTRALISED.** Team rubber, A/2, 1/2A power. Area Venues.
- October 10th **LONDON AREA C/L CHAMPS.** Goodyear, FAI team race, combat at Charlville Lane, Hayes.
- October 10th **SMAE ALL-SCALE MEET.** F/F, C/L, R/C, (Class 1—Ripmax Trophy). Venue: RAF Little Rissington, Glos.
- October 16/17th **SMAE 1977 WORLD CHAMPS—F/F TEAM TRIALS,** 2nd weekend. Venue: Sculthorpe, Norfolk.
- October 17th **NORTHERN AREA FAI RALLY.** F/F, R/C, C/L at RAF Elvington, Yorks. SMAE members only.
- October 17th **TOWNER TROPHY.** % slot thermal soaring plus scale glider at Golden Cross, Lewes, E. Sussex. Pre-entry for Towner Trophy (75p) and scale (free) to G. Hockney, 1 Bainbridge Close, Sleaford, E. Sussex. SAE please.
- October 24th **WOLVES F/F GALA.** Open R/G/P, 1/2A, Cd'H A/1, HLG, F/F Scale. Venue: Chetwynd Airfield, near Newport, Staffs.
- October 31st **WHARFEDALE 'RUFFORTH 1000'** Class B racing. Details J. Horton, 10 Lawn Ave., Burley-in-Wharfedale, Ilkley, Yorks.

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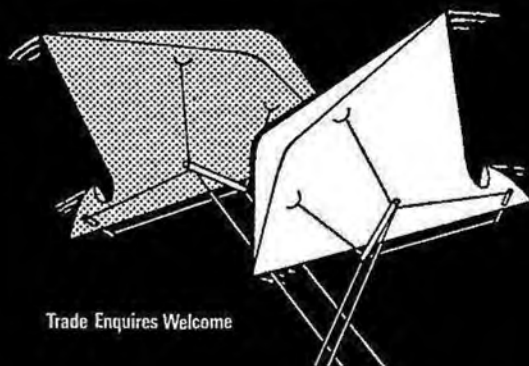
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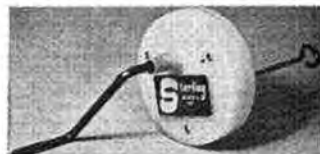
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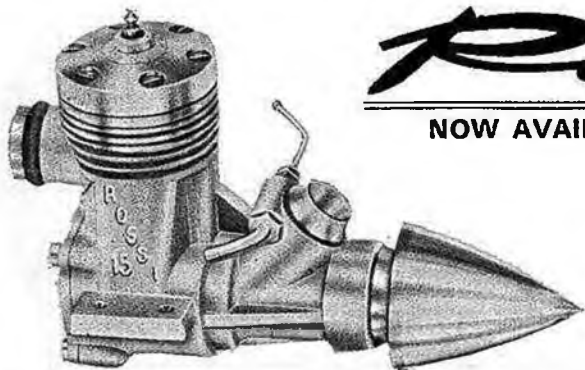


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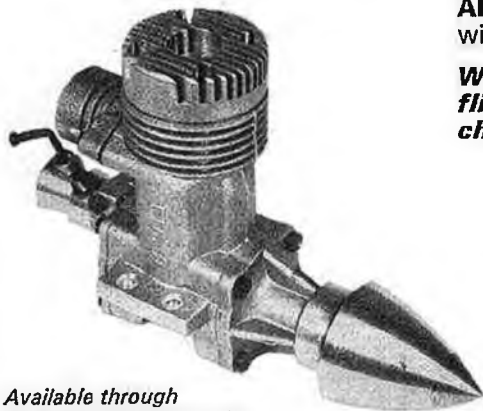
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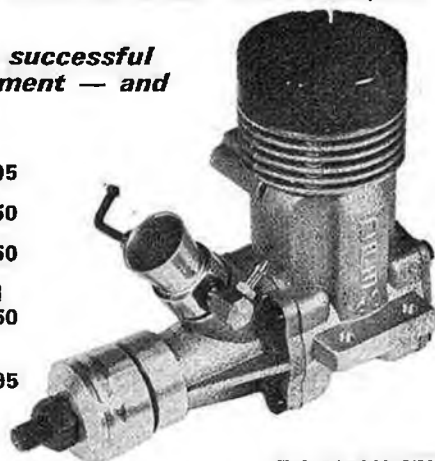
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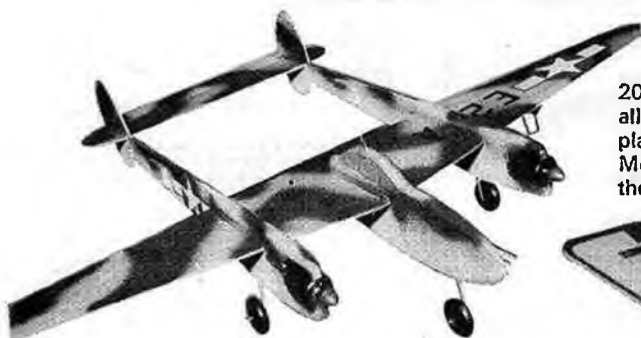
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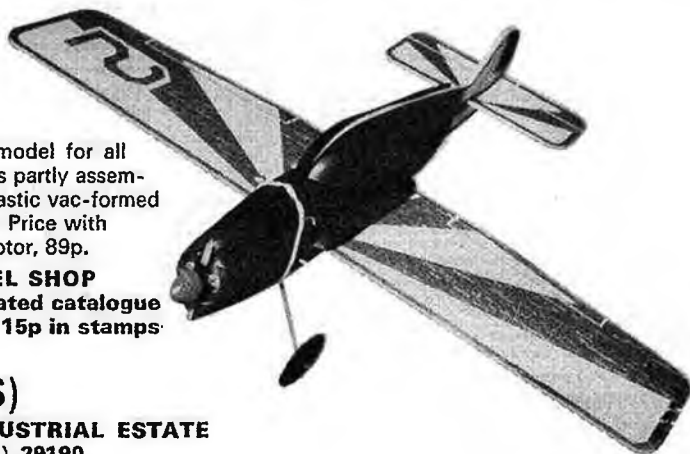
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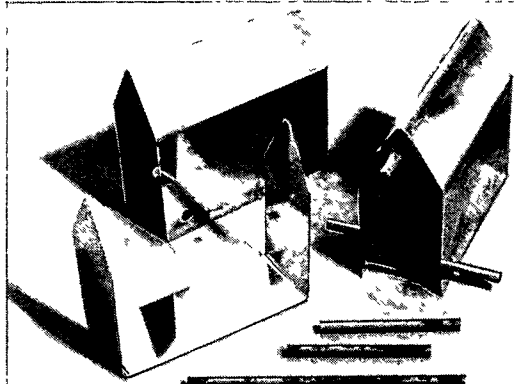
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