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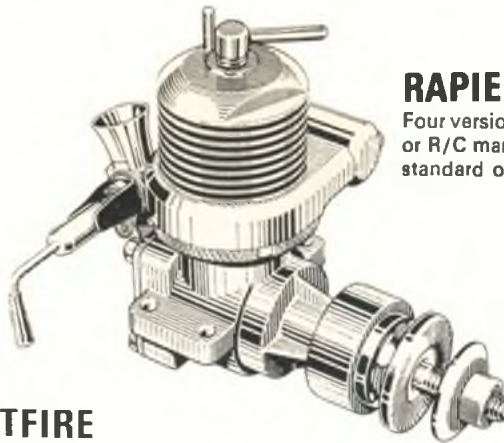
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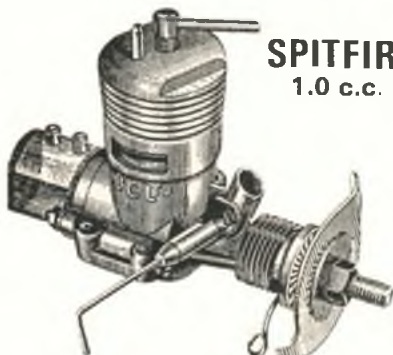
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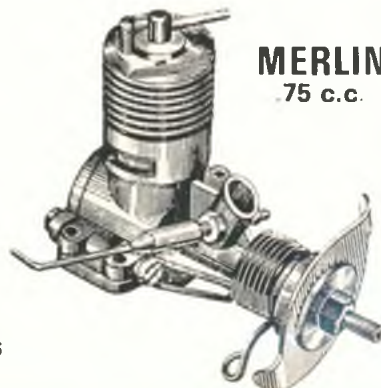
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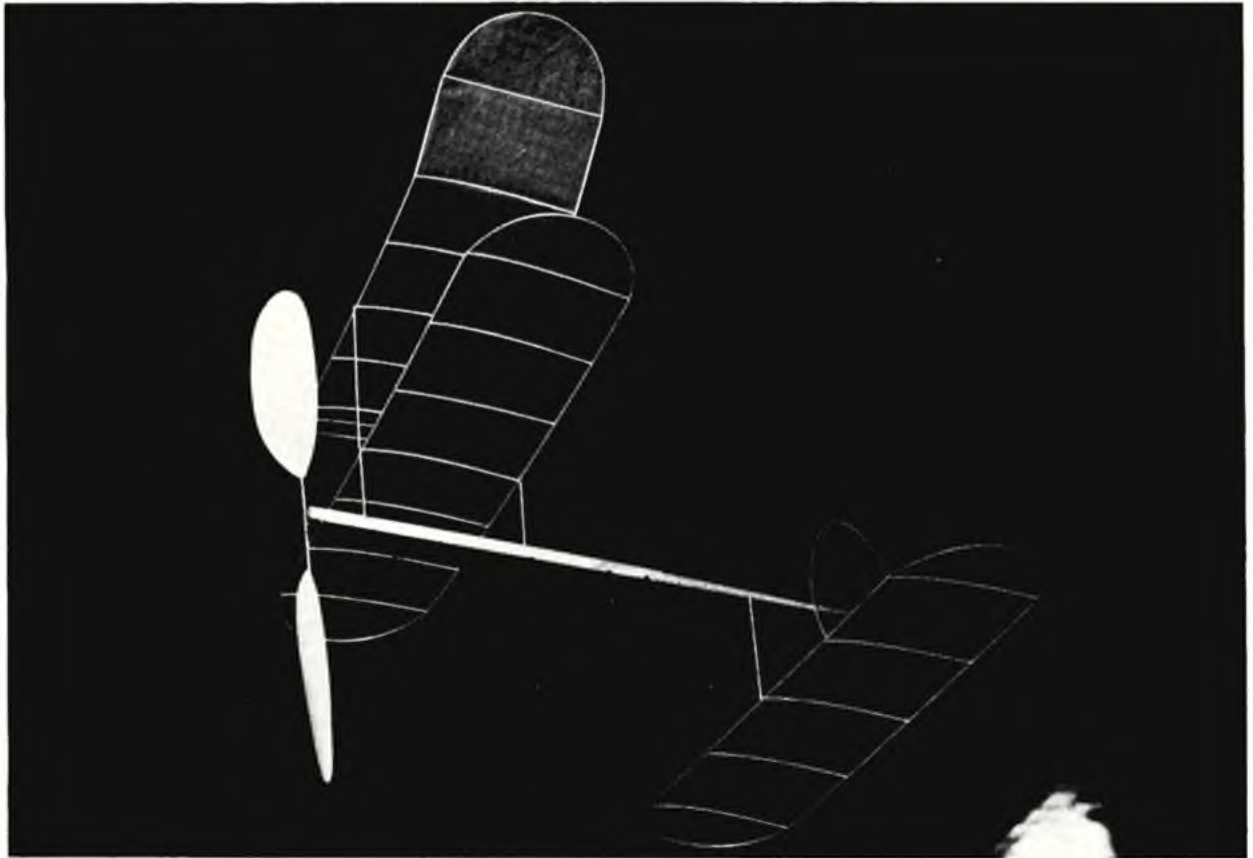
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# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

December 1975  
CONTENTS

Volume XL No. 479

HANGAR DOORS	1023
'MARTIN BAKER MB-5'	1024
THE FREE FLIGHT SCENE	1026
BETWEEN THE LINES	1030
MAGNET MEET	1034
FLYING SCALE COLUMN	1035
'SPARKY'	1038
'BRISTOL SCOUT'	1039
LATEST ENGINE NEWS	1041
FREE FLIGHT TECHNICALITIES Part 1	1044
AIRCRAFT DESCRIBED — Bowers Fly Baby	1048
TOPICAL TWISTS	1050
ELECTRIC POWER	1051
CLUB NEWS	1055
CONTEST CALENDAR	1056



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**Advertisement Offices:** Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Hertfordshire HP1 1EE. Tel: Hemel Hempstead 56117.

**Subscription Department:** Remittances to Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Hertfordshire HP1 1EE (subscription queries Tel: Kings Langley 66846). Direct subscription rate £5.00 per annum, including index, \$15.00 (U.S.) for overseas subscribers.

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**MODEL & ALLIED PUBLICATIONS LTD.**  
P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE  
Tel.: Hemel Hempstead 2501-2-3 (Mon.-Fri.)

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send seasonal  
greetings and best  
wishes for a happy  
and prosperous New  
Year to all our  
readers.**

## on the cover

*AeroModeller secretary Mandy Winfield displays a Keil Kraft Mercury Gnome glider and the Cal Aero Models Playboy Senior kit converted to electric free flight by the installation of Mabuchi A-1 engine units — see feature on pages 1051-3 for further details.*

## next month

Special feature on making your own spoked wheels for scale models — more on the technicalities seen at the recent Free Flight World Championships — Engine test — Regular features on scale, free-flight and control line topics plus other interesting articles in the January issue of *Aero Modeller* — on sale 19th December. Don't miss it!

*Aero Modeller* is printed in Great Britain by Leicester Printers Ltd, The Church Gate Press, PO Box 20, 99 Church Gate, Leicester LE1 9FR, for the Proprietors and Publishers, Model & Allied Publications Ltd. (a member of the Argus Press Group).  
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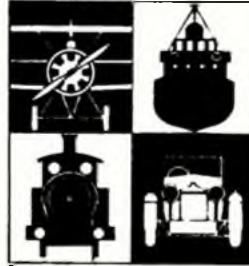
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The MAIN HALL will have a slightly different layout this time, improving, it is hoped, the flow of visitors and improving viewing. A main feature will be the traditional S.M.E.E. passenger railway in non-stop service with a variety of interesting locomotives 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.

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# Heard at the HANGAR DOORS

\* \* \*

**COUPE D'HIVER INTERNATIONAL** meeting at RAF Halton, 9am-5pm. 30th November will be a two-in-one event. Separate classes for FAI (80g) and the traditional French (100g) models will be run for the special trophies. Maurice Bayet of *Le Modele Reduit d'Avion* has presented a new cup for the 100 gramme class while *Aero Modeller* has commissioned a new style trophy for the FAI event. A party of modellers is expected from France, with other proxy entries from USA. Flights will not be made in rounds, but entry (30p) will close at 1pm. Two entries are permitted per person in the 3 flight 100g event, to maintain the splendid tradition of the MRA-A/M challenge, but only one entry is allowed for the 5 flight FAI contest. Proof of third party insurance cover must be made available on demand. This will be very much a 'trial' meeting to explore the possibility of establishing an annual Winter Cup challenge, and all thanks are due to the fine co-operation of the Royal Air Force at Halton for use of their airfield in its picturesque location.

\* \* \*

**ELECTRIC RTP FLYERS** take note. The aeromodelling sub-section of the *Avon Cosmetics Sports and Social Club* will be opening their doors to 'outsiders' on Tuesday 16th December and 20th January 1976 8pm, so that visitors may enjoy their excellent facilities for practice flying RTP models. 17th February 1976 is contest night, when two classes of competitions will be organised - speed and scale. Venue is the Avon Cosmetics Sports and Social Club, Nunn Mill Road, Northampton - visitors should book in at the entry gate on arrival.

Sounds like a good night out (a bar is available too!) - and brings us conveniently around to another reminder for RTP enthusiasts. As mentioned in the October issue, contests for these electric powered craft will be run during the period of the Model Engineer Exhibition at Seymour Hall, London W1, from 30th December 1975 to 10th January 1976 (excluding the Sunday). Two classes will be catered for: scale and aerobatics, and in addition to the two excellent prizes donated by Harry Butler (Models), there will be prizes for the most meri-

torious flights daily plus special Junior prizes. And even if you do not wish to fly in the contests, just bring along your models and fly them on the 23 feet radius circuit. No contest fees - just come an' fly! However, if possible send us a postcard stating the likely date and time of arrival so that we can guarantee you flying time, and avoid the over-subscribed Saturday dates if possible.

**VINTAGE** control-line flyers where are you? Michael Beach is keen to promote this form of old-timer flying and is prepared to make a suitable trophy, so we are tentatively planning an informal meeting to be held next April at Old Warden - idea is not to judge the aerobatic performance of model or pilot, but more from the angle of whether the model in question is a praiseworthy restoration. Any comments? Glad to hear from any vintage C/L flyer.

**THE ACADEMY OF MODEL AERONAUTICS**, the governing body for aeromodellers in the USA, continues to go from strength to strength with a membership now topping 60,000 modellers. Recently they have negotiated the purchase of Hutchinson airfield in Kansas, at a cost of \$20,000 - three-quarters of

this cash having been generously donated by AMA members.

**US TEAMS CHOSEN.** At Lakehurst, New Jersey, the US representatives for the 1976 World Indoor Championships (proposed to be at Cardington) were selected - the final team being Bucky Servaites, Jim Richmond and Bud Romak. These three flyers headed an entry of 24 competitors after a real struggle against the extremely adverse air in the airship hangar caused by 'eccentric' weather conditions thanks to Hurricane Caroline and a massive low-pressure system.

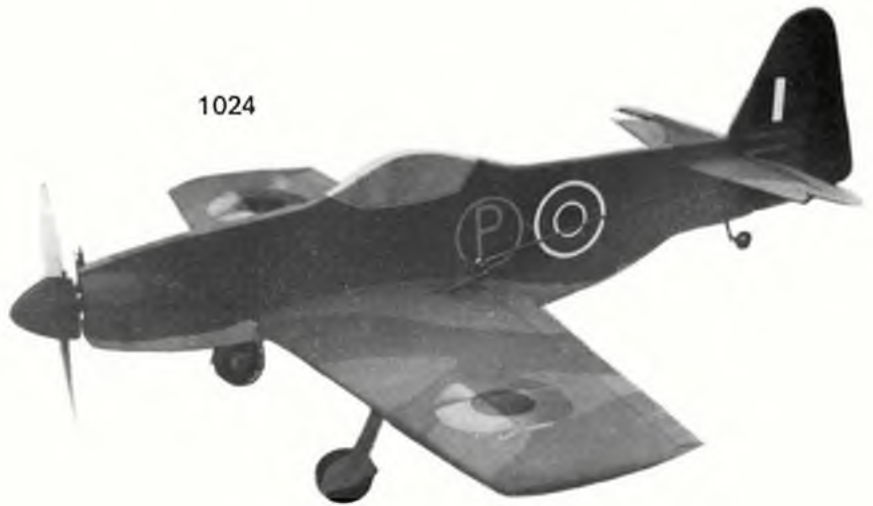
The C/L aerobatic flyers were rather more fortunate with their weather, although the wind was more than a little unfriendly. Eventually, Gene Schaffer topped the results, followed by Bob Gieske and Bill Werwage - a very strong team, in fact the same as '74 when Gieske became World Champion and the US team took top honours.

**RASSEGNA TECHNICA** di Aeromodellismo (*Technical Digest of Aeromodelling*) is the title of the well produced magazine of the Italian Unione Sportiva Aeromodellisti Lombardi. This 'internal newsletter' of the association is devoted entirely to flying model aircraft and has many highly qualified Italian and foreign contributors - a really first class effort for a 'private venture' publication-interested parties should contact Dr Ing. Ferdinando Gale, President USAL, Via Trieste, 8, 20081 - Abbiategrasso (Milan), Italy for information regards receiving copies.

When Leisure Sports Ltd commissioned Ray Hillborne to build a replica Supermarine SS they obviously picked the right man, as evidenced by this picture of the result of his handiwork. With much previous replica work experience behind him, and armed with a set of Aero Modeller scale drawings, Ray produced this machine entirely of spruce and birch plywood, rather than duplicate the original's aluminium fuselage. A Continental Flat 6 engine was then installed, taxi-ing trials commenced and a short 'hop' successfully completed at Southampton recently.



*want an attractive snappy, semi-scale control-line stunter for 1-1.5cc engines? Try Bill Burkinshaw's 26in. span*



## MARTIN BAKER MB5

THIS MODEL was built for a purpose – aren't they all? The purpose behind this one was a school fete six or seven years ago, in which the school model club (which I ran at the time) was expected to perform. So in addition to Goodyear racing we decided to do some scale/semi-scale combat plus balloon bursting. I persuaded two boys to either build or re-paint models of suitable type and then cast around for inspiration. The then current issue of *Aero Modeller* provided this in the form of scale drawings for the MB5 which looked in plan view to be just right. A quick check on the dimensions showed that scaling up the 1/72 scale drawings by a factor of four would give me a reasonable sized model for a 1.5cc motor. Plans were duly drawn up and construction details filled in, the wing chord being increased slightly but no other alterations to the outline were made.

The original model was powered by an Oliver Tiger Cub MkII, fitted with a 7 × 6in. prop, and flown on 42 foot lines. The first flight proved something of a disappointment as the looping radius was excessive and overall control response poor. The weight of the Oliver motor coupled with the long nose was a major factor, but how to improve the situation? The answer I settled for was flaps. These were then fitted and the model tried once more – the difference was astonishing, the model now being capable of all the aerobatic manoeuvres I was able to put it through. Triangular and square loops were both within its capabilities.

The version drawn here is fitted with a removable undercarriage as per radio control practice, and has more refined flap connectors than my original. The flight performance with an OS 10 plus silencer is quite adequate for a model of this type, all basic aerobatics being within

its compass, plus a fair turn of speed.

The fuselage outline has now been flattened slightly to allow cutting the basic shape from 4in. wide balsa sheet. For those who are put off by the complexity of coupled flaps and elevators, don't connect them up! Glue the flaps onto the rear of the top and bottom 1in. × 1/8in. TE and take the push rod directly from the bellcrank to the elevator horn. With the additional length of push rod it may be necessary to add a support/guide halfway along to retain positive control. With a light engine such as a PAW 1-49 the lack of flaps should not prevent most basic aerobatics from being performed – in fact without flaps the MB5 would make a good stunt trainer.

### Construction

They always say that the laziest person always finds the quickest way to do a job – far be it for me to encourage people to work so fast that they spoil something, however. Bearing these statements in mind, I still manage to build pretty quickly by using methodical building techniques. I firstly always make a complete 'kit' for myself, all ribs, spars etc cut to length, fin and tailplane shape etc cut out. The ensuing building sequence, if followed, allows the model to be built in a fairly rapid time – my second prototype took about six hours to build.

(1) Assemble fuselage parts, ie fuselage profile from 3/8in. sheet, 0.8mm ply doublers and 1/8in × 1/8in. bearers using PVA glue. Place between flat boards, weigh with a couple of bricks, and put aside to set.

(2) Commence wing construction by pinning down the TOP 1/2in. × 1/8in. hard balsa spar. Note that wing is built UPSIDE DOWN over the plan. This produces a flat top surface and dihedral lower surface to the wing.

(3) The trailing edge needs to be propped up at an angle, using scrap 1/8in. × 1/8in. balsa packing.

(4) Glue on the 0.8mm ply centre section spar reinforcement. The spars have to be crack-bent to shape to follow the maximum camber line of the wing.

(5) Glue in all ribs W1-7, noting that there are two W1 ribs sandwiched together at the centre section.

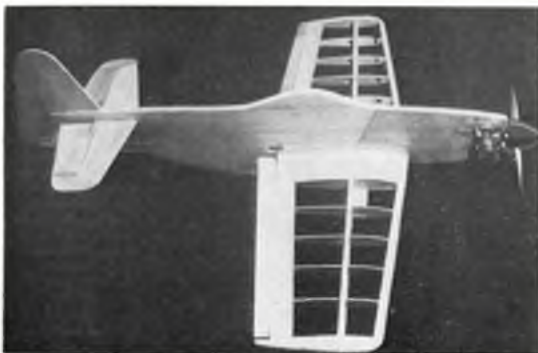
(6) Prop up the 3/8in. square leading edge with 1/8in. scrap; glue in position then add the bottom trailing edge sheet and bottom spar.

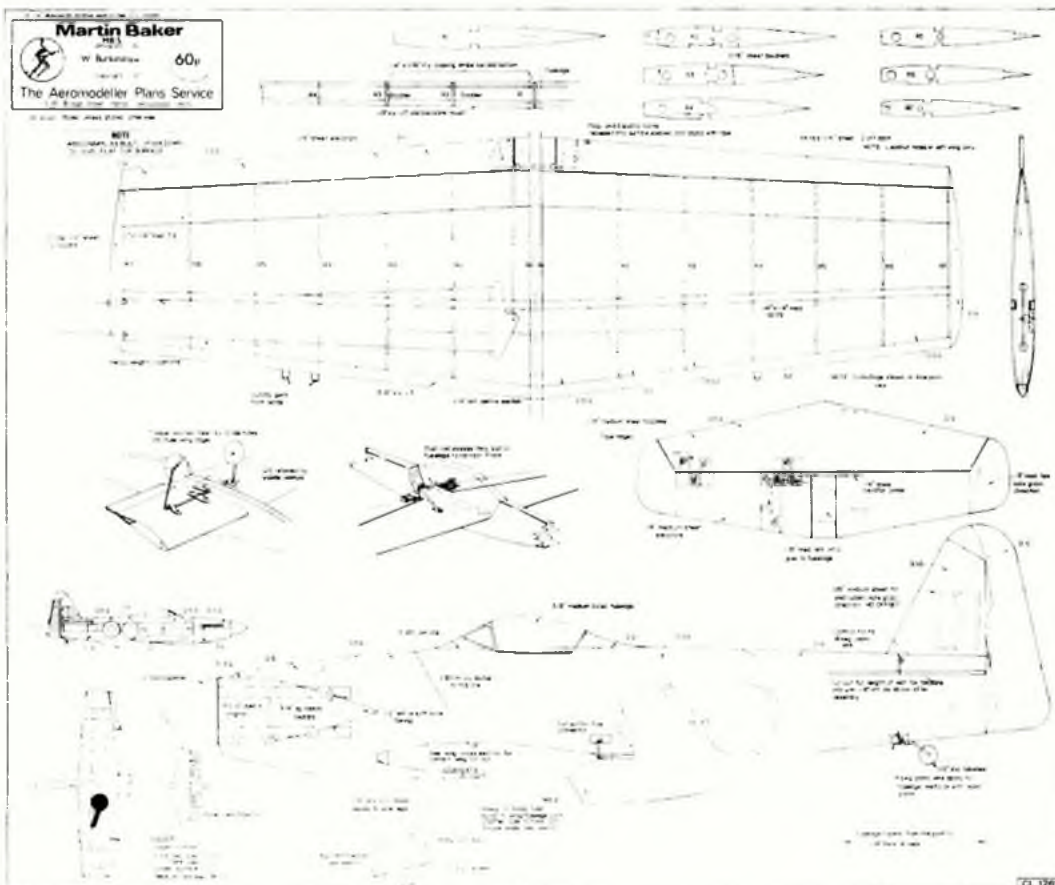
(7) The undercarriage mounting plate of 3mm ply can now be glued in position. This is in two pieces. Note reinforcements on ribs W1, 2 and 3.

(8) The bottom centre section can now be sheeted.

(9) Whilst this assembly is drying, glue together the fin and rudder plus the elevator parts.

(10) The 14swg wire u/c can now be bent to shape –





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the wheels are retained by soldered up washers. The 0.8mm ply undercarriage doors are bound on with thread and epoxied. Bend the tail wheel leg to shape and solder on the wheel retaining washers.

(11) Assuming that you live in reasonably warm surroundings and a couple of hours have gone by since you glued the fuselage parts together, you can either go to bed, watch telly, visit the 'local' to wash away balsa dust or remove the weights and sand down the rear taper on the fuselage and generally round off all corners.

(12) Drill the engine bearers to suit your engine and either solder wires across the screw slots in the bolt heads or remember to make holes in the fairing block to allow access to them. The method I recommend for getting a good neat appearance to these holes is to firstly drill the soft block  $\frac{1}{16}$  in. then produce some  $\frac{1}{16}$  in. dia. paper tube to line the holes. Glue tubes in place then temporarily plug the tubes with scrap soft balsa whilst carving and sanding the fairing block. On removing the scrap plugs a really neat bolt access hole will result.

(13) Sand the fin assembly plus the tailplane and elevators. Glue on fin and tailplane. Do not glue in-fill piece at this stage.

(14) Now return to the wings. Unpin from the building board and turn over. Install bellcrank as shown, soldering on the nut, and bend flap push rod. Install and solder all connections, locking the bellcrank nut etc.

(15) Drill tip blocks for leadout tubes, glue in place and install leadouts.

(16) Sheet in top centre section.

(17) While wing glue is setting, bend flap and elevator horns - 18swg piano wire is shown on the plan, but if you can get some,  $\frac{1}{16}$  in. dia. welding wire is even better as it is easier to bend. In addition it can be bent easily *in situ* to make minor adjustments to flaps and elevator

settings. Install all horns and reinforce with PVA and bandage.

(18) Carve and sand wing to section and preferably epoxy into the fuselage. Reinforce wing fuselage joint with bandage well soaked in PVA glue thinned with water.

(19) Whilst this assembly cures, the flaps and elevators can be covered with lightweight Modelspan tissue. Clear dope first, then rub down and dope on tissue. Do not attach to the model yet.

(20) The whole model should be rubbed down with  
*continued on page 1054*







# The Free Flight Scene this month: Michael Warren

1975 WILL BE REMEMBERED in this country for its glorious weather – we had month after month of sun, with calm evenings and calm Sundays and it was all marvellous. It had to break one day of course, and it broke with a vengeance in mid-September as wind and rain swept in to ruin the South Midland Area Rally . . . of which, more anon. Anyway, '75 has been a good year, and let's hope for a few more like it. We deserve them!

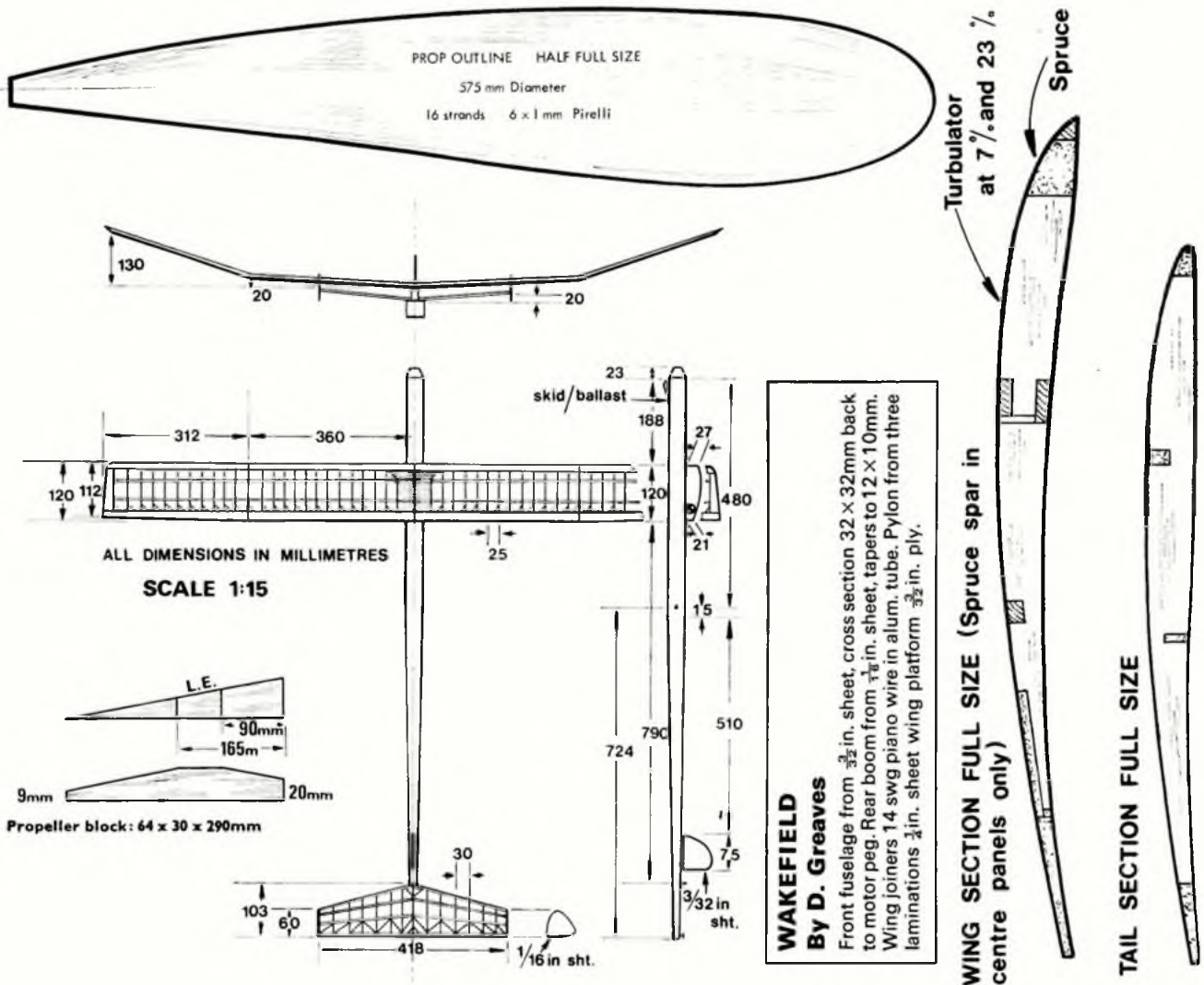
## WAKEFIELD – by David Greaves

This month's drawing is of the Wakefield-class model with which David Greaves won the 1975 Pierre Trebod contest. The keynote of the model is simplicity – it sports the now fashionable triple-fin, but has neither auto-rudder nor a variable incidence tail and was almost unique in France for its square fuselage. Curiously, David had not intended to fly this particular model at the French meeting – it was originally his reserve, but since his number one model turned in to the right on its first flight, he used this design throughout the contest.

The wings are from a model built in late 1974 for that year's Team Trials. The prop of that model to be replaced, a new tail was also built and – since the new tail did not fit anything(!) – a new fuselage also followed. David is not alone in going for simplicity: Dave Hipperson recently won the SMAE area centralised Wakefield contest with his usual gadget-free models, and the North Korean models are predominantly without frills and we all know how well *they've* been doing!

About five years ago David Greaves built a Wake with VIT. As he described it in *Free Flight News*: "Whilst trimming it I accidentally knocked-off the VIT arm. Being short of time, I retrimmed the model without it, and much to my surprise, the model performed much better." He has not used VIT since.

The John Gard wing section is used (similar to Tom Koster's 1965 section) and the model is flown on 16 strands of rubber – as they are easier to make up, and you can use a bigger or coarser pitch prop than with 14 strands. He now intends to build a second triple-fin model as the set-up is very forgiving – you can use a tighter turn and get away with it.



**INDOOR TEAM TRIALS – 20th-21st September**

This has been one of Britain's best-ever years for indoor flying. Standards are as good as – or higher than – ever, and there is probably more indoor interest than ever before. Doubtless this is partially due to the availability of the airship sheds at Cardington, Bedfordshire – still the best indoor flying facility in the world, the proposed site for the '76 World Champs' and the venue for the Indoor Team Trials, to select the British team for next year's World Championships.

Three rounds were flown on each of the two days, the best two flights by each competitor being aggregated for the final placing. By Saturday night Laurie Barr and John Blount were clearly in the lead, each with two flights in excess of 31 minutes. Interest was very much centred on the battle for the third of the team places, which seemed to be developing into a three-horse race with Bob Bailey, Geoff Lefever and Reg Farham all well in contention, but with several others, including Ron Green, chasing hard.

Official flying on Sunday started at 12 noon, with three two-hour rounds being flown between then and the end of the contest at 6 pm. During the first part of the afternoon conditions were more difficult than at any time during the weekend, with a slight drift across the shed taking models into the side girders. In **Round 4** there was no improvement for either of the leaders: Laurie Barr put in a 26 minute plus flight – and John Blount's model drifted into one wall after 12½ mins and lodged awkwardly in the back of one of the vertical girders. But they were not the only ones to have troubles – Bruce Edward's model got caught up in a balloon line whilst being steered away from the wall and Geoff Lefever's model was hung up on the underneath of one of the two side catwalks after only 8 mins. (For those who haven't been to Cardington, the side catwalks are about 120 feet above the floor . . . and some 30 feet lower than the centre catwalk. It's a big place!) Butch Hadland, Britain's team manager at the last World Champs in America, had put in one flight of 25 mins on the Saturday, but had done nothing anywhere near as good since. He changed models tried again and topped 32 mins – but it was only a test flight! Bob Bailey, who had spent a lot of time re-bracing a model damaged earlier, put in a late flight of just over 28 mins – good enough to put him into third place.

**Round 5** started with poor Geoff Lefever getting his sums wrong yet again. Using the same motor as in the previous round (which he thought would have lost some of its power) the model climbed steeply away, was up among the girders after only four minutes and, inevitably was hung up after just six minutes. In the early part of this round, the drift was still a bit difficult – John Blount had yet another model drift towards the wall and he damaged it very nastily in trying to steer it away from danger. Then, in the last 45 minutes of the round, the drift decreased, and none of the still airborne models got hung up. One of these was clearly better than the rest, and it was obvious Ron Green had got *his* sums dead right. His model was circling at the top centre of the shed, hitting the girders slightly but in little danger of getting hung up and clearly set for a good time. It was 34:14, the best of the day and more than enough to put Ron up into third place.

**Round 6** started with John Blount flying immediately – closely followed by Geoff Lefever and Laurie Barr, both of whom climbed away steeply, prop-stalled dangerously but then pulled up into safer, steadier climbs. All three of these flights were in excess of 31 mins, Lefever's being enough to bring him into 4th place, and Laurie Barr's, after looking as though it was going to be the best of the weekend, ended with the motor slipping off the model when it was just a few feet above the floor.

Thus Britain's team for the 1976 World Championships consists of Laurie Barr and John Blount – in the team again as they were in '72 and '74 – with the third place being taken by Ron Green of the St Albans Club. With respect to the excellent performances of the first and second placed men, the indoor flyer of the meeting and of the year must surely be Ron Green. It is remarkable to think that he built his first microfilm model in April this year and his first-ever indoor model only last Christmas! He has however done a vast amount of work during the last few months, and intends to spend the winter continuing work on rubber/propeller combinations. Though there is a great deal of standardisation among indoor models, Ron's are somewhat unusual in having 22in diameter props – significantly larger than the average in this country.

One other performance worth mentioning, though it did not count towards the Trials – Bruce Edwards, after a fairly off-form weekend, tried once more as dusk fell in the shed and put in a personal best of 34 mins 9 secs. Oh well, there's always the 1977 Team Trials . . . !

**Results**

	1	2	3	4	5	6	Best Two
1. L. Barr	17:50	31:53	<b>32:57</b>	26:09	18:56	<b>34:04</b>	67:01
2. J. Blount	<b>32:52</b>	31:35	15:40	12:29	11:04	<b>31:47</b>	64:39
3. R. Green	27:28	23:39	28:57	<b>29:10</b>	<b>34:14</b>	10:02	63:24
4. G. Lefever	25:19	<b>30:09</b>	6:59	8:01	6:01	<b>31:56</b>	62:05
5. R. Bailey	26:03	20:27	<b>31:50</b>	<b>28:07</b>	25:33	23:18	59:57
6. D. Morley	4:33	13:13	<b>27:15</b>	21:49	23:09	<b>29:38</b>	56:53

**NOTES**

You may remember that in my last Column I mentioned a 'fly-off only' Open Rubber contest being held at the Canadian Nationals – it was particularly interesting in that it was being held very early in the morning and that timekeepers were being allowed to follow the models. I am grateful to Peter Allnut of the Toronto FAI group for sending me the following details of the event:

"There was more interest shown in this event than in any other from a spectator point of view. Jack McGillivray had built a super-light ship and to cut down the drag so the aeroplane would glide and not wallow he had made a wing of only ¼in thickness. But he had problems sorting it out and did not fly it. Dave Sugden also built a 'one-off special' but during testing the evening prior to the contest his hand hit the prop on release and the now unbalanced (one blade missing) prop disintegrated the fuselage back to the pylon!

"At 5 am the next morning people were up and about and at sun-up the contest was started with everyone being allowed only 20 minutes to put their flight in. Conditions were very calm and flat, though there was a certain amount of drift at altitude. All the models were timed to the ground and the results surprised everyone – most people thought they would be in the 8 minute class and some had hoped for as much as 10 minutes."

And the results Peter has sent me show that the winning flight was surprisingly just under 6 mins – by Mike Thomas, flying his APS *Predator* design. Second was Paul Bedlam, half a minute or so behind flying McGillivray's design *Blimp*, and third was Joe Mackay with an own-designed model.

With this being the December edition, and with Christmas traditionally being the time for assessment of the old year and thinking ahead to the new, it seems a suitable time to look briefly at this

Member of the 1972 British team for World Indoor Championships, Martin Shephard struggled hard to make the '76 team at the recent Trials, but was never seriously in contention.







At left, Chris Chapman (Tor-bay) gets his Open Rubber model away in the breeze at the Southern Gala, only to see it wind in from 300 feet during the climb. Right, Another previous British Indoor Trials team member out of luck at the Trials was Reg Parham.



Column and the function it *should* be serving – and these, I hasten to add, are my views and not necessarily those of fellow-contributors Bob Bailey and Martin Dilly.

Broadly speaking, we use two types of material – technical data (which covers models, equipment and flying techniques) and contest reports. It is difficult to decide how much technical data should be included. If we put in too much we simply duplicate the work done by *Free Flight News* and similar specialist publications; but valuable as this work is, the fact remains that FFN and the rest are preaching to the converted and that newcomers to the sport will tend to read this Column first and will only add FFN to the reading list later. So the plans and technical data hopefully serve a useful purpose in informing both the specialist and particularly, the non-specialist.

As far as contest reports are concerned, I have to admit that no overall policy has been developed. Undoubtedly the major and heavily subscribed Centralised events should be – and have been – covered in detail. But what of the rest? My own feeling is that – as in John O'Donnell's day – all contest *results* should be included, but that *reports* should cover only the major events. And under the heading of 'major events' I have to admit that I do *not* include Area Centralised events. Useful and enjoyable as these meetings are, they seem to me to be of limited significance as competitions – if it's warm, calm and thermally at Bassingbourn but wet, windy and dead at Topcliffe for example, then no valid National contest has taken place, and putting the various Area results together is surely of little interest. To win your particular class at your particular flying field is fine, but to win the National event at the same time is not necessarily – though it can be – of equal significance.

It seems to me that contest reports should serve the prime function of telling those who weren't at the contest what it was like for those who were. Not just what happened, but what it was *like*. Space does not always allow it of course, but that is what we should be

aiming for. And if just a few people a year read a report, find it new/interesting/exciting or whatever and come and join us, then we will have done our job well. Comments please?

\* \* \*

At this year's *Amsterdam Cup* competition, one of the West German contingent, having lost one of his two models and damaged the other, tried to fly someone else's. This just is not allowed – and, once discovered, he took no further part in the contest. (This rule, which I gather the Germans want to do away with says, broadly speaking, that "*the model must have been built by the flyer*".) The reason I drag this incident up again is that at the *Pierre Trebod* this year another of the Germans was flying a model which he openly admitted he had not built. Apparently one of the better-known Germans is renowned for building models by the half-dozen or so, testing them all, keeping the best for himself and selling the remainder. And though this is very much against the spirit of model building/flying as it has developed since the war, I am not sure that I can find any particularly significant objection to it. In any case, the real specialists will continue to design and build their own machines . . . and will continue to win with them.

\* \* \*

This year's *National Free Flight Society Symposium* has recently arrived from America and a very impressive document it is – 163 pages of technical articles, plans and photographs. Fairly heavy going for anyone without mathematical training perhaps (there are pages of complicated formulae and graphs) but there is enough in the data summaries and in the plans to make it well worth buying. Of particular interest are a detailed history of the Coupe d'Hiver model from 1938 to 1975, an article on variable pitch props for indoor models and *all* the plans, which include Erwin Rodemsky's vast indoor model flown at Lakehurst, John Gard's latest Wakefield design and one of Bill Giesekieng's 'flapper' FAI power models. (This last plan, by the way, is accompanied by an



Left: Martyn Cowley had a successful day out at the Southern Gala with two third places with these designs. The Coupe d'Hiver model is eight years old and features turbulated propeller blades and Montreal stop, while the chuck glider is of rather more recent vintage, incorporating a high ridge point airfoil and swinging weight D/T. Picture on opposite page shows John Barton who took second place at the South Bristol Gala in the Vintage Precision event. He flew the Norman-Marcus designed 'Bazooka' that won the last Hullavington Nats. Model uses a tip-down tail D/T.





Left: Ron Green assembles his FAI indoor model – in the team after only 5 months of indoor microfilm work. Right: Trevor Payne gets the K&B 40 powered 'Forte' away at the Southern Gala.



eight-page analysis of flapper development – it's excellent!) The Symposium report is available for £3.60 from *Free Flight News* co-editor Ian Kaynes at 2 Alexandra Close, Netley Street, Farnborough, Hants. And Ian also has back numbers of most previous Sympo reports available, and on receipt of an sae he will be glad to send you details.

**SOUTH MIDLAND AREA RALLY – 14th September 1975**  
Held at Cranfield, Bedfordshire, this annual event was a bit of a disaster. The weather was foul, with heavy rain in the morning and a fairly strong wind all day. The turnout, not surprisingly, was low, and the number actually flying even lower. (Incidentally, those who feel that the airfield entrance fee charged by the South Midland Area is excessive should remember that the good years have to subsidise the bad. The airfield has to be hired rather than just used and the loss this year was something in the region of £300!)

It was a day only for the most dedicated, and the results make sad reading. Third place in the *Ted Evans Memorial* was taken with a score of just 42 seconds and that says it all! Those who *did* fly really coped very well with the worst weather, and they all risked lost or damaged models. Russell Peers lost one of his *Open Power* jobs and damaged at least two other models, but won both *Open Power* and *Open Rubber*; John O'Donnell damaged one model and flew a reserve in winning Wakefield. All in all, a horrid day, and all credit is due to those – particularly the juniors – who had the dedication and technique to fight the weather.

**Results**  
**Wakefield (*Ted Evans Memorial*)** – 1. J. O'Donnell (Whitefield) 7:34; 2. J. Grey (St Albans) 3:26; 3. B. Perks (Welland Valley) 0:42.  
**Open Power** – 1. R. Peer (Falcons) 4:49; 2. C. Batty (Bath) 3:23; 3. F. T. Payne (Biggles FFT) 2:43. **Open Rubber** – 1. R. Peers (Falcons) 7:22; 2. P. Balls (Grantham) 6:41; 3. T. Gray (St Albans) 3:00. **Open Glider** – 1. J. Cooper (Biggles FFT) 7:19; 2. D. Greaves (Birmingham) 6:30; 3. A. Jack (Southampton) 5:22.  
**Mini** – 1. A. Cordes (Leads) 6:37; 2. R. Moore (C/M) 5:37; 3. S. Marriot (Biggles) 4:35. **Chuck Glider** – 1. M. Cowley (Biggles FFT) 3:44; 2. P. Ball (Grantham) 3:38; 3. P. Hurst 3:32.  
**Junior Kit Contest – Rubber** – 1. G. Moore (C/M); 2. M. Moore (C/M) 2:17; 3. L. Ferrer 2:14. **Glider** – 1. H. Green 1:08; 2. J. Ashby (Biggles) 0:45.

**SOUTHERN GALA – 28th September 1975**  
Held at Odiham as usual, this event was blessed with somewhat better weather than the S. Midland Rally, though there was a stiff breeze for most of the day and a max, particularly in the afternoon, was almost certain to land outside the airfield.

There was a fair amount of activity during the day – 35 started flying *Open Glider*, for example, of which 20 made all three flights – but there were only 14 entries in A/1 and only four in ½A power. John West was the sole man to max out in *Open Power*, Russell Peers having had an off-trim first flight, and Russell was also out of luck in *Open Rubber*, his last flight gliding into a tree at 2:57.

First away in the five-man *Open Glider* fly-off was Gary Madelin. His launch was not perfect, but almost from the first it looked a good flight, holding up across the airfield before eventually disappearing behind some trees. Steve Marriott had meanwhile towed up, but stayed towing slightly downwind of the main runway, waiting for good air. Next away was John Cooper, whose model was up

and off very quickly. Bob Bailey followed and though he had trouble releasing his model, his flight too soon looked good. Marriott and fifth flyer Mike Fantham launched at more or less the same time, Mike's model being away from the main bunch and circling towards the hangars.

Eventual winner was Gary Madelin with that first flight. Gary was flying all day in great discomfort, having nasty cartilage trouble in his right knee. Towing was difficult and painful – perhaps that accounts for the launch in the fly-off! – and retrieval was virtually impossible. So Southampton flyer Alan Jack was retrieving Gary's models for him – friendship indeed since it was pretty windy and Gary was flying A/1 as well as *Open Glider*! The only other fly-off was for *Open Rubber*. Tragedy struck Norman Elliott immediately as his model looped straight back over his head and into the ground. O'Donnell was soon away, having temporarily coped with the premature prop-fold problem that has apparently been plaguing him for a while, and he was closely followed by Trevor Grey, Julian Hopper and, from a more upwind position Dave Hipperson.

Hipperson, surprisingly, set too short a D/T and was down in just under 6½ minutes, leaving Julian Hopper to come out on top with an excellent flight of just over 7 minutes. Though Dave Hipperson was lucky in having his model returned promptly from downwind, Trevor Grey and Julian Hopper were still out in the fields retrieving as night started to fall. And incidentally, since *Open Rubber* has a fair-sized following in this country – though it's not as popular as it was a few years ago – would it be an idea for us to hold a one-flight open rubber event, at next year's Nationals for example?

**Results**  
**Open Glider (35 entries)** – 1. G. Madelin (Crookham) M+3:46; 2. R. Bailey (St Albans) M+3:25; 3. M. Fantham M+3:04. **Open Rubber (20 entries)** – 1. J. Hopper (Stansted) M+7:02; 2. D. Hipperson (Croydon) M+6:24; 3. T. J. Grey (Sittingbourne) M+5:30. **Open Power (12 entries)** – 1. J. West (Brighton) 9:00; 2. F. Chilton (Crookham) 8:35; 3. D. Cash (E. Grinstead) 8:21.

*continued on page 1054*



# BETWEEN THE LINES

with Dave Clarkson

A philosophical Bert Metkemeyer 'sits out' the final at Utrecht following the failure of his fuel shut off; meanwhile Paul Bugl flies on though disqualified due to a 'foot out' infringement following a missed catch, leaving Flores/v.d. Voort to finish unchallenged.

## UTRECHT 1975

Since the 1976 World Champs are to be held on this site, the 1975 Utrecht International was a most interesting contest, especially for those who had come to 'sus out' the World Champs venue.

The circuit is located to the North of the city just off the city outer ring road. It is a compact site, approx 100m x 300m in size containing three permanent circles, one each for speed, stunt and team race, all with smoothly tarmaced perimeters and centres; each circle is equipped with a steel mesh safety fence. Also on the site is a large club-house, a small car-park and a young kids' playground. The club-house is equipped with a secretary's office, toilets, bar and kitchen besides the large club-room. In one corner of the club-room was an assembly of drill presses, grinders and vices, altogether a most complete and impressive set-up. The team-race circle is of adequate dimensions and very smooth and fast, the 50m wide circle markings in yellow paint were extremely visible against the black tarmac. Even more impressive was the T/R judging and recording set-up which would take a full article in its own right to describe (even if I understood its workings and electronics in detail!). It is, I hope, sufficient to say that all races were timed by one electronic master clock that gave a digital readout for each team when the relevant lap counter hit his button for the 100th or 200th time depending upon the selected race length. Hitting the button on the lap counter also brought up the laps completed for each team on large visual displays. The warnings were given as per the rule book (just about the only place where this is done) using green, amber and red lights. The Jury sat in an elevated steel frame box shielded from the models by clear plastic panelling and could communicate with the competitors via a loudspeaker system. The final display was a two digit visual one, on a separate level from the three laps-completed displays, which displayed in segment selection order the team numbers for the forthcoming race – no one could have any excuse for turning up late for a race. These facilities have been described in detail because they must form a model for the rest of the world, no one can have anything even comparable. With facilities like these, there is little wonder why the Dutch are some of the most formidable competitors world-wide in team race.

Despite this eulogy, the Utrecht site is not a perfect one since it totally lacks practice circles and space for flying combat. I assume



for the World Championships that practice facilities local to the site will be provided, but can understand why combat is not included in the list of events to be held.

The events run were speed, stunt and team race. *Speed* had only seven entries, four from Germany and three from Holland. The Germans as might have been expected filled the first four places, the only surprise being that Emil Rumpel did not win!

- |                |                |               |
|----------------|----------------|---------------|
| 1. J. Lenzen   | (West Germany) | 230.769 km/hr |
| 2. I. Schmidt  | (West Germany) | 228.571 km/hr |
| 3. E. Rumpel   | (West Germany) | 227.992 km/hr |
| 4. J. Fröhlich | (West Germany) | 219.244 km/hr |

Emil's motor probably had its final fling at Bochum just two weeks previously when he won with an incredible 266 km/hr.

*Stunt* had a nice 17 entries from just four countries – six from Belgium, five each from Holland and England and one from Austria. On their home site and knowing the flying conditions super well, the Dutch had an advantage which they took well. The Belgians apparently did not like the turbulent wind too much (the site is surrounded by short trees and bushes) so disappointed a little. Most of the British had come to gain experience since, of them, only John Heanan had had much previous International experience. This perhaps explains John's good final placing and the other English entries down the results.

- |                    |               |          |
|--------------------|---------------|----------|
| 1. P. Van Doesburg | (Netherlands) | 3570 pts |
| 2. P. Tupker       | (Netherlands) | 3510 pts |
| 3. R. Liber        | (Netherlands) | 3478 pts |
| 4. R. Edel         | (Netherlands) | 3460 pts |
| 5. J. Heanan       | (GB)          | 3433 pts |

- |                   |           |                    |           |                    |           |
|-------------------|-----------|--------------------|-----------|--------------------|-----------|
| 11. J. Lynch (GB) | 3125 pts; | 13. T. Fowler (GB) | 2741 pts; | 15. A. Church (GB) | 2711 pts; |
| 17. J. James (GB) | 1531 pts. |                    |           |                    |           |

*Team Race* had the largest entry, 20 entries from six countries, the bulk of the entries coming from Holland and England with seven each followed by Germany with three and Austria with two. With none of the 'renowned' Rossi operators present, a battle of the Bugl's was to be expected.

In the heats and the semis it became obvious that the top three – the Metkemeyers, Flores/vd Voort and Bugl/Straniak – were in a class of their own. The Metkemeyer brothers were particularly impressive being clocked in 3-up practice doing 21.6 sec/10 laps for more than 33 laps range, however in the actual races a sub-4 minute heat eluded them mostly due to pilot Bert having an awful lot of trouble staying with such a fast model, and consequently being put off his stride very easily by even the slightest of unintentional 'blocking'. Flores/vd Voort and Bugl/Straniak both had 100 mph 2-stop machines, with the first mentioned having perhaps the greater airspeed almost certainly because they had a much more streamlined and 'clean' model.

The Jury did a good job, being fair and consistent. They spotted most of the 'foot-outs' and had obviously done some reading on 'blocking' since the blockers received prompt obstruction warnings and 'hand off the chest to negate the block' was allowed. To my British eyes the Jury was soft on whipping although the Continentals may well have viewed this differently. (One wag in the British camp termed this contest the 'Oktober Whip-fest' and suggested that the next one be held in Munich!).

The Italian-Dutch team of Flores/v.d. Voort (Flores is an Italian working in Holland) established themselves as being amongst the top teams in Europe by their victory at Utrecht. Their final time may have been relatively slow, but who can argue with heat times of 4:10 and 4:13!



The British performances were varied, however three teams did reach the semi-finals, a number exceeded by no other country, although none did well in the semis. In the heats both Jim Broad and Steve Haycock supplied their pilots with good settings only once but these were sufficient to result in good fast times for these teams. Smith/Fry and Sutherland/Woodside were far more consistent, the latter team being particularly unlucky to be pipped for the last semi place by just 0.4 sec, by their fellow Norwest club entry. Harknett/Giles and Gray/Norman just were not quick enough with Gray/Norman inexplicably losing range in the heats from their Rossi RV diesel. The most disappointed team must have been Rudd/King who, through missed catches in both heats, did not record a time; their Rossi FI model was formidable in practice, showing 23.5 sec/10 laps for 36-40 laps (good enough to have reached the final).

The final was a big disappointment with Bugl/Straniak disqualified at the halfway mark when Paul Bugl put his foot out of the centre circle when his pitman Straniak totally missed a catch due to being temporarily blinded by the then very low sun. The Metkemeyers retired shortly afterwards when the shut-off re-set mechanism on their model failed. So Flores/vd Voort finished on their own in a relatively slow time. With three really fast models hitting the final, we had all expected something better than this. Still the early stages of the final had been superb with three models really honking around and a very tight contest in the middle.

1. Flores/vd Voort (Netherlands)	4:13	4:10	8:40	Bugl
2. Metkemeyer bros (Netherlands)	4:08	4:12	rd.	Bugl
3. Bugl/Straniak (Austria)	4:10	4:17	disq.	Bugl
4. Tribe/Broad (GB)	4:19	5:08		Bugl
5. Visser/Buys (Netherlands)	4:19	4:28		Bugl
6. Peterson/ Geschwentner (Denmark)	4:20	4:18		Bugl
7. Smith/Fry (GB)	4:21	4:28		Bugl
8. Gürtler/Baumgartner (Austria)	4:23	4:19		Bugl
9. Clarkson/Haycock (GB)	4:25	4:44		K&B
10. Sutherland/Woodside (GB)	4:26			K&B; 14. Giles/Harknett (GB) 4:34, Bugl; 15. Gray/Norman (GB) 4:41, Rossi; 20. Rudd/King (GB) rtd. Rossi.

Just look at all of those Bugl's, quite a few of them rather old ones too. The majority of the top Bugl operators (including the first three finishers) all used Bartels 'Baumgartner' props, mostly at 175-180mm dia and 180-185mm peak pitch, all well thinned and a few de-area'd. All of the British except one used a John Gray prop for at least one of their flights.

Personally I enjoyed this contest, liking particularly the efficient and very friendly organisation. The administration officials really tried very hard to make all of us have an enjoyable and trouble-free contest.

#### 1976 TEAM TRIALS Little Rissington, 7th September

*FAI Team Race - (reported by Bob Horwood)*

With only one circle available for flying, practice had to be held before and during the meeting, and three 45 minute sessions were provided for this purpose. Being the first Trials at which times from other SMAE competitions could be counted, this meeting proved an interesting experiment - allowing some teams room for trying things they would not have done under a normal Trials set-up.

Four teams already had good times from other SMAE meetings, but not Smith/Fry despite being obvious favourites following their performances at Verviers, Wyton and Woodford. No one could say that one poor day could jeopardise their chances of a team place, as in theory only one good time was required if adequate performances had already been recorded.

Six rounds were flown, the personnel in each heat being altered to provide a variety of competition. Notable in Round 1 were Heaton/Ross with 4:20, Rudd/King at 4:32 and Clarkson/Daly plus Smith/Fry tying at 4:36 - while the Tribe brothers recorded a surprising 5:13. In Round 2 Clarkson/Daly improved by 4 seconds and looked certain for a team place as a 4:30 seemed like being the qualifying time - and they had four more rounds in which to improve. Rivals Smith/Fry looked desperate at 4:35 - they needed a good string of times to be successful. They were more fortunate in the next round, recording 4:29 despite a poor stop, and backed this up with a subsequent 4:28 and eventually a flawless 4:19 to show their true potential and to snatch a team place away from Clarkson/Daly who were beset with troubles and could not find sufficient airspeed.

Heaton/Ross put in their usual faultless display of teamwork, and recorded a set of very fast times - indeed when it was obvious that a team place was theirs, they then threw caution to the wind



Bob Metkemeyer warms up for a heat at Utrecht with latest very fast racer - Bugl powered naturally. Despite this model being very susceptible to blocking the heat times are really good - he and his brother must be favourites for a sub 4 minute heat at next year's World Champs at this very same circuit.

to make an attempt on the British record - result being a pair of 4:13s from their Bugl powered racer.

Rudd/King's position looked uncertain at first with a couple of slow heats, but a 4:27 from their new Rossi model, backed by a 4:32 proved sufficient in the final reckoning. The only other team to seriously challenge the top four were Gray/Devonish, but in the third round, after they had found a lot more speed in practice, disaster struck. They took off with lines crossed over those of Clarkson/Daly, and despite fast work from Dave Clarkson who jettisoned his handle as soon as John Daly had the model in his hand, it was too late - John Gray crashed, writing off both model and Joe Devonish's last good HP15.

#### Speed (reported by Mike Billinton)

For FAI speed the Trials were effectively spread over five contests from April to September, each flyer being required to record four flights out of a possible 17! It is to the credit of the enthusiastic, though small, entry that they arrived at this final hurdle still determined to contest the team positions all the way.

Although after four contests the final outcome looked fairly clear, certain personality aspects were still to be tested. For instance, Gordon Isles, the clear leader to date, knew he had only to make one flight to maintain his team place. This knowledge, together with his awareness of his own special brand of ill luck combined to push his speeds down below his best. I believe he was also troubled by unfiltered fuel, a horrible aggravation to a man of Gordon's precise and clean workmanship. Fortunately, he came through the first two rounds with enough to give him 2nd place overall. Now that he has finally made the team we are certain to see his potential realised more freely.

Pete Halman, the eventual top man, and now to be the first winner of the new Alan Woodrow Memorial Trophy, was busily keeping his own counsel and laid down a very strong series of flights of consistently high quality using a Rossi that sounded quite powerful. Everybody using Rossis of course in the latest fully asymmetric gear. Pete has the air of a man who has represented his country before now, and has admirable quiet self-confidence.

Dave Smith, the eventual 3rd placer, had quite a different problem to solve! He arrived knowing he was in 4th place, with only a minimal chance of getting into the team. (Mick Tribe had a fairly strong hold on 3rd place at this time). Dave, desperately wanting to get into the team, dredged around for an answer, and under this very heavy pressure found it - five flights, all of them faster than his other early season qualifying flights; even more praiseworthy - no second attempts required - wouldn't we all like an answer like that! Technically of significance, Dave was the only man using a pipe pressure system.

Mick Tribe finally came in 4th having tangled continually with FAI Team race brother Ron during the day. It's sad that the point seems proven that invariably the specialist will succeed, as Mick's disastrous series of attempts proved. He just was not able to concentrate on the task in hand - I am sure the lesson will not be lost on him.

Finally Brian Jackson and Bill Firbanks made a belated entry into FAI again, mainly to prepare for next year's battles, and with no serious intentions of making the team this year.





It's only tiny, but the faulty fuel shut-off shown in Rob Metkemeier's left hand cost them possible victory at Utrecht. With modern techniques so advanced, there is so much scope for something to go wrong . . .

**Combat (reported by Headley Walker)**

*Rossimania.* All the dedicated dieselites seem to have caught it. Richard Evans, Mick Lewis and Vernon Hunt, who finished 1st, 2nd and 4th respectively used Rossi 15Ds to fight their way through into the team to represent this country, in the as yet unaccepted World Combat Champs. Only Richard Wilkens, 3rd with his Super Tigre - *Blasta* combination was the exception.

The fine calm day called for skill as well as extra mph and it is worth noting that the only Oliver Tigers to get through to the last six were used by Steve Malone who finished 5th.

Scores were high, and narrow margins the order of the day with Richard Evans scoring an average of 578 while the highest score of the day went to Vernon Hunt with 809 (six cuts).

Worthy of mention was 14-year-old Peter Degg of ADMAC who won his first three bouts by beating Nationals winner Bob Morgan and runner-up John Hammersley (both of whom only recorded one win) and Dave Wood who only won two of his five bouts. An off-form Mick Tiernan, 1975 Criterium team member also only recorded two wins.

Late afternoon saw Evans and Lewis clear with five wins each, so with Hunt, Malone and Wilkens four wins apiece it meant a fly-off. Sadly, Steve Malone had to withdraw through lack of flyable models and the resulting bout for 3rd and 4th places ended when Vernon Hunt conceded to Richard Wilkens, three cuts and two models down after two minutes.

All things considered a good competition with thanks due to the non-competing members of ADMAC who organised the event.

**Aerobatics (reported by Jim Mannall)**

There were nine entrants in the Stunt event this year; more than for a year or two, because of the increasing closeness of recent results and the real possibility of a 'new' team this time.

Despite the perfect weather some people had problems enough. John Heanon scratched from the first round as the engine in his new *Maxi* was not sorted. Pete Tindal with a freshly repaired (again!) *Chipmunk* was in trouble with a new tight Fox 40 which seized on practice flight before the competition started. However, with a very rich setting he struggled through the first flight, but suffered from lack of power (or wind - either would have helped!) Third place after the first round was Bill Draper with a new light-weight *Kittyhawk*, disguised in civvy colours and built in just three weeks. Jim Mannall and John Newnham both put in 'normal' flights to finish first and second in round one.

After his first flight Pete Tindal borrowed some fuel and disappeared down the runway to convert his engine from his own synthetic oil based fuel to a castor based mixture. He came back for his second round flight with more confidence in model and engine to retrieve the second highest score in the round. Glen Alison, his usual *Baga* with Super Tigre 46, now equipped with timer was now beginning his share of problems and suffered an early engine cut, as did Terry Taylor. John Lynch improved this round to overtake Bill Draper whose score dropped a little. Jim Mannall had an overrun (by four seconds!) despite a rapid 'brakes on' landing to leave John Newnham clearly in the lead. John Heanon came in this round and although close to Bill Draper's second score, was not really in contention.

So after two rounds there were five possibles for the three team places. Most precarious was Pete Tindal's position, for while an exceptional flight might even gain him first place, a failure from a very insecure engine would leave the field open for John Lynch

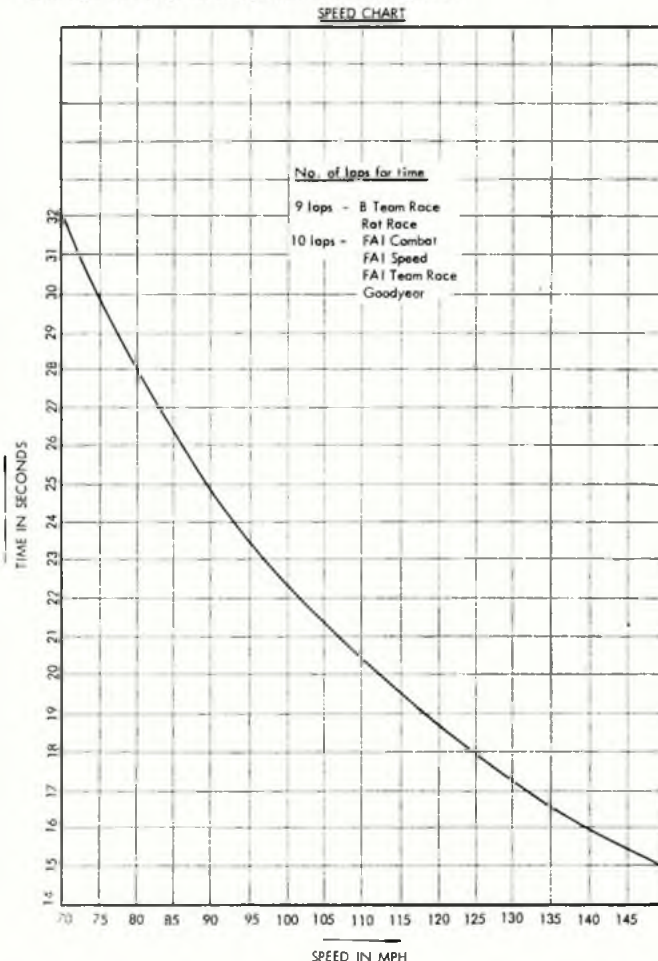
and Bill Draper. The two leaders made no mistake in the third round to record identical highest scores and Pete Tindal put in another good flight to end in a well deserved third place. Bill Draper must have found his form again to beat John Lynch. John's last flight although his best was beaten by John Heanon, the new *Maxi* already showing its potential. Glen Alison again had a very early cut, but Terry Taylor at last managed to storm through a complete schedule. Mention must also be made of Ron Parsons who finished in seventh place with a model designed to prove that flaps are just for show! To me he also seems to prove that a purely functional looking design does not impress judges, irrespective of its performance, and consistent reliability - of course there are others with more exotic designs who could benefit from a little more reliability!

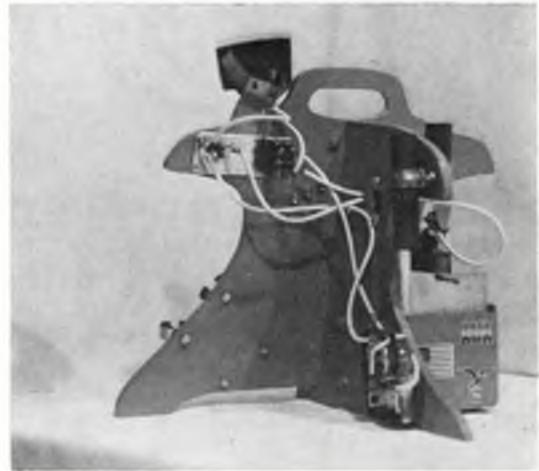
So the day ended with a new but familiar face in the team, and without any of the minor, or not so minor problems that the Trials can produce - much to the relief no doubt of Ted Fowler, who was press ganged into being contest director. Thanks to the judges, Messrs Harvey, Harley, Lowe and Rivens and not least to Mesdames Fowler and Mannall who added 104 scoresheets during the day - a record this year!

**Results (average of four judges' scores)**

Placing	Club/Town	Round			Best	
		1	2	3		
1.	John Newnham	Rolls Royce	959½	996½	1011	2007½
2.	Jim Mannall	Buchaneers	982½	942	1011	1993½
3.	Pete Tindal	Dagenham	865½	966	993½	1959½
4.	Bill Draper	Nottingham	876½	848½	940½	1817½

**Well just how fast does your model really go? Now that we have metric length Class B and Rat Race lines it is possible to draw a simple speed chart that caters for virtually all C/L events - the only variation being that for the FAI events and Goodyear the time taken for 10 laps and for Class B and Rat Race just 9 laps. Don't get too depressed by the results though . . .**





Two views of Bill Allen's (USA) 'Combat Pak' - which eliminates 90 per cent of the problem in a pit stop. A 2 volt battery with a special buzzer system and ammeter check and double check for 'dead' or flooded plugs. Light and handy, it carries everything needed in an emergency.

**SOME INFORMATION ON GLOW PLUGS**

This year a lot more glow motors have been seen in competition than ever before. Even in that erstwhile diesel dominated event - combat - recent contest results have shown that the glow motors are now making rapid inroads. Therefore a little bit of information on plugs may be appreciated.

Shortly after the Nats, I had a correspondence with Chas Taylor (the manufacturer of Taylor plugs) and this is how Chas explained the difference between 'hot' and 'cold' plugs, and why 1½ volt plugs have stronger elements than 2 volt plugs.

*"Basically, the element in a glowplug is predominantly platinum, the catalytic properties of which cause it to remain glowing when it is subjected to compressed burning fuel within the combustion chamber of the motor after the battery leads are disconnected. Platinum itself is a fairly soft metal and to give it added strength it can be alloyed with another material which, whilst providing more strength, must not be used in a manner which would effect the combustion efficiency of the platinum. The most commonly used alloying 'hardeners' are Thodium, Iridium and Ruthenium.*

*"A 'hot' plug will contain a higher proportion of platinum than a 'cold' plug, and thus will sustain combustion of cooler (eg straight) fuels rather more readily than a 'cold' plug. However, when such things as nitromethane are added to the fuel, the 'hot' plug's element is a little on the soft/weak side to cope with the higher heat and power released. The substitution of a 'hardener' for a part of the platinum in the plug element gives a stronger element which, with 'hot' fuels, is still capable of providing efficient ignition even though the platinum content is lower, because of the greater heat given by a 'hot' fuel when it burns.*

*"This general principle is easily demonstrated by trying to run a 'cold' plug on a 'cold' (no nitro methane content) fuel. Combustion is much more difficult to sustain than with a 'hot' plug on this fuel. A 'hot' plug, with its greater proportion of platinum will, of course, run perfectly well on 'hot' fuels (eg those containing a fair amount of nitromethane) but the element will become distorted more easily than that in a 'cold' plug because of the softer nature of the material used for the element.*

*"One serious problem that presents itself when trying to design a stronger plug element is the considerable difference in electrical resistivity brought about by the addition of the 'hardeners' mentioned above. In the UK, the vast majority of modellers draw their power supply to the plug from a 2 volt lead-acid accumulator. This in turn calls for an element able to withstand a full 2v (or even more since a fully charged 2v accumulator gives 2.2 to 2.3v). It can be appreciated that more wire is needed in a 2v element than is required in a 1½v element given the same wire diameter in both cases. This insistence by the majority on a 2v element is to some extent rather unfortunate, since a 1½v element becomes a shorter, sturdier coil of greater strength and therefore able to withstand greater stresses with a consequently longer effective life."*

To back up Chas's arguments about the effect of 'hardeners', I give below some physical data drawn from a standard reference book for platinum, and for platinum alloyed with a hardener.

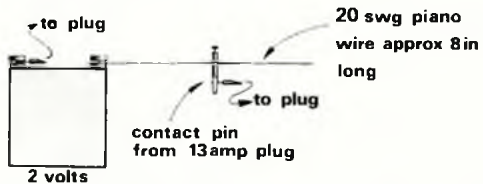
Metal	Tensile Strength	Melting Point	Electrical Resistivity
Commercial 100% Platinum	27	3215	65
90% Platinum 10% Rhodium alloy	50	3299	117

You will see that adding only 10% of a typical 'hardener' (Rhodium) has almost doubled the strength and the electrical resistivity.

Hmm! Try and work your way through that lot. My own conclusion has been 'cold' plugs for 'hot' fuels and *vice versa*, also that 1½v plugs should last longer than 2v plugs. This last conclusion has explained, to me anyway, why our American colleagues just about universally use 1½v plugs - they last longer! (A rather unbeatable reason.)

Now we all know that a 2 volt accumulator is far more practical than 1½v dry cells; in the long run an 'acc' is far cheaper and the typical small 'acc' has enough capacity to more than last out most contests. However, it is equally obvious that 1½v plugs are better than 2v ones. I noticed at the Nats that the visiting Americans Charlie Johnson and Gary Frost using glows in combat were indeed on this combination, and were using the neatest voltage 'dropper' I had ever seen to give a 1½v supply from a 2v 'acc'. This dropper, a coil of thick resistance wire which had a clamp at one end for attachment to one of the 'acc' terminals, the connection from the coil to the plug lead being a crocodile clip so positioned on the coil as to give the correct illumination of the plug, is a standard commercial item in the USA costing less than the equivalent of 50p. Because the amount of voltage drop given could be varied simply by moving the position on the coil of the crocodile clip, even on a flat lead acid battery the full 1½v could be obtained. This was the first variable dropper I had seen and it seemed a lot better than the fixed droppers I had seen before (like the classic 6 feet of bell-wire flex). It is obvious to me that the American approach as typified by Charlie and Gary is a far better one than our traditional UK approach (a 2v accumulator plus a 2v plug) and recommend it to all.

It is perhaps unfortunate, that the key item - the variable 'dropper' is not available here as a commercial item, but such an item is easy to make - my own is sketched below.



At full charge, a typical 1½v plug is adequately illuminated with the contact 7in. along the piano wire from the battery terminal; with a flat acc. this distance reduces to 4in.

I am sure that much better variable droppers can be built and hope to see some on the contest field very soon.

# MAGNET MEET

Paul Fynn reports on the Austrian event, held over 29/30th August

Heinrich Eder, the eventual winner, prepares to launch his 'wind' model which is quite conventional but for the aluminium foil covered flying surfaces, as described in the text.



THE KOLIBRI-POKAL is a bi-annual event designed to promote the interest of magnet flying amongst glider fliers, and the competition therefore is held in two sections on separate days. The A/2 contest was held first on the regular flying ground of the St Polten Model Club and full sized Aero Club, situated on the south west outskirts of St Polten on a small grass airstrip.

This year the British contingent did not fly in the A/2 competition as it was felt more benefit could be obtained by concentrating on the Magnet event, however we did pay a visit at the start of the contest and found that the wind was blowing ideally along the flying site, although conditions were extremely difficult due to turbulence created by a hill in front of the launch area. Downwind the site was tapered off by trees from the left necessitating a two minute maximum, but even so the eventual winner Siegfried Puttner, was only able to achieve this on four out of the seven flights, ending up with a final total of 758 seconds. The second man, Herbert Chmelik also had four maxes and a total of 757 seconds. Hans Zachalmel was third with 716 seconds.

Eventually we moved to the hillsides at Kolbing and found that the wind was blowing from the north-east rather than the east which is in the direction that the slope faces. The hill itself is very similar in shape to Ivinghoe Beacon near Dunstable, but there any similarity ends as the eastern side is terraced with orchards and vineyards. The top and northern face is capped with trees most of which are birch, growing to a height of about 20 feet. The remainder of the surrounding land is employed to grow cereal crops, chiefly maize, which

created a serious retrieving problem as maize grows to a height of about eight feet and usually totally envelops models that land in it. However, we were able to carry out a great deal of useful flying, and by Friday evening were well satisfied with the state of our models for the competition next day. We arrived at 7 am next morning to find the hill and the surrounding countryside totally enveloped in thick fog which fortunately lifted for the 8 am start, thanks to a light westerly breeze. Flying from this side of the hill proved to be a very much more difficult proposition than anticipated: not only was the rounded hill causing spillage of air to the left and right, but the wind was variable in both speed and direction. This meant that throughout the day models had to be constantly trimmed with both ballast and magnet adjustments – it was no surprise to hear that five consecutive five minute flights had never been achieved from this hill! In keeping with that tradition the eventual winner, Heinrich Eder, was in fact 193 seconds short of a full house. The variable winds continued to increase in speed until at the end of the round 3 nearly all the competitors had changed models – mainly to all sheet flying surfaced planes, appearing to be simply heavier versions of lightweight designs. The British contingent was not coping at all well with these conditions. Whilst Peter Dolby got away for a max in his first round, his flight times deteriorated as the wind speed increased and he made only a 69 second flight in round 4. Ray Sutton, on the other hand, started off badly with a 31 second flight then managed 207 seconds, had a bad third round flight, was just three seconds

short of a max in the round 4 and maxed in the fifth round! Out of us all, Ray got closer to sorting the hill out, and but for the two bad flights would have been well up with the leaders. Jeff Palmer's main problem was keeping his models in sight of the time-keepers as most of his flights went to the left or right of the launch area and were obscured from view by the trees. Having sorted that problem out, on the last flight Jeff's model drifted back over the top of the hill. I did everything wrong! A few minutes before the end of the first round, I D/T'd my lightweight model into a tree and broke it trying to get it out. Re-sorting to my (unsuitable) heavyweight model I then broke it on a trimming flight and had to use the now repaired lightweight model for the remainder of the competition. In the third and fourth rounds this was flown very quickly to the left of the launch area and behind the trees in a little over half a minute on both occasions.

One always considers that our European contemporaries have plenty of suitable flying sites available to them, but it would appear that they have no less problems than we do. One of Bernhard Schussler's models was particularly interesting when viewed in this context – it had been specifically designed so that in the event of it landing in trees it would dismantle itself to its component parts, and hopefully find its way to the ground. This is achieved by mounting the tailplane on an aluminium platform which is pivoted at the front. The D/T restrainer is fixed on this platform at about 75% chord and the tailplane is located on the platform by two lips over the leading edge. The TE of the platform protrudes some 7/16 in. and the tail is fixed to the platform by a rubber band looped over this protrusion and two other lips on the leading edge. This makes the tail easily removable in the event of a collision with a tree. As this type of model is launched by hand a suitably strong wing joint can be made using very short wing tongues giving an easily knock-offable facility to the wing. Whilst not actually employed on this model another thought that has been considered is the use of a sharply swept-back fin which would help to reduce the possibility of the model being hung up. The winning

*continued on page 1037*



Jeff Palmer one of the small band of British magnet glider enthusiasts had difficulty in keeping his model in sight of the time-keepers. Note the wooded terrain.



# FLYING SCALE COLUMN

by Eric Coates

Remember Jerzy Ostrowski's Lockheed P38 Lightning which took second place in the 1974 World C/L Scale Champs? Picture at right shows the model under construction. A large electric motor mounted in the nose retracts the undercarriage via a complicated system of gears and shafts. Model spans 78in. and features exhaust driven turbines.



AFTER THE LONG hot calm summer, autumn in England this year has been rather an anticlimax. Traditionally the period of calmest weather, when scale competitions are crammed together in successive weeks, conditions were far from perfect in September. Three major Area rallies were scheduled in the month: the Northern at Elvington, on the 7th, the South Midland at Cranfield on the 14th and the Southern at Odiham on the 28th.

The only scale competition at the Northern, and curiously omitted from the printed programme, was F/F for the long established *Selby Trophy*. Following the national trend this year, the entry list was light with only six competitors, although several other scale models were seen to be flying throughout the day. Conditions were not ideal, but far from impossible, with a steady wind of around 10-12 knots blowing.

After the poor showing I made in the *Eddie Riding* event with my DH9A, at Woodford two weeks previously, I had a trimming flight, with a little more elevation, prior to the contest. In the contest the old girl flew in her normal steady manner to return a creditable score of 510. Terry Manly flew the *Blackburn Sprat* again but this machine was in poor form that day, refusing to take off on all but one attempt and behaving badly in the air, with a poor transition and glide. His best flight score totalled only 160. The judges only awarded the *Sprat* the low static score of 460 which pushed it down to third place behind Ted Smales' venerable *Douglas O-38*. This flew very well in

Close up of Ostrowski's P38 reveals massive sprung U/C leg, specially moulded rubber tyre and rivet panel lines extending within the wheel well. Note all balsa construction.



difficult conditions for a rubber model. Dave Clarkson's *Sopwith 1½ Strutter* again flew very stably but the tired old Mills could not provide the power necessary for take off and in fact barely sustained the model in the air long enough to qualify – the engine-on landing nullifying all transition points. G. Jennings had a somewhat over-powered diminutive *Sopwith Camel* which cavorted about the sky performing high speed aerobatics to the great amusement of all assembled. The only other competitor, Mr Binns, flying a *Morane Parasol*, could not persuade his machine to remain airborne long enough to qualify.

## Results

		Static	Best Flight	Total
1.	E. A. Coates <i>D.H.9A</i>	458	510	968
2.	E. Smales <i>Douglas O-38</i>	340	340	680
3.	T. Manley <i>Blackburn Sprat</i>	460	160	620
4.	G. Jennings <i>Sopwith Camel</i>	281	280	561
5.	D. Clarkson <i>Sopwith 1½ Strutter</i>	308	140	448

A full selection of scale events was scheduled for the South Midland Area Gala, but with a near gale force wind and torrential rain greeting one on that Sunday morning I gave it best, not fancying a fruitless 300 mile round trip. I understand a few brave R/C stalwarts flew but have no details of results.

With a full day of rain and gales on the 27th and an Atlantic weather chart resembling a spider's web, I thought the Southern Gala was doomed to a similar fate, but miraculously the 28th dawned bright, sunny and calm.

More detail from the Polish masterpiece – the perforated air brake. Gear teeth cut onto the support arms of the air brake enable it to move rearwards and down. Model also fires rockets!





Fine Fokker DRI Triplane built by W. Nixon for radio control from Aero Modeller Plans Service (order No. RC 1213, price £2.30). Designed by Tony Lunt, this really is a 'big'un' - looks great in the air. End of commercial - it crashed!

Later in the morning the wind did get up to around the 10 knot mark, freshening in the early afternoon, to subside again later in the day. No rain fell before nightfall so a full contest programme could be run with only brief interruptions for necessary Service aircraft movement.

I had a very busy day, for after establishing the Scale Control, ably run all day by fellow Lee Bees club members, I competed in both F/F and R/C events. The previous day's weather put off the long distance travellers, for all events were lightly supported. Just four in F/F, three in C/L and 16 in R/C; of whom only ten flew.

When the F/F was flown conditions were almost identical to those prevailing at Elvington three weeks previously, and in fact, my DH9A returned an almost identical flight score of 532. The other entries all returned very creditable flight scores also. Rex Oldridge's pendulum controlled *Albatross DVA* put in a very nice flight in the late afternoon, following a take-off prang in the morning which necessitated a few repairs, to put it in second place. Doug McHard's other popular design, his *SE5a*, was flown into third spot by A. J. Coker. University College club-mate C. De la Nougeredge came a very well placed 4th, with his nicely detailed *FW56 Stosser*, in this very evenly matched contest.

The control line event was supported entirely by the Three Kings Club. Indeed it was facetiously asked of me if the three entries were, in fact, 'The Three Kings'. At the end of the day Wal Cordwell, flying his *Tutor*, had a clear victory over Vic Wilson's *Chipmunk*, with Cordwell Junior's *Thorpe Tiger* bringing up the rear.

R/C was a much more competitive affair with a wide variety of subjects stretching across both wars and beyond - the First War period being represented by W. Nixon's *Fokker Triplane*, built to Tony Lunt's drawings, and my *Martinsyde Elephant*. The 'flying ladder' was much more affected by the wind than the *Elephant*. In fact when performing some manoeuvres the Tripe seemed to lose all forward speed and cavort about apparently stationary. Unfortunately at the commencement of its second flight all aileron control was lost; the machine crashing on the grass at the side of the runway to bounce up again in a sickeningly spectacular cartwheel which all but wrecked the machine. Now I have got used to it, my *Elephant* handles quite nicely in winds up to 15 mph as long as it is the right way up. I must say I am not happy doing aerobatics in such conditions though, and this was reflected in the only modest flight scores I returned that day. A good static score, however, lifted me into second place

overall behind the ever consistent Brian Taylor, flying his *FW 190 A4* (not an *A8* as I incorrectly reported earlier this year). Brian's flight score was lower than usual in that strangely he completely forgot to perform one option manoeuvre, in his flight schedule, during the first round and a premature engine cut-off on his second mark prevented him remedying the situation. His high static mark though was sufficient to keep him comfortably in the lead overall.

WWII models were most popular, as a class of subject, as is usual in R/C contests nowadays. Unfortunately far too many do not feature retracting U/Cs which completely destroys the airborne character of these machines and usually results in down-marking of flying scores. Just such a pair of machines was the *Spitfire Mk XIV* and *Oscar* entered by father and son team of L. & J. Palmer. Bad flight positioning by this pair was also responsible for their low flight scores. It is surprising how many contestants throw flight marks away by the handful due to this one point alone.

One of the best flight performances was turned in by I. Vaus who eventually filled the 3rd place slot. Flying, at a very creditable slow scale speed, a *Spinks Aeromaster*, his manoeuvres were a fine example to all with regard to positioning. Close behind, with an almost identical flight score, was the *Bucker Jungmeister* of A. Sims.

## Results

Freeflight		Static	Best Flight	Total
1. E. A. Coates	<i>D.H.9A</i>	549	532	1081
2. R. S. Oldridge	<i>Albatross DVA</i>	511	430	941
3. A. J. Coker	<i>S.E.5A</i>	457	420	877
4. C. De la Nougeredge	<i>F.W.56</i>	396	432	828
Control Line				
1. W. Cordwell	<i>Avro Tutor</i>			837
2. V. Willson	<i>Chipmunk</i>			684
3. B. Cordwell	<i>Thorpe Tiger</i>			435
R/C Class 2				
1. B. Taylor	<i>F.W.190 A4</i>	563	441	1004
2. E. A. Coates	<i>Elephant</i>	614	325	939
3. I. Vaus	<i>Akromaster</i>	493	421	914
4. A. H. Sims	<i>Jungmeister</i>	447	424	871

## SMALL SCALE SERVICE

During the last three years the miniature rubber powered scale model has made an amazing comeback into popularity in the UK. This has been assisted considerably by the availability of good quality American equipment from John Stennard's *Small Scale Service* much of which I have reviewed in these columns over the years. This business has now become too big for John to handle any longer, as a spare time enterprise, but I am pleased to say it has been taken over by another organisation which has long been

Blackburn club member Dave Clarkson (as distinct from the gentleman of 'Between the Lines' fame) has his 'Sopwith 1½ Strutter' examined by one of the judges for the Selby Trophy.



keen on supplying the specialised demands of the scale modeller – *The Modellers Den Ltd*, of Bath. They will continue to handle most of the lines which John carried; including the popular range of Peck and Tern Kits. One of their new lines is Tern tissue stocked in 10 colours as follows: Red, Yellow, Dark Blue, Medium Blue, Light Blue, Orange, Black, White, Light Green and Medium Green. At 12p a sheet this is not cheap but considering a sheet will cover at least a couple of Peanuts not bad in these days of galloping inflation. Not as light as Jap, it is much easier to work and shrinks well. The colours are very bright and dense. All in all a much better material than lightweight Modelspan for miniature models. Do not get me wrong about lightweight Modelspan – for general purpose models, a little larger in size, I know no finer tissue, but its appetite for absorbing dope makes it far from ideal for a 'Peanut'.

For large radio and control line models the same establishment also offers a nice range of coloured lightweight nylon in a variety of colours. Although heavier than silk, nylon has the advantage of not needing a layer of tissue beneath it to prevent splitting. Although very strong, however, nylon covering does tend to be rather heavier and cannot be recommended for free flight powered models. For this type of machine I cannot recommend anything better, for covering, than lightweight silk doped over lightweight Modelspan. The only snag is that at the moment silk seems to have gone completely off the market! If any stockist can obtain any he would be doing the scale world a great service – if he lets me know then I could pass on his name in this Column.

For real jumbo sized models of WWI machines, *The Modellers Den* has in stock a heavyish grade of nylon in a light buff colour. When doped this is realistically like the varnished linen fabric so common to the under-surfaces, and all surfaces in the early part of the war.



New name to the results list of free-flight scale competition is C. De la Nougeredge – placed fourth at the Southern Gala with his well detailed Focke Wulf 56 Stosser.

Prospective users be warned though: this is a substantial material only suitable for models around six foot span.

Finally this month that old subject of matt dopes. As readers no doubt are aware these are almost unobtainable at most model shops and when available, at the better establishments, the range of colours is limited. At the Southern gala, Mr de la Nougeredge passed on to me the name of a supplier of a cellulose matting agent which enables any glossy cellulose based dope to be transformed to the desired matt finish. It is available, in quantities of ½ litre minimum, from Horace & Williams Ltd, Serene Works, Old London Road, Patcham, Brighton, Sussex. Tel No Brighton 56868.

## MAGNET MEET

*continued from page 1034*

model was also interesting in that whilst quite conventional in construction, the tissue coloured flying surfaces had been completely overlaid with a special plastic coated aluminium foil which is extremely strong. The material, which was obtained by cutting up a survival bag, such as is carried by hikers and climbers, was applied by coating the entire model with a diluted impact adhesive. After this had thoroughly dried the material was cut to shape and ironed on to the airframe having first fixed it around the perimeter of the item. The three great advantages of this material are that it can be seen for a great distance due to its tremendous reflecting qualities, it is extremely strong, and it also has the ability to prevent the passage of virtually all ultra-violet rays and thus prevents warping of the flying surfaces by sunlight.

During the course of the day I was able to have a long discussion with Hans Gremmer who told me how important it is that a magnet model should be completely free from warps if it is to be flown successfully from this kind of rounded slope, i.e. one that divides the oncoming wind rather than forces it upwards from a bowl. Certainly from the British party's point of view this was very good advice. Now that we have available in this country a German made magnet unit which employs a spring



Best of the British flyers, Ray Sutton, launches his model which was built from plans in the 1973 Aero Modeller Annual. A German-made magnet unit, now available in the UK, is fitted for steering duties.

loaded jewel and is virtually indestructible the problem of providing a reliable steering system has been overcome. It is now a matter of model design and trimming to make the craft return to its originally set course.

With the flying concluded by mid-afternoon, prize giving was held in the evening as part of the now traditional supper; speeches being made by the organisers, FAI Jurors and Burgemaster. A thoroughly enjoyable evening was then rounded off with – yes, you've guessed it – Tombola!

### MAGNET RESULTS

		Time secs
1.	Heinrich Eder (Germany)	1307
2.	Gunter Mussig (Germany)	1276
3.	Karl Lintner (Austria)	1263
4.	Robert Haller (Switzerland)	1254

*British Placings: Pete Dalby 17th, 859; Ray Sutton 18th, 848; Jeff Palmer 23rd, 725; P. Finn 29th, 586.*

(32 entries)



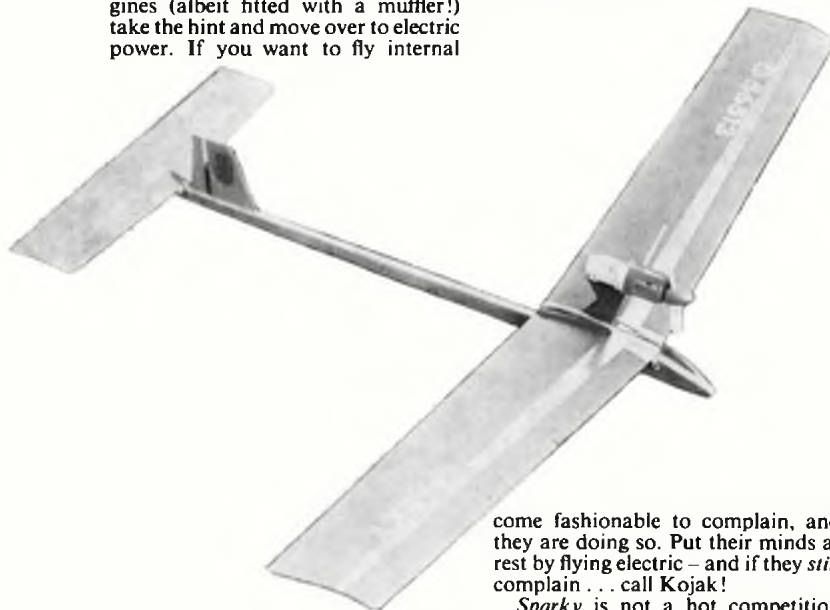
# SPARKY

a 32in. wing span, free flight model  
designed for electric power with the  
Mabuchi A-1 motor unit.

by IAN DOWSETT

IF YOUR LOCAL Council has restrictions on flying IC engine-powered models and the neighbours have started to complain about the noise you make with glowplug engines (albeit fitted with a muffler!) take the hint and move over to electric power. If you want to fly internal

size field. While convenient for those who fancy half an hour on a summer evening in the local recreation ground problems do arise by flying there. The locals have realised that it has be-

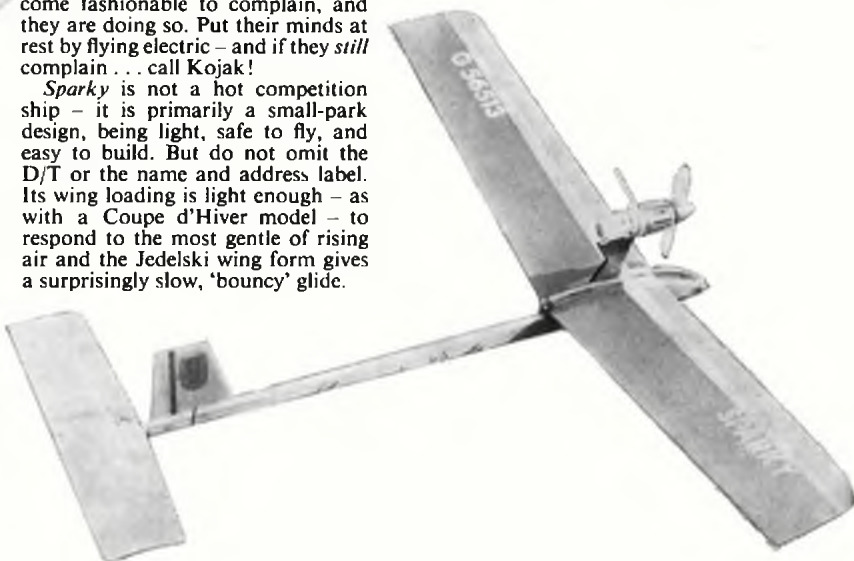


combustion engines, then move out of the urban locality onto the club field, well away from habitation.

The SMAE's public relations committee have had this fact impressed upon it during the last year, via an analysis of press cuttings which they have obtained to help them understand the problems which model flyers face. We know that, with the magnificent radio-control equipment available today, it has become almost child's play to keep that complex scale prototype in the air – providing the power is available. And unlike past days when we needed square miles to guarantee the safe return of the free flight type, the R/C model can be flown from the postage-stamp-

come fashionable to complain, and they are doing so. Put their minds at rest by flying electric – and if they *still* complain . . . call Kojak!

*Sparky* is not a hot competition ship – it is primarily a small-park design, being light, safe to fly, and easy to build. But do not omit the D/T or the name and address label. Its wing loading is light enough – as with a Coupe d'Hiver model – to respond to the most gentle of rising air and the Jedelski wing form gives a surprisingly slow, 'bouncy' glide.



## YOUR TV FULL SIZE

Do try to select light wood for the structure – that way, the model will bounce, if by any mischance, it hits the ground hard. Start construction with the wing, pinning down the rear portion of the  $\frac{1}{8}$ in. sheet surface flat on the plan and gluing all ribs in place, using non-shrink PVA adhesive. When dry, lift from the plan, turn right way up and keep the rear portion aligned with the building board by placing weights on top (not too heavy!). Having chamfered the rear of the  $\frac{1}{8}$ in. sheet front portions, glue to the ribs which protrude from the rear sheet. When the whole is dry, the wing can be lifted, the root ribs sanded to a chamfer to give the correct dihedral, and the two wing panels glued to the  $\frac{1}{8}$ in. sheet rib W1.

The tailplane is equally straightforward. Starting inverted, glue the last half inch of the rear parts of each rib to the  $\frac{1}{8}$ in. sheet surface, and when dry, apply PVA to the rest of the ribs (ie the forward portions which will touch the sheet) turn over and gently curve the sheet surface

*continued on page 1040*

# NO FREE E PLANS!

## BRISTOL SCOUT

a 24½ in. wing span, all sheet, semi-scale free flight design for 0.3-0.5cc motors.

by G. E. WHITEHEAD

THERE ARE, or have been, so many attractive full sized aircraft that when the scale modeller is looking for inspiration, very often he is spoilt for choice. If, like myself, you enjoy R/C scale, it is a most frustrating thought that it is impossible for one person to make even a fraction of the models



he would like to, in the available time. In an effort to get some of the most attractive planes out of my system, I hit upon the free-flight all-sheet idea, as represented by my previously published *Nieuport II* (plan no. FSP 1172, price 35p) and the *Bristol Scout* portrayed here. Construction time is minimal while cost, even by today's standards, is low, and flying pleasure so far has been infinite. At the 1973 Nats, where I flew the *Bristol* in the calm evenings, I counted no fewer than three *Nieuports* built from my plan. If a few of you build the *Bristol*—or, more importantly are encouraged to sit down and draw up your own plans in the same vein, perhaps we could have our own all-sheet scale class at the Nats!

For the uninitiated, the *Bristol Scout* was one of the higher performance Scouts used by the Royal Flying Corps during the early part of World War I, and like the *Sopwith Tabloid* (another 'sitter' for the all-sheet treatment) was developed from a pre-war racing machine. It was not long before the *Bullet*, as it became affectionately known, was armed with a variety of guns, but the absence of a suitable interrupter gear meant

that most of the arrangements for fire-power were home-made. This did not prevent Major L. G. Hawker from gaining the Victoria Cross for

shooting down three enemy machines in one combat. I could not locate a photo of his machine, but a description in Profile No 139 indicates a mounting as shown in the photos of my model.

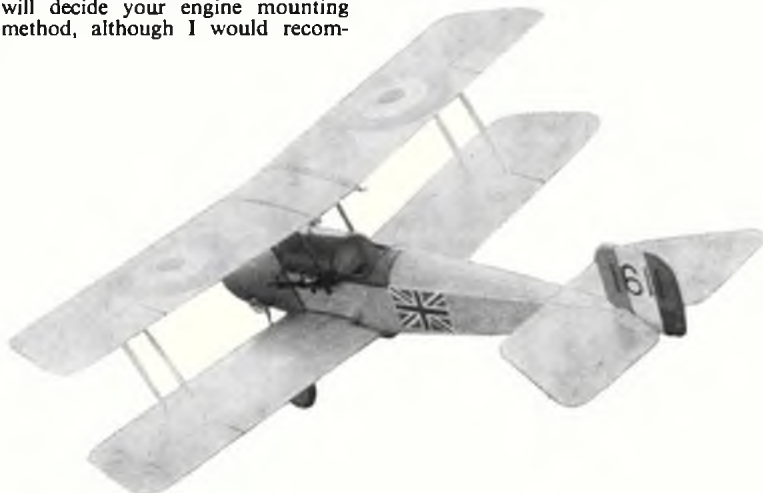
### Construction

Firstly the fuselage — your engine will decide your engine mounting method, although I would recom-

mend radial mounting for simplicity. However, since two bits of hardwood and a scrap of aluminium is about one tenth of the cost of a metal mount for a DC Dart etc, a suggested beam mount is shown on the plan. After cutting out all parts, glue the fuselage doublers to the sides, and F1 to F1B, using an impact adhesive. Next, glue together the sides F1, F2 and F4 and allow to dry, ensuring squareness. Join the tail end and add the remaining formers. Bind and cement the cabane struts to the formers F3, then add F3A and cement to the fuselage.

The front decking and cowl is assembled as follows, having first made card templates as necessary (use bent sheet — do not plank as this is heavy and takes a lot of sanding). Cover from F3A to F5 in one piece, then the top decking from F1 to F3A, followed by the two side pieces from F1 to F3A. The cowl front is detailed on the plan, and is only added after engine installation is finalised. Add the bottom sheeting and stringers then cut out the cockpit aperture and sand smooth.

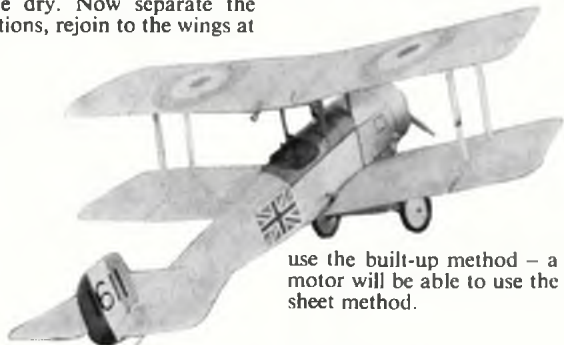
The wings are simply made by butt



joining 2in. wide and 3in. wide sheets together and cutting to shape. The rib positions are marked, the sheets steamed to a curve, then the ribs glued and pinned to them – the whole being pinned to the building board until quite dry. Now separate the centre sections, rejoin to the wings at

wood. I tried both, and found that the built-up structure, covered, doped and fuel proofed only weighed as much as the sheet structure *before* the latter was even doped. If you are using a Cox Pec-Wee for power, then

weight did not paint the model all over. The Union Jack needed a fair amount of care, patience and adhesive tape, but adds immensely to the character of the model and is well worth a try. When painted to your liking and fuel proofed, finish the struts, add the gun, and pray for calm weather.



use the built-up method – a heavier motor will be able to use the simpler sheet method.

#### Finishing

Lightweight Modelspan tissue is banana-oiled onto all sheet areas and sanded well. Simulated metal panels can have a coat of sanding sealer before the silver is added. I think that the buff colour of clear-doped wood is attractive, so to save

the correct dihedral angle and add reinforcing tape. Sand all edges round and remove the lower wing cut-out.

Both the tailplane and rudder can be cut from light sheet, as shown on the plan, or assembled from strip-

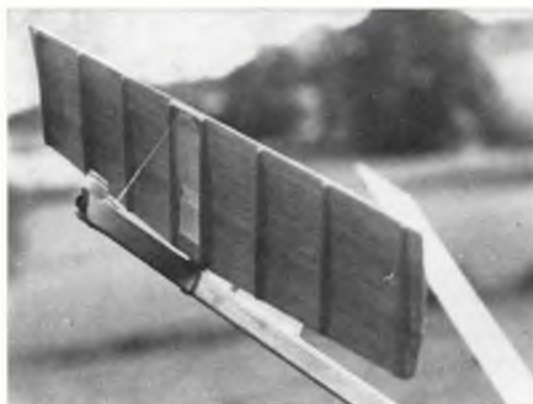
#### Flying

Check the centre of gravity and add lead to balance as necessary. The prototype weighed about 9oz. including lead, and used a 5 x 3in. propeller fastened to a Cox Pec-Wee engine running on Keil Kraft Nitrex 15 fuel. A celluloid trim tab stuck to the lower right hand wing trailing edge enabled warps to be counteracted, and a left hand glide from a hand launch is the first requirement. Under power, use rudder to adjust for left-hand circles. The original climbs quite slowly in wide left-hand circles, and after a two minute run on a full tank reaches only 200 feet altitude after which, its reconnaissance completed, it glides gently to earth ready for another flight.

## SPARKY

*continued from page 1038*

The tip-up tail dethermaliser is not just for decoration – use it and keep your model *your* model! Note the snuffer tube embedded in end of fuselage, packing at rear for trimming (sand it down to remove a stall) and simple curved sheet construction used for tail. Keep the tail-end light to avoid using more ballast. Picture below right shows the detachable motor pod – it is held in place by the wing retaining bands. This allows the motor to fly off in the event of a hard landing without damaging the model. Glue piece of wet/dry paper on the underside so that it grips the top surface of the wing securely.



over, holding in place with weights or pins.

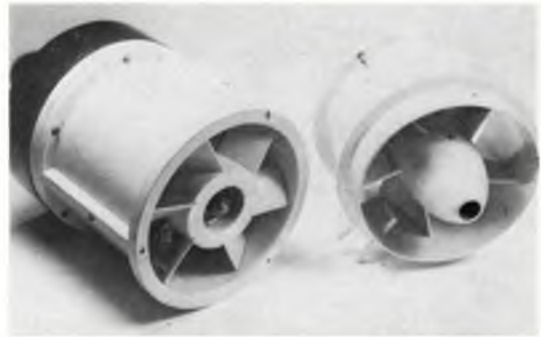
The fuselage has  $\frac{1}{4}$ in. sheet each side of the  $\frac{1}{2}$ in. x  $\frac{1}{2}$ in. longerons and spacers – make sure that the boom is straight, otherwise you may have a permanent glide circle in the wrong direction! If you are worried about getting the fin on vertically, make it extra long on its base and glue to the fuselage side. The 'cockpit' can be  $\frac{1}{2}$ in. balsa sheet, or if you prefer (as I do) hot-mould it out of acetate sheet. The pylon is laminated from three pieces of hard balsa as shown,

with a spruce top, to which the engine mount for the Mabuchi motor can be screwed.

If you want a colour trim, *keep it light* by using *Magic Marker* sprays, or a felt pen, then a light-sprayed coat of sanding sealer will keep the weather out. If built as the plan, and with the CG as shown, all adjustments can be made via tailplane packing and small movements on the rudder (go easy). Trimmed right-power, right-glide, you will find *Sparky* a docile and enjoyable model to fly.







Ducted fan motors seem to be enjoying something of a fresh appraisal these days, culminating with the commercially available Scozzi 'Turbo Ax' unit. This unit made by Robert Kress (and described in the text) is composed mainly of plywood and balsa to facilitate ease of construction by the modeller and is the kind of thing that an enterprising kit manufacturer might take up.

## Latest Engine News

by Peter Chinn

APOLOGIES TO engine enthusiasts who looked in vain for the usual engine article in the October and November issues. Other commitments forced a temporary disruption of our schedule, but we hope to cram a little more into this month's article to partially make up for the omission.

### Kress ducted fan

Robert W. Kress is Deputy Director of Product and Technology Development at the Grumman Aerospace Corporation, Bethpage, New York and was Chief Engineer on the Grumman F-14 project from its inception through to the early flight testing of this aircraft. He has also been a modeller for many, many years and last year we learned that he was personally acquainted with an old friend of ours, Joe Dale, who used to manufacture, among other things, Aerotrol radio equipment back in the early post-war years and is an inveterate experimenter himself.

Among the model projects on which Bob Kress has been working is an ingenious method of prop selection and thrust calculation. Another project is the design of ducted fans individually matched to specific engines for optimum performance. In a letter that we subsequently received from him introducing these activities, he wrote: "I have followed and greatly enjoyed your engine technology columns in the magazines for many years and have used your horsepower/rpm curves in various calculations. I have enclosed a draft of an article on prop selection and thrust calculation

which I wrote a few years ago and never did anything with. It uses your data as a basic input and seems to work quite well. It also uses RAF prop data collected in 1937 as a data input! Surprisingly, prop efficiency seems to hold up quite well at model scale.

"A while back I started fooling around with ducted fan design and thrust prediction. I built two ducted fan units, learned a lot about them (how not to do it!) and have finally evolved a fairly tractable method for designing

a ducted fan for a given engine with good accuracy. The method is based upon axial turboblower theory and has been checked against 'Joy Axivane' pump data, as well as Scozzi's recently marketed 'Turb-Ax' fan unit, for which the thrust I predict, based on your K&B 40 engine tests, checks within  $\frac{1}{2}$ lb. (6.25lb vs. 6.00lb).

"Ducted fans will always have the fundamental shortcoming of not producing enough static/take-off thrust for a given horsepower input, although



This purposeful looking ducted fan unit was designed and built by Grumman engineer Robert W. Kress. Design entails accurate matching to engine's performance characteristics. Example illustrated was designed for the O.S. Max-III 15.



First promised about five years ago, soon after the release of the Rossi R.15 glow-plug engine, the R.15 Diesel has only recently become generally available. Essentially a conversion of the standard R.15 glowplug motor, a reduced diameter contra piston is fitted to a separate add-on sleeve insert housed in a special head.

### OPS Speed 29-VAA

McCoy, Dooling, Fox, Super Tigre. The engines that have left their mark in 5cc class C/L speed over the past 30 years have been few, but the OPS Speed 29 looks like becoming one of that select number if its recent successes are any indication.

In general design and construction, the Speed 29-VAA is similar to the OPS 40-SPP. Both are rear-induction, rear-exhaust engines with tuned-pipes. However, whereas the 40-SPP belongs to a family of fourteen OPS 40 engines, each aimed at some particular section of the overall 40cu.in. engine market, the 29 is sold in two versions only, the model dealt with here which, identified by the suffix letters VAA – *Aeria e Auto da Velocità* – is for C/L speed and racing cars, and the 29-RCB, flywheel and throttle equipped, which is intended for radio-controlled racing boats.

The 29 has the same stroke as the 40 models (17.8mm) but the cylinder bore is reduced by 3mm to 18.6mm, for a piston displacement of 4.837cc. Several parts are common to the 29-VAA and 40-SPP including the crankshaft and front housing assembly, the backplate, valve disc and conrod. However, the 29 cylinder/crankcase is different, with smaller

*their performance is not too uncompetitive at higher speed. A practical R/C flying model can be made if you use a hot enough engine. The big attraction is, of course, the possibility of near-scale jet-propelled models."*

Bob Kress sent us a sample of one of his ducted fan units, photographs of which are reproduced here. The unit is made entirely of plywood and balsa, except for the glassfibre reinforced nylon engine mount and sheet aluminium cowl and the idea behind the project is that fan units should be individually design-matched to a specific engine and fuel. "This matching is essential to good performance – nothing performs worse than a ducted fan operated off its design speed point" Bob wrote. He believes that kits could be produced commercially to sell at a quite reasonable price, if anyone were interested in the idea. "Using your engine data it is possible to accurately design the duct diameter, number of blades, pitch, twist, straightening-vane curvature, tail pipe diameter, etc, for best performance, and to calculate the thrust, using my methodology."

The particular unit shown was designed for the OS Max-III 15 and has a duct i.d. of 3.5in. and a duct length of 7.5in. It has an overall length of 11.1in. and outside diameter of 4.1in. Weight, less engine, is 7.7oz.

o.d. cooling fins and the cylinder-head, which has a natural aluminium, instead of a black anodised finish, has a trumpet shaped combustion chamber in place of a bowl shaped one.

In common with all other current OPS engines, the 29-VAA features Schnuerle scavenging and a ringless aluminium piston running in a chromed brass cylinder-liner. The cylinder casing is wholly integral with the crankcase barrel and has three cast-in transfer channels. These lead to the usual Schnuerle porting setup of an angled main transfer port each side of the exhaust port and an upwardly inclined rectangular third port diametrically opposite the exhaust. The three ports open and close together for a total transfer period of approximately 128 degrees of crank angle. The exhaust period, extended to make full use of the supercharging effect of the tuned pipe exhaust system, covers 170 degrees of crank angle.

The flat crown piston is without ports or skirt cutaways and has a 5mm o.d. gudgeon-pin retained by wire circlips. The connecting-rod is bronze bushed at the lower end only, where it also has two oil holes. The crankshaft has a 3/8in. dia. main journal and a 7mm front journal, both running in brass-caged ball-bearings, the front one being a shielded type. The shaft has a full disc type crankweb with peripheral counterbalancing



The OPS Speed 29-VAA closely resembles the rear-exhaust, rear rotary-valve version of the OPS 40 but has a smaller diameter cylinder. Engine features Schnuerle porting, ABC piston/cylinder set-up, trumpet head and integral spinner assembly.



slots each side of the 6mm integral crankpin but without a sealing rim.

The backplate assembly features a counterbalanced valve disc of reinforced phenolic resin material of the 'Tufnol' type, approximately 3.4mm thick and mounted on a pressed-in steel pin. The induction period is lengthy at approximately 215 degrees of crank angle, the valve opening at 35 deg ABDC and closing, very late, at approx 70 deg ATDC. The machined intake venturi has a 10mm i.d. choke which, after allowing for the jet assembly and needle, gives an effective choke area of approximately 54sq.mm.

At the front end, the 29-VAA is fitted with a robust aluminium alloy spinner assembly, the machined prop driver, mounted on an aluminium split taper collet, being enlarged to 32mm.dia. to form the spinner backplate into which the machined spinner is locked.

The standard tuned pipe for the OPS 29 is OPS Part No. 118. This has a 15mm i.d. inlet, an 8.5mm o.d. outlet and is 33.5cm long, or approx 36cm from the cylinder axis when installed, but the manufacturer suggests shortening the pipe. A peak output of 1.8bhp at 25,000 rpm is claimed for the piped Speed-29 and to tune the pipe length to this speed will probably require shortening it by about 3cm.

Including its spinner assembly and exhaust stub, the Speed 29-VAA weighs 332g or 11.7oz and this is increased to 380g (13.4oz) when the pipe is added.

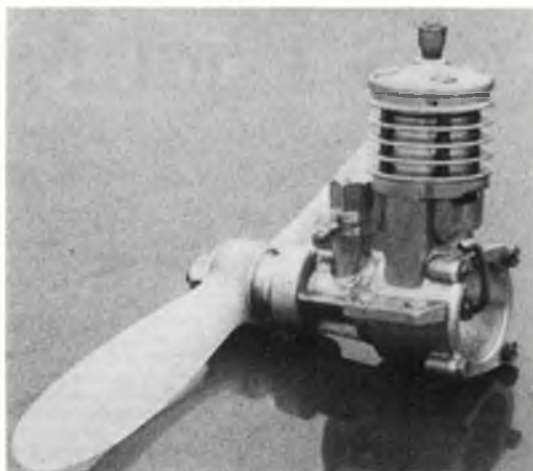
#### Rossi diesel

We have been having a look at an example of the recently introduced 'Diesel Combat' version of the Rossi R15 kindly loaned for this purpose by Ron Irvine, the UK Rossi distributor. This is basically the standard R15 *Normale* glow engine, with a diesel head and a smaller bore intake venturi. In accordance with compression-ignition requirements, the piston fit, 'squeak tight' at the top of the stroke is, of course, much closer but porting is unchanged. Measured timings were 40 deg ABDC to 60 deg ATDC for the shaft type rotary-valve, a 148 degree exhaust period and a 134 degree transfer period. The gas passage through the shaft is also the same at 7.6mm i.d.

Typically, the carburettor choke area is quite small: 8.0sq.mm. from a 3.2mm i.d. in contrast to the glow-plug version's 28.3sq.mm from a 6.0mm choke. Multiple surface-jets are retained but are reduced from six to three.

The most unusual feature of the

An interesting home built 2.5cc diesel engine made by German combat enthusiast Johnny Dubell - test flown but not yet competitive in this event where horsepower is becoming more and more important.



engine is the diesel head conversion. Instead of using a special cylinder liner, lengthened to accommodate the contra-piston, the Rossi has the standard glow engine length liner and this is fitted with a ground steel insert which extends the cylinder height by just over 5mm. This insert projects 2.3mm into the 15mm bore to clear the piston crown at TDC by approximately 0.5mm (20 thou) and carries a reduced diameter (12mm) contra-piston.

A 0.2mm soft aluminium gasket makes the joint between the cylinder flange and the insert, which is enclosed in a special head that ties the whole assembly to the main casting by means of six 2.5mm cheese head screws. Contra-piston adjustment is actuated by a T-head compression lever with M6 x 0.75 thread.

Incidentally, the idea of a separate extension insert to carry the contra-piston is not a new idea. Joe Dale of New York, whom we mentioned in our opening paragraphs, used to manufacture just such a conversion head for the Arden spark-ignition engines almost thirty years ago!

At nearly £40 in the UK, the Rossi diesel is not cheap but it goes without saying that it is, like all engines built by the Rossi brothers, a well designed and extremely well executed piece of model engineering. It is only ½oz heavier than the standard R15 glow, scaling a checked 178g or just under 6.3oz.

#### Divine Wind

The interesting looking in-line twin seen in one of our photos is the new Kamikaze (or 'Divine Wind') 40 made in small numbers in Japan. The engine was designed by Haruo Shimuzu and is a product of a specialist model shop in Tokyo, Rev-Up Models, which is run by Akira Fujimuro, well-known Japanese modelling writer and former C/L speed flyer who, earlier, worked with the Enya brothers.

The Kamikaze Twin has a bore and stroke of 16.6 x 15.0mm (6.493cc or 0.3962cu.in.) and draws mixture from a single Enya carb via twin rotary-valves to supply its alternate firing cylinders. The engine costs about £120 in Japan.



The 'Kamikaze 40' is an inline, alternate-firing twin cylinder glow engine made in small numbers in Japan. See item: 'Divine Wind'.



# FREE FLIGHT TECHNICALITIES

## PART ONE

*Martyn Cowley comments on the recent World Championships and takes a closer look at the A/2 glider 'hardware'.*

LOOKING BACK over the Championships this year there was a noticeable levelling-off of performance. Previous championships have often been contested by a handful of outstanding flyers. This year it was harder than ever because there was a levelling off of performance at the highest standards. Technical advances in terms of gadgetry and knowledge has been communicated on a worldwide basis and the flying skills throughout the world have reached a new high level of consistency. Perhaps only the performance of the Russian glider flyers, and the success of the North Koreans shine above the achievements of the other competitors.

The exceptionally good weather obviously played its part in the record numbers in the fly-offs. However it would seem reasonable to suppose that this year's record numbers in the fly-off, although a credit to the standard of flying, will be unacceptable in future World Championship events. The ball is now back in the hands of the FAI, and with it comes the task once more of limiting performance. When a competitor drops 1 second from a possible total of 1,260 and places 43rd as happened in glider, then the limits for deciding a World Champion are too fine.

The present situation of contests held during peak thermal activity followed by a large fly-off in sudden death cold air is obviously far from ideal. Any proposals that contest flying should only take place early or late in the day would also need to bear in mind that non-lift twilight times only occur in more northern latitudes. Had the contest been held earlier during the day in Bulgaria the results would still have been the same, as lift was present from dawn till dusk. Other proposals to drastically alter model specification will always meet with opposition. In fact it is the heavy performance penalties that have turned model flyers away from improving aerodynamic performance, and have now produced a highly tactical approach to the contests. The preparation and waiting is now more important than the flying, and this year's models had little more potential than those of over a decade ago.

F1C power flying is the only class where current technology and gadgetry has produced performance to outstrip the rule book. The new 7 sec power runs, if practicable, should reduce this performance at the risk of making the class into another tactical one. The successive 2 minute fly-off periods have long been recognised as unfair and never more so than with this year's extended fly-offs. The new progressive fly-off proposals will again help at the risk of making lift detection during later fly-offs all-important.

For Glider and Wakefield the most significant improvement would be to ban 'flapping' of models or assisting them in any way after launch. Such a rule would have reduced the numbers in this

year's fly-offs by at least half and probably to as few as a handful in each event. Several other models suffered adversely through being on the edge of such activity and thus having their own air disturbed. A ban on all forms of thermal detectors would also put the emphasis back on the personal skills of the flyer and reduce fly-off numbers. But you can't prevent flyers waiting to watch the progress of other models in lift and benefiting that way.

It may sound like sour grapes to say that the British contingent were not happy with the justice they received regarding timekeeper incidents. Two competitors out of nine lost their rightful place in the fly-off and the glider flyers were robbed of a certain team prize. This is no reflection on the Bulgarian organisers but rather a condemnation of present FAI rules. Timekeepers will continue to have difficulty in timing engine runs audibly while other competitors are running motors as close as 7m away on the next pole. The line cross re-fly rule is not enforceable, unless one timekeeper is allowed to run with the tower in order to observe line tangles. Timekeepers should be allowed to leave their pole positions, to avoid obstruction by nearby spectators in order to time models to ground level.

Whatever decisions and changes are made before the next World Championships the 1975 event in Bulgaria will always remain a classic in terms of organisation, spectacle and the record high levels of performance.

\* \* \*

THE TYPE of model designed for a World Championship will obviously reflect the anticipated conditions at the contest. The current trend towards increasingly sophisticated models featuring numerous gadgets to improve handleability and performance took a noticeable standstill at this year's Champs. This is, of course, a relative statement compared to the standards of our domestic contests. As previously mentioned, the type of thermal conditions under which the contest was flown obviously contributed to this state and, if anything, favoured the simple consistent model well flown, over the real aerodynamic performance models. This was certainly the case in Wakefield and Power where the now standard auto-rudders and variable incidence tailplanes were the limit of complexity for most. Variable geometry and delayed prop releases in Wakefield were disappointingly all but absent. The fixed nature of the launching position makes knowledge of thermal activity, using thermisters or bubbles, more important than ultimate performance, certainly during the preliminary rounds in any case.

The methods employed by different teams were many and varied ranging from physical indicators such as the familiar mylar strips,

**Very neat circle tow mechanism used by Peter Buchwald (Denmark), is fixed directly to aluminium pylon - shown here with latch released. Three nylon bolts limit hook movement: whole assembly is covered by semi-cylindrical hatch when flying.**



**A simple yet effective impulse mechanism is this 18 swg piano wire hoop used by Israel's Ovrutski; when the distorted hoop springs back to shape it jumps the towhook in the normal way, and is less prone to damage than the spring versions.**







Business ends of German thermal detection-pole mounted instruments are anemometer and thermister. Print-out unit plots wind data (left) and temperature (right) simultaneously. Third picture shows America's secret weapon - 'cat-tails', used to locate thermal activity. At right is Argentina's bubble machine.

aerodynamic concept. At times it seemed more like a meteorological contest rather than one for model aircraft and combined with the present trend towards actual thermal generation, perhaps still only in its infancy with flapping, the situation does appear to be getting a little out of hand.

**A/2 GLIDERS**

However, with gliders, tactical manoeuvrability during tow is the all important factor, and this year saw almost wholesale adoption of circling techniques by virtually all the competitors.

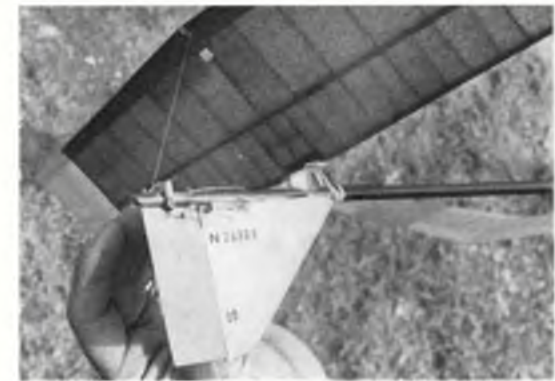
The secrets of circle tow mechanisms have long been made public, even if not to say comprehensible, in numerous articles. The two main types being the original Russian pendulum towhook variable rudder arrangement and the French offset aerodynamic balance approach, supplemented by the Danish impulse type towline ring with the Pradlice tension release as another alternative. All types were present with an amazing multitude of cross breed combinations of design ideas, utilising some features from each. In this area of glider design there is tremendous variety and ingenuity of ideas.

One of the practical problems of circle towing is that with a 50 metre towline the diameter of a towed model tracing a cone-shaped path above the flyer, necessitates a fairly tight diameter circle. This requirement usually conflicts with a desirable wider turn diameter during the flight, and it is not just as simple as using more rudder during the tow as the usual incidence and centre of gravity position set for the glider plus the drag of the line merely induces a spiral dive instead of the required circle. The French offset towhook overcomes this problem to some extent by inducing a rolling moment, enabling the model to be put into a banked turn and brought round more quickly than the normal rudder-only would allow. However, for models with a central towhook the only solution is to use a two stage auto rudder using wash-in on the inboard panel to keep the wing up. This of course then produces penalties of induced drag when the model is finally released into the glide. The Russians Lepp and Isenko overcame this problem on their models by using inboard ailerons connected to the circular towhook that enabled increased lift with down flap during the tow, with a neutral no-drag position for the glide. This system was seen in '73 at Weiner Neustadt, but no one else seems to have adopted the principle since.

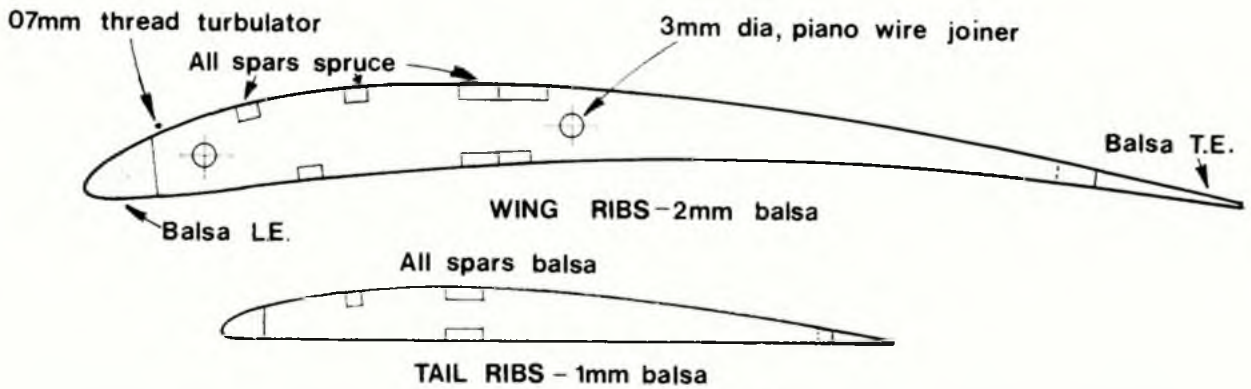
An alternative to the use of wing warps is the change of trim using incidence, and several flyers were using VIT gliders, including Peter De Boer from Holland. Movements ranging from 1/2 in. to 1 in. increase during tight circles produces a bouyant tow for thermal



Peter De Boer's highly complex glider - the hanging fob and plug is removed before flight to activate FM radio retrieval Tx mounted behind timer. Catapult latch also de-activates VIT mechanism for zoom launch. Below left: Canadian Willard Thompson's renowned winch! Vertical trigger near index finger activates plunger on small line drum to release pre-determined number of lops of line to give sudden drop in tension for impulse release. Rubber band from plunger to drum keeps line in place during tow - counter balance weight (bottom right) keeps things running smoothly when winding. Whole assembly mounted on short fishing rod for increased leverage/control. Below: rear end of Jim Walter's model, which uses high incidence set-up to fly tail-high. The tail mount LE is raised on short GF tube as seen to achieve this - VIT arm shown held in up position.







hunting. This tailplane position works concurrently with the rudder and is connected in the normal way to the pendulum towhook set up, until final tension released the latch for catapult rudder and normal tailplane incidence for increased speed and zoom launch.

This was also the first year where the Danish impulse type towline release was allowed, and a high percentage of the competitors used this method either on offset rings or more commonly on pendulum towhooks connected to rudder movement, similar to Elton Drew's latest versions. Many had simpler versions with no catapult release facility and included in this approach was Peter Alnutt who says he found the added complexity unnecessary, although he does use a drag line, which is an extra line running from the towline and lightly pinned on the inboard wing tip, which helps pull the wing round into its turn during release. Another even simpler method was employed by the Finnish team with no tow offset and no rudder movement other than a pin operated auto rudder. Surprisingly, they have found that with a forward ring position they can turn the model either clockwise or anticlockwise merely by towing to the desired side and without the use of any gadgets! This obviously relies upon fairly calm conditions, but is akin to the involuntary circle sometimes performed by off trim conventional models. The towline hooks were mainly of the standard tension spring variety, but Israel's Mouy Ovrutski used a loop of 18swg wire, which 'destared' to an oval during tension, thus storing enough energy for the springy release when desired, a similar system to that employed by our own Andy Crisp in this country. As for the actual release method, most chose to pluck the towline to produce the desired sudden drop in tension for release. The most advanced method however belonged to William Thompson of Canada whose complicated winch allows the sudden release of slack line using a trigger. The slack line is stored on a secondary drum to the main winch drum and the windier the conditions the more turns of line are stored to achieve release.

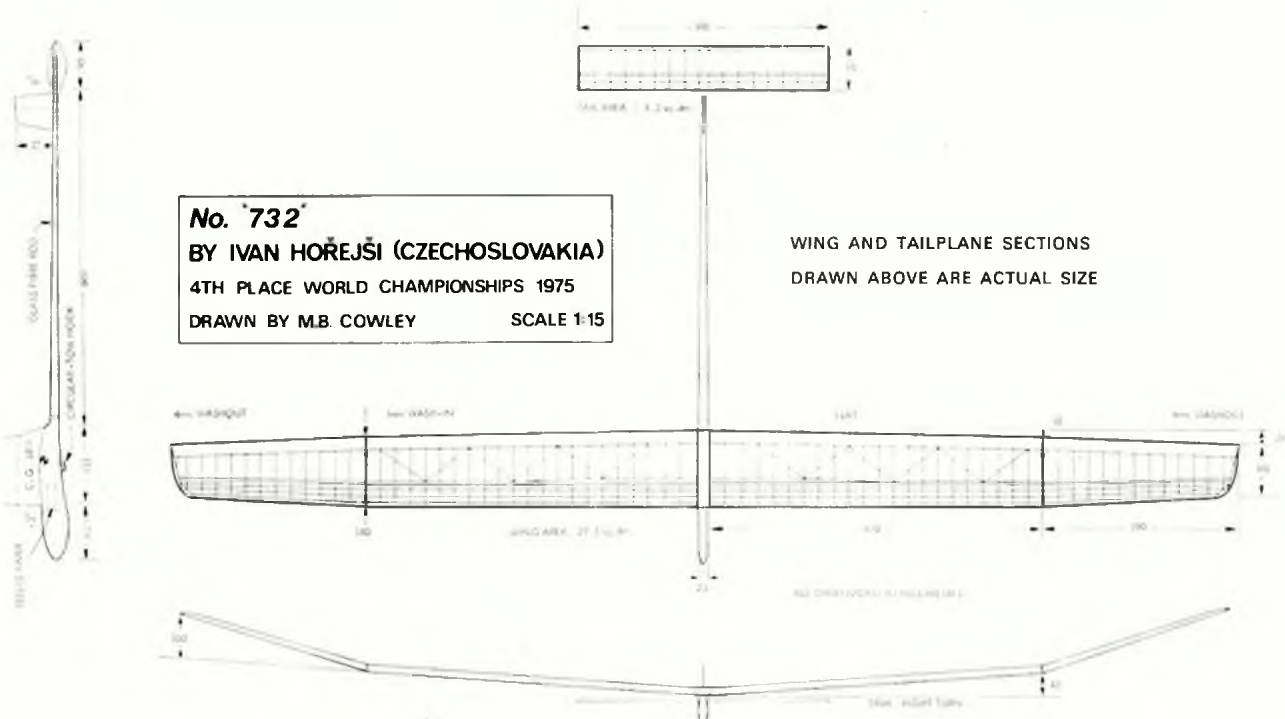
As far as improved aerodynamic and still air performance was concerned it was impossible to tell whose design was the best, certainly the contest is not aimed at finding such a model, consis-

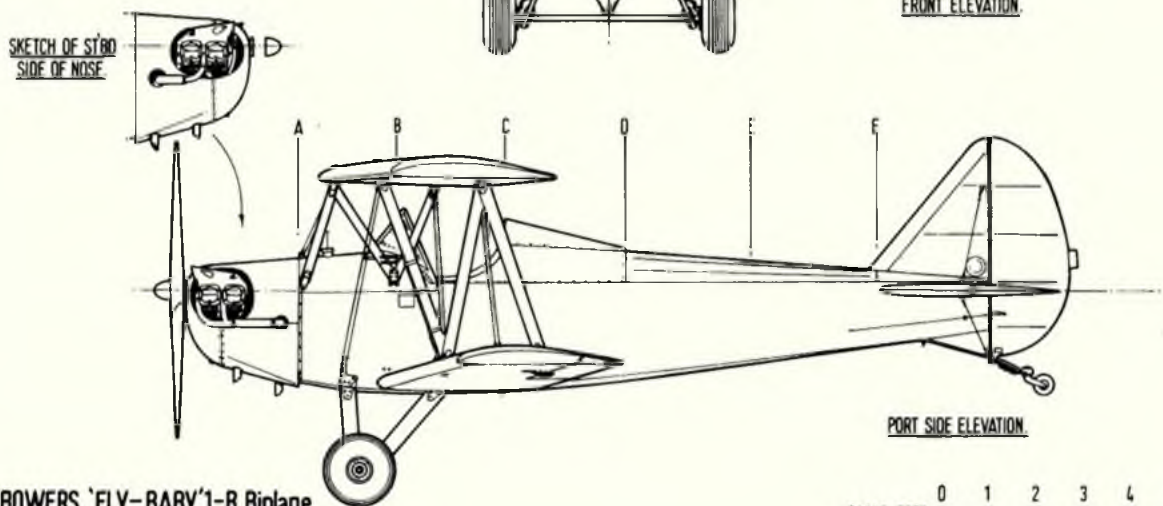
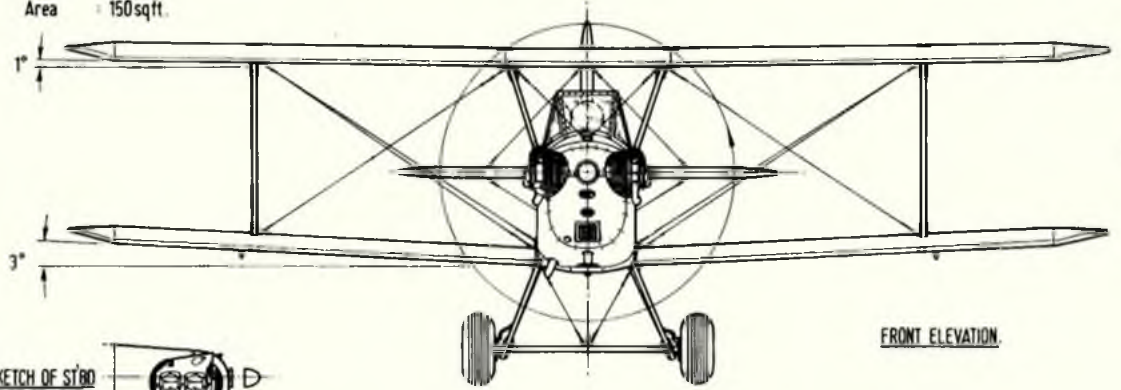
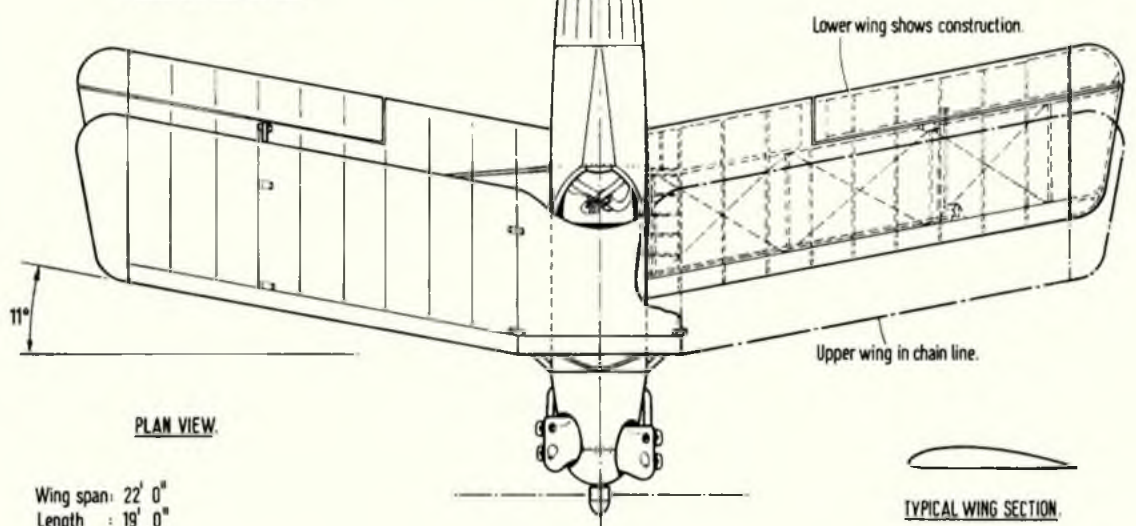
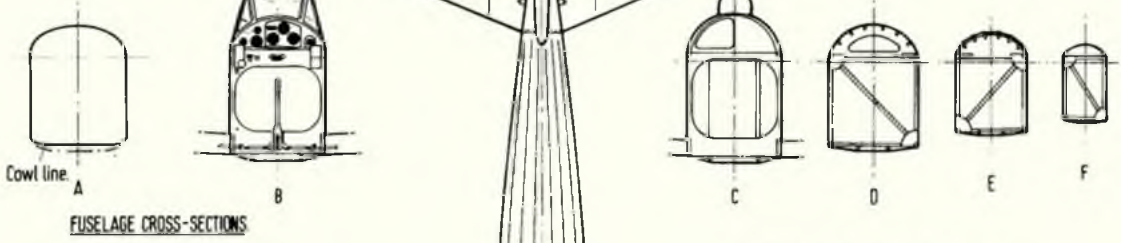
tency and flyability are still encouraged by the rules as being the most important factors. Many models used such features as turbulators in all forms, to achieve claims of improved performance. Pete Alnutt used the shearing elastic type on his model and discovered the best position and size by extensive flying tests inside a hangar to establish that they did actually improve performance. Following a recent NFFS Digest, proposing tailplane positions out of the normal turbulence-wash off the wing, Jim Walters used the 'Desert Dip' configuration of plenty of positive incidence on both wing and tailplane to achieve a tail high attitude during glide, whilst others used 'T' tail positions.

Super thin 'performance' sections were also being employed, and the traditional disadvantages of poor rigidity and lack of strength resulting from their thinness was often overcome using the latest constructional techniques. Such methods rely on the use of very light glassfibre coverings, using microglass cloth often as light as 20 gms per square metre to give a surface active structure. Running the grain at 45° chordwise helps increase rigidity, with the main core of the wing cut from expanded or extruded white or blue polystyrene weighs 15-20 kg per cubic metre skinned with light-weight balsa. These cores are cut using electrical hot wire bows allowing 5mm extra on wing sections for melting effect, and 100mm on spars to allow for spoiled ends. The first top offcut is replaced using weights for the second bottom cut out to avoid the core lifting and being miscut.

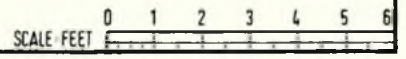
The male and female remaining offcuts are then used as moulds to help when skinning the core with light balsa of around 15gms for a 100mm wide sheet. The whole assembly is forced together either by enclosing in a plastic bag and using a vacuum pump or simply by using sand bags to give overall even pressure on a plate glass base for accuracy. A fine sanding of the polystyrene core helps reduce absorption of the alcohol thinned epoxy, and the weight of resin should not exceed the weight of the cloth. Obechi is popular when needed as it blends in more easily with balsa than does spruce during sanding and finishing.

**Next month: Wakefield and Power**





BOWERS 'FLY-BABY'1-B Biplane.







# Bowers Fly-Baby Biplane

AIRCRAFT DESCRIBED NUMBER 229



PETER BOWERS' famous low wing design for home-building has long been a popular selection for scale modellers. Though the original is large (28ft. span) and bulky by other single seater standards, e.g. the *Druiue Turbulent*, it has perfect proportions for aeromodelling. This might have been expected for Peter Bowers was a highly respected model designer in the earlier days of cabin power free flight models. The biplane came about in a desire to make the first Fly Baby convertible, and to explore the virtues of the 'Bi-Baby' case.

Heading photo illustrates simple assembly of the Bi-plane conversion from the original monoplane Fly Baby (EAA Photo). Two flying shots by Mike Stouffer convey the delightful atmosphere of this 'blown up' man-carrying model.



Span was reduced to 22ft., chord to 42ins. from the monoplane's 54 inches and this gave an increase of total wing surface area by 30sq. ft. to 150sq. ft. for only 46lbs. extra weight. Though the increased drag reduced the cruise to 80mph on the 65hp Continental engine, take-off and landing distances became much shorter and landing speed was reduced by 5mph.

The change to biplane configuration, using established spar pick-up points for the lower wing meant that the upper wing had to be moved forward, and since access to the cockpit called for the centre section to be forward of the cutaway, the classic sweep-back of the *Tiger Moth* and *Jungmeister* resulted. Sweep is eleven degrees, and the dihedral is one degree for the upper and three degrees for the lower wings. Combined with the tall centre section, the appearance is not unlike that of the *Tiger Moth* in miniature.

Though changes to the spar points on the lower wings were easily arranged, rigging wire attachments had to be fitted. These comprise steel straps bolted across bulkheads. Centre section struts conveniently attach to the engine bearer stiffeners at lower front, and to the monoplane landing wire lugs at lower rear. The centre section itself is fitted to the upper panels by external straps as on the old Waco biplanes, and stranded steel wire is used for all rigging.

Peter Bowers had a few problems with the authorities in certification of his Fly-Baby convertible which remains unique among home built. Officially it is known as a Fly-Baby (modified) but *Bi-Baby* is the better known term.

Though a local circuit flyer the Bi-Baby has made several long haul flights to EAA rallies. In 1969 Peter let Carl Schwartz of Renton take the Bi-Baby to the EAA convention in Wisconsin at Rockford. Total flying time there and back amounted to only ten minutes short of 52 hours! This included an exciting flight through McDonald pass where Carl had to seek updraughts to reach 9,300ft. in order to clear the mountains!

Coloured 'Boeing' shades of mustard and brown the Bi-Baby has white registration picked out in black line and offers an unusual challenge for scale modelling, especially if designed to follow the convertible configuration concept.

REPRINTS OF THIS FEATURE TOGETHER WITH 1/24th SCALE DYELINE PRINTS FROM THE ORIGINAL DRAWING ARE AVAILABLE AS PLAN PACK 2973 FROM AERO MODELLER PLANS SERVICE PRICE 35p.

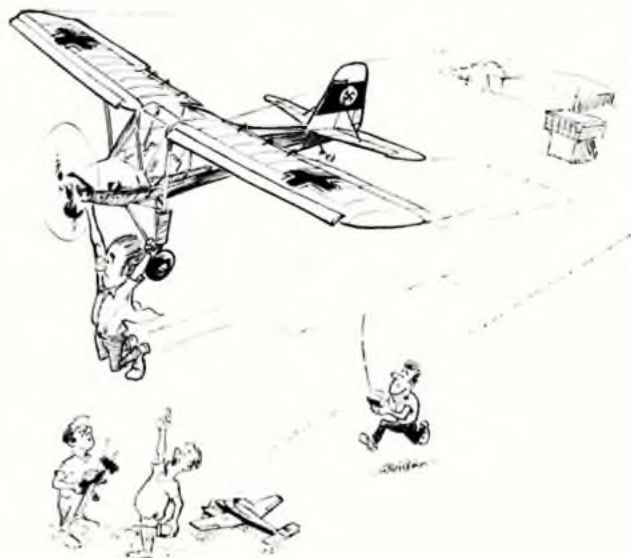


Aero Modeller

# topical twists

by 'Pylonius'

illustrated  
by Sherry



"No, its not the latest in hang-gilding. He forgot to let go."

## Hidden Charms

IN THESE DAYS of flying on isolated fields, that super model upon which the proud but haggard modeller has spent all those hundreds of man hours will only be admired, envied or criticised by other modellers. Between outings it will languish in some cluttered box room or blush unseen in a dark attic. It is the fate of model planes that they do not fit in with the general home decor, and cannot be constantly on view in the lounge if the aesthetic niceties are to be observed. Build a grotty old galleon, though, and it immediately takes pride of place under the reproduction cuckoo clock, where it will tastefully harmonise with the flight of china ducks over its mastheads. Even a vintage car model can be given the home and beauty treatment, sitting purposefully on the Scandinavian dresser or nestling among the petrol-gift tumblers. But it is a well known fact that housewives react to the sight of a model plane like Dracula to a sharpened stake. Nothing is more likely to come between man and wife than a plastic Lancaster, and many a fine craft has perished in a vigorous cobweb dusting. And, as for anything with a dirty big glow engine out-odourising the deodourisers and dripping mayhem and destruction on the fitted carpet, that would be the domestic end.

Few model planes are now built as pure ornamentation. That super scale model is there not simply to delight the eye but as a piece of blatant airfield oncupmanship, daring old so and so ever to bring out his tatty old semi-scale Spitfire again. Usually, though, it's a case of onedownsmanship as far as the latest form of airfield domination is concerned: monsterisation. Surely these dinosaurs are just as static and bulky at home as they are on the airfield. Being mostly vintage, all struts and stays, they can't just be stowed away in a model box or in a corner of the garage; they demand hangar style treatment. Fortunately, the affluent radio type usually have a home extension or two knocking around – little offerings to the wife and kids to offset the delivery of yet another hundredweight of balsa and plastic – and these can provide ideal stowage between the sauna and the rumpus room.

## Model army

If that noise-battered flying field resident would really like to realise a burning ambition he should join the Army. He might then get a chance to fire a machine gun at a nasty lump of airborne radio model, for it's the latest way of training the recruits – much more exciting than popping away at the old bulls-eye in the butts, and with a nice feeling of destruction about it.

But do they need to join the Army to enjoy the sport? It might be a way of avoiding those blistering complaints if the model club provided the odd beat up radio model for Sunday morning shooting practice. Imagine the delight on the colonel's face as he blasts away with his twelve bore at a dratted model plane. Far from getting his customary attack of apoplexy at the weekend he would be looking forward to a fine bit of sport.

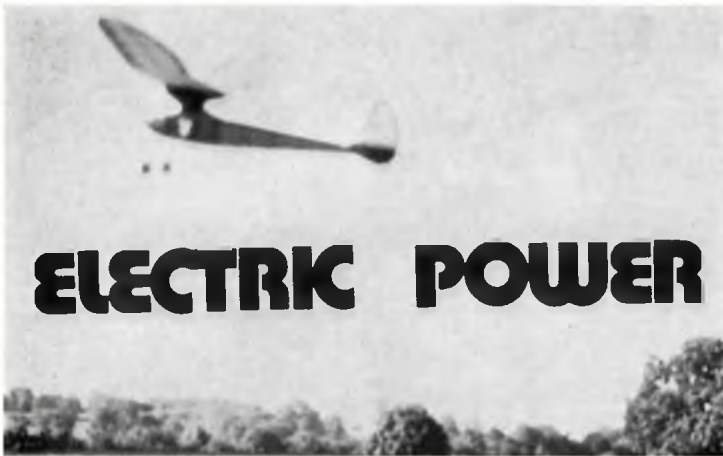
The only reservation I have about using model planes for target practice is that it debases what has always been a means of uplift and recreation. But I'd better not say too much, otherwise I might get shot down in flames.

## War in the air

In those mini wars, called international events, perfection of model craft and flying technique is, like patriotism, not enough. The crafty foreigners, superbly equipped for this sort of warfare by our amateur standards, have long since exploited the full potential of perfectionism: sculptors gasp in wonder at the finely realised contour of wing and fuselage, coach builders strain to learn the secrets of the mirror finishes, and watchmakers look to their laurels as the latest in noseblock mechanics is paraded. What is needed in addition to perfection and military style organisation is that essential of all campaigning: strategy. And what this means in terms of free flight contesting is tactical flying.

Now, it is not that we in this country have not learned the rudiments of tactical flying, but we seem to depend on the outward flourishes of the art, like bubble machines and thermal meters, rather than the rough skills of the real in-fighting. When it comes to flouting all the tenets of good sportsmanship, codes of honour and other good, gentlemanly virtues, the foreigners have no inhibitions, but we are still lumbered with memories of the Queensberry rules and Tom Brown's Schooldays. Even bubble machines are frowned upon by those who look upon model flying as a rugged, manly sport, although there are others who, after the poor British showing at the World Champs, think they should be jumped upon. No, what tactical flying is all about, and what we shy away from, is simply chucking your model into the tail of one that has got into a spot of lift. This makes for a waiting game, with everyone waiting for the other to launch, and team members taking over the vigils from each other as the wound rubber motors wilt in the heat.

All very un-British, and all very silly, since a few sensible rules would put an end to the whole tactical nonsense.



Two commercially available electric power systems are evaluated. Result? Electric power for free flight is a reality — now!

ELECTRIC POWER is not really 'new' of course, many individuals having experimented with it over the years with varying degrees of success. Certainly one of the foremost pioneers in this field was Graupner designer and development engineer Fred Militky. As long ago as December 1959 we reported a flight duration of 22 minutes recorded from a 1-2 minute power run achieved by Fred using a geared Micromax motor powered by two miniature 2 volt accumulators – the whole weighing a total of just 2½oz. A real breakthrough, but then Fred did begin experimenting with electric free flight in 1941 . . .

One of Militky's ambitions was realised in the early '60s when Graupner marketed a ready-to-fly electric F/F model, powered by salt activated batteries, but regrettably the modelling public were not ready for the 'throw-away-age' (the batteries were non-rechargeable) and the model enjoyed only a relatively brief production life. Very much more recently, several systems have been made commercially available for the radio control market, made possible chiefly by the recent advances in high power, rapid recharge battery cells – plus attendant development of electric motors able to cope with high amperages. However, our 1959 quote of "electric free flight will soon become reality for European modellers" did seem a little optimistic in retrospect!

The next milestone in commercial electric free flight in fact did not occur until 1972, when the American *Mattel*

concern released their almost-ready-to-fly 'Super Star'. This was certainly an ambitious project, aimed at the toy market, consisting of an easily assembled model with a foam wing and moulded lightweight plastic fuselage. Secret to success was the engine unit, consisting of a geared Mabuchi motor driving a 7¼in. prop via a rubber shock absorber coupling and incorporating two rapid-recharge Nickel Cadmium button cells. A further refinement of the model included a choice of 'flight programmes' – cams being used to alter the rudder position to vary the flight pattern. Unfortunately, the promised separate supply of spare motor units failed to materialise, which prevented modellers from experimenting with it. Nonetheless, the 'toy' demonstrated the practicability of electric F/F, as the batteries were re-charged directly from a standard Lantern battery, and a 3 minute re-charge resulted in up to 60 seconds of thrust.

Returning from a trip to Japan in 1974, our Managing Editor brought back news of yet more development in this field – and as proof obtained a sample of the Mabuchi A-1 unit. A few months later two parcels arrived at the Editorial desk simultaneously – one containing the *Monogram* E-power electric power module from British distributors A. A. Hales, and the other a complete *Mabuchi* A-1 outfit from their importers, Ripmax. Although both are designed to perform the same task, the approaches chosen were somewhat different, and bear closer examination.

The Monogram E-Power module is very similar to the original *Mattel* unit and needs no separate charger – a 6V lantern battery is used direct. Unit is quite bulky – measuring 5½in. from rear to point of spinner and with a maximum depth of 2½in. The plastic moulding includes provision for an undercarriage housing. Power is claimed to be the same as that of a CO<sub>2</sub> engine – a very good comparison it would seem. Models with relatively short nose-moment arms would be recommended for this unit, while 'pylon' mounting is not a very practical solution. Several mounting lugs are provided in order to securely screw the assembly into a model.





The Mabuchi A-1 motor unit together with its charger. Two button cells are carried within the white plastic moulding which clips onto the rear of the motor unit. Total overall length is 4in., maximum width 1½in. Unit is very easy to detach and may be changed from model to model in seconds. Charger uses four U2 dry batteries for power – the rechargeable cells being placed in the apertures in the top and the button kept depressed while in operation. Motor, batteries and charger are available as separate items.

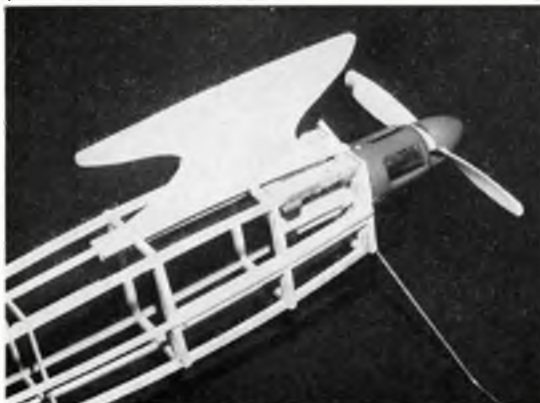
#### Monogram E – power module

Marketed by Monogram, the assembly is in fact manufactured by none other than the Mattel company, although it differs somewhat in detail from their original item. Completely self contained, being housed in a blue plastic moulding, the unit features a Mabuchi motor with a 7¼in. prop geared 3.27:1, and carries behind it two rapid recharge Ni-Cad cells plus a rotary switch. To charge the batteries, a 6 volt Lantern battery (996 type) is pushed directly against a pair of contacts within the moulding for up to three minutes. This results in up to one minute's power being developed, although of this only around 40 seconds is 'usable' power, the torque falling off rapidly as the batteries are exhausted. Price of the module is £4.95.

Moulded into the housing are a number of attachment points for screwing the unit into a model – although these did seem a little flimsy and could easily break off in a 'firm' landing. The instruction sheet supplied gave several useful tips regarding installation of the motor module within a model.

To give the unit a practical test, fellow clubmate Bill Burkinshaw installed it in an elderly Keil Kraft *Competitor*

The Mabuchi A-1 unit installed within the 'Playboy Senior' fuselage – a very simple task. Fuselage consists of balsa longerons, spacers and uprights the forward area then being sheeted with ¼in. balsa. This results in a very strong, stiff structure which is also light – perfect for this application, as well as for Cox .020 power, for which it was designed.



model – a very simple task, although the relatively long nose of this rubber power design necessitated an ounce of lead in the tail to help counteract the weight (2¼oz). Despite the now relatively heavy airframe (6oz) the model performs quite well as a sports flier giving a wide circling climb under power followed by an easy transition to glide – although the prop was still turning until landing – flights of one minute being commonplace. A trim tab was epoxied to the tail to offset motor torque and needed quite a large deflection. No doubt a purpose designed model would perform better, as a shorter nose would result in the tail weight being discarded.

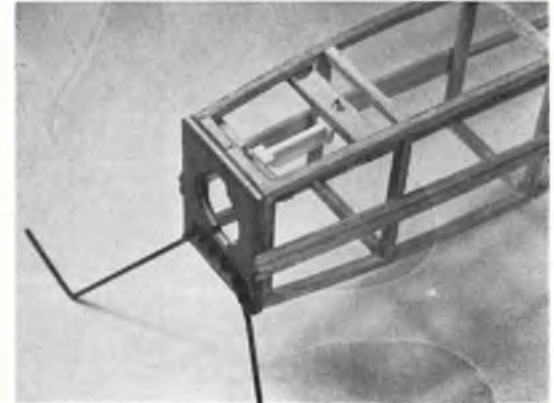
The only drawbacks found with this unit concerned its physical size – it is a little bulky due to the gearing employed, and access to the underside of the unit is necessary to enable the recharging battery to be connected. This latter point could easily be overcome by the builder making up a charging lead with a miniature jack plug and socket installed permanently in the model. The switch is also hard to accommodate – it was found better to shorten it and to turn it on via long nose pliers.

#### Mabuchi A-1

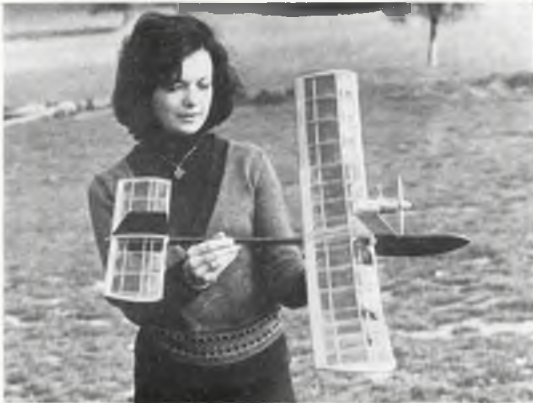
This unit differs from the Monogram module in that gearing is not employed – the motor turning a 4½in. prop direct. Consequently, the unit is much more compact, its major dimension being a diameter of 1¼in. The two button cells are carried in a plastic housing which snaps onto the rear of the motor – and this housing slips over a runner screwed to the fuselage to make the whole quickly detachable. To charge, the motor unit is detached, the button cells slipped out and then placed in a special charger. This charger is powered by four U2 dry cells – pressing the button for up to five minutes provides approximately 45 seconds of thrust, of which at least 30 seconds are 'useful' before the power falls away. The unit is robust and quite light at around 2½oz complete – its only slight drawback being that one must provide access to the motor in order to remove it for charging the batteries. Cost of the complete system, ie motor, batteries and charger is £7.25 – not including the four dry cells.

We decided to build a model to evaluate its performance, but what to choose? A lightweight design with plenty of wing area seemed ideal – and fortunately we had available a *Cal Aero Model's* mini 'Playboy Senior', thanks to importers Bob's Models. A little investigation showed that this should meet our requirements, and although designed for an .020cu.in. motor, the short nose moment should help offset the extra weight of the Mabuchi unit.

The only modification to the *Cal Aero-Model* kit consisted of making a suitable hole in the ¼in. ply front former for the battery holder plus the addition of two thin ply strips between the top longerons to which the nylon mount (supplied with motor) is screwed. Battery unit simply slides over this nylon mount – rather like a mini curtain rail.







A Mercury Gnome glider is easily converted to electric power thanks to a simple pylon of  $\frac{1}{4}$ in. plywood glued in the centre of the fuselage during construction. Note how motor is placed near the centre-of-gravity in order to avoid adding any ballast.



The Cal Aero-Models 'Playboy Senior' makes up into an attractive performer, with quite straightforward construction. Wood was excellent and the plans very clear - a perfect introduction to mini-vintage modelling in fact. Price is £3.00 - available from Bobs Models (Batley).

This 0.45:1 scaled down version of Cleveland's original design proved a joy to build - and in fact an ideal introduction to 'Old Timer' free flight. The wood was of excellent quality, while the die cutting of the ribs proved accurate and clean - only the spar slots needing slight assistance from the knife. The plan was very clear, as was the flying advice, although there were no building instructions - a strange omission. Of the parts supplied our only dislike concerned the tissue which certainly was *not* wet strength! A couple of sheets of Modelspan and all was well however. Construction was very straightforward and the resulting airframe proved surprisingly rigid - especially the sheeted nose area.

Fitting the motor was exceedingly easy. The only 'mods' from the standard kit being to cut a hole in the front former for the battery housing, and adding two strips of  $\frac{1}{4}$ in. ply across the top of the fuselage to which the nylon 'runner' engine mount could be screwed. The front sheet cowl parts were then replaced with items some  $\frac{1}{4}$ in. longer to 'hide' the motor, and that was it! To remove the motor one simply has to 'bend' it upwards so that it snaps away from the battery housing. Tilt the fuselage and out pop the batteries!

Total weight of the completed model was 4 $\frac{1}{2}$ oz (no fuel proofer needed of course) and the CG proved to be spot-on.

Hand glides established that the model needed no trimming whatsoever so a power flight was soon attempted. A three minute charge resulted in little more than a powered glide, though it should be admitted that the wind was rather gusty - rather an unfair test for such a light model. Subsequently, a full five minute charge was given and the model climbed away, hanging into wind in the still breezy conditions. The ensuing cartwheel into the ground resulted in no damage to the structurally stiff model, but the engine pod detached itself, scattering the two batteries. Luckily, it was being flown over short grass, so these were soon found, but this could be a problem over more difficult terrain.

The test flights were then abandoned in order to wait for calmer conditions, and when these eventually materialised, the little *Playboy* was found to be good for flights of around 1-1 $\frac{1}{2}$  minutes from a five minute charge. Very satisfactory - and a totally silent, mess free flying session ensued. A thin aluminium trim tab was fitted to the starboard wing, and to a small deflection upwards was all that was necessary to offset the motor torque.

Summing up, it is safe to say that electric free-flight is a practical proposition now. While the power output is not great, there is sufficient available to power a lightweight design, and for ease of operation these units cannot be beaten. The only real drawback concerned the wait while the batteries are recharged, but a suitable solution is to carry the battery/charger downwind whilst retrieving the model, enabling the nickel cadmium cells to be recharged on the return journey. Convenience of flying is second to none: it seems so strange to go to the flying field with no more than a re-charging source - and no risk of oily clothes either! Life of the re-charging batteries is hard to estimate, although each system seemed to have lost its edge after 15 flights.

What is really needed to give electric flying a boost(') is the availability of purpose-designed models, although it is relatively easy to adopt a number of commercial designs and kits. However, the *Sparky* plan provided elsewhere in this issue should help Mabuchi A-1 operators, and we understand that Ripmax will shortly be marketing a kit for this motor also.

One further point of interest for newcomers to free-flight. As the power curve of the motors tails-off gradually when the batteries become exhausted, there is no problem of transition from power to glide as occurs with conventional i.c. engines. We can only suggest that modellers try these motors for themselves - they could even provide an interesting contest class . . .



Underside of the Keil Kraft Competitor shows the Monogram E-Power unit fitted - and the access hole necessary for connection of the re-charging battery. This unit is best suited to a 'permanent' installation rather than to attempt making it interchangeable with other models.

# MARTIN BAKER MB5

continued from page 1025

fine glass paper and given a coat of clear dope. Lightweight Modelspan is used to cover the wings and doped until the tissue pores are filled. Apply sanding sealer and rub down the fuselage until the grain is filled, then paint to the colour scheme indicated on the plan with Humbrol enamel. The whole model should be then given a coat of fuel proofer.

(21) Either sew on control surfaces, use tape hinges or attach using an R/C type control surface hinges (not the mylar though – it is too stiff). Bend push rods carefully to shape and retain with soldered washer. Note that the flap horns are on the top surface of the control surface and elevators are on the lower surface. The flaps *must* move in the opposite direction to the elevators.

(22) Attach the u/c using either small nylon saddle clamps (R/C type) and wood screws or small aluminium purpose made saddle clamps.

(23) Install engine and prop plus 2in. diameter spinner. The fuel tank can be held in place by the traditional method of spring curtain rod and woodscrews as close as possible to the rear of the engine, and level with the jet. I always use a fuel filter and my OS10 is fitted with the maker's silencer.



Close up of the flap linkage reveals pushrod from the bellcrank passing through the flap horns and the fuselage itself. A second pushrod then provides the connection to the elevators.

(24) It is most important that the balance point will be well forward. This is because of the rather long nose, and did not appear to have detrimental effect on the performance of the original. There are no rudder or engine off sets shown on the plan – these are not necessary. The large fuselage side area seems to help to maintain adequate line tension. Fly on 40–50 feet lines depending on the engines used – an -09cu.in. glow motor pulls the model round well on 50 feet of light Laystrate lines.

## THE FREE FLIGHT SCENE

continued from page 1029

**Coupe d'Hiver (8 entries)** – 1. I. W. Kaynes (Croydon) 7:57; 2. M. Cowley (Biggles) 7:05; 3. I. Dowsett (Northwood) 6:29  
**1A Power (4 entries)** – 1. J. Hopper (Stanstead) 10:00; 2. A. Chilton (Crookham) 6:06; 3. R. Taylor (E. Grinstead) 5:13.  
**A/1 Glider (14 entries)** – 1. G. C. Hart (RAFMAA) 8:10; 2. K. Moore (Biggles) 7:51; 3. G. Madelin (Crookham) 7:49.  
**HLG (17 entries)** – 1. M. Martin (Maidenhead) 4:37; 2. W. Bessant (Southampton) 4:25; 3. M. Cowley (Biggles) 4:20.

### SOUTH BRISTOL GALA, RAF Little Rissington

On a day when there were free-flight contests at Chetwynd, Watton and Little Rissington, in addition to the Indoor Team Trials at Cardington, I (writes Martin Dilly) decided to head west to the exposed, hilltop airfield at Little Rissington. The overnight forecast of light winds strengthening to Force 4 as the day warmed up was happily totally out of phase, and the wind dropped in strength throughout the generally sunny day to give conditions of near-zero lift for the evening fly-offs.

Competitors arrived to find that access to the airfield was restricted due to the imminent return of various aircraft, after the previous day's Battle of Britain displays. Car parking had to be completely off the airfield all day, although the site was not more than a couple of hundred yards from the preferred launching area. This caused some problems for early flyers, among them Chris Chapman from Torbay; people have grown used to winding models in the lee of a car when flying in a breeze. Although the upwind escarpment was two hundred yards from where most people launched, there did not appear to be many problems with false lift indications caused by ridge lift and, when the final jet had landed, allowing uninterrupted contest flying, the maxes came fairly easily for the glider flyers.

Although the day was punctuated by the crackle of spark ignition motors as vintage cabin power models lumbered through the launch area (however did one of those things manage to outfly a rubber model with no motor weight limit at pre-war US Nationals?), and nothing (and nobody) important was actually hit. Thermal soaring was the sole radio event; even though it was sited directly downwind from free-flight (a useful aid for some R/C competitors who piggy-backed off drifting F/F models heading their way in lift), there were not mutual problems.

Several of the younger members of the very enthusiastic and team-minded Biggles group used the good weather to get useful experience of tactical flying, and Martin Kinder of Richmond got into his first glider fly-off.

I managed to tow my T-tailed Shoaf airfoiled A/2 into the runway after the straight-tow stop for the circle hook shifted forward, producing a violent weave, but epoxy and masking tape had the wing back in its original two pieces instead of four, and into the eleven man fly-off. Certainly the sort of tissue shattering, rib/spar joint breaking damage that occurs when a square-tipped model hits something hard might be avoided with curved tips, to prevent the impact loads being taken on one corner and tending to produce a parallelogram effect as the whole structure tries to skew.

When fly-off time arrived first away were Fred Chilton from Crookham and John Hook of Southampton. Fred's Super Tigre 21/35 powered model had a smooth fast climb, but was outglided by John's modified *Woodpecker*, OS .40P powered and trimmed with a rather roly-poly climb.

John Uden of Crookham was the only rubber flyer to achieve a full house, but 14 glider flyers lined up for their fly-off. After considerable confusion as to how long the fly-off period was to be and when it would start, several people started to tow, at which stage it was announced that the period would end in seven minutes. The several circle two models apparently found no lift and there was no marked enthusiasm to launch under any particular model. Several *Ladies* were in use, including that of local man Pete Scrivens, who finally won with 2:53. Elton Drew who, of course, designed the *Lively Lady*, was flying a different model, using VIT to give reduced decalage on tow to prevent the model getting too far overhead in wind.

### Results

**Open Power (7 flew)** – 1. J. Hook (Southampton) M+5:25; 2. F. Chilton (Crookham) M+3:40; 3. R. Moore (CM) 8:45.  
**Open Rubber (6 flew)** – 1. J. Uden (Crookham) 9:00; 2. J. Gunn (Bristol & W) 8:53; 3. G. Ferer (Leicester) 8:50.  
**Open Glider (36 flew)** – 1. P. Scrivens (Cheltenham) M+2:53; 2. J. Cooper (Biggles) M+2:44; 3. M. Dilly (Croydon) M+2:28.  
**HLG (12 flew)** – 1. J. Tipper (Lee Bees) 5:00; 2. K. Penny (S Bristol) 4:37; 3. M. Cowley (Biggles) 4:29.  
**Vintage Precision (12 flew)** – G. Pink (Bristol & W) *Jnr. Mallard* 0:29%; 2. J. Barton (Bristol) *Bazooka* 0.83%; 3. Williams (CM) *Outlaw* 2.1%.

### Correction

The sketch of the bubble generator in the November issue unfortunately showed the detergent container fixed rigidly to the head of the machine. This, as any operator will inform you, results in a soapy solution trickling down your sleeve. Instead, the container should be suspended from two hooks to enable the pole to be tilted without spilling the liquid, as detailed in the text. Our apologies to Martin Dilly and waterlogged reader. Our artist is now selling hot air blowers . . .

# CLUB NEWS

SORRY IF ANY of your reports are late in appearing, but the delay was caused by circumstances beyond our control. We hope we are now back on an even keel, and look forward to your ever welcome letters and news-sheets – particularly the latter which seem to have diminished somewhat of late.

**Bilston MAC** (Wolverhampton) is a club which has been keeping a fairly low profile, but is now shaking off the lethargy and exerting itself. Interest seems to centre mainly on control line, and the club's pride and joy is the club premises, comprising a purpose fitted out workshop and lounge. The best in the Midlands, according to Mr R. H. Clews, who sends us this report. No mention of flying facilities, and we must take these as satisfactory. Room, however, for new members over and above the 22 on the books. All ages and interests invited along to St Leonards School, No 1 Arthur Street, Bilston, on Tuesday and Friday evenings or to phone Bilston 42606 at these times. Female (aero) modellers welcome – optimists these lads! – but would be wise to keep out of the pilots' circle. The club generates quite a bit of contest enthusiasm, and much praise is given to the friendly and well organised meeting at Woodvale. Five entries from Bilston in the Carrier event and took all the minor placings from fourth downwards. Better things, though at Woodford, where members Phil Baldwin and Keith Garbett came second and third. A case of happy landings. Running parallel with all this contesting was the industry and effort that went into no less than eleven local displays during the high summer, including one at the prestigious Wolverhampton *Fiesta '75*. These brought their own monetary reward, apart from other satisfactions, to the extent of boosting club funds by £100.

Calling all model flyers in the **Henley-on-Thames** area Tired, no doubt, of all those snobby regattas, Mr W. Dennis is trying to form a model flying club. You can contact him at Dairy Bungalow, Gowders Farm, Cockpole Green, Wargrave, Berkshire.

Mr R. G. Harris of Loughton, has long been trying to re-form the **Debdenairs MFC**, but has mainly been thwarted by lack of a suitable flying space. However, he has now obtained Council permission to use a piece of land lying between the new M11 motorway and a river – the devil and the deep – and with new heart rallied the old dough-ties together for the start of a new Debdenairs chapter. Membership is to be limited to over 16 seniors, and there will be no facility for multi radio. Further details from the Venture model shop at Loughton.

Mr R. A. Smith combines the duties of PRO for the North Eastern Area with a similar role in the Tynemouth MAC, and it is in the second capacity that he sends us his report. A word, though, about the Area in general. There is an all round increase in activity in the many branches of model flying, with R/C sport taking the honours, as might be expected. No mention of the club's particular flying facilities, but contest hopes centering on RAF

Ouston were minimised by access being limited to pass holders only, making the airfield more or less available for Area free flight events only. This should not worry the club's strong F/F section which includes British team member, Ron Pollard. Fresh back from the World Champs he won Open Rubber at the Northern Area Rally, and at the same meeting Brian Martin followed up his Nats win by taking Open Power. On the C/L side of the field prowess was no less in evidence, with the Hudson/Smith combo winning Class B team race after placing second at Woodford a fortnight before, and Dave Sallows placing second in Combat. Mr Smith will be pleased to hear from anyone interested in the Tynemouth club to contact him at 74 Whitley Road, Whitley Bay, Northumberland NE26 2NE.

Following the glamour and excitement of Woodford the **Bolton MAC** staged its own colourful spectacular – a C/L scale comp. Derek Potter, the club PRO, tells us that the weather was as bright as the models, with just a hint of breeze. Five models took the air: a *Fairey Gannet* painted in blue, a 1½ *Sopwith Strutter* with throttle control, a *Sopwith Pup* also with throttle, a *Fokker Friendship* in Air Anglia colours, and a *Pitts Special*, red with yellow stripes. All five models performed realistically, with throttled touch and go landings adding an authentic flavour. Most impressive was the *Fokker Friendship*, its two 1.5cc PAWs giving a stable, speed to scale flight. The 50ft line circle was on grass, which made for soft landings, but being a bit long caused the *Pitts Special* to snag up its wheel spats. Winner was the *Sopwith Pup*, with the *Strutter* in second place. Both powered by Merco 35s.

More C/L news, this time from the all control line **Stockport and DMAC**. The report from Chairman, Ian Hutchinson, reminds us somewhat shiveringly, that grim old winter is upon us in the October to February programme he has attached to it. This includes talks both technical and entertaining, slide shows and a club auction. Even so, I expect, like most of us, the members look forward to many a mild Sunday on the flying field, and for this purpose the club has the use of a site in Manchester Road, Cheadle, for whom they have the Stockport Council to thank. Suitable for all C/L models except racing and speed. These hairier types have their outings on the RAF field at Burtonwood. The club can boast quite a number of luminaries of the model world amongst its members. There are such notable combos as the Clarkson/Daly 1975 European Champs T/R team member pair, Daly/Howard, the 1975 Nationals Goodyear winners, and in singleton array, Dave Wood, the leading combat flier and designer of the well known *Titan*. Thus, rank and file members have a lot of expert advice to call upon, and the top men are very active in helping and encouraging new members and beginners. New members welcome. Club fees £4 per annum, including insurance. Meetings held every Thursday evening 8 pm at the Community Centre, Turncroft Lane, Offerton, Stockport.

Being already under siege from the flying field 'heavies' I can only hope the *Ballerina* 85hp craft, featured on the cover of the **Worcester MAC's Flysheet**, is a full sized craft and not a large size in models. Anyway, the newsletter reveals a club with wider interests than just R/C, for apart from a spot landing event, the club programme features R/G/P free flight and a C/L rat race. We also gather that the club field at Perdiswell is a council site, and that the said council is not averse to allowing the club to erect the odd notice board, and has actually removed the intrusive goalposts in the interests of flying space. An intriguing point raised here anent the oath piece on the club card requiring the member to comply with club regulations. The regulations have disappeared into the mists of time, but obviously are needed where a club is



flying on a public space. May I suggest they include a stringent silencer rule – there are still too many over-noisy models about – and a demand that models fly away from, and not over, the car park or peopled areas. I am not inferring that these tenets of responsible flying are not observed at Perdiswell, but they are all too commonly flouted, to the detriment of the hobby.

The *Three Kings Court Circular* continues the saga of Croydon Airport with Mr D. Conway nostalgically recalling the last years. Croydon was to aviation what steam was to rail travel – the glamour went out of flying with the laying of tarmacs. One particular memory of Mr Conway is his five bob trip in a *De Havilland Dragon* in the late forties. This has reminded me that I also went on a pleasure trip in the same aircraft at about this time. I flew from RAF Hornchurch to the Short Bros field at Rochester and back. A touch of nostalgia, too, from the older Three Kings members, who are now looking back on their recent past as the good old days. In the last year or so they have lost many a club stalwart, mostly through moving to other areas, but there have been some – dreadful renegades – who have gone over to the enemy, Radio. Survivors of the Old Guard now look for a shot of adrenaline being pumped in the Three Kings circulatory system by the new generation of enthusiasts. Radio 'pirates' on the Croydon patch, notwithstanding, the Council have renewed the club's licence. That's the good news – the bad news is that they have upped the annual fee by £8. Back to good news, with successes at Woodvale. Vic Willson came first in Scale, and Mick Reeves, in his first comp for a couple of years, won the Carrier event.

From the *Concorde MAC* newsletter we get the impression that members' models are not just built and flown, but are produced and flight tested – it's the aircraft factory approach. But even with scientific production methods things can go wrong. Martin Jackson's second *Spiritfire VB* suffered a serious aft CG problem, and would have required ten ounces of lead in the nose but for a partial rebuild. Like many clubs these days, *Concorde* is very much involved in the 'show business' side of the hobby, putting on a number of well received static and flying displays, and acquiring the expertise for this sort of presentation. This reminds me that only last week I read of a town show where the best received display item was that given by the local model club.

In *East Anglian News*, Mike Woodhouse gives his impressions of the recent F/F World Champs from a participant's point of view. He gives praise to the organisation, the choice of the large flying site and the kindness of the weather, but lambasts what passed for timekeeping – some of the decisions, he maintains, would have resulted in a lynching at any domestic event. Nevertheless, and in spite of poor points showing, the British teams flew well and had an enjoyable time. Back to home affairs, it is a happy thing for the Area that Mike Woodhouse's club, *Norwich*, has such an active, contest minded F/F section, otherwise the Area meetings at Watton would hardly be worth holding. In the September Area meeting the *Norwich* club had five fliers in the Power Team event, and put up some extremely competitive times. I am sure if petrol costs were not so high the *Norwich* boys would get more company at the Area meetings.

Disappointment for the members of the *Sussex MFC* after much planning and preparation; the annual 'Airshow' has had to be cancelled this year. Reason given is the failure to secure the Angmering field, and the uncertainties involved in alternative plans. Let us hope for a more fruitful outcome next year.

High expectations, though, for the Symposium and Display scheduled to be held on Sandown Park Racecourse

## Contest Calendar

- 22-23rd November **NW AREA INDOOR MEET.** Venue: Wigan Technical College Sports Hall, New Market Street. 25ft. ceiling. Admission charge but no contest fee. Attractive, guaranteed prizes. Soft footwear essential. Saturday: Microfilm facilities 0900-1800. Sunday: 'Eaves Silver Trophy', events: EZB (0900-1200, 1600-1800) HLG & Keyhole Scale (1300-1600). Scale judged at 1300 – rules as per February '75 issue *Aero Modeller*. Juniors up to 15 years – those over 12 must be builder of model. Further details: J. O'Donnell, 061-427 3711.
- 30th November **COUPE D'HIVER INTERNATIONAL.** Venue: RAF Halton, Nr. Aylesbury, Bucks. Details as per 'Hangar Doors' this issue.
- 7th December **FALCONS GALA '76.** Open R/G/P (3 x 3 min) chuck glider (best 5 from 9, 1 min. 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.
- 11th January '76 **NW AREA INDOOR MEET.** Venue T.B.A. Events as for November meet (Sunday only). Information from P. Branigan, Formby 741 33.
- 7-8th February '76 **NW AREA INDOOR MEET.** Venue: Wigan Technical College Sports Hall. Details as for November event.
- 5th March '76 **NW AREA INDOOR MEET.** Venue: T.B.A. Events as November meet (Sunday only).


next May by the *Elmbridge Model Club*. A racecourse is a more positive proposition than an airfield which is likely to be earmarked for use at the last minute, and with its stands and public arrangements makes for an ideal symposium site. The Symposium Secretary is Mr P. W. Maddocks, 2 Lexton Gardens, Clapham Park, London SW12.

Paul Masterman gives a fulsome report of the recent F/F Champs held in Bulgaria in *Free Flight News*. From his and other accounts I cannot help but feel that tactical flying has gone beyond the point of absurdity. Many people, of course, hold to the view that tactical flying is what modern contesting is all about, but if this is the case why do the mags publish so many plans?


Several plans in the Swedish (?) *Aviatikern*, but generally a rather thin content.

Clubman

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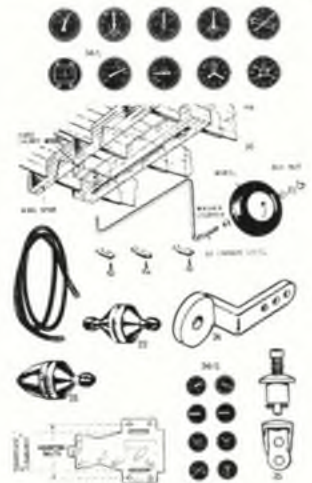
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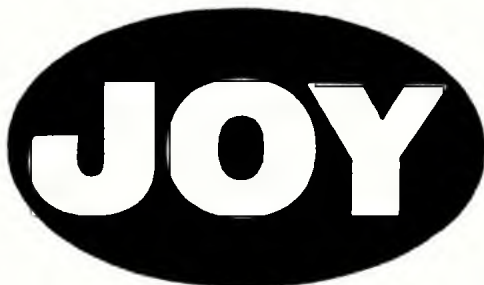
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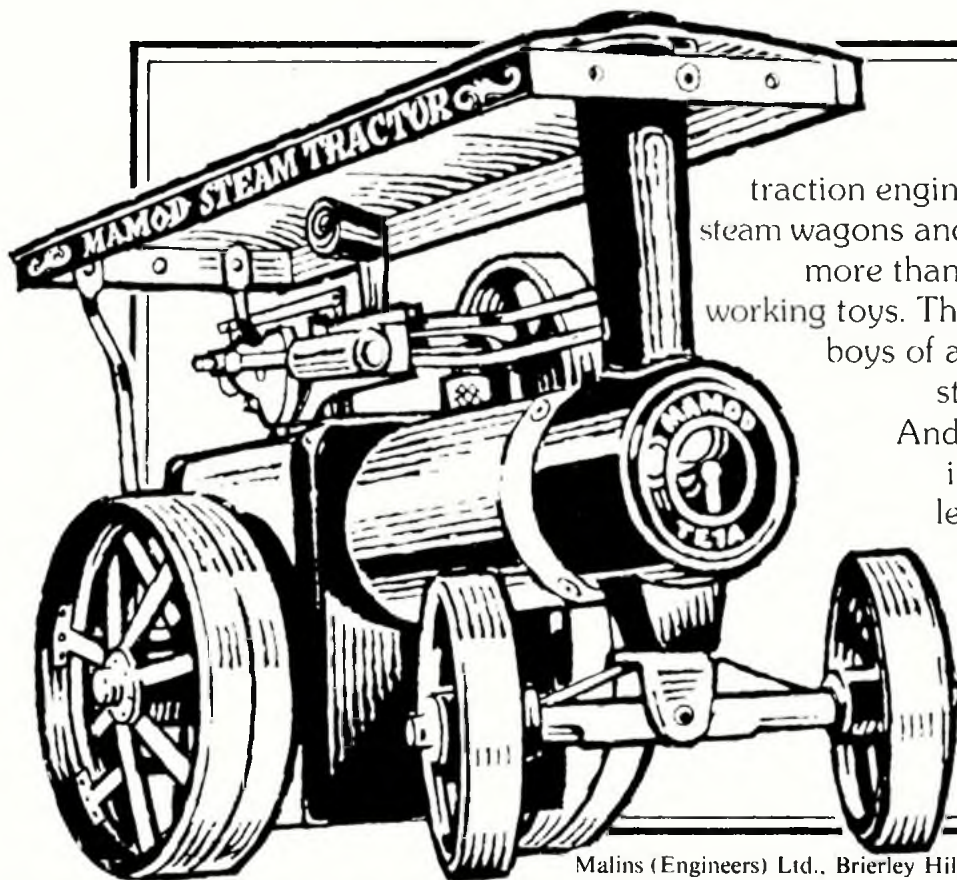
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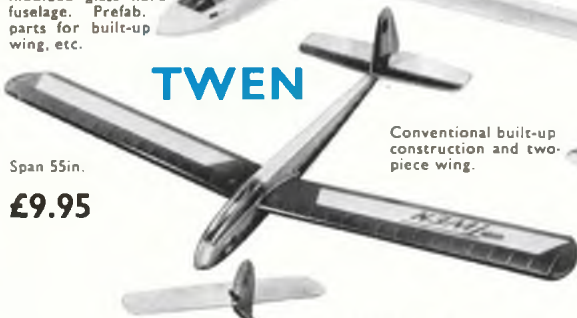
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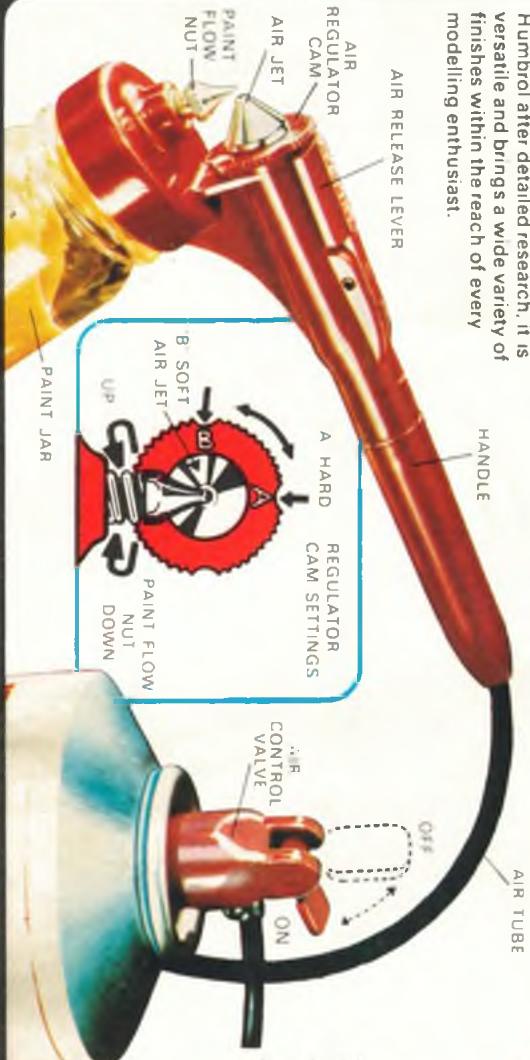
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