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JULY 1979 45p

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JULY 1979

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MAP HOBBY MAGAZINE

Comment

PUBLICATION of a photo of a modeller using ear defenders while launching a Free Flight power model, in our May issue, drew strong reaction from a senior RAF officer suggesting that all similar models be silenced to ensure continued use of RAF venues.

The concern for noise generated by models and the good name of the hobby are sentiments we share. However to put the record straight, there is more than one way of minimising noise nuisance. Most R/C modellers, for example, use effective exhaust mufflers typically reducing noise output to 82dB – or they choose Thermal Soaring gliders for true silent flight. Free Flighters on the other hand, limit the engine run to 7 seconds (or 10 seconds in some cases) and records prove that such short engine runs, even for unsilenced motors (current rules ban their use) pro-

duce far less nuisance than even fully silenced models flying for longer periods.

Ear protection is a matter of choice for the individual, however the majority of noise generated actually comes from model vibration and airframe resonance, air intake and propeller noise, so even exhaust mufflers can only be partially effective. Considering that such F/F power models are usually only flown on remote locations, we can see no need for mandatory silencing at this time with the associated increase in weight and power that would be involved.

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On the Cover

Peter Miller's Fox 25 powered semi scale sport stunter part of this month's double feature, together with Aircraft Described scale drawings of the full size aerobatic trainer. Peter's model combines straight forward construction, with a realistic appearance and fine performance, just right for those lazy summer flying days.

Next Month

Bumper Free Plans issue. Two full size pull out plans, John Kay's very attractive Free Flight sports model SUNBEAM and for control line fans, Dave Clarkson's 1/2A Combat model TAMERLANE. Both great designs. CO₂ – It's a Gas covers converting simple kit models, more R/C information in R/C Sport Flyer plus full British Nationals programme, on sale July 20th.

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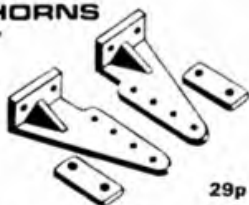
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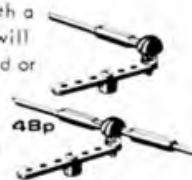
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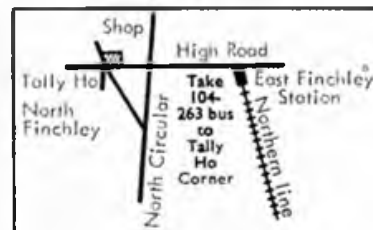
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GOSSAMER IN KENT

By the time this news is published it is more than likely that the first attempt to cross the English Channel by human powered flight will have been made. On April 25th Bryan Allen, flew for 13 miles over the Mojave desert in Nevada in a time of 1 hour 9 minutes. This was sufficient to prove to the team the feasibility of transporting the machines to England.

In a remarkably fast moving series of events the three machines prepared by Paul MacCready's team arrived in England (by courtesy of a Royal Air Force C-130 Hercules) on May 1st and one of them prepared for flight at RAF Manston, Kent, within a few days. On 10th May, the Gossamer Albatross No. 1 was flown by the two pilots who are to be directly involved in the crossing. Their proving flights were 4:25 and 9:24 (the latter covering a distance of over 3,000 feet and constituting something of a record).

Henry Kremer's generosity has certainly stimulated fantastically fast progress in human powered flight. The new Albatross weighs only 55lbs and it would appear that Bryan Allen is confident of making flights of longer than two hours. This would certainly enable him, given reasonable meteorological conditions to cross the English Channel. We wish him all success in this venture.

BRITISH NATIONALS

Details are now available for the 1979 NATS, on 25th, 26th and 27th August to be held on three separate sites. R/C power and C/L events will be at Barkston Heath with the main trade stands and public facilities. R/C Thermal Soaring will be at

The new Whitney Straight Trophy awarded for FAI Combat at the Nationals, was constructed by members of the Petersfield Aeromodellers. The trophy plated in 24 carat gold depicting a combat model in action replaces the original which was destroyed by fire.



Above: Gossamer Albatross team in the US Embassy! Only took 10 minutes to assemble the wonder plane for the World's Press on May 16th. Right to left (standing) Paul MacCready, Sterling Stoll (project manager), Kirke Leonard, Sam Duran, Bill Watson, Kirk Giboney, Ted Anconce, Dr Morton Grosser, Blaine Rawdon. Seated right to left Peter Bryan Allen, Tara Kiceniuk and Steve Elliot. All extremely capable experts in the field of low speed flight. Right: New structures revealed included Carbon Fibre reinforced styrene ribs on a CF tube monospar, covered with 'Tensitized' Mylar. Flies on 0.25hp with its new, tapered 12ft 8in prop.



Cranwell with F/F at Everleigh in Wiltshire. Camping at £3.50 per adult, children under 14 free or 50p if unaccompanied, is available at Barkston Heath, but only competitors are allowed to camp at Cranwell, with strictly no camping at Everleigh. All bookings and contest entries must be received by 31st July sent to SMAE Nationals, Kimberley House, Vaughan Way, Leicester – don't forget your SAE! Full programme of events in next month's *Aeromodeller*.

SPORTS COUNCIL DEMO

Officials from the Sports Council attending their AGM at Bassingbourn on Thursday 12th July will be given a demonstration of Free Flight flying. As a back up, Dave Hipperson is organising an FAI contest for F1A, F1B and F1C which it is hoped will attract modellers for a day's flying despite being midweek. Any flyers who would like to assist by demonstrating their models or their skills should contact Martin Dilly who is dealing with the Public Relations liaison; Martin's address is 20 Links Road, West Wickham, Kent.

OBITUARY

Whitney Straight, born leader in so many aeronautical fields died in April and though comparatively little known to present day aeromodellers, his passing will be regarded with sorrow by all connected with the SMAE immediately postwar. Fighter pilot, Airline executive, Government advisor and spokesman, he gave a magnificent trophy to the SMAE which bears his name and was guest speaker at

SMAE functions. (Once introduced to a large audience by G. Yates as "Stritney-Weight".) But it was the White Paper on Private Flying, of 1947 which we recall as his greatest achievement for aeromodelling. The Ministry of Civil Aviation established a committee under his guidance and he ensured that aeromodelling was incorporated as part of the grand scheme. The concept established air centres where model making, gliding and power flying could be integrated into a harmonious activity for the sake of this Nation's future in aviation. Sadly it did not materialise. France adopted an identical programme and as we now know with 32 years' hindsight, France produced their strong industry, lightplane and gliding movement with aeromodelling as a nursery intake from the ashes of war. Had the 1947 report been adopted in full, who knows what the position of our aviation industry might have been today? Which of the once-great names might have survived through provision of adequate air-education in the Fifties?

There was one aspect which did survive the report for our benefit. "Redundant aerodromes and other suitable and convenient open spaces should be made available for the flying of model aircraft at no cost". This was paragraph 64 and thanks to an enlightened RAF, Home Office and Ministry of Civil Aviation, we have been able to enjoy that recommendation with official blessing. Would that another Whitney Straight could arise to stimulate Government interest in air education in time for the next Century.

Letters

THE RECORD THAT WASN'T

Dear Sir,
No, Fenland Mac's "record" isn't a record! In 1960 I made a total of exactly 1000 figure eights in a time of 1 hour 15 minutes with a 5ft wingspan stunt model with a Glo-Chief (now Taipan) 49 as the ballast. On the following weekend a fellow member of the Holdfast MAC in South Australia made 1086 figure eights in a time of one hour with a smaller, faster combat model, the times and counts commenced from the motor stopping. As both flights were deliberately terminated through sheer boredom and lack of challenge, I am sure that others have improved on the above figures.
South Australia

Roger Duance

'SPORTS FLYER

Dear Sir,
With reference to 'Comment' in the March issue may I insert my 'twopennyworth' I have been a modeller for some 40 years both aircraft and boats, and have held office in London area of SMAE for a short period. I have always been a 'club member' and at present belong to the Three Kings and Blackheath MFBC.

Your note on specialisation is I feel the whole point of the matter as well as the oft repeated separate classes of "Competition" and "Sports Flyer".

In the halcyon days of the late '40s early '50s when aeromodelling was at its height, everybody flew for the fun of it; all those who appeared each Sunday at Farlop or Epsom was a sport flyer but each would enter any and every comp that was presented.

I admit that we had our big names of the day such as Ron Warring and Bob Copland for Wakefield, Bill Dean, Mark Coates, Henry J. and Eric Reid for almost every-



Remarkable photographs from the Peoples' Republic of China of Sun Tho's rubber-driven helicopters which he has been flying for several years. We hope to publish details of the drive mechanism in the near future.

thing else, Ray Gibbs and the rest of the West Essex lads for speed and stunt C/L but each, with the odd exception, did his thing and won his event with the enjoyment and materials available to the other bods who made up the rest of the entries, equipment readily and easily available over the counter of your local model shop.

Today there is seemingly a gap of some width between the Competitor and Sports Flyer caused on the one hand by the dedication by a few who wish to be and stay at the top, and on the other by the resignation of the majority who somehow feel that to enter a comp would be of no use as "they" have the best gear and always win.

In the early days whatever the result of your first two flights - remember 3 x 5 min max - if your model was still flyable you took your third and if you ended 39th on the result list, you still did better than he who was 40th.

Numerous attempts have been made by your magazine and clubs to formulate a competition where all are equally favoured and stand a chance of winning but in a short time they have become the contest where the keen types have a hold on the top places and the 'Sports' give up. Goodyear and Coupe are to my mind examples of this.

In the *Aeromodeller Annual* for 1979 plans are shown together with rules for the P.30 class. In the *Aeromodeller* you have already published J. O'D's design to these rules and it seems that in all ways this is a class which



could be popular but how long before the "ruling class" make those small additions to the rules which preclude the others from attempting to have a go. At this moment two points in the rules give some cause for thought; the props are only available from the Modellers Den and where do you get 10 grams of good rubber for the motor. I have tried a great number of shops by visit and phone, in the London area and have been offered nothing but the "white knicker elastic", poor stuff against the likes of FAI, Pirelli etc. which the top rubber boys mention so casually in your pages; here alone I can already see a separation into P30 "white rubber" and P30 "good rubber".

I hope I do not seem so utterly downcast that it appears that I have joined the ranks of the "what's the use" brigade. I enjoy my flying too much, as well as my boating, to ever join them. But today's restrictions - mainly brought on by unthinking modellers themselves - on flying sites, noise levels, local byelaws etc. do create problems which when compared with the information that a Team Race was won by a model having a home built one-off motor, well! sometimes it does make you think.

London.

Don Hemett

What's Happening?

EVENTS

June 18th
RAF OPEN DAY Static and flying displays including Red Arrows and pleasure flights in aircraft and helicopters. Full catering and car parking. Cars £2, Motorcycles £1, Coaches £5. Venue: RAF Waddington near Lincoln.

June 18-17th
MODEL WEST 79. RC MODEL FLYING DEMONSTRATIONS, TRADE STANDS & EXHIBITS Venue: Cheltenham Race Course, 3 miles from junctions 10 and 11 on M5.

June 23rd/24th
RAF INTERNATIONAL AIR TATTOO. Hundreds of aircraft, military types, aerobatic teams, old aircraft, from the smallest trainers to the largest transports. Adults £3. Children £1. RAF Greenham Common, Berks.

June 24th
2ND BKFA FESTIVAL, KITE FLYING. Venue: Standford Hall, Leicester.

June 24th
FLYING DAY. Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

June 30th
MOTH MARATHON: about 50 mixed De Havilland Moths overflying in morning en route Hatfield to Stathallan. Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

July 13th
FLYING EVENING Venue: Shuttleworth Collection, Old Warden Airfield, Beds.

July 15th
GALA OPEN DAY. FLYING & STATIC DISPLAYS OF MODEL AIRCRAFT. Venue: Lincolnshire Aviation Society Museum, Old Railway Yard, Tattershall, Coningsby, Lincs.

July 15th
OPEN DAY SHUTTLEWORTH VETERAN AEROPLANE SOCIETY MODEL SECTION. Free Flight and CL Class II Control Line flying. Venue: Old Warden, Beds.

CONTESTS

June 17th
OXFORD OPEN THERMAL COMP. BARC'S RULES. £2 pre-entry essential. Venue A: Port Meadow Contact: J. Broughton, 12 Wamborough Road, Oxford. SAE.

June 24th
3RD C/L AREA CENTRALISED F2B, F2C, F2D GOODYEAR, OPEN SPEED. Venue B: Wyton (P) Contact Bob Hornwood Tel: 0272 48869.

June 24th
INDOOR DURATION F1D, 35cm. Venue C: Cardington. Contact: Bob Bailey Tel: Stevenage 723642.

July 1st
SCALE FLY IN C/L & R/C. Venue B: Wyton Contact Roy Yates Tel: 01 868 5328.

July 1st
OLD TIMER RALLY RC ASSIST, PRE '51 DESIGNS, SPORT, PRECISION, DURATION and ANTIQUE IPRE 1940). Pre-entry £1 (2nd event 50p). Venue D: Walsall Airport. Contact M. Taylor Tel: 0922 415316.

July 1st
FAI FF RALLY, F1A, F1B, F1C. Venue E: Alamein Barracks, Driffield. 3 weeks prior notification of attendance to Nick Walton, 18 St. Nicholas Road, Copmanthorpe, York.

July 8th
A COMBAT RALLY. Venue F: River Embankment, Peterborough. Contact: N. Gill Tel: 0733 252645.

July 8th
ST. JOHN'S AMBULANCE GALA. OPEN NOVICE, STUNT, SCALE AND CARRIER. (F2B CLAPA MEMBERS CHAMPIONSHIPS 7th & 8th). Plus full size flying display Red Arrows, Pitts Special etc. Venue G: Essex Show Ground, Braintree. Contact P. Burgess Tel: Witham 516881.

July 8th
INDOOR DURATION F1D, O/FILM. Venue C: Cardington. Contact: Bob Bailey Tel: Stevenage 723642.

July 8th
NW AREA F2D Mainstream Trophy (F2A, F2B and F2C cancelled). Venue: 3 Sisters Site. Contact Derek Lee. Tel: Rochdale 73619.

July 8th
TYNEMOUTH T/R RALLY FAI, GOODYEAR, CLASS B, (JA possibly). Venue H: Albemarle Barracks, special pass required. Contact R. Wilson. Tel: Newcastle 881127.

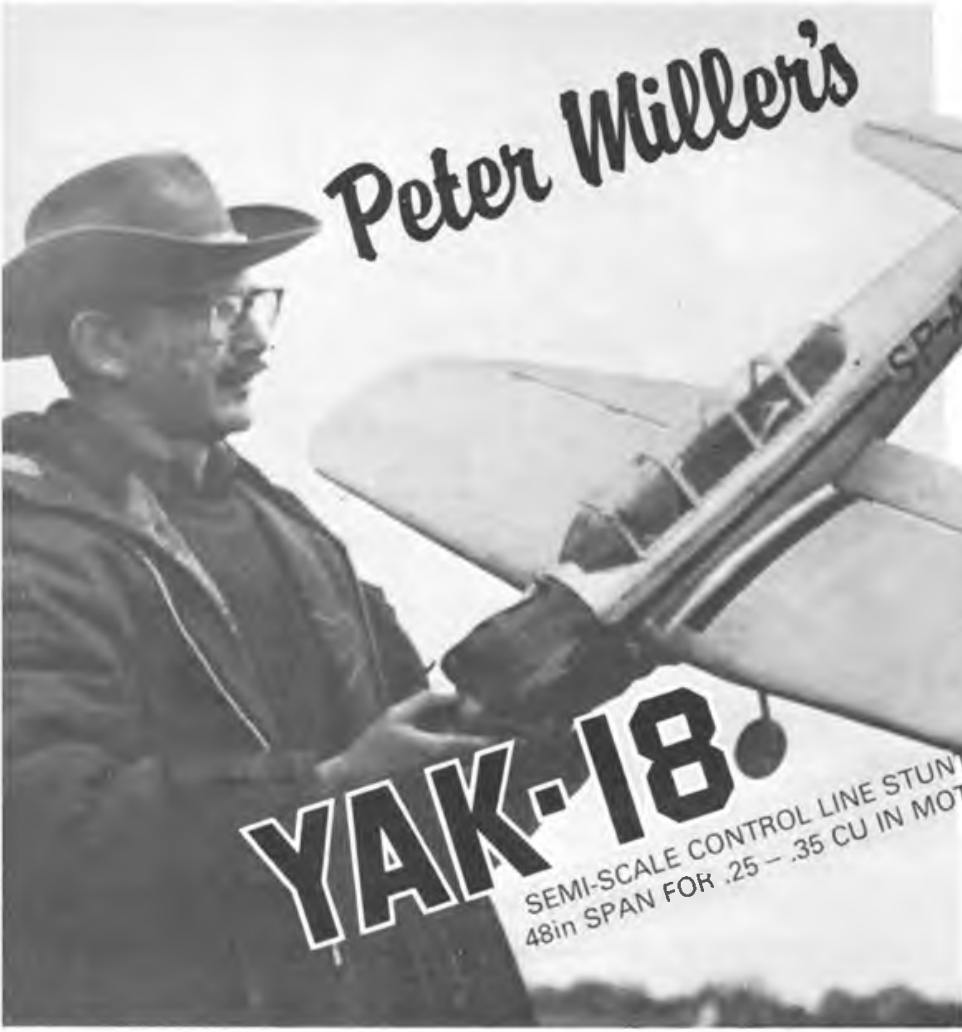
July 12th
SPORTS COUNCIL DISPLAY FAI PLUS GENERAL FLYING. Venue I: Bassingbourn. Contact D. Hipperson. Tel: 01-446 1575.

July 15th
ELLIOTT CONTEST F2C GOODYEAR, JA TR, JA COMBAT CARRIER PROVISIONAL. Contact: Pete O'Neil. Tel: Sevenoaks 57899.

July 15th
SOUTHAMPTON GALA O/G, OTR, OIP, FIA, MINI, HLG, Engraved Glass Trophies. Venue: Beaulieu. Contact Doug Gordon, Chandlers Ford 67168.

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



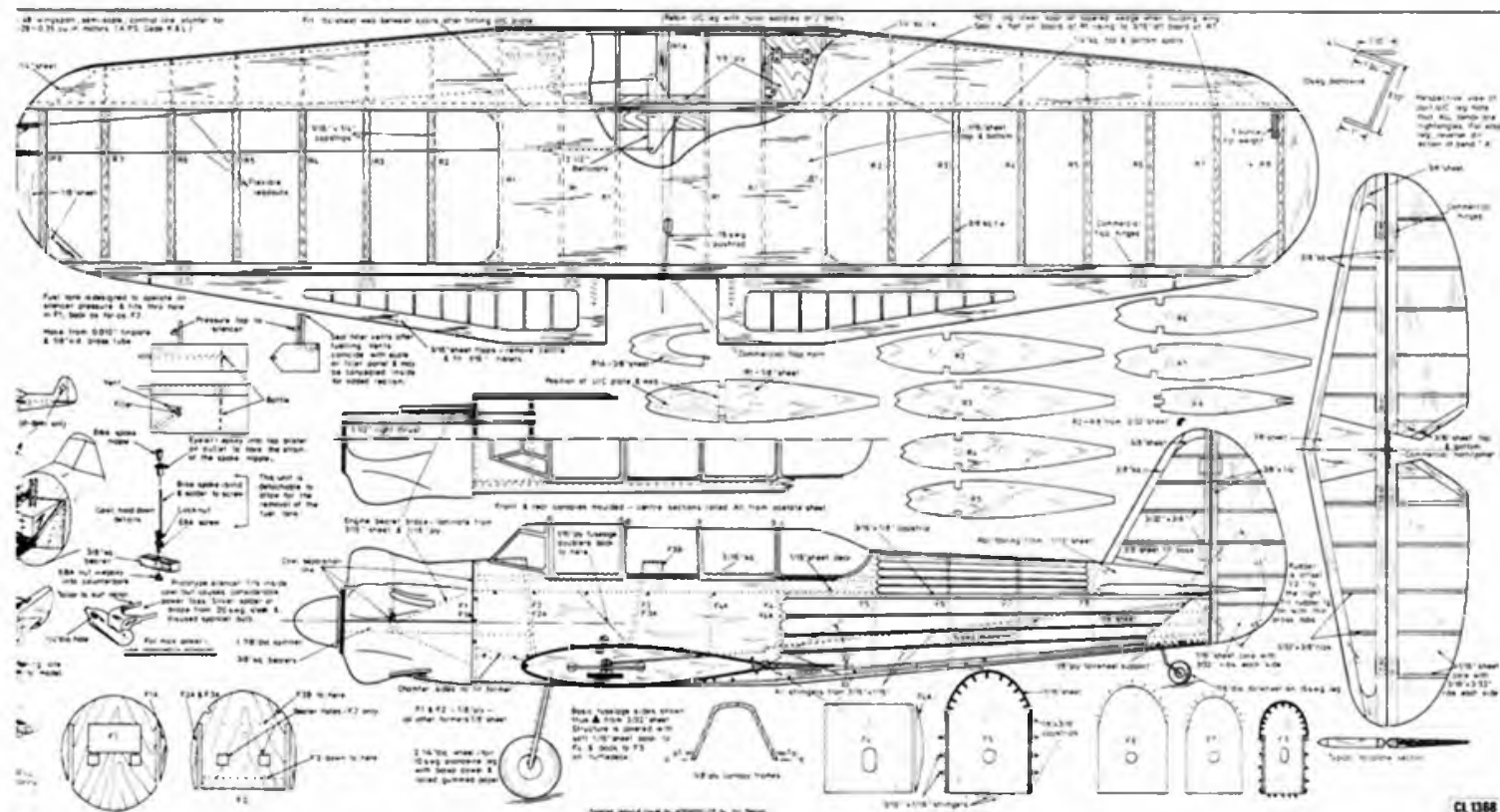


SOME YEARS AGO I built a true scale model of the Yak 18PM and found that even loops were very dodgy with this particular model (maybe someone remembers the inadvertent touch and go at the bottom of a loop at the All-Scale Day at Old Warden). So when the Editor asked me if I would like to design a model of the Yak 18 to go with the feature on the full size plane I was very pleased because it has all the desired features for my type of scale model, with an aerobatic performance. I therefore redesigned the original model, I simplified the fuselage slightly, increased the tailplane area, added 2½" to the wing chord and fitted flaps, I used a 16% symmetrical section and no dihedral, apart from these alterations the model is true scale, in fact the aerodynamic layout is very close to that of *Thrift* (APS Plan CL1257) and my later and better design, *Nebula*, which has yet to find a home in a magazine—hint, hint. The power unit chosen was the Fox 25 but any engine from .25 to .35 cu in. can be used and the model has been flown with the Fox 35 as well, but more of that later. The model does allow the possibility of some interesting variations, a Yak 18 PM would be an easy conversion though the cowl would cause a bit more drag.

Left: *The unmistakable character of the famous Yak 18 light aerobatic trainer is captured by Peter Miller's delightful model. A conveniently sized design at just 48in wing span, it combines realistic appearance with pleasing stunt performance.*

Right: *Ingenuous fuselage construction simply utilises sheet slab-slides with add-on half formers and stringers to simulate scale structure. Far Right: View of tail leathers shows half rib construction each side of 1/16in sheet used for rudder and elevator.*

Full size copies of the plan reproduced above to 1/7th scale available as Plan CL/1368 price £2 15, plus 30p postage. Export orders obtainable from appointed agents or directly from Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE.



Now to the building of the model, well, if you can build a stunt model you can build the Yak. I have shown no scale details on the plan as these can be found on the full size scale drawings, I used very little on my own model to save weight. I did not fit a throttled motor but there is plenty of room to fit a Mick Reeves blencyrck (described in the Control Line Aeromodeler) or a Roberts unit if you are feeling rich. All wood should be soft except the top stringers and the spars which should be medium hard.

Start fuselage construction by assembling F-1, F-2 and the engine bearers, while this is drying glue the 1/16 ply doubler to the 3/32 fuselage sides. Now box in the tank bay between F-1 and F-2 and fit the sides followed by the rest of the formers including the outside formers for the 1/16 sheet skinning, fit the side stringers, the top stringers and the 3/16 square cockpit coaming, also the cap strips at the top and bottom of the fuselage sides. When all this is dry cut back the stringers to take the 1/16 sheet and then fit the sheet, the semi-circular cutaways between the stringers can be cut out with a piece of sharpened tube at any stage, this effect is very notice-

able and adds to the character of the model, it also adds strength. Do not fit the bottom stringers until the controls have been connected. The tailplane can now be fitted with the control horn and rear half of the push rod, then add the fin. The fin fairings are from rolled 1/16 sheet and are quite easy to fit so do not be tempted to substitute block. The wing can now be fitted, the controls soldered together making sure that the flap and elevator horns are neutral. Now fit the tail wheel leg, the bottom stringers and the scrap 1/8 sheet at the rear of the side stringers and sand everything to a smooth flowing shape.

The wings are perfectly conventional stunt model wings, only one or two points need to be made. The lower spar is pinned down over a support which tapers from 3/16 at R-7 to nothing at the outermost R-1. This gives an equal taper to the wing in front view. All spars join on the centre line except the L.E. which has joints at the point where the sweepback starts. The undercarriage mounting plates rest under the leading edge and on top of the lower spar, when the glue is dry fit a scrap 1/4 sheet web between the U/C mounting plate and the top spar. When fitting the

leading edge sheeting only glue it down as far as R-7, then when the glue is dry, wet the sheet and glue and pin it to the rest of the tip, the result is very neat and simple. Fit the controls and make sure that they are free in all positions, this is particularly important if throttle control is being used, there is plenty of room so there is no excuse for any binding or sticking. Fit the centre section sheeting, capstrips, tip weight, lead out tubes and the wing is ready to fit to the fuselage.

The tailplane should present no problems, the elevators are very light and strong while still looking realistic, when the elevators are complete and ready for covering it is a good idea to rub candle wax or something similar into the 1/16 sheet between the ribs to within about 3/16 of the edge, this will prevent the covering sticking down between the ribs when doping, the fin and rudder use the same construction methods. In all cases do not fit the control surfaces until the model is complete and fuelproofed, then use R/C hinges, (the pin type only, not the one piece type) for the elevators and flaps and strips of tin for the rudder

The engine bay and cowling can now be



completed. Start by gluing the laminated bearer gussets in place, make sure that they are a perfect fit and well glued, use epoxy for this and also for gluing on the nose ring. When these items have dried start fitting tapered sections of 1/2 sheet between the nose ring and F-1, those fitted below the level of the bearers should be firmly glued in place, those above should be firmly glued together but only spot glued to the nose ring and F-1. While the main cowling is drying cut out and laminate the blisters, the top one for the engine should be hollowed before assembly, the rest can be partly hollowed out to save a bit of weight. Separate the cowl top and temporarily fit the engine, cut away the cowling to clear the engine and fit the top blister, glue it in place and leave to dry then remove the cowling and fit the rest of the blisters and carve and sand to shape. If the silencer shown on the plan is used fit it and carve the cowling to fit over it then line this area with thin aluminium sheet or foil. A 1/16 ply top half nose ring can be fitted at this stage. The blisters are faired smoothly into the main cowling and as the wing is also faired to the fuselage all this can be done at this time, I use a very light filler made by taking scrap soft balsa and shredding it with a coarse rasp, this is then mixed with dope and applied like plastic wood but when it dries it leaves a rough and very porous material which sands easily and is very light, the dust from sanding fills the pores so leaving a smooth outer surface. Finish the cowling cutting all access holes, finish off all intakes and exhaust slots and cut the hole for the tank filler, note that this is in the scale oil filler position so you could cover it with a scale panel.

Cover the model with heavy tissue on stringered areas, the wings and tail surfaces and light tissue on all wood surfaces, sandpaper and apply two coats of sanding sealer, the degree of finish depends on the builder and the smoothness of the bare wood but remember that excess weight



has to be paid for in loss of performance. I painted the model with Duplicolor spray cans, Ford Platinum Grey gives a nearly perfect match for slightly weathered silver doped fabric, (I tried my new airbrush to shade the fuselage side panels.) The cowl and flash are done in red, registration is black, note that there are no registration letters on the top of the wing. Colour schemes shown on the plan are from Jan Boluk of Lublin Poland to whom my thanks.

The tank shown is designed for pressure feed from the silencer, the tapping point must be in the vent pipe though this particular tank does not have a particular vent or filler, if you fill through the wrong pipe you are going to have a lot of fuel in the cowling!! The silencer is sealed to the engine with silicone rubber and is quite effective, the Fox 25 read 85Db max at 7 Meters. Any friendly garage or small engineering firm will braze it up for you at a small charge. While this silencer is very neat and effective it does reduce the power of the engine to a marked degree so it should only be used when appearance is more important than performance, more on this in the notes on flying. The cowl hold-down is self explanatory but make sure that it can be removed or you will never get the fuel tank out.

I added very little detail to the model, the cockpit has dials and a few pins for controls, a control column, sheet balsa seats and consoles with paper safety harnesses. On the exterior I thickened up the U/C legs

Left: The characteristic helmeted cowling which encloses the five cylinder engine on the full-size machine is reproduced from soft block laminated to approximate shape before carving, sanding and hollowing to suit particular motor installation. Note lower cowl and nose former are permanently fixed to model while top is removable.

Right: Final installation of Fox 25 fitted with commercial spinner and showing fuel tank installed. Home made silencer fabricated from old sparklets bulb fits inside cowling although commercial silencer could be used.



Above Left: Wing centre section with bellcrank, leadouts and pushrod installed with ply plate set between ribs to support port undercarriage leg bolted in position. Above: Beechwood bearers projecting from nose are braced with ply and balsa gussets. Tank sits on platform and is recessed through hole in front former.

with balsa dowel and left it at that. The drawings of the full size aircraft provide information for adding a wealth of detail to dress the model up and the Ripmax 1/10th scale full length pilots will fit the cockpits. With regard to balance, I have a photo of the Yak being flown solo from the front cockpit. Talking of balance brings us to the flying trim. The model should balance on the mainspar, the rudder is offset about 3/8th of an inch and the engine is offset about 1 1/2°.

First flights were made with a Fox 25 with the silencer shown and the model was capable of loops, 8s, bunts, triangular loops and a wandery cloverleaf. I then fitted the Fox 35 with the same silencer without very much improvement, removal of the silencer did not increase the sound level very much due to the silencing effect of the cowl but the change in performance was tremendous. Stability both upright and inverted is remarkable, on the second flight I was flying lap after lap with the fin inches from the ground while full power, touch and goes are easy if you have the nerve. One final note on the looks of the model, the club members just can't stop yakking about that beautiful cowling.



YAK-18

DRAWN BY F. PAWLOWICZ

AIRCRAFT DESCRIBED 3008

WHEN RUSSIAN AIRCRAFT designer Alexander S. Yakovlev returned to trainer aircraft after his series of wartime fighters, he revived the Yak 18 prototype which had been shelved since 1938. It was to replace the UT-2 with the same M-11 engine and fabric and tube construction but as a retractable landing gear monoplane. Lineage of the Yak-18 stretches further back to 1927, and Yakelev's first light aircraft, the AIR-1 (Ya-1) which brought with it

a measure of fame to the young designer. A long series of aircraft followed including single and two seat versions, high wing monoplanes, floatplanes and 5 and 6 seaters. The AIR-10 (later the Ya-10) was built in large quantities from 1935 onwards as a two seat primary trainer with the Soviet Air Force. Later this was to become the basis for the Yak 18. Eventually countless thousands of the 18 were to be built serving with Soviet, Chinese, Czech, Austrian,

Hungarian, Korean and Polish forces and it could be claimed as the most popular and numerically strong of all the World's primary trainers.

An enclosed glazed canopy with sliding sections, and a 125hp M-11D 5 cylinder engine housed in a distinctive "helmeted" cowl were the new characteristics of the prototype. When the YAK-18 entered production in 1946 the engine was replaced with the more modern 106hp M-11FR

Polish Yak-18's in heading show one with spinner removed for better cooling in summer operation. They are in standard olive green finish, by contrast, SP-BNL here is silver with red trim. Note the external, though "retracted" undercarriage leg



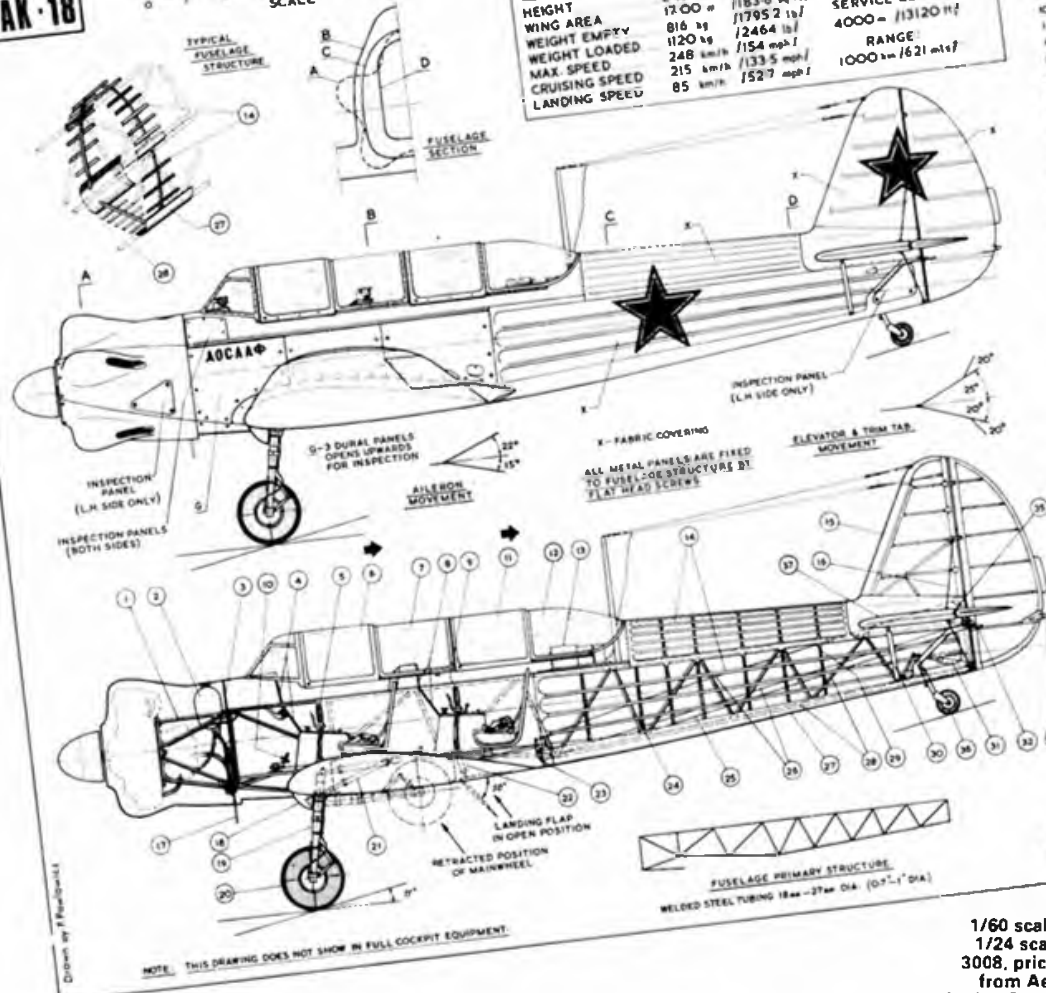
Hungarian Yak-18 olive green fuselage and outer wing panels with sky-blue undercarriage and centre section at Ferihegy, near Budapest. This machine also has a spinner removed for summer flying and a glider towing attachment on rear of fuselage.



YAK-18

SPECIFICATION	
SPAN	10.60 m / 34 ft 9 in /
LENGTH	8.03 m / 26 ft 4 in /
HEIGHT	2.18 m / 7 ft 2 in /
WING AREA	17.00 m ² / 183.6 sq ft /
WEIGHT EMPTY	816 kg / 2464 lb /
WEIGHT LOADED	1120 kg / 1544 lb /
MAX. SPEED	215 km/h / 133.5 mph /
CRUISING SPEED	85 km/h / 52.7 mph /
LANDING SPEED	
RATE OF CLIMB	3.5 m/sec / 13 ft/sec /
SERVICE CEILING	4000 m / 13120 ft /
RANGE	1000 km / 621 mi /

1. ENGINE MOUNT (STEEL TUBING)
2. OIL TANK 22 (CAPACITY 14.8 GAL)
3. FIREWALL
4. CONTROL COLUMN
5. FRONT SLIDING CANOPY
6. FIXED PART OF CANOPY
7. REAR INSTRUMENT PANEL
8. REAR CONTROL COLUMN
9. RUDDER BAR
10. REAR SLIDING CANOPY
11. REAR FIXED PART OF CANOPY
12. TRANSMITTER / RECEIVER #51-4
13. LONGITUDINAL METAL STRINGERS
14. ALL METAL STABILIZER AND RUDDER
15. STREAMLINED BRACING WIRE
16. OIL DRAIN PIPE
17. LANDING LEG FABRIC
18. MAIN UNDERCARRIAGE OLEO LEG
19. LOW PRESSURE WHEEL
20. MAIN LANDING GEAR ACTUATING CYLINDER
21. LANDING FLAP CONTROL CYLINDER
22. ELEVATOR BELL-CRANK
23. PULLEY
24. RUDDER CONTROL CABLE
25. ELEVATOR CONTROL CABLE
26. LONGITUDINAL DURAL PANEL
27. WELDED STEEL TUBE FUSelage FRAME
28. METAL STIFFENER
29. TAILPLANE STREAMLINED STRUT
30. OLEO PNEUMATIC SHOCK-ABSORBER
31. RUDDER HORN
32. WHITE NAVIGATION LIGHT
33. FIXED RUDDER TAB
34. ELEVATOR HORN
35. TAILWHEEL (SWINGING 360°)
36. FIXED STABILIZER, DIBEDRAL-D°



PLANS NOTICE
 Reprints of this feature with 1/60 scale drawings plus dye line prints of the 1/24 scale originals are available as plan pack 3008, price £1.20 inclusive of VAT and postage, from Aeromodeller Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE.

engine. A pneumatically operated undercarriage which retracted backwards to leave the wheels partially protruding as a safety feature, minimised damage in the event of a wheels-up emergency landing. The slow running engine was fitted with a variable pitch two blade wooden airscrew, and the characteristic agricultural exhaust note became a hallmark of these machines which were to become the backbone of the Russian flying training scheme.

Maximum speed was 153mph (248km/h) with a cruise of 133mph (215km/h) and stalling speed of 53mph with flaps and undercarriage up. In this form the aircraft established several world records, notably M. Chechneva's average speed of 244.692km/h for a 500km closed circuit in 1949 and A. Bodragina's, a lady

pilots' record soon after, of 262.771km/h for a 100km circuit.

In a way the 18 represents the last of a breed and its standard olive green top, pale blue undersides will be recalled with the same affection given to the Tiger Moth, Boeing Kaydet (Stearman PT-17/19) Fairchild Cornell etc, in the West. And like all good basic designs, it went on to greater development as progress demanded improvements.

By 1955 the Yak 18U development

appeared for the training of jet aircraft pilots on which a tricycle undercarriage was employed with the main wheel legs transferred to the rear spar now hinging forward and up. the nose was lengthened by 18in, retaining the characteristic cowling and a rearward folding front noseleg incorporated. Such modifications generally brought about a lowering of all aspects of performance.

A new version was introduced in 1957 as the Yak 18A, the major change being

Soviet Air Force Yak-18 being prepared for another day of hard slog training in the circuit for ab initio work up to 'wings' standard. The 18 is the Chipmunk of the East





Nose cowling on a Polish Yak-18 depicts a *Witches' broom* through the young lady's name with a pair of frilly 'smalls' airing from the handle - an unusual piece of humour for a serious trainer!

Standard RIT equipment between the two cockpits is mounted on the solid shaft at sill level. Coarse tuner is for frequency. Seats are well worn leather upholstered, with full harness coming through slot at top of seat back.

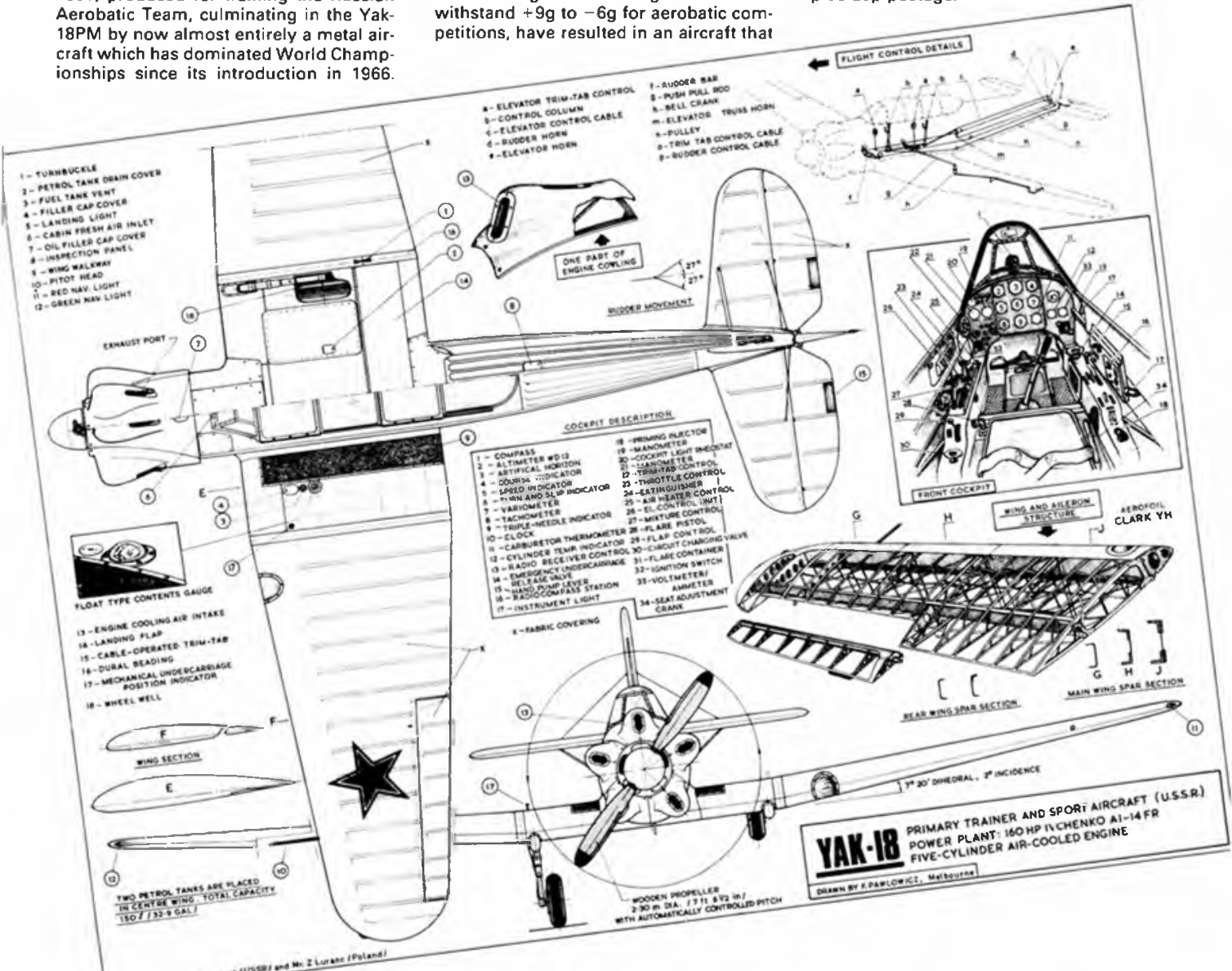
the replacement of the original 5 cylinder engine with a 250hp Ivchenko nine cylinder A1-14R housed inside a smoothly rounded cowling.

A parallel development to the 18A was the single seat 18P which appeared in 1961, produced for training the Russian Aerobatic Team, culminating in the Yak-18PM by now almost entirely a metal aircraft which has dominated World Championships since its introduction in 1966.

Refinements which include reduced dihedral from the standard 7°20' to 2° to improve inverted performance, various cockpit locations, initially forward and later aft, and a still more powerful 300hp A1-14RF radial engine, fully retracting undercarriage and a stronger airframe to withstand +9g to -6g for aerobatic competitions, have resulted in an aircraft that

continues to be the standard by which others are judged.

This Yak-18PM aerobatic variant was featured in March 1971 *Aeromodeller* and a reprint of the drawings and description is available as Plan Pack 2918 price 60p plus 20p postage.



CO₂

it's a GAS!

Heading Top Left: *Humbrol Bronco*, with additional Sellotape reinforcing used on wing section. Top Right: *Telco's 18in wing span Cessna* decorated with self-adhesive trim. Bottom Left: *Cambria's Cessna Pee Wee* the latest addition to the plastic ready-to-fly.

ALMOST READY TO FLY KITS REVIEWED PART 2 – IAN PEACOCK

Model kits for CO₂

On the model front, few kits are made expressly for CO₂, although many may be simply converted and will be detailed as this series progresses. All three UK manufacturers however, produce Almost-Ready-to-Fly (ARTF) models expressly for their engines. Mass production techniques and clever tool making has enabled almost childproof flying models at sensible prices.

TELCO'S CESSNA 180 was first and is a classic example of modern foam injection moulding. Engine, tank, filler and undercarriage assemblies fit neatly into the

holes moulded to receive them, the fuselage halves being rubber banded together internally. This cunning method is however negated as the self adhesive decoration covers up the band retainers, and the wing, being stuck in place, renders disassembly difficult, if not impossible! Flight characteristics are acceptable for an all plastic model although the wing section is a little too blunt to be very efficient. However the model is very tough and can withstand most of the punishment that it is likely to receive.

HUMBROL'S BRONCO is also supposed to be a CESSNA (according to the Vinyl stickers!) but really neither model is to scale. The BRONCO is rapidly assembled making full use of adhesive tape for quick results. Prolonged flying however, showed that a better method of fixing was necessary. Higher strength parcel tape

was used to fix the wing panels whilst the undercarriage which broke through the fixing tape on the first landing, was glued in place with a smear of epoxy. The engine mounting bulkhead also fell off on the first flight and it too was replaced with a quick dab of epoxy.

Flight trials were carried out in varying weather conditions both indoor and outdoor flying being fully explored. Of the ARTF (POWERMAX ELF, HUMBROL BRONCO, and TELCO CESSNA) the Bronco seemed to be the best all round flyer. After many hundred flights the TELCO motor was substituted into the Bronco airframe producing the best possible combination. Any of these ARTF kits would make excellent presents for the younger modeller, indeed it seems a good cheap introduction with all the feel of a "real engine". If offered as a Christmas gift



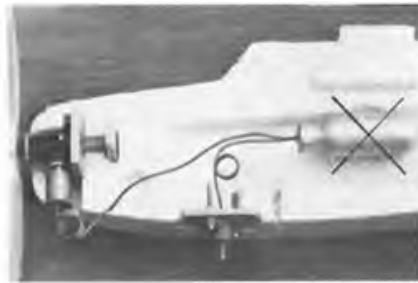
Far Left: Here's Telco, and this is what you get in the box; model comprises of simply five major components which quickly assemble into a first class flying model. Left: Plastic mounts for motor, filler and undercarriage slot into expanded foam fuselage halves. Above: Fuselage halves joined shows patch of Scotch Tape on wing platform. Button of plastic protrudes to accurately locate wing.

however, they could prove most disappointing as they will fail to perform properly in the attendant wintry conditions and it seems a little sad that no real explanation is offered in the instruction sheets (which otherwise cover the subject extremely well!)

CAMBRIA's CESSNA PEE WEE appears to be of French manufacture and is similar to the Telco offering but about 25% larger. Structure is moulded Expanded Polystyrene with many surface "pips" that require sanding off before the vinyl stickers will adhere. Motor is standard Telco, packed separately within the box and containing Telco's own instruction sheet (fortunately!) and assembly is straightforward.

Most obvious error is the kit instruction to fit the tank lying down horizontal – fortunately the Telco leaflet shows the correct installation. However the Novice at whom this kit is aimed – may well be confused with the two opposing statements. The motor was tried with the tank lying down with poor results and icing up, as any liquid CO₂ in the tank gets fed directly into the motor!

A small notch was filed in the lower fuselage to accept the upright tank, also the filler mounting plate would not fit properly without notches cut to clear the filler fixing screws. Despite these small criticisms, once the tank was in the upright position the engine ran with the usual good performance. The model's extra size seems to produce a much better flight



characteristic when compared with other products.

Tank mounting

Some general problem areas that were encountered on the ARTF models and were subsequently found valid for other models, are worth investigating. Keeping the motor and tank warm was just one such point and basing our thinking of the foam fuselage ARTF models, foam blocks were hollowed to contain the gas tanks for subsequent models. It transpired that this foam "jacket" slows down the return to normal temperature at the end of each flight, and considerable time is lost between flights. Not very desirable, especially if one is competing in a "scramble" type of contest. Leaving the motor cylinder head exposed, together with the bottom 1/2" of the gas tank, was found to be both simple and remarkably effective. Internal air ducting is a more complex solution which will be covered later.

The tank should be fitted in front of the



No No No No! Don't believe the instructions for Cambria's Cessna, they are WRONG. Laying the flight tank horizontal will result in liquid CO₂ passing to the engine, stopping it dead! TANK MUST BE UPRIGHT as shown in quick modification which only requires cutting a small hole in underside of fuselage below.

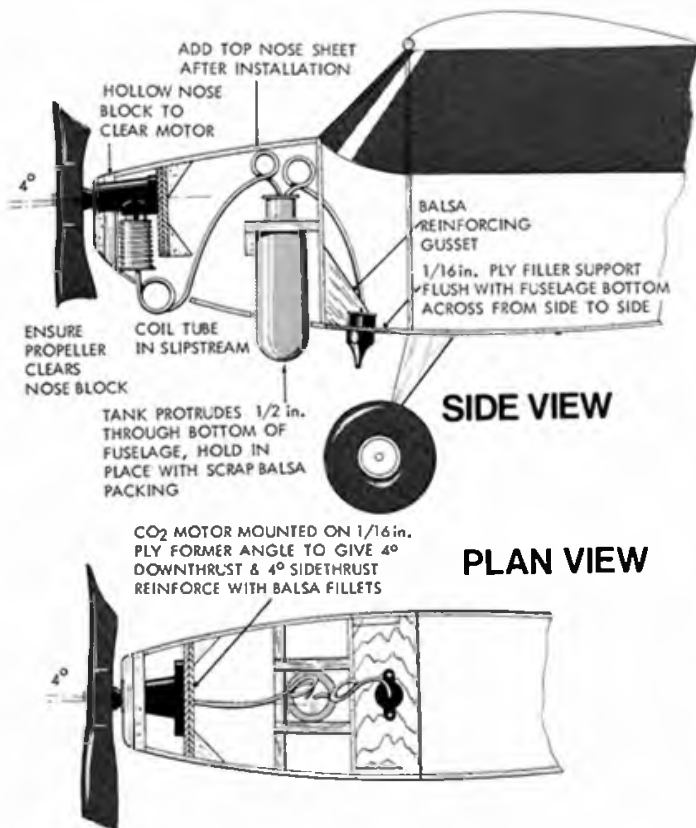


centre of gravity, producing a slight nose heavy trim when fully loaded with liquid CO₂. This helps to combat the initial power zoom resulting from the first burst of power from the motor and allows the balance to be regained as the tank slowly empties and the thrust of the motor drops off. In practice a point just in front of the wing leading edge seems to work out best. The tank should always be mounted as close to upright as possible, to avoid liquid CO₂ from running down the pipe stopping the motor.

TYPICAL CO₂ INSTALLATION

Below: Ready for flight the Cambria Cessna, the largest of the models reviewed and another fine flier. Many experienced aeromodellers will be pleasantly surprised by the exceptional flying ability of these new breed of ready to fly models.

Next Month: We take a look at some of the simple Almost-Ready-To-Fly Kits, and how to make minor improvements.





THIS MONTH:

Be prepared for those inevitable crashes when learning to fly . . . Here's how to repair the damage.

THERE ARE MANY uncertainties in modelling but of one thing you can be certain – you will eventually need to repair a model after crash damage. The early days in a modeller's career are always the most testing. It is then the problems are most likely to occur. Those with a casual interest in modelling give up at this stage whilst the budding enthusiast keeps at it until he overcomes the difficulties. Perhaps overcome the difficulties is the wrong thing to say, after 30 years I am still learning to overcome the problems, – and still having fun.

"Tough Cookie", the trainer plane I have built needed some tail weight to make it fly better and it has also suffered damage not only from crashing but I also trapped it in the car boot lid! The 'Viper' is not an ideal first model having a built up wing and the damage was caused in its first crash. "Tough Cookie" was designed to survive and I think we were a bit unlucky to suffer damage even after many crashes. Both models suffered typical damage by snapping the fuselage near the wing trailing edge.

Top left: young Ian Thompson is learning to fly with John using this Ripmax Quest Imp trainer fitted with D.C. Merlin and integral fuel tank.



Left: Ouch! The result of dozens of crash landings during a day's flying, eventually the fuselages broke on both John's Tough Cookie left and Ray Tomlinson's Mercury Viper right. Not to worry, out with the repair kit.

Below: Long jagged breaks provide plenty of surface area for gluing parts back together. Right: Hold with pins, pegs, tape, etc. until dry, but make sure parts are aligned correctly.



Solid wood trainer planes are much easier to repair than built-up and covered models. With a little care they can be as strong if not stronger after repair than before they were broken. Modern glues make it possible to repair a model at the field and fly it again within minutes, using cyanoacrylate or 5-minute epoxy. Unless there is some urgency such as a demonstration or a competition I prefer to stop flying a model as soon as damage occurs, and carefully repair the model at home.

Where you draw the line between field and home repairs depends not only on your competence with a particular glue but how far you have travelled and whether you have had one or twenty flights that day. Experiment with a fast acting glue at your leisure, get to know how to use it and always take it to the flying field. It can salvage an otherwise ruined day.

When a model is damaged your first concern must be to make absolutely sure no fuel gets onto the bare wood at the

break. Do not run the engine again to check it – that can wait. Empty the tank of all its fuel and carefully wipe the fuel and oil off the model with a rag using strokes away from the break.

If you opt for a home repair here are a few tips. When you get back home sit and contemplate the job in two stages. The first is to restore the model to its correct and accurate shape. With the PVA white glue I use, this usually means devising a method of holding the bits of model together for about an hour before the glue sets sufficiently to remove the support. Work out the method of support before you put the glue on. Pins, rubber bands, and clothes pegs are all useful as well as bean tins, books and matchboxes for supporting wings and tailplanes. To make a good glue joint, it is important the two surfaces are clean, fit together well and have plenty of gluing area. A splintered break gives much more glueing area and consequently a strong joint. Put a thin film of glue on both surfaces of the joint and

it off. On the 'Viper' there was no tissue on the fuselage and I needed to use paint remover (in this case dope thinners) and sandpaper. I was a bit surprised to find out by accident that dope thinners, but not dope, lifts the brand of domestic polyurethane paint I use, although it is perfectly fuel proof. You can see how well it worked in the picture. Over the joint I then doped on the pieces of ordinary bandage both sides of the fuselage. To make sure it was well and truly stuck I gave the bandage another coat of dope just before it was completely dry. Over the bandage I then doped on some tissue to help make the surface smoother. After a coat of paint the model is almost as good looking as it was originally and is no doubt a bit stronger. A quick check shows the centre of gravity has moved about 1mm rearwards which is not enough to worry about. It stands to reason that repairs should always be light and especially so when a distance from the C of G. It is no good putting a 2in splint under the tail-



Top Right: David Churchard, another young pilot joining in the flying fun with his Keil Kraft Champ powered by a D.C. Sabro and using a metal wedge stunt tank.

plane and expecting the model to fly well again. It would need considerable nose weight to get the balance right again.

Now the model is repaired wait for a good flying day and off to the field again. Whatever you do, do not treat your first models as precious things to be cherished and kept forever. I know it may well be the apple of your eye but you must have the courage to treat it almost like a disposable paper plate. By all means look after your model but remember the sole objective of your first trainer is to teach you to fly, allowing you to progress to other models, not to produce a work of art for everyone to admire. I put these remarks in because I have discovered a marked reluctance among my learners to fly their own models. Two of the original six boys have handed their models and engines back having run out of enthusiasm. Both could start their engines and found them interesting but found making the model too much bother. Not everyone can meet the challenge of aeromodelling and a hit rate of 4 from 6 is not bad.



Left: Most glue joints will prove stronger than the original wood, but extra reinforcing can be added by covering with bandage patch applied with balsa cement or dops.

press them firmly together. Add whatever support you are using and wipe away the surplus glue. With PVA this is easily done with a damp rag. Check the accuracy of the airframe and leave the model alone for about one hour. The supports can now be removed but the model needs to be left overnight for the joint to harden. If you leave the supports on they sometimes get firmly stuck to the model!

Having got the model back into the correct shape we must now consider how to restore and perhaps even improve on, the original strength. As a general rule wingtips, tailplanes and fins can be repaired without adding extra strength. Fuselages, wingroots and engine mounts are parts which take a lot of strain and need to be given extra strength. For this job I strongly advocate ordinary bandage or nylon stuck on with either PVA or dope.

When the glued joint has set remove the finish around the joint to reveal bare wood. If your model is covered with tissue try getting a knife under it and just pulling

Below: After glue has set, clean off paint from around repair ready for bandage. Right: John proves his paint, repair complete and repainted looks as good as new and will be found to be much stronger.



TOPICAL TWISTS

by Pylonius
illustrated by Sherry

TOUGH AT THE TOP

It must be lonely up there for the top contest flyer – like an eagle in its remote eyrie, with everyone taking pot shots at it. The most recent attempt to bring these high flyers down in flames is to get them banned from the very competitions they dominate. It seems it is all too undemocratic that they should keep winning all the competitions with their highly scientific apparatus, when poor old Fling-it Fred, the novice kit builder, should be in there with a chance, too. It might be like asking Nikki Lauder to move over to make way for Aunt Mabel in her Mini, but back to the flying fields would come the jolly charabanc loads of the Fifties, out to urge Fling-it Fred on to fame and fortune.

In a way, though, I feel sorry for the beleaguered top flyer, surrounded by his plastic plaques and secrets of success. He works hard for the little he gets, beavering away while Fling-it Fred snores in front of the telly. In fact, the time he spends in his little work cell could give concern to Amnesty International. And if you do throw out the top contest flyer what is he supposed to do? Go along to the airfield to see Fling-it Fred win yet another trophy on handicap, or stay at home writing complaining letters about the way some people dominate the contest scene?

MIND OVER MATTER

Looking at a picture of a free flight power model zooming up I got the impression of a swan with a broken neck. It was, however, the latest in pusher engine pods that gave rise to the distortion, the design being yet one more attempt to whack up the rate of ascent of the power duration model to make it even more ludicrous and impracticable than it is at present. If anyone wants to play with rockets why not buy the ones with sticks? At least they don't need silencing.

Anyway, the pusher on the pod is yet another example of the way the scientist is invading our humble hobby. Having explored and invented almost everything else they are using all the up-to-date scientific techniques, including computer read outs, to push the possibilities of our models to the farthest limits. They already have taken over the Indoor scene where individuals and teams are now less in evidence than research groups. Its put up the flight times no end, but at the same time made it that much more boring in that the models stay up for times beyond the limit of human patience. Depressing, too, if you are just a rule of thumb, ordinary modeller, only there to make up the numbers.

Altogether, the egghead influx is making our flying fields, particularly the contest areas, much less friendly places than they used to be. Enter one of these scientific enclaves waving your *Caprice*, and you are not likely to get a too friendly reception. You feel like a Neanderthal man who has wandered into Cambridge University. People with I.Q.'s in the 180 region do not answer to names like Fred. They speak only to their own kind and regard the bulk of humanity as a sort of curiosity, useful only for anthropological study.

Ah for the days when we working lads flew our non-scientific models in brotherly bonhomie. Not a B.Sc., or Ph.D., in sight, just friendly old knuckleheads. Come home, Fling-it Fred, all is forgiven!



"Hi there, is this where the contest is being held?"

PILOT SCHEMES.

Ever since I built a small Puss Moth kit many years ago I have been somewhat biased against Scale models. The result looked less like the Puss Moth depicted on the glossy carton than a number of sparsely situated sticks of balsa covered in a meagrely tinted tissue. More offputting was the way it fell to pieces on its first flight attempt.

It was, I suppose, the precursor of the modern 'Peanut' model, and thinking of my experience, and how these models survive against the unyielding indoor surfaces, I have only admiration for the exponents of this art. My only complaint is that many of the models have but a remote likeness to the full size thing; some in texture and finish having more in common with a peanut than, say, a metallic surface.

But perhaps you can carry Scale authenticity too far. And I am here thinking of the dummy pilots which are again rearing their ugly heads. Not that these truncated mannequins have much else to rear, but why is it a convention that they are always middle aged with Grandad moustaches? What have the elderly and be-whiskered ever done to deserve this, although there is a widely held belief that flying was so dangerous years ago that they only sent up the more expendable, older people.

Why not get up to date, though, with all the little men you see around the toy shops. All you need to do is to go in and ask for 'Half an Action Man, please'.

RADIUS CONTROL

Having outgrown its welcome in the great outdoors, Radio Control has gone indoors in a big way. I say, Big way, because the models that gyrate around the internal dimensions are veritable monsters with spans in the seven foot region, requiring it would seem nothing short of an astrodome in which to spread their wings. Let loose in the local gymnasium there wouldn't be much left of light fittings, or the spectators come to that.

Is it, though, the start of a serious sport, or just another gimmick? For years now, indoor models have been finding their way around the halls and hangars without need of radio control, and since the six ounce weight and seven foot span is just to carry the radio, is it worth it?



YOUR FULL-SIZE PLAN

by W. D. Binns

MANY PEOPLE have asked me, in tones of sympathy or outrage, why or even what is "Fozzle". The idea came to me, whilst inspired by the Rochdale Indoor Meeting. Not that I infer by this that the design is in any way their fault. As one friend said on seeing the contrivance "Well, you should feel better now".

Actually there is a certain logic to the design; it is light, 14oz; it is very resistant to warps; has low drag; it is virtually crashproof. This is by design. That Fozzle also came out exceedingly stable, with a very good duration, and looks diabolical in the air, is pure luck. Purring round and round overhead, Fozzles have caused immense interest, though one in white with large green spots caused several requests that I repaint or remove it.

Cut and file an aluminium template for the wing ribs and cut out 32 ribs from 3/32in soft sheet. Pin them together in two blocks of 16, and sand them down equal. With a razor saw cut the slots for the spars and leading edge. The spar slots are cut 1/8 x 3/32in to allow for the slant of the ribs. Rub the plans well with a candle. Hopefully this stops the wings sticking to them. Cut and notch the trailing edges and pin them down. Place the end ribs in position in the trailing edge, with a length of 3/32in soft in

the bottom spar notches and line up the ribs, and pin down the bottom spar. Fit and glue all the ribs, spars and leading edge in place. All 3/32in soft balsa. I use white P.V.A. glue, but balsa cement dries quicker.

Cut the End Fins from 1/32in medium, with the grain vertical and laminate the Centre Bulkhead from 1/32in medium, with the outer layers grain vertical, also cut out the Elevons. Cut the Engine Mount, the Engine Mount supports, and the Tank supports. The Engine Mount is 1/32in ply, the rest scrap balsa.

Sand down the trailing edge to a wedge section. Carefully sand the wings all over, removing lumps of glue, debris, etc. I used Jap Tissue, glossy side out. Give the outline of the wing a coat of diluted P.V.A. glue. Cut a piece of tissue oversize, and damp with a cloth. Cover the top of the wing first with a 1/32in overlap. Cover the bottom and trim to outline. Alternatively, cover with the tissue dry, then watershrink later. Give two coats of 50/50 dope and thinners. Pin down the wings to dry between coats. Add name and address label.

For assembly of model I use balsa cement. Cement the Elevons to the wings. Cement the fins to the bottom wings, using pins to hold them in place. Then cement the top wings to the fins, making

sure they are parallel to the bottom. Mark out the positions of the wings on the centre bulkhead and, when dry, cement the other making sure the leading and trailing edges are in line for both sets. Cement in the Engine Mount, Supports and Tank Supports incorporating 3" right and down thrust.

I assume you have your CO₂ Instruction Leaflet, however, do oil the big end, it really likes it. Temperature alters the engine performance radically. Even if you have set the engine at home on the bench, as you should, you will probably have to alter it when on the flying field. Give the engine time to defrost between runs, the trouble with CO₂ motors is keeping them warm.

Don't cut the pipes, coil them if too long, you can repair the pipes, but it isn't something to be undertaken for fun. "Fozzle" wants a 45sec, 50sec run for best flights.

Launch "Fozzle" over long grass, all you are trying for at this stage is a straight glide. If it turns to the left, bend both left elevons down, or both right elevons up. What you must remember is that you must have at least 3/32in up on the elevons for stability. If "Fozzle" turns right then you just adjust the opposite way. When the glide is about straight, give a gas charge only. To adjust the flight pattern bend both sets of elevons up for climb or down for dive.

We have had a lot of fun trimming as you are unlikely to do any damage. We once, through lack of downthrust, got six consecutive loops, and if you put too much turn on then "Fozzle" only climbs ten or fifteen feet, and buzzes round like a demented bat.


When you have got it right, "Fozzle" climbs away in a big circle to the left, climbing steadily for what seems a very long time. In fact its about 35 seconds, but it then flies level for another 20 before starting the glide in. You can fly in a reasonable breeze, but you will have a long chase.



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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1/16 TOE IN

L.E & SPARS
3/32 SQ (MED)

T.E 1/16 x 1/4
(MED)

PORT WING -
MAKE 2

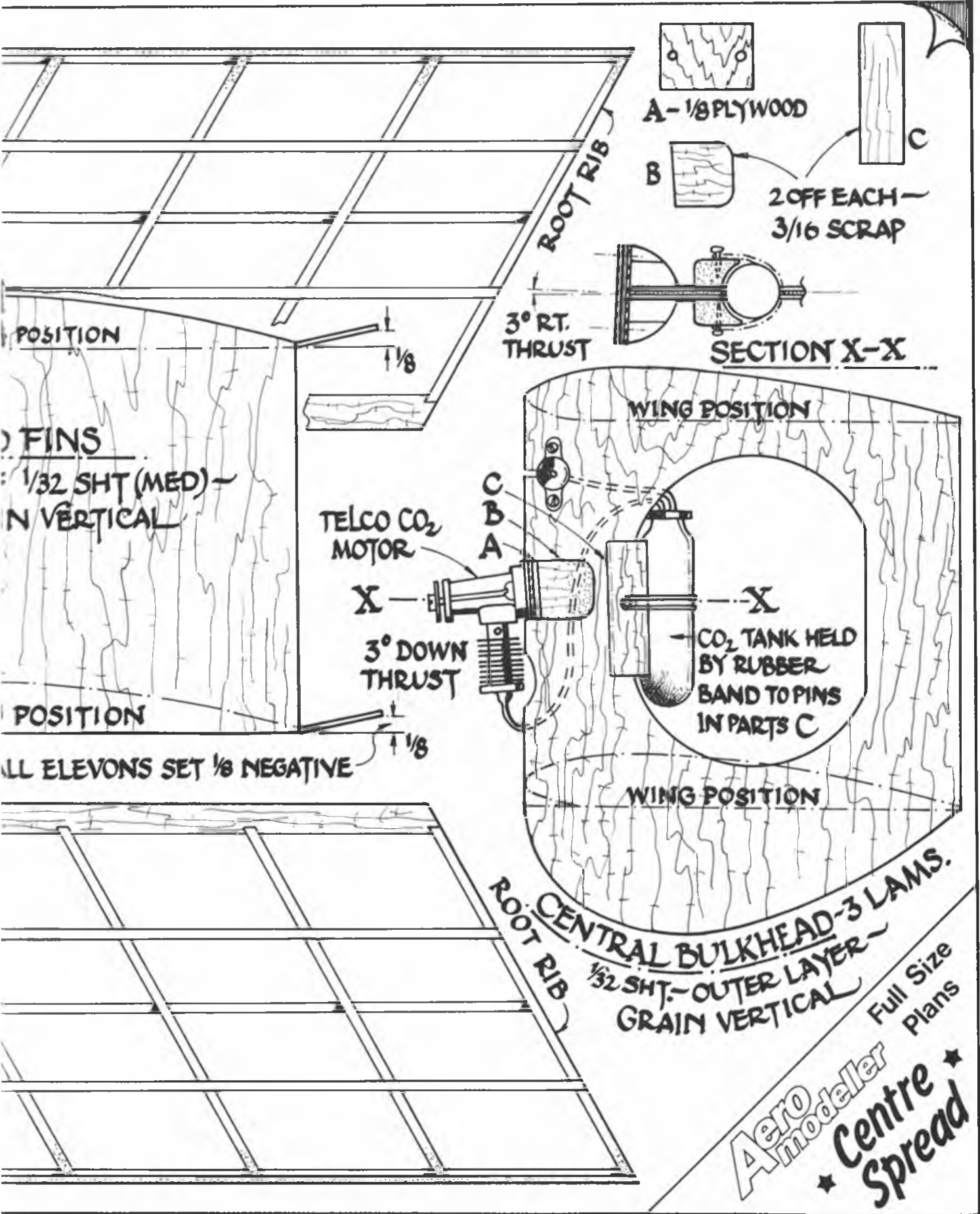


RIBS - 32 OFF 3/32 SHT (SOFT)
ELEVONS - 4 OFF 1/32 SHT.

STARBOARD WING
MAKE 2

NO DIHEDRAL

1/16 TOE IN



David Baker reports on the SAM CHAMPS

A PARTY OF BRITISH MODELLERS VISIT THE UNITED STATES

A CASUAL REMARK from Don Hartman, a dyed-in-the-wool Old Timer who visits us here in London frequently from his home in New Jersey "Why don't you come to the SAM Champs in New Jersey this year (1978)" and that's how it all began. The venue for the 13th Society of Antique Modellers Championships was to be at COYLE DROP ZONE in South Jersey in the last week of July 1978 but the story started long before that.

Ted Katsanis from Illinois, a club mate of Chester Lanzo, flew another classic Henry Struck design, the BOOMER BUS.



Firstly our friends at British Airways were contacted; without their help and particularly the chaps on the cargo side who were an enormous help, the trip would not have got off the ground. The packaging of the thirty models, the largest being the late John Haggert's 9ft Lanzo Stick, was quite an operation. BA not only made up custom model boxes but collected them from our address in London and delivered them to the nearest Old Timer to the flying site in New Jersey. This was done with such care that the models arrived at their destination completely undamaged.

Arriving at Kennedy Airport with the temperature in the low 90s, we were thankful for the party that met us. Six of us went with Jim Clarke in his enormous air conditioned bus to make the trip down to the vicinity of the field (this being in the Forked River/Toms River area). Ken and Mark Hinton stayed at Woody Woodman's bay side home, while the remaining four – Jack Law, Mike Radford, Ben Buckle and Jim Travers – were the guests of Al Swiekart. Julian de Camillis and myself were meanwhile taken in by Don Hartman at his home in North Jersey, and were out at his local flying field within an hour of leaving Kennedy Airport.

Henry (Hank) Struck, one of the most prolific designers of all time, famous for his unorthodox yet distinctive designs.



This field, which is used by his Club the Somerset Signal Senders, is a local council-sponsored field for their exclusive use. Although it was just a normal Sunday afternoon, the field was littered with *Play-boys*, *Trentons*, *Delaires*, *Scrums*, and a couple of *Powerhouses* nothing in fact but old timers.

Monday saw Julian and I travelling south to join up with the others at Coyle for the trimming session and the traditional SAM bean feast, whilst meeting more of the people you used to read about in the old mags. Sal Taibi, Chester Lanzo, Henry Struck, Leo Weiss, Leon Shulman, Bert Pond etc. etc. There are so many facets of this sort of meeting, not only modellers but old timers, genuine old timers so it doesn't matter who you bump into, they are all tuned in . . . picture the scene, warm to hot sandy conditions but with a stiff breeze, spark ignition engines flying matched models all over the site. Herb Wahl with his baize covered table taking in Brown Juniors for repairs and dispensing spares so casually, on my life he must have had 60 Brown Jnrs in a box by the table for various bits to be done to them (one chap had brought 13 to be overhauled by Herb) you could also buy the complete range of Brown Jnrs engines and spares. Bert Pond was dealing out the back of his Cadillac, his speciality being compressed air motors. Leon Shulman was reminiscing with the aid of photo albums, so full of memories, these chaps are so willing to share them.

The flying started just after 6am and finished about that time pm but one wondered where the time went. The contests were split into two camps, one F/F, the other Radio with crowds around each take

Aeromodeller

off area. Beautiful models in such quantity and quality. Models one had only heard of, but never seen. Mike Granieris' *MG2* in all sizes built by one club from 9in to 9ft 6in. This is a 1935 Parasol design which ousted the perennial *Playboys* this year, the *Playboys* winning 10 trophies and the *MG2s* winning 11. *Zippers*, *Powerhouses*, *Clippers*, *Rangers*, always something different and interesting, the days went by too fast, the evenings were equally exciting. Danny Sheelds by the way presented his own trophy, a monster about 3ft high for the winner of his massed fly-off 'A' Frame event. Count down to 11 o'clock when about 40 'A' Frames lofted into the air at one time, last one down is the winner. It really looked like a scene from Alfred Hitchcock's 'Birds'. (We are hoping to run a similar contest at the British Nationals; if anyone is interested in making an 'A' Frame for a fun thing send a stamped addressed envelope and you will have a selection by return.) For the benefit of non believers an 'A' Frame is an 'A' shaped fuselage, cannard configuration with 2 pusher props rubber powered; great stuff and what could be more nostalgic?



Above: Julian de Camillis and Don Hartman with Julian's *PRIVATEER*, a Thracey Petrides design, a very stable and forgiving model was actually completed at the last minute virtually on the flying field!

Below: Sal Taibi, designer-builder-filer par excellence and all in great proliferation-powerhouse, *BROOKLY DODGER*, *CADET*, *WINGED YANKEE* etc. This one is a vintage *CORBEN ACE* originally published in *Flying Aces*.

Right: Taking five, Woody Bartell with one of his many beautifully finished models, is it a *COMMODORE* or a *FLAGSHIP*?



July 1979



Above: John Pond, the President of the Society of Antique Modellers in the States also runs John Pond Plans which offers rare old designs for vintage fans. Right: Danny Sheelds (with pint pot) truly the court jester of SAM, John Pond narrowly pipped Danny for President. This informal portrait captures the relaxed atmosphere of the meeting.

Thursday night was the banquet, must have been a 100 trophies, sounds a lot but they awarded to fifth place and there were a lot of classes. Sal Taibi as usual wins his share as did two of our group, Mark Hinton won first in B Cabin and Ben Buckle did well with his *Eastern States Gas Champ* got third and two fifths. Julian de Camillis who came seventh in Texaco with his *Privateer* and Ken Hinton came sixth in AB ignition with his *Playboy*. Julian's model was finished the night before and its second flight was his first official, in this sort of company a few seconds can mean you are in or out. Everybody will do better next time.



The evening and the break up of the champs ended all too soon with hurried 'goodbyes'. Some people had come quite a way, like Sal Taibi accompanied by his charming wife, in his perennial 1955 Chevrolet, and Larry Boyer who motored all the way from California, 6 1/2 days each way.

All eight of us are to return with our wives to the 1980 14th SAM Champs in at the moment, California (Taft). We are going to book a 707 to take *only* modellers and supporters. We only need 200 and we have got 90 without trying. Why don't you come along? It's going to be the cheapest way of getting to California you'll ever know, so drop a SAE for details to: David Baker, SAM 35, 22 Ellington Road, Muswell Hill, London N10 3DG.

Left: Bert Pond (no relation) has been making models almost before everybody else was born, actually since 1915! Attended the first AMA Nats in 1920s and is now a great compressed air exponent using old beer cans.

Below: Mark and Ken Hinton, usually unbeatable, this is a silk covered *ANSWER* originally kitted as *TOPPER*. Mark placed 1st in Class B Cabin.



SCALE MATTERS



by
Alan
Callaghan

INDOOR SCALE NATIONALS: Cardington 29th April

Following on so soon after the March Indoor Scale Fly-in at the same venue, this meeting, as anticipated, turned out to be a very good gathering indeed. As I have suggested before it is the *regularity* of meetings rather than the occasional big-time events that encourages almost any class of model to develop and thrive. Regular meetings offer the opportunity for consistent and meaningful practice, and also give greater scope for trying ideas out carefully and without too much pressure. Many times we have seen brand-new scale models brought to places like Cardington for a one-day event only to find that it takes almost the whole of one day to just begin to realise how any given model will perform, and work out what sort of modifications may be necessary in order to get the best from it. Sometimes the flyer feels obliged to enter a competition simply because it's happening there and then, and in the frantic rush to achieve a semblance of a flight long before the model is ready the damage is done. There are *no* soft landings for the untrimmed model at this venue! This means that many people never fully realise the flying potential of any of their models, since any accident that cannot be repaired on the "field" only results in discouragement since there may be some considerable time before there is a chance to try the model again under the present pattern of staging indoor scale meetings. Each class can only benefit from more meetings.



This 24in span Vickers Vimy was built for twin Telco CO, by Dan Knight from Wensley, Accurate and nicely detailed, the model had yet to be fully trimmed for flight.



With every right to look pleased, Mark Hinton shows us his Peanut Santos — Dumont 14bis and his large Ferman Moustique. Both these models are amongst the best flyers ever seen at Cardington.

The other side of the story is that *competition* flying with scale models definitely does improve the breed, not only in the quality of construction and accuracy of the models, but also the skill of the flyer. It has often been said about most types of model flying that one learns more in one's first comp than in weeks of practice, and the sense of occasion that the competition offers gives a better incentive to sharpen up one's abilities and gets the adrenalin flowing. At a scale comp no-one is really trying to prove that one type of subject is a far better flyer than all the others. Were that so we would all be flying the same model, and the judges would be dying of boredom. Instead, the challenge is that *any* scale subject can be made to fly as well as any other within reason, i.e. don't

expect a Peanut Jump-Jet to fly like the real thing! An excellent example of just what can be achieved through the right approach was seen in the **Peanut** event at this meeting, where Mark Hinton's *Santos-Dumont 14bis* turned many a head with its superb flying performance. Few of the armchair experts would give this subject any kind of consideration as a free flight scale type, but if you take away the insurmountable aspect of such a project, that is, having to fly in turbulent air, and fly the subject solely indoors in flat calm it all becomes quite possible. In fact Mark made it all look ridiculously easy!

The model is built largely of 1/20in sq indoor quality balsa with wing ribs being cut from .020 balsa sheet. The covering is condenser paper but no solid leading or trailing edges are used on the flying surfaces. The wings and foreplane are built quite similarly to a boxkite, and this, especially the full depth "fabric" infill panels to the interplane struts must contribute a great deal to the remarkable stability of the model. Being a pusher, *all* the thrust from the prop goes into relatively clean air, and the efficiency of this was in no doubt every time the model was launched into its typical climb angle of approximately 45 degrees. Just as it would climb so steeply to something like 60 feet altitude, it would descent in the same way, and to prevent damage to the vulnerable foreplane the model had to be caught as

Aeromodeller



The CO₂ Bleriot by Rick Granger won its event by a clear margin. The attractive Bristol Brownie stablemate is also for CO₂.

close to the ground as possible to make the most of its flying time. Besides all this the model not only topped the flying times (yes, against a Lacey!) but would have won the event by a healthy margin if Mark had not posted his flight scores too early, since it went on to put in flights around the 79 second mark as the day wore on. As the results show, the 14bis only missed first place by 1.75 points, being pipped at the post by Butch Hadland's new Lacey which made up points from its higher static score. This must be the closest Peanut contest we've yet seen, and far more interesting it was for the lack of the placing system. Despite finally snapping my three-year old (!) motor in the Widgeon it still went well enough to secure third place to be followed by Rex Oldridge's Isaacs Fury (also with motor problems) and then Dr Spowage's Piper Cub. To examine the Peanut results table again in detail, and in realising that a two-flight total of 82 seconds can only bring a fifth place these days, it can be seen that anyone who still maintains that scale models, especially small ones, and especially rubber-powered ones, cannot fly well, are just not to be taken seriously, or even jokingly!

The **Open Rubber Scale** event also saw some closely competitive flying, with only 20 points separating the first five places, but with quite a mixture of static and flying scores. The best compromise came from Butch Hadland's large Lacey which topped neither the static nor flying section but did well enough in each to head the final results. The two new models this time were Nick Peppiatt's Mustang which flew extremely well at the March meeting and kept easily on trim for this session, and Mark Hinton's very large but ultra-light Farman Moustique. Just as I was reasoning at the beginning of this article the Mustang had been nicely trimmed in the relaxed atmosphere of the previous meeting, and then left well alone save for the addition of a few minor refinements such as a fairing for the tail-plane once the best setting for flying had been established. It is very satisfying to go on with the finishing touches in the know-

ledge that the model has already been properly trimmed and flies well. As mentioned before, Nick's model was built from a Clarence Mather plan published in the excellent "Flying Scale Models of WWII" book, and I always find it surprising that more people do not build from this very good source of well-designed models.

Mark's Moustique (or Mosquito, to you and me) was another of his own designs, and was built using ultralight techniques, such as condenser paper covering, to quite a large size. I did not check the wingspan but it appears to be over two feet and the model weighs approximately 14 grammes. It flew very slowly, rarely going over about ten feet in altitude, and nevertheless returning flight times of around one minute from an R.O.G. The external finish of dyed condenser paper was not very successful, but the judges comments were that at least it was possible to see through it to the neatly made balsa structure underneath! The low static score, however, held the model down to third place despite a clear lead of 14.5 marks in the flying section which as you will recall is not marked for duration but for the quality of flight. Top of the static section was Rex Oldridge's beautiful Fokker EIII, which even though being a Peanut size model was giving nothing away in quality or accuracy. Mike Reeves's venerable Bristol M. 18 was one of the pioneer indoor scale models in this country, and was only just nudged into fifth place due probably to not having been taken out of its box for three years until this meeting!

CO₂ Scale attracted six entries of which four actually completed qualifying flights. These comprised a nice mixture of subjects including two WWI types, a souped-up low-wing trainer, an early ultralight, and arguably the earliest ultralight! The last-named, a Bleriot, was built simply and neatly by Rick Granger, whose father built the Archeopterix which is in the nearby Shuttleworth Collection. The Bleriot flew extremely well and I was able to witness one rather tense moment as it came soar-



Butch Hadland together with his fleet of models "77W" is a Pietenpol Air Camper, and also seen are a CO₂ Mr. Mulligan and the two Laceys.

ing through the complex girders at the side of the shed only to land uphill on a sloping roof with great aplomb. Shades of Alpine flying. Rick also had a nice Bristol Brownie for CO₂, and together these made an attractive pair.

Being busy with my own models I did not see a great deal of the other CO₂ models that placed well, but undoubtedly the most ambitious subject present was a Vickers Vimy for two Telco motors built by Don Knight from Wendover. This model was 1/32 scale at approximately 24 inches span and very nicely detailed. Three tanks were plumbed together in the nose, with a central manifold being used to balance out the gas pressure to each motor. The motors and all the relevant piping were well hidden amongst the various struts and cowlings, and the model is approximately 3½ ounces in weight. It was all being tested for the first time and naturally did not like the hard floor. After a couple of test attempts Don wisely withdrew to save the model for that elusive calm day and long grass.

Open Rubber Scale (9 entries)

		Static	Flying	Total
1.	C. Hadland Lacey	74	69	143
2.	N. Peppiatt N. A. Mustang	62	73.5	135.5
3.	M. Hinton Farman Moustique	39	88	127
4.	R. Oldridge Fokker EIII	81	44	125
5.	M. Reeves Bristol M. 18	51	72	123

CO₂ Scale (6 entries)

1.	R. Granger Bleriot	206	85	291
2.	C. Hadland Pietenpol	202	77	279
3.	C. Newman Sopwith Pup	117	87	204
4.	D. Day Ryan Special	66	64	130
5.	G. Spencer Aviatik	111.5	-	111.5

Peanut (11 entries)

1.	C. Hadland Lacey	37	132	169
2.	M. Hinton Santos-Dumont 14bis	33.25	134	167.25
3.	A. Callaghan Westland Widgeon	36.5	98	134.5
4.	R. Oldridge Isaacs Fury	37.25	84	121.25
5.	D. Spowage Piper J3	30	82	112

RACING

by Dave Clarkson

FROM THE HANDLE

GOODIES DIRECTORY

Back again folks! This irregular feature always reappears because our essential 'goodies' are always in short supply, and as a result people all over the World keep on having a try to satisfy some of the demand.

'FLIWISE' PRODUCTS

Available from Phil Corfield, New Zealand. A comprehensive list of standard goodies. Prices given are in New Zealand dollars to which should be added appropriate overseas postage. Further details are available from Phil - send him an International Reply Coupon to get the details to you.

Item	Price NZ \$
1. 'Fliwise' Finger Valve	9.50
2. 'Fliwise' Tank Valve	7.50
3. 'Fliwise' Pressure Refuel System	31.50
4. 'Fliwise' Team Race Wheel	2.00
5. 'Fliwise' Universal Prop Balancer	2.00
6. 'Fliwise' Line Reel	2.00
7. Winding Attachment for item 6	0.50

The illustrations I have seen for these show that they appear to be well designed and well engineered items. A most promising source for Antipodean followers.

Michael's Models

Compulsive advert readers will have noted that Michael's Models - regular advertisers in this magazine and a real haven for we control-liners - have added some new FAI-TR 'Goodies' to their catalogue. My 'spies' tell me that these are from Paul Schippers in Holland and look really neat with the tank valves particularly well designed. If they do come from Paul Schippers then his engineering quality is well known. Well worth a visit to North Finchley when you are next in London to have a good look-see.

Current prices in Sterling are:

1. Tank Valve (standard)	£6.25
2. Tank Valve (for Nelson)	£6.25
3. Finger Valve	£3.95
4. Team Race Wheel	£2.40
5. Allen head comp screw	£0.80
6. 1/2A Circular Bellcrank & Housing	£3.95

Plus a great many more items of interest to TR nuts. A little gold mine is Michael's Models!

QUOTE OF THE MONTH

Maybe it's my twisted mind but I couldn't let this one go. From the January 1979 edition of the American magazine *Flying Models* comes this beauty:

'In the brake horsepower department, the diesels are way ahead. The brute power available is surprising. A '15' diesel puts out about the same power as a '29' glow. Don't look for the super high rpm though. That's not a diesel characteristic. It is interesting to note however, that in Europe a number of team racers use diesels in spite of generally lower rpm. About a year or so ago, a Super Tigre '15' diesel beat a Rossi '15' glow in a team race in spite of the fact that the Rossi could 'eat it up' in individual lap times.'

Read it a few times folks, and see if you have a twisted mind too. Or is it that things happen differently over there?

THE FLIGHT OF THE PHOENIX

The title is of my favourite old movie: come on, you as an Aeromodeller must have seen it and realised that it contains the best statement of the positive advantages of aeromodelling ever put out repeatedly over the TV. Really nothing to do with my subject here, except perhaps the world 'Phoenix'.

Some months ago this column carried the desparately sad news of the death of Paul Bugl and apparently the end of the Bugl motor story. Not so in the motor department, for the motor business and machinery etc. has passed into the hands of BG Model Engines, Nyrnberggade 29, DK-2300 Copenhagen S, Denmark - namely Hans and Jens Geschwandtner, the famous and most successful Danish FAI-TR brothers.

The BUGL Mk3 is the motor in question - prototypes



Left Top: The Fliwise Pressure Refuel System. Bottom: Fliwise Universal Prop Balancer. Right Top: Fliwise team race wheel, four versions available. Middle: Fliwise line reel. Bottom: Fliwise Finger valve and Tank Valve features an extra 'O' ring seal (arrowed) where finger valve meets the tank valve.



were in use at the Woodvale WC '78 in the hands of Petersen/Geschwandtner (Denmark) and Fontana/Amodio (Italy). The BUGL Mk3 is dimensionally similar to the previous marks except that it is quite a bit less tall and lighter. Detail changes include:

Liner - Now hard chromed steel with reduced height. Also an enlarged boost port.

Head - A two part aluminium head is fitted which gives improved cooling, radically changed appearance and reduced weight.

Backplate - Now cast of high strength aluminium. The well-known BUGL bell-valve induction system is retained.

Crankcase - A new casting incorporating a much larger boost passage and using a high strength, stiff aluminium alloy.

Crankshaft - Dimensionally the same as before but much lightened.

Multi-Function - Two multi-function valve systems are now available. The well known BUGL multi-function valve remains available but as an optional alternative at the same price, a much lighter multi-function similar to that used by the Danish team at Woodvale is also available.

Production started early in 1979 and the first batch of 30 motors is currently being delivered. Ron Tribe has one and very nice it looked in his hand at Cosford. Never a bad motor, the BUGL was always right at the top of the TR motor tree. In its new and improved Danish form the

BG-BUGL Mk3 is bound to be strong competition for the now almost universal Nelson. Current prices are:

	DM
BG-BUGL Mk3 without multi-function, with 1 carb & key incl.	300.-
BG-BUGL Mk3 incl. multi-function, 1 carb and key	350.-
Complete carb set 2.8mm to 3.7mm dia inclusive	55.-
1 single carb (specify size)	6.-
1 multi-function (state option)	50.-

All prices are in West German Deutsch Mark and exclude postage. Postage charges are as follows:

	Europe	Overseas (Air Mail)
Engines	6.-DM	12.-DM
Accessories	1.-DM	3.-DM

A deposit of 35.-DM is payable with each motor order and on receipt of order, the makers will confirm the order and give the motor order number and delivery date by letter. The balance is payable shortly before delivery. All accessories are payment incl. postage with order.

Existing BUGL owners will be gratified to learn that BG Model Engines offer a full repair service at moderate cost for all Mk1 and Mk2 BUGL motors.

CLARKSON HAS MOVED

Address books to the ready. Now get writing: David Clarkson, 'Ashlee', Vicarage Lane, Bowdon, Cheshire. Tel: 061-928 7065.

TYNEMOUTH TR RALLY – 1st April Reported by Dick Wilson

Held at one of the highest airfields in the UK, Albemarle Barracks (formerly RAF Ouston), where the trees grow horizontally, was the first racing contest of the season. Mixed weather with moderate winds, variegated showers – some hail, some sleet, some rain – even a little sun all contributed to the rustiness of the competitors showing problems for all as reflected in the results.

F2C (12 entries) was dominated by two teams each from WHARFEDALE and TYNEMOUTH Clubs. The team with the prize for the most problems must have been Nixon/Campbell up from Leicester who suffered malfunctioning engines and at least three sets of broken lines.

1. Wilson/Gardner TYNEMOUTH 8-42
2. Langworth/Broadhead WHARFEDALE 8-53
3. Horton/Haworth WHARFEDALE rtd.

First and Second finishers were separated by about 5 laps at the end which was probably explained by Langworth/Broadhead suffering an unexpected stop early in the race caused by an engine seizure.

GOODYEAR (12 entries) Only Jarvis/Needham of NORWEST had their act together all the rest were in comparison poor. The result was that semi-finals were not run. Jarvis/Needham cruised to an easy (and fast) win in the final – a race only enlivened by a blown plug, then a crash by Fitzsimmons/Millar also of NORWEST.

		Best Heat	Final
1. Jarvis/Needham	NORWEST	3-56	8-25
2. Sykes/Crabtree	WHARFEDALE	4-50	200 laps
3. Fitzsimmons/ Millar	NORWEST	4-44	150 laps

1st SMAE CENTRALISED – 15th April

Traditionally this contest has been held in wintry weather on a bleak airfield with no protection, for we competitors – except our cars, from the usual wind, rain, even snow and always the cold.

Maybe Tynemouth Club's contest a fortnight before took over the tradition because this year's 1st SMAE Centralised was held on a lovely warm day in gentle breezes at RAF Cosford, a really clean and civilised airfield under lots of beautiful sun. What a change, what a very pleasant change!

The only black mark on the whole day was that the very small patch of tarmac made available was only big enough for 1 circle in which both racing events of the day were held, so practice facilities were virtually non-existent (except perhaps for 1/2A-TR where a patch just big enough was available under the trees). For those still rusty after the hard winter, practice facilities would have been much appreciated. However, it illustrated the current excellent state of TR in the UK that this lack of even one practice circle didn't stop just about everyone getting a good setting in the races and showing potential sufficient to promise a most interesting season ahead.

F2C (27 entries, 22 flew) The evidence of a lot of work during the winter was there for all to see, for many new models came out to bask in the sun. Perhaps the most noticeable of these was a most compact 14oz weight (with a standard steel Nelson inside!) model by Hutchinson/Daly of NORWEST looking very modern. Looking very old-fashioned, a pair of Nelson models by the Tribe brothers of COSMO. A pity I did not have my camera there for a lot of good model pictures could have been taken.

Before the racing started, practice in the circle was possible and some very quick models were seen – Tribe/Tribe doing 20.5 sec/10 laps. Heaton/Ross 20.7 sec/10 laps. Clarkson/Woodside 21.2 sec/10 laps all for comfortable 2 stop heat range were typical examples. Strangely, despite this, only two teams went under 4 minutes during the heats. Heaton/Ross (surprise, surprise) did it twice including a British record smashing 3-47.30 run (current World Record 3:44.0) using their last year's number 2 model, and Tribe/Tribe did it once. Clarkson/Woodside showed lack of familiarity with their new Hutton Oddy type multi-function valve on their Nelson and made bad stop after bad stop – not the only ones to suffer from cobwebs!

Just one round of semi-finals were run by the organisers Steve Smith and Colin Brown of FELTHAM. Maybe the rapidly cooling evening fooled a few for many potential finalists lost speed through undercompressed motors. So the final cut was 4-16.3: not the sort of time I would have expected.

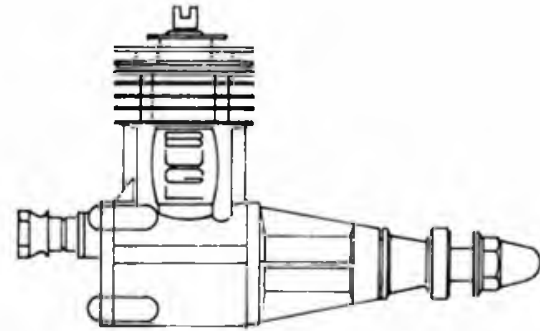
Despite the times, above, all three in the final had virtually the same airspeed. Maybe Heaton/Ross were marginally the fastest and Wilson/Gardner marginally the slowest, but there really was very little in it in the air. It was on the ground that the differences appeared with the first two finishers being good-to-excellent and the third placers bad. To relieve an otherwise unspectacular performance Clarkson/Woodside had their model run-in and do the usual half-dozen pirouettes at their 4th stop, amazingly their model then tumbled to the edge of the circle and then took-off quite normally. I have never seen

F2C

		Best Heat	Semi	Final	
1. Heaton/Ross	NORWEST	3-47.3	3-58.6	7-53.8	Nelson
2. Wilson/Gardner	TYNEMOUTH	4-13.4	4-11.1	8-27.2	Nelson
3. Clarkson/Woodside	NORWEST	4-10.7	4-16.3	8-59.1	Nelson
4. Tribe/Tribe	COSMO	3-59.5	4-25.7		Nelson
5. Hutchinson/Daly	NORWEST	4-03.8	rtd.		Nelson
6. Langworth/Broadhead	WHARFEDALE	4-07.6	4-41.4		Nelson
7. Gray/Haycock	FELTHAM	4-08.1	4-20.8		Bugl
8. Rudd/King	FELTHAM	4-14.7	4-38.6		Rossi FI
9. Smith/Yeldham	SOUTHEND	4-19.9	4-30.7		Nelson
10. Cooper/Green	ST. ALBANS	4-21.1			Nelson

1/2A

		Best Heat	Final	
1. Clarkson/Woodside	NORWEST	4-29.0	9-04.9	Oliver 'Cub'
2. Heaton/Ross	NORWEST	4-21.8	9-40.6	Ross Spl.
3. Langworth/Broadhead	WHARFEDALE	4-35.2	retd.	Oliver 'Cub'
4. O'Niell/Bollen	ELLIOTT	4-47.5		Oliver 'Cub'
5. Fitzgerald/Williamson	WHARFEDALE	4-48.0		Oliver 'Cub'
6. Taylor/Ridley	FELTHAM	4-49.4		Oliver 'Cub'



Hans and Jans Geschwendtner have taken up production of the Bugl Mk3 motor following the sad death of Paul Bugl last year. Orders are now being taken and a full spares service is offered which includes earlier Mk1 and Mk2 motors.

this before and I guess neither had most of the others present. A fun end to a hard day with the high spot being Heaton/Ross's truly excellent new UK heat record.

1/2A-TR (15 entries, 14 flew) A big entry for this event: let us all hope that 1/2A-TR will see similar good entries throughout the season, for it is a most pleasant event and maybe such good entries will encourage more scheduled events to come. Quite a few new teams and new models appeared and some good racing resulted. However the times were not spectacular as the results show – maybe strict marshalling by the organisers Steve Smith and Colin Brown of FELTHAM had some influence here?

A nice tight final with the first two 40 lapping and unlucky Langworth/Broadhead just 50 lapping. I say unlucky for just after their 3rd and last stop in the final Bernie Langworth temporarily lost sight of his model and it kissed the tarmac removing the undercart – they were in the lead by a few laps at this point and would have won quite comfortably.



Smart team racer from the Italian Voghera-Memozzi team who represented their country at last year's Woodvale Champs. Model is powered by one of the new Cipolla motors housed in a glass fibre fuselage all-up weight is 430 grams.



AEROBATICS

by Glen Alison

GLASS CLOTHING FUSELAGES

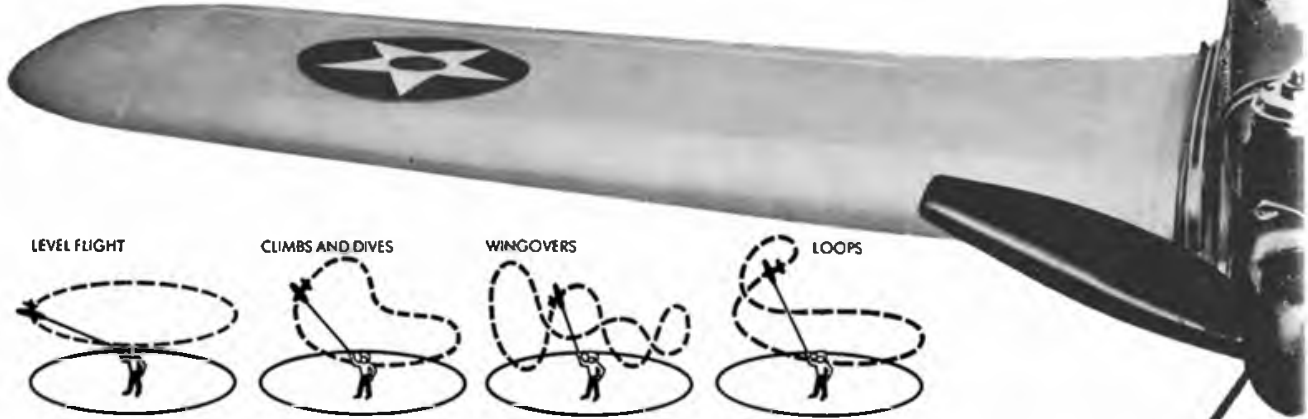
One often hears of new techniques pioneered in different branches of aeromodelling, but hesitates to try them for oneself for fear of lack of confidence in making a good job of it on your latest pride and joy, which may have taken many months to construct. Such was my feeling on approaching the technique of covering a fuselage in light glassfibre cloth. The team race boys have been doing it for ages with success. The fuselage of my aerobatic model in question, was made of particularly light wood and could almost be termed flimsy. I wanted therefore to stiffen it and toughen it by applying a hard skin to the surface. The cloth chosen was the lightest obtainable at 0.6gm/sq. yd. and cost £2 for a pack from 'Maple Models'.

I approached the job with a mixture of fear and caution, scared of making a mess of it. Having sanded the wood to a good finish and vacuumed off all the balsa dust, I lay the cloth on the fuselage dry and proceeded to "mould" it to the contours. The cloth is loose woven and can be distorted and wrapped around three dimensional objects very well. The glass cloth was then adhered to the wood by brushing through it with clear K & B Super-Poxy by starting in the centre of an area and moving outwards. You can also use two-part fuel proofers such as "Tuf-Kote" for this. Once the glass is in position, areas where trimming is required such as cockpit canopies, etc. can be cut out, use a very sharp knife or scissors to avoid "pulling" the weave.

When the paint or resin is dry rub down the surface with 280 grade dry paper. I then sprayed on two thin coats of K & B white primer and one coat of white colour gloss. The finish is superb, very quick to achieve, and fairly light. The total weight gain on the whole fuselage

Trainee Flyers

To follow in the footsteps of thousands who learnt to fly on the real thing—
 Designed in 1938 to teach Army Flight Corps. Cox have faithfully reproduced this control line model to give it similar flying characteristics to its full scale prototype.
 This control line flyer takes you easily through the training stages until you're ready for loops, wingovers and dives.
 Colourfully finished in authentic livery it even includes pilots and the famous Cox .049 glow plug engine.



from bare wood to flying state was just 1oz. There is of course no need for fuel-proofer as the K & B products are completely proof against all fuels.

BIG IS BEAUTIFUL

That enthusiast of large semi-scale stunters, Brian Dyke of St. Albans, (remember the 72in. span Stuka? APS Plan CL/1299 price £3.25) has been at it again with another impressive project. This time it's a Westland Wyvern, the famous Naval fighter which he has chosen as a follow up project. The model has a wing area of 840 sq. in. and is powered by a Merco 61. The wing is detachable and is fitted with adjustable lead out positions. Also adjustable are wing tip weight and rudder position. Brian has fabricated a custom internal silencer to fit within that beautiful radial cowl. Another specialised home-made feature is the parallelogram action sprung undercarriage legs.

Although yet to be covered and finished the result so far is truly impressive both from the size and bulk of the model, and the details of construction. Models of this type are always heavy, its the price you pay for scale like profiles, however it's bound to have a reasonable stunt performance and be a true pleasure to fly.



Opposite: Brian Dyke nearing completion of his latest monster stunter, this time a Westland Wyvern - what a craftsman! This page: Close ups confirm the quality of work and attention to detail, note parallelogram sprung shock absorbers on undercarriage leg left.



Wanted For the superb Cox PT19 Flight Trainer

You'll find it in easy assembly Kit form at your Department Store, Model or toy shop. Don't forget the Hales/Cox flight pack only £2.91 which contains all you need to fly your Cox fuel powered plane - one AD4 1½ volt Ever Ready battery, one 250cc can of Cox Glow Fuel, a Glowclip and two wrenches.

Ref: PT19 Flight Kit. FLY 100 RRP £13.95 (All prices correct at press date.)



HALES

A. A. Hales Ltd., P.O. Box 33,
Hinckley, Leicestershire



Frequencies, Crystals and Flight Line descriptive

In the United Kingdom, radio control equipment for model operation is designated two small spaces in the radio spectrum.

These are 26.96-27.28 Megahertz (MHz), by far the most popular, and 458.5-459.5 MHz.

"Megahertz" incidentally is a unit of the measurement of the operational frequency of the transmitted signal in which "hertz" means *cycles per second* and Mega is the multiplier to the power of one million. Thus one Megahertz is one million cycles per second and so the signal from our radio control equipment oscillates about 27 million cycles per second – quite quickly really!

The alternative 459 MHz band, is almost totally ignored for technical reasons – although this may change for the future and already we have one R/C system commercially available, albeit at a cost outside the pocket of most aeromodellers.

However – enough of the technical stuff, all this leads up to an explanation of a small component in our R/C systems which, in very practical terms, is fundamental to the way we operate our radio control equipment in company with others. This item is the crystal and its correct usage is vital.

As far as the licensing authorities are concerned, 26.96–27.28 MHz is the allotted waveband for R/C operation and we are perfectly at liberty to transmit signals at any point in that waveband. Back in the bad old days one of the basic unreliabilities of R/C equipment was the inability of the transmitter to stay tuned *exactly* to a specific set frequency due to air temperature changes, battery state fluctuations, etc.

The 'fix' was the crystal controlled oscillator, which nowadays is taken for granted as part of any modern R/C system. The electronic component termed the 'crystal' is a tiny wafer of quartz which has been carefully ground so that it will 'oscillate' at a specific frequency. With the crystal designed into the transmitter circuit, the transmitter cannot but operated at the desired frequency set by the crystal.



Without flight order and frequency discipline this idyllic gathering of R/C glider flyers could become a scene of carnage. Note that all those transmitters lined up against the back wall all carry frequency pennants, but for better discipline still, they could all be kept in one place.

Even with a crystal in the transmitter it is still only possible to operate one R/C system at a time unless the matching receiver is a type called a *superhetrodyne* or *superhet* for short. Fortunately, present day proportional R/C systems all use superhet receivers, so much so, that the term has lost much of its original significance. We take it for granted that several R/C models can be flown simultaneously, but it is important to understand that the

crystals in your R/C system are very much the physical expression of this ability, that improper use of these components can cause disaster for your own model and/or those of your fellow modellers.

As we have already recorded, our R/C licence permits us to transmit our R/C signals anywhere within the legally allotted waveband, but for practical purposes things are slightly and significantly different. In practical terms, to operate without



Fig. 1

Above: the hero of the piece! Here's what you find under the lid of the sealed metal crystal can – a paper-thin ground wafer of quartz crystal set in a wire holder. It is extremely delicate and must be protected from shock load or vibration.

Below: *plug-in crystals for R/C systems are the norm. On Skyleader transmitter, crystal slots into holder under case top and is protected by plastic cap.*





inter-reaction, a number of R/C systems operating simultaneously must be spread out across the waveband and there is a minimum of 'separation' for safe, inter-reaction free operation. Since there is a minimum required separation, it didn't take modellers long to agree a set of standard "spot frequencies" within the waveband as a choice of operating frequencies.

Originally there were six "spots", each colour coded so that by flying an appropriately coded streamer or pennant from your transmitter you advertise, for all to see, the "spot frequency" which you operate on. All can then see at a glance which "spot frequencies" are in use at any given time, which are completely free, how many potential operations on any given frequency there will be, etc.

The six standard spots are:-
 26.995 MHz (Brown) 27.145 MHz (Yellow)
 27.045 MHz (Red) 27.195 MHz (Green)
 27.095 MHz (Orange) 27.245 MHz or
 27.255 (Blue)

However, as R/C has become progressively more popular, the demand to make better use of our R/C waveband has resulted in the development of R/C equipment capable of operating at much narrower waveband separation factors so that the six original "spots" has been interspersed with others to achieve the following table of standard "spot frequencies" used among the R/C community:-

Tx. Frequency	Colour Code
26.970	(Brown/Grey)
26.995	(Brown)
27.020	(Red/Brown)
27.045	(Red)
27.070	(Orange/Red)
27.095	(Orange)
27.120	(Yellow/Orange)
27.145	(Yellow)
27.170	(Green/Yellow)
27.195	(Green)
27.220	(Blue/Green)
27.245 or 27.255	(Blue)

Since it is the crystal that sets the frequency of transmitter signal, it's not hard to imagine that, by substituting a crystal appropriate to another "spot" within the waveband, we change the frequency of operation and that, if these crystals were arranged simply to plug in to the circuit, we could change frequency at will and avoid over subscribing any spot frequency at the flying field.

Such, of course, is the modern picture, but there are further vital points to understand about crystals which are essential for safer operation of R/C equipment. For instance, the frequency of the crystal in the receiver will be different for that used in the transmitter. As an example, if a transmitter crystal is ground to 26.995 MHz, its matching receiver crystal will typically be 26.530 MHz, a difference of 0.465 (or 465 Kilohertz). This difference is vital to the operation of the receiver, but the difference is not necessarily standard and does vary from brand to brand, variations being 455 KHz, 460 KHz and 470 KHz.

In practical terms this is a warning signal for one of the DON'TS of R/C, i.e. *never mix or substitute brands of crystals.* For example, never use MacGregor crystals in a Futaba R/C system and vice versa. The result will certainly be disaster.

Here's another cardinal rule. NEVER transpose transmitter and receiver crystals. Chances are that the system would work, but a quick bit of arithmetic will tell you that in all cases your transmitter would transmit on a non-standard frequency, which, in company with others, would certainly cause havoc. In the case of

brown frequency, the arithmetic tells us we would actually be transmitting outside our own R/C waveband. So the rule here is to be certain that the correct permutation is used. Fortunately, R/C manufacturers carefully code their crystals so that their respective functions can be immediately identified, but a moment's absent mindedness could cause damage, disaster, lose you a lot of friends or even flying fields!

Naturally, no R/C system will work with say a red frequency transmitter crystal and a green frequency receiver crystal.

Finally, crystals are extremely delicate components. Fig 1 shows what's inside the protective metal can. It's a paper thin quartz disc set in a wire holder. Naturally it is extremely brittle so that any jarring, rattling or a drop from any height runs the risk of permanent damage. So treat your crystals with absolute care. Rattling around in the bottom of a tool box is not the treatment for these delicate components upon which the operation of your R/C system depends. Keep them tucked away in a small plastic box, well protected in foam plastic against shock damage.

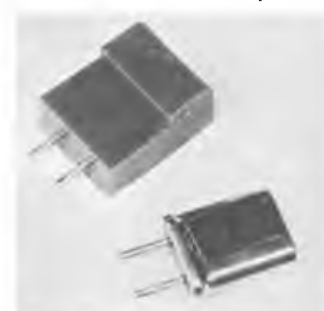
Above all, respect the essential discipline of the R/C hobby:-

- (i) **Always display your correct frequency pennant from your transmitter aerial.**
- (ii) **Always check to find who else might wish to use your chosen frequency. If there's more than one you'll have to agree to share.**
- (iii) **Always check for other operators before switching on. A casual check that your own equipment is switched on will shoot down anyone who might be airborne.**
- (iv) **When changing frequency – always tell others that you are doing so and change appropriate frequency pennant.**
- (v) **Always be absolutely certain that the correct crystal permutation has been used.**
- (vi) **Treat those crystals with absolute care.**



Above: another complication – FM means Frequency Modulation rather than 'failed miserably' and denotes a new type of R/C system now becoming more generally available. Crystals without the "FM" notation are "AM" or amplitude modulation type. Basically, the two types are incompatible so don't put AM crystals in FM R/C sets and wicky works!

Below: R/C manufacturers go to lengths to ensure transmitter and receiver crystals are not transposed. In MacGregor set, receiver crystal fits into plastic key, which slots into receiver – foolproof! Picture right shows how. Set supplied for photography by Waller & Arris, Hemel Hempstead.



Bob Bailey reports....

Free Flight Scene



MIKE BULL'S 1978 JAPAN WINNER

Mike tells me that his model was originally built from an APS plan (Zeus PET/841 price £1.10). I was particularly interested to hear how he had modified it to produce the contest winning capability it has shown - over to Mike.

"This is the fourth Zeus I have built so far and I like to think that the modifications which have culminated in the current version are real improvements; I hope the original designer will allow me to slightly rename it, Zeus MkII. I chose Zeus from the APS plans handbook rather naively because the blurb stated that it had a 'terrific climb' but I fear the caption writer was a trifle optimistic; however, it *did* have a 'terrific glide' and if there is a thermal within sniffing distance Zeus will head straight for it and hop on!"

"The modifications have been brought about in an attempt to gain climb height, and the addition of VIT and A/R have allowed the use of a straight climb with half a turn on the way up; an additional benefit of the VIT is the reduction in area of the tailplane (the original being very stabilising but drag inducing), now that the decalage can be chosen at will."

"When everything is working well the design is very competitive: 7th '76 Nationals, 1st '77 Croydon Rally 10:00 + 7:40, 1st '78 Vulcans Gala 10:00 + 3:23, 1st '78 Nationals 10:00 + 9:39."

"The climb is still slower than many other models, but the glide and thermalling characteristics more than compensate. Here is a list of the major modifications:-

1. Auto rudder
2. Variable Incidence Tailplane
3. 1/16in sheet fuselage top, bottom and sides
4. Widening of rear of fuselage to stiffen
5. Built up pylon
6. Reduced wing angle of attack
7. Reduced wing warps
8. Reduced stab area and thickness
9. Webbing on first three wing bays
10. New shape fin
11. Reduction in moment arm
12. Add lightness!
13. Reduced Dihedral

"The modifications may appear to be a Pandora's box of changes but they have been introduced over four models and they do seem to work."

"See you at the '79 Nationals!"

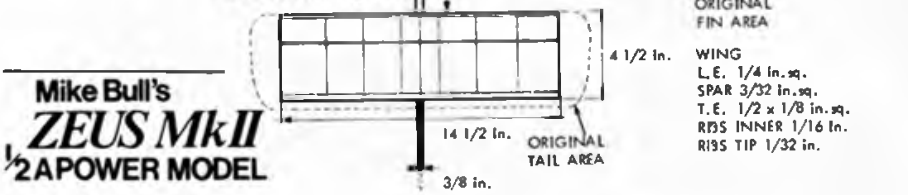
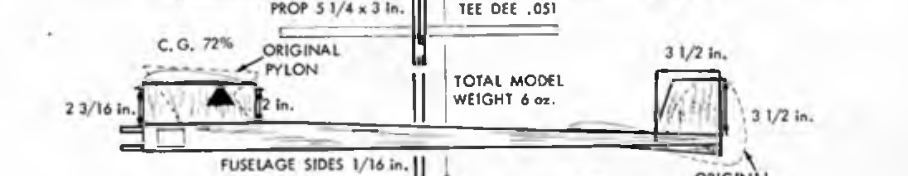
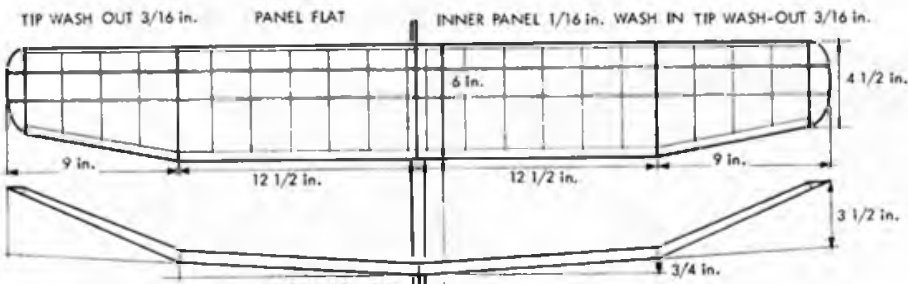
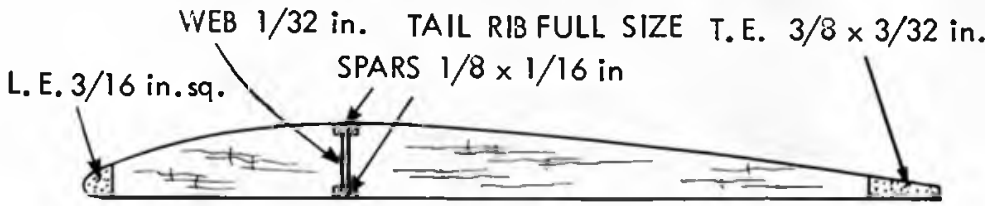
ENGINE PRESSURISATION

The following is of use mainly to glow motors although the occasional racing diesel like the MVVS benefits from it also. Engine pressure feed is a simple and convenient means of providing a constant feed of fuel to the engine whatever the model's altitude, level or climbing. Racing glow motors are more sensitive to fuel feed variation than the average diesel, maybe because of poorer suction characteristics. When the model is launched, the acceleration causes the fuel to be 'left behind' and the fuel feed decreases causing the model to slow down. This increases the fuel feed and allows the model to pick up speed again, by which time, assuming it is a competition model, it will no longer be pointing straight up. The competition model may well dive in as a result!

Enough of the reasons; now to how it is done. First and most important, the fuel tank must be airtight with *no leaks anywhere*. If not, the motor won't run properly - as simple as that.

Secondly the motor needs a slight modification to provide a feed to the tank from the crankcase. The best place for this is the engine backplate. You may say - but your TD049 has a pressure tapping on the crankshaft - maybe, but many people have found that using this tapping causes considerable difficulty in starting the motor. Not ideal for launching your model into the air you choose. I strongly recommend that you make a pressure tapping form the backplate. The simplest way is to epoxy a piece of 14swg brass tube into the backplate (see fig 1). Next a piece of fuel tubing goes from the tapping to one of the two filler/vents on the tank. To complete the system, block off the other vent after filling the tank with a piece of fuel tubing plugged with a 6BA bolt or a piece of wire. See Figure 2.

The system described above pressurises the tank and fuel feed to something like twice atmospheric pressure. You will consequently find that the needle valve is only open say 2 turns whereas without pressure, it requires to be open 4 turns for correct running.



Mike Bull's ZEUS MkII 1/2A POWER MODEL

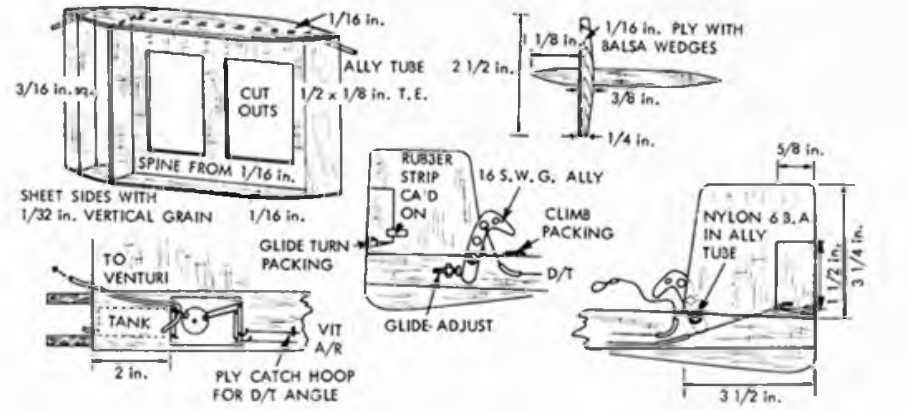


FIG. 1 PRESSURE TAPPING ON ENGINE BACKPLATE

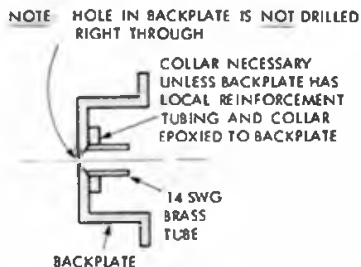
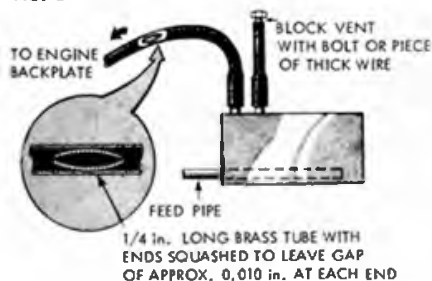


FIG. 2



If the engine starts, speeds up, falters, speeds up, falters etc. and won't hold a steady speed, there are several possible causes.

1. Dirt in the needle valve assembly. This one fooled me recently for quite some time.
2. Pinholes in the fuel line and any other (flood-off) lines that may be fitted. These are not always easy to see - change your fuel lines if in doubt.
3. Leaky Tank. This is best checked before installation by blocking up all outlets except one and connecting a piece of fuel line to the one remaining outlet. Immerse the tank in water, blow into it via the line and watch for a stream of air bubbles. A dead give-away!
4. There may be a need for a restriction in the line from the engine pressure tapping to the tank. A restriction forces the air to pass from the engine to the tank through a small hole which slows the air flow down.

For a 1/2A motor a 12 thou hole seems to be about right; for 2.5cc motors, a hole about 30 thou diameter seems to work OK. However don't worry about drill sizes; there is a much simpler method which I use myself. A short piece of 16swg aluminium tube about 1/4in long with the ends squashed almost flat works perfectly. The tube is pushed into the pressure line before installing the latter in the model. The aluminium tube has the big advantage that the ends can be unsquashed to open up the restrictor a bit. See Figure 2.

Should you find, now that the motor is running properly, that it falters on launch, your pressure restriction holes are too small, giving the symptoms of no pressure feed, open the restrictor up a bit and try again.

Sounds complicated? It isn't really, but the benefits in terms of consistent engine running are enormous. Now you can install a flood off system to stop the motor when you want to - much better than a fuel feed strangle. More on flood offs in the near future

CARDINGTON, 22nd April

This, the first duration meeting of the year saw a welcome return to the shed. Flying started late due to balloon rearrangement and door opening and was terminated early (6pm) due to the Sunday shift finishing work. However, the conditions although cold were dry which was a great relief to EZB fliers since these models are the most sensitive to damp.

Most people had problems at one time or another getting altitude; because of the cold, thick motors were needed and it turned out that the easiest rubber of the new variety to use was that obtained through Ian Dowsett. Apparently, the orange rubber is more sensitive to temperature than the Ian Dowsett rubber.

Dave Pymm found form more quickly than anyone

else; he used a light model, a small motor and was content to use somewhat less than maximum altitude. His best flight of 17.05 was good for the conditions. Derl Morley was set for rather more on one flight, missteered and the model came in for a well controlled descent - upside down! I was also set well on the second flight but the model drifted towards the doors and extreme turbulence, a bunch stopped the prop, and the model glided straight into the side and was only rescued when the doors were opened and the model blown down. Unfortunately it was somewhat bent, but EZBs repair easily so some of it will fly again!

John Blackburn on his first visit to Cardington flew very well with a best of 14.00 - a good augury. Ron Green flew a model with a small underslung tail which flew extremely well, the small tail holding the climb under perfect control and Ron was well rewarded with 2nd.

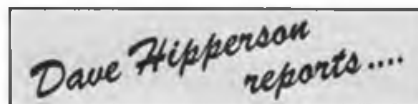
Manhattan had poor support contest wise, but several people were trying out 4g models. Laurie Barr, the only entrant, improved on his record for 6g with 7.21. If anyone else had entered, he would have had great trouble in beating Laurie's score of 14.31.

I did not see much of HLG but by popular request we agreed to run a 12in span class as well as Open which proved worthwhile. The scores were extremely high this being the warm up for the 1979 Sweepstake series. In open, John Buskell took an early lead with two flights of well over a minute; Steve Philpott then went somewhat better with a 65 and 70 but John was not to be outdone and with his high aspect ratio model went even better with 71 and 75. Top Junior was Gary Dowsett who flew remarkably well to produce 55.6 + 51.2.

Mick Page showed the way home in 12in but only just got clear of John Buskell by 2 secs - very good flying in relatively poor conditions.

A somewhat short but most enjoyable day.

RESULTS: EZB (9 entries) 1. D. Pymm 15:45 + 17:05 = 32:50, 2. R. Green 15:34 + 15:33 = 31:07, 3. D. Morley 15:02 + 15:00 = 30:02. **Open HLG** (11 entries) 1. J. Buskell 71 + 75 = 146, 2. S. Philpott 65 + 70 = 135, 3. W. Simms 55 + 62 = 117. **12" HLG** 1. M. Page 50 + 53 = 103, 2. J. Buskell 51 + 50 = 101, 3. R. Roberts 41 + 39 = 80. **Manhattan** (1 entry) L. Barr 7:10 + 7:21 = 14:31.



RUBBER - ORANGE, BROWN, WHITE?

THERE ARE INTERESTING ANOMALIES in the current supply of rubber, this is what has happened. Some time last year a batch of the very orange coloured Pirelli obtained through the back door of the factory in Italy showed remarkable potential for Indoor flying. On the strength of this Ian Dowsett risked an enormous importation of what was hoped would be the same stuff. He brought in £1500 worth and it turned out on arrival not to be the orange stuff he had been expecting. However the other surprise was that it was (is) still enormously powerful rubber and may be even better than the original orange stuff! (I have had none of the special orange batch to test so I can make no direct comparison.) However the Dowsett Pirelli (currently all sold-out) - is not as orange as either that back door supply of last year, or the rubber that HJN has been supplying for the past few years.

This is where things get interesting. Still on the trail of the 'orange' rubber some indoor flyers have, they believe, found a source in a model shop in Paris, and have been buying it there for an enormous price. However I have tested some of this and it performs in exactly the same way as the Pirelli that HJN has been stocking for the past few years, and which I tested in July 77 *Aeromodeller*. It is very acceptable in performance (I use it) but not spectacular. Therefore it would seem there are several types of Pirelli, of which the exceptional orange stuff of last year may have been a freak batch.

In the light of this I have done more tests. Ten gramme samples were used as before and remember the figures are torque values, but not specific oz/in units as the instrument is not calibrated.

The six column chart deals with three types of rubber. The commonly available model shop Aero Strip 'white stuff' is tested in the first two columns, then follows my tests of the Paris Pirelli importation and then a sample of HJN's latest batch supplied from the Ed.

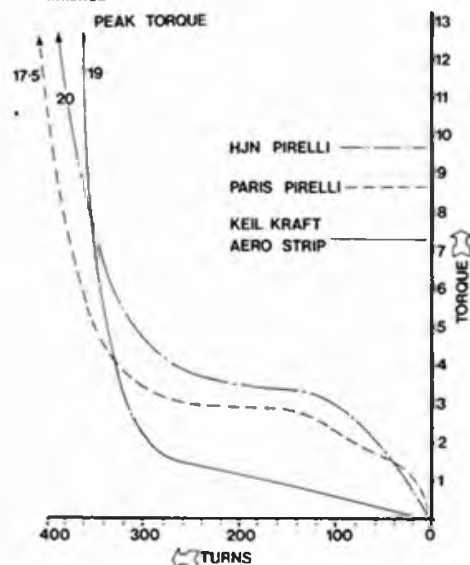
In all three cases the motors had been given some running-in to approximately half winds. The two tests

for each were conducted only a few minutes apart and both start lengths and final lengths are given. None of the samples were broken but it was thought that the highest turns reached in each of the three cases was the practical maximum as a very light smooth action winder is used through which it is possible to feel the condition of the motors easily. It should also be pointed out that the white rubber was narrower and made up to eight strands initially 11.50in long and stretched to 14in during the running-in phase.

Conclusions

Top torque can be misleading and one can see that all three samples came out equal or virtually so. However, comparison of torque at 300 turns, and 200 turns says it all. It is quite clear that the white sample is very poor quality and appears to be useless for model flying, which explains why people using it in the kits in which it is supplied have so little success in getting their models to fly at all! The Pirelli imported from Paris is unspicacious but very usable. The HJN sample, although somewhat below those figures which I obtained from my tests two months ago, is still excellent rubber, and the Editor is not having this sample back!

motor length	White		Orange		Brown	
	Aero Strip	Paris Pirelli	Paris Pirelli	HJN Pirelli	HJN Pirelli	HJN Pirelli
Turns	14"	14 1/2"	12"	12 1/2"	11 1/4"	12"
400				17.50		20.00
390				12.00		15.50
380				9.00		12.50
370	19.00	11.50	7.50	19.50	10.50	
360	10.00	9.00	6.00	13.00	9.00	
350	7.50	7.50	5.50	1.50	7.75	
340	5.50	6.50	4.50	8.50	6.50	
330	4.00	5.75	4.00	7.25	6.00	
320	15.50	3.00	5.00	3.75	6.50	5.50
310	7.50	2.75	4.50	3.50	6.00	5.00
300	5.00	2.00	4.50	3.50	6.00	4.50
290	3.75	1.75	4.00	3.25	5.00	4.00
280	3.00	1.50	4.00	3.25	4.50	4.00
270	2.50	1.50	4.00	3.25	4.50	4.00
260	2.00	1.50	3.75	3.00	4.00	4.00
250	2.00	1.50	3.50	3.00	4.00	4.00
240	1.50	1.25	3.25	3.00	4.00	3.75
230	1.50	1.25	3.25	3.00	4.00	3.75
220	1.25	1.25	3.00	3.00	3.75	3.50
200	1.00	1.00	3.00	3.00	3.75	3.25
180	1.00	1.00	3.00	3.00	3.50	3.25
160	1.00	1.00	3.00	3.00	3.50	3.00
140	1.00	0.75	3.00	2.50	3.25	3.25
120	0.75	0.75	2.50	2.25	3.00	3.00
100	0.75	0.50	2.00	2.00	3.00	2.75
80	0.50	0.50	2.00	2.00	2.50	2.25
60	0.50	0.50	1.50	1.50	1.75	1.50
40	0.25	0.25	1.00	1.00	1.50	1.25
20	0.25	0(1)	0.75	0.75	0.75	0.5
0	0	0	0	0	0	0
Length when finished		15"(1)		12.5"		12"



FURTHER OPEN RUBBER DEVELOPMENTS

Martyr Pressnell has sent some interesting mathematic confirmation of my proposals for Open Rubber development in the April issue.

He applies the formula for rubber model duration 'D' as

$$D = F \frac{Wr}{W} \frac{1}{(W/A)^3}$$

F expresses efficiency of model

Wr is motor weight

W is Total airborne weight

A is area.

He considers F, for a typical open job, to be 126 sec. oz 1/10. Applying the formula (after accepting the premise that my 310 sq in model does 7 mins) he comes up with a still air duration of 6.46 for the J. O'Donnell type arrangement, the datum 7 mins for mine and a startling 9.22 for the super light proposed model.

What is even more interesting is that he agrees that the very large aerodynamically cleaner, but not necessarily super light, arrangement I suggested would have an improved F of somewhere between a Wake and a current Open model and could thereby produce theoretical times of 10 mins. at a flying speed of about 10ft per sec! His chart illustrates how he feeds the formula.

TYNEMOUTH FF RALLY – April 22nd Report by Alan Jack

Attendance was reasonable considering the clash of dates with the Midland Area Rally, as far as I am aware the Midland's Area's event was not arranged when we fixed our event for April 22nd.

I was particularly pleased to see Darlington Club members and some of the lads from Scotland in attendance. The weather did not treat us too kindly, starting windy but sunny and gradually becoming more cloudy and colder but also calmer and by the end of the day there was easily three minutes available on the 'drome'. We allowed doubling up of flights and reduced the maximum to 2 1/2 minutes to promote competition.

Chas Plant flew A2s in Open Glider and All-in-FAI very effectively, his towing being particularly stable in the windy conditions. He survived late challenges from Phil Moate and Alan Jack flying F1A and F1B/F1A respectively and from Ron Sabey of the Hamilton club in Open Glider.

In Open Rubber, Stan Fairless won easily with a model

Photographs from the Russian magazine Wings of the Fatherland and the Czechoslovakian magazine Modelair show top USSR F1C flyer Eugene Verbitsky with his latest model BE-37, which again uses thin dural skinned flying surfaces. The most interesting feature however is the folding propeller, hinged at the root just outside the spinner to reduce drag during the glide. Eugene will again be a top contender for the World title at the Californian Champs in October



Model	Type 1	Type 2	Light Model	Developed Model	Indoor F1D
Wing area A in.	250	310	310	608	195
Motor WR oz	6.0	4.5	3.5	4.0	0.048
Airframe oz	3.5	3.75	2.25	4.76	0.036
AUW W oz	9.5	8.25	5.75	8.76	0.084
Loading W/A	0.038	0.027	0.019	0.014	0.00043
Ratio WR/W	0.632	0.545	0.609	0.457	0.571
Potential D/F	3.240	3.344	4.475	3.805	27.15
Factor F	126	126	126	158	87
Duration D min sec	6:46	7:00	9:22	10:00	40:00
Flying Speed ft/sec	17	14	12	10	2

he designed 30 years ago, a copy of which he flew in the Wakefield trials at Fairlop in 1949! His first flight was spoiled somewhat by an under elevated glide caused by moving the wing back to cope with the windy conditions. Perhaps the older reader might remember such practices! His second was an easy max and this proved sufficient after John Anderson and Alan Jack each broke their aeroplanes.

In Combined Mini, Phil Moate won by a good margin but might have been pushed hard if Dave Edwards had not lost his model with two flights remaining.

Open Power was something of a non-event with only two entrants. Nevertheless, George Blair of the Edinburgh Club put in three steady flights with a JA power model to win.

HLG proved to be the hardest fought competition. Alan Jack won but young Dave Cant (last year's Scottish Nationals HLG winner) was unlucky to only really sort his model out towards the end of the contest.

Let us hope we strike it fourth time lucky with the weather for our next date - October 21st for the North Eastern Area Rally.

RESULTS: Combined FAI: C. Plant (Darlington) 10:05, 2. A. G. Jack (Tynemouth) 8:24, 3. P. Moate (Tynemouth) 6:07. **Open Glider:** 1. C. Plant (Darlington) 6:12, 2. R. Sabey (Hamilton) 5:25, 3. A. G. Jack (Tynemouth) 5:00. **Open Power:** 1. G. Blair (Edinburgh) 4:44, 2. C. Plant (Darlington) 2:21. **Combined Mini:** 1. P. Moate (Tynemouth) 7:36, 2. J. Anderson (Tynemouth) 5:06, 3. D. Edwards (Darlington) 5:05. **Open Rubber:** 1. S. Fairless (Tynemouth) 4:18, 2. A. G. Jack (Tynemouth) 3:24, 3. J. Anderson (Tynemouth) 2:06. **HLG:** A. G. Jack (Tynemouth) 4:02, 2. C. Edwards (Darlington) 3:15, 3. D. Cant (Edinburgh) 3:00.



ST ALBANS' GALA – April 29th

Had this event been run in similar conditions ten years ago and at Chobham Common, as was the fashion in those days, the distribution of entries and consequently the results would have been vastly different - even though some of the same names may have filtered to the top! Such a breeze on Chobham would have had us sheltering Coupes, A1s and JA models in the boxes for fear of off pattern and wallowing flights in the turbulence. The entry would have plumped for the big open events or the 'heavier' FA1 ones.

Things have changed a great deal. Perhaps the conditions are easier to read and the turbulence less pronounced over a flat 'drome' than it was over the humps and bumps of Chobham those years ago? Perhaps we have just got better? As it turned out at Bassingbourn on April 29th, and in 10 to 15mph breeze the mini events showed the way for both enthusiasm and standard and, in contrast, only one person completed a full score in open rubber!

John Cooper was most definitely man of the meeting by recording three-threes to take first in Open Glider then going on to also top F1A glider, without any maxes at all, surely an achievement in itself.

If the ten events were individually rather weakly supported at least they gave people a chance to finish trimming models under contest conditions. Peter Carter, for instance, came out with his first Wakefield and managed an encouraging second in F1B flying the model which bore strong Andy Crisp influence. He was topped however by Roy Miller some minute in front.

Events closed at 5:30 and the only flyoff - for Open Power - took place shortly afterwards in weak sunshine. Screen flew promptly with his 'second string' all-orange model that he had used all day, away well and high and was joined in virtually the same air by Ray Moore who flew the furthest but was clocked off OOS still quite high.

So Screen took first place, his second 'score' of the day - as earlier he had DT'd his model through the mouth of the goal on an occupied downwind football pitch. This precision landing happened to coincide with action in the goal mouth, and the goalie was sufficiently confused to miss both the model and the ball at the crucial moment!

RESULTS: Open Power: 1. S. Screen (Birmingham) 9:00+4:03, 2. R. Moore (Biggles) 9:00+3:58, 3. R. Monks (Birmingham) 9:00+ over run. **Open Rubber:** 1. R. Peers (Falcons) 9:00. **Open Glider:** 1. J. Cooper (Biggles) 9:00, 2. P. Bixby (St Albans) 8:10, 3. L. Gray (Falcons) 7:24. **F1C Power:** 1. R. Moore (Biggles) 5:28. **Wakefield (F1B):** 1. R. Miller (Croydon) 12:23, 2. P. Carter (C/M) 11:06, 3. B. Stout (Grantham) 10:17. **F1A:** 1. J. Cooper (Biggles) 11:19, 2. A. Fathers (Biggles) 10:27, 3. J. Baguley (Norwich) 10:17. **JA Power:** 1. D. Hipperson (Croydon) 9:56, 2. E. Vye (Market Harborough) 9:25, 3. R. Peers (Falcons) 9:12. **Coupe d'hiver:** 1. T. Gray (St Albans) 9:25, 2. J. O'Donnell (Whitfield) 8:38, 3. P. Bixby (St Albans) 8:08. **A1:** 1. J. O'Donnell (Whitfield) 10:00, 2. M. Cowley (Biggles) 9:16, 3. J. Bailey (Biggles) 9:07. **HLG:** 1. P. Davies (Richmond) 4:08, 2. M. Page (Peterborough) 3:15, 3. A. Crisp (Biggles) 3:02.

SMAE 3rd Area Centralised, 6.5.79

F1B Wakefield Weston Cup: 1. M. Evatt (Biggles) 15:00+6:50, 2. D. Greaves (Birmingham) 15:00+5:18, 3. I. Keynes (Croydon) 15:00+4:17, 4. M. Howick (East Grinstead) 15:00+2:51, 5. R. Miller (Northwood, 15:00+2:18. **Open Power - White Cup:** 1. J. West (Brighton) 9:00-8:05, 2. D. Pererall (St Albans) 9:00+6:35, 3. R. Cummins Bristol and West) 9:00+5:50, 4. R. Monks (Birmingham) 9:00+5:01, 5. P. Bond (Anglia) 9:00+4:56. **Open Glider:** M. Gilmore (Grantham) 9:00+9:04, 2. G. Bunney (S. Bristol) 9:00+8:20, 3. P. Ball (Grantham) 9:00+7:42, 4. B. Baines (RAFMAA) 9:00+6:42, 5. M. Stones (Louth) 9:00+6:20. **Plugge Totals:** 1. Biggles 756, 2. St Albans 603, 3. Croydon 599, 4. B and W 510, 5. Birmingham 443.

Glider Towing

By John Cooper

CIRCLE TOWING

The first essential before trying circle towing is to have a model that is trimmed for straight tow and glide. I therefore find that the easiest way to trim the model is to fit a straight tow hook to the model, trim it out for both straight tow and glide and then fit the circle towhook. This is far easier than starting off with a circle towhook, since movement of the hook position (to give a good straight tow as described last month) usually alters all the rudder settings on a circle tow model, requiring alterations to the rudder line length, all of which is rather difficult to achieve successfully on the usual cold, wet and windy flying field.

There are two basic forms of circle towing, the Russian spring loaded pivoted hook and the French offset hook with impulse release, plus a combined system, the Elton Drew Maxaid hook. All three systems have been described thoroughly in past *Aeromodeller* articles and further detailed description of each system would appear unnecessary. Having tried all three systems in the past I personally prefer the Russian style hook. The following therefore applies particularly to this style of hook but the comments will still generally be relevant to all types of circle towhook.

Before describing how to trim the model, a few comments on my hook system would appear to be appropriate. As previously mentioned the hook is basically similar to the Russian system but has one fundamental difference in that all the rudder adjustments, except the catapult launch setting, are made at the rudder end of the model rather than at the hook end. I

feel that this gives far more positive rudder settings, which must aid the model's consistency.

The basic construction of my towhook and its associated components is shown in *Figure 5* and should be self explanatory. Although the construction looks complicated, I make the hooks using hand tools only and the complete system takes only a few hours to make and install. The only critical items in the operation are that the moveable glide turn arm spring should be stronger than the rudder torsion bar spring and that the rudder horn and attached spring are the right size and strength. A bit of experimentation with this spring length and strength may be necessary to get the system to function correctly. For a source of springs try a good old fashioned hardware store and ask for Terry's tension springs (or compression springs for the hook itself) alternatively try typewriter repair shops, or wind your own from 30swg single strand control line wire or other thin gauge piano wire.

Set the system up by installing the unlatched hook in the model, with the hook held in the forward position i.e. the catapult launch mode, and then adjust the rudder line length such that the rudder is positioned midway between the straight tow and the glide settings. All the other settings should then be correct.

If you use a hook with an adjustable unlatch tension, set the tension at about 3lb for initial flights, a spring balance can be handy here, until the correct rudder setting for the catapult launch is found. If the unlatch tension isn't variable, take great care on the first few releases, since the model will be flying very fast when the unlatch tension is achieved.

Start the trimming by ensuring that the catapult rudder setting is roughly correct; this will give you great confidence should you have to do an emergency release



John has been a member of four consecutive British Glider teams (a record) and will again represent his Country in October, flying in California His Pink Elephant glider was our free plan No G1366 in May issue and this month he concludes by explaining circle tow techniques

when trying to circle. Simply tow the model up without attempting to circle, and accelerate the model by running rapidly into wind when at about 2/3 full height, adjust this rudder setting until the model peels off gently into its glide turn as the latch releases. *Figure 6*

The next stage is the first circle which is always the hardest. Keeping 30 or 40 feet of line on the winch drum, tow the model gently until it is above you or just ahead of you. If the line starts to go slack before the model reaches you, either run a little faster or wind in some more tow line, which will ensure that the rudder stays in the straight tow position. When the model is in front of you, let the line go slack and run downwind, paying out the spare line from the winch as you go, ensuring that the line remains slack. Try to watch the model as you go downwind and try not to let the line tangle in the undergrowth that obstructs the average flying field.

The model should have started to turn as soon as the line went slack and should do a fairly tight circuit, such that as it comes into wind again you are just

Fig. 5 TOWHOOK

LATCH RELEASE TENSION FOR AN A.2 GLIDER IS APPROX. 6 1/2 LBS.

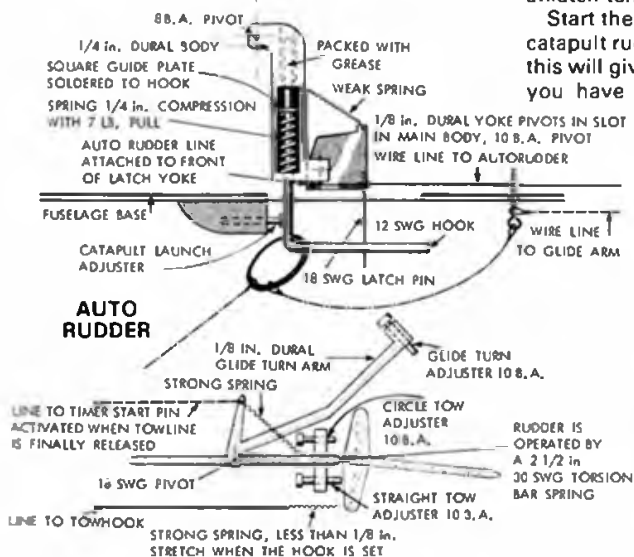


Fig. 6 CATAPULT RELEASE. MODEL ACCELERATED QUICKLY AT TOP OF LINE COMBINED WITH EXTRA RUDDER DEFLECTION TO GIVE CLIMBING TURN WITH HEIGHT GAIN

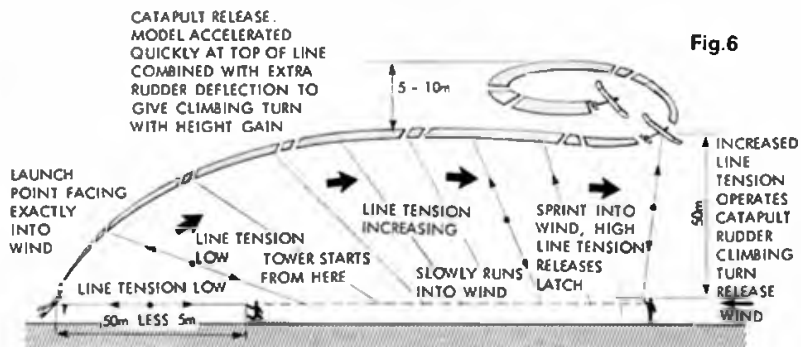
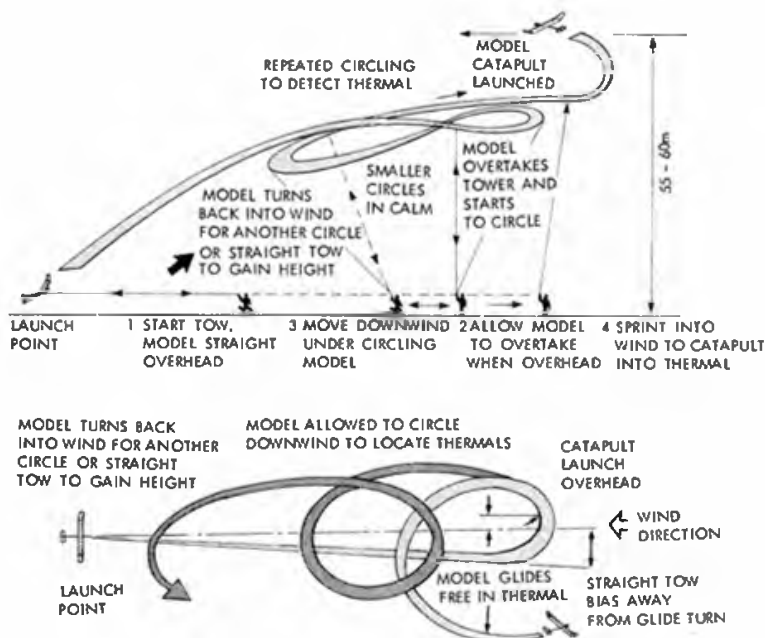


Fig. 6

Fig. 7



upwind of the model. By then running fairly rapidly into wind and increasing towline tension you will release the latch and release the model to glide normally. Alternatively you can gently tow the model into wind again until it goes in front of you, to do further circuits. If you wish to do consecutive circles on tow you should aim to be just downwind of the model as it completes each circuit and by keeping the line slack the model will carry out another circuit. *Figure 7.*

The ideal towing flight pattern for circle tow is when a model begins its first circle with the imaginary centre directly above, or slightly up wind of the tower, *Figure 7.* The model should be towed with light tension on the line until overhead just upwind of the tower where the line tension is then reduced so that the line is slack and the rudder moves to circle. Set off downwind, so that as the model completes its first circuit and comes into wind again, you are still just downwind of the model allowing further circuits. In this way the model is always circling on a slack line and you should be able to judge (by the degree of slackness and altitude) whether the model is in lift or not.

If the model starts circling when it is still down or even side wind (towards the glide turn) of you, as can happen in windy weather or with a badly trimmed model,

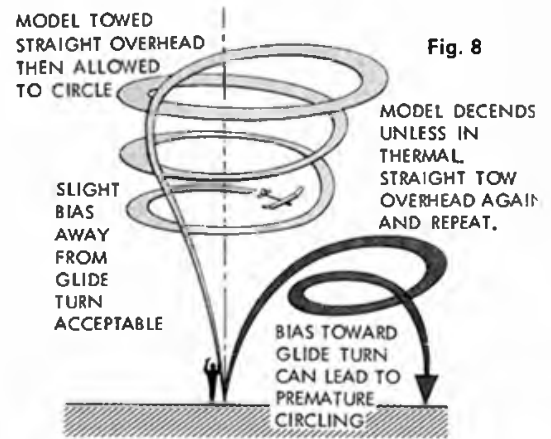
then the model will probably be flying on a tight line all the time, and this makes lift detection very difficult and can easily mean that the model crashes whilst still on tow, as the rudder straightens – very undesirable! *Figure 8.*

In breezy weather one circuit on tow is all that you will be able to achieve at a time, otherwise you will be halfway down the aerodrome when you release and your legs won't last the day. Unless the available lift is very weak, you shouldn't need to do consecutive circles on tow, since after practice you will be able to judge if the lift is present during just one circuit.

The common faults that beset circle tow models are: models that remain resolutely pointing into wind when the line is allowed to go slack refusing to circle, or models that complete the first half of the circle correctly and then head straight off downwind until the towline goes tight where upon the model tries to dig its own grave. Both these symptoms are caused by the same fault or series of faults in the model.

The easiest starting point is to try moving the hook forward by up to 1/8in from the ideal straight tow position. This will give you a slightly weavy straight tow but since the model won't generally be used in windy weather this can be tolerated. As mentioned earlier, moving the hook posi-

Fig. 8

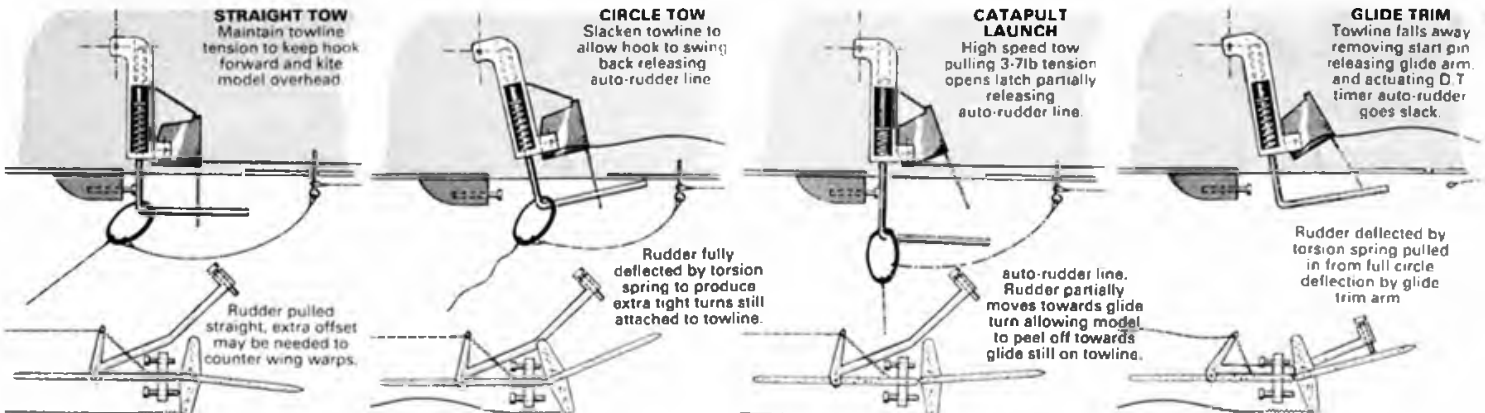


tion is rather a fiddly job since it necessitates moving the hook pivot and replacing (or altering the length of) the line from the hook to rudder.

Hence some of my models are constructed with 1/4in sq of brass shim at the hook bend which can be filed away to move the effective hook position forwards.

If altering the towhook position doesn't work, then the cure involves juggling the wing warps or relative incidences. Again this is where the twin wire wing fixing comes into its own. To make the model begin its circle tow or to keep it circling on tow, you will need to increase the incidence of the inboard wing relative to the outboard wing. If your model has a wing joined as above, you can experiment with different settings on the field. If you can't vary the relative incidences on the field, you will have to return home, steam in some different wing warps and try again. A little too much differential incidence is better than not enough.

With the right amount of differential incidence, the model will tend to turn away from the glide turn direction just before it reaches the top of the line when being towed gently and will tend to turn into the glide direction when being towed rapidly i.e. just before giving a catapult release. If the differential incidence is overdone, the model will try to turn sharply away from the glide turn direction just before going into circle tow, it may even begin to circle the wrong way and once the model has completed its circle on tow it will try to do a second circle, even when the line tension is applied again and the rudder has straightened.





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The correct style of catapult launch is determined by your model design. If you have a model with a fairly thick undercambered section, and a fairly well forward CG (50-55%) i.e. a typical British type of model, then you won't achieve a great height gain with the release, since the model's drag at high speed is so great that the model will tend to come off the top of the line and run out of steam fairly rapidly. This needs a catapult rudder setting nearly as great as the glide setting.

If however you have a Russian style model with a fairly thin, low cambered section and a fairly rearward CG, then the model's drag at high speed is comparatively low and you should be able to gain 20ft or more of altitude if you give a good release. This only requires a very slight rudder deflection upon release but such a model can give problems, since just after release from the line the rudder will go to the glide setting and this, combined with the high speed, can give spiralling problems. This is why the Russians use ailerons or delayed timer operated rudders on their models. Personally I consider that the British style model will give the better performance for the smaller amount of effort that the average modeller is prepared to devote to his sport.

A couple of final tips that although not connected with trimming should assist in successful flying. Never let your towline go tight when the model is heading

downwind away from you since the model will nearly always crash. In such an attitude the rudder will return to the straight position and hence the model won't try to turn out of trouble. The only way to stop the rudder going to the straight position when the model is in such an attitude, is to use a system with the hook pivot directly above the hook position; which gives considerable problems in getting the model to the top of the line, as explained by Martin Dilly in the January 1979 *Aeromodeller Free Flight Scene*.

Use your winch properly to save your legs; by winching in and paying out towline at the correct moments you can gain considerable extra control over the model. If you can't get the model to go overhead, prior to circling, in calm weather, winch

A good winch is very useful for reeling in and paying out line during towing to save unnecessary leg work. Obviously it must be free running, and must not be prone to jamming. Line is paid out and controlled by passing through one hand protected by a leather glove – cheap leather-palmed gardener's gloves are ideal. The other hand holds the winch, with fingers or thumb pressing on the rim of the line drum to act as a brake and prevent over running.



some line in and your model will accelerate forwards. The reduced effective line length won't matter since you are not going to release the model at that time. If the model is heading downwind away from you, pay out some spare line; this certainly saves your feet and may save the model. In about a 5 mph wind you should be able to stand still indefinitely and just control the model using the winch.

I have covered most of the problems that I have encountered during my eight years of glider flying, although I must confess to still having one model which despite frequent trimming sessions still won't tow properly. If anyone knows any other cures not mentioned, please let me know, preferably before I compete at the forthcoming World Championships.

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CLUB NEWS

ONE OF THE MORE fulfilling aspects of model flying is the first try out of a new model. At least we hope the occasion will be fulfilling with the model coming up to the highest expectations. But there can be disappointments, perhaps some elusive bug that defies elimination. Often, though, it's all a question of patience, gently nursing the model through its first tentative hops, ironing out the faults and building up the trim. Sometimes, though it means a 'back to the drawing board' re-appraisal. Not exactly a morale building exercise, but an indicator that model flying can be a tough and demanding business.

Someone who has been at the very apex of this tough and demanding business for an exceedingly long time is John O'Donnell, the famous free flight exponent. We are reminded of this in a report from his Manchester based club, **Whitefield MAC**, wherein it is suggested that Manchester has this twin cause for pride, John and his club, along with its football clubs, grammar schools and a very wet line in precipitation. It is claimed in the report that a club is only as good as its committee. Usually this is true in that the committee also represents the hard core of flying field enthusiasts, but, anyway, it was decided at the AGM, that a small, streamlined committee would best serve the purposes of the club, although the term 'streamlined' might not be all that appropriate in that the average age of the committee members, reduced to four, is around the forty mark. If not a dynamic duo at least a fortified foursome. Tom Jolley is the Chairman/Treasurer, John O'Donnell the Secretary, John Shackleton given his wings to become Flying Officer, and Tony Cordes, who sent in this report, the PRO. Now, I would have thought that the current membership of 30 was a comfortable number for a not too young committee of four to take care of, but it is considered that the club has many splendid amenities that could serve aeromodelling on a wider scale. There is the local authority granted, and SMAE approved, flying site, a regular meeting place for the fortnightly get togethers, and acknowledged experts in a variety of model flying classes who are only too willing to help newcomers and juniors. All this and a monthly newsletter, yet membership is down! Why not remedy this situation you Mancunians? Be you expert or beginner or interested in any aspect of model flying you can contact *John O'Donnell, 36, Marina Drive, Marple, Stockport. Tel 061 427 3711.* Mancunians? I hope a lot of little yellow men don't turn up.

'Seadog' is the newsletter of the **South Eastern Area**. Retired from the editorial chair is Brighton's answer to Alan Mullery, the trophy lifting Trevor Grey. If I tell you that the initials SEADOG stand for South Eastern Area Digest of Gen, you will appreciate that the more ebullient, jocular style of the new editor, Jim Lambert, will not be out of place. Underneath the facetious froth, though, there is a steely determination to get those contributors writing. He is up against the general apathetic attitude towards submitting articles and useful bits and pieces. Odd that this should be the case since model flyers come from better educated sections of our society – some can even spell! The contest diary published in the newsletter looks quite tasty, with even dear old motorway bifurcated Chobham Common opening up its rough heart to a Free Flight Scale Meeting. F/F Scale is one of the toughest challenges in aeromodelling, but I always feel that the F/F Scale model looks more realistic in flight than the controlled type of machine. Interest in F/F scale seems to be on the up and up with 'stand off' events at Odiham on April 8th and the 23rd September. Jim Lambert gives a lively and witty account of the big social event on the Area's calendar: the Dinner and Dance. Held at the Crest Hotel, Crowborough, in March, it attracted a number of luminaries of the model world including notable after dinner speakers, Ron Moulton and Henry J. Nicholls.

Mr N. H. Goodman of the **Coventry & DMAC**, has sent to us the April edition of the club newsletter, 'Wings and Fins'. Somewhat a

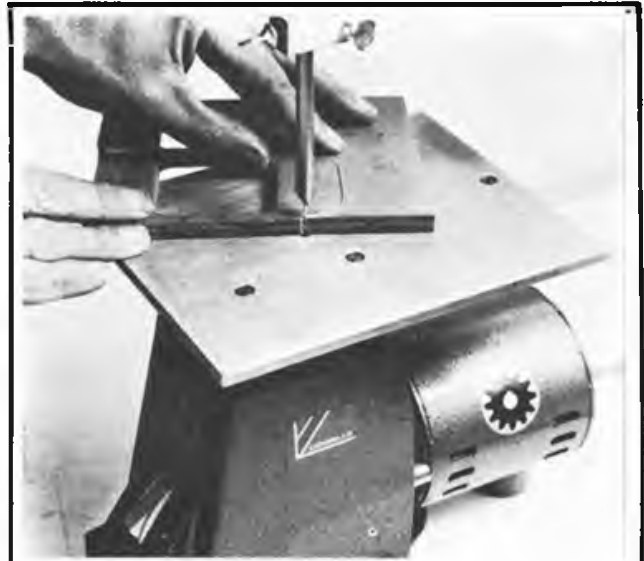


The 7th Annual Aeromodelling competition for Cubs, Scouts and Venture Scouts from North East London attracted 86 entries. Winners of the John Cordes Trophy, donated in memory of a brave air scout, were the 40th Chingford Sea Scouts pictured above with some of their individual entries.

fin content, though. Principal event featured is what is quaintly described as a 'Pre-Thermal' event, held in March. It turned out to be a four cornered Thermal Soaring derby for the Coventry, Avon Vale, Daventry and Malvern SA clubs. At the time we were still knee deep in our winter snows, but the great god Thor was repentant and the day turned out warm and sunny with those 'pre-thermals' very much up to date. Entry was a busy 25, with many top flyers entered. Winner was T. Hughes of the Malvern club with second place taken by the inevitable Al Wisler. *Secretary: N. H. Goodman, 23 Berwyn Way, Stockinfor, Nuneaton, Warks. CV10 8QW.*

Seemingly the absence of the decorative cover to the **Three Kings Aeromodellers' 'Court Circular'** is not a permanent thing. There is to be a slight change in paper size and a competition is under way for a new cover design. Winner to receive 1/2 gallon of fuel - something to draw on! Although things on the patch are still quiet, there are stirrings of activity and the promise of events to come. In late March the first Goodyear League Match of the season got under way. Four teams turned out on a very windy day, battling through to a decision in spite of the tough time had by the pilots. Winners were Miles/Eisner. Booked for July 14th is a display at the Tooting & Balham Carnival weekend, competing for attention with vintage cars, steam locos and horses. There is also the Elmbridge Symposium coming up, for which the club intends to give its usual display in the paddock. Still recalling memories of the days when airline passengers were treated as VIP's, and not suspected terrorists, Group Capt., Tweedie, who operated out of Croydon Airport in the Thirties, was one of the leading lights at the first meeting of the Croydon Airport Preservation Society. Having just taken a trip to Paris I can see the advantages of just walking on to an aircraft without fuss and bother. The overall journey time, too, must have been quicker on the HP42 (Hanno) airliner Group Capt. Tweedie remembers with such affection. *Secretary: D. G. Woods, 133 Ravensbury Road, Southfields, London SW18 4RY.*

The 'Bring a Model' night at the **Hemel Hempstead MFC**, put some doubt on the adequacy of the doorway dimensions as members came staggering through with products of the latest trend in large Scale models. Notable was Nobby Putts' 'Hannibal'. Still more memories of old Croydon, or is it a glider? There was also Phil Selwoods' 'Zlin', a craft I am not familiar with, and, lurking somewhere, a 1/4 scale 'Blackburn'. Somehow the presentation of the Dacorum Limbo Shield was squeezed in among the huge bulks of aircraft. Recipient was Bob Ringsell. *Secretary: T. Angell, 6 Curlew Close, Berkhamsted, Herts.*



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The main news from the **South Bristol MAC**, newsletter is an elucidatory meeting with the Army authorities on the use of Azimghur Barracks. T's were crossed and i's dotted, revealing a situation satisfactory in some respects but not in others. Free flight, for instance, will only be allowed for the agreed number of organised meetings, and the lack of toilet amenities is something that will not encourage the womenfolk to come along. But it was agreed to allow Thermal Soaring on an area just outside the accepted one. *Secretary: Gordon May, 4 Burchells Avenue, Kingswood, Bristol.*

Mr P. O. Burgess, Vice Chairman of the **Witham MAC**, (Essex), sends along a report on the club's recent activities. The long winter has not been conducive to control line flying, or any other flying come to that, but after an enforced hibernation the C/L section of some fourteen flyers are getting into the swing of the new season, competing in Scale, Stunt, Carrier and Speed events. The big event they are looking forward to, for which plans are well in hand, is the two day CLAPA championship to be held at Braintree, Essex. A new trophy is being put up for the event, which also features Novice Stunt, Carriers and C/L Scale. On the Radio side a programme of club contests has been arranged, and this plus proficiency tests and displays should make for a fulsome season. During the winter snows a model was seen fitted with skis. A good photography opportunity missed here, for a shot of a ski take off would have been the picture of the year. *Secretary: D. R. Harvey, 116 Rickstones Road, Witham, Essex.*

We are still not sure what came first, the chicken or the egg, but at least the editorial in the **Northern Area News** convinces us that the model came before the full size craft, citing the Wright Brothers, Sir George Caley and even Leonardo De Vinci. Apropos to this I feel that the model movement must retain a volition of its own, particularly in design, if it is to have any true raison d' exis-

CAPTION CONTEST

Another year's subscription to *Aeromodeller* goes to the reader who in our opinion supplies the funniest caption to the photograph below. Send your entries to *Aeromodeller*, PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE. Results to be announced in the September issue.



tance, and not be just a toy reflection of full size aviation. It is not often that our meetings coincide with that point on the Beaufort wind scale that reads 'impossible', but the Morley club chose just such a day for its Mini Meeting at Baildon in early March. Wind is the bugbear of any meeting, but particularly the Mini meeting when held on a small field. In view of the increasing performance of the Coupe's, Half A's etc., it is doubtful that a 'keep it on the island' policy is possible on anything but a quite substantially sized field. Perhaps a new batch of specifications is called for.

Writing in the **Leicester MAC's** Bulletin, Roger Quilter upholds control line flying as still a viable and pleasurable sport. C/L flying has come a long way since the West Essex boys got the crowds flocking at Fairlop with their stunting 'Box-cars', or has it? The pirouetting is in much the same anti-clockwise direction, and the contemplation of the port side of the model on similar lines (an opportunity here for meditators to display their mantras), but there are certain technical advances like the third, throttle line and the rather belt and braces idea of radio control to operate the flapdoodlery. A reminder here, too, that you can fly C/L in the local parks, at least in the Leicester area, although, obviously, you would have to take the greatest care to ensure public safety. *Secretary: P. Toyne, 1 Sherrard Drive, Sibley, Loughborough, Leics LE12 7SG.*

The magazine of the **Anglia MFC**, 'High Flyin' always makes for a good read, covering a wide range of Radio activities. Unfortunately, there has been no write up of late of the usually successful activities of the lively free flight section. *Secretary: C. J. Goodley, Chase Farm, Woodham Mortimer, Maldon, Essex.*

Keep those reports rolling in and don't forget the black and white photo's.

Clubman



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The Caption Challenge in May *Aeromodeller* certainly appears to have snookered the majority of our readers. It appears the funnier the original picture, the harder it is to write a caption. However, lots of readers were obviously *scouting* around for a solution and quite a few were on *cue* for this month's universal caption "BEAUFIGHTER INTO TOP POC-KET", congratulations to the many who sent it in. Wal Cordwell was runner up with "FIRST POT THE RED BARON THEN FOLLOW WITH A BLACK WIDOW" and H. Newberg, Southampton asked "AREN'T YOU SUPPOSED TO PLAY THIS GAME WITH BALLS", but the most concise entry, also from J. Daniel was "DIB DIB DIB BANG!"

The only question that remains unanswered is what were those four Boy Scouts doing with a fleet of aircraft in such an unlikely location? Well, Waddington Playing Card Company are marketing a set of Star Trump cards featuring WWII aircraft, and these models were used as subjects for their artists. When their job was complete, the whole fleet was handed over to the 36th Barnsley Cub Scout group, the local *pack* to help raise funds. Surprised you didn't realise that from the photo.

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Mon-Fri 9.30am-6pm. Sat 9.00-5pm

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MILL HILL Tel. 01-959 2877
H. A. BLUNT & SONS LTD. ★
133 THE BROADWAY
NW7 4RN
Open: 9am-6.30pm Mon-Fri
9am-6pm Sat

WEMBLEY Tel. 01-902 4823
WALLY KILMISTER LTD
6 & 7 NEED PARADE
Mon-Sat 9.00-5.30
Closed Wednesday

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

PRESTON Tel. 51243
PRESTON MODEL CENTRE ★
LIMITED
(Opposite Polytech.)
2 Fyde Road
Open: 9.30am-6pm Mon-Sat

LONDON SOUTH

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

NORFOLK

KINGS LYNN Tel. 63164
BARNEY'S MODEL SHOP
SOUTH EVERARD STREET
Open 9am-6pm

KENT

BROMLEY Tel. 01-460 0818
AVICRAFT LIMITED ★
15 CHATTERTON ROAD
Open: 10am-6pm
(not closed for lunch)
except Wed 10am-1pm

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

LONDON Tel. 01-703 4562
MODEL AIRCRAFT SUPPLIES ★
LTD
207 Camberwell Road, SE5
Open: Mon-Sat 10am-6pm.
Fri 10am-7.30pm.
Closed all day Thursday

NORWICH Tel. 0603 42515
GALAXY MODELS ★
88 CATTON GROVE ROAD
Open 6 days a week

NORTHANTS

NORTHAMPTON Tel. 31223
THE MODEL SHOP ★
230 WELLINGBOROUGH ROAD
Open 9am-6pm. Half day Thurs

NORTHAMPTON Tel. 35718
STAGG MODELS ★
20 DERNGATE.
Open 9am-5.30pm
Early closing 1pm Thursday

NORTHAMPTON Tel. 27726
TAYLOR & McKENNA LTD
41-43 PRINCES WALK ★
GROSVENOR CENTRE
Mon-Thurs 9am-5.30pm
Fri Sat 9am-6pm

NORTHUMBERLAND

NEWCASTLE UPON TYNE Tel. 22016
THE MODEL SHOP ★
18 BLENNHEIM STREET
Mon-Fri 9am-5.30pm. Sat 9am-6pm

NOTTINGHAMSHIRE

NOTTINGHAM Tel. 204040
M A CHAPMAN MODELS
18 MANSFIELD ROAD
DAYBROOK SQUARE
Open Mon-Sat 9.30am-6pm

NOTTINGHAM Tel. 50273
GEE DEE MODELS LTD ★
19-21 HEATHCOTE ST.
OFF GOOSEGATE
Open 9.30am-5.30pm.
Early closing Thurs

SUTTON-IN-ASHFIELD Tel. Mansfield 58157
MODELLERS CORNER ★
146 OUTRAM STREET
Open Mon-Fri 9am-8pm
Sat 9am-6pm
Half day Wed (1pm)

WORKSOP Tel. (0909) 2855
RUSSELL MODELS ★
MODEL CENTRE, RYTON STREET
Open Mon-Sat 0930-1730
Thursday 0930-1300

OXFORDSHIRE

ABINGDON Tel. 21927
F KNIGHT & SON ★
44 BATH STREET
Open 8.30am-1pm-2pm-5.30pm
Late night Fri 6pm
Closed all day Thurs

OXFORD Tel. 42407
HOWES MODEL SHOP ★
9-10 BROAD STREET
Open 8.45am-5.30pm 6 day week

RUTLAND

OAKHAM Tel. (0572) 56100
RUTLAND SCALE
MODEL CENTRE ★
11 Mill Street.
Open 10am-5pm Mon-Fri,
9am-5pm Sat, 10am-4pm Sun
Closed all day Thurs

SCOTLAND

GLASGOW Tel. 041 632 8326
RIDDEL BROS ★
61 MOUNT ANNAN DRIVE
Open 9am-6pm. Closed Tuesdays

PAISLEY Tel. 041-840 1381
DUNNS MODELS ★
26 GLASGOW ROAD
Mon-Sat 9.00-5.30
Tuesdays Closed

PERTH Tel. 24540
DUNNS MODELS ★
29 SCOTT STREET
Mon-Sat 9.00-5.30
Wednesday Closed

STAFFORDSHIRE

BURTON-ON-TRENT Tel. 64240
J & N MODELS
22 DERBY STREET
Open 9am-5.30pm Closed Wed

STAFFORD Tel. 3420
JOHN W. BAGNALL LTD. ★
18 SALTER STREET
9am-5.30pm. Closed all day Wed

STOKE-ON-TRENT Tel. 263574
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9am-5.30pm. Closed all day Thurs

WOLVERHAMPTON Tel. 26709
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MODELS & HOBBIES ★
BELL ST. MANDERS CENTRE
9am-5.30pm Mon-Sat.
Early closing Thursday

SUFFOLK

IPSWICH Tel. 51195
BOWMANS OF IPSWICH ★
37-39 UPPER ORWELL STREET
Open 9am-5.30pm Mon-Sat
Early closing Wed

IPSWICH Tel. 79279
GALAXY MODELS ★
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SURREY

ADDLESTONE Tel. Weybridge 45440
ADDLESTONE MODELS LTD ★
63 STATION ROAD
Open 9am-6pm
Closed all day Wednesday
Late night Friday 6.30pm

HORLEY Tel. 2412
HORLEY MODELS
91 VICTORIA ROAD
9.15am-5.30pm
Closed Wed

KINGSTON ON THAMES Tel. 01-546 4488
MICK CHARLES MODELS ★
180 LONDON ROAD
Open Mon, Tues, Thurs, Sat
9.30am-6.30pm
Wed 9.30am-1pm, Fri 9.30am-9pm

WOKING Tel. 66493
WOKING MODELS ★
9 GOLDSWORTH ROAD
Open 9am-6pm Mon-Sat
Closed Wed afternoon

SUSSEX

BRIGHTON Tel. 418225
HARRY BROOKS ★
15 VICTORIA ROAD, PORTSLADE
Open every day except Sun
8.30am-5.45pm (no half day)

CRAWLEY Tel. 21921
HEATHER CRAFT ★
60 HIGH STREET
9am-5.30pm Mon-Sat.
Half day Wednesday

EAST GRINSTEAD Tel. 21750
SOUTH EASTERN MODELS
5 THE PARADE
LONDON ROAD, FELBRIDGE
Open: Mon-Sat 9.30am-5.30pm
Closed Wednesdays

WORTHING Tel. 207525
SUSSEX MODEL CENTRE ★
10 TEVILLE GATE
9am-5.30pm. Open six days a week.
Monday to Saturday

WALES

CARDIFF Tel. 29065
BUD MORGAN ★
22 CASTLE ARCADE
SOUTH GLAMORGAN
CF1 2BW
9am-5.30pm.
Early closing Wed 9am-1pm

CARDIFF Tel. 31367
RYALL & WALTERS RADIO ★
MODELS
34 LLANDAFF ROAD
Open
9am-12.30pm-1.30pm-5.30pm
Monday 8pm. Closed Wed

NEWPORT Tel. 65061
MAKE A MODEL
123 COMMERCIAL STREET
Mon to Sat 9am-5.30pm
Late Friday 8pm

PONTYPOOL Tel. 58070
TREGARON MODELS ★
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GWENT NP4 6BY
Open: Mon 12-7; Tues, Weds
9.30-5.30; Fri 9.30-7.30;
Sat 9.30-5; Closed Thursday

SWANSEA Tel. (0792) 52877
SWANSEA MODELS &
HOBBIES LTD ★
PLYMOUTH STREET
SA1 3QQ
Open: Mon-Sat.
Late night Fri 6pm

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SMALL HEATH
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Early closing Wed 1.30pm

BIRMINGHAM Tel. 021-373 5945
021-373 3535
JIM DAVIS MODELS
311-313 MARSH LANE
ERDINGTON
Mon-Sat 9.30am-6.30pm

COVENTRY Tel. 0203 76409
MODEL CRAFT
61 SPON END
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Sat 9am-5.30pm
Closed Wednesday

SOLIHULL Tel. 021-744 3374
SHIRLEY MODEL SUPPLIES
62 STRATFORD ROAD
SHIRLEY
Open
Mon-Sat 9am-2pm-3pm-6pm
Thurs 9am-8pm

WILTSHIRE

CHIPPENHAM Tel. 2466
CHIPPENHAM MODEL ★
CRAFT LIMITED
65 NEW ROAD
Mon-Fri 9am-5.30pm
Sat 9am-5pm
Wed 9am-1pm

SWINDON Tel. 26878
SWINDON MODEL CENTRE ★
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THEATRE SQUARE
(Next to Wyvern Theatre)
Open daily 9am-5.30pm
Open all day Wednesday

WORCESTERSHIRE

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P & R. MODELS ★
1 SEVERN GROVE
RIFLE RANGE ESTATE
Open: Mon, Tues, Thurs, Fri,
9.45am-5.30pm.
Sat 9am-6pm
Closed all day Wednesday

YORKSHIRE

BARNLEY Tel. 43561
DON VALLEY SPORTS ★
 28 NEW STREET
 Open 9am-5.30pm Mon-Sat
 Closed Thursday

DONCASTER Tel. 27255
EVANS MODEL CENTRE
 D. C. EVANS & CO.
 (HOLDINGS) LTD
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 Open: Mon-Sat 9am-5.30pm
 Closed all day Thursday

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FLYING MODELS ★
 88 CROSSGATES ROAD.
 CROSSGATES
 Mon-Sat 6am-6pm
 Sun 8am-1pm

BRADFORD 8 Tel. 26186
MODEL DROME ★
 182 MANNINGHAM LANE
 9.30am-5.45pm. Closed Wed

DONCASTER Tel. 20767
SOUTH YORKSHIRE ★
MODEL SUPPLIES
 313 BENTLEY RD. BENTLEY
 Open:
 Mon. Weds. Thurs 10am-6pm.
 Tues 10am-1pm. Fri 10am-8pm.
 Sat 9.30am-5.30pm.

OTLEY Tel. 56334
H & S. CLIFF
FLYING MODELS
 57 GAY LANE
 Mon-Sat 6am-6pm

DONCASTER Tel. 62524
B CURTISS & SONS
 40 DUKE STREET
 Open 9am-5.30pm.
 Closed all day Thurs

KEIGHLEY Tel. 65662
AIREDALE MODELS ★
 5 ROYAL ARCADE. LOW STREET
 Open: Mon, Wed, Fri 10am-6pm
 Thurs 10am-7pm. Sat 9am-5.30pm

YORK Tel. 0904 34281
YORK MODEL CENTRE ★
 17 DAVYGATE CENTRE.
 DAVYGATE
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★Shops offering a mail order service are denoted by an asterisk.

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 CO₂ engine
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SHEETS
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A 500 mm span rubber powered model. Extends the modeller's skill into basic wing construction, covering and treating the wing to fly his model within a few hours.

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