



LIFT

ISSUE 77

MARCH 2015
THE NEWSLETTER OF THE
THAMES VALLEY SILENT FLYERS



Diary Dates

Annual Presentations



Blanik



Recent Slope Moments



23 January Ditchling - Pilatus



17 December 2014 Butser



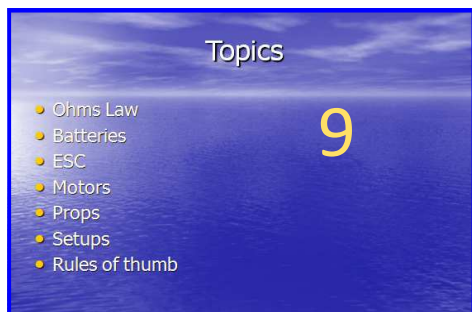
Well, another excellent Christmas MUSSEs Sloping Outing. The breeze at Butser was brisk, dry and warm. The MUSSEs of Colin, Trev, Graham, Peter, and Tony, were joined by Byron (a part-time MUSSE), a local or two, and a party of tree-lopers from the north face of Butser.

Trev brought a box of mince pies, Graham brought two boxes, I brought a box of Stollen Bites, Tony brought everyone a Whisper bar, and Peter (who thought there might be too many calories flying around), brought as all a wee dram of delicious single malt. So we were well fed and watered!

Here is the traditional Christmas MUSSEs picture, mit hats, etc. I should add that Graham managed to bring his own silly hat, so I did not have to add one in Photoshop. Oh, and he was wearing a really silly Christmas jumper. → *Colin Hutchinson*

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TVSF Committee



Chairman	Graham Stallard (GS)	01344 481275
Vice Chairman & Safety Officer	Chris Moynihan (CM)	01753 889825
Secretary	Steve Elkin	01628 605510
Treasurer	Richard Thornton	01189 629168
Competitions Secretary	Mike Fantham	01483 282747
Membership Secretary	Ian Lancaster	01189 760523
Records Officer	Graham James	01932 226327
Newsletter Editor	Tony Ridler	01252 542720
Other contacts;		
(JP) John Price 01189 414766;	(TH) Trevor Hornby 01252 870677	
(PW) Peter Williams 01252 842120	(TM) Tony Morgan 01189 691027	

Edited by: Tony J Ridler, 109 Pierrefondes Avenue, Farnborough, Hants. GU14 8NZ

Email: tonyridler@sky.com, Phone: 01252542720, Mobile : 07989243599

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Front cover photograph of Trevor Hornby's Lear-jet (at least at the time it belonged to Trevor). Photograph taken by Tony Ridler at White Sheet downs, the launcher is Graham Stallard.



Photo on the rear cover, courtesy of Chris Moynihan. This photo was voted 2nd at the annual club photo competition.

Do you know someone who would like our club newsletter? To order a copy of the next issue (July 2015) send a cheque to Tony Ridler, 109 Pierrefondes Ave, Farnborough, Hants. GU14 8NZ for £4.00 which covers P&P. A few back issues are available @ £2, email Tony for availability. Make cheque's payable to Thames Valley Silent Flyers. Orders must be received by the cut off date. - **17th June 2015 for the July Publication.**

Editorial

By Tony Ridler



Another year is here and I hope your winter projects are near completion. Was your stocking full of modelling goodies from Father Christmas?

The MUSS's have been very active this Winter although I have been supporting the CBA club, I am a fair weather flyer now a days.

We are short of items for this issue of the newsletter so come on let me know what you are making and flying.

There is a good article from Bill Cooke on his progress with the Blanik including the trials and tribulations of the Canopy.

Our southern correspondent, Terry Antell has an article bringing us up to date with life south of Guildford, there is no doubt the Christchurch and District Model Flying Club is on a roll.

The AGM in December was well supported, the same committee was re-elected so I guess the members are happy the way our club is conducted. The full minutes are included in this issue of the newsletter.

January was the annual presentation night, congratulations must go to Colin Hutchinson for winning 9 trophy's. However when it came to February it was Trevor's turn to be the top flyer at the indoor chuckie. We had to fly this year at our club meeting room which was long enough for the distance challenge but proved too narrow for all except Trevor to achieve any duration.

Safe flying and have a good year what ever your discipline. I am looking forward to Wales.

Tony. →

This morning on the motorway, I looked over to my right and there was a woman, in a brand new VW Golf, doing 90m.p.h, with her face up next to her rear view mirror putting on her eyeliner!

I looked away for a couple of seconds, and when I looked back she was halfway over in my lane, still putting on the makeup.

As a man, I don't scare easily, but she scared me so much I dropped my electric shaver, which knocked the meat pie out of my other hand.

In all the confusion of trying to straighten out the car using my knees against the steering wheel, it knocked my mobile phone away from my ear, which fell into the coffee between my legs, which splashed and burned 'Big Jim and the Twins', ruined the phone, soaked my trousers, and disconnected an important call.

*B****Y Women Drivers!!*

Chairman's Chat

By Graham Stallard



The news at the January meeting was change is on the horizon in the shape of Syngenta changing their farming business model. The news is Syngenta are leasing all their fields to a third party to manage as appropriate. Needless to say the committee have been on the case identify multiple plans depending on developments. The transition date is September. Since receiving this news there have been further developments. Whilst nothing has been finalised it is very likely we will carry on as before. We will see if we cannot get better use of Oldlands than in recent years. However until the new manager in place we should carry on as before and see what we can arrange once the manager is in place.

As most will know I have been learning to fly full size gliders and what an experience it has been. So many new experiences and so much fun. One of the benefits is there are many experienced and knowledgeable individuals to talk with. During a conversation on the theory of flight, one of the instructors recommended reading a paper by Holger Babinsky (How do wings work). For those of us who have been exposed to flight being based on Bernoulli's theorem this paper is enlightening. I read an article a while ago which demonstrated that the forces developed by Bernoulli's theorem were just not sufficient to sustain flight. This paper tells the real story of how wings work. It is on our web site or can be downloaded from

<http://iopscience.iop.org/00319120/38/6/001;jsessionid=7582DAD9057521F75D0F11AC5B9496E2.c4>

My life plan has gone a bit awry through January and February. Must learn to so No and stick to it. So Model flying, building and full size have been in short supply. Fortunately I know others have been busy with a serious outbreak of Phase 5 gliders. Through the good auspices of a fellow modeller a number of Phase 5 airframes have been made and are currently with various club members being fitted out and covered. A few of these are to be finished in Red Bull livery. So once complete these will be a something to see. Can't wait for the Wales trip where we are hoping for a mass maiden of multiple Phase 5's. In fact I reckon if half make it into the air it will be highest concentration of phase 5's ever.

Now to get the work life work balance back closer to lots of flying and some occasional work. Off to the model room next to fettle a Simoon. More on that in the next Lift.

That's my bit of chat. See you on the field or slope.

Graham



Diary Dates

Date	Day	Item	Contact
03 - March	Tuesday	Club Meeting	
07 - March	Saturday	Indoor - Garth Hill	TM
08 - March	Sunday	Slope Aerobatics	JP
22 - March	Sunday	Slope Cross Country	GS
5 - April	Sunday	Slope Spring Spare	TBA
7 - April	Tuesday	Club Meeting	
18-25 - April	Sat - Sat	Spring Wales Week	CM
28 - April	Tuesday	Mini Glider L 1	JP
01 - May	Friday	eSoaring FNL 1	PW
05 - May	Tuesday	Club Meeting	
08 - May	Friday	Thermal FNL 1	CM
15 - May	Friday	eSoaring FNL 2	PW
16 - May	Saturday	Blackbushe Model Air Show	
22 - May	Friday	Thermal FNL 2	CM
23-25 - May	Sat-Mon	Radio Glide	
19 - May	Tuesday	Free Flight Chuckie	JP
29 - May	Friday	eSoaring FNL 3	PW
02 - June	Tuesday	Club Meeting	
05 - June	Friday	Thermal FNL 3	CM
12 - June	Friday	eSoaring FNL 4	PW
16 - June	Tuesday	Mini Glider L 2	JP
19 - June	Friday	Thermal FNL 4	CM
21 - June	Sunday	TVSF Club eSoaring and e2m	GS
26 - June	Friday	eSoaring FNL 5	PW
27 - June	Saturday	TVSF Open F3K (1) BMFA	GS
03 - July	Friday	Thermal FNL 5	CM
07 - July	Tuesday	Club Meeting	

The odds against there being a bomb on a plane are a million to one, and against two bombs a million times a million to one. Next time you fly, cut the odds and take a bomb.
— Benny Hill

Where do we go from here?

By Vic Thomas



Entering 2015 perhaps some may think that there is little to concern us as harmless hobbyists but I am none too sure. There are a number of issues which are catching up with us, some we can do something about and some which are outside our influence. Not necessarily in any order of importance as each of us will have a priority dependant on specific interests, these seem to me to be of concern.

What is the hobby?

To me the hobby, unlike many others, includes a wide range of related interests, scale, free flight, gliders, electric, vintage, etc. etc., and as time passes this range changes which in turn maintains interest. In my age group aviation had an almost magical exciting quality satisfied by very simple models and the Yanks at Greenham, Daks, Horsas, Wakos, but that is another story.

Over the years, unfortunately it was not possible for me to enter the full-size world, but aeromodelling provided an alternative. Avoiding a lengthy history, and coming up to date, a simple definition of where we are can be divided into two broad categories.

Fellow enthusiasts whose interest extends to building and even designing what they fly, we can call aeromodellers and those, for whatever reason, buy “ready made” and derive their interest in the flying, model flyers.

Affecting both camps we have a wide range of competitions. As a club we seem to reflect both of these elements and our relatively steady, but changing, membership shows that we are getting something right. Enough of the blindingly obvious.

What about those outside the hobby?

It is in the interests of the toy trade, keen to supply the market with new products from the East, to offer a frightening array of “flying models” which, for the most part, will not finish up in the hands of formal model flyers.

We are all looked after, perhaps governed, by BMFA and a number of lesser organisations, anxious to protect our interests, with advice, codes of practice and, above all, providing insurance. We have already seen shouty headlines in the more excitable press about airliners put at risk by drones at 3000+ feet and it only needs one incident to encourage the “powers that be” to impose restrictions which will affect us far more than the “toy users” who can always find something else. It may be total coincidence but our use of major flying areas, Middle Wallop and Barkston, and indeed our own site, may be under threat already.

What might be done?

Whilst it may be possible to encourage some of these new toy users to extend their interest in model aviation by joining a club, it is to be hoped that their plastic whatever will be ditched when it breaks and their fad will change to something not affecting us. One can only hope before serious damage is done.

Having not purchased one of these toys I do not know what advice is given to purchasers on safe operation, certainly the safety advice given with the most mundane items is laughable to the extent that it is ignored, (more visits to A&E). We can only hope that BMFA and related bodies will make it their business to offer advice to the distributors/manufacturers in formulating user advice.

Watch this space with trepidation...→

Caption competition.

The non-white individual in the photo is alleged to be Colin talking to the sheep, however what do you think the middle sheep saying?



Answers on an email to tonyridler@sky.com

All captions will be printed in the next issue of *LIFT*. →

Paddy decides to take up boxing and goes for the required medical. A few days later the doctor 'phones and says "Paddy, you realise you've got sugar diabetes."

Paddy says, "Nice one, when do I fight him?"

Electric Flying

By Graham Stallard

Graham's notes from his Lecture



Ohm's Law

$$\frac{V}{I R}$$

- I** Is the current through the conductor in units of amperes
- V** is the potential difference measured across the conductor in units of volts
- R** is the resistance of the conductor in units of ohms



The sums

V = I x R If I=10A, R = 0.1Ω gives V = 10 x 0.1 =1V
If I=100A, R = 0.1Ω gives V = 100 x 0.1 =10V

R = V / I

I = V / R If V =12V, R = 0.1Ω: I = 12 x 0.1 = 1.2A

Power

Power combines Ohm's law & Joules Law giving

P (power) = V x I. Watts, Or $P = V^2 / R$ Watts, Or $P = I^2 \times R$ Watts , $P = 12V \times 100A = 1.2KW$
Which is 1200/746 (1 horse power) = 1.6HP

Batteries

NiCad, then NiMh and now Lithium. Common to all is they store energy volts

Size is proportional to capacity, Internal resistance is inversely proportional to size and chemistry.

800 mA @ 60C is 48A max

2200mA @ 60C is 132A max

Plate size drives capacity drive max I

Electronic Speed Controllers. (ESC)

Used to vary the drive to a motor

The type of FET determines the performance, The more power required the more FET's

The 'RDS on' determines the loss in the ESC, FET_RDSON_1.pdf, FET_RDSON_2.pdf, FETs.jpg

Motors

Kv: Kt: Io: Ri:

Kv the RPM per volt of the motor

Kt is the motor torque constant

Io is the minimum current to overcome losses in a motor

Ri the motor terminal resistance

Losses are copper losses, Iron Loss, Friction, Timing

Hacker B50 6L

Power range max. 1200W (15 sec.)

Idle Current @ 8,4V 6,15A

Resistance (Ri) 0,0038 Ohm

RPM/Volt (kv) 4025 U/min-1

Weight 255g: Diameter 35,8 mm: Length 60 mm

Poles 2-Pole Insiderunner: Shaft Diameter 5 mm

Recommended. Speed controller 40A to 125A Brushless

Recommended. Timing 0° - 5°

Kontronik Kira 500-30 with 6.7:1 gearbox

Resistance (Ri) 0,011 Ohm

RPM/Volt (kv) 3000 U/min-1:

Weight 200g: Diameter 36 mm: Length 80 mm: Shaft Diameter 6 mm

HET (Typhoon) 2W20

Power range max. 700W (Max A 60A)

Idle Current @ 9V 2.6A

Resistance (Ri) 0,014 Ohm

RPM/Volt (kv) 3400 U/min-1

Weight 93g: Diameter 28 mm: Length 42mm: Shaft Diameter 3.17 mm

Recommended. Speed controller 40A to 125A Brushless

Props

Slow speed high power. Like a wing high aspect ratio equals better efficiency.

Stiff. Needs to cut through the air rather than beat it.

Rules of Thumb

What's the objective, eSoar or F5J

Do not obsess with wing loading 4 oz in 6 square feet is 0.75 on the wing loading.

Is getting to height fast a requirement?

Model performance

Induced drag, Profile drag et al are an area where all thermal gliders are being developed.

There are unlikely to be significant changes in this area producing significant advantages.

In conclusion

As with competition classes over the next few years as with F3J etc we will see an optimum soaring solution evolve. The fun (!) will be in the journey to this point.

Power to Weight

- Basic sport flying 50W/lb
- Sport Flying 100W/lb
- Aerobatic 150W/lb
- 3D 200W/lb.

LiPo rules of thumb

- Always charge LiPo's with a balancer
- Charge LiPo's at 90% C for long life
- NEVER discharge LiPo's below 3V per cell (Puff)
- Operate LiPo's within their C rating (Puff)
- Store LiPo's with 50% charge.
- NEVER short output.

NiMh rules of thumb

- Charge NiMh at 1 x C (Eneloop 2000 mA @2A)
- Store NiMh with 0% charge, discharge to 1V per cell
- Charge NiCad at 1 x C (Sanyo 3000 mA @3A)
- Store NiCad with 0% charge, discharge to 0V per cell and store short circuit.
- ALWAYS test battery voltage with a load



Graham Stallard



Thames Valley Silent Flyers

Annual General Meeting

Minutes

2nd December 2014

8.00pm – 10.00pm

Attendance= 28

Apologies: - Peter Woods, Chris John, Mark Hastings, Bill Cooke, Peter Chance, Barry Jordan.

Request for Any Other Business (AOB)

Minutes of 2013 AGM

The Minutes Report for 2013 AGM was put to the floor for criticism and/or comments, there were none?

A vote was taken to accept the minutes report,

Proposed by Chris Moynihan – Seconded by Jeff Bentley.

Fore = 25, Against = 0 and Abstention=3. The minutes were accepted.

Matters Arising from the last AGM - NONE

Committee Reports:

Secretary: Steve Elkin

During the year, I have managed to attend 10 of the monthly meetings, and all the committee meetings.

As a relatively new member to the club, 3rd Year, the position of secretary has been a little challenging to start with, mainly the writing up of the minutes for each meeting, but hopefully the job I am doing the club is finding acceptable and with the help of other club members, mostly Graham, I think it's working out OK.

I have also taken on the role of (Online Club Admin) with the BMFA portal, to manage the clubs details on the BMFA web site along with Ian Lancaster.

I am happy to carry on in the secretary's position for 2015.

Membership Secretary: Ian Lancaster

Although we now have this new BMFA portal to use, I will probably carry on using the old paper system that I am happy and familiar with.

At this time of year, the job is quite hectic, with all the membership renewals going

on, but the rest of the year is quite steady, I have noted that more and more members are opting to pay their fees by BACS, which is OK, but I still like getting cheques, part of the old school I suppose.

I am happy to continue as Membership Secretary for 2015.

Comp Secretary: Colin Hutchinson

It's been a good summer with only 2 TVSF comps not running – the 60" crunchie and the foamy slope annual pylon racing.

We have had reasonable turnouts for most of the comp, despite some field changes, and the occasional day that challenged the pilots. There have been a lot of warm evenings, and sunny days that have far outweighed the cold windy ones.

There have been the usual assortment of incidences, including models in trees, dead receiver batteries, dead tx batteries, models lost in the corn, etc, BUT more details of that will be revealed at the awards night.

However, Graham James wishes it to be known that all those helpers who aided his rediscovery of his Pike Perfect at 40,000 feet during the Thermal Open will be receiving a bottle of whiskey for their help!! Names and addresses to Graham!

WHAT - so that is everybody then??

Thanks

Thanks to all those who turned out to fly in competitions, but especially to the CDs, to Graham (switch-on) Stallard, Graham (it's a Moonshot) James, John (it'll be a Fournier one day) Priceless Price, Trevor (Impact) Hornpipe, Peter (Irrepressible) Williams, Mike (chuck-em high) Fantham, Tony (I'd rather be editing) Ridler, Chris (Scrabble champ) Moynihan, and finally to Vic (The only other Walloper) Thomas.

Apologies if I have missed anyone of the list.

Records Officer: Graham James

I took over the job of Records Officer from the last AGM, so I've been doing it for just the one year, some of the winches are currently been modified by GS to make them more serviceable for next season, apart from that, everything is going OK, and I am happy to carry on in the position for 2015.

Newsletter Editor: Tony Ridler

Well another year and 12 of my attempts to provide the club with a club newsletter, although I like to think it is a bit more like a magazine.

It would seem from comments that unless members are being kind, my offerings are generally acceptable.

The past 12 copies have been quite enjoyable to build and publish apart from pressuring members for material. One of my regular contributors who likes to remain anonymous, feeds me with interesting items, look on the last page for his musings. LIFT 77, will include his latest contributions, which is of course if I am re

-elected as TVSF editor.

Keep the articles coming in; all I need is some text and a few photos on any topic. It could be Balsa Bashing, maybe the latest project, visit to a new slope or what interested you at a model show or exhibition, the list is endless. The MUSSES have visited a number of new slope sites this year; an article would make an interesting item.

Well having completed four years, where did it go? Providing you vote for me to continue I am prepared to stand for at least another year.

Webmaster: Trevor Hornby

Overall highlights:-

1- Forum Membership is up to 50

2 -We have added the latest issue of the TVSF Handbook

3 - "Useful links" recently updated now have 233 silent flight links

4 - The hottest topic "who's up for Sloping" has now had 178,000 hits

5 - At 12:00 today 297 "visitors" were looking at the TVSF forum

Behind the scenes - who looks after what

Paul and Keith Vale - overall design ownership, web masters and techy support.

Tony Ridler - Photos

Trevor – Contest results, Calendar, Links, and Front Page (with Tony).

Vice Chairman: Chris Moynihan

I've managed to attend 11 of the club meetings this year, all the committee meeting, and stood in for the secretary twice, I've managed to do some flying this year, contra to rumours, and have CD the club TFNL, Open Thermal and the Club 100s comp.

I have organized the two Wales trips, with help from other club members.

I also carry the responsibility for health and safety, and I need to report an incident earlier in the year of a glider going down into the grounds of Syngenta, causing a broken glass panel in one of the buildings, as a result, a no fly zone has been put in place over Syngenta.

Another problem, is the parking of cars, during comps. along the hedge line, on the approach line of landing models, so please park away from the approach line of flying models during these times, to avoid any possible damage to members vehicles and the subsequent insurance claim.

I am happy to serve for another year as Vice Chairman.

Chairman: Graham Stallard

Well another year has passed and thankfully plenty of flying including model and full size. We have a number of new members join and look forward to their development within the club. Some comps have been down on numbers and may re-

flect the changing interest of club members. The club BBQ was a success as a result of good weather and excellent cheffing. Innes was appreciative of the club presentation and we are settling in with the new guys standing in for Innes, Justin and Ben. One of the difficulties the club has been obliged to navigate is Oldlands being unavailable. Within the limits that the farm can, the farm has endeavored to minimise the time we are off Oldlands. We have managed the arrival of a glider in one of Syngenta's green houses with little consequence in the end. It has however resulted in a no fly zone which has little impact on sport flying. The club day out slope soaring this year was a bit different but enjoyed by all. The club enjoyed a day out at the Wyvern Gliding Club at Up-Avon kindly hosted by Gordon Walker. This was enjoyed by all including an impressive beat up along the air field, loop the loops and more. The CM Wales trips are a popular as ever with lots of flying and socialising. A number of members are regularly slope soaring mid-week. Another group of club members are soaring their socks off at Aero Tows. The Lift magazine continues to keep all club members informed with a very professional publication. All in all, the club is pretty active.

Part of the reason the club works so well is due to the committee members who give up their time to take care of day to day operations of the club. It is their work and those others who run comps, get things done that allow us all to have a good time. My sincere thanks to you. Of course it also only works if club members join in. To the club members here and those who read this at some point some committee members will be standing down in the future. They have done their bit for years, in some cases decades. The club, your club will need others to step forward when the time comes. That's my bit.

Treasurer Report on Accounts:

Richard Thornton

This year has been more or less the same as last year, with no major events happening, or expenses, we have ended the year on an £82-00 deficit.

A few year expenses are increasing on a year basis, such as the engraving and prize costs, so club fees may need to be increased in the future to cover this, the committee will review as and when necessary.

I spent an evening around Peter Williams (the auditor) house, where he checked over the figures and make sure everything added up.

I am happy to carry on as Treasurer for 2015 if the club wants me to.

A vote was proposed to accept the accounts presented as a true report for 2014, it was proposed by Terry Weeks and seconded by Colin Hutchinson. A vote was taken and the result was:

Fore = 27, Against = 0 and Abstention=1. The proposal was accepted.

Elections of Officers for 2015

All committee members are prepared to stand for next year, the floor was asked if there were any objections, there were none.

A proposal was put to the floor to re-elect the committee en-block, proposed by Clive Learwood and seconded by Brain Pettitt, a vote was taken and the result was:

Fore = 28, Against = 0 and Abstention=0. The proposal was accepted.

Appoint auditor for 2015

Peter Williams said he is prepared to stand again for 2015, but a new auditor will need to be appointed for 2016.

The proposal is re-appoint PW as auditor for 2015 was put to the floor, Proposed by Brain Pettitt and seconded by Clive Learwood, a vote was taken and the result was:

Fore = 28, Against = 0 and Abstention=0. The proposal was accepted.

Subscription for 2015

The committee discussed this at length, and in view of the current bank account balance and conditions, could not justify an increase for 2015, so the fees will remain the same, £32.00 BMFA + £35.00 club.

Proposed Amendment

Jeff Bentley proposed that he thought that the club fees should be increased by at least £1.00 for 2015, just to keep up with inflation. A discussion followed with one the points made, that the committee had discussed this in detail, and it was agreed that because the clubs bank balance is still healthy, the fee would not be increased for 2015, but would be reviewed on the yearly basis's.

A vote was taken, proposed by Trevor Hornby and seconded by Jeff Bentley and the result was:

Fore = 2, Against = 26 and Abstention=0. The proposal was rejected.

A proposal to keep the subs the same as last year was put to the floor, for a vote, and the result was:

Fore=27, Against = 0 and Abstention=1. The proposal was accepted.

AOB. There was no other business.

Date of Next AGM 1st December 2015

The Meeting closed at 10.00pm.

→

More about Chargers

By Stan Yeo



Introduction

This article will hopefully reduce the number of burnt out chargers and mains regulated power supplies (PSU). Lower modeller's expectations as to how quickly batteries, Lithium Polymer (LiPo) in particular, can be charged with the equipment they have and assist in the selection of a new charger or electric flight packs.

LiPo Charging

The charging regime for the Lithium family of batteries is different from other types of battery that we use in that the charge is terminated on battery (cell) voltage. Also it is a two stage charge, i.e. it starts as a constant current charge where the charging voltage rises in line with the battery voltage and finishes as a constant voltage charge where the charge current drops off to almost zero as the battery voltage gets closer to the charge voltage

The changeover generally occurs when the battery voltage is within about 0.1 volts of the cut-off voltage. When the combined voltage of the cells on charge equals 4.2v (Lithium Polymer) per cell then the charger terminates the charge. For a 3 cell LiPo pack this will be 12.6v.

Expected Charge Times

With NiCad / NiMh battery packs the formula for calculating the charge time of a fully discharged pack is:

Battery Capacity / Charge Current x 1.4 = Charge Time (hrs)

i.e. For a 1000mA Pack being charged at 100mA (standard 10% charge)

Charge Time = $1000/100 \times 1.4 = 1.4\text{hrs}$ i.e. 1hr 24mins.

Unfortunately this is not the case for Lithium packs due to the final stage of the charge being at constant voltage with a declining charge current. I would surmise this adds another 10 - 15 minutes to the charge time resulting in a typical full charge for a LiPo pack of around 1hr 45mins instead of 1hr 24mins for a 1C charge. C = Pack Capacity.

Cell Charging Voltage

To 'push electricity' back into the battery to charge the battery the charge voltage must be greater than the battery voltage to overcome the resistance of the battery. The battery resistance will vary from battery to battery, type to type, as a consequence so will the voltage differential.

The full charge cut-off voltage for a single LiPo cell is, as stated, 4.2v so for the purposes of this article and simplicity we have opted for a charge voltage of 5v per cell. For a 2 cell pack this would be 10v (2 x 5v) and a 3 cell pack 15v etc. etc. I am aware there are a number of variables that affect the charge voltage per cell but those of you that understand this rela-

tionship will also understand the relationship between charge voltage, charge current and the rated output of the charger so please accept this generalisation as I am trying to help those who do not!

Chargers

Based on our experience the most popular chargers are the ones with specification maximums of 50 watts / 6amps / 6 cells (LiPo). This for the non-electrically minded modeller is where the confusion arises. **Max 50 watts OR 6 amps OR 6 cells**

Aide Memoir: Watts = Volts x Amps.

This can be rearranged as Volts = Watts/Amps or Amps = Watts/Volts

If the charge current for a 50w charger is set at the 6 Amps maximum the out put voltage would be $50W / 6A = 8.33v$. Hardly enough to fully charge a 2 cell LiPo to the required 8.4v.

Caution . We do not recommend running chargers at their rated capacity. We would recommend a maximum 90% loading for charger longevity. In this case $50w/0.9 = 45 \text{ watts}$.

Practical Examples

Taking a typical 50w / 6A / 6S charger operating at 90% capability i.e. restricting the maximum output to 45w as suggested above results in the following maximum charging currents when the 5v per cell charge voltage mentioned above is used.

Single Cell = $45w/5v = 9 \text{ Amps}$ Greater than 6A max. current limit.

2 Cell (2S) = $45w/(2 \times 5)v = 4.5 \text{ Amps}$. Max. Pack capacity 4500mA @ 1C

3 cell (3S) = $45w/(3 \times 5)v = 3 \text{ Amps}$. Max. Pack Capacity 3000mA @ 1C

4 Cell (4S) = $45w/(4 \times 5)v = 2.25 \text{ Amps}$. Max Pack Capacity 2250mA @ 1C

5 Cell (5S) = $45w/(5 \times 5)v = 1.8 \text{ Amps}$. Max Pack Capacity 1800mA @ 1C

6 Cell (6S) = $45w/(6 \times 5)v = 1.5 \text{ Amps}$. Max Pack Capacity 1500mA @ 1C

As can be seen from the above calculations the issue also starts at 3S with cells of more than 3000mA capacity. Some cells can be charged at higher than the 1C rate. This in turn reduces the size of the battery that can be safely charged. In this situation our advice would be to look at buying a higher spec. charger such as a 200w 8S 10A with a 200w mains regulated power supply (probably a cheaper option than buying an all in one AC/DC one). A charger with this specification is capable of charging a 6S pack @ 6A

i.e. $(200w \times 90\%) / (6 \times 5v) = 180w / 30v = 6A \text{ (6000ma)}$

To Sum Up

If you are new to electric flight and not of an electrical mindset please study this article and try to understand the concepts. They are no more complicated than $A = B \times C$ or $B = A / C$. For those who take issue with my simplistic approach I do apologise. I am just trying to lift the mist for those who do not. Also please read the other articles on electric flight on our website www.phoenixmp.com. →

Happy Landings *Stan*

From your Southern Correspondent



I don't write often but occasionally I get the urge!

2014 was my year to change my laptop computer. The Windows system was getting me down again. After visiting the Apple store in Southampton I came away with a MacBook Pro 13" retina display. Absolutely marvellous machine, plus files can be saved in Word & Excel formats allowing most others to open anything I send through.

Christchurch and District Model Flying Club has had a really good year (2014). Our membership increased to 122, our best ever year since its beginning in 1966. When I joined it was 13!

We purchased another projector and an 80" screen. Being able to operate in HD makes everything so sharp. The projector has its own sound but we also have two wireless speakers which allow good coverage at the back. We regularly see 50 members at our meetings, the most being 65.

Our previous projector & screen was stolen from our store room at the pub. I managed to get a grant of £100 from Christchurch Borough Sports Council towards the £757 the new gear cost.

Every month we start at 6.45pm with an hour long training session. Could be Lipo's, Tx settings, ESC's, building from scratch, safety, etc. Flight training is also catered at meetings so newbies understand common sense things from the BMFA Members Handbook.

Main meetings then proceed from 8pm, usually with a speaker immediately after the items on the agenda.

We also meet on a Tuesday afternoon once a month from September to March for general chats and training. This 2pm till 5pm.

Our 40" cut ride on mower needed a proper service at the end of 2014 which only cost £228.

After paying everything we cleared just over £1000 into the club account. Remember, our membership is £15 a year, plus BMFA fees.

We don't pay for room hire which helps. Each year we have received items from members who have drifted off in a thermal which all goes into our accounts.

We also managed to donate £160 to Macmillan Local at Christchurch Hospital.

Next year I intend introducing aerotowing using an elec power model. So far my Cessna Skylane 172 has shown that it will be possible. (had one go with a good glider flyer on the line)

Indoor flying continues twice monthly at a local school sports hall. September to March gives us 14 evenings. We charge £3 per evening, 7.30pm till 10pm. The hire charge is £25. The year 2013/14 made the club £200! We operate an 8 minute session for small heli's,

Slow fly models, large Heli's & shock flyers. Simon Cole who came 2nd & 1st at the BMFA Indoor Nationals shows us all how to do it. We try, then the super glue comes out!!!

I managed to win the Wessex League, run by the Wessex Soaring Assoc. This was for electric thermal gliders up to 4 metre wing span.

My Silent Dream, a 3 1/2 metre model coped well in varying conditions. I was 70 in August so winning a Tesco £25 voucher was great AND the bottle of wine.

I'll sign off now. Until next time. ➔

Cheers, Terry Antell

Sports Presentation Award to Terry Antell

During November 2014 I received an invitation to the Christchurch Borough Sports Council awards evening. I was to be presented an award for Dedication to Sport.

Shocked was the word. I didn't realise someone had put my name forward so I asked, "Who was it?" The chap dealing with the entries (at Christchurch Borough Council) had lost the submission therefore he didn't know the name!

I then received a form for our Hon Sec., Malcolm Bird to fill in, which he did.

On the Evening of 28th November my wife Jean, myself and Malcolm Bird arrived at the East Dorset Indoor Bowls club in Christchurch along with around 90 other people.

39 Awards were being presented, as you'd expect, mainly to young people. It was truly humbling to hear just what these teenagers had achieved, then there was me, a 70 year old involved with model aircraft.

The citation about me seemed to go on & on.

The chap mentioned in the second paragraph above had also forgotten to arrange for a photographer and reporter from any newspaper. Jean took the photo on her iPhone.

It is me and the Mayor of Christchurch with me holding the Certificate & Salver on its stand. ➔

Terry Antell



TVSF 2014 Annual trophy presentations



The award evening got off to a good start with a free club raffle. Ten prizes totalling £200 were up for grabs. Several were won by committee members which caused much heckling and good humoured banter.

This year most of the pot's were won by Colin which only left the dregs for a few lesser mortals. There were a number of muttered comments along the lines, "who shall we pick to drive over his models" and "maybe he might catch the flu or a similar nasty this year".



Annual comps

Indoor Chuckie	Picton Pot	John Price	Peter Williams
Hand Launch F/F	TRL Cup	Colin Hutchinson	John Price
Hand Launch R/C	Bill Hatton Memorial	Colin Hutchinson	John Price
Slope Xcountry	Lancaster Pot	Trevor Hornby	Graham Stallard
100S	Moss End Plate	Colin Hutchinson	Terry Pelling
Open	Moss End Trophy	Graham James	Peter Williams
Electric Thermal	Electric Cup	Colin Hutchinson	Glynn Chambers
Electric Xcountry	Propeller	Tony Ridler	Graham Stallard
F3F	Watership Shield	Graham Stallard	Collin Hutchinson
Aerobatics	Kingsclere Cup	John Price	Graham Stallard

Special Awards

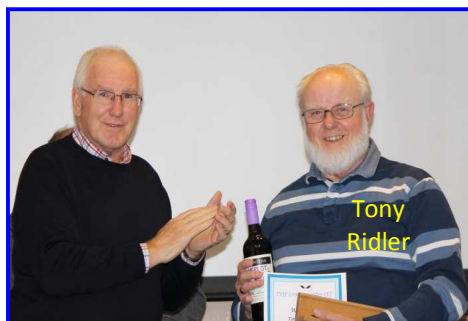
Best F3J	Findlay Trophy	Graham James
Photo Contest	Wasserkuppe Cup	Mike Fantham

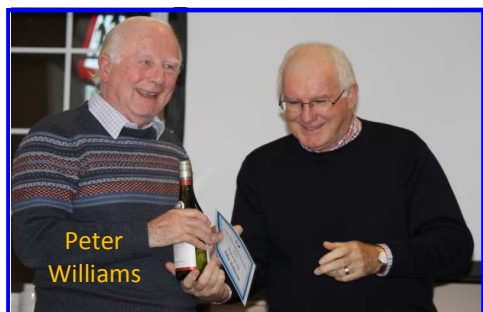
Leagues

Thermal FNL	Moynihan Shield	Colin Hutchinson	Graham James	Trevor Hornby
Electric FNL	Miles Shield	Chris Moynihan	Trevor Hornby	Colin Hutchinson
EFNL 2m		Roger Critchley		
Mini Glider L	The Binfield Bucket	Colin Hutchinson	Graham Stallard	Mike Fantham

All Rounders

Thermal All-Rounder	Chris James Memorial 1	Colin Hutchinson	Peter Williams	Trevor Hornby
Slope All-Rounder	Chris James Memorial 2	Graham Stallard	Colin Hutchinson	Peter Willams
Electric All-Rounder	Bracknell Bowl	Colin Hutchinson	Tony Ridler	Chris Moynihan
TVSF All-Rounder	Kings Cup	Colin Hutchinson	Peter Williams	Trevor Hornby





2014 Presentations

Not present- Trevor & John

The Chuckie Event of 2015

By Vic Thomas



I no longer can find a vaguely humorous title for this annual report, I have no idea how many there have been as my computer has been changed with the inevitable loss of information for too many times. Never mind, here goes again...

For the first time the EVENT was organised in the Binfield club room, we have tried a number of locations since moving from TRL many years ago, but apart from the number of entries, we produced "a result" as our kick-about colleagues would say.

It was a bitterly cold evening but that should not have accounted for the very low meeting turnout, about 13! Committee to discuss.



In the end we had 7 entrants including Trevor's son, Chris who usually puts in an appearance at this prestigious event.

The long narrow room had no effect on the distance element but apart from the eventual winner was very difficult for the duration part.

Construction is a fascinating part to me as an observer. The effort now put into sanding an aerofoil section into 1/16 balsa was, in earlier days an approach by the aficionados, but now

is standard practice.

The designs are becoming fairly standardised, quite small, and polyhedral, only one highish aspect ratio, nothing outlandish at all. Shame! This is probably due to the attrition of previous years, bigger means more breaks, in fact no one withdraw with an irreparable model, ah, the joys of Cyano and kicker.

With Colin on Trevor's computer, producing real-time results we started the Distance event.

Generally, the scores show a steady improvement as the rounds progressed, we had none of the hilarious "null points" with flights ending on the launchers foot! Chris Hornby, coming late and starting his construction halfway through the allotted time, produced a set of outstanding results, with an average score of 9.5, followed closely by Roger Henderson, a new member, (have to watch him), and Peter.

The duration event suffered from the room geography, most entries reverted to repeating their distance flights, scoring 2 to three seconds, it was surprising how flights from one end of the room to the other varied, by over a second, but perhaps I am being too fastidious.

However, the master was Trevor. He managed to re-trim his model to perform graceful circuits of about 9 feet diameter, achieving sometimes 3 full turns, his best flight was 4.8



seconds which, in no way reflects the skill and grace of the flight achieved. Once again Roger, got to watch him, was consistent and finished in second place overall.

The final results, I will not bother with the trivia of parts of seconds, although ably timed by Chris, are :-

Distance +Duration	Both %	Sort Place	Points
Trevor Hornby	170%	1	10
Roger Henderson	161%	2	9
Peter Willams	157%	3	8
Chris Hornby	147%	4	n/a
Graham James	143%	5	7
Tony Ridler	139%	6	6
Steve Elkin	138%	7	5



Many thanks to Colin and Chris M for their assistance and to Trevor for the “equipment” →

No	DISTANCE	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Best 5	%	Place
1	Graham James	6	8	7	6	8	9	5	10	9	10	46	85%	5
2	Steve Elkin	8	8	7	8	9	8	10	10	6	9	46	85%	5
3	Tony Ridler	9	6	6	10	8	10	11	5	7	9	49	91%	4
4	Peter Willams	7	10	10	10	11	11	9	8	7	10	52	96%	3
5	Roger Henderson	7	9	9	10	10	11	11	10	11	6	53	98%	2
6	Trevor Hornby	7	9	7	5	8	7	6	5	7	6	38	70%	7
7	Chris Hornby	7	9	9	9	10	11	10	11	12	7	54	100%	1

	DURATION (Secs)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Best 5	%	Place
1	Graham James	2.8	2.3	2.3	2.6	2.0	3.1	1.2	2.3	1.9	1.8	13.1	58%	4
2	Steve Elkin	1.7	1.9	2.2	0.2	2.0	2.5	2.2	2.3	2.3	2.5	11.8	52%	5
3	Tony Ridler	1.6	1.4	1.9	2.3	2.0	1.9	2.2	2.1	2.3	1.8	10.9	48%	6
4	Peter Willams	2.8	2.6	2.5	2.3	2.3	2.4	2.2	2.5	3.2	1.9	13.6	60%	3
5	Roger Henderson	2.0	2.8	2.9	2.8	2.6	2.7	2.9	2.6	2.7	2.7	14.1	63%	2
6	Trevor Hornby	4.6	4.8	3.5	4.8	4.0	1.9	2.0	4.3	1.7	1.0	22.5	100%	1
7	Chris Hornby	2.4	1.7	1.2	2.1	2.2	1.5	2.0	1.4	1.5	1.9	10.6	47%	7

Inteco L-213A Blanik

By Bill Cooke



Typically I would expect to complete a model in around 6 – 8 months but there has been significant delays for one reason or another since the article on the wing build was published a year ago. Additionally, on this model the covering/finishing took much longer, being painted rather than using a shrink film, and I had to build the canopy mould and get the canopy moulded, which was a real saga.

The Fuselage build

The fuselage is oval in section and constructed from a series of frames connected by a pair of longitudinal frames and stringers, the important parts being the wing and fin mounts.

There is several different ways to construct such a fuselage but in this case a series of stands were made, carefully designed from offsets measured off the plan, and glued at the appropriate intervals onto the building board. I also used the wheel retract mechanism as a building jig. (Have I told you about the retract?) I used my 'portable' board (precariously balanced on a Workmate) so that I could get at both sides of the build.

It all went together quite neatly, until I got to the wing mount. This houses the brass boxes for the wing joiners which run through them and into each wing. There's two, one above the other, and they have to be built very accurately otherwise the wing joiners jam.

I built this as sub-assembly being ultra careful with the accuracy and it all looked absolutely spot on. One wing slid on o.k. but the other wing jammed. Grrrrr! After a lot of grinding (with valve grinding paste) I got the wing to slide on but it was very tight and I decided to start again with some more frames ordered from Cliff. This time I built it assembled on the wings. (in the dining room because I needed 4.3 metres of space), and the wings now slide on and off reasonably o.k.



Front section only. Rear jigs and frames not yet in

These rectangular box/flat steel wing joiners never slide together easily, especially if there are two. Some people use tubes but in constructional they are difficult though they do seem a littler smoother.

Then the rear frames back to the fin. Obviously the fin has to be square and vertical in relation to the wing. The horizontal tail attaches to the fin so the fin sets the decalage,

something else to check. (I prefer all moving tails, you can easily adjust the décalage later.) The stands used for mounting the frames weren't man enough to ensure that all was kept square, so I screwed a pair of uprights to each side of the building board and ran a horizontal across to support a frame.

A trial fit indicated all was spot on (a tribute to the accuracy of the parts). There wasn't enough room to install the wings, but the wing joiners are long and enabled me to check for vertical. I use set squares and levels but frankly, the mark one eyeball is as good as anything.

Checking décalage was a problem because the wing chord was too big for my décalage meter, but with a bit of jiggery I managed it. Usually, when I disassemble, glue up, and reassemble, the fit is all different (followed by much swearing) but in this case it all went back together perfectly.

The fuselage, like the wings is covered in ply, 0.4 mm aft, and 0.8 mm up front. Up front it's a compound curve and has to be planked up as on the Topaze but from the wing backwards it's a single curve and could be covered in a single sheet.

However, I split it, top and bottom, and divided the top into three sections because the fit over the wing root is complicated (looks a bit like a flattened tortoise), and also round the fin, but less so. The two joins were obviously on frames which I widened with balsa to give more area. Scarf joints were used. The bottom was similarly split but into two.

There was also the issue of the ply join between the fin and fuselage ply and similarly the wing root ply. 0.4 mm ply is too flexible to leave unsupported. I made up sub ribs of thick balsa where the two sections joined which worked o.k. Cutting out the ply for the top wing root section was tricky because of the complicated shape and I had to make two attempts but the fin section was o.k.

A bit of smoothing of the stringers then on went the sheeting using the iron on PVA technique.



Back half. I forgot to take a photo of the extra sub frame.



Fin fit. You can see the extra thick rib. This is a trial fit. I removed the fin and added the sheeting before gluing it in.

Now I had to take it off the frames and turn it over for the bottom sheeting. But it has to stay square. I had hoped that the top sheeting would stiffen it sufficiently.

I took off the extra fin brace mentioned earlier but left the fuselage on the rest of the jig and tried a few wiggles but it was still too flexible. So back on with the fin brace and more in hope than expectation I installed some cross bracing. To my surprise it locked the fuselage solid, it wouldn't twist at all.

Now for the bottom sheeting and planking up forward.

Off it came and over it went onto a single jig just in front of the wing mount plus another simple support at the back. I actually remembered to install the tubes for the rudder Bowden cables and ran the cables through (a good job 'cos there's no access once sheeted).

I used two pieces of ply for the aft bottom sheeting, there still being a tricky fit round the wing root, and planked up the front. I added a .4 mm doubler where the aft 0.4 mm sheeting joined the front 0.8 mm sheeting to keep it fair.

I made up the nose section from two formers and glued in the tow release. I also installed a plate for the tow release servo, batteries and adjustable ballast (with a bolt to hold it down).

Most of the ballast goes in the nose section and is covered in filler.

I covered the fuselage with 25 gm glass aft, 50 gm up front and 80 gm inside up front.

At this stage I assembled the model to give me a rough idea of how much ballast I would need. To my alarm, and despite the long nose, I needed 1.8 Kgm to get the C.G. in the right place. About 700 gm of this will be batteries, receiver, pilot etc but that still leaves a hefty 1.1 Kgm of lead.



Top back covered. None of the forward planking was done yet.



Fuselage inverted ready for planking



Back covered, planking up, front going in. Nose formers and tow release are visible.

Weighing the model indicated an all up weight of 8.5Kgm which compares with 6.5 Kgm for the Topaze. It's a bigger model so I guess that that's not to bad.

A 1/3rd scale pilot arrived from A.H. and a set of instruments from Aerocockpit in the Czech republic.

The instrument binnacle has to be removable to allow access to the batteries and ballast and this was arranged via a shelf and velcro.

I have no photos of the cockpit of the full size but I assume that it would be a space frame from tubular steel on which the aluminium body is fixed. The model has frames and stringers and I'm wondering how I can make that look like a tubular space frame.

The Topaze is similar but I rounded off the stringers and painted them silver and added a few diagonals and it looks reasonably scale, but the Blanik cockpit is much bigger with more frames and stringers. I have, however, lined the planking with ply to smooth it off and make it look like an aluminium skin.

But I still need a canopy and the painting needs finishing.

The !XXXX!! Canopy

I was volunteered to make the canopy mould and get the canopy moulded.

A few telephone calls revealed that the way to do this was to make the mould from blue foam and cover it in glass. I subsequently found that most moulds are made from plaster and I also found out why.

So off I went. I made a frame from balsa and filled the gaps with foam. Obviously it has to be a little smaller than the actual canopy to allow for the thickness of the Perspex, 1.5 mm in my case, and you also have to allow for the thickness of the glass. I allowed about 2.5 mm – not enough, see later! It proved quite difficult to get a fair, accurate shape, but eventually I got there.



Assembled for the first time. It's a beefy looking model.



It still needs blocking in front and rear to sit flat on a plate.

I was also told that you mustn't paint the mould or have exposed filler. The heated Perspex will just pull this off and show absolutely every imperfection. I put some blue colouring in the epoxy to assist fairing and then lots of smoothing and polishing.

The canopies are formed by heating Perspex and pulling it down over the mould with a vacuum.

Consequently the mould has to be built with a flat underside to sit down on a flat plate and be man enough to withstand atmospheric pressure. So I had to fill in each end under the canopy shaped mould and add a bit for an overlap.

Then up to Sarik-Vacform for the moulding.

Failure! The 2.5 mm glass wasn't strong enough and the vacuum squashed the mould over the blue foam. I got a canopy but very wrinkled.

So what to do? A suggestion was to fill the wrinkled canopy with plaster and then fill the imperfections with more plaster. But I'd already started to trim the canopy intending to use it just to get the model flying. So I gritted my teeth and embarked on making a female mould from which I could take a male mould made from plaster.

I repaired the damaged male mould, smothered it in release agent, and built up the female mould from glass, about 4mm thick with wooden reinforcing. But despite all that release agent it wouldn't release and I had to break up the male mould. This resulted in yet more repair work on the female mould but I got there.

A 25 Kgm sack of herculite plaster (low shrinkage) arrived, was mixed with water according to the instructions and poured into the mould.

I added some wire reinforcing, and a rope handle to help get it out (very useful because I used all of the plaster so that the mould weighed 25 Kgm), and waited a week for it to dry.

It got quite hot and a few cracks appeared but nothing to worry about.



Female mould ready for the plaster.

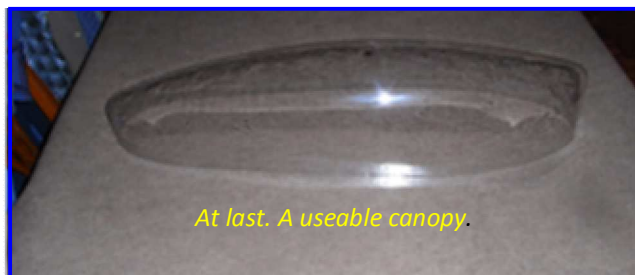
I dangled the whole thing from a roof joist using the handle and wacked the female mould a few times with a wooden mallet and out popped a pretty near perfect male canopy mould, Just a little remedial work then polishing with 1500 grade wet n' dry used dry and I had a smooth mould.

Then up to Sarik-Vacform, now taken over by Traplet at Ledbury. Barry Atkinson, another scale modeler, moulded the canopy for me and it is just about perfect. But what a saga!

Now I've got to fit it to the frame and arrange the fixings. Obviously it has to be removable. The full size folds backwards via a cantilever hinge but I'm not going to try that. I've tried various systems but this time, on Geoff Bentley's advice, I'm using magnets, two at the back and a steel peg at the front. Simple and it seems effective. →



The plaster male mould.



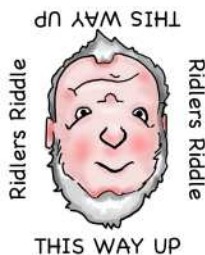
At last. A useable canopy.



Discus launching not so easy as it is made out. I understand one particular competitor is fitting a toe-hook for the 2015 season!

TVSF Puzzle Corner

*The puzzles in the last issue were 2 simple logic puzzles. **Answers***



The Jar of modelling pins

A jar contains 75 white headed pins and 150 black ones. Next to the jar is a large pile of black modelling pins. A somewhat demented modeller removes the pins from the jar, according to the following strange rule:

He removes two pins from the jar at random. If at least one of the pins is black, he places it on the pin-pile and drops the other pin, no matter what colour, back in the jar. If both pins are white, on the other hand, he discards both of them and removes one black pin from the pile and drops it in the jar. At each turn of this procedure, the jar has one less pin in it. Eventually, just one pin is left in the jar.

What colour is it?

Solution: White. The modeller only ever removes the white pins two at a time, and there are an odd number of them. When the modeller gets to the last white pin, and picks it up along with a black pin, the white one always goes back into the jar.

The Red Kite

Two friends decide to go flying together; so they start riding their bikes with their little chuckie gliders towards each other. They plan to meet at the Moss End flying field which is halfway. Each is riding at 6 MPH. They live 12 miles apart.

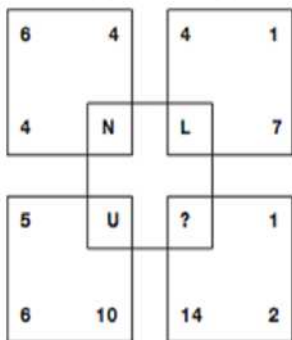
One of them has a pet Red Kite and it starts flying the instant the friends start travelling. The Red Kite flies back and forth at 18 MPH between the 2 friends until the friends meet.

How many miles does the Red Kite travel?

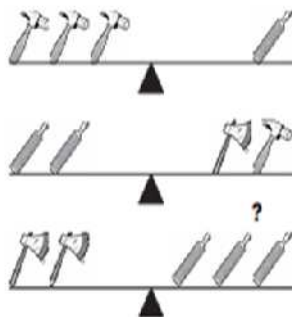
Solution: It takes 1 hour for the friends to meet; so the Red Kite flies for 1 hour at 18 MPH = 18 miles

Two puzzles for you this issue

Which letter replaces the question mark?



Which tool will make the last scale balance?



Musings from my anonymous friend.

Many seek to uncover his true identity but only the editor knows, it is believed he is the wise man of Moss End.

My friend passed me a copy of an email which I though was amusing at the time, see if it reflects your thoughts or lack of them!

As I was sitting around, pondering the problems of the world, I realized that at my age I don't really give a damn anymore.

If walking is good for your health, the postman would be immortal.

A whale swims all day, only eats fish, drinks water, but is still fat.

A rabbit runs and hops and only lives 15 years, while a tortoise doesn't run and does mostly nothing, yet it lives for 150 years. And I'm supposed to exercise?? I don't think so.

Just grant me the senility to forget the people I never liked, the good fortune to remember the ones I do and the eyesight to tell the difference.

Now that I'm old, here's what I've discovered:

1. I started out with nothing, and I still have most of it.
2. My wild oats are mostly enjoyed with prunes and all-bran.
3. I finally got my head together, and now my body is falling apart.
4. Funny, I don't remember being absent-minded.
5. If all is not lost, then where the heck is it.
6. It was a whole lot easier to get older, than to get wiser.
7. Some days, you're the top dog, some days you're the hydrant.
8. I wish the buck really did stop here, I sure could use a few of them.
9. Funny, I don't remember being absent-minded.
10. It's hard to make a comeback when you haven't been anywhere.
11. The world only beats a path to your door when you're in the bathroom.
12. If God wanted me to touch my toes, he'd have put them on my knees.
13. When I'm finally holding all the right cards, everyone wants to play chess.
14. It's not hard to meet expenses . . . they're everywhere.
15. The only difference between a rut and a grave is the depth.
16. These days, I spend a lot of time thinking about the hereafter . . . I go somewhere to get something, and then wonder what I'm "here after".
17. Funny, I don't remember being absent-minded.

HAVE I SENT THIS MESSAGE TO YOU BEFORE?

Or did I get it from you?

That's all for this issue of LIFT, to be sure to get your articles to me early for the next issue.



Ian Lancaster launching Martin Gilbert's Discus at Annie's last autumn