

AUGUST 1985

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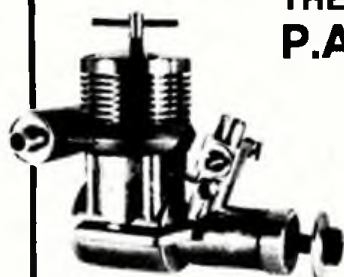
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Group Editor	<i>Bill Burkinshaw</i>
Editor	<i>Peter Freebrey</i>
Sales Executive	<i>Neil Fulcher</i>
Art Editor	<i>Steve Archibald</i>
Graphic Design	<i>Jenny Hine</i>
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Cover:

Above: The latest in glider technology takes to the air, the Schlempp-Hirth "Discus" a highly state of the art competitive glider. Below: They also flew - not everybody wins at the Nationals but all who fly take home memories to last them until next year. . .

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HANGAR DOORS

The Nationals... Europe's biggest

The August Bank Holiday weekend, Aug. 24-26th sees the Control Line, Scale and Radio Control British National Model Flying Championships, - the Nats - at RAF Barkston Heath and RAF Cranwell.

As well as being the biggest model flying event this side of the Atlantic, this dual-venue Championships will be a fine chance for everyone to see World Champions in action at both sites; with entries expected from Steve Smith and Colin Brown, who won last year's team-race event in the USA, plus radio soaring team winners Dave Worrall, Stuart Blanchard and Dave Dyer who triumphed in Australia this Spring.

The Nationals sees hundreds of top flyers in action where their skills count, in competition. It is that extra edge of excitement that makes this a very special event.

A popular innovation in 1984 and continued this year will be demonstrations of vintage models, average 'Sunday flying' by club flyers and of aircraft above the 5kgs. CAA weight limit.

But with over 20 different contests taking place over the three-day weekend there will be enough excitement for every model flyer, plus the chance of seeing Britain's most successful models and their flyers in action.

SMAE members can get a special pass that lets them into both airfields as spectators for just £5.00 for all three days; send your cheque to: *Nats Pass, SMAE, Kimberley House, Vaughan Way, Leicester, LE1 4SE*, to arrive before August 9th.

Non-members and people without the member's pass can spectate for £3.00 per day (£1.50 for under-16s, and free for under-10s); a car and all passengers is £6.00 and mini-buses are £18.00.

There will be a wide range of stands featuring the best of the model aircraft trade. Spectators will get a free souvenir programme at the gate.

Right, little and large! Modern day 'Goodyear Racer' is Andrew Chadwick's heavily modified Cassut 'White Lightning' pictured alongside Airbus. Those seeking inspiration for a Goodyear Racer might like to go to the Tiger Club Airshow at Redhill Aerodrome on 1st Sept to see some Formula One Air Racing...



All SMAE competition licence holders will have received advance information on the Nationals, but write to: *Nats Entries, SMAE, Kimberley House, Vaughan Way, Leicester, LE1 4SE* for entry forms if you too, want to enjoy the flying by competing instead of watching.

Treasure trove

Mr Edward Pelc recently bought a cottage in South West Ayrshire in Scotland from his stepfather, a Mr R B Reid, and stumbled upon an Aladdin's Cave of nostalgia. In the 1930s Mr Reid was a keen model builder and as a 12 year old enthusiast did what some of us do in later years...collected more model aeroplane kits than he could reasonably build. These were stored in the loft of his cottage packed into large cabin trunks.

It has not been established whether he actually made many model aircraft at this time but his skill as a builder and rigger of scale model Clipper and Galleon sailing ships is known.

He also had an interest in steam engines and model railways, doubtless these many pursuits prevented him from devoting himself to the model airplane kits that he had so carefully stored away.

So they stayed in the loft for 50 years...until stepson Eddie Pelc, examining his recently purchased cottage discovered them. Fortunately, Eddie had been 'an aeromodeller in his



Above, just part of the fifty plus vintage kits found in a loft... Edward Pelc just could not believe his eyes when he discovered the contents of his newly purchased cottage... (see Treasure Trove).

youth, so he appreciated the old kits and greatly enjoyed going through this unexpected treasure trove.

Protected from sunlight, the kits are in good condition except for the natural deterioration of rubber bands etc, and needless to say, paints and cements will probably have solidified in the interim.

As readers of our Advertisements will know, many of the kits are now for sale and these include such gems as:-

Appleby (card flying models) Bristol Lucifer and Humming Bird *Comet* (flying scale) Heston Phoenix and Percival Gull *Tower* (flying scale) Blackburn Shark and Westland Lysander *Aeromodels* (flying scale) Hawker Fury and Boulton Paul Defiant

Aeromodels (non-flying scale) Gloster Gauntlet and Sopwith Camel

Skybirds (solid scale) Fokker DVI and Nieuport 17

There is a sprinkling of Peerless, Keelbild, Lindberg, Cleveland and Super Scale Kits. Also to prove that Mr. Reid's interest extended into the 1940s there are the following HJ Towner masterpieces kitted by *Astral*, Short Stirling, Blenheim, Beaufighter and Hampden.

The total number of kits exceeds 50 and only a sample of the types in the various categories has been given.

That was the good news...now for the bad! Only a few weeks ago, when a general clean-up

STOP PRESS

Vintage: The 50th Wakefield Anniversary meeting on 4th August will now probably be held at Barkston Heath - phone 0689 22684 for confirmation.

Scale: Team Trials for 1986 World Champs, C/L and R/C will be on 7th, 8th September. Pre-enter by 1st August, phone 0533 58500 for details.

Nationals Events

Saturday, Aug. 24th

C/L Handicap Speed, F2B Aerobatics, Novice & Junior Aerobatics, Open & CL2 Goodyear, B Team-Race, F2C Team-Race, 1/2A Team-Race, 1/2A Combat, Diesel A Combat, Open & Profile 40 Carrier, R/C Aerobatics, FAI Pylon Race, Club 20, Helicopter, International Stand-Off & Light Scale, Open Thermal Soaring, 100S, Hand-Launched Soaring. (*Soaring events at Cranwell*)

Sunday, Aug. 25th

C/L Handicap Speed, F2B Aerobatics, Novice & Junior Aerobatics, Open & CL2 Goodyear, B Team-Race, F2C Team-Race, 1/2A Team-Race, Diesel A Combat, F2D Combat, Open & Profile 40 Carrier, Scale R/C Power events as Saturday, Open Thermal Soaring, Sportsman Task (100S + 2 Metre), F3B, Electroflight, Hand-Launched Soaring, Thermal Scale Demonstration (*Soaring events at Cranwell*).

Monday, Aug. 26th

C/L events as Sunday, R/C Power events as Sunday, Open Thermal Soaring, Inter-Club Challenge, Home Counties Invitational Challenge, Hand-Launched Soaring.

All three days

F/F Rubber and Engine-powered Scale, + CO₂ on Sunday

Aeromodeller

took place at the cottage all the smelly old magazines were thrown out... these included several years of *Aeromodeller* from and including issue No. 1...

Old Warden Car Boot sale

An innovation at the *Aeromodeller Vintage Days* to be held at Old Warden, Beds. On August 17th and 18th this year will be a "Car Boot Sale". Spaces are available by prior arrangement *only*, as car passes to the special area have to be issued in advance.

Price for a one day pass will be £5, please note that this is payable in advance and does not include the price of admission to the event which will be payable on the day at the gate.

This is not a "Trade" sales area, there is a separate patch set aside for bona-fide model hobby traders, it is solely intended for modellers to swap, sell or generally trade privately with one-another. Send cheques or Postal Orders payable to *A.S.P. Ltd to RCM&E, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS*. Please include a note indicating which day or days that you wish to attend plus a stamped addressed envelope for return of your pass. Please note that anyone trading out of car boots anywhere other than the authorised area or without a pass will be asked to pay an "on-the-day" fee of £10.

A Royal occasion

On May 1st Her Majesty the Queen presented awards to Britain's leading people in aviation sport at the Royal Aero Club's British Aviation Bicentenary Year Annual Awards ceremony at the Banqueting House, Whitehall.

This black tie occasion in the

sumptuous surroundings of the former Whitehall Palace saw twenty-three RAeC medals and national awards presented to honour achievement, gallantry and organisational devotion to every branch of air sport from parachuting to ballooning, and of course the recipients included model flyers. The Queen, patron of the Royal Aero Club, was accompanied by HRH Prince Philip, Duke of Edinburgh, who is the patron of the Society of Model Aeronautical Engineers, so May 1st was a very special day for British model flying.

Winners of an RAeC silver medal were Steve Smith and Colin Brown of the Feltham club, in recognition of their dedication and achievement in control-line team-racing; as well as having been British champions for the past six years, F2C heat and final record holders, national team members in three World and one European Championship, they won the 1984 World Championship for Great Britain last year in the USA. Frequent British R/C aerobatics team member and equally frequent national champion Ken Binks of the Eastbourne club was presented with the national R/C aerobatics trophy.

Both at the presentation and during the subsequent informal 'walkabout' the Queen spent considerable time discussing model flying with the SMAE members there, and was especially interested in the membership increase, while at the same time sharing our concern at the lack of younger flyers entering the sport.

In a letter from the Palace to RAeC chairman Beverley Snook it was stated that Her Majesty "was much struck by the variety of qualities which the recipients had displayed during their



Above, just some of the control line models that put in sterling service at the Sandown Park Model Show on 11th, 12th May. Flying displays of control line and almost all forms of R/C models always draw the crowds... those at Sandown certainly got their money's worth!

various achievements. It was indeed a remarkable cross-section of skills that were rewarded - from the triumph of the United Kingdom model aeroplane team to the gallantry of Mr. Lyall. "Chris Lyall is a parachute instructor who carried out a rescue of a free-fall parachutist who was unconscious after a collision.

Two outings...

The month of August sees two major modelling shows that are worth a visit if you can get to them. In the North - 3rd, 4th August, the *Woodvale International Rally*, held at RAF Woodvale, near Stockport. In the South - 17th, 18th August, the *Model Show at Plumpton Racecourse*, near Brighton.

Both events have almost too many attractions for us to do them justice herel Both have 300mph jet models from Holland, both have hours of first class model flying displays and lots of trade stands.

Woodvale also has the

Barnstormers Flying Circus appearing twice daily, a National Championship Off-Road Meeting for RC cars, a Large Model Fly-in, a Large Scale event with special categories for ducted fans and juniors, Vintage aerobatics, Cycle racing and a Vintage car rally, not to mention all the fun of the fair, Model Railways and a Country Market. Entry is £4.00 per car including all occupants and parking, two day ticket is £7.00. Pedestrians: Adults: £1.50, Children and OAPS; 75p.

Plumpton Racecourse can offer Parachutists, Model Rockets, Helicopter rides, Micro-Light aircraft, Model displays include Aircraft, Boats and Cars. Also DPR Model Competitions, Live steam trains and Traction engines. Both shows offer camping facilities but you had better check how booked up these are before hand. More details from:

Woodvale: John Armstrong, Tel. 051 526 6857

Plumpton: Dave Bishop, Tel. Tatsfield 550.

What's On

July 20-21
SMAE INDOOR NATIONALS
Comps: Saturday - EZB (Houlberg Trophy), 'Heavies' (Index) Sunday - F1D (Aeromodeller Trophy & Euro Team Trials), EZB (Index) Venue: Cardington, Beds. Contact: Laurie Barr, 4 Hasting Close, Bray, Berks. Tel: 0628 25595 SMAE Comp Licence required for Trophy events. 'Heavies' are: Peanut Duration, CO₂ Duration, Pennyplane etc. Names and addresses together with car reg. number - MUST be registered before the event.

July 21 **OLD WARDEN SVAS OPEN DAY**
Venue: Old Warden, Nr Biggleswade. Comps: Vintage CL Scale. Contact: M Staples Tel: 0223 241978. Vintage models, all welcome especially FF and CL.

July 21
SMAE VINTAGE & LARGE MODEL FLY-IN
Venue: Barcombe Nr. Lewes, Sussex. Contact: Norman Couling, 7 The Green Walk, Willingdon, Eastbourne, East Sussex BN22 0RB.

July 28
FACCT OPEN THERMAL COMPETITION
Venue: RAF Weston on the Green, Contact: N Webb, 13 East Street, Fritwell, Nr

Bicester, Oxon OX6 9PX. Also for BARCS League: Entry £2.00: Send SAE and frequencies: SMAE Members ONLY.

August 3-4
WOODVALE INTERNATIONAL RALLY
Venue: RAF Woodvale, Nr Southport. Contact: John Armstrong, 71A Client Avenue, Maghull, Liverpool. Tel: 051-526 6857. Write for details of competitions, entry forms, camping etc.

August 4
DUXFORD MILITARY PAGEANT AND FLYING DISPLAY
Venue: Imperial War Museum Duxford. Tel: 0223 833963. Adults £3.00, Children, OAPS £1.50.

August 11
CARDINGTON INDOOR MEETING
Comps: All in' (Index), SAM Fly-in. Venue: Cardington, Beds. Contact: Laurie Barr, 4 Hasting Close, Bray, Berks. Tel: 0628 25595. Names and addresses together with car reg. number - MUST be registered before the event.

August 11
THREE KINGS CONTROL LINE CARRIER DAY
Comps: Scale and 40 Profile. Venue: Old Croydon Aerodrome. Contact: Derek Bird. Tel: 01-874 6394. Silencers essential.

August 11
SAA CONTROL LINE RACING
Comps: Goodyear, Class 2, 1/2A TR Venue: Newhouse. Contact: R. Thorpe Tel: 06988

5516.

August 17-18
AEROMODELLER VINTAGE WEEKEND
Venue: Old Warden, Nr Biggleswade. Contact: Aeromodeller. Tel: 0442 41221.

August 17-18
PLUMPTON MODEL SHOW
Venue: Plumpton Race Course. Contact: Dave Bishop, DB Sound, 17 The Square, Tatsfield, Kent. 300 mph Dutch Jets, Helicopter rides, Aeroplanes, Cars, Boats, Rockets, Microlights. Live steam trains - Fun for the whole family. Camp or Caravan - £15.00 (if pre booked).

August 24-25
CARDINGTON INDOOR MEETING
August 24, 25, 26
LONDON AREA FREE FLIGHT GALA
August 24-26
SMAE CONTROL LINE, SCALE AND RADIO CONTROL BRITISH NATIONAL CHAMPIONSHIPS

September 1
SMAE 5th AREA FREE FLIGHT EVENT

September 1
MIDLAND AREA FLY FOR FUN RALLY

September 8
OLD WARDEN SVAS SILENT DAY

September 15
CARDINGTON INDOOR MEETING

September 15
DISPLAY TEAM CONTEST

September 15
DUXFORD FLYING DISPLAY

September 15
C/L AEROBATICS - DOUG BLAKE MEMORIAL TROPHY

September 15
SMAE TOWNER TROPHY FOR THERMAL SOARING

September 22
SMAE 8th AREA FREE FLIGHT EVENT

September 22
RAF SWANTON MORLEY INDOOR FLY-FOR-FUN

September 22
SHEFFIELD VINTAGE COMP

September 22
THREE KINGS CONTROL LINE SCALE DAY

September 29
SMAE SOUTHERN GALA

September 29
WHARFEDALE 1000 CLASS 'B' TEAM RACE

September 29
SMAE SOUTH MIDLAND OPEN THERMAL COMPETITION

September 29
CARDINGTON INDOOR MEETING

September 29
ROLLS ROYCE VINTAGE FLY-IN

October 5
SAMS 3rd INDOOR FLYING DAY

October 5
VINTAGE CONTROL LINE RALLY

October 20
DUXFORD FLYING DISPLAY

Photo Prize MODEL NEWS With Fliar Phil

Wood for Winners

100 Sheets of balsa, nearly 200 lengths of strip wood — some prize!

All you have to do is send Fliar Phil your photograph — good quality black and white or colour prints will do, with your name and address plus details of the model, its construction etc on the back. Post your entries to Aeromodeller Photo-Prize Feature, P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead Herts HP2 4SS. Photos will be returned after publication.

Photo 3 Winner

Fliar Phil occasionally receives a photograph which has that imaginative touch of realism about it. A good example is this one of a *Westland 'Widgeon'*. From an 'Elite' plan, powered with an O.S. 60 four stroke, it weighs 6½lbs. The photo comes from Tim Chard of Forest Hill, London. Fliar Phil cannot resist accepting the pilot's invitation to hop into the front seat for a 'quick flip' Tim! However, he will send you this month's balsa wood before he takes-off.



FLIAR PHIL often wonders if there are aerobods (like him) who decorate the walls of their workshop, den etc., with 'PIN-UPS' — photos of very alluring MODELS! Among his collection F.P. has a seductive Spitfire, a glamorous Gladiator and curvaceous Comet. Ah! Maybe you were thinking of the other sort of lovely models! Anyway, this month's selection all deserve to be 'aeromodelling 'pin-ups'.

Photo 2

This fine model of a *Desoutter MK1* was designed and built by Phillip Kent of Cleckheaton, West Yorks. To 1/8th scale, span is 54in. Power HP VT 20 four stroke. SAM four channel R/C. Phillip in his notes mentions that the full size aircraft was part of a National Flying Services fleet, way back in 1930. Not very often modelled by scale buffs your *Desoutter* is most impressive Phillip.



Photo 1

Without doubt the '*Fairey Fox*' was a most elegant aeroplane in its day. It's characteristically fine lines are well displayed in this photo of a model free flight *Fairey 'Fox'*. It is powered by a Mills 1.3cc engine with the exhaust ducted through scale outlets. Fliar Phil is indebted to Mr. C. Newman of Wheatley, Oxon for details of the model — AND for an excellent photograph.





Photo 4

Rubber powered models particularly scale jobs **STILL** have a large following. This *Waco* biplane (from a 1935 *Megow* plan) by Peter Bull, of Kilkenny Ireland is powered by four strands of 1/8th rubber, weighs 7/10th of an ounce *with* prop and motor. A modification, Peter tells F.P. is that the number of ribs have been doubled. A good-looker it is no mean performer either with a wing span of 12in. - turning in flights of 25-30 seconds R.O.G.



Photo 5

Not many aeromodellers would choose the *Heinkel 162* for a scale model - for obvious reasons! However Joe Briffa of 30 Wharton House, St. Saviours Estate Abbey Street London S.E.1. has produced a worthy replica of the Luftwaffe's jet fighter. Wingspan is 44cm. Power : A *Jetex 'Atom 35'*. It glides well, but power flights await Joe obtaining some igniter wick. Can anyone help Joe out - please!



Photo 7

Easily recognized by students of WW1 aircraft as a model of a *Nieuport 28*. This well constructed example comes from Mr. R. Larsen of Rushden Northants. From a *Guillow* kit, span is 18in. with *Telco CO₂* power. All models gain immeasurably by a fine finish. Mr. Larsen achieved his by *Humbrol* enamel sprayed over two coats of thin dope.

A last word! F.P. gets many scale model pics - but where are the 'duration' models (rubber/glow/diesel/CO₂) Just a hint!! See you next month.



Photo 6

Even if you are not sold on biplanes you *must* admit that 'two wingers' do have *something* (besides **TWO** wings of course!) this beautifully built biplane is 'Duchess'

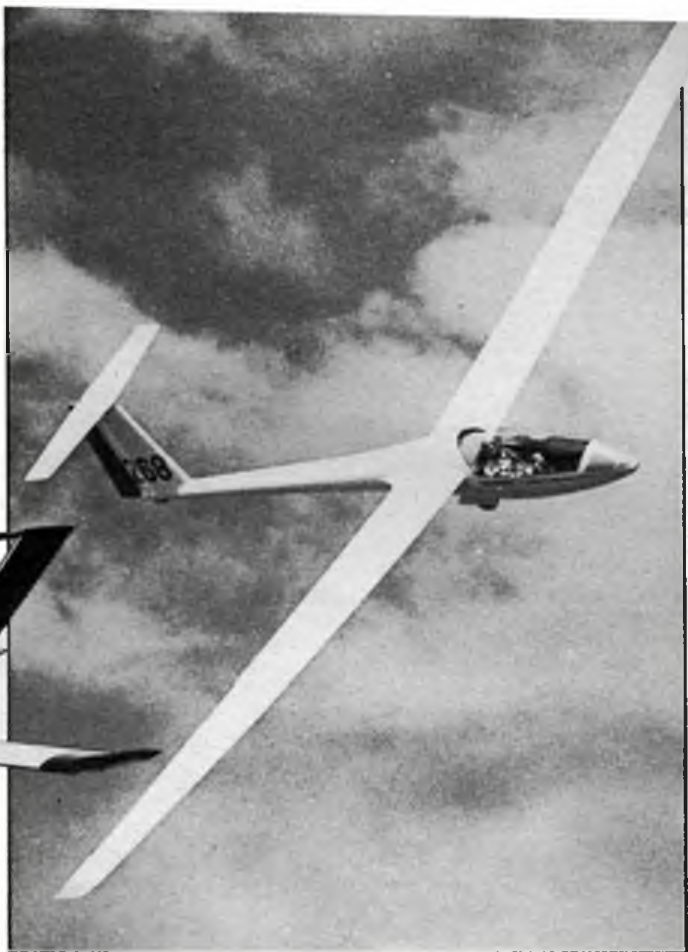
(an *APS* plan). Photographed by Mr. J.E. Ford, of Solihull, West Midlands. Span 36in. tissue covered, *Fox 35* powered. Awaiting its *first flight*, F.P. is sure that all will go well Mr. Ford

Remember folks, this is YOUR feature and Fliar Phil needs YOUR photos to keep it going!

HAVE YOU ever wondered what it would be like to be "up there looking down" rather than on the ground looking up? Why not try gliding to find out? If you have already built and flown a model glider you probably have an inkling of how elegant and pure this form of flying can be.

Soaring with the birds from morning 'til sunset in the rising currents of air with no noise save the rushing of the air over the wings. The landscape unfolding beneath you revealing its hills and valleys, patterns and colours in a way you've never seen before. Gliding offers you a whole new perspective on the world.

Right, Pete Sheard in an LS4, Standard class glider at the Nymphaeum Standard Nationals. Photographed by Steve Tromans. Left, unusual on models but more often seen on full size is the 'V' tail seen here...



More than 10,000 people in the United Kingdom are now taking to the skies in gliders and there are 100 gliding clubs spread all over the country. Many of these clubs are in very picturesque parts of the countryside such as the Grampian Mountains of Scotland, the Black

-Like a bird... Full size gliding~an aeromodeller's sport?

Move up to 1:1 scale — Nikki Campbell looks at the world of full size gliders.

Mountains of Wales, the Cotswolds, the Sussex downs and the Chilterns to mention only a handful.

They are as individual in character as their members and vary from small 'weekends only' clubs, run entirely by the members, to larger 'seven day a week' clubs with a professional staff. All of them have training gliders and club single seaters for members to fly (so no need to buy a glider once having flown solo); but obviously the larger the club the larger and more varied its fleet of gliders.

Although it is a sport for the individual once you are in the air, clearly a team effort is needed on the ground to help launch the gliders. If you go along to a club for a trial flight to see how you might like it you will experience this first hand. Members and

Right, another standard class, photographed at the Booker Nationals in 1982 by Jane Randle.

people visiting, turn up and put their name on the flying list...it is then a matter of waiting their turn to fly.

Whilst waiting, they help retrieve gliders that have landed, pushing them back to the launch point, take turns keeping the flying log and help people launch (either by an aerotow from a tug plane or by a cable towed by a car or wound in by a winch.)

There are no age restrictions for learning to glide, youngsters of 16 can go solo as can

people of 70. It is probably true to say that if you can drive a car or ride a bicycle safely to the airfield, you can learn to glide. It takes an average of 50 take offs and landings to arrive at that magic first solo. Although there are no hard and fast rules about this; a teenager might be ready after 30 flights whereas an older person might need longer.

Rest assured however you will not be sent solo until you are good and ready. You can learn either by joining a club and turning up to fly when it suits you or by going on a gliding holiday course of 2, 5 or 7 days costing on average £25 for 2 days or £200 for 7 days (often including meals and accommodation).

Instructors are all well-qualified; high standards of training and safety are ensured by gliding's governing body, the



British Gliding Association and you will learn in a two-seater with dual controls. Once you have learnt the basic handling of the glider you will want to develop your skills and learn to fly cross-country. To do this you will need to find and use the different types of lift available...

There are the thermals often marked by cumulus clouds, or ridge lift created by wind blowing over a ridge or hill and standing waves created by the wind blowing across mountains. First of all you will have to complete your Bronze badge which consists of two 30 minute soaring flights, flying checks and tests of your knowledge of air law, meteorology and the theory of flight. Then you may wish to go in for your Silver, Gold and Diamond badges which involve making flights of defined duration and

Right, father and son, many times champion Andrew Davis, about to take off for another award winning flight (Photo by Jane Randle). Below, the scene from the air at last years Nationals at Nymptonfield.



distance and making specific gains of height.

As you become more experienced you might want to buy a share in a syndicate owned glider (these are rarely owned individually due to their cost). Although many pilots enjoy and find ample challenge in flying locally or on short cross-country flights in a club glider...for some, the weather and their own skills are not sufficient adversaries. For these adventurous spirits, competitive gliding provides further challenges.

At competition level, gliding can be one of the most demanding of individual sports both physically and mentally. Daily cross-country tasks are set for the week or ten days of the competition, these are often triangular in shape, but may be any shape, and can cover up to 400 to 500 kilometres if the weather is good enough. Average speed over these racing tasks can be as much as 100 m.p.h. - no mean feat over such a distance for several hours.

The very latest high-performance glass-fibre gliders are needed for competition flying at National, International and World Championship level. There are three competition classes of glider: the Standard Class (restricted to 15m wing span and no flaps), the 15m Class (restricted to 15 metre wing span but with flaps) and the Open Class (no restriction on wing span and with flaps.)

The performance of the latest gliders in all classes has increased dramatically in recent years due to a number of factors. First of all the introduction of super light materials such as carbon fibre combined with glass reinforced plastic in their construction enables designers to shape the ideal wing section and achieve a finish as smooth as silk: both impossible with the old wood and

fabric gliders.

Improved wing-section design has meant performance is maintained even when the wings are wet with rain and their ability to carry an average of 400lbs of water ballast in order to vary the wing loading has increased their potential even further.

The resulting performance of, for example, an Open Class 'Nimbus 3' manufactured by Schempp-Hirth of West Germany, is astounding. With a wing span of 24.5 metres (80 feet), water ballast capacity of 530 lbs, a top speed of over 150 m.p.h. and a best glide angle of 1:55 - which means if it were released in still air at 5,500 feet it would glide for 55 miles before touching down - you can see just how advanced these sailplanes have become.

Inside the cockpit of every glider the pilot is aided by standard flight instruments, but in a high-performance glider he will also have a sophisticated electric variometer, sensitive to every movement and change in the air mass outside, to help interpret and

exploit the rising air currents to his best advantage. There may well be a computerised flight director system to assimilate all the information and present it to him in an easily digestible form.

Glider pilots do not fly by their instruments however, they fly by looking out at the horizon and judging their speed and angle of bank, just glancing occasionally at flight indicators to cross check their own assessments. These instruments often have a continuous audio signal facility for just this reason.

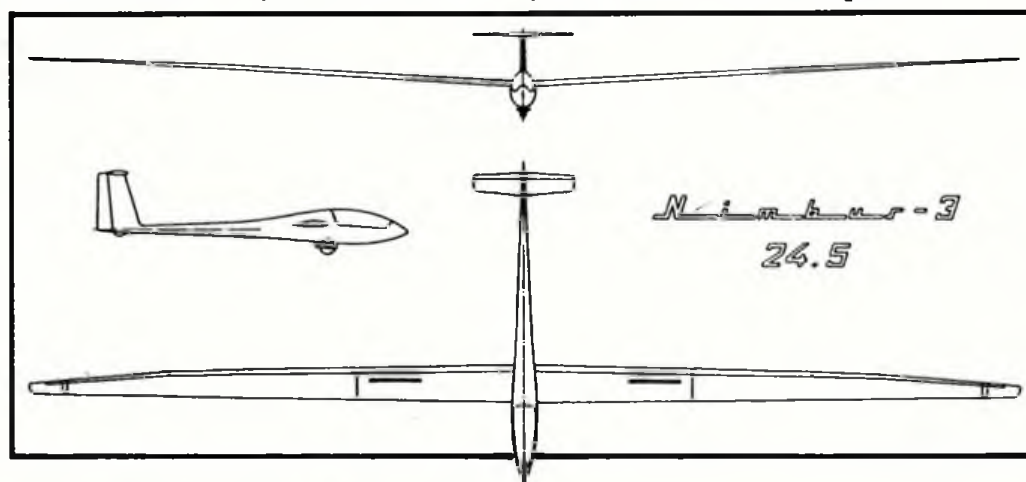
In the end, whether in a top competition flight or a training flight, or an early solo flight; the flying is all down to the pilot's skills and ability to make fine judgements. Whatever stage you have reached there is plenty of challenge to keep the adrenalin flowing and always something more to go for.

If you want to have a go, gliding clubs are happy to welcome you and offer a trial flight (approximately £4 for a winch launch and £12 for an aerotow). Whole families are often involved - often all flying! So take the family for a day, or on a gliding holiday course for an informal relaxed holiday with a difference. If you'd like a list of clubs and any further information, contact the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

If you'd like to go along to a National competition and see the latest gliders and pundits put through their paces, the following events are still to take place:

15 m Class 1985 British National Gliding Championships 13th to 21st July at Booker Gliding Club, Wycombe Air Park, Marlow, Bucks, and: Standard Class 1985 British National Gliding Championships 10th to 18th August at Husbands Bosworth Airfield, Coventry gliding club, Lutterworth, Leicester.

Below, the Nimbus 3/24.5, one of the latest high performance gliders. With 80 foot wing span, an aspect ratio of 35 and a maximum speed in calm air of over 150 mph - a little different from the average A21



ONCE AGAIN, by kind permission of the Officer Commanding, the Free Flight British National Championships were held at RAF Barkston Heath near Ancaster, Lincolnshire over the Whitsun Bank Holiday weekend, May 25-27. This was the sixth year running that the event has been held at Barkston at the end of May.

The contest programme was also very familiar with MINI events on the first day, OPEN events on the second day and FAI events on the final day. Two changes were made from recent previous Nationals. Firstly, the FAI contests were flown over five rounds and not seven thus allowing for a later start on the third morning, 9 am instead of 6 am, which no doubt appealed to those competitors residing in local hotels. Secondly, the introduction of a new event; Slow Open Power for the new Falcons Trophy.

considered insufficiently flexible to cope with present day contest demands.

The planning, co-ordination and organisation required prior to the Nationals is considerable and mainly done by the Free Flight Technical Sub Committee. This year it was extremely well done and all competitors would surely like to thank all those involved. For the first time within recent memory, all flight cards were typed out and available 'on the day' - very neat, very professional. Also this year, all winners including juniors (!) were presented with a bottle of Champagne. Very smart trophies, which were quite an improvement over the more usual SMAE plaques, were presented to those who placed first, second and third in every event. As in the past, prize

Right, the old proverb about 'ill winds' certainly paid off on Saturday for John Cooper with his win in A/1 Glider.



Free-Flight Nationals

RAF Barkston Heath 25-27th May 1985
Weather mixed... Flying good...

givings were held at the end of each day and were presented by the Contest Director of the day...

All in all the SMAE and its Free Flight Technical Sub Committee in particular can be justifiably pleased with their efforts and the final outcome.

The 1985 Free Flight Nationals will perhaps be remembered for the very wide range of weather conditions that occurred

over the three days. The weather varied from thunderstorms with hail to hot sunny conditions and from strong blustery winds to almost flat calm conditions.

The changes in weather seemed to occur every few hours which made the Nationals seem as though they were being perpetually interrupted and held up. To add to this sense of interruption a full size 'Catalina' gave an impromptu short flying display and then made a landing during the third day which held up proceedings for approximately three-quarters of an hour.

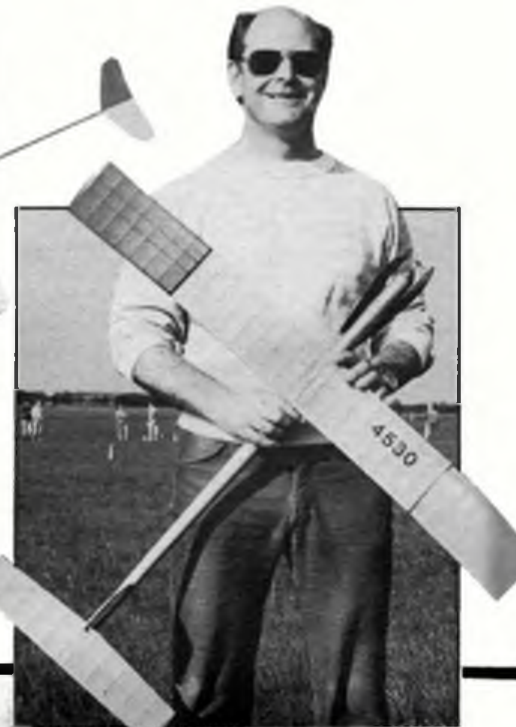
A disappointing aspect of this year's

Above, no not to shade the rubber from the sun! This king size broly has appeared before in Aeromodeller... a small prize will be sent to the first reader writing in and telling us who belongs to the white boots!

Competitors received information about the Nationals in advance via the SMAE Contest Members News. From this document it was noted rather surprisingly that the overall costs for competitors would be reduced compared to last year's event because the camping fees and registration fees were lower. Also the publication contained a series of statements under the name of Barry Wade (SMAE Technical Secretary... Ed) presumably from the SMAE Council empowering a Contest Director to announce prior to an event variations from the current published rules.

This indeed could have far reaching consequences if mismanaged and brings into question, in the extreme, the need for sensible and experienced CDs. Fortunately, no unexpected measures were necessary this year but such a philosophy must surely be considered for future National events and appropriate adjustments or corrections made to the present rules if they are

Right, for the second year running Mike Page has scooped the Chuck Glider (HLG) event at the 'Nats' - five foot nothing and with arms like tree trunks, Mike has hopes to make it three in a row... Far right, 'George' Sharpe of Croydon Club won Coupe d' Hiver by only two seconds from second place man Chiltern from Birmingham.





Above, T. Hall of Walsall Club on form this year following places at the Woodbury Weekend, won 1/2A Power a comfortable minute in front of nearest rival P. Watson.

Nationals was the number of entries. They totalled only 597 which when taking account of the additional new event of Slow Open Power represents a drop of 12% over 1984 and a drop of 29% over 1983. Reasons for this drop off in active interest could be many and varied and are beyond the scope of this report but it must give rise to concern to those involved with the overall interests of free flight model flying. In spite of the weather and in spite of the reduced entry the standard of flying was very high and all the winners had to work hard for their final top placings.

25-30 mph was blowing and there was a low grey cloud base with a hint of drizzle and rain in the air. The direction of the wind was from the control tower towards the right hand edge of the missile site which meant that very few models, if any, landed in this out of bounds area.

Up wind was a row of trees which forms part of a small wood and also a large



Above, Toby Owens launches dad Phil's A1 glider for disastrous fifth flight, that dropped Phil to sixth place. Right, Stafford Screen in characteristic 'javelin launch' pose...

hangar. The combination of these features and the strong wind, produced severe turbulence with the result that many models of all classes ie. A1 Glider, 1/2A Power, Coupe d'Hiver, HLG and CO₂ were written off or severely damaged...

It is a long time since as much carnage occurred in a competition of this importance. It could be argued that the very poor flying conditions experienced to date

frame. With the wind in this direction, one advantage was that flying occurred adjacent to the camp site and so those competitors who were camping could quickly and easily retreat to their temporary homes!

Fortunately, by mid afternoon the weather conditions improved. The wind slowly abated, the cloud base began to disperse and the sun shone, the temperature increased and life became much more pleasant. Fewer models were now being broken and better flight scores started to be recorded. The winning scores in A1 Glider, 1/2A Power and Coupe d'Hiver reflect the difficulty encountered over the day because of the weather conditions and not one full score was recorded in these classes.

One full score however, was recorded by Page to win the HLG event for the second successive year. A fly off was required in this event for second place which was taken by Tipper over third placed man, Hopper.

A fly-off was also required in CO₂ Duration involving Philpott, Hipperson and Ball. This fly-off proved a disappointment for Philpott whose record in CO₂ Duration at the Nationals is very impressive indeed. He won the event in 1981, 1982 and 1984, was second in 1983, but this year his model crashed soon after launch to



Left, the lure of the Nets...two escapees from the control-line circles prove that allrounders still exist! Jim Woodside (right) and Dave Campbell leave their team-racers behind to fly in more relaxing (?) events...



Saturday 25th May Mini day

Competitors arriving for this, the first day of the Nationals must have been apprehensive with the weather conditions that greeted them. A cool blustery wind of

this year, meant that many models were untrimmed for this years Nationals.

During this period of the first day the most successful flying was done by kites which were happily weaving and flapping in the wind. Another successful flight was made by a frame tent complete with its tubular

put him down to third place. The winner turned out to be Ball even though his model did not appear to climb as well as Hipperson's.

The A1 Glider winner was Cooper who dropped only one of his five flights. Cooper deserved this win having placed second in 1983 and 1984 but he had to wait late in the day for confirmation of this result since Owens with four max's then dropped his fifth flight very badly, scoring only 27 seconds. Cuthbert, the winner in 1982 placed second again, only dropping one flight and Oldfield was third.

The 1/2A winner was Hall whose consistent flying resulted in him dropping only 23 seconds over the five flights - yet he only scored one max. He was well ahead of second placed Watson and third placed Chiltern. 1/2A Power seemed to suffer most

from the prevailing conditions and only half the entries eventually flew.

The Coup d'Hiver event was won by Sharpe closely followed by Chiltern and Ferer. The very good performance by junior member Francis put him in to fourth place.

Mini events are often considered easy compared to their larger counterparts but in weather conditions such as those at this years Nationals when a two minute flight regularly was off the airfield and five flights are required in each event then it is hard work and the winners deserve every credit. Those who fly in more than one event deserve even more admiration.

this report giving a blow-by-blow account of how individuals reached the fly-offs. Fly-offs were eventually required in all events except Tailless and the Womens' Cup. What perhaps makes more interesting reading are those who did not make the fly-off including Cordes in glider, and Carter and Sharpe in rubber.

The hot calm weather continued until approximately 2pm when the skies closed in, the rains came, severe at times for the next three hours. Fortunately the weather cleared to produce good conditions for the exciting fly-offs.

Fly-offs were scheduled to commence at



Above, Russell Peers gets his motor in tune but this time could only manage fifth place in 1/2A Power.



Left, Tom Smith launches 'Super Nig Nog' for second flight in Open Power. The Smith family, flying identical models won top three places after a fly-off.

Below, the strain is taken... as Bernard Aslett loads on the turns before taking second place in Open Rubber with a fly-off time of over eight minutes.



Below, very short nose moment glider seen in Open Glider belongs to Collin Sheppard - last year's winner of FAI Glider event.



Sunday 26th May Open day

Those who were camping had the pleasure of a super outdoor breakfast. Following a heavy thunderstorm during the evening the dawn broke warm and sunny with clear skies and very little wind. Summer had arrived in 1985, following the extension of winter going back to last October!

The Open events therefore got off to a very good start. Max's-a-plenty were recorded in all classes, and it is really quite pointless in

6.30pm and because of the number required, continued until after 8pm. First was Open Glider with 23 competitors. Several started towing at the commencement of the fly-off period including the eventual winner, Jack. He circled up-wind of the crowd for most of the fly-off period and launched into what immediately appeared useful air to record a score of 4:41. Several fliers down-wind of Jack did not react quickly enough to take advantage of the apparently only useful air in this fly-off period. Second place went to Bartle more than a minute behind Jack and



Above, Richard Staines of Grantham Club didn't manage too well in tailless but made up for this by winning FAI Glider next day.

third place was taken by Owens.

Next to fly-off was Open Rubber with 26 competitors. Like the glider fly-off earlier most models were timed to the ground and two outstanding flights were made by first placed Wells with 8:19 and second placed Aslett with 8:08. Third placed Ferer scored



Left, Steve Philpott cools (freezes?) his tank prior to filling just before the fly-off in CO₂...the event was won by Phil Ball with model seen at the right.



seconds. The Smiths were visibly delighted with their performance.

Slow Open Power had a two way fly-off between Harris and Hickmott. The result could not have been closer with Harris triumphing by a margin of one second! Moorehouse placed third with 8:32.



Above, Bill Dennis (Scale Matters) flying a very un-scale Open Rubber model. Above right, Julian Hopper, launching very consistent Open Power model for another maxi! Below right, Chris Strachan off for another big flight with big OR model. Left, even with such a red-hot launcher Mike Fantham could not find enough thermals in FAI Glider...



The Vintage fly-off was a five way affair won comfortably by Hipperson flying his now familiar 'Lanzo' to a score of 5:28. The next four fliers were separated by only 22 seconds with Chambers placing second and O'Donnell third.

Three junior fliers were required to fly-off for the Frog Junior Trophy. All used rubber models and Ball proved to be the winner, second was Auckland and third Dixon.

Only four ladies entered and flew in the Womens' Cup event. This was won in grand style with a full house by Sue Coy. Second place was taken by Mrs Flynn and third place by Mrs Nash.

It is disappointing that so few competitors were involved with both the Frog Junior and the Womens' Cup events. The Nationals is very much traditionally a family type contest and surely the time has come when some revision of the rules must be made to



The result proved to be quite unique and unlikely to be repeated for many years. The Smith family dominated, T W Smith (Dad) placing third with 6:51, son A T Smith placing second with 6:59 and his other son J K Smith won with 7:31. All three naturally flew the 'Super Nog' and it is claimed that these models climb to 1000 feet in 10

encourage better participation by ladies and juniors. This could be achieved perhaps by abandoning the builder of the model rule even if just for the Nationals and these two events.

The final event settled on this busy second day was **Tailless**, the event being won yet again by J B Poole. What a record he has in this event, winning it in 1982, and 1983, second in 1980 and 1981 and third in 1984. Attiwell placed second and Peers third. The weather had developed by now into a very pleasant evening and many modellers were out trimming and enjoying carefree flying ready for the final day.

Sunday 27th May FAI day

The FAI contests for **F1A** (Glider), **F1B** (Rubber), **F1C** (Power), were flown in rounds commencing at 9.00am. Each round was scheduled for 45 minutes and a

round it had started to rain and the direction of the drift also changed. This resulted in another *hold* while 'Control' and the flight-line were moved.

The second F1A round set at 30 minutes, commenced with now continuous rain, but still fairly calm conditions. Lift was now even more difficult to detect than earlier and at the end of this round only four double maxes had been recorded.

Another *hold* was now necessary because of the 'Catalina' display referred to earlier and the second F1B/F1C round then commenced again set at 30 minutes. It was still raining... Part way through this round the direction of drift again changed and



Above, Pete Buskell launches for final flight in the rain to reach the fly-off in FAI Power.

maximum of three minutes was possible all day. The sequence of flying was F1A for 45 minutes followed by F1B and F1C combined for 45 minutes followed by F1A and so on.

At the start of the first F1A round the weather conditions were fairly good, being dry with a light breeze and reasonable visibility. Lift was difficult to detect which made the conditions excellent for competition glider flying. Unfortunately, half way through the first round mist descended making visibility difficult, but the drift dropped to almost zero. These changes during the round were to lead to drama later in the day.

The misty conditions prevailed into what was scheduled for the first F1B/F1C round resulting in a *hold*. Conditions cleared within half an hour or so and the first F1B/F1C round commenced but in an attempt to make good lost time, the round was reduced to 30 minutes. By the end of the



'Control' and the flight-line were *again* moved but this time part way through the round, and the CD tried to allow for this by increasing the round time to 45 minutes. This procedure created some upset among a minority of flyers but no official protest was made.

Above, eventual winner of FAI Rubber was Dave Greaves with the only full house of 15 minutes. Right, Richard Staines checks his tow line before final flight to win FAI Glider.

At the start of the third F1A round the rain had eased and the direction of drift remained settled. Flying conditions were still difficult and at the end of the round only one full-house score remained.

Flying continued in the sequential rounds without much incident but then at the start of the fifth F1A round the skies opened and very heavy rain swept the field. Many a glider flyer was now wet through to the skin. No full scores were left in glider and at the



Above, winner of the Frog Junior event was Anthony Ball. Three reached the fly off which Anthony won with 4:31.

completion of the round a request for Owens, who many thought had won the event, to report to control was made. Apparently, an official protest had been made earlier in the contest regarding the timing of Owens' first flight. This was upheld by the jury, Owens first flight being disqualified. This left Staines the winner whose consistent flying was rewarded, since he only scored two maximums. In second and third places were Gregorie and Cordes who each dropped only one flight.

The fifth round of the F1B/F1C produced its share of drama. The rain had stopped but it was still damp and visibility was marginal. Pollard who had four maxes to





Left, winner of Open Rubber, Bob Wells, preparing FAI Rubber model held by Jessica Nash who placed third in the Women's Cup. Right, Ron Pollard launches Tony Cordes' FAI Glider for final flight to clinch third place...



date in F1B was well set for his fifth when the model DT'd early putting him right out of the running. In F1C Screen of all people, made one of his rare slips and dropped his fifth flight. However, five F1C flyers produced full scores thus requiring a fly-off.

The winner of the F1B event was Greaves with a full score but second placed man Gaunt was only one second behind, third place went to Howick.

The F1C fly-off provided some-what of an anti-climax. The competitors were aiming at a four minute max, which for most modern day F1C models is well within their performance, yet only one flyer, Johnson, achieved the four minutes to win. Second place went to Harris with the fly-off time of 3:51 and third place to Buskell with 2:54. Drama occurred when it was realised no-one had timed Jack's fly-off flight and it was deemed not possible for him to fly alone in his own slot so his flight was recorded as zero.

The overall National Champions were now determined since all events at the 1985 Nationals were now completed. The deserving winners proved to be Cooper in Glider, Harris in Power and Hipperson in Rubber. The Junior Champion was Ball.

The overall impression of the 1985 National Championships is one of how good they were. They were well planned, well run by the Contest Directors and well competed in. On the Tuesday following the Nationals began a period of hot calm non-stop sunshine, for which the first week in June will be long remembered. Such is the plight of free flight flying...

Below Martin Gregorie - 2nd in FAI Glider - seen here in relaxed pose whilst 'feeling the air' during an extended circle tow.



Results

Coupe d'Hiver

60 Entered 38 Flew
1 F.G. Sharpe
2 M. Chilton
3 G. Ferer
4 M.E. Francis (J)
5 J. Dyer
6 M. Dixon

HJN Trophy

Croydon	9.00
Birmingham	8.58
Leicester	8.50
C.M.	8.27
Vulcans	8.12
Birmingham	8.02

A1 Glider

44 Entered 33 Flew

1 J. Cooper
2 J. Cuthbert
3 S. Oldfield
4 C. Shepherd
5 N. Lee
6 P.A. Owens

British Airways Trophy

Biggles	9.51
Grantham	9.23
Leicester	9.02
Birmingham	8.40
East Grinstead	8.32
Liverpool	8.27

1/2A Power

40 Entered 22 Flew

1 T. Hall
2 P. Watson
3 A. Chilton
4 P.R. Harris
5 B.R. Peers
6 A.R. Wells

Hales Trophy

Walsall	9.37
Birmingham	8.35
Crookham	8.27
Birmingham	8.12
Falcons	7.58
Anglia	7.49

CO₂ Duration

22 Entered 13 Flew

1 P.A. Ball
2 D. Hipperson
3 S.R. Philpott
4 S. Fielding
5 J.B. Pool
6 A.W.J. Tennant

Sparklets Trophy

Grantham	10.00 + 2.19
Grantham	10.00 + 1.52
Biggles	10.00 + 0.05
Morley	8.15
N.Y.F.F.G.	8.03
Timperley	7.45

H.L.G.

24 Entered 20 Flew

1 M. Page
2 J. Tipper
3 J.J. Hopper
4 P.A. Ball
5 D. Edmondson
6 G. Neil

H.L.G. Trophy

Peterborough	5.00
Lee Bees	4.56 + 0.42
Freebird	4.56 + 0.09
Grantham	4.44
C.M.	4.27
Anglia	4.03

Open Rubber

73 Entered 46 Flew

1 A.R. Wells
2 B. Aslett
3 G. Ferer
4 C. Chapman
5 D. Morley
6 D. Hipperson

Model Aircraft Trophy

Anglia	9.00 + 8.19
Cirencester	9.00 + 8.08
Leicester	9.00 + 6.56
Bristol & West	9.00 + 8.32
C.M.	9.00 + 6.31
Grantham	9.00 + 6.27

Open Glider

101 Entered 74 Flew

1 A. Jack
2 D. Bartle
3 P.A. Owens
4 J. Walton
4 J. Cooper
6 M. Gregorie

Thurston Cup

Tynemouth	9.00 + 4.41
N.Y.F.F.G.	9.00 + 3.32
Liverpool	9.00 + 3.18
N.Y.F.F.G.	9.00 + 3.10
Biggles	9.00 + 3.10
Freebird	9.00 + 3.01

Open Power

46 Entered 28 Flew

1 J.K. Smith
2 A.T. Smith
3 T.W. Smith
4 J.J. Hopper
5 B.R. Peers
6 S. Screen

Sir John Shelley Cup

B.A.C.	9.00 + 7.31
B.A.C.	9.00 + 6.59
B.A.C.	9.00 + 6.51
Freebird	9.00 + 6.07
Falcons	9.00 + 6.01
Birmingham	9.00 + 5.57

Tailless

Lady Shelley Cup

11 Entered 7 Flew

1 J.B. Pool	N.Y.F.F.G.	8.35
2 K. Attiwell	Calderdale	8.20
3 B.R. Peers	Falcons	7.54
4 I. Kaynes	Croydon	6.31

Vintage

Jubilee Cup

41 Entered 28 Flew

1 D. Hipperson	Grantham	9.00 + 5.28
2 T. Chambers	Darlington	9.00 + 3.55
3 J. O'Donnell	C.M.	9.00 + 3.40
4 D. Davitt	Leeds	9.00 + 3.37
5 T. Hall	Walsall	9.00 + 3.33
6 I. McDonald	Biggles	8.42

Frog Junior

10 Entered 7 Flew

1 A.D. Ball	Grantham	9.00 + 4.31
2 N. Auckland	N.Y.F.F.G.	9.00 + 2.46
3 N. Dixon	Birmingham	9.00 + 2.10
4 T. Owens	Liverpool	7.23

Frog Junior Trophy

Womens Cup

4 Entered 4 Flew

1 Miss S. Coy	Freebird	9.00
2 Mrs E. Flynn	Liverpool	8.02
3 Mrs J. Nash	Anglia	7.31
4 Mrs B. Tyson	Crookham	7.29

Women's Cup

Slow Open Power

36 Entered 17 Flew

1 P.R. Harris	Birmingham	9.00 + 2.52
2 C. Hickmott	N.Y.F.F.G.	9.00 + 2.51
3 A. Moorhouse	Bristol & West	8.32
4 K. Rowsell	Viking F.F.G.	8.13
5 D. Hipperson	Grantham	7.55
6 C. Plant		7.55

Falcons Trophy

F1A Glider

94 Entered 80 Flew

1 R. Staines	Grantham	14.40
2 M. Gregorie	Freebird	14.32
3 A. Cordes	Birmingham	14.13
4 J. Cooper	Biggles	14.11
5 C. Edge	Crookham	13.59
6 G. Wobeking	Germany	13.58

Ronytube Tube

F1B Rubber

49 Entered 43 Flew

1 D. Greaves	Bristol & West	15.00
2 P. Gaunt	Leeds	14.69
3 M. Howick	East Grinstead	14.47
4 B.G. Martin	Tynemouth	14.34
5 D. Hipperson	Grantham	14.33
6 M.J. Woodhouse	Viking F.F.G.	14.24

Fred Boxall Memorial Trophy

F1C Power

24 Entered 19 Flew

1 R. Johnson	Freebird	15.00 + 4.00
2 P.R. Harris	Birmingham	15.00 + 3.51
3 P.R. Buskell	Crookham	15.00 + 2.54
4 P. Rowledge	C.M.	15.00 + 1.56
5 A. Jack	Tynemouth	15.00 + 0.00
6 R. Collins	Anglia	14.51

Eddie Cosh Memorial Trophy

National Champions

Glider

Rubber

Power

Junior

J. Cooper
D. Hipperson
P.R. Harris
A.D. Ball



GOODYEAR STARTED here in the late 1960's inspired by a series of articles by the late Jim Kloth of the USA in this magazine. It was, as have been all things in control-line, an American invention and it was the AMA rules that the SMAE initially adopted.

Those first few years of Goodyear were fascinating, for no-one was an expert and all sorts of people and equipment could win. The memories flood back of models like 'Shoestrings', 'Jinny', 'Mike Argander Special' and 'Cassut', motors such as *Oliver Major*, *ETA*, *Kosmic* and *PAW* specials.

Some people also come to mind: Ron and

GOODYEAR RACING Mr. D & Ol' Blue '72

Two top class winners, Dave Clarkson explains what's what in Goodyear...

Micky Tribe who showed that dedication and practice with very ordinary equipment could win everything; Gunter Schwarz and Konrad Kaul of W. Germany who showed that Team Race techniques (pressure refueller, multi function valve, glass fibre propeller, *HP 15 D* motor) also worked in Goodyear; Dave Rudd and Richard King who showed that a fast glow motor that restarted well was unbeatable. It was this last pair who set the trend for what happened next in Goodyear.

In the mid 1970's Goodyear became a glow motor event. The G.15 started it, the *Rossi* made it total and the arrival of the 3.5glows finished the job. The result was that new people with new ideas arrived, people like Mike Daly and Graham Howard with their *Rossi* powered 'Ol Blue', Mark Jarvis and Ed Needham with their *OPS 21* powered 'Lil Quickie' and Brian Cunningham and John Green with their *K & B 3.5* powered 'Miss San Bernardino'.

Strong models, strong pilots, gallons of Nitro and cards of plugs became the norm. Quite a change but the fun, variety and challenge already established as an essential part of Goodyear remained, even increased, for the racing became spectacular with boodles of bhp blasting around the sky and motor choice, price and availability, perhaps the best ever. All good things come to an end for the models became too heavy, too fast and too noisy so the SMAE decided upon a major change to the present '2.5 cc diesel only' rules.

If anyone had thought that '2.5 cc diesel only' rules would slow things down and make it easier for newcomers to compete, then time has proved them wrong. During the period of 'glow Goodyear', diesel motor technology had taken giant steps forward thanks to such as Henry Nelson in the USA and the *FMV* team in Holland. Joe Myska's *Rossi 15 D FI* that in the mid 1970's pulled a Goodyear round at about 90 mph re-emerged at 25 mph faster! My own *Rossi FI* that in 1976 set a SMAE Team Race heat record of 4:03 re-appeared in 1983 to set a SMAE Goodyear heat record of 4:00.

Who could have imagined that a *Rossi FI* purchased by Ed Needham gummed and rusted solid after being unused for years, could be reworked to set unofficial UK bests of 3:48 for a heat and 7:50 for a final and win the 1984 Nationals in Goodyear. Quite, amazing, for now the '2.5 cc diesel only' records are very close indeed to those set by the 3.5 cc glows. Who said that Goodyear is boring.

Of course the infusion of diesel technology into Goodyear has made it hard for newcomers. Now, more than ever before, a big technology gap exists between the club field and the racing circle. In an attempt to close that gap last year the SMAE introduced Class 2 Goodyear. The rules for this class do not permit expensive or modified motors and require the models to have external controls and bent-wire undercoats.

They also require the models to be flown using multi-strand lines (which are the commercially available ones). The technology gap is eliminated by these rules and so Class 2 Goodyear has become by far the best event in all of control line racing for the newcomer. The motors are cheap, the models are simple and in the races things happen sufficiently slowly for the inexperienced to correct their mistakes before disaster occurs.

In an attempt to promote the popularity of this class, the 'Ol Blue 72' plan presented here is in Class 2 Goodyear form and I have included some advice concerning motors, fuel and props, advice based upon experience for our 'Ol Blue 72' was second in Class 2 Goodyear at the 1984 Nationals.

'Mr. D' Open Goodyear

I credit the discovery of 'Mr. D' to Tom Millar and John Schofield who found it amongst Tom's comprehensive stock of *Hirsch* three-views. In many ways 'Mr D' is the Goodyear model we have all been searching for, it features:

- 1 a large span (750mm) wing giving easy catching and good glide characteristics.
- 2 a short (500mm) fuselage giving superior strength and rigidity
- 3 a short (100mm) nose giving a satisfactory CG position with today's

light models and heavy motors

- 4 a medium low wing position enabling complete hiding of the shut-off, tank and controls in the 'dirty' air behind the motor
- 5 a relatively large tail conferring excellent flight and control characteristics.

Of particular importance to me in selecting this design are its enormous wing root chord (180mm) and the low wing location, for these together allow a gigantic tank to be recessed into the fuselage without adversely effecting the strength of the fuselage. For Ed and I 'Mr. D' has given impeccable results. At the time of writing it had won every contest in which it had been flown, had set UK unofficial bests, had won the 1984 Nationals and had set the SMAE Goodyear final record. Not bad huh!

'Ol Blue 72' Class 2 Goodyear

I claim no originality for this one either for 'Ol Blue' must be one of the most winning Goodyear designs in existence. The nice thing about the 1972 version shown here (derived from a Charles Meldenhall three-view and checked against *Racing Planes Annual* and *Hirsch* three-views) is that it has squared off tips and a straight taper wing together with a racier canopy profile.

In other words, this version is easier to

Above, with a string of successes to its name 'Mr D' makes a tough, functional Open Goodyear model. Below, tank, engine detail of 'Mr. D' showing advantageous placing of tank due to low wing position.



build and looks better. It also has quite a pedigree being a past holder of both the SMAE heat and final records in Open Goodyear and in 1984 placed in more Class 2 Goodyear finals than any other individual model.

Since the Class 2 Goodyear rules require the tank, bellcrank, pushrod, horn and undercart all to be mounted externally on the model I have adopted the minimum drag approach of putting all of these items on one side of the fuselage and on the 'dirty' side at that, the one with the motor on it.

I think that this approach has some benefit, for our model is one of the quickest Class 2 models around and yet our motor must be one of the worst, for it was swapped by Ed for a tank valve and nothing has been done to it since except for cleaning it and adding a needle valve assembly, a socket headed comp screw and a safety nut.

Whilst on the subject of Class 2 Goodyear motors some words of advice might be appreciated. The SMAE rules are written to make it in effect a PAW 249 only event. The PAW 249 is not a racing motor, rather it is a cheap motor and this means a lot, for a motor built down to a low price means that it cannot have 'cost no importance' design and construction features such as ballraces and advanced metallurgy.

The general experience in Class 2 amongst those who have done some

winning, is that old, loose motors (some would say 'clapped out') give the best airspeed. Using such a motor makes the re-starts even more important for conventional wisdom has it that clapped motors are fast but do not start. Experience has shown one method that gives one or two hit, hot re-starts with a clapped PAW and that is:

- 1 fill the tank against a closed shut off,
- 2 Open the shut-off
- 3 Move the piston to close the exhaust
- 4 slosh exhaust port with fuel
- 5 hit the prop as hard as possible.

This technique means that the exhaust port has to be easily accessible and this favours the selection of the cheaper radially ported DS version of the PAW 249. Using the DS version means that prop selection is important, for the DS does not have the top-end power of the Schnuerle ported 'Contest' version.

We have found the best props to be the glass filled, grey nylon full 7 x 6 dimensioned ones made by Graupner and Taipan at near to full diameter. Not exactly what you would think of as a racing set-up but the PAW is not a racing motor. Into the same bracket goes the fuel formula where we have found that a fuel oil content of at least 25% gives the best consistent airspeed.

It should not be forgotten that whilst modified motors are not permitted, two modifications are compulsory on safety

grounds. These are firstly to replace the 'T' bar comp screw with a socket headed one of the same thread (2BA for a PAW 249, and secondly, to fit a dome headed safety nut in place of the standard prop nut.

Two more modifications are also legal and are of benefit:

Angle the top of the venturi forward (so as to ease finger choking of the motor should this prove necessary) and drill out the venturi to the maximum practical ID., also replace the standard needle valve assembly with the much more robust *Super Tigre* equivalent.

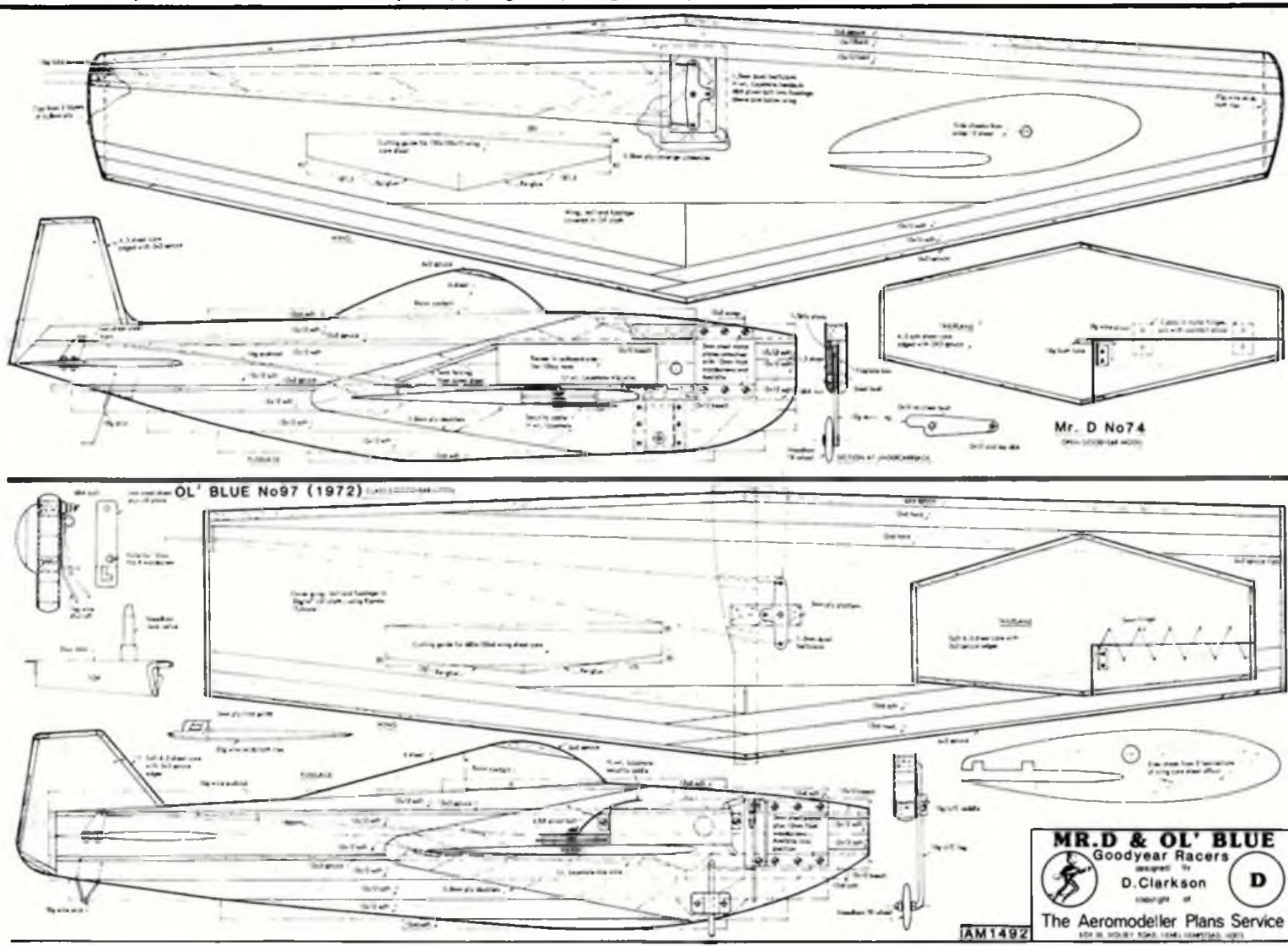
That is it on motor modifications for nothing else is legal. When loose enough and when properly set and using the right fuel and prop any PAW in a good model will give 30 sec/10 laps airspeed. If yours does not, it is you who is at fault...

Construction

I do not intend giving a 'glue this to that' description for the construction of both models should be obvious to anyone not building their first model from plans. In any case building Goodyear models is easy, which is one of the attractions they have for me. However, there are some details of importance...

The fuselage of both models is assembled from soft 12 x 12mm (3 off) and 12 x 6mm (1 off) strip balsa plus 12 x 3mm spruce longerons and 12 x 10mm beech bearers. I

Full size copies of the one quarter scale plan below, will be available for a limited period from Aeromodeler Plans Service, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS. Cost £2.30 plus 50p postage and packing. Please quote plan number AM 1492.



use strip as opposed to sheet balsa not only because it is cheaper this way but also because it is easier to avoid flawed wood and the lengthwise glued joints help alignment and give strength.

The fuselage section is tapered evenly on both sides from the 0.8mm ply doublers to mate neatly with the fin. I cover the wing/fin assembly, the sidecheek and the canopy separately in 30 gm/sq. metre glass cloth using the 'Tufcote' method described below.

'Mr. D' shows an internally mounted, wobbly wheel undercart whilst 'Ol Blue 72' shows an externally mounted bent wire version. The wobbly wheel undercart is *much* superior in drag and ground handling terms but you *have* to use the bent wire type in Class 2.

For a wobbly wheel undercart a soldered tinplate box drilled for the axle bolt and having a 6BA nut 'soldered on' to retain the axle bolt, is epoxied into the fuselage supported by a 1.5mm ply plate. The wheel is attached to a 12 swg *Dural* leg which pivots on a bushed 6BA axle bolt, whose movement is contained by a 3mm sheet rubber piece held in the box by the leg. The cocktail sticks glued through the fuselage immediately each side of the box are *vital*, for these stop the fuselage splitting under excessive landing forces.

Whilst 'Mr. D' is shown using a 10mm sheet wing 'Ol Blue 72' is shown using a thinner 6mm sheet wing. Wing rigidity is vital for the good performance of any model and the first provider of rigidity is thickness. Because of its long span, a 6mm sheet wing is not rigid enough for 'Mr. D', so you have to accept the weight penalty and opt for the 10mm sheet version.

My latest 'Mr. D' has multi-carbon fibre sparred 6mm sheet wing, and despite the carbon fibre spars (thick ones too) it is not stiff enough! A 6mm sheet wing is just about OK for 'Ol Blue 72' because of its moderate (680mm) span and tapered planform.

There is only one way to shape a wing to section and that is by using a razor plane with a *sharp* blade. If you do not own one, get one right now. The tails shown are from light 4.5mm sheet edged with 3 x 3mm spruce strips. Do not omit the spruce edging for these contribute greatly to stiffness.

The 'Ol Blue' tail is shown with elevator hinged the simple but 'raggy' way using a sewn thread hinge. The 'Mr. D' tail uses the clean but involved hinging method of pinned (cocktail sticks) cyano glued *Mylar* strip hinges plus a bushed pivot. This second method is much superior but a sewn hinge is acceptable.

"Mr D" (Open Goodyear) is not only relatively simple to build for a first contest model but has handling qualities second to none...



"Ol Blue 72" (Class 2 Goodyear) with its squared off tips and straight taper wing makes it easy to build - join the winners build one from our plans overleaf...

Mylar strip hinges should be inserted dry into the slotted edges of the tail and elevator, and secured by dripping low viscosity cyano glue onto the wood/*Mylar* junctions - capillary forces will wick the cyano all over the *Mylar* strip.

Ed Needham covers our wings and tails in a press using 30gm/sq. metre glass cloth and epoxy resin. This method gives the best possible results in terms of weight and strength. If you do not have the use of a wing press and an experienced operator then the 'Tufcote' method is an acceptable substitute. The method is as follows:-

- 1 fine sand surface to be covered to final desired profile, section and finish.
- 2 de-dust surface and lay upon it the glass cloth and smooth it down by hand.
- 3 brush one coat of 'Tufcote' through the glass cloth onto the balsa using a small stiff brush.
- 4 Sand off excess glass cloth and lightly sand covered surface. Then de-dust and give second coat of 'Tufcote'.
- 5 Lightly sand smooth second coat of 'Tufcote' then spray lightly with colour using an aerosol can of car paint. When fully cured give final coat of *cold* 'Tufcote' to finish (cold to avoid bubbling paint or transfers).

Whilst on the subject of colouring it should be remembered that the rules require a scale like finish. The generally accepted meaning of this requirement is that the entire model should be coloured, the cockpit should be painted in a contrasting colour, your *SMAE* number should appear in large letters on the upper surface of the outboard wing.

The original plane's racing number (74 for 'Mr. D' and 97 for 'Ol Blue') should appear in

large numbers on the upper surface of the inboard wing towards the tip *and* between the wing and the tail on *both* sides of the fuselage. What colour you use for the model is your choice for it does not have to be as used on the original plane.

I always select a colour of maximum visibility so that Ed and I can see the model easily during races. Looking at cars on a murky day will reveal suitable colours and such an exercise has limited my choice to white, yellow or orange. Aerosol cans of car paint enable colour to be sprayed on to the model easily and at minimum added weight (three very light coats should be sufficient which means the use of a little less than one standard can of *Duplicolour* for one model).

There is a large variety of car colours available so you can personalise your models satisfactorily. Do not forget that the model weight in grams to within 30 grams should appear in numbers no less than 20mm high on the inboard wing tip of the model.

There is one final aspect of construction and that is the subject of *accuracy*. Accuracy of construction is vital in all control-line racing aircraft but particularly so in Goodyear because of the scale rules. Because of the amount of checking of three-views I have been able to do for 'Mr. D' and 'Ol Blue 72' I have been able to derive very accurate profiles to the scaling tolerances permitted by the *SMAE* rules.

A wise user of these plans would not change the profiles shown. Certainly if anything is reduced, then an illegal model will be the result. The need for accuracy also applies to joint making in construction, for ill fitting joints make for weakness and weight which are both enemies of life and performance.

Open Goodyear

1984 saw more Goodyear contests than ever before. It also had more records broken than in any previous year. This means that Goodyear is as healthy as it has ever been and is certainly as competitive as it has ever been. To better the current *SMAE* records some exceptional machinery and teamwork will be required...

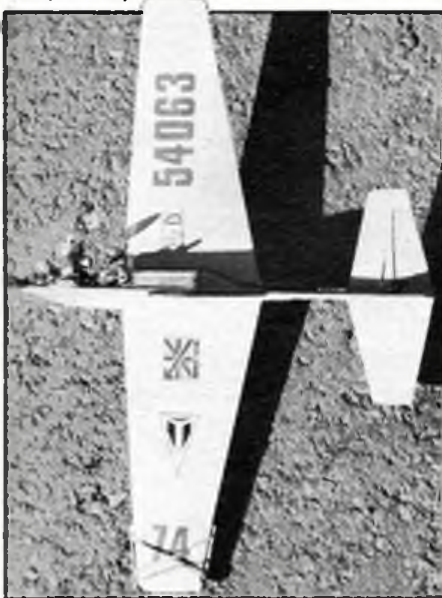
It should be noted that evidence is mounting that the *Rossi* 15 FI Mk III motor is significantly more powerful than the Mk II version. I have no doubts that when records are broken it will be by a diesel converted Mk III *Rossi* FI with a chrome plated liner and set up to run on pressure...

The approach to using crankcase pressure feed adopted by Ed Needham and I has already been explained in detail in this

magazine, therefore it will not be repeated here. There are however, certain vital aspects of this approach that need emphasis and these follow.

Leaks from anywhere are *disastrous*. The tank *must* be pressure tight and to ensure this, use lapped seams. Pin holes and splits in the connecting tubing are just as bad as a leaky tank; we install new tubing before every competition. The shut-off must seal both the fuel and pressure feeds completely when 'fired'. This means that it must be a powerful 'two tube' tube crusher type, for

This plan view of 'Mr. D' shows two of its many good points: minimal drag and relative wing/tail area (see text).



any sort of 'weep' of either fuel or pressure through the shut-off when fired means *no re-start* at the pit-stop!

Re-fuel pit-stops are at best complex and at worst horribly slow, they are best done as infrequently as possible. To me this means that the 'big tank' approach is obligatory, 'big' being big enough for a full heat (or half a final) plus most of the warm-up. Experience has taught that for a MK II Rossi a 100cc tank is big enough but for a MK III Rossi no less than 130cc is required.

The 'Mr. D' plan is drawn for a 100cc tank (25 x 40 x 100mm) but room does exist for a 130cc tank (25 x 40 x 130mm) to be partially recessed into the fuselage behind the motor. 'Mr. D' is the only model design I know where this can be done easily without the tank projecting *above* the motor profile.

The reason for using pressure feed is to allow your motor to breathe freely at high revs, in other words to allow a venturi size of at least 8mm ID to be used. Besides the 'big hole', a 'Little prop' is needed, one with a peak pitch of 140 to 150mm (5½ to 6 inches) and a diameter of 155 to 165 mm (6¼ to 6½ inches)... Quite a few suitable suppliers of such props exist and they all seem to have started life as a 7 x 5in. *Tornado* 'Plasticote', (preferably in Carbon Fibre to ensure prop integrity at the high revs it should give - 23 to 25,000 in the air).

Oil is the enemy of motor performance but the friend of motor life, so the fuel formula you use must be a compromise. This is particularly true with a pressure fed motor, for pressure feed can give (especially when a little leak occurs) lean mixtures and unlike a suction-fed motor, forced fuel feed means that the motor keeps on running on very lean settings.

Rossi spares are hard to obtain, particularly for the MK II version, so it pays to be a little conservative on fuel oil content. Ed and I use 15% Castor Oil in our fuel. We know that 10% oil content is at least 0.5 sec/10 laps faster but we got fed-up with blowing motors and not finishing races.

Of course you do not have to use a Rossi FI on pressure to be successful. John Catlow and Peter Jephcott have done a lot of winning with Rossi FI motors on suction; Alan Pegg and Ron Thorpe are contesting the top of the Goodyear League Table using a Rossi RV on suction; and Tim Andrews and Bob Horwood are formidable competitors using their Nelson 15 FI also on suction.

At the 1984 Nationals both Ed and I and John Catlow and Peter Jephcott (particularly this latter team) showed very high airspeed using Rossi 15 FI Mk III motors on pressure. As always in Goodyear, there are many different ways to win and this remains its greatest attraction to me.

People ask me why, having been to the highest levels in FAI team race and why, being a leading competitor in ½A team race, I still hold to Goodyear as first love. The answer is simple, for to win at Goodyear you throw brains into the pot whilst in proper team race you also have to throw in things I do not have anymore - time and money...

A controversial view perhaps but true, for in no other variety of control-line racing do we see four different motors with the capability of winning. Besides this, Goodyear is the only racing event in which we have a variety of colourful models that look, at least to some extent, like the real thing. To me this is what racing is all about and Goodyear has the lot.

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		S2000 - 25	£110.51
		S3000 F.I. R/C	£133.83

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RI - Rear Induction
W/M - With Silencer
SE - Side Exhaust

RE - Rear Exhaust
TS - Transfers Schnuerle Port
TST - Transfer Super Tigre Port
ABC - Chromed Brass Sleeve

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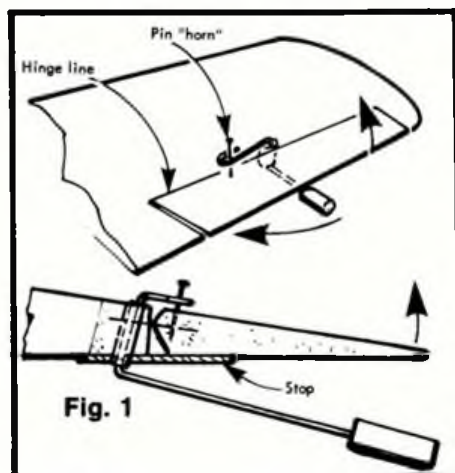
Free Flight with Bill Dennis

Pendulums again

Following my recent article on pendulums, I received a letter from Norman Peacock, who had practical experience of pendulum elevators, rudders and ailerons in the 1950s and early '60s.

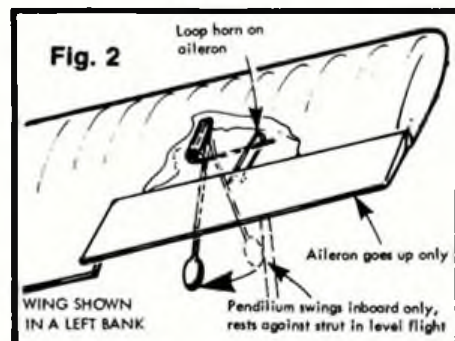
Norman confirms that the main problem is one of inertia. With elevator control, the trouble does not arise, as I thought, on launch, but when the engine stops! In launching, provided one runs into wind and pushes the model smoothly, it may show a slight sink, but will then climb away. However, when the engine stops the model will suddenly slow down, the pendulum gives full 'up' and the result is a stall. This will be accentuated on high-drag aeroplanes, i.e. biplanes. To counteract this, it is necessary to under-elevate the glide to the degree required for the nose to drop after the power run.

Norman found that a pendulum rudder worked quite well provided the model was trimmed to fly in wide circles. Clearly if the



turn tightens up sufficiently the weight will swing outwards with predictable consequences. Of the three control systems I feel rudder has the greatest potential for disaster!

As far as aileron control is concerned,



Right, Paul Briggs has developed quite a reputation for his use of polystyrene foam construction... Here he puts the final turns on his 'Klittyhawk', held by Barry Hetherington.



Norman's experience is limited to one installation, as shown in fig. 1. He relates that the bank had to be quite steep before the control was effective, which does not surprise me, given the very shallow angle of the pendulum. A similar system is used on the APS 'Hannibal' and Supermarine 'Sparrow'. I am not sure what the thinking is behind this acute angle since it is bound to give a jerky response. Perhaps it is that the pendulum is less obtrusive...

However, in fig. 2, I have sketched an idea for a vertical pendulum operating directly on the aileron. In my previous article I raised the question of aileron movement,



This view of Terry Manley's Blackburn 'Swift' was taken at the 1978 World Scale Championships at Woodside.

and Norman confirms that 'up' only should be used, to avoid control reversal where the extra drag of the 'down' aileron is greater than its banking effect, and the model would then turn the wrong way. In this case, the pendulum can be hidden next to, or even in, an interplane strut, which will act as a stop, limiting the aileron to 'up' only.

Elevator deflection should be small, starting with, say, 1/4in. total movement



Above, this fine shot of Bill Dennis' free flight Handley Page 0/400 was taken by Rex Oldridge. It is powered by two Mills .75s with a common cut-out. Lines on the fuselage are shadows of the wing struts.

and increasing to a maximum of 1/2in. if necessary. As for the balance of the system, the weight of the pendulum should just give positive movement - some aerodynamic damping is desirable. Extra weight can then be added as necessary.

Of course complete freedom of movement is essential and considerable experimentation may be necessary to get the system to work properly. Whether the model survives this period is another matter!

Covering

I am sure Fernando Ramos will not mind my pilfering a tip from his column in *Model Builder* magazine. Covering, water shrinking and doping lightweight indoor tail structures can easily lead to warps, or at best some pulling in of the framework. It is very difficult to get the tissue just taut. This idea works well on flat-plate surfaces.

Fernando constructs a rectangular frame from 1/4in. square balsa a little larger than the component to be covered. Tissue is attached to the frame, and shrunk and doped in the normal way. Some tissue can continue to tighten after the dope is dry so it is best left for a couple of days. Then thin dope is applied to the component which is

then placed onto the tissue-covered frame. After trimming the outline with a sharp blade, the process is repeated for the other side.

Scale in the USA

I receive copies of the news letters of two F/F scale clubs in the USA via *Aeromodeller*. The first is the famous *Flying Aces* which I believe is based in the east of the country, and the other is *Scale Staffel* centred in California. Both contain

Right, another model by Bill is this Gotha G IV. Again MHA powered, unfortunately the model lacked directional stability and was not a success!



Left, the late Fred Longbon launching his famous Puss Moth (APS-FSP/891) at Chobham. Right, Alan Callaghan with Rearwin Speedster at last years Nationals.



interesting articles, three-views etc., plus some rather esoteric stories! Perhaps the most useful articles recently were in a series by Leon Bennett on large rubber models. You may have seen a photograph in *Aeromodeller* of Leon's truly enormous 'Moth Minor' which spanned around 90in., with 24 strands of rubber! The address for details of *Flying Aces* is F.A.C. 3301 Cindy Lane, Erie, PA 16506, USA. and for *Scale Staffel* 2230 Ft. Stockton Drive San Diego CA 92103.

The F/F scale scene is rather different in the USA to that seen here, and the most obvious difference is the level of enthusiasm and active participation. FAC lists almost 200 contest winners alone! This club runs its own Championships, with a bewildering array of classes, ranging from outdoor Peanut to Jumbo, with several mass launch events. In a country where everything is 'bigger' I find it rather amusing that the

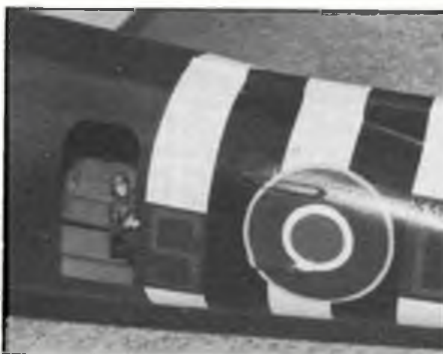
maximum size for 'Jumbo' is a modest 36in. wingspan (and 30in. for biplanes).

The overwhelming majority of scale models are rubber powered, with relatively low interest in either power or CO₂. A study of photographs indicates that emphasis is placed on flight duration at the expense of scale appearance, much more so than in this country - one example being liberal applications of dihedral on a *Fokker DRI* and *Aviatik 'Berg'*.

I have always thought that a similar specialist group would be a good idea in this

country, since it would be bound to increase interest. In fact there was such a club a few years ago - the *Free Flight Scale Association* - but unfortunately the impressive paper membership was not matched on the flying field and the group quickly fizzled out. This is a pity, because such an Association should generate its own enthusiasm and be capable of arranging scale meetings additional to those run by the *SMAE*, giving scope for 'alternative' events such as mass launches which are apparently very popular in the States.

Chris Bradford in appropriate attire(?) with one of his latest projects a DC 3 'Dakota'. Close up pictures give some idea of the detailing Chris has put into the model...



Control Line with Vic Willson

Firstly an apology for an error (entirely my fault) which referred to a *Williams* bellcrank, this of course should have been *Roberts* bellcrank, hopefully this mistake has not caused too much confusion.

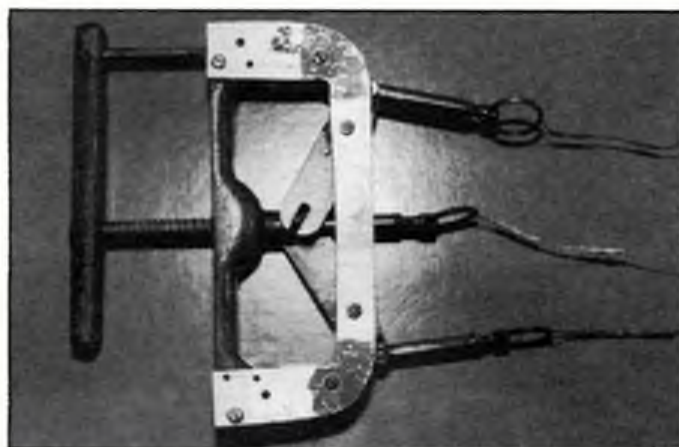
I recently paid a visit to Chris Bradford down at his Marlborough home where he has a very impressive workshop with more than ample bench space and very good natural lighting from large windows. As I am confined to the proverbial 'kitchen table' these facilities made me quite envious. However to save the facilities is one thing, but to utilise them effectively is quite another...

Chris as all who have seen his *Nieuport*, does indeed make the most of his workshop

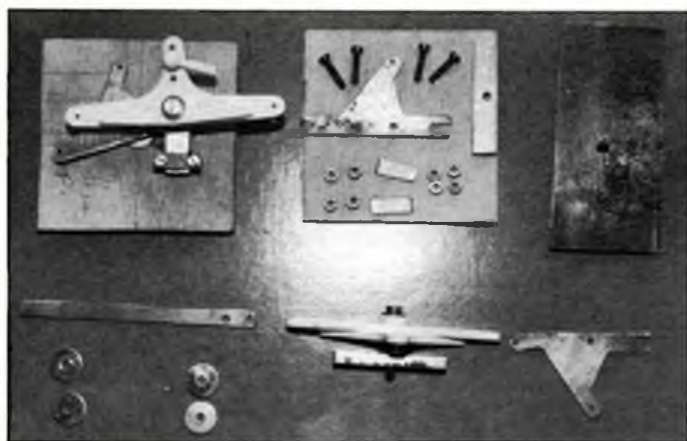
facilities and his latest project is a complete contrast to the light *Nieuport*. The model is a *Douglas 'Dakota'* of 83in. wingspan. It is 57in. long powered by two OS 30 RC engines fitted with three blade *Tornado* props.

The construction is conventional aeromodelling practice with a balsa and ply framework, planked fuselage and sheeted

Right, Chris Bradford's own design of three line handle, squeeze control utilises scissors action to maintain relative line lengths.



Left, the three line bellcrank associated with the above handle, assembled on left together with views of the components before final construction.



wings. At the time I saw the model the fuselage was almost finished and had been airbrushed in the chosen camouflage finish with rivet detail applied using a hypodermic syringe and PVA glue. The result is very realistic and makes for a very impressive model indeed.

The wing assembly is detachable from the fuselage for ease of transport and approximate weights are: wing 4½lbs (unpainted) and fuselage 2½lbs. An all-up flying weight of 8½lbs should be achieved which is very reasonable for such a large model and should ensure a good flight performance.

Throttle control is fitted to both engines and working flaps have also been incorporated, however the most interesting feature will be the parachutists. Chris hopes to drop a 'stick' of four to six parachutists as one of his flight options and is at present trying to perfect a release mechanism that can be easily installed and removed through the fuselage rear door and will eject the model figures by means of a fourth line control.

designed and constructed by Chris. The handle uses a squeeze action which actuates a scissors linkage to maintain the relative line lengths so that elevator control is unaffected by the position of the throttle line. An added refinement is the adjustable connector for each line which enables line length to be very accurately set.

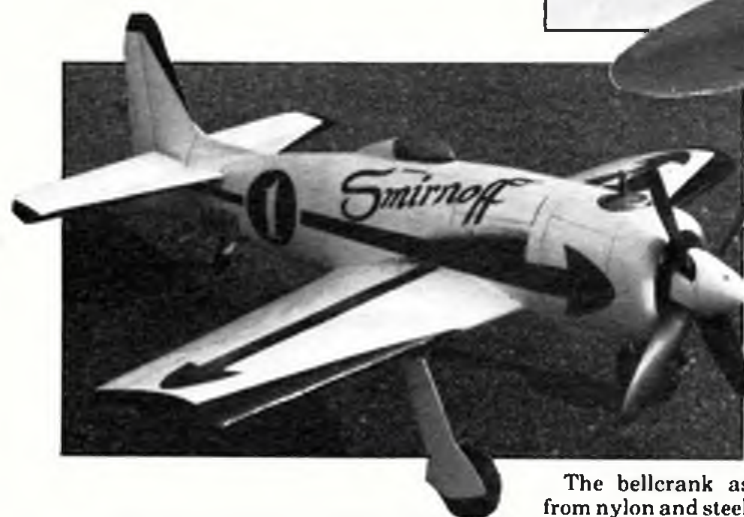
engages with the sliding pivot of the elevator bellcrank. The components and the assembled unit are shown in the accompanying photograph which should help clarify the mode of operation.

Foreign Interest

Having attended several Scale Control Line World Championships I have often wondered whether there was any activity in this class of aeromodelling in other European countries (apart from the regular competitors such as France and Russia etc), so it was a pleasant surprise to receive a letter from West Germany prompted by the description of Bernard Sexton's *Laird*



Control Line scale interest from Germany... Above Karl-Georg Krafft's Beechcraft 'Staggerwing' C-17R, span 909mm (36 in) and powered by an Enya 35. Left, another of Karl's models is this fine example of a Grumman 'Bearcat', span 600mm (24 in) power PAW 2.49



The basic three-line control system for elevators and throttles is also interesting as it uses yet another variation of the bellcrank/handle combination, both

The bellcrank assembly is constructed from nylon and steel and has a conventional (*Micro-Mold*) bellcrank pivoted on a sliding block arranged across the fuselage of the model. A secondary bellcrank (for the third line) is pivoted on the mounting plate and

'LC.DE', in the June Scale Matters column.

The letter is from Karl-Georg Krafft of Hagen, West Germany and he says that building and flying control line models is a very rare hobby in Germany and that C/L scale modelling is probably only done by him! Needless to say there haven't been any C/L Scale competitions for ages. I quote from Karl-Georg's letter:-

"I built an Art Chester 'Jeep' about five years ago: span 740mm, length 630mm weight 700grams. Powered by an old *Taifun* 'Bison' 3.5cc and fitted with three-line control..."

Karl-Georg goes on to say that some more racing types that he has modelled are Darryl Greenamyers' *Grumman 'Bearcat'* with clipped wings and the racing version of the *Beechcraft 'Staggerwing' C-17R*.

The 'Bearcat' is 600mm span, 560mm long and weighs 650 grams. It is powered by a PAW 2.49 and has a removable under-carriage necessitated by often flying over



tall grass. The *Beechcraft's* vital statistics are span 909mm, length 727mm, powered by an unthrottled *Enya 35*. It has no undercarriage, but is quite aerobatic and as the full size prototype had retractable landing gear, no doubt the model looks realistic in flight.

Above and right, before and after...Wal Cordwell's 'Spad' taking off for its first flight...and the result! Damage was minimal and the 'Spad' flew again a few weeks later.



Above, seen at the High Wycombe fly-in was this attractive 'Chipmunk' by Patrick Roberts - flew well with smooth throttle control.

High Wycombe Club's flying site.

Although the weather remained rather chilly and overcast, the flying conditions were quite reasonable and the small number of people who turned up enjoyed a fair amount of flying.

Two new models of note were seen at this meeting...Wal Cordwell's 'Spad' and young Patrick Robert's *DH 'Chipmunk'*. Wal Cordwell's 'Spad', which I described in the April column now looks very smart in its authentic 'hat in ring' squadron colours and

markings...and surprise, surprise had a new *OS 40* concealed under the engine cowl!

However, the first flight was to prove traumatic to say the least. With such a short nose moment, this is a model that requires ballasting to bring the centre of gravity to a suitably forward position, but unfortunately this model had not been ballasted enough. Almost from the moment that the model left the ground it had a mind of its own and despite Wal's valiant efforts to control it, eventually flew into the circle and crashed heavily. Luckily, being fairly soft grass rather than tarmac, the damage was minimised and I'm happy to report that the model has been repaired and flew successfully at the Three Kings Scale Day on 6th May. Needless to say with considerably more nose weight.

The other new model was a *De Havilland 'Chipmunk'* very nicely finished in the silver and yellow RAF trainer colour scheme used during the 1950s. This model flew very well and appeared to be well trimmed and with a very smooth throttle action.

Mick Staples made the journey up from Cambridge and brought his very fine

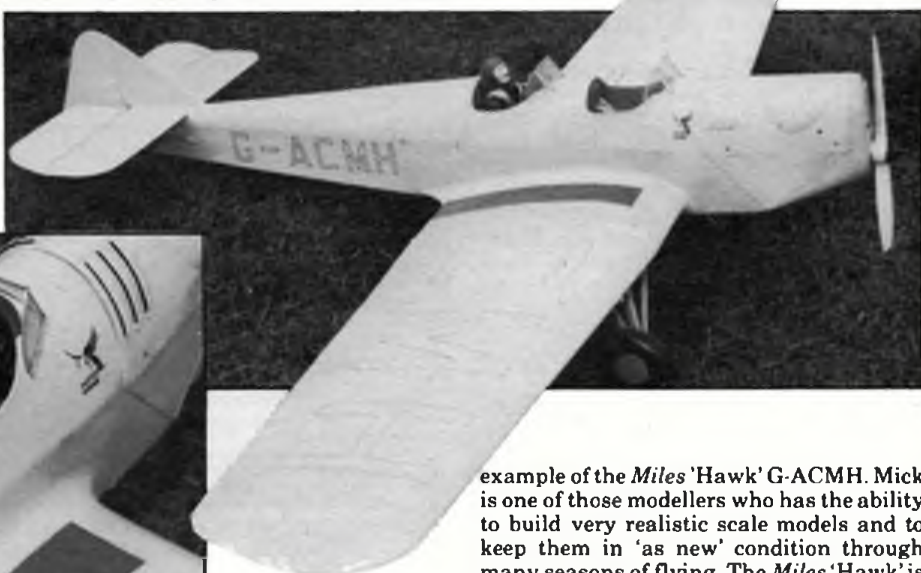
Other aircraft modelled are a *Pitts 'Special'* and a profile *Grumman 'Tigercat'* powered by two *09's*.

Karl-Georg concludes by saying that he has a *Turner 'Champion'* under construction, powered by an *HB 20* and fitted with flaps and a *Percival 'Mew Gull'* with *Cox 15 'Medallion'* power and with throttle control.

Nice to know that there is still some interest in countries that appear to have gone completely over to R/C - keep up the good work Karl-Georg.

Recent Events

The 'season' is now with us and the first event for C/L Scale models was an informal fly-in organised by Ron Truelove at the



Above and above right, Mick Staples' *Miles 'Hawk'*, 45in. span (1143mm), *OS 20 RC* power. A beautifully finished model and as can be seen in the close up, with fine attention to detail.

example of the *Miles 'Hawk'* G-ACMH. Mick is one of those modellers who has the ability to build very realistic scale models and to keep them in 'as new' condition through many seasons of flying. The *Miles 'Hawk'* is a good example, having been built in 1979, but looks as good today as when it first appeared. The model is about 45in. span powered by an *OS 20 RC* and features full cockpit detail and a scale pilot in the rear cockpit (essential for realism in this type of subject).



VINTAGE CORNER

WITH ALEX IMRIE

Golden Era Model Festival

When I first heard this name I felt that it was a great title for a vintage meeting, but obviously other people liked the sound of it too and it was deemed that this function should be devoted to large scale R/C models of aircraft from the 1920s and 1930s, with an eventual tolerance towards free flight models, if the wind conditions on the day did not cause a conflict between the classes of models.

The days immediately preceding the 19th



Above, original 'Kanga Dragonfly' rubber drive biplane held by Terry King who has plans of this attractive C.E. Bowden mid-1930s design for sale (see text).

May were fine and warm with light winds, ideal free flight weather that caused me to prepare both 'Miss Tiny' and 'King Burd' in anticipation. However, on the morning of the Golden Era Meeting, no sun was to be seen, and it remained out of sight for the whole of the day. The misty drizzly weather being strongly reminiscent of the anticyclonic gloom of winter, and the temperature was not much out of character either!

But, it takes more than unsuitable weather to keep the keen vintage enthusiasts down, especially if the wind is not strong, so a good turnout resulted even in these prevailing conditions. The main assembly were of course, the R/C merchants, but a surprisingly large number of free flight modellers turned up. These

being relegated to the far side of the aerodrome...got on with the job in hand, flying everything from chuck gliders to large heavyweight power models.

Vintage R/C: Before looking at the models of our persuasion, one has to make mention of the radio models. A number of these were, of course, vintage designs, and apart from the usual 'Junior 60s' in all sizes,

Above, Ray Harrison from Bromsgrove with his OS 40 powered "Long Cabin" 78 inch span design by Bob Long that was described in *Air Trails* August 1937. This is one of the most reliable and stable early vintage designs.



there were Keil Kraft 'Falcons', a Brooks 'Skyrocket', Jim Shelley's 'Cavalier' (did a loop, no less).

Dick Barton's 'Cyclonic' which 'went in' in a terrific spiral dive due possibly to a stuck servo, and Dick reports that engine, radio and flying surfaces are OK, but that the fuselage is in need of a rebuild! Peter Ashmore from Dudley, West Midlands using four-stroke power, flew both a Simmonds 'Gas Champ' (Saito 35) and a 'Playboy' (OS 40), while Ray Harrison from Bromsgrove had a fine all red example of Bob Long's 'Cabin' also four-stroke powered by the OS 40.

Derek Giles from Bletchley flew an R/C 'Chatterbox' and two sizes of 'Junior 60', the six feet span version being powered by a 5cc Sparey diesel constructed by Paul Dancer.

Flying Scale: There were others equally fine and the large scale models will, of course, be reported on in detail in the magazines devoted to such things. To vintage eyes all the ancient flying scale models looked great, but especial mention must be made of a four motor electric powered Armstrong Whitworth 'Atalanta', although obviously not finished since



Below, Richard Gelger tunes the inverted Mills .75 diesel in his 'Natsneez' before one of its many flights at Old Warden (see text).



Above, Tony Penhall's latest 'Blue Dragon' replica powered by a Brown Junior Model D (see text).

dummy engines and cowlings were missing, it looked right.

So did the nice Avro 'Tutor' with red and white sunburst uppersurface decoration in the manner used by the Central Flying School before the war, and the fine Potez 25 French army co-operation biplane from the 1930s complete with machine gun armed crew.

Aeromodeller



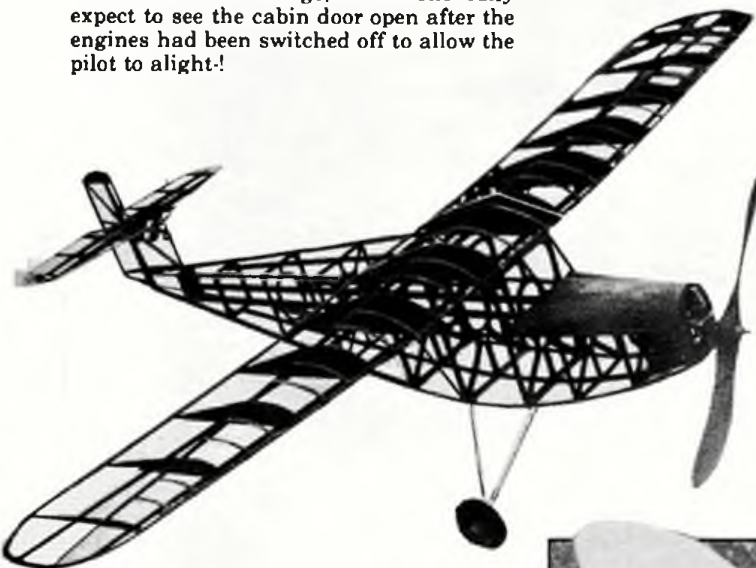
Left, slots are seen to advantage on the late Mike Reeves' 'Natsneez' held aloft by Andy (Mind the Lines) Brough.

However, pride of place must go to that excellent twelve and a half foot span DH 89a 'Rapide', in today's parlance this was 'something else'. It flew in a scale manner, at what, to me, looked like a scale speed, the noise of its twin Enya 120 four-strokes being not unlike the muted purr of the two Gipsy 'Queens' fitted to its big sisters.

With scale flaps and appropriate use, realistic take-offs with its weight of 44lbs and beautiful landings, made one fully expect to see the cabin door open after the engines had been switched off to allow the pilot to alight!

mid-1930s design by C E Bowden was featured in these pages before (Vintage Corner, October 1981). For those of you who want to build an example, Terry has now drawn up the plan from an original blue print and can supply copies for £2.00 plus 35p postage. Order direct from him at 65 Main Street, Witchford, Ely, Cambridge-shire.

Clive Bunyan was getting some good



Left, original flying scale Koolhoven FK 41 made in hardwood and ply in 1929 by Tommy Key, Charge-Hand Engineer on the large British rigid airship R 101 (see text).

This was one of the best flying scale performances that I have yet seen, full marks to the perpetrator, Richard Crapp, not only did the spectators like your model and your flying, but your baggy breeches and flying hat were well in keeping with the 'period dress' appeal.

Others wore striped blazers, boaters, long leather coats and flying helmets of every description, Dave Bishop, the PA system commentator was rigged out in a striped suit and wore a white hat, which he claimed was an Al Capone outfit!

Pure Vintage: Across on the free flight area there was less variation in dress, and not much of that was 'period', but these vintage free flighters hungry for the opportunity to fly, showed a great variety of models. Tom Andrews was flying his tailless towline glider, a Warneford 'Sunbeam' which was shown in the 1949 *Aeromodeller Annual*. This model was performing well, going up rock steady on the line to about 100 feet before being released. Terry King was flying Derek Camps' original 'Kanga Dragonfly', this 29 inch span delightful rubber powered biplane, a



Above, AM 2.5cc (original version) diesel powered Mercury 'Mallard' by Harry Timms, the Elmlic 'Limit' tank can be clearly seen (see text).

flights from his silver and black 'Gazookus' a nice parasol design by Calhoun Smith that was described in *Air Trails* in August 1950. Some years ago I made this model in its original size of 36 inches span and used a DC 'Dart', it flew well until an over enthusiastic son released it with a full tank at Old Warden, I sometimes wonder if anyone ever found that little yellow and black model with the Snoopy insignia on the rudder that gave us so much fun. Clive's

machine is 52 inches span and uses a PAW 80.

Petrol problems: Tony Penhall brought along his latest (and final, says Tony) 'Blue Dragon', this now has a fuselage built from the drawing provided by Phil Smith who was able to measure the remains of CEB's original 'Blue Dragon' fuselage. Tony was unable to fly due to flat batteries, so we were prevented from having a sight of this very fine replica in the air.

Engine trouble dogged Brian Ferrett who had bugs in *Mechanair*, *Forster 29* and *Ohlsson 'Gold Seal'*. Why is it that petrol engines especially, run OK on the bench at home, yet are baulky on the flying field and refuse to perform? It is easy to blame the modeller for not being careful enough with his pre-flight preparations. Anyone who laughs at such an unfortunate, whilst having never experienced these problems himself take care, it could be your turn next!

No one is immune from this 'petrolitis', and when it hits, one can easier understand why there was so much enthusiasm for the model diesel when it appeared and one could at last dispense with electrics! Brian Ferrett, after all his petrol engine problems did eventually get airborne when he flew his Sadler 'Pacemaker' low wing, powered by an ED 'Hunter' diesel!

Diesel delights: There were two fine flying models of 'Natsneez' designed by P E Norman and still available from the APS *Plans Service* as PET/221 price £3.00 plus 50p postage. This is a baby power model of interesting construction with a wingspan of 31 inches. There were detail differences between the two examples seen at Old Warden, like non-detachable tailunit, unfaired undercarriage and wing tip slots.

However, one thing that both models had in common (apart from splendid flight performance) was the fact that their flyers were not the builders! Both models had been inherited.

The first, flown by Andy ('Mind the Lines') Brough, was built by Mike Reeves



an enthusiastic SAM 35 member who lost his life in a vintage French sailplane crash last year. Powered by a PAW PK 25/86 diesel, I was assured that the model's weight approximated to that of an ignition version. It handled the power well and was a very stable flier.

The other machine was bought about 10 years ago from *Michael's Models*, and is now flown by Richard Geiger. Powered with the Mills .75 its flight performance seemed

little different from the PA Wenged model. Both these models did a lot of flying, emphasising again that for pure fun a small tough diesel model is hard to beat.

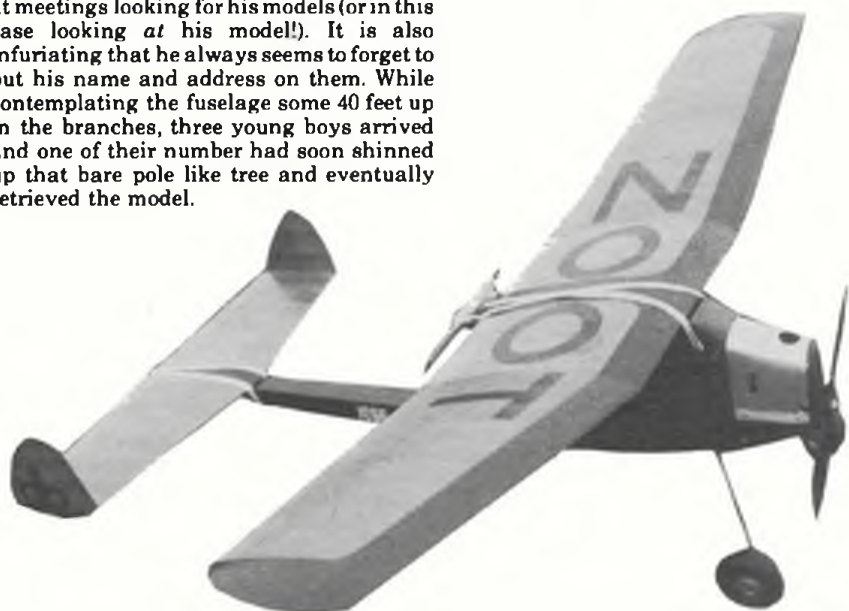
Andy also had a 'Wasp' with him, fitted with a 1.25cc glowplug replica engine based on a pre-war petrol engine made by a Mr Innes, but this model did not put in the amount of flying logged by the 'Natsneez'. The same goes for Richard's other model, a well made Keil Kraft 'Ladybird'.

Youthful enthusiasm: Bill Langley of Gravesend, a regular attendee at all vintage flying meetings flew his 'Spartan', a not so well known *Halfax* design from the mid-1940s and was using a Czech NV1 diesel for power. Allowing just too much fuel for the drift, his model was effectively treed, and it looked as though it would have to stay there.

I remembered that this was becoming a regular thing for Bill and much time is spent at meetings looking for his models (or in this case looking at his model!). It is also infuriating that he always seems to forget to put his name and address on them. While contemplating the fuselage some 40 feet up in the branches, three young boys arrived and one of their number had soon shinned up that bare pole like tree and eventually retrieved the model.



Above, appropriately decorated, Dave Baker's large Shereshaw XP-4 twin-boom pusher powered by a PAW 35 diesel (see text). Left, named 'Zoot' following his practice of naming most of his models after vintage period tunes or jazz musicians, Dave Baker's unusual twin PAW 15 diesel version of J.L. Sadler's 1940 design (see text).



the third lad of the party is only known to me as Andrew from *DB Models* of Northampton. So it would seem that youngsters are still capable of the sort of enthusiasm for model aeroplanes that one remembers as populating the model flying fields some years ago.

Harry Timms was flying a *Mercury* 'Mallard' powered by an original AM 2.5cc diesel and was using an *Elmic* 'Limit' tank which was the first I had seen. I have used the cheaper version of fuel limit when the tank was made from the 'French Chalk' tin from a puncture repair outfit feeding a coil of fuel tubing that held exactly enough juice for 20 seconds.

Whipping the tank off and releasing the model were as one action, and in the days of erratic airhydraulic timers this was the best means of getting really close to a 20 seconds power run. *Elmic* obviously improved on this idea and have a reservoir which allows

These lads had happened by, since they were retrieving their own 'Dart' powered 'Cardinal', a model that they spent the whole day flying in a most enthusiastic manner. Whenever one looked up during the meeting the 'Cardinal' always seemed to be there. Even minus a wheel and with much of the tissue gone from its centre section it still spent most of the day in the air!

Later I enquired after these youngsters and found that, their (to me) 'normal' approach to aeromodelling, was obviously because of the exposure they have been subject to, being more or less reared on it. Mark Leivesley works for *Mikes Models* and his friend Stephan Edkins was the tree climber,

Below, Derek Welch uses a Mills .75 diesel in his version of Gordon Murray's 'Answer' which was described in *Model Airplane News* August 1940. Note that this model uses a 44inch span Ritz-wing.

Below, despite the damp conditions slacking off the banana-oiled tissue on his Earl Stahl 'Hurricane', Phil Brooks shows this attractive 35 inch low-wing monoplane that was described in July 1940 *Flying Aces*.



the exact amount of fuel into the limiter by the mere twiddle of a setting screw.

R101 man's model: Another interesting model seen, did not fly since it was in an uncovered state. This was a flying scale model of the *Koolhoven FK 41* (a type when modified, became the 'Desoutter') built in 1929 by a Mr Tommy Key who lost his life as Charge-Hand Engineer on the large British airship R 101 when it crashed at Beauvais on 5th October 1930. The model, built mainly from plywood and hardwood is to a scale of one inch to one foot and is surprisingly light.

Owned now by Don Beattie of Turvey near Bedford, the original undercarriage is missing and has been replaced by wire vees and wooden wheels. Two large diameter brass gearwheels suitably lightened drive a *Chauviere* propeller, and to my way of thinking it would be a pity to cover this intricate structure, it deserves to be preserved in its present state, and is a real museum piece.

Unorthodoxy: Dave Baker can always be relied upon to bring something unusual to a meeting and although we have seen his Shereshaw 'XP 4' before, I had not seen his 'Zoot' which is built from an H A Thomas and J L Sadler article that appeared in *Air Trails* in August 1940. Dave tells an interesting story about the Shereshaw design...some years ago he was in USA and chatting with modellers, mentioned that he was currently building an 'XP 3'. He was advised by one of the group to lengthen the nose by 12 inches to keep the C of G forward, to which Dave countered that he could hardly do this since it would obviously offend Ben Shereshaw, he was flabbergasted to hear the reply 'I am Ben Shereshaw'!

So the nose was lengthened and the 'XP 3' became the 'XP 4'. The 10 feet span twin boom pusher did not really get going at Old Warden, a few trimming flights were undertaken but a heavy landing resulting in nose wheel damage terminated the flying. The model is powered by a large PAW 35 diesel.

When I first saw 'Zoot' I felt that Dave had built somebody's 'doodles', but the design was actually constructed by Sadler (of 'Pacemaker' fame) and a small two-view drawing and a schematic sketch appeared in the magazine mentioned. It was an attempt to pack more power into a design

and there were many similar ideas put into practice at this time.

One of them by Frank Ehling, who fitted a 'Mighty Atom' engine as a pusher on his *Ohlsson 19* powered high parasol model, the idea being that if one engine was either removed or left dead the model qualified for Class A, while with both engines running the increased capacity put the model into Class B (1940 American rules). Sadler's design was five feet ten inches span and weighed 4½ lbs using an upright *Dennymite* in front and an inverted *Brown 'Junior'* at the back, two complete ignition circuits were of course necessary.



Above, Clive Bunyan with his 52 inch span 'Gazookus' a Calhoun Smith design from the August 1950 issue of *Air Trails* which features an attractive cowl and a dummy flat twin engine (see text).

Dave's model is powered by two PAW 15 diesels and is a faithful reproduction of the Sadler model. The origin of the name Zoot is in keeping with his jazz interest (Zoot Sims). Since this does not appear to conflict with any other model name it would seem to be a good choice.

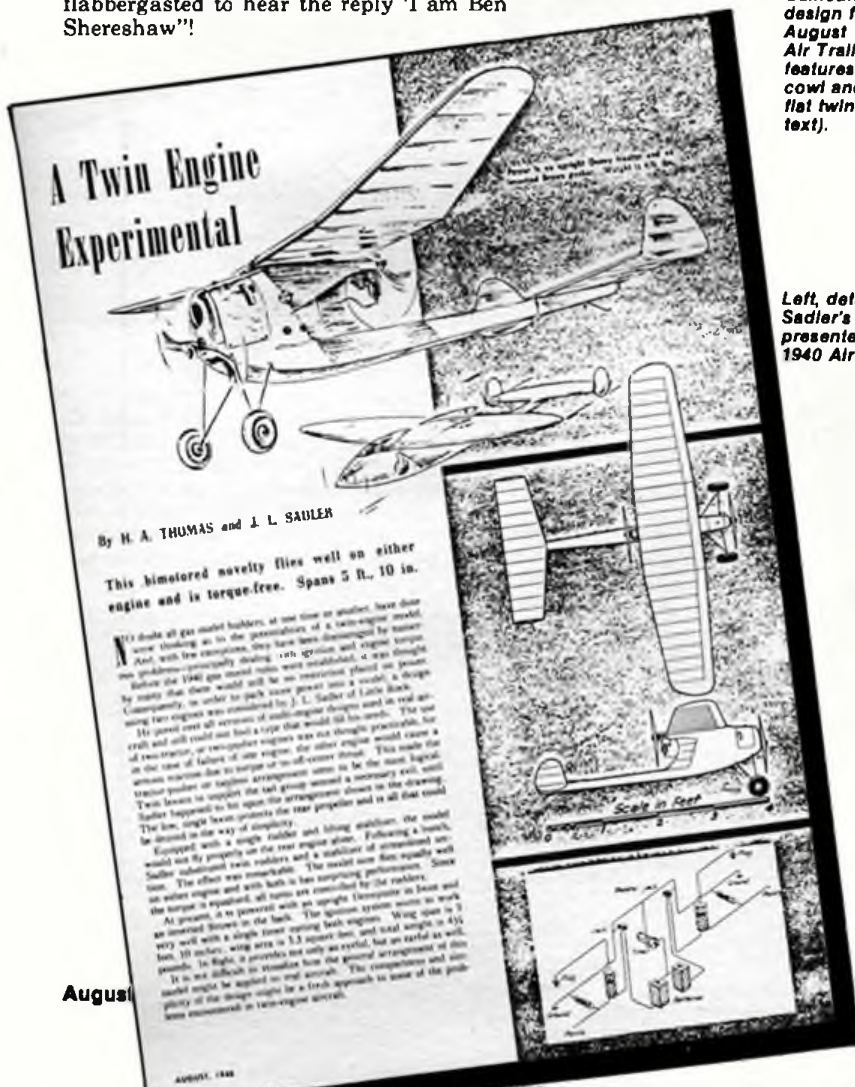
Despite the weather all were agreed that the spirit of the Golden Era was present in some strength, everyone I met was enjoying himself and all this augurs well for the 1985 season...just you wait until we get some sunshine!

Thoughts from Down Under

After having written about the three youngsters at the Golden Era meeting, some appropriate words appear in the New Zealand Newsletter of the Christchurch Model Aero Club called *Torque*. After recounting past experiences the Rev. Phillip Ramsay ends his article with these thoughts. "Can we learn from this past? Yes, the art of encouraging youngsters who have little know-how and less money (yet massive enthusiasm) needs to be recovered.

Fewer would invest their time and coins at fun parlours if older hobbyists offered a little friendship, an invitation to the workshop, a cup of cocoa and a bicky (or its equivalent)."

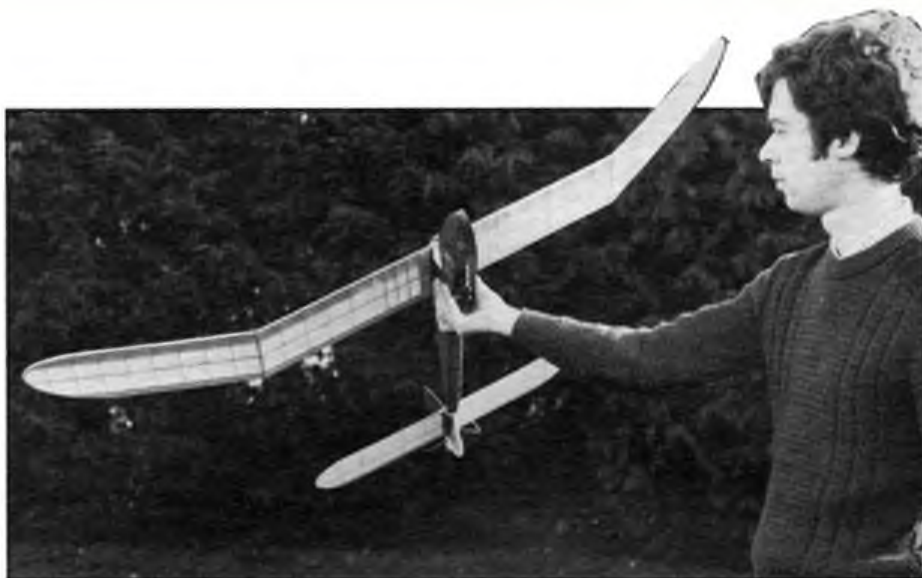
An adult can get so involved in this own enjoyment, and considerable cash outlay, that he does not even notice the shy lad hovering about the pits. Tentative questions need the best and kindest of answers. Clubs should make the cultivation of juniors their Priority One. There will always be a fascination with flight - and an appeal to hand and mind in the putting of things together - but making aeromodellers out of raw and youthful enthusiasms is an art we are in danger of losing.



Left, details of Sadler's model, as presented in August 1940 *Air Trails*.

THIS IS A HALF SIZED version of R. Minney's enormous vintage glider and it makes a very handy and attractive sports model. Construction is very simple and can be completed in a week of evenings. No special parts are needed, such as a fishing rod blank and since it will be towed straight up and off, a fuse D.T. is perfectly practical and cheap and costs little!

The recent beginners series by Trevor Faulkner covered just about all the points you will encounter on this model, but I shall mention one or two features.



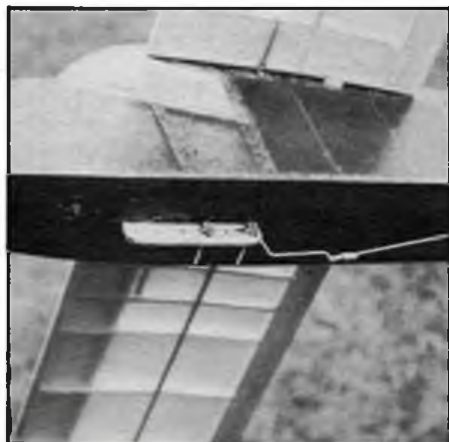
Mini Thermalist



Bill Dennis scales down the 1948 giant glider by R. Minney

Fuselage

Having built two sides, join them with F2 and F3 and add the spacers between. Then draw together at the tail, tapering the ends so that the width here is 3/16in. to merge with the fin, and then add F1. Bend a shallow angle into the wing joiner and epoxy to F2 - this is to prevent the wings from drooping slightly (the inner panels are flat).



Wings

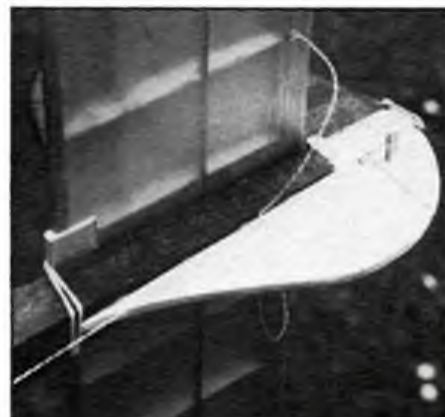
The wing joiner passes directly through the ply ribs and a 1/8in. peg fixes the incidence. A band passing between hooks on the wing roots holds the wings in place. The drawback with this method of wing mounting, is that if the model glides into an obstruction the wing cannot knock-off, and may suffer damage. If this worries you a thin dural tongue could be used.

Before covering, assemble the model and put plasticene inside the nose to bring the balance point about 1/4in. in front of the position shown. Cover with lightweight *Modelspan* and give three coats of dope.

Heading pictures show Bill's version of this famous glider, original had landing wheel to absorb shocks of a 4lb model coming back to terra firma. Close-up of tail end detail shows auto-rudder and dt restraining lines. Left, simple variable tow line hook position attachment.

Trimming

Packing the tailplane is not very satisfactory since it spoils the fin/sub-fin junction this is what I did: before fitting the wing pegs, use pins in the fuselage above and below the wing trailing edge and vary the wing incidence for trim. When the glide is O.K. fit the pegs, and fine tune the glide with tail ballast. The autorudder seems small, but is perfectly adequate.



Rumpler Taube



Build this Peanut Scale model of the Rumpler 'Taube' (Dove) based on those of the Imperial German military aviation service around 1914. Original 'Taubes' had a wingspan of 47ft and a weight of 1918 lbs, ours designed by Brian Faulkner has a span of 13 ins and weighs considerably less!

THIS DESIGN has been developed to give long flights and utilises a light airframe which is covered with jap tissue on the fuselage and single surface wing and tail.

Start by selecting light balsa wood sheet 1/16in. thick, this will be suitable for the wing leading edge.

Carefully cut the leading edge 1/8in. wide using a steel rule and sharp razor blade. Now cut out the trailing edge and use a balsa knife to scallop the rear to give the World War 1 'wire doped' appearance. Wing ribs are cut from light, stiff 1/16in. sheet using a 1/32in. ply template, slicing them to be 1/16in. deep. Build the wing using a flat board, using a cyano or indoor cement (Joyplane H.M.G. old type balsa cement thinned down with acetate). Do not use glue which will 'pull' and distort the structure. Cut and glue on the sheet pieces at the rear tips using quarter grained 1/32in. sheet, note the grain direction.

After slicing the fuselage longerons from sheet, or using 1/16 x 1/16in. balsa strip, sand down to 3/64in. square using a fine sandpaper block. After pinning the plan to a flat board lay a thin polythene sheet over it to prevent glue sticking to the paper. Now build as in section AA to form the turtle deck, then glue on the 1/32in. sheet turtle deck. Cut out the cockpits. Make the eight tapered stringers from 1/32in. sheet and glue in place, spacing equally about the centreline.

The dummy engine can be made from soft block balsa, start with the crankcase then add the cylinders from rounded strip, finally glue on the exhaust stub pipes and manifold.

Cut the wing in half at the centre, then carefully locate below the top longerons as shown on the plan with two 1/16in. sq. packers at the upper side of the trailing edge to give 1/16 in incidence. A dihedral of 1/4in. under each wing tip is to be built in.

Build the tailplane in a similar manner to the wing and cement above the top longeron. Cut out and glue on the 1/32in. sheet top and bottom rudders.

Above, this sparrow's view of the peanut 'Taube' gives some idea of the good 'eye-ball' scale achieved with simple materials.

Using fine piano wire, make the undercarriage, and solder after binding with fuse wire at 'B'. Make the wheels, add a small centre tube, then the 1/32in. spokes, sand the rim to a round tyre section. Fit the wheels and solder a small washer or ring of fuse wire to the end of the hub. Protect the wheel with wet paper whilst soldering.

Fix the undercarriage to the fuselage, secure with five minute epoxy glue. Add thin bamboo or balsa strips to the undercarriage legs and epoxy in place.

Cover the wings and tail with white tissue on top. It is advisable to cover the fuselage with jap tissue (white) before fitting the wings.

Water shrink and dope the fuselage, but not the wing or tail.

Dope on the crosses and A.41 12 numbers using thinned black dope (or black tissue cut outs). Make a balsa nose block, then epoxy in place. Paint the crankcase silver and the cylinder with exhaust black.

Flying

Careful trimming will be necessary to obtain long flights. The best trim on the original was obtained by using left rudder, giving a 15 foot circle to the left. Down thrust will be needed to control the climb. Carefully bend the 1/32in. sheet wing trailing edge 'flaps' to control the turns, they will act in a similar fashion to ailerons to prevent spinning-in under power.

Only trial and error will give the best trim, tight turns are readily achieved for small halls or a straighter pattern for outdoors in calm weather.

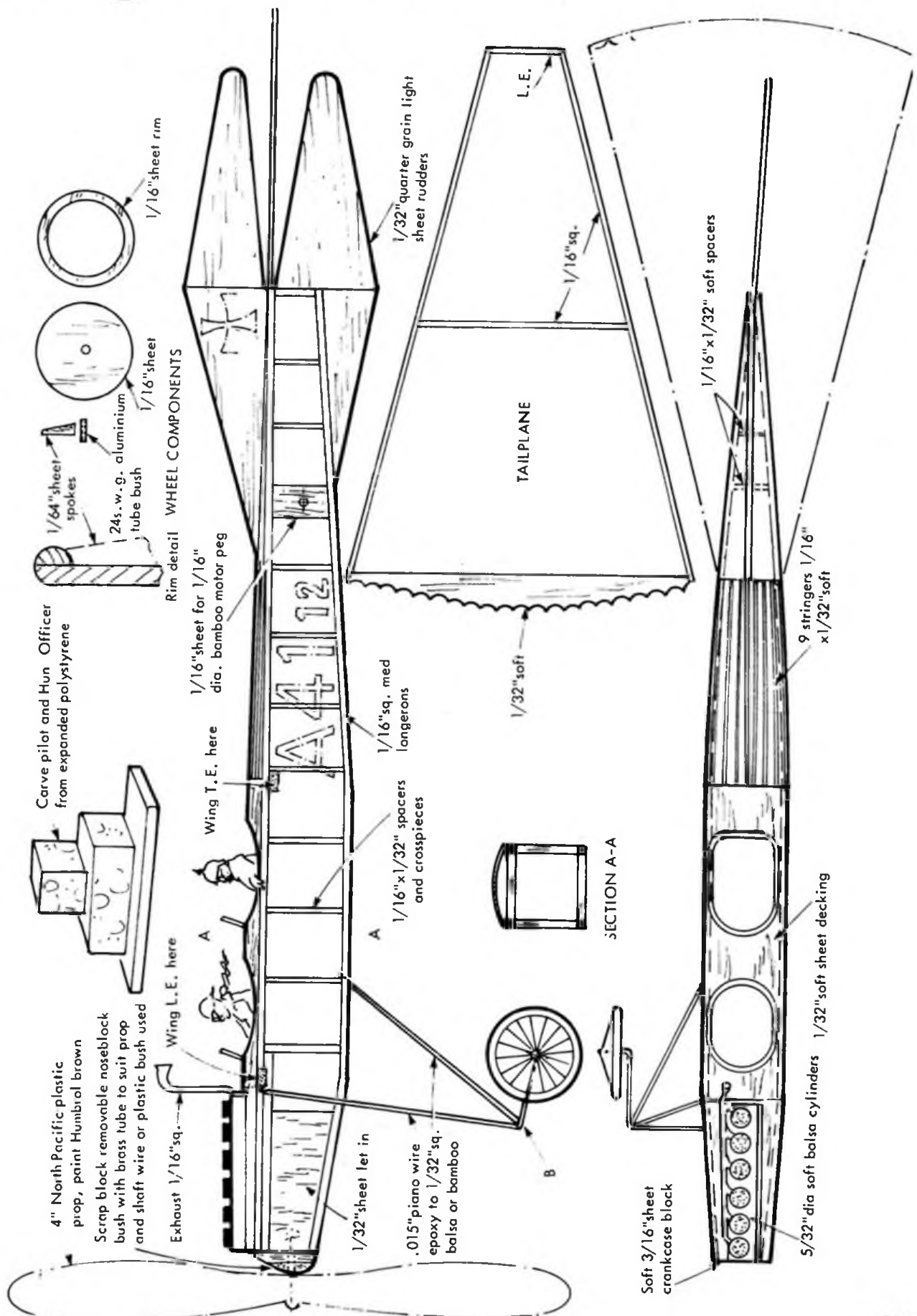
Don't forget to make the pilot and 'General' from polystyrene to give that touch of the 1914 - 1915 period.



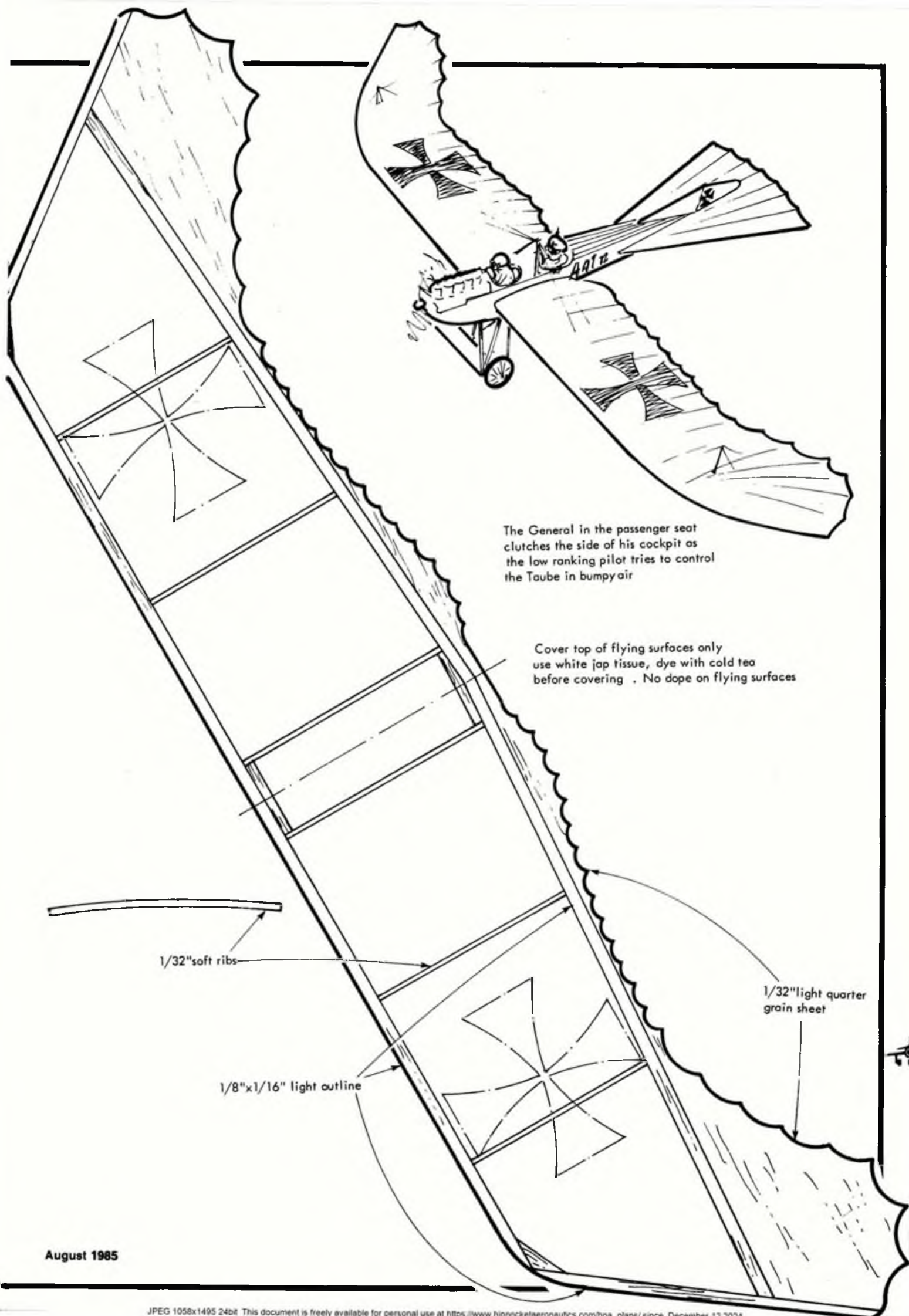
Left, build them light to fly them high? A little attention to such detail as the spoked wheels enhances the looks of this good flyer.

Rumpler Taube

A 13 inch span Peanut Scale model by Brian Faulkner



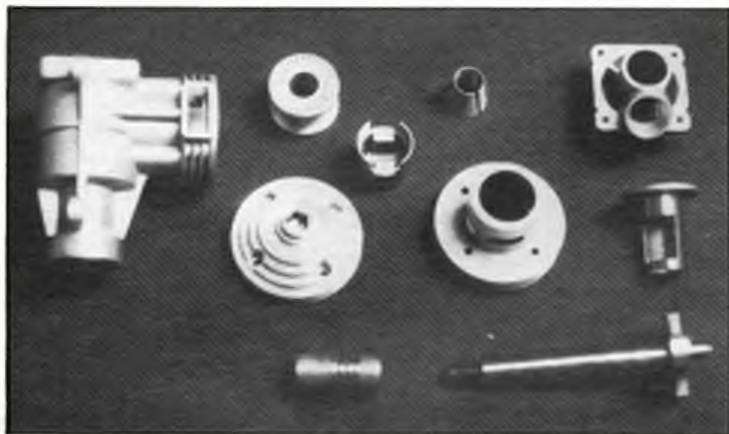
Aeromodeller



FROM THE HANDLE

CONTROL LINE NEWS

Racing with Jim Woodside



Racing Diesel Review

Quite some time back these pages carried a picture of a crankcase cast by Gordon Burford - the man behind such engines as the *Glow Chief* and *Taipen*. In fact three varieties of cases for the international 2.5cc. class are available. The photographs show an engine built around the Russian style team race crankcase, which is intended for direct bolting to the fuselage.

This is the handiwork of Rob Fitzgerald, an Australian currently doing some 'globe trotting' after the 1984 Control Line World Champs. Although the case comes with a ready cast blank finned type liner, Rob chose to machine his own with larger diameter fins.

As can be seen, all parts are finely made and go together to make a most attractive looking motor. Note the use of an unstepped shaft and its associated ground steel spacer to provide clearance between the front and rear ballraces. As a one off, the motor has not been trouble free.

The cylinder head, which has no insert into the liner has tended to leak owing to the securing screws being too far from the liner flange. Also the rear ballrace has given trouble as it is of a lightweight construction.

Right, Rob Fitzgerald's FAI Team Race (F2C) motor, constructed around one of the Russian style crankcases produced by Gordon Burford of 'Glow Chief' and 'Taipen' fame. Below left, Rob's motor dis-assembled to show component parts.



The second motor illustrated also employs a Gordon Burford crankcase. It may strike you that it looks rather like a *Nelson* but with a side exhaust. This is, in fact, very near the truth. Appropriately machined the case will accept all the components from the *Nelson*.

The one in the photograph was assembled by Don Haworth and uses a standard timed AAC liner. As far as I can judge (test flying and one competition) the configuration offers no increase in airspeed or range over the standard rear exhaust *Nelson* layout. However there does seem to be an improvement in the running characteristics of the motor.

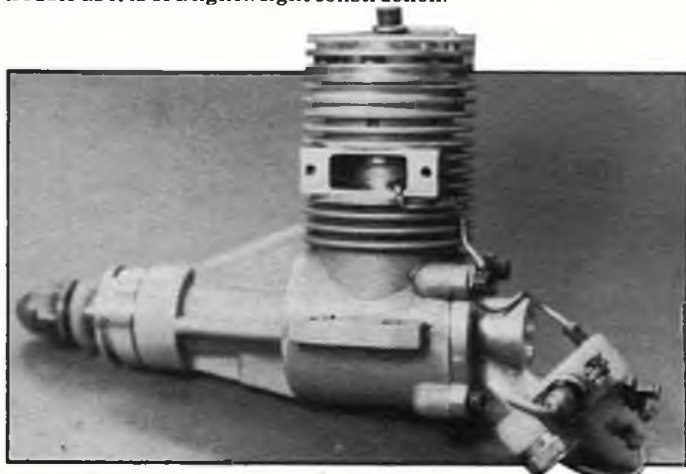
As a basic rule the faster a motor runs the more heat it will produce. The finned liners in Rob Fitzgerald's motor was a way of dissipating this heat efficiently. Another sound idea is to get rid of the exhaust gases by the shortest route i.e. side exhaust.

On the 'Kobus' F2C model the van Uden

Below left, this Burford crankcase houses a complete set of Nelson parts. The multi-valve is also Australian - from Theo Georgiadis - and incorporates a venturi prime.



Above right, the 'Burford Nelson' in model with a moulded Kevlar fuselage. Note air intakes in cowl to cool crankcase and provide air to carburettor.



brothers went to great pains to separate the hot gases and extract them as quickly as possible. Certainly their rear exhaust *Nelson* ran a model with consistent efficiency.

In short the more efficient the cooling the more can be extracted from the motor in terms of performance. It is in this area that I hope to reap some benefit. The competition flight was a two up affair on a cold day. This yielded a 3:37, which included a gliding finish. Sufficient to be encouraging...

Those interested in obtaining crankcases should contact Gordon Burford direct for details of price and delivery. Cases

available are:- F2C Russian style F2C to take *Nelson* parts (side exhaust), F1C to take *Rossi* 15 parts.

Gordon Burford, 86 Tierney Drive, Currumbin, Queensland 4223, Australia.

Contest Reports

With the exception of the first comp of the year, unseasonal weather has dogged the rest. In fact the FAI final was held over at the 1st Centralised meeting due to the severity of the rain.

The February S.C.L.A.M.S. meeting was however held in good weather and some quick times were recorded. Notable amongst these was a 3:38 in Goodyear going to Clarkson - Needham (Stockport). Even if one allows for lenient jury the airspeed and pit-stops must have been first-rate.

Hill-Metcalf, of the organising club showed that they had one of the fastest *Cipolla* 15's in the country when they returned a 3:31. Sadly, the motor was written off when a line snapped whilst testing a new model.

Incredibly the same team crashed their second motor at the Three Sisters Centralised. This time a prop blade seemed to leave the hub with the usual dire consequences. There is a clear lesson here for all competitors to check those vital lines at regular intervals.

The Three Sisters Centralised had a sharpened interest for F2C teams as times recorded in heats will now be used by the C.L. Sub-Committee in determining future U.K. teams. As the day was shortened owing to rain, only two rounds of both F2C and GY were held; fastest three into the finals.

In GY the 'big three' of Clarkson-Needham, Catlow-Jephcott and Hadfield-Daly went through to the final and finished in that order. Last year, honours were fairly evenly divided between the *Nelson* and *Rossi* engines. So far this year the *Rossi* III seems to be the favoured motor.

Many speak of the steel lined *Rossi* being easier to set in our predominantly cool conditions. I also think the poor Sterling — U.S. Dollar exchange rate must be a factor as the *Nelson* is now effectively twice as expensive as the *Rossi*.

In F2C Smith-Brown turned in a 3:39 two stop race to lead Fry-Thorpe and Heaton-Woodside, who were separated by a few tenths of a second, having both 'three-stopped' their races to low 3:40's. The final as noted is still to be flown.

The Grantham Grand Prix flown at Barkston Heath on the 21st April, suffered the same winds which seem to have afflicted these isles for weeks. 1/2 A.T.R. was cancelled and the main events flown as two-up races. Nonetheless the times were some of the

quickest of the year. Run to the three heats and a final system, most teams had plenty of time to hit the right settings. By the end of the day conditions had improved to allow the finals to be flown without trouble in regard to take-off and landing.

A pleasing footnote to these reports is the performance of a new young team from the Widnes M.F.C., Dale Ogden and Chris Martindale have been close to making the finals of Open GY on both of their outings this year, this despite conceding a lot in terms of horse-power to the leaders. Well done...

SMAE 2nd Centralised ...12th May

Doleful faces at Barkston Heath greeted the third cold and windy competition in succession. I swear it has been this way for six weeks!

Class 'B' T.R. attracted only two entries, although I suspect that some more were lurking in car boots. The cancellation of 'B' was one of the first casualties of the day. Pieces of broken stunt and combat models drifting towards the racing circles were further reminders of the conditions.

Still, you cannot keep the racers down and eventually they crept from their vehicles to compete in two up races under the direction of Roger James and Dave Campbell for F.A.I., and Alan Hill and Stuart Metcalfe for GY.

Hill-Metcalf also competed in F.A.I. and seem to have burnt some midnight oil to recover the best of their equipment damaged earlier in the year. Their reward was a 3:39.

The Novocastrians recorded times in the low to mid 40s. Fastest heat went to Heaton-Woodside who recorded a 3:35 with their *Cipolla* X2. The two fastest teams both elected to use *Nelsons* for the final - a wise decision as it turned out for Heaton-Woodside whose high-timed AAC ran very smoothly to score a personal best for that team.

Sladdin-Ross had a new side exhaust *Nelson* 15 with them. The external appearance is excellent - the fins being more numerous and thinner than the earlier R.E. versions. The exhaust by the way, is towards the inside of the circle. I will publish details and a photograph as soon as possible.

For once Goodyear attracted less entries than FAI. Ed Needham was experiencing problems in starting and setting his motor. This was later traced to a broken feed pipe inside the tank, which is built in! The suction feed motors do seem to run cleaner when the weather is chilly as I suspect they are not being additionally cooled by the very high rate of fuel flow as in the pressurised systems

Results

FAI Team Race

1 Heaton-Woodside	3 Sisters	3:35	7:18	<i>Cipolla/Nelson</i>
2 Wilson-Gardiner	Novos	3:43	7:38	<i>Nelson</i>
3 Hill-Metcalf	SCLAMS	3:39	8:23	<i>Cipolla/Nelson</i>
Goodyear				
1 Andrews-Horwood	S. Bristol			<i>Nelson</i>
2 Clarkson-Needham	Stockport			<i>Rossi III</i>
3 Whorton-Gennard	Fletham			<i>Nelson</i>

Famous Quotes No 2

These are taken from that splendid trilogy written by the late Ron Warring on control line flying. They make a splendid read and copies of the books are not too hard to find, especially through the vintage movement. What does become obvious is that when we think we are breaking new ground we are really only turning the soil broken so many years ago by the real innovators. As far as I can see the only real changes have been in new materials and the fantastic increase in horse power from our miniature engines.

Anyway two quotes will appeal to pilot and pitman respectively:

- 1 "An inherently slow model can be speeded up by whipping to a certain point".
- 2 "Most pilots find it difficult to remember exactly how many laps they have completed during an official run"

Stunt with Claus Maikis

Pick a pitch

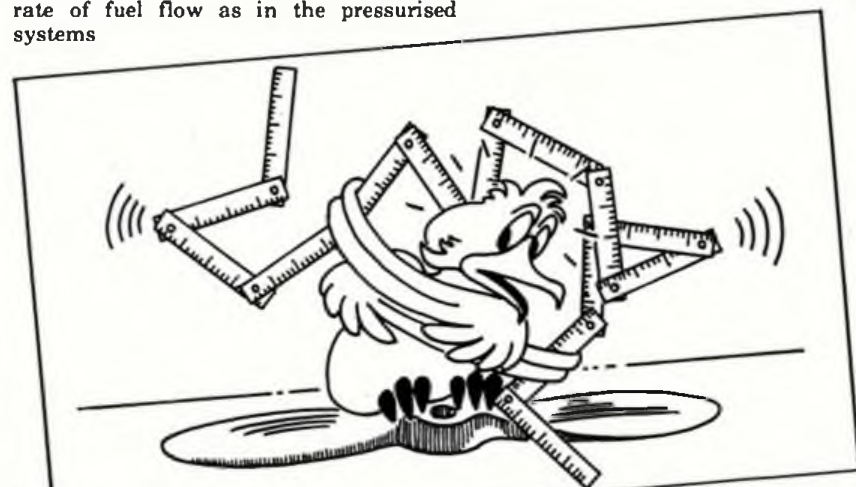
Leonardo da Vinci was the first one to realise the efficiency of the airscrew. Since that time, a tremendous evolution has developed the present day high performance propellers. Nevertheless, attention of all kinds of modellers is still centred around design, dimensions and shape of this item. Especially where top performance counts...

While top speed or economy is not the utmost goal for stunt flyers, we have enough requirements of our props to give them a critical look. The sheer ability to pull our aircraft around and (sometimes) up, is only the basic requirement.

We have learned that the choice of

Grantham Grand Prix Results

FAI Team Race				
1 Wilson-Gardiner	Novos	3:37	7:41	<i>Nelson</i>
2 Smith-Brown	Feltham	3:31	7:48	<i>Cipolla</i>
3 Heaton-Woodside	3 Sisters	3:35	8:21	<i>Cipolla/Burlord</i>
Goodyear				
1 Clarkson-Needham	3 Sisters	3:55	8:00	<i>A.D.</i>
2 Fitzgerald-Groom	Australia/CM	3:54	8:16	<i>Rossi III</i>
3 Catlow-Jephcott	Loughborough	4:07	DQ	<i>Rossi III</i>



propeller can completely change the flight characteristics of our model. Since no exact rules for prop selection can be given - it depends too much on type of aeroplane, engine, pilot etc. - we can only try a number of different props and choose the best for our set up.

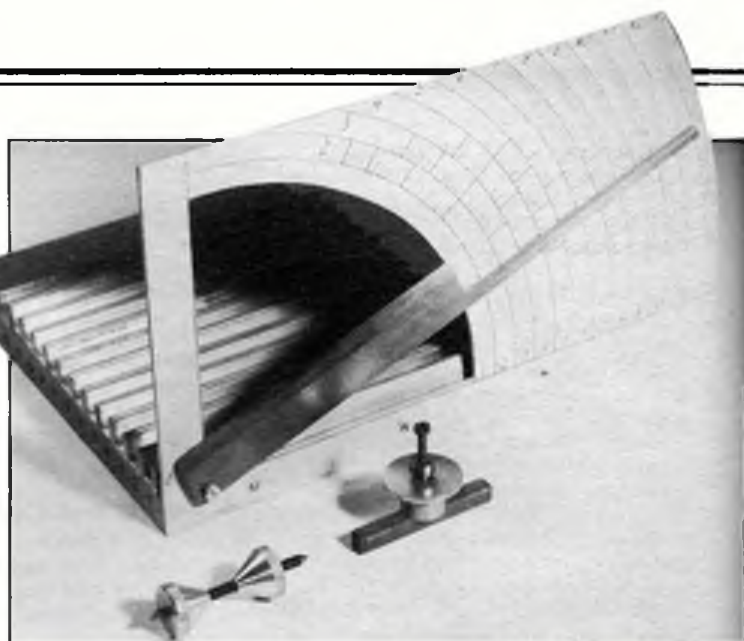
For this reason we should know what kind of propeller we are using. Since nominal dimensions are not always quite correct - to say the least - we must find out the actual dimensions for ourselves.

Another reason, is the differing quality of commercial props. In general they are sufficient for our purposes. Sometimes though, minor modifications are helpful to bring a mediocre product up to our expectations.

A third reason to have exact knowledge occurs when we construct our own propellers. While not absolutely necessary, it is an interesting experience! It can be quite an improvement to make your own propellers, especially when you prefer three blade props, self-help is the only way...

In either case a prop pitch gauge is helpful, if not a necessity. There are some products on the market, produced by backyard manufacturers aimed at the pretentious speed flyer or team race enthusiast. These items are of high quality with of course an appropriate price. I don't think we have to spend a fortune to get useful results. I've made my own pitch gauge... a friend supplied the copy of a scale, everything else is scrap material.

Right, Claus' prop checker! Pitch gauge at back, prop mounting plate and prop balancing jig. Below, figure 1 shows half size scale for pitch gauge - photocopy and enlarge or send s.a.e. to Aeromodeller for full size photocopy.



The scale (fig 1) shows pitch angles from 100 - 250mm (4in - 10in) pitch for 20 - 130mm radius, which is more than enough for our needs. A piece of 3mm plywood or 1.5mm Dural is used for the front plate. After glueing the scale to the sheet, it is cut as shown and bolted to the base plate (10mm ply or similar). The measuring arm is made of ply or Dural. Shape is not critical but be sure that the edge which indicates the pitch, is in line with the axis of the mounting bolt (point A). The edge that touches the bottom side of the prop blade *must* be parallel with the pointer edge.

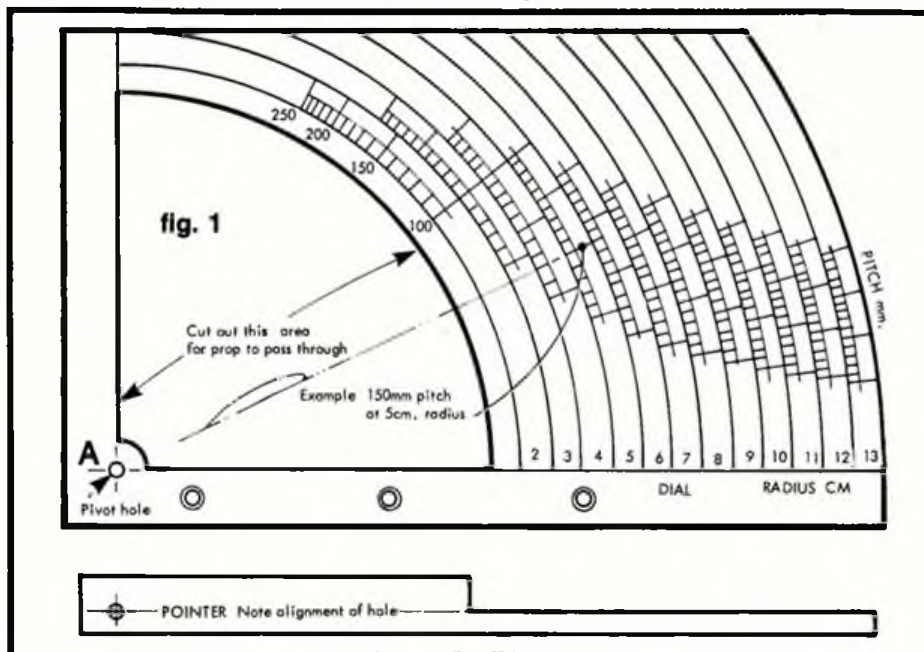
The props are mounted on a block (fig 2) which ensures horizontal squareness. I've made this block from brass to eliminate wear. This mounting block is placed at the exact distance behind the face of the scale to suit the radius to be checked. To this end, 'rails' are fixed to the base plate. If you make the mounting block 5 x 5mm, you can use 5 x 5mm spruce stringers mounted so that the centre between stringers is at the correct radius.

Another way is to use U-shaped aluminium extrusions with a 10mm outer dimension (you need this to give the required 10mm spacings). The mounting bar *now* has to be made according to the inner dimension of the U-rail. Mark radius positions on the side of the base plate.

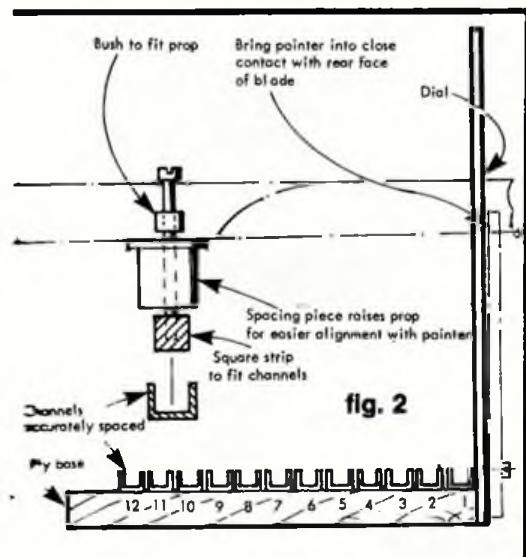
Using the pitch gauge is simple. Mount the propeller on the mounting block making sure it is positioned perpendicular to the front plate. Put the mounting block into the desired 'radius rail'. Move the pointer up, until its edge touches the bottom side of the prop blade. It may be necessary to slide the prop sideways to get exact measurement - that's what the rails are made for...

It may be helpful to have a lamp placed behind the gauge. The visible (or non visible!) light between prop blade and pointer edge ensures accurate measurement. Now look at the scale, pick the chosen radius scale and read the pitch. If you have constructed your gauge carefully very exact readings may be made.

This prop gauge is not much work. Once you have one, you'll realise the benefit of this item. You'll be able to make your own props or make exact modifications to existing ones. You'll detect inaccuracies on bad examples. And you'll be surprised how much the pitch of some props differ



MOTORS — GLOW PLUGS — SPARES
AT YOUR FAVOURITE MODEL SHOP



from that stated on the blade! All this may help you choosing a suitable airscrew. Leonardo was badly off without a gauge...

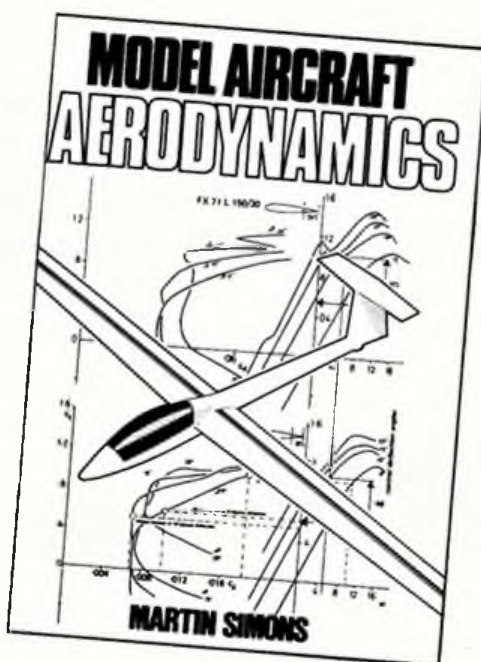
Reading lesson

At the start of the flying season I sometimes plan a flying Sunday to remove the cobwebs between my fingers. But in our lovely climate the temperature can fall to a level where you soon have icicles between the cobwebs! Trees are bent to horizontal by what the weather forecast calls a moderate wind. What else can you do but read books or write letters (or contributions to *Aeromodeller*!)

Since my attendance at the World Champs in Poland in 1980 I have corresponded with Piotr Zawada. Piotr is a very good stunt flyer, in fact he's the best in his country. He's a very proficient builder, and a busy one, too. What I didn't know: he's the author of a book about control line flying..

Now there are not so many control line books on the market, and one is always eager to see what is published. What makes this book so unique is that it is exclusively devoted to aerobatics. Can you imagine... a complete book solely filled with information for us 'stunt men'! Alas, the book is written in Polish and the only two Polish words I know are the name of the author!

Judging from the many photos and the fine, clear drawings this book should be an excellent introduction for beginners as well as a helpful guide for advanced stunt pilots. Piotr has added detailed three view drawings with dimensions of some of the better known airplanes, McDonald's



Above, popular and very readable book on model aircraft aerodynamics by Martin Simons - Published by Argus Books... of course!

"Stiletto", Hunt's "Genesis", Czech's "Ritmo", and Fancher's "Imitation".

Piotr has also included three plans. A very basic flight trainer, an advanced profile trainer, and a 35-40 size profile stunt model. These are reduced scale but dimensioned drawings with full size rib patterns. Does anybody speak Polish?

The book on modelling that has fascinated me most in recent years is *Model Aircraft Aerodynamics* by Martin Simons. Over the years I've seen quite a few books on this subject. There are some very good publications with a scientific approach to model aerodynamics. Because of the general trend in the modelling scene, the contents of these books deal mostly with RC...

While often first class information, some parts and some formulae are slightly above my horizon! The authors seem so familiar with this stuff that they do not realise what the layman or beginner needs or wants to know, or how much he doesn't know!

Martin Simon's book is a notable exception. The author starts from zero, makes logical progression step after step, and ends with a collection of understandable formulae. Everything is written in simple language, formulae are thoroughly explained, and drawings help to clarify complicated correlations (even I could understand it!)

The best thing about this book is that the knowledge gained can be applied to, and is quite helpful for, all categories of model flying, even control line aerobatics...the chapters which deal with trim, stability and control provide many answers to questions you might have asked since the design of the "Nobler".

Longitudinal stability - THE theme among control line aerobatic model designers - is discussed in detail. There are some interesting thoughts about flaps, elevators and aspect ratio. Maybe no revolutionary new ideas, but just understanding how and why things work might help you to avoid errors in your next design. *Model Aircraft Aerodynamics* is published by Argus Books and costs £6.95.



Below, stunt is often a 'loner' sport but not for this group from Germany. The 'Camel Squadron' was a club winter programme culminating with a public flying display. Simple profile fuselage was greatly enhanced with the plastic bottle 'cowlings'...



WITHOUT a doubt, the widespread availability of modern power tools has made a great impression on the modelling world. Less and less aeromodellers are content to stay with the 'broken razor blade' technology and are opting for the ease and convenience of model making using the latest in power assistance.

This is great for the tool manufacturers/distributors and to a lesser extent, great for modellers too! However, not all of us are really conversant with the pro's and con's of the tool industry and I suspect, many of us could get a great deal more from these tools if we were better versed in the *raison d'être*.

The smaller mini drills for example are of immense help in all aspects of our hobby yet being hand held they have both advantages

and snags. Most of these would be self evident to the professional engineer. Only a small part of modeldom is made up of such people and to professionals from other walks of life (be they doctors or dustmen, lawyers or lift truck drivers) a few chosen words might be of help...

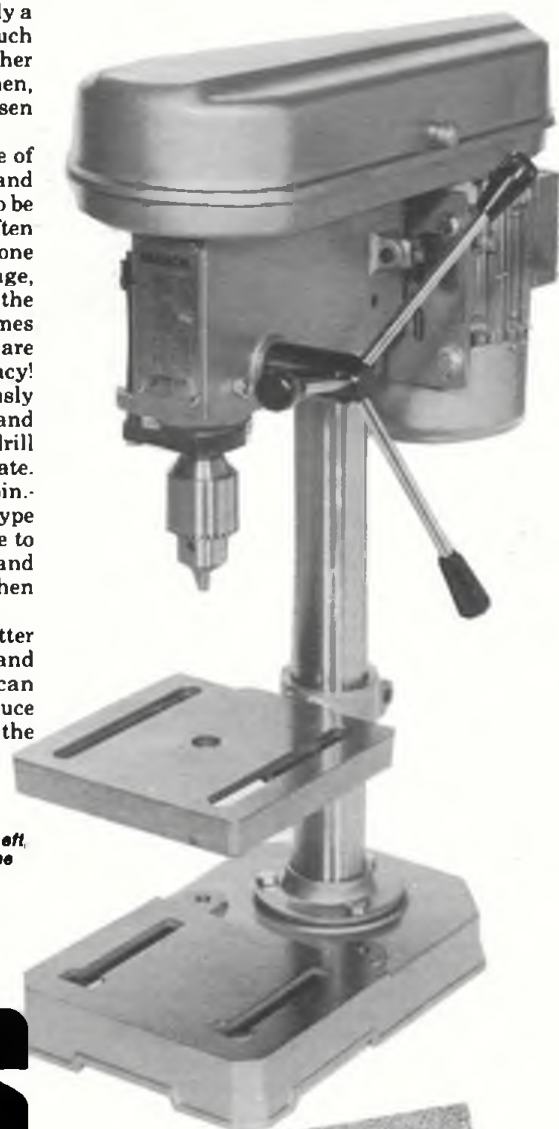
The major advantage of the mini type of power drill is their small size and one hand operation. The small size enables them to be used in confined spaces such as one often comes across in modelling practice and one handed operation enables flexible useage, leaving the other hand free to support the model. However, nothing in this life comes for free, and the accompanying snags are largely connected with power and accuracy!

Power from these mini tools is obviously limited due to their physical dimensions and therefore one should not expect to drill 1/2in. diameter holes in 1/4in. steel plate. But, if one sticks to holes of around 1/16in. - 1/4in. diameter (dependent upon the type and brand of drill) and restricts the use to balsa, ply and those light metals and plastics associated with model making then no trouble should be encountered.

Accuracy, however, is a different matter and few of us have such keenness of eye and co-ordination of hand, that we can *guarantee* that a hand held drill can produce accurately positioned holes that are at the correct angle.



Large and small... Right, the useful and reasonably priced 1/4 hp Naerok bench drill. Left, one of the long standing favourites amongst the 'minis' from Como Drills.



Power tools

Ian Peacock continues with his review of tools for the modern modeller

- in the workshop



Left, like other manufacturers of mini power tools, Como too, have several 'sets' that include fixed or variable power supplies and a variety of useful tools.

Wherever possible, it pays to fit the mini drill into a vertical drill stand (or drill press, as it is often called!) Such a stand enables consistent positioning to be maintained with ease. Careful thought during the planning stage of the model's construction will enable the modeller to drill individual parts *prior* to installation in the model. Such individual parts can be marked out and drilled under the stand-type drill with repeatable accuracy.

Even here, it pays to be a bit more careful, for there is little point in having accurate drilling facilities if the component is not accurately marked out to begin with.

Marking out on anything other than wood (i.e metal, nylon, paxolin etc) is best done

with a scribe. Failing this, any home-made, sharp metal instrument will do (fig. 1). Sharpen an old nail or an offcut of pianowire to a conical point such that it scribes a *fine* line.

The accent is on the word *fine*, for there is little point in marking out with a point that is blunt, producing a thick line whose centre is somewhat suspect. Always use a steel rule and engineer's square wherever possible, and mark out both horizontal and vertical axes to make a cross where the hole is to be drilled.

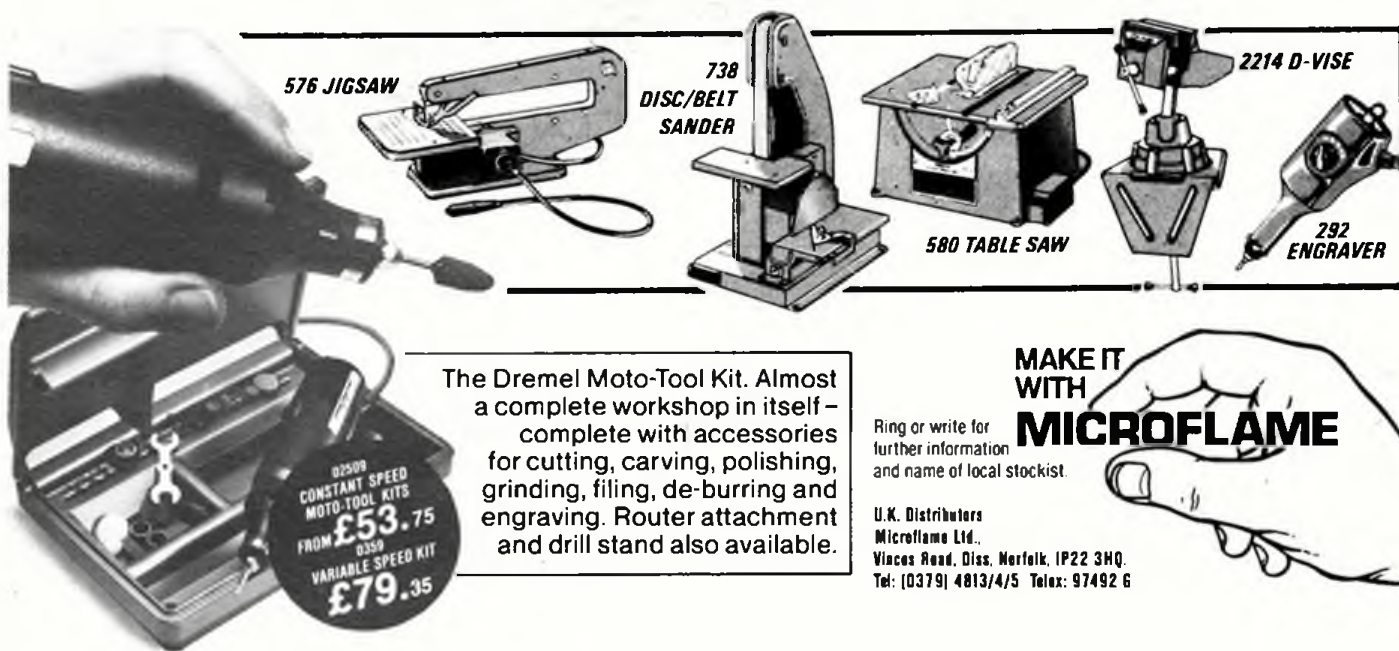
Finally, centre punch the position for the hole. Once again if commercial punches are not on hand, sharpen an old 6in. nail or a scrap of piano wire (16 swg or bigger), this time don't taper the end too much but aim to achieve something in the region of a 45° angle.

Marking out and punching in this manner will enable you to 'place' the point of the drill with much greater accuracy. When working on wood, particularly soft wood such as balsa, it becomes impractical to use a scribe

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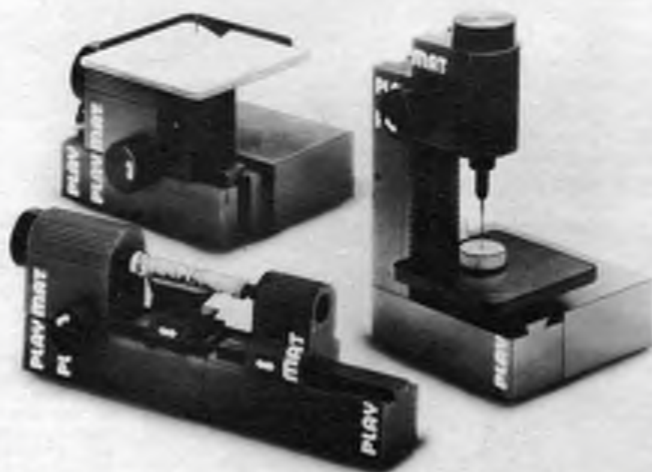
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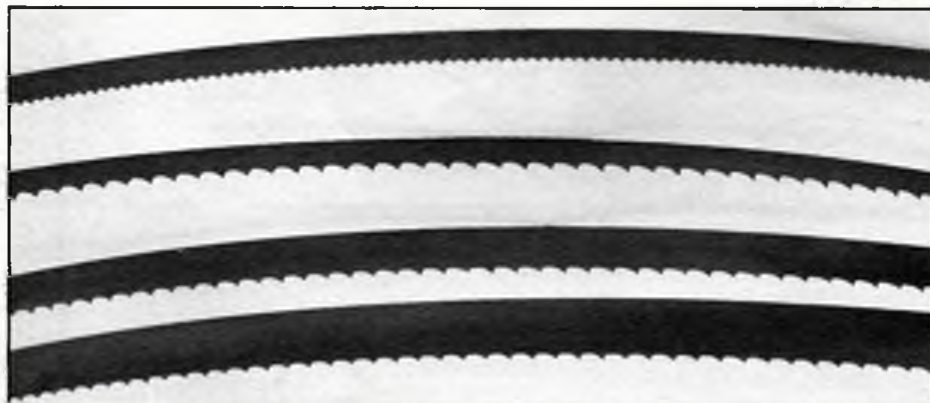
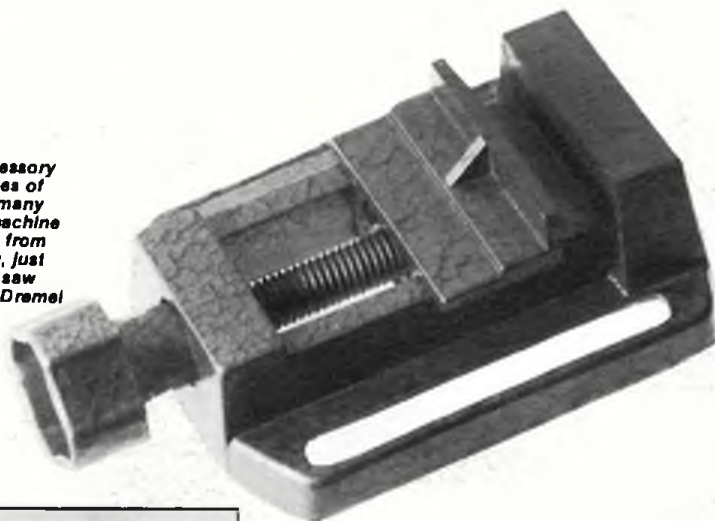
WOOD TURNING CAPACITIES
Distance between centre 140mm
Centre height 40mm
Max. dia. wood turning 16mm

and one has to resort to a ballpoint pen or felt tip. Either way, use the finest point possible to achieve the greatest accuracy and *still* use a rule and square wherever possible.

In general terms, the majority of mini drills rotate too fast for most drilling jobs (particularly when drilling metals, hard plastics and hardwoods) and there is much to be gained by using an electronic speed control.

Most suppliers of such drills have these controls in their range. They allow the drill to be driven over a full range of speeds from zero to flat out (which is often as high as 15-20 thousand rpm, whilst retaining full power. Note that one cannot simply reduce

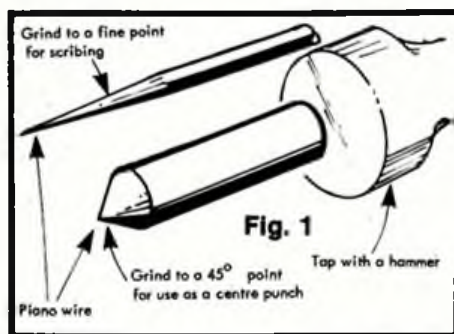
Right, a very useful accessory for holding various pieces of work whilst drilling (or many other operations) is a machine vice - this one available from Microflame (UK). Below, just some of the varieties of saw blades available for the Dremel 'Moto-shop'.



the voltage on which the drill runs, for whilst this slows it down it also reduces the power available such that at low speeds the drill will stop as soon as the drill bit meets the materials to be drilled!

Trial and error will soon produce a fair idea of the best speeds for any given job, most of which will be about half speed or even slower.

Keeping the drill bits sharp is also very



important, not only to produce a good clean hole (blunt drills will often wander, causing an oversize hole to result) but to reduce the workload on the drill motor. Furthermore, blunt drills in softish materials will often 'burn' their way through (sheer friction!) with disastrous results.

Small vices, toolmaker's clamps, or similar, make invaluable aids to drilling, as the work piece can be clamped at the correct angle to achieve accurate results. Many such clamps and vices are on the market, sometimes distributed by the drill manufacturers themselves but often sold as a separate 'universal' tool.

Machine vices of this nature are also just as valuable when one graduates to larger tools. I, for instance, use a full size engineer's bench drill as often (perhaps even more often) than the mini drills. This is of Taiwanese manufacture and my particular example is that imported by Naerok of New Milton in Hampshire.

There are a great number of 'professional' standard tools flooding into the U.K. from Korea and Taiwan and Naerok are just one of many importers distributing these items to the modelling market. Not only drills, but lathes, bandsaws, milling machines etc and

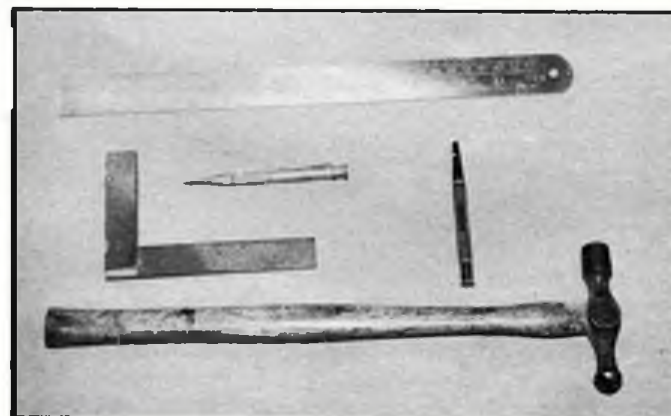
all at suitably reduced prices as one has come to expect from this corner of the globe.

Some of the smaller items in these ranges of tools are eminently suited to aeromodellers and I can thoroughly recommend readers to give them more than just a passing glance. Some of the small horse-power five speed bench drills retail at around £75-£80, and offer exceedingly good value.

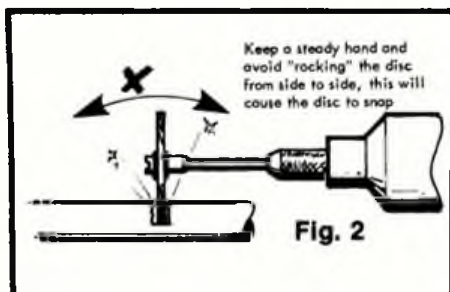
As with all things, modeller's power tools are a real case of 'horses for courses' and whereas drills of the Naerok type offer immense use over a wide range of jobs (up to 1/2in. diameter drills for instance - no more trouble opening up propeller hubs to clear Oliver 'Tiger' or K & B 40 prop drivers!) they cannot be used, hand held, in confined spaces!

When making up your mind as to just which types of power tools suit specific needs, a good look at the *whole* market, is very important as the various 'add-on' goodies available to fit some tools might well tip the scales in their favour. Take for instance the Dremel 'Motoshop' or the Hobbylux 'Jigsaw'. Both of these established modeller's jigsaws feature power take offs. That is to say a flexible shaft (typically 3 1/2 feet long) can be clipped onto the saw's drive motor. The Dremel shaft terminates in a collet drive (three sizes of collet provided) whilst the Hobbylux has a full 1/4in. Jacobs keyed chuck!

Using a flexible shaft in this manner achieves almost as much as a mini drill. In use, such a shaft is not quite as flexible (pardon the pun!) as a truly hand held mini drill - one cannot move further than three feet from the saw for instance - neither can one purchase a vertical drill stand to suit. However it would not prove too difficult to make up a small adaptor collet to enable the end of the flexi-drive to fit into someone else's drill-stand and thereby achieve the



Left, tools you should be using if working with metal - steel rule, scriber, engineer's square, centre punch and of course the ubiquitous hammer! Far left, centre punching a measured and marked up sheet of metal prior to drilling.



best of both worlds...

So - at the end of the day "yer pays yer money and yer takes yer choice!"

Apart from the continuing need to drill holes, the mini drill (or flexible drive) can be used for countless other jobs and to this end virtually every manufacturer/distributor offers an amazing variety of 'goodies' that can be fitted to the chuck or collet. Without a doubt, many uses can be dreamt up for the wirebrushes, polishing wheels, grinding stones, routers etc., yet probably the most useful is the carborundum wheel.

Dependent upon where they come from, carborundum wheels are about 25 thou thick (0.025 in). Rotating at high speed (this is a tool where the mini drill can be left to run flat out!) these wheels can be used to cut through tensile steel bolts or piano wire to produce a clean square cut.



The uses of hand held 'drill' are almost boundless. Above, using a carborundum disc to cut heavy gauge piano wire. Right, abrasive tools in many shapes help finishing awkward shapes, this cowling would be much more difficult to 'clean up' with just a file!

Whilst on the subject of grinding wheels and similar, there are often other uses for these tools than those for which they were designed. Just one such use occurred to me recently when cutting out formers for a scale rubber job. One of the tasks that I really hate is cutting out the 1/16in. square notches to take the fuselage stringers...

This is a particular pain where the notches are diagonally across the grain and



no matter how careful one is with the balsa knife, somehow the corners *always* chip off! Packing two or more of these grinding discs side by side onto one mandrel produces a ground cut of exactly the right width (fig. 3) with no mental strain and *no* broken corners!

Similarly construction can often be made somewhat easier if the formers are 'solid' i.e. the centres are not cut out. This, of course, adds unnecessary weight, not to mention the fact that one just can't thread the rubber motor through solid formers. However, removing the relevant parts of the former *after* basic construction is complete, is quite a simple matter using a mini drill or flexishaft fitted with a suitable sanding drum.

I hesitate to mention that the tiny steel burrs (dentist's variety) are extremely useful in opening up and polishing the parts in glow or diesel engines - (such mods are best left to the experts) but it does not take too long to realise the usefulness of all these motor driven accessories.

In our last brief look at the power tool scene, one of the more established names in modelling circles was omitted. Not for any reason of technical specification, nor that of price and availability but purely on the grounds that the range is really too vast and too well established to gloss quickly over in



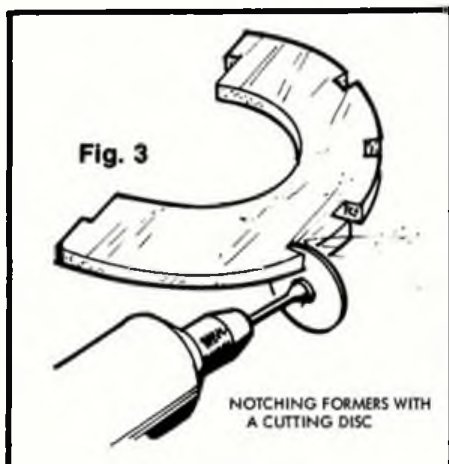
Piano wire, for example blunts hacksaw blades in seconds and is therefore not the easiest of materials to cut. Similarly high tensile steel bolts, used for axles on undercarriages are equally difficult. Slim grinding wheels of this nature can do the work in seconds (fig. 2). However, a steady hand is needed for these thin discs are not very flexible and too much wobble will cause them to snap.

Flying splinters from an abrasive disc of this nature are 'bad news' and a wise move would be to invest in a cheap pair of industrial safety glasses or goggles and wear them *all the time* when using high speed rotating tools.

Not only splinters from broken grinding discs but sparks from the cutting are also bad for eyes - so take care and save your sight.



Above left, the Dremel 'Moto-shop', together with just a few of the many accessories that are now available. Left, very neat and practical mini-drill stand from Microflame.



such a brief resume. Even now the space restriction precludes more than just a passing glance at the tools from that household name amongst tool suppliers, namely that of *Dremel*.

Dremel has been established for many a long year as that of the tool for our American modelling cousins. For almost as many years, the range has been only partly available to modellers in this country but more recently *Microflame* (U.K.) have sought to make *Dremel* a household name over here as well.

Probably, the best known item from this vast range is the ubiquitous 'Moto-Shop' a 240v tabletop jigsaw. Mine dates back to before *Microflame* picked up this agency, in fact I'm on my third motor - so much work has been done on it.

As jigsaws go, the 'Moto-Shop' is a first rate, well proven design, ideal for the modeller. Don't be put off by its other title - 'Scroll Saw' (that is just Americanese!). Basically it performs much the same job as a fret-saw but the powerful mains driven motor provides it with plenty of 'elbow'. It has a 15in. throat enabling wood of up to about 1 1/2in. thick to be cut with ease.

The throat restriction is often a problem when dealing with three foot long balsa but the blade retention clips on the 'Moto-Shop' enables the blades to be fitted 'fore and aft' (conventionally) or sideways on. Fitting them sideways enables one to saw from the side rather than from the front and allows three or four foot sheets to pass right through with ease (unless the width of wood is more than 15in. of course!)

A sprung blade-guard/work-piece hold down is supplied as standard (self adjusting) and the mains voltage motor turns at 2,875 rpm. Consequently a good high speed cutting action results. Whilst this high cutting speed is fine for balsa, ply, thin dural etc., problems may be encountered with some thermoplastic materials. Recently whilst trying to manufacture a 3/4in. *Perspex* display plinth I ran into trouble with the speed of the cut causing the heat to increase (due to the friction) to such an extent that the *Perspex* was temporarily molten as the saw passed through. So much so that it *melted back together again* behind the blade... much to my embarrassment.

As I required to cut inside as well as outside, I was unable to use a bandsaw and was forced to resort to the use of a hand fret-saw! This does not suggest that the 'Moto-Shop' is at fault, merely pointing out yet again, the 'horses for courses' approach to your use of tools!



Above, probably the most sensible way yet of cutting slots for fuselage stringers, using abrasive disc(s) in a mini-drill. Right, another variant, this time from *Mini Craft* of a mini-drill stand.

Like the majority of jigsaws of this type, the 'Moto-Shop' table can be tilted by up to 45° for bevel and angle cutting. In addition to this, the table can be raised and lowered, the usefulness of which may not be immediately obvious. But once in use, it becomes rapidly apparent that the saw blade only moves up and down by a little over a 1/4in. Consequently before long the blade teeth will start to wear over the cutting area. Raising the table by 3/4in. or so, will now put the workpiece onto a fresh area of blade.

Repeatedly raising the table will enable the user to make maximum use of any one

blade before it has to be discarded. As mentioned earlier, the *Dremel* 'Moto-Shop' has a power take-off and this can be used to drive a range of accessories...

Foremost of these is the flexible shaft. This comes with a bewildering list of accessories, drills, burrs, wire and bristle brushes, sanding drums/discs, silicon carbide and aluminium oxide grinding wheels. High speed and carbide steel routers and cutters and many many more. In fact one would be hard pressed to find a modelling job that couldn't be tackled with one or more of these accessories.

In addition to the flexishaft, a sanding disc, polishing bonnet and grindstone can all be fitted *directly* to the power take-off (one at a time - dimwit!) This allows for



Left, Naerok Belt and Disc Sander, bench mounted, a little too large (and expensive) to be found in many modeller's workshops - but those that have one bless the day they bought it... Below left, bench drill in use - NOTE THE PROTECTIVE GOGGLES...



larger area sanding grinding and polishing to be achieved. The only area of criticism that I have ever been able to raise over many years of extremely hard use, is that there is no table on which to rest the work piece when using the sanding/ grinding wheels. This feature would allow one to sand/ grind at a predictable and repeatable angle, rather than rely on the guesswork resulting from a hand held item.

However, I may be guilty of nitpicking here for this machine has taken considerable stick over the years not only from me but my children and those from the local secondary school model club (to name just the odd hundred or so!) yet it has never let me down. With *Microflame*, spare parts are quickly and easily obtained if and when required, as are a whole host of accessories.

Other items include belt/disc sanders circular saws, engravers, routers, pillar drills etc. In fact far too many to go into here. Perhaps we will find time in the future to look more thoroughly at this range and some of the cunning tricks that they can perform...



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with Dave Hipperson

Henry Tubb's Indoor Manhattan

Regular indoor flyers will already be familiar with this model. Those that fly the class will as likely as not have already formed their personal preferences and have their own designs. We are publishing this model for those that may never have flown indoor. Henry has developed it over the past five years and its a regular winner and we have it here in its most up-to-date form, incorporating all his latest improvements.

The rules allow a minimum structure weight of six grams and any weight of rubber. Maximum dimensions are limited to 20in. flat span and 20in. fuselage length excluding prop. Maximum tail size is also limited to 8 x 3.5in. and wing chord to 4in. Furthermore the fuselage has to be large enough somewhere to enclose an imaginary box cargo of 2 x 2.5 x 4 inches but please refer to page 13 of the new SMAE Rule Book for line and verse!

If you are starting indoor for the first time after reaching reasonable proficiency at outdoor construction then you probably have most of the tools and wood necessary for this model. There are a few items that will help you. The correct size fine wire, teflon thrust washers, condenser tissue and a supply of glue tips. These latter are simply

polythene nozzles which fit over the conventional balsa cement tube and restrict the usual gush to an easily controllable and very fine bead.

Thin cement is best used and for this reason I would always recommend the smallest tubes on the market. There are of course a host of special indoor glues if you wish to experiment. All the above are available by mail order from SAMS of whom I cannot speak too highly. When you have seen their catalogue you may well find it hard to resist buying just a little special wood too! SAMS - 2 The Drive Blackmore End, Wheathampstead, Herts).

Much construction technique can be gleaned from John O'Donnell's excellent article surrounding his Peanut Duration 'Cagebird' in the September '84 issue of *Aeromodeller*. This model itself of course would make an excellent starting point. That was certainly my first Indoor rubber model and so I might have a better insight into the problems and delights of Henry's ideas; I also built one of these and the photos here are of my version.

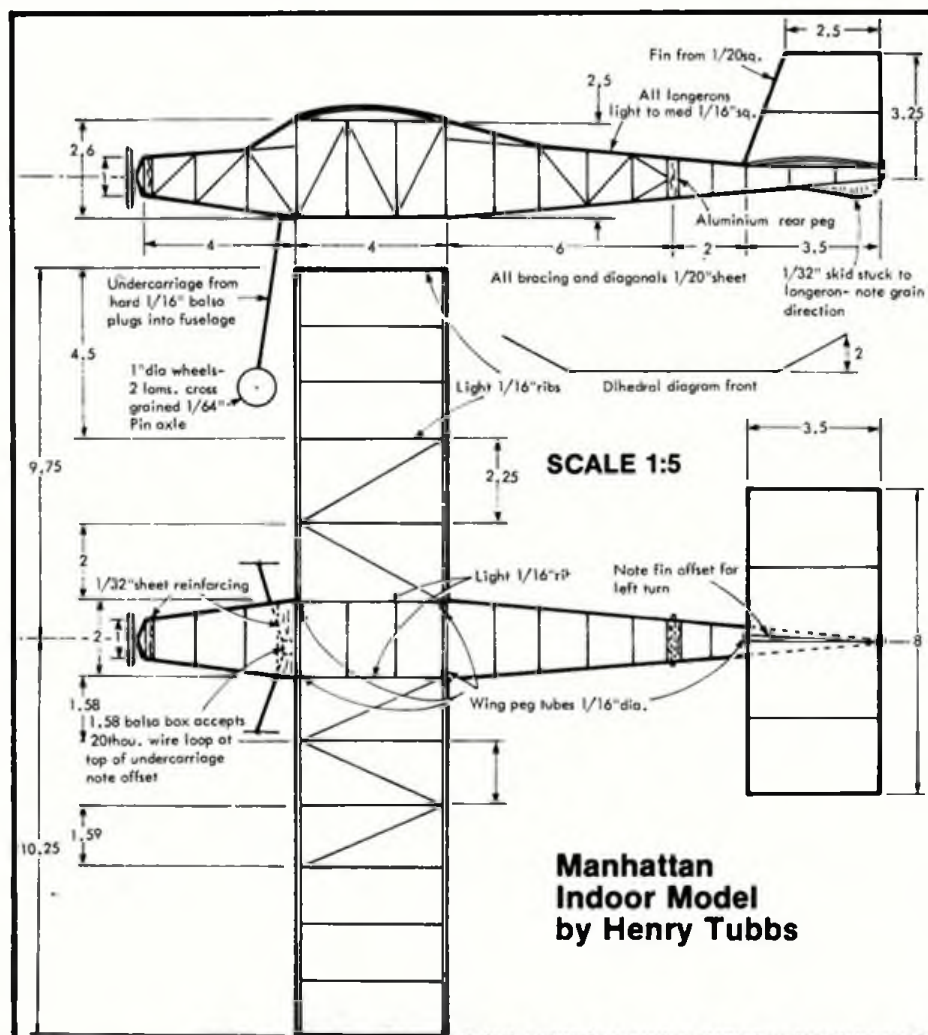
You will see that the wing construction is really quite robust by indoor standards. One should remember that this is quite a large unbraced surface supporting quite a weight. Make sure it is stiff enough - a model with a



P. Gaunt in all manner of trouble at the Grantham G.P. after quite a gentle launch. His designs have very thin solid wings and its the first one to go like this. Note the reverse load flexing the starboard tip down now all the torque is trying to twist the fuselage. (Grantham G.P.)

very flimsy wing will be difficult to trim.

You will notice that the wing is offset. This offers lift to the inboard panel without recourse to wash-in which would be difficult to maintain in an unbraced single surface unit. The undercarriage is offset too, by the same amount - to aid ROG's. I must admit I modified this to a simple straight leg plug-in set-up much as I do on Vintage models. This was at no weight penalty and makes for

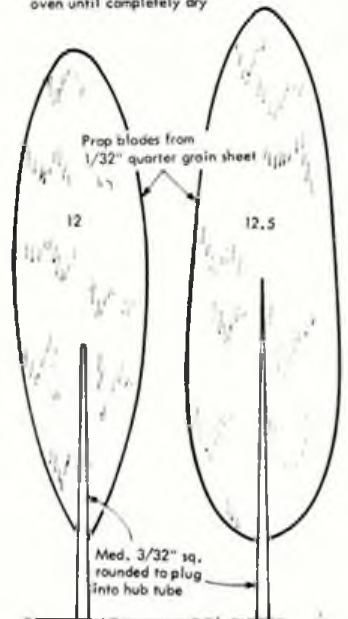


Manhattan Halfsize parts

L.E. 1/8"sq sanded to section T.E. similar
Ribs 1/32" sheet (wing)

L.E. 1/16"sq sanded to section T.E. similar
All ribs 1/32"sheet (tail)
Note: tip and dihedral ribs are 1/16" light sheet

Blade twist obtained by forming wet blanks on 6-8" dia tin offset 15° from vertical. Bound and cooked in a warm oven until completely dry



even easier storage as the legs are then separate.

Balsa cement in the tiniest possible quantities is used throughout the construction - put away the cyano it is too heavy and very light balsa is recommended for all but the longerons and nose area.

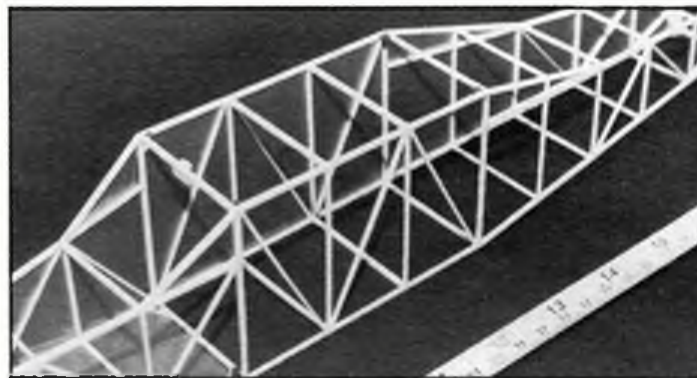
Henry's method of prop blade construction is excellent. Simply form well soaked blanks from quarter grain light 1/32in. sheet around a tin of between 6in and 8in diameter and at 15 degrees to the vertical and allow to dry in a warm oven. This system has proved its worth in EZB. Pitches in terms of actual inches are not very important at this stage, you can always start calculating such things later.

Henry's system allows for detachable blades and therefore the final pitch can be 'tuned' to the ceiling height under which you are flying. It is then a simple matter to construct separate prop assemblies for different venues if you want to.

The condenser tissue is pre-shrunk before applying to the flying surfaces. This is very important. I did it most successfully by sandwiching pieces of tissue between damp heavyweight *Modelspan* and ironing dry. The tissue used to cover the fuselage need not be pre-shrunk - I water shrunk it after covering. That may be dicey on a very light fuselage which mine was not. Go gently if you are applying water by brush - it is better to spray it on.

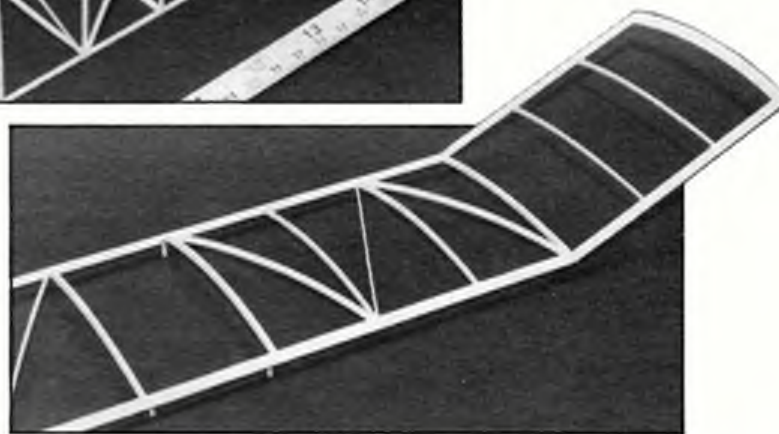
All tissue was stuck on with dope - very thin dope. At first I used too much thinners, and the tail plane dissolved into a kit of parts! Experimentation showed that 25% dope 75% thinners was about as thin as it was safe to go. There are a great many special condenser tissue cements on the market (*SAMS Catalogue again*).

I can't believe anything is lighter than dope but remember dope based adhesives *shrink* and water based adhesives (Henry



Left, fuselage of 'Manhattan' half covered. Paper tube bottom left takes port undercarriage leg. My only modification to Henry's plan.

Right, 'Manhattan' wing structure prior to covering. Note the substantial leading and trailing edge cross sections.



uses very thin *Polycell* wall paper paste) wet and *expand* the balsa...Take your choice.

Finally, the rubber. Henry is at pains to point out that there are so many variable factors governing performance - such as model weight, ceiling height, prop diameter, pitch, rubber cross section and length that 1/8in strip is recommended only as a starting off point...

Rubber of slightly more or less cross section may well improve durations under certain conditions. The aim being to gain as much height as possible and land with just enough turns on the motor to maintain revs. Dead stick descents are inefficient in the extreme.

Coupe torque meter

If a rubber model is going to crash under power it is more than likely that it will do so sooner rather than later in the flight. No matter what quality your rubber nor how much energy you get back from your winding efforts you get most power at launch.

A little too much, more than the model was trimmed to handle, and that finely adjusted pattern can be thrown all over the sky or worse terminate in a spin. If we can measure the torque of the motor at the end of winding it becomes possible to quantify the effects of a few more or a few less turns.

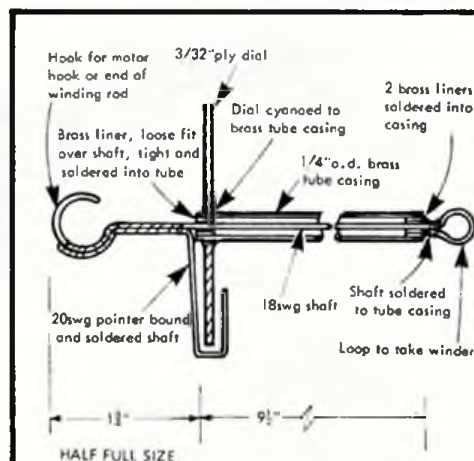


Fig. 1

In other words, once you have a record of the torque a model has been trimmed to, you need never exceed this figure accidentally again. Thereby greatly reducing the chances of dangerous trim upsets, even when experimenting with different lengths and qualities of rubber. Of course falling very short on torque also effects power trim but not nearly so seriously, unless you have one of those annoying models that climb vertically for the first 30 seconds!

Manhattan Indoor Model by Henry Tubbs

Weights:-

Fuselage	2.8 - 3.0g covered
Wings	1.4g covered
Tail and Fin	0.4g covered
u/c assy.	0.45g
Props 12"	1.0g
12 1/2"	1.15g

Rubber: Recommended start 1/8" strip 26" loop approx 4 grams. 0.115" to 0.135" strip in loops weighing between 3.5 and 4.2 grams have been tried.

General notes:

All ribs from quarter grain balsa
Tail and fin covered with ultra light condenser paper

Wing covered with standard condenser paper

Fuselage covered with standard condenser paper or Jap if weight allows.

Tissue used to cover flying surfaces should be pre-shrunk *before* applying to the structure.

Fuselage can be water shrunk after covering and very lightly doped if weight permits.

Prop blades can be tight plug fit into 3/32" tube hub until trial and error arrives at optimum prop pitch for your venue. Then tack glue. Centre of hub 3/32" round hard balsa.

Prop shaft 0.018" - 0.024" wire

CG at approx 50%

Windscreens from clingfilm.



Left, the Coupe d'Hiver Torque meter reading up to 40oz/in - left. Compared with the Woodhouse unit for larger loads on the right. Both worth their weight in rubber!

The device shown here (fig. 1) has been designed to handle the low torque loads of Coupe d'Hiver and lightly powered Open Rubber models up to 40oz/in. It uses the principle that the angular deflection along the axis of a piece of wire - in this case 10in. of 18swg piano wire - is proportional to the torque necessary to twist it.

The ends of the meter suit my winding system - you may require to modify them slightly to suit yours. The calibrations work out conveniently to approximately 10oz inch of torque per 90 degree deflection so that sub-dividing those into four segments shows 2.50oz inch increments.

In my experience a fairly weak Cd'H motor - I tend to favour something in the region of 12in long - will give a little over 15 oz inch at full turns. At the other extreme - 10in. of really thick *Pirelli* or *FAI Supplies* will take it around to over 20 maybe 25oz. ins. Remember though that the calibrations are only for *reference* - any scale sub-divisions will do as long as they are numbered.

Undoubtedly this basic design could be modified to accommodate the higher torque loads in F1B, Open Rubber and Vintage. A thicker wire probably 16 or even 14 swg would be needed; perhaps it would have to be shorter too, and remember if you are going to scale up, reinforce the hooks and loops to take the greater strain. My advice for the heavier load applications, particularly if your time is short would be to buy the excellent Wilder/Woodhouse unit. I bought one of these some time ago and reckon it to be my most useful £15 aeromodeling investment. They are available from Mike Woodhouse, 12 Marston Lane, Eaton Norwich, Norfolk. NR4 6LZ. £14.50 post free.

Torque meters are not gimmicky extras strictly for the boffins. They are the next logical step after the winding tube, for more consistent and trouble free flying. Try either mine or the Woodhouse version and you will soon see how they help build confidence in your model.

SMAE Mini/Vintage Meeting ...28th April

Seven classes are flown at this meeting to offer something for everybody, particularly when it is too turbulent for sensible flights with the more frail Mini classes. This year despite the cold fresh westerly, a fair number of entries were recorded in all events.

The middle few hours definitely brought the worst conditions after a bright start clouded over. Most that flew then, fared badly. However, early 'Lanzo' flights in Vintage soon had the top two places in this class pegged, even though they were far from perfect.

Chas Plant then made efficient use of *two* power models and 'mixed' events. A 'San de Hogan' in Vintage and an own design in Slow Open; flown together to halve his downwind trips! The gamble rewarded him with the top place in Slow Open and a useful 3rd in Vintage. Actually his 'San de Hogan' was most impressive and very high on its 20 second run. He dropped time on his 2nd flight in strong sink during that bad mid-day patch.

Clear leader quite early in Cd'H proved to be Anthony Ball who put in some very impressive flights. As the afternoon wore on the expected drizzle arrived and conditions

should have deteriorated further but the wind reduced to a virtual calm for the last 30 minutes. Those that had started late were able to complete numerous flights very quickly and in quite neutral air.

Ferer and Lavis in Cd'H both benefitted from this, the latter having been busy with A1 in the morning and the former (and eventual winner) not arriving until lunch time. He actually flew his last two flights within the last minutes of the contest.

Even Stafford Screen had been discouraged from flying 1/2A in the morning by the wind, but as it dropped he completed a perfect score alongside clubmate Harris, who had flown throughout the day. Peers' 3rd place total, was also made at the end of the day, only his first flight spoiling his chance of a flyoff.

John Cuthbert was 'sweating' on a full score in A1 for some time, particularly just before the event closed when only Phil



Above, Joe Flynn releases his successful 1/2A design at the Grantham Grand Prix. Drawings in this column soon...

Owens could have taken him to a flyoff. Phil's last flight sagged off the line and dropped him right out of contention. It was encouraging to see a positive increase of both numbers flying in, and standard of, CO₂... Must be the more reliable motors now available.

Many people flew very well even in the roughest part of the day. I saw Tennant and Kinder both making numerous good flights but in this class too, those that started late benefitted. Chris Strachan and Dave Hipperson gaining the doubtful privilege of a flyoff in the very cold damp evening air. Here Chris proved the decisive winner with an excellent near three minute flight whilst Hipperson over charged a very cold motor which ran erratically for his worst flight of the day. Screen made no such mistake in the 1/2A final with his 'fly-over' after Harris' motor cut on launch.

Unluckiest man of the day must have been Terry Dilks. His first flight in Vintage failed to max in a patch of poor air and was



Above, S. Darmon prepares for the Open Glider flyoff in the nearest thing to sunshine the weather had to offer at the Grantham Grand Prix.

then subsequently run over on the road just outside the drome. So, one model down and little chance of placing now, after the bad flight, he sportingly continued - this time with his 'Bazooka'. No mistake with the air on this flight, in fact one of the best bumps of the day. An easy max - the trouble was it didn't dt! I found him staring wistfully up and into space on the far peri-track watching the tiny dot finally disappear miles up.

Commiserating on the way back up-wind, I pointed out how luck always plays a large part in the results and he should not be too demoralised. A few seconds later I was informed that the lucky max in Slow Open I had just retrieved so jauntily, did not count 'cos I had forgotten to enter! There's always a new way of making a mess of things...

Results

A1 Glider (12 flew)

1 J. Cuthbert	Grantham	10:00
2 S. Philpott	Biggles	9:41
3 J. Bailey	Biggles	9:30

Coupe d'Hiver (9 flew)

1 G. Ferer	Leicester	9:12
2 B. Lavis	Biggles	8:59
3 M. Benns	Peterborough	8:57

1/2A Power (8 flew)

1 S. Screen	Birmingham	10:00 + 2:07
2 P. Harris	Birmingham	10:00 + 0:03
3 R. Peers	Falcons	8:54

Vintage (8 flew)

1 D. Hipperson	Grantham	8:30
2 R. Peers	Falcons	8:27
3 C. Plant	Darlington	8:17

CO₂ (7 flew)

1 C. Strachan	Biggles	10:00 + 2:41
2 D. Hipperson	Grantham	10:00 + 1:50
3 P. Ball	Grantham	9:48

HLG (6 flew)

1 P. Ball	Grantham	4:56
2 P. Davies	Richmond	4:25
3 M. Page	Peterborough	4:08

Slow Open Power (5 flew)

1 C. Plant	Darlington	7:30
2 J. Carter	Falcons	6:53
3 B.M. Perks		6:41

Woodbury Weekend

...4th - 6th May

Call me a perfectionist but I rarely give away at the end of a contest without some reservations about the organisation. Bristol and West's Woodbury Weekend is becoming the annual exception. A small group from this club put in a great deal of work both before and during their three day event and much of it in spheres not normally associated with a free flight contest.

The effort shows and is appreciated. This year it showed quickly when despite a discouraging wind that sprang up seconds before Saturday evening's Champagne Flyoff, more flew than ever. Chris Strachan (pronounced Strawn by the way!) took Vintage comfortably with his distinctive red and white striped 'Lanzo Stick' after an initial power stall. The model was later trampled on by cattle!

Peter Michel launching in the same buoyant patch, also had a very long flight but his time-keepers were not equipped with binoculars and the last few minutes from his 'Korda DT' were never seen. Mike Kemp (Jnr) showed his dad how to do it by taking 3rd with an 'RAF 5'.



Above, one of the handsome marble trophies presented to the winners at the Woodbury meeting. The trophies were made by Stonemason Dave Greaves, better known for his Wakefield models!

Tony Hall won the first of his many weekend-end placings by topping the Open Power flyoff despite a short run from his massive *Super Tigre 51* (sounded like a chain saw) in a model that might have been considered about ideal for a 2.5cc a few years ago.

Strachan was active again in Open Rubber, but this time had to be content with 2nd behind John O'Donnell's near 7 minute flight. John's model distinguishing itself by comfortably clearing the woods and various other down-wind obstacles so many others fell victim to. In Open Glider Martin Kinder's ultra short nose, one piece wing layout, proved victorious but only by 10 seconds.

The following day was ear-marked for the three Open events. The wind had backed and strengthened and with it came some occasional and very heavy showers. Entries were reduced dramatically but the Falcons Club put on the determined display we have come to expect of them.

All Carter's Rubber flights were very high - he was particularly lucky to get the first one back - he swears he found it in a lunatic asylum! The day was his by a mile!

Peers made sure this time in Power even after a rather left launch on the first flight had his *ETA 29* model very low at the end of the run. Much hilarity ensued when it then proceeded to slope-soar until a decent thermal came by. Martin Kinder looked like the Glider winner again but a disastrous premature release on his 2nd flight when he trapped a finger between tow-line and spool in a sudden gust had given him one very bad flight. John O'Donnell slipped in with three well controlled flights from his A1 and despite severe low level turbulence he took Open Glider comfortably.

With virtually the entire entry and their retinues filling the Castle Brake Caravan Park, that evening's barbeque and prize giving was undoubtedly the highlight of the week-end. Once again aeromodelling proprietor Alan Parker finding time to organise the food, talk to everyone and lay on a local folk group.

The prize-giving itself was conducted by Gerry Pink and gave a further insight into just how much effort had gone into the venture. Champagne and glasses went to winners of Saturday night's fly-offs, trophies, wood and cash to the Open event winners. Even the threat of an 8am start for the five flight FAI event the following day did nothing to inhibit that night's revelries. There were people still visiting in our caravan at 2.30am!

Thankfully FAI day was much kinder with a slight drizzle and near calm developing slowly into an almost summer afternoon. Peers switching to F1B, taking Wakefield with a perfect score after John O'Donnell had lost his number one model on dt failure in the first round.

John Cuthbert, currently on form in glider, and making his first appearance in Devon, completed a perfect score to win F1A although there was talk of his having lost a model on the last flight. That short nosed glider of Martin Kinder taking him into the placings for the third time. Just behind him came Tony Hall again - his fourth result of the week-end!

The Chilterns made up for bad luck in the first day's Champagne fly-offs with a clean sweep in their favourite class - F1C. Prizes for this last day's events were awarded on the field adjacent to the familiar score board, which was now complete with printed and water-proof name labels and comprehensive lists from all three days flying.

The prizes for FAI were perhaps the most magnificent of all - marble plaques crafted

Below, more trophies...this time awarded at the Grantham Grand Prix together with engraved glass goblets...worth flying for!



by Dave Greaves, additional to cash and bundles of high quality balsa. This team from Bristol and West should be offered a decent salary to run the British Nats for us one year...Thanks chaps.



Results

Champagne Flyoffs - Saturday evening

Vintage

1 C. Strachan	Lanzo Stick	6:04
2 P. Michel	Korda DT	4:53
3 M. Kemp (Jnr)	RAF 5	2:44

Open Power

1 A. Hall	3:39
2 R. Peers	3:32
3 P. Lumsden	2:37

Open Rubber

1 J. O'Donnell	6:47
2 C. Strachan	5:46
3 J. Carter	4:12

Open Glider

1 M. Kinder	2:49
2 A. Hall	2:39
3 J. Abbey	2:32

Open Events - Sunday (2:30 max)

Open Glider

1 J. O'Donnell	6:56
2 M. Kinder	5:30

Open Rubber

1 J. Carter	7:30
2 J. O'Donnell	1:56

Open Power

1 R. Peers	7:30
2 A. Chilton	6:17
3 A. Hall	4:36

FAI Events - Monday (5 flights - 2:30 max)

F1A

1 J. Cuthbert	12:30
2 M. Kinder	11:38
3 A. Hall	10:31

F1B

1 R. Peers	12:30
2 G. Pink	12:20
3 J. O'Donnell	12:08

F1C

1 F. Chilton	12:30
2 A. Chilton	11:49

SMAE 3rd Area...12th May

Results

Open Glider (17 flew)

1 P. Owens	Liverpool	7:30 + 2:15
2 B. Lavis	Biggles	6:57
3 J. Carter	Falcons	6:55
= J. Down	Stn Bristol	6:55

F1B Weston Cup (Plugge 30 flew)

1 D. Greaves	B&W	11:35
2 M. Chilton	EPS	11:17
= M. Moulton	Anglia	11:17
4 B. Martin	Tynemouth	11:08
5 D. Hipperson	Grantham	11:07

Open Power White Cup (9 flew)

1 J. Hopper	Freebird	7:30 + 5:43
2 J. Bailey	Biggles	7:30 + 3:41
3 T. Payne	Biggles	7:30 + 0:7R

Plugge positions after 3 events

Anglia	593
Bristol & West	553
Biggles	541
Vikings	498
Tynemouth	476

Senior Championship positions after 6 events

D. Hipperson	20pts
R. Peers	9pts
S. Screen	9pts
J. Bailey	6pts
M. Fanham	6pts

Cardington...19th May

Results

Indoor: Index event

1 M. Croome	CO ₂	84.8%
2 L. Barr	EZB	83.8%
3 D. Hipperson	CO ₂	79.1%
4 B. Roberts	Flyrod	78.2%
5 B. Hunt	EZB	74.6%

MIND THE LINES

with
Andy Brough

Open invitation...

In order to make the column more reflective of the current Vintage control line scene, or even influence it, let's hear more about what 'you' are building, flying, ideas you may have or photographs of your latest project, plans discovered, wants or reports of any rally attended all go to make interesting reading.

You'd be surprised how much an article or suggestion in *Aeromodeller* influences the modelling community. I'm sure Alex's 'Vintage Corner' has shown the way for so many R/C or F/F modellers especially with the many photos of such beautiful models. An inspiration to us all. So, come on, let's show what can be done on the control-line front.

Most British Vintage modellers would be interested in the current 'old tyme' control line goings-on Stateside so any of you modellers over the pond who would like to send in any reports and photos they would be gratefully received. Hint hint!!

Old Warden 1985

Even though I write this is early May this will be nearly the last issue before our Annual Pilgrimage to Old Warden for the

Right, delving through old Aeromodeller Annuals can turn up all sorts of interesting models...and plans! Such a one is 'Hot Rock', a stunter that Andy Brough particularly enjoys flying. More on this one in a future issue!



Aeromodeller Vintage Days. Each year the turn out of control line models has increased but this year I hope we will see an even greater showing especially with two days to aim for...

Apart from all the sport flying there will be three organised competitions, Mercury Midge Speed, Old Tyme Stunt and the much sought after Fireball Trophy donated by Mike Beach. The first two events have been covered in the last few issues but it is a while since the Fireball Competition was mentioned.

This event of course was named after the model which started it all off - Jim Walker's 'Fireball' - and is for any type of control line model designed or kitted before December 1950. The only requirements are that the model looks like the original and is flown in an appropriate manner to the original model. The only trouble with that is that the Judge has to be of an age to remember what the model originally flew like!

That wouldn't seem to be a problem though as you'd be surprised how many people have described to me Peter Cock's winning flight in the 1948 'Gold Trophy'. It must have been a momentous occasion for it to be remembered in such detail - I can't remember last year's 'Gold Trophy' flights!

Don't think that you must have a Vintage engine to enjoy these pursuits. The 'Midge' Rules allow non-vintage engines and the stunt rules give only 10 points for all original and none for a replica. Therefore a modern motor such as a PAW or similar will suit admirably and with the advantage that they can be fitted with silencers, so can be

flown at your local field.

On the other hand if you have a genuine vintage motor now is the time to take it out of the cupboard and use it in the relative safety of a control line model, no interference with radio and it shouldn't suffer a fly away!

Scale Stunt

Looking as I do through old issues of the *Aeromodeller* and *Model Aircraft* I noticed a type of model that has long since died out - the scale stunter: these models tended to be powered by 2.5cc diesels or Frog 500's, be 25in. to 35in. span and of lightweight construction. Although many were described as 'super scale' or to quote an example "one of the most enjoyable aspects and interesting phases of control line flying is in the operation of exact scale replicas". Mostly they were anything but exact to modern eyes but they did have character and were generally no more complicated than contemporary stunters.

Now one of my pet interests over the years has been control line scale but for one reason or another I have never got round to building one, but a vintage scale stunter is another matter. The models seem fairly easy to construct and since they were really disguised stunters the flying part shouldn't cause too many worries. All one has to do is build it exactly from the plan and give it a decent paint job and that is it! No three-view to study or photographic details to worry about.

To wet your appetite I've made the following list of scale stunters that are still recorded in the *APS Plans Handbook X* List, using the Old Tyme cut off date of December 1952...as the peak years seemed to be the very early '50s.



Left, back in the early fifties, speed models (other than the 'Midge') were to be seen at nearly every rally and gala. The 'Captain Sensible' look-alike seen here with just a few of his winners, is Pete Wright...

Pitts 'Little Stinker' MA 98	MA98
Hawker 'Hart'	CL/462
Hawker 'Tempest'	CL/336
Wakett 'Boomerang'	CL/433
Fokker DVII	CL/403
Fokker 'Tripe'	CL/307
Ercoupe	CL/385
Sopwith 'Tripe'	CL/361
Tipsey 'Junior' 28½"	CL/321
Tipsey 'Junior' 34"	CL/322
Tipsey 'Junior' 39½"	CL/323
Globe 'Swift'	CL/484
Lockheed 'Sirius'	CL/328

I know there must be many others such as the *Model Aircraft* plans no longer listed. These include the *Hawker 'Fury'* (MA40), 'Thunderbolt' (MA79), 'Harvard' (MA87), 'Wyvern' (MA105) and kit plans of the period. *Veron* produced some scale stunters one of which, the *Hawker 'Sea Fury'* had coupled flaps and elevators back in 1949! Phil Smith the original *Veron* Chief Designer, whose adverts have appeared in recent issues may have some of these *Veron* plans available.

For my part I shall build one for Old Warden, probably the *Tipsey Junior* or *Pitts Special*. Also I think I shall include a three-line system for throttle control. I don't know whether this was done prior to 1952 but it makes the flying much more fun.

If I get sufficient reaction to scale stunt I will organise a competition next year, based on a simplified old tyme stunt schedule compliance with the original plan plus workmanship. So *feed back* please.

Model of the Month

The December 1948 issue of the *Aeromodeller* revealed a super little scale stunter in the form of W. Musciano's *Fokker 'Triplane'*. Mr Musciano was a well known builder of this type of model and the 23½ in.

span 'Tripe' is one of those models that almost demands to be made after just one glance at the plan. The original was flown with a glow plugged 'Bantam' 19 on 20ft. to 40ft. lines. The shorter used on *very* windy days!

The wing section shown is flat bottomed and the model would loop but for inverted flying and outside loops a symmetrical section such as NACA 0016 was recommended. One puzzling feature is the wing incidence - zero on the bottom +2° on the middle and +4° on the top! Perhaps Geoff Burkett who recently built a large *Fokker 'Triplane'*, would like to comment. One is not supposed to alter such things as wing incidences though, so if you build one you'll find out how it flies...

Vintage Control Line Rally

As I couldn't attend the Rubery control line Rally on the 8th May, Peter Martin very kindly sent details of the event.

The day was overcast and windy but 20 to 25 cars turned up and unloaded many models including the following: 'Taurus', 'Zilch', two 'Stunt Queens', 'Stunt King' (Yulon 30), 'Ambassador', 'Demon King', 'Happy Harold', 'Icarus Snr', KK 'Scout' (Amco 3.5) 'Vandiver' (Frog 180) and Peter's

own *Frog 500 'Juggler'*.

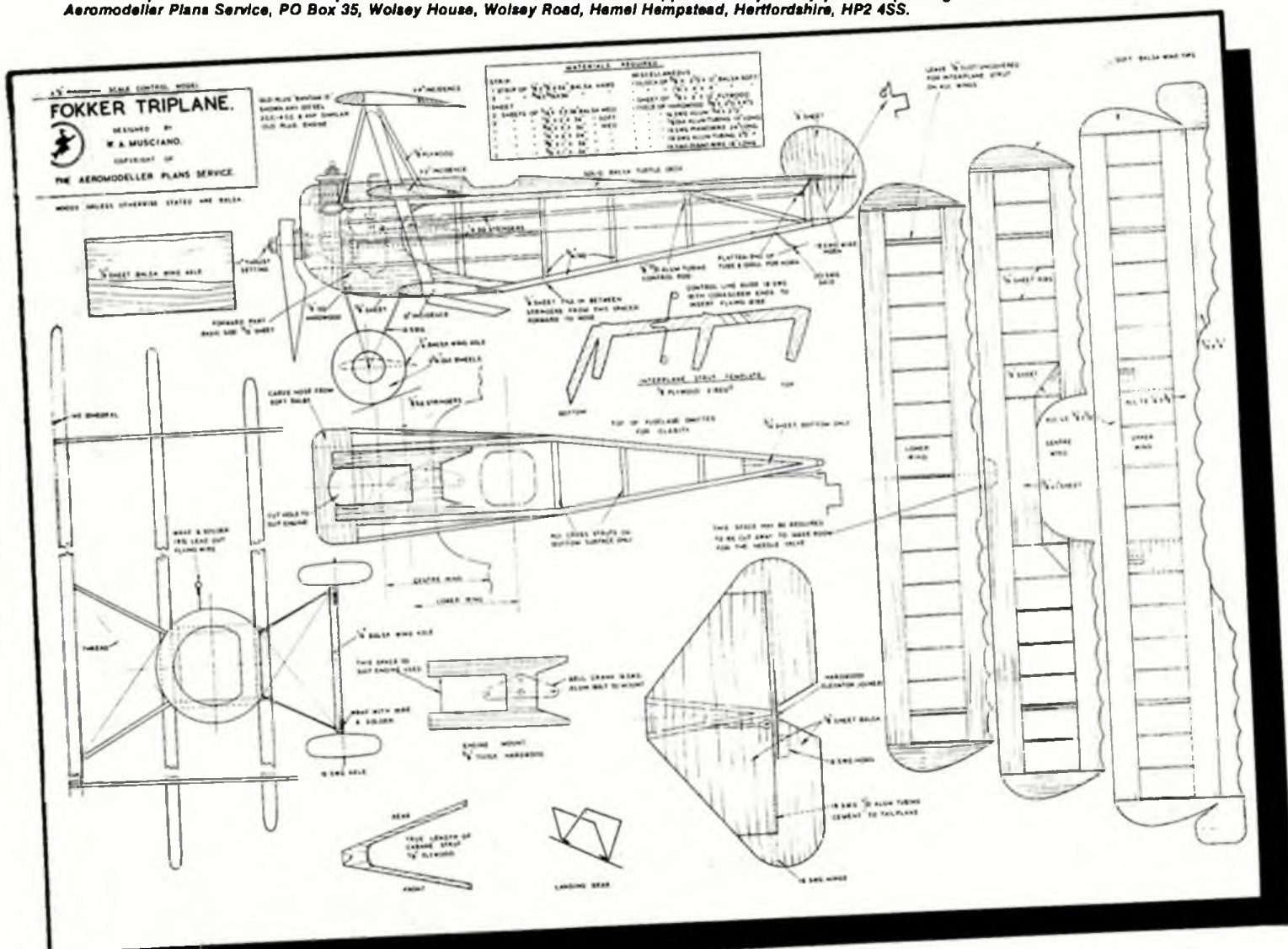
Only three entered the stunt competition, the winner being John Perry flying a 'Zilch' powered by a *Fox 40*, second was Ray Gordon with an 'Ambassador' and a very unlucky third was John Luckett who pranged his *ED 3.46 'Stunt Queen'*. In contrast seven brave souls entered the 'Midge' Event in the blustery conditions resulting in the following:-

Midge Speed Event

1. M. Downing	Frog 150	82.6 mph
2. K. Garbutt	PAW 1.5	81.5 mph
3. M. Downing	AM 15	76.9 mph
4. P. Iliffe	PAW 1.5	76.3 mph
5. D. Burgess	PAW 1.5	64.75 mph
6. J. Heaming	'Javelin'	59.2 mph

Peter's model unfortunately did not record a time. The winning speed of 82.6 mph is very good but Peter suggested that the time keeper was using an optimistic watch! Time will tell (pun!) as we should have a big entry on Vintage Day...

Full size copies of this 1/5th scale reproduction are available as Plan No. CL 307, price £2.30 plus 50p post and packing from: *Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Hertfordshire, HP2 4SS.*



AEROMODELLER'S WORKSHOPS make fascinating study. They're a complete reflection of character and application and those I have seen range from hunchback crevices in attic eaves to garden sheds and basements. West Canadians have their houses built over waterproof lined pits which become divided into a warren of workrooms, closets, bathrooms and yes you've guessed it, - modelling workshops with benches up to 25ft. long. All very nice for cosy warmth in a five month winter and loaded with machine tools and store cupboards to make life all the more comfy.

I hadn't seen a full blown two story detached house U.S. basement until John Worth and Bill Winter took Tony and I over to visit Don Srull at McClean Va. last March. When the complete floor area of the

A "for the record pose" in Don Srull's huge basement workshop. John Worth, Exec. Director of AMA and Don Srull told two sizes of the unique P-13 flanked by Tony Dowdeswell (L) and Bill Winter (R) with just a few of Don's fleet in the background.



Adverse yaw!

A regular, irregular view on the world of aviation from Ron Moulton...



own designs but also that the 'prints' of WW1 air battle scenes around the walls were all Don's original paintings. Of all, we like most his Lippisch 'Project P-13' which he's made in two sizes. This is a single seat, push-pull twin bomber designed in '42 but never taken into completion.

Don latched onto it for rubber and took it to the 'Flying Aces' meet. Despite 'scale of what?' critique, Don won his event. But where did he get the detail? You won't find it even in Putnam's "German Aircraft of the Second World War" or in Bill Green's otherwise packed "War Planes of the Third Reich" which goes to show how Don had to ferret for the info...

It appeared in "The Delta Wing", a biography of Alexander Lippisch published by the Iowa State University. Don showed us his copy, bought at the Smithsonian, and I wasted no time getting my own, but I might have known, - Jack Beaumont's

Two corners of the Wischer workshop where you can eat off the floor and envy the neat cupboards. Bob holds his latest Aeronca (r). Below, the French approach to Vintage is four 'A's'.



**Association
des Amateurs**



**d'Aéromodèles
Anciens**

house can be given over to modelling, the basement workshop takes on a new image! Don's cavernous room is so big it's ten paces at least from the 'Zero' wing on the R/C table to the store of rubber-scale delights for which he's best known.

It took a while to appreciate that not only all the models, - scale every one - are Don's

Aviation Bookshop in London had it all the time at £14.95 plus post! Go to it collectors.

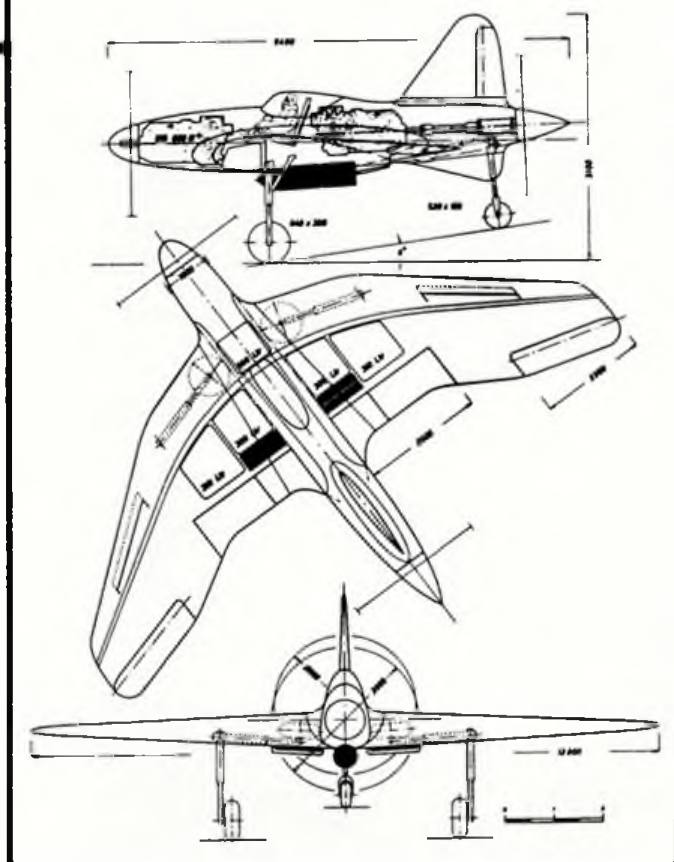
A few miles and days later, after NASM, Silver Hill, AMA and Toledo, I was in another workshop at the house that Bob and Dolly Wischer built, at Delafield, looking at his latest, a superb Aeronca with quite a story...

Years back (we won't reveal when!) Bob and Dolly outpaced their racing cycles and

swapped them for a his and hers pair of lightplanes. The Aeronca was Bob's favourite but one black night, a storm lifted the yellow bird over the hedge and crushed it beyond repair. The rudder still flies on another: but not with Bob. He's happy with a 1/4 scale version of NC19345, perfect in every detail from the OS twin that inspired it, to the beautiful sign written Aeronca logo on the fin.

Did you realise that plastic lids from freezer packs of ice cream make ideal drip trays? Bob uses them in a showroom clean workshop that is as much a living room as any part of the house. Imagine a pillow-level view of seven championship's standard R/C scale models. That's what you wake up to when you rest awhile chez Wischer!

At Toledo we bumped into that expatriate



Left, from the Lippisch biography, original design profiles of the twin engine P-13...quite a scale project but tough to document. Right is a closer view of the OS 160 which convinced Bob Wischer to model his old Aeronca. Superb detail, all precisely to scale.



from Wanstead and parts east, Dave Platt. Before he left, having put British R/C Scale on the road with a certain T-28 and a 'Spitfire', Dave was one of those who chased everything (Still does!), - with wings we mean. So it was great to learn Dave had turned the clock back to the 60's with a campaign for truly semi-scale team racers in two classes, for .21 or .40 cu. ins.

Already Dave has had one design, the 'Panther', published in *Flying Models* with rules that sound remarkably like those in the SMAE rulebook of the late 50's. Just imagine this one. 'Models must stop before mechanic may touch it' - *Ahem!*

The Wetsun Nats. at Barkston just didn't deserve all that aqua: but at least it gave me a chance to chat with diehards who would otherwise be downwind searching for wayward models. George Fuller is back in the fold - those years away in the delicatessen business have given him a new taste for design...so standby for news out of Teignmouth where he'll be based.

Strangely, George's return coincides with a flush of requests for the 'Dixielander' plans - mostly from SAM members in the USA. On the field, one couldn't help noting the number of vintage sportsters around - and with cars and caravans spread along

Right, hospitality is a wonderful gift. Sleep on a Wischer pillow and you awake to a sight that inspires for the rest of the day. Below, for those who want to be up with the latest in wing shapes, is the Discus 15m world beating sailplane.



three quarters of a mile of peri-track there was a reassuring lot to see.

This included lots of new shapes with swept tips. Are we being Dornierised? Or maybe has the full size sailplane world influenced free flight as with the 'Discus'. Anyway it's a neat trend even if it does pose problems of where to put a continuous spar.

La Bourget, just one Sunday later was hot, dry, dusty and a vintage collection of new shapes and sizes. You'll have to forgive my 1:1 scale affiliation: but not to mention the vast AN 124 'Condor' - Russia's World's biggest aeroplane by far (not much short of 300ft span or 230ft long) or the adventurous Dornier 'Seastar' amphibian (which cries out to be modelled for R/C scale) would be sacrilegious to any aerofan.

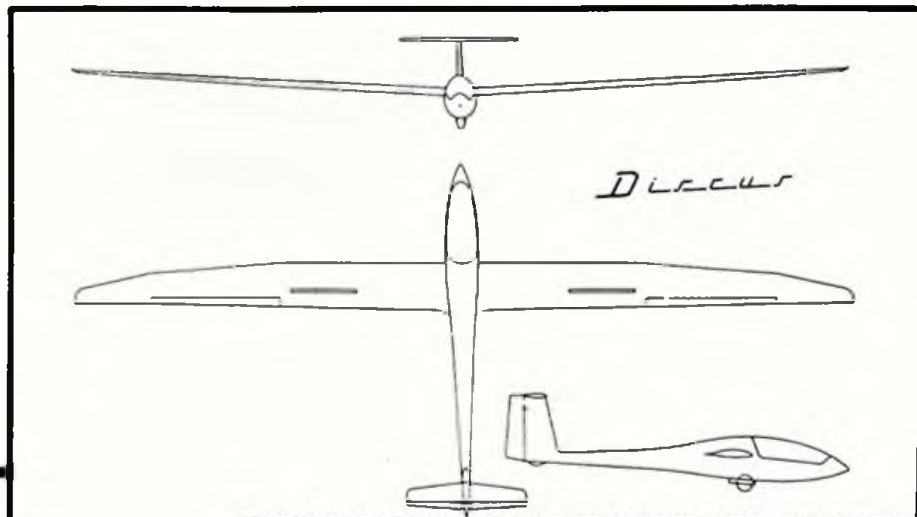
So what has the Salon Aeronautique got

to do with aeromodelling? The answer is *everything* and *everywhere*. F.F.A.M. - the French SMAE had its own stand where we saw a Gates Learjet executive lost in admiration of a 'Red Zephyr', and bustling through the crowds one couldn't help meet old friends, now established in the aviation industry. Models are, as ever superb...

Dassault and Airbus Industrie represent the best from the home Nation while Space Models had some exceptional finishes on theirs for BAe, etc. But the skills have spread, SAAB, Embraer, Grumman, are typical of the modelling arts which have become essential in these showplaces. Many of the modellers who produce these works of art spend their free time on the flying field with us. I'll spare their blushes; but all the same, congratulate them for their magnificent workmanship.

One modeller we met was Guy Revel, fresh back from Australia, where he reported the F3B Championships, and Singapore where he saw Sanwa producing 60,000 R/C sets a month! Guy mentioned a swing to vintage modelling so we located the AAAA in a Le Bourget hangar. Serge Swahlen is behind the Association des Amateurs d'Aérmodèles Anciens, himself a veteran flier and a pro-modeller and he's on the way to establishing a Museum of Aeromodelling.

After all our chat of a base at Brooklands, wouldn't it be great if, for once, we were first with such a treasure store here in the UK? Straighten up, kick off the yaw and stuff the nose down - we've said enough for now.



SHOP TALK

NEW MODEL HOBBY PRODUCTS REVIEWED

Rapid heat irons...

Four models of soldering iron from the well known *Engel* range are available from *Kelgray Marketing* of Crawley Down, West Sussex.

The range is between 30 and 100 watts with a variety of tips that have soldering area capabilities from 1.2mm² - 12mm². All models pre-heat in approximately 6 seconds and cool in approximately 10-15 seconds.

Models S50, B50, 60S and 100S all meet the high standards of quality and reliability demanded by trade and industry as well as meeting the requirements of amateur and hobby electronics.

They are controlled by an energy saving operating switch and include a safety transformer (except model B50), to guarantee high electric security. They are equipped with built-in or attachable lighting to illuminate the soldering area. All tips are easily changeable and long life protected against corrosion.



If you are thinking of a new soldering iron then think Engel, good quality and not expensive.

Model B50 is a cordless, rechargeable iron (about 35 watts) with long life nickel-cadmium batteries. Capable of up to 350 consecutive soldering applications it is ideal for field use and can be recharged from a car cigarette lighter socket (or through a mains charger). It also incorporates a safety switch to prevent accidental operation. All models are cased in unbreakable, temperature resistant plastic and available individually or in kits.

The mains powered versions are obtainable in basic form from about £12.00 (35 watt) to £17.00 (100 watt).

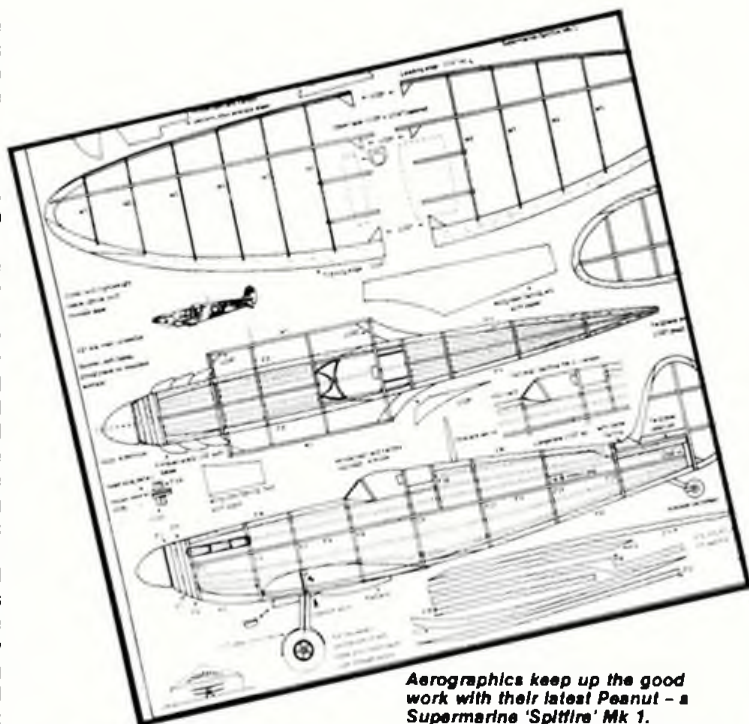
The cheapest version of the B50 is £22 plus vat and p&p. As many variations are available phone 0342 715066 for more details.

See before you buy...

One of the latest *Graupner* kits imported by *Ripmax* is the 740 mm wingspan, novice glider kit 'Primaner'. Like many of the *Graupner* kits this one is highly pre-fabricated with several plastic parts, to make assembly quicker and easier. The glider features a 'V' tail and 'pod and boom' fuselage, with the pod being a smart injection moulded plastic item. The wings are straight dihedral - again for ease of construction, and the wing seatings are also 'easy fit' plastic mouldings. Leading and trailing edges are already pre-formed and even the notches for the ribs are already cut for you in the trailing edges. The kit is pretty comprehensive, even including bands! There is no need to get all the bits out of the box to inspect them before you buy - no box - all is clearly visible in its clear plastic display packaging. See them hanging up in your model shop! Not cheap at £7.95 but *Graupner* quality should ensure ease of assembly and reasonable flight characteristics...



Latest small glider from Graupner is up to their usual standard and highly prefabricated (slotted leading edges, plastic parts etc).



Aerographics keep up the good work with their latest Peanut - a Supermarine 'Spitfire' Mk 1. Construction packs are available to save that fiddly marking out!

Modelling Video

"Models are not toys". This is the positive statement that opens this video on model sports that is being launched by *Ever Ready*. The dramatic pictures of competitive model racing will fascinate - and inform - the professional and amateur alike and for potential model enthusiasts open their eyes to the scope, expertise and international aspects of modelling.

Ever Ready, leader in its field in the British market started, a sports sponsorship scheme in 1983 that has assisted many diverse activities. This video, 17 minutes in length, called "Model Sports - power for the people" highlights the exciting 1984 British Grand Prix at Southampton for 1/8th scale racing cars, the *SMAE* Flying Championships at RAF Cranwell and the Scale Model Boat Championships at Farnborough.

Available in VHS format and can be purchased at a special rate for modellers for only £13 (inc. p&p) or on hire for 2 weeks at £8.00 (on returnable deposit of £13). Ideal for club nights, family viewing or instruction purposes. It gives a fascinating picture of what the commentary describes as "one of the most imaginative sponsorship projects of this decade".

The video can be obtained from *Imperator Sports Limited*, telephone (01) 370-4381.

Another Scale Peanut

Aerographics of Chippenham have now completed their second, World War II peanut scale model - a *Supermarine* 'Spitfire' Mk 1. This follows their previous recent offering of the *Hawker* 'Hurricane'.

Attention to detail is always noticeable with plans from *Aerographics*, whether it be a simple fly for fun rubber model, or as in this case a 13in. wing span 'Spit'. That attention goes further than just the plan as once again a construction pack is available to take away the chore of tracing all those formers, wing ribs etc.

Although we have yet to build one, the plan certainly looks clear and has that quality that tempts one to get out the wood and glue! The Mk1 was chosen as early examples had a flat-topped canopy as opposed to the later, more common, 'blown' versions - which tends to put off the average modeller! Also a two bladed propeller was used on those early versions which also makes life easier...

Cost of the plan is £1.60 (plus stamp), construction pack is £1.00. Details of this and the rest of the range can be obtained by sending a large (9 x 4in.) sae to *Aerographics*, 43 Chamberlain Road, Chippenham, Wilts. SN14 0TF.

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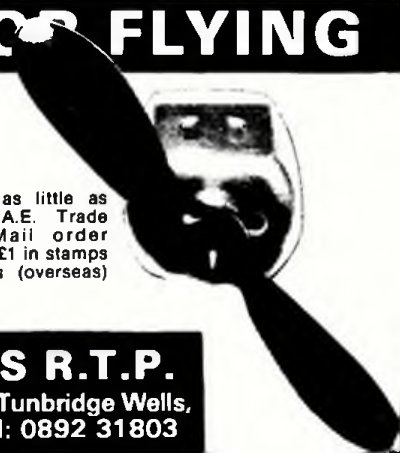
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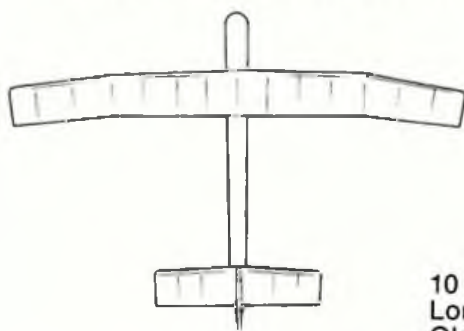
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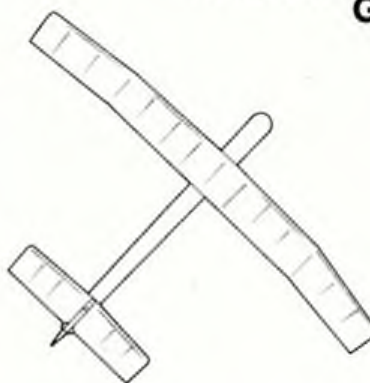
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PAW 49 DS + Silencer	39.10
PAW 19 R/C	20.10
PAW 30 R/C	27.00
PAW 49 R/C + Silencer	22.99
PAW 249 R/C + Silencer	24.15
PAW 19 R/C + Silencer	25.30
PAW 29 R/C + Silencer	36.80
PAW 35 R/C + Silencer	41.40

ED ENGINES

ED Std Racer 246	17.25
ED Std Racer 246 R/C	18.75
ED Super Racer 246	19.75
ED Super Racer 246 R/C	21.75
ED Super Hunter 346 R/C	30.35
ED Viking MkII 4.9cc R/C	31.25

DUNHAM REPLICA ENGINES

Ornwick 64 Spark	145.00
Ornwick 73	155.00
Mechanair 5.9cc Spark	91.00
Viking 5.3cc Spark	90.00
Valkyrie 5.3cc Diesel	86.00
Ellin 2.49cc Diesel	45.75
Ornwick 29	113.50

TELCO CO₂ MOTORS

Telco Std	11.45
Telco 3000	13.31
Telco 6000	14.95

ED ENGINES

ED Std Racer 246	17.25
ED Std Racer 246 R/C	18.75
ED Super Racer 246	19.75
ED Super Racer 246 R/C	21.25
ED Super Hunter 346 R/C	32.35
Viking MkII 4.9cc R/C	31.25

FREE FLIGHT/R/C ASSIST VINTAGE

KITS

1937 Buccaneer Std 66"	35.75
6th Trenton Terror	35.75
1981 Super 60 63"	36.25
1937 Quaker Flash 67"	33.00
1936 Red Zephyr 72"	43.50
1946 Junior 60 63"	35.75
1942 Fokker D8 57"	36.25
1937 Flying Quaker 88"	48.75
SHG Simplex 60	28.95
1938 Playboy Snr 80"	35.75
SHG Powerhouse 88"	41.95
SHG Scram 88"	38.95
Hepcat 48"	19.25
Super Scorpion 66"	43.50
Majestic Major 88"	54.95
Flair Junior 60	31.95
1946 Falcon 96	87.50

VINTAGE ACCESSORIES

2.4 Volt Miniature Coil	11.50
NGK or KLG 1/4" x 32 TPI Spark Plugs	5.80
H.T. Lead Clips PR	.35
Made up HT lead with suppression	1.65
3/8" x 24 TPI Spark Plug	3.50

MILLS ENGINES

Mills 75 Mk II	16.50
Mills 1.3 Mk II	17.50

M.E.E. ENGINES

M.E. Heron 1cc diesel	19.95
M.E. Snipe 1.5cc diesel	20.95

ENGLISH MILLS REPLICA

Mills 1.3 Mk I	42.95
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AM ENGINES

AM10 1cc diesel	14.95
AM15 1.5cc diesel	15.95

SPECIAL PURCHASE (limited supply)

Black Tissue L/W pk 5 sheets	1.50
Black Tissue H/W pk 5 sheets	2.00
Humbrol Rubber Lubricant per tube	.50

GLASS FIBRE PROPS

6 x 6, 6 x 7, 6 x 8	1.75
6 1/2 x 7, 6 1/2 x 7 1/2, 6 1/2 x 6, 6 1/2 x 4	2.30
7 x 3 1/2, 7 x 6, 7 x 8, 7 x 5, 7 x 7	2.30

The above prop are glass fibre but a glass / carbon mix and all carbon can be ordered if required

POSTAGE

Engines	.75
Other items	.50

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AERO MODELLER

PLANS SERVICE Free Flight Scale

PZL WILGA 35 by *P. Hayward*. Very stable 1/12th version of the Polish glider tug, this 36 in. (914 mm) span model's high wing and large tail is an ideal Free-Flight layout. Uses 0.5-0.8 cc engines. FSP/1178 Price £3.00

SOPWITH TABLOID by *K. McDonough*. A diminutive 1/12th model, span 25 1/2 in. (648 mm). For 3 to .8 cc motors. FSP/810 Price £3.60

S.E.5a by *J. D. McHard*. Famous WW1 fighter in full detail on specially printed plan with photo illustrations and instructions. Fine and tough performer. Span 27 in. (686 mm). Also for R/C. Uses 0.5-0.8 cc motors. FSP/682 Price £3.00

SOPWITH CAMEL by *D. M. Collin*. Fine flying, 28 in. (711 mm) span version of the WW1 favourite. This 1/12th scale, free flight model is designed for 0.5-0.8 cc engines. FSP/1143 Price £1.80

D.H. TIGER MOTH by *A/M Staff*. A magnificent 44 in. (1118 mm) span model of one of the best-known aircraft ever. Flies well and realistically. 1/8th scale. For 1-1.5 cc engines. FSP/656 Price £4.40

BLACKBURN 1912 MONOPLANE by *A. M. Finucane*. 1/8th scale, 48 in. (1219 mm) span, pioneer monoplane; flies as well as its modern counterparts with 0.8-1 cc motor. FSP/587 Price £4.40

HANDLEY PAGE H.P.42 by *Cpl. S. Newton*. The famous Hannibal airliner. Very detailed drawing for this 65 in. (1651 mm) span model uses two 0.8-1 cc engines. FSP/615 Price £4.80

SUPERMARINE SPARROW by *G. F. Elsegood*. 1/12th scale of 1920's light racing aircraft designed by R. J. Mitchell; 34 in. (864 mm) span model features scale rib spacing and pendulum rudder/aileron controls. For 0.3-0.5 cc motors. FSP/1408 Price £1.80

BRISTOL BULLDOG by *P. J. Allnutt*. A 1/12th scale model which uses some spruce and ply in its rib for rib, stringer for stringer construction. Full colourings and markings. Canadian competition winner. Span 33 1/2 in. (857 mm). Engines 1-1.5 cc. FSP/762 Price £3.60

COLONIAL SKIMMER by *E. Fearnley*. For flying scale enthusiasts who want something different. Span 47 in. (1194 mm); for 0.75-1 cc engines. MA/250 Price £3.00

JODEL D9-BESE by *Hoh Fang-Chiun*. Neat replica of famous French light plane with fixed rudder. Detachable 38 1/2 in. (978 mm) span wing, super flyer. 0.5-0.8 cc motors. FSP/581 Price £2.30

B.E.2a by *K. McDonough*. Lightweight and with large wing area, this 1/12th scale 40% in. (1035 mm) model flies slowly. Detailed plan includes gun and camera! Power with 0.8-1 cc motor. FSP/721 Price £4.40

D.H. 80A PUSS MOTH by *J. M. Greenland*. An accurate replica with a scale area tailplane. Excellent performance. Span 30 in. (762 mm). FSR/268 Price £2.30

SOPWITH SWALLOW by *John Darnell*. A 1/8th scale version of a little-known 1918 fighter. Span 41 in. (1041 mm). It is fine for the beginner scale enthusiast. FSP/625 Price £3.60

FAIRCHILD ARGUS by *E. J. Riding*. Authentic appearance makes this a winner. Span 37 in. (940 mm). FSR/272 Price £3.00

CESSNA 172 By *W. P. Holland*. This 72 in. (1829 mm) 1/6th scale model of the popular American light-plane is the answer to those who want an easy-to-build large model for radio conversion. Knock-off wings and shock absorbing trike u/c. For 2.5-3.5 cc engines. FSP/868 Price £4.40

CURTIS-WRIGHT JUNIOR By *J. Headley*. Free-flight scale model of an unusual subject. Very stable, powered by .5-1 cc engines. 48 in. (1219 mm) span. FSP/1043 Price £3.60

D.H. MOTH MINOR by *G. W. Day*. A handy size, low-wing model, well suited for the beginner. Span 35 in. (889 mm). FSR/168 Price £2.30

P-51D MUSTANG by *C. Chapman*. The famous WW2 American fighter at 28 in. (690 mm) span is a faultless performer. Price £2.30

AUSTER A.O.P.9 By *R. G. Moulton*. 36 in. (914 mm) span version with all sheet fuselage and tail assembly simple wings. Flies like the real thing, aerobatics or sport flying with 0.5-0.8 cc engines. FSP/580 Price £3.00

DORNIER 27 by *D. Garrett*. A 27 in. (686 mm) span model of modern German light plane. Plans include modifications to take .3-.75 cc engines. FSR/706 Price £2.30

CESSNA BIRD DOG By *E. Fearnley*. High-wing cabin model of 36 in. (914 mm) span. Pleasing lines are developed from a simple sheet balsa fuselage construction. FSP/568 Price £3.00

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AM 85

Appendix: Links to the plans

The original magazine comes with a free plan (Mini Thermalist) printed front/back on a pull out folded banner of four sheets. The banner is not included in the document.

Mr. D by Dave Clarkson

CL Goodyear

https://www.hippocketaeronautics.com/hpa_plans/det ...
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Ol' Blue by Dave Clarkson

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Mini Thermalist by Bill Dennis

FF Sport Glider

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Rumpler Taube by Brian Faulkner

FF Rubber Peanut

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Manhattan Indoor Model by Henry Tubbs

Rubber model presented in FREE FLIGHT SCENE

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Fokker Triplane (from December 1948) by W.A. Musciano

CL Semiscale

https://outerzone.co.uk/plan_details.asp?ID=1569 ...
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