



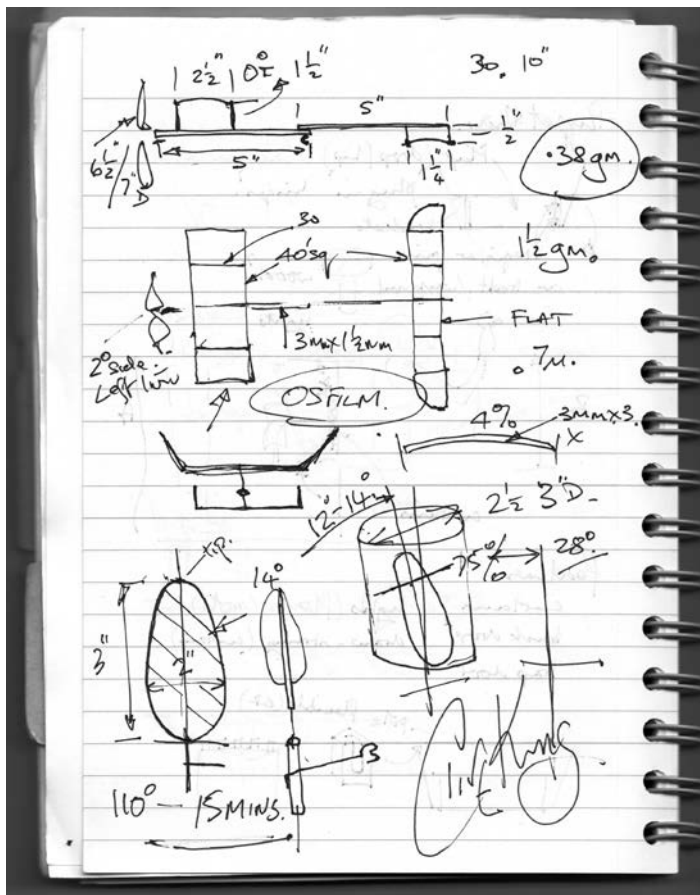
### July August 2014

Edited by Bryan Gostlow  
Distributed by Tony Harper

### Carpe Diem *starting out on a small adventure*

by Bryan Gostlow

Over the years I've never had any success with rubber power and have come to regard it as a 'black art', not for me and best left alone. Thinking back now I can't remember how it came up, but towards the end of November Clive King said, "every modeller should build at least one indoor duration model" and began sketching his design for a mini stick and talking me through building one. With this design Clive has achieved a flight of 17 min 10s from 4,800 turns of 16 thou rubber.



Above all I enjoy building and as he began to explain how to form the prop on a wine bottle there was something infectious in his enthusiasm. When he said, "you've got to be ready to make twenty ribs to get three good ones" that appealed to me as a strategy that's paid dividends in the past. All this coupled with a challenge – Clive has built down to 0.38g but said, "you'd

do well to get down to 1.5g" and my pride bristled a little at that.

It seemed to me that it would be like taking up violin making but with Stradivarius as your tutor and *Carpe Diem* was my primary school's motto!



wrinkly Gyminie Cricket

I couldn't wait to get started but took the advice of my granddad, "if a job's worth doing, it's worth doing badly" in other words, find out what the snags and pitfalls are before you begin in earnest. So I sent off for a couple of Gyminie Cricket kits to get me started.

The building was 'simples' but I hate covering and find it the quickest way to ruin a model. Richard Staines suggested screwing up the tissue into a ball and then smoothing it out a bit. I could see what he was getting at as there was a certain elasticity in the tissue that could 'give' and not distort the minimal structure in changing humidity.

My catalogue of failures with rubber meant I couldn't bring myself to fly the thing but, fortunately, Raymond Fella put on some turns and launched it. This ruse was enough to breathe life into the balsa and fool the Gyminie into flying. Clearly it thought Raymond was its creator.

During the week I looked at the tail and decided that 1/16" square wasn't right and substituted 1/20". Admittedly I was in a hurry to get my hands on the thin stuff Clive had described. It flew better than I could ever have guessed so went a step

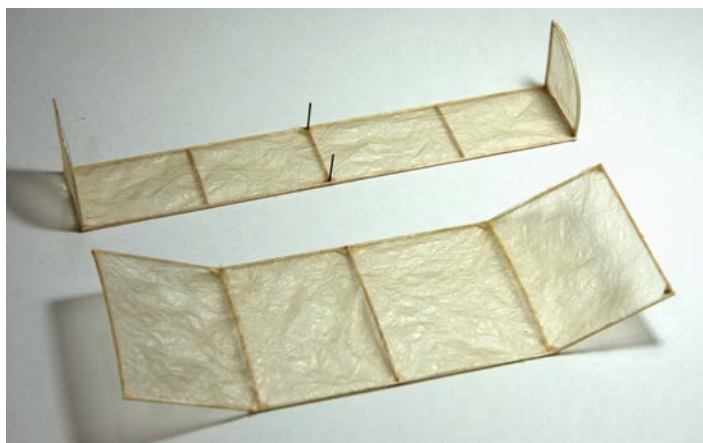
further and built Gyminie with 1/20" but with a 1/32" for the tail. The weight was coming down but clearly the plastic prop would have to go.

The first prop I made, sanding down 1/32" sheet, was too small and the next too large but as Goldilocks found the third one was just right. I got a flight of 2 min 24s a quite unheard of time in my experience. Time to tackle Clive's design.

**the 1.5g target**

He explained how get a thin coating of spray mount onto the wing to hold the covering. He suggested I make up a frame, lightly smeared with Vaseline, to pick up the covering, then tease it out flat [the Vaseline holds it but lets it slide] before placing over the wing.

I took my uncovered efforts to show Clive and to get his feedback – oops! It seems you cover *before* adding the dihedral,



first attempt salvaged with condenser tissue

but still he gave me a couple of valuable tips: glue a strip of tissue along the top of the wing spar to form a hinge; as you add in the dihedral the covering will wrinkle so suck a sweet and then draw a line of saliva along the dihedral break and the covering will snap tight. I can vouch for that, it really 'snaps' as surface tension pulls one layer over the other and the covering looks perfect.

I'd got hold of an EZB pigtail bearing from SAMS and some rubber; taken my 1/32" sheet down to 20 thou and formed a couple of blades on a wine bottle: angled to the left 12° - 14°, wetted and wrapped in tissue before going into the oven at 110 C for 15 min; made up a reverse S-hook or two after watching somebody on YouTube showing how it was done.

My first proper Mini Stick weighed in at something like 0.98g ["Yes!"] and flew for 1min 30s in the Gropius. I remember Clive coming over and asking what it weighed, before saying, "0.5g" that's all . . . time to build a better one!

**aiming for 0.5g**

What about blade shape? Back in '79 there were some very bright guys aiming to fly an HPA [human powered aircraft] across the Channel. They'd done a 'real good' job on the structure but their flight times were a huge disappointment. Up steps Gene [Eugene Larrabee] who devised a way to design minimum induced loss propellers. I was fortunate enough to meet him when he was visiting Ron Moulton and they came to see John McIntyre's HPA 'Airglow' at Shuttleworth. His wife said how they watched film of Gossamer Albatross crossing the Channel and winning the Kremer Prize. She turned to her

husband and said, "Gene, that's your propeller winning it for them!" She wasn't wrong.

So when I talked to Clive about blade shape it was no surprise to hear 'Larrabee' mentioned. A Google search came up with an article in 'Stick & Tissue' by John O'Donnell with Larrabee blade profiles. Problem solved!



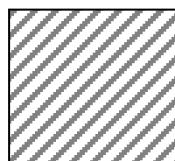
one for the bin -much too heavy

The thing is, at beginner level, these things are amazingly quick to build. A prop takes a couple of hours and I was soon getting down to 12 thou – you get a real buzz from doing that.

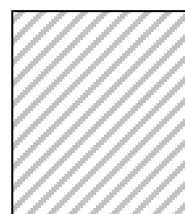
About this time there was something beginning to puzzle me. I could cut thin spars and make them up into wings but they were too flexible – no stiffness at all and who wants floppy wings . . . what to do? How on Earth was I going to get down to 0.5g and he'd managed 0.38g?

The *what to do* was to take a close look at Clive's planes the next time we were in the Gym. He wasn't using super thin spars and, if anything, they were thicker than mine . . . and the penny dropped.

Think of two spars A and B roughly 1/32" square. A is cut from light/medium balsa of 9 lb/cu ft but B is from Balsa Cabin's finest 'contest grade' 6 lb/cu ft. Even though B is slightly wider and a bit deeper it weighs a tad less – just 95% of A, but that's not the trick.



0.030" x 0.030"  
9 lb/cu ft  
stiffness 6



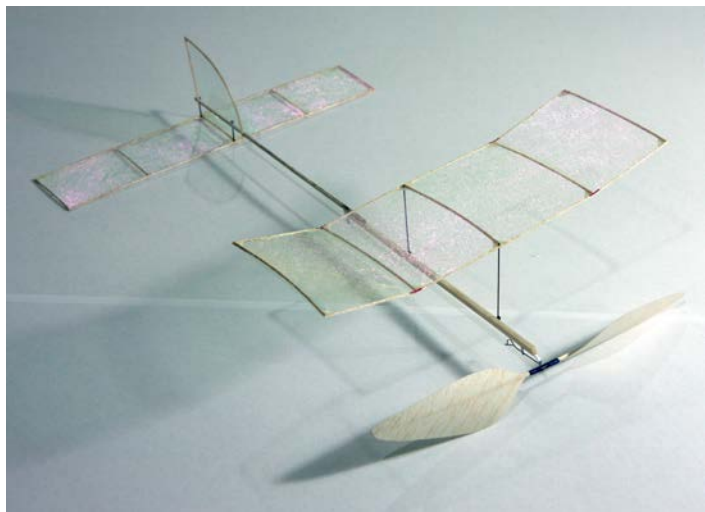
0.032" x 0.040"  
6 lb/cu ft  
stiffness 15

The stiffness of a 'beam' depends on the width x depth<sup>3</sup> and when you load up these two they both deflect but B deflects just 40% as much as A. This is the explanation as I see it for modellers searching out 'contest grade' balsa as you can build light but stiff wings and planes.



flows freely and dries fast – works for me!

Next on my hit list was to replace the aluminium tube prop hub. I was sad to see it go as I'd enjoyed making those and thought I'd come up with a good design, but Clive said, "paper tube". This looked easy enough until I came to try it at which point the tube looked very small, conversely fingers and thumbs grew to be huge. The trick to this I discovered is a short length of PTFE or 'Teflon' tube threaded over a piece of piano wire. You cut a tissue strip and brush on some glue then start it around the tube and wind on however many turns you think needed. After setting aside for a while you can slip the paper tube off the PTFE 'easy peasy' and trim it to length.



0.6g my best effort so far

Motors aren't too difficult at the level I've been working. A Clive tip is to add O-rings at either end as it makes attaching so much easier. When he flies Clive always has his rubber cutter with him so as to get the motor right.

These MiniSticks have almost no inertia so can crash into walls or whatever and, ninety nine times out of a hundred, come to no harm. That is, except for the props. The blades themselves are tough but all the stress is concentrated where the blade shaft enters the hub. There's nothing so sad as a blade that has snapped off and you have to throw both away and start again. Or is there a better way?

I've yet to meet anyone who likes using cyano but the thin stuff has the ability to penetrate balsa and make it much, much stronger.

The trick to this is to add just a tiny drop of cyano to the tip of the spar and let it find its way along the grain.

In the end I got down to 0.6g before Clive set the bar at 0.3g and Spring arrived.

Just look around at any of Bruce's contests and see who it is that carries on flying and adjusting long after everyone else had said, "enough is enough", it's Clive. Well my temperament isn't suited to getting the best out of these models but I've had huge enjoyment building a few and I'll be trying again when the clocks change again in the Autumn – I've learnt so much and had a lot of fun.

## The Interview with Alan Hunter

*Do you have a favourite model past or present?*

Probably it was the Contest Kits DAB towline glider – I was about 13 yrs old and I was really impressed by its performance – my first with a fuse DT and it needed it. I have since bought another kit on ebay for sadness reasons. - but not for 15/9d !!!



*What tool wouldn't you want to be without?*

Nothing high-tech here - vital to me are home made sanding blocks with quality abrasive paper in various grades ( SIA or Oakley etc – not junk sold by some DIY Stores) bonded to square and flat wood blocks in various sizes - couldn't live without.

*Never happier than when I'm . . . on the other hand I hate having to . . .*

Flying a model I have designed and built myself and it performs well – the hate is having to accept some are clunkers

*What got you started?*

Given a KK Dolphin kit for a sixth birthday – my father built it and we towed it up on Girton Rec – I was hooked from then on - 8d Balsa Bundles purchased and O-My cement from Automodels on Peas Hill ( didn't know about Renbros then) . Really got going when I joined IVCMAC in about 1960 – plenty of advice from club members like Chris Hinson, Derrick Camps, Tom Collins and of course Ray – he sold me my first engine – a round port ED Baby – Ray charged me 1 guinea to be paid off at two bob a week with a shilling final payment – I still have that engine.

*What do you fly?*

Generally RC Electric these days but I have served a full apprenticeship through assorted Free Flight models and Control Line when younger.

I enjoy designing/building and flying really small RC models – I am pleased that I have lived long enough to have been able to take advantage of the technology available today – amazing.

*It took me a while to get there but . . .*

Still does – my OCD gets me sometimes like covering a tailplane 11 times with Solarfilm until I was happy with it, only to have Geoff Waters notice that the two halves were a slightly

different shade of film – I must have changed rolls and not noticed – the air was blue.

*A time it came close to disaster or phew, only just got away with that!*

Most disasters were losing models although not too often – in the early days of Rudder only Bang-Bang RC and flying a IC Powered Glider at Harlton I remember flying in too high wind I could not penetrate – the model went further and further downwind until I had to spiral the dot down to the ground – in those days I always had a spotting scope, ordnance survey map and a compass and we drew a pencil line from launchpoint to the last sighting through the scope on the correctly lined up map – by walking that line we found most flyaways including that RC model in a orchard near the next village.

*When I'm not aero modelling . .*

I enjoy fiddling with and mending/rejuvenating Shortwave Radios – both Military and Civil.

Many are valve sets with several from WW2 – these are generally known as Boat-anchors cos they are that heavy – over 100lb – they have to work as radios and all are listened to on a regular basis – how sad is that.



*An unfulfilled ambition*

To have learnt Morse Code – the original digital system

*Old dog new tricks*

Buying and flying the odd Foamy although I still hide them behind the car at the flying field – it is pornographic aeromodelling

*What's your covering material of choice . . and adhesive . .*

Got to be Polyspan – got the look of tissue – waterproof – fairly light – takes little dope to airproof and would be near perfect if it was available pre coloured. I have found I can colour it quite

well by spraying it pinned to a frame with artists Acrylic Ink. I have tried colouring it on a flat non-absorbent surface by brushing/sponging/credit carding and it does not work for me – always streaks when picked off to dry. I apply to the airframe using BalsaLoc heat sensitive adhesive with a small tacking iron.

*Do you have a favourite model of Ray's*

A small all sheet rubber model called the Cosmos – I was all of twelve years old or thereabouts and Ray wanted to see if kids my age could build and fly it before it went into the magazine - I was pleased because mine flew better than Rays with excellent climb – the glide, however, was a typical Ray glide, like it has DT'd but it hasn't – I built another one a few years ago and it was rubbish so looks like it is only for kids.



*Where does it happen . .*

Model building in workshop overlooking the garden and the machine shop – lathe, milling machine, pillar drill, stores etc in the garage.

*If you could turn the clock back . .*

Learn to fly RC properly – just do not have the eye/brain/hand coordination these days – that is my excuse anyway.

*A modeller you admire . .*

Within our club, Clive King, for sheer ability/skill/dedication and I would enjoy another of his lectures on indoor model techniques – hint !!

Outside of the club there are many but Dave Boddington – now no longer with us, come to mind – a really friendly and creative modeller - I visited his factory once with Tony Neal when he held a factory sale – absolute Aladdins cave

## For Sale

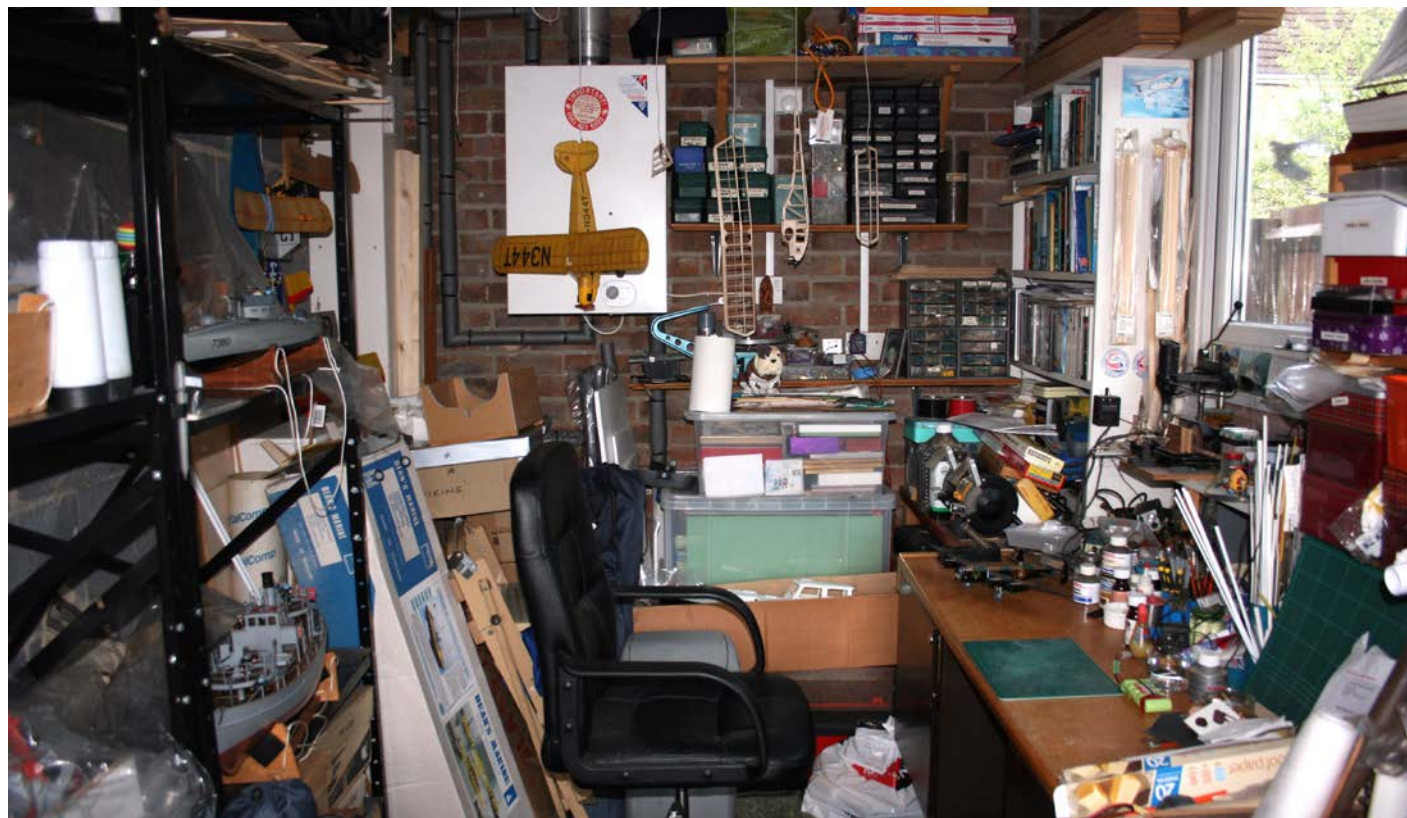
T-Shirts, various colours with Flier Phil picture on front. cost £8.00

Ideal for the summer weather we are going to have from now onwards!

Please contact **Margaret Staples**.

## Snapshot

We look in on **Chris Hinson**, "A view from the workbench"



Many thanks to Chris

**Freydis Sharland** pilot born in Cambridge  
22 September 1920; died 24 May 2014

In 1953 Freydis Sharland climbed into a 430mph Hawker Tempest V, and set off from an airfield in southern England on a 4,000-mile intercontinental flight. Her aeroplane was one of the biggest, and fastest, of the last generation of piston-engined RAF fighters, and her destination was Pakistan. Sharland's stopovers, an itinerary for the last days of empire, took in Nicosia, Baghdad – where she was entranced by the almond trees – and Bahrain, and then she undertook the final, and longest, leg to Karachi. Upon arrival, and having delivered the Tempest to the Pakistan Air Force, she was denied access to the officer's mess. She was, after all, a woman.



That epic was her longest flight, and her first outside Britain. But by then, Sharland was well established as a formidable flyer. She was one of more than 160 women who flew for the wartime Air Transport Auxiliary. Between 1939 and 1945, more than 1,300 ATA pilots delivered warplanes between factories, facilities and bases across Britain, and, later, into mainland Europe and the Mediterranean. In January 1940, the ATA's first eight female pilots were recruited, and, based at what had been the De Havilland airfield at Hatfield in Hertfordshire, began delivery of unglamorous, 100mph Gipsy Moth training aircraft. Following the outbreak of war, Sharland became a Red Cross nurse in Colchester, Essex. She fulfilled her ambition to join the ATA in 1942, starting out on Magister trainers and graduating to twin-engined Ansons. Then she progressed to the frontline fighters, Hurricanes and Spitfires. She was at first based in Hamble, near the Supermarine Spitfire factory in Southampton. Her other stations included Sherburn-in-Elmet in Yorkshire, Prestwick in Scotland and White Waltham, the ATA's headquarters in Berkshire.

Sharland flew a range of British and American aircraft. There were twin-engined bombers such as the Vickers Wellington, the Lockheed Hudson and the ultra-fast, and tricky, De Havilland Mosquito – and there were the fighters. The Spitfire was her favourite. "It was so light, I fitted into it so well, it was such a nice little cockpit," she told an interviewer from the Second World War Experience Centre in 2008.

The rule was that ATA pilots avoided flying in bad weather. The reality was rather different, and 15 women died flying with the ATA. Navigation meant skilled, solo map reading – as it did on the way to Karachi – and tracking destinations by railway lines, lakes, gasometers, and so on. There were other dangers, too. Flying a Tiger Moth, Sharland was turned over by the slipstream of a giant, four-engined Liberator bomber.

She rarely complained about sexist behaviour, but she knew that, although men were on the look-out for their errors, women had no difficulty doing the job. She acknowledged that, thanks to the efforts of her fellow flyers, and those of Sir Stafford Cripps, minister of aircraft production, the ATA pioneered equal pay. She had never before, Sharland observed, had so much money in her life.

At a ceremony on 30 November 1945, a female flyer lowered the ATA's flag for the last time. But Sharland's flying career had hardly begun. She worked as a freelance commercial pilot, won her full RAF wings – which she never collected, saying she looked lanky in the uniform – and was active in the Women's Junior Air Corps and the Girls Venture Corps. In 1955 she founded the British Women Pilots' Association. The year before, competing against 16 men, she became British air racing champion.

Born in Cambridge, Freydis was one of three children of Catherine (nee Shuttleworth) and Charles Leaf, a meteorologist and archaeologist who, though shell-shocked in the first world war, would re-enlist in 1939. She was educated at Ancaster Gate school in Bexhill, East Sussex, and Wycombe Abbey school in Buckinghamshire. In 1937, when her father and her elder brother, Derek (who would be killed in action in 1944), began flying lessons at the Marshall flying school in Cambridge, Freydis called for, and won, the equal treatment that led to her life in the skies.

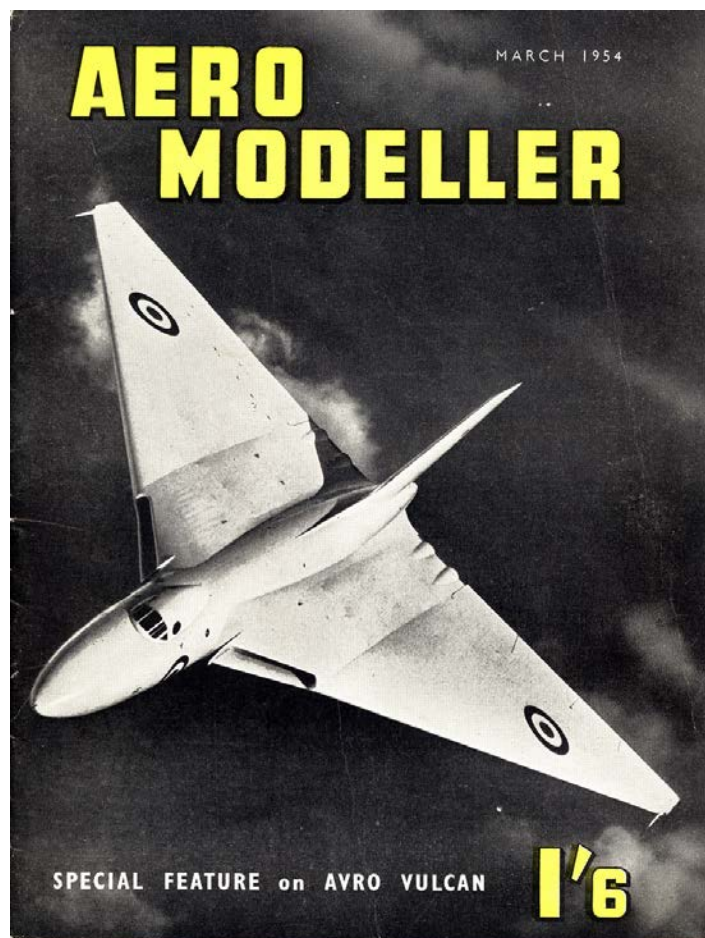


From an obituary originally published in the Guardian and used with consent.

## Great covers

### *Aero Modeller* March 1954

Who could fail to be impressed when they first saw an Avro 698 Vulcan?



I was when I saw the prototype Vulcan on the March 54 *Aero Modeller* cover. This was the aeroplane that Wing Cdr Roland Falk had rolled at Farnborough in 1955. Apparently this was not the first time he had done this. Returning to Woodford after performing a day earlier he had rolled so low that many windows were broken by the noise from the four RR Avons working overtime. On a personal note I can remember, when returning from a holiday in Yorkshire, we stopped off the A1 near Finningley. In the half hour or so we watched there were five or six wheeling around doing a few circuits before landing. On another holiday, again in Yorkshire, we parked at a well known beauty spot known as "Scath Nick". This overlooks the small village of Preston Under Scar. By then the role of the Vulcan had changed from high level bombing to low level. We heard jet engines approaching for several minutes before we saw four Vulcan B2's down between the hills twisting and turning. They were no longer white but camouflaged which made them harder to see as we were looking down on them. In a couple of minutes they were gone, all that was left was a distant smoky trail and a muffled rumble.

Tony Harper

### Gliding at Gransden? asks Margaret

Just to confirm the gliding evening will be 7th July, subject to the weather of course.

## Going online

### Using the Internet

The *Interweb* can be a tremendous resource for modellers and knowing where to look is half the battle. We've drawn together here some trusted websites used on a regular basis. If you know about one that we don't then please let us know.

### inspiration:

Mike Stuart's pages

<http://www.ffscale.co.uk/>



Phil & Shaun's  
Single Channel  
& Vintage R/C Page

Phil & Shaun's Single Channel & Vintage R/C Page

<http://www.mccrash-racing.co.uk/sc/archive.htm>

### plans:

Outerzone

[Outerzone.co.uk](http://Outerzone.co.uk)



Hip Pocket Aeronautics

[http://www.hippocketaeronautics.com/hpa\\_plans/index.php](http://www.hippocketaeronautics.com/hpa_plans/index.php)

Frog models

<http://www.houseoffrog.co.uk/>



### forums:

Hip Pocket Aeronautics

[http://www.hippocketaeronautics.com/hpa\\_forum/index.php](http://www.hippocketaeronautics.com/hpa_forum/index.php)



Stick and Tissue

<http://www.stickandtissue.com/cgi-bin/yabb2/YaBB.pl>

### youtube:

polyspan with Frank vonJaerschky

<https://www.youtube.com/watch?v=2oJrkbC3vLc>

Radian Tune Up Guide

<https://www.youtube.com/watch?v=E5dQVqPivXY&list=PLF1FB A24FFAFAOFF6>

### misc:

Plan It Reprographics Ltd - <http://www.plan-itrepro.co.uk/>

**Atlas House** Cambridge PI Cambridge CB2 1NS

SAM 1066 Clarion

<http://www.sam1066.org/clarion.html>

The Pensacola Free Flight Team

<http://www.pensacolafreeflight.org/>



Dave Day's Internet Page

<http://oobopshibam.webspace.virginmedia.com/>

### suppliers:

There comes a time when you have to pay for stuff and we would recommend you sign up with PayPal – that way you don't have to phone through your card details to each and every supplier. If, as happens sometimes, a supplier needs to refund you – well that works too.

PayPal

<https://www.paypal.com/uk>



Mike Woodhouse

<http://www.freeflightsupplies.co.uk/>

Sams Models

<http://www.samsmodels.com/>



Robotbirds

<http://robotbirds.com/catalog/>

Micron radio control

<http://www.micronradiocontrol.co.uk/>



The Balsa Cabin

<http://balsacabin.webs.com/>



Flitehook

<http://flitehook.net/>

ModelFixings

<http://www.modelfixings.com/>



4-Max

<http://www.4-max.co.uk/index.htm>



Hyperflight

<http://www.hyperflight.co.uk/>

GiantShark

<http://www.giantshark.co.uk/>



The Vintage Model Company

<http://www.vintagemodelcompany.com/>

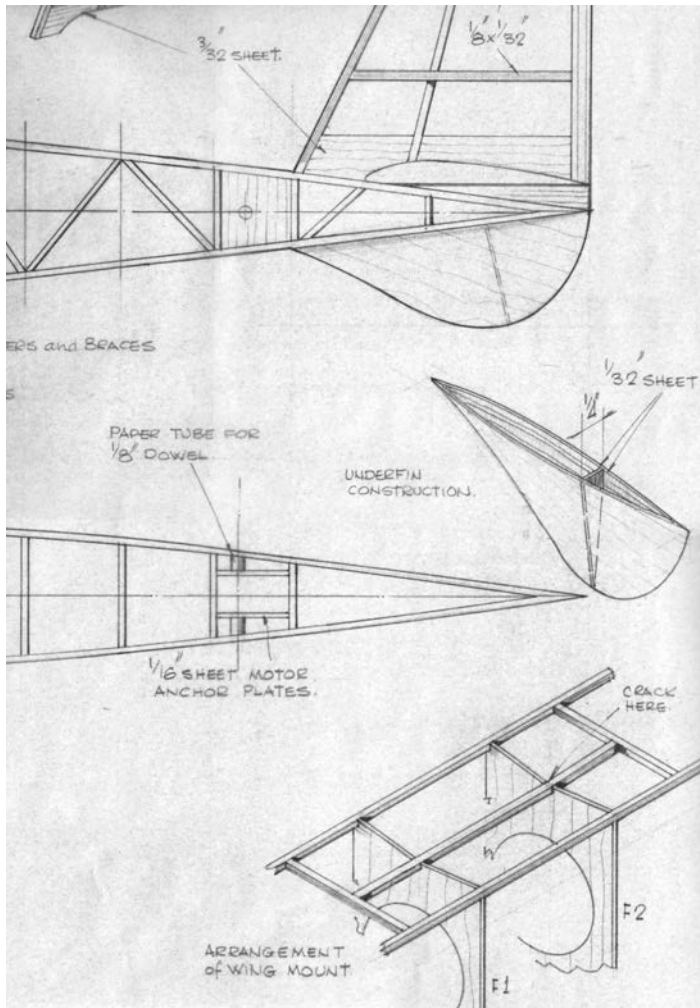


CRAFTY computer paper

<http://www.craftycomputerpaper.co.uk/>

## Before you can make one

first somebody has to draw it



### THE OUTSTANDING ENGINES FOR '61

## "Venom"

**1400**

Specially designed for the beginner—fitted with sure-fire "Recoil" starter for extra easy starting. A safety feature is the rear throttle control for easy handling. Heavy duty 2 v. Glow Plug; Robust construction for long life. Wide speed range. Weight—3 1/2 oz. Suitable for control line models (Frog "Battle of Britain" Fighter) or free flight sport models. Price **58/-**

"VENOM"  
1.5 c.c. Glow Plug Engine



## "Viper"

**1500**

The Competition engine for '61. Its sparkling performance will satisfy the most enthusiastic modeller. Speed over 15,000 r.p.m. on a 7 x 4 propeller. Rear throttle control — robust design throughout. Weight 3 1/2 oz. Suitable for all types of 1 1/2 c.c. competition models, C/L stunt, 1/4 A Team Racing, or free flight. Price **80/3**

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"VIPER"  
1.5 c.c. Ball-Bearing Diesel Engine



Venom and Viper requested by Tony Neal

remember **Malmstrom Madness?** - the West Australia Model Aero Club



Mike Butcher waiting with his *Brigadyr* to run off some of his fuel before launch – "Test glide on a calm day, preferably over long grass"



## Competition results

### Michael Marshall reports

The **25 inch rubber** competition which should have been held on the 30 May, following the BMFA Nationals, had to be delayed by one week because of poor weather. However four competitors were able to put a variety of models into the air. The competition was for the best three flights out of five with the maximum set at one minute. Chris was the only flier to achieve three maxes with Bruce and Mick Staples tying for second place. This was resolved by a fly off won by Bruce.

|                      |                  |
|----------------------|------------------|
| 1st Chris Strachan   | 180 s            |
| 2nd Bruce Lindsay    | 167, fly off 64s |
| 3rd Mick Staples     | 167, fly off 28s |
| 4th Michael Marshall | 136              |

The **Malmstrom** competition took place on the 13 June, which was probably one of the best evenings weather wise we have enjoyed this year. Usual formula, best three flights out five with a one minute maximum. Four competitors were able to take part with Bruce, Mick Staples and Michael flying Vikings. Gordon Hannah flew a scale model. Bruce was a clear winner. Michael who had arrived at the field with his model but no propeller was able to borrow Bruce's propeller assembly to complete his flights but by this time the better air had departed.

|                      |       |
|----------------------|-------|
| 1st Bruce Lindsay    | 168 s |
| 2nd Mick Staples     | 158   |
| 3rd Michael Marshall | 143   |
| 4th Gordon Hannah    | 65    |

### Something a little different!

The **King Harry** Competition took place at Newmarket on the 18 June, nearly mid summer, with a warm and pleasant evening. A strong wind during the day began to subside to enable some good flying. I promoted this one model competition at the beginning of the year and eleven club members were in receipt of plans. I allowed the option of the original 1942 King Harry plan or the more recent Alan Wiggs variation as I thought there might be difficulties accessing plans but in fact both were readily available. Come the day five modellers made it to the field for a three flight competition with the conservative maximum of one minute. This is an amazing little model, I knew that Chris had made a flight of two minutes in preparation. Only one flyer made three 60 second flights. Chris and Phil made two. Maybe Phil would have made a third but unfortunately broke the motor, and his model winding for his third flight.

|                      |       |
|----------------------|-------|
| 1st Michael Marshall | 180 s |
| 2nd Mick Staples     | 175   |
| 3rd Gil Hart         | 172   |
| 4th Chris Strachan   | 169   |
| 5th Phil Haines      | 120   |

If there is any one out there who hasn't yet managed to finish his model or even someone who wants a copy of the plan you can fly in the **Ren Cup** competition, at Newmarket on the 23 July.

## How things were

December 1963

**AMAZING RELEASE!....**  
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the box says REN MODELS £1.09  
 so the chances are it was Chris Hinson who sold it to Tony Neal

Isn't it time you finished building that model Tony?

THIS DRAWING WAS MADE BY Terry Rose FROM A COPY OF NOV. 1944 'AERONODELLER'

## Old Warden – flying the flag

just don't mention the snoring



getting the PAW ballraced 09 running just right

**Tony Welch, Steve Mynott and Tony Hines** flew the flag literally at Old Warden early in May.



These three took a camper so that they could get the most from the weekend. In Tony's words, "We normally have a bit of trouble with Steve's snoring. At the Nationals a couple of years ago he brought a big bag of silencers for various engines. He'd snored a lot on the first night so on the second night I put silencers in his pillow to try and quieten him down a bit but he twigged it and took them out!"



Tiny Tot

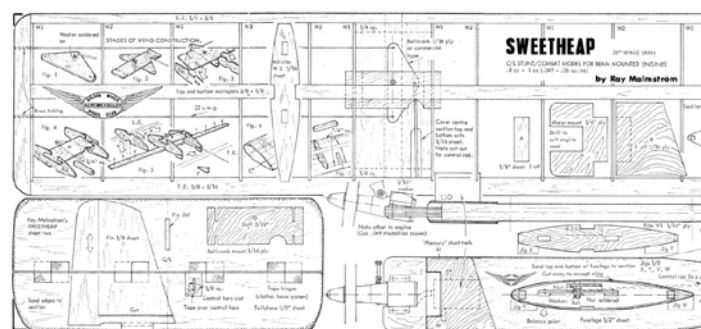
"I was flying the red and yellow Tiny Tot built from the Aero Modeller plan. It's a Doug McHard design which is unusual for him as he wasn't really into control line."

"The blue one we flew is a Sweetheap and one of Ray's designs. The first one I built I couldn't get to fly very well. I didn't like the wing section and didn't know whether it was me made a mess up of it or whether it wasn't a very good wing section on the plan. I don't know but then I redesigned it with a thinner fuselage – I used only 1/4 instead of the 3/8 Ray had used – and

I've got a combat wing section but kept the same plan form. Anyway, it's transformed and now it romps away."



Sweetheap – Sept '68



Ray's Sweetheap

The other evening Steve and Tony were flying an ex Peter Hoskison SkyStreak 26 with an Eflin 149, the Malmstrom Sweetheap, a T-Tray with ball raced 09 and a Bernie Shulman's Wee-One with a Cox Tee Dee 020 – flying little models as the weather was nice.

Plans for all of these can be downloaded from either [Outerzone.co.uk](http://Outerzone.co.uk) or [HipPocketAeronautics](http://HipPocketAeronautics)

Picking out two models from Old Warden, we have the immaculate Tetrarch of modeller Anthony Druce. Just look at that prop, carved from Jelutong.



magnificent carved prop on this Tetrarch of Anthony Druce

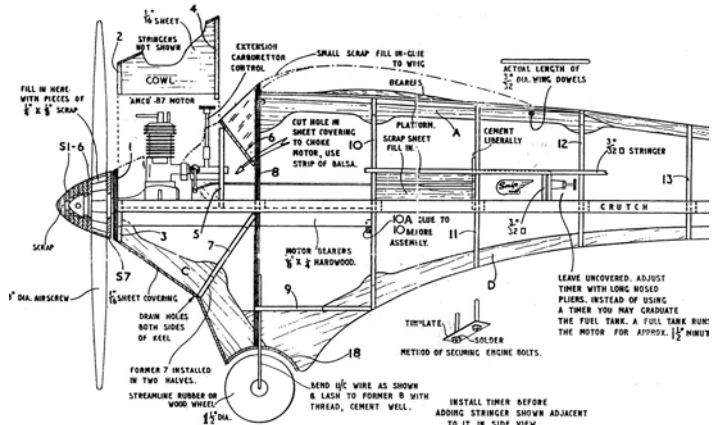
Nearby Tim Gray was flying a 35" Scarab.



A real "builder's model"



wonderful deep fuselage to enclose the mono wheel



## Ask a man who doesn't know

that **Mick Staples** has a lot to answer for

I happened to be there when Mick came up to Richard and asked, "what would be a suitable electric motor to replace a Mills?" Not only did we realise that we didn't know, but we weren't even sure where to start.

Each to his own and I began by searching for Mills data and found an Aero Modeller article from Dec '60 where the output of both the .75 and the 1.3 Mills had been measured at 11,000 rpm: the .75 gave 0.054 hp and the 1.3 gave 0.114 hp so, turning that into today's money we have 40W and 85W. Alan got drawn into the discussion and came up with the 'Hunter Rule' – you typically need 50W/lb.



I remembered that my 'hero' Eric Coates had described trimming his Mills 1.3 powered DH9A in his Flying Scale column. Sure enough, the finished weight was 33 oz or just over 2 lb.

According to the rule he would need 2 x 50 or 100W – a bit more than the 85W quoted, but then for free flight scale the model would want to be flying very sedately. Next I looked at the data John Valiant supplied for his Luton Minor. This 18 oz model flies with an EMax CF2822 capable of 74 W from two cells or a bit more [101 W] from three. 'Hunter's Rule' suggests just 56 W is the power required, so he has power in hand. This is the beauty of outrunners, they can be throttled back so effectively and controllably.



John Valiant's stately Luton Minor

Next time I saw John I asked him about the LiPo he used in the Luton – it seems he uses a 3 cell pack – which would seem to provide far more power than the rule suggests, "Yes, I need the weight of a 3S pack but I fly on no more than 40% throttle". I stood next to him next time he had it in the air, just to check.

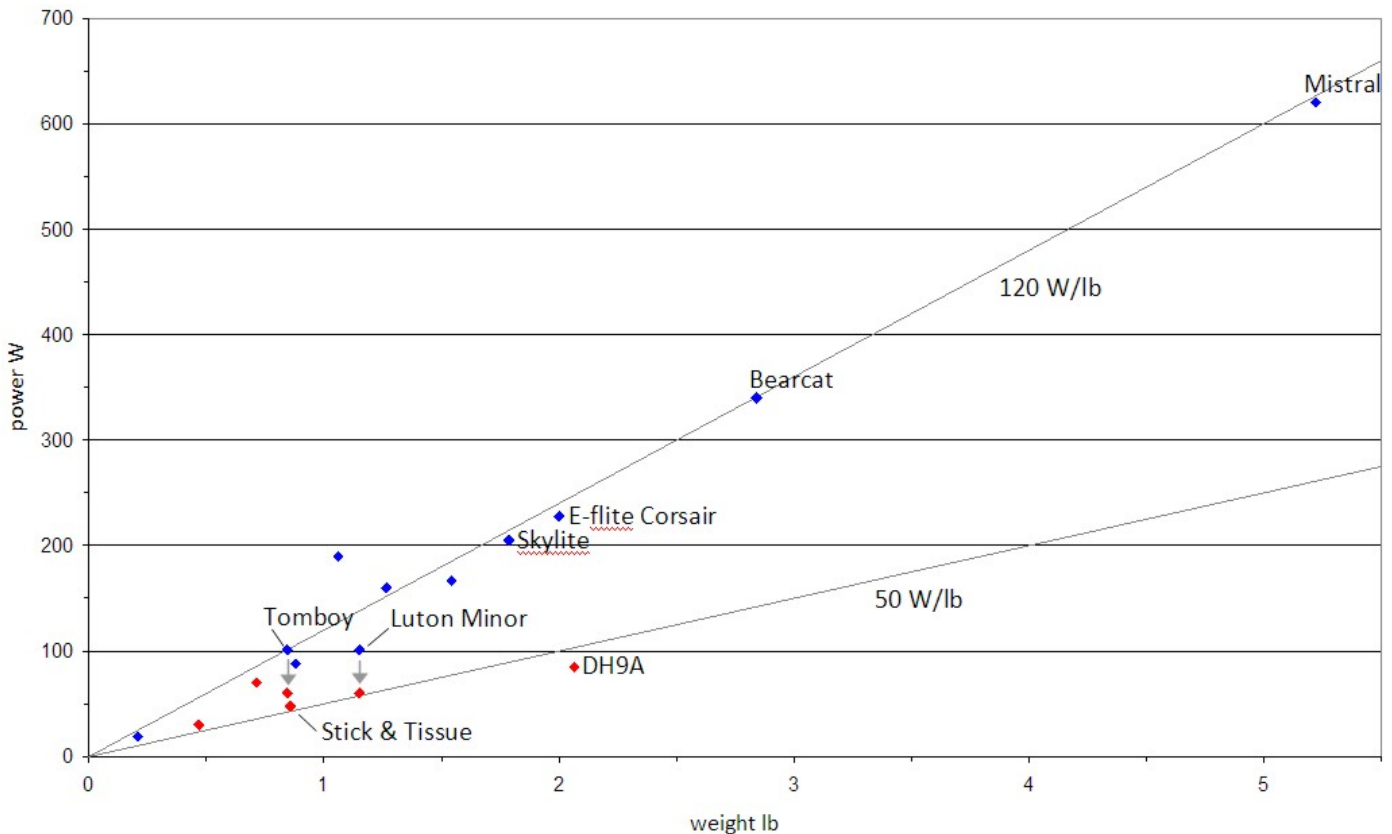
Meanwhile, rather than turning to the computer for answers, Richard had been busy getting out models . . . With one of these – they sit between LiPo and your ESC - showing how many amps are flowing, what voltage the LiPo is producing and, most importantly, how many watts are passing into the motor.



FROG Blue Tit perched on the Mistral's wing

Richard measured all sorts of data for his considerable range of models, but most importantly, weight and power. From tiny 3 oz Blue Tit through the 45 oz Bearcat to the huge 83 oz Mistral

Out of this mass of data a pattern or two emerged:



I've added a couple of lines to Richard's data: the lower line shows 50 W/lb and the performance of models close to this line can be described as 'sedate' – 'Hunter's Rule'



Gerald holding up my 'sedate' Stick & Tissue

The upper line reflects a power to weight ratio of 120 W/lb and these models have performance described by Richard as, "ample" – falling short of his "ballistic" category. You'll see that John's Tomboy and Luton Minor appear twice and that's because they have plenty of power in hand [the upper entry] but in practice he flies at about 60% power or less [the lower entry].

So, getting back to Mick's question about the Mills, a 60 W outrunner could replace the .75 and 120W stand in for the 1.3 bearing in mind you can always throttle back.

## Footnote

*a comment or two from the editor*

Thank you to everyone who has contributed to this issue. If you have ideas or suggestions please speak up.