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1002**

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AERO MODELLER

November 2020.
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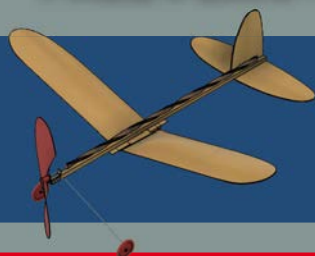
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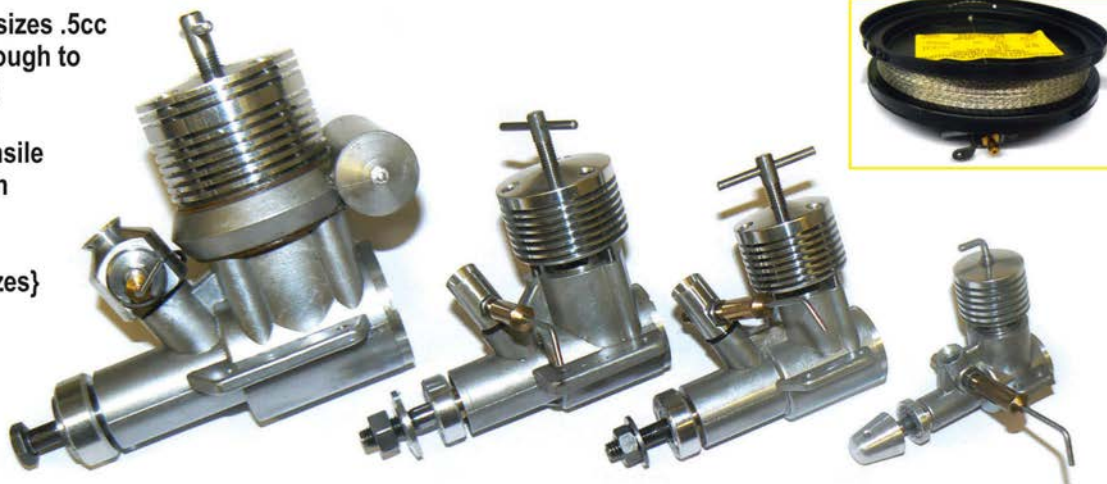
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AERO MODELLER

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The Stampe SV4 by Chris Brainwood is one of the free plans.

HEARD AT THE HANGAR DOORS

FLY WHEN YOU CAN

At last I made it to a large organised model flying event, my first of the year! Old Warden was a breath of fresh air after a grim six months despite all the changes to make sure that it was 'Covid Compliant', and this was thanks to the hard work and dedication of Sheila and Ken Sheppard at ModelAir, The Shuttleworth Trust and all the volunteers working for both organisations.

However, I wonder how many more events like this we will see in 2020? All the signs are that a second wave of Coronavirus infections are coming as there are increasing restrictions on what we can do in the next 6 months. There will

certainly be a reluctance to hold indoor flying events where it is more difficult to socially distance.

So, fly when you can and make sure you have plenty of balsa and kits for the next potential lockdown! Looking forward positively to next year, ModelAir have announced dates for the model flying events at the Shuttleworth Trust (www.shuttleworth.org) museum airfield at Old Warden in 2021: May 22-23, July 24-25, September 18-19. Fingers crossed for a more active and social 2021!

Regards, Andrew Boddington
editor@aeromodeller.com

JAMES MAY – CELEBRITY FAN

As part of our 1000th issue celebration and last issue's Film and TV special, many thanks to James May for providing the following words. James needs little introduction as he is well known for his Toy Stories TV series which included the autonomous GPS-guided long distance flight of a model Slingsby Swallow from Ilfracombe to Lundy, and the meditative The Reassembler where he rebuilt iconic everyday devices. He has also been known to appear in car programs with two other presenters...

"These days, I fly real aeroplanes. I have an American Champion Scout, which is wonderful, and although amateur flying is quite challenging, and the consequences of getting it wrong are quite severe, I'm always reassured that I understand the basics of aerodynamics - the lift/drag curve, centre of pressure, centre of gravity, the stall, trim - because, as a boy, I made gliders out of balsa wood and threw them around the garden.

"What many people dismiss as mere 'models' are essential to aviation progress. The Wright Brothers made models, and so did George Cayley. Aeronautical students make models. The Flyer, the Curtiss Jenny, the DC3, the Spitfire, Concorde, and the F22 have existed because, at some point, inquisitive people made models. In fact, the model aeroplane effectively pre-dates the real one, so we shouldn't think of models as miniaturisations of full-sized aircraft, we should acknowledge that full-sized aircraft are scaled-up models.

"This is why AeroModeller is important. Just as small cash-strapped flying clubs produce the airline and fighter pilots of the future, the modelling hobby is the point of departure for future aircraft designers. I think it should be one of the complementary magazines on long-haul flights. You could settle into your seat on an Airbus A330 with a copy of Vogue or The Economist, but really you should read AeroModeller. It's the reason you're there."



AEROMODELLER 1000 QUIZ ANSWERS AND WINNERS

Thanks to all the readers who took the time to enter our 1000th issue quiz. Most, but not all, entries were correct. The answers were as follows:

Q1. In which year was the original issue 1 of AeroModeller published?

A1. 1935

Q2. What were the names of the father and son contributors to AeroModeller?

A2. E J (Eddie) Riding and Richard (Dickie) Riding

Q3. What do the initials PAW stand for?

A3. Progress Aero Works

Q4. The designer of the Leprechaun glider. What is his name?

A4. Richard (Dick) Twomey. (Sadly Dick Twomey died after publication of the quiz. See obituary last issue.)

Q5. Supplier of equipment, paints and Iwata products. What is this aptly named company?

A5. The Airbrush Company or airbrushes.com

Q6. What is the name of the auctioneers?

A6. Gildings

Q7. Who is the maker of this wide range of glues, finishes, lubricants, etc?

A7. Deluxe Materials

Q8. What is the name of the model shop?

A8. Steve Webb Models

Q9. A regular contributor on FF scale. What is his name?

A9. Bill Dennis

Q10. What does GAvA stand for?

A10. Guild of Aviation Artists

The three lucky winners from those with correct answers were:

1st Prize, Deluxe Materials Goodies – Phil Williams

2nd Prize, CS Boddo Mills Replica – Mick Coppins

3rd Prize, 1 year subscription to AeroModeller – Bernard Pugh



GILDINGS MODEL AERO ENGINE AND MODEL KIT AUCTION SALE

Thanks to Will Gilding and Toby Collis for providing information about the annual auction. This year the auction will not be run as usual due to COVID-19. The auction will be held online on Tuesday 11th November starting at 1:30pm. Unfortunately, there can be no attendees for the auction itself, and so bidding will be restricted to absentee bids or live bidding via the internet.

Gildings are providing extended viewing in the days leading up to the auction on Thursday 6th, Friday 7th, and Monday 10th. Numbers are limited on the premises at any one time to comply with responsible social distancing restrictions and so viewing is by timed appointment which can be self-booked via the Gildings website, or by calling the office.

Details of online bidding can be obtained from the website:
www.gildings.co.uk

The title of the event has changed due to one vendor presenting us with over 500 model kits. There are about 150 small scale rubber kits being offered in bundles of 3, 4 and 5 per lot, 5 lots of Jetex kits, gliders from 15" HLG to 2.5 metre Algebra, kits made by Keil Kraft, Veron, Ben Buckle, etc. and USA kits by Guillow, Comet and Sterling. Having inspected many of the American kits, they appear to be better than the UK in quality.

We have 10 RC models complete with Spektrum radio fitted. The

engines on offer include many Mills, ED, Banks, Boddo diesels and Morton M5 radial.

Be aware that the buyer's premium has been increased to 20% plus VAT on the hammer price. When bidding online there are no additional fees for bidding via gildings.co.uk or invaluable.com, although there is a surcharge for bidding via the saleroom.com of 5.94%.

Lots must be collected. People can collect in person (again by appointment). If they want anything sending to them, they would have to arrange with a third party firm such as Pass the Parcel (local to Gildings) or Mailboxes. Gildings does not wrap/pack the items. It is only fair to acknowledge that in some cases the costs of pack and parcel would make it particularly unviable for individual lots – for example, the minimum fee for Pass the Parcel is around £20. Items are only released by Gildings where they have prior instruction from the buyer naming the person or firm collecting on their behalf.



As well as the usual wide selection of model aero engines, Gildings will have a large number of kits for sale by absentee/online bid auction on Tuesday 11th November 2020.

DEMISE OF REPLICA BE2

It was only in the last issue that I mentioned that my cousin Matthew Boddington was rebuilding the Currie Wot based SE5 replica which was flown in many films of the 60's and 70's. Little did I know that Matthew would be making the wider news when he crashed in the 'Biggles Biplane' replica at Sywell, Northamptonshire on 2nd September 2020. Matthew was flying with members of The Bremont Great War Display Team who were practising their display

routine when the accident happened. The biplane is co-owned by Matthew and Steve Slater who had restored the Tiger Moth based BE2 replica to fly again in 2011 after a previous owner crashed it.

Thankfully, Matthew's injuries were never life threatening, but he did sustain broken ribs and vertebrae and received a nasty gash on the head. He is now recovering at home having been treated at Coventry hospital. Thanks

to all the AM readers who expressed concern and sent Matthew their best wishes.

What of the future? Matthew tells me that when recuperated he will first continue with the rebuild of the SE5, but will then consider the BE2. I thought the wreckage looked worse than when he originally acquired the BE2, Matthew replied, "It's difficult to tell until we take it apart, but I don't think it's as bad as last time. By hook or by crook I will do it again."



Ouch! The sad wreckage of the BE2 replica. (Photo by Ian Castle)

Taken seconds before the crash of the 'Biggles Biplane' BE2, you can find this image all over the web including the Northampton Chronicle and Echo site at www.northamptonchron.co.uk



FLY THE WORLD TAKES OFF!

Thanks to Chris Ottewell for this update on the Fly the World project to have a Redfin diesel travel around the globe.

You can read more about the great Old Warden weekend elsewhere, but it also gave us the ideal platform for Fly The World to be launched, albeit nearly six months later than intended.

On the Saturday afternoon, Roger Cooper met me at the AeroModeller Table hosted by Alex Phin, bearing a couple of "Sam I Am" models, one of which was going to make the first official flight. After a brief chat we decided that given the gusty conditions he should take away the engine and check his model ready for a possible attempt the

next morning.

With a much steadier wind on Sunday morning Roger decided to go for it. A couple of test glides showed Roger had the model perfectly trimmed as it described a series of gentle turns to the right – hopefully leading to a perfect straight flight under power. And so it proved, although a series of loops showed the need for more down-thrust! With this minor adjustment I am hoping he can make another flight at Buckminster before posting the engine to Ben Kleikamp in The Netherlands for the next round.

Full rules were published earlier this year in June issue 997, but wherever



Roger Cooper has made the inaugural flight of the Fly The World project with his Redfin diesel.

you are in the world, if you want to take your turn at flying this small diesel in your country, simply send the £5 participation fee in your own currency, via PayPal along with your details to techflytheworld@outlook.com

Note – Should you have any difficulty with the above e-mail address please let me know using chrisottewell@anworld.com



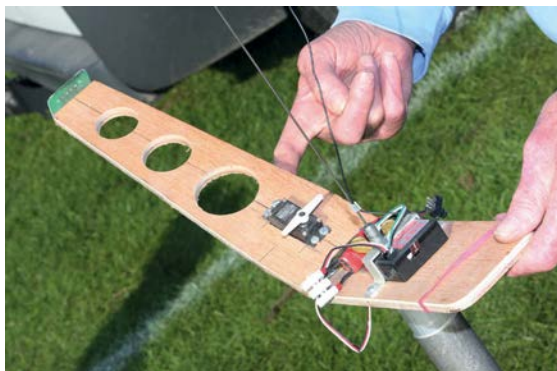
The new Redfin 061 TBR diesel exhibits the same high quality build as Alex's other recent engines.

ALEX PHIN & REDFIN

I think Alex Phin must never sleep! He has recently released yet another new engine in the Redfin diesel range, the 1.0cc 061 TBR (Twin Ball Race). It costs £110.00, UK postage is £6.00 and is ready for immediate delivery. We will of course have a review in a future AM.

Alex Phin was as busy as ever during lockdown but still wanted to be able to fly. He devised this radio control RTP device to

allow him to fly IC power control line from outside the circle. The pole centre is ball raced and has a servo with arms to attach the lines. He has successfully flown the Vic Smeed designed Chubby biplane (Redfin 0.5cc powered) built by Dave Cowburn, but has yet to attempt any aerobatics. He is still experimenting with the central pivot control device.



Alex Phin devised this RC RTP device to allow him to fly IC power CL (13" span Chubby biplane) in his garden on 8 foot lines(!) from outside the circle. The control uses an old 27 MHz radio he had lying around; seems sort of wrong to be checking frequency clashes when flying CL!

FF DURATION EVENT VENUES

The Coronavirus pandemic has cancelled many planned events this year, and even with the easing of lockdown uncertainty stalks those BMFA FF events which have been confirmed for later in the year. Lately we have seen the withdrawal of Sculthorpe for 6th Area meeting on 20th September, and the cancelling of an F1E contest scheduled on the 27th September.

At the time of writing Barkston Heath remains available for the Area meetings and the Midland Gala, but there are of course comprehensive Covid regulations to be complied with, such as sanitizing one's hands on entering the field and after booking in, stations being provided at each location. You can find updates on the BMFA FFTC website at freelflight.bmfa.org and always check with the site or CD before travelling as events can be cancelled at short notice.

IMPINGTON AND OFMAC INDOOR MEETINGS CANCELLED

The continuing pandemic has sadly led to the cancelling of indoor flying events at the start of this winter's season. The Impington Village College MAC indoor event near Cambridge usually takes place in November but this has been cancelled. Follow the club website at ivcmac.bmfa.uk to see whether the planned March 2021 event takes place.

Similarly the Oxford area OFMAC Indoor FF Meetings in Berinsfield will not be happening for the foreseeable future as the main hall remains closed. Ian Melville says the club will review the 2021 meetings in December and then publicise the outcome.

HISTORIC AVIATION FILMS

Thanks to Martin Dilly for spotting that the National Aerospace Library (which is funded and operated by the Royal Aeronautical Society - the oldest aeronautical society in the world) has just launched a new web-site based on historic aviation films held in the Library's archives which have been recently digitised and which can now be viewed via: www.aerosociety.com/movies

Among the gems are US transport aircraft of the '30s, including several of the Northrop and Lockheed low-wingers and a Burnelli lifting fuselage aircraft. There are Miles promo films, featuring the Mercury, the Aerovan and the tandem-winged Libellula, film of the 1944 Landgraf H-2 helicopter, as well as early Sikorski, Platt-LePage, Hoppi-Copter and Piasecki helicopters. In all there are over 30 films, some dating back to pre-Bleriot days, and more will be added later. Make the lock-down a bit more bearable and delve into this aviation treasure trove.



The National Aerospace Library has made various historical aviation films available for viewing online www.aerosociety.com/movies

FF FORUM

At the time of writing Martin Dilly has confirmed the 2020 Free Flight Forum is running but with a venue change. the 36th FFF will be at the Mercure Daventry Court Hotel, Sedgemoor Way, Daventry NN110SG, not at Buckminster. It opens at 10 a.m. on November 15th, the day after the BMFA AGM.

This year's speakers and topics include: Simon Dixon - The Models of Ray Monks; John Emmett - Electronics in the Service of Free Flight; Stuart Darmon - Building Other People's Mistakes ; Phil Ball - Building in Lock-Down; Sue Johnson - What Next for a Lady Flyer?; Gavin Manion - Coupe in a Box; Andy Sephton/Mike Fantham - F3 RES, RC for the aging Free-Flighter; Stuart Darmon - Carbon-Skinned Wings for F1A; Peter Martin - Simulated 3D Flight Dynamics; Mike Woodhouse - Tame Your F1B.

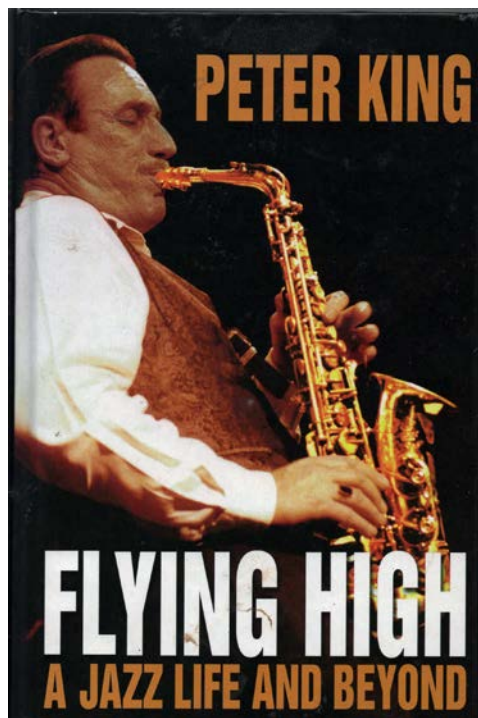
The audience is currently limited to 20 due to social distancing requirements, so tickets, costing just £10, will be on a first come, first served basis. Your cheques, payable to BMFA FF Team Support Fund, should go to Martin Dilly, 20, Links Road, West Wickham, BR4 0QW, but please first call 0208-7775533 or e-mail martindilly20@gmail.com to secure your place. However, do check on the BMFA website Events Calendar where any increase in numbers allowed will be notified by November 1st.

MIKE REYNOLDS RIP

It is sad to report that Mike Reynolds died on 30th August age 79 years. Mike may not be well known to all but you have undoubtedly seen his handy work as he was a draughtsman of plans for many years; originally at Argus and Nexus the previous publishers of AeroModeller in the late 20th Century

and also the occasional plan for the relaunched AeroModeller and Model Flyer with the present publisher. More recently Mike Reynolds and his wife Joan also worked with Ken and Sheila Sheppard as ModelAir to organise and run the model events at Old Warden. Our condolences go to Mike's family and friends.

PETER KING RIP



It is not many aeromodellers who get a full-page obituary in the Times newspaper (8th September edition) but jazz musician and FF model flyer Peter King is one. Peter King died on 23rd August 2020 and you will find an appreciation of him in Tail End Charlie at the back of this issue. Thanks to all who contacted AeroModeller about his passing, including Martin Dilly and Alan Postlethwaite.

Peter King was born during the Blitz. He joined the Surbiton MAC club in 1952 and placed third in the FROG Junior free-flight contest at the Nats the year after, at the age of 13. He later joined Croydon & DMAC and had planned a career in aerodynamics, but at the same time taught himself clarinet and alto sax, developing a great feel for modern jazz, in particular the be-bop techniques of Charlie Parker. At the age of nineteen and as a recognised young prodigy, he was asked to play alto at the opening night of Ronnie Scott's jazz club in 1959, and there followed a thirty year break from model flying, while he developed his career as one of the world's most highly-regarded alto saxophonists.

In 1990 he came back to competitive free-flight and re-joined the Croydon club, flying in both the F1B Wakefield and F1G Coupe d'Hiver classes with considerable success. Peter had always had an interest in low-speed aerodynamics and wrote several papers on model performance for the BMFA's Free Flight Forum Reports and for the US NFFS Symposium Reports. He will be much missed by his friends, both in free-flight and the world of modern jazz.

Peter King's autobiography Flying High covers a life in jazz and a passion for competition FF aeromodelling.

AVAILABLE FROM doolittlemedia.com



Up & Coming

Please note that the events listed are compiled weeks in advance of publication, so please check in case of change - specifically MOD venues such as Barkston Heath can be cancelled at short notice. For inclusion of your event, please send an email with date and details in a format similar to those shown below to editor@aeromodeller.com

During the current the Coronavirus Pandemic, please be aware of changes in the way events are organised. You may need to pre-register for an event and you should check the day before that it is still happening (local lockdowns and unforeseen problems can cause cancellations.) Be prepared and take face masks and hand sanitiser to the event, and follow the organisers' instructions for social distancing to keep you and your flying friends safe.

OCTOBER

17-18 October

SAM 35 Octoberfest, BMFA National Centre Buckminster, Sewstern NG33 5RW. SAM35 events. FF Scale Flying only for STC Trophy League on 17th, BMFA Open Trophies Flight Judging TBC to BMFA Rules

(Mike Smith michaeldocsmith@gmail.com)
www.sam35.org

18 October

7th F1E FF Slope Soaring (Not Team Selection).

Ian Kaynes 01252 512538
kaynes@btinternet.com

24 October

BMFA Midland FF Gala, RAF Barkston Heath. F1H, F1G, 1/2A Power, E36, P30, SLOP, Mini Vintage, CO2, HLG CLG.

Phil Ball 07470 177947 phil.ball@ntlworld.com

24 October

Cranfield Classic, 60th Anniversary. Barkston Heath or Postal. BMFA Classic: Gloworm, Mr Max, no. 18, La Bestia, Lucky

Lindy mk3 or taper wing.

Simon Dixon dixonfamily100@yahoo.co.uk

25 October

*CANCELLED BMFA SW Area Indoor Flying, St Austell.

David Powis 01579 362951
dave_powis@hotmail.com

NOVEMBER

6-9 November

Gildings Aero Engine and Kit Sale Viewing, The Mill, Great Bowden Road, Market Harborough LE16 7DE. By appointment only.

01858 410 414 www.gildings.co.uk

10 November

Gildings Aero Engine and Kit Auction. Online and absentee bidding only - no bidding in person. Won lots must be collected by appointment.

www.gildings.co.uk

15 November

FREE FLIGHT FORUM, Mercure Daventry

Court Hotel, Sedgemoor Way, Daventry NN11 0SG (NOT Buckminster). 10:00. Day after BMFA AGM. Tickets £10 limited numbers.

Martin Dilly 0208-7775533
martindilly20@gmail.com

22 November

*CANCELLED BMFA SW Area Indoor Flying, St Austell.

David Powis 01579 362951
dave_powis@hotmail.com

DECEMBER

13 December

*CANCELLED BMFA SW Area Indoor Flying, St Austell.

David Powis 01579 362951
dave_powis@hotmail.com

27 December

"Cold Turkey", Barton, Manchester. CL TR British Goodyear, Barton B, Club Speed.

Malcolm Ross 01925 766610
www.controlline.org.uk



Fingers Crossed for SAM 35 Octoberfest together with BMFA FF Scale at the National Centre Buckminster on 17th and 18 October. Check before travelling to this and all other events!

Full details of BMFA events can be found at: www.bmfa.org

Jon Fletcher's Cox

Maris Dislers examines this comprehensive glow to diesel conversion

Converting existing model engines to compression ignition probably began soon after the Klemenz Schenk Dynos wowed them at the Swiss Nationals in the early 1940s. Our 1945 French Jesco Comète Junior 5.5cc diesel, designed originally for spark ignition, is an early example. In the USA, similar experiments also sought to eliminate the “dead weight” of electrical ignition gear. J. B. Dale’s D-E diesel heads promised neat conversion to compression ignition of Ray Arden’s fantastic 099 and 19 sparkers with the twist of a wrench. Achieving some success until Arden introduced the better suited glow plug ignition in 1948. Bob Davis revived the diesel conversion idea

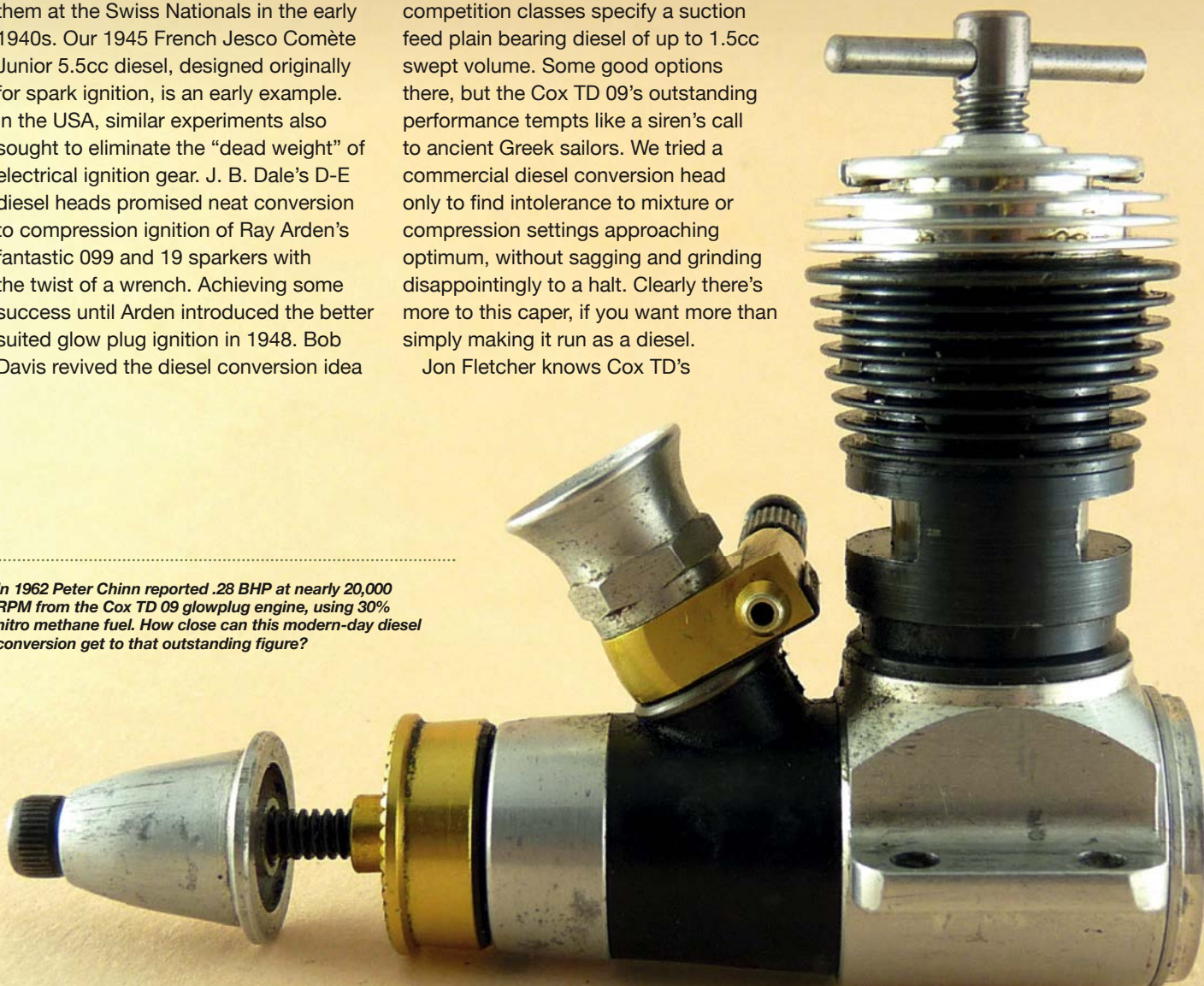
in the 1970’s (with his own tweaks) for Cox glowplug engines. Cox discouraged conversions, saying their engines were not designed for that.

Oz Diesel or Kiwi Power free flight competition classes specify a suction feed plain bearing diesel of up to 1.5cc swept volume. Some good options there, but the Cox TD 09’s outstanding performance tempts like a siren’s call to ancient Greek sailors. We tried a commercial diesel conversion head only to find intolerance to mixture or compression settings approaching optimum, without sagging and grinding disappointingly to a halt. Clearly there’s more to this caper, if you want more than simply making it run as a diesel.

Jon Fletcher knows Cox TD’s

intimately and approached the job with his usual thoroughness. An object lesson in what is really needed to properly adapt this glowplug engine to diesel operation.

In 1962 Peter Chinn reported .28 BHP at nearly 20,000 RPM from the Cox TD 09 glowplug engine, using 30% nitro methane fuel. How close can this modern-day diesel conversion get to that outstanding figure?



Cox TD 09 Diesel



Aside from the obvious compression screw, it looks original Cox. Excepting a few incidentals, all else is replaced or modified in Jon's conversion.

Best described in his own words:

I sleeved down the venturi because for Free Flight use one cannot have the engine sag after launch, unlike say in a CL model which being controllable can be recovered and continue flying.

The smaller venturi does lose some power but as you noted is also more consistent.

Marginal on the TD09 glow, the crankshaft was found to be not strong enough for diesel application, fracturing

across the crank web. So the crankshaft was machined from pre hardened and tempered high tensile 4140 steel. Crankweb design changed to full width and balancing achieved by machining two asymmetric flats either side of the crank pin. One flat bigger than the other to partially balance the shaft's intake aperture.

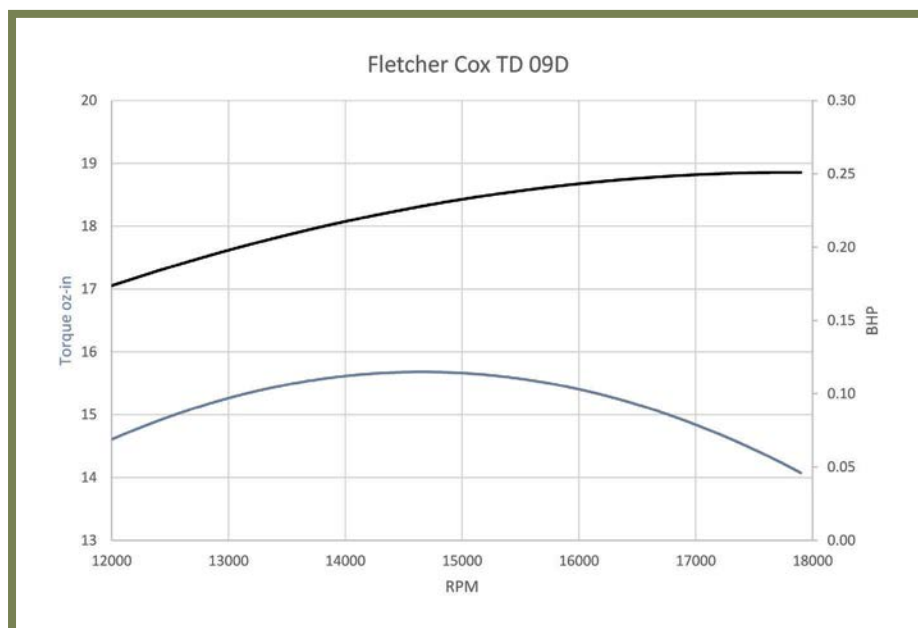
The cylinder bore taper has to be less for diesel application. Achieved by lapping out the mild steel cylinder

to the desired taper and then making a new conrod, gudgeon pin and cast iron piston assembly. Gudgeon is set low in the piston to maximise the sealing land length as Alan Allbon did on his engines. Conrod wasn't strong enough in 2024-T3 material so changed to 7075-T6.

To ensure that the gudgeon pin cannot drift into the bore it is secured with two wire circlips at each end of the gudgeon pin bore. Gudgeon pin drilled from each end to lighten but not a through hole to avoid unwanted gas passage affects. Piston milled extensively internally to lighten. Total reciprocating mass of piston, gudgeon pin and conrod small end and circlips is actually less than the standard Cox 09 design.

Cylinder head contains a close-fitting cast iron sleeve with precision fitted cast iron contra piston. To get a good seal with the Cox copper washer, the cylinder's sealing face and the sleeve's flange face were both lapped flat. Even so head has to be tightened more than the glow head to seal. The head is not an OEM part modified, but machined from 6061-T6 al. alloy to the glow head's exterior dimensions and to fit the Cox wrench. As it is a USA based product the comp. screw thread was chosen to be an American thread.

I'll add that a cast iron piston in a steel cylinder has important thermal and physical advantages in model diesel engines. A hard steel/soft steel combination is much more sensitive to fits, for good results. Intake/cylinder port durations unchanged and Jon fitted a metal ring over the venturi mounting spigot of the plastic crankcase part, to prevent it from splitting. After proving the concept, a strictly limited run of six "production" Fletcher Cox TD 09D



It took our stronger bar-stock cylinder barrel to revive this 1940s Comète Junior diesel, which had "blown its top" back in the day. Its spark ignition design elements couldn't stand up to diesel stress. Same goes for many glowplug engines.



Cast iron head sleeve has cast iron contra piston. A good combination that generally gives trouble-free operation. Jon's head fits precisely onto the sleeve for good heat dissipation.

engines followed and thanks to Martin Williams, we recently had the opportunity to test one.

Our regular diesel fuel mix containing 25% castor oil, 30% ether, 45% kerosene and 1.5% added diesel ignition improver (Amsoil Cetane Boost) suited it well, with a nice, short warm-up time and sweet running at the highest speeds. Starting was straightforward with a few drops of fuel onto the piston crown and a few more in the venturi as the only preliminaries. And providing the mixture needle was well rich of optimum. It could then be progressively leaned out as the cylinder reached stable running temperature, with compression setting left at its previously established best position.

Like any other plain bearing diesel when fitted with a light propeller of little flywheel effect, starting can require a good old diesel bash. But that should not be needed, as in practice, propellers with 7-inch diameter, or a little more, provide more usable thrust and give better climb.

With some engines, high power output only comes with high vibration or nasty handling that would be impractical for competition use. Jon has succeeded in delivering commendably smooth running throughout the usable speed range.

Plotting our results showed torque somewhat subdued at slower speeds, but rising nicely to around 15.5 oz-in between 14,000 and 16,000 RPM. The engine certainly ran with more authority when allowed to reach that zone.

Indicated power went up with speed,

PERFORMANCE

PROPELLER	RPM
APC 7 x 3	17900
APC 7 x 4	15200
APC 7 x 5	13900
APC 7 x 6	12300
APC 8 x 4	1190

reaching 0.25 BHP near 17,000, which is maintained up to our maximum test speed of 17,900 RPM. That puts the 86g (3.1 oz.) Fletcher Cox TD 09D right up with its top rivals, the heavier PAW 149 or 09 and fragile, difficult to start Cipolla Junior 09 Diesel. Bravo Jon!

An Experiment

By sleeving his venturis down to 2.7mm (effective choke area of 5.7 mm²) inflow velocity is, by proportion, almost 30% greater than Cox's standard 3.2mm choke with 8 mm² area. Good thinking when optimum RPM in use will also be around 15% lower than a TD 09 running with glow fuel and the increased suction on the fuel provides more resilience against fuel starvation under acceleration. But frictional losses in the smaller aperture reduce volumetric efficiency and some power is lost. As an experiment, we tried a standard Cox venturi in Jon's engine to assess its power potential more directly against the glowplug original. Revs went up, but running consistency was unacceptable, with surging fuel delivery.

I've seen this before, particularly with surface-jet carburetors, like the Cox's. Terrific, when working within certain design parameters, but troublesome when this is not so. Droplets of fuel drawn into the throat should collide with each other or bounce off the opposite wall of the venturi forming a lovely mist before being drawn into the engine. But when things aren't right, I see a pandemonium of fuel droplets, some even heading right out of the carburettor, or collecting on the upstream walls, to be drawn in unsynchronized, by airflow in a future cycle. Add in a cold cylinder, misfiring as it warms up, and spit-back of droplets from inside the engine running at slower speeds than ideal for the timed closing the rotary intake port - no wonder you get inconsistent mixture feed.

Piston movement and varying rotary



ABOVE LEFT: A peek inside shows Jon's tougher crankshaft with different counterbalance and aluminium conrod. **ABOVE CENTER:** Sometimes, a traditional spraybar carburettor can work better in diesels than the Cox peripheral jet design. We tried one in Jon's engine. **ABOVE RIGHT:** Tiny wire circlips retain the traditional wrist pin in cast iron piston. By careful machining, reciprocating mass is less than the original Cox piston/conrod assembly. An important detail for low vibration at peak speeds. The exhaust port orientation is no accident either. In theory giving a little more power, as flow into the transfer passages is easier.

valve effective opening lead to pulsed airflow in the carburettor. Plotting that on a chart would likely give a sinusoidal curve. Air is compressible, while liquid fuel on its way to the venturi throat isn't, so I figure their respective inertia/momentum is different. It seems that to get good synchronization for this carburettor to work effectively, adequate incoming airflow velocity is needed over a large enough proportion of every intake period.

Frank Coombs was a great believer in the superior "real world" consistency of regular spraybar through venturi designs with diesels. Yes, airflow is less smooth, but importantly, the pressure drop measured at a transverse spraybar's jet position (centred in the throat) is greater than at the surface jet position of a Cox-style venturi. Which allows for larger choke area, compensating for much of the reduced airflow potential. As a bonus, the spraybar prevents a significant amount of fuel loss from spit-back, resulting in an overall benefit.

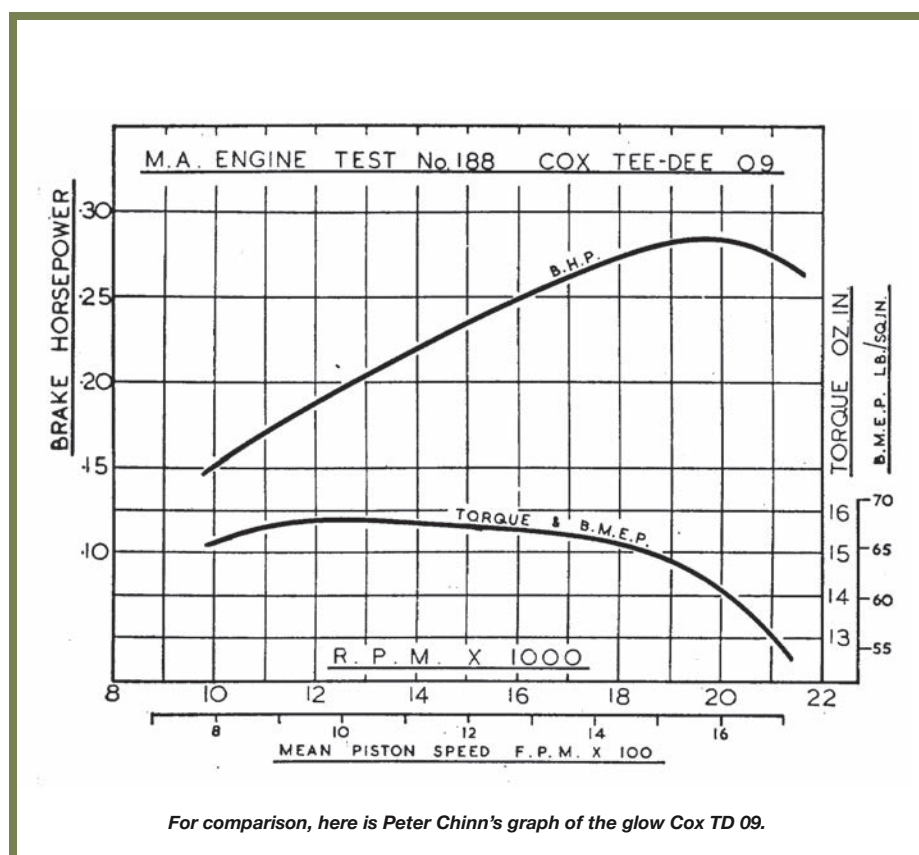
I made a carburettor with 5.5mm bore and 3mm spraybar, matching the standard Cox effective choke area. Very pleased to report, the engine now gives up to 10% more power, or an average extra 600 RPM, is as easy to zero in on ideal mixture and runs as steadily as with Jon's version. Flight tests would be needed to confirm trouble free launches, but I'm quietly confident.

In closing off this review, the question arises of the optimum position the spraybar fuel jet(s) relative to airflow. In a clear airstream, there's a stagnation zone directly in front. Pressure falls as air flows around the circular cross section, then in a small zone just past the widest

point, laminar flow breaks away causing backflow and a slight pressure rise, before dropping again in the turbulent wake. Inside a carburettor tube, air squeezing past the spraybar would modify that flow, probably accentuating pressure drop at the maximum spraybar diameter, when viewed from the side and central, when viewed from upstream.

Spraybars cross-drilled to give two jet holes are ideally positioned with the jets perpendicular to the airflow, but will work less effectively in any orientation, then requiring a more open needle setting. For a single jet hole, the convention of pointing it directly downstream is

generally fine. But not optimum, as that's in the most turbulent flow zone. The ideal is at an angle downstream of the maximum spraybar diameter. If the jet hole is rotated downstream just out of view, you'd be close. If maximum choke area (hence power) for acceptable fuel delivery is imperative, the exact spot can be determined experimentally by mounting the spraybar in the empty crankcase, with the needle well open and a hose connecting the fuel nipple to a U-tube manometer. Then blow or draw air through the venturi and rotate the spraybar slightly to arrive at the greatest pressure drop. ■



BARTON MFC TWO DAY CL SPEED EVENT

DICK HART THE ORGANIZER REPORTS ON THIS CLUB SPEED EVENT HELD ON 30TH AND 31ST AUGUST 2020



As the Power Nationals were cancelled this year the Barton MFC Committee sanctioned a Two Day Club Speed Event on Sunday 30th and Monday 31st August, provided it was run according to the prevailing social distancing anti-Covid 19 guidance. Although parts of Greater Manchester were under local lockdown, we were still OK at Barton to run an outdoor event for up to 30 people. So, following a briefing on the posted Club Social distancing

rules (www.controlline.org.uk) and signing everyone in, we got on with it.

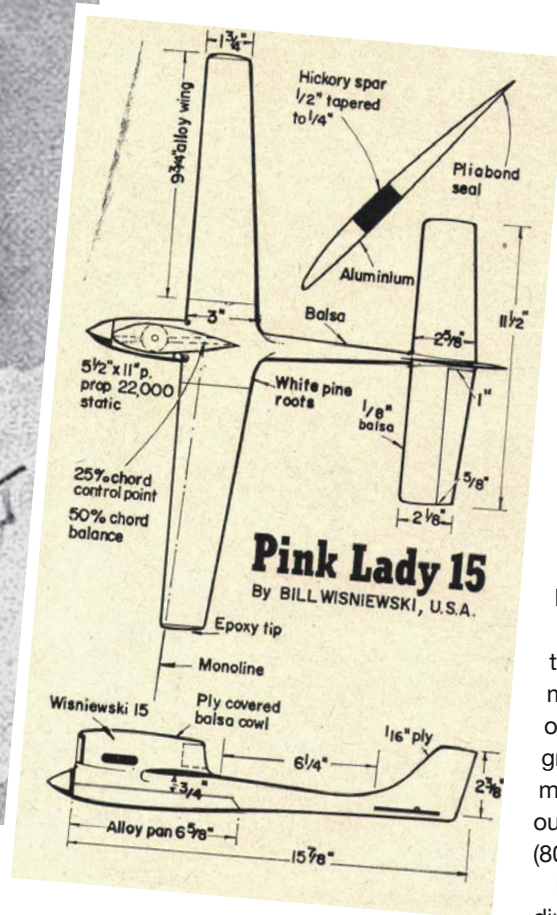
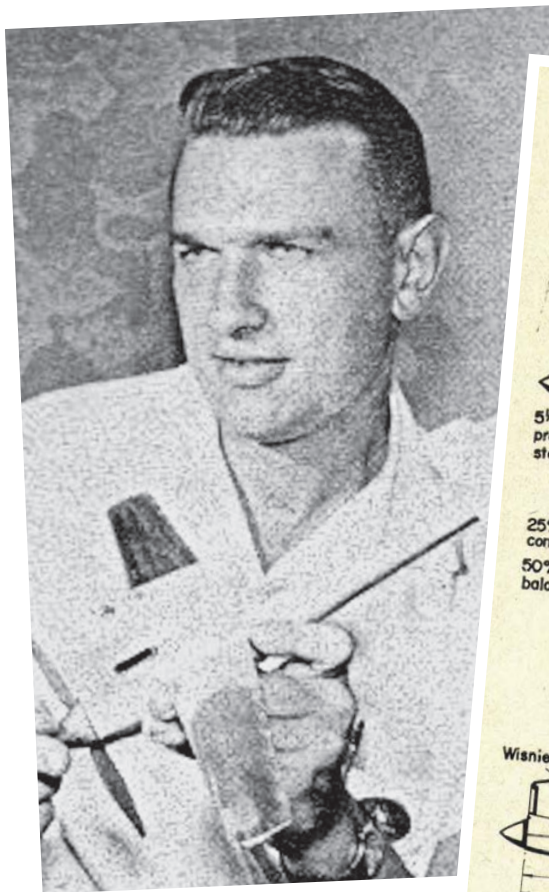
Barton Club Speed

The first competition was Barton Club Speed. This Club class is for 1.5cc plain bearing engines, glow or diesel and engines of choice seem to be the PAW 1.49 and the Cox Tee Dee 09. To level up the competition the winner is the entrant with the highest percentage of their previously recorded personal best. You therefore don't have to be the fastest to

Malcolm Ross with his PAW 1.49 powered Pink Lady. Malcolm would in more normal times be seen Team Racing. Club Speed is an opportunity to keep those racing skills honed while social distancing.



Liam Hartwell flying his PAW 1.49 powered Mini Goodyear model.



Many think that Bill Wisniewski's Pink Lady should have been the winner at the 1960 World Control Line Speed Championship in Hungary (See AM January 2018). Bill went on to win in 1964.

is possibly the first with a British diesel.

Derek Heaton came second with another genuinely nice little model, perhaps influenced by Italian FAI models of the 1970's. Also powered by a PAW 1.49 Derek has been steadily tweaking the tank position to improve performance and managed 97.52 mph for 106.2% of his previous best.

Coming third was Liam Hartwell, the youngest competitor by a country mile. Liam has made steady progress over several seasons coached by his grandfather Ken Morrissey, and he managed to pull his best performance out of the bag for this event, 105.2% (80.09 mph).

No event is successful without efficient direction and Len Morrall has made Barton Club Speed exceedingly popular with his friendly but no-nonsense oversight. There were 16 entries and everyone enjoyed themselves despite the need to observe social distancing rules.

Open Speed

After a short break for lunch the action

win, you just have to be the most improved.

On this occasion Malcolm Ross finally managed to get his lovely little Pink Lady model with a PAW 1.49 to run well, so well in fact that Malcolm has the honour of being the first to beat 100mph (100.45mph) in the four years we have been running the event with a staggering 122.2% of his previous best. The Pink

Lady is an iconic 60's-70's era speed model design by Bill Wisniewski of the USA which he used to win the World Championships. A later version of this model was also the first to successfully employ a tuned pipe. It has since been built in variants from 0.049 to 0.65 cu in. although Malcolm's



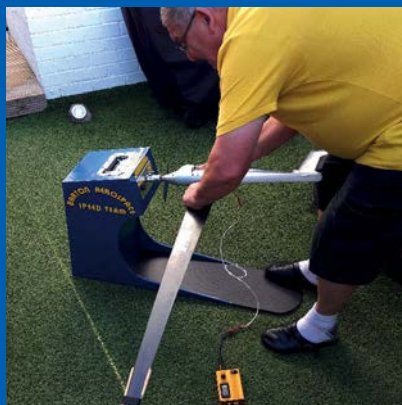
Len Morrall and Andrew Watson time a competitor.



Derek Heaton and his PAW 1.49 powered Club Speed Model.

Control Line Competition

Barton Club Speed 8/30/2020										
Name	D/G	Check	Flt1 Sec	Flt2 Sec	Flt3 Sec	Best Sec T	MPH 1908.5	Previous Best	% Improvement	
L Hartwell	D	✓	24.74	24.16	23.83	23.83	80.09	76.10	105.20	3
M Ross	D	✓	19.00	n	n	19.00	100.45	82.19	122.20	1
M Bellamy	D	✓	25.23	24.42	27.90	24.42	78.15	n	n	
L Court	D	✓	26.15	26.17	n	26.15	72.98	85.39	85.50	12
M Fitzgerald	D	✓	30.11	32.77	35.95	30.11	63.38	n	n	
K Morrissey	D	✓	ATT	27.16	ATT	27.16	70.27	91.71	76.60	13
D Goddard	D	✓	29.18	29.78	29.00	29.00	65.81	68.55	96.00	6
D Cannon	G	✓	23.72	n	n	23.72	80.53	93.20	86.40	11
C Martindale	G	✓	22.06	n	n	22.06	86.51	97.00	89.20	10
T Millar	D	✓	25.43	25.82	n	25.43	75.05	73.23	102.50	4
J Bradley	D	✓	ATT	24.05	23.79	23.79	80.22	88.32	90.80	9
N Frith	D	✓	26.66	27.28	26.54	26.54	71.91	n	n	
D Hart	D	✓	23.11	23.25	23.37	23.11	82.58	86.20	95.80	7=
D Heaton	D	✓	22.06	20.33	19.57	19.57	97.52	91.84	106.20	2
A Watson	D	✓	26.76	26.62	23.76	23.76	80.32	80.63	99.60	5
J Pinkerton	D	✓	25.39	24.20	ATT	24.20	78.86	82.30	95.80	7=



Chris Martindale's one man operated speed pit box under test. It can have a rope attached so that another person can drag the box out of the circle from a distance.



Nigel Frith (right) and pitman Ken Morrissey with Nigel's F2G just after Nigel's record run pre-Covid 19 late last year.



Ollie Witt with his upright Sport Jet model at the previous meeting.

moved to the Number 1 caged circle for Open Speed. The competition was run as a handicap record ratio event using BMFA Record Data. We set up the Transitrace, briefed everyone again on safety and social distancing, then made a start.

Chris Martindale has made a self-starting device for propeller driven speed models which allows a single pit man to start and release a model and its first try out was with Andrew Watson's F40 entry. The self-starter worked like a charm and made short work of starting the mini piped .40. If you have seen some of Chris' other models and gadgets you would not have been surprised with how well the starting system worked.

Nigel Frith has taken up F2G (electric CL Speed) with a passion over the last few seasons and late last year set a new UK record of 278.4Kmh. He made a number of successful practice and official flights over the two days and came within a whisker of his record recording 99.2% (276.2Kmh). This put Nigel in first place for the Open competition.

Sport Jet

There were six Sport Jet entries, four of which were newcomers. There should have been more, but Chris Martindale and Barrie Lever were heavily engaged in their learning curves of running the Transitrace and helping to start the jets respectively. We did allow proxy pilots just as long as the entrant was part of

the pit crew. The beauty of the jets is that the person actually starting has to hold the model whilst the person with the ignition box is at the end of a 3 meter lead, so maintaining a 2 meter distance is straightforward. If the sport jet heads themselves were not anodized, then the one man set up used for the fast jets would work. The fast jet heads are un-anodized since it is common to reshape and polish the intake. The spark box negative low-tension circuit is made when the air probe touches the intake. No modification of the intake on a sport jet is allowed so the anodizing has to be intact.

First up with a Sport Jet was Ken Morrissey with his model which is a derivative of the Pod Racer design by Jim Booker from the USA. Ken made two perfect flights reaching 98% (147.1mph) to place second in the competition.

Barrie Lever flew for Dick Hart who made two flights with a ratty looking model which originally belonged to Jet Bill Capinjola built to Lenny Waltermath's original Tarfu design. This model holds the UK record with the same pilot, but the magic was missing on this day and the Tarfu could only manage 143.3mph for 95.5% and third place.

Then it was the turn of the newcomers, of which Ollie Witt is by far the youngest so he got roped in for pilot duty for all four of them. He took his own model to third place at 92% (138.1mph). this is a Dick Hart design upright model originally built by Barrie Lever and powered by a

Barton MFC Open Speed Competition 30/31 Aug 2020					CD Dick Hart					
Name	Class	O/P	Round 1	Round2	Round 3	Best	Record	%	Comment	
Paul Bardoe	SJ	0	137.20	ATT/ATT	ATT/134.6	137.20	150.10	91.40		
Ken Morrissey	SJ	0	146.00	147.10	n	147.10	150.10	98.00		
Dick Hart	SJ	0	143.30	142.70	n	143.30	150.10	95.50		
Ollie Witt	SJ	0	135.70	134.30	138.10	138.10	150.10	92.00		
Ed Needham	SJ	0	134.50	ATT/ATT	n	134.50	150.10	89.60		
Paul Harvey	SJ	0	123.00	131.00	n	131.00	150.10	87.30		
Barrie Lever	SJ	0	ATT/	n	n					
Chris Martindale	FJ	0	n	n	n				Busy on Transitrace	
A Watson	F40	0	139.30			139.30	185.58	75.00		
Nigel Frith	F2G	0	261.2Kmh	276.2Kmh	266.4Kmh	276.2Kmh	278.4Kmh	99.20		
World Record Attempt										
Morrissey/Hart			176.30	180.70	182.30	182.30				
	Weather: Wind 0-5mph S Dry 9/10 Cloud									
	70.7 F	44.3%RH	47.4 FDP	.32VP	30.04" Hg	20.52 %O2	1090'DA	ADR 98.7		

Hobby King motor. He then flew Paul Bardoe's model which is a Dick Hart sidewinder design in a very fetching pink. Powered by a PCPJ Sport Jet it managed 91.4% (137.2mph) for fourth place. Ed Needham's model is a Robert Bolton T34 powered by a Hobby King

and managed 89.6% (134.5mph). Peter Harvey's model is another Dick Hart upright and powered by a Hobby King engine. He managed 87.3% (131mph) in his first two flights with the model.

Jet speeds were not fantastic because although the weather was kind to us, the

barometer was through the roof and this always affects the performance of the jets to a greater or lesser extent. A good time was had by all and it was great to see the rookies learning their craft. ■

EXTRA - World Record Attempt!

A new World Record Claim for control line pulse jet speed has been filed by Ken Morrissey and Dick Hart (Morrissey/Hart Speed Team) following a successful attempt at Barton on Monday 31st August. The speed achieved was 293.3 Kph (182.3mph). The World Record is currently open and the team are working to improve the record next year. Although the weather was dry and the winds were light, the barometer was pretty high at 1017mbar and this usually means it is difficult to get the pulse jets to run at their best.

The model was designed and developed by the team over more than eight years. They have had some obstacles to overcome as the project progressed, not the

least being the size of the model. The rules state that the wing loading of the model must not exceed 100g./sq.dm. and so, for a model weighing well over 1000g. with fuel the wing area is huge compared to a regular fast jet speed model. The team would like to thank John Bristow of Deluxe Materials for his sponsorship.

The engine was made by Jet Bill Capinola shortly before he died and the fuel was 60% Nitromethane and 40% Propylene Oxide.

Barrie Lever was the Directing Official nominated by the BMFA, Chris Martindale was the Transitrace operator and Ollie Witt was the scrutineer. Barrie Lever and Ollie Witt were also the height judges. We will update you on our progress in a future issue.



Ken Morrissey signals he is ready to go as Dick Hart puts on some fire protection.



Dick Hart (L) and Ken Morrissey (R) should look even happier than that after their World Record Attempt, but they were exhausted! Note the larger than normal wing area.

Eric and Ernie, and not forgetting FRED!

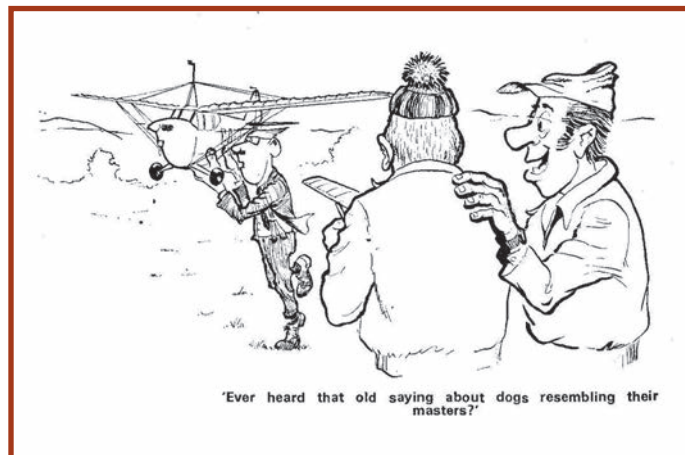
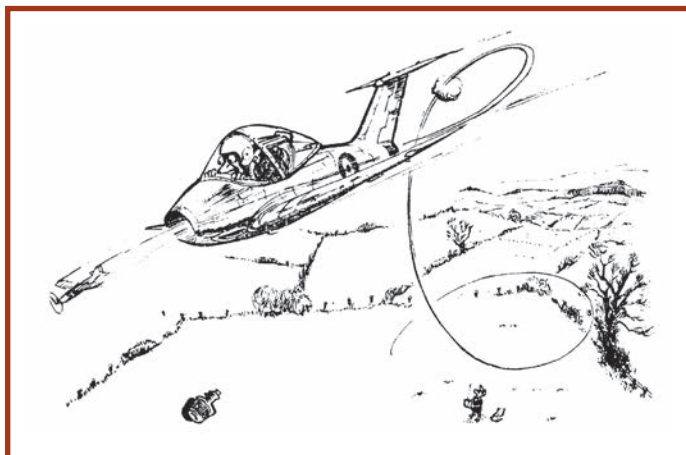
No, not Morecambe and Wise. Eric Clutton reminisces to the editor about his old friend AeroModeller cartoonist Ernie Sherry and their early exploits with full size aviation

Most modellers will know of Eric Clutton as the designer of the iconic Sharkface. This was back in the mid 60's

when single channel models were often nothing more than guided free flights. With Sharkface, Eric produced one of the first extreme sports flying models capable of aerobatics from rudder

only control. Other designs from Eric's pen include the similarly nippy tailless Tadpole, and quirky free flight designs such as the all-sheet Fishface and four winged Kwod.





Ernie Sherry produced various cartoons to go with the original publication of Sharkface in July 1965 AM.

Usually with the by-line 'Sherry', Ernie produced a long running series of witty cartoons to accompany the Topical Twists column.

Eric is now 92 years old, an ex-pat Brit who emigrated to the USA in 1983 and currently lives in Tullahoma. He has not given up on his British aeromodelling ways; many will know Eric as Doctor Diesel. For many years he has been the PAW diesel distributor in the USA and advocate of all things diesel powered. However, in his advancing years he has admitted to embracing electric power in many of his new models.

Ernie Sherry will be well known to long term AeroModeller readers as cartoonist for the Topical Twists column from the 1960's to the 80's. I doubt his style has ever been equalled, and certainly never bettered, as a cartoonist who both understood the subject of aeromodelling and its tribes, and was funny!

Eric tells me he has lost touch with Ernie Sherry since he moved into a care home in the UK. If anybody knows how to contact Ernie or a member of his family, please get in touch with the editor.

I'll let Eric set the scene and remember how his friendship with Ernie developed with their joint aviation projects.

"Ernie Sherry was in the publicity department of the Michelin plant in Stoke so got a lot of practice in the cartoon business, making him better than me at it! He was married and I was not (I managed to dodge it very successfully).

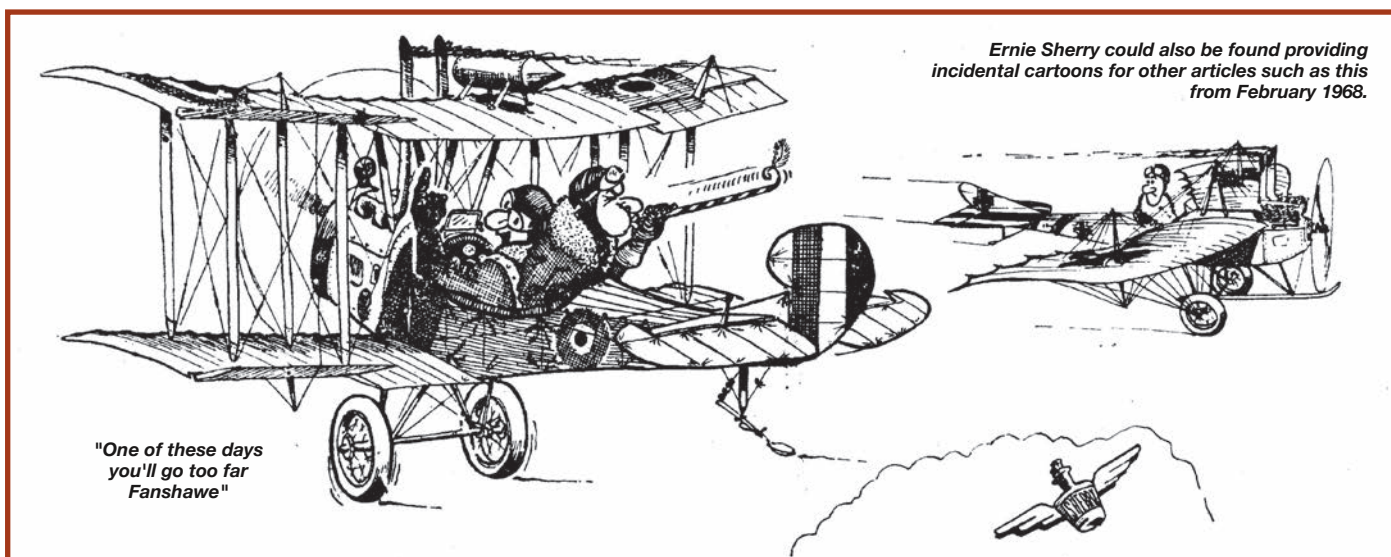
"We first met when we were both members of the Midland Gliding Club at Long Mynd. I was there every weekend for about ten years, but Ernie's marriage commitments would not allow that. We got together at other times and originally were looking at a building something we could glide in, a scaled down Slingsby Skylark with a prone pilot, but perhaps it was just as well we did not proceed with that. I also did some drawings of a tandem wing glider

Hang Glider

"We then got involved in a project

straight out of Jules Verne – or was it Walt Disney? Ernie was a fan of high aspect ratio wings and me of low aspect ratio (a bit like Laurel and Hardy I guess). Ernie got started in building a pair of strap-on wings so I helped him – a sort of latter day Lillienthal. Control was by weight shift and with a root chord of not much more than a foot and high aspect ratio I didn't think it would work. I was right! We took them out to those lovely hills around Buxton and ran down the slopes with the wings strapped on. I never had the courage to lift both feet off the ground at the same time.

"One time I had just run down a steep slope and then staggered back to the top of the hill looking like the angel Gabriel with 40 ft. wings sprouting from my shoulders. As I came over the brow of the hill (attired in wings and goggles) I could see that a large number of Sunday motorists had stopped by the roadside, wide-eyed at the sight I presented. The



Ernie Sherry could also be found providing incidental cartoons for other articles such as this from February 1968.

"One of these days
you'll go too far
Fanshawe"



Ernie Sherry strapped in to the glider wings with help from Eric Clutton. Photos from the mid 50's.



Eric captioned this as 'Ern's corset shop!' Ernie seen constructing the strapping to attach the glider wings to the pilot.

opportunity was too good to miss - I made sure to shout to Ernie that it had been 'a bit rough over Derby!'

"Then Ernie had a determined go. We wore motorcycle helmets and when he lifted both feet off, the inevitable happened and he nosedived into the soft turf! He came out with a noise like a cow dropping a load and that was all the testing for those wings.

Birth of FRED

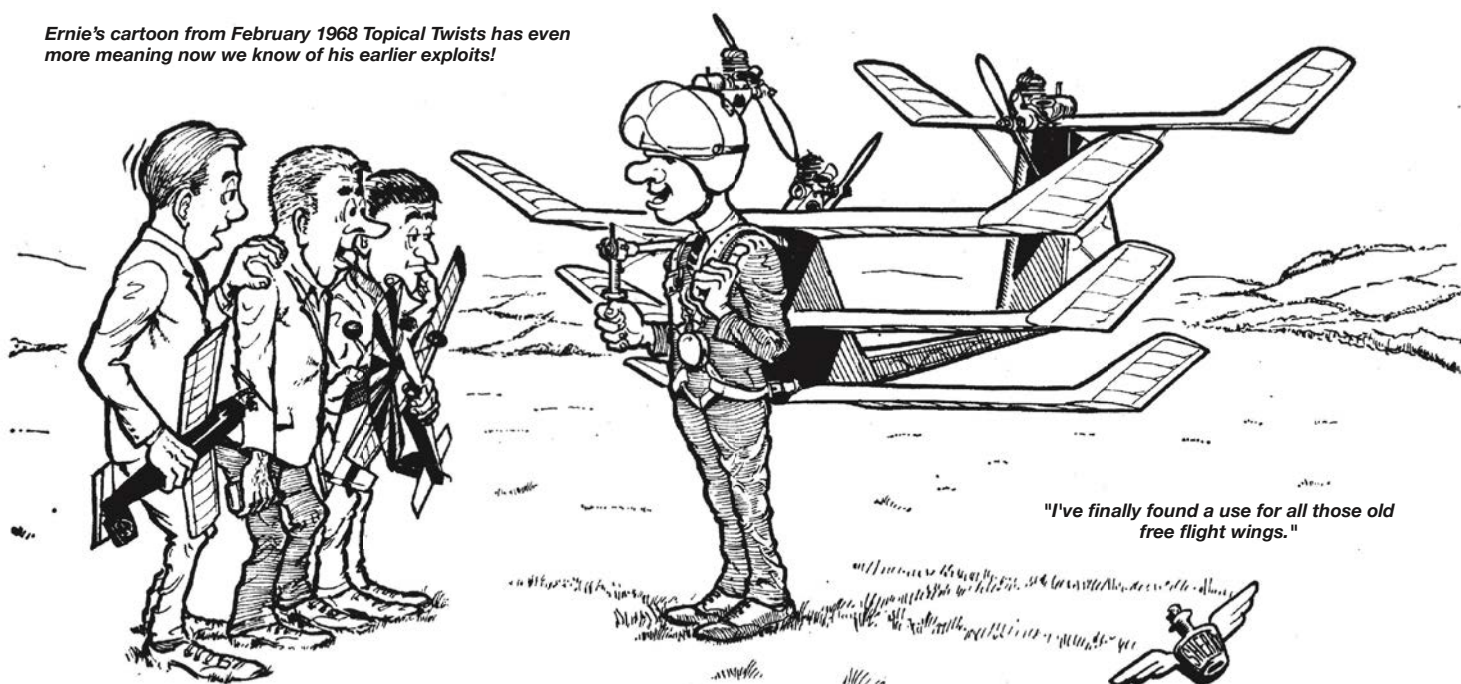
"Meantime I had found a copy of Mignet's book on the Flying Flea in the local library and I knew we could do better than that in many ways, so FRED (Flying Runabout Experimental Design) was born. Because of our gliding heritage he was made with detachable wings and tail and made to tow on his own wheels. We started to build in a room over a pub in Newcastle also used once a week by our local model club (Five Towns) although we were there most nights. Eventually we had to move and stored FRED parts across the road at a Salvation Army place, then did a 'midnight flit' to the other side of town where I had a friend Arthur Evans who had an upholstery business. He carried a couch in the back of his van and his tale was that it was to stop the van bouncing although we knew that the van did more bouncing when he was in the back with his girlfriends! FRED's airframe was completed there, then Arthur left for Australia so we had to move again. This

time to a rather bombed out string of stables near the Stoke cemetery. At this time I had a motorbike and sidecar so FRED was towed on the road.

"Now we came to the requirement for an engine, Mignet's book showing the way, so a used Triumph twin engine was found and fitted with a chain reduction exactly like Mignet used. This was necessary because the Triumph liked to run at 6000 rpm! Anyway, it all worked and several trips were made to various diused airfields for testing. At this stage FRED never got airborne but when we stopped at a pub on the way back from Chetwynd a local fellow came in and wanted to know who owned the Punch and Judy Show outside!

"On one of these trips Ernie stayed out longer than he was allowed and I didn't see him for a week or two. When I did, I asked him what his wife had said and he replied "Nothing, for two weeks!" Shortly after that a friend of mine got interested in FRED and made Ernie an offer. It was one his wife couldn't refuse so that is when Albert Tabenor became involved. Albert was able to make a very welcome insertion of cash and was a really good welder, plus owning a big old house with stables at the back converted to workshops. If this sounds familiar it is because just less than a mile away from Albert's place was R.J. Mitchell's old home with a similar conversion! The Triumph gave up the ghost and was replaced with another engine but it was a

Ernie's cartoon from February 1968 Topical Twists has even more meaning now we know of his earlier exploits!

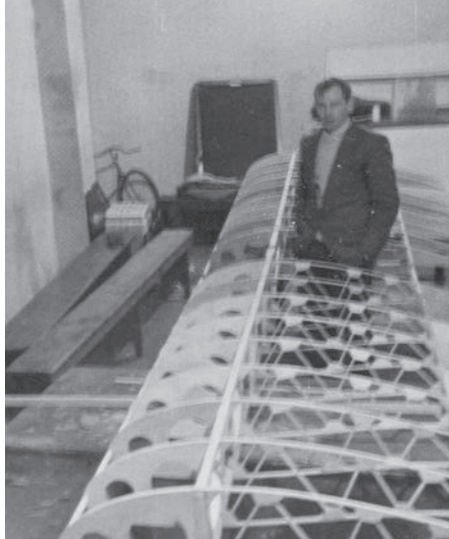


bit of a lash up and although FRED was now flying it was a long way off reliable and my gliding experience came in very handy just about every flight.

"Ernie had actually made the first 'hop' in thick fog and we could only tell by looking at the gaps in the tracks on the grass as the fog cleared. I was sufficiently encouraged to make the first 'proper' flight after that. Albert Tabenor knew a lot of people in the garage game and one of them gave us a new unused Scott engine designed for the Flea. FRED flew quite well with this engine but it was a two stroke with a built in reduction drive of 2:1. A lovely piece of kit but the aluminium castings of the 1930s were not like today and when it failed I donated it to the Shuttleworth Trust in exchange for a tour around their workshops!

FRED Migrates

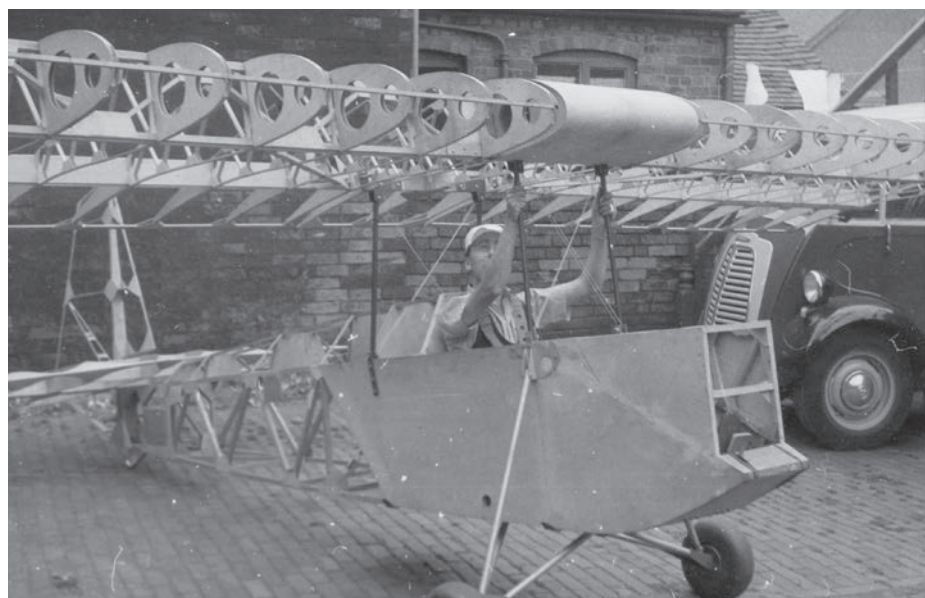
"I had started to visit the USA on the cheap jet flights and started to import used aircraft engines into the UK. One was a 50hp four-cylinder Franklin and I got that rebuilt by some friends at Rolls Royce who did a great job using similar car engine parts for bearings etc. FRED flew for several years with this reliable engine. I even got a cup for longest flight into Dunkeswell from a disused airfield near us! The Franklin was eventually replaced with a Continental 65, also with the Rolls Royce touch and I have always considered this to be the finest small aircraft engine ever made. I made one test flight in England just before leaving to live in the US where I was followed by FRED who was shipped over with



Ernie standing (apparently trapped) in the structure of FRED's wings, probably in the room upstairs of the old pub before the move to the upholsterer's. The wings are in fact in two pieces.



Ernie caught working on FRED's centre section.

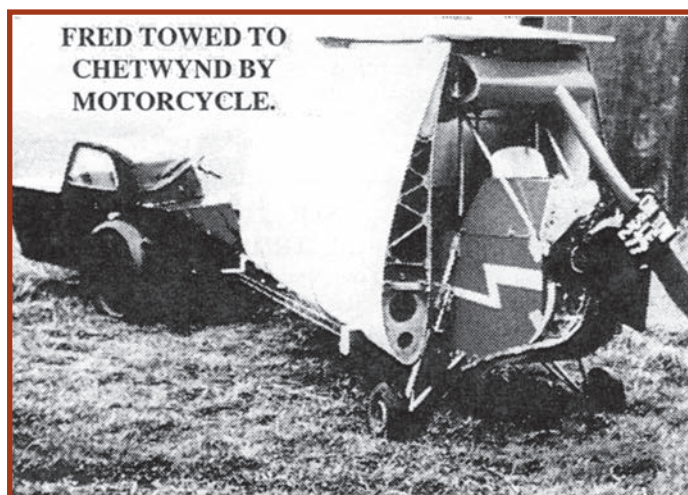


Ernie with the rigged FRED airframe in 1961.

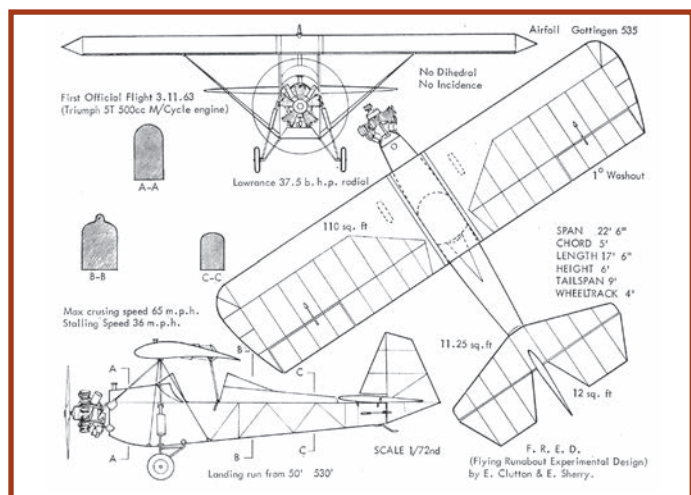
the help of friends in the Birmingham area. Since then FRED has done much carefree flying all over the place and after twenty years the Rolls Royce/Continental has not used a drop of oil! I simply changed it twice a year.

"Ernie and I kept in touch for many

years because he lived just around the corner from my younger brother and when my brother died from Alzheimer's (ten years younger than me) I still kept in touch with his widow who kept a watch on Ernie. Ernie had a daughter and she called me to tell me that he had gone



Yes you can tow a full-size aircraft using a motorcycle-sidecar combo!



A 3 view of FRED appeared in the AM Annual 1968-69. It is a modeller's aircraft in all senses.



FRED flew in to the 1975 PFA Rally at Sywell and became the cover star of May 1976 AM. Resplendent in its WWI German camouflage and flown by Eric the FRED Baron!



Eric Clutton continued to fly FRED until his late 80's.



Eric has produced various sizes of mini-FREDS as RC models. This one is powered by a PAW 19 RC diesel engine.

to an assisted living place in Stoke (his wife had died a few years before) and I managed to keep in touch with Ernie for a while after that, but my letters now get returned.

"I gave up fullsize flying about three years ago and sold FRED to another Brit down in Palm Beach, Florida. I also sold my dear old Luscombe to another guy not far away in Tennessee but I have not seen it since. I am sure I could still pass the flight physical but had to realise I would not be able to keep up with their maintenance because I already had loops of rope to haul myself aboard both of them!

"I have three RC models of FRED. One is the cartoon version where I modified the wing fixing to elastic bands, and one is painted in WW1 colours like big FRED was at one time (when I was the FRED Baron!) The other one is in the all yellow Canadian training scheme as currently sported by big FRED.

"That's about it and I believe that there are about 60 FREDS flying in the world with one in a museum and a couple being rebuilt!

FRED Book and Plans

"By the way, my book, AN AEROPLANE CALLED FRED is available from me at \$15.00 plus shipping. The LAA stocked my book for a while but quickly ran out of stock and I am sure they are not keen on an aircraft you keep at home and tow

out to any suitable field to fly! They are not modellers!

"FRED plans are still available from me \$60.00 and they include a copy of my FRED book which has many useful photos. Airmail shipping across the pond is usually around \$20. Almost 60 sets of plans have gone out and the usual rule of thumb is that one out of each ten sets results in a flying aircraft."

Eric Clutton

913 Cedar Lane, Tullahoma, TN 37388
USA. doctordiesel@cafes.net

There is a non-commercial web site created by FRED enthusiast Matthew Long in consultation with Eric Clutton. This site is the product of Matthew's desire as a FRED fan to spread the word about this often overlooked but eminently fun and practical little airplane. cluttonfred.info

Email from Ivan Taylor

In September issue the Aeropost letters page featured a letter from Ivan Taylor. This is Ivan's follow-up;

Dear Andrew,

Below my pendulum letter last month was another contribution from Eric Clutton. He probably doesn't remember me but I remember him and other members of the Five Towns Club. I actually lived on Meir Aerodrome in a



This electric powered RC cartoon FRED built by Eric in the last year is an adaption of a Stevens Aero kit.

Barry Fletcher (see this month's Tail End Charlie) built this neat rubber model of FRED.



small cottage adjacent to 2 T2 RAF hangars. I was about 9 years old when I first saw Eric and the others on Meir. My Uncle Fred virtually ran the airfield, along with the Council grass drying plant. My father was often called out on a Sunday to pull out one of the ATC static winches from a boggy bit with a tractor.

These were great days for me, including a trip in Bill Nadin's private Auster. Bill was in charge of the RAF Gliding Schools in Staffordshire, I believe he flew Sopwith Camels in World War 1

and told my father of his experiences. This was all in the mid to late 50's.

Years later I happened to be on Meir, trimming my early Wakefields when Eric arrived with "FRED" and I'm sure I helped him in some way. I believe this flight may have been the last flight (unofficial) from Meir. There were some real characters in the Five Towns Club and I think Eric was top of the list. A great guy.

Ivan Taylor

Finally, this piece is by Eric from an article in the AeroModeller Annual 1968-69 on aeromodellers who build their own full size aircraft;

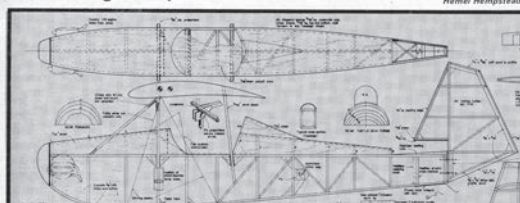
"Oh yes, I still manage to make toy aeroplanes as well—wouldn't be without them in fact. The strange thing is that I became involved in full size building through my modelling activities and because of my involvement in big stuff I can honestly say that my workmanship has improved, and I now make better models." ■

A 33in. span rubber powered flying scale model designed for the Arden power unit.



FRED

Designed by Trevor Faulkner

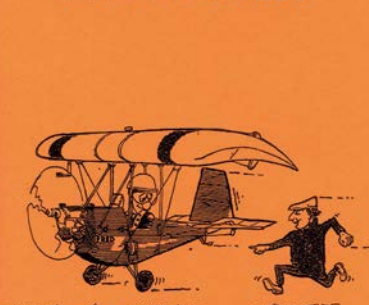


FRED'S EXISTENCE began via the pages of the Flying Modeler magazine in 1968-69. Design by Messrs. showed a delightful light plane with stant chord wing. Gottingen section rather too close to comfort, and a semi-circular top. I decided to build a model with trim adjustments for my limited skills. Only other scale I own-design 'Kanu' this had shown models could survive their return to the ground. Because of the decision was in control surfaces provide washout flying wing via the stab section, (i.e. means of the ele angle was only to thought it likely camber and inc considerable later.

Full size copies of 1/5th scale are available at £1.95 plus 40p our Plans Service. Hemel Hempstead

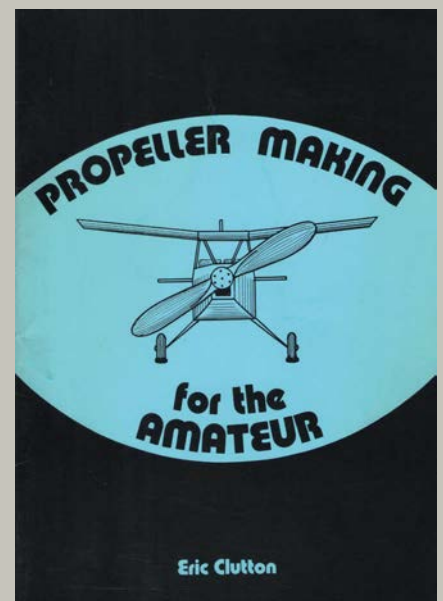
Trevor Faulkner designed a 33" span rubber powered version of FRED which was published in December 1981 AM. This is available as an X-list plan FSR1426 from Sarik Hobbies www.sarikhobbies.com as is a 45" span RC model by Colin Reynolds plan MW3426.

AN AEROPLANE CALLED FRED.



ERIC CLUTTON

If you have enjoyed this short biography of the development of FRED, you will undoubtedly want to read this longer autobiography of Eric's life, his wartime work at the flight sheds at Meir Aerodrome near Stoke, the many iterations and escapades of FRED and it's power unit, and his time in the USA. A thoroughly recommended read.



Eric has always been 'hands-on' when developing his aircraft and this includes making propellers and sharing that advice with others.

SUPERMARINE

PART 1: Ivan Taylor shares the build of his new flying scale S5

The Supermarine S5 is, in my opinion, a lovely looking aeroplane, and I only choose prototypes that have a strong aesthetic appeal for my scale subjects.

About 4 years ago I built a rubber powered S5, which was about my 4th scale model. It proved successful and finished well at the Nats and other contests. When I had finished the model I took it over to my friend Gavin Manion's house to show him what a good job I had done. Having placed the model on his lounge table I was expecting a "Wow, that's nice" comment. (Gavin can always be relied upon for a useful honest appraisal of my Scale efforts.) "Oh dear," he said, "it looks like something out of an airline showroom, not like your FW190. I can't smell the oil, it's not real!" So, I did some work on the finish and it was much better. Thanks, Gavin.

After a season or so I got bored with the relatively short duration (about 40 seconds or so.) I installed a mini-Mills replica .5 and, with some correction to the CG and a slight upthrust, which I had found essential on the rubber version, went trimming. It was a lovely low drift evening and after 3 flights a good trim was found – just an extra 1g of lead in the rear would make it spot on. My thinking was not to risk another flight and wait for the space of an airfield. However, the lead was



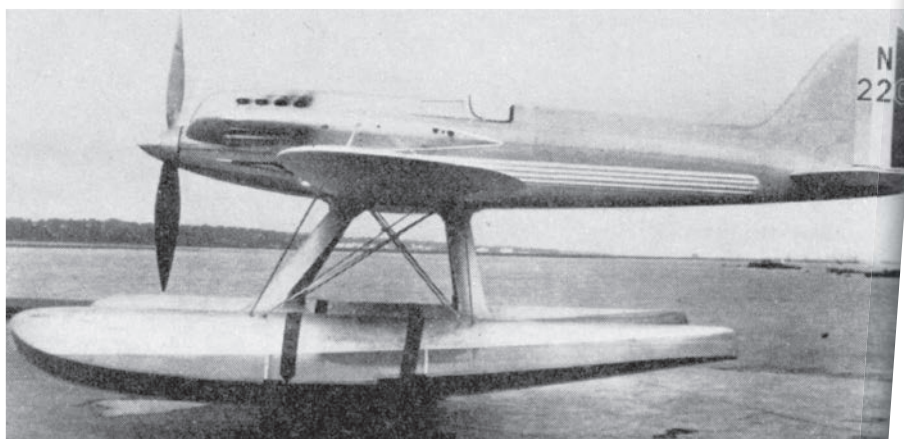
THE S5



Ivan Taylor's S5 airframe is a joy to behold.

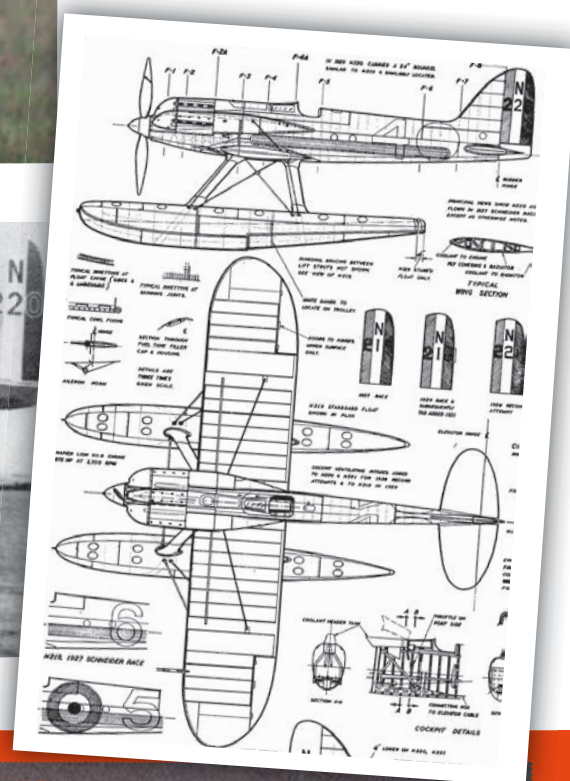


Ivan's earlier rubber powered S5 being retrieved at the 2015 August Nationals.



Ivan used the Aircraft Described of the S5 in August 1963 AeroModeller for reference.

installed and David (my trusty helper) and I watched a cracking flight that will always stay in our minds. The Mills had been highly tuned in-so-much that I had overdone the easing of the sticky contra piston and resorted to carefully superglueing the slack contra piston to an ideal setting. It is to the credit of the inherent quality of the engine that it started and ran just fine without any compression adjustment. After a minute or so the flight was over the wooded area and on a nice glide down. The story of the search is long: 8 visits in all, including a camera equipped drone – result one



1: The engine compartment is tight for either of the considered engines, but OK. The exhaust will exit through 2 of the 3 banks (not visible in this photo). I use obeche block (hard) for engine bearers plus engine plate as normal. **2:** The all moving tailplane is pivoted on a 1.5 mm carbon rod into alloy tubes, adjustable to find the trim. I don't use elevators for trimming as this can destroy the effectiveness of the tailplane as a stabiliser.



3: The underside view looks a bit of a nightmare. I made a jig for accurate alignment of floats to fuselage. The use of carbon and the wonderful triangulation make for very good rigidity. The black patch is tissue over yet more holes! Very light block balsa then hollowed gives accuracy for the complex shapes, as well as structural strength. **4:** The D box gives great torsional rigidity which helps keep the model on trim when flying time arrives - no warps. Block balsa wing tips give accurate contours, the block then being hollowed for lightness. **5:** As an aside, a gadget tip! The inner part of the top (which is blue) of the small Morrisons water bottle can be used to make a replacement Mills 1.3 tank, with minimal work. **6:** It seems a pity to cover such a fine structure, but that's what the next issue will describe.

lost model. No address label, no tracker, bad initial retrieval technique – a very amateur effort by me, including too much fuel in the tiny tank.

After the lockdown build of a Camel – not yet flown – I spotted the static scale prop from the S5 in my workshop. I drew up a new design for diesel power up to the size of the first model – 36" span to suit the scale prop. The floats and struts are stronger, using carbon tube and rod. The fuselage and float structure were designed with the filler

on tissue technique in mind, which I hadn't discovered when the original S5 was built. I have paid more attention to accuracy, both with regard to scale and to building. Important changes are the offset starboard float and no dihedral – as the prototype. (No cheating whilst in flight.) The position of the vertical CG is most important for lateral stability. Keeping the overall weight down, I am hoping to be able to add some lead in the floats to help lower the CG. All the block balsa has been hollowed and the

majority of the balsa is 5lb cf.

The engine will be either a .5 Mills or a .5 PAW, depending on the final wing loading and power needed. The basic structure (minus strut fairings) with the PAW is 9.6 oz with the CG on the LE. With the 25% CG position required the finished model should not need any longitudinal ballast. Having taken these photos I can now unplug the wings, remove tailplane, etc. and start covering.

To be continued with details of Ivan's finishing techniques. ■

PEANUT STAMPE SV4

An easy-build foam semi-scale 13" span model of the Stampe SV4 by Chris Brainwood

The inspiration for this model came from an old aeromodelling friend, who having just moved to a new house was stuck for a model to fly at an indoor meeting. His

answer to this was to build a peanut sized biplane in a day from polystyrene sheet and fly it with great success. The techniques are nothing new, in fact my friend has models he made 30 years ago using the same method but I thought

a model using these techniques would make a great beginner's introduction to indoor flying or even just a quick build fun model. My version is based on the iconic Stampe SV4 but the basic design could easily be tweaked into many

Chris Brainwood has caught the essence of the Belgian Stampe biplane in his simple to build peanut size model.



Radio Models Expo & Barnstormers Flying Display

SYWELL, NORTHAMPTON, APRIL 2/3rd



There are plenty of colourful schemes for your Stampe SV4 if you like a challenge! The Rothmans display team on the front of the programme for the 1972 Model Expo at Sywell.

different biplane designs, whatever takes your fancy.

The basic construction is very simple; the main structure is from polystyrene foam sheet, the type sold on roll as 2mm thermal insulation under-liner for wallpaper, stuck together with Copydex. When I measured the sheet I had bought it was actually 1.5mm so I have used this dimension on the plan, if your sheet is 2mm I doubt it will make much difference.

Construction

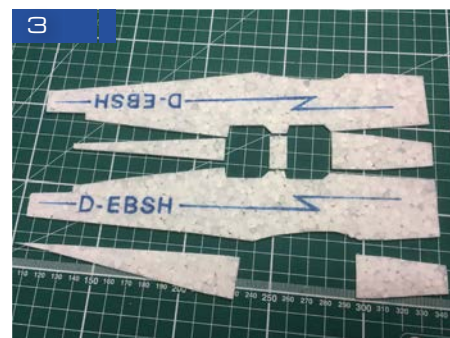
Construction is started by tracing out the parts onto the polystyrene sheet and then cutting them out with a craft knife. This is also the best time to add any markings to the model while everything is flat and easy to work on. Permanent markers work well and most don't affect the foam. I found a range of colours in my local art shop and went for a royal blue to match the blue of the original. To make life much easier I cut out the registration letters and side stripe from a copy of the plan and used this as a stencil which saved a lot of polystyrene sheet being wasted trying to get it to look neat and was very easy to do. The wing and tail markings were drawn on and simply coloured in.

Next the 1/32" sheet balsa stiffeners were added to the inside fuselage sides along with a small square of 1/32" sheet for the rear rubber motor peg. These are stuck on with Copydex. A hole was drilled through while it's flat to take a short length of aluminium tube for the motor peg, but a short bit of bamboo skewer would work just as well. The 1/32" sheet stiffeners for the nose were added too and once that was done the fuselage could be built into a basic box.

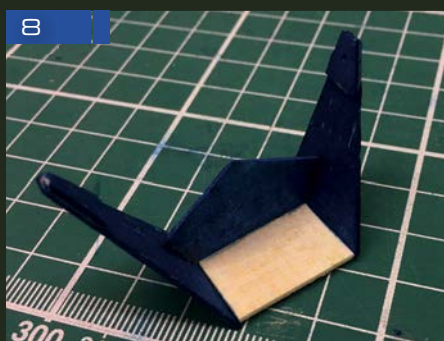
The Copydex works very well on the

polystyrene but you do need to let it dry before you join the parts and then you really need to get it in the right place immediately, there is no adjustment with this contact adhesive method. I began by building the rear section first as it has both a top and bottom panel to help form its shape. Applying a fairly generous amount of glue to the bottom panel edge where it contacts the fuselage side and lining it up while wet so the glue transfers to the fuselage side worked well, the parts were then separated and once the glue has dried the part could be offered up again for the one hit contact fixing. I repeated this on all the edges, making sure to get a right-angled joint until I had the pointed tail end of the fuselage. The front end was done in the same way but I did this over a cutting mat so I could line it up with the tail section using the lines on the mat, making sure by eye that the fuselage was straight.

The cabane strut assemblies were made up over the plan from some 1/32" x 3/16" cut from sheet and joined to the centre section rib - note the notch in the rib for the mainspar. The balsa was coloured with marker pen before gluing them together with some cyano, this avoids any uncoloured areas around the joints. These are then attached with



1: These are the main raw materials you need. Around £5 will buy a 10m(!) roll of polystyrene 2mm sheet. **2:** Making a stencil from a photocopy of the plan for the registration letters. **3:** Fuselage parts laid out. **4:** Stiffening strips of balsa applied to the fuselage before assembly. **5:** Fuselage is built up over a cutting mat grid to make sure it's all straight. **6:** Cabane struts assembled with top wing rib using cyano/superglue.



7: The cabane struts are stuck to the fuselage sides using Copydex. **8:** Undercarriage assembly - colour with marker pen before gluing together. **9:** Wheels are lightly sanded to shape and coloured with marker pen. **10:** Dihedral is added by propping at the correct tip lift of 1" on bottom and 3/4" on top. **11:** A small wedge of slimmed down balsa is used the space the wings spars apart to give the correct dihedral angle. (Bottom wing shown) **12:** Once the dihedral has been set the centre section foam with its balsa stiffener can be added to the top wing surface.

Copydex to the fuselage paying great attention to the angle of incidence on the top wing lined up. I pinned the cabane down over the plan applied the Copydex and let it dry, and then positioned the fuselage over the plan so it all lined up

finally pressing it onto the strut assembly. The undercarriage structure was built in the same way using cyano. The axle is from a steel guitar string with some additional 1/32" patches where it passes through the undercarriage and where it

contacts the central former. The wheels are made from 4 layers of polystyrene sheet glued together with Copydex, sanded to shape (use a dust mask) and coloured with marker pen.

The wings are cut from the polystyrene



sheet so that the curve from the roll they have been sitting in helps form the airfoil section. A spar of 1/32"x 1/8" is attached to the underside of each wing butting together in the centre. Do not glue this join, to achieve the correct dihedral angle a small piece of balsa is added as a wedge between the two spars. With one wing held flat there should be 1" on the lower wing and 3/4" on the top wing when measured at the other tip. A centre section of polystyrene sheet with a 1/32"x1/8" stiffener was then attached to the topside on each wing by gluing it on the outer edges where they contact the wing. The lower wing centre section fits inside the fuselage and has the stiffener on top. The wings are glued on using Copydex lining it all up over a large cutting mat to make sure it's all square. The curved joining surfaces on the fuselage and centre rib will help form the curved airfoil section.

The tail and fin are cut from polystyrene sheet. Simply bending the polystyrene tail back the other way from the way it has been rolled gently flattens it out. Note that the curve of the sheet is used in the fin to give some turn as well as offsetting it slightly when attaching it to give 1/8" left deflection.

The nose block is from 1/4" balsa with some 1/8" square attached to the rear to



locate it as a snug fit into the fuselage.

Propeller

The propeller is very simple to make and starts with two blades cut from 1/32" sheet. To get the correct curve to them, find a circular tin or bottle about 3 1/2" in diameter. Draw a vertical line on the side and then another line at 15 degrees to the left, do this the same on both sides of the tin. This will give an efficient shape to the blade for anti-clockwise rotation. Soak the balsa blades in water for a few minutes and then tape them,

one on each side, to the tin or bottle so that the centre line of the blades follows the 15 degree line. Once it has dried a cocktail stick can be glued to the rear concave side of the blade following the centre line. The hub is a small section from a biro/ball pen centre, the cocktail stick should be a tight push fit into the tube. The blades are left separate to each other so some adjustment to the propeller pitch can be made. I found something around 40 degrees pitch worked well.

The hub is drilled in the centre to take



13: Adding the wing centre section reinforcements, note glue on the edges only. **14:** Nose block is located with some 1/8" square balsa. **15:** Propeller blades soaking in water, note 15 degree line marked on the tin. **16:** Propeller blades taped to can in line with the 15 degree line to dry. **17:** Cocktail sticks are cyanoed to the rear concave side of the blades. A section of ballpoint pen inner tube forms the hub. **18:** Completed prop - the loop on the front allows the motor to be wound without removing the nose block.



the 20swg prop shaft, which is bent up according to the plan. I've formed a loop at the front so a winder can be attached without having to remove the nose block from the rubber motor. A commercial nose bearing was used to mount the prop into the nose block but note the down thrust and right thrust when drilling the hole for it. I did this by eye lining it up over the plan to give 3 degrees down thrust and 2 degrees right thrust.

Flying

You should now have a complete aeroplane. My model came in at around 6g without the motor. I found the best motor to fly the model was a simple loop of 1/16" rubber 13" long and weighing 1.2g. If you use this motor then the model balances with the CG rear of the centre section without the motor fitted. If you use a different motor then use the actual CG point and balance it with the motor installed. This motor gave excellent performance with ROG flights of around 50 seconds on about 1,000 turns.

After some initial test glides the model flew straight off the board. My model is set up to fly in small hall just one Badminton court wide so it has a relatively tight turn, as well as the left rudder already mentioned about 1/16" of wash in is bent into the lower left wing. This slight increase in the angle of attack will help keep the inside wing up in the turn. There's a video on YouTube of it flying at an OFMAC meeting earlier this year just before the lockdown <https://youtu.be/DZgsBmlaR7I>

It's a lovely slow flyer and has proved a fairly reliable performer but one note of caution. The polystyrene sheet is very soft so collisions with walls, ceilings or table legs can move things around a bit and may require a bit of a retrim. After a few attempts at nesting in the rafters and bouncing off a few walls at my local indoor venue my Stampe now needs extra packing in the nose block to maintain the correct thrust angles.

On a calm evening it goes very nicely outdoors too! ■



Prop: 5" or 6" plastic 'Peck' style will be more effective than 'Sleek Streak' style.
Check bore size for propshaft fit and adjust wire to suit or carefully drill prop to suit wire.

al block: start with $2\frac{3}{8}" \times \frac{5}{8}" \times \frac{1}{8}"$, chamfer $2\frac{1}{8}"$ dihedral each side (approx. 15°)

single loop and experiment!

Fuselage stick $12\frac{1}{2}" \times \frac{3}{16}" \times \frac{3}{16}"$ medium firm

model will depend on rubber
front of fuselage stick to l.e.

Fin $2\frac{3}{4}" \times 2\frac{1}{8}"$
grain vertical
glue on right
side of
fuselage
stick. Use $\frac{1}{32}"$
8 lb/ft³ or
lighter.

Rear motor
hook and
tailskid bend
from 0.75mm
piano wire

↑ Forwards

Tailplane $7" \times 2\frac{1}{8}"$ glue
under fuselage stick. Use
 $\frac{1}{32}"$ 8 lb/ft³ or lighter.

All wood balsa unless otherwise stated.

ply

$2\frac{1}{8}"$ tip dihedral
each side

Rib $\frac{1}{8}"$ firm 4-no.

Rib profile shown is 10% thick at 40%
chord - you can experiment!

↑ Forwards

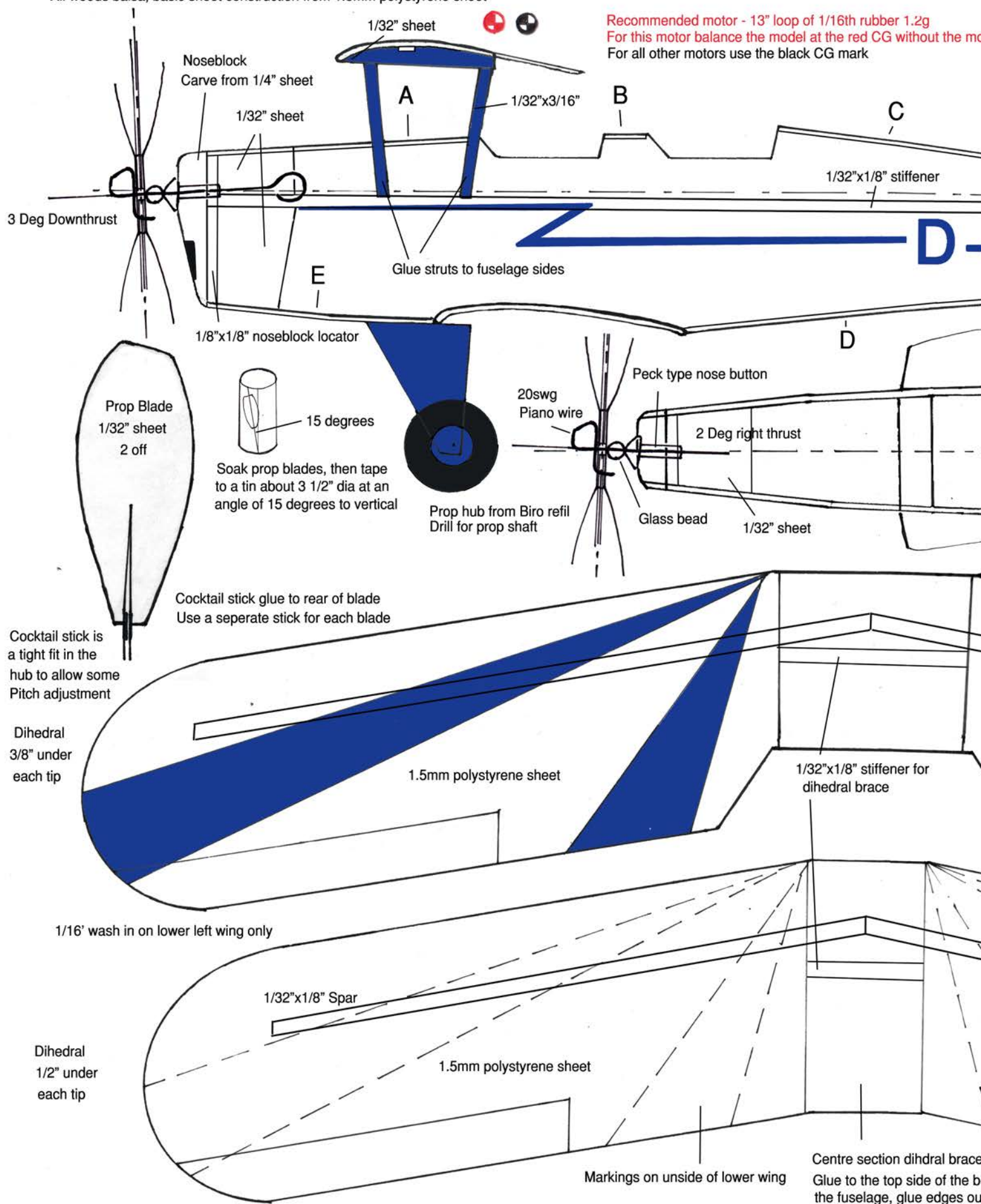
If possible, build wing in one piece by glueing to ribs while pinned to board at l.e. and t.e. When set, razor saw through centreline. Attach dihedral block to one side while still on board. Release and attach other side to set dihedral. Block will squash camber locally to form rigid dihedral brace effect.

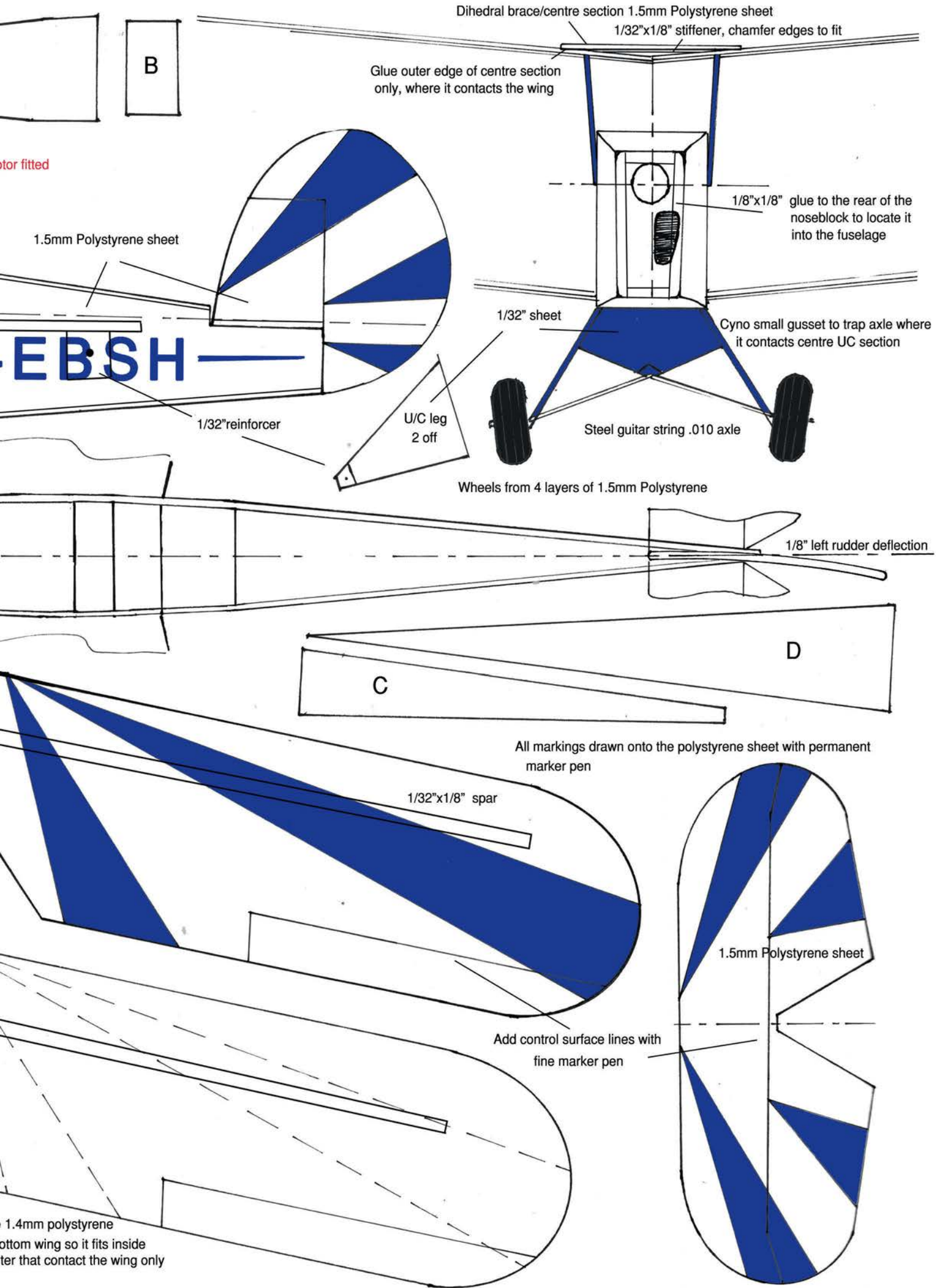
Stampe SV4

Designed by Chris Brainwood

13" Span semi-scale Peanut rubber indoor model

All woods balsa, basic sheet construction from 1.5mm polystyrene sheet

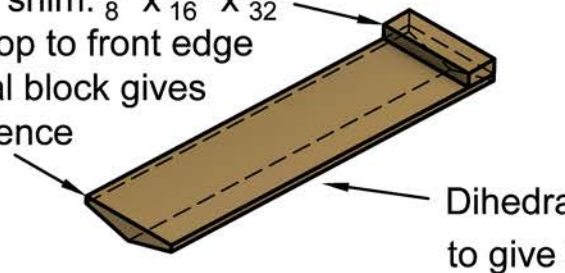




CT-70

based on Cloud Tramp
design by Charles H. Grant
drawn at 70% by Nigel Monk for
AeroModeller 2020

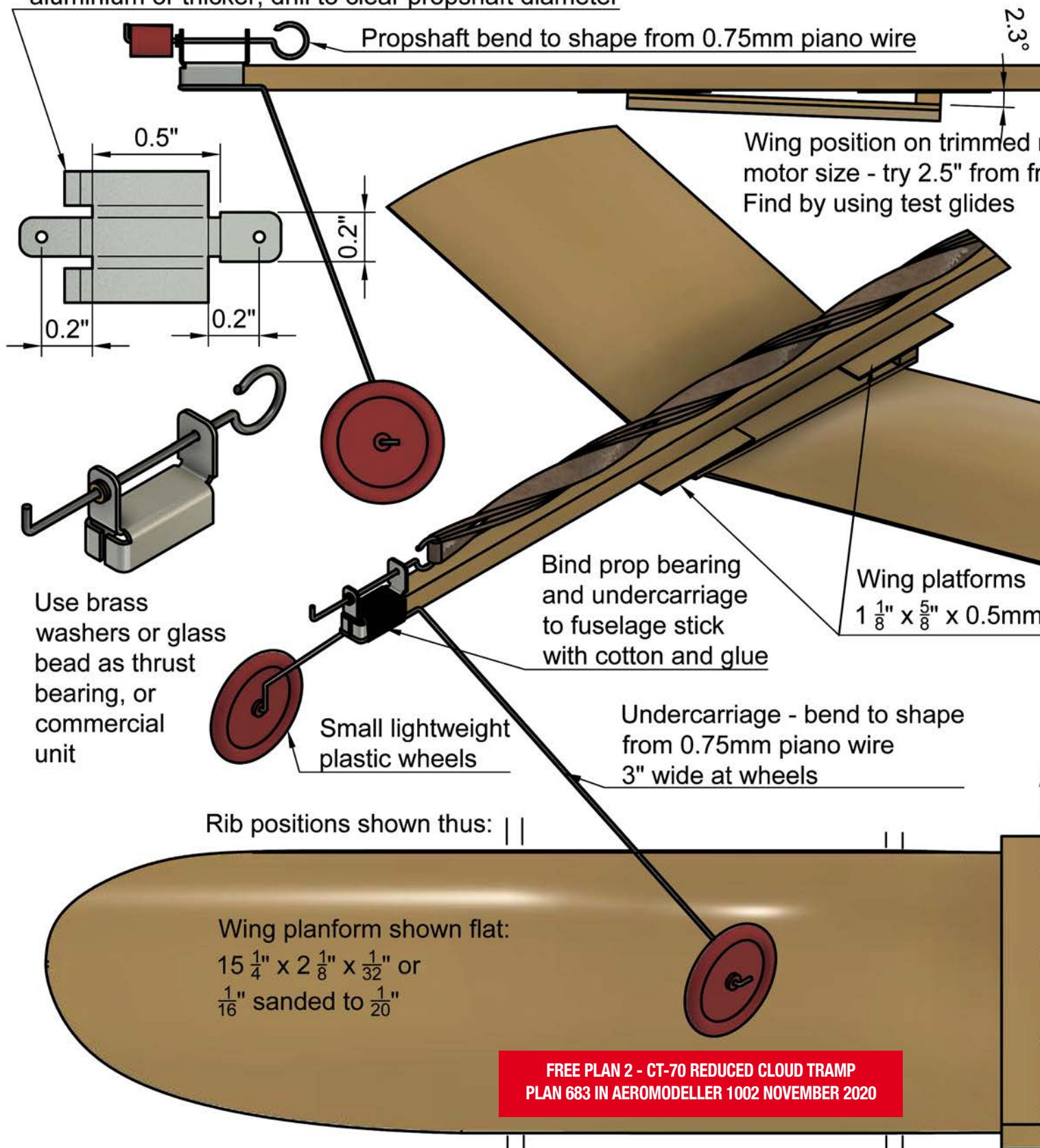
Incidence shim: $\frac{5}{8}$ " x $\frac{3}{16}$ " x $\frac{3}{32}$ "
chamfer top to front edge
of dihedral block gives
2.3° incidence



Prop bearing shown unfolded 2:1 Make from 0.5mm
aluminium or thicker, drill to clear propshaft diameter

Motor: start with $\frac{3}{16}$ " flat s

Propshaft bend to shape from 0.75mm piano wire



Rib positions shown thus: | |

Wing planform shown flat:
 $15 \frac{1}{4}$ " x $2 \frac{1}{8}$ " x $\frac{1}{32}$ " or
 $\frac{1}{16}$ " sanded to $\frac{1}{20}$ "

FREE PLAN 2 - CT-70 REDUCED CLOUD TRAMP
PLAN 683 IN AEROMODELLER 1002 NOVEMBER 2020

CT-70 REDUCED CLOUD TRAMP

Nigel Monk produces a 70% size version of Charles Hampson Grant's Cloud Tramp for the indoor flying season

The Cloud Tramp design has been around for decades and can manage 2 minutes or more outdoors, but lately we have had a couple of reduced size models flying at Alfreton Leisure

Centre our local indoor free flight venue. Recently, I've needed to raise my CAD skills for work so I picked a model to practice on. I've drawn the Cloud Tramp at 70% scale using Autodesk Fusion 360, a professional solid body modelling tool, for which individual licenses can be obtained free of charge. There are also really great tutorial videos available

online. I've only flown my model indoors but there's no reason it can't go outdoors when we get the chance. All credit for the original design goes to Charles Hampson Grant.

Components

Let's gather some parts. The scale was chosen because it suited some spare

The full size Cloud Tramp is a popular model with its own worldwide mass launch event (MIMLOCT) on the first Saturday in August. See www.endlesslift.com This 70% version is certain to be a success indoors.





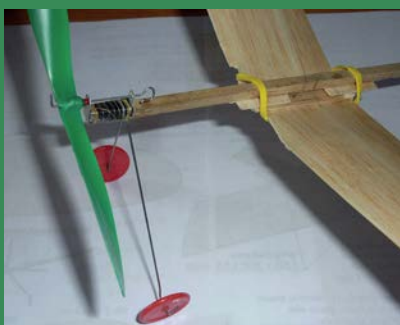
There are plenty of ready to use prop assemblies available, some with bearings and stick attachment included.



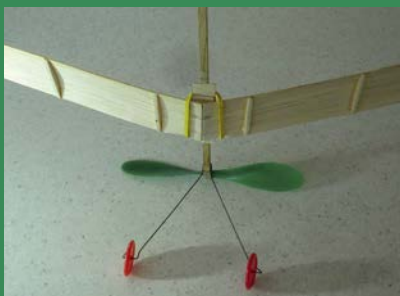
Give yourself room near the fin to attach the rubber motor to the hook.



Initially the wing is held in place by a single band loop to allow repositioning during trimming. An easier peg retention system can be fitted later.



Nigel made up his own thrust bearing and bound it to the fuselage stick. Reinforcing the wing centre section edges is recommended.



The end of the wing joining dihedral block can just be seen in this view.

FREE Plan 2

Sleek Streak legs and prop assembly this granddad had lying around but you don't need to wait until your kids, grandchildren (or parents!) have donated suitable parts. The undercarriage legs can be bent from straight piano wire of about 0.75mm diameter, anything approximating the shape shown will work. Any small light wheels will be OK and, to be honest, the Sleek Streak and similar props are fine but you will be much more satisfied with a "Peck's" type 5" or 6" diameter plastic prop. Propeller efficiency is hugely important, even for this little model. Peck-Polymers products are available from "Wind-It-Up Enterprises" www.wind-it-up.com as you will have seen in their adverts in AeroModeller. FliteHook also offer a suitable range. If you do have an old prop with its shaft and housing still attached, you can easily modify the front of the fuselage stick to fit, no need to remove the housing for the sake of following the plan. Small Guillow models are still available very cheaply.

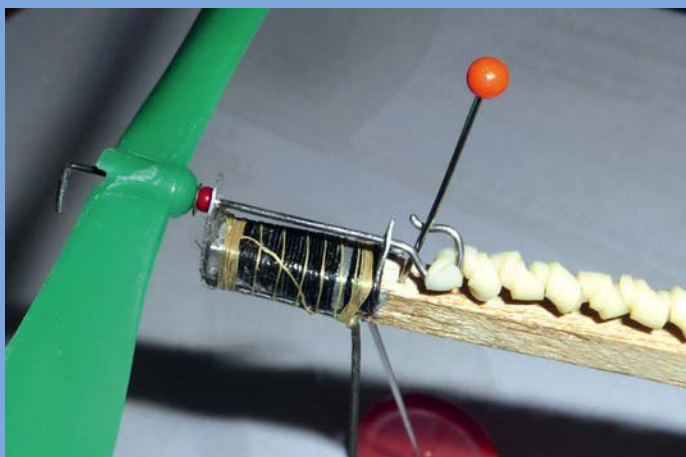
Construction is negligible. The fuselage stick should be medium-firm to resist the motor pull. The tailplane and fin are held straight and square by the side and bottom of the stick. I would angle the rear motor hook away from the fin to give a bit more space for fingers when attaching the rubber. I didn't bind my rear hook, relying instead on a close fit and glue, and haven't had any problems. The tail skid is marvellous for hooking sports-hall net curtains!

The wing retaining band deserves special mention, amidst words of profanity. The photograph shows how a single band loops over the stick fore and aft, so that the wing has to be threaded through onto the mounting plates. I would recommend installing pegs across the fuselage after your favoured wing position has been found from flight testing to make wing attachment easier. I've indicated 0.8mm ply for the mounts to prevent damage from the wing retaining band. The wing may need to be moved forwards or back from the position shown for flight trim on your model. The photographs also show how the retaining band nibbles the leading edge so it may be worth hardening the wing skin locally with cyano or balsa cement rubbed in.

The two slightly unusual parts in the model are the propshaft support and the wing dihedral block. The propshaft support is bent from fairly thick aluminium. It's a small part so even 1mm thick won't weigh much. Drinks cans are not strong enough. Do drill the holes carefully to align the prop axis fairly straight. A degree or two down and right thrust won't go amiss. Bind the support with the undercarriage wires to the front of the fuselage stick with thread and glue or just strong glue. The washers can be replaced with a glass bead or a commercial thrust bearing. Do contact FliteHook because John Hook doesn't list everything on his website www.flitehook.net.



Nigel Monk used the draughting of the CT-70 as an opportunity to hone his Autodesk Fusion 360 CAD skills.



Put a few turns on the rubber to take up the slack then pin the shaft before test gliding.



Some colour to differentiate your CT-70 when flying is a good idea.

Wing

Perhaps the most unusual component though is the wing dihedral block. I recommend making the whole wing in one piece to start with, if possible. Glue in the four ribs and pin down with sticks along the leading and trailing edges to set the under-camber. The rib profile shown is simply a spline curve fitted to 5% thickness at 40% chord but use your favourite profile if you have one. When dry, saw the centreline with a fine saw then glue one side at a time to the dihedral block. The first half to be glued can be left on the board and the block pinned through it until set.

Squashing the wing camber flat against the block creates a double-curvature surface which holds the dihedral very effectively. The second wing half is attached the same way

but with the first half lifted at an angle. Depending how soft or springy your wood is, you may see a bulge outboard of the inner rib, just visible in the CAD renderings. Glue the incidence block to the dihedral block and chamfer slightly towards the front edge. The incidence dimensions are a good start but can be experimented with.

Completion

Finally, using the material sizes shown and assuming 8 lbft-3 balsa but without any glue weight, the CAD program calculates weight as 11g. Mine weighs 13g as photographed (plus 3g rubber). I variously use a length of 1/8" or 3/16" rubber, or thereabouts. That will do for a start but you'll quickly find your optimum through experimentation. The CT-70 size and weight are not dissimilar

to a peanut scale model which can achieve 1 minute-plus flights in skilled hands.

Guides to trimming are numerous on the internet but I would start by winding a few turns onto the motor to keep it in place. Holding the turns on, pin the driveshaft forward so the prop can rotate freely. The photograph shows how. This balances the model in flying trim. Move the wing fore and aft until a smooth glide is achieved – forwards if it dives, rearwards if it stalls. I recommend adding some colour somewhere if you're flying at the same time as others, so you can see which is 'your' model to watch and maybe chase downwind if you're outdoors. Or argue who is stuck in the rafters if you're flying indoors.

I hope you enjoy building and eventually flying your CT-70. ■



Nigel used his CGI skills to produce this outdoor view of the CT-70!

OLD WARDEN POSTPONED SCALE WEEKEND

ANDREW BODDINGTON REPORTS ON THE FIRST (AND LAST!) MODELAIR EVENT OF 2020 AT THE SHUTTLEWORTH TRUST AIRFIELD

Will it, won't it happen? Right up to the Thursday before the weekend of 19th and 20th September we were not sure whether the Old Warden event would be held due to the restrictions and constant changes introduced by the government to combat

the pandemic. Thankfully it did, with a raft of social distancing and safety measures put in place by Model Air and the Shuttleworth Trust to minimize the risk to all involved.

Ken and Sheila Sheppard of ModelAir are to be congratulated for making happen the first outdoor event I've attended in 2020. I know they had

to jump through many organizational hoops, but they came up with a workable system. The RC flight line was moved further out along the main runway than normal, which gave more space for the FF and CL flyers. Parking was also less dense with large boxes marked on the grass for individual vehicles to park.

Before attending there was also the



A lovely collection of Jetex/Rapier models by Roger Simmonds and Daniel Rackstraw from designs by Steve Bage, Richard Crossley, Roger and Daniel. News to me is that there are now alternatives to the Rapier rocket motor made by TSP. See Roger Simmonds website for more info www.jetex.org



Daniel Rackstraw with Me262 designed by Richard Crossley which has a single Rapier/TSP motor in a lower trough.



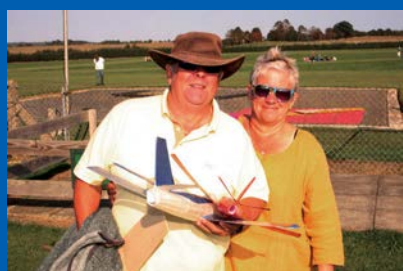
Rob Smith designed the 'XX' Double Cross Fighter plan in the last issue. This is his 4th version finished in a fetching blue combination which has front foreplane RC control and ailerons.



Brian Spencer with larger version of the 3D printed Sabre. More in a future issue.



Dave Rumball waits for a lull in the wind to launch his Sirocco, with timekeeper **Peter Gibbons** in the background.



Brian Spencer with his partner **Alison Feist**. Alison should have been acknowledged as the flying shots photographer for the Double Cross fighter plan in the last issue. Duly corrected!



Tony Rushby with electric winder from a foam RTF rubber model. Flying a 29 year old Playboy he reckons he has just got the trim right! Enough for second place in the main A class.

fear that it wouldn't be the same Old Warden we have come to know and love for more than 50 years. Yes, numbers were down on normal, which is partly due to some of the older or health impaired model flyers deciding to stay away for safety considerations, but the weather was not as helpful as it could be. The sun was glorious but the wind was gusty, averaging around 15mph, not ideal for FF and CL. But many hardy souls decided to fly and the consensus

of those I talked to said 'Yes' this felt like Old Warden!

Thanks is due to the Shuttleworth Trust staff and volunteers, together with ModelAir for making it happen. There were plenty of people on hand to direct traffic and make sure we kept each other safe. The only strange change to mar the efficiency was the closing of the usual exit gate which meant that all traffic coming in and out had to use the same one lane track with blind corners; I could



Good social distancing being maintained by those in the Rubber Bowden.



Pete Fardell flew his much repaired (scale planks on fuselage sides?!) *Auster Agricola* in to first place in Class B.



Trevor Tabor with his Rubberdub won the A class with a variation of just 1 second over two rounds.



John Ashmole acts as his own 'glamorous assistant' to display the SAM35 trophy given to the class winners.

not see the logic in that!

After nearly a year since any outdoor event of this size it was great to catch up with old friends and see models being flown. There was the bonus that the Shuttleworth Trust now include museum entrance in the cost of entry – it is always an interesting potter around the hangars looking at old favourite and new aircraft.

The trade stands had been moved from their front fence position to the area normally reserved for camping. Again, slightly fewer than normal stands but there was plenty of opportunity to stock up on fuel and accessories.

This date had been rescheduled as the Scale Weekend, but the weather and turnout conspired to make it a general

sports flying and low-key competition event with a little scale flying. John Ashmole ably organized the rubber precision event which is colloquially known as the Rubber Bowden. A healthy entry of around 20 models, despite the gusty wind, meant that the main A class for small cabin/high wing duration models was tightly contested. Two flyers

.....
There were two Rubberdubs entered in the Rubber Bowden – this is Charles Field's.



Two AM25 powered Voetsak Tribute entries. They are 70% size of Ron Moulton's original design Voetsak seen in the background.



Team Brian (Waterland and Lever) flew in Voetsak Tribute.



Simon Timperley's nicely finished collection of sport/stunt CL models. We hope to have Simon writing for AM in the future.



Peter Smart with his VMC Minimoo glider, the same size as the old KK Minimoo but it has been improved (the stringers now run straight!) and the kit is laser cut. Peter was using a 2 channel micro RC board from a small RTF model and getting some great flights off a bungee launch. In a future AM we will have a smaller version free plan, the Baby Minimoo.

(Tony Rushby and Trevor Tabor) had an error of zero in a round from the target flight time of 30 seconds, but Trevor won by making a second flight with an error of 1 second to Tony's 3. John Ashmole has done a fantastic job promoting small field FF duration events for many years and is understandably looking for people to start taking on the running of some of the Old Warden, Buckminster and Peterborough events that he has been responsible for. Could you step up to continue the momentum?

The Control Line circles saw the first ever Voetsak Tribute event for the 70% sized Ron Moulton designed Voetsak, powered by an AM 25 rather than the sometimes unreliable Ohlsson and Rice. Ron's son Jonathan was on hand to see the flying of this smaller version of his father's first CL design. The inaugural competition was won by the team consisting of pilot Andy Housden and pitman Ray Ewart with the Trevor Tabor built Tribute. Andy and Ray had

been entering the previous normal sized Voetsak racing class for some years with its requirement for Ohlsson and Rice spark ignition power. They'd never before managed to complete the laps without the engine stopping, let alone win the competition!

With the cancellation of both the BMFA FF and Power National events the STC (Scale Technical Committee) had quickly reorganized some of the championship FF scale events once lockdown eased. As part of this was it was planned to undertake the static judging of the premier Open Scale event during the Old Warden weekend. Several factors conspired to mean that Mike Smith was the only entrant for judging with his marvellous DH4. I know that some potential competitors did not attend due to health concerns, other because of the short notice, but some regular entrants are not happy with the rule changes this year and had made a conscious decision to miss it. I hope that by the 2021 FF Scale season the concerns of all who fly FF scale are brought to a satisfactory consensus to give a healthy number of entrants both regular and new. ■



Scale judging for the Open FF scale class. From the right, Paul Briggs hovers to orientate the model and make sure it is not tipped by a gust, while Paul Rich and Doug Hunt judge the model against the scale documentation. This is Mike Smith's US Mail Airco DH4.



Ray Ewart pitman is shown with the Trevor Tabor built Voetsak Tribute which was flown by Andy Housden to win the inaugural competition. They ran their AM 25 with a Taipan 8 x 6 propeller.



New to Old Warden hangs on 9th September 2020 was the Travel Air 4000 with a pretty colour scheme crying out to be modelled!



Mark with Jasmine and James were making the most of the included entrance to the museum.



Chris Howell's semi-scale Grumman Avenger carrier deck model. It is converted from a Hobby King RC YAK 55 by reshaping around the edges and adding bits. It has already won competitions as it excels at the slow laps, although not so fast at the top end.



From the Feltham club Nigel Thorpe (left) and Mark Legg were taking the opportunity to practice their combat flying. Normally the Sunday at Old Warden would see the competition for the Oliver Trophy but with Social Distancing not possible when flying combat, this was some consolation.

SCALLOP DECORATION

Dave Banks is the designer and builder of many exquisite small flying models. Here Dave explains how he produces the scallop design

I have been approached by a few people on the flying field asking how I achieve the scalloped decoration on my models. Having seen a method described in an earlier model magazine which involved fairly complicated and time-consuming use of geometry I will describe a simpler method that I use. As a general rule I use the wing rib spacing as the scallop spacing but you are free to determine the spacing to suit.

The best idea is to use the original

plan or make a sketch first to rough out a design with a pencil. You will need the following:

- An airbrush [the simple external mix type works fine for this]
- 20 thou plastic card or a thick plastic container
- 24" steel

straight edge

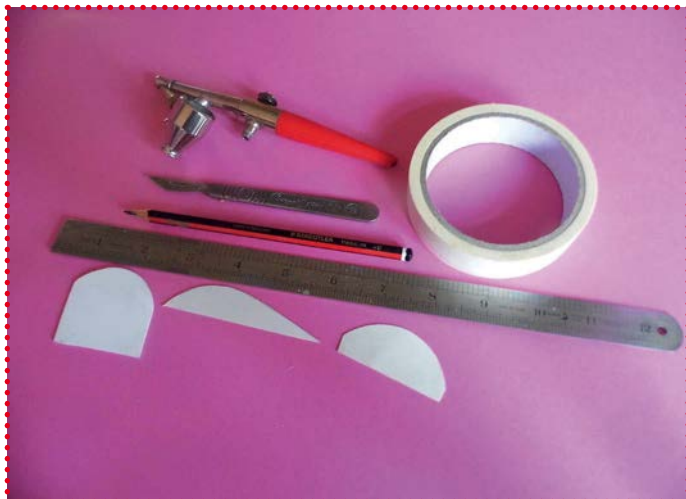
- A clean dust free cutting board
- Scalpel with new blade
- Soft lead pencil HB or B
- Old newspaper
- 2" wide masking tape

For clear doped tissue or film covering I use cheap masking tape from one of the Poundland type shops and this works fine. If you are painting over an existing painted surface it may pay to use a more expensive low tack tape such as FrogTape.

Template

Firstly you will have to make up a semi-circular cutting template from your plastic card using a circle cutter or marking it out with spring-bow compass and then cutting with a scalpel. As a guide the radius should be the scallop pitch divided by approx 1.6. Once cut, smooth

Dave Banks is the designer of the popular Miss 35 model, free plan in February 2019 and also available as a kit from Belair www.belairkits.com



Gather together the items you will need to go scalloping! At front left is the plastic card template for the wing scallops.



Using the model's wing to directly mark the rib spacing on to the wide tape.



A straight line has been drawn far enough back from the top edge of the tape to allow the template to fit. To avoid over spray getting on the model the text suggests having a sheet of newspaper attached under the lower edge of the tape.



Repeatedly cut around the plastic template aligned with where the line crosses the spacing marks to produce the scallop mask.

the edges of the template with fine sandpaper.

On your cutting board lay out a sheet of newspaper equal to just over the half span

of your model and using a 10mm overlap attach the tape to the newspaper long edge. Now mark the scallop spacings on the tape, using the rib spacings or markings on the plan. Alternatively transfer the spacings directly from the model itself.

Using your template make sure there is enough distance from the leading edge of the tape to take the scallop depth. Now draw a straight line to intersect the spacings along the length of the tape. All you need to now do is to lay your template at the intersections and cut around it. You will end up with a mask similar to a sixties style pelmet!

If you are doing an elliptical or curved

wing you can draw the line using the wing Leading Edge.

Using a soft pencil mark two points on the wing the required distance back from the LE, one at the root the other at the wing tip. You can do similar when spraying the tail. These form the guides for applying the masking. Apply the mask ensuring that the edges are well pressed down.

Many people are put off using an airbrush but if you follow some basic rules you will find it quite straightforward.

They are:

- The airbrush components must be scrupulously clean.
- The paint used must be free of any contamination and thinned to the right consistency which approximates to that of full cream milk.
- The air pressure needs to be set to

suit the suit the equipment you are using.

If in any doubt it is better start off with the paint slightly over thinned, testing on a piece of paper and gradually adding paint in small increments until satisfied, rather than under thinning which results in a blocked airbrush and consequent re-stripping and cleaning.

If it is your first time spraying it is worthwhile spending a spare evening practising on some paper before attacking your model. It is also important to keep the airbrush moving in a series of sweeps to ensure even coverage and spray at an angle away from the masking. **See Fig 1.**

Unlike use in a graphic studio your airbrush will not be in continuous use and will need to be stripped down and the components individually cleaned

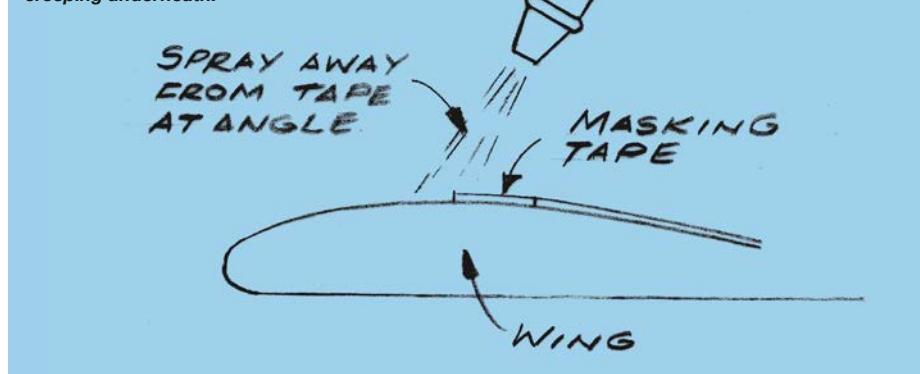
before being put away for your next model. I always give mine a quick blast of thinners as a check that it is working okay.

Paints

Note that not all paints are suitable for use in airbrushes. Some of the acrylic paints that are sold in model and art shops are for brush application only. I find the following work okay: Tamiya acrylic, colour dope, car finishing cellulose and acrylic, and Humbrol enamels. All can be thinned with a good quality non-bloom cellulose thinner. Also remember when spraying over an existing painted surface to check for paint compatibility as this can cause a real disaster. Note that car acrylic paint is highly toxic and requires a face mask - a good idea with all your painting.

I hope that I have covered all that

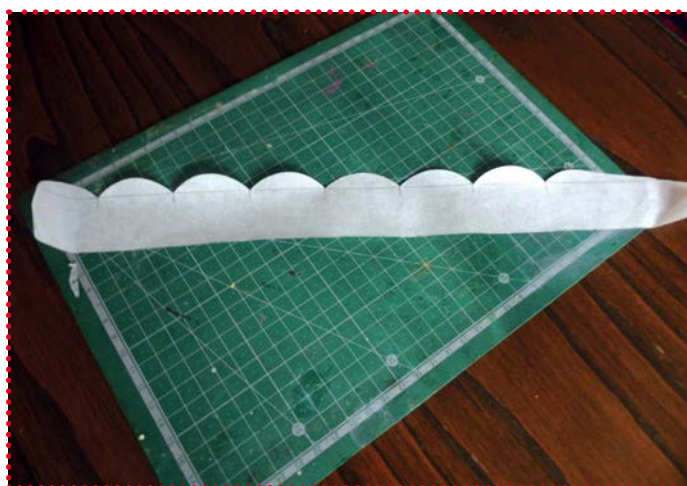
Fig 1. Spray away from the edge of the tape to avoid lifting the edge and the paint creeping underneath.



you need to get you spraying. Further information can be gleaned from the excellent earlier airbrush articles by Richard Crossley in October and November 2018 AeroModeller. The Airbrush Company website www.airbrushes.com is another useful

resource.

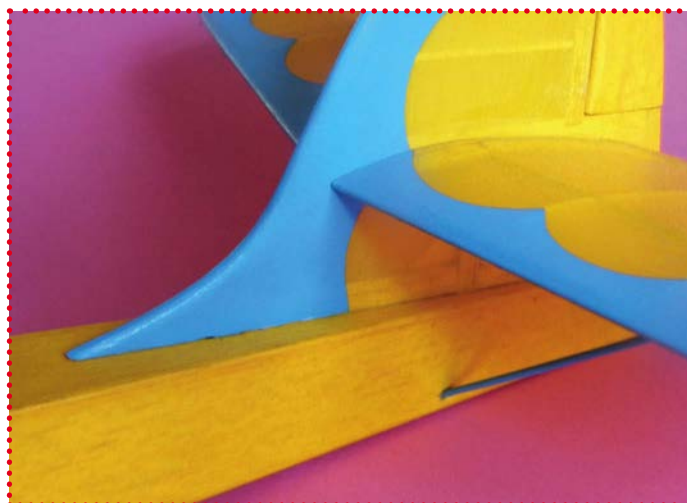
The above is just a guide as to how to go about it, you may want to adjust and modify to suit your personal preferences. Good luck with your models and remember "it's just a load of old scallops really!" ■



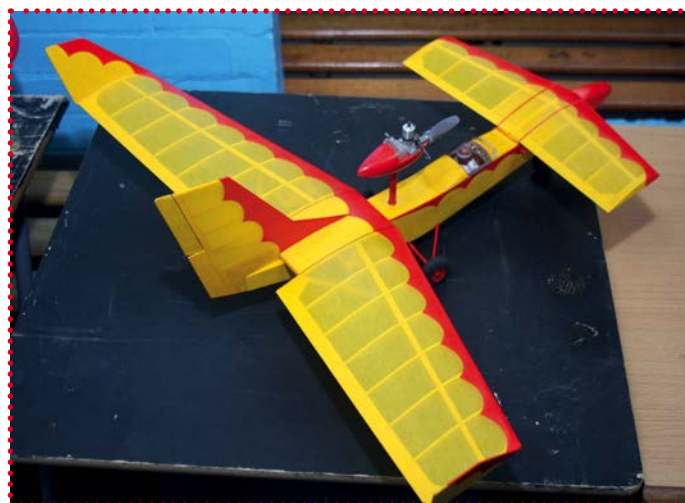
The scalloped sticky tape mask ready to be placed on the model. Take your time when aligning the mask and once in place carefully burnish the edges down.



Once you have sufficient coverage of the scallop colour remove the tape, remembering to avoid smearing the paint from the tape on to the wing if it is still wet. If you are not as precise as Dave with your spraying, then newspaper at the lower edge prevents overspray.



Other plastic template shapes will probably be required to help cut masks for 'fiddly' areas.



Dave's trademark scallop finish can be seen on most of his sports free flight models.

AeroPost

Do let us know your thoughts on AeroModeller and aeromodelling in general. We're happy to receive post to the Doolittle Media office address, or emails to editor@aeromodeller.com – all are read although you may not get a reply. Featured letters may be edited.
Regards, Andrew Boddington

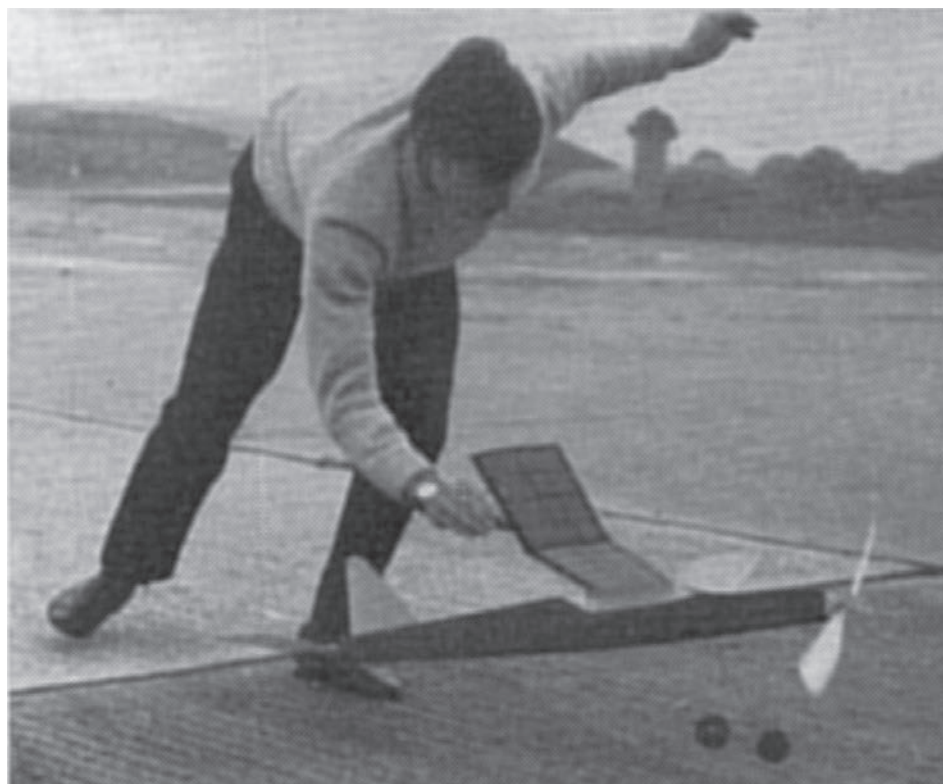
BROOKLANDS MEMORY

Hello Andrew,

Re: the picture top right of (1000) September's page 70 in Peter Scott's APS article - the RAeS Weybridge contest winners from 1968, it was for under 18s. I remember the event well and was able to speak about it at a Weybridge RAeS meeting in 2018, 50 years after the original contest. I remember seeing Peter's Red

Admiral (covered in red tissue) which was a much more attractive aeroplane than my effort. Here's a picture of me releasing my model for the winning flight on the Vickers Brooklands runway. I was back at Brooklands today - I steward regularly at the Museum.

Regards, Mike Fantham



Mike Fantham releasing his model to win the RAeS junior modellers competition in 1968.

1000TH CONGRATULATIONS

Dear Andrew,

Congratulations on the 1000th issue of Aeromodeller magazine! I've been a regular reader since your reboot in 2013 plus some boxes of old issues purchased at swap meets. We in the former colonies have absolutely nothing to match it. A few special interest group newsletters that are great but AeroModeller is just such a swell all-round publication that I don't see how any modeler should be without it. Hats off to you and please do keep up the great job you're doing!

**Best regards, James Conery
Atlanta, Georgia, USA**

Thanks to all the readers who have commented so positively on the 1000th issue, a fraction of which are reproduced above. It is good to know AM is being read so enthusiastically all around the world. I'll certainly do my best to keep it going with interesting content, although me reaching the 2000th issue as editor may be stretching it a bit!

Regards, Andrew

A MODEL LIFE

Hello Andrew,

Just had to drop you a note to say how much I enjoyed the 1000th copy. My first AeroModeller magazine was bought for me by my Dad in 1938, I still have the copy minus cover I think that finished up on my bedroom wall. He bought the mag for me because of grief over destroying my FROF Fairey Battle flying model which my Mother had purchased from, I think, Quaker Oats which was offering this as a promotion where you had to collect three coupons. I had built this strictly following instructions, covered it with the black tissue supplied sprayed it with water - no dope, Mother did not like the smell. I think the model was quite large as I had difficulty in passing it through the bedroom window to launch. It flew like a brick and crashed on the patio below where Mother was hanging out the washing, her only words were "I think you should find another hobby." Fortunately, my Father had a friend whose son was a lot older than me who built and flew models and he became my mentor. I spent many happy hours in his shed.

I lived in the midlands, my only transport was a bicycle and I built a trailer for it, rather like a coffin. The lid opened and became a work bench and the interior was stuffed with model repair material, a small tent and a stove. I went to many meets and met some of the people mentioned.

I joined the Loughborough model club in 1946 and met Roy Chesterton who was at the college and a club member. I remember him asking my friend and I if we would build a copy of a new model he had as he was having a little problem with trim under certain conditions. I can't remember all the details anyway we built it under his watchful eye (it was a hard model to build), I have a picture of him holding this model ready to launch on its first flight which was successful. It was the end of term and he took the model home with him to compare the performance with his own model. As you know he won the Wakefield Cup in the USA in 1948.

At 89 I am still building and flying RC models. I have a number ready in flying trim from old timers, scale, pattern style and of course a foamie and just pick and select according to mood and weather.

Again, thanks for the memories, keep up the good work.

**Kind regards, Norman Harris
Burlington, Ontario, Canada**

Irwin Polk (cofounder of Polk's Hobbies) congratulates Roy Chesterton on his win flying a Jaguar at the 1948 Wakefield competition.





FF BACK IN BUSINESS!

MIKE WOODHOUSE ON THE RECOMMENCEMENT OF FF AT THE TRAINING AREA SALISBURY PLAIN



Mark Benns deep in concentration hooking up the lines on his F1B.



Peter Martin flew in Combined Power on the Saturday.

Prior to the Covid 19 outbreak the weekend of the 5th and 6th September was programmed to be our double FAI World Cup contests.

However, it was not to be. We kept the date on the calendar, and we were able to run an ad hoc event under the current Covid 19 restrictions. It was decided that the event would be relaxed with the minimum of organisation. Sufficient organisation was put in place in order to observe social distancing plus the basic paperwork. The FFTC (BMFA Free Flight Technical Committee) decided that the contest fund would stand the cost of the event, there would be no site or entry fee. However, donations would be requested. Over the years the free flight community has built up a fund to cover support of

fliers if and when needed. When the fund was started such a contingency as being experienced now was never expected and would have been miles away from our wildest dreams!

The FFTC hoped that a relaxed and safe event would encourage fliers to come out and have a go. Many turned up simply to air models that had laid dormant since March, as well as getting their brains switched back on trying to remember how things worked. Old acquaintances were renewed, and lockdown stories were shared. From what I gleaned considerable in-house activity had generated plenty of additions to the fleets of models.

Saturday

We had hoped for decent weather

and things turned out pretty well. The Saturday was a tad breezy but the wind never got above the mid-teens and it was warm. Saturday was given over to the combined specifications and a not too difficult max of 150 seconds was applied.

In rubber Chris Redrup was flying a neat BMFA Open model. In discussion with Chris we agreed that the dihedral was a bit excessive, however Chris maxed out. There was also max out for Mark Benns flying combined rubber, while at the same time trimming an F1B. There was no max out in glider. Peter Tribe had started early and was looking good, but he failed on his last flight. Julian Pennington flew steadily although he dropped time, he beat Roger Heap who was flying one of the



Jim Paton with the Jim Baguley designed "Last Resort" flown in the Open rubber event. Jim is considering the quality of the air before letting go.



Roy Vaughn sorting out his Eggleston designed "Creep" - a look of what do I do next?



Simon Dixon was the eventual winner of Combined Power.



Andy Crisp with F1A acknowledging the photographer.

late Jane Howick's models. Four maxed out in power the most impressive being Roy Vaughn's "Creep" somewhat over engined, which, despite a roly pattern (too much wing warp) climbed to an enormous height. John Hook gave up after the first flight with a DT failure that took the model miles; the model was recovered but John failed to recover!

The two rubber flyers decided on a DT fly off (DT at 90 seconds). Chris Redrup's



Chris Redrup with his Open rubber model displaying the rather excessive dihedral.

model decided not to fly a decent pattern (too much dihedral?) allowing Mark to gain a narrow win. In the Power fly off Roy again climbed high but DTed early. A tracker failure made for a long but successful search.

Sunday

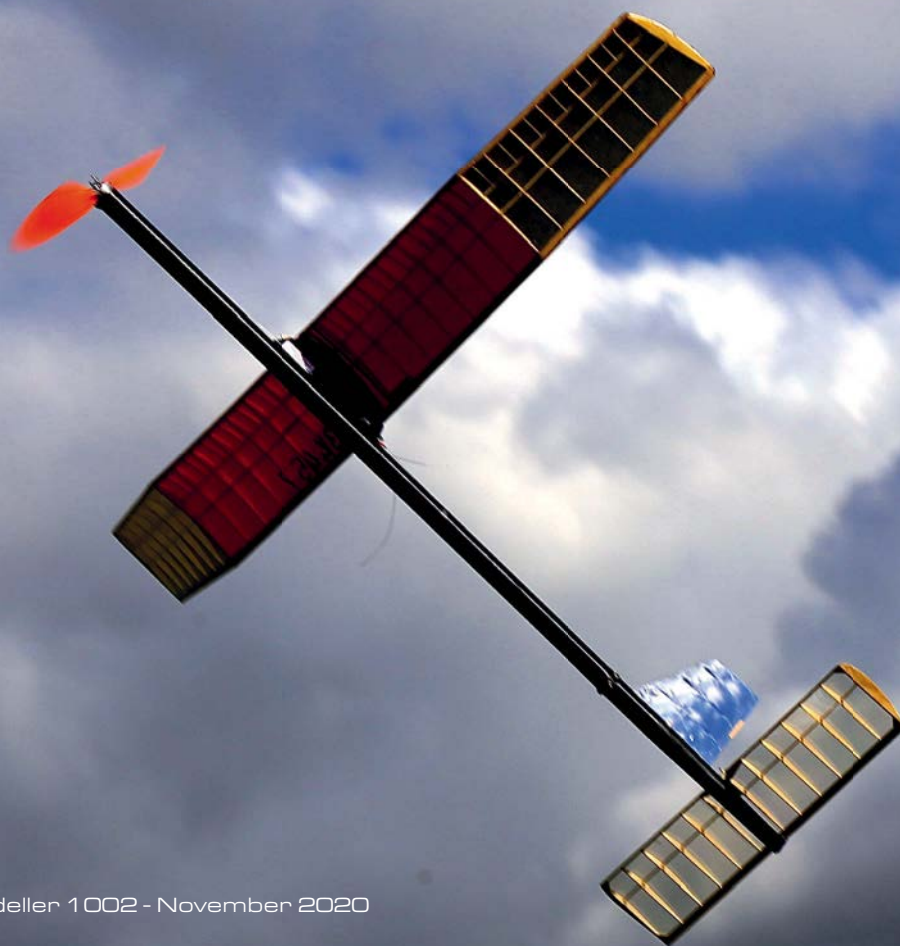
Sunday, as promised, had a very light drift. Although FAI it was decided that there would be no flight line or rounds



Mark Benns was the winner of Saturday's Combined Rubber.

and 150 second max. We wanted to encourage people back into the air. This arrangement made social distancing and other covid restrictions easier to manage.

There was plenty of good air available so the maxes were plentiful. In F1A the only flyer who had any real problems was John Williams who scored a zero on his 4th flight. In F1B the only dropped flight was from me! My excuse being that the model had not been out of the box



since January and the glide was a tad tight. No drops in F1C and all looking good, Neil Allen was seen messing with a home-built folded wing model, he used a standard model for his contest flights. There was to be no fly off in F1Q as Trevor Grey dropped a few seconds on his 4th flight.

In the mini classes. Garry Madelin turned up late in the day to slam in 5 quick maxes to win. In F1J there could have been a flyoff but Ken Faux called a halt and went to help Paul Chapman to de-tree his model. This allowed Neil Allen a walk over with 5 maxes to win. F1G was a Bristol and West match between Martin Stagg and Alan Brocklehurst. Both dropped time, Martin the least so he won.

Gary Madelin, who had arrived late, said that he had intended to get his hot-air balloon aloft but decided against it as rain was on the way. Mark Gibbs, who works, for the MET Office concurred. The rain was steady for the flyoffs. John Carter took F1A with a good clean launch after a line tangle with Julian Pennington and a tow in. The 5-minute fly off launch window can make for a traumatic time! As the rain was steady the F1B fliers agreed not to fly and thus tied for first place. By the time of the F1C flyoff the rain had eased to a steady drizzle. The rain cleared the skies and gave excellent visibility. Neil Allen climbed the highest and logged his 2nd win. Neil also picked up a bottle of wine donated by Brian Silcock for the best performance of the weekend

All in all, I think we got what we came for; a lot of flying and enthusiasm rekindled. Thanks to all for attending and following the guidelines, and in particular Peter Tribe on the organisational front. ■

RESULTS:

Name	1	2	3	4	5	Total	Fly off
Combined Rubber (4 flew)							
1 Mark Benns	150	150	150			450	DT(90) 110
2 Chris Redrup	150	150	150			450	DT(90) 108
3 Jim Paton	109	150	150			409	
Combined Glider (7 flew)							
1 Julian Pennington	150	147	150			447	
2 Roger Heap	150	123	150			423	
3 Richard Jack	120	150	150			420	
Combined Power (5 flew)							
1 Simon Dixon	150	150	150			450	292
2 Peter Martin	150	150	150			450	214
3 Roy Vaughn	150	150	150			450	203
4 Alan Jack	145	150	150			445	
Combined Electric							
1 Chris Redrup	150	150	150			450	
F1A (8 flew)							
1 John Carter	150	150	150	150	150	750	252
2 Richard Jack	150	150	150	150	150	750	213
3 Julian Pennington	150	150	150	150	150	750	177
4 Jo Gibbs	150	150	150	150	150	750	172
5 Peter Williams	150	150	150	150	150	750	138
F1B (5 flew)							
1 Mike Woolner	150	150	150	150	150	750	DNF
2 Mark Benns	150	150	150	150	150	750	DNF
3 Peter Martin	150	150	150	150	150	750	DNF
4 Peter Brown	150	150	150	150	150	750	DNF
F1C							
1 Neil Allen	150	150	150	150	150	750	336
2 Simon Dixon	150	150	150	150	150	750	286
3 Allan Jack	150	150	150	150	150	750	275
F1Q							
1 Peter Watson	150	150	150	150	150	750	
2 Trevor Grey	150	150	150	141	150	741	
FIH (3 flew)							
1 Garry Madelin	120	120	120	120	120	600	
2 Richard Jack	120	76	101	106	108	511	
F1G							
1 Martin Stagg	120	117	120	120	120	597	
2 Alan Brocklehurst	120	120	93	120	120	573	
F1J							
1 Neil Allan	120	120	120	120	120	600	
2 Ken Faux	120	120	120			360	
3 Paul Chapman	120	120	120			360	



ABOVE LEFT: Richard Jack with F1A flown in both the Open and FAI classes. **ABOVE CENTRE:** Peter Williams' F1A glider about to be launched on its way to another max. **ABOVE RIGHT:** Peter Martin and F1B. Peter is taking care before making his last max. The model has just been gifted a new pair of wings. Wings which have been referred to, with their short-swept tips, as "Mickey Mouse" wings...

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The Aviominima Antares and Atomic Diesels

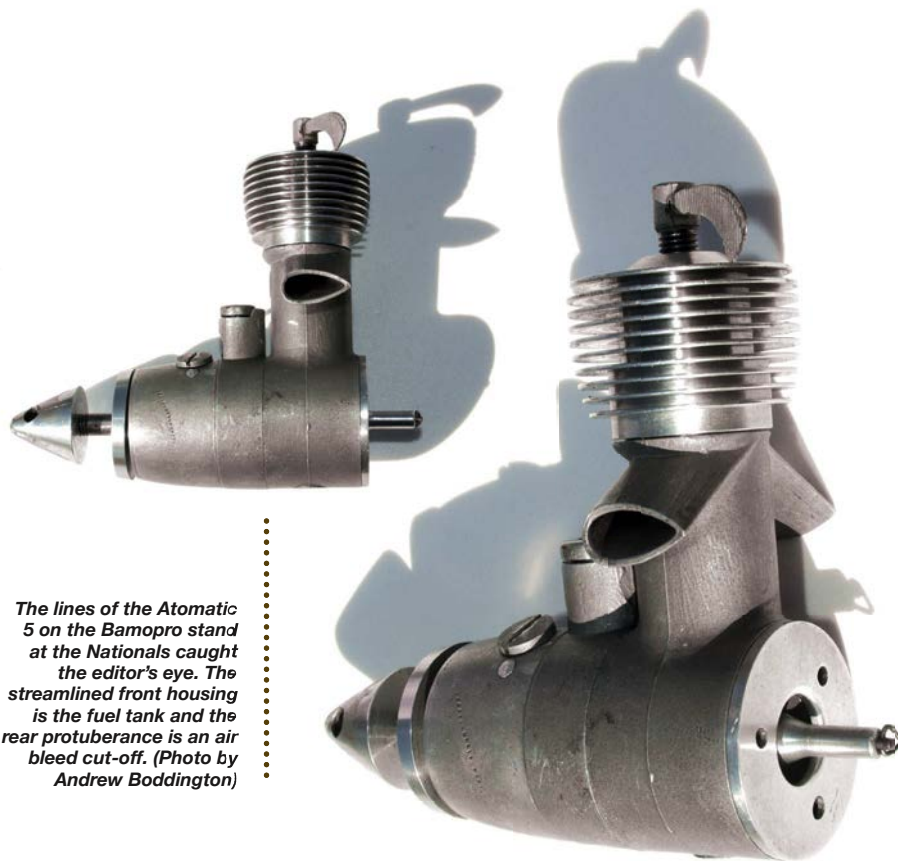
John Goodall of Barton Model Products occasional series on rarer vintage engines. With the help of Salvatore Angeloni

Italian Atomic 5 - 5cc diesel

I have always admired the beauty displayed in Italian engineering and it resulted in me acquiring a few Italian vintage motorcycles as well as several model engines and one early post WW2 example is the Atomic 5cc shown here. Your editor saw it in my display case at the British Nationals last year and asked me to pen a few words. This was a problem as very little has been published in the UK on the marque and so I asked a friend in Italy, Salvatore (Salvi) Angeloni, if he could help me and he sent most of what follows here; I am extremely indebted to him.



The Antares 4 and Atomic 5 Italian diesels are refined designs for the 1942-45 period. (Photo by Salvatore Angeloni)



The lines of the Atomatic 5 on the Bamopro stand at the Nationals caught the editor's eye. The streamlined front housing is the fuel tank and the rear protuberance is an air bleed cut-off. (Photo by Andrew Boddington)

The small workshop housed a lathe, milling machine, drilling machine and a flypress and employed a few craftsmen from the adjacent Breda Weapons factory, some of whom made parts in their spare time to supplement their income. The castings were produced by a foundry in another part of Rome.

The Atomatic engine is a front rotary valve, unlike the Antares which is a sideport, and has an air control to vary the mixture, another difference to the Antares. Bore is 16.5mm and stroke 20mm giving the tall appearance of the Atomatic 5. The fuel tank is situated around the front bearing housing with a screwed-on cup giving the streamlined look in a very similar manner to the Antares as shown in the photos. Stylistically similar compression screws are used. The alloy casting is very clean and well finished seemingly made from a permanent mould. The Antares has a

I knew Aviominiima had distributed the engine and were based in Rome and that they had previously made a 4cc engine and that was the extent of my knowledge. The company was set up by Uberto Travagli born in 1920 while still a student of engineering at the Rome University. He was also Chief Editor of "Aquilone" (The Kite) the Italian Aeromodelling magazine. He set up Aviominiima in the early 1940's and traded from a shop in Via San Basilio in Rome. This was under Travagli's home with just enough space for a small workshop. They sold plans, materials and modelling goods including engines made by a famous engine builder Elios Vantini of Padova who designed the Antares 4cc diesel made from 1942. Vantini was producing syringes commercially and what pushed him into making model engines is unknown, but good for us modellers. Only small numbers of the Antares were produced and today they are extremely rare, just like the Atomatic.

Travagli probably influenced by Vantini designed his first model engine the Atomatic 4 of 4cc in 1944, this had straight horizontal exhaust extensions and was followed in 1945 by the second version of the Atomatic 4 with down slanted exhausts. The help of his dearest friend Giovanni (Ninetto) Ridenti, a very famous Italian Modeller, was invaluable.

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L'ATOM-ATIC 4

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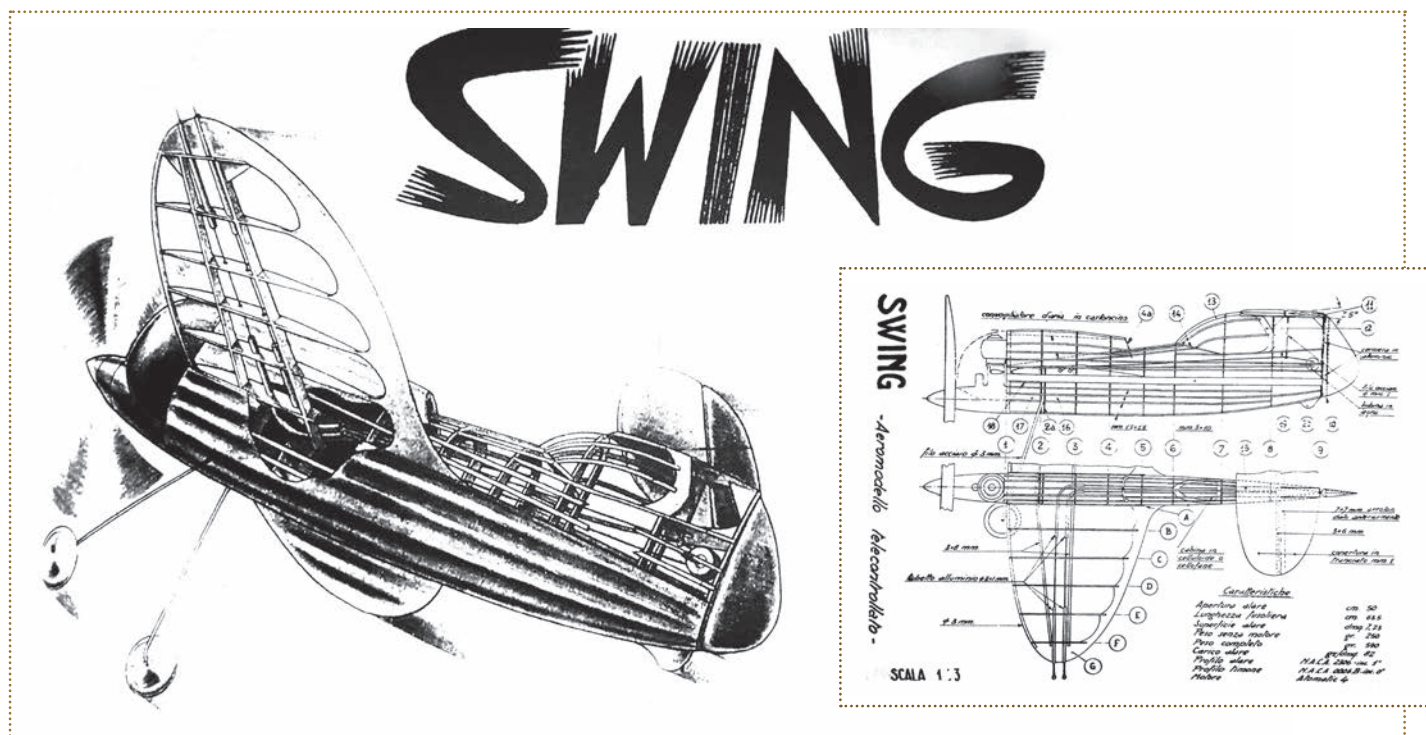
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The Atomatic was advertised by Aviominiima in Italian model magazines. (From Salvatore Angeloni)



The Swing CL model was designed by Travagli around the Atomic 4 and had control by direct wires (no bellcrank) to the elevator.

three-lug mounting at its rear while the Atomic has a mounting ring screwed into the rear housing with a central hole to clear the built-in spring loaded “air bleed” engine cut-off. It has three screw holes to fix it to the bulkhead of the model giving a very streamlined and clean overall look, very Italianate I would say.

In 1944 Travagli designed the first Italian Control line model called the “Swing” unique in that it had no bellcrank with the control wires directly connected to the elevator, it was powered by the Atomic 4. It was a very elegant design which sold well. The shop became a meeting point for all Roman

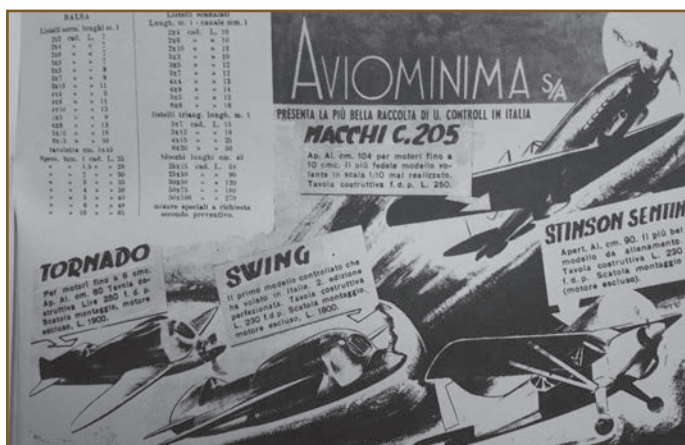
Aeromodellers and a few American servicemen visited as well, among them John Zaic younger brother of the famous Frank Zaic. In 1947 the Atomic 5cc was introduced with the elegant down slanted exhausts as shown and a few of the Atomic 10 probably of which only ten were made. Shortly after this the shop closed for a few years and reopened in the early 1950’s, but production of the Atomic engines had ceased. Only other makers products were now sold including a few Tether Model Cars such as the Alfa Romeo Alfetta, Cisitalia, Ferrari 125 GPC powered by direct drive engines of 1-1.5cc.

Uberto Travagli never graduated in

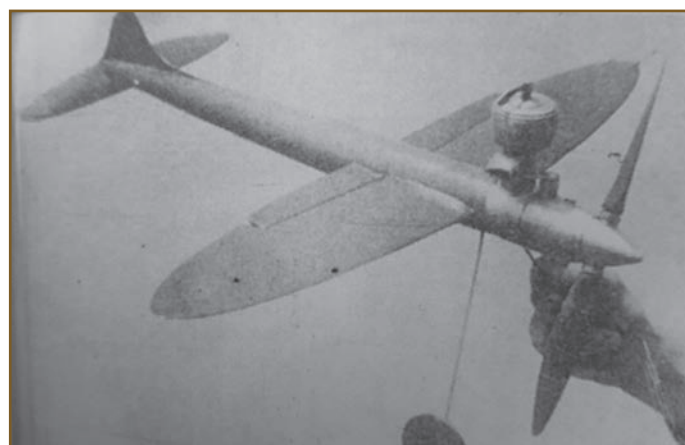
engineering from the University, probably due to too many distractions? He died in 1993 leaving some of the most beautiful model engines ever made.

Italian Antares 2cc Restoration

Writing the history of the Italian Atomic 5 aroused my interest in restoring the 2cc Antares which I had obtained as remains at Old Warden many years ago. The gestation of the Atomic was inspired by the Antares produced before 1945. When bought my Antares was in very poor incomplete condition, with several missing parts and previous abortive attempts at getting it to run. All parts were stamped with the number 13,



Immediately post war Aviomini had a range of IC powered designs on offer.



A contemporary CL model powered by an Atomic diesel with what looks like a large and variable pitch propeller.



*The sloping exhaust stack shows this is the second version of the Atomic. Salvi still has the original Aviomini prop (red logo just visible) on the engine.
(Photos by Salvatore Angeloni)*



These Tether Model Cars were supplied by Aviomini, the Cisitalia on the left and Ferrari on the right. We'll have a future AM special on Tether Cars given the surge of interest following the opening of the Buckminster track.

lucky or not? The worst damage was the drilling of a hole to fit a venturi towards the rear instead of where it was originally, to the side. I welded this up shortly after I got it and due to lack of information put it to one side where it resided for several years until the Atomic got my enthusiasm back.

Salvi Angeloni came to my rescue again with a three-view drawing, information and photographs which allowed me to get the project underway. A detailed examination showed up a major problem in the front housing which was cracked around the sealing flange where it meets the crank case into which it is screwed with a 31mm diameter by 0.75 mm pitch thread. A new front housing was turned up on my lathe and the thread screw cut to suit and it fitted perfectly at first trial; very lucky?! I bored it out for a phosphor bronze sleeve pressed in, whereas the original ran in the alloy. The thread on the nose was damaged on the original and I had already bought a suitable set of taps and a die, so that completed the part. I use "Tracy Tools" for most of my small

tool purchases with every satisfaction, see www.tracytools.com I now had an engine that turned over nicely with compression, so that was very fortunate.

I turned my attention to the fuel tank which surrounds the front housing and turned the bore out first to a taper to suit a side profile I drew up twice actual size to get accurate diameter stations along the length to get the curve correct. Then I turned the exterior at the front to slightly over the finished size and made a template to produce the curve. This was free hand turned, a skill I was taught in my apprenticeship completed over sixty years ago and no doubt frowned on today as too risky and against health and safety rules, but I am still OK?? So I will not describe the detail except to say the surface is produced by using a hand held tool ground up from an old file and using a rest for support held in the tool post and set close to the work. I have made spinners this way for many years you need to consider keeping clear of the spinning chuck with any clothing and your hands, arms etc., you have been warned. The 9mm hole was them

drilled and tapped for the fixing before parting off and facing to final length. The engine was now beginning to look like it should. A prop driver and spinner were turned up to complete most of the frontal appearance of the engine.

The fuel filler was made from aluminium again turned up in the lathe, straight knurled for the grip, and furnished with a 2BA thread and small air hole. Two holes were drilled in the fuel tank one tapped 2BA and the other left plain for the fuel feed pipe to enter.

I now turned my attention to the carburettor which was turned up from brass made in two pieces fitted at right angles and then silver soldered. I have a good few NOS Taplin needles which seemed a very close match to the drawing so one was used. This needed an imperial 6BA thread, a system based on metric threads so acceptable in my view. The finished carburettor is set at a 45 degree angle and pressed into a 5.5mm hole. Unfortunately this hole was damaged and had to be taken out to 6mm to get a good air tight assembly which meant it impinged slightly into the



John Goodall's Antares diesel (2cc not 4cc) during restoration, the distorted top cooling fin just visible. The tap on the right has a fine 12 x 0.75mm pitch thread and was used for making the front fuel tank cup.

crank case bore and had to be curved to clear the liner which now has to be assembled after the carburettor, a small price to pay.

Next to make up the fuel pipe, I decided to use copper tube as would have been used before 1945 and this was a difficult job, but was eventually managed after much annealing and making a sliding ferrule with which to join the pipe and fuel stem together. This was

cold soldered to complete the assembly.

The fins are largely original except the top fin had been badly damaged by pliers from a previous owner who did not know better? I turned this off after measuring and turned up a new fin to about the same dimensions allowing for the damage and pressed it onto the turned shoulder left on removing the original. I then polished the other fins up with abrasive and the result is not too

bad certainly better than it was. I have the Atomatic to thank for all this and the resulting restoration with which I am very pleased. I do like the Italian design ethos don't you?

John Goodall's book "The Oliver's and a Tiger" is available in soft back at £25 plus postage from Bamopro. j.goodall@bamopro.co.uk www.bamopro.co.uk ■



Lucky for this engine Serial Number 13 that it fell in to John Goodall's hands to be restored.



John's restored side port Antares (left) with copper fuel tube next to his Atomatic 5 which is front rotary valve.

TIME TAKES IT'S TOLL

by Dennis Lee Gerber

"TIME TAKES IT'S TOLL"

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Dennis Lee Gerber

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CLAPA CHAMPIONSHIPS

THE CONTROL LINE AEROBATIC PILOTS ASSOCIATION MADE A RETURN TO COMPETITIVE FLYING AT BUCKMINSTER ON 15-16 AUGUST 2020. STEVE WHITE REPORTS

The weekend of the CLAPA Championships (www.clapa.org) soon arrived after what felt like an age of hurrying up and waiting. The prospect of maintaining a respectable social distance, and events not running quite as we remembered them in the not too distant past, certainly did nothing to dampen the spirits of those that attended.

The dear ol' British weather once again put pay to any meaningful flying taking place on the Sunday, so on top of everything else, the flying schedule was condensed into a single day of, at times, quite intense activity.

It was, I felt, comfort and nourishment

for the soul as we tentatively return to some semblance of normality to see familiar faces, hear familiar sounds and watch the dedicated pilots perform their aerial dances for the judges and spectators. A good number of people remarking how they were just glad to be out - even if it was on a windswept model airfield!

Nevertheless, the beautiful backdrop of our dear British countryside certainly put pay to any chills felt by the unusual Northerly, changeable and gusty stiff breeze. The passing of the Battle of Britain Memorial Flight was an extra treat (if not also a distraction for judges and pilots alike!) A minutes silence was observed on the field at 11am to mark

VJ Day.

Considering the current situation, Vintage, Classic and F2B each saw some healthy and competitive flying - the enthusiasm and passion for the sport certainly shows no sign of waning as we start the third decade of the new millennia, encouragement indeed for us all to take things forward and hopefully expand our activities at the National Flying Centre.

Vintage saw 4 entries this year - the standard and enjoyment of flying in this category was an inspiration to us all, a mere 82 points separated first from fourth and in the end it was Glen Alison who lead the field, Dave Roberts again providing the all-important judging -



A Socially-Distanced spread of competitors, judges and organisers at the CLAPA Championships at the National Centre.



Part of the flight-line at the Champs, a good mix of electric and IC seen this year; Dick Stepney and David Marshall in the background readying for a flight.



Graham Leatherland putting some practice in before the competition flights.



The 1994 F2D Combat World Champion, Mervyn Jones about to start his engine with help from CLAPA Chairman, Kevin Morgan – competitor+helper each formed their own 'bubble'.



Chairman Kevin Morgan getting up there amongst it - the concentration clearly seen!



Barry Robinson's expertly scratch built classic model 'Olympus' helped him to the top spot in the Classic competition.

Team Race



Alan Watson the competition CD marking up the scores, with Helen Jones and Angela Williams working on the numbers; vital work behind the scenes to make the competition run as smooth as possible. Bravo.



Peter Deane flying his beautiful example of a classic design - Nobler.



Mervyn Jones about to fly his Classic design - Genesis, with help from Kevin Morgan, both sharing a happy moment with judge John Bonner- wonderful to see the joy this hobby gives us all.



John Copsey showing us all how it's done - inverted no less! The KA10 design proving its pedigree. UK Chief judge Roger Ladds looks on with Tony Johnson.



Chris Maggs flying in the Vintage event, eventually placing 3rd this year- the vintage discipline is seeing a recent surge in popularity along with the classic.

thank you Dave.

Classic was again, a tightly fought contest. A recent update on the rules regarding eligible dates for design entry has increased the interest in this discipline and the flying was matched in effort and gusto, Barry Robinson eventually taking the honours with his expertly crafted Olympus.

F2B saw 11 entries this year. Again, fervently contested, the contest was ably judged by Ken Reeves and Roger Ladds. Mark Williams took first place on



Striking monochrome trim on Ian Hewitt's 'Jamison Special'.



the day in at times quite challenging conditions. Bravo to all that entered the fray. The effects of lockdown and the reduced flying calendar certainly didn't dissuade those that entered from demonstrating their dedication and passion for the sport.

As I write this we are looking forward to the rescheduled Nationals in September. Thank you to all the people that work behind the scenes to make these events a reality. Let's hope we can all gather once more, bound by our common interest and sheer joy of hearing, watching and enjoying our sport of control line aerobatics. See you there. ■

RESULTS:

VINTAGE – 4 Entries

Name	F1	F2	F3	Best 2 of 3	Place
G Alison	301	310	313	623	1
R Stepney	291	294	295	589	2

CLASSIC – 7 Entries

Name	F1	F2	F Total	AP	Total	Place
B Robinson	951.40	964.00	1915.40	40	1955.4	1
G Alison	894.40	954.30	1849.20	38.5	1887.7	2
M Jones	882.90	928.50	1811.40	39.5	1850.9	3

F2B – 14 Entries

Name	F1C1	F1C2	F2C1	F2C2	Total C1+C2	Place
M Williams	1016.00	850.80	990.50	938.90	1954.9	1
B Robinson	1057.30	870.00	1013.00	868.00	1927.3	2
G Alison	885.80	856.20	976.10	918.50	1894.6	3
M Jones	786.30	903.40	985.40	903.90	1889.3	4

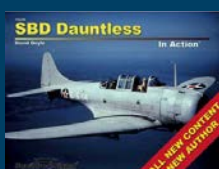
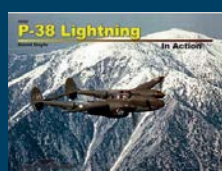


Dick Stepney's lovely example of the sweeping lines of the 'Thunderbird'



'Caprice' built by Glen Alison, a superb build and well-deserved regular winner of the concourse trophy.

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1204	Early MiG Fighters in action
1224	F-84 Thunderjet In Action
10211	P-51 Mustang in Action
10216	F6F Hellcat in Action
10219	B-17 Flying Fortress in Action
10220	F4U Corsair in Action
10221	B-25 Mitchell in Action
10222	P-38 Lightning in Action
10225	TBF/TBM Avenger in Action
10227	B-29 Superfortress in Action
10228	B-24 Liberator in Action
10235	SB2C Helldiver in Action
10236	SBD Dauntless in Action
10238	A-20 Havoc in Action
10241	F-105 Thunderchief in Action
10242	A-26/B-26 Invader in Action
10243	Messerschmitt Bf 109 in Action
10246	A-1 Skyraider in Action
10248	CH-47 Chinook in Action
10249	UH-1 Huey in Action
10263	UH-60 Blackhawk in Action

WALK AROUND SERIES - SOFT COVER

5549	OV-1 Mohawk Walk Around
25043	Messerschmitt Bf 109G Walk Around
25056	Spitfire (Merlin) Walk Around

WALK AROUND SERIES - HARD COVER

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65056	Spitfire (Merlin) Walk Around
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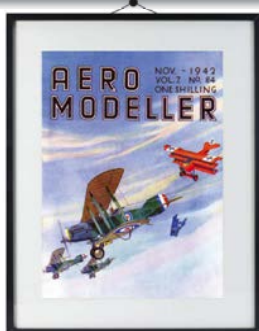
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Tail End Charlie

Another pot pourri of aeromodelling miscellany...

Peter King RIP

2nd September 2020 - Today's newspaper (remember them?) carried this headline to a major obituary feature – "Peter King, Britain's greatest Jazz saxophonist who was also internationally acclaimed as a builder of model aircraft."

Peter started model flying at the age of six and continued into his teens when in addition to the usual distractions he had those of serious musical talent.

In an interview a few years ago he recounted that –

"It wasn't until I was middle age that I bought a magazine and suddenly got interested in it again. The type of model I used to fly, which is a rubber powered model – Wakefields and F-1B they're called now – are really competitive models. The Wakefield Trophy is the most coveted trophy. It's the world championship. Originally, it was for all models, but now it's only for rubber powered models. They've changed the rules a lot with the type of models I used to fly – they keep reducing the amount of rubber you can use. In the former USSR, the modellers were like professionals. Their clubs were like their jobs. They used to come and fly at the world championships and they had developed totally new systems.

It was fascinating, astonishing. That's how I got back into it all. This one Russian, Alexandra Andriukov, was world and European champion three times in a row, which had never been done before. He got out of Russia, and now works for Air Environment, the people who made the Gossamer Albatross, the big solar-powered airplane. He's very happy now. They're all crazy aeromodellers in that company, you know.

"It took me a while once I got back into to learn how to build models using the new technology, the new trimming techniques. I won the British Championship in 1989 and a couple of other major competitions, and I came in second in an international competition in France to Alex, the Russian world champion I mentioned before. Suddenly, I found myself in a fly-off with Alex. I then got more interested in aerodynamics in its own right. Then I met the guy I knew years ago, the boffin. He was getting old, but he remembered me just like it was yesterday. He showed a lot of things. Then I got a computer and learned how to use spread sheets."

He was also a keen F1 motor racing fan and later played as a member of Charlie Watts Tentet – a man of diverse interests and

many talents. RIP Peter.

Barry Fletcher

Barry Fletcher from Oshawa, Ontario, Canada also started aeromodelling at the age of six, so 75 years later, he knows a thing or two about model aircraft! He started on the usual small built up rubber models of the day and has built and flown most things but currently flies...

"A Taibi Powerhouse with an original Forster 99 in it. Since we have little space that is not houses or corn I use RC for guidance. The fields I used to use for free flight are gone. I also build and fly IMAC style aeroplanes. I also fly an Easy Built rubber powered Miss Canada Senior with micro RC in the schoolyard near my house. I don't call it a free flight. (RC is a roofus avoidus device.)"

You can see a video of his Powerhouse in flight by searching on YouTube for 'McK Taibi Powerhouse Climb'

Barry is quite particular about definitions, and went on to say:

"I built Doug McHard's Fokker D VII with a pendulum when it was published in the September 1962 Model Aircraft and still have the pendulum. I have done autorudder, trim tabs, pop up DT etc. None of these things guarantee stability, the plane must be pre-trimmed

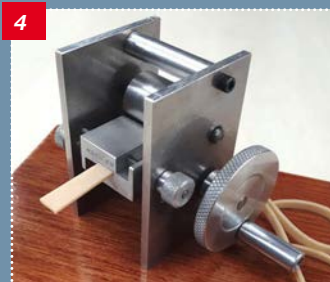
and is completely autonomous aerodynamically. None of these things will "trim" the aeroplane autonomously to replace poor trimming skills. A device that "thinks" in real time and makes control changes to guarantee flight is really a computer substitute for talent. To create a sport plane that doesn't spiral in etc it's great. Just don't call it free flight with everything preset before launch. Chaperoned in absentia perhaps? Just not FREE."

Given all the cunning and expensive gizmos involved in top level International free flight competitions these days I wonder what you all think? Let me know - Mind you those guys still don't stand a chance without top notch trimming skills as well!

Barry also sent me a picture of the rubber stripper he used to make. A neat work of art, sadly when I asked if he could still supply them, he told me he no longer has the grinder needed to make the blades.

Finally, don't forget to send your anecdotes, tips and comments to me at chrisottewell@anworld.com or via the editorial offices. ■

By Chris Ottewell



1: Peter King with his Wakefield. 2: The mighty Powerhouse.
3: Barry Fletcher with his Ringmaster. 4: Barry's superb home-built rubber stripper.

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Foam Armour - hard protective coating on foam wing tips etc. vulnerable surfaces on foam. AD21

Speed Epoxy - 4, 20 & 60 min epoxy glues. AD65, AD68, AD71. Add strength with Milled Fibre. BD69

Model Lite - easy sanding lightweight filler for balsa fibreglass etc. BD5, BD6

Eze Kote - finishing resin for balsa & foam. BD37

Fix n Flex - safe adhesive for bonding servos, carbon & plastic parts & re-attaching decals. AD78

Aerokote - tough, high gloss fuel proofers. BD45

R/C Modellers - gap filling clear glue for canopies and rivets. AD81

Micro Modellers - hard durable wing skinning epoxy. BD1. Easier sanding with Micro Balloons. BD15

Grime 2 Shine - foaming cleaner for effortless removal of dirt & oily grime. AC27

Carbon Tissue - for surfacing & strengthening balsa and foam. BD62

PowerModel 2T-5 - synthetic 2T oil with heat protection for gasoline 2 stroke engines and diesels. LU01

Wonderfill - strong lightweight filler for foam. BD48

Liquid Gravity - pourable weighting & balancing system. BD38

Aliphatic Resin - fast grab, easy sanding yellow wood glue. AD8 & AD9

Eze Dope - for shrinking & airproofing tissue paper. BD42

Tissue Paste - strong bond on all tissue. AD60

Speedbond - special modelling PVA. 5 minute bond. AD10 & AD11

Tacky Wax - hold servo screws on screwdrivers. AD29

Foam 2 Foam - foam safe, clear adhesive for rapid foam modelling. Even create hinges. AD34

Aero T<ch - non-drip epoxy for bonding composites etc. AD64, AD63

PowerModel Jet Oil - the World's first fully environmentally friendly turbine oil. LU02

Eze Wind - rubber lubricant, maximises energy for the ultimate flights. LU03

Roket - fast setting 1-30 second CA glues. AD43-46

Cover Grip - heat sensitive adhesive for bonding covering film. AD22

Super'Phatic! - super-thin, non-fuming, alternative to CA for pre-assembled joints, hinges. AD21



Creators of innovative & safer model hobby products for over 45 years



Available from all good model shops through our network of international distributors including **Ripmax** in UK & **HORIZON** in USA. In case of difficulty: Consumers enquiries please go to deluxematerials.com T: +44(0)1529 455 034