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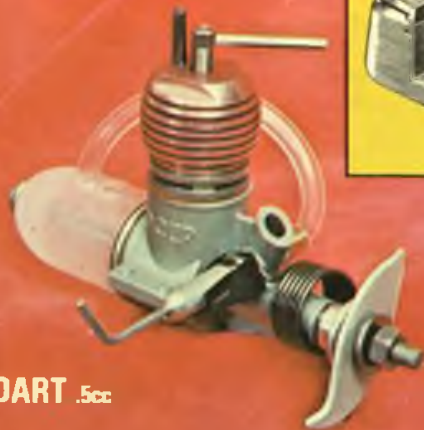




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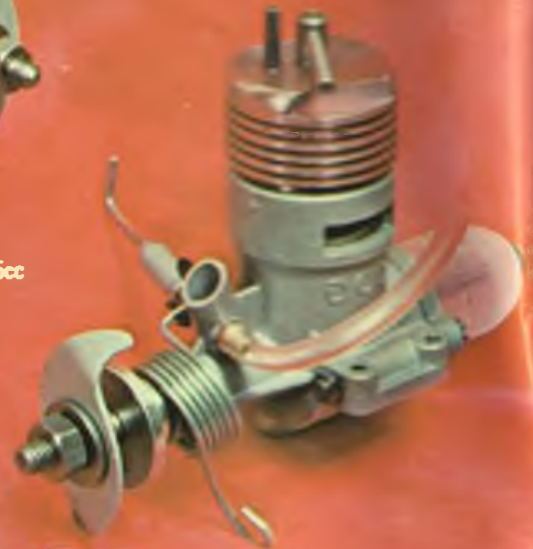


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# Aero modeller

AUGUST 1979

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MAP HOBBY MAGAZINE

## Comment

IN A LITTLE bicycle shop in Dayton, Ohio, two brothers were assembling a flying machine. They had all the necessary technology including lowspeed aerofoils developed from their own wind tunnel tests. They had already taught themselves to fly with kites and silant hang gliders. The two Wright Brothers could have become famous but they blew it – they put a 12 horsepower engine in their flying machine. 75 years later, after the Wright's

pioneer attempts, another team led by Dr Paul McCready assembled a not dissimilar aircraft, also a canard pusher but this time built around a bicycle frame with the power supplied by a 3 horsepower cyclist Bryan Allen. On June 12th at 5.50am he took off before our very eyes, out over the English Channel and for the next 2 hours 49 minutes he pedalled his way firmly into aviation history by landing 23 miles away in France to claim the £100,000 Kremer Prize for the first Man Powered Aircraft to cross the English Channel. The Wright Flyer of 1903 now hanging in the Smith-

sonian Institution in Washington has already been joined by Gossamer Condor as a landmark in aeronautical design. Now the Albatross enters the hall of fame as the pinnacle of achievement in low speed flight. The remaining accolades go to Industrialist Henry Kremer who had the foresight to initiate the challenge which inspired the development of new designs and use of materials, and to the RAeS for their persistent support of a seemingly impossible task. Congratulations Gossamer Albatross and to the young team of Californians who reached their goal.

## Contents

- 464 HANGAR DOORS
- 465 WHAT'S HAPPENING
- 466 CO<sub>2</sub> – IT'S A GAS
- 469 NATIONALS PROGRAMME
- 470 AERO ACES – FLYING START
- 474 ALL-SCALE DAY
- 476 R/C SPORT FLYER
- 479 SUNBEAM
- 481 TAMERLANE
- 483 TOPICAL TWISTS

### Volume XLIV No 523

- 484 SCALE MATTERS
- 486 FROM THE HANDLE
- 490 FREE FLIGHT SCENE
- 494 ENGINE NEWS
- 497 STRESS OFFICE AIR RACE
- 499 TRADE TOPICS
- 500 CLUB NEWS
- 502 CAPTION CONTEST
- 509 CLASSIFIEDS

### On the Cover

Superb CO<sub>2</sub> powered flying scale models converted from standard rubber powered kits as part of Ian Peacock's "CO<sub>2</sub> – It's a Gas" series. Top right Telcoo installed in Hi Flyer Tiger Moth, left Humbrol motor fitted to a Humbrol Fokker Eindexer and the Piece de Resistance a Guillow B-25 Mitchell with a matched pair of Telcoo motors. All the models are decorated with spray paint, saving weight and adding realism.

### Next Month

Scoop! Editorial Director, Ron Moulton was the official observer for the Royal Aeronautical Society to witness the Gossamer Albatross Channel crossing flight, and has spent much time with Paul McCready and the team. Pat Lloyd presents his Aircraft Described drawings of the machine, together with Ron's account of the flight. Plus all our regular F/F, C/L and R/C coverage of model flying activity, on sale August 17th.



Page 479

Page 481



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A long time ago designers used to design whole aeroplanes. Then it became the job of separate design teams, each responsible for parts of the aeroplane, with a chief designer overseeing the whole. As aircraft got more and more sophisticated – and costly to produce – it became imperative that the prototype flew 'right off the drawing board' – only the drawing board was replaced by computers.

So aeroplane outline shapes became more and more functional with attractive appearance a secondary consideration – or forgotten. With a few exceptions from time to time. The same is largely true of contest-type models – although here the individual designer is wholly in charge. Which is really more satisfying than being just a very small part of a full size aircraft design team.

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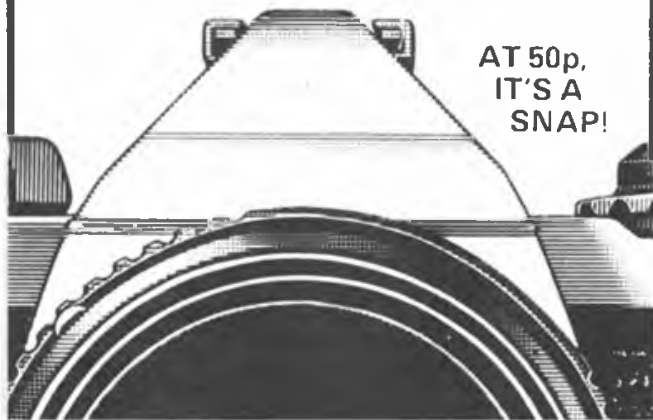


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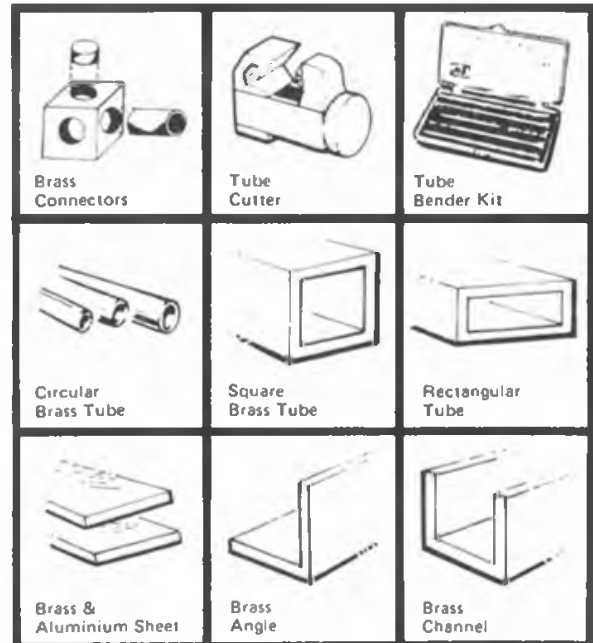
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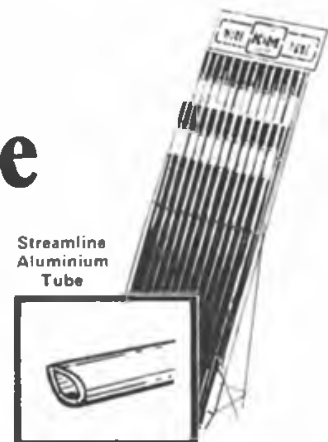
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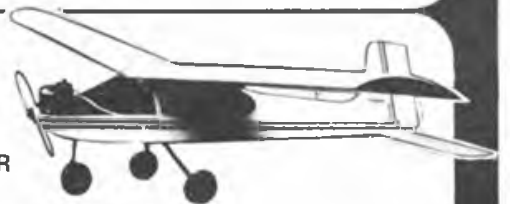


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Cambria Miri 100"	£37.95	*Electric Flight	

### RUDDER/ELEVATOR/AILERONS or RUDDER/ELEVATOR/THROTTLE ..... £66.50



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This outfit matches any of the R/C glider and sailplane kits – from the smallest to the largest. For power modellers, there is a wide choice of Trainers available. Our special recommendations are given below.



Graupner Cirrus 118"	£52.40
Aviette Mendip 60"	£17.95
Monarch Shikari 63"	£21.80
Graupner Elektro Fly* 70"	£32.40
*Electric Flight	

Ripmax Trainer 56"	£26.55
Cambria Dragonfly 57"	£26.95
Graupner Maxi 63"	£52.70
Aviette President 57"	£21.45
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This covers all the functional controls of a powered aircraft, and in the case of gliders an additional control for flaps or spoilers. MEDALLION '4' with four FD28M SERVOS is the top budget-price outfit here. 'Full house' coverage complete for **only £99.50**. A sound investment which will give you years of service and satisfaction!

Sports, scale or aerobatic models – even helicopters. Choice of model type – and size – is wide open with a 'full house' outfit. Remember, that means complete control, too – no compromises.



Graupner Mini Nimbus 130"	£98.20
Ripmax Aileron Trainer	
56" span	£27.80
Mini-Moonshiner 36"	£22.95
Schluter Heli-Baby	£147.50

MICK REEVES KITS:	
Gangster 52	£21.95
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Spitfire 63"	£39.75

★ All the above is famous-name equipment (they don't make radio better than Ripmax-Futaba). For details of the FULL range ask your model shop for the latest RIPMAX-FUTABA LEAFLET (or send large SAE to Ripmax Ltd., Green Street, Enfield, Middlesex, EN3 7SJ, if you have no model shop near you).

## AVAILABLE AT ALL RIPMAX STOCKISTS

Prices shown above were correct as at June 1st 1979, but may be subject to change.



# Hangar Doors

## HERCULEAN TASK

Corporal Michael 'Tex' Bryson of the Royal Australian Air Force has just completed a 1/12 scale R/C replica Lockheed Hercules. Special flying permission was required from Australia's Department of Transport as the 40lb, 11½ft wingspan, 10ft long, pilotless aircraft powered by four 6.5cc motors, was no longer considered a "model". All air traffic at Edinburgh Airfield was stopped and even the top brass turned out to witness the maiden flight in the capable hands of Sergeant Dennis Scott, who took over the R/C transmitter to perform a flawless demonstration. The Hercules may fly only once or twice more before being presented to the RAAF Museum and it is already insured for \$A5,000 – but only while it is on the ground.

## FLAMBARDS IN CORNWALL

All the replica aircraft and models constructed by well-known aero modeller David Boddington, featured in the ITV series *Flambards*, are currently housed in the Elm Park hangar on display at the Cornwall Aero Park. The complete collection at Helston next to RNAS Culdrose features aircraft covering 70 years of flying history, from early "String Bags" to American jet fighters, including a rare Scimitar and two Seahawks. Visitors can also operate controls of flight simulators for hovercraft, helicopters or jet link trainer.

## WOODVALE SCALE INTERNATIONAL

Although organised at short notice last year, the considerable interest from home and abroad shown in the scale events flown at the 78 Woodvale C/L Championships, has prompted the Liverpool and DMAC to organise a similar event. This year in addition to the R/C scale classes there will again be an International Free

Above. Almost indistinguishable from the real aircraft, Corporal 'Tex' Bryson's 11½ft wing span C-130A Hercules stands on the tarmac at Edinburgh Airfield, South Australia, awaiting its maiden flight. Right: Phew, what a relief! Tex congratulates R/C pilot for the flight Sergeant Dennis Scott after a perfect demonstration.

Flight Scale contest which it is hoped will become a feature of successive Woodvale rallies. This year's event is scheduled for August 4th-5th and the Contest Director is Bernie Sinclair.

## ELECTRO MEETING

The world's largest and most important championships for electric powered R/C models – 4th Benelux Electro Meeting – takes place at Mill near Arnhem in Holland, 8th-9th September. Organised by 'the Red Baron' Model Club, events will be held for E-glider E-aerobatics E-Pylon and E-Stand off scale. Highlights of past events include: participation by five nations; the first appearance of low wing aerobatic models with retracts performing the complete FAI schedule; and the first ever Pylon racing and Scale events. Further information is available from B. Kruijssen, Saffierd reef 4, 5431 WS Cuijk, Holland.

## F/F CHAMPS UPDATE

More details are arriving on this year's World Free Flight Championships in California. The two Open International F/F

events previously to be held on the same dates have been rescheduled, one before and one after the Champs, and the National Free Flight Society Symposium has been added to the list of events at Bakersfield.

Sept. 29-30th: LIVOTTO INTERNATIONAL F1A, F1B, F1C – TAFT, CA.

Oct. 6-8th: WORLD FF CHAMPS F1A, F1B, F1C – TAFT, CA.

Oct. 9th: NFFS SYMPOSIUM – BAKERSFIELD, CA.

Oct. 13-14th: SIERRA CUP F1A, F1B, F1C – SACRAMENTO, CA.

Submissions for the Symposium on any topic associated with FAI, F/F, to Ray Harlan, 15 Happy Hollow Road, Wayland, Massachusetts 01778, USA.

## † PETER L. GRAY

World War One aviation historian Peter Gray died peacefully on June 4th. His 59 years had been almost continuously troubled by physical disabilities but Peter had borne these adversities with the same admirable fortitude which made him a peer among researchers. For over 25 years he contributed the results of his studies as scale drawings and type descriptions of WW1 aircraft in *Aeromodeller* and currently in *Scale Models*. He also produced the classic reference "German Aircraft of the First World War" with Owen Thetford for Putnams and in recent years had been preparing the WW1 vintage of "Aerodata" for Alf Grainger's Vintage Aircraft Publications.

Now this quiet spoken, modest friend of all enthusiasts for early aviation is no longer with us. We shall all miss his encyclopaedic knowledge which has benefited so many thousands, who we are sure, will join us in offering condolences to his son Tim and daughter Jane and his wife Teddy



David Henley (centre), Managing Director of Beatties, the famous model and hobby retailers, takes delivery of Beatties new customised delivery van from Frank Cribbens (left) Director of Morris and Ingram Ltd and Ray Haggood (right), who painted the van with a design of various models including a Supermarine Spitfire



# Letters

## FROM MEMORY

Dear Sir,  
My June issue of your *Aeromodeller* came in today. Of particular interest to me this time was the letter from Mr P. Michell, in which he tells of his interest in a 1920-era Wakefield, with photograph of his fine replica. A nice piece of aeromodelling. I could not resist some comments – and perhaps some answers – to the letter.

Having examined the photograph closely, I came to the conclusion that the likely original designer and builder could well be R. J. Trevethick – it's very much his style. R.J.T. I knew well; professionally, he was a commercial artist, and he used to produce those very beautiful Fairey Aviation advertisements of the 'Flycatcher' (on your front cover!), the 111F, the fast 'Fox', and the famous long-range Monoplane that established records like the one to South Africa. Trevethick made the most beautiful and impeccable models, including some powered by compressed air engines made by D. A. Paveley.

But about the query, in Mr Michell's letter, of accommodating two skeins of rubber. People like Newall (who won the first Wakefield) and your humble scribe used geared motors. In those days (before the Americans gave us the tip about long, stretched rubber motors) we used to work on the rough formula of the skein being 50% longer than the distance between hooks. Anything more, we thought, would cause bunching at the latter part of the 'unwind'; and this would cause flying trim problems.

Where the detail of strands of rubber is concerned, I can only cast back fifty years and say that it was of the order of six strands – sometimes eight – of 1/16in strip. This was usually enough for the purpose intended, remembering that we aimed for a long motor run, rather than

high rate of climb. It should be remembered that in the pre-Balsa days the models had a heavier airframe and we just did not know much about the effect of thermals. Thus duration under power was what mattered, with a glide down as (say) a 10% bonus.

So if my memory serves us well then six strands of rubber would accommodate itself well enough with those models with gears the centres of which were in apart. Referring to Colonel Bowden's 1946 *History of model aircraft*, I see that my Wakefield 'Heron' used four strands of 3/16in on each skein, the gear wheels being 5/16in diameter. Again, my seaplane – which was 22in wing span and weighed 2oz in seaplane version – used twin gears obtained from a watch-maker, the power being 1/8in rubber of (I think) four strands per skein.

So I venture to suggest that Mr Michell should have no problems of accommodating the two skeins of rubber; certainly we did not! And where the winding-up was concerned; well, we did it by hand, pulling the nose-block out every 100 turns or so to get even distribution. And no talking to the winder whilst he was counting! An average number of turns worked out at about 900, certainly no more.

I hope that all the above will be helpful. T. H. Newall should, perhaps, gain the award for being the first aeromodeller of note to use geared motors. His Wakefield winner in 1928 'Falcon' had three skeins.

Finally, my guess about the date-line of Mr Michell's model is circa 1928-1930 – it has that style about it.

In order to goad my old friend J. van Hattum into making his contribution to the questions, I am sending a copy of this letter to him in Holland. I bet he comes up with quite a different story – he usually does! Kingsdon, Somerset.

James Pelly-Fry P.S.: The two skeins geared together in turn drove the propeller shaft on a 2:1 to 1 ratio, the propeller turning more slowly than the rubber motors. This was the prototype for the 'FROG'!



recently cleaned out several unwanted items and was about to throw the escapement away when I read your letter. I do not want payment for the unit but would be interested to hear of Mr Joshi's progress with his project and a photograph of his model is possible.

I have recently been using one of the 'Indian Mills' engines some of the early ones were spoilt by minor defects but the later ones seem very good. The engine I have is the .75cc version and now that it is run in it starts easily and does not require adjustments to either compression screen or needle valve, they are becoming quite popular, especially for small free flight scale models.

Cheshington, Surrey.

P. G. Gain

## R/C ASSISTANCE AT HAND

Dear Sir,

I am sending an escapement as per your request in *Aeromodeller* magazine. The unit is about ten years old but has never been used so is virtually brand new. It has been stored away out of sight and forgotten for years. I

## WHILE STOCKS LAST

Dear Sir,

Would you please inform Mr Joshi that we can supply him with a new escapement from stock. We have ELMIC Commanders new and boxed. Rubber driven escapements price £4.18p + post.

Airedale Models, Keighley, W. Yorks.

Bob Hurrell

# What's Happening?

## EVENTS

**July 22nd**  
AIR BRITAIN FLY-IN. Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

**July 29th**  
MILITARY AIR PAGEANT. Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

**August 12th**  
BOGNOR BIRDMAN RALLY. Contestants leap off local pier attempting to fly a 50m course over the sea in a variety of flying machines at Bognor Regis.

**August 12th**  
HISTORIC VEHICLE FESTIVAL. Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

## CONTESTS

**July 22nd**  
FINCHLEY GALA. STUNT & COMBAT. Venue A: Summers Lane, Finchley. Contact: Steve Tothill. Tel: 01 346 4764.

**July 22nd**  
COMBAT RALLY CLASS A DIESEL. Venue B: Dewsbury. Contact: Greg Staves. Tel: Otley 56467.

**July 22nd**  
INDOOR DURATION EZB, MAN, IHLG & CO. Venue C: Cardington. Contact: Bob Bailey. Tel: Stevenage 723642.

**July 29th**  
CENTRALISED MINI A1, COH, VA, HLG & CO. Venue D: Bassingbourn. Contact: Mike Fantham. Tel: 01-736 7163.

**July 29th**  
MIDLAND AREA RALLY SPEED, AEROBATICS, GOODYEAR COMBAT. Venue E: Fulbeck. Contact: R. Giles 0283 703323.

**August 4th-5th**  
WOODVALE RALLY R/C SCALE CLASS 1 & 11 R/C AEROBATICS, FIF SCALE INTERNATIONAL. Venue F: Woodvale. Contact: Bernie Sinclair, 41 Silverdale Road, Litherland, Liverpool 21.

**August 5th**  
INDOOR DURATION F1D, 35cm. Venue C: Cardington. Contact: Bob Bailey. Tel: Stevenage 723642.

**August 12th**  
NA NEWS 2ND MICRO-MEET HLG, CO, P-30, MICRO GLIDER A1. Venue G: Heath Common, Wakefield. Contact: Jim Moseley. Tel: Leeds 864026.

**August 26th-27th**  
BRITISH NATIONAL CHAMPIONSHIPS CIL & R/C. Venue H: Berkston Heath. R/C THERMAL. Venue I: Cranwell, FIF. Venue J: Everleigh. Contact: Nats Director Dick Pavey, Kimberley House, Vaughan Way, Leicester. Tel: 0533 58500.

**August 26th-27th**  
INDOOR DURATION F1D TEAM TRIALS (practice only 25th). Venue C: Cardington. Contact: Bob Bailey. Tel: Stevenage 723642.

**September 2nd**  
NW AREA F2A, F2B, F2C, F2D. Venue K: 3 Sisters Site, Ashton in Makerfield. Contact: Derek Lee. Tel: Rochdale 73619.

**September 2nd**  
N AREA RALLY FIF CIL & R/C. Venue L: Church Fenton. Contact: Jim Moseley. Tel: Leeds 864026.

**September 9th**  
5TH FIF AREA CENTRALISED TEAM POWER (KEIL & PLUGGE) F1B (GUTTERIDGE) A1. Venue: Local Area. Contact: Mike Fantham. Tel: 01-736 7163.

## NEW ANNOUNCEMENTS

**Sept 9th**  
3 KINGS CIL SCALE: Class II rules, prizes and Trophies. Venue: Old Croydon Aerodrome. Contact: Derek Bird. Tel: 01-874 6394.

**Sept 23rd**  
CAT'S 1/2A COMBAT RALLY limited entry Pre-entry F1, Juniors 50p. Venue: Horsenden Hill, Perivale, Middx. Contact: OX Marc Harrison, Tel: 01-997 1794.

**Sept 23rd**  
STOURPAINE STEAM RALLY, CLASS A DIESEL COMBAT (PRIZES NEW MKV OLIVER PLUS MEDALS PRE ENTRY FOR FREE COMPETITORS PASSES). Venue: Stourpaine near Blandford, Dorset. Contact: Kelly Hanocq. Tel: Broadstone 697861.

**Sept 23rd**  
SMA VINTAGE RALLY: STUNT, R/C ASSIST & FIF. Venue: Halton.

**Sept 23rd**  
N.A. AEROBATICS: F2B Pre-entry. Venue: RAF Dishforth. Contact: Arthur Tipper, Tel: Leeds 667458.

**Sept 30th**  
COMBAT CHAMPIONSHIPS CLASS A DIESEL 2ND ROUND. Venue: River Embankment, Peterborough. Contact: N. Gill. Tel: 0733 252645.

**Oct 21st**  
NE AREA FIF RALLY: OIG, OIR, OIP, COMBINED FAF, COMBINED MINI, HLG (No rounds) 10am start. Venue: Albemarle Barracks. Contact: Alan Jack. Tel: Cramlington 714773.



# CO<sub>2</sub>

## it's a GAS!

Left, LINDOE's high wing Cessna 185C built by 10 year old Kevin Peacock, one of a range of 12 LINDOE models with die-cut parts and pre-decorated coloured balsa. Far left, HUMBRÖL's built up wing Aero Subaru from their range of models featuring simple balsa sheet fuselages and lightweight built-up tissue covered wings.

## THIS MONTH: CONVERTING SIMPLE KIT MODELS TO CO<sub>2</sub> POWER

### PART 3 – IAN PEACOCK

IF WE ARE TO BELIEVE what the advertisements say, "Balsa flies best". In areas where lightweight is of particular importance – such as with the small free flight model, balsa can rarely be beaten, so it follows that all balsa construction has distinct advantages for the relative low power of CO<sub>2</sub> motors, and there are several model types of interest to those in search of enjoyment using CO<sub>2</sub> power units. If however, one compares the attendance at a Cardington meeting with the Aeromodeller Scale Day at Old Warden (June 10th this year), it becomes increasingly clear that there is a much greater enthusiasm for the scale types than the purely duration models. In fact there can be few modellers who do not hanker after a 'scale' subject somewhere in their imagination! It now remains to be seen what effect the recognition of CO<sub>2</sub> duration as an official class will do to the relative popularity.

CO<sub>2</sub> power is in fact a natural answer to many of the problems associated with the small free flight scale model. There are if one bothers to look for them, literally hundreds of kits and plans about, which with the minimum of modification, make ideal CO<sub>2</sub> subjects. Many were originally rubber driven and as such had poor-to-disappointing performance plus the inconvenience of winders, rubber lubricant, etc. Simple conversions to CO<sub>2</sub> power offer a degree of success and convenience that could scarcely have been dreamed of. The scale model therefore dominates the remainder of this series, although much of the conversion technique shown will also be equally applicable to the duration type of model.

The most basic requirement for the absolute beginner is a readily available kit of parts, the simplest being the 'all sheet, ready coloured and die cut' type of model kit. Fortunately there are three extremely

good ranges of such models available from British manufacturers. KEIL KRAFT & VERON will be names recognised by most modellers: however spare more than a passing glance at LINDOE models made by Yorkshire's JNT models. LINDOE produce a range of good flyers (the Spitfire, Me109 and Hurricane being particularly attractive) and the Keil Kraft *Ee-Ze-bit* and Veron *Kwik-fix* models all form an ideal starting point.

All three ranges have been about for some considerable time and should be available locally. Samples of all the brands were built with about even success. Veron's models are a little larger with wingspans of around 23in than Keil's which have wing spans varying from 15in-20in and in general terms produce a slightly more satisfying flight pattern. Lindoe models vary from about 15in to 22in and as with the others, the larger models fly a little more realistically.

Below, VERON Bolkow Junior Kwik—Built kit. Tapes mounted on 1/16in ply bulkhead tank fills further back to prevent nose heaviness.



Below, Coiled motor feed pipe and bottom of flight tank protruding avoids freezing during flight. Filler is mounted on ply plate inside.



A Humbrol CO<sub>2</sub> motor mounted in the nose of a VERON Cessna, care must be taken to ensure propeller clears nose block when running.





No difficulty was encountered in constructing these models as 95% of construction follows the well detailed instruction sheets. The novice would be well advised to choose a high wing example for his first attempt (Piper, Cessna or similar) as these were found easier to trim for good flight performance. The desire to make the ubiquitous 'Spitfire' etc would be well left until some success with the high wing models is achieved. This not to say the WWII fighters in these ranges are difficult to build, far from it! They are however, a bit more tricky to trim for a reliable flight pattern.

Construction with all models is very straightforward and instruction sheets comprehensive, only the nose area requiring any detailed attention. Here it is necessary to fit an extra former to support the engine and some local reinforcement for the tank and filler nozzle.

It was found in practice that a small 1/16in plywood former was most suitable for the engine mount although 1/8in hard balsa or 1/16in Plasticard would do equally well. A degree of trial and error may be needed to juggle this former into place and shape. In some instances the nose former itself may be used as a guide to shaping the engine mount. The exact position of this former is not critical but one should aim at getting the motor as far back as possible without having the propeller foul the front of the nose block which in most cases will need opening out to clear the crankcase of the motor. If one's skill at this 'cut and fit' game is not too high, make the former fit as nearly as possible, reinforcing the joint between the plates and the fuselage sides with scraps of balsa. A degree of forward thinking at this point will enable this former to be put in at an angle to obtain some downthrust

*Telco motor and filler both mounted on ply former ready for installation into a HUMBROL Racer.*



and right thrust – about 4° seems to work for most models. The dedicated modeller will adjust these angles during trial flights by packing thin washers behind the motor.

Somehow there always appears to be too much copper pipe around when fitting CO<sub>2</sub> motors, and it is not uncommon to see some of the surplus pipe wound into coils, particularly adjacent to the top of the cylinder. This serves a dual purpose in providing both extra 'radiator' area, keeping the pipe in the warm slipstream and thereby helping to avoid the gas from freezing! Care should be taken to avoid any strain on the pipe, particularly at the junction with the engine. Coil diameter should not really be any smaller than the diameter of a pencil!

Gas tank installation is simply a matter of cutting a close fitting hole in the fuselage floor and maybe fitting the odd bit of scrap balsa to keep the tank upright. Allow the bottom 1/2in or so of the tank to protrude outside of the model. Fit the filler nozzle to the airframe rather than letting it hang free, using another scrap of 1/16in ply. This small nozzle mounting plate may then be glued to a suitable place on the fuselage. A note of caution here, for considerable pressure is exerted on the filler during the gas transfer stage, requiring that the model be held quite firmly. It would seem logical therefore, to fit the nozzle adjacent to a former, or some other strong point, and reinforce locally inside the scrap balsa. Once satisfied that all is OK, and that the motor runs correctly, the top and bottom nose sheeting may be fitted, cutting away as required to clear the motor and pipes. This simple technique almost takes longer to describe than it actually takes to do, and was found to work for all the examples tried, and many



*Clever use of VAC formed cheek covering will allow access to motor when model is completed.*



*Top left, Vac formed cowling, top deck and clear canopy on HUMBROL's Subaru, motor is mounted at 45° to fit completely inside cowling*

*Middle, Super pre-printed colour decoration on LINDOE's Hurricane produce nice results. Model flies exceptionally well, due to generous wing span*

*Bottom, Telco installation shown in the LINDOE Hurricane, note filler on wrong plywood cross rail (Telco motor runs correctly) before adding bottom decking planking. Stub exhaust pipes in line add weight. A blade prop also included. Kit could be tried on CO<sub>2</sub> motor. Underwingage shown. The cowling left off for*

more besides!

Flying in general, follows the pattern laid down in the original kit instructions, test gliding as always over that elusive and ever popular long grass on those equally elusive warm, calm days. The kit recommendations as regards balance, trim tabs etc. may be safely followed until a smooth straight glide is achieved. The motor should be set to reasonably low revs and the tank filled with a Gas charge (nozzle of charger facing up). Flick the prop and determine that the motor is running the correct way i.e. draft moving back over aircraft. A low power flight of this nature is little more than a 'powered glide' but will serve to show that all is well. Gently increasing revs each flight, still on a Gas charge, will yield short climbing flights showing up any tendencies to veer off course. Small deviations in course may be corrected by the trim tabs but one should remember that such corrections will also affect the glide path. Major changes of trim are best tackled by altering the thrustline. A zooming climb under power indicates insufficient downthrust and vice versa, whilst violent turns under power may be rectified by adjusting the side thrust to point away from such a turn.

*Motor and filler tested for fit inside VAC formed cowling to check propeller clearance. This power module can later be fitted to other models.*





Completed motor module left which incorporates VAC formed spinner cyano'ed to prop. note slot for screwdriver to lighten prop. built.  
Finished HUMBROL F1 Racer on right. excellent miniature transfers included in kit add final touches



Given reasonable weather conditions, this type of all sheet model will out-perform the plastic moulded variety by almost double. My 10 year old son Kevin (one of several guinea pigs in the series!) managed to successfully build and fly some of the kits with only the minimum of help from Dad! At an RAF indoor meeting at Cardington last Autumn he was regularly clocking 4 mins plus and has since had one fly out of sight (OOS) outdoors you fool – not inside the hangar!

To improve upon these flight performances a major reduction in structural weight is needed, together with an improvement in aerodynamics. To this end one must look towards the Built-Up-tissue-covered structure. To many however, this may seem a major step, and one which appears so disconcerting that it sometimes does not get taken. How many, one wonders, have been put off aeromodelling by the apparent complexity of the 'build up' scale kit, so often offered promoted as "suitable for the beginner"?

Fortunately there is an intermediate stepping stone, in the shape of a range of six kits marketed by HUMBROL. These too are designed for rubber power, but convert beautifully to the benefit of CO<sub>2</sub>. The

range contains 3 high-wing models, one mid-wing, one low wing and one biplane, the ever popular Tiger Moth; and therefore offers something to satisfy most requirements.

The fuselage and tail assemblies follow the pattern set by KK, VERON & LINDOE and are virtually identical in construction, carrying the same installation techniques. The wing however, are traditional built-up structures with top and bottom spars, ribs and leading and trailing edges. The pictorial instructions are most comprehensive taking one gently through ones first taste of tissue covering! All the parts are pre-cut and at a price of a little over £3, represent a good stepping stone to the totally built up model. All six examples were tried with various motors, success being pretty well even. As with the building instructions, details on flight trimming are equally clear even to the point of a section illustrating how to cope with a repair job!

The next obvious step is to tackle the 'total' built up job, but in keeping with the 'gently does it' approach it may be reasonably argued that kits where the parts are all die-cut would be the order of the day.

A full and comprehensive range of STERLING & GUILLOWS scale model kits

are distributed through RIPMAX & JNT and the COMET range models (also from the USA) is also available. Again, if this is ones first excursion into this type of model, one would do well to tackle a high wing 'slab sided' subject first, before venturing onto the more exotic subjects from either WWI or WWII.

It will be seen that wing structures follow the pattern of the HUMBROL models but that now the fuselage also is built up! Fuselage structures fall broadly into three styles: Slab sided or Box where the sides are constructed flat from thin strip, joined with cross braces being added later; HALF KEEL, a technique common to models having circular or elliptical cross sections; FORMER-ON-A-TUBE, here formers are 'jigged' onto a master tube, particularly favoured by COMET kits.

Of particular interest within this sphere of structures is one of the very few kits made expressly for CO<sub>2</sub> power. This is the Pitts Special from Harry Butler models, a good example of die cut, half-keel construction producing a most pleasing replica of the real thing, with an equally zippy performance.

Next Month: We look at some of the more complex scale kits and how to convert them to CO<sub>2</sub>.

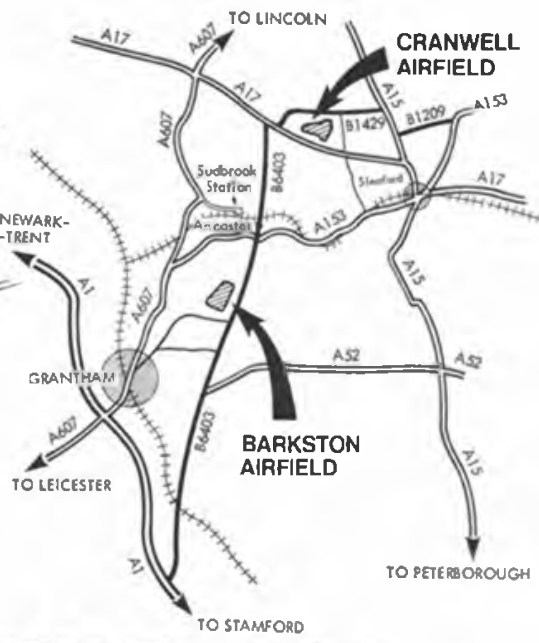
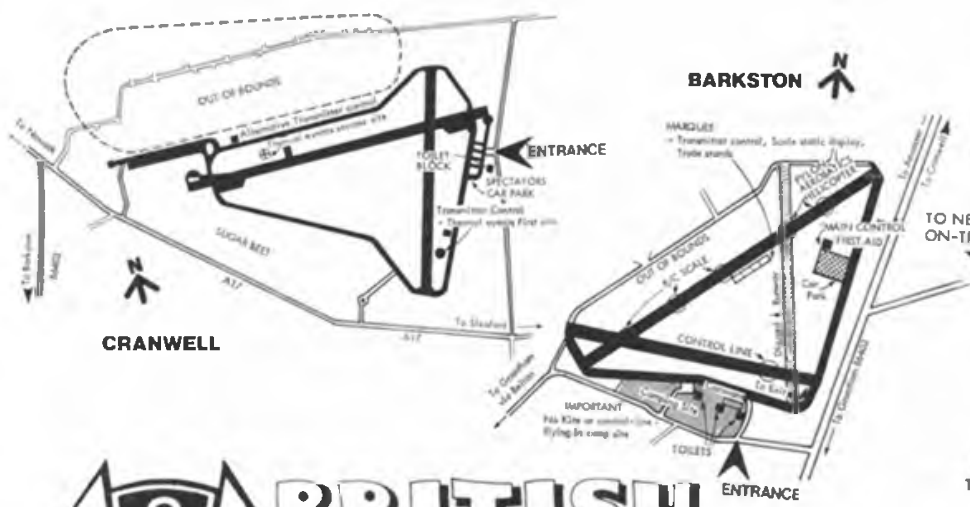


The inherent stability and good flight characteristics of high wing cabin mono planes typified by VERON Cessna offer the best success rate for the newcomer before moving onto more complex scale types of low wing designs.

Even our youngest kit reviewers 7-year old Alison Peacock and 5-year old Michael Walters had no trouble getting super lights from their Lindo Bolkow Junior, thanks to Dad who built the model for them!







# BRITISH NATIONAL CHAMPIONSHIPS 1979

## 25-27th August

### HELP MAKE THE 1979 NATS THE BIGGEST YET!

The 1979 SMAE British National Championships is split into 3 separate sites, twin airfields Barkston Heath and Cranwell near Grantham, and Everleigh dropping zone north of Salisbury. General camping is available at Barkston, and for competitors only at Cranwell, with strictly no camping at Everleigh. For further details of competition entry and camping send SAE to SMAE NATIONALS, Kimberley House, Vaughan Way, Leicester. Tel: 0533-58500. Spectators are welcome at Barkston, coaches £10, cars £2, Motor cycles £1, Pedestrians 50p, accompanied children under 14 free.

Cars must be kept off both grass and main runways. Perimeter tracks are available for access and car parks are designated, with priority given to competitors.

#### R/C – CRANWELL

- Open Thermal – 09.00-18.00 Sat.
- Multi Task F3B – 09.00-18.00 Sun.
- Scale – 11.30-18.00 Sun.
- 100S – 09.00-16.00 Mon.

#### C/L – BARKSTON HEATH

- 1/2A Team Race – 08.00-10.00 Sat., 17.00-19.00 Sun., 11.00-11.45/15.00 Mon.
- F2C Team Race – 15.30-19.00 Sat., 13.30-17.00 Sun., 09.00-09.45/11.45-12.30/16.00 Mon.
- Goodyear Racing – 10.00-13.00 Sat., 08.00-11.30 Sun., 09.45-10.15/14.40 Mon.
- 'B' Team Race – 13.30-15.30 Sat., 11.30-13.30 Sun., 10.15-11.00/15.20 Mon.
- Mini Goodyear – 13.00-17.00 Sat., 13.00-17.00/17.30-18.15/19.00 Sun.
- F2B Aerobatics – 08.00-19.00 Sat., 08.00-19.00 Sun., 09.00-13.30/12.30-15.00 Mon.
- Novice Stunt – 13.00-18.00 Sat., 13.00-18.00 Sun.
- F2D Combat – 09.00-15.00 Sat., 09.00-15.00 Sun., 12.30-13.00/15.40 Mon.
- 1/2A Combat – 15.00-19.00 Sat., 15.00-19.00 Sun.
- Carrier – 09.00-13.00 Sat., 14.00-18.00 Sun.
- 3.5cc Carrier – 09.00-13.00 Sat., 14.00-18.00 Sun.
- Speed – 09.00-17.00 Sat., 09.00-17.00 Sun., 09.00-16.00 Mon.

#### R/C – BARKSTON HEATH

- Club 20 – 08.00-19.00 Sat.
- Helicopter – 08.00-19.00 Sat.
- FAI Pylon – 08.00-18.00 Sun.
- Aerobatic – 08.00-16.00 Mon.

#### SCALE – BARKSTON HEATH

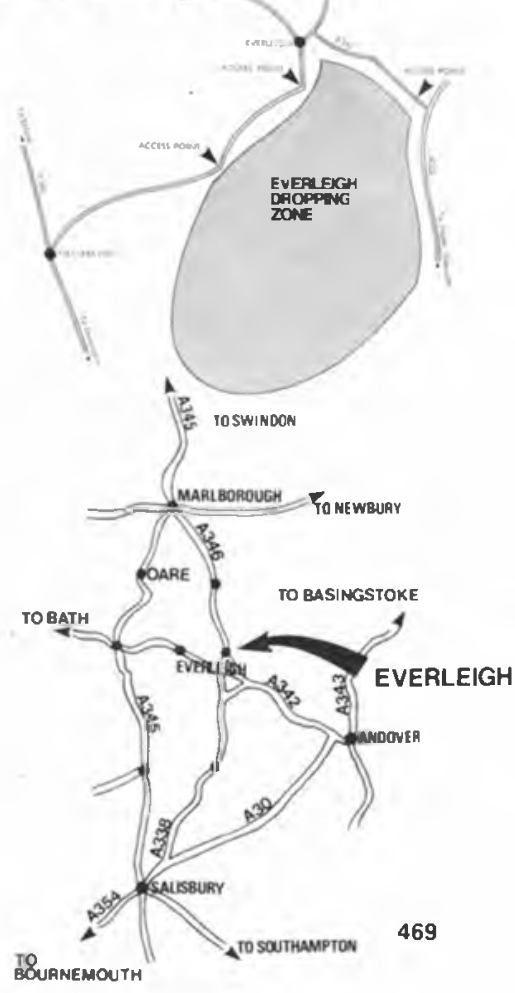
- R/C Super Scale and Stand-Off. Flying: 09.30-18.00 Sat., 09.00-18.00 Sun., 09.00-16.00 Mon. Static: 10.00-18.00 Sun., 10.00-18.00 Mon.
- F/F Super Scale and Rubber Power. Flying: (round 1) Sat. 18.00 or Sun. 07.00, (round 2) Sun. 18.00 or Mon. 07.00. Static: 10.00-18.00 Sun., 10.00-18.00 Mon.
- C/L Super Scale. Flying 10.30 Sun. Static: Sunday or Monday.

#### F/F EVERLEIGH

- SATURDAY, AUGUST 25TH
- Open Glider\* – 10.00-19.00 hrs
- Open Power\* – 10.00-19.00 hrs
- Coupe d'Hiver – 10.00-19.00 hrs
- Hand Launch Glider – 10.00-19.00 hrs
- Fly Offs from – 19.15 hrs
- SUNDAY, AUGUST 26TH
- Open Rubber\* – 10.00-19.00 hrs
- 1/2A Power – 10.00-19.00 hrs
- A1 Glider – 10.00-19.00 hrs
- CO. Scramble – 12.00-13.00 hrs
- F1A Glider – start 14.30-15.15 hr (45 min rounds)
- F1B Rubber – start 15.15-16.00 hr (45 min rounds)
- F1C Power – start 15.15-16.00 hr (45 min rounds)
- Fly Offs from – 19.15 hrs
- MONDAY, AUGUST 27TH
- F1A Glider – start 10.00-10.45 hr (45 min rounds)
- F1B Rubber – start 10.45-11.00 hr (45 min rounds)
- F1C Power – start 10.45-11.00 hr (45 min rounds)
- Vintage – 10.00-16.00 hr
- "Sparklets" CO. Duration – 10.00-16.00 hr
- Tailless – 10.00-16.00 hr
- Fly Offs from 16.15 hr
- \*Frog Junior and Ladies Cup events

#### JUNIOR KIT – EVERLEIGH

SATURDAY, AUGUST 25th, 12.00-17.00 hrs. The competition is open to anyone under 16 on January 1st, 1978, and any glider or rubber-driven model they have built from a kit is eligible, as long as its wingspan is less than 50 inches. The contest is simply for flight duration; the gliders can be launched with up to 50 metres of tow-line, and three flights are counted, each timed to a maximum of two minutes. Separate classes for gliders and rubber models both have an extensive prize list of model kits, materials and equipment sponsored by Humbrol Ltd. Entry is made on the day and is free of charge.



# THIS MONTH: SPRAY BARS, FUEL TANKS & SQUEEZE BOTTLES



with  
**John Stroud**

You will have already discovered that your engine is sensitive to the amount of fuel in its fuel to air mixture. The needle valve reduces, and finally closes off, the fuel when it is screwed in and gradually allows in more fuel as it is screwed out. If the valve is too far out (rich) by about a turn the engine is likely to lose something like 1,000 rpm. If it is too far in by one turn (lean) the engine is likely to run very erratically or stop. By the way, most engines 'lean out' in flight so expect to need to set the needle valve at least 1/4-1/2 turn open from the best ground setting to get the

best airborne performance.

Let us examine the effect tank position will have on the fuel to air mixture. The function of the fuel tank is to supply fuel to the spray bar and it is the tank position relative to the centre of the spray bar where the jet holes are, which is important. Figure (1) shows where the centre line of the spray bar is when we consider the vertical plane of an upright and a sidewinder motor. Figure (2) shows what happens if the tank is mounted too far above the spray bar. Fuel will tend to run down to the spray bar and flood the

tanks, which have a different piping arrangement than the one shown, should always be fitted as in Figure (4). This is so that when the aircraft is upside down there is no relative change in position. Imagine turning Figure (2) upside down and it turns into the problem of Figure (3).

For sports use one can usually afford to have the two centre lines up to 1/4 inch apart and the need to be spot on rests only in stunt models.

Now let us consider the problems of locating the tank in plan view. At first glance one might think it does not matter

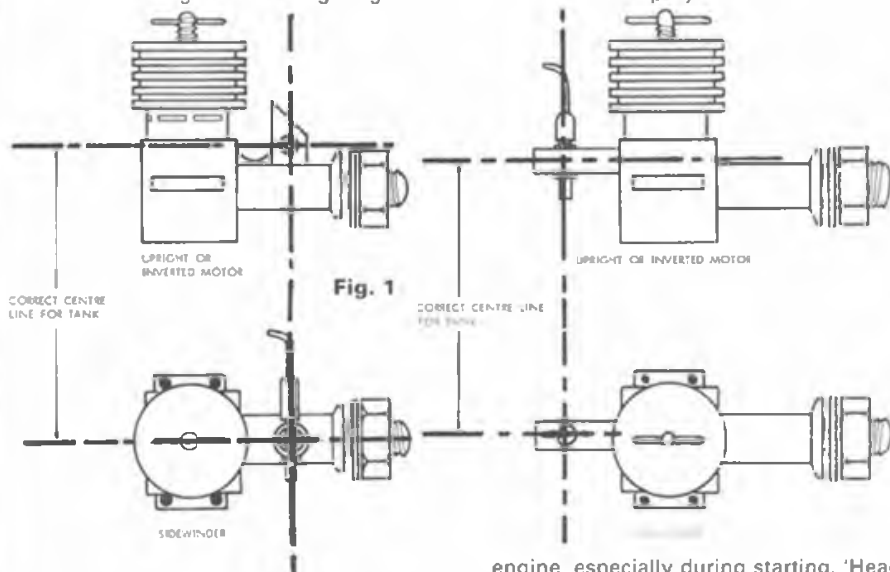


Fig. 1

FRONT INDUCTION VIA HOLLOW CRANKSHAFT



Try this test

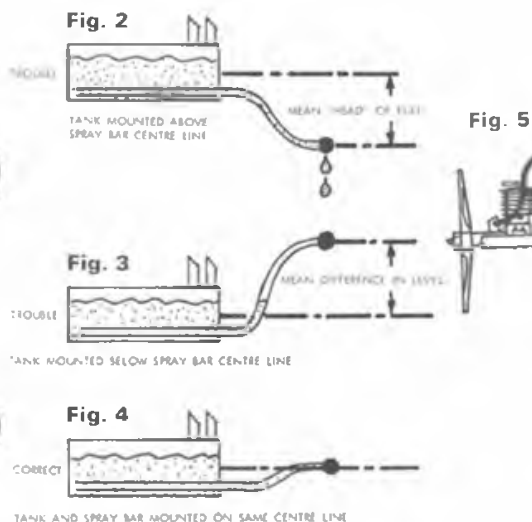


Fig. 2

TANK MOUNTED ABOVE SPRAY BAR CENTRE LINE

Fig. 5

Fig. 3

TANK MOUNTED BELOW SPRAY BAR CENTRE LINE

Fig. 4

TANK AND SPRAY BAR MOUNTED ON SAME CENTRE LINE

engine, especially during starting. 'Head' is the word plumbers use for the height difference in a pipe system. Notice I have called it 'mean' height because there is a change in 'head' between a full and empty tank and one needs to consider the average. In Figure (3) with the tank below the spray bar, we will once again have starting problems. This time the engine will need to suck the fuel up the pipe to the spray bar. Many engines can achieve this feat when they are running but most are impossible to start in this position. Figure (4) shows how things should be. Notice that there will be a small head with a full tank and the fuel level will be below the spray bar as the fuel is used up. This helps starting slightly and is one reason why most models speed up as they near the end of their flight. Note too that stunt

but with control line models centrifugal force brings its own special problems. In Figure (5) I have exaggerated a badly placed tank. Notice that when static it presents no special problems but then consider the effect of centrifugal force. It will force the fuel to the outside corner of the tank and the engine will then need to suck it back. With the tank as closely lined up with the engine spray bar as possible, the effects of centrifugal force on the fuel system are kept to a minimum. Here again is a reason why engines lean out towards the end of a flight. Finally how far back can the tank be? Once again let us exaggerate the position, to imagine the effect, and put the tank on the tailplane. When the plane dives the engine will flood and when it climbs, it will be lean. Acceleration too, from a launch, will cause the engine to go



Two simple methods of fixing fuel tanks to the side of profile fuselage models. Left, rubber fuel tube strap retained by threads of 6BA bolts. Right, tinplate strap cut from old can, can be soldered to tank.

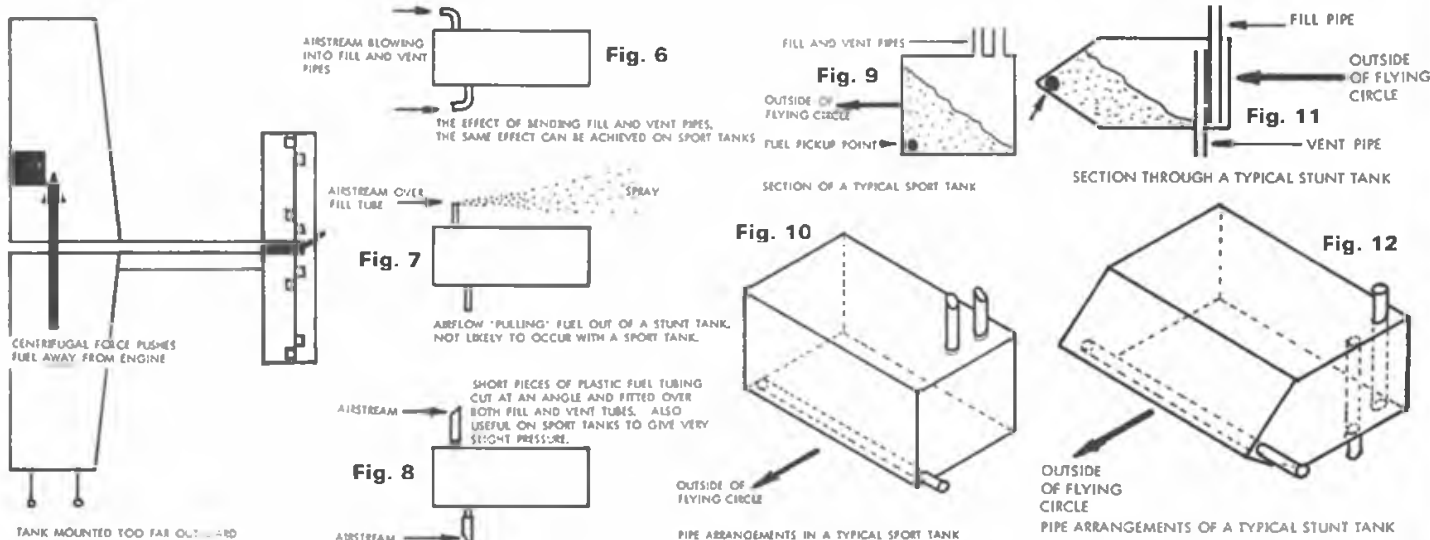


lean. In addition, the fore and aft location of the tank can have a noticeable effect on trim as the tank empties. The golden rules are get the tank as close to the engine as possible and get the centre line of the tank in line with the centre line of the spray bar. Engines vary enormously in how forgiving they are to tanks being slightly out of place. As a general rule very high performance engines are more touchy than beginners engines and need a different type of tank system to get good reliable engine runs. These special tank systems provide a pressurised fuel feed where the

fuel on the same principle as a scent spray. A simple and quick way to prevent this problem is to fit 'dog ears' to both pipes. These are short pieces of tubing, cut at an angle and fitted to cause the airstream to blow down the tubes rather than across the top, figure 8.

If you did not make your fuel tank you may be puzzled by the internal working of yours and those you have noticed fitted to your friends' models. If we ignore the pressurised systems used by experienced modellers then we are only left with two types of control line fuel tanks used by

work upside down. Imagine turning it upside down from figure 9. Not only will the fuel pour out of the fill and vent but it will also fall away from the pickup point. In figures 11 and 12 I have shown the usual set up in a wedge type stunt tank. The fill pipe enters at the top of the tank and goes to the bottom and the vent pipe enters the bottom and goes to the top. The pickup point is in the corner of the wedge at the rear of the tank. I have shown the fuel level towards the end of a run but even so the pickup point will still be in the fuel when turned upside down. If the tank contained



fuel is forced along the pipe to the engine rather than allowing the engine to suck the fuel into the spray bar. By using the airstream and prop backwash it is possible to very slightly pressurise any simple system and overcome the problem Ray encountered on his Gazelle. Many commercial tanks are made with the fill and vent pipes bent to face forward, figure 6. If yours is like this then you already have a system which is very slightly pressured by the airflow. Ray's tank on the other hand had fill and vent pipes which had been cut off at 90° and not bent. Not only is his system not pressured but there is a strong possibility that fuel was being drawn out of the tank up the filler tube during flight, figure 7. When airflow travels over the top of a piece of straight cut tube at a precise angle it will draw up, and spray out, atomised

beginners. These are stunt tanks designed to work upside down as well as the right way up and 'sport' tanks which only work the right way up. The pipes in a tank do three things (1) Take the fuel out of the tank to the engine (2) allow the fuel into the tank for filling (3) allow air in or out of the tank during the action of (1) and (2). In figures 9 and 10 you can see how this is achieved in a typical sports tank. The pickup point to supply the engine is on the outside of the tank at the bottom and towards the back of the tank. The fill and vent tubes extend only just inside the tank and are positioned at the front to avoid venting fuel when the model is slightly nose-up during normal flight and take off. In figure 9 I have shown what happens to the fuel during flight. This type of tank is suitable for all trainer planes but will not

more fuel the functions of the fill and vent pipes are reversed during inverted running. Not all stunt tanks are wedge shaped, especially the larger ones. The rectangular ones always leave some fuel in the tank. The pickup pipes do not always come out of the front of the tank as I have shown. The important thing is where they pick up from. If you are puzzled by your tank, try this test. Disconnect the tank from the engine and put in a little fuel. Connect a length of fuel tubing to the outlet and to the fill pipe. Put the outlet tubing into the fuel bottle, put your finger over the vent and blow down the fill pipe. The position of the tank when fuel comes out instead of air should enable you to deduce what the pickup point is in the tank. I have found beginners with tanks fitted so that the pickup pipe was towards the inside of the

circle. The engine would start OK but always cut after a lap or two.

How is your fuel tank attached to the model? If it is held on by elastic bands, shame on you. I know it is very easy but diesel fuel rots elastic bands and the tank is never in the same place two flights running. Even quite small changes in tank position call for adjustment to the fuel setting and you will rarely get it right. The answer is to adopt one of a number of satisfactory ways to fix a fuel tank to a model.

The easiest way is to get the old slow setting epoxy out again but this method does have its problems. With no 'give' in

models over 1.5cc – although admittedly I have never tried it.

Lastly, and suitable for any size model, the tank can be held by a straightforward tin plate strap. Cut a strip of metal from a tin can, bend it to shape, drill or pierce two holes and there you are. However if you are going to make a good job of fixing the tank it is worthwhile putting some thought and care into getting the position right. NOT ALL FUEL for model aircraft engines is sold in cans with filler spouts, certainly not if purchased in gallon cans. Even when you have a can with a valve spout you may well find it rather slow for filling large tanks. For these reasons I find it handy to



Not all fuel is in cans with filler spouts.



Left. Assorted plastic squeeze bottles suitably modified for filling fuel tanks are much better than the metal cans in which the fuel is sold

Below right. 1/8 inch dia brass tube epoxied into plastic top which has been drilled out for clearance.

Below. 1/8 inch dia brass tube soldered to tinplate disc before fitting inside brittle plastic top.

the mounting the tank is more likely to split in a crash especially when the tank is full of fuel and heavy. If this happens the tank is difficult to repair or replace. If the tank is inside a built up fuselage one is stuck with the problem. I have had to carry out some quite tricky surgical operations to get the tanks out of a built-up model for repair. Fortunately profile models allow tanks to be mounted so that they absorb some shock and can easily be removed for replacement or repair.

Small tanks can be attached very simply by putting two bolts through the fuselage one above and one below the tank. The tank is then held by a strap made from fuel tubing which needs to be a good tight fit over the bolts. This is a great idea I pinched from someone, but have never considered it suitable or strong enough for



use a fast acting squeeze bottle filler I have made up myself. All that is needed is one of the common flexible plastic bottles which have dozens of domestic uses. Making up a filler bottle with a shampoo bottle or a washing-up liquid bottle is fairly straightforward. In both cases I used slow setting epoxy to fix a short piece of brass tube into the screw cap. The short neck helps make the washing-up liquid

into a disc of tin plate and then Araldite the whole thing up inside the cap. I was even able to use the original conical sealing washer. Keep your eyes open for a suitable plastic bottle and make a good robust job of converting it into a fuel bottle. There is nothing worse than calling a halt to flying when you have a perfect model, the engine is behaving itself but the filler bottle gets broken.



Don't get left out of the flying fun this summer, join the Aero Aces by sending for your Membership card, badge and transfers. Members can benefit from our question and answer service to help them overcome familiar problems facing Aeromodellers, and the chance to win APS plans vouchers for the most interesting letters published.

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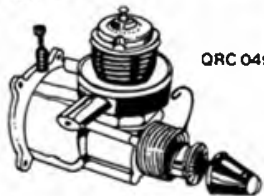
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1000 Pee Wee	.020
1200 Golden Bee	.049
1500 Black Widow	.049
3500 Babe Bee	.049
4501 QRC 049 with Muffler	.049
with throttle control	
1001 Pee Wee	.020
1201 Golden Bee	.049

Rotary intakes, higher performance than the Reed Valve Series, no backward movement, but available with throttle control. Ideal for general sport and R/C flying.

2200	.15
2300	.09
2400	.049
with throttle control	
2201	.15
2301	.09
2401	.049



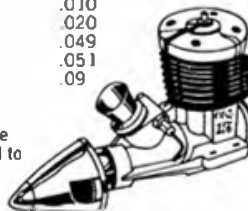
Tee Dee Series

The most powerful engine in its class. Designed for competition. Front rotary, double porting, high compression. No throttle versions since these engines used at maximum levels.

1300	.010
1600	.020
1700	.049
2000	.051
2100	.09

### Conquest Series

High performance engines designed to meet the rigours of competition. Rugged die cast crankshafts, tungsten carbide inserts to give optimum balance, minimum vibrations, precision contoured for temperature changes. Schneurie transfer porting for maximum flow at high r.p.m.



2800	.15 F/F
2810	.15 R/C

Accessories only from Hales



Exclusive flight pack containing Ever Ready 1½ volt Battery, Hales Cox 250cc can of Glow fuel, Glow cap wrenches Glowclip

Fuel  
Red Glow 250cc  
Hales Cox Exclusive Special Glow 250cc



(Prices correct at time of going to press)



1. Marcus Norman launches a ducted fan Yak 23 RIC, also used take off dolly to get model airborne.  
 2. Hells Angels over Old Warden! 5 RIC WWII models overhead simultaneously do battle in the sunny skies.  
 3. This EMB Ipanema was one of the largest FIF models flown, took all day to get it trimmed.  
 4. Wai Cardwell does a slow fly past with his control line Tiger Moth.  
 5. Jeremy Shaw's very impressive Sikorsky S-43 amphibian.  
 6. Kit Lockheed Lightning converted to twin CO, was one of many multi engine CO models flown.  
 7. How many models can you recognise; Flamards, DC3, Sea Fury, in fact 233 RIC Scale models actually flew!  
 8. Ron Bye up from South Bristol with recently completed C/L Vickers Viscount built from APS Plans powered by Cox Medalian 09 and 15s.  
 9. Dave Kenny an aerobetic flyer turned to scale, tunes the motor on his C/L Kawasaki Swallow, nicely airbrushed colour scheme.



2

OLD WARDEN

3



4



8



10. Roy Yates proxy flew this Merco 35 powered pre war Hendy Hobo lightplane scaled up from Aeroplane Monthly drawings.

11. Unusual Transavia Airtruk from Peter Miller with his Yak 18, last month's APS plan in the background.

12. Dennis Bryant flew this 80 inch span Aeronca C3.

13. Dick Grainger from Nottingham tried this unusual CO<sub>2</sub> powered tissue para wing, goes better indoors.

14. Loening Amphibian, built from APS Plans, powered by PAW 149 made some good flights.

15. Martin Fardell with DH10 awarded trophy for best RIC model of the day, powered by twin 40s.

16. Dennis Cater from Orpington in Kent, with his RIC 1/4 scale Piper Brave.

17. Vic Westmuckett starts up his Experimental Britten Norman Islander single Dowty fan Control Line model.

18. David Burdock, member of Wanstead Effs, flew this DH71 Tiger Moth converted to Control Line from Economy Scale RIC kit.

12



16



17

18





# R/C Sport Flyer

**This month some basics of how an R/C model is controlled.**



RIGHT NOW, let's start to be practical this month by passing on from the theoretical side of what makes radio control tick to more practical considerations. Specifically, let's look at the basic controls for flight, how the control surfaces move and what effect each has on the flight path of the model to achieve the desired effect.

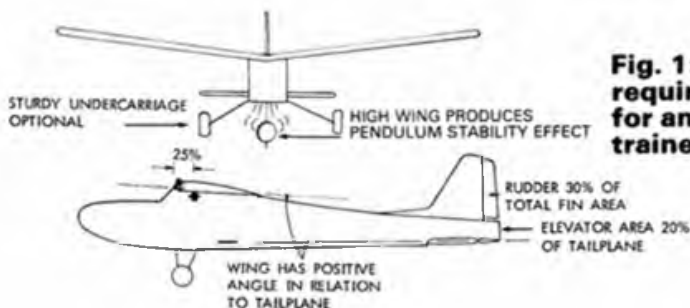
The controls applied to your R/C model depend entirely upon the number of controls which your R/C system has and the type of R/C model you will be flying. We will therefore assume that most of you will have two or three function R/C systems and since this feature is written specially for newcomers to the R/C hobby, your model will inevitably be a trainer type.

## Inbuilt stability

Trainers have to be easy to fly and for this reason have to be naturally stable – the ability to re-assume upright level flight after violent disturbance from that "straight and level" state that the novice R/C pilot will inevitably induce just by his own inexperience.

"Finger Trouble" is to be expected from anyone who has never before flown a model by radio control and the antidote to the inevitable out-of-control situation is a model which, upon release of all controls back to neutral, will quickly right itself to a straight and level attitude – a sort of R/C aerial lifeboat! The trainer will therefore have to be stable in both the lateral (roll) and longitudinal (pitch) axes. To achieve this, the model will be a high wing type to provide the pendulum stability achieved by slinging the bulk of the weight underneath the wing.

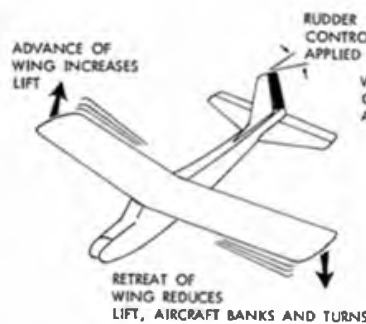
Stability in the lateral (roll) axis is



**Fig. 1: basic requirements for an R/C trainer.**

*Although a scale model this parasol wing Fokker D8 from the Varon kit has many of the attributes for an R/C trainer using rudder, elevator and throttle controls.*

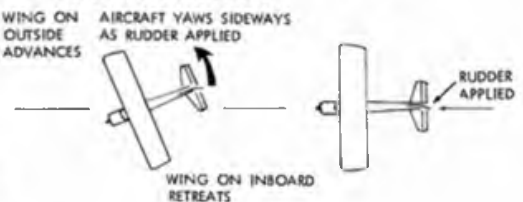
achieved by generous wing dihedral – another obvious physical feature of all popular R/C trainer aircraft designs. In the longitudinal axis, natural stability is achieved with a balance point well forward on the wing (typically 25%) coupled with a generous longitudinal dihedral – ie, a fair difference in angle of attack between the wing and the tailplane. Traditionally, trainers have used "flat bottomed" wing sections and although such is not absolutely essential, the section is well suited, not only for stability, but for the very practical reason that a true, unwarped wing is easily built. Fig. 1 illustrates the basic requirements for a stable trainer.



## Lateral axis control

On our 2-3 R/C function trainer, the lateral or *directional* control is the most important and that control is the **RUDDER**. Truthfully, rudder is a yaw control rather than one which in itself "steers" the model, but another inbuilt feature of the trainer model design combines with the rudder yaw effect to change the direction of the model as required. This is the wing dihedral which, when the rudder command is applied, "banks" the aircraft, the wing dipping in the direction of the required turn. Within reason, the more dihedral, the snappier or more violent the "banking" reaction becomes so the dihedral angle of the wing has to be care-

**Fig. 2: Turning by use of rudder control.**



fully selected – plans and instructions should be carefully followed folks!

How then do rudder and wing dihedral combine to have the desired "banked" turn effect on the model? Fig. 2 shows how. When the rudder is applied and the model "yaws" say left, the net effect is to increase the angle of attack of the right wing panel which is outboard of the turning direction. With angle of attack increased (the left hand wing panel angle is correspondingly decreased) a rolling effect is introduced.

At the same time, the 'pendulum' stabil-



ity works against the roll force so that a rate of turn is achieved proportioned to the amount of rudder control applied. Note, however, that without the wing dihedral, turning by application of rudder control is very ineffective – a fact we will discuss when we go on to talk about aileron controls.

Rudder control requires a fair amount of control movement – say 2–1in either side of neutral on a typical size R/C trainer.

### Longitudinal control

The longitudinal or “pitch” axis control surface is the elevator, located and hinged to the trailing edge of the tailplane to become an integral part of this flying surface.

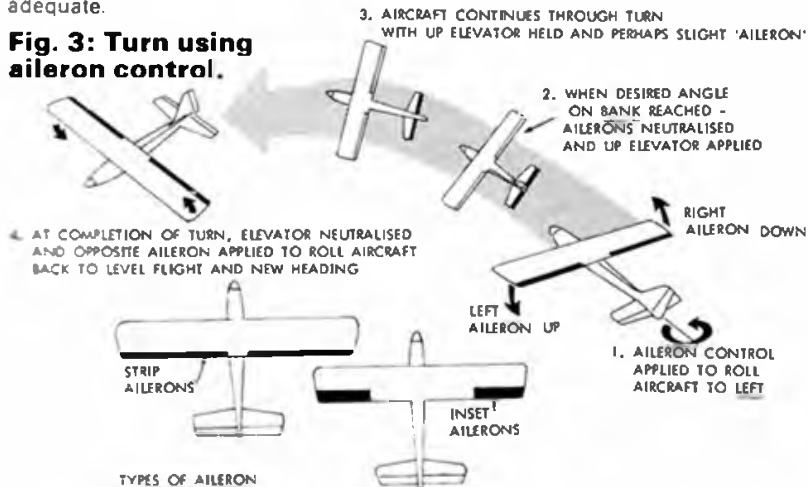
Unlike the rudder control where one effect leads to another more preferable result, the elevator acts entirely within its own control axis to pitch the nose up or down as desired. In the case of the novice R/C flyer, that direction is usually up, or away from the nasty hard stuff the pilot is standing on!

On an R/C trainer type aircraft the natural and highly desirable inbuilt longitudinal stability imparted by the difference in angle of attack between wing and tailplane, plus the forward balance point, provide a fair inertia force for the elevator control to work against, but even so, by nature, the elevator tends to be the more sensitive control surface.

In a trainer type aircraft, therefore, its effect must be minimised to avoid over-control, otherwise you’ll be trying to control a nasty aerial switchback! Far better in fact, with all that inbuilt stability that the elevator works more like a trimmer than a full control force to achieve a very mild pitch control effect.

We will talk more about trim control as achieved by those little extra levers on your transmitter just a little later – meanwhile suffice to say that elevator control surface area need be only about 20% of the tailplane to which it is attached while ½in control movement in each direction measured at the trailing edge should be adequate.

**Fig. 3: Turn using aileron control.**



### What about ailerons?

Not normally regarded as a control function desirable for beginners, it is important nevertheless to understand what ailerons do, since on more advanced models the ailerons replace the rudder as the primary directional command, although the rudder remains for ground handling during taxiing and for yaw control as in aerobatic manoeuvres such as stall turns.

Ailerons are generally applied to a model where there is less inbuilt lateral stability and in general appearance, such models are characterised by less wing dihedral – maybe none at all. Ailerons are much less effective in any model with a generous dihedral angle.

Ailerons come in pairs, one to each wing panel and operate simultaneously in opposite directions to roll the airframe around the lateral axis. As such, the ailerons do not produce a ‘turning’ control. In practice the ailerons are applied in proportion to the rate of roll required and for long enough to roll the aircraft to the required angle of ‘bank’. At this point your model is flying chinese fashion – wun-wing-lo, and if left in this state will most likely side-slip gracefully into the ground three fields away.

The actual sequence of control commands to achieve the turn is that at the point when the required angle of ‘bank’ is achieved, the aileron control stick is returned to neutral and a measure of up elevator control is fed in to haul the aircraft round the turn, whilst a very minor amount of aileron may need to be applied to hold the aircraft in the desired banking attitude.

This combination of control application achieves what is called a “co-ordinated turn” and the ‘rate’ or radius of the turn is determined first by the angle of bank. A small angle of bank is countered by a correspondingly small introduction of up elevator sufficient to hold the nose of the model up and prevent the aircraft from losing altitude in the turn. Over-application of elevator will cause the

model to climb in the turn and vice-versa and to tighten up the turn, a greater degree of bank must be introduced followed by more up elevator to hold the nose up and tighten up the turn.

Without the degree of natural stability of the trainer type model, the aileron controlled model will normally hold the angle of bank which has been applied until corrected by applying opposite aileron action to roll the aircraft back until the wings are once again level.

### Throttle command

Where only two function R/C systems are used, the engine speed control is normally ignored, but where a third control function is available for a trainer type aircraft, this is normally used to operate the throttle of the motor – always assuming you are using a powered model.

A simple wire push-rod linkage, preferably with adjustable clevis end, links the servo to the control lever on the throttle mechanism to vary the speed of the motor. Truthfully the novice pilot has little use initially for this feature since it is desirable to fly at full power as the easiest means of achieving constant airspeed and therefore uniform control surface reactions. The throttle might initially be used more as a motor cut-off prior to a glide approach to landing. However, as experience is gained the throttle may be used to control the rate of ascent or descent and provide a more interesting flight pattern.

### Trim controls

Your transmitter has spring centred main control columns for the control functions. Coupled to the functions of these main control columns are independent, non-centring stub levels which cover servo movement of approximately 10% of full travel about the neutral or centre point.

The “trims” are then used to correct minor alterations to the natural flight characteristics to achieve perfect stable straight and level flight within the limits of these trim control movements – much in the same way as packing pieces are used on free flight models. But trim controls should only be regarded as a secondary means of trimming the model and used, for example, to correct the slight climbing tendency which will be induced as the fuel in the tank is burned off. Trim controls are no substitute for the more drastic alterations to control surface neutral positions which must initially be applied by adjustments to the control clevises on the control push rod ends.

Where, on initial test flights the trim controls have been displaced from their centre points to achieve airborne equilibrium, the flight control surfaces should be pinned, the control links disconnected, trims re-adjusted back to their centre points and then the control clevises on the push rod ends adjusted to link up to the control surface horns once again.

**BLADES - TOOLS**

1	48 or ABC	No 4 Sheet Blade Ph 1
2	88	No 8 Blade Ph 1
3	88	No 9 Blade Ph 1
10	10C	No 10 Blade Ph 1
11	11C	No 11 Blade Ph 1
12	12C	No 12 Blade Ph 1
13	14C	No 14 Blade Ph 1
15	16C	No 16 Blade Ph 1
17	17C	No 17 Blade Ph 1
18	18C	No 18 Blade Ph 1
19	19C	No 19 Blade Ph 1
21		No 21 Blade Ph 1
22	27C	No 27 Blade Ph 5
23	29B or HC	No 29 Blade Ph 1
24	29C	No 29 Blade Ph 5
25	29C	No 29 Blade Ph 1
26	29C	No 29 Blade Ph 1
29	829	No 29 Blade Ph 1
30	830	No 30 Blade for SportsKut Ph 2
31	No 1 Red	No 1 Blade Aluminium Ph 1
32	No 1 Red	No 1 Blade Aluminium Ph 1
33	No 1	No 1 Blade Aluminium Ph 1

**WOODCARVING BLADES - TOOLS**

100	0001	Woodcarving Bit No 1 Ph 2
101	0002	Woodcarving Bit No 2 Ph 2
102	0003	Woodcarving Bit No 3 Ph 2
103	0004	Woodcarving Bit No 4 Ph 2
104	0005	Woodcarving Bit No 5 Ph 2
106	0006	Woodcarving Bit No 6 Ph 2
121	127 C	No 127 Pencil Blade Set Ph 1
131	140 11 C	Punch No 32
132	140 12 C	Punch No 32
134	8 489 C	Group 1 Ph 2
135	8 489 C	Group 2 Ph 2
137	2007C	Woodcarving Bit No 7 Ph 2
151	1601 C	Group 1 Ph 2
152	1602 C	Group 2 Ph 2
153	1603 C	Group 3 Ph 2
154	1604 C	Group 4 Ph 2
155	1605 C	Group 5 Ph 2
156	1606 C	Group 6 Ph 2
157	1607 C	Group 7 Ph 2
158	1608 C	Group 8 Ph 2
161	1609 C	Group 9 Ph 2
162	1610 C	Group 10 Ph 2
163	1611 C	Group 11 Ph 2

**BLADES - CARBID**

271	13C	No 13 Saw Blade Ph 1
272	13C	No 13 Saw Blade Ph 1
273	29C	No 29 Blade Ph 1
274	37C	No 37 Saw Blade Ph 1
275	37C	No 37 Blade Ph 1
276	37C	No 37 Blade Ph 1
277	37C	No 37 Blade Ph 1
278	37C	No 37 Blade Ph 1
279	37C	No 37 Blade Ph 1
280	37C	No 37 Blade Ph 1
281	37C	No 37 Blade Ph 1
282	37C	No 37 Blade Ph 1
283	37C	No 37 Blade Ph 1
284	37C	No 37 Blade Ph 1
285	37C	No 37 Blade Ph 1
286	37C	No 37 Blade Ph 1
287	37C	No 37 Blade Ph 1
288	37C	No 37 Blade Ph 1
289	37C	No 37 Blade Ph 1
290	37C	No 37 Blade Ph 1

**BLADES - DISPENSERS - CARBID**

418	101	Dispenser No 10 Blade
419	101	Dispenser No 11 Blade
420	101	Dispenser No 12 Blade
421	101	Dispenser No 13 Blade
422	101	Dispenser No 14 Blade
423	101	Dispenser No 15 Blade
424	101	Dispenser No 16 Blade
425	101	Dispenser No 17 Blade
426	101	Dispenser No 18 Blade
427	101	Dispenser No 19 Blade
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441	101	Dispenser No 33 Blade
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444	101	Dispenser No 36 Blade
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448	101	Dispenser No 40 Blade
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450	101	Dispenser No 42 Blade
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496	101	Dispenser No 88 Blade
497	101	Dispenser No 89 Blade
498	101	Dispenser No 90 Blade
499	101	Dispenser No 91 Blade
500	101	Dispenser No 92 Blade

**BLADES - BULK PACKS**

408	8 100BP	No 8 Blade Bulk Ph 100
610	0 100BP	No 10 Blade Bulk Ph 100
610	11	No 11 Blade Bulk Ph 100
616	16	No 16 Blade Bulk Ph 100
617	17	No 17 Blade Bulk Ph 100
618	18	No 18 Blade Bulk Ph 100
619	19	No 19 Blade Bulk Ph 100
620	21	No 21 Blade Bulk Ph 100
621	27	No 27 Blade Bulk Ph 100
622	29	No 29 Blade Bulk Ph 100
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650	29	No 29 Blade Bulk Ph 100



**SAW BLADES CARBID**

274	488	Coping Saw Blade Ph 1
275	485	Special Saw Blade Ph 1
276	484 11	Drum Saw Blade Ph 1
277	146	142 86 C
278	752	3525 C
279	753	3625 C
280	750	3625 C
281	750	3625 C

**KNIFE AND TOOL SETS**

5001	5001	Modular Set Board
5002	5002	Professional Graphic Art Set
5003	5003	Professional Graphic Art Set
5004	5004	Professional Art Set Board
5005	5005	Professional Art Set Board
5006	5006	Professional Art Set Board
5007	5007	Professional Art Set Board
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5009	5009	Professional Art Set Board
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5017	5017	Professional Art Set Board
5018	5018	Professional Art Set Board
5019	5019	Professional Art Set Board

**DRIVES**

3001	3001	No 1 Blade in Tube
3002	3002	No 2 Blade in Tube
3003	3003	No 3 Blade in Tube
3004	3004	No 4 Blade in Tube
3005	3005	No 5 Blade in Tube
3006	3006	No 6 Blade in Tube
3007	3007	No 7 Blade in Tube
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3050	3050	No 50 Blade in Tube

**TOOLS**

1001	1001	Professional Drawing Set
1002	1002	Professional Drawing Set
1003	1003	Professional Drawing Set
1004	1004	Professional Drawing Set
1005	1005	Professional Drawing Set
1006	1006	Professional Drawing Set
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1009	1009	Professional Drawing Set
1010	1010	Professional Drawing Set
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1012	1012	Professional Drawing Set
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1050	1050	Professional Drawing Set

7101	7101	Professional Drawing Set
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7115	7115	Professional Drawing Set
7116	7116	Professional Drawing Set
7117	7117	Professional Drawing Set
7118	7118	Professional Drawing Set
7119	7119	Professional Drawing Set
7120	7120	Professional Drawing Set
7121	7121	Professional Drawing Set
7122	7122	Professional Drawing Set
7123	7123	Professional Drawing Set
7124	7124	Professional Drawing Set
7125	7125	Professional Drawing Set
7126	7126	Professional Drawing Set
7127	7127	Professional Drawing Set
7128	7128	Professional Drawing Set
7129	7129	Professional Drawing Set
7130	7130	Professional Drawing Set
7131	7131	Professional Drawing Set
7132	7132	Professional Drawing Set
7133	7133	Professional Drawing Set
7134	7134	Professional Drawing Set
7135	7135	Professional Drawing Set

**SUNBEAM**  
**34 inch span**  
**Free Flight Sportster**  
 box 3 - .5 cc motors  
 designed by John Kay



SUMMER FLYING DAYS are here again, and what better way to enjoy them than with this attractive quick-to-build all-sheet free flight sportster. Sunbeam is ideal as a first step in power modelling, and follows on from my earlier design Moonco, the CO<sub>2</sub> powered model that was offered as a free plan in the May 1978 *Aeromodeller*. The all sheet construction follows the same lines and the model has a similar Jedelsky type wing. The tailplane is fitted on the underside of the fuselage so that the fin can be directly glued to the fuselage and not knocked out of alignment.

Whilst designed for free flight, Sunbeam can be converted to fit light-weight radio weighing 4-5 ozs. Suggested modifications of the fuselage formers are included on the plan. The original was powered by a Cox Peewee .020. The model is suitable for other small engines such as Cox TD.020, DC Dart and Humming Bird. The more powerful of these engines should be used for the radio control version.

Below, Tailend details, flat sheet tail retained with rubber bands, note 1/16in balsa wedge required to cure stall during trimming.



- Below is listed the timber required:
- 4 sheets of 3/32, 3in x 36in - medium.
  - 1 sheet of 1/16, 3in x 36in - medium hard.
  - 1 strip T.E. section 1in x 3/16in - soft.
  - 1 strip 1/2in x 3/16in - hard.
  - 14swg wire.
  - 3/16in 3-ply for engine bulkhead.
  - 1/8in hardwood dowel.
  - 1 1/2in balloon wheels.

If possible choose two sheets of 3/32in quarter grain sheet and the other two medium straight grain. Select a straight grain and a quarter grain for the wing panels. The remaining quarter grain 3/32in sheet is cut in half and re-joined to form an 18in x 6in panel. Choose the size of the sheets with a minimum gap between them and then using Sellotape to join the panels in three or four places and then a further long strip is used to cover the whole length of the joint. By folding back the balsa, using the Sellotape as a hinge, squeeze a bead of PVC glue along its length and close, remembering to wipe



Above, view of underside of wing shows simple ribs which keep top sheet to aerofoil shape behind triangular leading section.

Below, nose details, standard commercial graduated tank cut down and fitted with angled brass pipe to give visual fuel indication.



off the surplus glue with a damp cloth. I use PVC adhesive that will sand; however, if you prefer balsa cement, pre-cement the joints before finally gluing together. The panels should now be left to dry, weighted down on a flat surface, for 6-8 hours. Sand surfaces of balsa panels and cut the 36in x 6in sheet to 34in, then cut again, so that you are left with a sheet 34in x 5in. The strip of 34in x 1in is used for the eight wing ribs, whilst the remaining 6in x 2in piece is used for the fuselage formers. The tailplane fin and the remaining formers are cut from the 18in x 6in sheet. At this stage make templates for the fuselage sides, fin and half wing and tailplane panels to ensure minimum wastage of balsa.

**WING.** Glue the hard 1/2in x 3/16in strip to the 1in x 3/16in T.E. section and when dry sand the T.E. section so that there is a sharp edge. It may be necessary to sand the side to be glued to stop bowing. This piece is glued to the front of the wing

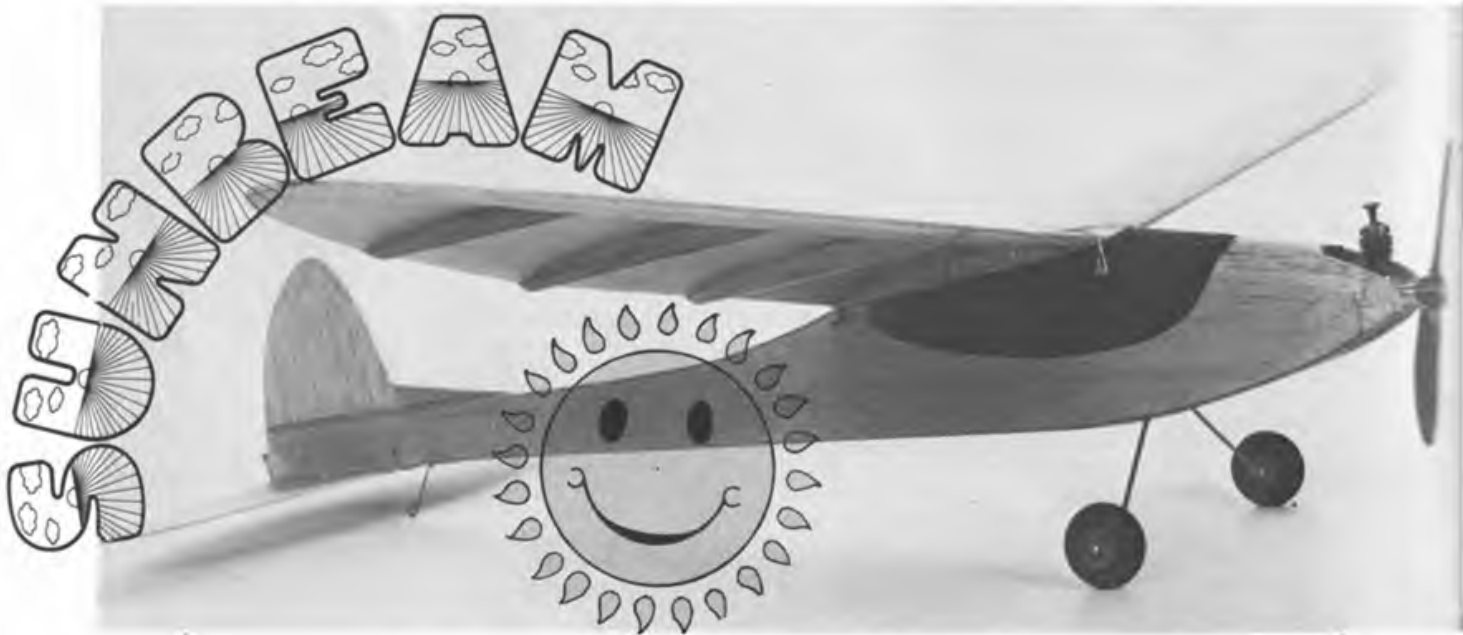
sheet. A triangular portion is removed from the leading edge underside as shown on the plan 1/2in back from the leading edge and to a depth of a 1/4in measured from the top of the wing sheeting. The outline of the wing is drawn on the top of the sheet but at this stage do not cut out, as it will make it more difficult to build the wing. Dope the underside of the wing with a thin banana oil and dope mixture and sand smooth when dry. This saves time later and gets over the awkward sanding between the ribs. Mark out the position of the ribs on the underside of the wing sheet. The wing is built upside down using 1/4in square packing at the leading and trailing edge. See sketch for details. Cut out the ribs and glue in position using a non-shrinking adhesive such as white PVC and allow to dry overnight.

the engine bearers. Glue the second side in place and when dry add the three rear formers and hold the rear of the fuselage together with a paper-clip or clothes peg. Check that the sides have an equal taper before allowing the glue to set. If the model is to have radio control, alternative formers 5 6 and 7 are shown on the plan to give extra width for installation and pushrods.

At this stage the undercarriage wire is bent over the plan and epoxied in position and the triangular braces added for strength. The wheels are fitted to the axles by soldering 8BA washers. Cut out the engine bulkhead from 3/16in ply. Mark and drill the engine mounting holes before fitting. The top and bottom of the fuselage is sheeted with 1/16in balsa with the grain across the width of the fuselage.

the leading edge using thinners. When dry, cut the tissue along the top of each wing rib whilst holding it under tension into rib bay panels. Only cut and dope one panel at a time. The cabin outline trim is cut out from colour tissue and doped on. Now fit the wing and tail dowels and tailplane saddle and give another coat of banana oil. To finish the whole model give a coat of fuel-proofer; and a second coat is advisable on the fuselage if a Glow engine is used.

Fit the engine to the model, if you are going to use a Cox Pee Wee it will have to be taken apart to drill a hole in the side of the fuel tank housing to allow the fuel tube to exit to the visible external tank. I used a small Mercury free flight tank cut down to the mounting lugs with the top re-fitted. A piece of bent brass tube is fitted to the



Cut out elliptical wing panels. The area under the leading edge from rib 3 has to be trimmed to form a flat panel tapering to the tip. See photo and plans for details. The two outer ribs will need to be reduced in depth at the trailing edge to match the other ribs. Do not taper the ribs flush with the trailing edge, otherwise the trailing edge can reflex in time. Cut the wing at the centre section, bevel the edges and rejoin with 3in dihedral under each tip. The two centre ribs are sanded flush with the leading and trailing edge and the underpanel is sheeted in with 3/32in balsa between the ribs. No dihedral braces are necessary.

**FUSELAGE.** The fuselage sides are both cut from a single 3/32in sheet 3in x 36in. Mark out the former positions and glue the first four on one side, making sure that they are at right-angles to the sheet. Note they are all the same width. If other than radial mounted engine is to be used, holes will have to be cut in the formers to take

The front curved portion is planked with strips approximately 1/8in wide, cut from offcuts of the 3/32in sheet. Small pieces are used on the inside of the engine cowling so that the nose section can be rounded. See photos for detail.

The tailplane is cut out from 3/32in sheet balsa, but before sanding the edges, let in two pieces of 1/8in dowel at the leading and trailing edge at the centre section to prevent damage by rubber bands. Glue the fin to the fuselage and when dry sand all the airframe and apply two coats of thin dope and banana oil mixture.

**FINISHING.** The original Sunbeam was tissue covered all over. The best method of applying this is to dope entire model first then lay the tissue on the surface and brush it with thinners to dissolve the dope underneath which then acts as an adhesive. The only awkward part is the underside of the wing. Cut a piece of tissue 1in wider than the wing panel and attach to

bottom of the tank, so that the fuel tube will not kink.

Assemble the model and check the position of the C.G. balance point which should be 2in back from the leading edge. Add ballast to the nose or tail to correct: the original weighs 7oz ready to fly. Test glide over long grass and adjust by packing under the front of the tailplane if the glide is too steep and the rear if it stalls. The original flew in a left-left pattern and this was produced by adding a piece of 1/8in square balsa about 1 1/2in long on top of the left-hand wing panel about 5in from the tip and 2 1/2in back from the leading edge. The balsa acts as a spoiler and that panel loses lift. By adding or taking away from the length of balsa, the circle can be decreased or increased for both climb and glide. No side thrust should be necessary. This method of trimming was fully described in an earlier *Aeromodeller* plan book (No. 1).



## INTRODUCTION

FAI COMBAT IS BECOMING less and less suitable for the ordinary hacker (like me), so the search has been on for a 'fun' combat event.  $\frac{1}{2}$ A Combat is the answer. Models and motors are cheap – well within the finances of just about all of us – and the models bounce, not break, on ground contact! This year has seen the SMAE give recognition to the event by including it in the 1st SMAE Centralised at Cosford and also issuing provisional rules for it in the new Rule Book which is about to be issued.

Already, as typified by the recent Elliott Club contest at Rochester,  $\frac{1}{2}$ A Combat entries are becoming larger than those in FAI. So it could be said that  $\frac{1}{2}$ A Combat has 'taken off' and now is the time to get involved – an opinion shared perhaps by

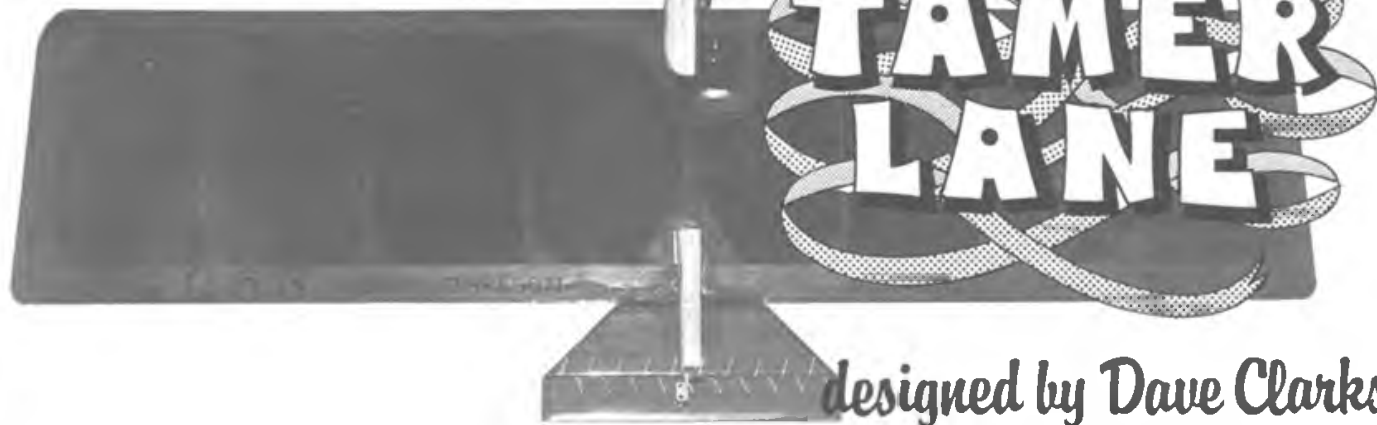
predecessors, TAMERLANE has more line tension, is about twice as manoeuvrable and is not a jot slower. My inexpert piloting has also demonstrated that strength has not suffered as a result of the growing process. I do not claim that TAMERLANE is the 'ultimate'  $\frac{1}{2}$ A Combat model; but it is pretty good, being easy-to-build, cheap, tough and very, very manoeuvrable (after all it has the wing loading of a 16oz 'Nobler!!).

Why the name hugh! Well, around the end of the 14th century Tamerlane, otherwise known as Timur the Lame to his followers and described by the noted military historian J. F. C. Fuller as 'a ferocious monster of destruction' lead his immense army of Monguls and Turks from his capital of Samarkand in Central Asia first to conquer northern India and then into what

are to assemble the LE and the centre rib (including the bellcrank platform). Next pin the TE to your building board and glue in place all of the ribs and the TE gussets. When set, re-pin the ribs to the board such that the front of each rib is perpendicular to the board. The LE, LE gussets, tip weight and tips can now be glued in place and, when this little lot has set, the frame removed from the board and the tank, tank surrounds, and the controls can be added, the tips rounded and the wing covered in 'Solarfilm' or similar plastic film covering.

All that remains are the motor pod and the tail. Both are very straightforward items and easy to assemble. For the pod, note that the mounting bolt holes should be drilled, the pod shaped externally and accurately dry-fitted to the wing before covering in suitable cloth (1oz sq. yd. glass

# 28 or 36 inch Span $\frac{1}{2}$ A Combat Model for 1.5cc motors



others for FAI Combat 'stars' like Mick Lewis, Mick Tiernan and Vernon Hunt are rumoured to be building fast. Here in the North West of England, two very successful Greater Manchester New Year  $\frac{1}{2}$ A Combat contests have been held and these, plus a few other similar contests in the area, have proved very popular for many combat refugees. I guess that this is being experienced nationwide.

My own involvement started a little over two years ago with a series of models featuring about 200 sq. in. of area and about 28in. span. These seemed nice at the time but in an up-and-coming event, rapid improvement in model design is the norm. The plan presented here is for my latest – placing 3rd at its first contest, and in the words of that day's winner, Vernon Hunt, 'the best model on the field'. Over 300 sq. in. of area and a span of 36in. may seem verging on the ridiculous for a  $\frac{1}{2}$ cc Combat model but as has happened in FAI Combat, big-is-best. Compared with its

is now Syria slaughtering every man, woman and child on the way – the head of the inhabitants of each captured city being piled in pyramids before its gates. This TAMERLANE in its own smaller way, is quite worthy of the name.

## CONSTRUCTION

In the interests of reducing building time, improving reparability and maintaining cheapness, the structure is just about as simple as can be. Three basic units are involved – the wing, the tail and the motor pod. Construction of these can proceed in parallel for they come together only after covering operations have been completed. As you will see from the plan, the wood list is very brief so it is highly sensible, and not much of a chore, to cut out all of the bits required before reaching for the glue.

Wing construction is done 'on-the-board' so as to minimise the possibility of warps in the finished article. First actions

fibre cloth doped on is particularly easy to do). Once the pod has been covered, dry-fit it to the wing and trace around it with a sharp knife so that the 'solarfilm' in the joint can be removed before the pod is finally and generously glued to the wing with slow setting epoxy. If the joint was accurate and if you were very generous with the epoxy no dowels through the pod and wing should be necessary, however, better to make sure though, and put one or two 1/8in dowels through to make sure that the pod will never come off.

The tail is assembled from 1/8in sheet and 1/2 x 1/8in spruce strip. Note that the spruce strips should be bound with the read onto the sheet tail, just behind where the wing TE will be, and the thread sealed with glue before covering the tail and elevator with 'Solarfilm'. The tail is pushed onto the wing, springing the spruce strips apart. Now dry-fit the tail to the wing and trace around with a sharp knife as with the pod to enable unwanted

'solarfilm' in the joint to be removed. Finally glue the tail onto the wing and hinge the elevator to the tail by sewing.

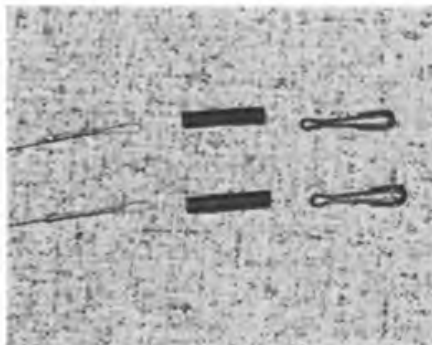
Just about finished now. Apply a couple of coats of 'Tuffkote' or similar good fuel-proofer to the pod and tail spruce strips and also one coat to all the edges of the 'Solarfilm' covering and to the elevator hinge sewings to seal these. The final act is to bend the end of the push rod, fit the elevator horn to give equal amounts of up and down, and to bind and solder the leadout loops to give equal projection at neutral elevator. Almost forgot the most important part; bolt on the motor and do not forget to use locknuts!

## MOTORS, PROPS AND THINGS

Common features of the various sets of rules that exist are requirements for a £10 motor list price maximum, suction feed metal tanks and nylon props. It will be no surprise that very few motors fit the bill and that the most popular motors are the PAW149 and the FROG 150. The PAW has a bit more power and the FROG is a little easier to use but there is not much in it and since only the PAW is still in production, the PAW 149 is the natural choice.

It is inevitable that the motor modifiers have some influence even in a basic event like this one. If one is honest then a few mods are beneficial to suit the PAW to its function here. The first is an essential and is to fit a compression locking bar – 1 x 1/4in strip of 1/8in thick aluminium drilled and tapped 2BA at one end is perfectly adequate. Almost as essential is to replace the regular PAW needle-valve assembly with a Rossi 15FI or ST G.20 equivalent. You will need to use a few 4BA washers to pack the spray-bar to get the spray-hole central in the venturi but the improvement in the fuel suction and perhaps more important, the vast improvement in crash resistance given is very well worth the cost and effort involved. Some say that removing some piston-skirt (*not* a job for the novice) to give sub-piston induction like the FROG helps the power output but this is beyond the capability of most of us so cannot be classed as an essential.

*Short lengths of rubber fuel tube slip over line connectors to prevent accidental unhooking during combat action.*



A little experimentation with props is always a good idea. My feeling is that a 7 x 4 is not quite enough prop and a 7 x 6 is a bit too much. The choice depends on how loose your motor is (a 7 x 4 is likely to be inferior on a new, tight motor) and your flying style (a 7 x 6 may prove faster if you go in for wide manoeuvres). Since a one-model-per-bout rule is common, glass filled nylon props, being more prone to break in a crash, are generally speaking not the most practical choice.

If you make up your own fuel, then a fairly oily mix by current standards is best for these plain bearing motors. I suggest 3 parts Castrol 'M' oil, 4 parts Solvent Ether, 5 parts domestic paraffin plus 2-2½ parts per 100 of Iso-Propyl Nitrate (IPN). Home brew fuel like this is far from essential unless you are mean (like me) for commercial fuels like Model Technics, Keil Kraft or Davies Charlton seem to work fine.

Starting these little diesels can be a bit tricky; the most common faults being too weak a flick and too much prime. A good hard hit plus one choked turn and/or a tiny exhaust prime should give a first flick start on a hot motor. 2 or 3 choked turns plus an exhaust prime should do the trick for a cold one. The best way of getting the right amount of exhaust prime is to first close the exhaust port with the piston and then slosh fuel in the general direction of the piston. Now turn the prop once and hit it!

*Commercial fuel filter incorporated in feed line from tank. Note also use of Rossi Spray bar and compression locking lever.*



## RULES

The Provisional SMAE Rules in the new Rule Book are to say the least, a little sparse. Mention has been made in this article of additional rules that are commonly enforced namely: maximum £10 motor list price, Suction feed metal tanks only, one model per bout, nylon props only and these have much to recommend them when cost factors are considered. Other rule variants that exist are 35ft lines (as opposed to the 42ft lines stipulated by the SMAE) which some favour because you can get one set of lines from the standard 70ft pack or 3 sets from 2 standard 100ft packs. 35ft lines also give improved line tension (a problem with these light models) and a reduced 'battleground' forcing tighter more exciting combat. Also since Woolworth's crepe paper only seems to be about 7½ft long these days, this length of streamer rather than the full FAI length of almost 10ft as required by the SMAE rules is popular. Finally, to emphasise flying skills and de-emphasise slick pitting, many prefer not to give the plus one point for every second in the air as well as the minus one point for every second on the ground that the SMAE rules require. Still, the SMAE Rules are Provisional ones precisely because differences in rules for this developing event do exist. Hopefully what differences that are current will be sorted out this year and a full set of nationally accepted rules formulated for next year.

## CONCLUSION

1/2A Combat really is fun: cheap too! In fact all of the things FAI Combat sadly seems not to be anymore. Even hardened straight-and-level pilots like me who rarely, if ever, do a loop deliberately can compete with some chance of success and certainly a great deal of enjoyment. All without the pain of searching for that 'super wood' and saving for the 'super motor'; and long may 1/2A Combat stay that way. Try a TAMERLANE and have some fun too!

# TOPICAL TWISTS

by Pylonius  
illustrated by Sherry



"Hey, where do you think this is, Wembley?"

## AT FULL STRETCH

TO THE AVERAGE model dabbler the deeply committed expert is an ever intriguing mystery. Any snippet of information about this cult figure that gives some insight into what motivates him is eagerly snapped up; so naturally we welcome an article on one expert's approach to rubber motor maintenance on the field which has appeared in this journal.

Personally, I was quite ignorant of this aspect of top contest flying, thinking, generally, that rubber motors could take care of themselves on the flying field. After all, the contest day is a time to chat and laze about, not to fuss over rubber motors, which once prepared, can just get knotted. But, it seems, if you want your name at the top of the result sheets your contest day will be taken up with preparing, grading, logging, and even cataloguing your pre-packed, and sometimes crated, rubber motors. On this showing the average bloke, like me, is much too lazy in his approach to get a pot or two on his sideboard. He will not have driven half a mile up the road on the great day before he is smitten with a nagging doubt. No, he has not taken the wife with him, it is just that he wonders if he threw the bag of rubber motors into the back of the car along with his wellingtons, or did he leave it behind? He remembers pulling the wellies from under the bed, and the last time he saw the bag of motors it was stuffed in one of the wellies, but it could have fallen out. Oh, well, for all the chance he stood he could always fall back on his shoe laces.

Thinking about it, though, the expert has got the right idea, however much we may jeer and sneer at him; if you are going to commit a whole day and make a long journey to a contest you might as well win it, even if you only get a plastic plaque for your trouble. But at least you do get a nice glow of satisfaction at the thought of all those envious groundlings tearing you to pieces.

## THUMBS DOWN

Still on the subject of the contest winning expert, the other talk of the day would appear to be slightly deflatory to his image. It suggests that the expert relies on rule of thumb rather than scientific method, and always has done; the mathematics and formulae that we used to see in the past being so much camouflage to cover the machinations of a smart cookie.

This form of denunciation, though, is not to be taken too seriously, as no one in the model movement as ever been credited with the merest scrap of worthwhile aerodynamic knowledge. Put up a theory, however basic, and you find it shot down in flames in no time at all. There seems to be something in the nature of aerodynamics and aeronautics which gives scope for someone thrashing about to come up with something better than whole regiments of positively thinking boffins can muster. In fact, the regiments of boffins could be barking up the wrong computer, while the chap with a bit of nous and inspiration could be showing us the way forward. The very thought that old Joe Blockhead has come up with an answer that has completely eluded them so

infuriates the boffins that they are at pains to point out that Joe is no sort of inspired genius but a blundering idiot who has got all his cups and trophies under false pretences. People who fly models with the CG, half way down the fuselage instead of tucked under the leading edge in the proper manner would not be allowed through the gate.

One thing you may be sure of; when the Wright Brothers made their historic first flight, there was plenty of aerodynamic theory knocking around at the time to prove they could not have succeeded without six pairs of wings in tandem and a steam engine operating a set of paddles.

## OTHER PLANS

We read that the newest recruit to our democratic ranks is an eminent town planner. This would seem to be a hopeful indication of a change of heart, for the mandarins of our society usually live in those highly exclusive enclaves far from the crowd their ministrations have made madding. One thing that must not penetrate these last redoubts of peace and quiet is the noise of a model plane, however faint, invoking all sorts of strong public action.

I would have thought though that town planners existed for no other reason than to frustrate model flyers trying to get their meetings. This they do by an ingenious system of one way roads which, if they have been successfully planned, brings the motorist back to the point he started from. I should also have thought that the term town was something of an anachronism too, since there does not seem to be towns any more but just one built up area merging into another. Come to think of it, the town planner themselves no longer refer to towns but to consternations, or is it conurbations? These being just the knottier segments of the general urban sprawl.

No doubt the overall plan is to make Britain into one huge town with a one way system that lets you out either at Lands End or John O'Groats. But in such a situation where would anyone, even town planners, fly model planes? On the fly-overs perhaps.

## TALE-PIECE

There is no truth in the rumour that the Southern Gala is to be known in future as the Odium Rally, that is if it is deserving of a future. Nor is it true that a group of model flyers, caught out on the airfield during the late afternoon after the runways had been put out of bounds and the airfield officially closed, are still there awaiting an Israeli type air rescue.

SEVERAL MONTHS AGO John Coker and Cedric dela Nougerede came up with the idea of a novel informal contest to be run mainly for '2FSA' members but which would be open to anyone else who cared to take part. Most associates of this group tend to scratch build their own free flight scale models be they either rubber or motor powered, so the subjects in this contest were instead restricted to the ranges of small rubber scale kits manufactured by Keil Kraft and Veron. Whilst there must be hundreds if not thousands of aeromodellers who have built one or more subjects from these kits at one time or another, they are never to be seen in great numbers on flying fields anywhere. Most of the ones I can recall having seen flying have been converted to CO<sub>2</sub> power since the rapid growth in popularity of this form of propulsion in recent years, or converted to electric RTP flying. To see one built and flown purely as intended as a rubber scale model is a rare sight indeed, and so the challenge was issued! In some ways it is a great pity that this could not extend to the same manufacturers' jet subjects, but with the demise of Jetex motors there is little opportunity to do anything about this. Since the early 1950s when engine manufacturers first flourished on the market, many names have come and gone, some more regrettably than others, but when an entire form of propulsion disappears and the gap in the market is not filled, then the loss always seems so much greater, notwithstanding the problems of operating the units themselves.

The flying scale kit contest was to be run to very simple rules, in that the models were only to be timed for flying duration. Although many of the subjects as built straight from the kit could not have been judged meaningfully for scale accuracy it may have been worth marking them simply for quality of workmanship as well, since there does not seem to be much logic in having a duration contest with scale models alone. Modifications were allowed to the prop units and noseblocks, as well as different rubber to that supplied in the kits being almost mandatory to achieve any kind of flight performance. In

# SCALE MATTERS



by  
**Alan  
Callaghan**

fact it would have been very revealing to run such a contest with absolutely standard kits, since they are only really let down in flying performance by the prop/rubber combinations as supplied. As it was, most of the entries chose to use either a Tern or Bob Peck plastic propeller, although John Coker was seen to be using a rather rare Veron carved balsa prop that worked very well on his neatly-painted Me109 from the same source.

Chobham Common was chosen as the venue, and while I am not a great fan of the very rough and uneven ground here, the vast areas of long grass make the flying of scale models a decidedly less risky business than it can be over a nicely mown airfield or similar. Entries were disappointingly low, there being six in the senior group and five in the junior who actually completed their qualifying flights, and this was quite surprising in view of the very generous spread of prizes in kits and balsa supplied by Messrs Keil Kraft and Veron.

Most of the junior entries came from an ATC group run by John, and the winner of this section, master Sharpe flying a *KK Luscombe Silvaire*, was giving nothing away with a three-flight total of 2.05 made up of three consistent times of 39, 41 and 45 seconds under warm but rather gusty and uncertain conditions. Closely following this was Stuart Oldridge with a total of 1.55 from his Veron *Grumman Wildcat* and which did a best flight of 54 seconds. The following flyers, Masters Horley, Roker, and Tubb came some way behind with times hovering between the 20-30 second mark but nevertheless still did quite well at prizegiving time!



Author's *KK Piper Family Cruiser* showing modified noseblock and removable prop bearing with 7in Bob Peck propeller and stranded motor. Average flight time 42 seconds

Times were only a slightly better in the senior section, where Rex Oldridge came out tops with his *Veron Comper Swift* and a total of 2.22, and yours truly came in second with 2.06 from a *KK Piper Family Cruiser*. A couple of low-wingers then followed on with Dave Kew's *KK Chipmunk* at 1.43, and John's *Me109* at 1.24, with times showing that it certainly was not an overwhelmingly clean sweep for the high wing monoplanes. Rounding it off came Derek Knight's *KK Fairey Junior* and Bill Dennis's *KK FW 190*.

How does one get good performances from kits which, with all due respect, are not widely regarded as having outstanding flying performances, and which if tackled as beginners' subjects, must go some way to putting people off flying scale models permanently for the same reason. As with any rubber model, much of the secret of success lies in having a propeller carefully matched to the model itself. The props supplied in these kits really aren't up to the job, and the simplest solution is to either carve a new one from scratch, or fit one of the other imported commercial ones previously mentioned. For my own *Family Cruiser* which is 21in span I chose a 7in green plastic Peck propeller, and fitted it *without* a free-wheeling clutch to a shaft that incorporated an S-hook to prevent the rubber climbing up and jamming everything solid. Dispensing with the clutch is a technique I like to use on indoor models, since ideally these should not be expected to glide and should land with the motor still running for a smooth touchdown, and



Some of the Junior entrants in the "2FSA" KeilKraft/Veron Rubber Scale kit contest held at Chobham on May 6th are seen here with a mixture of theirs and Senior models.



it also makes the prop fitting much neater. One can try for the same effect outdoors, except for the smooth landing of course, but additionally a prop that will not free-wheel makes a pretty effective dethermaliser on a scale model where it may be impossible to fit the normal pop-up tail-plane. At this contest more than one of these little kits were seen to benefit from thermal assistance!

I also modified the noseblock to take a removable prop bearing block of 1/2 x 3/8in balsa. This allowed me to easily change to a Tern prop similarly mounted, but which after a few test flights obviously could not handle as much power as the 1in larger Peck. The motor consisted of four strands of 1/8in Pirelli 28in (yup!) long, pretensioned down to 20in, and taking approximately 1400 turns. These were all the modifications I made and the model was built entirely from materials supplied in the kit, topping the scales at 40 grammes ready to fly. Surprisingly, it came out noseheavy despite the very long motor, and approximately 4 grammes of Plasticine was needed at the tail to balance the model properly. My best flight time with this combination was around 48 seconds, but I should think that in much calmer conditions where the model would have a chance to climb much higher it should be possible to achieve a minute or so without too much trouble.

all the way down from Lincoln by Chris Chapman on this occasion. Neatly finished in matt enamels and using the kit transfers, the model flew straight out of the box as it were without any need for trimming adjustment, which says much for the quality of the original design and the accuracy of Chris's building. The *Heinkel* flies with the undercarriage in the down position, and it would be interesting to try another version of this with the wheels retracted to see how much this feature contributes to the model's great stability in flight. To anyone looking for an unusual colour scheme, I recommend the new Heller 1:72 scale plastic kit which provides details of the 1938 Luftwaffe 132 Squadron at Furstenwalde and 1942 Rumanian markings from Bessarabia.

Rubber scale enthusiast Richard Falconer may be remembered for his twin *Lockheed Lightning* entered at the Woodvale International FF Scale last year, but at this meeting he was trying out a single-engined *Bellanca* built I believe from a vintage American plan, and an unusual Airspeed Courier variant with the inline Napier Rapier engine. As photographed the model was being flown in an unpainted condition since Richard is still trying to accurately document the correct colour scheme. Can anyone help?

Some of the most superbly detailed models I have yet seen have come from

the building board of Derek Knight, and as well as having his beautiful *Fairey Fox* on hand together with a *CO<sub>2</sub> Auster* and a *Fairchild Argus*, Derek was trying out a new *Spitfire XIV* with *CO<sub>2</sub>* power. This model is highly unusual in that it is almost entirely carved from solid balsa – not only the fuselage being in two halves, but also the wings, split through the centreline of the wing section. All parts were lightly glued together while the external shapes were formed, then taken apart so that the insides could be hollowed out. The wings are formed from a 3/8in balsa top sheet and a 1/8in bottom sheet with most of the hollowing being done on the top. Needless to say that with neither a wing rib in sight, nor a sagging fuselage stringer, the silver scheme and specially moulded cockpit canopy gave the model that quality of looking 'just right'. The motor, tank and filling nozzle are all easily accessible through the top nose cowling which is completely removable for this purpose.

This type of meeting always attracts a much wider range of models than any type of more serious scale competition, and throughout the day the number of people who came and went either with models or simply to watch and enjoy the flying must have been quite close to the hundred mark, so the appeal of outdoor FF scale shows no sign of being on the wane.

The *FF Scale International* at Woodvale last year also drew a very good response from competitors and spectators, and I am pleased to be able to report confirmation of another event to be held at this year's Woodvale Rally. Full details of this together with entry forms are available from Bernie Sinclair, 2b Fox Street, Liverpool L3 3BQ, to whom I am grateful for this information. Hopefully the entry fee will be kept down to about £1.00 and likely competitors are asked to contact Bernie as soon as possible so that the best arrangements can be made in good time. The rules to be used will be the FAI F4(a) set which will be included in the new SMAE Handbook which should be available now.



Left: This Napier Rapier version of the Airspeed Courier was built for rubber power by Richard Falconer. Colour scheme is still being sought. Can anyone help?

Below: Bernard Sexton seems pleased after the first test flights of his Gee-Bee Model 'D' to 1/12th scale (28in span) for electric RTP. Vivid blue and white scheme makes an attractive subject but model is to be re-engined with a larger motor and prop

With the exception of John's *Me109* which wore a very realistic camouflage scheme, virtually all of the other entries were covered in coloured tissues in order to save weight. We were rather surprised at the low number of entries, and would have liked to see a few more '2FSA' members joining in the fun!, but all thanks are due to the two manufacturers whose donations would not have disgraced the prize list at a major national meeting.

As usual at any '2FSA' gathering there was quite a variety of other models being flown, and amongst the well-known FF power models most frequently seen were yet more rubber scale subjects. A brand-new kit model being tried out for the first time was a *Heinkel He100* built from the excellent American *Flyline* range produced by Col. Hurst Bowers and brought



# SPEED

by Mike Billinton

AFTER MANY YEAR OF STRIVING, one of Speed's uncontroversial figures Dick McGladdery (Feltham) finally cornered one of the SMAE Open records! At the scintillating Elliott Spring Rally he made a pass at the 29 Class, rotated at 186.7 mph and so now becomes firmly fixed in the sights of the other aspirants in that class as the man to get agitated about! Couldn't happen to a nicer fellow though. Certainly Dick has struggled against a (self imposed) stringently silenced operation of his OPS 29 tuned pipe power house, this laudable attitude has meant that his full potential has occasionally been unclear.

It will be an interesting breakthrough then, if he can succeed in repeating these speeds whilst applying the full pepperpot silencer treatment which hitherto he has resolutely used.

The following case notes are by Dick himself, and his concluding notes on a possible future course for Speed C/L in this country will no doubt get the lines humming! ... Just a thought Dick, if you'd like to ban Nitro - why not give up alcohol as well? That's also considered as a 'hot fuel' also in some areas!

## 'HOW THE 29 RECORD FELL'

by Dick McGladdery

### General

The Record came as a bit of a surprise, not least to myself. I had been trying a fuel switch (CFS) earlier this year, with conspicuous lack of success meanwhile ruminating on the workings of pipe pressure. Having recently broken my usual 'pepperpot' pipe and at the same time abandoning my CFS for the time being, I was 1 week from the Rochester meet and thought I had at last tumbled to how pipe pressure works. I concluded that I had previously been over-pressurising by sleeving down the tail pipe to too small a size, and with limited time available my gaze fell on the X-29 pipe which happened to be amongst my bits and pieces. It was also sleeved in the tailpipe, down to 0.325in but I reckoned this might be about right, so I bolted it on and went to Rochester. My first 2 attempts resulted in the motor coming in OK but then richening off hopelessly (again over-pressurising?). Before making another attempt, I had a bit of a think and got the views of others around, and decided to remove the tailpipe sleeve to give it the full ID of 0.4in. This done, I did a quick ground run to check that there was still enough pressure to enable the motor to run on the ground, took a guess at the needle setting, and the next flight was 186.7 mph, compared to my previous best of 172 at last year's Nationals.

### Model

Upright engine, 2 line asymmetric, total area about 80 sq. in., weighs 27oz in flying trim. Pan is a very ancient Harter 'King Rat' pan cut down to 9in length, with a very long ugly draggy but effective landing skid/prop saver. The model is of wood construction, and in a somewhat chequered life has required substantial repair on two occasions and consequently looks rather battered on close inspection.

### Motor

OPS 29 VAA. Most bits are several years old, including the liner and piston. Newest bits are the rod (broke a rod on the bench due to a shaft run earlier this year) the races and the head. This latter is a Super Tigre X-29 head [with the plug remotely positioned from the conical combustion chamber] machined down to a 'slug' with the original OPS head turned into a clamping ring. Fitting this, together with banding the shaft housing so that it fitted the crankcase decently, had a very dramatic effect on bench rpm. Initially I was pushing hard to reach 25,000 on a Bartels 7x6 cut down to about 6! Subsequent to the above mods the motor went daft on the same prop, turning around 28,000 plus. Swapping to a balanced but otherwise untrimmed example of the same prop calmed it down to 26,500. I credit the X-29 head for a large part of this increase, though I must admit the original head was a terrible fit in the liner, which certainly didn't help it. I hear rumours that this type of head/plug combination is due to be dropped by ST... I hope not, cos in my opinion they are MAGIC!



Dick McGladdery with his OPS 29 powered model which set a new British record with a flight of 186.7 mph.

### Pipe Pressure Fuel systems

Potential speed fliers and other users of piped motors might be interested in my conclusions re pipe pressure. Like crankcase pressure, pipe pressure is virtually constant regardless of rpm (in the range that we are interested in anyway). The problem is probably most acute with a speed model, but one of the stumbling blocks in using a pipe is the rise in fuel requirement as a motor 'comes on the pipe'. A sudden switch-over from an ideal ground setting to the final full power setting is too sudden for a motor to cope with; doing this just over-richens it so it loses rpm and comes off the pipe. What is needed is a progressive increase in fuel supply, and the easiest way there is to mount the fuel tank inboard of the carb. jet, so that under flying conditions G-force provides an artificial 'head' for the tank above the jet. The only reason for using pipe pressure or crankcase pressure is to make possible the use of a carburettor of such large size that ordinarily would never function on suction feed, and neither system in any way assists in the enrichment required when the motor comes on the pipe.

You can't get round the problem by setting the motor deliberately rich on the ground, because it then never leans out sufficiently to 'come on the pipe'. If it did (which could only happen with an outboard-positioned tank) it would immediately go over-lean (no fuel head to help, and suction is just as constant as pipe or crankcase pressure). In theory, it should be possible to get a crankcase pressure/gravity system to work in the same way as pipe pressure and gravity, but my guess is the tank would have to be set further inboard than it is possible even in a .60 model, possibly several inches. Ways round this might be to have a 'drop tank' on the wing (rather complicated) or to regulate the pressure with a needle - either way you must use the 'head' or CFS.

### Future development

I have made a bit of a thing out of silencers in the past, so you can imagine I came in for a bit of stick when reverting to a plain pipe resulted in a record! My belief is that a pepperpot type will work just as well provided enough holes are made to sufficiently relieve the pressure.

Alternatively, some form of regulation of the pressure bled from the pipe would serve the same purpose. This may take some time to sort out, in the meantime I can't resist the temptation to stay with the plain pipe set-up until I have confirmed that the quieter pipe can do the same job.

### Pipe

Is a Super Tigre X-29 pipe with aluminium tube araldited into front cone for pressure connection to tank. Length was 21.5cm from plug terminal to junction of front and back cones, as recommended by OPS (for straight fuel actually!) and about 34.5cm from plug terminal to end of tailpipe. Tailpipe ID is 0.4in.

### Tank

Made from 0.010 brass shim, plain rectangular, long and narrow shape, set as far inboard in the pan as it would go - between 2 and 5mm inboard measured from the jet orifice to the outboard side of the tank. About 30cc capacity, which I find is plenty. Fuel taken from rear outboard side at bottom, pressure fed in at front inboard side at top.

### Propeller

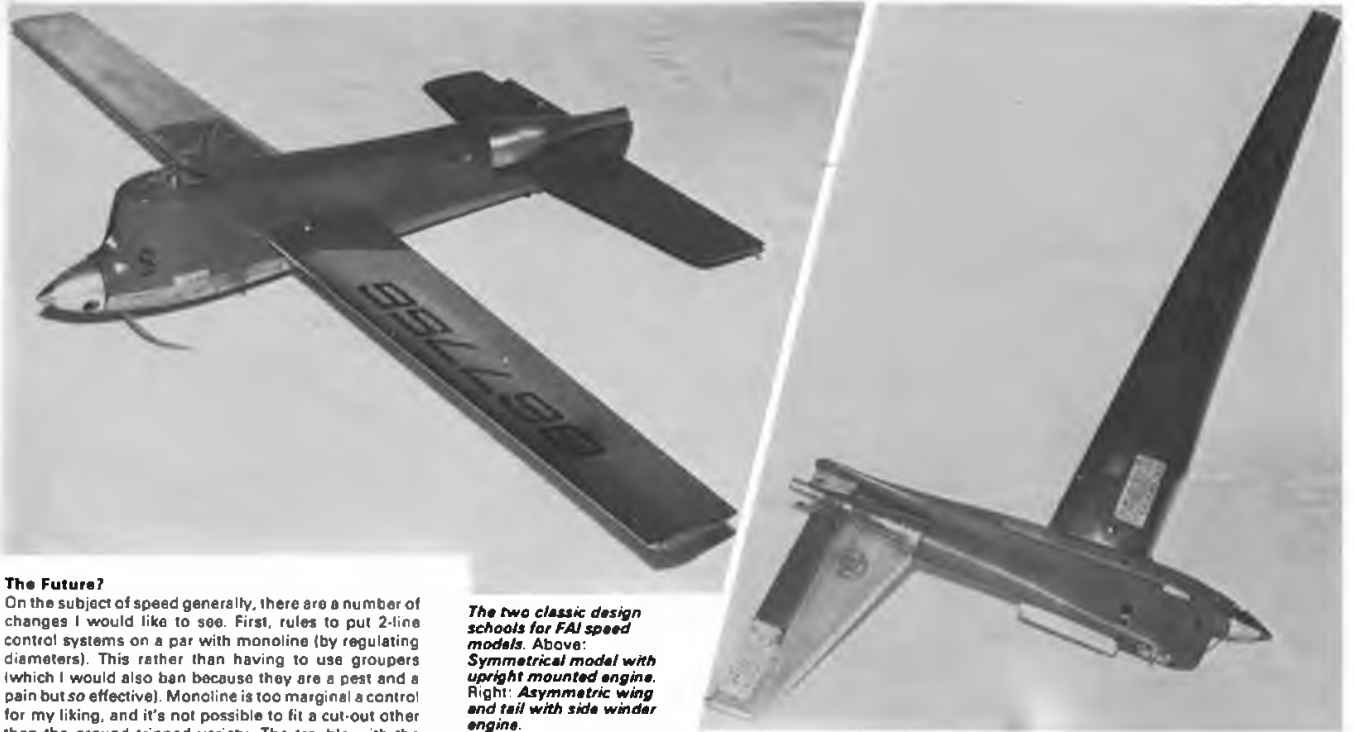
7 x 9; Topflite, untrimmed with tips washed out to reduce excess pitch in that area.

### Fuel

Difficult - I had tanked up with 50% Nitro/20% Ucon/30% Methanol and done a quick test run to check a mod (removal of a sleeve in the tailpipe which had reduced the ID to 0.325in) then topped up with 60% Nitro mix, so it was probably around 55%.

### Lines

Two 0.4mm wires with groupers consisting of about 100 x 1/4in length hypodermic tubes 0.5mm bore on the back line. *Sellotaped* (use no others they aren't sticky enough) to the front wire at 3in-4in centres from near the leadout to two-thirds way in toward handle. Ordinary Aviomodelli wire used, not as coil-free as Graupner but good enough.



**The Future?**

On the subject of speed generally, there are a number of changes I would like to see. First, rules to put 2-line control systems on a par with monoline (by regulating diameters). This rather than having to use groupers (which I would also ban because they are a pest and a pain but so effective). Monoline is too marginal a control for my liking, and it's not possible to fit a cut-out other than the ground tripped variety. The trouble with the latter is that it usually entails destruction of the propeller. These items are hard to get at all in most speed sizes and homemade ones take far too much time. A two-line model in contrast can be fitted with a T/R type cutout (mine are), maybe firing a retract U/C as well? Second, I would ban doped fuels. I am in a minority in this, but provided it was a rule, it would have substantial benefits for everybody. Plugs and motors would not get such a terrific caring, and there would not be the need to mix fuel to suit the day's weather as often occurs. In cold weather, only comparatively low-nitro fuel can be used, but when it gets hot, propylene oxide, 70% plus mixes become possible. Motors really ought to be carefully tested on each fuel to establish the optimum compression ratio at least. But with the weather varying from day to day, most people settle for a compromise and desist from using the wilder mixes (I do anyway). With straight fuel as standard, we could spend a bit more time on the aeroplane end of the business rather than fixing the damage done by the last dropped plug element or lean run.

The two classic design schools for FAI speed models. Above: Symmetrical model with upright mounted engine. Right: Asymmetrical wing and tail with side winder engine.

**SPEED FOR NEWCOMERS**

by Jo Halman (continued)

**PROPS**

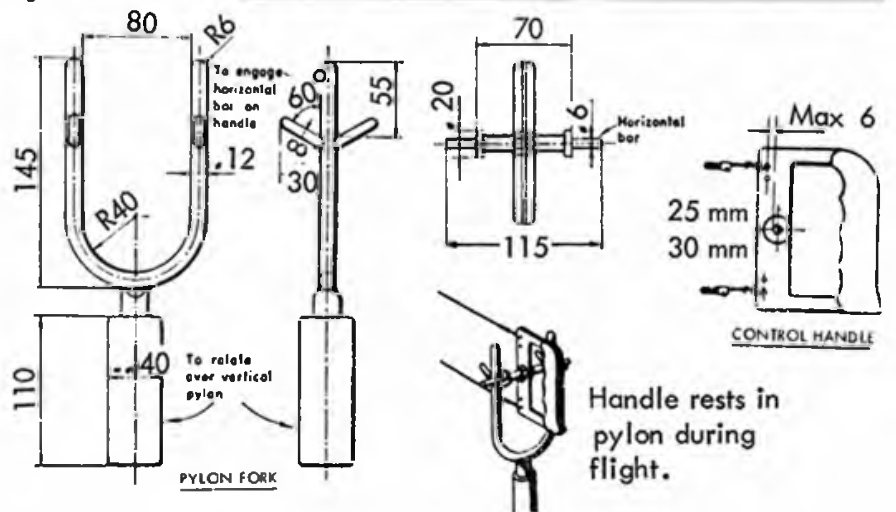
These can be glass fibre; carbon fibre; glass and carbon fibre; wood; single blade or two bladed. Fliers generally use Bartel carbon fibre with the CFS system and Rossi/McCann carbon fibre with the suction system but this is only a rough guide. Eventually it is hoped that you will make your own (see Aeromodeller, May 1972, p. 284). Generally fliers use two bladed props but the single blade props made another appearance at the 1978 Control Line World Championships. Please note that single blade props are not as easy to use as the traditional two bladed ones, see the Woodvale report Aeromodeller, December, 1978, p. 673.

**LINES**

High tensile stainless steel lines are best but special fluxes, available from most engineering suppliers, are needed for soldering the ends. High tensile steel wire may be used but is more difficult to keep clean. 'Scotch-brite' kitchen pads are ideal.

**HANDLES**

These are custom made by the flier to the specifications in the FAI Sporting Code. A noticeable difference on an FAI handle is the horizontal pivot bar which has to fit into



the pylon yoke during the timed flight. A safety strap connecting the flier's wrist to the handle must be used.

**PYLON**

The yoke (see drawing) is fitted onto a vertical pole which is adjustable for height. It is recommended that the pylon be adjusted to set the yoke at approximately shoulder height.

**DOLLY**

This is the separate custom made 'undercarriage' onto which the model fits for take off. When flying speed is reached, the model lifts out of the dolly which continues to run. The dolly should be adjusted, by bending the rear axle, to run out of the circle.

**STARTER AND BATTERIES**

A starter running at 6,000 rpm, at least, is needed. The best on the market is the American made Sullivan available at model shops, which runs off a 12 volt battery. Electric starters generally run smoother than hand cranked types and are less likely to damage the engine. However, the starting instructions must be adhered to. If

you would prefer a hand cranked starter and need a gear box, ask at a motor scrapyard for a second hand gearbox found on the sides of articulated lorries and used for extending their front jacks. If you prefer a new gearbox, contact any of the articulated truck manufacturers and they may be able to help you.

A two volt battery needs to be used to activate the glow plug. The battery can be wet or dry but the wet kind is more economical as it can easily be re-charged.

**FLYING SITE**

This has to be a hard surface: concrete or tarmac but does not have to be an airfield runway. Try car parks; tennis courts etc. BUT OBTAIN PERMISSION FIRST!

You are now in possession of all the basic facts to allow you to become an FAI speed flier. The rest is up to you: hard work and constant practice but persevere, it's well worth it. Try to visit any FAI speed contest (generally held wherever open speed is on the calendar) to watch and talk to the FAI speed fliers. Each SMAE contest is a qualifying round for the trials for the British team and FAI fliers will have too much on their minds to answer questions during the actual contest but will be happy to talk to you when their flying is finished.

## ELLIOTT SPRING RALLY 6th May, 1979

This 'New Direction' event by the active Elliott Club (Rochester, Kent) saw first use of their newly positioned car park site. This allowed at least 4 tarmac and 2 grass circles enabling Team Race, Combat, Stunt and Speed to operate together for the first time.

With brilliant weather, competition from afar - Newcastle, Bristol (even SMAE C/L Chairman Bob Horwood turned up to see that was going on) plus refreshments on site... it frequently looked like the C/L Nationals in concentrated form.

Some things to be rectified for the Autumn Rally, like minor interaction between circles (Speed dollies steaming into the Stunt area) did not affect the strong sense that this rally was a successful social and competitive occasion, and its future popularity seems assured. It was heartening to see the interest being shown by competitors in their fellows' endeavours in the adjacent circles... a situation not easily achieved along a windy airfield runway!

### STUNT REPORT by Brian Rodgers

The contest proper got off to a late start (12.00) due to an inordinate amount of model trouble. For most of us with problems it was engine/tank trouble but Alf Howe had some trimming to do to cure inadequate line tension. Being blessed with magnificent weather it was decided to try to run 3 rounds which was well met by all concerned.

John Lynch flew to what is now the norm for him - excellently - to secure first place. John flies calmly and consistently, creating an air of confidence which everyone present admired to retain the Elliott Summer Gala Trophy.

#### Results

	1st round	2nd round	3rd round	Total
1. John Lynch	1006	999	-	2005
2. Glen Alison	875	947	931	1878
3. Keith King	908	881	952	1860
4. Brian Dyke	837	706	855	1692
5. Rob Ethernon	824	816	849	1673
6. Mike Feaver	810	768	784	1594
7. Alf Howe	758	748	-	1506
8. Peter Burgess	400	555	658	1213
9. Dave Kenny	506	542	585	1127
10. Brian Rogers	712	-	-	712

### TEAM RACE by Pete O'Neill

The new car park at Elliott has two pilots circles permanently marked. 1/2A was included for the first time in many years and was successful because of the good attendance of teams from the Northern Areas. Other classes were FAI and Goodyear as usual.

There were sixteen entries in FAI which is the largest for a good many years. Much of the racing was of a very high standard with personal best times from Tribe/Tribe

of 3:48.8, Smith/Brown of 3:53, Wilson/Gardner of 4:02.7 and Smith/Yeldham of 4:03.8 all using Nelsons.

Smith/Brown flew an attractive new tailless model, designed to reduce weight but which apparently has good flat flying characteristics. It certainly looks sleek in the air with fin neatly incorporated into its tailskid and is finished in their familiar orange.

Ron and Mick Tribe flew their light, rearward cockpit design and used a single bladed prop to achieve the fastest time ever recorded at Elliott. A performance greatly helped by Mick's superb pit work.

A closely fought final seemed in doubt when Ron Tribe misinterpreted instructions from his pitman and cut the motor unnecessarily towards the end of the race! However a lightning fast restart by Mick saved it. Result: Tribe/Tribe 7:55.4, Smith/Brown 8:04.7, Wilson/Gardner 8:27.1.

The Tribe's win at this contest is somewhat gratifying, not only because they are Elliott members facing opposition from Feltham and elsewhere, but because of the share of bad luck they have suffered in recent years. Let's hope this is fading away - no one works harder than they do.

Goodyear had ten entries which supports the suggestion that the class has waned a bit in the past couple of years and perhaps is one factor which implies the need to change the rules. There seems to be fewer new teams appearing these days than there once were and the formula could well be defeating its own object.

Only seven teams recorded times and the poor handling qualities at high speed of one model resulted in a mid-air collision when overtaking.

Predominant engine was the K & B 3.5 in standard glow form (no diesels were entered at all) first, third and fourth placed teams using this motor with that of the fastest team, Green/Cunningham, having a pipe.

The scorching final was marred only by the retirement of Rudd/King at 131 laps. Result: Green/Cunningham 8:15.4, Jarvis/Needham 8:51.5, Rudd/King retired.

Although most flyers recognised the need for change in Goodyear a certain element of excitement will be lost from the event if we lose the big glows. Let's at least make the most of it while they remain.

1/2A had six entries with fastest times going to Nixon/Campbell 4:25, Rudd/King 4:33 and Wilson/Gardner 4:35. Oliver Cub in each case. Result: Nixon/Campbell 9:53, Rudd/King 10:20.5, Wilson/Gardner retired.

### SPEED

Dick Miles (Feltham/Elmbridge/3 Kings) again came good in 40N with his K & B40 ABC, and his sights must now be set on the Open classes. (Hope he doesn't come my way!) This Newcomers class has proven attractive to several ex T/R fliers etc., but the main hoped for area of support (the real newcomer from outside the sport altogether... we might get a 'Bill Wiz' who still doesn't know his true vocation) has still not appeared. Could be this class is a bit hairy for most of them, and so moves are afoot to introduce in 1980 a less dramatic Newcomer area; possibly a 2) Diesel class. Mind you, one newcomer, Pat Ross (Christchurch) won't touch the 40N class, preferring to go right in the deep end with his

Open 29, and producing here a creditable 151 mph. The variety of approaches possible in the SMAE Speed C/L Classes certainly produces some interesting anomalies!

Meanwhile Ian Skinner's (Christchurch) own strong hold on the 29 class results and record was finally broken by a surprised Dick McGladdery (Feltham) who goes home now to study the Ratio: DBa/BHP plus wondering "would his pepperpot silencers look good on the dinner table?" He seems confident though that he will equal his new 186.7 mph British Open 29 record (achieved here at the rally) even when he reverts to the 'Full Silenced mode'. He deserves success here because his approach has always provided one of the most interesting points of contrast in Speed C/L. For the present, though, he's now the record holder after 12 years of Speed C/L striving... and he builds an interesting model too!

#### Results

1. D. Miles (Elmbridge)	K & B 40 (N)	149.1mph	102.7%
2. A. Slater (Feltham)	ST.x40 (N)	148.1mph	102.0%
3. D. McGladdery (Elmbridge)	OPS 29	186.7mph	101.9%
4. P. Williams (Feltham)	K & B40 (N)	146.2mph	100.7%
5. I. Skinner (Christchurch)	S. Tigre 29x	180.4mph	98.2%
6. O. Warboys (Christchurch)	OPS 60	183.3mph	97.6%
7. M. Radcliffe (Elmbridge)	OPS 60	176.1mph	94.0%
8. P. Halman (Sharston)	Rossi 15 FAI	146.2mph	93.5%
9. P. Eisner (Elmbridge)	Rossi 15	168.1mph	91.6%
10. R. Cox (Elliott)	S. Tigre 60	168.1mph	89.5%

### 1/2A COMBAT (SENIOR) by Pete Tribe

A fine day and a good site greeted the 34 entrants in the 1/2A Combat event at Elliott's on Sunday 6th May. The prizes were donated by Avicraft and Bexley Models.

After the compulsory fitting of safety straps to the handles, the entrants were ready for the first bout between Maynell and Edwards with Maynell winning. Best bout of the day was between Herbert and Benzing, which proved to be a terrific battle, with Herbert winning. Then a surprise came for Dave Scott when he flew against Linda Turner, the only woman competitor of the day; not only did she fly in fine style, she also won the bout! Neil Gill, the 78 Nats finalist, was beaten by Vallins but returned to the contest after winning in the losers' re-fly.

Nine elimination bouts were flown to reduce the number to 16 but after his 'losers' victory Neil Gill was eventually knocked out of the second round by Ray Sibbald. Jarrett was beaten next by Willis, Hawtree lost to Arnold, Harrison beat Tromans, Taylor beat fellow clubmate Maynell and with Tribe beating Riddell it proved to be quite a victorious round for SLACK with all the winning pilots belonging to the same club!

The reigning international Dutch champion Ray Sibbald was beaten by Paul Vallins, then came a terrific bout between Pete Tribe and Dave Willis with Willis winning 4 to 3 all in the quarter finals.

In the final between Dave Willis and Dave Harrison, Willis began quickly with a cut from Harrison's streamer, as Harrison turned he quickly managed to pluck the whole of Willis's streamer from his plane but Willis was able to gain two more cuts from Harrison thus winning the event.

### JUNIOR SECTION

With only four entrants in this category, the finalists soon emerged. They were Adam Willis (SLACK) and Andrew Mansfield (Peterborough). The first cut in this bout was gained by Andrew who unfortunately also hit the ground, but once he was airborne again Adam followed his opponent through consecutive figure of eight manoeuvres, managing to gain 3 cuts from Andrew, making Adam the junior winner.

An excellent achievement for the SLACK combat team who are all members of Cosmo AC, but an especially good day for the two winners in Senior and Junior sections who also happen to be father and son! Results: Senior 1/2A Combat (Senior): 1. Dave Willis (Cosmo), 2. Dave Harrison (Cosmo), 3. Dave Fincham (Cosmo) (Junior): 1. Adam Willis (Cosmo), 2. Andrew Mansfield (Peterborough).



*Aerobatics winner at Elliott Spring Rally, John Lynch with his Eagle V. Like reigning World Champ Bobby Hunt, John also favours three bladed prop.*



## FAI COMBAT – PENALTIES

Paul Smith

A common complaint heard from both competitors and contest officials in the United States is that they just can't understand FAI Combat rules and there are several very glaring gaps and loopholes. The following is my attempt to clear up some of the misunderstandings regarding the event, based on my personal experience in England and Holland in 1974, '78, and '78, and also, on long discussions with Kelly Henocq of England and the FAI Jury at Woodvale.

### DEFINITIONS

Pilot LEAVES the centre circle . . . This statement appears several times in the rules, but there is no definition of the word 'LEAVES'. Does it mean one foot? Both feet? His whole body? Mechanic ENTERS the flight circle . . . the same as above. I suggest that in an important contest you should ask the Jury how they intend to interpret these rules. Also you will be safe if you keep BOTH feet on the proper side of the line at all times.

IMMEDIATELY withdraw the model from the flight circle. IMMEDIATELY very definitely means before you do anything else. If you begin to do any work on the model before removing it you will be penalized. This includes removing the streamer.

### POINT PENALTIES

There are only four point penalties in FAI Combat:

- 100 points – Streamer falls off the model in the air;
- 50 points – Pilot accidentally leaves the centre circle;
- 50 points – Mechanic neglects to immediately withdraw the downed model;
- 50 points – Mechanic enters the circle at other than the closest point.

It should be pointed out that if the pilot INTENTIONALLY leaves the centre he is disqualified (DQ'd). This is of course a judgement call. Remember this if the lines go slack and you are tempted to run out of the centre to save the model.

### STREAMER HANDLING ACCIDENTS

Streamer handling accidents are the subject of numerous contradictions, loopholes, and some commonsense rules. As stated before, if the streamer falls off the model while airborne the penalty is 100 points and you must immediately land and replace the streamer. However, if the opponent snags off the entire string, including your streamer hook, it counts as a cut for him and you don't need to bother transferring string to your spare for the rest of the match. This was a precedent set at the Woodvale Internats.

If the model cuts its own streamer on the ground you replace the streamer and there is no penalty.

According to the rules, if the streamer fails to unfurl or is ACCIDENTALLY detached you get a rematch. I expect that if you were hopelessly behind and you landed and your pit crew stepped on the streamer that the jury would rule the incident a 'non-accident' and refuse to give a rematch.

What if the pit crew neglects to attach the streamer to the model or if the streamer is wrapped around the wing or the lines or tangled with itself? These are all gaps in the FAI rules and it's anybody's guess what the jury will do. The custom has been to allow the competitor to correct the streamer with no penalty.

Finally, remember that you are DQ'd if you attack your opponent without the streamer or its remaining parts attached to the model.

### DISQUALIFICATIONS – (CANCELLATION OF FLIGHT)

These are too numerous to cover in this article and also are in many cases very straightforward. I will discuss a few of the more commonly misunderstood ones here.

16c: model fails to be airborne within two minutes of the signal to launch. This is commonly ignored by contest organizers. The intent is that if your opponent is more than two minutes late, you already have the majority of the time and you could just land and win – so why fly the match?

16f, g: passive action and flying in a dangerous manner. Both of these are archaic holdovers from the past. Under present rules there is no advantage to passive flying and all unsafe flying acts are covered in other rules. Any competitor who is DQ'd under one of these rules has my sympathy.

16b, i, j: no bellcranking!

o): for any flagrant breach of the rules (ATCH 22).



Will this be the trend of the future? Tuned exhaust pipe fitted to HGK 15 powered Samurai as flown by JO-HSU WU, rated an expert FAI pilot in the United States.

Latest FAI design from Howard Rush. Taper foam cone wings, long moment arm, no streamers with air and very high aspect all moving elevator.



Intricate optical design from the Keeler, member of the Vacante Skylinks. It's also designed the MACA emblem as sign of wing.

### LINES ON THE GROUND

Very definitely the 3 metre circle is the pilot's circle and you must be in it whenever the model is airborne. This includes take-off and landing. This is about the only definite statement one can make about lines on the ground.

At the FAI meeting prior to competition at Woodvale there was considerable discussion about the true purpose of the 19 and 22 metre circles. The consensus was that the 19 metre circle is the pitting circle and that the 22 metre circle is unnecessary. The mechanics must pull the model outside this circle for pitting and also stay out of it at all times except while recovering a downed model. In conclusion, if there is only one circle marked on the ground, consider it the pitting circle. If you see two, get the CD and jury together and prepare for a long meeting.

Note: it is physically possible for the pilot to stand inside the 3-metre circle while holding onto the handle and have the mechanic outside the 19-metre launching

the airplane. This is the legal way to launch a model and it could not be done if the 22-metre circle were considered the pitting circle.

### RULE 12H – LINE TANGLES

The rule states that (basically) you can't launch the spare until the lines are untangled. One team manager pointed out that frequently the man who is ahead panted the lines then takes the remainder of the match to untangle them. After considerable discussion, the jury at Woodvale stated that they would DQ anyone who was guilty of such a tactic. Also, the jury assumed the power to declare a tangle 'hopeless' and order the spares to be launched. Neither of these decisions are yet a part of the rule book. Note: you are allowed an unlimited supply of lines and handles.

Please send any comments direct to me: 11112 Dill, Sterling Hts. Michigan 48077, USA

Next Time: optimum use of the spare.

*Dave Hipperson reports....*

### CONTESTS – ROOM FOR CHANGE?

There has been a rumpus over the Free Flight Nationals and this year its fate is sealed. Perhaps a little more advanced thought will see it re-established somewhere more fitting next time. However the Nationals is only a fraction of the Free Flight contest calendar. We have the other SMAE centralised events, the very important club and area run events – a number of which have already been reported this year – and of course the SMAE Area Centralised events. It is these last two types that I want to discuss here as I believe with a bit of a re-shuffle both could benefit immeasurably.

I have mildly criticised the last few 'local run' contest for, if anything, offering too many class choices for the competitor and thus spreading him too thinly on the ground. This is understandable as when an organiser finds a suitable venue, realising how scarce such sites are, he cannot pass up the chance of running events to please the largest cross section of flyers as possible. Although commendable this is counter productive as by so doing no event is then enough of a challenge.

Let us look for the moment from the other end of the problem – the SMAE Area Centralised events. At present we have up to nine Areas in the country looking for six aerodromes or sites per year – that's 54 aerodrome days per year just for Area events. Say the SMAE retain the arrangement and order of these Area events – for the moment at least – but no longer fly them at Area centralised level. That is to say instead they centralise them, selectively and spread them up and down the country using the most suitable sites.

We know from past experience that the North of England tends to be rather unflyable in the early part of the season – an understatement this year I would think – and are therefore best avoided. Similarly most of the countryside around our best 'dromes is heavily cropped in mid-Summer. (This year we have the ludicrous situation of having virtually no SMAE events during the most flyable months of the Summer for this very reason.) Therefore such sites are best avoided in July and August using instead places that are not surrounded by corn – Everleigh, Beulieu, Ashdown even Cannock Chase at a pinch.

The six current Area events could be run something like this. The first one at Bassingbourn, the second at Barkston (maybe two at Barkston) even driving up from Exeter there are only a few miles of road that aren't motorway to Barkston. Then the third and fourth at more northerly venues and the fifth flown in July or August at Everleigh or Beulieu and the final one at Barkston or Bassingbourn again. Suddenly we have more venues than contests. Perhaps we would add a couple of dates and make the total up to 8 to give all corners of the country a couple of events a year on their doorstep. All these would of course be augmented by the existing SMAE Centralised events that are run at the moment and a greater choice of 'dromes would be available for them too if Area comp secs booked the same number of dates at their local field as they do now.

Think of the potential at good sites like Barkston and Bassingbourn. For the same number of annual bookings we could have two of the old Area events plus four extra dates available for clubs to experiment with their own events where organisers could concentrate on just a few classes per day – even one at a time – and make them something really special.



The days of Area events being necessary so that school boy enthusiasts could cycle to them are over lets face it. As far as travel by road is concerned the cost of this can hardly be used as an argument either, as in real terms petrol is cheaper now than it was 15 years ago! There has been a growing tendency for British modellers to head like lamplings for the European Circuit in the summer. That in itself goes to underline that distance and in this case a sea crossing – is little objection and its the competition that counts. Perhaps if our domestic events were a little more sensible more would stay in England!

This change would also take some of the burden off Area Comp Secs and get around that problem of having to book six particular Sundays every year at the discretion of whoever draws up the SMAE Contest Programme. It would improve relations at sensitive sites (allowing some all silent events for instance) it would eliminate unfairness in the spread of weather, it would enable SMAE events to continue right through the high summer months and it would allow them and the local events that could be booked in between to be more competitive and interesting. It could only be an improvement – what say you?

### SIMPLE AUTO RUDDER PROP ASSEMBLY

If you are as suspicious of Montreal prop assemblies as I am you will probably like the look of this unit from the bench of Tim Gray. It has been developed deliberately to avoid the use of machine shop facilities and to include a trigger for operating an Auto Rudder. The principle is simple and is very similar to what I remember of Laurie Burrows Wakefield auto rudder set-ups.

The conventional coil spring between the nose block and prop-hub is compressed on the shaft when the motor is wound and the hook at the rear of the assembly rides well clear of the prop stop. When the motor has run down the spring expands and this hook engages the stop in the usual way. However in this case instead of being a simple screw in the back of the block it is pivoted and when engaged rotates to allow an auto rudder line to be stripped from the hooked end of the stop that emerges through the side of the nose block. Just a few degrees of movement are all that is required before the stop is restrained and the shaft is stopped and the blades fold. The stop is held over during flight by a 30 swg spring which is easily over-ridden by the motor when the stop is engaged.

A standard spring and screw block can be converted but better still replaced with only a few grammes weight penalty. Tim reckons the only fiddle to the construction is sandwiching the two ply discs together with the 1/8" in balsa plug between as the release/stop mechanism is inserted. The 18 swg wire is bent carefully so as not to crimp the aluminium swivel tube. The hole for the prop

shaft and release arm can be drilled in the ply discs and balsa plug and then a 'V' is cut out of the plug to be glued back later. The two ply discs are slid on the release arm tube assembly and the well apoxied balsa plug can be pushed in between. The prop shaft tube or bush is also added at this stage and that V that was cut out earlier can be replaced and the whole assembly squared up and clamped lightly until dry.

A laminated nose block is built in the usual way but the first disc on the rear of the block must have a segment removed to allow the release arm to swivel at the appropriate moment. A small U shaped piece of wire is epoxied into the block at the bottom of this relieved segment. The whole assembly can now be stuck together and the usual bits added to suit your taste. Adjustment of the stop is made by clipping bits off or bending the rubber hook arm. The system can of course be applied to square blocks and probably built up ones as well if some beofing up is done on the back plate. A boon for any class of rubber model as it allows the glide circle to be adjusted at any time independently of the power. Very useful.

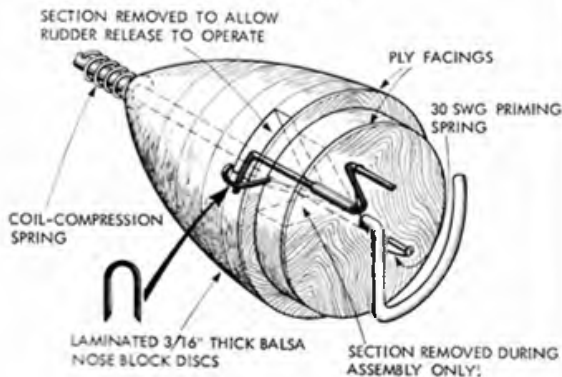
### ULTIMATE OPEN RUBBER TROPHY

People have been asking for more details on this event. It is to be held at Bassingbourn on October 21st. There will be four flights during the day in short rounds. These will be of an increasing max to suit the prevailing conditions. Full score qualifiers will be required to fly one or more further flyoffs after this. Each contestant will be restricted to two models only.

Pre-entry is advisable and preferred. It is 50p for seniors and free for juniors. On the field entry will be £1 for seniors and 50p for juniors. Those pre-entering that send one SAE will have receipt of entry acknowledged plus any last minute info up-date necessary. Those that pre-enter with two SAEs will receive the above plus a complete set of results as soon as possible after the event.

The prize giving will be held at the pub on the edge of the aerodrome after the event. The entire downstairs bar is being taken over for this purpose. As an added incentive for those that have not won anything there will be £20 of free beer available at this hostelry during the proceedings. Prizes will be extended as far down the lists as possible. However whatever happens there is a returnable trophy for the Senior winner – plus £50 cash. Second prize is goods plus £30 cash and third is goods plus £20 cash. Top junior will also be awarded a trophy and a hand made Tim Gray winder plus £10 cash. Second place junior will receive goods plus £5 and third place junior just goods. Pre-entry closes Friday 12th October without exception. Pre-entry to The Open Rubber Trophy, Flat 2, 29 Alexandra Grove, Finchley, London N12. Cheques and POs to D. Hipperson. Now pray there isn't a thick fog on that day!

#### SIMPLE AUTO RUDDER - PROP ASSEMBLY



Aeromodeller

## MIDLAND RALLY

Barkston – 22nd April, 1979

Perhaps rather too many events attracted a healthy number of contestants but spread them thin on the ground at this year's Midland Rally at Barkston Heath. Once again rather breezy throughout the day and although not blowing in the best direction until a little way through the contest the organisation may have been over cautious to set a 2½ minute max. As a consequence flyoffs filled up quickly as conditions were very steady vertically under the light overcast and it was little trouble for on trim power and rubber models to max.

What was hard to explain was the lack of activity in Coupe. It wasn't until the last hour when conditions were most certainly at their worst that some frenzied activity took place when it was discovered that practically anyone could be second! However junior Ian Davitt held onto his first place from a string of creditable flights totalling 7.47.

There were numerous CO<sub>2</sub> models to be seen and a great deal of discussion took place around the subject all day. Most models were on the small side and the top two at least used the Humbrol power plant. Miko Coomes flying a Phil Ball type layout complete with blue foam wing and John Billam with a very racey looking built up wing design weighing only 36 grammes took first and second. John suffered one particularly poor charge but on the whole the top models showed good climbs despite the wind. They were usually far away before any glide set in but what could be seen of that portion of the flights wasn't up to so much! Ball himself made no appearance in this event explaining that his models were mysteriously off trim. He made up for it with some fine HLG flights and a total of 4.45 to take this event by nearly 1 minute.

Martyn Cowley had totalled 8.56 in A1 to have John O'Donnell start flying late in the day to put in four consecutive maxes. Martyn must have put the 'fluence' on John's fifth flight as it fell off the line and then out of the light lift to land at exactly 56 seconds to push the decision to another flight!

The promised rain began as the contest closed and looked to be about to spoil an otherwise satisfactory day. However with the rain – and it was never that heavy – came a considerable reduction in wind strength. It was virtually flat calm as the hooter sounded for the first flights at 6.20. The Rubber and Vintage flyoffs were run together and Russell Peers' open rubber model was away quickly and looked to be in good air. Certainly good enough to coax Dave Hipperson to launch his Bazooka in the two way Vintage flyoff between himself and JOD. The latter had been engaged in some rather hasty repairs to his Scram after smashing a tip on the last max. He didn't start work until 5.30 as he had been busy with his A1! The remaining two Open Rubber participants followed but were not in the same good patch. There had been more than three qualifiers but a number of the farthest travelled had left for home when the wind freshened in the late afternoon.

Open Glider gave John Cooper a convincing win with 3.11 after a short tow. Tony Cordes had launched first but was never quite in contention. Martin Dilly had circle towed through all the good air to launch last and make only 1.49. Cowley and O'Donnell were next with their A1s and it was the first man away who had the better air, Martyn winning by a little over 20 seconds.

Four had qualified for the Open Power flyoff but only three came out for the flight. It was still relatively calm and only just raining but the good air had definitely gone. Russell Peers was first away and although neither very high nor in lift his 3.15 was easily enough as Ray Moore went very off pattern and stalled down on the glide for less than a minute. Trevor Payne didn't fly until the rain had returned and got poor air with his FAI model off the top of a respectable power pattern which starts with a very ungainly curved launch but ends with a VIT that operates before the power cuts and adds considerable altitude as a consequence!

Small prizes and re-distributed entry fees were awarded at a short prize giving from the back of the control caravan which hadn't had to move all day. After the previous weekends 'chase the organiser' event, it made a pleasant change.

## Results

**Open Rubber:** 1. R. Peers (Falcons) 7.30 - 6.25; 2. P. Ball (Grantham) 7.30 + 4.51; 3. J. Parker (Leeds) 7.30 + 3.45.  
**Vintage:** 1. D. Hipperson (Croydon) 7.30 + 3.21; 2. J. O'Donnell (Whitfield) 7.30 + 1.58. **Open Glider:** 1. J. Cooper (Biggles) 7.30 + 3.11; 2. A. Cordes (Whitfield)



Ian Dowsett with his latest outdoor duration model. Appropriately, the wings were originally designed for his earlier Jetex models, a power source no longer available which now seems to be replaced by CO<sub>2</sub> as a similar quiet, clean and convenient lightweight power source. Incidentally, Ian still currently holds the Indoor Duration record with a flight of 7.59, a record certain to be improved upon this year.

7.30 - 2.04; 3. M. Dilly (Croydon) 7.30 - 1.49. **A1:** 1. M. Cowley (Biggles) 8.56 - 1.44; 2. J. O'Donnell (Whitfield) 8.56 - 1.23; 3. D. Allman (Nantwich) 8.09. **Open Power:** 1. R. Peers (Falcons) 7.30 - 3.15; 2. T. Payne (Biggles) 7.30 + 2.20; 3. R. Moore (Biggles) 7.30 - 0.58. **Coupe d'Hiver:** 1. I. Davitt (Leeds) 7.47; 2. N. Beaumont (Croydon) 2.50; 3. R. Scales (Leicester) 2.15. **HLG:** 1. P. Ball (Grantham) 4.45; 2. L. Gray (Falcons) 3.59; 3. F. Rusby (Clemeac) 3.44. **CO:** 1. M. Coomes (Grantham) 8.41; 2. J. Billam (Grantham) 7.44; 3. A. Beckett (Leicester) 7.01. **P30:** 1. G. Ferrer (Leicester) 7.55; 2. I. Davitt (Leeds) 7.38; 3. P. Carter (C/M) 4.48, 1/2A: 1. E. Vye (Market Harborough) 9.54; 2. G. Foster (RAFMAA) 8.47; 3. S. Riley (Morley) 8.07.

## CROYDON SILENT GALA

Bassingbourn – 20th May, 1979

Mid November arrived six months early to coincide with the Croydon Clubs 'Silent' Gala held on the usually fine weathered Bassingbourn. Thundery showers forecast – which would at least have made it interesting – turned out to be a solid overcast bringing a breeze and constant drizzle. The first totally 'unflyable' Sunday the aerodrome had seen this year. Not surprisingly 'Silent' was a very apt description with only the chink and chat from the very local pub to disturb proceedings until well past 2pm.

That is not to say all those present imbibed but those that did missed no flyable weather. Mysteriously the breeze dropped and the rain eased off at around 2.30pm and furious activity followed. Most hurried believing that the rain would return after this passing calm patch. In many cases this rush was their undoing as if anything the conditions improved right through to the end of the contest with many winning totals being made during the last hour when conditions warmed up further.

Flying late was quite practical in any class apart from Open Rubber which had been arranged as a two flight event to the usual 3 minute max, both flights to be returned before 5pm an hour earlier than the close for the rest of the contest. A longer but maxed third flight was planned for the qualifiers. In the circumstances this system virtually eliminated the contest itself as visibility was not consistently suitable for open rubber flights until a little after 5pm! It was strange therefore to see experienced flyers like O'Donnell, Sharp and Gray making their first flights as early as 3pm. Their efforts ended in OOS flights practically without exception and all long before maxes were recorded. A futile exercise but hardly the organisers' fault as one disgruntled competitor was heard to suggest. On the contrary, rules of this kind take into account such odd conditions rather well. Had Open Rubber flying been allowed up to 6pm in the traditional manner then there may have been as many as half a dozen with full nine minute scores made in the last hour. The resulting flyoff would have then been held in rapidly worsening visibility making the timing of long flights impossible and proving nothing. As it was John Bailoy chose his moments carefully twice and topped the results with the only clean 6 minute score.

Standards in the other events – more suitable for the murky conditions – were very high. Large gentle patches

of lift wafted through more and more frequently as the afternoon wore on. J. Watkins finding form flew a string of consistently good flights – but only two actual maxes – to take A2 by 30 seconds over Baines. He then repeated the act with two more maxes and a good flight to place second in Open Glider behind Baileys only nine minute total. The score of Baileys remaining the only full house all day apart from the previously mentioned Open Rubber total (a different Bailey) and Hippersons treble in Vintage using one of his Bazookas

There was much activity and close scoring in the two mini events and perhaps the drama latent in these was diluted by having no form of score board and card return rule. Certainly by the end of the day there were more than half a dozen flyers in A1 separated by as many seconds and all at the top of the list. Eventually however it was Ken Smith and John O'Donnell that took a considerable lead over the pack. John topping Ken's score by over half a minute mainly from flying late in the day as earlier he had his hands full with putting together a very usable 9.34 total in Coupe. As it turned out this was only good enough for 3rd. Peter Carter took 2nd in this event in the calm conditions which we have seen suit him best in the past. He too flew late in the day after first completing his Wakefield flights. By the end of the day half a dozen had scored totals of over 9 minutes in Coupe but even top placer Tim Gray couldn't quite make a perfect score. With only two maxes his three other flights were as close to 2 mins as to make no difference and all from very respectable climbs that seemed to have very little or no thermal assistance if the glides were anything to go by.

Howick and Taylor finished the day at the top in Wakefield only three seconds apart – Ivan being particularly unlucky to miss a max on only one flight. Ian Kaynes, recently third in the Weston Cup flyoff, found himself in the same position again with a little under a minute short of a full score.

There had been a CO<sub>2</sub> event promised but despite at least three of the leading protagonists of the art being present no one flew in the comp. although a number were seen testing after the event. One presumes there just wasn't time to fly everything. This is the one criticism of such contest – just too many events to make any of them really worth winning. However in their mitigation I did hear complimentary remarks about the amount of money returned as prizes – the largest proportion going to the hardest fought events which is as it should be.

**Open Rubber** (3 mins. x 2): 1. J. Bailey (Biggles) 6:00. **Open Glider** (3 mins. x 3): 1. R. Bailey (St. Albans) 9:00; 2. J. Watkins (East Grinstead) 8:47; 3. M. Warren (Richmond) 8:28. **F1B** (3 mins. x 5): 1. M. Howick (East Grinstead) 14:37; 2. I. Taylor (Falcons) 14:34; 3. I. Kaynes (Croydon) 14:02. **F1A** (3 mins. x 5): 1. J. Watkins (East Grinstead) 13:44; 2. B. Baines (RAFMAA) 13:14; 3. A. Cordes (Whitfield) 12:59. **Vintage** (3 mins. x 3): 1. D. Hipperson (Croydon) 9:00. **HLG:** 1. P. Ball (Grantham) 4:42. **Coupe d'hiver** (2 mins. x 5): 1. T. Gray (St. Albans) 9:51; 2. P. Carter (C/M) 9:39; 3. J. O. D. (Whitfield) 9:34. **A1** (2 mins. x 5): 1. J. O'Donnell (Whitfield) 9:52; 2. K. Smith (Croydon) 9:14; 3. C. Edge (Welland Valley) 8:48.

### ISSAENKO RE-VISITED

From Argentina comes a slim-line variant of Viktor Issaenko's circle tow-hook; Mario Israileu of Tucuman has used a single coil spring round a silver steel hook, which slides between aluminium alloy cheek plates. The total hook assembly is thus only 5mm thick and has no projections at the sides to foul the inside of a slim fuselage.

Mario's hook as drawn shows no rake and would thus make a glider hard to tow upwind of its flyer if set up with the hook free enough to be pulled back to the tow circle made by the auto-rudder spring. However, some of the Soviet hooks are quite deliberately made to stay in either the forward or aft position until the towline is tugged to re-position them. This is usually achieved by balanced springs, and certainly the USSR's team at World Championships seems to have little trouble with the system.

### RUBBER

With the recent availability of good rubber from several sources, more and more people seem to be building Wakefields and Coupe models, and may need some hints on the care and feeding of 'The Rich Man's Motive Power'. As supplied, rubber strip is lightly dusted with talc, as a means of avoiding sticking of adjacent strands in manufacture and storage of the hank. Talc, however, is not a good rubber lubricant and therefore should be thoroughly washed off once the correct weight of rubber has been cut off the hank.

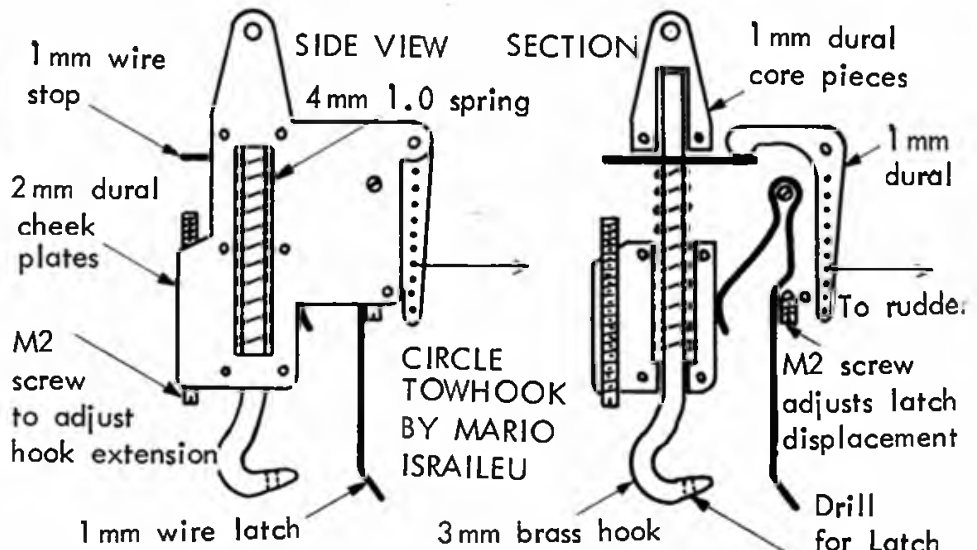
When storing rubber, by the way, whether in a shop or at home, make sure that it is kept cool and away from the light; ultra-violet light, present in daylight, causes rapid deterioration of natural rubber, so it is only sensible to store both stock and made-up motors in light-tight containers. Rubber should not be stored wound tightly on a spool; if bought in a hank make sure the knots tying the ends neatly to the rest of the rubber are loose and not deforming the material.

Newcomers sometimes have difficulty in knotting a motor; several ways exist, but here are two that work. Start with washed and dried rubber in both cases. Method A: tie a single overhand knot *very tight* in each end of the rubber, and then lick the ends before tying them together in a reef or square knot. The saliva acts as a lubricant to enable you to slide the initial overhand knots tightly against the reef to act as a lock; it is worth trying a minute spot of cyano-acrylate on the knot to further inhibit slipping. Method B: originated, like some other good things in free-flight, by Jack North, this system uses a simple self-clamping jig to hold the ends of the rubber overlapped and tight while they are bound with wool or thick de-waxed carpet thread.

Two clamp arms of 3/8in square hardwood are loosely pivoted at one end to a baseplate of 18 s.w.g. aluminium alloy or steel, bent as shown; the other ends of the two arms are cut at an angle so they butt against the upper lip of the baseplate. On my version I have filed serrations into these angled ends and stuck rubber on the lip to provide a tighter grip on the rubber strip. To join the two ends of a motor, overlap them by an inch or so, and pull the double thickness as tight as you can; place one end against the lip of the baseplate and swing the arm up to clamp it into place. The tension of the rubber tends to close the arm tighter against the lip. Keep pulling the double thickness of rubber, stretch it across the gap in the baseplate and swing the other arm up to keep the lapped joint taut; with both hands free you can now tightly bind the joint with half a dozen turns of wool or thread. You may care to add a drop of cyano-acrylate to the bound rubber, before swinging the clamp arms outwards to free the completed motor.

Lubricant is important for improving the performance of rubber and extending its life. Water is quite a good one but would get squeezed out in practice; if you need to cut rubber with a knife the job is far easier if the blade is kept wet. This is why tyre punctures occur more frequently in the rain, and why wheel adhesion on cars is reduced, especially when car tyres used natural rubbers rather than the butyl ones common today.

Some people favour castor oil (the medicinal type, rather than the fuel component, which often contains additives), but it is very hard to remove from a motor if you need to join a broken strand, and even harder to get off hands. Silicone-based surgical lubricants like KY



have been used by some people, but the rubber tends to look dry and strands break uncomfortably often. Soft soap and glycerine is the lubricant that many contest flyers use; roughly equal parts are boiled together until the result is about the viscosity of gear oil on a cold day. Too thick a lubricant will be hard to spread over all surfaces of the rubber, while a thin one will spray around inside the fuselage rather than staying on the motor. Try to find the unattractive-looking brown soft soap, which does not contain the green dye that most stocks now have, and which may not be very good for rubber.

I would not advise using washing-up liquid as a rubber lubricant; we did get a letter from a reader who had used it and complained of frequent broken strands. Many of these domestic detergents are petroleum-derived, and are therefore harmful to rubber.

Bear in mind when weighing your rubber for 10 gramme Coupe or P-30 motors or 40 gramme Wakefield ones that rubber lubricant adds weight; I aim for about 9.5 grammes for a dry Coupe motor, which will allow a little tolerance on both your own weighing device and the processors'. The specified rubber weights are for lubricated motors, so don't cut it too close.

As a final word on rubber, do not expect to get any sort of performance from the whiteish elastic strip sold in some model shops: it has no similarity to the rubber used for making the propellers of model aeroplanes go round fast enough to provide a climb. The material you are looking for is brownish, greyish or blackish, and should stretch to about seven times its normal length. For further information on rubber testing and use, refer to one of the definitive articles on the subject, Testing Commercial Rubber, which appeared in the now defunct Model Aircraft magazine in February 1961; photo copies of the three page article are available from *Aeromodeller* at a cost of 50p.

### NATIONALS 1979

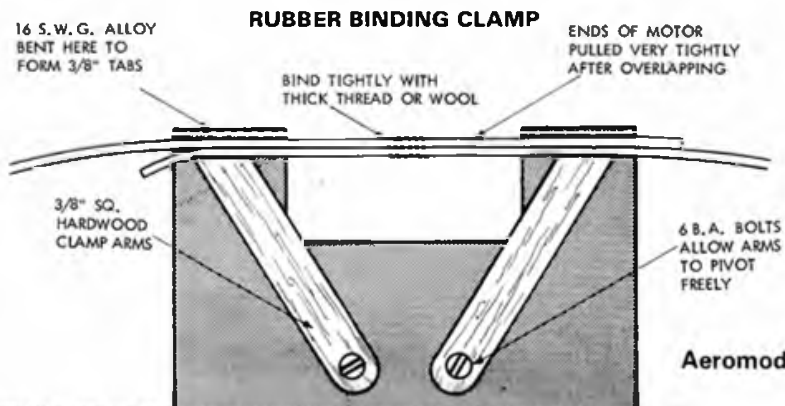
There has been some comment both editorially and from flyers about the decision to hold the Free Flight National Championships at Everleigh Dropping Zone, rather than at Cranwell or Barkston Heath. The problem is simple - crops! While it is all very well for people to waffle on about the family atmosphere, and the joys of camping, and how nice it is to wander about looking at other peoples' activities, the fact remains that we are

talking about the National Model Flying Championships and not a funfair. The constraints on a combined Nationals that result from the wind- and downwind terrain-dependence of free flight, coupled with the vast array of fixed obstructions that control-line and especially radio-control seems to involve today, mean that it is no longer acceptable to muddle through, and hope that everyone manages to avoid everyone else and that the wind doesn't swing.

Last year's grouping of free-flight with R/C soaring was an improvement over the previous one, but the three people at Cranwell whose 14 ounce A/2s were hit and destroyed in mid-air by 3 or 4lb radio controlled(!) soarers, presumably trying to share their lift, would probably agree that the mix does not work. Certainly the 1977 experience of having R/C aerobatic aircraft overflying the Open Glider launch area at 100 feet was not one that many flyers want to share again.

The problem of crops is one that is still not understood by a lot of free-flyers, some of whom organise contests. It is simply not good enough to ignore the fact that models may land on someone's livelihood, or to wait until they do before approaching farmers or moving the launch area. At some of our vital F/F sites we have a working arrangement to discuss with local farmers before each day's flying, as a matter of courtesy, to find if any fields are in a delicate state, and yet sometimes even this is ignored by a contest director, in the hope that the drift will be slight, or that it will be possible to shift the launch point, or that "we'll worry about that when models start landing in crops". The farmer outside the perimeter fence views things a little differently. If he sees models landing in his fields and people wandering straight across to them, apparently not caring about what they step on, then he will be upset, and anyone later calling on him to discuss model recovery will have a defensive, somewhat aggrieved farmer to deal with.

In May I watched three flyers walking across a field of newly-sown potatoes in ridges; I had checked the night before that we could cross the field carefully, but these three were striding along, making no attempt to avoid the ridges and step in the troughs. The loose topsoil carried large visible footprints as a result, probably not disastrous to the national spud output, but an example of the careless behaviour by a small minority that makes retaining flying fields that much harder.





## DUTCH NATIONALS

The one-day Dutch F/F Nationals held on Thursday May 24th, sensibly two days before the Dutch International, made the two meetings a practical proposition for foreigners visiting on a long weekend. The venue, once again Roozendaal Heath, precluded the flying of power events because of past conflicts with nature conservationists, and was therefore a silent glider and rubber only affair. Events included F1A and F1B plus A1 and HLG with P-30s being flown in an Open type event. Novice, Junior and Senior classes appeared to give added interest to the events, with an exceptionally large number of flyers in the junior and teenage groups, perhaps half the total number of flyers! Conditions were truly flat calm with very weak yet unmistakably solid lift available.

Timekeeping was by official timers only, with competitors queuing for their turn – a good system but for the shortage of timekeepers resulting in up to 30 minutes queuing in the one hour rounds, with anyone starting to queue within the last half hour of the round losing their flight! Be warned if you go next year and start queuing early whether you intend to fly soon or not!

Conditions were relatively easy, but the crunch came in round 2 with the drift changing through 180° during the drizzle that continued all round. A few models drifting overhead maintaining altitude prompted Mike Fantham to tow off down wind after them. Catching them some 300 yards down wind he circled to discover the lift had dissipated, only to return upwind circle towing for the next 20 minutes in the rain before catapulting into air that left him with 5ft altitude when the DT popped at 3:05. That proved to be the deciding round for most competitors and with all the other classes decided on less than perfect scores only F1A with five full houses (5 x 3 min.) remained to prove the climax of the day.

With conditions now near perfect, no rain, light breeze, even some sun, the remaining five all flew in the same bump, marked by Bleuer's model, to all score 4 mins. Returning for the 5 minute round, this time Fantham was away first and only two others could catch him to also score a max. The organisers now wishing for a speedy conclusion, and with five minute flights just reaching the woods, declared a 5 minute max with only two minutes towing period. Fantham and Bleuer both made it look easy! Once again they returned for another 5 minute max, being now the fourth fly-off round, this time with only 60 seconds towing time. You would need to see it to believe it – no problem, they both maxed again. Desperation for the organisers, they had to reach a result! Tony Aarts decided on 20m tow lines, up and off releases going for a 5 minute max. Impossible – not exactly. Both models were clearly released into bouncy air, Mike Fantham's model just failed to make the most of it, but Heinz Bleuer once again climbed convincingly to another 5 minute max and certain victory. A fantastic climax to a brilliant contest between these top flyers Heinz Bleuer had accumulated 24 minutes of fly off time after a contest score of 15 minutes, truly a classic contest.

### Results

**F1A:** 1. H. Bleuer (CH) 900 + 240 + 300 + 300 + 300; 2. M. Fantham (GB) 900 + 240 + 300 + 300 + 111; 3. C. Breeman (NL) 900 + 240 + 300 + 140; 4. P. Lending (NL) 900 + 240 + 197; 5. A. Leeuwangh (NL) 900 + 240 + 96. **A1:** 1. M. Mennes (D) 596; 2. M. Cowley (GB) 583; 3. H. v. Empel (NL) 570. **F1B:** 1. P. Ruyter (NL) 843; 2. H. v. Hoorn (NL) 832; 3. K. Presetschnik (NL) 826

## TWELFTH HOLLAND INTERNATIONAL – 1979

With a smallish site on a heath near Tilberg, and windy but warm conditions, with some heavy rain during the last round on Saturday, the three minute max. looked a bit optimistic, but although there were some models treed in patches of downwind woodland, and ditched in knee-deep lakes, the main attrition was due to turbulence from a line of trees a few hundred yards upwind of the launch line. The siting of the line about 50 yards downwind of a shallow bank about five feet high also shielded flyers from the real wind conditions at towline height and led to surprises for glider flyers, and a number of wing breaks.

The venue problems, apparently arose following noise complaints caused by long-running R/C models and resulting in the loss of the other similar sites to all powered models. Slackness in interpretation of the Sporting Code led to a few mumbblings. Random test flying in the contest area, questionable decisions on



Above, Beate Kappe lead for several rounds, finally placing Second at the Holland International. Right, Hero of the Dutch Nats Heinz Bleuer assisted by trusty retriever Peter Zimmermann, at moment of decision for Tony Aarts who ordered 20m towlines for 5th fly off round! Below, Mike Fantham flew brilliantly at both meetings, receives Holland International trophies from Tony Aarts. Bottom, Jens Kristensen, Denmark's top new Wakefield flier, will be joined by his father in World Team for California

winch throwing, and a ban on the timekeepers' use of binoculars, leading to several under-timed flights, were the main problems.

Technically, the aircraft that caught my attention were Wakefield winner Jens Kristensen's model with three-stage auto-rudder, plus v.i.t., and the short-coupled A/2s flown by the West German Cella club, including second-placer Beate Kappe, improving on her fourth place at the Trebod last year.

The Cella gliders use a 45cm moment arm and look very short-coupled compared to more orthodox aircraft. Beate's model seemed to thermal well, but she was not circle towing which may have cost her some time on the calmer rounds. Beate D.T.ed short at 2 minutes in the opening round as a protest against the 3 minute max overflying woodland, yet she lead later rounds and was overnight leader in F1A glider. But on Sunday morning her best model had seriously changed trim after a soaking, and the timer had jammed in her reserve. Such delays left her with only 5 minutes to fly in the fifth round and after towing her model up, she was then unable to reach sufficient line tension to unlatch the impulse hook. Many times she tried to release as the seconds ticked by, and there was now no time left to land for adjustments and a refly. She was still trying to release as the end of round hooter signalled – too late. But NO! The model finally released before the end of the short hooter blast, the flight though not in lift was OK! However, she finally needed more than two minutes to catch overall winner Mike Fantham.

Mike started the contest with a line cross and maxed on the re-flight, but after his model got damp the towing got difficult and he spiralled down for only 42 seconds in the fourth round, even though a previous check flight showed no problem. Fortunately during that round, the last one on the Saturday, not one max was scored, and Mike hung onto second place, and the Wakefield round which immediately preceded it had produced none either. To round off the day, the drizzle which led to delays of the final Wakefield round caught Dave Greaves out in the swamplands looking for a model and the search party which set out after him found instead a magazine editor and a UK team manager trying to lift a Ford Escort out of a water-filled pothole on the heath. Greaves' model spent a wet night out in a bush, and he flew another, which got him third place. The bogged-down Escort cost Martyn Cowley a lost fourth round flight following an overrun and as a result winner Bert Huyben needed only six flights to take the trophy.

### Results

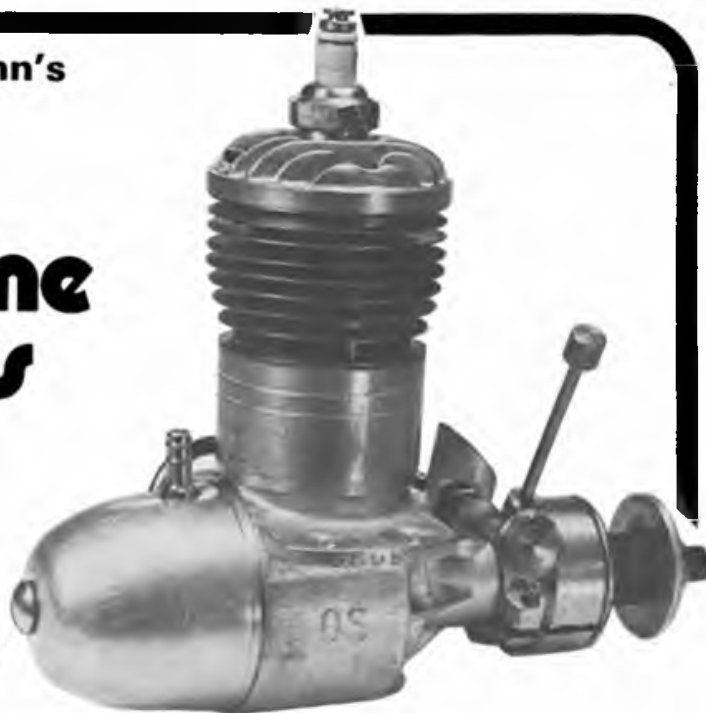
**F1A:** 1. M. Fantham (GB) 1050; 2. B. Kappe (D) 927; 3. C. Hohls (D) 925; 4. G. Fiks (NL) 905; 5. D. Rasmussen (DK) 903; 16. M. Dilly (GB) 689; 17. D. Oldfield (GB) 682; 33. D. Moaa (GB) 346. **F1B:** 1. J. Kristensen (DK) 1183; 2. P. Ruyter (NL) 951; 3. D. Greaves (GB) 912. **F1C:** 1. B. Huyben (NL) 1003; 2. M. Cowley (GB) 895; 3. R. Simon (NL) 534.



Peter Chinn's

# Engine News

Another view of the 1946 O.S. Type 10 engine mentioned in the January issue. One of our readers reports that he bought one of these in Japan in 1947 for just over £2!



## SILHOUETTE CORRESPONDENTS

"I should like to endorse previous correspondents' views by requesting more space to be devoted to vintage engines and designs."

"I hope the silhouettes are going to be a regular feature and may I add my plea to those asking for more space to be devoted to old engines."

"As you may gather, I, too, find old engine features fascinating."

"More vintage space would certainly be welcome."

"Please keep some of your engine news for vintage motors."

"Keep up the good work."

These are just a few of the most recent comments from readers of this column concerning older engines. When, a few months ago, we began, rather tentatively, to include in this column, items on old engines, we little realised how enthusiastically these notes would be received. Far from attracting the attention only of collectors, it seems that our reminiscences stirred fond (or otherwise!) memories for a lot of other readers who have owned or encountered these engines and we have had more letters as a result of the "Collectors' Corner" and "Silhouettes" items, than for any other since the column was started back in 1966.

Space available here will allow only a limited number of extracts from readers' letters to be published, but we would like to thank all those who have taken the trouble to write about their experiences and memories.

One engine that we had not expected to hear about from another reader was the

fairly rare 1946 O.S. Type 10 illustrated in the January issue, but this brought forth an entertaining reply from R. Johnson of Billericay, who told us that he also has one of these motors, which he actually bought in Japan in 1947 while serving in the RAF as a member of the British Commonwealth Occupation Forces, at the former Japanese Naval Air Station at Miho, near Yonago in Honshu.

"On one of my casual visits to Yonago," writes Mr Johnson, "I was attracted to one shop by the sound of a small engine running. The place was full of blue smoke and Japanese . . . and there, bolted down on the counter, was this engine being demonstrated by the proprietor. It looked and sounded marvellous to me, a modeler of some 12 years standing, at that time, but only of rubber-powered models. When the shopkeeper realised he had a possible customer on the premises, he stopped the motor and, after the customary haggling, I found that the engine could

be mine for the then princely sum of 2,200 yen.

Believe it or not, in those balmy days when the pound was still worth something in other parts of the world, 2,200 yen was the equivalent of a mere two pounds and ten new pence! However, since the British forces were not supposed, officially, to possess any yen, a trip back to camp was required in order to raise the wind with a spot of mild unofficial trading . . .

The next day, Mr Johnson went back into town to collect the motor and, incidentally, to make the pleasant discovery that the Japanese practice of supplying motors fully equipped didn't start with Datsun or Toyota. He writes: *In addition to the engine, I also received the spun aluminium fuel tank, as mentioned in your article, a radial mounting tank which screws in place of the engine backplate, two propellers of 12in and 13in dia, a combined plug and propnut ring spanner, a scale spinner, coil, condenser, batteries and also a large aluminium mounting for use in a model boat. There was also an instruction booklet in Japanese . . . All these were included in the price of 2,200 yen!*

Writing from Northern Ireland, Allan MacFarlane comments "First of all, many thanks for giving vintage fans some column space and for being one of the few people to appreciate the enthusiasm that exists for these engines." Then, after handing out this bouquet, he follows with a well-deserved brickbat: "On to the silhouettes: bearing in mind your emphatic statement about no tricks being resorted to, I would say that you were being slightly sneaky as the first motor is a Metro 52 diesel, but the silhouette is the wrong way round, the needle being shown angled back on the right hand side, whereas it should be on the left."

Quite right, Allan! But the trick was not intentional! The silhouettes are made by taking a photographic print of the engine, cutting around its outline, removing the "engine" and then mounting the remainder of the print face downwards on black paper and re-photographing it, but unless the engine is perfectly symmetrical, the

Solution to Engine Silhouette No. 5 in the April issue: the West German Metro 52 first made in 1951, with parts shown to right. Unusual feature was its alloy prop stud (to save front end in a crash) over which was fitted for 'decorative' reasons - a boxwood spinner.



new negative must, strictly speaking, be printed back-to-front. Hopefully this will be done with this month's negatives!

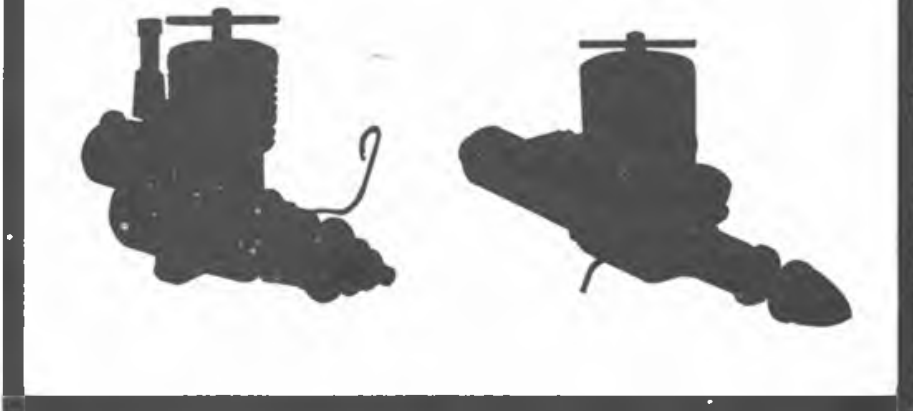
The April issue engine silhouettes brought a bigger than ever crop of post-cards, including a surprising number of (almost) correct ones. The two engines shown were the Metro 52 (left) and the 'K' Falcon and fourteen readers identified both, including (in order of answers received): Mike Holloway of Wallington, Surrey; Bob Brown of Newbury, Berks; John Noble of Worsley, Manchester; O. F. W. Fisher (of Performance Kits); Jack Law of Newark, Notts; Peter Kirby of Abingdon, Oxford; Peter Jackson of Banbury, Oxford; S. Barrett of Hull; J. F. Taylor of Ormskirk, Lancs; J. R. Holt of Dagenham, Essex; J. M. Hemmings of Stourbridge, West Midlands; Colin Sparrow of Beith, Ayrshire; Allan Macfarlane of Ballyclare, Co Antrim and Rod Roper of Bungay, Suffolk.

One thing we found puzzling was that several of these otherwise 100 percent answers referred to the Metro as "East German". The penny dropped when we had a second look at Peter Fisher's card which also identified the engine as East German: a glance through Peter's book, the *Collector's Guide to Model Aero Engines*, and there was a photo of a Metro 52 on page 126 identified as the "East German Metro 2.47cc". In fact, the Metro was manufactured by W. Mayer & Sohn of Rothenburg ob der Tauber, which is about 40 miles west of Nuremberg, so the Metro was very much a West German product. John Noble was the only reader to correctly identify the Metro's origin.

The Metro 52 first appeared in 1951. It had the usual arrangement of shaft-valve induction and radial exhaust and transfer ports, and had a bore and stroke of 15 x 14 mm, giving a swept volume of 2.474cc. Distinguishing features were the eight round exhaust ports, the alloy prop stud with boxwood spinner and a steel prop driver with lightening holes.

The 'K' Falcon was one of a number of annular port diesels manufactured by the 'K' Model Engineering Co, Ltd, of Gravesend, Kent under the direction of N. and L. Selwyn, in the late 'forties and early

## SILHOUETTE CHALLENGE 7 & 8



'fifties. These engines included the smallest model diesel produced in the UK at the time, the 0.2cc 'K' Hawk and also one of the largest, the 5cc 'K' Vulture. The Falcon was a 2cc unit, or to be more precise, 1.96cc, derived from a bore and stroke of 0.520 x 0.562 in. It had the rather unusual arrangement of a cylinder that was flanged at the bottom and sat on top of the crankcase, held down by a locking ring that screwed on to the outside of the case. Above the exhaust port there was the usual screw-on finned jacket. Porting featured internal flute type transfer ports and annular exhaust ports, in conjunction with a conical piston crown, and the rotary valve intake was below the main bearing rather than above it.

We had a couple of these engines on test. The first one was set up rather tight and after a couple of hours running, its output was just under 0.10bhp at 9,400rpm. The second one was a great deal better and just topped 0.12bhp at 9,600, which was quite good at that time for an engine weighing only 4.3oz. In those far off days we even had time to try out test engines in models and our notes tell us that the second Falcon, installed in a small (150 sq in) ultra lightweight (9½oz!) C/L stunt model, was clocked at nearly 52 mph on 40 foot lines . . .

*This month's silhouettes are of a pair of silencer-equipped diesels which collectors may care to try to identify. One is British, the other imported. Both were made in the early nineteen-sixties. Solutions on postcards as soon as possible, please, if you are interested, so that we can publish names in the October issue.*

Incidentally, several readers thought the Falcon silhouette was that of a 'K' Kestrel 1.9. The Kestrel came on the scene in 1949, a few months after the Falcon and could be identified by the absence of cylinder finning below the exhaust ports.

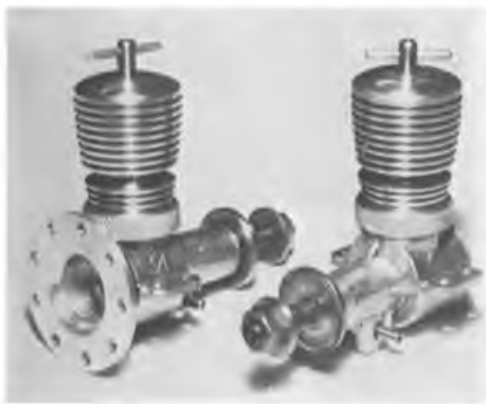
### WHAT NEWS OF OWAT?

Ron Wilson of Stockport has written to ask whether a test report was ever published on the Owat 5cc diesel. To the best of our knowledge, the answer is no. The Owat, made by Modella Engines (Bradford) Ltd, of Bridge Street, Bradford, first appeared in 1946 and, quite obviously, was, to put it politely, "inspired" by the French 5cc Micron fixed compression diesel.

The Owat was not in production for very long but whether, as has been suggested, this was due to a complaint by Micron, we do not know. In any case, a combination of a relatively large displacement and fixed compression was not the best recipe for survival. As Ron Wilson observed: "These engines were pigs to start but, by experimenting with head gaskets, I managed to successfully fly one in a 'Radio Queen'. This was in 1950-51."

Incidentally, an alternative to changing head gaskets, with a fixed compression diesel, would be to raise or lower the cetane value of the fuel with different additives. We did, in fact, experiment with this away back in those early diesel days when trying to persuade fixed compression diesels to run on differently sized props. The idea, of course, was to advance the ignition point for smaller props (for which we used amyl-nitrate) or retard it for larger props (nitrobenzene).

*Far Left: Solution to Engine Silhouette No. 6: the British 'K' Falcon 2cc diesel. The radial mount backplate was an optional extra. Left: Partially dismantled 'K' Falcon. Note the unorthodox cylinder, flanged at the bottom and secured to top of crank-case with knurled screw-on ring at left.*



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**BRITISH AEROSPACE**



# STRESS OFFICE AIR RACE



AT THE AIRCRAFT FACTORY where I work we hold an annual event – a hard fought inter-office challenge match, for the “Whittaker Cup” and the “Concorde Trophy”, which has become known as the Stress Office Air Race. The Stress Office is a technical department where aircraft strength calculations are done and the object of the challenge is to fly a model from one end of it to the other. There are two classes, in the proper tradition, rubber and glider, but they have to be made from office scrap material, cardboard, paper, paper clips, pencil stubs, old biros, broken rulers and elastic bands. There is a concession for the rubber-driven models, they are allowed a commercial plastic propeller, but the power must be office elastic bands and the shaft a paper clip.

The contest takes place during the 45 minute lunch break, and previous practice is allowed if you can persuade the usual lunchtime occupants to stop their activities for you, and if your model is actually completed before the day. Both of these occurrences are sufficiently unusual to preclude practice, apart from the hazards of the course, which do not encourage pre-contest flying. Wall to wall, the flight path is about 90 feet, with 15 feet of usable width, but the course is littered

with the usual paraphernalia of a technical office. Desks and cabinets are stacked with books and files, chairs, telephones, a row of large roof pillars and an enthusiastic crowd of spectators lining walls and window ledges.

So, not only are the models constructed from low strength to weight materials, they have to fly in a straight line, which is not easy, and survive numerous short-falls into the office furniture during the contest. This invariably necessitates re-trimming in the form of bending flying surfaces or propeller shafts back into



place before the next attempt. These constraints have produced the three main design requirements, a linear flight path, a good combination of duration and speed and last but not least, survivability.

The glider class has reacted most quickly in satisfying these conditions and evolved entries which, in the main, have highly swept wings and are either tail-less or canards. The old paper dart you may think, but this is not entirely so. A pointed nose doesn't survive the first crash (landing is too good a description into a sea of desks and chairs), small ones cannot be given sufficient momentum to achieve a useful distance and large ones can lack rigidity. In addition, a fair measure of longitudinal stability seems to be required. This means a forward centre of gravity position with a trimming device, either elevons or a noseplane. Consequently, some of the models are fair examples of origami, with three-dimensional wing sections and built-in camber and elevons.

The most successful dart ever flown was a large glider made from “brown folder” card with the needle nose removed, ballast added and the cropped wing tips turned down. This model had a most impressive performance, gliding in a



Top right: *Not as orthodox as it looks, author's design with lots of dihedral, taper and aspect ratio. Span 76cm, length 56cm, weighing 116 grammes.*

Above: *Despite its unorthodox layout, this model built from brown cardboard flew well. Span 43cm, length 51cm, weighing 56 grammes.*

Left: *Straight winged paper gliders with card ribs. Model with tail fin flew best, which fits the author's theory, but the needle nose took a lot of punishment. Span 31cm, length 47cm weighing 30 grammes.*



straight line down the centre of the office to win the contest, although not without some effort of trimming and throwing during a hectic 45 minutes.

Another glider, entered as a flying saucer, but unkindly called a discus by the other competitors has also flown the full course. However, this design approach has been eliminated in subsequent contests by appeals for fair play!

Straight down the middle of the office is the dream of all the contestants and the gliders are quite successful, but not many reach the other wall. The throw has to be well judged, with the initial climb ending just below the ceiling (clearing the lights, fans and cross-beams of course) and the pull-out after the following dive just above desktop level. Then, if there are no books or files in the way, the model might reach the other wall during a second climb, providing it has enough speed left.

An explanation of the success of the gliders takes us into the realm of

lems which are overcome by adopting the canard layout. One of these, a 3 feet span monster constructed of paper, had a Jedelsky wing section employing a rolled paper tube leading edge and paper strips in tension to support the wing lift. It flew extremely well and would have won a duration contest, but the designer was not able to achieve a straight flight path in the time available. Nor did it survive for a photograph, unfortunately!

There is a school of thought that relies on twin motors, rotating in opposite directions, to counter the torque problem. Combine this idea with a canard layout and what do you have but the classic 'A' frame pusher. One of these, made from Bristol card with bent ply propellers, flew excellently for about 70 feet in a long powered glide which almost won the contest in that year.

Another out of the rut attempt is a cascade-wing, canard pusher built from ordinary brown cardboard. This model certainly flies and on one occasion won the contest, despite its unlikely appearance.

The author's first attempt was a stick model with all elliptical surfaces, made from white card, rather like an old-fashioned microfilm model. This flew well but would not go in a straight line and proved difficult to retrim after each landing amongst the desks.

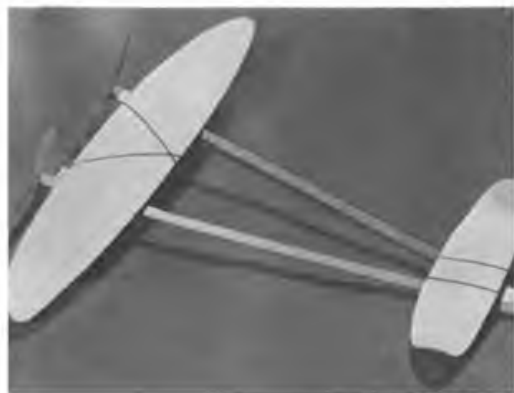
The next year, my approach was to re-examine the conditions for stable spiral stability in terms of aircraft geometry and see whether the characteristics inherent

naturally in the delta-winged gliders could be embodied in a straight-winged model of high aspect ratio. This would give more control over torque reaction by utilising the high roll damping. Assuming that all the aerodynamic yawing effects arise from the fin and all the rolling from the wing (and this is not necessarily true as a tall fin can produce significant rolling, a fact apparently exploited by one of the more conventional gliders) a mathematical analysis shows that a good spiral stability is helped by large dihedral, large aspect ratio, large fin arm, high taper ratio and high speed.

At a casual glance the model produced to this specification is not very unusual. However, closer examination reveals fifteen degrees of dihedral, a two to one taper ratio on a 10:1 aspect ratio wing and a highly swept fin, to increase its moment arm. A tail volume ratio of one, with a well forward centre of gravity position and lots of elastic bands driving a K.K. plastic propeller, complete the picture. It was built using a brown cardboard spar and wing ribs with the leading edge boxed in with white card and the trailing edge aft of the spar covered in paper. The fuselage is a rolled tube of white card with a laminated cardboard nose block.

The glide of this mode was dead straight, but the problems in trimming out the torque variations during a short but powerful motor run were not fully overcome and the contest flight path was a shallow S-shape. Nevertheless, it won in the year that it was entered and in the final flight was still flying strongly when it hit an obstacle just short of the end of the office. So the honour of being the first to fly a rubber-powered model the full distance is still unclaimed.

Where did the trophies come from? Well, the "Concorde Trophy", as its title suggests, is a paper dart made in stainless steel presented by a kind enthusiast and the "Whittaker Cup" was originally presented to Mr Whittaker for growing cabbages, or something similar! Must get back to the drawing board now to doodle my winning design for next year, why not challenge your office or school to a similar event?



aerodynamics. One of the conditions for a linear flight path is strong spiral stability, the ability to retain a given heading. To ensure this we need a large dihedral effect, offset by larger fin area to prevent dutch roll instability. You will know that dihedral effect can arise from three layouts, dihedral (of course!), a high wing, or sweepback. Remember those early jet bombers that had so much sweep for high speed flight that they had to be built with an anhedral to compensate for the dihedral effect? So the delta glider has all the ingredients for a straight flight, as you will have noticed the last time you folded a paper dart.

The keen rubber-power fliers observe all this with some envy. They see the advantages, both structural and aerodynamic, of the glider configuration but high sweep implies small wing area and consequent high speed, requiring lots of power and hence torque, the bugbear of a linear flight path. As a consequence, rubber power design has not yet settled down and the contest produces a number of interesting prototypes.

Pushers are growing in popularity as a means of protecting the propeller and its shaft. This raises centre of gravity prob-



Top left: 'A' frame pusher in card! Span 42cm, length 44cm, 42 grammes with 13cm propellers in bent plywood. Total power 18 office elastic bands giving a long powered glide of about 70 feet.

Above: Delta-winged glider cleverly folded in thin card to give the necessary reflex trailing edge for static stability. 30cm span and length, weighing 42 grammes. Excellent, stable llier with a long straight flight path.

Right: A group of models from earlier contest. The winner is in the foreground with the author's elliptical stick model behind it.



# Trade Topics

**MINI VICE** from Cintridge Ltd., Bakewell, is a new lightweight clamping tool with highly versatile swivel action. The ball and socket mounting provides tilt through 90° and swivel through 360° and is controlled by a single locking knob and the flat metal jaws are 2½in long, opening 1½ inch. A similar vice is also offered without the universal joint movement, but fitted with a thumbscrew clamp for quick fixing to any table or work top.



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# CLUB NEWS

YOU SEEM TO GET SPELLS now and again when you just cannot seem to get to the flying field. Just lately I haven't got so much as a sniff of the flying field air. Either it's been a bout of flu, gale force winds, incessant rain or just more pressing commitments (is there such a thing?) The models, though, are lying patiently in their boxes, awaiting an airing, subtly undergoing those imperceptible changes that will require a complete re-trimming.

If we have somehow overlooked the subject of our first report, the **Nottingham MAC**, we apologise to Alan Davies, the PRO, and hasten to make amends. Apparently, the club is enjoying better meeting attendances since running their Wednesday meetings at the Basford Hall Miners' Welfare. Mainly the report harks back to the Winter activities, sensibly of the Indoor variety, with the exception of a Stunt Contest won by who else but Bill Draper. Frank Fearn was second and Mike Chapman third. Most of the Indoor events were held in Chilwell Olympia. Notable among these events was a Scale contest (why no details?) which was won by Richard Grainger. The Wednesday evening meetings are given a bit of extra substance with a number of slide and film shows, and there was a club outing to the Old Warden Scale Day. *Sec. R. B. Lowe, 49 Commons Close, Nenthorpe, Notts.*

A new club for a new town. We are advised by Bryan Mason, the PRO, of the existence of the **Milton Keynes Model Society**. The society covers all types of activated model, including, of course, aircraft which are of the controlled varieties: Radio Power and Radio Glider, Control Line and Round the Pole. For those modellers who enjoy a side interest there are boats, cars and locos. Meetings are held fortnightly on Tuesday in the club room at the Royal Engineer, Stratford Road, Wolverton, Milton Keynes, and the *Secretary is Mr George Davis, 10 Highview, Deanshangar, Milton Keynes, Tel: M.K. 56354.*

From Mr C. T. Whitmore, PRO of the **Sussex Radio FC**, comes an introductory 'blurb' about this large and successful club. Mr Whitmore tells us that membership is around 150, and there is no doubt that this calls for a highly geared administration. The club has no less than four flying sites for powered models, available as and when vacancies occur, with separate fees payable for each site. Shoreham Airport, however, is open to all members for power and thermal soaring when full size flying activity has ceased; usually after 8pm in the summer. In addition there is a Thermal flying site and a number of available slopes in the locality. Subscription fees are enticingly low, only £6.50 per annum, and this includes insurance cover and Associate Membership of the SMAE. A lively agenda includes club contests, club displays and the use of dual control training equipment. *Secretary is Ron Bray, 21 Victoria Road, Shoreham by Sea, Sussex, Tel: Shoreham 3706.*

Mr N. H. Goodman has sent along the May edition of *Wings and Fins*, the newsletter of the **Coventry & DMAC**. It opens with some advice on towing up thermal soarers. But do people still tow them up physically? From what I've seen of it in the past you need seven league boots and the stamina of a marathon runner. It all seems so much easier on the 'bungee'. However, it is much less hardship to pull an A/1 glider into a hopeful patch of lift, and here the first F/F contest of the season got things off to a good start with a glider entry of five. In spite of the windy conditions, Pete Collins put up some good times with his Jedelsky wing type model. There are other free flight comps 'in the wind', mostly of the type that encourages a wide participation. Back again to Radio Glider. Several people were seen on the flying field with *Orangeboxes*, built from the free plans presented in the March '79 *Aeromodeller*. Appears to be a good model to start your gliding career on, according to the Coventry members. *Sec. N. H. Goodman, 23 Berwyn Way, Stockingford, Nuneaton, Warks. CV10 8QU.*

The theme of the editorial in the newsletter of the May issue of the **Leicester MAC**, is that boring but inescapable factor: safety. It





Diane Humphreys from Northampton built this Hapier 2.5cc powered Quaker Hash and flew it at the recent SAM Vintage Rally at RAF Henlow.

is advised to think of your radio model in terms of the thing hitting you between the shoulder blades at full whack – or somewhere even worse – and prepare and fly accordingly. It is fair to say that a radio model, whether power or glider, should be thoroughly checked over before each outing, with particular attention to the state of the batteries and to linkages. Anything bedded in soft balsawood is highly subject to working loose. But more than Radio goes on at the Leicester club, and there is no better illustration of the club's wide ranging interests than the celebrated Winter Building Comp. The second (covered) stage was held back in April, when, on display, were the finishes, special to each type of model that overlay the most splendid skeletons. This is where, I suppose, the judges have to apply varied criteria, for the most expertly produced model may not be that very slick and prepossessing scale job, but a skilfully wrought Wakefield or A/2. In this instance, though, the top man was Dick Child with a very fetching silver Mustang, complete with rivet and panel markings and smoke scorchings. Reading through the list of models and their particular attributes, whether an R/C Glider or a scale Klemm L25d, all would seem to deserve a prize. But there is another sort of finish that is the hazard of all flying models, and this was demonstrated by the unfortunate Gerry Ferar at the two-day Cottesmore meeting. His immaculate Orange, black and yellow Open rubber model was being eased through its initial flights when a power stall precipitated it into the runway at an explosive rate. Best club performance was by Martin Scott flying his 'Moby Dick' A/2 glider. He made 3rd place with a 5min 34sec fly off. *Sec. P. Toyne, 1 Sherrard Drive, Sibley, Loughborough, Leics. LE12 7SG.*

The **Three Kings Aeromodellers Court Circular** reports a successful and enjoyable Club Open Day, with two events, Novice Stunt and Carrier, well supported and flown off in tolerable weather, if but a bit more windy than desired. There were nine clubs represented in Novice Stunt, with G. Clark of Crawley winning a closely fought contest. It adds zest to know that, with experts excluded, you have a real chance of winning. The other event, Carrier, provided the usual thrills, fun and games, but is apt to be a bit dicey in a lively wind. Winner was Three Kings Alan Fritz who, in the jargon of the afficiendos, 'got in a cracking High, followed by a good Low and Hookup' with his OS40 powered Dumas Crusader to take the honours. Wal Cordwell in his column has observed that the model box bespeaks the man, the style of the box, tidy, flamboyant or just plain scruffy, giving some insight into character and life style. One member, who is in London Transport, not only paints his box red, but it is a double decker. On the Book List '1000 Destroyed' is not the Citizen Band Radio model tally to date, but is a sage of the Second World War. *Sec. D. G. Woods, 133 Ravensbury Road, Southfields, London SW18 4RY.*

C.B. also crops up as a theme in the **Sittingbourne & DMAC's The Bourne Flyer**. It is something the model movement must

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resist by all means possible, as the widespread use of such sets would have a ruinous effect on radio flying. There is a general belief that the citizens' band is beneficial to the road user – reporting hazards, accidents, etc – but since the main use is to advise other motorists of police speed traps the contribution is more negative than otherwise. Ownership of C.B. sets is not illegal in this country but the operation of them is. How easy it is to obtain a prosecution against an offender is another matter, although it would seem that the Post Office has a special enforcement unit that is keen to act against illegal operators. We all know of the Army using radio models for target practice, but now it is planned to make our fly for fun radio craft into aerial workhorses. Already the indefatigable Dave Boddington (there is no truth in the rumour that his next film is 'The Thousan Bomber Raid') is working on a 102in span, 11lb Crop Sprayer. Equipped to spray murderous pesticides over our once fair countryside, it will give a wry twist to the oft-quoted saying, "These Radio models are a pest". *Sec. D. J. Chamberlain, 100 North Street, Milton Regis, Sittingbourne, Kent.*

If you have ever been intrigued by the title of *Nitro* attached to the newsletter of the **Belfast MFC**, well, in spite of the sinister connotations it may hold in a certain context, it just means 'Northern Ireland Themarlin and Rotatin Observer', not, however, bespeaking a well wrapped but fidgety onlooker, but of matters appertaining to models aerially free and wire controlled. From this rather verbose introduction of mine, we come to the editorial subject of the May issue. This is a plea for articles likely to give guidance in the basic arts of model-flying to the perplexed beginner of today. But do beginners need all that instruction? Most of the people I know who became model flyers of any competence built their first models in their early teens with no more instruction than was contained in the kit or plan description. If the beginner has a keen enquiring mind he will ferret out all the information he needs by himself. What guidance the beginner really needs is an insight

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## CAPTION CONTEST



to the type of model suited to his particular circumstances and the kind of interest he has. The nursing of dumbbells is just a waste of time. If the beginner really wants to know how to get going he would do worse than to take a close interest in the club's '79 Display project for which twelve profile replicas of WW2 fighters are being produced to Maurice Doyle designs. These will be for 2.5 diesel power, and, naturally, control line. Yet another chance for the beginner to nose effectively around is at the Model of the Month competition which the club has now introduced. Four models were entered for the April competition. They were all C/L, and all pleasingly finished. Alan Hanna's winning model, a semi-scale Mustang, was tissue covered and finished in silver as per the WW2 Mustang fighter. It has a 51½ in wingspan and is powered by a Fox .45.

From the **Hemel Hempstead MFC** newsletter comes a firm telling off to members for blatantly disregarding flying field etiquette and safety rules in the general enthusiasm of a day's radio flying. Procedure can be irksome at times, particularly when baulky motors, unsticking take offs and sundry glitches cause delay and confusion, but better a lost flight than a smashed model or injured person. On a brighter note the club is suitably publicising itself and making itself agreeably known to the local powers that be through its series of displays, some static but mostly control line, but even here a dark note is sounded, for it is regretted that R/C displays cannot be safely conducted 'because of an illegal activity', which I can only think refers to the growing threat of the Citizen Band radio. *Sec. T. Angell, 6 Curlew Close, Berkhamsted, Berks.*

Through all the political upheavals through which their country has gone the **Association of Rhodesian Aeromodellers** have steadily pursued their hobby, sending us news of all the things they do over there but in rather different climatic conditions.

Your reports, newsletters and photos welcome.

Clubman



#### JUNE WINNER - K. GRIMWARD, AMERSHAM

Phil Corfield from New Zealand, this month's runner-up, thought the photo came from an R/C instruction manual "EVEN THE SLOPE SOARING ENTHUSIAST, LIVING IN A FLAT AREA, SHOULD NOT BE DETERRED. AS A SIMPLE HILL LIKE PLATFORM CAN BE BUILT IN A FEW HOURS..." Vic Dubery, from Walton-on-Thames, suggests "HAND LAUNCH - NOTHING IN THE RULES ABOUT STANDING AT GROUND LEVEL." J. Burtham, Warrington, offered "AND IF IT COMES UP HERE AGAIN YOU'RE NOT HAVING IT BACK." R. Williams, Leyland asks "IS THIS THE WRIGHT WAY TO LAUNCH A CANARD" and Howard Boys, Weedon who knows a thing or two about unorthodox designs says "YOU SHOULD NOT HAVE LET GO OF A DESIGN LIKE THAT!" That design incidentally, was recognisably a Doug McHard Canard after retrieval from a hangar roof by the fire brigade, which appeared in *Aeromodeller* April 1959. But the final word, as usual goes to Graham Pugh "YOU HAVEN'T QUITE GOT THE HANG OF INDOOR FLYING YET, HAVE YOU?"

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**PLYMOUTH** Tel. 0752 21851  
PLYMOUTH MODEL CENTRE  
11 OLD TOWN STREET  
9am-5.30pm Mon-Sat  
Late night Friday 6.30pm

**CHELTENHAM** Tel. 34644  
THE MODELLERS DEN  
39 HIGH STREET  
Open 9am-5.30pm Mon-Sat

**PLYMOUTH** Tel. (0752) 53330  
RUNWAY SOUTHWEST ★  
16 DEVENPORT ROAD  
STOKE, PLYMOUTH  
Mon-Sat 9am-6pm  
(Late night Friday 8pm)

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**ANDOVER** Tel. 61307  
RADIO CONTROL SUPPLIES ★  
1a UNION STREET  
Open 9am-6pm. Fri 9am-8pm  
Closed Monday



**FAREHAM** Tel. 234136  
 G. M. H. BUNCE & CO LTD ★  
 206 WEST STREET  
 Open 9am-5.30pm Closed Wed

**KOWLOON** Tel. 3-800155  
 SCIENTIFIC HOBBIES LTD ★  
 185-D PRINCE EDWARD ROAD  
 Open 10am-8pm Sunday closed

**MANCHESTER** Tel. 061 834 3972  
 THE MODEL SHOP ★  
 (MANCHESTER)  
 209 DEANS GATE  
 Mon-Fri 9.30am-6pm, Sat 9.00-5pm

**LONDON** Tel. 01-607 4272  
 HENRY J. NICHOLLS &  
 SON LTD ★  
 308 HOLLOWAY ROAD, N7  
 Open: Mon-Sat 9am-5.30pm

**FARNBOROUGH** Tel. 44600  
 DGN MODELS  
 24a QUEENS ROAD  
 NORTH CAMP  
 Mon-Sat 9.00-6.00  
 Closed all day Tues

**HONG KONG** Tel. 3 684184  
 WINNING MODEL & HOBBY  
 SUPPLIES  
 2a AUSTIN AVENUE  
 KOWLOON, HONG KONG  
 Open 10am-7pm Closed Sun

**PRESTON** Tel. 51243  
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**MILL HILL** Tel. 01-959 2877  
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 NW7 4RN  
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**PORTSMOUTH** Tel. 25049  
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 10 KINGSTON ROAD  
 Open 10am-5.30pm  
 Lunch 1pm-2.30pm  
 Closed all day Wed

**KENT**  
**BROMLEY** Tel. 01 460 0818  
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 15 CHATTERTON ROAD  
 Open: 10am-6pm  
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 except Wed 10am-1pm

**WIGAN** Tel. 45683  
 G FORSHAW & SON ★  
 58 MARKET STREET  
 Open 9.15am-5.45pm  
 Early Closing Wed

**LONDON SOUTH**  
**ELTHAM** Tel. 01-850 4324  
 ELTHAM MODELS ★  
 54 WELL HALL ROAD SE9  
 Mon-Sat 10am-5.30pm.  
 Closed Thurs

**SOUTHAMPTON** Tel. Eastleigh  
 EASTLEIGH MODEL 617849  
 CENTRE ★  
 2e HIGH STREET EASTLEIGH  
 Open 9am-6pm. Half day Wed

**CANTERBURY** Tel. 69888  
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 Open 9am-5.30pm inc. Sat  
 Closed all day Thursday

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**HINCKLEY** Tel. 30952  
 PUNCTILIO MODEL SPOT ★  
 6 WATERLOO ROAD  
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 Tues 2pm-7pm  
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 Fri 9.15am-7pm, Sat 9.15am-5pm

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 207 Camberwell Road, SE5  
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 Fri 10am-7.30pm  
 Closed all day Thursday

**SOUTHAMPTON** Tel. 25919  
 HOBBY LOBBY LTD ★  
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 Open 9.30am-5.30pm Mon-Fri  
 Sat 9.30am-5pm

**MAIDSTONE** Tel. 51719  
 THE MODEL SHOP ★  
 19-23 UPPER STONE STREET  
 Open 9.30am-1pm 2.30pm-5.30pm  
 Closed all day Wed

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 MELTON ROAD  
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 Thurs closed 7pm  
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 Other days 9am-6pm.  
 Early closing Wed 1pm

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 Fri-Sat 9am-6pm

**TUNBRIDGE WELLS** Tel. 36689  
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 Closed Wed

**LOUGHBOROUGH** Tel. 61421  
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 Closed Wed.

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 Late Night Friday 7pm  
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 Sat 9am-5.30pm

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 Closed all day Thurs

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 Mon-Fri 9am-6pm  
 Sat 9am-5.30pm

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 JOY-CRAFT ★  
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 190-194 STATION ROAD  
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 Wednesday 9.30-5.00

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Late night Fri 6pm  
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Monday 8pm. Closed Wed

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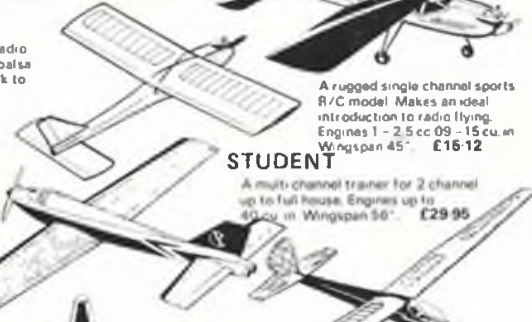
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