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DECEMBER 1989
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AERO

MODELLER



p.679



p.686

Editor	<i>Geoff Clarke</i>
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Cover: Bernad Saele manfully displays his massive Miles M20 at breezy Barkston Heath during a break in control-line scale activity. Chunky fighter remained untried at the Nats - that's the model, not Bernad! - but is now being worked up to contest form. For all the news of the '89 Nationals, turn to p 686 and our full report...

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ASP

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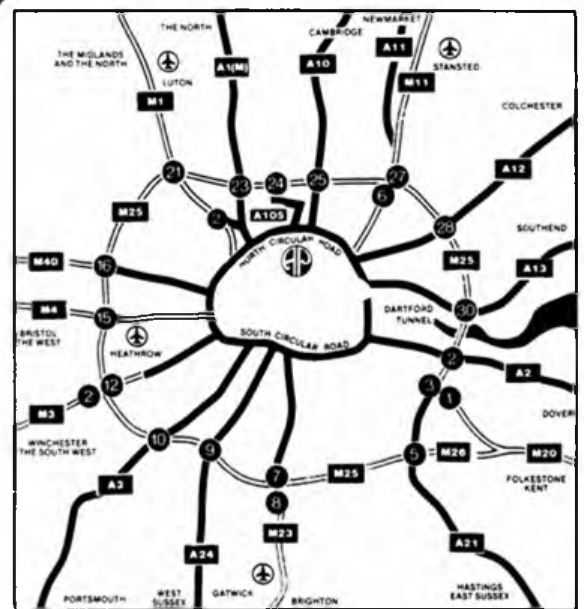


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AN **ARGUS**
GROUP EXHIBITION

HANGAR DOORS

Is this you?

The team's expanding. From December, your editor assumes responsibility for our companion magazine RCM&E - tops for R/C coverage - as well as Aero-modeller. Enthusiastic and knowledgeable, bright editorial support is now sought to help keep activity at full throttle - so if you're aged between 18 and 25 or so, think you can handle aeromodelling copy and want to join a sharp team (with good career prospects too) then write and tell us why. All replies treated in confidence; so send details and CV now!

Coupe confirmation

The 1989 Aeromodeller Coupe



d'Hiver competition will take place on 3rd December at RAF Henlow. Fancy a go? Then we need to know the following information: (a) your name and address; (b) your car type and registration; (c) the number of occupants; and (d) which classes you intend to enter (100gm, 80gm, Vintage or Junior). All this with an SAE please, and we'll send you our sheet of gen on the event. All are welcome - so get set for a merry day of mini-flying!

ME update

New Year's Day 1990 is the date of the DPR Model Flying Championships at Ally Pally. Main event is the Junior and Senior National Chuckie contest, to be held at 2.30. Only criterion is that the DPR 'Chuckie' glider is used - so buy the kit, build and trim ready for hot competition - and super prizes!

Under-13s are well catered for thanks to Hit the Kit Targets (always immensely popular, and hectic!) for any DPR model, and the mid-day Junior Superfighter

contest for the slot-together Spitfire, Hurricane and Spitfire kits. The famous Workshop will operate, allowing models to be built and flown on the day. Great fun - and not to be missed!

More, yet. The whole of Thursday 4th January will be devoted to Indoor model flying. Demonstration slots for competition models, Scale and Vintage too, will interlock with fun-fly slots where anything goes. Plenty of Indoor specialists will be in attendance, including Robin James, Steven Midson and Simon Firth of Fly-Me Models. Support is also promised by the SAM regulars, and a few surprises are planned to. Fancy joining in? Contact Geoff Clarke at Aeromodeller!



Congratulations to all who flew at the Nationals - especially the juniors at the handle in Mini-Goodyear. Here are the three finalists: winner Danny Jones, Stephen Ross (third) and Gavin Heaton (second). Well done, lads!

creating a new Open 2.5 record, being first-in-the-world to crack the 200mph barrier with a .15 model. Not a world record though, as the craft falls outside FAI regulations thanks to its small-area wing (in all other respects it is actually Paul's FAI craft!). Previous tank vibration problems have now been cured - hopefully for good - allowing a series of trouble-free motor runs on the day. Five per cent nitro means a less-critical needle; though, interestingly, no rpm gain. Paul reports that rate of circulation at the pylon is close to his personal limit, and it certainly seems true that FAI Speed, at least, is becoming much of an athletics event. Dick McGladdery tells us that he's in training for next season, having got the bike back out of the shed!

Books and videos

A full review of Christmas reading and viewing will appear next month. We've recently enjoyed The Speed Seekers by Thomas G Foxworth, a masterly account of the dramatic exploits of the racing craft of the twenties. VTOL Military Research Aircraft

covers as diverse a selection of tailsitters, ducted fans, tiltwings and vectored-thrust machines as you could ever hope to find - neatly categorised and deftly analysed too. And how could we omit John Isaacs' gentle autobiography, Aeroplane Affair, a story which breathes the essence of club flying and home-built endeavour from every pore. Full details next month - but space to report enthusiastic co-operation from Albion Scott Limited, whose advertisement appears elsewhere in this issue, and from whom not only these but many other volumes are available.

Cord Aviation Videos have sent us a bumper package of latest offerings including Oshkosh - The Best Of The 80's, The Fun of Flying, Mosquitos Airborne and Classic Manoeuvres. We particularly liked the Oshkosh video, a cheerful sampling of show highlights from the decade illustrating not only the power of the homebuilt, classic and war-plane movement but the uniquely Stateside showpiece that the annual EAA convention has become. Much more on all these next month!

Eisner again

Congratulations to Paul Eisner who flew a scorching 203.92mph with his Irvine .15 speed model at Three Sisters on 15th October,

Above left: Happy scene at Three Sisters on 15th October - Paul Eisner (centre) has just clocked over 203mph with his Irvine .15 C/L Speed model to create a new Open 2.5cc record. See 'Eisner Again!' Below: Aeromodellers' cars... this is Richard Falconer's Chaparral 1. Rare bird!





All the favourites

The National reports in this issue is the last of our major features this year. Next month sees the return of all your favourite regular features including From the Handle, Mind the Lines and a round-up of Free Flight

events from home and abroad. John Cuthbert's Supa Nova glider at last comes in for its share of attention - and look out for a duo of Scale and Vintage craft to build from our full-size plans! Seasonal Greetings from all at Aeromodeller - and here's to 1990. May all the flying days be calm and sunny; may all thermals be great but all models happily recovered!

Where's Wildfire?

Peter Michel writes to ask for help. Straight over to you, PDM...

'In the late 1940s, coinciding with the meteoric arrival of the Elfin 1.8 diesel, a control-line stunter of considerable charm emerged in the Isle of Wight and Portsmouth area. It was the Wildfire (no connection with a model of the same name in the ASP X-List).

'Had it been favoured by members of the more fashionable clubs such as West Essex there is no doubt that, far from



Left: The Spastics Society offers a buckshee flying lesson to all who raise £110 in sponsorship for the Society (almost all do, they say). In the first year over 1100 took part in this scheme. Interested? We can supply details... Above: Terry Rose's view...

vanishing into obscurity, it would be flying to great effect today on the Vintage circuits.

'In recent times SAM 35 members including Laurie Glover, Peter Montgomery and myself have tried without success to track it down. We know that plans were sold in 1949 or

1950 by Robin Thwaites at his model shops in Cowes and Portsmouth. But they seem to have vanished without a trace.

'We would be most grateful if any Aeromodeller reader could help.'

Yes - and we'd like to see it, too. Any Wildfires out there?

WHAT'S ON

30th DECEMBER - 7TH JANUARY 59TH MODEL ENGINEERING EXHIBITION

'HIT THE KIT' COMPETITIONS AT 11.00 am - 1.00 pm and 4.30pm
If you are under 13 years old, you can enter these events on the day! Score a direct hit on one of the D.P.R. Model may be used, (NO catapults to be used) Build a model and bring it with you - or make one on the day!

New Year's Day 1990 - All the details - DPR Model Flying day at the 1990 MEI

2.00pm JUNIOR 'SUPERFIGHTERS'
Another event for the under 13's using the Slot-Together rubber powered 'SUPERFIGHTER' models. Choose a SPITFIRE, HURRICANE or MUSTANG which can be assembled in a matter of minutes on the day!
SUPER PRIZES TO BE WON FOR THE BEST FLIGHTS

2.30pm JUNIOR & SENIOR 'NATIONAL CHUCKIE CHAMPIONSHIPS'
Anyone can enter this indoor duration event using D.P.P.R. Models high performance 'CHUCKIE' hand launched gliders - kits are available from your local model/toy shop or direct from D.P.R. Models and may be built in less than an hour
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Contact DPR Models at The Vanguard, Shoeburyness, Essex SS3 9QY + SAE for entry form!



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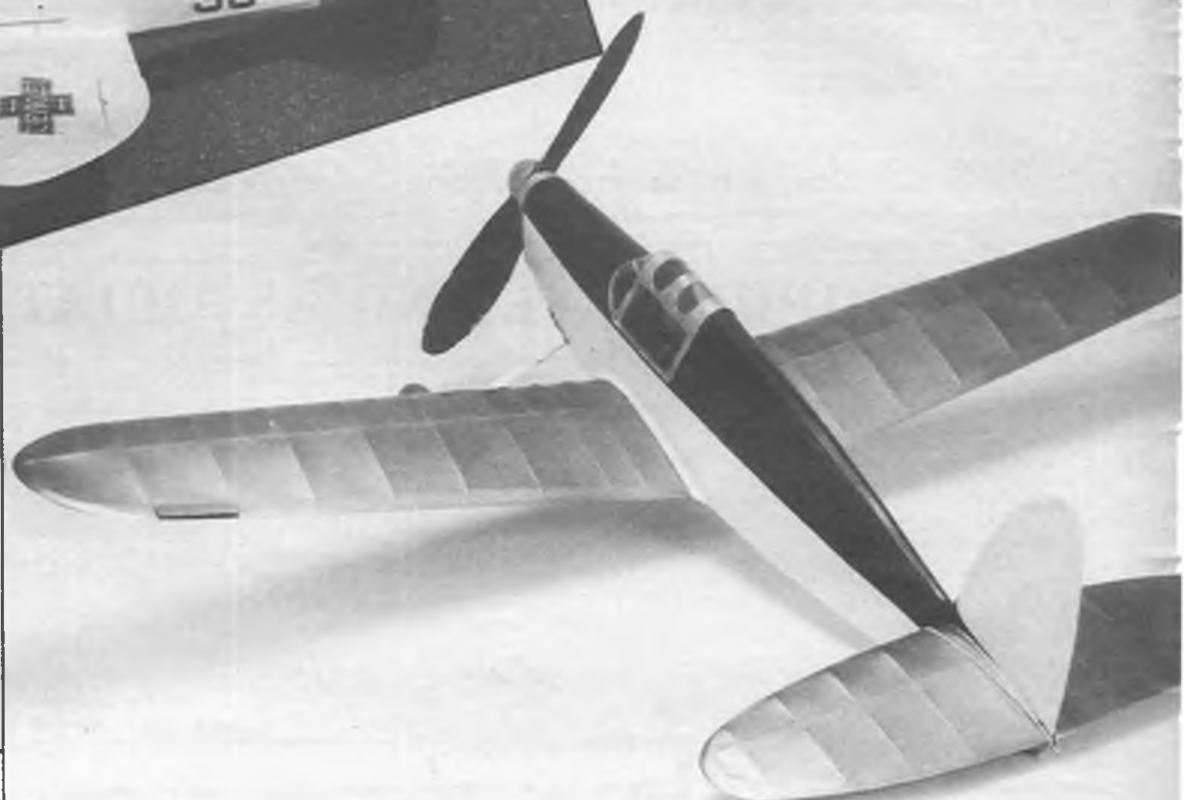
MODEL NEWS



With the accent on the
Nationals (but not entirely!)
here's our latest selection of pics



6: Karl-Georg Krafft enjoys C/L scale, as this neat Miss Chevrolet proves. Apologies are due to Karl-Georg; we wrongly credited his fine Gee Bee in this feature last month 7: Not many Frog Jupiters seen these days, but the subject is a stable performer. Thirties-style colours suit it well; this is your editor's example, with plenty of flying to its name.





2

Photo 1: Australian visitor Gary Odgers with attractive PAW 80 Classic powered Gloucestershire Gannet in the Barkston breeze
2: Bill Brown's black-and-white Nobler was one of several at the Nats.
3: Back to Scale Weekend - and it's Paul Briggs with large gentle Bleriot for rubber power.



4

4: Bill Grigg at Golden Era Day with stable, CO₂ Payret - won a pile of balsa in the '89 Lympne-Scale event, despite unhelpful conditions.
5: Here's your ME reminder - model flying at Ally Pally is on the menu again. This is last year's DPR Senior Chuckie Championships.



5



8

8: Ray Cox takes the strain during 130lb pull test at the Nats. OS 60 monoliner clocked 184mph. Dick McGladdery photo. **9:** Very interesting Soviet CO₂ motor, now the property of Chris Bradford, seen at the Nats. Plenty of gear was exchanged at the Eurochamps - more motor news to follow...



9

LIKE most things in control line, Goodyear racing began in the USA, where it is known today as AMA Scale Race. It is flown competitively in most Western Europe countries and in Scandinavia and Australasia as well as North America. Soon, maybe (judging from the interest shown in our Goodyear models at the 1988 World Champs in Kiev and the recent '89 Eurochamps at Three Sisters) the class may be flown in Eastern Europe. We would guess that it also takes place in South America (confirmation would be welcome) making Goodyear a truly world-wide activity.

Of course, since Goodyear is not an FAI registered event, most nations have their own rules concerning motors, lines, race distances and so on. For instance, in the USA 2.5cc glows are raced on 10 per cent nitro fuel using 60ft, 0.014in diameter lines. Heat distance is five miles (with one pit-stop) and the final is twice that, with three mandatory stops. Over in Italy the motor size goes up to 3.5cc glows, and commercially-available fuel, lines, props and tanks must be used. Every country has its own variations; but all are more-or-less-successful attempts to provide a racing class with simple, easy requirements to attract newcomers into C/L racing.

UK beginnings

Here in the UK Goodyear began in 1969, helped greatly by Aeromodeller magazine which proposed the first set of rules and published many articles and plans. Initially the models looked very similar to the British Goodyear craft of today, but high-tech developments were not long in arriving. Indeed, John Daly and myself (Dave Clarkson) flew at the very first SMAE Goodyear contest late in 1969 at RAF Cottesmore using an MVVS 2.5 TRS diesel, running on pressure feed with a large venturi. We employed the no-refuel-pitstop 'click and flick' technique that is so dominant in Open Goodyear today. Other, early high-tech operators were Martin Radcliffe and John Dixon of Feltham who achieved many shockingly fast heats with a Maibach G.15 F1 burning high-nitro fuel. Gunter Schwarz and Konrad Kaul (West

Make a start on control-line Goodyear racing - Dave Clarkson and Ed Needham advise...

Germany) chose an HP 15D fitted with glass-fibre prop and all-singing, all-dancing F2C-style multi-function valve, used with a pressurised refuelling system to take victory at the 1971 Nationals.

Things progressed. In 1973 Dave Rudd and Richard King blasted apart the SMAE heat and final records using a G.15 glow. Then the Rossi MkII .15 F1 glow arrived, and in 1975 all three Nats finalists used this motor to produce one of the closest finals ever seen. Horsepower emerged in a big way in 1975 with the adoption of 3.5cc Schnuerle-ported glows, leading to John Green and Brian Cunningham of Ipswich setting apparently impossibly high standards with a heat time of 3:35 and a final of 7:33sec in 1979 thanks to a tuned-pipe K&B 3.5 buring mega-nitro fuel. The SMAE became very concerned about the very high noise levels and airspeeds, plus the fearsome model carnage rate; and so, in the following year, rules were changed to permit only 2.5cc diesels. This move brought about the best-ever Nats final in 1980 when all three teams finished within 1.5sec of each other.

Beginners, please

If it was thought that the 2.5cc diesel rule would bring a return to the imagined 'Golden years' of the early '70s then the legislators were wrong, for it took only a few years for the Green/Cunningham heat time of 3:35sec to be bettered by the authors using a diesel-converted AD 15 F1 ABC to net 3:31.

Open Goodyear was retained as an 'experts-only' class, but a deliberately low-tech version known as Class II Goodyear was introduced in 1984. This proved to be an imperfect move, for the rules virtually enforced the use of the low-priced PAW 249 DS. We are sure that Gig and Tony Eifflaender will forgive us for saying that this is not a true racing motor; it needs high operator skills to reproduce high airspeed and instant re-starts. We managed to win the Open Nationals finals in 1984 (Rossi motor), 1985 (Nelson), 1986 (AD), 1987 (Moki) and 1988 and '89 with the Irvine .15; and we netted the Class II events from 1986 to '88 using an old PAW 249 DS that Ed had swapped for a tank valve after the owner had removed its comp screw and needle valve assembly as, quote: 'the only parts of value'. Truly a bag-of-nails motor transformed by expert skills, but not what the legislators had intended...

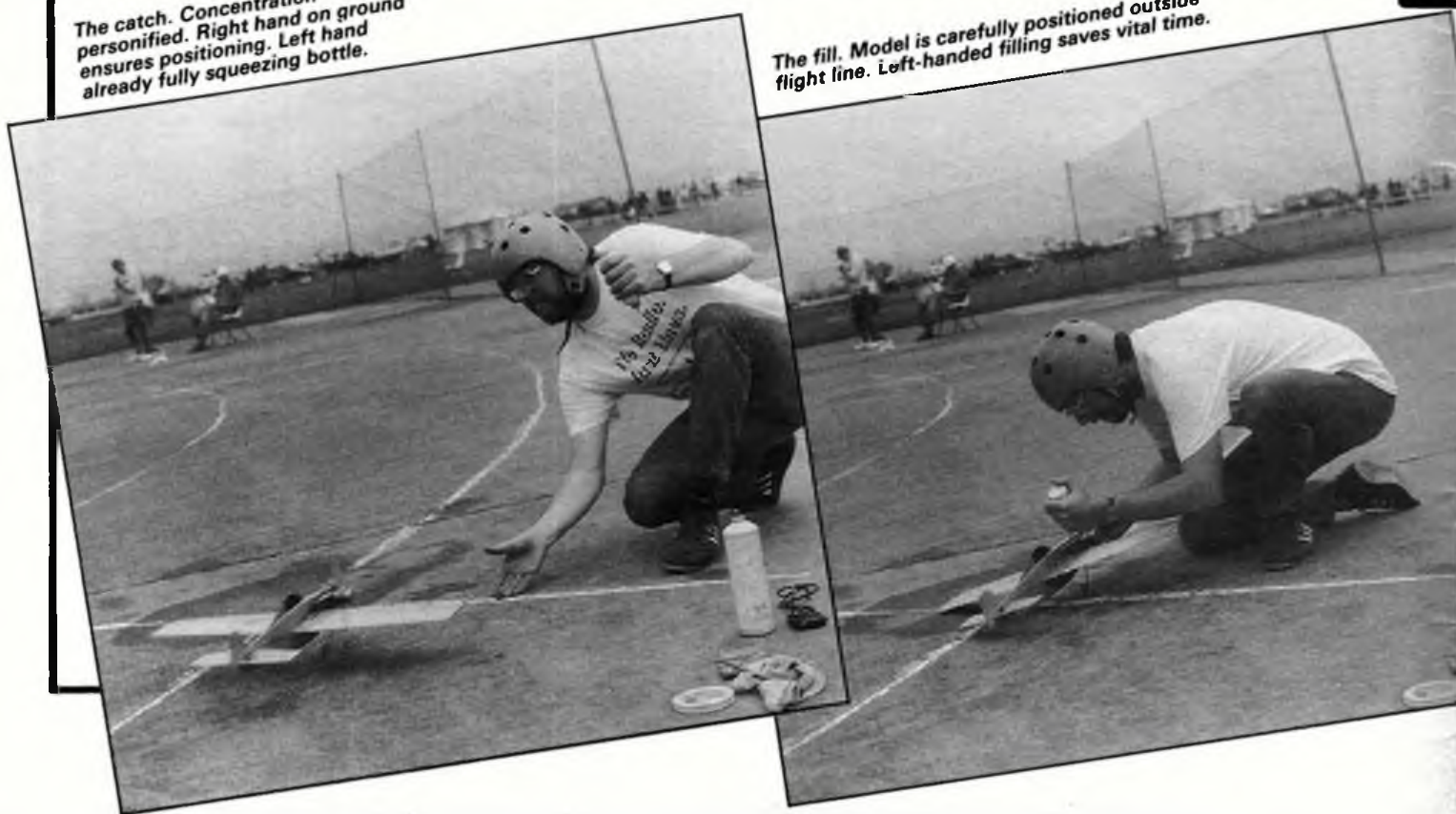
British Goodyear

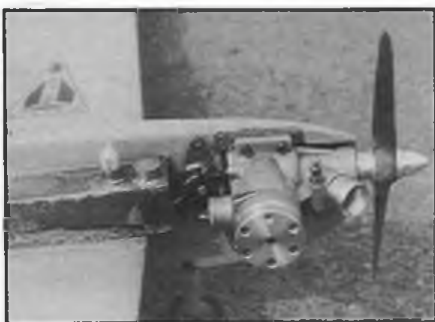
Open Goodyear continues unaltered, save for rules governing permitted lines, but Class II rules have been changed under the title British Goodyear. Major difference is that any 2.5cc diesel, commercially manufactured in the UK, is permitted. Gone are the very hard-to-operate, low-cost, plain bearing 2.5cc diesels; in have come high-quality, reasonably priced, very easy to handle motors such as the ETA, Oliver Tiger and the new PAW 249 TBR. So far British Goodyear has proved an

Go Goody

The catch. Concentration personified. Right hand on ground ensures positioning. Left hand already fully squeezing bottle.

The fill. Model is carefully positioned outside flight line. Left-handed filling saves vital time.





Irvine 15 RE powers famous Mr D Open model, winner of '88 and '89 Nats. 10mm i.d. venturi and 150 x 140mm Needham CF/epoxy prop get air in and allow high revs.



Self-venting tank valve, double tube crusher shut-off and adjust-by-key needle valve all visible here.



Outer edge of tank is just outboard of the needle valve. Shut-off button, here re-set, is in minimum drag position and falls naturally for refuelling.

excellent innovation, attracting many newcomers and giving really close racing – and being a newcomer has proved no real disadvantage. The newly-legal motors are easy to start and set, and as the models lap at 2.5 and 2.7sec they are not fast for beginners to handle, nor too slow to require special skills to keep them in the air. Perhaps, at last, we have indeed started a new Golden Age, for surely control line needs it to attract more to the sport.

As far as we know, the UK is the only country in the world that insists on 2.5cc diesels for Goodyear. The advantage is that diesels not only last longer but are far easier to operate – neither nitro not plugs (both costly) are needed. In these environmentally-sensitive days their quietness is attractive. Similarly, to our knowledge the UK is the only country with Goodyear classes for the novice and expert. Just maybe, other nations should follow our lead.

Here are the current UK rules; this is an abbreviated summary, so read the 1989 BMFA handbook for full details.

	Open	British
Model	1/8 scale Goodyear racing aircraft	Profile Scale Goodyear racing aircraft
Motor	Any 2.5cc diesel	Commercially made UK 2.5 diesels. Some modifications permitted
Props	No restrictions	Commercial plastic
Tanks	No restriction	Squash-bottle filled Suction feed only
Controls and U/C Lines	No restriction	Must be external
Races	Heats: 100 lap + two pit-stops Finals: 200 lap + five pit-stops	Heats: 80 lap + two pit-stops 160 lap + five pit-stops
Records	Heat: 3.35sec Final: 7.31sec	Heat: 3.48sec Final: 7.38sec

Open Goodyear focus

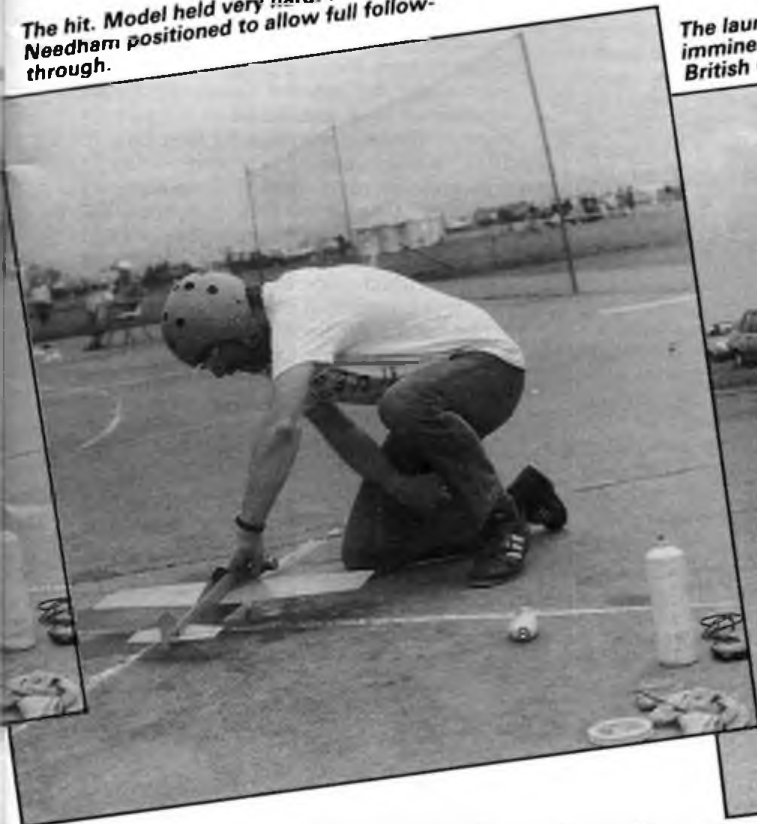
Since 1985 we have used only our Mr D design, published in Aeromodeller and available as plan AM1492. Alterations, even today, are few. The fin is now from 1.5mm ply, slotted into the fuselage (balsa and spruce items are shown on the plan). We now use a longer tailskid which projects about 30mm below the fuselage. This gives improved take-off characteristics, particularly in windy conditions. Even more helpful in the latter regard is the use of tip weight. A ten-pence coin buried in the outboard tip before shaping and covering is ideal. After numerous elevator hinge failures we now sew with Kevlar thread. To maintain good 'grooving' flight characteristics we pay much attention to producing really stiff tails. A bent wire 'fairlead' around the pushrod, epoxied into the fuselage behind the wing, prevents the pushrod from flexing in flight, not only improving grooving but giving really positive shut-off action. Apart from an outboard wing leading edge reinforcing strip there is no hard, or even medium, balsa in our models. Light, stiff wood really helps keep the weight down. The 600gm wet-weight rule is hard to achieve. Basic concepts like KISS (Keep it Simple, Stupid) and 'what isn't there can't weigh anything' help a lot here, as does careful wood selection and making all joints neat so that the heavy stuff – glue – is minimised. And use just enough colour spray to give an acceptable finish.

Motor matters

As mentioned, we have used diesel-converted versions of the Rossi MkII .15 FI Normale, the rear-exhaust Nelson 15 FI, the AD .15 FI ABC, the Moki S-12 and the Irvine .15 RE to win at the Nationals. We rate the Irvine as the best currently available but the Nelson 15 FI side-exhaust diesel (available from Ian Horne in this country, or direct from Nelson in the States) is exceedingly competitive, and it comes in instant-use form. Common to all of our motors is a Needham diesel head, a 10mm i.d. venturi and a thimble-screw locking needle-valve assembly.

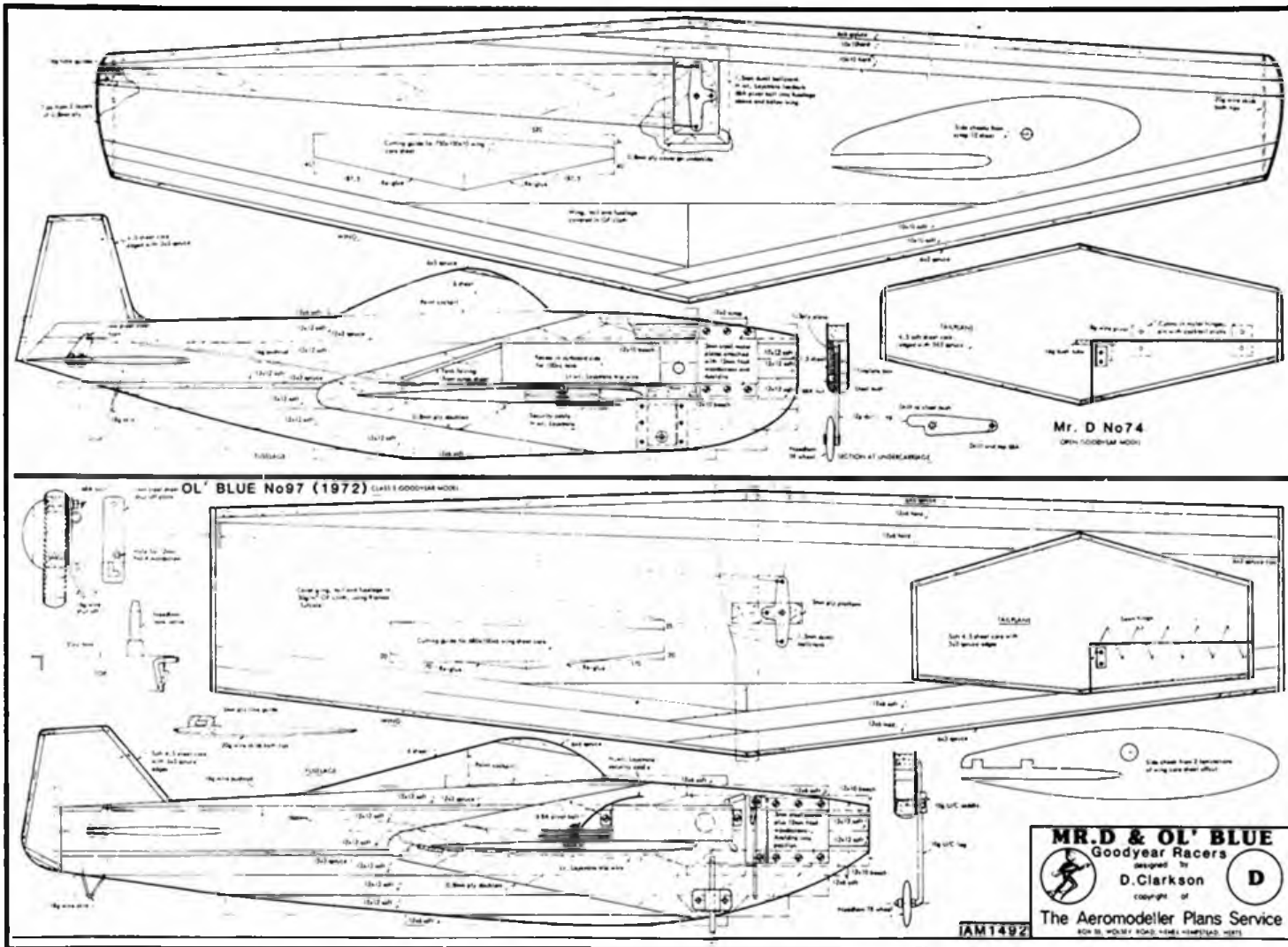
Year!

The hit. Model held very hard. Pitman Ed Needham positioned to allow full follow-through.



The launch. Free arm extended indicates launch imminent. This pic: Open Goodyear; others British Goodyear.





Of course, crankcase pressure to the fuel supply is necessary, so this means a pressure nipple in the backplate. We have found that the size of the hole in the pressure nipple is critical for hot restarts – too small and the motor floods when the shut-off is re-set, and vice versa. A 0.8mm hole is a good starting point. We feel that we set our motors differently from most. Our method is to keep on opening the needle and raising the compression until we get a 'clack-free' smoking run in the air. This gives highest power but if the motor goes lean (because of a leaky tank, split or pinholed fuel line, or dirt in the needle valve, for example; all of which may happen) a quick seizure will be the result.

Our tanks hold pressure for at least a week, and tubing is changed often (Kavan black rubber tubing is the most serviceable type). Naturally we burn a lot of fuel. 100cc is sufficient for 120 laps; that is, one heat plus half a warm-up. Our fuel formula is quite conventional, as below.

Ether	38 per cent
Paraffin	50 per cent
Castor	12 per cent
Oil	
IPN	+ 2.5 parts per hundred
Lubrizol 52	+ 1 part per thousand

The use of Lubrizol 52 is notable. This is a commercially-available lubricating oil additive, included in motor oils as a detergent, which helps considerably to retard the carbon build-up on piston, liner and cylinder head. We also use the least amount of castor oil that the motor will happily stand. Until the switch to the Irvine this amount had been

12 per cent but as the Irvine was not happy on this we increased to 13.1/2 per cent. Extra oil relates directly to less BHP so it is stupid to use more than necessary. Conversely, less oil means broken motors – enough said?

Prop it up

We have always thought we use more propeller than most of our competitors; certainly, until adopted the Irvine we seemed to rev less in the air. But the Irvine loves very high revs so we use a carbon fibre/epoxy resin prop made by Ed using my hand-carved master, which is carefully matched blade-to-blade in diameter, chord, shape, section, balance and pitch! Diameter is 150mm; peak pitch (at 70mm radius) is 140mm. This prop tachs at around 24,000rpm on the ground. More than 20,000 is essential for Open Goodyear is a horsepower event – and a certain way to be short on this commodity is to over-prop your motor.

Socket to 'em

A motor used so hard must be treated with care. If it 'goes funny' in the air it must shut off immediately. Equally, it must be tied down to the model firmly. We use substantial steel plates accurately flattened after installation in the model using slow-setting Araldite and 15mm chipboard screws. Four 6BA socket-head screws, tightened down with a long series Allen key hold the motor to these plates. Heavy, maybe – but essential, for a really well-built, tough and rigid front end allows all the available BHP to produce airspeed, instead of wasting it in vibration.

Note – throughout all this we have left the motor unmodified. There is no 'tuning' with the aid of a file or grinding tool. We are certain

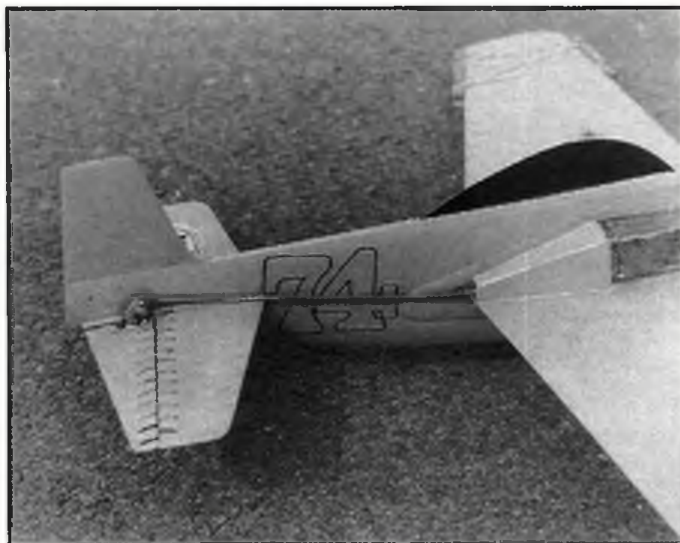
that these high-quality manufacturers known much more about engines than we do. we give lots of TLC (tender loving care) at home – but hell in the air. Practice flying is kept to the absolute minimum, for even the very best motors can only take so much!

Tanks and systems

The essentials here are a shut-off that is fast and easy to trip and re-set. When tripped it must squash the pressure and fuel line equally, for a leak down either tube means no hot re-start. We have used the same design ever since we started Goodyear flying together in 1983. It is based on a 'two-tube crusher' designed and built by John Daly in 1971. Indeed, our first cut-off actually incorporated parts from that pioneering device. All that Ed has done is to apply the KISS principle to ease manufacture and add lightness. Because it is re-set by depressing a plunger which projects through the model's nose side cheek, shut-off re-set in a natural action for the left hand just when the right hand is in position to bash the prop as hard as possible for the start. At the single, Final pitstop I hold on full 'down' elevator while Ed starts to fill the tank; this enables Ed to momentarily open the shut-off in order to prime the engine, but without re-setting the shut-off, while pressure still exists in the tank to give this prime.

Tanks

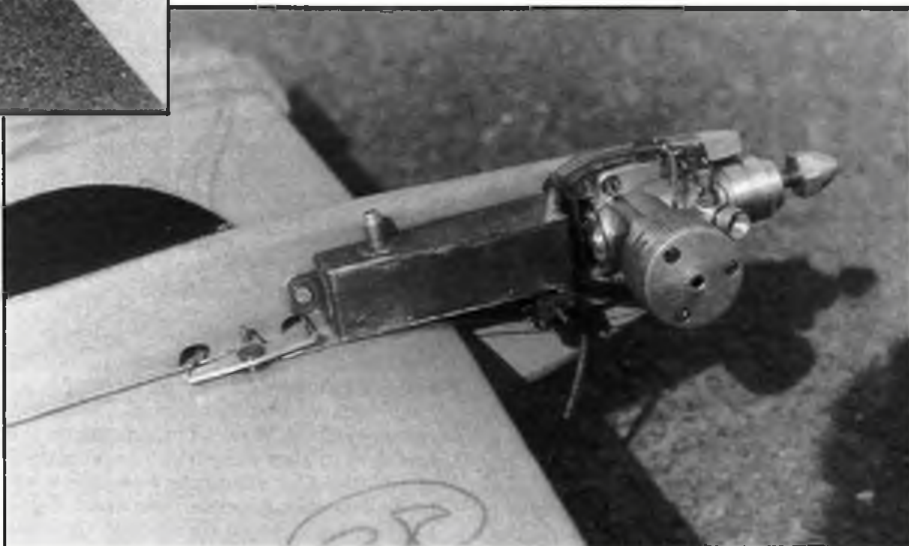
Our tanks are simple tinplate boxes with all seams lapped and soldered. To prevent fuel from entering the pressure line we use Ed's unique self-venting tank valve. The



Opposite: Mr D and Ol' Blue plans available as AM1492 for £2.95 including postage. Left: Tightly sewn elevator hinges are from Kevlar thread. Pushrod fairlead prevents flexing. Below: British Goodyear features - compulsory safety nut and key compression screw; short needle overflow primer to exhaust port; shut-off button ready for reset.

described in the August 1985 issue of this magazine. With this primer it is very easy to over-prime and flood the PAW 249 TBR, giving very slow restarts. The problem is solved by crimping the primer tube around a pin to reduce the size of the hole. A bit of experimenting will pay dividends.

Our tank is a fairly narrow, forward feeder, uni-flow design incorporating a Needham tank valve and an old John Daly shut-off. It holds 30cc of fuel, sufficient for about 50 laps. Now that the rules require the tank to be refuelled at each pitstop, it is well worth the effort to work out just where the tank valve should be positioned, and how it should project to give easy and natural filling action



drawing shows how. This tank is recommended most strongly! There are two vital features. The outboard side should be 3 to 5mm outboard of the motor needle valve. This ensures that the motor runs with the same degree of richness on the ground as in the air, making ground-setting the needle a practical possibility (we do it all of the time). Also, the tank is recessed into the fuselage side, butting up against the inboard side doubler where it is fixed with epoxy. Thus the tank will not become loose, or detached; and it is considerably stiffened, minimising tank wall flexing under pressure. This flexing is undesirable because it causes motor flooding when the shut-off is opened, and the soldered joints will eventually fail. We have fixed upon Mr D as our preferred model simply because the structure is not compromised by these criteria. Not mounting the tank as described is a big mistake — competitors please note!

Make the tank from K&S easy-solder tinplate, which is much easier to solder than old tin cans, and gives very secure joints. Piping is K&S 3.2mm (1/8in) o.d. copper tube. Both should be available from your local model shop.

British Goodyear

Our choice is the 1972 version of the Aeromodeller plan Ol' Blue (AM 1492). The only changes are the use of an 18mm wide side cheek, covered with three layers of 25gm/m² glass cloth to stiffen the front of the model. Also, we now use 1.5mm ply for the fin and canopy, both being slotted into the fuselage before covering for ease and durability. Undercart, tank and motor primer are as

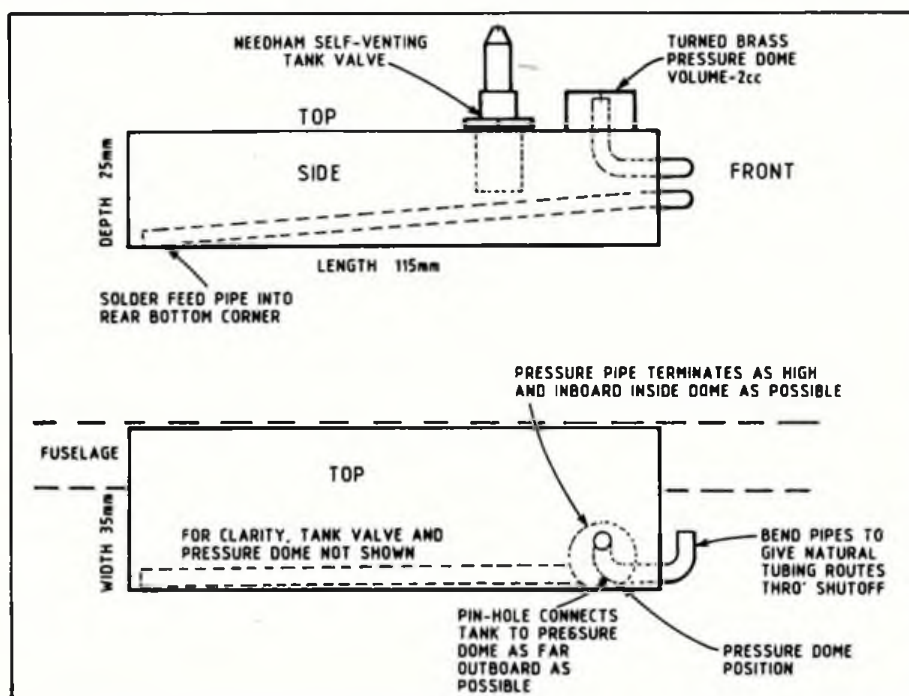
using a squeeze bottle. Our squeeze bottle is relatively small at 175cc for comfort. Unusually, its spout incorporates a spring-loaded valve that will pass fuel only when the spout is depressed by pressing it onto the tank valve. Not only does this prevent fuel from being sprayed all over the model but it allows the squeeze bottle to be squeezed very hard before it is applied. The tank fills even faster than could be achieved with a team race pressurised refueller. If you saw our pitstops at the '89 Nats you'll know why we recommend it...

Choose your motor

The choice imposed by the current rules rests between an old Oliver or ETA, or a new PAW 249 TBR. Apart from the difficulty of getting spares for out-of-production motors, racing experience has shown that a good TBR is faster even than the best of these classics. The extra cost of a works-tuned TBR is well worth it. Order direct from Tony Eifflaender and he will do a good job for you.

As permitted by the rules we have adapted our motor to its purpose by installing the biggest possible i.d. venturi, retained by a Super Tigre needle valve assembly installed through the intake grub-screw holes. The sides of the ST spraybar are filed flat to give maximum intake area, and the needle projection is shortened so that Ed cannot bash it during pitstops. The TBR is a lovely motor; those two ball-races have made all the difference. Thanks are due to Tony Eifflaender for making British Goodyear a practical proposition.

PAW recommend 15 per cent castor oil, but our motor prefers a little more, and so our fuel formula is as overleaf.



Maybe your motor will run happily in 15 per cent oil; if so, use it, for the less oil, the more BHP will result. Use one of the many 7 x 6 props commercially available. Most fliers use the Graupner prop. Out of the box this is a bit big in diameter. Try trimming it 3mm at a time — retaining perfect balance — to get best airspeed. Your target should be 26sec per 10 laps, or better. Ours can just to this in practice but the best we have seen is Martin Worgan's model (24secs/10 laps) with Ken Morrissey's not far behind at 25sec/10 laps).

Availability of suitable wire for Goodyear flying is a major problem. The old classic — and those that the Open and British rules were written around — is Lightweight 3-strand Laystrate. Sadly, today's equivalent is of variable strength. We have used as many old contacts as possible to secure as much 'old' Laystrate as we can. About half of this is just over-diameter from the required minimum of 0.35mm so use of a micrometer is vital during selection. Old Laystrate (recognisable by a relatively high-pitched spiral) is really strong, braking under test with a load of about 17kg. New Laystrate seems a little smaller, and some break at as little as 11kg — not good, for a 600gm Open model circulating at 20sec/lap can pull over 10Kg on its two lines. If anyone knows of another source — ideally the diameter should be 0.36mm, or 0.14in, with a breaking strain



Lines for British Goodyear pose less of a problem, for 'new' Laystrate is acceptable. To achieve maximum airspeed we use (as does Ken Morrissey) SIG 7-strand 0.012in wire (0.35mm diameter). Lovely stuff and adequately strong. An alternative is Drennan 28lb 7-strand stainless steel trace wire available in reeled 25mm lengths at fishing shops. This is 0.33mm in diameter — or about 0.31 · 0.32mm by the time you have rubbed off the lacquer covering; an essential task to prevent line binding in wet weather. We are trying it at the moment, with no complaints. While you are in the fishing shop get a supply of links with a rated loading of at least 20kg to use as line connectors, and a box of Drennan Slim Crimps. There is nothing better for neatness, small diameter and security when marking-up crimped line ends (remember — you cannot solder stainless steel). It seems astonishing that a fishing shop should be a vastly better source of lines and associated gear than most model shops...

As with all branches of C/L flying, line care is essential. We clean lines regularly and reel them in after every flight. Leaving them stretched-out for someone to walk on is a real no-no. Lines are inspected before each flight, any that are damaged are replaced. Only one model and motor needs to be lost to teach

Goodyear racing in the UK is twenty years old. Since then it has always been the most popular form of C/L racing – *and it is an excellent introduction for newcomers (and development class into the Blue Riband racing event – FAI T/R)*. We hope this article will encourage and help newcomers. If you need specific advice or information, come and ask us and we will do our best. We have never held secrets; and there is no magic. Remember that and enjoy!

7-strand stainless steel lines; excellent balsa.

Address

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TEKFIRE

Litho plate and Litespan - fresh materials for Barry

Sims' sleek semi-scale rubber sportster

LAST winter, while building a WWII biplane for rubber power, I had trouble with Jap-tissue covering the fuselage, as the amount of dope needed to tighten it tended to bow the thin stringers. So off went an order for two sheets of Litespan and a jar of Balsaloc. In the meantime, I set about covering the nose section with litho plate. Scale panels were cut and carefully polished, but the double curvature of the nose prevented fitting without creases. The only answer was to cut each panel into two or three sections and attach them with Evo-stik, retaining the original correct panel lines and filling the other gaps with model filler. A rub-down with fine wet-or-dry paper, the use of, cut-off pins for rivets, a coat of primer and two of aluminium from spray cans resulted in a better-looking cowl than I could have achieved by any other means, but I was sorry to lose the polished metal finish.

I took as a personal challenge the note in the building instructions for this aeroplane that the top surface of the annular wing could only successfully be covered by using several pieces of tissue.

I cut single pieces of tissue and applied small dabs of balsa cement to the wing outlines to tack them roughly into position. Jap tissue allows for such tacks to be pulled away again without damage, so by progressive slight repositioning it was possible to obtain a smooth and evenly-tensioned covering. Cement spots disappeared when the two finishing coats of thinned clear dope were applied. Clearly, this was the method to use for Litespan covering. Although the plastic sheet could not be fully tightened by the 'moving tack' technique, the final heat-shrinking pulled the covering tight and wrinkle-free.

High-tech topics

I now had two new, fairly high-tech materials waiting to be used for the right project - litho plate (that could be polished to a mirror finish) and Litespan, which would provide a light, strong and self-coloured finish for the rest of the model.

How about a rubber powered, semi-scale Spitfire? I knew that Litespan would cover the slight dual-curvature of the elliptical flying surfaces, but how to shape the fuselage sections from litho without those curves? A bit of lateral (or tubular) thinking gave the answer - straight lines!

A thin metal tube, straight or tapered, can be shaped at either or both ends by squashing or bending, without creasing the surface area, as the sides of the tube remain straight between the front and rear shapes. This rather crude idea can be improved by making

front and rear formers, shaped as required, then rolling a sheet of litho around the formers. So a fuselage could be made in, say, three sections, front, centre and rear, each to match in section where joined, and profiled in straight lines. A session with pad, pencil and ruler indicated that a pleasant looking fuselage shape could be drawn, accommodating the necessary design features for a stable, rubber powered sports model. The outline drawings for Tekfire were prepared and construction began - a model built rather out of normal sequence - materials dictating design and plans finally drawn from the finished aircraft.

The first, all-litho fuselage looked really impressive, but was too heavy to be practical for a small rubber powered model. This led to another useful design feature. Obviously, substituting 1/32in balsa sheet for the litho covering on centre and tail sections would solve the weight problem and still be quite strong enough, but it would have to be covered for the sake of appearance and weatherproofing. No trouble with Litespan, as it's all straight lines, but sticking the material to the whole balsa surface resulted, as it would have much more so with tissue and dope, in slight distortion of the balsa and a less than smooth finish. The answer was to stick the plastic covering at the seams and edges only, then heat-shrink for a perfect finish. At last.

Heading and photo below, show two developments of Tekfire. Neat, robust 32in craft is almost indestructable - looks great too!



TEKFIRE

It only remains to mention the use of laminated outlines for flying surfaces, and generous wood thicknesses for sheet balsa components for a strong and warp-free airframe to complement the strength of the plastic covering.

Get on with it!

Use light balsa for main structural components and flexible 1/32in sheet for centre and rear fuselage skins. PVA adhesive is the choice for all joints and laminations, except where noted. Used litho plate in good condition can be obtained from printing firms, usually free. The plain side is easily polished and the printed side can be lightly sanded to provide a key where it is to be glued to the structure. Use a smooth, flat board to work on, to avoid damage to the litho surfaces. If damage or distortion occurs during construction, litho is easily stripped off by slitting the adhesive layer with a knife blade. A new piece can then be used after applying more adhesive. Do not be tempted to use abrasive paper on the outer surface, except to smooth off joint lines, as the grit marks are hard to remove. Brisk, light rubbing with a soft cloth and metal polish will quickly produce the required effect.

Tail surfaces

It is a good idea to trace tail surface outlines onto separate sheets of paper and laminate over these, leaving the plan free for other work while they are drying. Pins can be used to hold the glued strips in place for the gentler curves, but scrap sheet templates should be cut to inner curve shape and pinned to the board for tip areas, to avoid indentations. Cut strips slightly wider than stated size to allow for sanding down, then soak them in water and wait a few minutes until they are pliable before applying PVA. Start from one end (or from the centre outwards, if preferred) and work around the shape, keeping the free ends of the strips separated until pushed into place over the outline. This prevents over-tensioning of the outer strips as they move in relation to the inners due to the larger radius they must follow.

After overnight drying, remove laminate and carefully sand grainwise until smooth and square, then pin over the plan and complete the construction.

Elliptical affairs: the wings

Laminate leading and trailing edges as for tail units, sanding the bottom surfaces flat before re-pinning to the plan. Make them full span and cut after drying – allowing a slight gap between leading edge (LE) halves. Cut spars and join with ply dihedral braces. Pin down spar on one side of wing, build that, then remove and prop at correct dihedral angle while building opposite side. I cut all ribs from basic shape (R2), rough trim to the trailing edge (TE), then use a long sanding block to blend top shape from R3 to tip rib and and taper thickness to 1/8in at the tips. Note that ribs R2 are not fitted at this stage.

When dry, remove wing, check TE joint and fit brace, then install a temporary brace between LE halves – a straight piece of ply will do. Make and test-fit the U/C spar, bend 18g U/C legs then bind and epoxy to the spar, but do not fit wheels or install assembly to

wing at this stage. Carve and sand leading and trailing edges to section, being sure to leave rear of TE 1/16in thick, not a sharp edge. Sand assembly smooth as described.

Fuselage facts

Build fuselage basic outlines from sheet sizes indicated on plan, with R1 at lower edge of centre frame. Spacers 'X' are temporary, but must be accurately and firmly fitted at this stage. Check frames over main plan for accuracy of alignment and incorporation of downthrust at notched front ends. Pinprick former outlines onto 1/8in sheet and cut out slightly oversize to allow for sanding. Spot glue, in correct alignment, F4 to F5 and F6 to F7. Sand these formers in pairs to ensure identical matching shapes. F6 should be sanded to shape drawn on plan at the bottom and to F7 where they match. Separate formers and mark matching faces.

Lay formers F4, F5 and F7 flat on the building board, with appropriate faces up or down to ensure correct matching later. Glue the appropriate ends of the frames to the formers, keeping them square. Plastic audio cassette boxes are good squares for aligning these parts. When dry, invert centre section to fit F6 in similar manner. Fit F3 by eye, incorporating the same amount of right sidethrust as downthrust, and pinning in position until dry.

Glue F8 into position, trimming slots if necessary to ensure accuracy. Cut side strips, slightly overlength, and glue into former slots and the face of F8, making sure that matching formers remain square and that thrustline is maintained. Trim strips flush with formers when dry. Cut and fit temporary cross braces X, where indicated on the plan, between the side strips, so that the strips remain straight between formers. Glue 1/16in sq to the bottom edge on lower nose strip on each side. This provides a wider joint line for the litho covering.

Now hold fuselage sections together, with matched formers aligned, then sight along the outlines to check that the assembly is straight. Correct slight misalignment between sections by sanding the appropriate former faces. Cut rear braces and motor peg

mounts and glue accurately to tail section. Glue ply facings each side of lower rear strip to reinforce tailwheel or skid mounting.

Check that all side strips are straight. Use a straightedge at several points around the circumference to check the shape of F8. Carefully sand F8 as necessary until straight-edge aligns across F7, F8 and tailpost. The idea is that the covering sheet will be smooth and straight from front to rear when glued to all external surfaces of the structure.

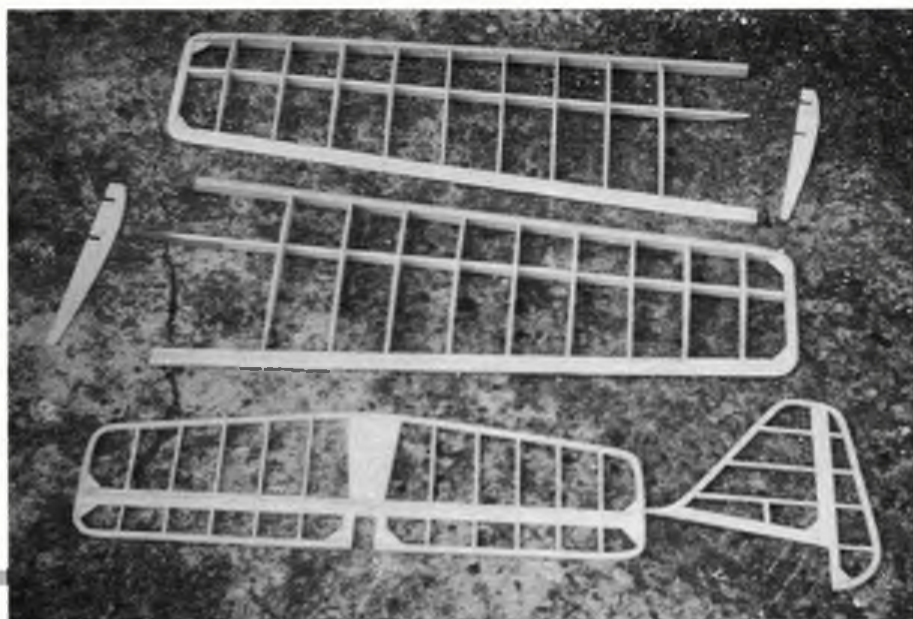
To cover the nose section, cut litho to shape, using a straight-edge for accurate seam cuts. Easier than cutting right through is to score well with a modelling knife, then bend joint gently up and down to split the metal. Lay the sheet, outer (good) side down, on the board. Hold the nose section on the sheet with the approximate centreline of the lower strip along the seam edge of the sheet and equal overlap at each end. Make pencil marks, lightly or they will show through, along the edge of the lower strip and at the outside of front and rear formers. Now roll the framework over the litho until the first side strip touches down. Mark along this strip and again at front and rear. Continue in this manner until rotated through a full turn, marking strip and former positions as they align over the sheet. Join marks where necessary and the glue lines will be indicated on the sheet. Lightly rub over these areas with fine abrasive paper to provide a key. Slightly round off the edges of the strips on all fuselage sections.

Use Evo-Stik to attach the litho to the structure. Apply along the lower strip from centre to edge and along the starting seam of the litho. When touch-dry, being litho to structure and align along the centre of the lower strip, with equal overlap at each end, before pressing firmly into contact.

Spread adhesive over the next two side strips, and the formers and marked areas of litho up to this three-quarters round the circumference point. When touch-dry, roll structure onto litho, checking that opposite strips remain parallel to prevent twisting. As each side strip meets the litho, press it firmly into contact against the board.

Now ease the remaining quarter of the litho

Basic surfaces of a Fw 190 derivative; Tekfire's structure is essentially similar, apart from laminated outlines of course.



over to the seam and mark the joint line at each end. Place on the board and cut between marks with knife and straightedge. Apply adhesive to seam, litho and formers as before. When ready, ease into place with the fingers, fitting the centre of the seam first to avoid possible overlap, followed by the ends. Rub the joint down firmly against the adhesive, using the knife handle or similar tool. Trim the ends of the litho by scribing round the outer edges of the formers, inside the litho, then working the spare metal first inwards then outwards, repeatedly, to split. Finish with wet or dry paper or a fine file.

To cover the tail section, cut 1/32in balsa sheet to size and arrange to cover first the side with the rear peg access hatch. Pre-cement by smearing lower strip and starting seam of sheet with balsa cement, then allow to dry. Apply more cement to seam and stick to lower strip, halfway over the width. Gently wrap sheet around the formers and tailpost. If necessary, but not if it can be avoided, dampen the sheet in the area of tight curvature. Mark the seam ends, then cut in a straight line between them. PVA the outer edges of the structure, except the seam line, which should be pre-cemented as before. Wrap sheet into place, clamp with scrap balsa pads and a clothes-peg to the tailpost, apply cement to the seam, then close joint and hold until set. Check that the tail section is not twisted, making sure that tailpost and former F7 are both vertically aligned.

Cut the hatch plug from 1/8in balsa and use as a guide to position and glue the 1/8in sq surround against the inside of the sheet. Cut out the hatch opening, motor peg hole and 1/8in wide slot for the tailplane. Fit balsa skin to the second side in similar manner, using existing holes and slot as guides to cut opposite items. Wait until all glue is fully dry before cutting slot through tailpost. Trim and sand skins flush with F7 and tailpost.

Cut out and glue together left and right ribs R2 with doublers. Remove temporary LE brace and fit fuselage centre section to wing, with lower edge of F6 on rear of TE. Check for accurate alignment, then mark round lower edge of F5 onto rear of LE. Cut away LE just inside these lines to allow for fine trimming later. Fit centre section to wing, glueing R1 to the spar and F6 to TE. Glue ribs and doubler units into place, aligning top edges of doublers flush with edges of formers. Cut and fit balsa skins to centre section, glueing them to the sides of the doublers at their lower edges.

Time, now, to remove spacers X. Working through the ends of the sections, use a suitable tool or piece of wood to break these away. A wire hook can be used to pull out those in the tail section.

Glue centre and rear fuselage sections together, using rubber bands between motor peg and a similar peg across the forward former to hold while drying. Fit 1/8in fairing former (side view) behind F6 and 1/32in rear fairings (top view) between wing TE and centre section. Glue 1/16in strips between top of ribs R2 and rear of fairings, to provide straightline support for sheeting. Plank top of wing roots and fairings as on plan, notching sheet slightly into TE - but do not cut too deep. If preferred, use soft block for the rear



Top: Barry's daughter poses with first prototype. Above: Litho panelling clearly seen in this shot. Idea adapts to other craft too...

parts of the fairings, rather than the sheet.

Trim LE as necessary for a good fit, then glue previously polished nose section to F5. No need to glue ends of LE to litho, although dabs of Evo-stik can be used if you wish. Install U/C spar assembly, without wheels, then plank underside of wing centre section. Sand the whole model smooth, taking care not to scratch the surface of the litho.

Make up the noseblock, shaft, bearing and propeller assembly, using a 9.1/2in Peck plastic prop. If a thrust bearing (recommended) is fitted, trim away the rounded rear bearing surface of the prop so that it bears correctly on the outer part of the race. Otherwise fit a cup washer between prop and noseblock. The built up spinner assembly shown looks nice on the static model, but the simpler version looks just as good in the air and is more practical, so take your choice. Finish the noseblock assembly with sanding sealer and coloured enamel.

Covering

One sheet of Litespan (I used silver) is just enough to cover the model, but for grain direction to be matched on left and right surfaces and to allow for possible errors, it is safer to order two. Start with the fuselage, applying a coat of Balsaloc about 1/4in wide around the rear of the litho sheet, tailpost,

lower rear section seam, top of wing fillet (on fuselage side), motor peg holes and tailplane slots. Allow to dry for about half an hour.

All covering can be attached using a normal domestic iron. Set to 90-100 degrees C (wool) for tacking and sticking the film to the structure and 120-130 degrees C (cotton) for shrinking. These settings will be referred to as 'cool' and 'hot' for convenience. Remember that, if sticking areas immediately after shrinking others, that the iron should be allowed time to cool first. Tacking is achieved by a quick dab of the cool iron on a small area, sticking by a slower, wiping motion at the same temperature and shrinking by slowly brushing the entire surface with the flat part of the iron, at the hot setting.

Cut a piece of Litespan, slightly oversize, to wrap around the fuselage from rear of nose section to tailpost, straight at the seam. Tack at bottom of tailpost, pull gently along the lower seam, then tack at the rear of the wing fillet. Wrap smoothly over the top of the fuselage and hold in place while sticking along the seam. Smooth the film round the fuselage and tack to the other side of the seam in two or three places. Reposition tacks if necessary before sticking steam. Slit film to clear rear of fillets. Stick around litho, at tailpost and around peg holes and tail slots. Trim and stick around top of wing fillet. Trim in a straight line around litho and to small overlaps at other edges. Paint overlaps on film only with Balsaloc, allow to dry, then stick down. Heat shrink entire area, then cut out tail slots and peg holes.

Paint Balsaloc around entire wing outline and about 1/4in wide around wing roots and outer edges of lower centre section sheeting. Coat the whole of the upper centre section sheet and root fairings. No need to coat ribs or spars, as this provides for a more evenly tensioned covering, but remember to coat the sheet around the exit points of the U/C legs. Cut a piece of film to cover one lower wing surface, lay it in place and pierce a hole in the right position for the U/C leg. Fit over and stick to the sheet around the wire. Tack around the outer edges, moving and re-tacking until evenly tensioned, then stick down all around. Trim to the centre of LE and 1/16in beyond TE then stick these overlaps, slitting them at intervals around tight curves. Cover remaining wing panels in a similar manner, cutting slight overlaps on top surface edges. Paint Balsaloc on these overlaps and stick down when dry. Press film down smoothly to entire surface of wing fillet, using a stroking motion with the tip of the cool iron.

Cut outlines and separate elevators and rudder from tail surfaces. Round off the mating edges. Cover these parts separately as for the wing, coating the whole of the sheet surfaces, but not the ribs, with Balsaloc. Join elevators to tailplane using soft wire for hinges. Use a pin to make matching holes in each component, dab some epoxy over the holes, then push the wires into one side. Align and test-fit the matching part, then glue into place. Do not use cyano for this job, or to fit the canopy, later, as the acid contained will leave white marks.

Check tail fit and squareness in fuselage,

Continued on p.713

VINTAGE CORNER

Alex Imrie presents an in-depth appreciation of the late

Juste van Hattum: Part One



Knotted scarf, horn-rimmed glasses and intent expression – one of aeromodelling's premier boffins as so many will remember him.

IN 1950 I was employed by the Newcastle-Upon-Tyne Aero Club, and in June of that year went with four of our aeroplanes to participate in the Benelux Air Rally. Our first stop was at Hilversum in Holland, and as I climbed out of the Auster, I was met by a bespectacled Royal Dutch Aero Club official, who, spotting the SMAE badge in my lapel, said, as he extended his hand in greeting, 'I am an aeromodeller too; my name is van Hattum.' I was honoured to make his acquaintance. His name was well known to me; not only had I read many of his articles over the years, but before that, in 1931 my father had built van Hattum's low-wing model Ghost when it was described in the pages of Model Engineer. My aeronautical education commenced at that time, and I grew-up listening in on my father's conversations with other model enthusiasts. I don't think that I ever wondered why a Dutchman should figure so prominently in their talk; and his name (plus that of his friend James Pelly-Fry) became part of my vocabulary, being revered just as much as those fundamental terms like fuselage, aileron and dihedral. In doing this I had unwittingly placed van Hattum in his rightful position, because his name is irretrievably a part of model aeronautics.

The call of the air

Born in the Hague on 19th June 1907, Juste van Hattum felt the call of the air at an early age, and after the usual aeroplane images of cardboard and models made of paper, he graduated to the most common design of the time, the twin-pusher. He did not like this configuration and claims that he never flew the model – it probably remained unfinished. Then in 1923, the inspiration brought about following his first flight in an aeroplane, when he flew in an old Fokker FIII of KLM from Rotterdam to Amsterdam coincided with the purchase of a booklet describing a stick tractor. This was successfully built and flown and he joined the Model Club of The Hague, whose secretary turned out to be the author of the booklet, JHW van den Muelen, a prominent modeller of the day who held six Dutch records for distance and endurance in various model classes. No wonder young van Hattum came under his spell and considered him to be his mentor. This was a happy period, for he was able to mix with experienced aeromodellers and find a multitude of interesting model aeronautical discoveries. There were also clubs at Amsterdam, Utrecht, Haarlem and Rotterdam,

The Flying Dutchman

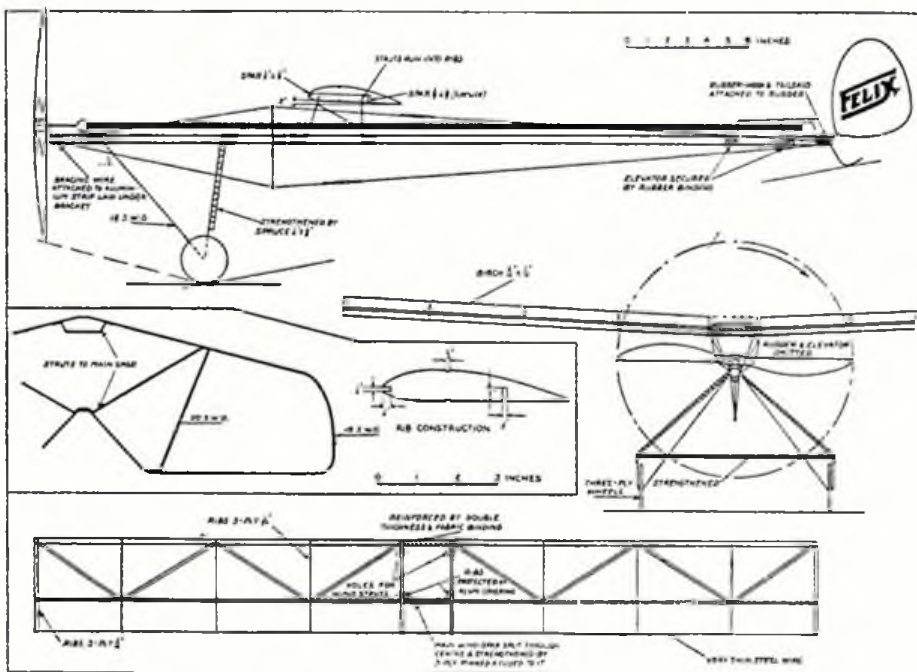
the last two engaging in inter-club competitions with the Hague modellers. The future looked rosy; but this activity was short lived. None of the clubs, some of which had been in existence since before WWI, had troubled to attract junior members who could have been trained and taken the place of the older members. Consequently, when the latter gave up the hobby due to other demands on their time, the clubs simply faded away. he was '...one of the few who remained behind, not sufficiently experienced to continue on my own, yet too keen to take up another hobby.' It was an object lesson van Hattum never forgot, and it was to decide the path this his main contribution to model aeronautics would take in the years ahead.

Whether or not he had been present at the Rotterdam meeting in June 1923 when a visiting SMAE party demonstrated a British

fuselage model and showed a machine powered by compressed-air is not known, but it was possibly knowledge of this event that caused him to subscribe to Flight, since that journal reported the activities of the SMAE, which at the time was more or less concentrated in the London area.

He joined that organisation receiving membership number 108, thus becoming one of its earliest overseas members. Soon he had established written contact with some members and was invited to attend the flying meetings. He did this first early in 1926 when he flew across to Croydon, via KLM, complete with model. He was greatly enthused to meet the SMAE members and this personal contact started a friendship with one of the leading lights, Ralph Bullock, who was to become his second mentor. Van (as he was always known to his English friends) was moved to send

The Felix stick tractor, the earliest known van Hattum design, was advanced for its time with parasol cabane and double surfaced wings. Described in Flight, May 1926.



a model across to be proxy flown by Bullock in a Freshman's Competition held at Sudbury in April 1926, this being almost certainly Felix, a 40in parasol stick tractor. Not only did Bullock fly the model with success in the competition and return it with a full report on its performance and suggestions for its improvement, but caused a description of the model with working drawings to be published in *Flight*. Receipt of Bullock's comments and seeing his model published in his favourite journal obviously spurred van Hattum to greater effort. Designs now left his building board with increased frequency, and this was the real beginning of an activity that would eventually produce some 150 models in the VH series over the next 60 years.

Wakefield flyer

By now built-up fuselages were the norm, and (doubtless due to Bullock's influence), many of his designs were of the low-wing type, a configuration that he found particularly appealing. VH-36, designed in September 1927, was a general-purpose low-wing machine, made for realism of flight instead of mere duration. This 49in all-hardwood, sixteen-ounce model underwent considerable modification over the next few years and was eventually named Ghost. When the first Wakefield Competition, planned for Hendon on 22nd September 1928, was in real danger of being cancelled due to lack of entries, van Hattum, who was in this country attending the Model Engineer Exhibition, sportingly, entered for Holland thus supplying the required international ingredient. There was a delay until the model arrived in this country, but it was proxy flown by B K Johnson in the competition on 29th September. Possibly because of the haste with which the model had been dispatched from Holland, it did not perform well, having trouble meeting the ROG requirement. Van also represented Holland in the 1929 Wakefield on 14th July at Halton, his machine being appropriately named Flying Dutchman. This was a 38in high-wing model, weighing 4.1/2 ounces, two skeins of 1/4in rubber, of six strands each, being geared to the twelve-inch propeller. Although the model flew well during practice flights, it managed only 22.6 seconds in the first round due to the use of new rubber. A bad take-off terminated his second flight after just over six seconds, and when the turns were being put on for the final round, the rubber broke – and Van did not have a spare motor! On 19th July 1930 Halton was again the venue for the Wakefield International Cup Competition and again Van represented Holland, that name being proudly inscribed on the rear fuselage of his 38in high-wing model Wapiti II; but bad luck dogged him once again and he scratched from the competition.

Comp Sec SMAE

Van had come to England in 1928 to study mechanical engineering at Imperial College, South Kensington, but the '...somewhat indigestible meal of steam engines and associated subjects...' did not appeal to him and he was able to change his seat of learning to the de Havilland Technical School at Stag Lane where students were given a three-year course in aeronautical engineering. Always



A young van Hattum in 1928 with HV-36 in its original form, coloured black and grey. This model was later transformed into the Ghost racer, and was described in *Model Engineer* in April 1931.

an eager worker he became a Council member of the SMAE and was its Competition Secretary from January 1931. Most active during his sojourn here many were his contributions to *Model Engineer*, in which paper he described his own and Pelly-Fry's models; the splendid drawings (including perspective sketches) were van Hattum's work and he excelled at this art style. Additionally when issues were raised in the correspondence columns of *Flight* or *Model Engineer* it appears that Van always responded, he was the first to recognise merit in new ideas and said so, but woe betide correspondents who tried to lead him up the garden path! His considerable knowledge of aerodynamics gave him an edge over most other enthusiasts but he never took advantage of this. He maintained that one could not write in a controversial manner on aerodynamics, either one understood it or one did not. It was to help others '...who had not done their homework properly...' that he wrote at length on the subject in various journals. With his scientific approach he was what later became known as a boffin. One of the many problems to occupy his fertile mind concerned a system of accurate timing for speed models. His calculations showed that 2/5th of a second error in stopwatch operation meant variations up to 3mph, and although he did not claim to have provided

James Pelly-Fry holds Wapiti II at Halton in 1930 (possibly at that year's Wakefield) – Van is at the winder. Note that contact is via a 'winding fork', so it was necessary to press against the model to keep the fork in engagement. The 38in model, built of hardwood, piano wire and silk weighed five ounces.



the answer, his detailed investigation showed SMAE members that the 10 per cent error accepted at that time was not good enough, and he looked at electrical and photographic means of reducing this. During his stay here he struck up a friendship with James Pelly-Fry which was to endure for the remainder of his life. Recalling the Wimbledon Common days he wrote: 'James and I lugged a big cardboard model box around in underground and bus and sometimes a bus conductor would not have the thing on board, so we waited for a more understanding fellow... there were hardly two dozen modellers for an important competition, nearly all from the London region as travel was expensive and time-consuming. A new face was an event. Captain Claude Bowden and his wife Grace were particular friends, if only because they beckoned Pelly-Fry and me to their Lagonda where they treated us to tea and delicious sandwiches... afterwards we often used to go to the Windmill Café on the Common for tea and buns, where technical 'secrets' were freely discussed and everyone could explain in detail why his model had not given of its best that day...'.

Another place of congregation was Lyons Corner House in New Oxford Street, where, after SMAE Council meetings at the YMCA in Tottenham Court Road, Van, Bullock, Pelly-Fry and others would foregather over coffee and a snack and would debate at length the best model characteristics, merits of different materials, forms of construction and other model topics. Sometimes these discussions became animated and always resulted in leaving a trail of designs and explanatory drawings of specific points on paper napkins, since the backs of old envelopes for the purpose had long since been used up!

Instead of devoting himself to duration models, he was more interested in applied flying and for a period was a keen devotee of both speed and weight-lifting models. His Ghost was made into a racing machine by fitting a special wing carefully faired into the fuselage and semi-spats on the wheels, a task performed by Pelly-Fry who proxy flew the model into first place in the SMAE Speed Cup Competition on 3rd October 1931 at 29.2mph. The model was capable of higher speed, but in the competition was flown in

a slight climb, being of necessity over-elevated, in order to ROG successfully from the rough ground at Danson Park.

At about this time Van wrote a thought provoking article in *Model Engineer* about fostering a wider interest in models than pure duration and his accusation that the movement was '...only half awake' in this regard ruffled a few feathers, especially because the name of the writer was not included, the immediate inference being that he was ashamed of what he had written. But Van had no intention of hiding, nor was he ashamed of his cause. The apparent anonymity was due to a misunderstanding by Percival Marshall who adopted Van's theme in his speech at the SMAE prizegiving in December 1931, so the message was well and truly put across.

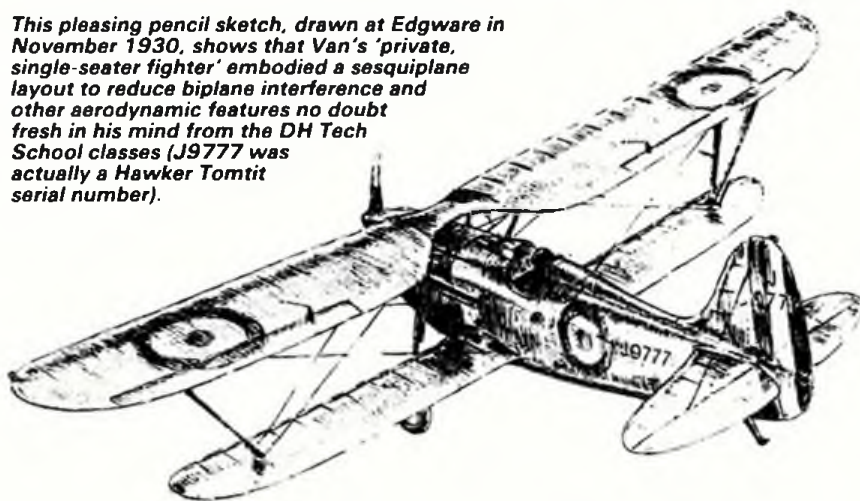
Payment in flight

The death of his father in 1931 and consequent shortage of funds almost terminated his study at Stag Lane; in fact, the situation was such that he had already shipped home the small two-seater Sara car which he now used to visit model meetings and to transport 'difficult' model boxes, but a kindly aunt rose to the occasion and produced the necessary finances. Not only did this allow the completion of the course, but also made it possible for Van to remain in England for a period thereafter, during which he was fortunate to be allowed to work as

The cover of Van's first book which introduced balsa into Dutch aeromodelling in 1935 with its detailed description of VH-60 Woodpecker.



This pleasing pencil sketch, drawn at Edgware in November 1930, shows that Van's 'private, single-seater fighter' embodied a sesquiplane layout to reduce biplane interference and other aerodynamic features no doubt fresh in his mind from the DH Tech School classes (J9777 was actually a Hawker Tomtit serial number).



Left: Black and white! VH-36 with C E Bowden's racer Bullet on Wimbledon Common, August 1931. On the day this photograph was taken, Ghost did 45mph over the ground - with a 25mph tail wind!

an improver in the DH drawing office. As a foreign national, however, he could not be paid in cash for this, and received instead flying at the rate of £1.00 per hour on DH 60 Moths, his instructor being young Geoffrey de Havilland. The weekly entitlement of two-and-a-half hours' flying meant that he soon qualified for his pilot's 'A' licence; and by the time he returned to live in Holland in 1934, he had flown some 80 hours as a pilot, had practical experience of aircraft drafting and was an Associate Fellow of the Royal Aeronautical Society (AFRAeS). After a short period with the Fokker design department, Van joined the staff of Mr Fredrick Koolhoven at Rotterdam, and was project engineer on the FK 53 Junior, a two-seater, side-by-side, light gull-wing monoplane which was based on a Pobjoy powered low-wing machine that he had designed in his last months with de Havillands, having previously been responsible for the drawings of the Technical School's TK 1. His Dutch designation of TK which meant 'Technische Kollege' was retained for the remainder of the series of light aeroplanes designed by the DH students up to 1939.

Mentor

Because the pressure of his involvement in full-size aviation had effectively prevented him from doing any serious aeromodelling for over two years, he now began to 'toy with models again', taking a keen interest in his own country's model aeroplane movement. It troubled him to see how backward this was compared to activities in England and he desired to correct it. A wave of air-mindedness had swept through Holland at the end of 1933 following the magnificent flight of the KLM Fokker F.VIII 'Pelikaan' which returned to

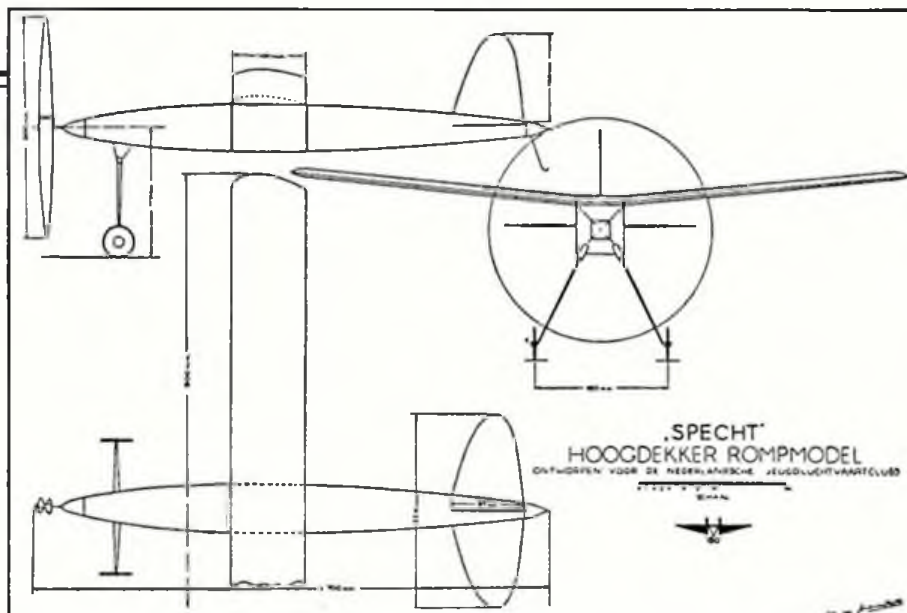
Amsterdam from Batavia in just over four days, and this interest kindled a flame of enthusiasm, especially amongst the younger generation, that was regularly fanned by other aviation news showing that Holland was making a name for herself in the air. Spontaneously, clubs of aviation enthusiasts were formed in the major towns and these received the support of the Royal Dutch Aero Club which arranged visits to aerodromes, programmes of lectures, and similar activities. Eventually some members began to make models, these usually being gliders of German origin. The importance of modelling in promoting an interest in aviation was appreciated by the Aero Club but it lacked experience in this area and made an appeal in the aeronautical press for assistance with model activities. Van offered his services, seeing this as an opportunity of creating an organised Dutch aeromodelling movement whose nucleus would be these youngsters who could be given a sound grounding in basic principles using modern, state-of-the-art techniques.

With the Delft Club members he designed and built his VH-60 Woodpecker, a simple tractor fuselage model of the type then common in England. This was a practical test from the beginning, for most members; it was an introduction to balsa construction, and they were encouraged to handle the models roughly as might complete novices. Van was greatly encouraged at the result, and the three Delft balsa-and-tissue Woodpeckers caused a technical sensation at the first large competition held near Schiphol in April 1935, where the other models were either large hardwood German gliders or stick models of piano wire and oiled silk from the 1920s! He now wrote a 60-page book explaining in full detail every step in Woodpecker's construc-

tion, and this was accepted by the official body as a standard textbook for the other clubs. The next design for beginners was lighter and capable of better performance. VH-64 Sparrowhawk was built in October 1935 and it also proved highly popular with the various clubs. (This model was described in Aero Modeller, March 1939, the full-size plan for the 31in model being free).

The 'air enthusiast' nature of the clubs now changed and modelling, originally a fringe interest, became the clubs' main

Van Hattum was associated with each of the following: The Jeugdvluchtvaart clubs (Youth Aviation Clubs) - nucleus of the Dutch model aeroplane movement in the 1930s; the Society of Model Aeronautical Engineers (SMAE); the Koninklijke Nederlandse Vereniging voor Luchtvaart (Royal Dutch Aero Club); and (at foot of panel) we see Van's trademark, usually shown at the bottom right-hand corner of his working drawings, always annotated with the design number.



theme. The Aero Club maintained a strict supervision of the modelling activities and the result of Van's efforts saw him placed in charge of the technical development of Dutch model aviation - at this time an unpaid, spare-time job since he was still employed at Koolhoven; however, the task eventually became more than one could handle in spare time and he had to make a decision whether to carry on in full-size aviation or accept the position that he had himself created.

He opted for the latter and entered full-time employment with the Royal Dutch Aero Club in this capacity in 1937. Van was chairman of what later became the Technical Committee, whose members produced advanced rubber and glider designs as well as simple models suited to the large numbers of newcomers to the hobby and also attended to the technical side of the organisation. Sponsorship was obtained from a chain of provincial newspapers and this greatly increased the number of competitions held throughout the country. The first ten-day

VH-60 Woodpecker, of 35.1/2in span was powered by eight strands of 3/16in rubber driving an 11.1/2in balsa propeller which gave an average duration of 45 seconds ROG.

aeromodelling camp was held at Ermelo in 1937; it was a huge success so further camps were held annually until 1940. There was keen desire to show what Holland could do in international competition and models were now made to meet FAI regulations. Van himself represented Holland in the initial rule-making meetings that would eventually produce the Commission Internationale d'Aeromodelisme (CIAM) his service to which would cover some twenty-five years and bring him the award of the Diplôme Paul Tissandier by the FAI. The development of a good Dutch Wakefield was one of Van's particular interests his first model in this class being the attractive VH-70 Condor and he accompanied teams from Holland to the 1937 and 1938 Wakefield Cup contests.

To be concluded...

Below: Perpetually with pipe, Van at a Belgian meeting at Knokke in 1937 with his simple, attractive, low-wing VH-54 'Falcon'.



Dateline: 26th-28th August. Venue: RAF Barkston

Heath. Occasion: The '89 BMFA RC, CL and Scale

Nationals...

Scale and control AT

Free Flight Scale

Free Flight Scale at the Nationals continued its healthy growth with a record thirty entries across the three classes. This is interesting – and at a time when participation in R/C Scale appears to be declining. Unfortunately the meeting was dominated by the weather, with a stiff breeze prevailing from the moment of conclusion of the Competitors' Briefing.

CO₂/Electric and Rubber

These two classes are flown together. The first two rounds took place on Saturday afternoon. When conditions are less than perfect it becomes a difficult job for the Contest Director to fit in the flying in the best possible way; and there is a responsibility on the part of the flyers to take advantage of any reasonable conditions that occur.

The afternoon began breezy but flyable. Despite this, there was no urgency to get on with things – modellers were standing around, hands in pockets, waiting for someone else to have a go first.

Only three models qualified in Rubber, which is rather a poor show. Of all the classes, a well-trimmed rubber model is best able to cope with breezy conditions, and this was driven home by those that flew – particularly Charlie Newman's Breguet 693 twin, pointed wings and all. Lindsay Smith has built a new Spearfish, which performed happily; and this was followed by Mike Hetherington's large Spitfire which floated away like an escaped Indoor model but nevertheless impressed the judges!

This class has not really developed from its initial promise. The models are being built but the level of expertise and commitment does not improve. By the same token, anyone willing to treat Rubber Scale seriously, build a neat model and trim it out before the contest has an excellent chance of picking up a trophy...

The same comments can be applied to CO₂/Electric. By the end of Saturday evening there were only three qualifiers, including another twin – Ian Pallister's Catalina. The following evening saw even worse conditions, with a strong and turbulent wind. On this occasion Kevin Wallace led the way, though he all but demolished his Sopwith Scooter in the process. Almost at close of play, Derek Knight made a heroic qualifying flight with his well-known Tiger Moth, which fought the wind bravely; as it was in a class of its own in the Static section, Derek deservedly won the class by several streets.

Power Scale

Rounds One and Two were scheduled for Saturday evening. The breeze was still strong but just flyable; but rather than wait a while for any improvement, the majority jumped at the chance of a postponement until the following morning, particularly when someone piped up that the forecast was good for Sunday. Inevitably the wind howled all day long so we found ourselves on the flightline at 7am on Monday... luckily in bright sunshine and tolerable conditions. All's well that end's well; and we were treated to a very good session indeed, with enthusiasts queuing up to fly.



Static scoring the previous day had shown that we would be in for a close contest. The judges had been severe, with the result that scores were rather compressed. Two models were especially worthy. Gary Odgers had travelled rather further than most to fly at the Nats – from Australia, in fact. He had brought a very neat Gloucestershire Gannet of 36in span, weighing about twenty ounces and powered by a PAW 80 Classic single-ball-race diesel. The motor started well, turning a large prop with ease – and can be recommended for scale models where the installation of a front-induction motor is not a problem.

Gary had not flown from a runway before, so the ROG was a new experience. The lightweight Gannet did well, scoring a good flight in conditions it was not designed to handle.

Star turn was undoubtedly Andrew Hewitt's one-eighth-scale Sopwith Camel with a Mills 1.3 up front. This represented D8239 of 28 Squadron and thus featured extensive red-and-white checked decoration. It had not been flown before the competition so when Andrew hand-launched it over the tarmac everyone was expecting the worst. To the astonishment of all, however, the Camel flew beautifully, holding into the wind and passing over the runway before peeling off downwind. Stirring stuff, indeed. Unfortunately there was little power in hand for an ROG; when the Camel left the ground it turned right with predictable results – but no damage. The other models had all been seen before. Rob Pressnell's DH 60 Moth flew well, if a little fast; the glide into wind being particularly impressive. Bill Dennis' BE 2e, now re-engined after problems last year, managed a good flight, holding a right turn perfectly stably; while Kevin Wallace's Bristol 77 smote the runway mightily, smashing the fuselage in the process. Best scoring flight was from Terry Manley's Sopwith 1.1/2 Strutter which flew high and far to take the Superscale Trophy

Above: Bob Horwood prepares in Open Goodyear. Pilot Tim Andrews will be pumping the adrenalin in the centre of the circle... Right: Early morning shadows cross the grass as Michael Smith fettles his Bristol Fighter in F/F Scale.



this year.

Despite the conditions the Power fliers went away with renewed enthusiasm, and a lot of new models should be seen next year as a result – both diesel and electric powered. For those of you who have not yet partaken of F/F Scale at the Nationals, I must tell you that you are missing a lot. I reckon it won't be long before the R/C contests have to be fitted in around us!

Thanks are due to the team of judges, especially those whose duties involved long periods of standing around in the wind; these gentlemen being Chris Chapman, Richard Granger, Barry Hetherington, Derek Knight, Charlie Newman, San Pallister and Andy Sephton. **Report by Bill Dennis**

Control-line Scale

Eight entries this year represented most types of aircraft. Thanks to typical Barkston Heath

line

THE 1989 NATIONALS

ONCE again, RAF Barkston Heath lived up to its alternative title of 'The Blasted Heath' - for most of the August Nationals, at any rate. Luckily, the majority of contestants were able to post respectable times (or scores) on the Saturday, for the weather on Sunday was changeable at best - and diabolical at worst. At least conditions relented by Monday morning, allowing a Nationals at last...

And how encouraging to see that the renewed growth of interest in Control-Line - and Scale - continues unabated. Entries were higher than for many years, with notable interest being shown in British Goodyear, all classes of

Aerobatics, and Vintage Team Race, which was treated to a Monday final for the first (and certainly not the last) time. Vintage Combat made its first Nats appearance; healthy participation points the way head for this event too. The successful Eurochamps at Three Sisters has clearly boosted momentum and provided International inspiration from a home base. All very promising.

For Radio Control coverage we invite readers to turn to our companion magazines Radio Modeller and RCM&E. We'll start right here with full details of Scale and Control-Line. Over to our merry band of reporters...



weather, the competition was postponed in part from its scheduled, Sunday morning start, although Contest Director Margaret Staples decided that static judging should proceed, in order not to waste time. Most of the aeroplanes were well-known but it was splendid to see Dave Kenny back in the fold again with a very neat refurbished North American F-82E Twin Mustang. Top in static was Mick Staples' Bristol Bulldog, comfortably ahead of the chasing group headed by Bernard Seale with his Thulin NA.

Despite standing by for the rest of the day conditions failed to improve, so Monday morning became the appointed time for flying to begin. Happily the wind was much less strong by 10.30.

Mick Staples was first away. Light models are often a terrible handful in the wind but the little Bulldog managed a qualifying flight. Bernard Seale's Thulin struggled, thanks to its high lift, undercambered wing and a lack of power from its

Enya four-stroke, the eventual hard landing causing undercarriage failure and wing damage. Fifteen-year-old Patrick Roberts, fresh from his Rolex Trophy success (as reported in Hangar Doors) put in a fine flight with his Miles Sparrowhawk, heaviest model of the meeting at ten-and-a-half pounds. His touch-and-go and landing were excellent, helping him to a useful score of 967.5 points.

Geoff Burkett stormed away with his Enya 60 powered SE5A but the motor seemed unexpectedly quiet and lacking in power. Geoff's flying ability saved the model on more than one occasion. The touch-and-go was more a hit-and-run, displacing one of his tyres which detached on landing to spoil his taxi option; but scoring 733 points nevertheless fellow Three Kings clubmate Wal Cordwell flew confidently with his pretty DH 90 Dragonfly, and despite his flaps sticking down achieved 955 points. This was a spell of increasing flight scores. Chris

Bradford (helped by his sons as pit crew) coped splendidly with the gusting wind and his ever-reliable C-47 netted 1056 points. John Roberts' heavy, but clean DHC Chipmunk isn't easily disturbed. The pilot was pleased with his flight - deservedly so, for his 1106 points took him into the lead.

There was just time enough for a second round. During the interval feverish activity was to be seen in the line park. Bernard Seale re-rigged his undercarriage. Geoff Burkett likewise; Wal Cordwell sorted his flaps and Dave Kenny, who had to abort his first flight, worked hard on his motors and controls.

Mick Staples declined his second flight, not wishing to risk his Bulldog; and Bernard Seale had to give best, for the Thulin's motor was far from right, showing no throttle response. Instead he assembled his new Miles M20, as featured on the cover this month. Geoff Burkett's SE5A still appeared underpowered, the model being unwilling to wingover or loop, and landing on its nose. Wal Cordwell was the only competitor to raise his score thanks to fully-operating flaps. Son Patrick wingovered the Sparrowhawk to score identical to his first, and Dave Kenny managed to get both motors chiming-in to take the Twin Mustang to a potential-showing score of 463. The trusty Dak suffered an engine cut, dropping Chris Bradford's chances; but he was still to finish in second place. All this left John Roberts far enough ahead not to need a second flight. Mixed fortunes at a wet and windy Nats, then; but all vowed to return next year. How about joining them?

Report by John Roberts

Handicap Speed

The speed event was run by Jo Halman with her usual skill and efficiency, and although the weather made things difficult, there was relatively little carnage, and speeds were well up to par. The event is run on a handicap basis, with no less than ten different classes of model all competing against each other. Each model's best speed is expressed as a percentage of the current national class record and placing is decided according to percentage.

An anomaly in the rules allows an entrant to enter as many classes as he likes (although practical consideration usually prevents anyone from competing effectively in more than two classes). However, only the best score counts in the overall handicap placing. The models themselves vary from 049s (0.9cc) through to 60s (10cc); most of the classes are 'Open'; that is, there are no restrictions on model design, nitromethane fuels are allowed and either two-line (grouped if desired) or monoline control is permitted. Control wire sizes are strictly controlled according to model class and weight, and a pull test is applied before every flight.

The 'F' (for "Formula") and 'N' (for "Newcomer") classes are similar, except only two-line control is allowed, without groupers, and the wire size is fixed

regardless of weight. FAI (actually F2A under the international FAI rules) is similar to F/N, but only 'straight' 20/80 castor/methanol fuel is allowed. Class I (Open 0.9cc) was contested by Tony Eifflaender and Ken Morrissey, both flying conventional two-line symmetrical models powered by a PAW 80 diesel and piped Tee Dee 049 respectively, both on atmospheric tank systems. Tony put in three strong flights with a best of 95.97mph to take fifth place in the handicap with 93.95 per cent. Ken's Tee Dee was a bit tired, and whilst doing a tightening job on the ball-and-socket little end, some grit got in the works and scored the liner and piston; this hampered the performance which Ken says is usually around 100mph, and his best was only 91.68mph, still good enough for 10th on handicap with 89.75 per cent.

Class II (Open 1.5cc) failed to attract any entries, there being no suitable motors available even remotely to approach Myszaka/Allcock's record of 139.99mph. Class III (Open 2.5cc) continues to be dominated by Paul Eisner, who has now retired his Rossi to shoe-horn an Irvine 15R into his familiar, undersized model, now required to fly on a pair of grouped 0.35mm wires instead of 0.3mm as previously. Paul reckons his present set-up should top 200mph, but here he was plagued by an uneven engine run, apparently richening up progressively, however, his best official of 194.18mph still got him second in the handicap with 99.13 per cent, only a whisker behind the winner.

Class IV (FAI-F2A) enjoyed the largest entry of any single class, with no less than nine hopefuls. Irvine 15Rs dominated with Peter Halman way out in front of the pack with a dazzling 182.77mph, which won the handicap with 99.42 per cent - a just reward for the vast effort which is necessary to achieve this level of performance. Paul Eisner annexed second spot in the class with 171.55mph, comfortably ahead of Rob Metkemeyer, over from Holland, who recorded a new Dutch record with 168.96mph.

Close behind came Dave Brewin with a 166.57mph run, somewhat troubled by vibration which was later traced to a fractured pan-mounting stud. Steve Smith was fifth in the class with his Halmanised Rossi MKIII, with 165.09mph, followed by Paul Reiterberger from Holland with 159.33mph. Ian Mander, Des Ratcliffe and your reporter suffered various calamities and failed to score.

The entries in Formula 21 comprised Peter Halman and Ian Mander with Irvine 21Rs and Dave Smith with a Nova Rossi 21. All had to work fairly hard to get their results, Peter winning the class but discarding the score in favour of his FAI performance, however, Dave Smith's 172.34mph earned him fourth place in the handicap, and Ian Mander's 170.24mph got him sixth place.

In 21N, Maurice Roberts and Terry Murton strived to record a time, but both were defeated, mainly by dolly problems. Maurice had built a new rat trap type dolly for his Irvine 21R/minipipe/bladder/Kingfisher but suffered repeated hang-ups. Terry seemed to have the converse of this problem, with the model hopping off before it was ready to fly.

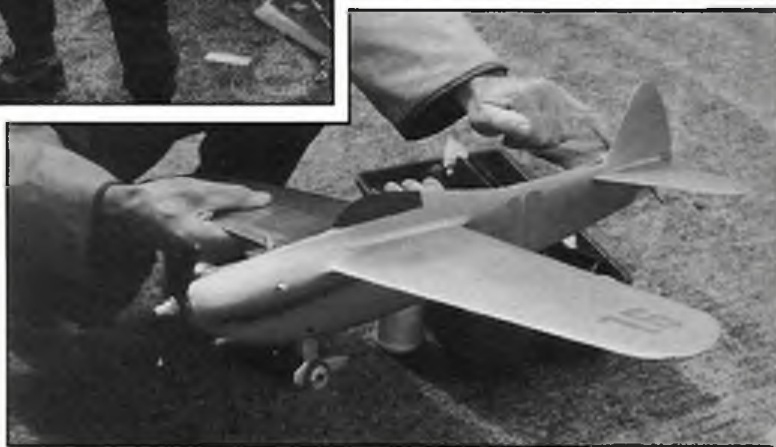
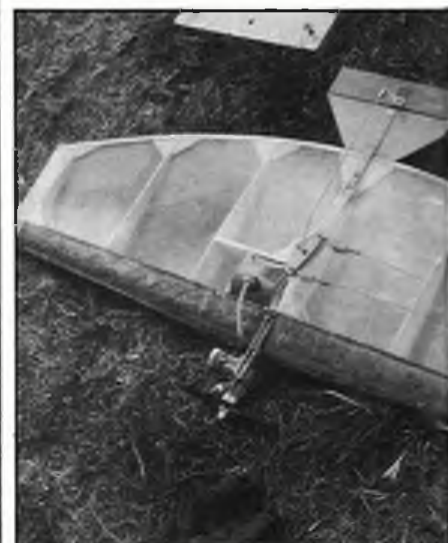
Ian Skinner and Pat Rose are the main patrons of Classes V and VI (5cc and 7cc) and both have shown good form this year, especially in 5cc. Both favour monoline control, and use piped Super Tigre X-29s and 40s, running on suck; Ian's models are usually semi-asymmetric with elliptical wing and tail surfaces, whereas Pat's are fully asymmetric, generally rectangular in planform and usually arranged with the cylinder head inboard. Ian's first flight in 5cc was 176.83mph which gained him third place in the handicap as well as first in the class. Pat had a less happy time with poor engine runs and also suffered a control handle lock-up on take-off, resulting in a damaging crash.

The only Formula 40 entry was Dick Roberts with his semi asymmetric model powered by an OPS .40 on crankcase pressure and minipipe, but a pressure leak defied all his efforts to locate it, and he could not manage an official flight. Class VIII (10cc) is always a great crowd-pleaser - lost of noise and smoke with these big, heavy models seemingly more in charge of the pilot than vice versa.

Ray Cox put in several impressive flights with his symmetrical model powered by an OS .60 on bladder and minipipe. This was actually Ray's old reserve monoliner, pressed into service after his



Above: Paul Stanley takes the strain during the F2B pull test.
Above right: Lightweight Dutch combat craft; note R/C horn, metal bearings, USE engine.
Right: Sleekest Goodyear craft at the Nats? Worgan/Cotterell tried hard but clanged a pitstop.



No.1 model was destroyed in a crash earlier this year. Ken Morrissey flew his Millenium Falcon as described in the July issue of Aeromodeller (OS .60 power, minipipe, bladder, upright asymmetric on two-line control) and holds the record at a whisker under 216mph; however, Ken got in a muddle when he was mixing his fuel, and accidentally put the oil in twice. The motor didn't like this mixture at all, and retaliated with much popping and sputtering, but Ken still managed to using 187.19mph for a class first. Martin Radcliffe also flew, but his monoline OPS 60/tuned pipe/pipe pressure Blue Phew is long overdue for replacement.

We are overdue for a fine-weather Nationals, but this year was not too bad, and all enjoyed themselves; many look on it as much as a social occasion as a contest, a chance to do some leisurely chin-wagging as well as fling the aeroplane around. Thanks to all who competed - and especially to those who helped to put up and finally pack away the nets and other equipment.

Report by Dick McGladdery

Aerobatics: Gold Trophy

Interest in competition Stunt flying is again rising. The Gold Trophy saw a healthy thirty-one entries this year - and a good selection of new models. We were treated to one foreign entry this year - Hiromitsu Yokoe from Japan, currently resident in England, who has had some success this year on the competition circuit with his Enya .35 powered semi-scale Tony. Maurice Doyle, over from Ireland, presented a neat, new version of his Ariane stunter; and veteran competitor Eddie Sharp produced a very smart, blue-and-white, updated Kestrel with the old faithful ST.46 for power. Even your reporter had a new model - the Challenger (featured on the June cover). ST.60 powered and now trimmed out to perform well.

Nats format these days is for the first two days to be used as an eliminator to produce a top fifteen for the fly-off on the last day. Two circles are used; pilots fly once in each circle, each day, and the best score from each circle is added to select the finalists.

Competition got off to a good start on Saturday with a light breeze under an overcast sky; ideal

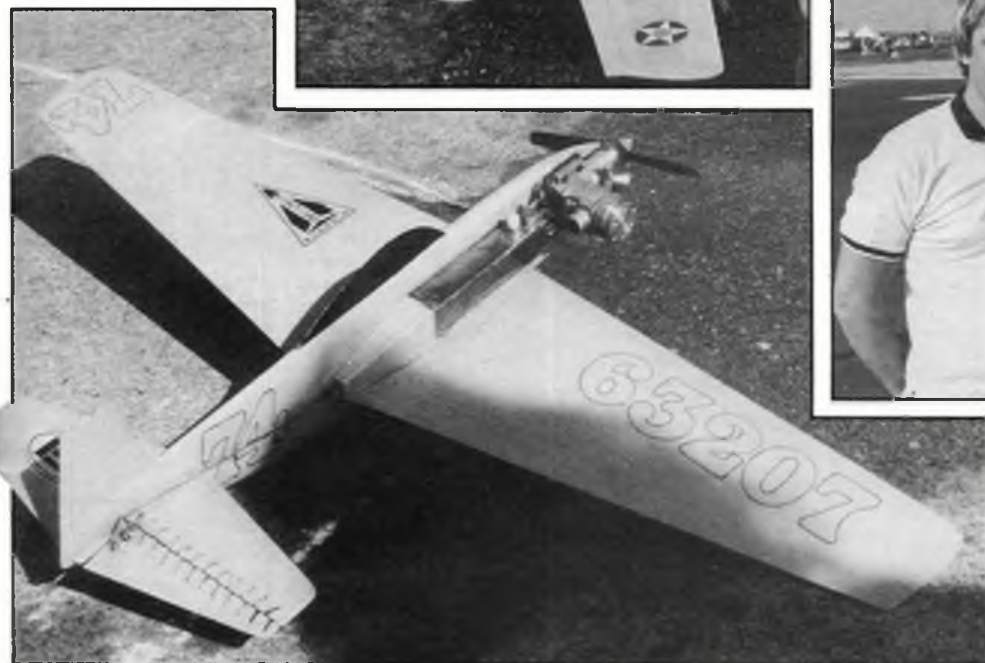
conditions, in fact - but it was not to last. By lunchtime it was raining hard and the wind had picked up.

Dave Day's old Nobler finally met its end when the wings folded; and Bill Draper was caught in a tremendous downpour, but still managed a respectable score.

On the second day the wind was appalling; so strong that very few bothered to fly at all. It would have been almost impossible to improve scores. The top fliers, having secured their places in the fly-off anyway, showed ordinary mortals how to handle the conditions and get in some extra practice in case the flyoff was just as bad. Actually, the wind moderated to a reasonable breeze, and a good contest was in prospect. One early casualty was Nev Dickinson whose Northwind suffered a control failure in the overhead eights, with the inevitable crash. John Ash's engine cowl came off in flight, resulting in a no-score. Hiromitsu Yokoe flooded his engine and then managed to break his prop by flicking too hard.

As is customary, the scores were posted after each flight. It is all credit to Mike and Gwen Feaver that with the new computer in use, they were able to list the scores within a few moments of each landing. After the first two fly-off rounds the lead was held by Tony Eifflaender. For the final round the scores are withheld until the final results are known - this being the sum of the best two fly-off scores. Tension certainly mounts during the final round. It was obvious that it would be a close run between our Eurochamp, Bill Draper; Barry Robinson, and Tony himself. It is amazing how three completely different styles of model - and flying - can be so close in performance. Only ten points separated them at the end, top honours going to Barry Robinson (Northwind, ST.60) followed by Tony Eifflaender (Freebird, PAW 35) and Bill Draper (Superhawk, Enya 40SS). Nev Dickinson did well to manage fourth place with his reserve model, closely followed by Peter Coates, who has just returned to the scene with his ST.46 powered Maxi. Thanks must go to judges Alan Church, Reg Lowe, Dot Dickinson, John Harley who did noble service over three, hard days.

Report by Glen Alison



Top left: Nobler winner Dave Day attaches the lines at rear; Ron Prentice's version in foreground. Top right: Tony Eifflaender concentrates on the release in British Goodyear. Left: Winning Open Goodyear craft of Clarkson/Needham. See our special feature this month. Above: Novice Goodyear winners Terry Taylor and Paul Darke acquitted themselves well.

Class 2 Aerobatics

This year there were ten entries for Class 2 Aerobatics, which was formerly known as Novice Stunt. The competition was run in three rounds on consecutive days. Saturday's poor weather did not unduly affect the flyers. Brian Temporal, flying a Twister, clipped the ground damaging the propeller, as did Neil Stewart with his Mid West Me 109. John Wing was flying a stretched Mercury Crusader powered by a ST .46 which looked to be flying very smoothly. Top scorer in Round 1 would have been Ron Prentice, had he not lost landing points due to an over-run. On Sunday, those who did brave the wind struggled to keep line tension in the overhead manoeuvres. Ron Prentice landed his ST60 powered Imitation Excitation safely, but as the model rolled towards the downwind side of the circle, the wind caught under its tail and turned it over, fortunately without damage. He had done enough to win.

The remainder flew on Monday, when the weather had improved considerably. In addition to those already mentioned, the other entrants were Roy Cherry (Nobler OS35 FP), Brian Sylvester (ST 60 powered Classic), Brian Smith (U2 Spy Plane OS40 FPS), S. Ward and D. Bratton. S. Foster withdrew.

Report by Ron Prentice

Old Tyme Stunt

Because of the increased number of entries in Old Tyme Stunt this year, it was necessary to run the two rounds over two days. Saturday morning dawned grey and wet but by the official start time the rain had stopped.

With judges Andy Brough and John Noble assembled, all we needed was a competitor. The first scheduled to fly was Richard Doyle, who had built a superb new Coasby Taurus from the 1949 Aeromodeller Annual. Unfortunately during practice the bellcrank platform had come unglued; Maurice had just epoxied it back and was waiting for it to harden. In desperation I asked Harry Leyland to fly his Fox 29 powered Foxstunter. More problems! When he got model and lines into the circle, he discovered that the engine was loose! A screwdriver and spanner soon appeared and with the bolts tightened up, the contest started in earnest.

After a good take off, the Foxstunter proceeded to fly a rather shaky schedule, eventually running out of fuel during the overhead eights. The next competitor was Brian Lever flying a Mercury Monitor powered by an original AM 35 diesel. Because Monitors do not have wheels, we all trooped over to the grass for the flight. He did not have a good motor run, which made the overhead manoeuvres difficult; he over-ran the time limit and lost landing points. With the epoxy now hard, Maurice Doyle carried his model to the circle, started up and did the most superb, tail-up 'Tiger Moth' style take off, only to hit a team race competitor who had inadvertently wandered into the stunt area without looking. The model was very badly damaged, but fortunately the modeller who caused the damage was not.

Newcomer to the OTS scene, Phil Darke, flew next, his Taipan 2.5 diesel powered Juggler performing very well. F2B flyer Glen Alison, who made his Vintage debut last year, was next to take to the circle with his Super Zilch. Now re-engined with a Fox 35 instead of a Fox 59 it is a different

airplane. Much slower and smoother, it performed the schedule with ease. The deBolt All American entered by Mike Castell, designed for a Fox 35, flies very fast, and as if on rails. He achieved a good round in spite of the heavy rain which had set in. Another newcomer to the OTS scene, John Taylor flew his 1951 Hopit which was powered by a DC 350 diesel. Shortly after take off the model crashed and was withdrawn. Following a short break for refreshments, Dave Day flew his Elfin-powered Ambassador in his usual rip-roaring style to get a good score for the first round. This was followed by Ron Prentice flying his Fox 35 powered All American, which was new for this season. A poor motor run made the early part of the schedule difficult, but it improved during the flight.

As Contest Director, I decided to discount Maurice Doyle's ill-fated first flight and allowed him to fly again with his (now rather elderly) Oliver-powered Tycoon. At this time the wind was gusting badly and the model was blown about unmercifully.

Now came Mick Taylor with his well-known Fox 35 powered Reinhardt 1950 International Winner, a model with which he has had considerable success. His flight was very smooth with good shaped manoeuvres and would obviously take some beating. Bristol's Terry Taylor built a Coasby Flicka from the 1949 Aeromodeller Annual specially for this contest, but during practice the bellcrank pulled out and the model was written off. So it was back to his old faithful Foxstunter, which performed more than adequately. He went into inverted flight by doing a half outside loop, which threw the judges into confusion for a time, then finished his flight with a very bouncy landing.

Alan Smith of the Nuneaton Club flew a Calamity Jane powered by a Fox 35; Brian Waterland with

his Devil Bat. Brian always has problems starting his Enya 35 and eventually used an electric starter. The judges did not allow any starting points for this, but the flight continued uneventfully. However upon checking the rules, I discovered that it categorically states that electric starters are not allowed and so Brian's flight was disqualified.

The round was completed by Gordon May flying a Merco 29 powered Foxstunter, Steve Crawford whose Oliver 2.5 powered Ambassador put up a good, fast round; and finally late entry Ted Lloyd, flying a PAW 19 powered Stunt Queen.

Sunday morning dawned with intermittent sunshine and a gusty wind. By 10am, when the second round was due to start, we were advised that the weather forecast predicted gale force winds abating overnight. Upon consulting Mike Feaver, Overall Aerobatics Contest Director, it was decided to postpone the round until Monday.

Fortunately, Monday saw better weather.

The second round started with a good flight from Maurice Doyle, who considerably improved on this first-round points. Bearing in mind his disqualification, Brian Waterland took advantage of the rules to borrow a hand-cranked inertia borrowed from a speed flyer in order to start the Enya 35 in his Devil Bat. Following this rather unusual procedure, he flew a better schedule. Next to fly should have been Harry Leyland, but he did not appear. Steve Crawford's second flight produced several tense moments when his propeller clipped the ground on take off; and again at the bottom of vertical eights, but he finished the schedule without further problems. Alan Smith flew a good round with his Calamity Jane and in the absence of the next competitor, Ron Prentice decided to fly next. After having trouble starting his engine due to a blocked jet, he called an attempt. Glen Alison's Super Zilch, which clipped the ground several times just after take off, did not fly as well as in the first round, because of a damaged propeller.

Ron Prentice got away to a much better round than previously, but he was obviously not on good form. Mick Taylor's Reinhardt International Winner was next to fly. As usual he had a good motor run and flew a really smooth classic schedule, but a bouncy landing lost him valuable points. Fellow West Countryman Phil Darke flew a very fast round with this Taipan powered Juggler. After a half-hour break for lunch Ken Day, who missed his first round flight, flew a Veco Chief, (complete with Polywog airfoil section). Dave Day started his Elfin in three flicks and again treated everyone to one of those riproaring, fast schedules which we expect!

Report by Ron Prentice

Nobler contest

Sunday's wind and rain did their level best to mar the eagerly-awaited Nobler-only contest with the great man himself, George Aldrich, presiding over a gathering of his brainchildren. There were reports of a score or more Noblers on the stocks all over the country, but in the event just seven replicas of this truly formative design of the very early Fifties materialised at Barkston, five of which flew. However, in view of the awful conditions Ian Ward who, with Don Burgess, masterminded this gathering of the Nobler clan in George's honour, need not be discouraged at the turn-out. Certainly George wasn't. He will go back to the States well aware of how much his design is appreciated by control-line flyers in this country.

The contest, flown to the AMA schedule, was won in magnificent style by Dave Day who had completed his all-red Merco 35-powered version at 2am the night before. He didn't even have time for a test flight and was pitched straight into the contest when conditions were at their very worst. As he worked steadily through the schedule a sudden and violent rain squall swept in from the north. Spectators dashed for shelter, leaving Dave to soldier on, a lonely figure in the centre of the tarmac. During the squall the wind must have buffeted to 30mph, yet Dave's Nobler ran on rails from start to finish. A truly great flight with a touch of Wagnerian splendour about it. Second place went to Ron Prentice who completed the schedule, albeit with a few hairy moments. Another great effort although, as Ron himself said, he was glad it was

only a one-flight comp! Bill Brown from Scotland set the tone in this battle against the elements. His striking black-and-white striped model made a fine sight against the ever-threatening clouds. He dropped points by omitting a manoeuvre or two - some would say wisely in view of the dreadful fate that overcame his chum from north of the border, Ian Ward, during the first flight of the contest. Ian was half-way through the wing-over when a sharp 45-degree wind shift flung the model towards him and across to the other side of the circle where the 18 thou. lines snapped like cotton, causing a write-off. Those lines had passed a mandatory 35lb pull test, yet Ian didn't even feel them break, such was the power of the wind at that point. The only other competitor to get airborne was Peter Michel whose OS 35 FP, normally 100 per cent reliable, coughed and died after a couple of laps.

What a pity George couldn't have seen his offspring perform in a better setting. Still, he enjoyed the comings and goings well enough and signed certificates for all who turned up with a model. And he settled once and for all a talking point that has been dickering on for the best part of four decades. Do you say it No-bler or Nobler? Definitely No-bler, says George. He chose the name after a search through the dictionary where he came across Noble and Nobler meaning, roughly, a cut above the rest. That was it. No-bler it had to be!

(Footnote for collectors of useless information: One wind-swept Nobler-only competitor, who arrived too late for the contest, came up with this gem. 'Did you know,' he said totally irrelevantly,

'that Nobler-only rhymes with Toblerone chocolate?' Beat that on a rotten British bank holiday Sunday!)

Report by Peter Michel

1/2A Team Race

The entry for this year's event was the lowest ever at fourteen teams, which perhaps reflects the lack of suitable, commercially - available 1.5cc ballrace diesel engines. With John Oliver no longer taking orders for the Tiger Cub, the engine which has been the mainstay of 1/2A racing since the early sixties, the only alternatives are either home-made specials or difficult to obtain engines such as the Sesqui or sleeved-down Webra Speedy. It would be a great shame if 1/2A were to decline further as it remains the most pleasant of racing classes in which to participate and provides an ideal introduction to 'real' team races, from Mini or British Goodyear. Maybe one of the British manufacturers will shortly come to the rescue.

All the racing events at this year's Nats came under the able direction of stalwarts Dave Rudd and Andy Snowdowne, to whom much thanks is owed for their efforts in sometimes difficult conditions. Round one on Saturday afternoon had only three teams showing any sort of form by beating the four-minute barrier, these being Heaton/Hawarth (Haworth 1.5), Langworth/Campbell (Oliver Cub) and Dutch visitors Wakkerman/Metkemeyer (FMV), all of whom eventually made the final on Monday. Most teams



Left: Distinctive Bluebottle 'B' Vintage Team Racer fought well for Robinson/Pickles (3rd). Below: Pitman John Schofield looks pleased before the 'B' Vintage final; well he might - model was victorious, piloted by Dave Clarkson.



Above left: Stylish all-wood craft (apart from pan, cowl and hardware!) rests between Speed Flights. Left: 1/2A TR winners Don Haworth and Derek Heaton, happy after the final.



Top left: Second in Novice Goodyear, the team of Johnson/Thomason enjoyed their Nats. Charlie Johnson holds. Top right: Patrick Roberts' Miles Sparrowhawk heads Dad John's winning C/L Scale Chipmunk. Above left: John Kergon's smart Superhawk was a competent Class 2 Aerobatics craft. Above and left: The two faces of Mike Whillance, fresh from Eurochamps Combat success but out of luck this time. Far left: Dave Smith, happy with his F21 Speed machine. Bottom left: Tony Eifflander concentrates on his British Goodyear entry - PAW powered of course. Below: The other half of team Johnson/Thomason; Mark Thomason deep in thought before the final.





Main Picture: Rob Metkerniejer runs up the FMV diesel in the F2C final. Piloted by Loet Wakkerman, model finished second to Smith/Brown, just four laps behind.

Opposite page: top left: Stunt Eurochamp Bill Draper relaxes with well-known Superhawk. Top right: F2B winner Barry Robinson with Boreous, latest Northwind development. Below left: Colin Brown awaits the off in F2C. Below right: Shuttleworth-replica DH Moth by Rob Pressnell about to go in F/F Scale. Bottom left: Andrew Hawitt's previously-untried Sopwith Camel amazed by performing as if on rails! Bottom right: Most popular Vintage Combat choice was the APS Orcrist - this is Frank Smart's example.





Top left: Worgan/Cotterel happy in British Goodyear. Top right: Ed Needham eyes up the opposition in F2C. Above left: Dave Clarkson and John Schofield after the Vintage final. It was hard work! Above: Sharp in blue and yellow - Ron Prentice's Nobler fought the wind well. Far left: Haromilsu? Yokoe chose his country Kawasaki Hien as the basis for his own-design stunter. Left: Jim Woodside ready for the F2B fray. Below: Fierce Combat opposition came from Monique Wakkerman, whose bouts were all impressively clean



were grateful to have recorded a semi-final qualifying time in the first round as Barkston Heath produced its normal gale-force wind on Sunday morning. The wind was sufficiently strong enough to demolish the safety netting and jury tower during the night so it was no surprise to find the line check empty when 1/2A racing should have started. Only two teams eventually braved the elements in an attempt to reach the semi-finals, Crozier/McAlpine, who did, and Hill/Metcalf, who did not. Thanks were owed to Dave Smith and Taffy Bollen who did not need to fly again but did so with their reserve model to provide some opposition to those who wanted to fly.

The semi-finals on Monday were held in much more pleasant conditions and produced better times than in the heats. Again Derek Heaton and Don Haworth led the way with a fast one-stop 3:30.2 in the first race of round one with Wakkerman/Metkemeyer retiring with problems in the same race and leaving it all to do in the second round. This they did, getting the FMV on song for a two-stop 3:43.2 and a place in the final. Langworth/Campbell improved in round two to 3:52.2 from their Oliver Cub powered model to hold onto third fastest qualifying time ahead of Lorrimer/Ross.

With the superior speed and range of the Heaton/Howarth model, the result of the Final never looked in doubt. Derek and Don took a well-deserved victory in a fast time of 7:11.7 for the 200 laps. Wakkerman/Metkemeyer and Langworth/Campbell ran neck and neck for the whole race, the Dutchmen taking second place by just four laps. In all an excellent race – and the first 1/2A final for many a year.

F2C Team Race

Round one of F2C followed a similar pattern to 1/2A with three teams realising their potential, Wallerman/Metkemeyer leading the round with a three-stop 3:33.1 from the crackly-sounding FMV. Hot on their heels were Sladdin/Gardiner (Nelson) at 3:34.8 and Smith/Brown (Cipolla) on 3:37.5. All the rest of the twenty-strong entry were over 3:50, the last semi-final place being disputed by Heaton/Woodside and Davies/Broadhead who were tied on 3:56.4.

Round two was held in strong but moderating winds on Sunday afternoon. It produced an improvement in the semi-final cut-off time to 3:54.2, Fitzgerald/Thomason taking ninth spot and bumping McPeake/Robson and Davies/Broadhead out of the semis in the process. Fastest time of the round went to Langworth/Campbell (Burford), flying their old 'windy weather' model to a whisker under 3:40, taking advantage of a two-up race against Smith/Brown. The other teams to show a major improvement were Heaton/Woodside with 3:48.3 from a brand new Haworth Dragon powered model, only finished a few days before the event, and the makeshift team of Dave Brewin and Steve Haycock with 3:52.9 from an elderly Nelson.

The first race of round one of the semi-finals on Monday produced the fastest two times with Smith/Brown two-stopping to a 3:30.0 and Wakkerman/Metkemeyer taking an extra stop for 3:35.0. The next race saw Sladdin/Gardiner disqualified for piloting infringements, flying against Heaton/Woodside and Salisbury/Whorton who finished in 3:47.4 and 3:56.7 respectively. Martin Sladdin was being a bit over-enthusiastic in his overtaking, but both Derek Heaton and Richard Salisbury can do fair impersonations of immovable objects in the centre if the jury fails to make them walk round. The last race in round one saw Fitzgerald/Thomason finish in 3:50.5, ahead of Langworth/Ross on 3:56.4.

Round two of the semis saw only Sladdin/Gardiner really on the pace, Martin flying to the wishes of the jury this time for a fast 3:36.4 and third spot in the final. Heaton/Woodside were the model of consistency with 3:47.5, their third consecutive race within one second of each other.

The final was a truly excellent affair with all three pilots generally behaving themselves and the three mechanics demonstrating how pitstops ought to be performed. The Smith/Brown Cipolla gradually eased out a small lead over the unique sounding FMV by virtue of its greater range. The result was settled after about two-thirds distance when Martin Sladdin's Nelson began to overheat, effectively putting them out of contention. Thus

Steve Smith and Colin Brown took yet another Nationals win in a very fast 7:09.5. They were chased all the way by Loet Wakkerman and Rob Metkemeyer, four laps behind on 7:18.6, with Martin Sladdin and Ian Gardiner third in 7:40.0. A classic race.

Class 'B' Team Race

The entry of seventeen was a slight improvement on last year with three teams using .21 size motors to take advantage of the change of rules. Certainly the new line size for the smaller engines had made them much more competitive, as Dave Clarkson and Ed Needham showed at Hullavington earlier in the year when they returned a one-stop 3:28 from their Picco .21. Unfortunately they could not repeat this performance in the heats this time.

Generally the racing was rather scrappy, Smith/Yeldham heading the list with only a 3:37.4 in the first round from Fitzgerald/Thomason on 4:27 and Clarkson/Needham at 4:39. Fourth were Langworth/Campbell at 19 laps and fifth were Ross/Morrisey at 17 laps! Things improved in round two with Fitzgerald/Thomason (OPS .29) making 3:43 with two stops for a place in the final followed by Gough/Ward using a .21 for 4:27. Langworth/Campbell had their normally very fast OPS .29 model giving problems with a loose pipe manifold for a slow time and Clarkson/Needham also had engine trouble for a retirement.

The final saw Smith/Yeldham take an early lead as the Fitzgerald/Thomason model went off setting and blew a plug.

After much fiddling Mark Thomason had the model back in the race at blistering speed (around 140mph) but the pipe detached itself from the model in mid-air to merit their disqualification. In the meantime Gough/Ward were making steady progress but could not match the pace of the Yeldham OPS which took the flag in 7:23.3. Gough/Ward ran out to a creditable second place with 7:56.0 in what must have been Dennis Ward's first Class B final since ETA 29s were the state of the art!

Report by Dave Campbell

Vintage Team Race

In spite of the somewhat windy weather, twenty-five entries were ready to do battle in Vintage T/R. Nine of these were in Class A, and sixteen in Class B.

Only two Class A entries did not use Olivers; Horne/Pilgrim with a Frog 249 in their Pluto and Lloyd/Gorst with a PAW Voodoo – the first through choice, the second as a result of their accident at Three Sisters in June. Other than the craft mentioned, there were four Time Travellers, two Footprints and a Texan. Saturday saw three-up heats. Only one team, Millar/Schofield, broke four minutes at 3:42.3, with Andrews/Horwood just outside at 4:02.9. Highlight of the night was the Court/Noble Time Traveller. A quarter of a lap after release from a pit stop, the prop clipped the ground, whereupon the motor reversed, and the plane did a half lap backwards into the centre. No-one I have spoken has ever seen that happen before!

Sunday was run as 'two-ups', in view of the window conditions. It speaks volumes for Dave Rudd's organisation that there was time for Vintage at all. Only four teams elected to fly in A; two retiring and Bower/Bower qualifying for the final in 3:59.5.

Monday saw the first Vintage Finals in the main circle. Alas, Bower was caught out by the wind at take off and wing covered straight from take-off. As he was on front station it is a miracle the other teams weren't involved. The restarted final resulted in a victory for the Three Sisters team, Dave Clarkson proxy flying for Tom Millar who could not attend thanks to work commitments. Andrews/Horwood came in second, 31.5 seconds down, at 8:53.0. In the first 'final', Bob had managed to get into the circle to rescue the shaft-running Oliver of Bower, saving it from wrecking itself.

The entry in Class B saw no less than twelve different designs. Although the majority of motors were Etas of various marks there were some variety, with McCoy, Fox, Enya, OS and PAW represented. On the first night two teams broke 'four minutes' – Millar/Schofield/Clarkson at 3:27.0 and the



Out of luck this year, Dave Campbell nevertheless shows off the neatest 1/2A finalist of the Nats.



Smith/Yeldham (right and left above) wait to go in B Team Race final; took the lead from the beginning and couldn't be caught.

Wharfedale lads, Robinson/Pickles at 3:52.7. Breaking 4.15 were, in order, Andrews/Horwood, Parker/Aldred, Gough/Ward/Gough and Crozier/Blair. Surprisingly, few teams took official advantage of the vintage ruling which allows two pit men per team.

Sunday, as in Class A, was flown in two-ups, but five teams, either satisfied or disgusted with Saturday's time, elected not to fly. Bob Horwood, best of the '4 min plus' brigade was unlucky in having the prop clip the ground on take off. Being wood it splintered – the resulting vibration doing the plane no good at all. Breaking the '4 min' barrier were Parker/Aldred at 3:51.5 and Crozier/Blair at 3:56.5, not quite quick enough for the final. Vintage B has come a long way since the first race at Three Sisters, when anything even approaching four minutes would have received a standing ovation and the Freedom of the Borough of Wigan! The night's 'event' was provided by Whitehouse/Stocks, whose Scrambler decided it was a helicopter for a few seconds before falling back to earth, happily without damage.

The final saw the OS Rambler from Three Sisters, and two teams from Wharfedale, Parker/Aldred with their Enya Bluebottle and Robinson/Pickles, also with a Bluebottle, but powered by Eta. It was a good final, with few incidents. Clarkson made what was ruled as a legitimate use of the shut-off, avoiding potential disaster, and also managed to collide with a whisky bottle at one pit stop. Alas, the bottle was half-full of the 'hard stuff'. The owner's comments cannot be recorded here. The end of the race saw two planes cut in close proximity, tangling their lines and looking as if one plane was towing the other. You can't say that Vintage doesn't provide something new...

The winning team, Millar (in absentia)/Clarkson/Schofield clocked 7:53.85. Second were Parker/Aldred in 8:31.4 and third, Robinson/Pickles in 8:58.40.

Many thanks to those who helped, especially to Tom Miller and John Schofield who took the entries and did the processing whilst I was judging Old Time Stunt. No, they didn't process their own models; I was responsible for that.

Report by John Noble

Open Goodyear and Novice British Goodyear

Support for Open was as strong as ever, although most of the craft were familiar in the racing circles. Availability of Nelson, as well as the Irvine .15, means strong hardware back-up, and the new, British rules now encompass high-quality and easy-to-handle twin-ballrace motors which may be bought for quite reasonable sums. Quickest in the semis were Lorrimer/Ross with 3:45, whereas favourites Clarkson/Needham were slowest into the finals after problems with a burst tank, happily repaired to give no more trouble until the final was almost over, and when it was too late for the outcome to be affected. The final trio was completed by the combination of McDonald/Husband, who had not flown in competition before. Perhaps disappointingly, the final was an unexciting affair. McDonald/Husband were slightly faster at the start, but there was no more than a couple of laps in it until the first pitstop, when the McDonald/Ross model hit that of Lorrimer/Ross, which ran into the circle and out of the race. A lengthy third pitstop but McDonald/Husband about twenty laps behind, giving Clarkson/Needham an uneventful run to the finish and victory.

Novice saw a close final with brisk pitstops throughout - and, indeed, through the semis. Eventual winners Barker/Tomkins managed to keep Johnson/Thomason at bay, just ahead of Swinburne/Swinburne - all of whom vowed to fight even harder on the route to the Nationals in 1990.

British Goodyear

The earlier British Goodyear competitions of the 1989 season indicated that the admission of ball-raced 2.5 diesels of domestic origin was a sensible decision. The results of the championship event showed that British Goodyear was probably the most closely-contested event of all the five SMAE C/L competition classes.

As it happened, Saturday's first round was the best one to put in a qualifying time as Sunday was a day of strong winds. Four teams were easily under four minutes with Clarkson-Needham just in the lead with 3:53.1. Sunday was Fitzgerald-Worgan improve from 4:07 to 3:52.6 - and no less than fifteen teams who decided that discretion against wind and rain was the better part of valour.

Monday's semis were run in generally excellent condition. It is worth noting that the fastest qualifier was 3:52 and the slowest 4:18. I can recall few competitions where only twenty seconds covered all nine semi-finalists.

The semis were incredibly closely-fought affairs, with an extra flick of the prop making the difference between glory and elimination. The three qualifiers all reached the final with times within 0.8 sec! Fourth fastest was a mere 0.5 sec adrift. All very interesting and exciting stuff.

The final saw the very experienced Clarkson-Needham team cruise to a comfortable win using a conventional 36-laps-between-stops technique. Second place Andrews-Harwood used two stops in quick succession, but a dead engine just after launch, followed by a trudge to retrieve the model effectively put paid to their chances. Fitzgerald-Worgan eliminated themselves with a self-digesting engine at their third stop - likely cause was a broken bearing.

Equipment

The good news is that you can purchase everything needed to build a model. The angle to use is the factory-towed PAW 2.5 double-ball-bearing diesel. Contact Tony Eiffelaender at the factory - they advertise regularly in these pages. Filler valves and fuel shut-offs are available from Ed Needham, 100 Lowfield Road, Stockport 3, Cheshire. The best props seem to be the Graupner grey nylon type in sizes 7 x 6 or 7 x 7. Fancy it? Really seems the event for those who would like an introduction to competition C/L racing or even for those who might like to make a non-too-serious return to the fold. (See our feature elsewhere in this issue. GC).

Mini-Goodyear

This year the Mini-Goodyear circle sported its own control tent and this gave the area a focal point for competitors. Mini Goodyear, being an 'entry on

the field' event, always starts slowly, as the senior members of teams are often busy on the first day trying to sort out models in the larger racing classes. Saturday saw only six teams turn up to fly a heat, so as it looked as though the entry would be down on previous years it was decided to give each team three heats instead of running semi-finals.

Bob Horwood, a winner in previous years had a new pilot in fellow South Bristol member Danny Jones. They recorded best time of the day at 5:01. Father and son team of Round/Round from the Perth club recorded a respectable 5:39. The only other team to finish a heat were Stock/Stock from Harrogate with pilot Stevie flying in his first Nats and coming home in 6:18.

Sunday saw a change in the weather with all events being delayed - and having a knock-on effect in respect to the running of Mini Goodyear heats. The entry had risen to twelve teams; Jones/Horwood set the mark for everyone to aim at with a cool 4:51.

Ross/Ross of 3 Sisters flew two heats straight off, with a best time of 4:56. Fellow club members Crighton/Lorrimer set their best time of 5:12 in their first heat and retired in the second. Court/Court flew their three heats, recording a fine 5:23 at their first attempt, a time they were unable to better.

The Anglo/Scottish team of Heaton/Crossier flew 5:36 and then 'blew out' their second heat with 7:11! The only other notable time came from a scratch



Top: The Nelson sings as Neil Gill's F2D contender is warmed up. Above: Vintage combat finalists (with crew) Frank Smart, Stewart Vickers, winner Steve Malone and Andy Clark.

Power Scale: Superscale Trophy (11 entries)

		Static	Flight	Total
1	T Manley Sopwith 1 1/2 Strutter	872	1079	1951
2	W Dennis Be2e	929	1010	1949
3	G Odgers Gloucestershire Gannet	934	943	1877
4	E Coates DH9A	783	1023	1806
5	R Presnell DH60	744	800	1544
6	A Hewitt Sopwith Camel	814	676	1490

Rubber Scale: Model Flyer Trophy (10 entries)

1	C Newman Breguet	1056	619	1675
2	L Smith Spearfish	709	589	1298
3	M Spitfire Hetherington	545	536	1081

CO₂/Electric: Knight Trophy (9 entries)

1	D Knight DH82	1142	707	1849
2	L Pallister Catalina	833	513	1346
3	D Causser Hawker Woodcock	882	455	1337
4	L Smith Gosling	382	640	1022

Ralph Gould Trophy (Handicap)

	Class	(mph) Speed	% x Record (mph)
1	P Halman IV (FAI)	182.76	99.42 x 183.82
2	P Eisner III (Open 2.5cc)	194.18	99.12 x 195.89
3	I Skinner V (Open 5cc)	176.83	95.57 x 185.03
4	D Smith F21	172.34	94.99 x 181.43
5	A Eiffelaender I (Open 0.9cc)	95.97	93.95 x 102.15
6	I Mander F21	170.24	93.83 x 181.43
7	R Metkemeier IV (FAI)	168.96	91.91 x 183.82
8	D Brewin IV (FAI)	166.57	91.91 x 183.82
9	S Smith IV (FAI)	165.09	91.91 x 183.82
10	K Morrissey I (Open 0.9cc)	91.68	89.75 x 102.15
11	P Rietbergen IV (FAI)	159.33	86.68 x 183.82
12	R Cox VII (Open 10cc)	184.42	85.40 x 215.93
13	P Rose V (Open 5cc)	153.85	83.14 x 185.03
14	M Radcliffe VII (Open 10cc)	157.75	73.06 x 215.93

Class I (open 0.9cc)

1	A Eiffelaender	95.97mph
K	Morrissey	91.68mph

Class III (Open 2.5cc)

1	P Eisner	194.18mph
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Class IV (FAI)

1	P Halman	182.76mph
2	P Eisner	171.55mph
3	R Metkemeier	168.96mph
4	D Brewin	166.57mph
5	S Smith	165.09mph
6	P Rietberger	159.33mph

Class V (Open 5cc)

1	I Skinner	176.83mph
2	P Rose	153.85mph

Class VI (Open 7cc)

1	I Skinner	162.69mph
2	P Rose	151.97mph

Class VII (Open 10cc)

1	K Morrissey	187.19mph
2	R Cox	184.42mph
3	M Radcliffe	157.75mph

Formula 21

1	P Halman	179.10mph
2	D Smith	172.43mph
3	I Mander	170.42mph

ALL THE RE

Aerobatics Fly-off Scores Final Score

	1	2	3		
1	B P Robinson	3035	2992	3079	6114
2	A Eiffelaender	3058	2992	3052	6110
3	C W Draper	3002	3033	3071	6104
4	N Dickinson	2964	2337	2930	5894
5	P Coates	2845	2936	2941	5877
6	G Alison	2670	2741	2897	5638
7	M Doyle	2743	2798	2813	5611
8	P Arkley	2671	2579	2823	5494
9	N Evans	2651	2720	2656	5376
10	D Beesley	2502	2624	2703	5327
11	J Ash	DO	2527	2749	5276
12	J Kergon	2405	2733	2195	5139
13	T Taylor	2591	2446	2525	5116
14	H Hokoe			2743	2743
15	R Landon				

Class 2 Aerobatics

		1	2	3	Total
1	R Prentice	336	277	404	740
2	B Temporal	338	351	384	735
3	B Sylvester	334	292	394	728
4	B Smith	309		362	671
5	D Bratton	245	292	331	623
6	R Cherry	276		345	621
7	J Wing	285	292	316	608
8	S Ward	264		312	576
9	N Stewart	174		163	337
10	S Foster				

Old Time Stunt

	1	2	Best
1 M Taylor	296	269	296
2 G Alison	289	211	289
3 D Day	242	287	287
4 M Doyle	160	271	271
5 T Taylor	217	263	263
6 M Castelli	255	-	255
7 R Prentice	199	248	248
8 S Crawford	220	239	239
9 A Smith	157	218	218
10 K Day		208	208
11 B Waterland		207	207
12 T Lloyd	187	-	187
13 P Darke	135	177	177
14 B Lever	125	174	174
15 H Leyland	155	-	155
16 G May	59	-	59
17 J Taylor	16	-	16
18 G Hickhan			
19 R Handscomb			
= C Taylor			

Nobler Contest

1	D Day	330 points
2	R Prentice	313
3	B Brown	259
4	I Ward	79
5	P Michel	58

South Bristol team of Blades/Andrews with 5:37. The previously successful Allerton Grange team 'managed' by Bob Walker were below form and were not recording the kind of times that would make the final. Three other South Bristol teams made up the twelve but the pilots all lacked the experience necessary to keep up with the quick boys. Nevertheless Leon and Ben Hickman and Nathan Jones enjoyed the experience, and the superglue flowed like wine!

Unfortunately pitmen Kerr Crossier and Tim Andrews were both heavily involved in the main cage, and by the time they returned to fly their last round timekeepers had retired to sample the night life of Grantham. Contest Director Gordon May had to agree to let them fly off their last round on Monday morning.

The following morning saw Heaton/Crossier in cracking form recording 4:40 whilst Blades/Andrews fell victim of the Gremlins. Crighton/Lorrimer who had been sitting on a time of 5:12 correctly demanded to fly a third round but were unable to improve. The finalists were Heaton/Crossier (4:40), Jones/Horwood (4:51) and Ross/Ross, 4:56.

The final was slotted between events in the cage and this ensured a good crowd to watch the lads do their stuff. The audience were not disappointed, for the race went off at a cracking pace. The South Bristol pair always had a slight edge on speed and pulled out a lead of about ten laps at the half distance.

At this point young Stephen Ross made a high take-off leaving Gavin Heaton with nowhere to go but underneath, picking up Stephen's lines. The Contest Director gave up a silent prayer that we would be spared the disappointment of a ruined final. The pilots must have heard, and kept their cool, allowing Gavin to perform a quick 'change hands shuffle' to correct the line clash. The crowd cheered in appreciation at the high standard of piloting and the race run smoothly to the finish.

At the finish all three pilots had picked up two warnings from a strict jury, such is the competitive nature of a Mini Goodyear final at the Nats.

Report by Gordon May

1/2A Combat

Saturday dawned overcast and threatening rain but thankfully there was little wind. With the exception of one downpour in the afternoon, which resulted in Combat being suspended for an hour or so, the conditions were virtually ideal, with the dull sky helping the scorers to see streamer cuts.

Model design has improved dramatically over the past few years. With many agile models in evidence, 1/2 A has developed into a truly competitive class which is still cheap enough, thanks to its limited specification, to encourage newcomers to have a go. Let's see some of the competitive designs in print! (OK, GC).

The event was run on a knock-out basis with

first round losers re-entering via a repacharge and with two circles operating alternatively. It did not take long to whittle the competitors down to the last four. In the semi-finals Richard Herbert, last year's winner, lost to Mike Whillance while Monique Wakkerman beat Paul Stanley and then apologised for taking cuts whilst trying to fly out of a line tangle! They all count...

The third/fourth fly-off and the final were held over to Monday afternoon when Richard Herbert beat Paul Stanley to take third place in a bout which should not be taken as a lesson in engine setting - Richard had a rich run while Paul's motor was too lean.

And so to the final. With both competitors having recently represented their countries at the European Championships a good bout was to be expected. After four minutes of fierce competition, Mike Whillance emerged the winner.

Diesel A Combat

This year Diesel A was flown to the two-life system and the first round, which was flown on Saturday afternoon, afforded the first surprise of the event in the bout between Mike Whillance and Loet Wakkerman (Netherlands). With both contestants in the circle, the circle marshal gave the signal to start engines. Mike's pitcrew started his motor and on the signal to launch his model was airborne. After two minutes Loet had made no attempt to

RESULTS FROM THE AUGUST NATS!

1/2A Team Race (14 entries)

	Best heat	Best semi	Final
1 Heaton/Howarth	3:46.7	3:30.2	7:11.7
2 Wakkerman/Metkemeijer	3:53.3	3:43.2	8:01.7
3 Langworth/Campbell	3:51.8	3:52.2	8:13.6
4 Smith/Bollen	4:20.3	4:49.9	
5 Lorrimer/Ross	4:46.3	4:21.0	
6 Robinson/Owen	4:49.7	4:41.0	
7 Crozier/McAlpine	4:58.3	4:40.5	
8 G Heaton/Worgan	5:12.0	4:57.1	
9 Davis/Broadhead	5:46.3	4:41.4	

F2C Team Race (20 entries)

	Best heat	Best semi	Final
1 Smith/Brown	3:37.5	3:33.0	7:09.5
2 Wakkerman/Metkemeijer	3:33.1	3:35.0	7:18.6
3 Sladdin/Gardiner	3:34.8	3:36.4	7:40.0
4 Langworth/Campbell	3:39.9	3:51.7	
5 Heaton/Woodside	3:48.3	3:47.4	
6 Salisbury/Whorton	3:50.0	3:54.3	
7 Brewin/Haycock	3:52.9	4:40.8	
8 Lorrimer/Ross	3:53.1	3:56.4	
9 Fitzgerald/Thomas	3:54.2	3:50.5	

B Team Race (7 entries)

	Best heat	Best semi	Final
1 Smith/Yieldham	3:37.4	3:37.4	7:23.3
2 Gough/Ward	4:27.0	4:27.0	7:56.0
3 Fitzgerald/Thomason	3:43.0	3:43.0	DQ
4 Clarkson/Needham	4:39.9	4:39.9	
5 Langworth/Campbell	4:57.0	4:57.0	
6 Ross/Morrissey	RTD.	RTD.	
7 Bridge/Worgan	DQ.	DQ.	

Open Goodyear

- 1 Clarkson/Needham
- 1 McDonald/Husband
- 3 Lorrimer/Ross

Novice Goodyear

- 1 Barker/Tomkins
- 2 Johnson/Thomason
- 3 Swinburne/Swinburne

British Goodyear

	Best Heat	Best Semi	Final
1 Clarkson-Needham	3:53	3:50.2	7:38.4
2 Andrew-Harwood	3:56	3:50.6	8:38.4
3 Fitzgerald-Worgan	3:52.6	3:51.0	RTD
4 Gough-Ward	3:54	4:12	
5 Bridge-Eiffelaender	3:59	3:58.6	
6 Crozier-McAlpine	4:04	4:16	
7 Catlow-Jepcott	4:05	3:51.5	
8 Taylor-Darke	4:07	4:22	
9 Ross-Morrissey	4:18	3:53.7	

Mini Goodyear

	Best Heat	Best Semi	Final
1 Jones/Horwood			9.52
2 Heaton/Crossier			11.39
3 Ross/Ross			12.07

Diesel 'A' Combat

Position	Name	Round	1	2	3	4	5	6	7	8	Total
1	L Wakkerman	L	W	W	W	W	W	W	W	W	7
2	Ernie Burles	W	W	L	W	W	W	W	W	L	6
3	C Koene	W	Bye	W	L	W	W	W	W	L	5
4	M. Wakkerman	W	W	W	W	L	L	L	L	L	2
	M. Jones	W	W	W	L	W	L	L	L	L	2
	R Herbert	W	L	W	W	W	L	L	L	L	2
7	M. Lyne	W	W	W	L	L	L	L	L	L	1
	P Stanley	W	W	L	W	L	L	L	L	L	1
	D Wiseman	W	W	L	W	L	L	L	L	L	1
	M. Whillance	W	L	W	W	L	L	L	L	L	1
11	N Harkin	W	W	L	L	L	L	L	L	L	0
	D Harrison	W	W	L	L	L	L	L	L	L	0
	J Schoen	W	W	L	L	L	L	L	L	L	0
	S Malone	W	L	W	L	L	L	L	L	L	0
	D Thomason	L	W	W	L	L	L	L	L	L	0
16	D Holmes	W	L	W	L	L	L	L	L	L	-1
	J Davidson	L	W	L	L	L	L	L	L	L	-1
	S Vickers	L	W	L	L	L	L	L	L	L	-1
19	T Andrews	W	L	Rtd							N/A
	J Bates	L	L	L	L	L	L	L	L	L	-2
	C Bishop	L	L	L	L	L	L	L	L	L	-2
	A Degg	L	L	L	L	L	L	L	L	L	-2
	G Hickman	L	L	L	L	L	L	L	L	L	-2
	M Kizel	L	L	L	L	L	L	L	L	L	-2
	M Leeper	L	L	L	L	L	L	L	L	L	-2
	K Miles	L	L	L	L	L	L	L	L	L	-2
	F Smart	L	L	L	L	L	L	L	L	L	-2
28	N Howard	L	Rtd								N/A
	A Husband	L	Rtd								N/A
30	G Shacklock	Rtd	Rtd								N/A

F2D Combat

	1	2	3	4	5	6	7	8	Pts
1	J. James	W	W	Bye	W/W	W	W	W	7
2	M. Wakkerman	W	W	W	W	L	W	L	5
3	D. Harrison	W	W	L	W	W	L	L	2
4	E. Burles	W	W	W	L	Bye	L	L	1
4	T. Frost	W	W	W	L	L	L	L	1
6	M. Jones	W	L	W	L	L	L	L	0
6	M. Leeper	W	L	W	L	L	L	L	0
8	N. Harkin	W	L	L	L	L	L	L	-1
8	C. Bishop	L	W	L	L	L	L	L	-1
8	N. Perlaki	L	W	L	L	L	L	L	-1
8	M. Tiernan	L	W	L	L	L	L	L	-1
12	A. Degg	L	L	L	L	L	L	L	-2
12	F. Smart	L	L	L	L	L	L	L	-2
12	J. Ward	L	L	L	L	L	L	L	-2
12	M. Whillance	L	L	L	L	L	L	L	-2
12	D. Wiseman	L	L	L	L	L	L	L	-2

1/A Combat

	1	Repa-charge	2	Eliminator	3	3rd/4th	Final
1	S. Malone	L	W	W	W	W	W
2	S. Vickers	W	W	W	W	W	L
3	M. Kizel	W	W	W	L	W	
4	M. Lyne	W	W	W	L	L	
5	J. Davidson	L	W	W	L		
6	R. Herbert	W	L	L			
6	G. Hickman	W	L	L			
6	V. Hunt	W	L	L			
6	P. Stanley	W	L	L			
6	F. Smart	L	W	L			
11	N. Harkin	L	L	L			
11	M. Whillance	L	L	L			
11	D. Wiseman	L	L	L			
14	A. McDonald	D/Q					



Harry Leyland's Foxstunter performed competently in the first round of Old Tyme Stunt. Neat Hot Rock built by Peter Michel at foot...

start his motor and was thus disqualified, commenting that he was preserving his model for later bouts!

The other winners in round one were Messrs. Harrison, Stanley, Harkin, Herbert, Burles, Lyne (Canada), Wiseman, Jones, Malone, Holmes, Andrews, Schoen (Netherlands), Koene (Netherlands) and Monique Wakkerman against Davidson, Miles, Smart, Kizsel, Shacklock (DQ for non-arrival), Thomason, Vickers, Hickman, Bates, Bishop, Howard, Leeper, Husband and Degg respectively.

Round 2 started at 9.30 precisely on Sunday morning. Overnight the wind had strengthened considerably and conditions were far from ideal throughout the day. Generally the flying was spoiled by the high wind, many bouts being won by the pitcrews being able to get a model back into the air after a mid-air collision.

With still no sign of G. Shacklock and Messrs Hickman and Husband withdrawing from the competition, round 2 proceeded with only 27 pilots. Frank Smart again lost, this time to Stuart Vickers and so last year's champion was eliminated. Loet Wakkerman chose to fly in this round and was victorious over Richard Herbert. Other eliminations in this round were Kizsel, Hickman, Degg, Miles, Bates, Bishop and Leeper. Andrews withdrew from the contest and Koene had the bye.

Round 3 started with 18 competitors. There were only three eliminations in this round, Vickers, Holmes and Davidson lost to Koene, Malone and Whillance respectively. Only Lyne, Jones and Monique Wakkerman had both lives intact at this stage.

The second round bye finally caught up with Koene who had to fly twice in Round 4. He was victorious over Harkin but lost to Burles. Loet Wakkerman beat Dave Harrison when Dave gave away two easy cuts by turning inside his opponents model! Other competitors eliminated in this round were Thomason, Malone, Schoen and Harkin.

Round 5 saw the demise of Stanley, Lyne, Wiseman and Whillance who were knocked out by Koene, Loet Wakkerman, Burles and Herbert, leaving six competitors with only one life each.

Monique Wakkerman, Richard Herbert and Mervyn Jones were eliminated in Round 6, losing to Burles, Koene and Loet Wakkerman, leaving

these three to fight for the medals. The Diesel A finals were also held over to Monday afternoon when Ernie Burles was scheduled to do battle with Koene because Koene and Wakkerman (being of the same nationality) had to be drawn apart - previous opponents take precedence. After a well fought bout Koene was confined to third place.

Loet Wakkerman, having enjoyed the luxury of a bye to the final (one of the quirks of the two-life system) emerged victorious over Ernie Burles after a fine display of combat. Obviously Loet's first round decision paid off!

Vintage Combat

This new event, introduced at the beginning of the year as a provisional class and with three previous competitions, was meant to show the class to a wider audience. For those who don't know, here is a brief resume of the rules which are basically to the old SMAE format:

- 1 Model design: pre January 1st 1971, built and finished with traditional materials. A maximum of three models per contest.
- 2 Any production motor, from the period, of up to 3.5cc (but some later models are eligible).
- 3 5 points per streamer cut and 1 point for each complete 15-second period of ground time (non-accumulative).
- 4 Start motors at the signal to launch.
- 5 The bout lasts for five minutes.

With very little prior publicity before the event and entry on the day, it was encouraging to have fourteen entries. Although some of the models didn't strictly comply with the rules (solarfilm covering or designs which were slightly too recent, for example) the organisers took a lenient view. They may not be so easy-going next year! The event was flown during Sunday afternoon and evening - and again was somewhat spoiled by the high winds.

Round 1 saw McDonald disqualified for not being present, giving Herbert an easy passage to Round 2. The other victors in Round 1 were: Lyne (Canada), flying a Warlord borrowed from Vernon Hunt and fitted with a very quick MkII Oliver, Stanley, Hunt, Kizsel, Beasley and Vickers over Malone, Harkin, Smart, Davidson, Whillance and Wiseman respectively.

The first round losers repurchase was successful for Malone, Davidson and Smart; thus Whillance, Harkin and Wiseman were eliminated. Round 2 left five competitors and so an eliminator had to be flown, Vickers against Davidson, to enable the semi-finals to be flown. Vickers was successful.

The semi-finals saw Steve Malone (Orcrest, MkIV Oliver) beat Martin Kizsel (Warlord, PAW 249 BB) and Stuart Vickers (Warlord, PAW 249 BB) victorious against Mel Lyne. The third and fourth fly-off saw Mel Lyne leading Martin Kizsel on cuts when an unscheduled inverted landing broke Mel's needle valve. The pitcrew were unable to effect the repair in time and Martin gained third place by a one point margin. The final saw Steve Malone beat Stuart Vickers into second spot in a well-contested bout.

With only the first year of this class behind us, two models are already emerging as favourites: Warlord or Ruter Ess powered by either MkIV Oliver Tigers (preferably Copeman-tuned) or the PAW 19 DS/249BB. Note: the Orcrest design does not actually fall within the rules, being designed shortly after the cut-off date...

F2D

F2D commenced at 9.30am on Monday. With a compulsory two-life system all the finals and third and fourth fly-offs from the other events to complete, a tight flying schedule had to be maintained, with a bout every ten minutes, in alternate circles, to guarantee completion. Fortunately the wind had abated overnight and conditions were satisfactory.

The first bout was between John James and Mick Tiernan. Mick arrived at the line check with about three minutes remaining until his flight time, only to find that his lines were approximately two feet too long. With insufficient time to rectify the problem, Mick had to forgo the bout, John being in the circle ready to fly. The second bout saw Martin Leeper and John Ward ready at their flight time but Ward's pitcrew had not arrived and he also had to retire. Dave Harrison beat Mike

Whillance, and Mervyn Jones beat Dave Wiseman. Dave arrived at the circle during the last fifteen seconds of the warm-up period but as he was using Nelson diesels his pitcrew succeeded in having his craft airborne on the signal to launch.

By this time the competitors understood that to be late meant disqualification, so from this point on almost everyone was ready at their allocated flight time, the only exception being Tony Degg in Round 2. Fortunately Tony was very philosophical about the situation. Other successful pilots in Round 1 were Frost, Monique Wakkerman, Burles and Harkin over Bishop, Perlaki, Degg and Smart.

Round 2 saw Harrison, Bishop, Perlaki, Jones, Tiernan, Burles, Frost and Monique Wakkerman victorious, with Degg, Smart, Ward, Wiseman and Whillance losing their second life and exiting the contest. Disappointing for all - but perhaps more so for Mike Whillance after his recent success at the European Championships.

Round 3 saw John James with a bye and Bishop, Harkin, Tiernan, Perlaki and Harrison losing to Jones, Frost, Leeper, Burles and Monique Wakkerman respectively; thus Harkin, Perlaki, Tiernan and Bishop were eliminated, leaving seven contestants in the competition. In Round 4 Mervyn Jones and Martin Leeper were eliminated by John James, John flying twice due to his bye in the previous round. Ernie Burles and Tony Frost lost, for the first time, to Dave Harrison and Monique Wakkerman respectively.

At this stage only John and Monique were undefeated; they were drawn together in Round 5. At the end of a very good bout, John was declared the winner. This brought a query from the Dutch team who thought Monique had taken more cuts than she had been credited with. What had happened, according to the scorers, was that the two models had been involved in a minor collision which had damaged the covering on John's model, causing pieces of Solarfilm (the same colour as his streamer) to tear off his model during flight which could easily have been mistaken for cuts. With this explanation, the Dutch team accepted the result. It's not easy being a scorer! The other bout in this round saw Tony Frost eliminated by Dave Harrison and Ernie Burles had a bye.

Round 6 - and Ernie Burles was eliminated by Monique Wakkerman putting Ernie into equal fourth position with Tony Frost by virtue of Ernie's bye in the previous round. Dave Harrison was confined to third place when he was defeated by John James.

The final saw John James and Monique Wakkerman matched once again. Were we going to have a female champion for the first time? If so, Monique would have to defeat John twice. Unfortunately for Monique this was not to be. In a well-fought contest John emerged the clear winner and so successfully defended his title to become the British National Champion for the second year in succession. Well done John. Better luck next time Monique!

Thanks must be given to everyone who helped with the organisation and made the weekend such a success, in particular, Dave Holmes (contest director, 1/2A), Mike Whillance (contest director, Diesel A), the scorers: Lyn Brules, Pat Frost, Dave Thorpe and Nick Perlaki and especially Vernon Hunt for his tireless efforts as overall co-ordinator, CD for vintage and F2D and as centre circle marshal. In conclusion, an enjoyable three days of competition, marred only by the high winds on Sunday.

Report by Paul Stanley

And afterwards

Congratulations to all who participated in this bright and breezy Nats! Particular thanks to all the organisers, too - for thanks to hard work and slick timing, all events finished on schedule, allowing prizegiving to take place at the appointed time. Even this was commendably short, allowing the Dutch contingent time to pack hastily before a jolly dash back to the ferry at Harwich... For the rest it was the clinking of tent poles, the hitching-up of caravans, fish-and-chips on the way home - and the vow to try even harder next year. We'll be there to see you do it!

BALSA CUTTINGS

Cyano de Bergerac's nose is in front again...

Wish we had a breeding pair

What is it about slope soaring that makes its followers the worst line-shooters of all? Take that tale about the 2-metre Algebra which ran out of lift off a remote headland. As the choice open to the flier was to land in the sea or in the garden of a cottage built in a coombe which opened out maybe a hundred feet below him, he naturally took the latter course then stood surveying the scene and wondering where lay the way down. An old local ambled up. 'I shouldn't just stand about, boy,' he said, 'E be a twitcher down there.' 'Twitcher,' repeated his informant, then translated - 'Birdwatcher that is, and you've a-flied into his net. If you don't your aeroplane quick, e'll weigh un up, measure up, crimp on a ring and bung un off the cliff again afore you can say Jack Robinson.'

Giving it stick

The advice offered to those good chappies intent upon causing film or text to adhere to the undercambered profile of wing ribs generally deals with how to stick to it. Do this, do that, employ this, apply the other. None of it is much cop if, when you come to shrink the stuff, the heat softens the adhesive as contraction temperature is reached and the covering pops up off the rib underside. Just try sticking it back again! Zo! Here is a small but worthwhile item of aeromodelnautica - before you shrink the underside, tape down strips of card about half an inch wide to mask the rib lines from the heat of the gun or domestic iron. (They will blow off or fall off if you don't fix them.) You can take them off and apply reasonably overall heat to level out the stresses afterwards. If you are afraid that this will result in uneven shrinking of the covering and induce warps, all right, don't do it. Or you can try, and find out that it doesn't. (No, not *that* warp, mate. That was there already.)

Sheep may safely graze

There are two fliers who live at opposite ends of a wandering double row of cottages which are claimed to amount to a village, who call themselves The High Street Model Flying Club. Motto: Flugel Uber Alles. Since they do no harm, are on good terms with their neighbours and a lot of these neighbours keep sheep, there is no difficulty about flying fields. In fact they could fly every weekend for three months and not use the same field twice - really a case of Flugel Uber Everywhere.

Yet in the midst of this plenty they guard their privileges with a care that is worthy of our attention. One very nice place free flight is a big patchwork of meadows. On occasion your columnist has been allowed to

fly there. Now although the owner is alright, one gentleman who leased this land for pasture was a parrot of the first declension, and whilst he only got it on the clear understanding that the modellers were part of the furniture who were to be allowed to do their thing without let or hindrance, obviously it would be bad business to upset him. Because he was a bit on the short side and once appeared in an unbecomingly large hat, the boys called him Yosemite Sam. Up he charged one Saturday afternoon, cutting a splendid dash in his Landrover with the screen down, leapt out, undid the three bits of binder twine which secured the gate into the actual flying field at its top, bottom and middle, leapt back into the sea, drove in and jumped out again. 'I've got a bone to pick with you two!' he stormed. (The temptation to say 'Gnyeah, what's up, Doc?' must have been barely controllable). 'You left this gate open last week and half my ewes were out on the road.' 'But we didn't come here last week.' 'You're always coming here - it's no use saying it wasn't you. Nobody else comes here anyway.' The fliers mildly insisted that they hadn't flown last week, and pointed out that peasants were known to creep in to do a bit of unauthorised fishing in the pond. None of this carried any weight with Sam, however, who spoke of having words with the landlord. Then one of the modellers said - 'But there aren't any sheep in here today.' 'No', said Sam, 'They've 'et off all this lot and I've moved 'em'. 'But you still had to undo three bits of twine from the gate we tied up behind us before you could get in. If we do that when the field is empty...' Sam

glared, and paused. 'Ar', he said, 'I think I'll fill that pond in, that's what I'll do.'

You can learn a little every day.

And if the truth happens to be that on that occasion they had come in by the other gate, at the far end, out of sight over the hump, and left it wide open, well, that's just something else to learn from, isn't it?

Operate and add lightness

A seemingly straight-faced report published by a fairly serious daily paper from a normally reliable source tells of a budgerigar which could hardly hop because it was so overweight. After some of the fat was removed by Mr. Espen Odberg, 'The Norwegian veterinary surgeon' (surely *the* Norwegian veterinary surgeon), Tino can fly again. One wonders if the sighs of relief from budgerigar-lovers are being drowned by the clatter from the feet of aeromodellers rushing out to buy Swann-Morton scalpels.

The Trim Reaper

'Construction can be completed in a week of evenings.' Week of months, more like! Always, the problem is *time*. Current advice is that test glides should be made over long grass - 'if you can find any, ha-ha!' What's so funny? Here, just force open the back door and there's more long grass than bargained for. A friend rushing around trying to cram cutting the lawn and a flying session into the same Sunday morning has just taken the steel toe-cap off his boot, with part of his person as well. Heigh ho - mower haste, less speed.

Andrew Longhurst focusses on the canine viewpoint...



December 1989

FREE FLIGHT SCENE

Time to catch up with some outstanding events

earlier in the season – first, a Southern favourite...

Crookham Gala, 5-6th August

Now might be an appropriate moment – at least for the benefit of historians looking back on this season – to classify the 1989 contest summer as the year the Continent came to us! Even before the Nationals in May the ground had been drying – and thermals became more and more erratic. At Beaulieu, site of the Crookham Gala, conditions must have reached their limit. The ground was tinder dry, and the sun was out again, giving temperatures in the 70s.

This two-day event had been scheduled much later in the season last year, but this time it was deliberately positioned to coincide with the annual gap in domestic events that occurs in mid-summer. Mini-day was blessed with a fair breeze from the south which sometimes reached 15mph. The worst of the woods waited downwind...

Flying started at one o'clock with a menu of five one-hour rounds, and for most of the day lift was patchy and variable. Occasionally a few such patches would combine to create model-losing lift against which DTs were little protection. Conversely, very strong downdraughts would be present nearby. Pete Watson suffered in 1/2A when a very high climb was followed by a plunging glide. In general, though, even the dropped flights were respectable. Hipperson's total in Coupe was pieced together from a series of such scores. His only max refused to come down for ages and ended in the dense wood. Bob Cheesely's model went into the trees but he was lucky to find it on the ground, right in his path as he searched!

John Carter looked set to join John Cuthbert in an A/1 flyoff but he dropped badly on his last flight. His timer apparently started on



Above: Roger Baggott tunes up in 1/2A Power. **Left:** Leslie Sharp holds for husband George in Coupe d'Hiver. Note gloves for protection – he applies an extraordinary number of turns! **Below:** Phil Uden, clear winner in Coupe. **Below right:** Trevor Grey placed well in Open Rubber.





Above: George Fuller, happy after sorting out his trim - which had robbed him of a better chance in Slow Open. Below: John Cuthbert presented this package to the CD as a protest at the terrain, unsuitable for the now-popular art of circle towing. John caught his line on bushes in the flyoff and towed in. The model was damaged - but not as badly as this until John got his hands on it! Such is the volatility of the top contestant...



tow, the model releasing much too early and out of lift. John Hook was most effective in 1/2A with an almost standard Slo-Worm. His last flight was a mere eight seconds short. In Coupe, Phil Uden used a Dave Greaves-inspired model and dropped only a little time on his third flight to win by quite a margin over George Sharp's long-motor-run craft. The secret of George's long run isn't just the big prop - it's the number of turns he applies! Using 11-11.1/2in motors he managed to apply 455 turns on one flight! It didn't even break a strand so he used the motor again...

The second day started flat calm and was once again clear, hot and sunny. There was slight drift which appeared to be from the north, but this must have been a morning, off-shore effect, because before lunch it swung around to the south and began to pick up. Many had finished their flights by now. The others had even bigger thermals than the day before to contend with. Flights of over ten minutes were commonplace. Slow Open Power had been added to the line-up and was flown (for some reason) to five flights. Woodbury duo George Fuller and Alan Parker dominated this event with full houses. Only two did likewise in Open Power, the debilitating seven-second run taking its toll of such notables as Screen, Peers and Harris - and this despite re-entry being allowed.

Glider flying at Beaulieu is not easy thanks to changes in the terrain and large areas of high gorse and thick heather. Entries in Open Glider were therefore thin; it was no surprise that the top two were Foster and Bird, fliers used to flying at Ashdown Forest where it is even worse. John Cuthbert was the only Glider flier to make the top five in Combined FAI - and he was to hit trouble in the flyoff.

After the close at 5.30 Ted Tyson introduced a short hold in the hope that the breeze - by now considerable - might drop to allow flyoffs of reasonable length, without reaching the woods. He chose the order well and no models were lost, but it never really calmed.

Foster flew respectably; Bird towed-in to damage his Open Glider model, and then Parker made a very pretty flight in Slow Open, chased by George Fuller who went flat under power thanks to the loss of a wing warp. Alan's flight continued in good air and DTd from height for another minute or two.

The FAI flyoff included models of all three disciplines. Faux early launch was in reasonable, if slightly turbulent air, and his FIC was set for four minutes. John Cuthbert had trouble on tow, the undergrowth catching on the spare end of the line. Meanwhile Mike Evatt picked another warm patch but went perhaps a little too soon with his Wakefield which failed to max. Cuthbert's efforts had been to no avail, the model being towed in - and damaged as a result. John, being the rather hot-blooded character that he is, then did what many of us must often have been tempted to do in similar circumstances; he broke the model over his knee and presented the pieces to the Contest Director. Not quite sure what he was trying to say but it was an impressive performance. At least he hadn't suffered anything like last year's slipped disc...

The two qualifiers in Open Power were ready on the hooter. Julian Hopper had an

Crookham Gala 5-6th August

A1 Glider 8 flew

1 J Cuthbert	10.00
2 R Wilkes	9.21
3 J Carter	9.00

CDH 7 flew

1 P Uden	9.48
2 G Sharp	9.08
3 D Hipperson	9.07

1/2A Power 10 flew

1 S Screen	10.00
2 J Hook	9.52
3 P Watson	9.36

Open Glider 10 flew

1 J Foster	9.00 • 3.17
2 D Bird	9.00
3 B Colledge	7.51

Open Rubber 17 flew (7 in fly-off)

1 J Carter	9.00 • 6.33
2 G Ferer	9.00 • 5.45
3 T Grey	9.00 • 5.05
4 C Chapman	9.00 • 4.24
5 M Chapman	9.00 • 4.22

Open Power 6 flew

1 J Hopper	9.00 • 4.57
2 P Watson	9.00 • 4.48
3 S Screen	8.49

Slow Open Power 4 flew (5 flights)

1 A Parker	15.00 • 4.03
2 G Fuller	15.00 • 1.21
3 P Harris	13.56

Combined FAI

1 K Faux	15.00 • 4.00	(F1C)
2 M Evatt	15.00 • 3.20	(F1B)
3 J Cuthbert	15.00	(F1A)
4 B Cheesley	14.23	(F1B)
5 S Screen	14.23	(F1C)

array of radio communication gear and recovery gear, rivaled only in impact by the number of helpers on hand to use it. A casual observer might think that Julian only handles the model in the seconds before launch, for until then the aeroplane is in the capable hands of yet another helper who even assumes the stance behind the starter box! Climb was fine but height was lost thanks to a glide stall that took a minute to damp out. Watson climbed just as well but glided more steadily. Julian's model held on well at the very end whereas Pete's descended more quickly. The times were close. Julian's model was in the lake and - you've guessed it - one of his entourage (the same guy who had been holding the model before flight) volunteered to swim for it.

Drift had dropped appreciably for the final flyoff, held just before 8pm. Nine qualified for Rubber; seven actually put models in the air. Carter's top time just squeezed into the confines of the heath to land amongst houses at the very edge. Had he not DTd, Gerry Ferer might well have closed the gap. He certainly would have missed the lake. As it was, the model plopped itself in the middle - but quickly blew to the shore. Trevor Grey, flying a new, brightly-coloured 250sq in model, made a good climb but had rather an open turn on the glide. Nevertheless, his five-minutes-plus was still safely on the field.

Trophies and prizes were awarded soon after this - a little too soon for a number of the higher-placers to have returned from the chase. This year prizes were augmented by Get the Max mugs as per the coffee promotion. A very enjoyable weekend, although there was a consensus of opinion that questioned the venue's suitability for a Trials. If the weather in October is even as breezy as this was, there will be considerable complaint and certainly model loss.

High potential

Power, efficiency -

and model news:

latest update from

Chris Coote

TWO reasons why I favour electrics so much are their predictability and consistency. If you can take a few simple measurements on your chosen system then it is entirely possible to be able to predict accurately what the performance will be on any given prop or load. The first articles in this series gave the basic concepts of electrical measurements and how they are related via Ohms law. Perhaps now that I have allayed some of your fears in dealing with the mathematical side of electrics, it is time to introduce another simple bit of maths concerning motor performance. To those who came to my electrics seminar at Alumwell I apologise for a bit of repetition, but the subject is worthy of serious consideration, so here goes...

Peaks and parameters

Electric motors of the type that we use have a very useful characteristic in that the performance over a wide range of currents and voltages applied is a fairly linear relationship. A typical performance graph is shown in Fig 1. The first thing to note is the two straight lines relating current and

speed (rpm) to the output torque (torque is the turning or twisting force applied to the prop). If we could measure these parameters at only two values of torque, then we could draw in the straight lines between the two points and have a set of lines that described the performance at any speed, current or torque value in the range. Further, we could at any operating point calculate the useful mechanical power (from 'torque x speed') and the input power (from 'volts applied x current'), and from a ratio of these two obtain the efficiency at any point. When we do this we get two more graph lines to describe these parameters, but this time they are curves

which show definite peaks at particular values of speed, current and torque. You may say this is all very well; but how do we measure two specific values of torque? One answer is to observe that when the motor is free running and doing no useful work then the output torque is zero. The current required at a given voltage to free-run the motor can be easily measured, as can the speed (using, say, an optical tach looking at a small flat disc on the shaft, which causes little slowing down of the free running speed.) This gives us the points in the current and speed lines at the vertical axis of the graphs (zero torque!) Equally we can stall the motor

Doug Sheppard's latest sportster, based on a Vic Smeed design, flies beautifully on 'Union' Mabuchi geared motor.



Fig. 1: Performance curves for FK-260S motor with improved magnets

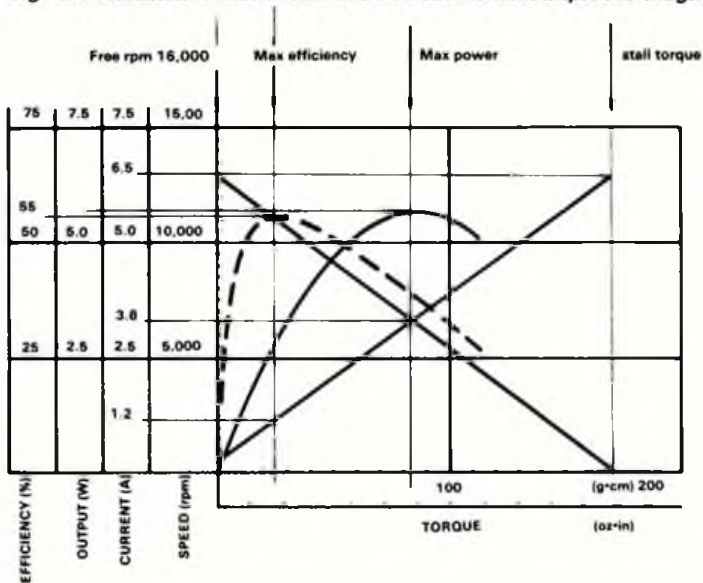
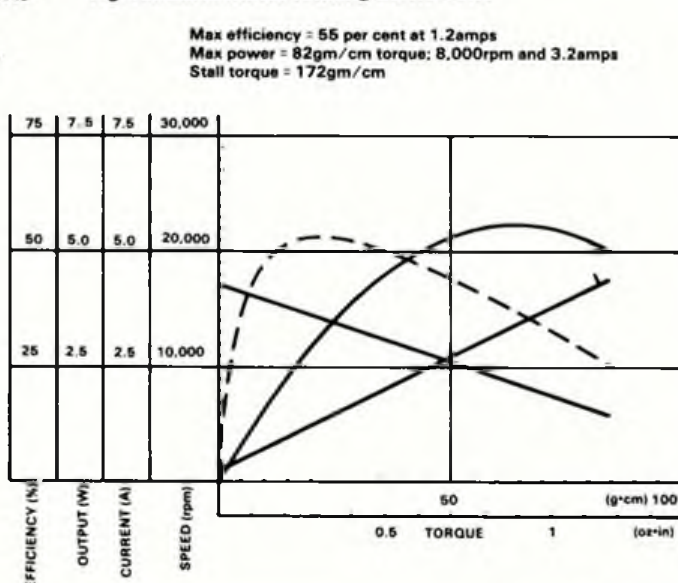
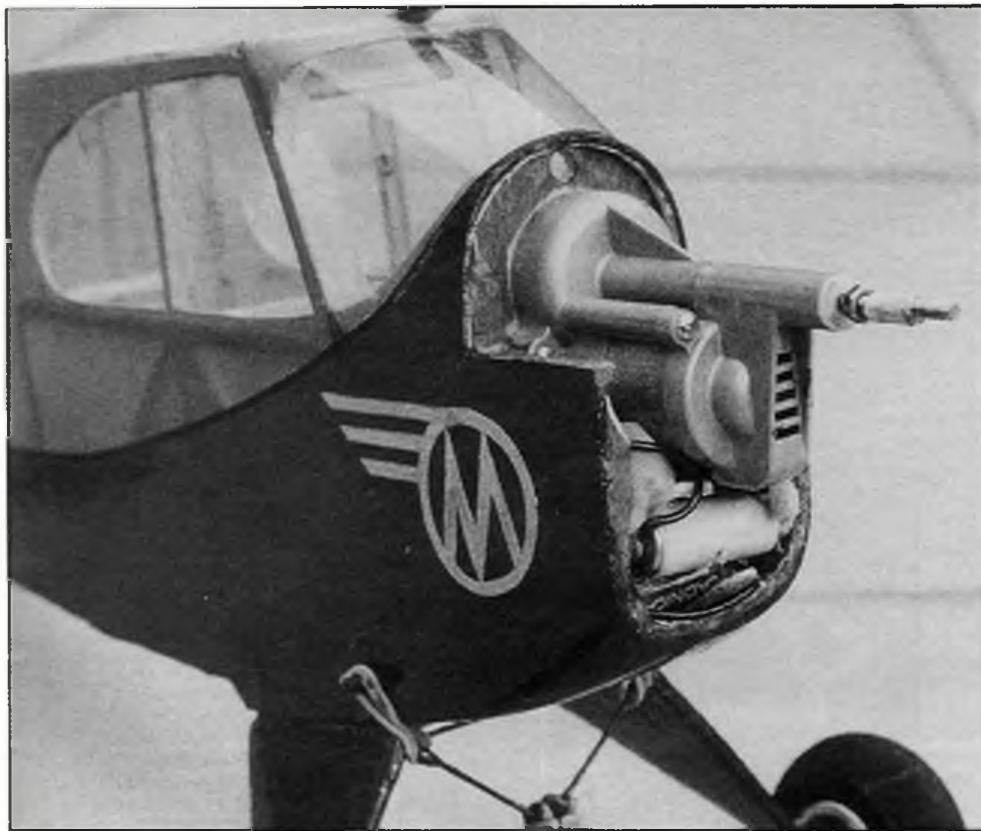


Fig 1a: Basic motor running at 4.5 volts





Above: Nose details of the Sheppard sportster. Four 150mAh cells used. Special wide-blade prop here removed; comes with motor unit though. Left: Plenty of room for wiring and fuse.

to give us zero rpm, measure the current, and then the stall torque (using, say, a spring balance and short beam attached to the motor shaft). This gives us the values on the horizontal axis (zero speed). Straight lines drawn between the sets of two points then gives us the motor characteristics exactly.

Dynamo effect

Unfortunately, this simple testing method can lead to motor damage at the stalled tests. This is particularly so on high power motors at high voltage and current levels. However, the principle of taking measurements at two points still applies and can tell us all we need to know about the motor's performance. What we need is a bit more theory to unravel the effects of applying different values voltages to our motors. As I said originally, our DC permanent magnet motors behave in a nice linear fashion so we can set up a simple bit of mathematics which tells us exactly what is going on. As some of you may know our motors, if turned over, act as little generators of electricity, or dynamos. In fact, when we connect them up to a battery lots of current flows in, limited only by the basic static resistance of the motor windings and brush resistance. This value of resistance is fixed, but as the motor starts to turn the dynamo effect builds up to generate a voltage which opposes that of the battery. The motor accelerates until the volts applied match the

sum of the back 'dynamo' volts and the voltage needed to force the current through the winding and brush resistance. All this can be written as:

$$V(\text{volts applied}) = E(\text{back dynamo volts}) + I \times R(\text{Current} \times \text{Resistance})$$

The expression $I \times R$ comes from good old Ohm's law:

$$V = I \times R \text{ or } R = V/I, \text{ and so on.}$$

Now the fact that motors are well behaved, linear-type devices means that the variation of back dynamo type volts is in direct proportion to the speed. This can be written as:

$$E(\text{back volts}) = N(\text{rpm}) \times K$$

where K is a constant for that motor.

Doing the mathematical manipulation on all this we can come up with a single equation which relates all these motor parameters together. This ends up as:

$$N(\text{rpm}) = \frac{(V-I) \times R}{K}$$

On any run of the motor using a typical load or prop we can easily measure N, V and I. This leaves us with the two unknowns, R and K. But we know that these are constants for all running. So if we do another run at a different speed caused by using a different prop or battery pack, then we will get another set of values for N, V and I. We now have the classic school type problem of two equations with the same two unknowns in each. These unknowns can be evaluated by the method of solving the two simultaneous equations and the values then used to predict any combination of voltage, speed and current of which the motor is capable. So once again we can draw up the two straight-

line characteristics, but this time based on information from two non-damaging runs. This is what manufacturers normally do to get the results for their high-power motors.

Implications

So let's go back to Fig 1 and the implications of the power and efficiency curves. If we want to obtain the maximum motor duration from a given set of batteries then we need to prop the motor so that it operates near to the maximum efficiency point. You will note that this is in the low torque, high speed part of the motor characteristic. On the other hand if you want maximum power to the prop and hang the efficiency then you need to load the motor up to bring it into the low-speed, high-current section. This is clearly illustrated on the figure. If you do not want to be bothered with all this then there are a couple of rules of thumb that I have found to be surprisingly accurate over a wide range of motor types. If you prop the motor to give about half the quoted free running speed or about half the stall current amps then you will not be far off the maximum power point. For maximum efficiency you need to unload the motor to give about half that current again. A look at a real set of curves for a Mabuchi 260 type motor illustrates the point; see Fig 1a.

Highline highlights

The Highline company in the USA have for some time now been selling a kit of parts to build double-gear motor units similar in power and style to the familiar KP01. What you get is two of the 'flat' tiny motors and some plastic mouldings, including gears, plus a long length of 'rewinding' wire. I have noticed that identical motors are available on the surplus market from electronic discount shops like Proops. There are many variants of these motors with subtly different construction methods, particularly in the brushes area. What you need to look out for is a motor with a proper set of 'carbon block' brushes. Do not worry at this stage about the diameter of the armature windings, since this is something we can easily change. However, if you go to all the trouble of rewinding a tiny motor, make sure that the brushes can handle the extra current without melting by choosing the carbon block type. What you need to look for in the motor is a brush made of a single piece of flat, copper-looking sheet with tiny black blocks of carbon attached to the ends which bear on the commutator. This arrangement has been sketched in one of the first articles so there is no excuse for you not recognising it! The actual rewind has also been covered in detail before (see December 1988 issue) and the wire size of use is 30 or 33swg enamelled copper. If you have difficulty in obtaining this locally try Tandy or Maplins mail order. Tandy, in particular, seem to have branches all over the country now. Some types of enamelled wire are self-fluxing; that is, the insulating layer will melt under the heat of the soldering iron to give up a quantity of flux to make the joint. Unfortunately this also means that when the windings get hot in the arduous conditions of electric flight, the insulation can melt and the released flux makes rather a mess inside the motor. It's best, therefore, if you can find some ordinary insulated-type solder coating with one of the modern high temperature enamels. For those of you who want to try one of the Highline kits of bits the address to write is overleaf:

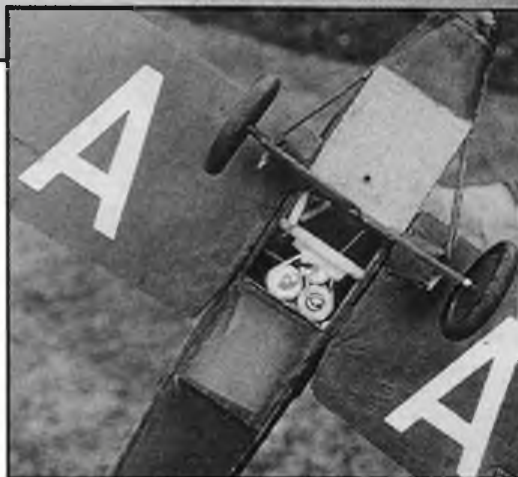
Highline Ltd,
PO Box 341283,
Bethesda,
MD 20817,
USA.

Feedback

Vintage enthusiast Mike Laxton has written to tell me of his plans for electric power, inspired by these articles. Nice to know that the word on electrics is having some effect! Anyhow Mike has taken the plan details of the Le Veau lent from the March issue and is fitting it up with a rewind RS540-type motor from an R/C electric buggy together with its six-cell, 1.4Ah battery pack. He has rewind the motor with the rather fierce specification of only 18 turns of 20swg on each pole. This direct-drives a 7 x 4 nylon prop at around 10,000rpm, but at the expense of consuming something like 24 amps from the batteries! I hope he is going to put a fuse in for protection and a timer to limit the motor run, otherwise it's going to disappear upwards never to be seen again. I suppose R/C assist is the answer in this case. Personally, for a Vintage model such as this I would go for a geared system. You can buy a geared 540 type motor from Graupner for about £16.95 (geared 600 motor) as an aero type, or, if you cannot locate one of these then try the model boat trade for a 'Navy Compact'. This is also a geared 540, but you will have to arrange your own prop adaptor. (These are still available from MFA but have gone up to £2.50 now!). The other obvious alternatives are the belt reduction drive Olympus system from MFA or the metal framed gearbox (and motor) from Mole Technology. All these firms have been mentioned before, and advertised so you should have no difficulty in picking up these units. Of course, they are only suitable for larger models of, say, 50-60in span and up to three pounds overall weight. The installed weight of the power system (motor and batteries) may well be over one pound in this case.

Again from Mike Laxton comes the tip that Tandy are selling the smaller Mabuchi RE260 motors for only 79 pence! That's got to be a bargain, and as Mike states the shop is not normally noted for low prices so my advice is to get in there and purchase a few before they change their mind. Used as standard on three or four cells of between 50 and 150mAh capacity they give a good sports performance when used on direct drive to a KP01-type five-inch prop. A 30in, lightly built sports model up to 120gm or so in weight is about right. I have the slightly larger RE280 motor running direct drive to a KP prop on four cells in my converted KK Invader glider. This flies so well that I have now fitted a Tomy timer for D/T, having lost it on three occasions and luckily having it returned due to the rather faded address being still just about legible. This is a fairly heavy model for the motor at 200gm but the 40in wing means that the wing loading is still low, thus giving good flying characteristics. The climb-out is steady at about ten degrees - not contest performance, but just what you want on a calm, summer evening.

Sources of cells for electric free flight in particular, where we are trying usually to keep down the weight and thus use tiny cells, can sometimes be a problem. Although the excellent 50mAh Sanyo cells are in wide use, they do seem to be a bit thin on the ground from retailers at present. It seems that the

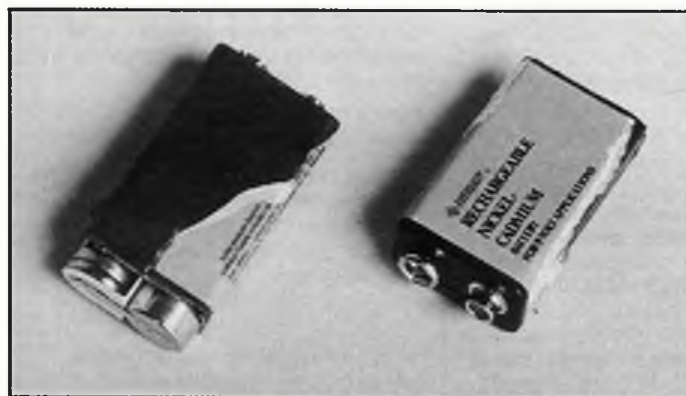


Above: KP02 'double' unit now replaces the Modela CO₂ motor in Doug Sheppard's DH Moth which flies well outdoors though optimum prop is yet to be found. Left: Three cells shown installed near the Moth's CG - subsequently increased to four to give more zip.

main Sanyo organisation (at the Japanese end) is undergoing some sort of organisational change and this is slowing things up a bit at present. Other sources of cells are useful; one such that has been brought to my attention by the American enthusiast Phil Stanson is the Ever Ready PP9 nicad sold as a direct replacement for the battery in your transistor radio. Phil sent me a couple of cells for inspection, one old-type and one new. Once you have cut away the grey plastic casing of the old unit a very useful clutch of six

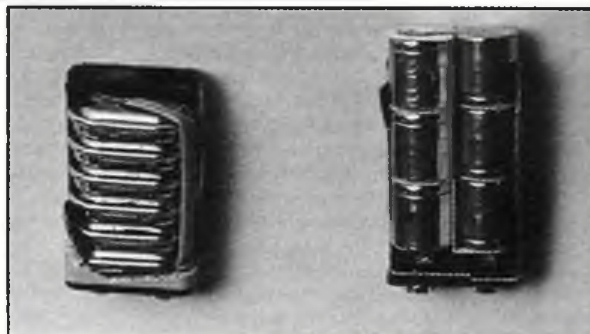
cylindrical, fast charge cells spot welded together via thin metal connecting strips is revealed. See photograph. It is thus very easy to cut off the number of cells you require, or, indeed, strip it down to individual cells. Each cell seems to be of about 80mAh capacity and weighs in at approx seven grams. Phil has used these cells extensively in his own models (see June issue for a picture of his charming pusher design) but he states

Continued on opposite page



Rechargeable PP9 nicad partially stripped...

...to reveal six fast-charge cells welded together via connecting strips. Types vary - see text.



Tekfire: from p.681

widening slots if necessary. Pencil mark along fuselage sides onto tail, remove, then smear Evo-stik on tail mounts at bottom of slots, slide in and align tail. Hold square using bands or tape, then leave until thoroughly dry. Make matching holes in fin and fuselage, insert dowels with dabs of PVA, apply Evo-stik to mating surfaces and, when touch-dry, align fin and press into place. Fit rudder as for elevators. Tail surfaces will now be firmly but flexibly mounted, which helps to resist damage.

Finishing!

Use a suitable commercial canopy, or make one up to the shape on the plan. Fit the 1.1/2in plastic wheels, retaining them with soldered washers or short pieces of metal tube cyanoed and crimped into place.

Litespan takes cellulose or enamel paints. Car aerosols can be used to colour the entire surface, if desired, at very little cost in weight. Aluminium spray (Comma Silver, Code W1S1, Part No GC 241 HT) is such a good match for silver Litespan that it can be used in local areas only, if required, particularly if the hot iron has scuffed the surface in places. Roundels and other markings can be commercial items, if available, or made from clear transfer sheets. I painted the large roundels directly onto the covering and made transfers in similar manner for the fuselage and fin. Mask the roundel centre circle slightly oversize and spray with white aerosol paint (SIWG/239/HT). When dry, use ink bows, or pencil lines and a very small brush, to outline the red

and blue areas before filling in with a brush, using enamel paint. The point of the compasses should be supported on a thin scrap of ply taped to the surface.

Trimming and flying Tekfire

Power with a 36in length of 1/4in flat rubber, tied at the ends, looped into four strands and well lubricated. Install using a length of wire with a hooked end, or a loading stick. Weight of model, ready to fly, should be about 3.1/2oz but doesn't matter much if it's a bit over this.

Built and covered as described, Tekfire is virtually immune to accidental damage even when flown over very short grass and hard ground. Landing in bushes may cause small dents in the covering, but these can usually be removed by local heat-shrinking (painted or not).

Check finished model for flying surface warps – unlikely unless built-in or caused by overtightening Litespan during sticking procedures. If warps are evident, hold the offending component flat and gently re-heat the covering with a hot iron – on one side only is often enough. Hold flat afterwards for a few seconds until cool.

Check CG position and adjust, if necessary, by adding weight to nose or tail. Set elevators and rudder to neutral and test glide into wind. Adjust elevators equally up or down to correct a dive or stall respectively. Don't try for a slow, floating glide. A flat, slightly fast glide provides a better flight pattern and nicer landings.

Now adjust the rudder to provide a wide turn. Either way is acceptable, but right is

preferred to keep the nose down under power. When satisfied with the glide, wind on about 100 turns by hand and check powered flight. Progress up to about 250-300 turns hand wound or 400-450 turns stretch wound, according to the quality of rubber used and the state of your nerves! A motor breakage should not damage the fuselage, but it's a fiddly job to remove the tangled rubber.

If the model power-stalls, change from left to right turn or increase downthrust using ply shims behind the noseblock. Use similar shims for sidethrust if power turns are tighter than glide turns. If it won't climb, or spirals in to the right, reduce right sidethrust or rudder deflection. Another possible cure is to raise the elevator on the side outside the turn and lower the opposite one by the same amount. If not cured, check by balancing on fingertips at propshaft and tailpost to see if one wing is much heavier than the other – add tip weight to the lighter wing to level out. If all previously mentioned points have been checked and faults eliminated, but the problem persists, then the CG must be too high (assuming that the dihedral is as indicated on the plan), so try adding a small amount of weight to the bottom of the U/C leg on the outside of the turn, then re-trim for glide and power as before.

Finally, retain trim settings by locking elevators to tail and rudder to tailpost, using a spot of epoxy between the joint lines at each end. If thrustline changes have been made using shims, a neat, permanent job can be done by installing an extra balsa former at the front of F3 and sanding this to the required angle.

Enjoy Tekfire!

High potential: from previous page

that the new style, black-cased variety is not so good. When I cut into one of these I soon found out the reason why. The new 'improved' arrangement is for a stack of six non-vented slow-charge cells made by Varta. These have the advantage of larger capacity (110mAh) for about the same weight, but do not seem to be able to take the fast charge/discharge so well. This is at variance to the advertising which makes great play of the fact that the new type cells can be charged in half the time of the old ones! The conclusion is to seek out the old, grey-case style (and hopefully buy them cheaper). To continue on this theme, I sought out the position with my favorite Sanyo cells. They also make a rechargeable equivalent to the old nine-volt PP9 cell. In this case a strip-down reveals a set of six very tall and thin vented cells (7.8mm dia by 42.5mm long) which seem to take rapid charge and discharge. The capacity for the weight is very good at only seven grams per cell for over 100mAh capacity. I have since discovered that the individual cells are listed by Sanyo as being available separately under the part number N-120TA, and they quote a minimum capacity of 120mAh, with a typical value of 130mAh. I will try one of these cells as standard supplying its full 7.2volts (six cells times 1.2 volts per cell) to one of my favourite RE360 type motors. These are often seen in surplus shops, but usually with too fine a winding for our purposes, necessitating a strip down and rewind. However, with the ready-made higher voltage supply from the Sanyo PP9 battery we should get enough energy in at a lower current than normal,

which should be an advantage from the point of view of losses in the wiring and switch. I am hoping that this kind of standard setup will become common and thus available for even the most unadventurous modeller to use; just buy a standard motor and battery and fly, recharging by direct connection to a standard twelve volt car battery.

Model news

Finally, some details on two more models. Both are the creations of clubmate Doug Sheppard; and it is thanks to him that I get some of my results for electric experiments 'in the field'. However, back to the models. The first is a very attractive sportster, which is a slightly scaled-down version of a design by Vic Smeed which appears in that excellent ASP publication *Fifty Years of Aeromodelling*. This results in a 38in span airframe weighing 10.5oz ready to fly. The power unit is a geared Mabuchi RC280S from the Union R/C Stickplane kit. These motor units are available as spares, as is the special, wide-bladed 7 x 5 plastic prop. On four cells of 150mAh this is turned at 4,500-5,000rpm, giving a good sport performance. Doug has now increased this to five cells and it goes up very smartly indeed in the traditional spiral contest climb typical of this class of model when powered by a 1cc diesel. Indeed, so pleased is Doug with the performance that he says this is one of his all-time favourite models!

The remaining picture shows one of Doug's numerous DH Moths. He has to have built loads of models of all sorts of different versions and is a member of the DH Moth club. Anyway, this one was built originally for a Modela CO₂ engine and painted in the

colours of the pre-war Pratt's petrol and oil company. The model was always slightly heavy for the Modela and thus a bit of a problem to fly reliably. This was because the engine had to be set to a high throttle setting and consequently tended to ice up at the slightest provocation (the perennial problem with CO₂; even at the last, scorching Old Warden Scale Days enthusiasts were still having CO₂ icing problems because of the high humidity!). After having removed the Modela, tank and all the ballast, we had a little pile of bits that weighed forty grams or so. It seemed that the KP02 double motor unit, at fifty grams complete with three 100mAh cells, would be an ideal replacement for the Modela and ballast. So it has proved to be, although the ideal prop has yet to be found, and the batteries have been increased to four cells. This 27in model now tips the scales at a fairly hefty 185gm but flies well outdoors as it was designed to do. The current prop is a standard 7 x 4 nylon power type, which is really too thick-bladed for best efficiency. One slight problem is the design of the very small prop attachment bolt and consequent difficulty in adapting for a wide variety of differing hub thickness. A suggestion from Derek Knight (who supplied the motor) is to use two blades from the standard KP01 prop spaced apart on a ply hub to give an extra inch or so diameter; pitch could be tweaked by suitable application of heat and twist to the hub areas of the prop. No doubt Doug will continue to experiment to get it right for ensuing scale competitions. The latest news is that a Sleek Streak type thin section prop with the tips washed out is proving to be even better.

More next month!

MORE AT SPARKLING SHUTTLEWORTH!

Second part of our peek at Vintage Weekend...

The Rubber Scene Report by Mike Kemp

Saturday's action

Saturday, being less well attended than Sunday, is usually reserved for serious flying. Aeromodeller cartoonist Terry Rose was one of the first on the field with his Cavalier, published in this magazine in the 1940s. That live-wire of the Vintage scene, David Baker, temporarily forsook his power models to air his large Elephant Ears Lanzo before an appreciative crowd. We also liked George Gleaves' Senator with its Chauviere prop.

Ramon Alban enjoys flying at Old Warden and this year was no exception. His Rushbrooke Mayfly and Warring Voo-Doo Wakefields were wound to full turns and flown spiritedly. All were followed by long retrievals out of the drome...

Those two Flight Engineers from Bahrain, John Meaney and Brian Martin, had arranged their leave to coincide with the Weekend and had brought a fine selection of models including a Lanzo Stick, Korda, Copland Wakefield, Cruiser Pup and A-Frame pusher. All took the air handsomely.

The late Col. Bowden was more renowned for petrol, rather than rubber exploits; but here was Tony Taylor's example of the little-known Baby Duration which was advertised just after the war. Tony is to be congratulated on choosing this rarity and getting it to fly quite well. And the oldest model on the field? Surely Norman Peacock's Warneford, first mentioned in Vintage Corner about a year ago.

But what would tomorrow bring?

Sunday, Sunday...

C. Rupert Moore Trophy

In spite of expanding the rules to include any Rupert Moore design, the entry list was disappointing. In addition to the two Jackdaws from Trevor Faulkner and Ken Fordham, there was an interesting entry from Mike Hetherington in the form of a Twin Gull Wakefield, but the windy conditions did not suit this model and cards were returned only from the Jackdaw fliers. Minimum first flight time was reduced to 25 seconds; Trevor's beautiful, silver model was again the winner with ten per cent error.

C A Rippon Trophy

Nine Cruiser Pups mustered for this 'best of three flights' event. With plenty of lift about it was thought that the previous best flight of over four minutes might be beaten, but it was not to be. Nevertheless, winner Chris Strachan's 3:38 and Peter Lee's 2:24 flights were very creditable.

Chobham Trophy

This popular and spectacular Wakefield Mass Launch event was well-supported with 25 entries. Better-known designs such as the Gipsy, Korda, Copland and Yankee IV were well in evidence but George Bickerton's 1937 German Wake, designed

by Klaus Schmidtberg, and Gordon Beal's Catamount added that extra interest.

R/C flying ceased at 4pm to allow the mass launch entries to take the stage for the three-minute countdown to launch. Stan Wisbey (Fish) and Alan Shepherd (Gutteridge) suffered winding accidents, the latter model's fuselage being completely destroyed. But on the dot, the sky was full of Wakefields, Peter Michel's Yankee IV and Gordon Beal's Catamount being the initial front runners, but they were overtaken by Chris Strachan's Korda as the 40-second judgement time approached.

Danny Sheelds Trophy

This year, Danny Sheelds himself was at Old Warden after an absence of a couple of years. As he says, there's nothing quite like Vintage Weekend anywhere in the world - and that includes America! This year nine entries appeared for Danny's A-Frame Pusher mass launch event, including Danny himself with a Burnham. It takes some time to wind these models, especially if you are putting 1300 turns on each motor, as was Reg Parham with his 1935 Simmers. Everyone got away - but then things happened! Danny's model just wouldn't fly; then he realised that he had wound the motors in the wrong direction... Next, John Meaney's Burnham and Spencer Willis' Skyscraper collided and both descended rapidly. However, for a considerable time there was little to choose between Bob Walden's own-design model, Dave Baker's Burnham and Reg Parham's model, but it was the latter that stayed longest in a patch of bad air to win.

Frank Zaic Trophy

This trophy is awarded to the best model from a plan in any of the Zaic Year Books. There is plenty of choice! Quality of workmanship and authenticity are criteria for judging - as is that indefinable 'something extra'. The standard was high.

Oldest models were Brian Martin's Carl Schmaedic pusher (1935-36 YB) and Gulf Air colleague John Meaney's Ying Wakefield. Specially built for this year's event was Stan Wisbey's Klaus Schmitberg Tailless Glider. Rather prudently, he had not put a swastika (which the original sported) on the fin...

By far the smallest entry was Tony Brookes' 40 per cent Jaded Maid for CO₂, parachute DT and all. (Soon to appear in this magazine. GC). But the winning choice was Peter Sanger's Experimental Papier Mache model designed by Fred Mayfield (1938 YB). An unusual craft as ever was!

Earl Stahl Competition Report by John Lawson

This popular event was again run in 'High Wing' and 'Low Wing' categories. Eight competitors assembled for the former but Ron Brownson was forced to retire at the first of the three mass launches when his model collided with a time-keeper. The top four were given a flyoff, Simon White emerging the winner with his Rearwin Speedster which attained tree height in a Wakefield-type climb and then caught lift.

The Low Wing event took place immediately afterwards. To see fourteen little scale models wing up must be one of aeromodelling's best sights. You just do not know which to watch - and the multiple near misses add to the fun. The flyoff saw close competition, but - once again - the winner was Doc Martin, all the way over from the States with his trusty Wildcat. Let's have fifty entrants next time - and Geoff had better arrange less of a breeze! (OK. GC).



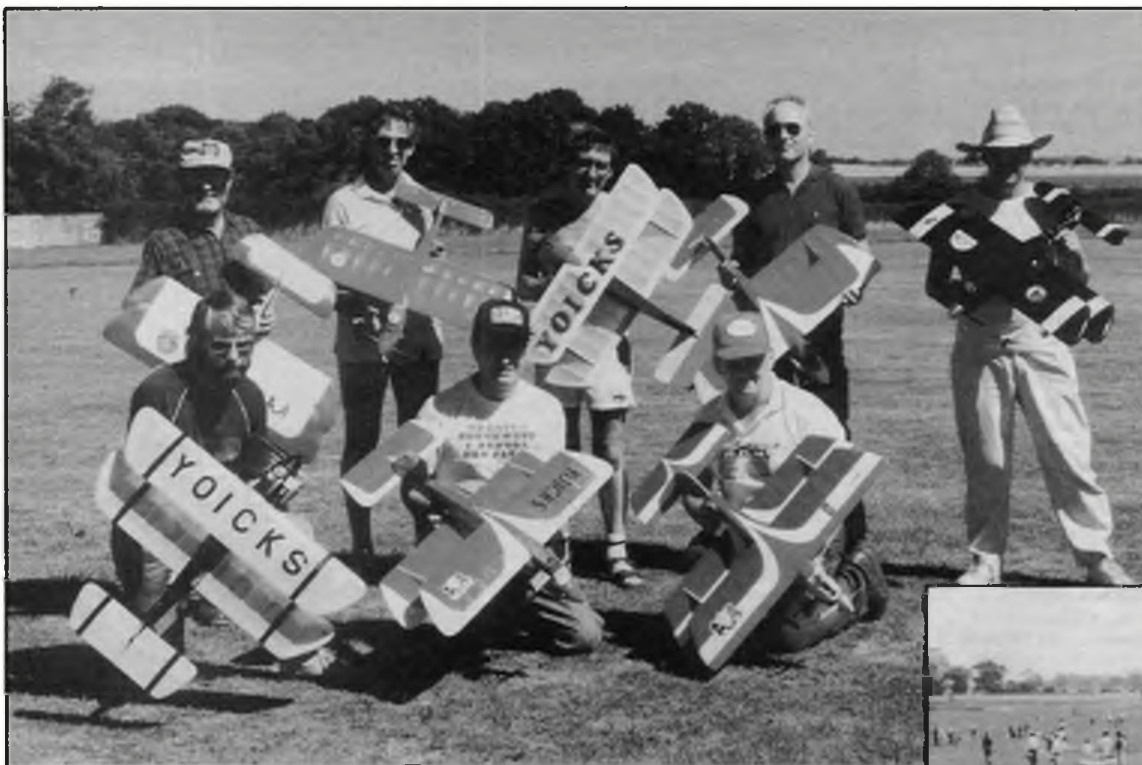
Above: George Aldrich enjoyed his first Old Warden; with feet firmly planted he wrung this Peacemaker through every manoeuvre in the book. Right: Brian Martin prepares massive Lanzo Wakefield.

Vic Smeed Precision Event

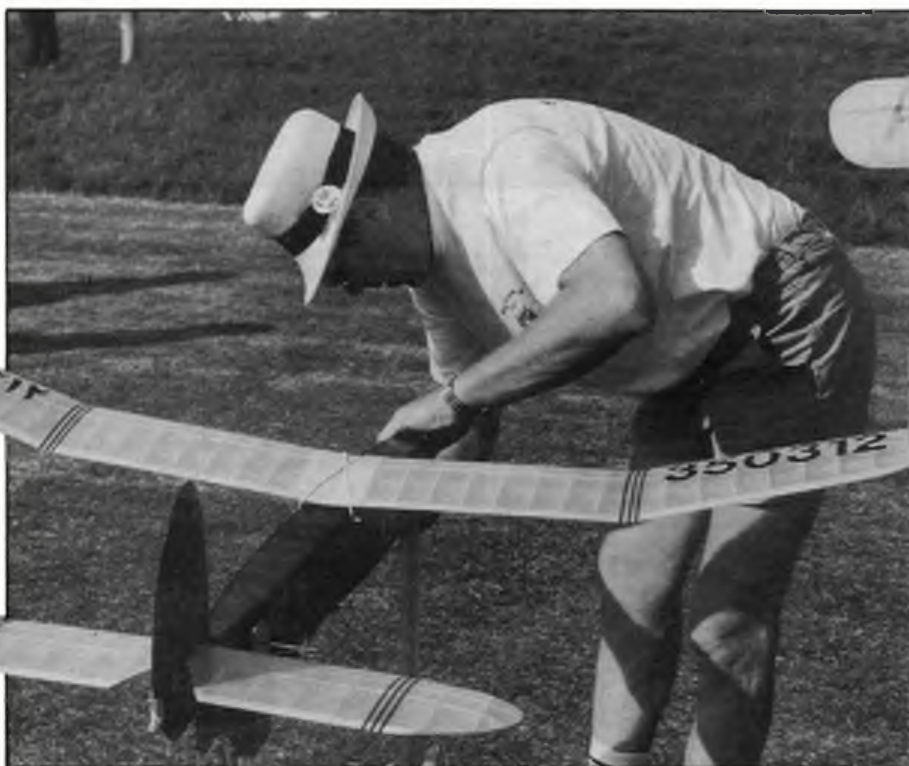
Over to Vic himself...

This simple competition proved surprisingly popular. It was more difficult than it sounded but the very simple rules allowed as many attempts in the two-hour running time as a competitor wished, and those who persevered found that - far from being a lottery - it became clear that practice brought considerable improvement. The luck element was confined to whether or not one of the frequent, small thermals was encountered and when a wind shift would occur.

All that was required was for the model to land near an umbrella sited about 200 yards downwind from launch line, which was around 100 yards long and thus allowed entrants wide latitude in picking their launch positions. There was a margin of some 150 yards beyond the target to the edge of the field and very few of about 250 flights landed out, though one Mam'selle was last seen about a mile downwind; and George Stringwell's Paageboy hit what he



Left: The merry Yoicks contingent - winner Mick Taylor at front, left. Below: Peter Russell displays short-coupled '293' - his own design - with 'as per' Ohlsson .23 spunky. Below that: A neat trio of Mills Speed entries: Andy Brough's Orbit flanked by (left) Peter Michel's winning Weatherman and Peter Martin's version of the same design.



termed as a brick-lifting thermal to reach the dizzy height off a 5sec motor run; fortunately he always flies with a DT in operation. George was one of those who made over a dozen attempts, but when he avoided the thermals the breeze backed or veered, landing him level with the target but off to one side, and when the direction was spot on a bit of a bump prolonged the flight so that the model overshoot. Very frustrating, but all the entrants, even the exhausted ones, insist that we must run it again next year.

Any Vic Smeed design could be used; and though most were power designs there were some good stabs by a couple of Victoria Parkers and some magnificent flying by a Mini Minx which must have landed about 40 yards to one side, or beyond, on six or seven flights. A couple of hopeful radio flyers turned up but withdrew when told they could certainly fly, but with the radio switched off. There appeared to be 32 official entries but quite a few unofficial!

The first model to land close enough to measure

was a Ballerina at 39.4m but this rapidly closed down to 20.4 (Tomboy) and then 17.55 by the Mam'selle of R Fella of the Impington (Cambridge) clubs. After one-and-a-half hours this began to look unchallenged, but then A Crawforth's Tomboy landed at 17.35 (it must have been its 12th attempt) and two flights later, five minutes or so from the end, the same model plopped in at a remarkable 4.23m to put the result beyond doubt. This enthusiast and his Tomboy are regular travellers from Lytham St Annes for Vintage Weekend and it was clear that he knew his model's flying characteristics well.

Most numerous entries were Tomboys, but there were several Coquettes and Mam'selles, a Pushy-Cat being trimmed as it went along, a couple of Poppets and Paageboys and Madcaps, at least one Cherub, the rubber models mentioned - altogether quite a cross-section of designs and, indeed, fliers. If there had been a consolation prize it should surely have gone to one gentleman who, we were told, is an F1-11 pilot, and who must have made at least

twenty attempts with his green and orange Paageboy with remarkable consistency (and speed of retrieval!) but, alas, not sufficient accuracy. Bet he'll be there next time, though!

Free Flight Fly for Fun

Taffy Williams, having decided to run an amalgamated Vintage Precision event on the Saturday, discovered the appeal of such a relatively informal arrangement, for entries were high.

In the Vintage, Nominated Time category, twenty-one models presented, ranging in type from Southerner Mite and Pirate to Flying Stick and Diamond Demon. John Kemp and his JC Judy set the standard with an error of only 1.12sec but Roger Gulliver (KK Pirate) wouldn't rest until he had bettered this; his 0.27sec error proving testament to continued effort.

Flying 25 (for designs over 25 years old) was run to the same formula. Of the thirteen entries Alan Husband' Pee Wee Pal kept the fun going; he nominated 40sec as his target and kept recording

1:31, then changed his target to 1:30 and promptly scored 0:40! After this, unsurprisingly, he just flew for fun... Winner John Michie was less than one second adrift with his Ebenezer.

Superb prizes, donated by several model shops, included an original -yes, original - Mercury Aeronca Sedan kit, a Flair Black Magic, and a couple of kits from Taylorcraft. Trophies for Best Model were donated by Radio Active of Hornchurch - and the winner was Bert Parsons with his Mercury Magna. John Berryman also received a prize as the entrant who was getting most fun from his model. Even the acting, unpaid timekeeper, Stan Horne, was rewarded with a prize, as was Concours judge Mike Barton. A great time for all - and certainly an event to be repeated next year.

Fly for Fun Event Vintage

1	Roger Gulliver	KK Pirate	0.85sec error
2	John Kemp	JC Judy	1.12
3	Malcolm Handscombe	KK Southerner Mite	1.65

Flying 25

1	John Michie	Ebenezer	0.93sec error
2	P Thorpe	Madcap	1.10
2	Malcolm Handscombe	Poppet	1.65
4	Peter Fisher	Ion	5.00

Rolie Lelliott Trophy Report by John Emmett

'Too hot for Pirelli' said the man as a huge twang came from my left. He could have added 'too windy for Jetex', but this year's eleven entries showed that the newer wave of Jetex fliers fear nothing.

Last year's winner, Mark Pedwell, was one of the first off at 11.20. He was flying the super light Midget 50 designed by Butch Hadland in 1949; and Mark obviously expected the wind to increase later. At this stage of the day, it was fairly turbulent at height with a wind speed of six knots at ground level. Around lunch time there was a lull but then the afternoon fliers faced gusts of twelve knots at best.

Such were the conditions, but there were triumphs nevertheless. Mark Pedwell made his first max marginally, the Midget was OOS behind bushes at 0:58 but reappeared at 1:02 before attempting to hide in the scrub. Next came an attempt, the model being saved by long grass, and this was followed by two easy maxes in a row, with attendant difficult recoveries. With three clear maxes before lunch time, everything hinged on the afternoon conditions. Meanwhile, the two scale entries were doing well, both came from KK kits, one MiG and one Sabre. They suffered less damage than the contest models.

By afternoon the fatal attraction of launching in the lee of the trees gripped several contestants including myself, but the afternoon really was dominated by the two heavyweights, John Nesbitt with the PAA loader 'Star Jet', and Rolie Lelliott himself with a Contest 200.

Rolie Lelliott Trophy

1	M Pedwell (Winner 2nd year running)	Midget 50	3:00
2	J Nesbitt	Star Jet PAA Loader	2:12
3	S White	Snowflake 50	0:52
4	E Milne	Ernie Fizz 50	0:44
5	J Emmett	Snowflake 50	0:42
6	R Gulliver	KK Sabre 50	0:31
6	M Tyrell	KK MiG 50	0:29
8	P Johnson	Own design 50	0:23

K Bates, P Williams, and R Lelliott did not record times, despite brave attempts.

Chart Telco CO₂ event

In view of the strength and direction of the wind rules for this popular competition were fixed at three flights to a 1:30 max, with a flyoff if needed. Hot conditions generated a good deal of turbulence and, occasionally, strong thermals, though these were of short duration. Models were sometimes dumped out of lift when apparently well on their way. There was some reluctance to enter - a pity, with over £40-worth of CO₂ goodies to be won.

Of the thirteen who braved the breeze only Peter



and David Gibbons of the Peterborough Club achieved the max, both flying miniature Simplexes - David's blue and yellow example, complete with Tomy timer, looking particularly attractive. Neatest model seen was S. Spencer's red and yellow Wedgy, which flew well too; but hot favourite Tony Brookes (Rambler and Jaded Maid) failed to rise to the occasion. Nevertheless, a most enjoyable event; and thanks, once again, must go to Ken Rippengale of Chart Telco for his generous support at Old Warden.

Chart Telco CO₂ event

1	D Gibbons	P/Boro	Simplex	3:37
2	P Gibbons	P/Boro	Simplex	3:32
3	K Rippengale	Chart Telco	Puffin	2:39
4	J Thornburn	P/Boro	Simplex	1:35

SAM 35 Old Time Stunt Event Report by Ron Prentice

Due to the delay caused by Saturday's departure of the fabulous collection of elderly De Havilland aircraft, the SAM 35 Old Time Stunt competition started at around mid-day. Once again we were fortunate to have secured the services of Henry J. Nicholls and Dennis Allen as judges; and the event was directed by SAM 35 C/L Competition Secretary John Perry.

First to fly was former Gold Trophy winner Tom Jolly; unfortunately before the judges were quite ready, so the flight was not counted and he was given a later slot.

The first actual competition flight was made by P. Smith, who was flying a Calamity Jane powered by a Fox 36. Following a good start, he flew a tidy schedule to get the event into top gear.

David Beales next flew a Ken Marsh Hotshot powered by an OS 25 borrowed from Peter Michel a day or two before. Unfortunately the motor was running too lean and quit during the loops, causing a crash which required workshop repairs. Ron Prentice with his Fox35 powered deBolt All American Senior also had motor problems and was forced to make an unscheduled inverted landing when his motor cut. The more relaxed SAM rules allowed a restart, but it was not a good flight. SAM 35 Chairman Gordon Counsell flew a Sterling Ringmaster (Fox 35) and put up a creditable

performance. Another former Gold Trophy winner, Dave Day, flew his Elfin 2.49 powered Ambassador and with a really good engine run, he threw the model around a very fast and accurate routine. He is now down to one Elfin, after losing the entire cylinder and head of his second a few weeks ago when the threads in the crankcase gave way. Another competitor's motor leaned out too much and overheated. He was unable to restart. SAM 35 Speaks columnist Mike Rolls brought out his venerable Veco Chief, which is powered by an OS 40. He flew a satisfactory schedule, but showed signs of lack of practice. At this point Tom Jolley made his rescheduled appearance with his Curtiss Swift, a model which I first saw fly some years ago. As would be expected from a former F2B flyer, he put in a very polished performance. For the first time that I can remember, the next model to appear was a reproduction of Brian Hewitt's Stunt King. This was flown by Alan Walker and powered by a Veco 19. In spite of the engine being a lot smaller than the original Yulon 30, the plane performed creditably but not quite well enough to bring him up to the top scorers of the first round. Prolific contest winner Mick Taylor from Peterborough next flew his Reinhardt 1951 International Trophy Winner, a model which he has used before to capture victory place in this competition. As usual, he put in an almost faultless schedule which put him right up in the top scorers. Newcomer to OTS, Alan Jupp, was next to take to the circle with his Super Duper Zilch powered by a Fox 45. Unfortunately he was unable to start and had to withdraw, first round, followed by Stephen Haines, whose Merco 29 Foxstunter did not bring him high points. Next was Mike Castell from Nuneaton. An F2B flyer who is beginning to enjoy Old Time Stunt, he was flying a Fox 35 powered deBolt All American, nicely finished in the original kit box colours of Stars and Stripes.

At this point Alan Walker made an appearance, flying a Mercury Musketeer instead of the Stunt King; could he be trying to impress judge Henry Nicholls, I heard someone say, that great all-rounder Peter Michel flew a Mark 1 Nobler, built specifically for the all Nobler event at the Nats the following week. He must have been nervous at being watched by the great man George Aldrich himself, because he did not set his motor correctly and it cut while



Far left: Fireball Trophy winner John Roberts and Tyro Trainer. Result was close... Left: Tom Hughes likes the large and loud. This is his Hornet-powered Vampire. Below: Fireball Trophy line-up. An impressive selection. Note Dick Roberts' twin-Dooling .29 Tiger Cat in background - an unforgettable sound.



inverted, fortunately causing no damage. At this time Alan Jupp was slotted into the round and managed to get his Fox 45 started and completed the schedule, but he had a very long motor run which must have over run the time limit.

The second round commenced at 3.25 with a flight by B.Green. His Calamity Jane was flying quite nicely when the silencer fell off, sailed through the air and hit judge Dennis Allen. Not the best way to get good points, one would think! After that bit of excitement the next to fly was K. Garbett whose Stunt Queen did not fly as well as the original. The weather was still bright, with sunshine, but a breeze had blown up which made it cooler, but rather turbulent.

Following his Hotshot crash David Beales brought out his diesel-powered Ariel. He did not have a good engine run and his little stunter was fighting the wind to do any manoeuvres at all. My second round flight was much better, but still not quite as good as it should have been. Gordon Counsell again flew the Ringmaster, followed by Dave Day, again with a blistering motor run from his Elfin 2.49.

Lionel Haines started his motor with his first flick, but omitted to do the inverted flight during his schedule, thus losing a lot of valuable points; but on the whole did a better round than previously. His son, Stephen Haines, did not do so well, his engine cutting inverted; and after a restart misbehaved enough to make him abort the overhead eights. At this point in the competition I was asked by Mike Beach to be a judge in the Fireball Trophy but I understand that the remaining flights went off smoothly. Final results were:

		points
1	M Taylor	Reinhardt 1951 Int.
		626
		Winner
2	T Jolley	Curtiss Swift
3	D Day	Ambassador
4	R Prentice	All American
5	M Castell	All American
		506

Fireball Trophy

The most prestigious control line trophy in the vintage movement is without doubt the Fireball Trophy. Presented by Mike Beach in the 70s, it is awarded annually to the builder of the most

authentically-constructed and flown model. Mike's original concept of the trophy was that it could be won by anyone. It isn't necessary to be a top speed flyer or a stunt ace. Someone with an orange-doped Keil Kraft Phantom powered by a Bantam 19, like Bill Dean's original need only fly it round and round, to stand a very good chance.

This year there were even more models to choose from. Mike Beach asked my old West Essex clubmate Sid Sutherland and myself to select and judge. Owners were then asked if they would demonstrate the flying abilities.

We decided to award five points for engine starting, take off, flight pattern and landing.

Those models selected to fly, not necessarily in this order, were Don Burgess' Dmecco Special speed model powered by a Dooling 60, Peter Michel's Weatherman speed trainer (Mills 1.3), Dick Roberts' Grumman Tiger Cat (twin Dooling 29s), an ETA 29-powered Candy II made by Mr. Slack, a Hornet powered Vampire flying wing from 1947 made by Tom Hughes, an Amco 3.5 powered Demon King stunter by Mick Taylor, Steve Betney's nicely made Ohlsson 29 powered deBolt Sportwing, David Nelson's superb Mark I Nobler (Fox 35), a dinky little Mills 1.3 speedster by Andy Brough called Orbit Angel, a nicely made Small Fry with a Mark II Mills 1.3 by Ron Davenport, Dave Day's beautiful little E.D. Bee Mk I powered K. K. Skystreak, John Roberts' McCoy 29 powered Tyro Trainer biplane, Dick Cooper's Yulon 30 powered Flicka and last, but not least, Peter Russell's McCoy 49 powered Speed 300. This model was totally authentic because it was the original!

Having selected the models, flying commenced on a specially marked out circle adjacent to the control tower. The Weatherman of Peter Michel performed exactly as one would expect from a Mills powered trainer; and Don Burgess' Dmecco Special had the advantage of having George Aldrich as pitman. Poor Mr. Slack had to withdraw his Candy II after failing to start the ETA 29. Tom Hughes, a contender for top place had bad luck when just after take off the model rolled up the lines and crashed. The Demon King and Nobler both performed the stunt schedule of the period adequately, although David Nelson missed out several manoeuvres. Of the other stunt models, Steve Betney and Dick Cooper both suffered from poor motor runs resulting in crashes. Ron Davenport crashed his Small Fry, fortunately without major damage. Dave Day treated us to a long display of aerobatics with his E.D. Bee powered Skystreak, which, to add to the authenticity of the occasion, he flew on thread lines.

John Roberts' nicely made Tyro Trainer took smoothly to the air after an almost immediate start, performed its circuits in a beautifully level manner and rolled to a stop after a perfect landing. The Orbit Angel of Andy Brough turned in towards him on the first attempt to take off, but on the second attempt flew very well, if any with a very short motor run. The most unfortunate tragedy struck Peter Russell when he took off his original Speed 300. The motor started very impressively and the model took off and released its dolly in a textbook manner. Then disaster struck. The model rolled up the lines, which broke and the model crashed and disintegrated. A sad end for such a long-lived aircraft. There is, no doubt that the most spectacular flight was from Dick Roberts' twin Dooling Grumman Tiger Cat. The howling, synchronised motors will not be forgotten in a hurry.

Winner for 1989 was John Roberts and his Walter Musciano designed Tyro Trainer.

A special commendation was made for Dick Roberts' Tiger Cat, which would have won had he not used an electric starter. The judges felt that it was not in the spirit of the competition to do so and he therefore lost starting points. He was awarded a compensation prize of a year's subscription to Aeromodeller.

Vintage Speed Report by Andy Brough

This event never ceases to amaze me! I always expected this Mercury Midge competition to go the same way as all the others, a couple of events and then a gradual decline into oblivion. Even though other designs are now allowed, it still remains the exclusive domain of the Midge, so I suppose the chosen model and the concept were just about right.

Once again the annual event for the Lancastria Cup attracted the usual group of enthusiasts. This year there were three events in one; firstly, the traditional one for listed or vintage motors; secondly, the Classic for old ball-raced motors and PAWs; and lastly, one for that humble old workhorse and unlikely speed motor, the Mills 1.3. These latter two classes had cups donated by Johnny Hall and Andy Brough respectively.

For several years the Elfin 149 has reigned supreme but this year, with seven Frog 150s in contention and only three Elfins, the writing was on the wall. The first round was much as expected with Barrie Wade (Elfin) and Mike Bennett (Frog) on 84.9mph and John Gibbs on 81.8. Brian Lister was running a fairly slow, (for him) 78.9mph but he left the arena to mix another brew of fuel! Newcomer B. Smith ran a very creditable 79.6.

Early in the second round Brian used his new fuel to good effect with a blistering 89.1. Was anyone going to catch him? Most made little improvement except Mr Smith whose 84.1 put him up with the leaders. We had to wait until the end of the round before Barrie and Mike, both past winners, made their second attempts. Mike repeated his first round speed and Barrie, with a different Elfin, was clocked at 10.3 sec which worked out at 87.4mph and second place. The results show just how close it was this year!

Lancastria Cup

1	Brian Lister	Frog 150	89.1
2	Barrie Wade	Elfin 149	87.4
3	Mike Bennett	Frog 150	84.9
4	B. Smith	Frog 150	84.1
5	John Gibbs	Frog 150	81.8
6	Dick Roberts	AM 15	76.9
7	Terry MacDonald	Frog 150	76.9
8	Andy Brough	Frog 150	75.0
9	Mike Downing	Frog 150	75.0
10	Ray Gordon	Elfin 149	62.0
11	Steve Betney	Elfin 149	55.5

The Classic and Mills events were poorly supported but this was expected for the first running. Whether Classic motors catch on remains to be seen but on this occasion Mike Bennett was the winner on 80.3 with a PAW. The Mills event was a great deal of fun with two Weather Men and an Orbit Angel trying their best to complete the required six laps! It would seem that the Mills tanks will not feed properly no matter at what angle they're set, so it looks like separate tanks will be required. Notwithstanding the problems, Peter Michael was timed over four laps and was declared the winner with a scorching 43.5.

Classic-

1	Mike Bennett	PAW	80.3mph
2	Dick Roberts	PAW	72.5mph
3	John Gibbs	PAW	scratched

Mills

1	Pete Michel	Weatherman	43.5mph
2	Peter Martin	Weatherman	—
3	Andy Brough	Orbit Angel	—

Finally, a big thank you to Peter Martin and Ray Bench for all their hard work in timing and recording the scores - and to all who competed making it all worth while.

Congratulations to all who attended, and took part, at this year's Vintage Weekend. We have even more scheduled for your enjoyment in 1990. Stay tuned for details. Here's to Old Warden's unique attraction and even more model flying there than ever!

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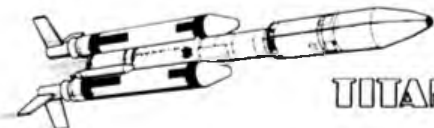


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NEW

LITESPAN

SUPER HIGH STRENGTH COVERING THAT LOOKS LIKE TISSUE BUT SUPERIOR IN EVERY WAY TO TRADITIONAL TISSUE & DOPE

- AIRTIGHT - STRONG -** does NOT need doping, fuelproofing etc. our tests show Litespan has four times the strength and puncture resistance of doped lightweight Modelsparan
- IMPERVIOUS - LIGHT -** not affected by fuels, water or dampness just under 1 oz per square yard - scale colours just 1 oz and no extra for dope or fuelproofers
- STABLE -** models keep their shape - not affected by dope shrinkage or humidity changes
- VERSATILE -** can be painted without any surface preparation - ideal on sheet balsa to provide a paintable surface
- EASY -** coat the framework with Balsaloc, allow to dry and iron on the Litespan. Tighten the Litespan with extra heat

Available in the following colours:-

- 'Tissue' colours -** Yellow, Orange, Red, Blue (look liked doped tissue)
- 'Scale' colours -** White (a brilliant clean white)
Black (almost completely opaque)
Dark green (for WW1 models & camouflage)
Cream (a creamy buff to represent doped linen)
Silver (a shiny textured aluminium appearance)
- Sheet Size** 900mm x 500mm (approx. 36" x 20") £1 per sheet (postage 70p any number of sheets)
- Prices** Balsaloc £1.40 per 100gm jar (postage 70p)

It is over 50 years since tissue and dope was first used in place of oiled silk as a lightweight covering material for model aircraft. Since then model aircraft design has changed and developed to make the best use of the properties of tissue & dope. In fact, *doped tissue is a very poor, shoddy material* - it is weak, brittle and punctures easily, dope shrinkage often pulls airframes out of shape or gives that 'starved horse' look, and it is badly affected by fuels, especially glowfuel. Colours fade quite quickly. About its best point is that it is cheap! But after spending hours building a model we have often felt that it deserved more than a 'cheap' finish.

Why have modellers tolerated such a poor material for so long - quite simple - there wasn't anything better that was light enough.

Now a new material, Litespan, overcomes all the disadvantages of doped tissue. Our tests show it to have about four times the strength and puncture resistance of doped modelsparan tissue. It is much tougher and absorbs impacts much better - so models are more crash resistant. Litespan is completely impervious to fuels (diesel or glow) and is totally unaffected by dampness or water. Yes - it is more expensive than doped tissue - but the colours are brighter and don't fade and it keeps its strength and toughness indefinitely. We have Litespan models that are 2 years old, which are clean, neat, unpunctured and not faded - and they have done a lot of flying!

Weight hasn't been mentioned. Litespan weighs just about one ounce per square yard (28 to 35 grammes per square metre) - and that's it apart from a little extra for the adhesive. In laboratory tests we haven't been able to get down to that weight with doped tissue, except by using so little dope that the tissue went slack in damp conditions.

Yes - you may be asking "Where's the catch?" - well we don't know of one. Provided you follow the instructions carefully and to the letter. After all we have been using the material for two years, so know more about it than any of the magazine 'experts'! The 'experts' tell us that Litespan doesn't add 'stiffness' like doped tissue, which is just another way of saying it isn't brittle like doped tissue. Yes, we admit that Litespan is a very tough and shock resistant material - far superior to doped tissue. If you want extra stiffness it is best to add a few triangulation members in the airframe (balsa strip or thin thread) at the building stage. Its always seemed a bit daft to build a flexible airframe and then hope the tissue is going to shrink up just right after doping and leave no warps. If you think about it, being a 'tissue & dope' expert is probably a disadvantage when first using a new material like Litespan - 'old dogs' never like learning new tricks. And using Litespan is completely different from using tissue & dope. It's all there in the instruction sheet included with every sheet of Litespan.

What models can Litespan be used on! Everything from a 1/4 ounce Peanut indoor scale model to a 72" 6 pound vintage Red Zephyr for radio. If you would like a sample and colour swatch send a S.A.E. to

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HAVE FUN WITH A D.P.R. MODEL

AT THE 1990 MODEL ENGINEER EXHIBITION
ON 1st JANUARY 1990 AT ALEXANDRA PALACE

The D.P.R. 'MODEL FLYING DAY' starts at 10.30 a.m. It's sure to be lots of fun and a great day out for all the family! Don't just be a spectator - Have a go! The D.P.R. Model Workshop will be open all day, so come and make a simple model. There is no charge for entry in the Competitions other than the purchase of a Kit - So why not enter one of these ?

'HIT THE KIT' COMPETITIONS AT 11.00 a.m., 1.00 p.m. and 4.30 p.m.

If you are under 13 years old, you can enter these events on the day! Score a direct hit on one of the D.P.R. Kit Targets and the model is yours! ANY suitable D.P.R. Model may be used, (NO catapults to be used). Build a model and bring it with you - or make one on the day!

12.00 JUNIOR 'SUPERFIGHTERS'

Another event for the under 13's using the Slot-Together rubber powered 'SUPERFIGHTER' models. Choose a SPITFIRE, HURRICANE or MUSTANG which can be assembled in a matter of minutes on the day!

*** SUPER PRIZES TO BE WON FOR THE BEST FLIGHTS *
2.30 p.m. JUNIOR & SENIOR 'NATIONAL CHUCKIE CHAMPIONSHIPS'**

Anyone can enter this indoor duration event using D.P.R. Models high performance 'CHUCKIE' hand launched gliders - kits are available from your local model/toy shop or direct from D.P.R. Models and may be built in less than an hour.

FREE ADMISSION TO THE MODEL ENGINEER EXHIBITION FOR 'CHUCKIE CHAMPIONSHIP' COMPETITORS

If you send your completed entry form to D.P.R. Models before 21st December 1989.

PRIZES

First Prize (Juniors Under 13) The D.P.R. Models 'Junior Chuckie Championship' Trophy - An exciting Tamiya 'Thunder Shot' 1/10th scale radio controlled 4WD Off Road Racer complete with ACOMS Radio Control and Electric Power Unit - 12 months subscription to R.C.M. & E. Magazine.

First Prize (Seniors) The D.P.R. Models 'Senior Chuckie Championship' Trophy - Superb Riko Electric Powered Cessna Skyhawk Radio Controlled Model Aeroplane Kit complete with ACOMS Radio and Electric Power Unit - 12 months subscription to R.C.M. & E. Magazine.

Trophies, D.P.R. Model Kits and Argus Specialist Publications subscriptions will be awarded to the runners up in each age group.

1990 'CHUCKIE CHAMPIONSHIP' OFFICIAL RULES

1. **ALL COMPETITORS** to be within the age specified at the time of the competition (i.e. Under 13 or 13 years - Adult).
2. **ALL MODELS** must be built from the standard D.P.R. Models 'Chuckie' kit, without any modifications to the construction, substitution of components or alterations from the original shape other than approved crash damage. Models must include doublers and stickers. No undercamber allowed on wings.
3. **SENIOR 'Chuckies'** may be built with undercamber, without doublers or stickers and may be extensively lightened, but must maintain the original Chuckie outline. (13 - Adult only)
4. **PRE-ENTRY** Return your completed entry form now to receive a FREE ADMISSION TICKET to the MODEL ENGINEER EXHIBITION for each 'Chuckie' competitor as soon as available! Non-competitors are advised to order ADVANCE TICKETS from Argus Specialist Exhibitions Ltd. Argus House, Boudray Way, Hemel Hempstead, Herts. (0442) 66551.
5. **CLUB OR GROUP APPLICATIONS** will be accepted and additional entry forms may be obtained from D.P.R. Models or photocopied.
6. **LATE ENTRIES** will be accepted on the day. Have your model ready to fly and see the organisers before 2.00 p.m.
7. **BUILDER OF THE MODEL** Whilst it is the policy of D.P.R. Models to encourage all competitors to fly a model built by themselves, it is permitted for youngsters to have assistance with building their models and with flight trimming.
8. **ALL COMPETITORS** will be allowed THREE FLIGHTS EACH. Their best flight time will count as their overall score.
9. **THE PERSON WHO ACHIEVES THE LONGEST FLIGHT TIME IN EACH AGE GROUP WILL BE THE WINNER OF THE COMPETITION.** In the event of a tie, a fly-off will be necessary to establish first place.
10. **ALL PRIZES** will be awarded at the end of the competitions.



ENTRY FORM

Please complete this form and return it to D.P.R. MODELS, Unit 9, The Vanguards, Shoeburyness, Essex SS3 9QY with a S.A.E. (0702) 295110. It must be returned by 21st December 1989 to receive your 'FREE ADMISSION TICKET' to the MODEL ENGINEER EXHIBITION at Alexandra Palace on 1st January 1990

Name:

Address:

Postcode:

Telephone No. (inc. code):

Junior Section (Under 13) your age:

Senior Section: Age 13-21 Over 21 (Please tick)

Competitors may use more than one 'CHUCKIE' model provided these are all built from D.P.R. MODELS KIT COMPONENTS. ALL COMPETITORS WILL BE ALLOWED THREE FLIGHTS OVERALL.

Please answer the following questions:

Where did you purchase your kit?

Where did you learn of the Competition?

Have you flown in a D.P.R. Competition before?

All competitors must sign the following declaration:
I agree to abide by the rules of the competition and I understand that the decision of the Competition Director will be final. No correspondence will be entered into after the event.

Signature Date



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Links to the Plans

The issue comes with a free plan (Tekfire) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

Mr.D & Ol'Blue (from August 1985) by Dave Clarkson

CL Goodyear Racers

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Tekfire by Barry Sims

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Felix Stick Tractor by Juste Van Hattum

Appreciation of Just van Hattum the Flying Dutchman. Presented in VINTAGE CORNER

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'Specht' Hoogdekker Rompmodel by Juste Van Hattum

VH-60 'Woodpecker' presented in VINTAGE CORNER

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