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November 1975

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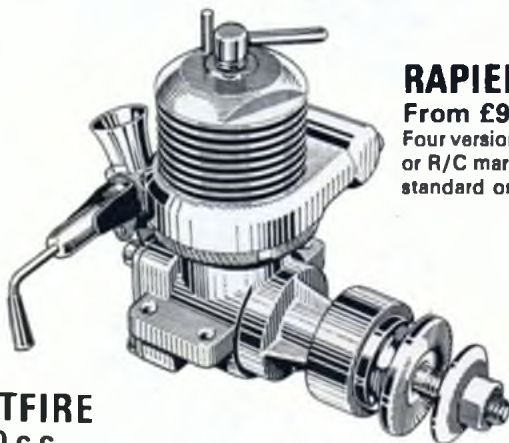
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Aero Modeller

INCORPORATING

MODEL AIRCRAFT

November 1975

Volume XL No. 478

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Comment

Visiting foreigners at our offices through the glorious summer months of 1975 have shrunk the globe and emphasised how no-one in the world of aeromodelling can be regarded as a 'foreigner'. Though languages may differ, and weather plays its part by influencing the trends of National interests, our hobby/sport generates a common understanding that operates like an unseen telegraph. We've had callers from Canada, Australia, Singapore, East and West USA, Turkey, Japan, S. America, West Indies and, of course, the European Continent in this exceptional year. Marvellous people, delightful to meet. All visiting en route to the free flight, or radio control World Championships and each with something to learn, something to give. Such fellowship produces a bond that excludes all political influences. The warmth of their conversation is an experience which surpasses every other form of communication and leaves one with a satisfying feeling for the future of aeromodelling everywhere.

What is there to learn from these exchanges? First how fortunate we are (though few would agree) that general costs of materials and equipment are so relatively low in the UK. Second, that this country has the most prolific fund of museums, tourist attractions and modelling events in its tightly packed confines to be found anywhere in the World. Third, though the pound sterling may shrink in value and the recession is a cause for National concern, British aeromodelling is held in high esteem and our organisation of the hobby is greatly admired. Things can't be *all* that bad!

on the cover

Winners of the Goodyear team race event at the 1975 National Championships - Mike Daly the pilot (on left) and Graham Howard the pitman, with the model that brought them victory, and also just happens to be the plan feature of this issue! The 'OL' Blue design is rapidly establishing itself as a top favourite in the racing world.

next month

Bumper Christmas issue! Two free full size plans with designs of models to especially interest sport modellers, plus a special feature on electric powered free flight models. More information from the recent free flight World Championships, regular features and other informative articles on all aeromodelling topics in the December issue - on sale 21st November.

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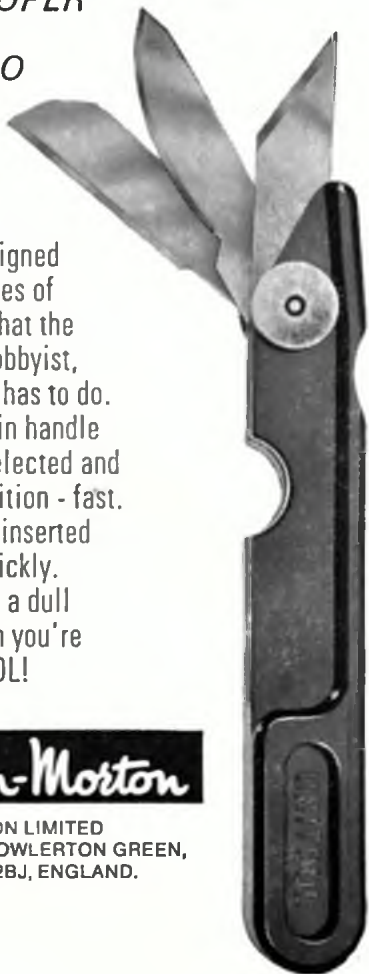
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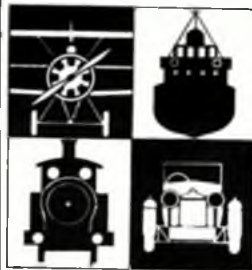
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Once again the Seymour Hall will be a meeting point at the turn of the year for modelling enthusiasts of all types. Examples of every type of model-making will be on show, from the minute to the enormous. Competition classes cover the whole range of modelling, from live steam locomotives to military miniatures. Demonstrations, club and trade, will include workshop techniques, brazing, painting, etc., etc., through to war-gaming and craft work. Visitors will be able to see and buy many of the hard-to-get bits and pieces, tools, publications, figures, kits, and the like, ask questions, chat to fellow enthusiasts and, of course, see some outstanding examples of model work.

The MAIN HALL will have a slightly different layout this time, improving, it is hoped, the flow of visitors and improving viewing. A main feature will be the traditional S.M.E.E. passenger railway in non-stop service with a variety of interesting locomotives on show and in action. The extremely popular S.M.E.E. workshop will be there, manned by experts ready to answer your queries or discuss your problems (don't be shy!), plus a display of models running on compressed air.

This year the LARGE FLYING CIRCLE, balcony to balcony, will be the scene of electric flying competitions in addition to regular demonstrations of the latest developments in this exciting aspect of aeromodelling.

TRADE STANDS include some old favourites and some newcomers, and should offer something of interest to everyone. Demonstrations will be continual on many of these.

More such stands plus CLUB and SOCIETY stands appear in the BRYANSTON ROOM, again with scores of models on show and continual demonstrations. The third hall, the LECTURE HALL, will include craft work and more exhibits.

The BOATING MARINA, parallel with the main hall, will feature demonstrations of boats—you can bring your boat along for a run if you write to us beforehand to check dates and times. Evenings (in particular) and all day Saturdays will see M.P.B.A. demonstrations, but clubs or individuals are most welcome on other days.

Several hundred people can sit in the GALLERIES adjacent to the balconies, where there will be more models, while the central balcony will be the scene of wargaming displays etc.

SOUVENIR GUIDE

Another CHRISTMAS EXTRA issue of *Model Engineer* will be coming out 2nd Friday in December with entries, trade stands, articles galore to assist the visitor and solace the stay-at-home.

REFRESHMENTS

Restaurant Service (licensed) available on ground floor. Parties may book in advance. Also soft drinks, cakes, sandwiches.

ADMISSION

Price of admission at the door will be 45p adult, 25p child inc. V.A.T. A child is regarded as anyone still at school. Children under five who have not started school and are accompanied will not be charged.

Reduced admission charges for pre-booking as under:

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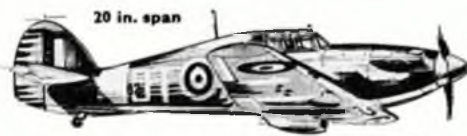


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by Harry Woodman

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CONTENTS

1 Plastic Kits

IPMS . . . vintage aircraft . . . survey of 1 : 48 scale kits

2 Improving Plastic Kits

Checking and correction . . . refining and substitution . . . additional detailing

3 Plastic Card Modelling

Modelling terms . . . adhesives . . . sprue . . . plastic card techniques . . . types of construction . . . fuselages, wings and tail assemblies . . . propellers and engines . . . cockpits and interiors . . . surface details . . . struts . . . undercarriages . . . rigging . . . small fittings . . . external loads

4 Models in Smaller Scale

Detailing . . . skinning . . . improving appearance of kit models . . . treatment for old kits

5 Painting and Finishing

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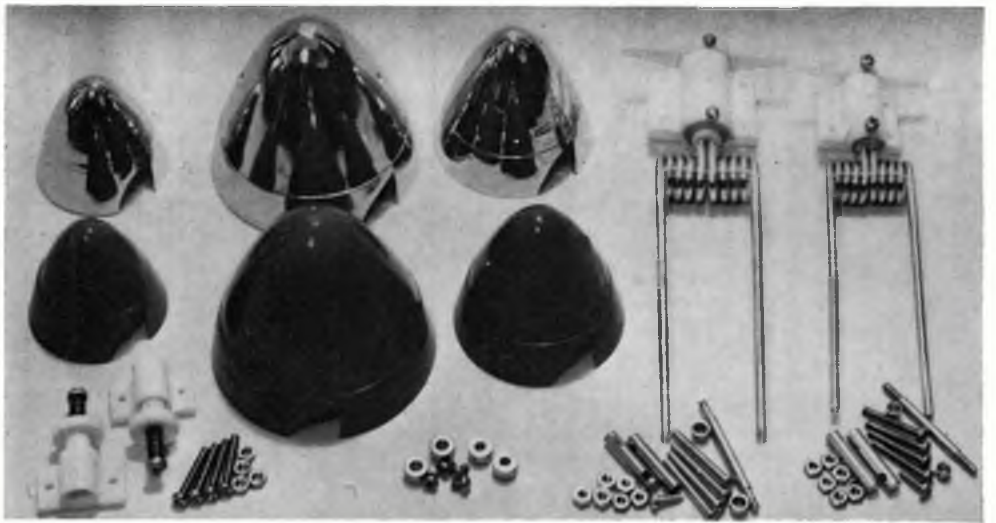


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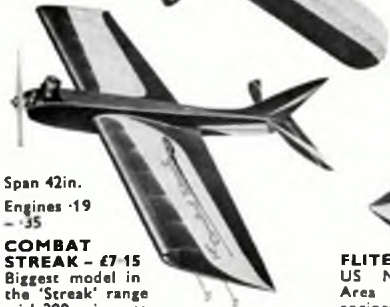
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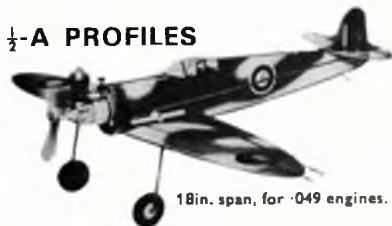
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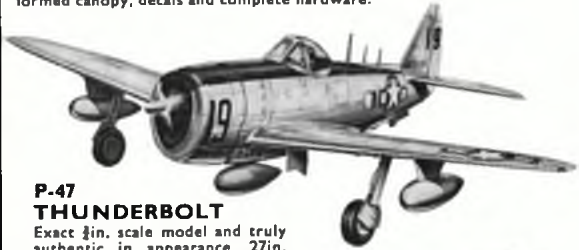


42in. span

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28in. span

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Heard at the HANGAR DOORS

AIR NAVIGATION ACT. With the recent publicity given to very large model aircraft (and it is amazing quite how many phone calls we receive from budding builders of ten-foot plus span radio controlled *Lancasters*, *Spitfires* etc - normally as a first model) it seems an opportune time to remind readers of this Act and how it applies to models. The appropriate sections are as follows:

Small aircraft

Article 93. The provision of this Order, other than Articles 44 and 67 thereof, shall not apply to or in relation to:

- (a) relates to balloons
- (b) relates to kites
- (c) any other aircraft weighing not more than 5kg. without its fuel.

Article 44 provides that a person shall not wilfully or negligently cause or permit an aircraft to endanger any person or property. Article 67 does not relate to model or small aircraft. Article 89 however requires that aircraft over 5kg. must obtain a specific exemption to enable it to be flown anywhere in the United Kingdom.

To obtain this exemption, it is necessary to make application to FSA2, Room 413, Shell Mex House, Strand, W.C.2, giving details of the fail-safe mechanism and details of the full size aircraft. If there is not a full size aircraft of which the model is scaled upon, then full details of the size, e.g. wing span, fuselage length, maximum weight, number of engines and capacity together with the details of the fail-safe mechanism must be quoted.

LAST OPPORTUNITY, until next Spring, to see a broad range of World War I aircraft flying will be Sunday, 26th October at the Shuttleworth Collection, Old Warden Aerodrome, near Biggleswade in Bedfordshire. As well as veterans from the '14-'18 war, there will be types from the '20s and '30s demonstrated and one of the main aims of the day will be for these machines to be flown past the viewing enclosures at relatively close range for the benefit of photographers. Gates open at 11am, flying commencing at 2.00pm. Entry fee will be £3.00 per car (including all occupants) covering access to the car park, spectators' enclosure and static exhibition.

TIGER MOTH Owners Circle is the title of a new organisation established by Stuart McKay for self-help among the stalwarts who remain faithful to this classic bi-plane. Advantages of combined effort to deal with matters ranging from the problems of high octane fuel to sanctioned use of camouflage colour schemes, are one of the benefits of membership. Owners and sympathisers can get details from 'Tangmere', 16 Thatchers Drive, Maidenhead, Berks SL6 3PW

A NEW WORLD RECORD claim for R/C electric powered model aircraft has been claimed by Swiss flyer Helmut Schenk who achieved a duration of 1 hour 32 minutes 51 seconds - an improvement of nearly 23 minutes over the existing record. The model was a Multiplex E-1 kit powered by two Multiplex motors turning 10in. diameter propellers. The batteries used to power the motors were six LO 26, 8.8 volts Mallory dry cells, rated at 10 amps per hour. Guidance for this craft was provided by Multiplex Royal R/C equipment, with rudder, elevator and throttle controls. A real achievement in this fast growing sphere of electric power - see next month's issue for our own results with free-flight models.

SOUTHAMPTON is the venue for an illustrated lecture entitled *The Development of Model Aviation in the United Kingdom* to be given by that splendid raconteur Lt Cdr A. Greenhalgh (Rtd) - accompanied by a display of models and flying demonstrations. Time and date of the lecture is 7 pm on Wednesday 29th October in Lecture Theatre 1, Medical and Biological Sciences Building, Boldrewood Site, University of Southampton.

The 'Sail Me' paper aeroplane as discovered in a book shop and probably dating from 1925. See story above.

HELP US to help you! Frequently we receive requests from modellers for the address of their nearest club, and whilst we are only too happy to oblige, the problem is that our list of clubs is becoming rather out-dated. We are therefore attempting to remedy this situation, but need the assistance of Clubs themselves - please send us the name of your club and the address of the secretary, then keep us informed of any changes in the future.

FIFTY YEAR OLD PAPER AEROPLANE. While browsing through an old Phillip's School Atlas in a second-hand bookshop recently Alan Kerridge, one of Martin Dilly's colleagues at work, discovered two envelopes, presumably, left here by some air-minded schoolboy. Both contained unflown specimens of *Sail-Me, The Wonder 'Plane of Wembley*, which turned out to be a 6½in. wingspan paper aeroplane, pre-cut and two-colour printed with RAF roundels and assembly and trimming instructions.

On the outside of the envelope a presumably typically dressed owner, with neatly-buttoned jacket and large cloth peaked cap, demonstrates the capabilities of 'The Wonderful Toy Aeroplane', which will perform 'Perpendicular Spirals, Horizontal Spirals' and can 'Loop the Loop'. The clothes and Wembley reference date the *Sail-Me* as probably 1925, the year of the British Empire Exhibition.

The cleverly-designed paper fuselage is ready-fitted with a crimped steel nose weight, and, when spread open to accept the wing, gives it about ¼in. of camber at the root, which decreases automatically to give an almost flat plate section at the tips. Flights of fifteen feet and more are possible, but aerobatics have not been attempted. It would have been interesting to have seen a model of this type competing in last year's Lyons Maid paper glider event.





THE FULL SIZE *Ol' Blue* is a fairly recent Goodyear racer. It first appeared in 1971, and has since established itself as one of the faster racing planes.

At the end of last season, looking through the *Racing Planes Annual* I saw this likely-looking aircraft as an alternative to the *Deerfly*, being very similar in size and areas, so guessed it would probably fly just as well. The original model was built with true-scale tail area, but the model shown here has the tail area increased by 25% (as allowed by the rules), to improve the handling in wind.

Construction

I begin with the wing. Using PVA glue throughout the construction, glue together the two pieces of $\frac{1}{4}$ in. \times 3 in. sheet balsa, keeping them flat while the glue dries. Cut the wing to shape and add the spruce leading edge, then form the bellcrank hole and make the leadout passages in the wing. Carve, plane and sand the wing to section, install the bellcrank mount and controls, then cover in the wing centre section with $\frac{1}{2}$ in. ply, cutting holes to clear the bolt head and nut, and to allow access for the pushrod. Add the tipskids with epoxy, and the wing is finished!

The fuselage has a core of very hard $\frac{1}{8}$ in. sheet balsa, to which are glued the bearers. The rest of the profile is made up from medium soft $\frac{1}{8}$ in. sheet. Assemble the fin and glue in place. The fuselage is then tapered to blend into the fin from the end of the ply doublers. Now make up the tailplane from $\frac{1}{8}$ in. sheet, but do not attach the elevator at this stage. The wing and tailplane are now positioned and glued into the fuselage – it is extremely important that the wing and tailplane are at zero incidence to the engine thrust line. Time spent ensuring this will give you a model that will fly *properly*. Just look around at some of the Goodyear models which do not handle when the engine cuts, and are unreliable in a wind. You will find that most of them have got some very strange incidence angles indeed . . .

Side profile reveals the generous nose fairing to aid rigidity and the detachable undercarriage mounting – a very useful facility as a damaged leg can rapidly be replaced with a spare. Goodyear racers are tough, practical machines, which are easy to make and yet provide lots of keen racing fun.



Graham Howard's Nationals
winning Goodyear team racer

OL' BLUE

a very competitive yet simple to
build control liner for 2.5–3.5cc
engines

Add the $\frac{1}{32}$ in. ply nose doublers, carefully cutting out the holes for the wing, together with the ply tail reinforcement. These are to stop the tailplane rolling off the fuselage in a fast catch. Make up the undercarriage mount as shown, and after cutting the slot for it through the inboard $\frac{1}{2}$ in. ply and the $\frac{3}{8}$ in. sheet, epoxy in place.

I prefer to mount the engine on $\frac{1}{8}$ in. thick aluminium plates, drilled and tapped to suit the motor. These are bolted to the wooden engine bearers with countersunk 6BA bolts and nuts, and secured with epoxy. This method prevents the bearers from being repeatedly compressed by the engine mounting bolts, which eventually causes them to split. When the epoxy is dry, file and emery the seating faces of the aluminium mounts until they are flat and true when checked with some engineers' blue on a piece of glass. Spend some time on this, a well seated engine will go faster.

Make the noseskid mount from 10swg brass tube, squashed to take the 14swg skid. Sew to the inboard ply nose doubler with nylon thread, and cover with epoxy.

Make up the shut off from 16swg steel plate and 14swg wire and attach to the fuselage as close to the engine as possible, using 6BA countersunk screws with blind nuts or nuts epoxied to the inboard side of the fuselage. Ensure that these bolts go through the engine bearers. Make up the tank from tinplate or brass sheet, folding all the joints before soldering. Make sure that it is pressure tight before epoxying it to fuselage as far forward as possible. Add the side cheek, $\frac{1}{8}$ in. ply airscoop and tailskid.

Finishing

Most people have their own differing ideas on how to finish a model, so I will briefly outline my own method. Sand the whole model to shape, finishing with fine garnet paper. Give the model two coats of 50/50 dope, sanding between and after with the fine garnet paper. The tissue SMAE numbers are cut from blue or black lightweight



The 'business' end of Graham's racer reveals the important ingredient if you want to join the winner's circle, a Rossi 15 glow engine. In this case a new cylinder head has been fitted to accept standard glow plugs - as described in the April 1975 issue. However, if you are not in the 'top racing bracket' then a less exotic, and less expensive engine of up to 3.5cc will still provide lots of sport.

there is a 1/16 in. gap between the ground and the bottom of the noseskid when the model is horizontal. Bend and fit pushrod and connect shut-off to pushrod with heavy-weight Laystrate. Adjust to operate shut off on about 5 degrees of down elevator.

Flying

From this year it would appear that to stand much chance of winning the Goodyear, a Rossi is essential. Even with poor pitstops, the 100 lap heat time is around 4:50, which the very fastest diesel men can only achieve if everything works *perfectly*. By the end of the season, I can foresee that the heat time barrier will be about 4 minutes.

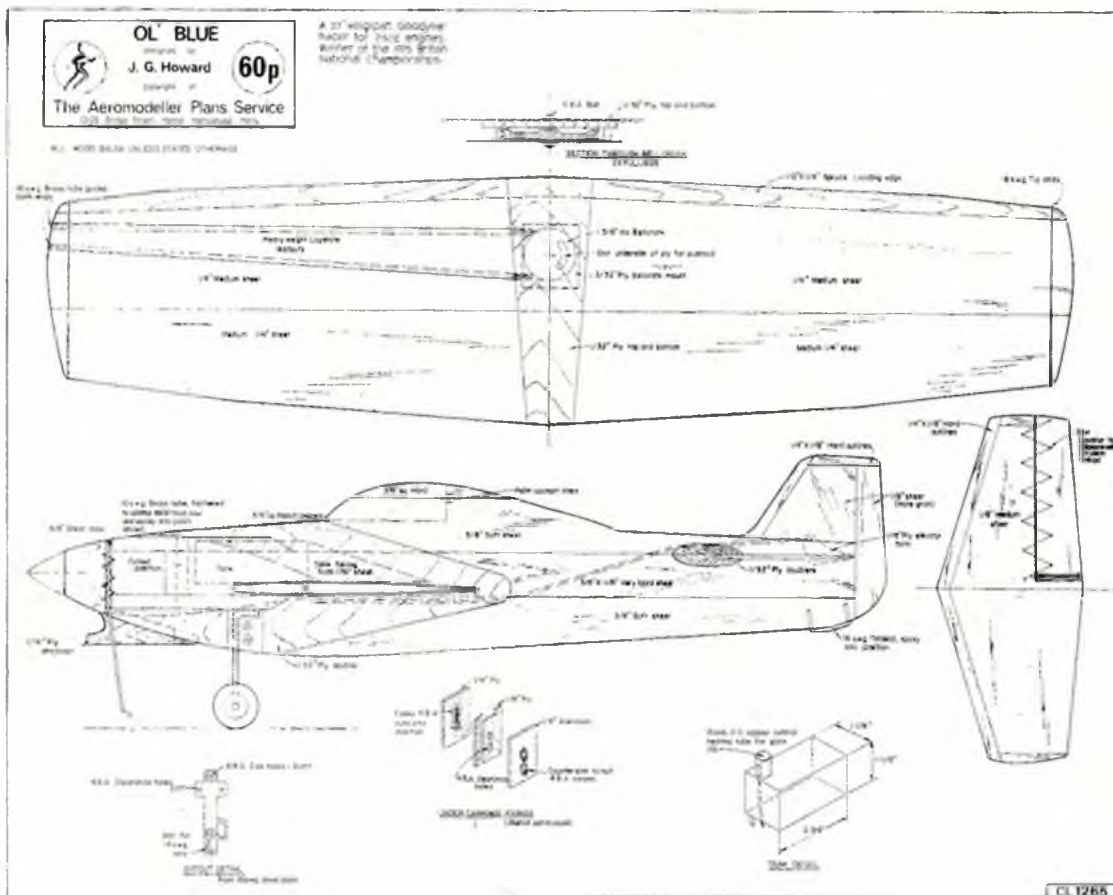
People do peculiar things to Rossi's, such as scrubbing the lacquer off the piston and having to buy a new one, and 'turning them round'. All we have done to ours is put in a head to accept standard glow plugs as described in *Between the Lines*, April 1975 *Aero Modeller* issue. We use a Taylor plug on 10% nitro fuel; any more doesn't seem to have any effect (except on running costs) and the prop is one of my own manufacture (Yes, you can buy them!!) carved to 140mm pitch. Any more pitch kills the motor completely, anything less than 18,000rpm on the ground is off the power curve in the air.

Our model weighs just over 17oz. without fuel and flies smoothly, with a good glide. It's simple to build, Goodyear is the best introduction to racing, so come on *Plums*, get building!

tissue using suitable templates, and applied with dope. Carefully sand when dry. Cover the whole model with lightweight tissue doped on and give one more coat of full strength dope. Sand the model with grade 600 wet or dry paper, used wet. Spray the fuselage with coloured car cellulose after masking wings and tail. Paint on cockpit and white backgrounds for numbers. Add racing number transfers and sew on elevator with nylon thread. Leave for at least 24 hours before fuelproofing with Ripmax Tufkote.

Make up the undercarriage leg and noseskid, so that

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topical twists

by 'Pylonius'

illustrated
by Sherry



Noises off

A RECENT NEWSPAPER article on Sunday noise nuisance did not give a single mention to the model plane. Just why the model plane should have fallen from grace – or, rather, the reverse – is something of a mystery. It is generally felt that, in spite of silencer development and intense propaganda, it still can compete on more or less level terms with other disturbers of that valued British tradition: the Sunday afternoon nap.

But perhaps a clue comes in the high nuisance value given to mechanical gardening aids. People no longer push the mower or wield the shears, but pop along to the nearest discount house for the latest electrical aids to a speedy coronary. For sheer Sunday suffering they are reputed to have more than the decibel edge on the model plane, particularly as they do the ear massaging at really close quarters, quite different from the usual, *'Go down to the bottom of the garden, and see if you can still hear those model planes . . .'*

Come to think of it, it wouldn't be a bad investment for any group of flyers to distribute such electrical devices to nearby residents *gratis*. Then, when the inevitable maverick gets his unsilenced racing engine going full bore, the noise battered residents will merely mutter, *'It's old McMamure, clipping his blasted hedge again . . .'*

On the subject of noise complaints, it often seems ironic to me that people send their minor aggrievements to the very authority which is contemplating siting a motorway bypass through their back gardens. The same authority which, under pressure of complaints, has de-urbanised the radio model, driving it into the wilderness to become the prey of environmentalist, conservationist and ecologist. *'The acoustic effect upon the Greater Spotted Leatherneck is a startling reduction in numbers . . .'* Then everyone gets even more anxious and concerned, even though they have never seen or heard of the Greater Spotted Leatherneck before. You just cannot win.

Small is beautiful

By virtue of sheer excess much of the thrill has gone out of the more spectacular forms of aeromodelling. Everything moves so fast, aerobats so splendidly and looks so authentic that there isn't much you can do to attract attention on the model field. You can try streaking, of course, presenting, as it were, an uncovered version of your own design, but in our climate this would be cold comfort, and you'd be safer doing what is now all the craze – going Jumbo.

I don't know at what spannage a model ceases to be a model and becomes a flying machine, but I do know that an unregistered aircraft must be anchored by a ten foot rope. Looking at some of these Jumbo models I feel it would be safer for all of us if they came into the ten foot

rope category. Happily, though, these multi engined monsters exist more in the threat than in the airfield clearing reality. Getting six engines all firing together takes up most of the flying session, whilst the rest of it is devoted to the photographic posing (why are the builders always expected to clutch their hefty craft to their stomachs?), and it's much nicer to hold a smooth, unfledged model than a heap of wreckage.

Just now the C/L and Radio Jumbo-ites are caught up in a competitive inflation spiral, with each faction vying to produce the most enormous model. Just who has the biggest nerve, the chap on the end of the lines, or the one knuckle-whitedly clutching his transmitter, it is hard to say, but there is something a bit pathetic about these model colossuses – they should have jet engines but have to make do with craftily concealed piston engines instead. This is because of a condition general throughout the scale model world, known as 'jet-lag'. Though we are now well advanced into the jet age, the model flying is still very much hogged down in the propeller era. Thus, the big model builder is faced with those 'please, it's only a toy' props stuck behind the jet pods, or go vintage with a *Lancaster* or *Dornier Do.X*.

The name's the game

They say a rose by any other name etc., but it does add something to your model if what you dub it is aptly descriptive. For instance, it can be a bit of a let down if, say, you call your model *Nimbus Nudger* when the only thing it nudges is the airfield fence. Or you could be lucky in choosing the name *Icarus* if, on your model's maiden flight, the wings fall off. But, generally, it is better to be like the Americans who, having emotively exhausted the terminology of fauna and flora, the stars above and the universe in general, became coldly scientific, and now identify all machines with code letters. Then, again, it is somewhat cynical to evoke the names of tigers, jaguars and other creatures brought to the verge of extinction, for our polluting gadgets.

Most model flyers, though, no longer trouble to give their models names at all, probably because the models now all look so much alike, so that the term *Wakefield, A/2, Team Racer* etc, is title enough. However, there are times when a name becomes obligatory, such as the model plan being published or put into a kit. It is on such occasions that you need a bit of inspiration like the chap who called his *Wake Hereward*, or the one who entitled his team racer *Penelope* (Pitstop).

These thoughts occurred to me on seeing a model, if model it be, of curious and lopsided configuration – a wing and a bit – claiming the most inapt appellation of a symmetrically perfect, multi-hued bird. Surely, 'XY Plus' would have been more befitting.



The Free Flight Scene

This month:
Martin Dilly

BLOWING BUBBLES

BUBBLE GENERATORS are a fairly normal part of the scene at F/F contests today, but the newcomer to the sport may like details of one type that works. The original design was by Jack North of the Croydon club in about 1968; exact details of the blower are best left to the builder to decide in the light of what is available. The original used an old hair dryer fan and housing, with a 6 volt slot-car motor substituted for the AC mains motor. Other versions have used a 12 volt axial flow car vacuum cleaner (with the impeller reversed on its shaft so it blew instead of sucking), and an ex-government 24 volt blower for cooling electronic equipment, again with a cheap 12 volt DC motor epoxied in place of the original motor.

The ducting should be as high as can be conveniently handled, in order to get the bubbles as clear as possible of ground turbulence. Certainly the bubble head needs to be at least ten feet above ground level. Duct materials have ranged from stout cardboard tubes, telescoped together, via plastic electrical conduit to PVC plumbing tubes, which are light and come with neat couplers with air tight neoprene O-rings inside them.

Batteries and a switch are taped to the bottom of the duct; one version used a 6 volt motorcycle accumulator to save the cost of replacing dry batteries. You may well find that you can get the best results by running the motor at less than its nominal operating voltage. It is also useful to include some means of varying the intake area of the blower, and thus the throughput of air. This may have to be altered according to the wind strength each day, so that bubbles of the right size and quantity are produced – say 1 in. – 1 1/2 in. diameter and 20 or more in each 'cloud'. The advantage of having the air intake at ground level is that the airflow from the exit nozzle is much less affected by variations in wind speed than it would be if both blower and intake were elevated.

With the blower, detergent container and any form of motorised dipper mechanism mounted high in an inevitably fairly bulky package, considerable turbulence is produced immediately downstream of the nozzle in winds of even moderate strength. This can often shatter the film in the bubble loop before the machine's air supply can produce bubbles; the result is a lot of useless foam, an odd eyeful of detergent and no bubbles!

A number of bubble machines seen on the Continent where contests are generally flown in calmer conditions, have all the 'works' mounted on top of a pole; this type is usually fully auto-

matic and is held upright by guy-lines. This saves manpower, but if the drift changes it may be the *opposition* downwind in the bubble stream, with the machine's owner watching them launch into the thermals it marks! With the hand held 'pull-the-string-and-watch-the-bubbles' type of generator, the operator can quickly move his position to direct the bubbles where 'his' man wants them.

But to go back to the machine. The more sophisticated types have flow-turning vanes in the head to reduce internal turbulence as the air turns through 90° into the outlet nozzle. Nozzle diameter may need a little experimentation, but aim at something around 3/4 in. for a start. It helps if the detergent reservoir is arranged to gimbal as the machine is tilted forwards, and the usual system is to suspend it from two wire hooks epoxied to the nozzle. If the reservoir is transparent it avoids running out of solution at awkward moments...

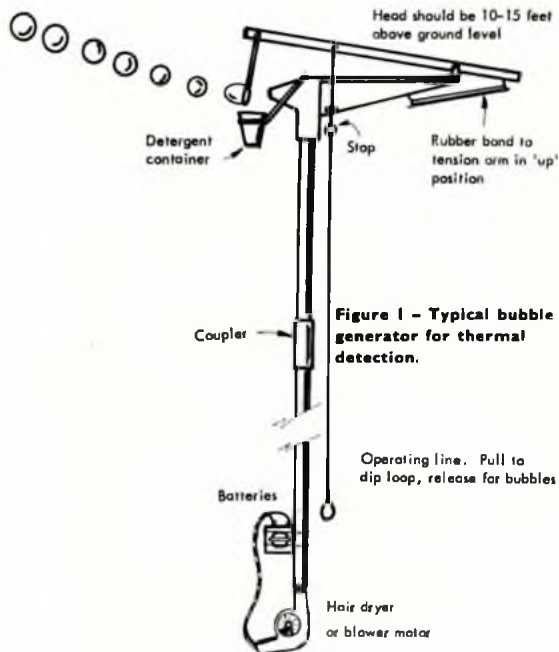
As for the solution itself, it is largely a question of trying a few brands until you find one that gives the results you want. *Palmolive* until last year's team Trials, gave a very thin film bubble of long persistence; it was common to find *Palmolive* bubbles a mile downwind four minutes after they were produced. But in late summer 1974 *New Improved Palmolive* appeared. Improved that is, for washing up, but next to useless for bubbles! Apparently it all depends on the type of non-ionic surfactant used in a detergent, so it was a case of back to the supermarket. As a matter of interest, in the late 1960s, the magazine *Scientific American* published an article on the formation of bubbles, reporting that it was possible, using aluminium stearates, to get large bubbles that lasted, under cover from dust particles, for several years!

The bubble loop can also be around 3/4 in. diameter – some have used the plastic loops from children's bubble blowing solution; one Hungarian machine had a loop consisting of a plastic 'coiled coil', giving a large surface area to hold a large volume of liquid, giving a long stream of bubbles on each pass in front of the air nozzle. Steel loops tend to rust quickly in the detergent, and the resulting contamination of the solution may affect its bubble-making qualities.

The dipper arm is best tensioned to the raised position, i.e. out of the solution, so that the container can tilt freely when the machine is lowered for replenishment or moving. Pulling the string dips the loop into the liquid; releasing it lets the loop rise into the air stream, and bubbles break off from the resulting 'sausage' of film until either the solution on the loop is exhausted or the film breaks. Increasing the air pressure reduces the size of bubbles and *vice versa*. Large bubbles are harder to spot against the sky, and seem to burst more easily.

Having produced bubbles, what next? In average British contests, with a 10–12 knot wind, thermals will probably be small in base diameter (say 50–100 yards); you thus have perhaps ten seconds in which to decide that the leading edge of the thermal has arrived,

Nationals Junior Kit Contest winner Mark Prickett of the Biggles F/F team hand launches his prize – a St. Leonards 'Nova', modified to have a deeper pylon.





Benedek B-6456-f ordinates

% chord	0	1-25	2-5	5	7-5	10	15	20	25	30	40	50	60	70	80	90	95	100
Upper	0-75	2-5	3-6	4-95	6	6-9	8	8-7	8-95	9	8-9	8-3	7-5	6-4	5-05	3-7	2-6	0-5
Lower	0-75	0	0-2	0-5	0-8	1-1	1-6	2-2	2-8	3-25	4	4-5	4-5	4-05	3-3	2	1-1	0

Nose radius 0-7

Figure 2

assess its strength and size, and launch your model into its invisible centre. Don't forget that the base of the thermal will trail the upper part; with a glider on a 50 metre towline this can make quite a bit of difference.

Using bubbles effectively can be a matter of teamwork. In some light and sun conditions it can be hard for the competitor himself to spot bubbles, especially with the machine a hundred yards upwind or more, as it needs to be in strong winds. This is where an experienced lift-spotter can be helpful, ranging about between bubble-machine and competitor, maybe getting an idea of the profile of the rising air. Just how much reliance you place on him and how he signals the lift to you is a matter of tactics; let us just say that it is not unknown for teams to give confusing indications in the hope of luring the opposition into false thermals, so the best solution is to rely on your own bubble man, or else other people's models in lift upwind of you.

SHEET-TOPPED WING STRUCTURES

A structural idea pinched from an A/2 (designer unknown) seen at the 1973 Nationals may be worth passing on. I have used it myself on a model with the fairly thin *Benedek B-6456-f* airfoil, and a sheeted upper surface. A problem with this section is how to install an upper and lower spar in the wing when the section depth is only about 1/8 in. at the spar position; with, say, flat spars of 3/8 x 1/8 in. spruce there is very little wood left between them if both are slotted into the ribs. The answer is to make up a composite upper-surface sheet, including the spruce spar (tapered from root to dihedral break) which thus ends up glued on top of the rib rather than inset into it. Remember to sand the combined spar and sheet before assembling the wing - doing it afterwards will thin the wood over the ribs and produce scalloping of the upper surface of the finished wing. Adding 1/32 in. vertical webs between the ribs will help to reduce the bending tendency of the wing under load. Being a mite lazy, I usually butt webs onto the rear faces of spars (or spar in the case of this type of construction); you will save the weight of a strip of wood 1/32 in. x the spar's depth x the wingspan if you install the webs between the spars instead.

If the rib spacing is around an inch or less on an A/2 wing, the extra weight of webs is hardly necessary, as the close ribs themselves provide enough support to prevent the spars from squeezing together and buckling under towing loads. But do remember to use tapered doublers to smoothly spread the loads from the ends of the wing joiners into the spars. I know - I've snapped wings on tow and the beady eye of the O'Donnell camera caught the result

The 'Maxaid' circle-tow unit described in the text is very compact and weighs just 8 grammes. It is supplied complete with all 'accessories' (see right) ready for installation in a glider, and the instruction leaflet is most explicit. Very good value at just £3.70.



during the 1965 Nats Open glider fly-off for all to see! But that was in the days of wire joiners running tubeless in 1/8 in. ply ribs.

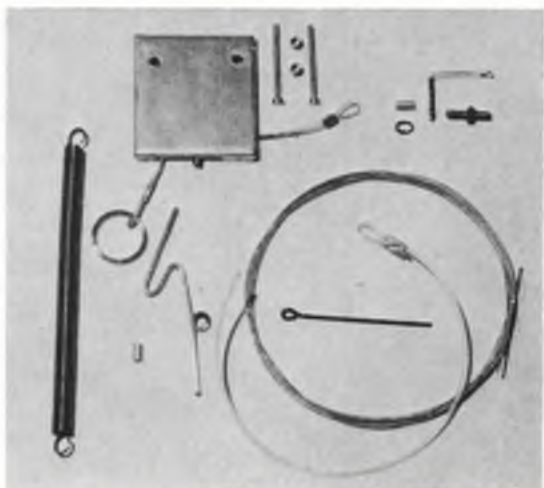
Having gone on at some length about a wing structure used with the *Benedek B-6456-f* airfoil, this seems like a good time to refer readers to Figure 2!

My own experiences with this section started in the early 1960s, using wings from 5in. to 6in. chord, all with fully sheeted upper surfaces. The most successful of these A/2s had a lowish aspect ratio of 12:1 but a reasonable contest performance in a wide range of conditions; details were in the 1964-65 Frank Zaic *Yearbook*. An A/1 with a 4 1/2 in. chord (*Cue Dot*, now on the *Aero Modeller* Plans Service 'X List' - presumably only suitable for those of us over 18, or else accompanied by parent or guardian . . .) also did quite well for a few seasons. But the point of this little saga is that the structure appears to be important aerodynamically; spar positions, surface smoothness, even the type of tissue used may well have an effect on wings that are 'identical' as regards chord, span and nominal airfoil. It may just be coincidence (or a function of Reynolds numbers) but the one unsuccessful wing I built with the *B-6456-f* airfoil was for an Open model and had an 8ft. span, a chord of 9ins. and used a fully built up, tissue covered structure with leading edge riblets.

Another section that seems critical on spar positions is the one Larry Conover used on his *Lucky Lindy F.1.C* model that was placed joint first at the World Championships in 1960. The original used tubulator spars on the upper leading edge of the flat bottomed airfoil, at 3-5%, 8-5%, 15% and 23% chord positions, on a chord of 8ins.; a 5in. chord version used on 1/2 A models has been successful for a number of people. Incidentally, for those of you who have the John Malkin book *Airfoil Sections* (now out of print) the ordinates given in it for the Conover airfoil should be multiplied by a factor of 2. As they appear in this otherwise excellent reference book, the section will end up only 4-9% thick instead of 9-8%. Although possibly superseded by FAI Power models, the Conover airfoil is well worth a try for today's 1/2 A and Open power models.

MAXAID CIRCLE TOW ASSEMBLY

The first circle tow assembly to reach the British market comes from ex-World A/2 champion Elton Drew and Reg Latimer, trading as *Maxaid Modelling Products*. The unit is very compact and weighs about 8 grammes; dimensions are 30mm x 30mm x 6mm, which enables it to fit into virtually any existing glider's fuselage. It gives a circle tow facility permitting tighter turns on the line than during the glide, but no zoom launch setting is available.



The recoil release principle is used and the parts for a spring-and-zig-zag tow hook are included, with pre-bent wire and a suitable tension spring, ready for connection to the towline. Incidentally, contrary to some people's fears, nylon monofilament line of around 25lbs. B.S. is quite satisfactory for a recoil system like this one.

The rudder adjustments for the circle tow and glide turn are made within the unit by an Allen key which is supplied; straight tow setting is achieved by varying the length of the auto-rudder line, also supplied, which is nylon coated, stranded, stainless steel wire. Aluminium tubing crimping ferrules, wire connecting loops, drilled rudder horn, and 8 BA adjusting screw and nylon nut are also included in the pack, at a total cost of £3.70, including post and packing from: 2 Downfield Close, Alveston, Bristol BS12 2NJ.

The unit attaches to the model via two holes to take 10 BA screws, which transmit all towing loads to the fuselage. A nylon latch locking line - included - is inserted before launch into one of two holes in the lower face of the unit, which locks it during tow into either a permanent straight tow mode, or else permits the model to circle as line tension is released.

Very complete instruction sheets cover installation, the spring hook assembly, and trimming. In all the Maxaid assembly is good value and should help all glider flyers into the circle-towing mid-70s.

TORBAY RALLY, Woodbury Common

Fellow-columnist Michael Warren paid his annual visit to the Torbay Rally, held on 3rd August at the traditional venue, Woodbury Common, near Exmouth in Devon. Mike, and contest organiser Chris Chapman, have sent the following report:

Woodbury Common, for those who don't know it, is tough terrain for free-flight - undulating, with a fair bit of bracken and heather and some particularly nasty ankle-high gorse. But - and it's a great asset in summer-time - it is big and totally free of farm land, and therefore of crops.

The weather was hot and sunny on 3rd August, with the temperature only being kept bearable by a slight breeze coming in from the sea. In fact, at the start of the day, the breeze was sufficiently strong to prompt the organisers to reduce the max to 2½ minutes: as the day progressed however, the breeze tended to decrease.

There was surprisingly little lift about despite the very warm air and for much of the day, and as the results suggest, the air was no more than poor. (It was after seeing his A/2 pulled down out of the sky for a flight of about 40 seconds, admittedly after a less than brilliant launch, that Michael Warren decided the fates were against him for the day and retired!)

The FAI event for the Torbay Trophy became an all-A/2 affair and most people doubled their flights with open glider. After the day's flying, the competitions ended in neat three-way fly-offs for each of the main classes. At the time of the fly-offs the air was particularly dead and there was little in the way of lift about. Julian Hopper seemed set to win Power but had pressure troubles on his *Super Tigre G15*. Dave Bailey, from Swindon, who is often successful at Woodbury, was well on form again and managed to win both Open glider and the Torbay Trophy.

Results

Open Glider (2½ min. max., 18 entries) - 1. D. S. Bailey (Swindon) M+2:27; 2. S. Spencer (South Bristol) M+2:21; 3. R. Inker (South Bristol) M+1:28. **Open Power** (2½ min. max., 11 entries) - 1. A. Chilton (Crookham) M+2:35; 2. P. Ward (Torbay) M+2:27. 3. J. Hopper (Stanstead) M+1:00. **Open Rubber** (2½ min. max., 3 entries) - 1. J. Hopper (Stanstead) M+5:24; 2. C. Chapman (Torbay) M+4:53; 3. R. Inker (South Bristol) M+4:32. **All-In FAI** (5 flights 2½ min. max., 14 entries) - 1. D. S. Bailey (Swindon) M+2:10; 2. R. Inker (South Bristol) M+2:06; 3. S. Spencer (South Bristol) M+1:13. **Chuck Glider** (best 5 from 9 - 1 min. max., 7 entries) - 1. M. Gilmore (Southampton/RAFMAA) 3:31; 2. M. Andrews (Southampton) 3:24; 3. J. Mayes (S. Bristol) 1:23.

LEEDS RALLY, RAF Elvington

Held on the more or less unidirectional airfield of Elvington on a bakingly hot 3rd August, this contest was in the 60-plus car class in terms of participants. Because the drift was across the long runway the flying took place from the upwind edge of a vast concrete apron about 400 yards square which acted as a heat reflector and led to some problems in thermal detection, not helped by trees a couple of hundred yards upwind. Caught between the devil of the upwind trees and their possible curl-over, and the deep blue sea of the downwind corn and further trees waiting for landing models, most people flew from roughly the middle. This made for some pretty final pile-ups when several poorly-trimmed (or heat-sensitive?) power models went off pattern.



At top is Colin Hickmott (York) who was placed 4th in Open Power at the Leeds Rally with his Fox 15 powered model. Above is Steve Marriot with his Coupe d'Hiver model which features an octagonal balsa fuselage and is fitted with an Elmic D/T timer to operate the propeller start delay.

One lucky escape came for Brian Martin whose normally spot-on power pattern went very rilly when a rudder horn came un-epoxied and nearly put paid to his 1975 Nationals winning sheet-surfaced -40 model. Both Russell Peers and Ewan Jones went flat on their climbs during the Open Power fly-off, Russell ending up less than glider towline height over that hard, hard concrete.

Open Glider with 49 entries produced ten fly-off contenders; in spite of several circle tow models rotating during the fifteen minute fly-off period none seemed to find obvious lift. Brian Baines broke a towline as he accelerated his model for the zoom release, final winner Pete Whitehead managing 3:12 with presumably slight thermal aid, trailed by John O'Donnell, now flying a circle tow model, and the still on form Tony Le Vey in third place; one of the 'winningest' juniors in the country.

Open Rubber winner Phil Ball, of Grantham, was unusual in flying a 300sq.in. model with a fuse operated variable incidence tailplane to control the early part of the power run.

In all the Leeds Rally was a well-run affair, with Jim Moseley doing a lot of work; no ropes, tents, stakes or Tannoys were used and all the organisation took place from the back of a station wagon, but in free-flight ballyhoo is not what it's all about. If anyone is still in doubt about what 'flying for fun' means, come to a F/F contest; if it wasn't fun we wouldn't do it.

Results

Open Glider (49 flew, 10 in fly-off - 1. P. Whitehead (York) M+3:12; 2. J. O'Donnell (Whitefield) M+2:35; 3. A. Le Vey (York) M+2:10. **Open Rubber** (23 flew) - 1. P. Ball (Grantham) M+5:46; 2. J. Mantle (Halifax) M+4:55; 3. G. Ferer (Leicester) M+3:52. **Open Power** (20 flew, 6 in fly-off) - 1. R. Monks (Birmingham) M+4:39; 2. R. Baggott (Birmingham) M+4:04; 3. B. Martin (Tynemouth) M+3:59. **Combined Mini** - 1. G. Abbey (Leicester) 9:49 (A/1); 2. D. Davitt (Leeds) 9:23 (80gm. Coupe d'Hiver); 3. J. Hanson (Liverpool) 9:15 (A/1). **Vintage** (18 flew) - 1. E. Smales (BAC) 9:00 (Cumulus); 2. G. Ferer (Leicester) 7:57 (Northern Star); 3. G. Abbott (York) 7:33 (Fugitive). **Hand Launched Glider** (7 flew) - 1. E. Jones (Sunderland) 4:52; 2. H. Brown (Tynemouth) 3:45; 3. R. Hoff (Vulcans) 2:12.



THE INDOOR SCALE Nationals held at Cardington on 17th August was very poorly supported. After entries in the 20s for the Experimental Peanut meeting held earlier in the year, I would have expected an even greater entry for the first-ever official SMAE Peanut competition. Instead just six models were entered including the Hannan *Farman Moustique*, which I again flew proxy, and my tatty old Peck *Andreason B.A.4*, which I only entered to make up numbers. Perhaps prospective entrants had taken to heart the recent *Pylonious*' facetious comments regarding the low performance of these models. Said gentleman, please note: the winner's aggregate time totalled 146 secs. for two flights and the last man managed a similar aggregate of 72 seconds. The winner in fact was again Butch Hadland flying a *Whittman Tailwind*, which not only put up the best flight time, but gained highest static marks to become undisputed winner. Second place resulted in a tie under the SMAE Provisional rules being used for the first time – with a low entry the 'place' system of marking is bound to result in several ties. Alan Callaghan's beautiful *Westland Widgeon Mk. 1* was second in static and fourth in duration, whilst Bill Hannan's *Farman* was fourth in static and second in duration; each model therefore totalling 6 place marks. A fly-off for second place therefore was necessary (under the rules the fly-off is judged on the quality of the flight under the Open Scale rules). The steadier flying qualities of the *Moustique* just edged it in front of the slightly stally flight performance of the *Widgeon* to put Bill Hannan into second place.

Entry into the Open event was even more abysmal. A grand total of 3 in fact. These however were to a very high standard, it being a difficult task for the Judges Ron Moulton and your scribe particularly to separate the two 'pre-historique' monoplanes of Butch Hadland and John Blagg. Butch had a replica of Cessna's first aeroplane,

FLYING SCALE COLUMN

by Eric Coates

built in 1911, whereas John flew his *Eastbourne Monoplane* in both this and the Peanut competition. Both these models scored the same static mark and flew almost identically, although the *Eastbourne* had a marginally better second flight to pip the *Cessna* for second place. The winner for the second time this year was Alan Callaghan's *Udet Flamingo*. While it couldn't be persuaded to ROG the quality of the rest of the flight, added to a superior static score, was sufficient to overcome this highly factored deficiency, to win with a score of 151.

Results

		Open Scale			
		Static	Best Flight	Total	
1.	A. Callaghan	<i>Flamingo</i>	89	62	151
2.	J. Blagg	<i>Eastbourne</i>	65	73	138
3.	C. Hadland	<i>Cessna 1911</i>	65	71	136

		Peanut					
		Scale Points	Pos.	Flight Points	Pos.	Pos. Points	
1.	C. Hadland	<i>Whittman Tailwind</i>	30½	1	146	1	2
2.	W. Hannan (proxy E. Coates)	<i>Farman Moustique</i>	27	4	96	2	6
3.	A. Callaghan	<i>Widgeon Mk. 1</i>	28	2	73.5	4	6
4.	J. Blagg	<i>Eastbourne</i>	27½	3	72.5	5	8
4.	E. Coates	<i>Andreason B.A.4</i>	22	5	81	3	8
6.	K. Miller	<i>Andreason B.A.4</i>	21	6	72	6	12

Alan Callaghan continues to privately publish the drawings of the excellent designs he flies so well at Cardington – his latest is the rather rare *Westland Widgeon I* he

Heading picture shows our columnist winding the motor of Bill Hannan's 'Farman Moustique' which he has flown by proxy in several Peanut events. Below is Butch Hadland's 'Whittman Tailwind' – winner of the Indoor Nationals Peanut contest. This superb little model recorded both the best flight and scale appearance points.



flew into 3rd place in the Peanut event reported above. I say rather rare because most people go for the later *Widgeon III* of 1927. The *Widgeon I* of 1924 is better proportioned for a F/F model having a better Wing/Tail area ratio and fuselage proportions and the more primitive structure also lends itself to a lighter airframe. This is certainly no Peanut beginner's model being fabricated almost entirely out of $\frac{1}{16}$ in. sq. balsa. Such a delicate lightweight structure should result in a much higher duration than the 30-odd seconds Alan was achieving. With patient trimming and a better rubber/prop combination this machine should be capable of flights of well over a minute indoors.

* * *

One notable absentee from the regular entries at Cardington on 18th August was Andrew Moorhouse. This is not surprising as Andrew has been concentrating on establishing his own kit manufacturing business. To Andrew must go the honour of producing the first Peanut Scale kits in the British Isles – trading under the name of *Bluebird Models* of Bath, Andrew had his first two productions available at Cardington. It is with great national pride therefore, that after reviewing endless offerings from the USA, some good, some bad, I can at last recommend a native product!

Both prototypes now offered in kit form have been exhaustively test flown in the Cardington shed and I can vouch for their flyability. The models presented initially are the *Luton Minor* and the *Comper Swift*. Both are relatively simple to build and are aimed at the beginner to miniature scale modelling rather than for out-and-out duration performance. To this end, the structure is relatively 'beefy' utilising $\frac{1}{16}$ in. sq. framework $\frac{1}{16}$ in. sheet formers and $\frac{1}{16}$ in. ribs.

The contents of the kits are almost identical. Both feature very clear and extremely detailed drawings; the quality of the printed sheet wood is superb and the fineness of line rivalling that to be found in *Tern* kits. The stripwood tends to be a bit on the hard side but this is no bad fault in a beginner's model. All curved outlines are built up from laminations of $\frac{1}{16}$ in. \times $\frac{1}{16}$ in. balsa, with full sized patterns for all the formers for these outlines included in both kits. Although a little more difficult to produce than cut-out sheet outlines, this form of construction is lighter, looks neater and is far stronger. On the same sheet are also full sized patterns for the registration letters and trim lines etc. which allow these to be cut directly from the coloured tissue provided.

Alan Callaghan's 'Westland Widgeon I' which took third place in the Peanut meet at Cardington, and for which plans are available from the designer at 49 The Gardens, London SE22 9QQ cost being 40p. See text for details.



Winner of the Eddie Riding Memorial Trophy was Terry Manley with his 'Blackburn Sprat', which was the only model to achieve a proper take-off in the rough weather conditions. Think . . . is the runway really on the side of a hill!

The standard propeller included is the 5 $\frac{1}{2}$ in. dia. 'Sleek Streek' plastic unit. Although reasonably efficient, to get the best out of these models a Paddle Blader is recommended. A full sized drawing to make a laminated balsa unit by the spirally laminated 'McDonough' method is shown. These excellent kits are completed with a pair of lightweight plastic wheels, nylon nose button, propshaft and washers etc. and retail at a price of £1.25 each.

Eddie Riding Memorial Trophy

Attendance at the NW Area's 'Woodford' meeting held one week after Cardington, on 24th August, was also rather poor. This was reflected in the *Eddie Riding* event which only attracted four entries including myself. The high cost of motor fuel and the general 'belt tightening' of the nation seems to be seriously affecting all competitions, bar the Nationals this year. After weeks of warm calm weather the cold windy day can have done nothing to attract people either.

The windy weather was responsible for the fact that only half the entry managed to qualify. I regret to record

Another Callaghan model – a 'Udet Flamingo' which won the Open Scale event at the SMAE Indoor Nationals despite the handicap of not achieving a rise-off-ground take-off. The same model also won the previous SMAE Open Scale event.





John Blagg produced another unusual scale model at the Indoor Nats - an Avro 511, but unfortunately trimming proved a problem and this beautifully built model did not fly in the contest.

that my faithful *D.H.9A* let me down on this occasion and together with J. Gray's *Storch* would not remain airborne for the required 20 secs. minimum. I had three abortive take-off attempts each of which resulted in a nose over, before I hand launched for my last chance. It was obvious that the old girl was under-elevated for the climb was almost nil so that as the engine warmed and the power reduced she sank back to earth. A weekend in the back of a hot car must have produced some trim change! The weather conditions were too far from ideal to risk a trim flight during the competition.

Terry Manley proved to be the winner with his *Blackburn Sprat*, first seen at the Nationals this year. This model had three abortive take off attempts out of four but in fact was the only model to achieve ROG in the rough conditions. The flight performance was far from good but it was more than sufficient to make him undisputed winner. Only other man to fly was Blackburn Aircraft clubmate Dave Clarkson, flying his *Sopwith 1 1/2 Strutter* in competition for the first time. This largish model was a bit underpowered with a rather sick Mills 1.3 and couldn't manage a take-off. It was very stable in flight though, from a hand launch and rode the wind nicely for a commendable second place.

Results

		Static	Flight	Total
1.	T. Manley <i>Blackburn Sprat</i>	557	171	728
2.	D. Clarkson <i>Sopwith 1 1/2 Strutter</i>	410	113	523

Now to conclude with this month a word about this Column for the benefit of new readers and there must be rather a lot who have joined the realms of aeromodelling since I first started putting pen to paper regularly each month. First, contrary to what many people think, I am not on the staff of MAP. I write this column as a freelance in my spare (ha-ha) time. I do a regular five-day job to earn my bread and butter, and am currently Chairman of the SMAE Scale Technical Committee. I also like to build all types of flying scale models and compete with them in as many competitions as I can manage. The amount of time I can afford to spend answering readers' letters is therefore, a negative quantity. I will, however, answer letters if I think I can help on an important matter and I am always interested in news which may be of interest to readers of this Column. If you want a reply though, please enclose a stamped addressed envelope. All such queries should be addressed to the Editor of this magazine who will pass on the relevant queries.

* * *

One regular query I keep receiving appertains to my *B.E.12b* which seems to have become a popular model in the *Aero Modeller* plans range. Technical gen and scale drawings for this hybrid machine is very sparse indeed and the following is as much as I have managed to scrape together. Photographic enlargements of the various drawings combined produces a reasonably good arrangement for contest purposes.

B.E.12b Data

Data on the *B.E.12b* is rather sparse. The best is to be found in J. M. Bruce's *War Planes of the First World War - Fighters Volume 2*, first published by McDonald in 1968. Pages 30 to 33 fully describe the machine. There are three photos and a small (not very accurate) drawing to 1/182nd scale.

More accurate drawings exist for the *B.E.2c*. This machine is fully described by Bruce with an accurate 1/117th scale three-view in *Flight* of 16th April 1954.

Aero Modeller publish 1/48 scale three-view drawings of the *B.E.2e*, and the *B.E.12Ae* by McDonough. (Plan Pack No. 2716, price 35p.)

A combination of all these drawings gives an accurate build up of the *B.E.12b*, while a good collection of photographs is available from the Imperial War Museum.

Dimensional data is as follows:

<i>Wing Span</i>	37ft.	0ins.
<i>Chord</i>	5ft.	6ins.
<i>Gap</i>	6ft.	3ins.
<i>Dihedral</i>	3°	30'
<i>Incidence</i>	3°	30'
<i>Stagger</i>	2ft.	0ins.
<i>Length</i>	27ft.	7ins.
<i>Tailplane Span</i>	14ft.	2ins.

A pair of new Peanut scale kits - and, we are glad to report, from a new British company, known as Bluebird Models. Man behind this scheme is that prolific Peanut builder/Ryer Andrew Moorhouse which should be a good clue to their (excellent) quality. On the left is the 'Luton Minor', on the right the 'Comper Swift'. See text for further details.



BETWEEN THE LINES

with Dave Clarkson

The fourth Dutch combat international organised by the Daedalus club at Rotterdam once more lived up to its reputation as being a first class meeting with first class organisation – and a very generous prize list. Seen at right is the International Jury on a raised platform which also houses the very legible timing clocks.



BLOCKING – Some Solutions?

This is a follow-up to last month's piece about the problem of obstruction in team-racing, and has been inspired by a revolutionary (for we British anyway) rule interpretation in the marshalling of the FAI-T/R event at the Woodford Rally. I will deal with the two solutions now known to me to this problem; the first – the high handle method – is effective in allowing almost unobstructed overtaking of 'normal' pilots, the second – the divided overtake as per the Woodford interpretation – allows unobstructed overtaking of 'difficult' pilots but requires a fair amount of skill to do so fairly. Using what I hope are by now my familiar 'in the middle' diagrams, I hope these solutions are clearly explained.

The 'high handle method' for normal pilots

Figure 1 shows the normal obstruction situation with both pilots flying absolutely in accordance with the rules (a by now familiar diagram). Figure 2 shows that by holding his handle high, such that his lines go over pilot A's shoulders and by walking a bigger radius circle (which means he has to walk about 40% faster than 'A' and also frequently means that his model is slowed), pilot 'B' can reduce the obstruction angle to zero and effect an unobstructed overtake. If pilot 'B' does not raise his handle high, then the radius of the circle he has to walk is increased even further, meaning that he would have to walk about 70% faster than 'A'.

Now, if both pilots are of the same size, then raising the handle to get the lines over one's opponent's shoulder without flying the model too high, means that 'B's' handle is strictly off his chest because it will be on his throat. This is what I meant last month by a

'relaxation of the handle-on-the-chest' rule; in my opinion it should be legal to fly holding the handle on the vertical axis of the middle of the chest so as to effect an unobstructed overtake. Requiring a pilot to speed-up his walk by 70% into what frequently becomes a run is surely not reasonable. Enough speed fliers have shown that, when required to run, some measure of control is lost; from this I conclude that making a pilot run in 3-up traffic is simply not safe and on these grounds alone (never mind being reasonable) the relaxation claimed should be allowed.

It is not difficult to see that pilot 'A' can become 'difficult' very easily. All he has to do to make life virtually impossible for pilot 'B' is to do one, or any combination of, three things. It should be noted that such actions may not be at all deliberate, but be the pilot's natural way of flying.

(i) Lean backwards – this effectively increases the radius 'B' has to walk to effect an overtake.

(ii) Walk fast – this means that 'B' almost always has to run, even with a raised handle to eliminate the obstruction angle.

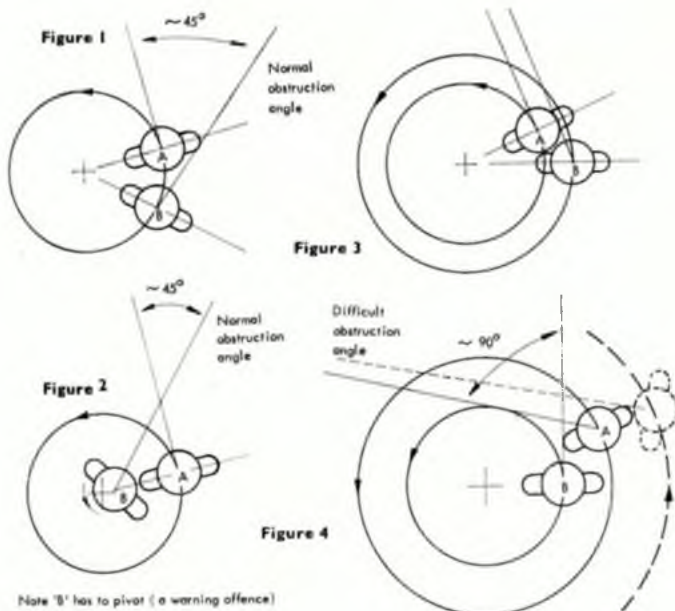
(iii) Angle lines to the left – a direct method of increasing the obstruction angle. It is very easy, either by 'flying Russian' (i.e. lines parallel to the chest) or by 'flying twisted' (i.e. turning shoulder towards the centre of the circle), to raise the obstruction angle well above 90° thus making 'B' run an enormous radius to overtake.

When a pilot does this either by accident or deliberately (and some are real experts – I can assure everyone that what we saw at Verviers was mild indeed compared with what some British pilots can do), the 'high handle method' is simply not enough and this is where the new interpretation showed its value at Woodford.

The 'divided overtake method' for difficult pilots

A fancy euphemism for line-crossing, the term 'divided overtake' comes from the fact that, when employing this method, pilot 'B' overtakes pilot 'A's' body before he overtakes the model. Now, in the normal piloting circumstances, a divided overtake means that the overtaking pilot must whip in some form, as shown in Figure 3, and so it has been assumed here in the UK and elsewhere that line-crossing automatically means whipping and warnings are given virtually instantaneously even though line-crossing is *not* one of the 18 different 'naughties' defined in the rules. Figure 3 shows that such warnings are, in normal circumstances, thoroughly deserved but, with a 'difficult' pilot as shown in Figure 4, pilot 'B' is now whipping.

Note that in Figure 4, Pilot 'A' is doing his worst i.e. walking a big radius (either by leaning backwards, or by walking fast, or both) and exaggerating the obstruction angle (by flying twisted and by angling his lines to the left); pilot 'B' has crossed lines and yet is flying perfectly normally, not whipping at all. For the masochists, I have dotted in what the conventional rule interpretation would have 'B' do, note that the radius convention requires is such that 'B' has to walk 150% faster than his normal, *and* twist himself in doing so quite excessively – far from safe and surely unreasonable. Also note that if 'A' is not being quite so difficult i.e. acting halfway between Figure 3 and Figure 4 – something that is the natural way of flying for very many pilots – to effect a 'divided overtake' pilot 'B' has to finish with his handle high so his lines run across 'A's' shoulder. The 'high handle' and the 'divided overtake' also become com-





Bob Morgan displays the 'hardware' which he collected for winning the Dutch Combat International. Surprisingly only eleven of the 59 entries were from this country and only Bob survived the fourth round. In second place was Dieter Jedamzik of W. Germany followed by Tommeleri of Italy and Dubell of W. Germany. Prizes extended to 16th place.

bined when 'A' is taller than 'B', for if 'B' pulled his handle down onto his chest, his lines would foul 'A's lines – not at all desirable.

Now you may say that pilot 'A' in *Figure 4* should be warned for obstruction (or even disqualified). I think he should but, because he is not 'performing a manoeuvre' as required by the rules for an offence to be judged to have been committed, most judges cannot interpret the rules and act so. Therefore, by today's interpretations 'A' goes unpunished whilst 'B' suffers badly having to do his running contortionist act, something few of us can do without being penalised for flying high or taking the handle off the chest: result – sinner 'A' gets 'B' a cooked-up motor and frequently a warning for 'B' in the process. The Woodford interpretation seemed to solve this problem to the extent that 'A' type antics became anti-productive; if this interpretation becomes the norm then the blockers, as a breed, will disappear – and we all want that.

I hope this article has shown that there *are* solutions that work for the obstruction problem. It is true that the 'high handle method' requires a rule relaxation (a relaxation that most judges already practise) and the 'divided overtake method' requires true judgment by the judges of whether each individual case does or does not involve whipping, but that has always been the judge's job. And the pilot has to judge which method is going to work for each overtake – makes life interesting anyway.

1975 USA South Eastern Championships Winston-Salem NC I like including American reports, if only to widen our perspective – especially with regards to speed. Again thanks to our correspondent B. B. Brown for the photos and information.

Entries and prizes were high by local standards with 109 contestants making 200 separate entries – Stunt with 29, Goodyear with 30, Combat with 32, Slow Rat with 33, Rat with 18 and 26 people flying the various speed classes. The trophies bill was over \$1000 and almost \$500 in cash was handed out in prizes with the trophies.

Some highlights were Howard Rush at his best winning 'Fast' Combat. Goodyear was stood on its ear by Ballard and Kilsdonk, with 6:17 and 6:44.6 respectively, following a 6:09 the previous week. Rat finished with a Kilsdonk-Scheider confrontation taken by Scheider in 4:43 and followed by Kilsdonk in 4:49. (Remember both Goodyear and Rat finals are 10 mile 2-stop races in the USA). In stunt all the contestants could say 'it was the greatest'. Les McDonald's second and winning flight was best described as 'breath-taking' – a near perfect performance. Speed was highlighted by six record breaking flights. Three belonged to 13 year old Brent Bussell from Dallas, Texas with 158.7 mph in 'A' speed, 109.5 mph in $\frac{1}{2}$ A speed and 91.9 mph in $\frac{1}{4}$ A proto-speed. Then Dub Jett set a new 'B' proto speed record of 168.5 mph and Mike Bussell did not attempt to back-up his 179.2 mph 'B' record that was barely over his existing record. A most amazing performance was Al Stegens setting a new $\frac{1}{4}$ A proto-speed record in Open with 104.4 mph with an off-the-shelf, 2-port Cox TD and Cox grey nylon 5x4in. prop. Yes, he re-worked both, but it sure does give one hope; he also turned 114.9 mph with his non-piped TD in $\frac{1}{4}$ A' speed.

Besides the actual contest, the organisers (ably assisted by people we know like Doc Jackson and Don Jehlik) laid on a barbecue and managed to get good TV coverage including a spot in the 11pm news on the Saturday night.

Well, they certainly do things in style in the USA; the contest results were pretty good too. Since in democratic America they try to arrange things so everyone can go home with a trophy, i.e. five separate speed events, three racing events and stunt split into three classifications, I only give the open speed results in detail below and hope that the text has adequately covered most of the rest. In addition to these results, a few details follow for some of the other winners.

Open Speed	Class	M.P.H.	% of Record	Details
1. Al Stegens	$\frac{1}{4}$ A Proto	104.4	105.7	2-port TD 049, Cox 5x4 prop. DJS 29 piped
2. Dub Jett	B Proto	168.5	103.0	DJS 29 piped
3. Phil Bussell	B Proto	163.1	99.8	DJS 29 piped
4. Bartley/Huff/Langlois	Jet Speed	202.9	99.4	Thomas 'Ironsides-2'
5. Bartley/Huff/Langlois	A Speed	167.9	99.4	Rossi 15 with ST shaft and RV

Junior Speed	Class	MPH	%	Details
1. Brent Bussell	A Speed	158.7	106.4	ST X-15 piped
2. Brent Bussell	$\frac{1}{4}$ A Speed	109.5	104.6	3-port TD piped

Senior Speed	Class	MPH	%	Details
1. Mike Bussell	'B' Speed	179.2	100.1	DTS 29 piped

Goodyear	Model	Time	Details
1. John Ballard	Midget Mustang	6:17.0	Rossi plus megaphone
2. John Kilsdonk	Falcon Special	6:44.6	Rossi 15N
3. Warren Sanders	Ol' Tiger	7:08.0	Rossi 15N

MAKE IT EASY – A 'hand on the chest' T/R handle

One of the pilot-conduct rules for FAI Team Racing that is being enforced more strictly this year than previously is the 'hand on the chest' rule, and I for one have been severely troubled by this requirement. With a conventional handle, where the leadouts emerge along the major axis of the grip, if the handle is to be securely gripped and one's hand, as opposed to one's wrist, is to be held onto one's chest, then the leadouts lie parallel to the chest and therefore at 90° to the lines. For those of us with weak wrists, this 90° angle between the lines and the handle leadouts, tends to lever the hand off the chest, and undesirable and unwanted warnings result. To ease matters, after discussing my problem with Derek Heaton, I decided to build an 'angled leadout' handle like Derek uses, but of simpler construction, and with the leadouts angled the full 90° to the grip. Subsequent experience with this handle has shown that it helps a great deal to solve my 'hand-off-the-chest' problem; I therefore recommend it to those similarly troubled by this rule.

The *Figure 5* shows that this T/R handle is constructed using a suitable piece of wood (preferably hardwood – mine came from an old chair!) and a short length of Bowden cable from a bicycle

American 'Falcon Special' Goodyear racer by Tait and Swindell, powered by Super Tigre X-15 – the broken rear fuselage resulted in trying to stop in $\frac{1}{2}$ of a lap, necessary due to 'traffic congestion' event in 6:44 (American rules).



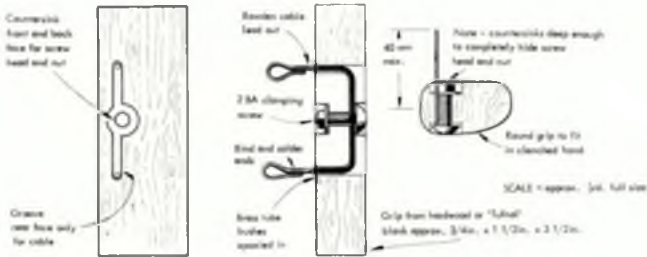


Figure 5 – team race control line handle.

shop. The handle is adjusted for neutral elevator by slackening the clamping screw, sliding the Bowden cable appropriately, and then re-clamping the cable. My clamping screw is a 2BA mushroom headed screw of suitable length, with the nut slightly filed on the flats to enable a normal plug spanner to fit (if you forget yours someone on the field will always have a plug spanner).

The sketch shows a '2 finger' handle intended for use by a right-handed pilot. The '2-finger' lead out spacing (i.e. the leadouts emerge from the grip between your 1st and 2nd and your 3rd and little fingers) is the one used by the vast majority of T/R pilots.

MIDLAND AREA RALLY – Wymeswold, 17th August 1975
No doubt because of the absence of pre-publicity, entries this year at Wymeswold were down on previous standards – pity really because the weather was exceedingly pleasant.

FAI Team Race

With most of the top 'names' absent, Clarkson/Daly took the opportunity to run-in their No. 2 K&B as a back-up for the Trials and Bingham/James (now established in the top ranks of UK teams as a result of this day) produced for the first time their *Rossi F1* diesel. Davies/Broadhead, the only Wharfedale representatives, had no luck at all with their *Bugl* whilst Neville/Graham were getting theirs to work only moderately well. The final was interesting because of the different motors employed and the differing ranges achieved – Neville/Graham 33 laps, Clarkson/Daly 29 laps and Bingham/Jones 25 worsening to 20 laps per tank – yet all had almost identical airspeeds, so, as the results show, the race was won 'on the ground'.

		Best heat	Final	
1.	Clarkson/Daly (Norwest)	4:42	9:22	K&B
2.	Neville/Graham (St. Albans)	4:48	9:41	Bugl
3.	James/Bingham (Leicester)	4:38	9:48	Rossi
4.	Daly/Howard (Norwest)	4:50		K&B

Goodyear

A more open contest than usual was expected because of the absence of the 'Feltham' *Rossi* operators, indeed the only *Rossi* glow users present were the Nats. winners – Daly/Howard. The big surprise of the meeting was the amazing airspeed of Clarkson/Daly's 'Old Faithful' MVVS diesel attributed to their Graham

At right: new from Punctilio Model Spot (Waterloo Road, Hincley, Leics.) are a set of four prop balancers of varying thickness to suit the diameter of most engine's crankshaft's. Choose the balancer to suit your prop/engine, slide it through the hub and hold the tapered points lightly between thumb and forefinger – and any balancing deficiencies will be readily apparent as the 'heavy' blade dips. Cost is just 50p (plus 10p post) per set. Below: something 'new' in combat model shapes? Just one of the entries at the Dutch meet – Oliver powered.



It's hot in the USA!
In the foreground is Garzon's 40 speed ship, while next to it is Phil Bussell's Class B proto-speed design 'Foxy Lady'. Dub Jett (sitting centre, dark hat) prepares for a run with his own designed motor.



Howard propeller (a Nova 170x170 reworked to 170x180 nominal dimensions). This combination produced the fastest times ever achieved worldwide(?) with a 2.5cc diesel, their only challenge being the inevitable *Rossi* glow of Daly/Howard – a challenge that faded when they continued with their post-Nats run of broken models etc. The *Rossi* diesel of McMahon/Myska had excellent airspeed and acceptable re-starts, but a most unfortunate accident (caused by myself) in the final robbed them of second place.

		Best heat	Semi	Final
1.	Clarkson/Daly (Norwest)	4:33	4:41	9:19
2.	Ailcock/Chambers (Tipton)	5:03	5:20	10:23
3.	McMahon/Myska (Wolves)	4:53	4:57	crashed
4.	Daly/Howard (Norwest)	4:34	retd.	

Good to see such a variety of models in the final. In my opinion *Ol' Blue*, *Miss San Bernardino* and the *Argander Special/Deerfly* are about equal for practicality and handling qualities, with perhaps *Ol' Blue* (this month's *Aero Modeller* plan!) getting the appearance points.

Combat

A surprisingly low entry compared with recent years, due maybe to the imminent Team Trials, allowed this event to be run with the usual efficiency and total lack of argument that we have become accustomed to when ADMAC run a Combat event – remember the '74 Nats and the Derby International? If the Combat organisers from the '75 *Criterion des As* could visit the next Derby International they would see that a Combat event with maybe 100 entries can be run without arguments in two days, if the rules as presently written are correctly interpreted . . .



The results of the Wymeswold Combat event speak for themselves!

- | | |
|----------------|--------------------------|
| 1. D. Williams | <i>ST G15 dieselised</i> |
| 2. V. Hunt | <i>Rossi 15 diesel</i> |
| 3. M. Tiernan | <i>ST G15 glow</i> |
| 4. P. Degg | <i>Oliver Tiger</i> |

Dave Williams deserved his win after working very hard to sort out his dieselised G15s. Mick Tiernan beat him in the first round but Dave came back via the 'hope' round to demolish Mick in their semi. Vernon Hunt may have been expecting too much from his Rossi diesel in the final, his nylon covered model literally sank into the ground twice at the bottom of manoeuvres; if he had used a lighter model the result may have been very different.

This is the first rally for many years to have Italian motors 1st, 2nd and 3rd – a sign of the times! Thanks very much to Mick Tiernan for providing this honest and interesting report. Nice to fly a model with real honking power in it, isn't it Mick?

SPEED '75 by Ivor Roffey

Near perfect weather at North Luffenham on 10th August resulted in a very good SMAE centralised speed contest – one or two people proved that given the right conditions they can go fast.

As soon as the contest began, the FAI class contestants made themselves devoid of the main body of fliers and disappeared down the runway to make many abortive test flights and a few successful ones. Dave Smith was the exception – he insisted on making the first flight of the contest and recorded 130-0mph with no fuss at all – and no practice flights.

Meanwhile, in the contest proper, records were being broken. When Bob Meager asked to have his diminutive little '049 model processed, somebody asked the question – *where is the rest of it?* 'That's all there is', said Bob and went out and made 90-6mph for a new '049 record. This model weighs about 2½ozs and is hand launched. Mike Billinton raised his own '40 record when he produced 184-8mph from his standard Schnewle-ported K&B '40. Mike was using 12 inches of pitch on his prop and the motor sounded as though nothing would slow it down. Ironically, although Mike recorded such a high speed he only came second to Bob Meager in the contest because of the handicap system. Ken Morrissey recorded 184-8mph in the 60 class for a new record, and third place in the contest. Ken was using a George Aldridge modified OPS 60. Half way through the flight the control system failed and Ken just made the timed laps before hitting the ground.

Ivor Roffey had trouble getting his 47 ounce all-metal, OPS 60 powered model off the ground once again – he has two OPS 60 motors that give about 6-7 bhp between them. When the model eventually gets flying, then there will be a really fast speed resulting.

It was nice to see Don Powell making flights in both the 29 and 40 classes. Don returned to the contest scene a couple of years ago after a long lay-off. Gordon Isles flew his usual very neat and tidy FAI model and recorded 138-0mph. On the whole it was a most enjoyable contest – if only our weather was like this all the time.

Results

		Speed (mph)	% of Record	
1. R. Meager	(North Sheffield)	90-6*	112%	Cox '049
2. M. Billinton	(Elliot)	184-8*	107-2%	K & B 40
3. K. Morrissey	(Sharston)	184-8*	101-7%	OPS 60
4. G. Isles (FAI)	(Sharston)	138-0	99-4%	Rossi 15

*New record claim.

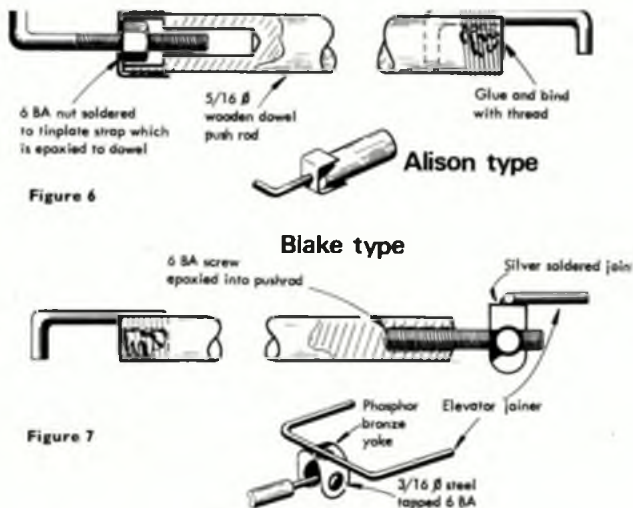
Mike Billinton has now got one of the new K & B 40 ABC motors and initial tests have shown that it is very promising. With the mini pipe supplied Mike found the motor would give its best power 2 or 3 thousand revs higher than the previous model.

On test flying his OPS 60 model Ivor Roffey found out what a 47 ounce model flying at 190mph feels like. Ivor always locks his control handle onto the pylon so that the flying load is taken by the pylon. On this occasion the handle slipped out and Ivor was pulled flat on his face. The safety strap was tested to the full when it took the full pull of the model. The estimated pull at 190mph is 120'lbs. So anybody who protests at line pulls and safety strap test, please take note.

THE AEROBATICS SCENE by Glen Alison

North Luffenham SMAE event

The weather was overcast at first brightening up later but with a strong blustery wind all day. With an entry of 13 and 3 (no less!) judges from the Nottingham organisers, it promised to be an interesting event. Leading for the first two rounds with his Al Rabe designed *Mustant II* powered by a Fox 40 was Bob Wallace from Nuneaton flying very well in the conditions, showing that a heavy



fast model can be good. Bill Draper had the misfortune to lose part of his spinner on his second flight thus nullifying it, for ejection although he put in a good third flight to clinch the deal and came out overall winner. Third placed Ron Parsons has a new model in the same style as his previous designs in red and white, but with very small flaps, he claims it helps to prevent speed loss in manoeuvres. Twelfth place went to Jim Mannall, his silencer fell off on both flights, unfortunately. An amusing episode occurred when Jim tried to fly with the line test spring balance between the handle and his hand to test the actual line tension. In fact it was only about ten pounds although it felt much more, thus giving support to the current argument that the pull test of 15 times model weight is too much and that 10 times would be adequate. No crashes marred the event which is a pleasant change. Luckiest man of the day must surely be Dave Wright with his Fox 35 own design, in one flight he lost his line tension about 20 times and got it back every time! Why don't I get breaks like that?

An innovation was the use of a clockwork dethermaliser timer and fuel cut off valve by arch enthusiast Ted Fowler, in his model to prevent an overrun. The six minute setting seems just right and it works. Positioning of the timer can cause a headache so that it can be switched on and also be protected from the gunge from the engine.

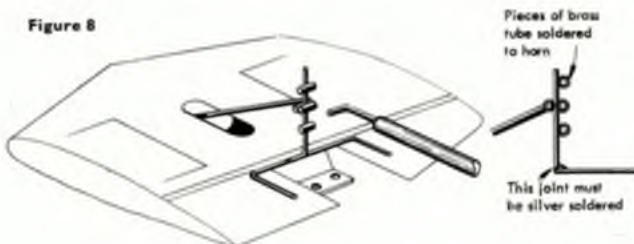
Two part models

One of the advantages of having detachable wings is that it helps in trimming the model by allowing access to the controls, push rods, horns etc. You can alter the flap elevator relationship to give equal response to up and down control simply by bending them but this is crude and imprecise, far better to have an adjustable push rod so that any change can be incremental and the trim change noted. You may be surprised how critical it is. The best way to tell if you are getting equal response is to fly overhead eights and notice whether the inside or outside loops tend to be smaller or larger than the other with equal handle movement.

Shown in Figures 6 and 7 are two suggested methods of making pushrods, please note that radio type of quick links are not suitable for stunt models because the loads are much greater with the big elevators and big movements we use.

Why not have several positions for the pushrod to engage in the flap horn, this will vary the ratio of flap to elevator movement. You will find that more flap gives softer corners but the model will not mush and it will be easier to be more precise. If you have sharp reactions try more elevator. Figure 8 shows a suggestion.

I am convinced that trimming is the key to success in stunting precision, make everything adjustable and do not be afraid to experiment to get it right. It is not enough to have a good model design, it must be trimmed to work and that includes centre of gravity, lead out position, wing tip weight and controls.



No it's nothing
'fishy', just a
mini-mammal!

DELPHINIUM

an all-sheet free
flight sportster for
0.5cc engines by
Robert Dulake

DELPHINIUM is the second model of its type in a series designed for fun, but also to investigate some aspects of stability. Experimenting with paper aeroplanes showed me that dihedral is not necessary provided that (a) there is sufficient decalage, and (b) the centre of gravity is well forward of, and below, the centre of side area. I also found that if these principles are combined, a considerable amount of anhedral can be tolerated.

The dolphin shape lends itself attractively to these ideas, so I made a small dolphin model from card.



This worked well enough, so I scaled it up to produce *Propelorus Jack*, a model of similar dimensions to *Delphinium* but 'wrong' in detail. It had too little decalage, the CG was too far back, and the centre of side area was too low.

This meant that it was unstable, and would not fly for more than a few seconds before rolling and sideslipping into the ground. A hefty twist to the tail, some noseweight and enlarged dorsal fin put matters right, and thus modified *Propelorus Jack* made many successful flights. I discovered that the layout is sensitive to lateral CG shift, but this is not a problem if the balancing is carefully done. Indeed, it provides a convenient method of directional trimming. A 'sea-gee', as described in



the December 1960 *AeroMADeller* would probably be the answer here!

Delphinium incorporates the lessons learned from *Propelorus Jack*, plus a small safety margin. The anhedral is reduced from 3 to 2 inches, and decalage is increased by placing the wing at a large positive angle. This allows the CG to be slightly further forward, and encourages a 'tail-up' attitude in flight, which raises the centre of side area. This all adds up to a docile sports model that looks like a fish, and that's just what you've always wanted to build, isn't it?

Study the plan well. Although construction is straightforward, do not try to rush. A little care will pay dividends. All joints on the original were made with '5-minute' epoxy which is ideal for butt-jointing sheet balsa. To keep your butt-joints true, sandwich them between polythene sheets over a flat surface while they set, using soft bound books as weights.

Wet or dry paper is best for finishing – I use three grades, P180 (coarse), P360 (medium) and P600 (fine) with a rigid block for sheet surfaces and a flexible block from 1mm ply for curves.

Fuselage (body?)

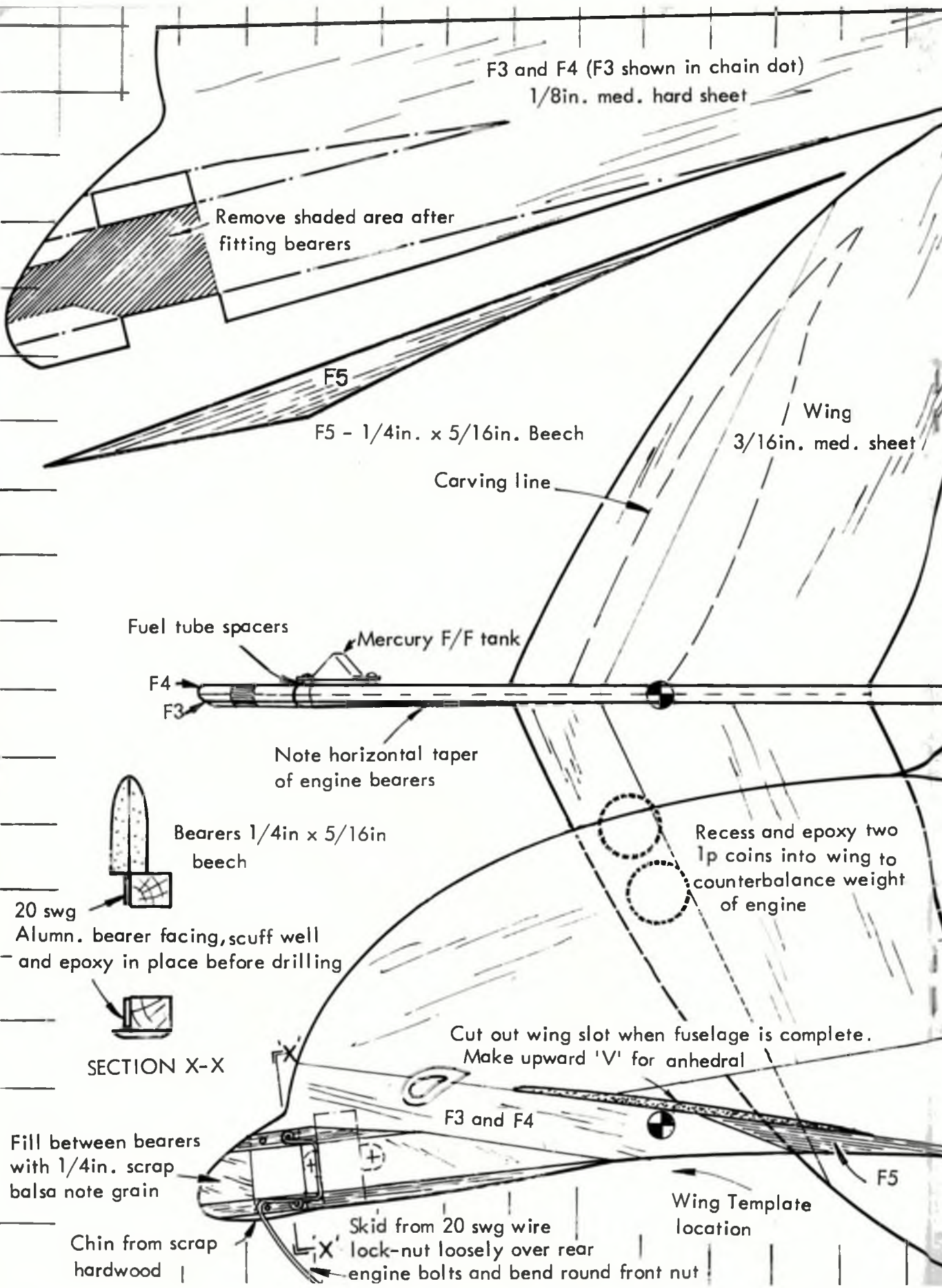
Cut F1 and F2 from medium soft $\frac{1}{4}$ in. balsa (note grain) and butt joint – do not cut out the wing slot at this stage. Shape the engine bearers and strengthener F5 from $\frac{1}{4}$ in. \times $\frac{1}{8}$ in. beech. Cut out the rough shapes with a saw and finish to the accurate outline with a sharp knife and P180 wet or dry paper. Remember the horizontal taper on the bearers.

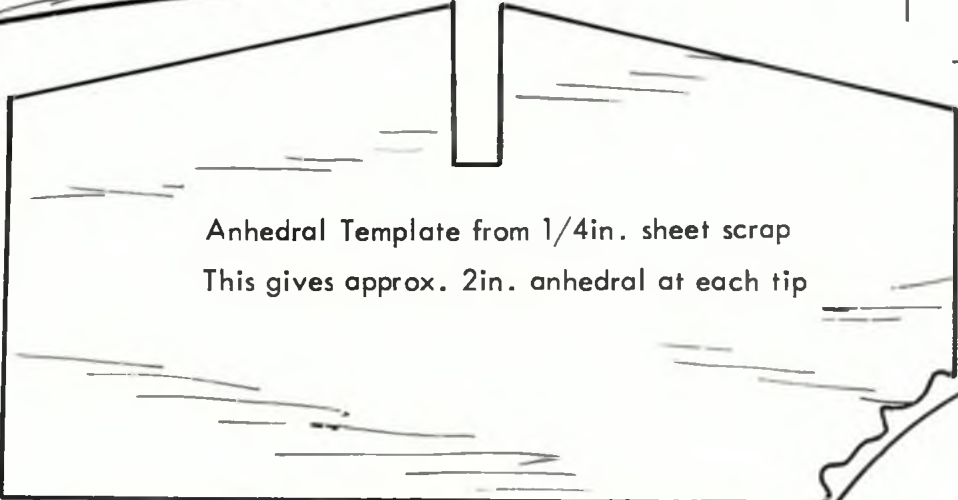
The 20swg aluminium facing plates are to give the engine a firm seating: scuff them and the bearers well before epoxying in place and drilling the engine mounting holes.

F3 and F4 are made from $\frac{1}{4}$ in. medium hard balsa, make sure that the grain runs as on the plan. Glue the two together, checking that they

HALF FULL SIZE
PLANS DRAWN
OVERLEAF







Anhedral Template from 1/4in. sheet scrap
This gives approx. 2in. anhedral at each tip

AN 18" SPAN FREE FLIGHT NOVELTY MODEL
FOR 0.5cc MOTORS

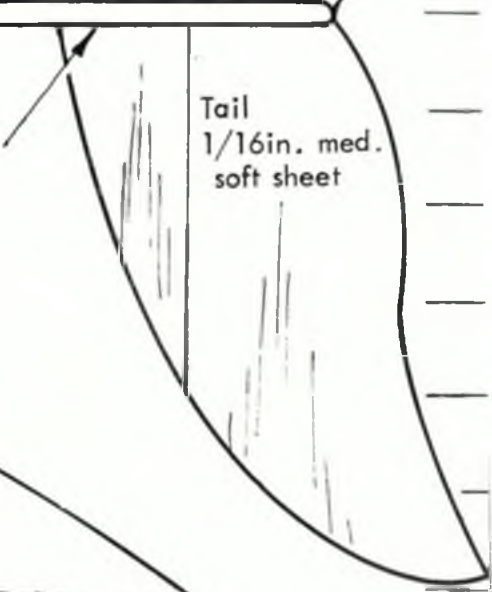
Delphinium

BY ROBERT DULAKE

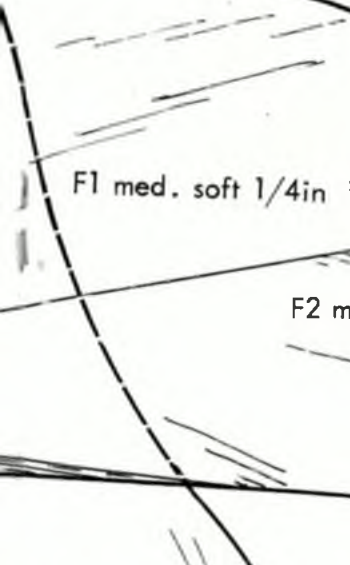


Fin 1/4in. med. soft sheet

Smear wing, tail and fin root
joints with PVA glue after
epoxing into place



Tail
1/16in. med.
soft sheet



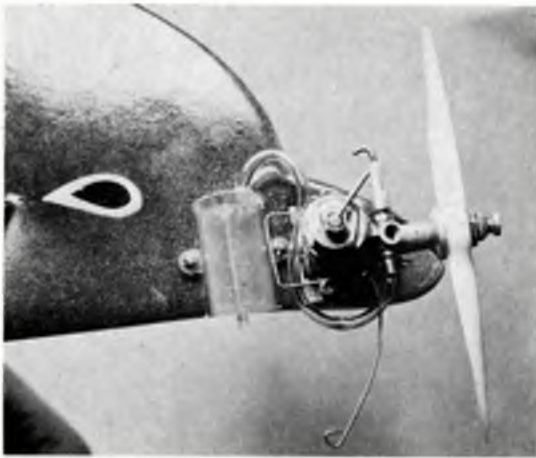
F1 med. soft 1/4in sheet



F2 med. soft 1/4in. sheet, note grain

Plan is drawn half full size.

Divisions represent 1in. squares



The 0.5cc diesel engine provides ample power for this craft. Designed purely for beam-mounted engines, it would however be quite a simple task to add a bulkhead and use a radial mount if necessary – but do keep the thrust line as shown on the plan.

are round the right way! F4 should be on the right, facing forwards.

Epoxy the bearers in place, checking the alignment of the engine mounting holes. When set, cut out the shaded area marked on F3 and add the scrap $\frac{1}{8}$ in. blocks between the bearers; you will have to hollow out the front portion of block slightly to clear the engine crankcase. Next shape the 'chin' from scrap hardwood and glue in place, then butt the nose portion to F1 and F2 and add strengthener F5 when dry. The entire fuselage should be block sanded with P360 paper so that there are no 'stepped' joints, and all the edges are well rounded. The flexible 1mm ply sanding block will be useful here.

Wings (fins?)

Cut out the wing blanks from $\frac{3}{16}$ in. medium balsa and butt the front and rear portions together. Carve and sand to the section shown using the carving lines as a guide. A tubular block of about 2in. diameter is useful for shaping the trailing edge. Recess two 1p pieces into the leading edge of the left (facing forward) wing, in the positions shown on the plan. These will counterbalance the weight of the engine cylinder head.

Tailplane and fin (flippers?)

Cut these from $\frac{1}{16}$ in. medium soft sheet and join the front and rear tailplane sections. Block-sand all over and round off the edges with P600 paper.

Finishing and assembly

It is best to keep the parts separate for pre-finishing and covering. Do not use shrinking dope. Use instead clear cellulose lacquer from a car refinisher, or make your own lacquer by plasticising ordinary dope with the addition of 5% castor oil. Thin your lacquer for brushing by mixing 2 parts of lacquer with 3 parts of

cellulose thinners, then give two coats to all parts. Sand after each coat with P600 paper. Cover everything with lightweight *Modelspan* tissue, using 50% thinned PVA adhesive. Brush this through the dry tissue and pull gently round the edges to remove wrinkles. Allow two hours to dry, then sand evenly with P600 paper. If any warps develop during this stage, they should disappear during subsequent lacquering.

Give a further three coats of lacquer to each component, again rubbing down well between coats with P600 grade paper and remove any remaining warps by pressing over a flat surface. The model can now be assembled. Start by cutting out the wing slot – cut in from both sides to form a shallow 'V'. Now epoxy the fin in place. Lay the fuselage on a flat surface and rest the fin on scrap $\frac{3}{8}$ in. sheet to ensure a vertical joint.

Now follow with the tail. Pencil-in guide lines to show the fuselage position, then epoxy in place. Smear any excess epoxy smooth to form a fillet – speed is essential. Check continually with a 90° template that the joint is true while the epoxy is hardening.

Before fixing the wings, make the anhedral template from scrap $\frac{1}{16}$ in. sheet, and pencil in positioning lines on the underside of the wings and on the fuselage. Mark guide lines $\frac{1}{16}$ in. from the root of each wing and assemble 'dry' into the wing slot. Holding the template in place by hand, make sure that the fits are satisfactory.

Quickly mix a quantity of epoxy and smear the inside of the wing slot and the wing roots. Press the wings in position from either side, checking from the guidelines that they are correctly mated, and smear off any excess epoxy to form a fillet. Hold the template firmly against the underside

of the wings until the epoxy is set. Finally, smear a fillet of PVA glue over the wing, fin and tail joints. The colour coat can now be added. The original was sprayed thinly with dark grey cellulose enamel to give a half-covered mist-coat. Two thin coats of fuel proofer were then added by brush. The eyes can be created by masking during application of the colour coat, or cut from coloured paper and stuck in place.

After finishing, epoxy the engine bolts in place in the bearers, and screw down the engine while the glue is soft to ensure correct alignment.

Bend the skid from 20swg wire and lock-nut it loosely over the rear engine bolts.

Fuel tank

The original was an old Mercury F/F tank, but any small transparent tank is suitable. (18in. of coiled fuel tubing is unsightly, but satisfactory.)

Engine

There is no point in using an engine more powerful than the *Allbon Dart* used in the original, as this is never run flat out. Only beam-mounted engines are, of course suitable.

Trimming and flying

The centre of gravity should be where shown on the plan in all planes. If necessary, recess lead shot into the 'chin' to bring it forward and down.

Lateral balance is critical, and if the wings do not balance evenly, add weight to the appropriate tip until they do.

Now check for warps – use steam to make the model as 'straight' as possible before test gliding over long grass. The design has a natural tendency to turn right under power, so the glide turn should be to the left to control this.

If the natural glide turn is to the right, add increments of weight to the left tip until a gentle left turn is achieved. A violent left turn should be cured by a little weight on the right tip.

An under elevated glide should be cured by a slight twist of the tail tips.

When a gentle left glide has been established, try a low-power flight. A right power turn will almost certainly result. This turn was perfectly safe on the original, but if it gets out of hand try tightening the left-hand glide turn a little before resorting to sidethrust, which I have not found necessary.

In calm conditions, and calm early mornings and evenings are really quite common, you can reduce the power until *Delphinium* maintains height without climbing. This is very pretty, but you must be careful of spectators, who will certainly gather.



Report and photographs by
MARTYN COWLEY

WORLD FREE-FLIGHT CHAMPIONSHIPS

PLOVDIV, BULGARIA—AUGUST 15th to 21st

BULGARIA was the host nation for the 1975 World Free Flight championships. Although it is the first time they have taken the responsibility for such an event, they were certainly no novices in organising what turned out to be, possibly the finest and most spectacularly staged World Championships ever. It would not be much of an understatement to say the Championships enjoyed near Olympic prestige throughout the duration of the event.

The choice of Bulgaria did produce an unusual problem and that was the weather. The conditions under which we fly our competitions and even our Trials in the UK are a continual source of concern amongst our flyers. But the problem in Bulgaria was absolutely the reverse. It cannot be often that model flyers have to confess that weather was really just *too* good for competition flying. Light winds, bright sunshine and an abundance of thermal activity provided some of the finest weather conditions ever experienced at a World Championships. Staging the events during the middle daylight hours together with the high standards of flying that thrived in such conditions provided record fly-offs, and considerable headaches for the Bulgarians in trying to decide the winners from a field of 245 of the world's top model flyers.

But the story for the British contingent started several days earlier when the party of team members and supporters, joined by Australian Tom Prosser and American Bill Hartill met at London's Victoria Station. It was with some disappointment that I learned that we were not after all bound for *Belgravia*! Travelling across London by public transport with model boxes and all the attendant flying equipment was to prove simple by comparison to some of the ordeals in store. Paul Masterman had shouldered the monumental task of trying to co-ordinate and organise the travelling arrangements for the party, and the inevitable economic considerations eventually convinced the majority to go by train. This was scheduled as a 51 hour non stop journey by train across Europe and was conceived as a kind of endurance test for the flyers. Ask any member of the British party, and they will describe it as truly *'murder on the orient express'*. And so the party left Victoria at 2.30 Tuesday 12th bound for Dover, to be ferried across to Ostend, and from there by train to Plovdiv. This route was chosen to avoid changing stations in Paris. The journey itself, together with all the problems arising from 'hand luggage' comprising more than a dozen large model boxes (which in the case of Bob Bailey was larger than the flyer) caused plenty of difficulties. Despite often trying to conceal these boxes in compartments the resulting effect upon numerous minor railway officials and customs men *en route* and the continuous bribes and financial penalties incurred would fill a volume. Indeed it is quite difficult to get members of the party, who have since returned, off the subject of the journey, and get

them to actually talk about the flying. However the journey was eventually successfully concluded at Plovdiv at 10.30 Thursday night after 55½ hours of solid travelling, and *never* will the team submit to the inconsistent Yugoslavian Customs demands again. That country has now written itself out of any hope of attracting travelling modellers ever again.

It was with some relief that we stepped off the train to be met by an FAI official and an interpreter, with a waiting coach that took us to the hotel on the outskirts of Plovdiv, where we were to be accommodated along with the teams and supporters from every other competing country — all under the same roof in a brand new 14 storey, twin tower block hotel, decorated with FAI flags, banners and giant model flying posters. Most countries had a complete floor to themselves and competitors shared twin single rooms, each one with its own shower and washing facilities.

The following morning however started on a low note with the news from Jessy that Bob Wells was confined to hospital after collecting some tummy virus en route, following their journey overland by car. Apparently he was really very poorly and this cast a shadow over the whole party as we were all very concerned for Bob's well being. The rest of the morning was spent with the business of changing money, registering our arrival with the administration and collecting the 7 Fiat type left hand drive hire cars, that were to allow us freedom of mobility during our stay. This involved an amazing journey by bus into Plovdiv to collect them, where the object of the exercise appears to be to cram an additional bus load of passengers into an already bulging bus at each successive stop. It perhaps cannot be conveyed, even to regular European travellers the sense of isolation felt in a foreign country where no one converses in Western languages and where the Russian alphabet renders all signs and words as unpronounceable and unrecognisable. The most popular of the new acquaintances soon proved to be the delightful Bulgarian interpreter girls.

With all these arrangements behind us, the afternoon was free for our first visit to the 'drome'. We were glad to discover the competition field was several miles square of very short grass with just occasional ankle high thistles. Conditions were sunny and even during this midday period winds were light and direction variable. There was already considerable activity with many countries enjoying relaxed training sessions spread out over quite a wide area. Unlike in Britain, flying is not from the upwind end of the drome, for the direction of drift will be continually shifting by anything up to 180°. So in true Continental practice, flyers just head out into the middle of the 'drome' until satisfied that they could max away in any direction without obstruction and then just start flying.

Practice days tend to be notorious for model attrition even at this



'Uncle Remus' and 'Miss Muffat' made Lars Olofsson of Sweden the new Power World Champion after three days flying and a total of ten rounds.

high level of proficiency, and several power models clapped wings when D/T'ing at the end of the motor run on those traditional check flights. Included in this category was American Dick Lyons who wrote off one of his foam wing 'Strutters'. Thomas Koster was having a taste of worse things to come, with a D/T timer failure causing a fly away of one of his two new flappers. Bob White suffered the penalty of launching too close to a mylar streamer and smashed both wings and props after the model got tangled mid air, fortunately it was a reserve model. Generally these incidents were few and far between but served to illustrate the misfortunes which overtake even the best known names at such meetings.

The British glider flyers John Cooper, Mike Fantham and John Boon had no problems locating numerous patches of strong lift, needing only a minute to find their own lift. Ron Pollard and Mike Woodhouse checked their Wakefields without problem and with the power team all flying well it was a promising start and everyone felt much happier. Then at about 6 o'clock John Cooper had his straight tow reserve fly away. Timed at over 24 minutes the model was down to 100ft, leaving John the other side of a field of high maize. A search till dusk produced nothing to give the Bulgarians their only souvenir model of the championships.

Friday had also been the first day of official processing of models, starting for one day at the hotel to be followed by Saturday at the airfield. Early-birds on the Friday found the processing to be extremely thorough with every dimension being checked. This continued while time allowed, but later models were given a briefer check of weight and collection of FAI documents, to be supplemented with more rigorous spot checks at random. All motors, once processed, were engraved with the competitor's number on the crankcase to stop the illegal swapping of motors between competitors. Wakefield motors were allowed to be processed completely separately from the models on later days and indeed even on the field during the contest itself - an option that, if used, would allow competitors to retain their best motors in whatever favourite storage conditions they preferred, safe from the prevailing heat until the last possible moment. Processing hours appeared to be generously flexible and the British power team took advantage of this by staying up late Friday night to get their paper work out of the way at 2 o'clock in the morning! In fact this degree of foresight by the Bulgarians enabled them to dispatch the potential figure of nearly 750 models with a commendable degree of efficiency, and all the models had been checked by Saturday lunchtime.

Saturday was in fact the first full day scheduled in the programme and it was from here onwards that the impressive Bulgarian capacity for organisation and showmanship swung into action. Apart from

the individual hire cars of many of the teams, a complete convoy of almost a score of coaches and police cars was provided for the bulk of the competitors and supporters. Used to our unspectacular treatment in England as a minority sport, it came as something of an eye opener to have all other traffic either stopped by the police or pull over to allow our procession of vehicles unimpeded progress to our destination. Every journey in fact from an across-town journey for breakfast to a trip out to the airfield for a spot of trimming! All the major routes through Plovdiv and out to the airfield were lined with giant vertical banners, flags and hoardings proclaiming with dramatic Bulgarian graphics the importance of the Free Flight Championships.

The first part of Saturday was taken up by an official press conference and luncheon, for the benefit of television and radio reporters and the aeromodelling press. Here we were welcomed to the Championships which were seen as an expression towards encouraging friendly relations and peace throughout all the countries of the world by meeting together in the comradeship of fellow sportsmen and friendly competition to participate in the forthcoming events. A detailed programme of the events was issued together with a promise of additional press conferences at the end of each contest day to meet the top three winners in each class.

Meanwhile at the airfield there were idyllic scenes of unhurried test flying as the only official day of 'training' got underway. The weather was still calm and sunny with plenty of gentle lift and just about every country was present flying over a wide area in the middle of the 'drome'. It is very hard to get any true assessment of model performance under such buoyant conditions, except perhaps for FIC where the power pattern gives a truer indication of the state of trim and model potential. Certainly the Russian power models seemed some of the fastest flying, with a wide type of pattern achieving great height. It was rather disappointing to discover that Eugene Verbitski was the only Russian with a flapper and he was keeping that in the box. The Danes are of course the other main contenders, and if not for inconsistency, the favourites. A late change of team had given Paul Holm Nielsen his second power team place but at such short notice he had only one model prepared, and had been up all night rebuilding after a trimming crash the previous day. But the power flyer of the meeting was still Thomas Koster. Having run out of models he had only time to complete two new flappers. They were undoubtedly the best models at the meeting combining probably the fastest climb together with a superior glide. Yet Thomas was plagued with a series of mechanical troubles. One of his early flights had a Rossi blow up midair at about 4 secs, and with the system not yet tripped the model plunged back earthwards to its destruction.

In Wakefield and Glider, with the models invariably in lift it was the flying techniques that were most interesting. Joachim Loffler and Albrecht Oschatz, each a previous World Champion for East Germany, flew and practised together as a team. Both winding at the same time, then waiting, they discussed the signs of lift from streamers, bubbles or other models until finally launching simultaneously when they both considered conditions to be right. Their two Wakefields could easily be distinguished flying overhead in formation, each having red port and black starboard undersides. All the East German models, irrespective of top surface decoration had these identical underside colours to enable downwind retrievers to identify their own models from the others. Another team using simultaneous launches were the North Koreans, where all the team would launch simultaneously. They were one of the countries who did not select the actual team members until after test flying in Bulgaria, and simultaneous launching certainly shows who's got the highest climb or the best glide with all the models flying in the same air. *Professionalism!*

In A/2 the only performance difference to note was how much height was gained at the moment of catapult release, and with virtually everyone present circle-towing the standards were both uniform and high. Clearly the most polished and proficient exhibitions still came from the Soviet Union, and with the physical effort required for prolonged circle-towing they were all as fit as athletes. They were also the only country deliberately practising downwind towing, and also snap releases at various heights, perhaps as a precaution in preparation for future line tangles. To give some idea of the truly exceptional weather conditions in Bulgaria, a power model glided down to land where the French team were practising flying. As no one came to collect it they took it to find the owner, who was delighted at its return as the model had disappeared upwards with D/T failure some four hours earlier!

As for the British contingent, all seemed to be well under control except for Roy Collins' unfortunate midair blow-up when an empty tank failed to flood off before the D/T went. Ken Faux had his troubles before he left England, when a timer seizure wrote off his



A Power Pictorial! 1. Two fabulous models by Urs Schaller – a development of his famous Swiss design 'Plourabelle'. 2. Australia's Tom Prosser not only reached Power fly-off, he also flew in Wakefield. 3. Al Denkin of the host country reached the 6 sec fly-off. 4. All the North Koreans used hand-carved props on their Rossis – here Sin Sang Gul prepares for a flight. 5. This unique shape came from France's Dennis Ferraro – power trim was also a bit curly! 6. Familiar face of Joe Savini – now back in Italy – with latest 'Vital' design. Ken Faux (7) kept the Union Jack flying until disaster struck during the 4 second fly-off round. 8. 'Yankee Doodle' Dave Rounsaville was equipped with all three US prop brakes (Hatschek, Kerr and Broderon) – and that's Bob Hatschek keeping an eye on him! 9. Where did you get that hat Frank? Zaniest head gear allows thermal currents to keep Canadian Frank Schlacta's head cool.



No. 1 Trials winning model after a full tank-run climb followed by a no VIT dive. Complete rebuilding of both wing and fuselage just before departure had paid off as Ken once again rated this model as his best for the rounds, with his new prop brake equipped model in reserve for the fly-offs consistently returning around 2:28 off four seconds. Saturday also saw Bob Wells up and about for the first time, although not well enough to fly he was taking it easy and watching the others. Ron Pollard and Mike Woodhouse appeared to be having no difficulty as they check flew all their models. Included in their new ones was a distinctive pink and black model of Ron's. Their flying followed much careful preparation of model and equipment before they left, but the problem now was trying to decide whether their models were under-elevated or just in 'sink'. All three glider flyers used circle tow models, both John Cooper, who has incidentally built sixteen A/2s during his preparation for two World Championships, and Mike Fantham used Russian type hooks while John Boon favoured the simpler French offset impulse release hook on his brand new sheeted model. For them conditions were ideal and towing for their own air they found lift with monotonous regularity. By the end of the afternoon with all the models tested the team seemed well pleased and felt confident of their chances.

Flying on the Saturday was cut short about 4 o'clock in the afternoon to allow competitors time to change for the opening ceremony. Earlier in the year bulletins of information had insisted that all countries be represented by teams in appropriate *costume*. Had not our supporters also been wearing identical Great Britain T-shirts they would have had considerable difficulty in recognising our own team, now smartly clad in brand new identical red track-suits of various sizes. In fact it has since been decided that in future at the Trials, the British team will be selected as the first three flyers in each class who are small, medium and large!

It was with growing apprehension that the British team, travelling in the leading coach behind siren-blazing police cars approached the athletic stadium for the opening ceremony. The nearer to the stadium, the more Bulgarians could be seen walking in the same direction in their thousands. This was going to be an opening ceremony the likes of which had never been seen before. All the team coaches were ushered round the back to be lined up and forgotten while the show got under way. For the teams were to be the climax to an evening's entertainment in an athletics stadium packed with an estimated 40,000 Bulgarians. To the rousing sounds of Bulgarian choral and orchestral music the crowds were entertained by a succession of displays starting with C/L aerobatics and combat flying, followed by model rockets then full size gliders and Zlin formation aerobatics overhead in the evening sky and at times almost diving into the stadium itself. Finally, free fall divers trailing smoke flares eventually parachuted into the stadium to burst spot landing balloons in the centre. All these events were well received by an increasingly cheering crowd, and it was at this moment that the bands struck up and the teams were marched out. Marching

Two more new World Champions, below, Wakefield winner Paik Chang Sun winds with prop still on. Compact wing surfaces on aluminium motor tube with built-up diamond section tail boom. Uses 30 strands of 1/8in. flat rubber. At right: 21 year old Tchopp of Russia proved glider victor - underlining that nation's superiority at circle-tow flying.



out behind an army of banner-carrying Bulgarian youths, each country was led by its own national flag around the athletics track to finally be lined up in the centre of the arena with full Olympic pageantry. Then followed the opening ceremony with the FAI flag being marched out by the past World Champions, before being raised to declare the Championships open. This year there were 245 competitors from 33 countries, including all the European and Mediterranean nations plus USA, Canada, Brazil, Argentina, Australia, New Zealand and Japan as some of the furthest travelled. By now darkness had fallen and the proceedings were brought to a close by hundreds of Plovdiv children running out to give bunches of carnations to all the competitors. Then the stadium floodlights were switched off and the competitors whisked away under the cover of a massive overhead fireworks display. The effect on the British competitors of such a spectacle can only be described as stunning. The overall feeling was, 'if only a representative of the British Sports Council had been there', because they'll never believe the importance attached to the event otherwise.

F1C POWER, Sunday, August 17th

THE REPORT of the World Championships is to follow the traditional format of the competition itself, followed by separate technical reports on the models. Contest minded readers will have to forgive the thin references to the model details in this issue.

The morning, as with all other contest days, was heralded by Paul Masterman's early morning call, the time 5.30am. A hurried breakfast and competitors were at the airfield by 7 o'clock to find a couple of dozen early risers already out trimming. Visibility was hazy, hiding a range of mountains only a few miles south, while the sun was rapidly climbing into a cloudless sky. With air movements at a minimum, conditions could hardly be better yet several models were written off even at this late stage, with off-trim patterns. Early casualties during practice included Frank Schlecta when a VIT failure sent his new sheet surface model in off-the-top leaving him to rely on his familiar Canadian *Loon-Mac* models. Siegfried Reda had a flat left pattern crash under power, while there was a lucky escape for the Finnish team when a model launched on glide setting almost took the team with it, performing half a dozen high speed loops before landing undamaged.

The competitor with the biggest headache however was Thomas Koster. After a couple of disastrous practice days, and now with less than an hour to the start of the 1st round, all Thomas had left was pieces. The entire Danish team was feverishly at work trying to assemble one flapper from the wreckage of two. Surgery removed half a centre panel from one, a bit of a tip from another and slowly a jigsaw of components was assembled using 5 minute epoxy and cyanoacrylate to produce an amazing hybrid, where you really could not see the join. Meanwhile all the other competitors were assembling on the start line and after a 15 minute delay the **first round** got underway. Tom Prosser, Australia's only power flyer



present, had been looking good in practice and Dave Anderson, their team manager, said he would do well if only they could dampen his normal impatience to fly. As the green Very went off Tom said 'it feels good now' and he was away with most other flyers watching this the first pilot model of the day. The model actually dropped quickly for the first half of the glide only to hang on at a couple of hundred feet for the first max of the contest. This flight was fairly typical of many in the opening rounds where a buoyant layer of air seemed to occupy the first 2-300ft. with poorer air above. Many teams were thus panicked into some premature flapping beneath models but in fact there was little sink this early.

The British team were using bubbles not only for thermal detection but more as a guide to true wind direction, which was extremely variable, and reflected more of the local thermal activity than the overall direction. Ken Faux maxed easily, but Roy Collins discovered a loose timer, attributed to damage in transit and elected to fly last to enable repairs rather than use his reserve. This allowed Bob Bailey to fly and max using his old consistent *Night Train*. Roy refitted the timer and ground tested it and all seemed OK. The competition flight was well on pattern but the glide was too steep and despite holding on in lift, it eventually spun-in to record a disappointing 91 secs. A post mortem revealed that the VIT line had been twisted and thus shortened during timer repairs. The actual VIT mechanism (*Aero Modeller June '75*) requires a half wcy movement between power and D/T to achieve the glide position and with the shortened line the intermediate glide setting had not been reached. Tough luck for Roy as his pre-flight checking was ultimately foiled by what can only be described as insufficient tolerances in the design. Unluckiest story was of the Dutch in this opening round when a series of misfortunes and bad air left all three with sub max scores. The Argentinians were all flying similar silver Melinex covered solid wing designs and Orestes Cuzzi dropped a flight with 153 seconds that was to prove their only poor flight of the championships, a quite remarkable achievement.

The real drama of this opening round however revolved around the super star, Thomas Koster, whose early morning rebuilding had produced one flyable model which was hastily trim checked only to break a tip off with just 5 minutes left to the end of the first round! Cyano-acrylate to the rescue and Thomas was on the starting pole with just 29 seconds to the red flare. Fortunately the motor started easily and he launched into an absolutely vertical climb, 6 second run, bunting off the top in true flapper fashion the model glided two large circuits in weak lift to record a max. Jubilation in the Danish camp soon turned to disbelief as the model continued to glide on and on, away into the haze. Another timer failure, and the Danes were off downwind on a pack of motor bikes after the model. It was in fact recovered in time for the **second round** flight, but this time it spun-off the top for 25 seconds thus ending all hopes, in spite of his determined efforts to overcome a succession of major tragedies. The design is said to have 8 minutes potential off 10 seconds and was obviously a favourite for a win. It was almost as a result of trying *too* hard, using a fly off potential model for the rounds, and yet all the failures came from the hardware malfunctioning rather than his model. Incidentally at the Danish trials Thomas also placed in the glider team but renounced his place in order to concentrate on power.

For most other people the 2nd round had been a straightforward affair with only four other sub-max scores. By the start of the **3rd round** the weather was hotting up and even before the round started all eyes were on a pair of eagles thermalling at 500ft. at the far end of the line and soon they were joined by a score of screaming power models that went away in some of the first powerful lift. As an indication of the efficiency of the organisers each model was checked by the timekeepers at the beginning of each round for ownership numbers, FAI stickers and processing stamps, causing some confusion at times as many people including Ken Faux had FAI stickers on top of the wing platform and consequently out of sight with the model assembled. All timekeepers were using two watches, one each for engine run and flight time. With the contest being flown from pole positions the regulation FAI 7m apart, this resulted in many power models being flown in a relatively compact area, and there were often problems for the timekeepers trying to decide when the engine had cut, over the noise of other engines.

It was the policy of our power flyers to go deliberately short at about 8 secs. to avoid overruns and yet Bob Bailey was timed at 10.1 secs. despite his model kicking over into the glide at only 8. The wind was changing through 180° during his flight, and the model took several minutes to D/T out of a strong lift after maxing overhead to land only a few yards away. Perhaps the team should have protested the flight but, with conditions apparently so easy, Bob chose to take his 2nd attempt. It is very discouraging to re-fly after your model has just performed a perfectly proper max because

really there is nothing to gain and everything to lose. With our first experience of a downdraught that is *just* what happened with a flight of 133 secs., and of course having taken the 2nd attempt it was too late to complain! A half hearted attempt at flapping had done no good and the team had to be prepared for the first sign of a downdraught for this tactic to work.

Morale was low at the start of the **4th round** as it appeared that the team's effort were fated. Ken flew first, a 7 sec. run put the model well into its glide circle by 10 secs. and away for a fine max. Incredulously one timekeeper made the run 12 seconds while the other one had clocked a motor run of 20 seconds! It was obviously difficult to hear engines stop with others running all around, but the use of non-aeromodelling timekeepers, obviously unfamiliar with timing engine runs rendered them unsuitable for the job. Brian Spooner, British team manager, calmed the situation and immediately lodged an official protest. Unfortunately it took 40 minutes to assemble the FAI jury and for them to hear evidence and reach their decision that the flight would not count but that Ken would be allowed two more attempts for a re-fly. This left Ken only 8 minutes to fly, with most other competitors having already flown and left for lunch there were no models to watch, and he was now at a distinct disadvantage. Eventually a 7 second run put him into bad air and definitely coming down. British contingent took a leaf out of the Continentals' book and managed to flap the model back up for the max.

At the end of the 4th round 11 countries still had full team scores. The first round had eliminated 10 flyers and 10 more had since dropped a flight to still leave 57 competitors with full houses so far. It seemed almost an extension of the FAI's standard fuel rule that everyone should be using, by their own choice, a standard motor, the Rossi 15. Only the Czechoslovakian team stuck to their MVVS diesels and even the Russians and North Koreans were using Rossi. Although many were obviously not standard, the wide availability of this top performance motor has done a great deal towards making a fairer contest out of what has often in the past left many countries behind in a battle of hardware. Indeed most of the competitors seemed quite capable of handling the considerable power of these units, and I think I'm right in saying that no one crashed a contest flight under power, although some unusual patterns did spoil many scores after low pull-outs.

Following the 4th round came a very welcome 2 hour lunch break, and every country was provided with its own tent in addition to the two large communal dining tents. This was really the only time during the stay when flyers had time on their hands to rest and relax and consume the superb packed lunches, although inevitably several flyers took this opportunity for trimming off pattern models. After lunch, thunderheads could be seen in the distance and a steady but light breeze blew although the direction still varied. Generally speaking, conditions couldn't have been better, and even the power flyer's arch-enemy the downdraught seemed few and relatively weak, and it became increasingly clear that we were heading for a record number in the fly-offs. But the American Frank Wolff flying his 'Square V' design spoiled his own and his team's chances with a left rolling horizontal pattern that left him with no height, to return 83 seconds. Dave Roundsville nearly followed the same fate, but just scraped home by 1 second, both in the **5th round**. Brian Eggleston, using the only straight dihedral power model at the champs, dropped in the **6th round** with a trim that had always looked knife edge, thus spoiling the Canadians' score. Another promising flyer Gringu Popa, with a very fast model powered with Romania's only Rossi also failed during the 6th round. The only last round victims were Hans Stetz of Germany, very unlucky with 172, and the Swiss Rudolf Schenker who also spoiled his team score.

When at last all the scores were in, it was with 42 competitors all achieving the seven maxes; this was well over half of the original 77 entries of whom four had not flown. Five countries each had all three team members left to battle for team honours with the next 10 countries having dropped only one flight each of the 21 possible. The Japanese team did exceedingly well to get *all* three flyers through as it is the first time they've entered a full team in person. Their models were quite old, but flew very consistently.

With so many in the fly-off it was a cumbersome affair to organise and the event was rapidly running out of daylight. This was the last World Champs. to be flown-off reducing engine runs. With each competitor only allowed 2 minutes to start and launch there was still a potential F/O round time of nearly 1½ hours between first and last flyer. Apart from the obvious differences in quality of air over such a long period it was soon realised that possibly the last few would actually be flying after dark! As it happened motors started quickly and the round only lasted 45 minutes, but it was interesting to notice waves of good air taking successive models



US Power team member for second successive time - Frank Wolff launches his 'Square V' design.



Sharin of USSR has been unlucky enough to suffer mechanical troubles during last two World Champs Power fly-offs.



Dave Rounsaville (USA) uses ear defenders - a wise precaution when operating high revving motors.

away, with the next few sinking until another wave of lift appeared. The 8 second fly-off did little to reduce the field with two over-runs and three sub max scores, including Joe Savini now back in his homeland and flying for Italy. This now left 37 competitors and it was by now dark. A quick meeting of team managers voted against an early morning resumption and instead opted for the following evening.

After the 2nd day of glider flying, power continued with the 6 sec run fly-off. Time was again short, a thundery cloud had earlier passed through up the valley and the wind had again shifted through 180° bringing the cloud on its way back. Once again there was an element of luck as to the quality of air during each of the two minutes periods. Ladislav Kovacic of Yugoslavia was the only person in all the fly-offs who was unable to start his motor, and three others had overruns including Brazil's only flyer Eolo Carlini whose run was 8 seconds. A total of twelve flyers failed to max during the round, and the Russians nearly lost their whole team. Mosirski had a poor transition to give only 160 secs while Sharin was again suffering from bad luck that had also finished him at Wiener. After a prolonged start and tuning troubles with his engine he was just about to launch when his systems started working and the tail popped up. He struggled to reset them still with the motor

running before eventually discarding the model in favour of his reserve and with only seconds to go he started and launched only to have the motor cut after only a second. Verbitski, last to fly of the Russians just scraped a max by 5 seconds and our own Ken Faux by just 2 seconds, both flying late in the round. There were now only 21 flyers left for the 4 second fly-off, but once again it was nearly dark and with spots of rain in the wind and lightning flashing around the airfield, once more the contest was postponed to be held after the Wakefield day.

The pattern of weather on the last day followed that of the previous, and it was once again in the atmosphere of impending storms that the final 4 sec fly-off was held. With a day between each fly-off round there had been plenty of opportunity for competitors to trim their pull-outs to suit the short run, but many flyers seemed to badly misjudge their launch, probably because they were sheltered from the true direction of the wind by large crowds of spectators. These spectators also caused problems for the time-keepers and several models were clocked off OOS behind the crowd.

Of those remaining, Verbitski looked favourite as he had done all through the contest in terms of model performance and Reda and Schaller were obviously also in contention. This was the round more than any other, where prop-brakes came into their own.

F1C Power

1.	Lars Olofsson	Sweden	1260+180+180+158
2.	E. T. Verbitski	USSR	1260+180+180+148
3.	M. J. Burns	Canada	1260+180+180+141
4.	Siegfried Reda	BRD	1260+180+180+130
	Reinhard Truppe	Austria	1260+180+180+130
6.	Urs Schaller	Switzerland	1260+180+180+128
7.	Sin Sang Gul	N. Korea	1260+180+180+119
8.	Mirko Bijelayac	Yugoslavia	1260+180+180+115
9.	Cenek Patek	Czecho.	1260+180+180+112
10.	Andras Meczne.	Hungary	1260+180+180+111
11.	Verner Kraus	Austria	1260+180+180+109
12.	Al. Dankin	Bulgaria	1260+180+180+104
	Klaus Engelhard	DDR	1260+180+180+101
13.	Kim Juna Hi	N. Korea	1260+180+180+101
15.	Peter Maurer	Switzerland	1260+180+180+99
16.	Michel Iribarne	France	1260+180+180+89
17.	Franz Hartwanger	Austria	1260+180+180+84
18.	I. Goranov	Bulgaria	1260+180+180+80
19.	Dich Lyons	USA	1260+180+180+77
20.	Josef Adlt	Czecho.	1260+180+180+69
21.	Kenneth Faux	UK	1260+180+180
22.	F. J. Schlachta	Canada	1260+180+170
23.	V. R. Mosirski	USSR	1260+180+160
24.	Urban Nigren	Sweden	1260+180+159
25.	Silvano Listrati	Italy	1260+180+158
26.	Jose A. Bonetto	Argentina	1260+180+157
27.	Keiichi Kibiki	Japan	1260+180+149
28.	Vaclav Patek	Czecho.	1260+180+141
29.	Hans Benthin	DDR	1260+180+140
30.	Andres Valdes	Cuba	1260+180+122
31.	Tom Prosser	Australia	1260+180+115
32.	Horst Krieg	DDR	1260+180+88
33.	S. Sharin	USSR	1260+180+11

34.	Yryo Waltonen	Finland	1260+180
	Farenz Czizmapik	Hungary	1260+180
	Eolo Carlini	Brazil	1260+180
	Ladislav Kovacic	Yugoslavia	1260+180
38.	Sergio Savini	Italy	1260+174
39.	Dave Rounsaville	USA	1260+169
40.	Shigeki Miyamoto	Japan	1260+148
41.	Tetsuji Masuda	(Japan)	1260 and Michel Jean (France) 1260;
43.	Hans Stetz	(BRD)	1252; 44. Johan Van Uden (Netherlands)
1245;	45. Poul Holm Nielsen	(Denmark)	1244 and Tor Bortne
(Norway)	1244; 47. Jose Luis De Luna	(Mexico)	1242; 48.
Gianpaolo Barbabella	(Italy)	1233 and Orestes Cuzzi	(Argentina)
1233 and Rudolf Schenker	(Switzerland)	1233; 51. Velunsek Oton	(Yugoslavia)
1219 and Kim Sung Hak	(N. Korea)	1219; 53. Denis	Ferero (France) 1217; 54. Robert Bailey (UK) 1213; 55. Jan
Ochman	(Poland)	1207; 56. Franz Bauman	(BRD) 1206; 57.
Jan-Ollo Akesson	(Sweden)	1202; 58. Jstvan Harstalvi	(Hungary)
1194; 59. B. Isev	(Bulgaria)	1190; 60. Ewont Reus	(Netherlands)
1189; 61. Tiny Backx	(Netherlands)	1187; 62. B. Eggleston	(Canada)
1183; 63. Jerzi Krzeminski	(Poland)	1176; 64. Frank	Wolff (USA) 1163; 65. Roy Collins (UK) 1148; 66. Manuel
Blanco	(Cuba)	1133; 67. Tadeusz Piatek	(Poland) 1122; 68.
Gringu Popa	(Romania)	1112; 69. Mauricio Zito	(Argentina) 1080;
70. Reijo Saukkonen	(Finland)	1079; 71. Reima Luostinen	(Den-
mark)	927; 72. Palle Jorgensen	(Denmark)	857; 73. Thomas Kostet
(Denmark)	205; 74. D. Petrescu	(Romania), G. Vincze	(Romania),
O. Torgersen	(Norway), A. Vela	(Mexico).	

F1C Team Placings

1. Austria 3780 + F/O; 2. Czechoslovakia 3780 + F/O; 3. USSR 3780 + F/O; 4. East Germany 3780 + F/O; 5. Japan 3780 + F/O; 6. Switzerland & Italy (tie) 3753; 8. North Korea & Yugoslavia (tie) 3739; 10. France 3737; 11. Sweden 3722; 12. West Germany 3718; 13. Hungary 3714; 14. Bulgaria 3710; 15. Canada 3703. Twenty-eight Nations participated. UK was 17th, 3621.

Since their debut, only two years ago when used by the Russians, many competitors now had them fitted, and there are several commercial units currently available. Despite this quick-stop facility most flyers were playing safe with their runs using mostly between 3-4 to 3-6 sec runs, which perhaps illustrated that much of the trouble still lies with setting the timer or uncertainty about the timekeepers. Eugene Verbitski made another faultless flight to the cheers of the crowd but the most impressive climb came from Sweden's Lars Olofsson. Lars had spent the afternoon tuning below-par motors to good effect. His launch consists of a short run followed by a straight overarm cricket bowling type launch during which he miraculously always seems to release at the right attitude. His climb was noticeably straighter and faster than anyone else's and a perfect pull out looked set for a win. Many others suffered from over conservative runs and it was surprising at this all-or-nothing stage that no one had an overrun, and few were really close. The FAI jury travelled down the line and, as with all other fly-off rounds, double checked every engine run to give absolute fairness.

Our own hopes now rested on Ken Faux, one of the last to fly. Ken opted for his original Trials model which had done so well followed by all the other comp. flights as it had the fastest motor, rather than use his prop brake equipped F/O model. In order to reduce the motor rundown he decided to use a lighter carbon fibre propeller instead of his usual glass fibre one. The motor sounded one of the fastest there and was pulling 29,000 rpm on the ground.

There was just time for the crowd to cheer his launch when after half a second the motor threw the prop blades, thus disqualifying the flight. A great disappointment to Ken and all the British contingent as he was undoubtedly well within reach of a placing. Many would have been sickened by his misfortune but Ken, a great sportsman, joked that he hoped it wouldn't happen to him at the next Champs. This round also saw the only diesels still in the running, but their MVVSs didn't really have time to unwind on such a short run and looked slow in the air.

No sooner was the flying over than the storm broke, an incredible piece of timing for the organisers' sake, and in the ensuing chaos as people ran for cover, no one quite knew the full story. It was initially announced that it had been a home victory for Bulgaria but when all the scores were in the new World Champion was declared to be Lars Olofsson, with Eugene Verbitski second and Mike Burns of Canada third.

F1B WAKEFIELD *Tuesday, August 19th*

Although the magnificent weather continued for the last day's Wakefield contest it proved to be the most difficult to fly in the prevailing conditions. Without the excess of performance of F1C, or the mobility of launch of F1A, the competitors were reduced to waiting at their pole position for the frequent thermals to come within reach. Flyers often watched well marked thermals pass them by, too far away for the normal flight pattern of their models. The variable direction of drift also meant that the flying line was rarely at right angles to the wind producing good and bad opportunities for tactical flying. It was probably this inability to be able to launch in the most desirable centre area of the lift that may have caused so many dropped flights. But more apparent on this third day, the air was the most treacherous of those yet flown with very tight patches of lift and powerful downdraughts. Models that were clearly in lift during the climb would often get squashed on the

The last 2 rounds' cost Bulgarians the Wakefield team prize. Here Stainov watches other models before launching.



"I'll never get that high" remarks British Wakefield flier Ron Pollard to Brian Spooner and Bob Wells.



Popular Eolo Carlini flew for Brazil in both Wakefield and Power. His main trouble is obtaining Pirelli rubber.



glide for short flights. It was interesting to notice that there were only a couple of other teams who used soap bubbles, like the British, and all these had thermistor back up. Bubbles can so often be deceiving in these calm, thermally conditions, huge clouds of fast rising bubbles marking strong lift that can often decay within a minute.

The first round was undoubtedly the easiest as regards stability of thermals. The British team flew from a pole position next to the Argentinians and with both teams using bubbles, a double helping was soon marking large steady areas of lift. All three British and Argentinian modellers had maxed within the first half hour. This promising start might have deceived the team into thinking it was going to be easy. Others were not so lucky, and some of the experts among the 20 dropped flights in the first round included Louis Dupuis, Pym Ruyter, Kield Kongsberg, Tom Prosser, Mielitz and Zapachni, while Jan Zetterdahl with motor breaks and team troubles had failed to even make a flight.

By the start of the 2nd round, the day was already hotting up and Ron Pollard was very fortunate to get away early because the air was becoming increasingly unstable and deceptive. The rising clouds of bubbles were soon to lead to our downfall. Mike Woodhouse launched in such a patch, climbing to a tremendous height only to glide as if under D/T for just 103 seconds. A shock that was repeated only minutes later by Bob Wells with 108 seconds, leaving a very uncertain British team. In fact for the next half an hour no other models went away in lift and this heralded the new phenomena of the World Championships – the flappers. The continental teams who are more familiar with these conditions ran underneath sinking models and by breaking the layer of hot air away from the ground were often able to 'flap' models back up to height. The moral of the contest was, if you were going to drop out of lift, it was better to do it in the company of as many other models as possible. The teams from many different countries often combined to flap patches of air containing as many as a dozen falling models. More than sixty people could sometimes be seen racing about beneath models waving flags, shirts, tracksuits and even bed linen. By the end of the 2nd round 40 flyers had dropped including all the Russians and Swedes. Only three teams survived – USA, Yugoslavia and Bulgaria.

During the day rubber motor breakages became increasingly common. Some teams sheltered their rubber during winding, using umbrellas or sheets, from the direct rays of the sun.

Everyone suffered, whether it was the heat of the day or the fact that all the officially processed motors were stored in small cardboard boxes, that spent the day out in the sunshine. One of the worst sufferers was Steve Marriott, proxy flying for Dave Tongway. His only batch of rubber appeared to have gone semi-crystalline and he was breaking complete motors at around half full turns. The East Germans too were seen to be having difficulties and it was not just the odd strand going but the whole motor. It was not unknown to hear of three or four motors being used to get just one flight. Dr Masatake Muirai, Japan's only competing Wakefield flier, wound his motors in cartridges, but separately from the model, and having successfully wound one would then insert it into the model.

The Swiss team were the best equipped in terms of specialist hardware, winder, model rigs etc, and all their models featured progressive VIT movement that was timer operated. They provided a highlight to the day when one of these tailplane systems came adrift in mid-air to leave it in-line with the fin, with the model banked over and looping in a tight turn. All eyes watched its antics

gaining height with each successive loop, with the Swiss praying for the tail not to fall off and thus disqualifying the flight. It didn't and it continued to gain the max!

After their disastrous 2nd round, the British team had been flying with great caution and had continued to max. In the 4th round they found a real bummer for Ron's flight which was timed at about 24 minutes on d/t into the vineyards, with Mike Fantham away retrieving it. The team employed a rota system with glider team retrieving on Wake day, Wake flyers for power and so on, in order to take some of the pressure off those actually flying. It was also a pleasant surprise for those retrieving to be offered huge bunches of grapes by the farmers as they ran through the surrounding vineyard after the longest flights. Again with the prospect of power fly offs at the end of the day the lunch break was shortened to restart one round earlier, and thus left Ron still without his model at the start of round 5. Ron waited for Mike to return his best model, but having done so a series of motor breaks put him in a sticky position flying near the end and Ron was out with a flight of 158 seconds.

There was no real shortage of lift by normal standards, but frequently, thermals marked by models were already too high for others to reach. Those attempting to do so would often fall short, and soon be in real trouble in the powerful downdraughts. Most successful approach seemed to be the compact low aspect ratio models of the East Europeans, with a fast punchy climb that could reach this height and quickly. Many of the models still heading for the fly-offs were of this layout. Conditions were thinning the field fast and everyone was having difficulty except for the Bulgarians who continued for five rounds with a full team score, showing that local knowledge certainly paid off on the day. But soon the Bulgarians too would be caught out, Valchev and Stoiyanov both failed to max in the 6th round, throwing the team prize wide open again.

Only 17 flyers started the 7th round with full scores, including 1971 World Champion Josef Klima who fell 20 secs. short of a place in the fly-off accompanied by Ben-Itzhak Itzhak of Israel and the last remaining Bulgarian Rashkov with 173 secs. The close of the seven round contest produced by Bulgarian standards a mere 14 with full scores. There were no teams remaining, but North Korea, Canada and Yugoslavia each had two competitors in the F/O. Of those well placed, but not in the fly off, Australian Alan Edwards had flown well, he missed a 1st round max by 8 seconds and D/Td himself 2 seconds short in the 3rd to give a creditable score. Alan employed what to us was a unique style of flying, actually launching in the after-thermal gust when the air felt terrible, to have his model sucked away down wind and into the thermal. He preferred this go it alone approach to the piggy backing style of which he does not approve.

Soon all 14 were ready for the fly-off held again under threat of rain. With only 4 minutes to launch, a motor break at this stage could mean a missed flight and most competitors had a spare model standing by, and others chose to wind early in anticipation of the fly-off round. Finally, the green Vey signal was fired and was soon followed by the first models. Others waiting soon saw the early flights clearly in lift and the panic to wind and launch was on. Several models fell away to the side of the main bunch, while the last few to launch including Mike Thomas with the only delayed propeller release model of the contest, were just plainly too late for the thermal.

This first fly-off had reduced the numbers to only 7 which still included both North Koreans. Models were quickly retrieved from only 200 yards away and soon the 5 minute max fly-off was under way. Once again a fairly simultaneous launch put all seven in the same patch of air. Two models fell away to one side and Bob White's distinctive no-gadgets right-left trim pattern took him away from the bunch and into the best air. It was soon apparent that the air was in fact very good for everyone and even the two lower models were maintaining altitude. All seven were carried away for another max.

And so all seven competitors returned to the line for the six minute max fly-off. Bob White had no decent rubber left for the World Champs and so he had had to rely on a whip round amongst his Wakefield friends in California to give him some rubber before he left. Earlier in the contest, during round 4, he had a motor disallowed because the timekeeper had not seen him load it into the model. It was this one remaining motor, now officially re-processed and his only fresh motor that Bob used for all three fly-off flights, and by now it had broken and been re-knotted three times! Following the previous fly-off round performance Bob had gained a large crowd of supporters who joined in the familiar American yells of 'go baby, go go go' as he launched. Once again it was clear that all the models were flying well and maintaining height, but now after some three minutes they started coming down. Bob

F1B Wakefield

1. Paik Chang Sun	<i>N. Korea</i>	1260 + 240 + 300 + 303																																																										
2. Bob White	<i>USA</i>	1260 + 240 + 300 + 281																																																										
3. Hans Zachalmel	<i>Austria</i>	1260 + 240 + 300 + 280																																																										
4. Kim In Sul	<i>N. Korea</i>	1260 + 240 + 300 + 243																																																										
5. Albrecht Oschatz	<i>(DDR)</i>	1260 + 240 + 300 + 235																																																										
6. Roberto Artioli	<i>(Italy)</i>	1260 + 240 + 300 + 222																																																										
7. Geza Vincze	<i>(Romania)</i>	1260 + 240 + 300 + 214																																																										
8. Hugo Benedini	<i>(Argentina)</i>	1260 + 224																																																										
9. J. R. McGillivray	<i>Canada</i>	1260 + 212																																																										
10. Rainer Hofsass	<i>BRD</i>	1260 + 199																																																										
11. Vilim Kmoch	<i>Yugoslavia</i>	1260 + 193																																																										
12. Dusan Pecak	<i>Yugoslavia</i>	1260 + 173																																																										
13. M. R. Thomas	<i>Canada</i>	1260 + 171																																																										
14. Bert Kroon	<i>Netherlands</i>	1260 + 147																																																										
15. Frantisek Rado (<i>Czecho.</i>)	1259; 16. Rashkov (<i>Bulgaria</i>)	1253;																																																										
17. Peter Rasmussen (<i>Denmark</i>)	1252; 18. Allan Edwards (<i>Australia</i>)	1250; 19. Stanislav Zurad (<i>Poland</i>)	1245; 20. Josef Klima (<i>Czecho.</i>)	1240; 21. Santiago Pentate (<i>Cuba</i>)	1232; 22. Jacques Boiziau (<i>Franca</i>)	1230; 23. Kasimerz Lapinski (<i>Poland</i>)	1226 and Pekka Sallinen (<i>Finland</i>)	1226; 25. Dieter Siebenmann (<i>Switz.</i>)	1216; 26. Kiehl Liwenborg (<i>Sweden</i>)	1215 and Rudesindo Marquez (<i>Argentina</i>)	1215; 28. Valchev (<i>Bulgaria</i>)	1214; 29. Hans Reifler (<i>Switzerland</i>)	1212; 30. Ben-Itzhak (<i>Israel</i>)	1209; 31. Ronald Pollard (<i>UK</i>)	1203 and Pawel Wlodarczik (<i>Poland</i>)	1203; 33. Giovanni Cassi (<i>Italy</i>)	1197; 34. Kim Dong Sik (<i>N. Korea</i>)	1195 and Stoiyanov (<i>Bulgaria</i>)	1195 and Fritz Gansli (<i>Switzerland</i>)	1195; 37. Willard Smitz (<i>USA</i>)	1194; 38. I. M. Silberg (<i>USSR</i>)	1192; 39. Egon Mielitz (<i>DDR</i>)	1191; 40. A. G. Jurov (<i>USSR</i>)	1190; 41. Carlos Gonzales (<i>Cuba</i>)	1189; 42. Michael Woodhouse (<i>UK</i>)	1183; 43. Ole Torgersen (<i>Norway</i>)	1179; 44. Joachim Loffler (<i>DDR</i>)	1177; 45. Verner Nimptsch (<i>BRD</i>)	1175 and Laos Purgai (<i>Hungary</i>)	1175; 47. Jon Davis (<i>USA</i>)	1174; 48. Matti Soininen (<i>Finland</i>)	1172; 49. Marcello Cancelli (<i>Italy</i>)	1168 and Emile Gouverne (<i>Franca</i>)	1168; 51. Bob Wells (<i>UK</i>)	1165; 52. Reuven Brand (<i>Israel</i>)	1160; 53. Klaus Leisner (<i>BRD</i>)	1157; 54. Manuel Menendes (<i>Cuba</i>)	1155; 55. Ario Donde (<i>Israel</i>)	1154; 56. Louis Dupuis (<i>Franca</i>)	1153; 57. J. F. Reid (<i>Canada</i>)	1147; 58. Jorgan Korgard (<i>Denmark</i>)	1141; 59. Kiehl Kongsberg (<i>Denmark</i>)	1140 and Niksa Alujevic (<i>Yugoslavia</i>)	1140; 61. Ernst Reitterer (<i>Austria</i>)	1121; 62. Swen-Olov Linden (<i>Sweden</i>)	1118; 63. Henk Van Hoorn (<i>Netherlands</i>)	1115; 64. Eolo Carlini (<i>Brazil</i>)	1113; 65. Vladimir Kures (<i>Czecho.</i>)	1111; 66. Hans Martin (<i>Austria</i>)	1087 and W. N. Sapashni (<i>USSR</i>)	1087; 68. Tom Prosser (<i>Australia</i>)	1085; Svein Olstad (<i>Norway</i>)	1058; 70. Jan Zetterdahl (<i>Sweden</i>)	1040; 71. Arcangel Armesto (<i>Argentina</i>)	1035; 72. Pim Ruyter (<i>Netherlands</i>)	1020; 73. Pentti Pasanen (<i>Finland</i>)	1001; 74. Ernesto Jimenez (<i>Mexico</i>)	973; 75. David Tongway (<i>Australia</i>)	944; 76. Masatake Muirai (<i>Japan</i>)	854.

F1B Team Placings

1. N. Korea 3715; 2. Poland 3674; 3. Canada 3667; 4. Bulgaria 3662; 5. Yugoslavia 3660; 6. USA & E. Germany (tie) 3628; 8. Italy 3625; 9. Switzerland 3623; 10. Czechoslovakia 3610; 11. W. Germany 3592; 12. Cuba 3576; 13. UK & France (tie) 3551; 15. Denmark 3533. Twenty-nine Nations participated.

White's model was certainly going well, but so too was another model, that of Paik Chang Sun, one of the two remaining North Koreans. All the models landed and it was clear that no one had maxed and the Koreans were World Champions. Paik Chang Sun walked triumphantly back to the North Korean team tent with models held victoriously overhead. There he was greeted and congratulated by his fellow team mates, in one of the most emotional triumphs ever witnessed, as they wept with joy at their remarkable achievement which gave them 1st and 4th individual places plus 1st team position in Wakefield.

F1A GLIDER Monday, August 18th

A bit of jet lag now for the reader as we jump back two days to Monday for the glider event. The circle towhook has been in use for almost ten years by the Russians and French, but other countries have been slow to catch on to its possibilities. This year was really the first major event of World, or even international importance, where circle towing can be said to have dominated the proceedings. All but a handful of competitors had some form of circling device, and if it can be said that modern A/2 design is stagnating, it is certainly not the case with hooks. There were nearly as many



Wakefields all. 1. Albrecht Oschatz with Joakim Loffler behind (both previous World Champions) wait for signs of lift. 2. Jon Davis (and Sarah) - used his older 'Groovy Tuna' having damaged his new model earlier in practice. Preferring to wind with prop attached (protected by a metal disc) Jurov of USSR (3) uses transparent Melinax covering. 4. These Noel Coward cigarette holders are ideal for lighting D/T's! Actually, it's the well equipped Swiss team - note the yoke winder. 5. Mike Thomas (Canada) with Brian Egglestone on thermistor, was surprisingly the only one using delayed prop release. 6. 1971 World Champion Josef Klima came close to another chance of the title. 7. Peter Rasmussen of Denmark is left handed, so he carves his props backwards and trims left-left. 8. Smiles all round for the North Koreans - not surprising, Kim In Sul placed 4th individual. 9. A great performance from Australia's Alan Edwards - he narrowly missed the fly-off using his own instinct rather than resort to 'piggy backing'.



different types of hooks present as there were competitors, and anyone new to the event would have been misled into thinking the few straight tow models to be unique.

This year for the first time the Danish type of impulse spring release towhook was allowed during processing, having been ruled illegal at Wiener Neustadt in '73 as being non-homogeneous with the rest of the line. Since '73 however it has been widely used and openly accepted in many top international contests and possibly a third of the contestants had this type or a variation of it.

Another day of perfect weather was heralded by a calm, hazy, sunny start, and with everyone now familiar with the organisation the **1st round** started promptly at 8.30. The green Very was followed promptly by Valerij Ekhtenkov, the only one of the reigning World Champions to take up his option of defending his title as an individual in addition to the three Russian flyers who comprised the actual team. This in fact gave Ekhtenkov his own starting pole and theoretically a full hour to decide when to fly compared with everybody else's average of 20 minutes each. Ekhtenkov chose to tow for his own lift at the beginning of every round, and after only 5 minutes he was drifting down from 3-400ft. having made the first max of the day - altogether a very admirable and impressive demonstration of complete confidence and expertise in circle tow techniques, a worthy example by the '73 World Champion. Ekhtenkov's max was so quick that it took everyone else by surprise, and in fact no one else was sufficiently well prepared to be able to tow after him and benefit from his marking lift. However it was not long before other models were away in lift and the mass stampedes which were to typify the day's flying got under way.

With the abundance of lift present all day most flyers would have had no problem towing and finding lift of their own, but tactically this is a very unsound approach to mark certain lift for others, while putting your own flight at risk. The majority therefore chose to still sit it out until others had not only marked the lift but for several models to show how wide and powerful it was, before the mass launches. The first round really set the pace for the contest, with 90 competitors returning scores, only 7 failed to max; it was really too easy. Closest flight of all was Kimmo Kulmakko of Finland being 1 second short of a max with 179 secs. Take a look at the results to see where a 1 second error out of 21 minutes puts you at these champs!

All the British glider flyers had looked good in practice and the first round proved no problem each one maxing easily. But we were soon to learn the penalties of and difficulties of mass circle tow launches. With John Cooper and Mike Fantham already having maxed in the **2nd round**, John Boon towed towards some marked lift but was cut off by entanglement with other flyers only to eventually have his line cut during a line cross with another competitor. This incident occurred some 100 yards from the pole from which John had started towing and the timekeepers watching the model seemed quite adamant that they had not seen any line crosses. There were now only 5 minutes left to the end of the second round and with our previous day's experience of the time involved in protesting, Brian Spooner insisted that the timekeepers should time another attempt immediately while the protest was being made. By now there were no other models in the air and John was away circling on his own, and although he found several patches of useful air he held on until almost the end of the round before releasing into steady lift. With John's model circling ever higher overhead for an easy max, the contest officials had arrived and the arguments began. Inspection of the towline clearly showed a break and examination of the impulse towhook proved this would cause immediate release of the model, but to prove a line cross with an unknown competitor is another matter. Under FAI rules if there is a line cross the flyer can opt for a re-fly but if the line simply breaks the flight still counts regardless. Their decision to give the first attempt a score of 55 seconds met with outrage in the British camp and an immediate official protest was made to the FAI jury.

It was under this cloud of injustice and uncertainty that the British team continued to fly and continued to max. The procedure from now on was to send one or two runners alongside the tower to help disengage other towlines, streamers and even spectators; and clear a path for the tower. Their job was also to collect the numbers of the other competitors with whom lines were crossed, and it was not unusual to return with the numbers of up to half a dozen competitors following towing incidents. A very undesirable way to have to fly, especially at a world championships.

With lift so plentiful and frequent it seemed hard to believe that anyone could have dropped a flight at all. Although downdraught activity seemed relatively small, quite often models released together were soon being separated and many just on the edge of lift were being thrown out. Another major factor was the line cross attempt rule, and unless a flyer could make a strong case often the

flights counted and this resulted in many of the sub max scores that were recorded. It is true to say that it was probably worse to get involved in a line tangle than to get into a downdraught.

The mass launches that followed each patch of marked thermals produced dozens of ground level 'flappers' to restore the falling models to a respectable height.

A great deal of apprehension by the competitors concerned with the dangers of so many circling models produced much caution when it came to launching. It was not merely a case of spotting a thermal but of making sure that the path was clear to get a chance of launching into it. The nature of the light winds and prolonged thermals reduced panic launches and competitors could watch for several minutes the progress of a model filled thermal. The real problems usually came during the tow in manoeuvring the model around the lines of others and this could take as long as 5 to 10 minutes of chasing a thermal backwards and forwards to enable a proper launch. The problem with many circlers is that even if they are towed straight towards the lift they then usually require at least one circuit to give sufficient tension to release the latch and, or provide momentum for the catapult release. The added complication is, of course, that models don't even circle to the same side, and so the scene was set for some horrendous tangles. The variable wind direction also played its part, often towing into wind meant towing along the line instead of out from it, and with 7m spacing that meant a towline would cross the poles of up to seven other countries even before launch. Conversely seven other towlines could be across your own pole!

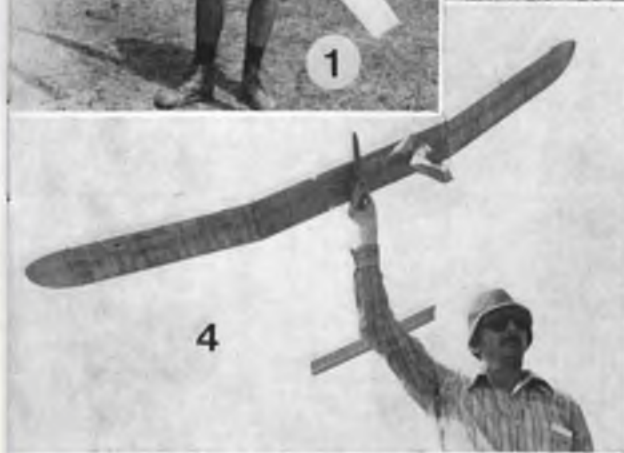
Normally one of the most exciting parts of FAI flying is the scoreboard where competitors' progress is charted round by round. This time, however, maxes were being scored with monotonous regularity and no obvious leaders were emerging - in fact it was soon clear that another record fly-off was to follow. With the F1C fly-offs still to come, the lunch break was shortened and the whole contest brought forward by a round. Earlier, Willi van Kamp, an Austrian proxy flying for Dave Simons of Australia, had been having some timer troubles. No back plates on the Seelig timers had allowed dust from inside the fuselage to jam the timers causing loss of one model in practice and the other during the **3rd round**. Having missed the 4th the model was now returned following a helicopter search (one of the consolations of losing a model at a World Champs). During the **5th round** John Cooper got involved in a bad line tangle and to avoid any more of the troubles we had experienced earlier with unseen line crosses, decided rather than risk a release to deliberately tow the model in, and go for the re-fly which he then successfully maxed.

The air was getting a little cooler now and only these last two rounds produced more than a dozen dropped flights. It was during the **6th round** that Ekhtenkov came unstuck. Still flying at the start signal he launched into lift that proved too weak and despite flapping the lift decayed quickly to give only 104 secs. Only two flyers went out in the last round, one was Herbert Chmelik, one of Austria's top flyers with 163. Both John Cooper and Mike Fantham reached the fly-off, and the proxy Kiwis, Martin Dilly and Gregory joined them, proving the suitability of both types of towhook straight and circle. Martin Dilly again put a *Lively Lady* into the fly-off and was later awarded a special prize for being the only lady competitor, on behalf of his proxy Mrs Rosalie Douglas. The Kiwis also received another prize as smallest team.

By the end of the day 42 competitors remained, just under half of the original entry. Organising such a large fly-off again proved to be slow, and an anxious time for flyers as the weather was visibly deteriorating. There was a steady cold breeze with spots of rain in the wind and the sound of thunder about. The final decision on John Boon's second round flight came just before fly-off time; the jury allowed him the 55 seconds 1st attempt. The decision was doubly disastrous as it effectively robbed the British glider team of certain team medals. By fly-off time only two other teams the Russians and the North Koreans had full team scores and John's proper score would have placed us with them as the top three, and who knows what an extra Briton in the fly-off might have achieved?

Finally the signal was given and the most models were launched soon after. With the air now so cold it was obviously not going to be a tactical fly-off, most towed away upwind in order to sample as much air as possible in the scant four minutes allowed. A couple of early releases at the far end of the line showed there was some weak lift available, but it was clear that this was to be a decisive round for most.

One casualty was Martin Gregory who spun with a displaced rudder setting and Mordehai Ovrutski of Israel had a mid-air collision and was still on the line with his reserve when the Very went. John Cooper, always a great exponent of overkill with his flying, had been flying on 4 minute D/Ts all day rather than risk



A/2 glider roundup. Peter de Boer (1) with sophisticated design featuring glass covered wings, circle tow, catapult hook plus VIT and FM radio Tx recovery aid. 2. Jean Luc Larousseau flew '30s style model: elliptical fuselage section and mid wing position. 3. Canada's Tom Thompson - even his winch has more gadgets than most power models! 4. Jack McGillivray launches for Peter Allnut. Note LE turbulator carried on ply plates. Following mix-up with the scores, Deitmar Henka (5) only heard of his 3rd place next day. 6. Rumanian flyers Papa and Petresw with identical circle tow models. 7. Jose Luis Ramirez (Mexico) used Pradice type hook, GF fuselage rod and Seelig timer. 8. One of Austria's best - Herbert Chmelik dropped in round 7 to miss fly-off. 9. Isaenko (USSR) used ailerons on inboard wing tip to provide tighter circles during tow. 10. Highest placed British flyer in fly-off - Mike Fantham with team manager Bryan Spooner. 11. One of the youngest competitors (16) was Poland's Jerzy Banasjuk, a fine builder.



F1A A/2 Glider

1.	B. A. Tchop	USSR	1260+240+300
2.	P. J. Allnut	Canada	1260+240+131
3.	Dietmar Henke	DDR	1260+233
4.	Ivan Horeisi	Czecho.	1260+224
5.	Jean-Pierre Challin	France	1260+210
6.	Anton Widensek	Yugoslavia	1260+203
7.	Mariano Fernandez	Spain	1260+191
8.	Wieslaw Korczak	Poland	1260+186
9.	Anton Bucher	Switzerland	1260+182
	A. A. Lepp	USSR	1260+182
11.	Gang Jung Sik	N. Korea	1260+180
12.	Volker Lustig	DDR	1260+178
13.	Jukka Sillgren	Finland	1260+172
14.	Branko Leskosek	Yugoslavia	1260+171
	W. I. Isaenko	USSR	1260+171
16.	Martin Vollbrecht	BDR	1260+167
17.	Walter Palmieri	Argentine	1260+162
18.	Jeno Voros	Hungary	1260+160
19.	Cringu Popa	Romania	1260+156
20.	Hakan Broberg	Sweden	1260+153
21.	Ilan Weiss	Israel	1260+152
	I. Sung Chan	N. Korea	1260+151
22.	Michael Fantham	UK	1260+151
	T. Otev	Bulgaria	1260+151
25.	Antonio Martinez	Cuba	1260+150
26.	Ioan Engen Popa	Romania	1260+149
27.	Ri Chul	N. Korea	1260+144
28.	Volkfgang Zach	Austria	1260+143
29.	Mario Sodini	Italy	1260+141
30.	Jesus Lopez	Spain	1260+139
31.	Douglas	N. Zealand	1260+130
32.	Robert Isackson	USA	1260+128
33.	Adrian R. Bardet	Argentine	1260+113
34.	Arno Deubel	BDR	1260+110
35.	John Cooper	UK	1260+109
36.	Jorn Odemark	Norway	1260+104
37.	Peter Buchwald	Denmark	1260+99
	J. Ivkov	Bulgaria	1260+99
39.	Pierre Dorn	France	1260+89
40.	Gregorie	N. Zealand	1260+31
41.	Mordehai Ovrutzky (Israel)	1260	and Ferenz Szvacsek (Hungary) 1260; 43. Kimmo Kulmakko (Finland) 1259; 44. Hans-Jürgen Wolf (DDR) 1252; 45. Enrico Tumiatì (Italy) 1249; 46. Herbert Chmelik (Austria) 1243; 47. Dandu Petrescu (Romania) 1225 and Pavel Dvorak (Czecho.) 1225; 49. Dura Massari (Yugoslavia) 1216; 50. De Luna (Mexico) 1206; 51. Pieter De Boer (Netherlands) 1204; 52. A. A. De Mello (Canada) 1203; 53. Piet Lendering (Netherlands) 1192 and James Walters (USA) 1192; 55. Jaap Kappelhof (Netherlands) 1189; 56. Ekhtenkov (1973 W/Ch.) (USSR) 1184; 57. Abadjiev (Bulgaria) 1174; 58. Don Chaney (USA) 1172; 59. Svend Gronlund (Denmark) 1169; 60. Herbert Schmidt (BDR) 1167 and Svein Olstad (Norway) 1167; 62. Walter Haller (Switzerland) 1166; 63. Niis Wallentin (Sweden) 1163; 64. Jose Luis Ramirez (Mexico) 1153; 65. Jorge Gonzalez (Cuba) 1152 and Rudiger Spann (Austria) 1152; 67. Stanislaw Kubit (Poland) 1145; 68. Suen Dihz (Cuba) 1144; 69. Per Grunnet (Denmark) 1140; 70. John Boon (UK) 1136; 71. Uri Gurfein (Israel) 1134; 72. Janos Horvath (Hungary) 1109; 73. Jean-Luc Jarousseau (France) 1108 and Fulvio Varetto (Italy) 1108; 75. Olle Sandahl (Sweden) 1105; 76. Jorge Leoni (Argentina) 1101; 77. Stefan Hubert (Czecho.) 1098; 78. Jerzy Banasjuk (Poland) 1093; 79. Svein Larsen (Norway) 1063 and David Anderson (Australia) 1063; 81. Allan Edwards (Australia) 1056; 82. Kamal (Egypt) 1049; 83. Georges Tschour (Switzerland) 1034; 84. Heikki Tahkapa (Finland) 986; 85. David Simmons (Australia) 985; 86. Soliman (Egypt) 980; 87. Jose Garcia (Spain) 941; 88. W. P. Thompson (Canada) 930; 89. Shezli (Egypt) 913; 90. Luis Colmenares (Mexico) 805; 91. Andre Gomide (Brazil) 000 and Lineu Charlier (Brazil) 000.

F1A Team Placings

1. USSR 3780+F/O; 2. N. Korea 3780+F/O; 3. East Germany 3772; 4. Romania 3745; 5. Yugoslavia 3736; 6. Bulgaria 3694; 7. West Germany 3687; 8. UK 3656; 9. Austria 3655; 10. Israel 3654; 11. Hungary 3629; 12. France 3628; 13. USA 3624; 14. Argentine 3621; 15. Italy 3617.
Thirty-one Nations participated.



The Australian glider team consisted of (l to r) Willi von Kamp proxy flying for Dave Simmons, Dave Anderson and Alan Edwards.

being under and now set his timer for 6. This prevented him from D/Ting short, in fact it prevented him from D/Ting and he was down with 109 secs. Mike Fantham having looked to be in reasonable air after launch did better with 151 secs but we knew that scores like that wouldn't uproot any trees.

As the scores came in it was revealed that there were still two flyers who had maxed – Tchop of Russia and Pete Allnut of Canada. Pete had originally been clocked off at 180 by unfamiliar time-keepers who calmly told him he'd maxed until the not so calm Canadians told them to keep on timing! And so these two lined up for the deciding 5 minute max fly-off. Tchop was first to tow followed out by a team of flappers to a position upwind where he started circling. A minute later Pete Allnut towed and to everyone's surprise immediately released. All eyes watched as he started to gain height with his first few circuits. This now put all the pressure on the Russian who was still circling, and with a superb catapult launch he eventually launched, but was only holding height. By now Allnut's lift degenerated to drop fast for 131, while the team of flappers soon had Tchop's model gaining height fast to go away to a convincing max. Bronze medalist for a day was Ivan Horeisi with his highest placing having represented Czechoslovakia for the last championships. However it was discovered the following day that the German Deitmar Henke had actually scored 9 seconds more to drop Ivan to 4th.

The conclusion of the flying marked the commencement of the celebrations and that night there was a different national party on almost every floor at the hotel, eventually joining together into one great multi-national celebration that continued till dawn. The following day it rained continuously and spoiled the scheduled sightseeing coach trips, but we were just thankful it hadn't spoiled the flying and took advantage of the fact to catch up on lost sleep in preparation for the final Banquet.

The outdoor closing ceremony was also rained off but sufficient contingency plans had obviously been made for the evening's entertainment which continued inside with traditional Bulgarian folk dancing and singing. The prizegiving was by comparison a formal affair, with national anthems and flags of the winning countries proclaiming the top individual and team placings. Best performances had come from the Russians with Tchop's 1st in F1A and 1st team prize and Verbitski's 2nd in F1C and 3rd team prize. The North Koreans, who only started world class competition in '73 were close behind with Paik Chang Sun's 1st in F1B together with 1st team prize and 2nd team prize in F1A. The other notable performance came from the Canadians, their small band of flyers had produced Pete Allnut's 2nd in F1A, Mike Burns' 3rd in F1C and the 3rd team prize in F1B. Later presentations included Eolo Carlini, Brazil's only representative and our own Martin Dilly on behalf of New Zealand's Mrs Rosalie Douglas. There then followed the Final Banquet in the marble columned Trimitium Hotel where entertainment ranging from operatic duets to sword swallowing were met with tumultuous not to say slightly inebriated reception from the teams.

Technical details next month

CLUB NEWS

THAT GLORIOUS PATCH of summer we had took me right back to the days of those huge thermal flights that looked so good in the club record book. I was out one very warm morning on the local common. Wind was non-existent and high thin cloud screened the sun. My little Coupe D'Hiver flew right into a super updraught and would have disappeared overhead but for the saving D/T device. Nevertheless, it seemed a long time since I flew in such conditions, and it made a welcome change from the endless battering winds.

Bright news, too, in our first report. Mr L. A. Rogers writes of the Western Area of the SMAE, going from strength to strength during the year. First notch on the Area barrel came with Richard Evans of South Bristol winning Combat at the European Criterium. Next comes a Nationals success. That of Chris Chapman of Torbay taking the Open Rubber honours with a fly off time of 6 mins. 30 secs. Then comes Dave Bailey of Swindon lifting the *Torbay Trophy* for All-in FAI, and winning the Open Glider event at Woodbury, and Peter West of Torbay coming second in the Power event. On the home front Richard Greenslade of South Bristol has been doing well in Area Power events, while Tony Rogers himself has just kept his nose ahead of Elton Drew in the All-in FAI Trophy. At the fourth Area Rally, held at Wroughton, South Bristol just pipped Bristol and West in the Team Glider event and, by way of diversion, John Mayes had a three minute engine run and a one second glide – very amusing (?) but is it possible?

The inflation hitting Paisley MFC (Scotland) is not the usual monetary depressing kind, but in the number of people clamouring to join the club. This we take to be a healthy state of affairs, although it does indicate just what pressure there is throughout the whole of Britain on clubs with flying facilities, radio in particular, now that power flying in urban areas is becoming so restricted. Many disappointed applicants are aggrieved at clubs so determinedly closing their books at levels below a hundred, but excessive use of a site generally leads to abuse and inevitable nuisance complaints. Then, again, club officials are unpaid enthusiasts with a limit to the time they can spend on the mass of administrative work that a very large membership entails. The answer for the larger clubs may well be paid officials, or at least an attractive measure of honorariums. However, back to the Paisley situation. Their membership level is fixed by agreement with the site owner, and this leads them to be highly selective in their choice of new members. In fact they have a unique situation in that the members must actually qualify for club entry by competing in at least one free flight event per year. No one has been deterred so far by this condition, and there is a story of one Radio afficionado actually designing his own rubber model. Letter from T. Lawrie, Sec.

John McAlroy, PRO of the Wharfedale club, says it doesn't seem like a year since he was reporting 'a very fair NATS for Wharfedale', and here he is again with a goodly measure of success in this year's events. In A Team Race Langworth/Williamson was 3rd and Davies/

Broadhead 4th. Horton/Haworth were 3rd in FAI and had the distinction of gracing the cover of this magazine. In Class B Fitzgerald/Pickles/McAlroy were second. But the club is not the unbreachable citadel of C/L flying it once was, all sorts of frivolities are allowed to flourish as the membership soars to the 100 mark: radio, slope and thermal soaring, f/f gliders and even helicopters. Some leading lights of the C/L circles are even finding an outlet in Chuck Gliding, and it is asked if their strong arm chucking has anything to do with equally strong arm whipping. What everyone can do, though, whatever their bent(?), is to compete in the *Activity Trophy*, where the criterion is the contribution made to club life whether running a national meeting or carting juniors to meetings. The latter, it seems, are in short supply these days (falling birth rate?) and any that venture near the club are carefully cultivated. It is suggested offering lollipops, but this might attract too many bald headed detectives. But old or young, the latter part of the season is going to be a hectic one for the club contest wise, with events at Luffenham, Wymeswold, Woodford and Rufforth/Elvington. It is hoped to fit in a couple of Chuckie events and one or two comps for the Radio fans. Among other delectable offerings there is the pie and peas feast at the club Disco, and the infamous club Auction, with more junk on the move than in Hong Kong harbour. John McAlroy wishes there were more months in a year.

We have an apology from John Weeks, PRO of the *Sittingbourne & DMAC*, for not giving us news of the club for some time, but assures us that it, like the *SADMAC* newsletter he encloses, is alive and kicking. Membership is increasing rapidly and, although it is still predominantly a Radio club, there are now growing Free Flight and C/L sections. John Weeks considers the club's 370 acre site to be near perfect, but there are plans to lay a concrete strip for the radio section and even a C/L circle at a later date. I note from the newsletter that the club is experimenting with the use of coloured batons instead of the usual pegs to allocate frequencies. It was considered that pegs are small and easily mislaid, and something more substantial was called for. Also noted was the range of club events; contests mentioned were F/F scramble, Mini Goodyear, radio control Spot Landing, Pylon and Scale.

The Reading & District MAC magazine I have before me is a 'model' of what a club mag should be. It is in booklet form with an actual printed content. Wisely, the mag has not been given a particular title but merely uses the full club name, plus badge and a well produced photograph on its cover. It could suffer, of course, from the malaise that afflicts all club newsletters, modest or aspiring, and that is suitable fillage, although the contributions in this issue are interesting and varied – it's a matter of keeping up the standard. One item that caught my eye was about the development of a pukka turbo jet engine. It is being produced by Gerry Jackman, and is 10in. long with a 2in. diameter. Weight will be 28-30ozs. and thrust at 35-45,000rpm., in the region of 9-11lb. A bit large for normal model purposes, but it is the sort of thing that could revolutionise the model power unit. The club appears to be mainly, or even wholly, Radio, and like many such clubs is anxious to get a flying site of its very own. The site they use at present only allows for 17 hours power flying per week, but rather more for gliders. They were almost in sight of a site, as it were, but were elbowed out by other radio interests which intend to erect a transmitting aerial on the coveted patch. When not flying members seem to indulge in 'Treasure Hunt' car drives, although such diversions are sometimes combined with a fly in. Correction to the Radio only notion – I see there is a C/L comp on the club programme.

Well, the romantic story of that archetype of airfields, Croydon, still goes on apace in the pages of the **Three Kings Court Circular**. This month the focus is on that phenomenon of the Thirties, Amy Johnson. And for the benefit of anyone who doesn't know who she is, she was the girl who, in a single seater biplane, blazed those routes which the great airliners of today use as a matter of course. It doesn't seem possible when you look at the vast air technology of today that only 40 years ago a flight to Australia and back was hailed as a major achievement. More of historical, or should we say, hysterical, interest, at the East Horsley Fete when Dave Morbin's I **Strutter** and Ken Gardner's **Fokker D.8** staged a 'dog fight', with realistic machine gun noises coming over the PA system. It would appear, though, that some fete displays are a flop because of inadequate or non-existent crowd control, particularly of venturesome children – most frustrating for a well prepared display team. Coming to more serious modelling affairs, Viv Willson bravely took on the cream of France in the C/L Scale event at Metz back in June. His **D.H. Chipmunk** was third in static and recorded the best flight, giving him an overall second place.

From **Nitro**, the newsletter of the **Belfast MFC**, we get the impression that the club survives by its sheer resilience rather than by depth of enthusiasm. Just now the sustaining interest is R/C Thermal Soaring, but I remember the day when the Belfast club fielded quite a strong free flight section. Perhaps the turn of F/F may come again but meantime the focus is on the Thermal Soaring League consisting of 18 flyers. Leader so far in the four round event is L. W. Rooney. Enough C/L interest left, though, for a couple of Juniors to make the journey to Derby to compete in the International Combat Event, and also for the club to meet with the North Down boys in local Derby Combat event in July. Winner was John Hamilton of Belfast. But, alas, no C/L Nats this year, only a C/L interval slot in the Leinster R/C Champs.

Some points raised in the **New Zealand Newsletter**. Just now the NZ scene, particularly radio, is being hit by some quite restrictive import licence controls (could it happen here?). Someone writing in the newsletter feels that radio, at least would benefit by a better public image. There are, he feels, too many people building highly functional models that can climb at Mach 1 and do all the tricks in the book, but bore the public into the ground. He'd like to see – and the public, too, he feels – some of these slow flying Scale and semi-Scale models that really do look like model planes. Another matter raised of interest to us over here, too, and that is Vintage. As far as rubber and glider is concerned these models were built for duration, so you need a duration style event to see them at their best. Some New Zealand flyers are experimenting with ideas that give bonus points to the older, and obviously handicapped, designs. My own pet theory is a points system for years of vintage, covering, say, four or five periods, although I do feel that the very old A-frame and pusher models require a special event of their own.

Mention 'Old Timer' to a British modeller and he'd think you were talking about an ancient clockwork device, but the term in the United States covers quite a modelling industry – the new archaeology of digging up the recent past. Hold a Vintage comp in Britain and you get a lean muster of 1950 lightweights, but in the 'Old Timer Champs' in **WMC Patter** you have comps for the whole spectrum of pre-war model types: Antique Ignition (my car!), Ignition Pylon, Combined Glow, Rubber Cabin, Rubber Stick etc, etc. A small dose of Vintage can add colour to the modelling scene, but can an excess of it be just a shade unhealthy?

Your reports and newsletters welcome.

Clubman

Contest Calender

19th October	SMAE INDOOR MEET. General indoor flying at Cardington, Beds.
19th October	NORTHERN AREA FAI GALA. F1A, F1B, F1B (flown in rounds, 1st and 2nd rounds together from 10am to noon). FAI team race and combat and R/C pylon. SMAE members only. Venue: RAF Elvington, nr. York.
19th October	TOWNER TROPHY DAY. Thermal soaring (% slot) and scale glider events. Details and pre-entry (40p) available on receipt of s.a.e., from G. Hockney, 1 Bainbridge Close, Seaford, Sussex.
25-26th October	SMAE 2-DAY FAI MEET. FAI rubber, power, glider. Venue: Sculthorpe, Norfolk.
26th October	WHARFEDALE 16th RUFFORTH 1000. C/L Class B team race. SMAE members only – no spectators. Details: J. Horton, 10 Lawn Avenue, Burley in Wharfedale, Ilkley, West Yorks LS29 7ET.
2nd November	SMAE INDOOR SCALE MEET. Venue: Cardington Beds.
2nd November	RICHMOND GALA. FAI R/G/P (in rds.) A/1, ½ A power, C d'H, HLG. Venue: Bassingbourn Old Airfield, nr. Royston, Herts. SMAE members only.
30th November	COUPE D'HIVER INTERNATIONAL. Venue RAF Halton, Nr. Aylesbury, Bucks. 9am start. Details from Aero Modeller editorial offices.
7th December	FALCONS GALA '75. Open R/G/P (3 x 3min.) chuck glider (best 5 from 9, 1min. max.). Starts at 8.30am at RAF Chetwynd, Nr. Newport, Salop. Entry fees: 30p per event, Juniors and Ladies free. Pre-entry 45p per event. Prizes for top 3 in each event plus best junior guaranteed. SMAE members only.

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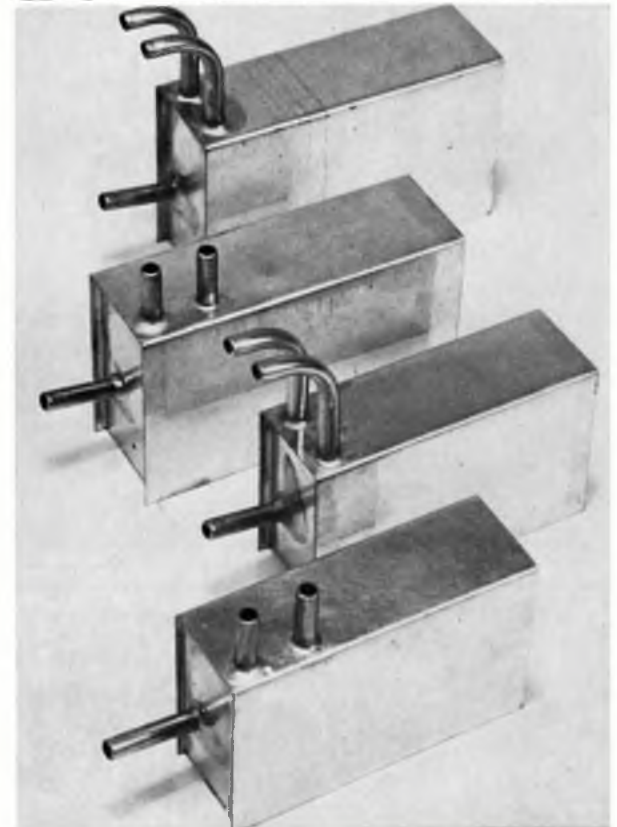
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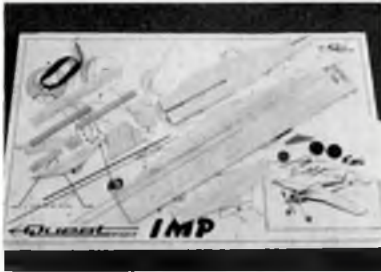
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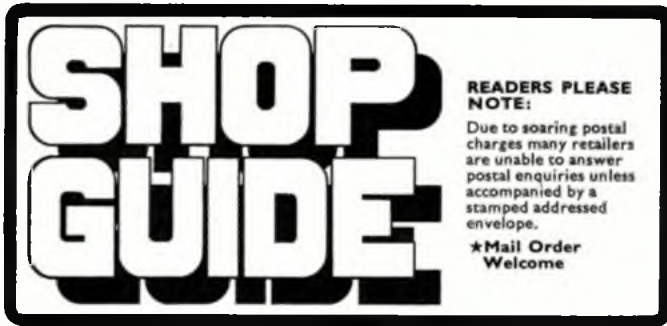
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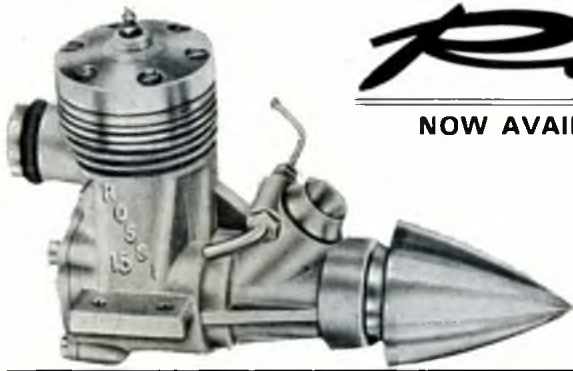
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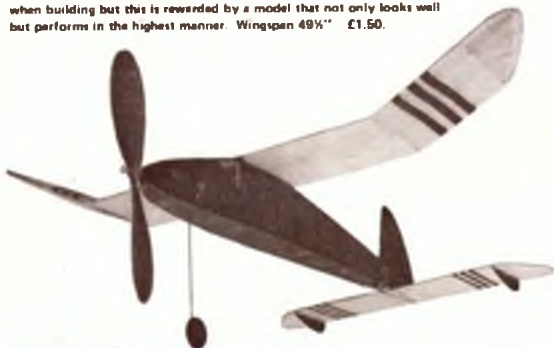
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KEILKRAFT GIPSY

GIPSY

One of the largest rubber powered models available in kit form with deceptively simple construction for a model of such proportions. Saw-cut propeller blank is included in the kit as well as all the usual hardware etc. Very high flight performance. Wingspan 40" £2.75.