Trinity Indoor Newsletter Vol. 2 Issue 7
Christmas 2021

Editors: Andy Blackburn / Lurk

Steve Haines, with a Keil Kraft Joker, and his Dad, with a Plover, at Newbury a "couple" of years ago.
Photo – courtesy of Steve Haines

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Parish Notices – Andy B

Flying at Trinity

Please refer to the last page of the newsletter for dates and times. When you arrive, please try and fill-in the corners and short edges of the hall first so as to leave a decent unobstructed area for flying.

Golden Age Scale

We had a reasonable number of expressions of interest for a "Golden Age Scale" competition so we're going to try and have one in September next year. Details below. There are hundreds of really nice plans on Outerzone that are eligible and some of the Dumas walnut scale kits should work. Please consider building a Golden Age model, if only for the craic.

Photos

Time is a little short at Trinity these days so it's not so easy for the press corps to do the rounds *and* get a little flying in. If you have a new model please send in a photo (or two) and some details. We're also interested in work in progress, about which more a little later.

Contributors

Thanks to Pete Heywood, Mike Stuart, John Whatmore, Steve Haines, John Scates & Paul Eggleton for their valued contributions to this issue.

Publication Schedule & Staff Changes

Next year we're moving to quarterly issues with the occasional special edition. The intended publication schedule is :

Issue No. 1 - End of 1st week in March.
Issue No. 2 - End of 1st week in June
Issue No. 3 - End of 1st week in September.
Issue No. 4 - End of 1st week in December.

Any extraordinary notices / changes will be announced via e-mail.

If you have any contributions for the Parish Mag., please try and get them in a week or more before the expected publication date 'cos the editor is a working stiff and only has evenings available for aeromodelling activities. Late submissions will be accepted, but it'll cost you (at least) a pint.

Lurk will be the main Editor of the newsletter for next year, but Andy will fill in the gaps as Editor Emeritus, Special Correspondent & Chief Bottle Washer when it all gets too much.

Contributions for next issue by – Sunday 27th Feb 2022

Trinity Golden Age Scale Competition – Andy B

Boeing P-26
Not an easy subject, but attracts a static bonus and low-wing bonus
Photo – ww2-history.fandom.com

The competition rules are designed to be as fair as possible, and to give adventurous flyers who opt for difficult subjects a chance of doing reasonably well.

> The rules are based on the Battle of Britain rules that were used successfully a few months ago, which seem to work OK and (importantly) do not place an undue burden on the administrators who would quite like to have a few flights themselves.

Eligibility

Models of any aircraft variant (i.e. a specific mark or version of an aircraft type) that first flew between **1st January 1920** and **31st December 1935** are eligible. Models must be rubber-powered. All models must have double-covered flying surfaces and must have some significant fuselage/nacelle thickness; profile and No-Cal models are not allowed. Aircraft with a retractable undercarriage can be built with undercarriage retracted, but will not be eligible for the R.O.G. bonus. There are no restrictions on model size

> The 1920-35 date range was chosen because it starts when private flying started becoming widespread, and finishes when all-metal monoplanes with retractable undercarriages were starting to appear. Model size is self-limiting – Peanuts are OK but smaller is more difficult, larger than about 18-20” risks hitting the walls unless very light. Around Dime scale size is usually perfect.

De Havilland D.H.85 Leopard Moth.
An easy subject that flies well, so no bonuses.
Photo – BAE Systems / Ron Smith

The 1934 Brown B-2 racer, "Miss Los Angeles".
There's a nice Peanut plan of this aircraft available on Outerzone
Photo – David Lednice

Entries

Entrants can enter one model with no restrictions, but can opt to enter a second model, subject to the following restrictions

a) Only one of the models can be multi-engined,
b) One of the models must be civilian and the other must be military.

In other words, you can enter a second model as a form of insurance, but there is a price for doing so.

Static Scoring

Hawker Fury.
No bonuses, but an attractive aircraft that is likely to get many static votes.
Image – Piotr Niemczyk

Static scoring will be done by arming anyone in the hall (FF flyers, RC flyers, hangers-on, Mr Lurker's Personal Chef, etc.) with a static voting slip on which they will be asked to write down the top three best-looking models. The slips are then handed in to the Contest Director(s). Marks will be allocated as follows:

1st place: 3 static points
2nd place: 2 static points
3rd Place: 1 static point

Some aircraft will be eligible for static bonuses – see Appendix 1.

Flight Scoring

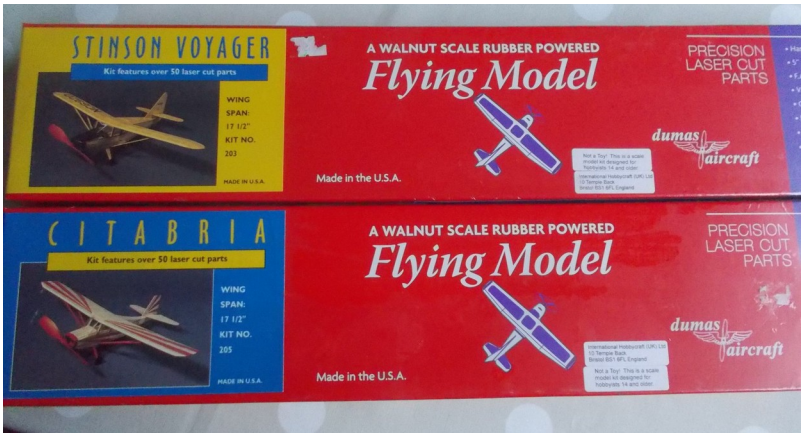
A maximum of six attempts are available (the usual flight score sheet will be provided) and the duration of the best two flights (rounded down to the nearest second) will count. Some aircraft will be eligible for a flight bonus – see Appendix 1.

Final Score

Each entry will have a "place" in the Flying and Static sections, the administrators will compute a final place for each model using the traditional Peanut Scale system of adding the flight and static places together, lowest total score wins. In the event of a tie, flying marks will take precedence.

Prizes

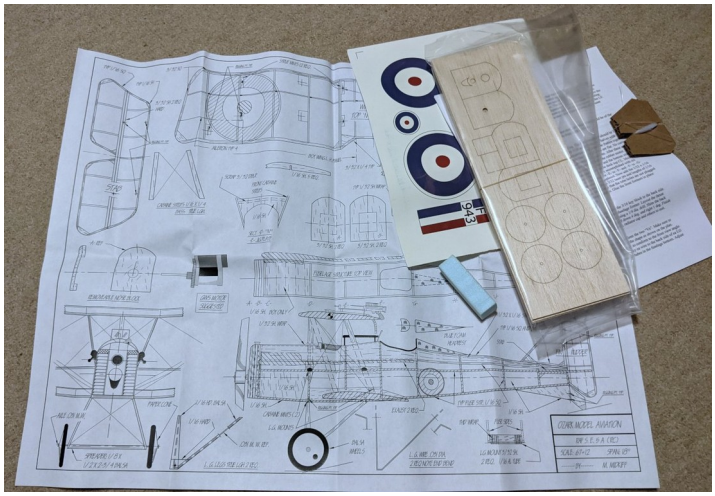
After employing varying amounts of carefully judged encouragement, cajoling and outright arm-twisting we have managed to gather the following kits as prizes. In no particular order…



Dumas' Stinson Voyager & Citabria.

A couple of high wing monoplanes that should make nice indoor subjects but still be very usable out of doors.

I'm told that Dumas had a reputation, like Keil Kraft, for supplying oak rather than balsa with their kits, but both Steve Haines & John Winfield report that the quality of recent kits is much improved.



Mike Midkiff 18" Span SE5a. Electric. FF or RC

It's a Midkiff kit, so there's nothing more to say, but this should also be suitable for indoor or outdoor flying.

Appendix 1 – Static and Flight Bonuses

The following bonuses have been designed to give as many interesting aircraft as possible a fair chance.

Static Bonuses

Aircraft has a substantially exposed engine (e.g. completely exposed cylinder heads, or radial engine with cowl ring) : + ½ static point *for each voting slip* provided that:

a) Each visible cylinder is rendered on the model as a three-dimensional item, even if this is a piece of shaped balsa sheet attached to a backplate.
b) Cylinder fins (if visible on the full-size) have been represented in some way
c) Obvious additional detail such as pushrods is represented.

The decision on whether an entry qualifies for this bonus is entirely within the purview of the CD. The decision of the CD is final.

Wedell-Williams racer.
A reasonable attempt at the sort of engine detail visible in this shot (cylinders with fins and pushrods) will be required to get the bonus.
Photo – Experimental Aircraft Association (Oshkosh)

Flight Bonuses

ROG Bonus

If a Rise Off Ground (ROG) is achieved, a 10 second bonus will be added to the flight time; take-off dollies are allowed for float-planes and flying boats.

> This is the standard peanut scale rule, and seems to work quite well.

Difficulty Bonuses

Supermarine S-5
Performance is compromised by floats, so gets a flight bonus.
Photo – John W. Read

Aircraft will be eligible for an additional bonus of 5 seconds on each flight if any one of the following statements is valid:

1. Aircraft is a low-wing monoplane.
2. Aircraft takes off and alights on floats (is a seaplane).
3. Aircraft is a flying boat (the fuselage/hull is normally in the water).

> This bonus is designed to compensate low-wing aircraft for the performance advantages enjoyed by biplanes (extra wing area) and high-wing monoplanes (extra stability), or to compensate for the drag of extra furniture (floats or bigger fuselage) required by floatplanes and flying boats. It's possible that an advantage could still be gained by flying an inline-engined racer, and consideration was given to applying a negative bonus to excessively-long fuselages, but such aircraft (Folkerts, Chambermaid, etc.) usually date from 1936-39 so for the moment we've decided to leave it as-is and see what happens.

Multi Engine Bonus

Aircraft will be eligible for an additional 5 second bonus on each flight if

a) There are two or more propellers driven by rubber motors that are mounted in such a way that they do not cross the fuselage centreline in plan view, and
b) There is no non-scale motor stick or rubber motor visible outside the model structure.

De Havilland D.H. 88 Comet.
Possible? Probably. Challenging? Certainly!
Photo – "fsll2" on Flickr

To begin with, we were concerned that the DH 88 Comet and similar aircraft might have too much of a bonus, but then we looked at the long, thin, tip-stall prone wings and thought no, it probably deserves both...

If you are considering entering the "Golden Age" competition (and please do; the more there are, the merrier it will be) then I'd suggest that you have your entry ready to trim by the May or June meeting. If Steve Haines' Battle-of-Britain-winning Gladiator is any guide then you will need several sessions to get the trim settled. Getting the glide and initial power trim sorted out over your favourite patch of Keil Kraft Grass isn't a bad idea either.

Comet Nickel Competition – Mike Stuart

While we're thinking of events, Mike thought it might be fun to run one based on the Comet "Nickel" range of designs. The range of eligible plans is in the accompanying PDF and the headline rules used by the FAC for their competition are:

- All plans other than the, "Baby ROG" are eligible.
- No wood thinner than 1/16" section.
- Structure may be reinforced, but none removed.
- Tail surfaces may be enlarged if necessary.
- The motor peg location may be moved.
- All flying surfaces covered on both sides
- All undercarriages must be down and locked for landing.
- Decoration to be typical for the era, single colour tissue finishes are allowed.
- Motor and airscrew choice are left to the builder.

There are a couple of suitable kits available from Volare if you're not inclined to build from plan. See…

https://volareproducts.com/blog/?product_cat=comets-nickel-models

Let Mike, Andy & Lurk know if you are interested. If enough people would enjoy taking part, then Mike has volunteered (he may not know it, but he has) to be CD and, if necessary, to come up with any Trinity specific variations to the rules outlined above.

As for a date. The "Golden Age" comp. is planned for September next year so to avoid crowding out build programmes and give people time to build and trim models the Dec. 2022 meeting is, tentatively, suggested.

Scale Trimming Made Easy – Andy B

Trimming your latest masterpiece can be a nerve-wracking affair; is it going to be a difficult model, or in some cases is it actually going to fly at all? And the thing is that we all know that it can be done, because people do it all the time. Fortunately, there is a more-or-less guaranteed way of making free-flight scale models flyable without too much trouble.

A Bit of History

Many plans for scale models, especially older ones, tend to be very approximate about longitudinal dihedral (the difference between the main wing(s) incidence and the tailplane incidence, sometimes called decalage) and the centre of gravity (CG). The Veron Tru Flite kits designed by Phil Smith were pretty bad in this respect, most or all of them having no longitudinal dihedral at all which caused poor stall recovery and dodgy power/glide transitions.

Albert E Hatfull did better with the Keil Kraft Flying Scale series by choosing an airfoil that had the leading edge raised above the building board, so that there was at least some incidence on the wing when the bottom of the airfoil was lined up with the tailplane. And some of the original 1930s Dime Scale kit plans on Outerzone have no mention of CG nor of longitudinal dihedral.

Even some modern kits (see below) have the CG quite far forward with absolutely enormous tail areas. This will work if the model is sufficiently light and has a minimal amount of rubber and flies slowly, but if it gets too heavy (show me a kit model that isn't!) it'll need heavier rubber and will start to fly a bit too fast, which means that the nose will tend to pitch up, which at first sight can be controlled by down thrust...

Unfortunately, this is a fight that down thrust. can only win at the beginning of the flight. As the power tails off, the down thrust. will be less effective, the nose will rise and the model is thereafter doomed to a series of disastrous dive/zoom manoeuvres which usually terminates (indoors, anyway) with it hitting something solid at high speed. This sorry state of affairs usually ends, sooner or later, with a box of matches on the back patio and an ignominious funeral in the dustbin.

We can move the CG back and reduce the longitudinal dihedral, of course, but at some point there will be insufficient longitudinal stability and the thing will refuse to fly properly.

So, we need a reliable way of working out for any wing/tailplane setup the workable range of positions for the centre of gravity, and the correct longitudinal dihedral that will allow the model to fly properly.

Ideally we need to know where the CG needs to be for a particular tailplane effectiveness and also what the minimum tail effectiveness needs to be in order to be confident that trimming will not be difficult. Enter Don DeLoach.

The McCombs' Legacy

Those of you who have built any of the DPC Models WW1 scale kits will probably have a PDF copy of a book called, "Flying and Improving Scale Model Airplanes" by Bill McCombs who was a Senior Engineer for the Chance Vought Corporation. This book, which I suspect dates from the mid-to-late 1970s, is an important work because it introduces the concept of the Tail Volume Coefficient (TVo) - a measure of tail effectiveness – and also gives a number of formulae that show where the CG needs to be.

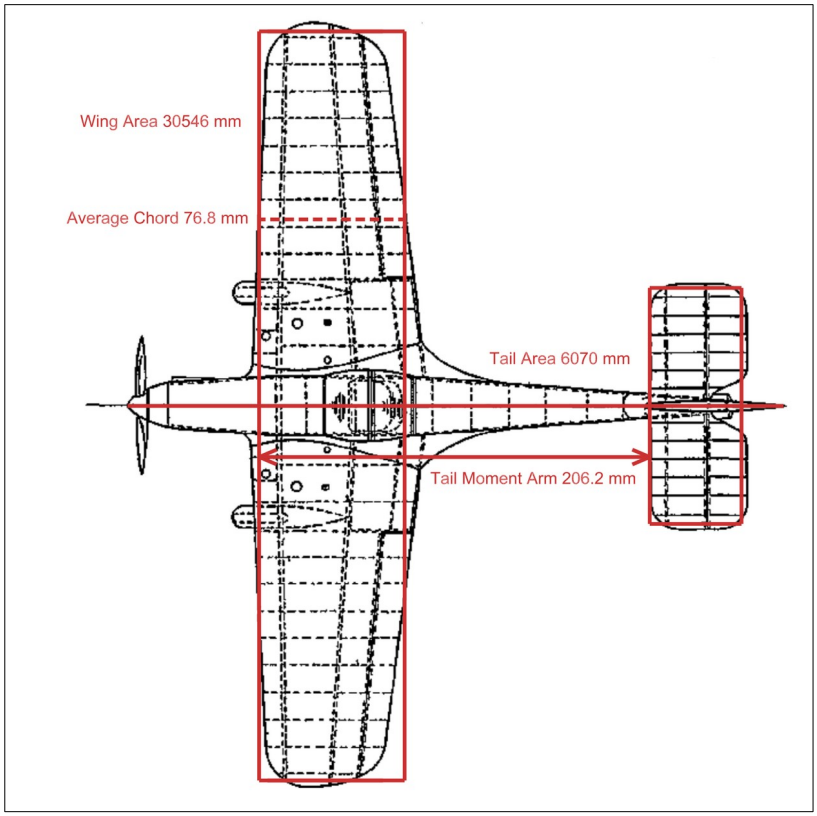
Don DeLoach took McCombs' work and (after a great deal of experiment) published an article called, "One Flier's Approach to Better Performance" in the Flying Aces Club Newsletter which as well as bringing McCombs' work to wider attention, crucially, supplied a "magic" number for TVo which enables almost any scale model to be trimmed and flown with very little fuss.

This magic number for TVo is **0.65**. If you can make the tail volume coefficient of your latest creation equal to 0.65, then CG is at 38% of chord from the LE at the average wing chord position. This is true for *any* and *all* designs where the TVo is 0.65.

How to Do It

So, how do we work out what the tail area should be to make TVo come out at the right number? Well, lets say that I want to build a Dime Scale Miles Hawk Speed Six (16" span), because it's a nice aeroplane and it can also can be entered in the Golden age competition planned for next year.

We can start with a full-size plan if one is available, or we can use a CAD package as I have done below, scanning a scale drawing and enlarging to the right size. Draw the equivalent rectangular wing and tail outlines (allowing for taper and area lost at the tips, etc.) onto the plan, then measure the wing and tail areas, the average wing chord and the tail moment arm:



When we have the numbers, they're plugged into McCombs' formula which is:

$$TVo = \frac{tail\ area \times tail\ moment\ arm}{wing\ area \times wing\ average\ chord}$$

In this case we have:

$$TVo = \frac{6070 \times 206.2}{30546 \times 76.8} = \frac{1251634}{2345933} = 0.53$$

Which tells us that we need to enlarge the tail a bit. We can find out how much to enlarge it by re-arranging the formula to find the required tailplane area:

$$Required\ Tail\ Area = \frac{TVo \times wing\ area \times wing\ average\ chord}{tail\ moment\ arm}$$

Plugging in the numbers again, including our required TVo of 0.65, we get:

$$Required\ Tail\ Area = \frac{0.65 \times 30546 \times 76.8}{206.2} = 7395\ mm^2$$

So, the enlargement factor for the tail area is 7395/6070 = 1.218 or about 22%.

The tailplane area can be increased by extending

a) the span
b) the chord, or
c) both in proportion;

I prefer the last method because I think it looks better. Any of them will work, though – do what looks right to you.

To get this tailplane area by enlarging the span and chord, we need to enlarge each of them by the square root of 1.218 (rectangular area is breadth x width), or about 10.4%. The CG can then be set at 38% of the wing average chord, and all we then need to do is to build in an easy method of adjusting the tail incidence angle to get a good glide.

Flight Testing

Assuming that we have carefully balanced the model with a few winds on the rubber motor to make sure that it's evenly distributed along the fuselage, find some nice Keil Kraft long grass and do some test glides. Some people are less-than-confident about this, but it's a matter of practice; all you do is aim for a point about 20 feet in front of you and give the model a good push forwards. The model needs to have enough flying speed for this to work, if it drops straight away then you need to launch a bit faster.

Do this a few times and then adjust the tailplane angle. Repeat until you have a reasonable glide.

Now for the important bit – *never touch the CG or the tailplane incidence again!* Well, unless there are repairs or the rubber motor is changed. Make all subsequent trimming adjustments with the thrust line, for which you will need a nose block that is a tight fit; if it isn't, strips of masking tape are very useful.

Thin layers of cyanoacrylate (CA) adhesive applied to either the plug or socket is another simple way of tightening up a loose fitting nose block. If you use this approach, remember to let the CA set completely before refitting the nose block.

This will work for almost anything because most full-size aircraft have a TVo of less than 0.65. If you're in the happy position of having a tail volume bigger than this, then Don DeLoach's original article can be had from the Flying Aces Club website in Issue N°. 267 of the FAC Newsletter. As a guide, if you can get the TVo up to about 0.75, the matching CG will be at 43% of the wing average chord. The larger the tailplane, the further aft the CG will be and

the less longitudinal dihedral will be needed. Although at some point, the tailplane will be too big and it will start to look a bit silly…

Summary

For any airframe, there is a relationship between the size/position of the tailplane, the longitudinal dihedral (the difference between the main wing(s) incidence and the tailplane incidence) and the centre of gravity. Putting the centre of gravity in the wrong place can mean that the model is impossible to trim because it's either too unstable to fly reliably, or liable to unfortunate zoom/dive behaviour if too much power is applied.

An airframe can be made to be much easier to trim by

a) Ensuring a Tail Volume Coefficient (TVo) of 0.65 by increasing the tail area if necessary,
b) setting the CG to 38% of the wing average chord and
c) determining the longitudinal dihedral experimentally by adjusting the tailplane angle for a good glide.

It's clear from McCombs' formula that increasing TVo can also be accomplished by increasing the tail moment arm, reducing the wing area or reducing the wing average chord, but these are not really practical for scale models.

Homework

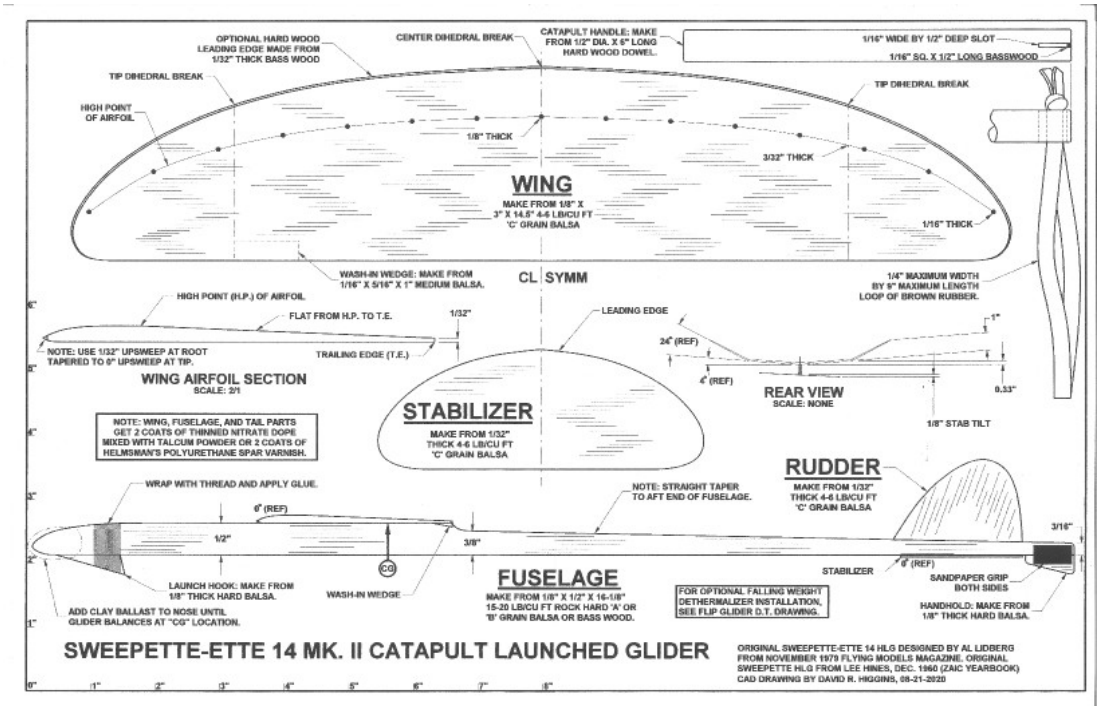
Finally, if you happen to be in a position where you are about to build any of the VMC kits, I do urge you in the strongest possible terms to check where the CG should be according to McCombs' formula, and then arrange for some means of adjusting the tail incidence.

I can state with confidence that at least two of the popular low-wing designs (and I've built one of them) behave as though the CG is too far forward, and the longitudinal dihedral is too high...

Work In Progress or, Forthcoming Attractions

The hope is that this section will make a regular, if not frequent, appearance in the news-letter, but it will depend on how many, if any, contributions drop into the in-box. A sentence or two and, if you've got them, a couple of pictures will be plenty if you're not in the habit of documenting your builds

Sweepette-Ette 14 MK II – Pete Heywood



Dave Higgins' updated version of the Sweepette-Ette

As a modeller of no small talent, in fact no talent at all, I was looking for a project to suit my 'skills'. Prior the 'no-cal incident' of October '21 (a couple of successful flights followed by an almost total loss in a 'winding incident') the number of indoor models I had completed could be counted on one hand, and the successful ones on the thumbs of that hand. As a consequence I was looking for something simple, and robust. I saw a chuck glider of the Bird of Time (one of my favourites) in my local model emporium, and whilst searching for that online and looking at others, I came across the Sweepette-Ette.

The original design, by Al Lidberg, first appeared in the Nov. '79 issue of Flying Models as the Sweepette-Ette 14. Dave Higgins updated it to the MK II last year and released a CAD drawing of it as well. The plan, a build guide and a bit more history can be found at

https://kcfreeflight.org/galleria-of-gliders/daves-glider-drawings/sweepette-ette-14-mk-ii-catapult-launch-glider/

I was hopeful that this would help me improve my skills, both in building and in trimming. Indoor gliders are featured in Ron Williams big yellow bible and it was the subject of build article online. My other requirement was that it needed to be completed relatively quickly. I have far too many projects in stages ranging from plans to almost complete and can't afford any more space.

I followed the article, and the book, choosing whatever was the easiest option. I started off by printing out the plan, and cutting out templates for the wings and stabs. The directions are to use a balsa plane to get the rough shape, but after a few attempts it became apparent that was beyond my skill level, so I opted for the more time consuming sanding approach. Fortunately the majority of the profile is flat to the trailing edge, and there are good instructions on how to achieve that.

There are details, such as the location of the leading edge foremost point (insert technical term here) which varies, I assume to give washout, which I did my best to achieve. The end result did indeed look wing-like, much to my surprise. The wing was then cut into the panels, which were then sanded to the appropriate angles to provide the dihedral. In retrospect I probably should have taken more time with the cuts, but it looked close enough for government work. I then used the recommended double gluing technique - adding glue, putting together for a minute, then taking it apart again for a second coat of glue once the first was dry.

The fuselage and tail feathers were pretty simple, although I have subsequently read that sanding the corners of the fuse actually makes it weaker.. Anyway, I then assembled with the same gluing technique and gave it a coat of thinned dope. I should have weighed it before and after, and will next time.

Initial flight testing took place inside a local school hall, and demonstrated a lovely straight glide. Unfortunately this is not what is required, despite the horizontal stabiliser having the required tilt, so I attempted to bend the wings and rudder to provoke this, ending up with having to cut the rudder to get enough deflection. I had glued it to the side of the fuselage.

With this done, I started to launch higher, which resulted in many stalls with no recovery. I tried adding and removing nose weight, and also began to wonder whether I needed to check the angles between the stabiliser and wing as my building is not what I would call accurate (I can't even cut straight with a ruler as a guide).

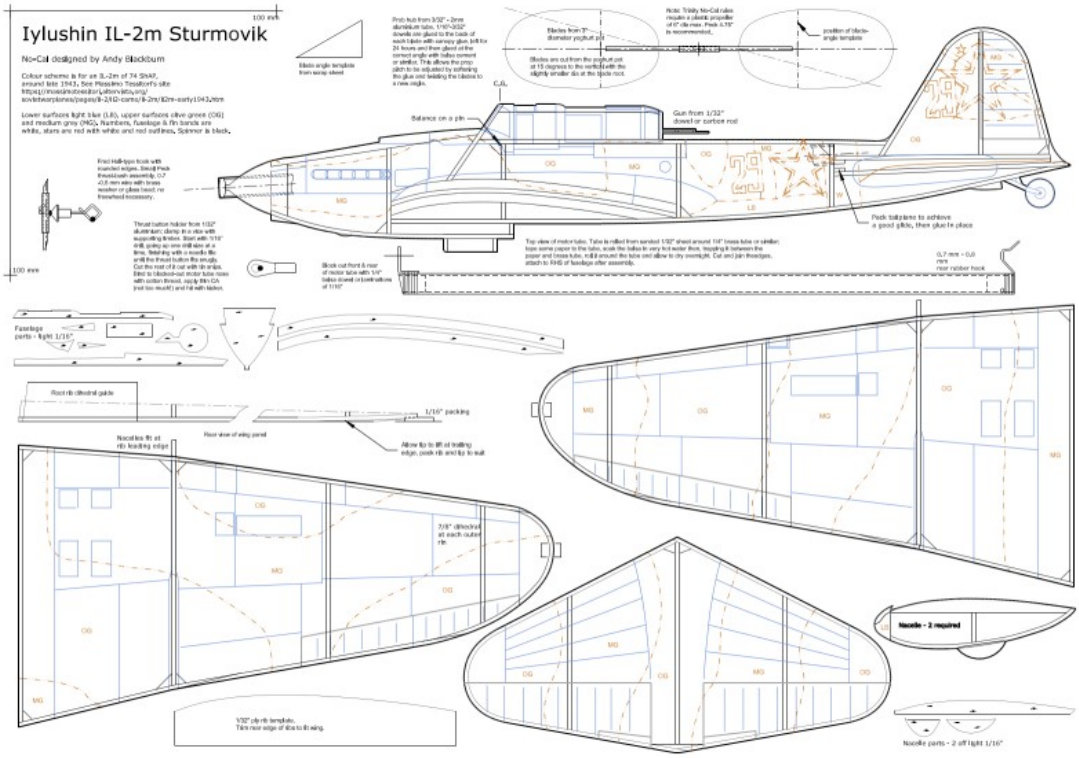
Launches at low angles were OK (but were, well, low) but at some point, when I suspect frustration began to take hold, I started launching harder, at which point the transition became much better and I had a working glider. This was all using a hand launch, and I managed nearly two circuits at one point, getting close to 10s. Not much, but a huge improvement from earlier, and enough for me to call it a success.

What next? Well, I suspect that it is now rather heavy at 12.7g (including repairs where I reattached the wing twice), and also appears to fly quite fast compared to others, so I may well build another, but there are also many other designs that I have found. For now, I am going to enjoy flying it, repairing it, and flying it again.

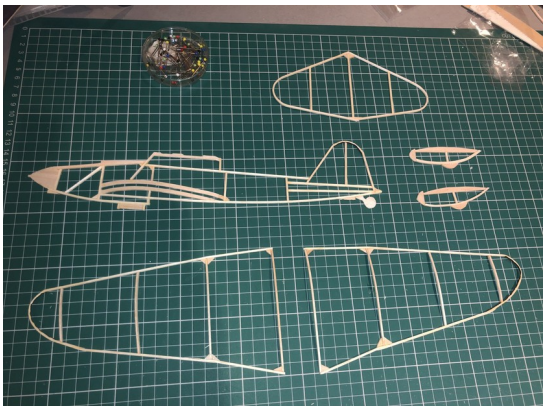
Pete launching the Sweepette.
From film shot by Colin Barnes

There's a nice clip, also filmed by Colin Barnes, of one of Pete's Sweepette's flights here https://youtu.be/vZti-JYPL0w

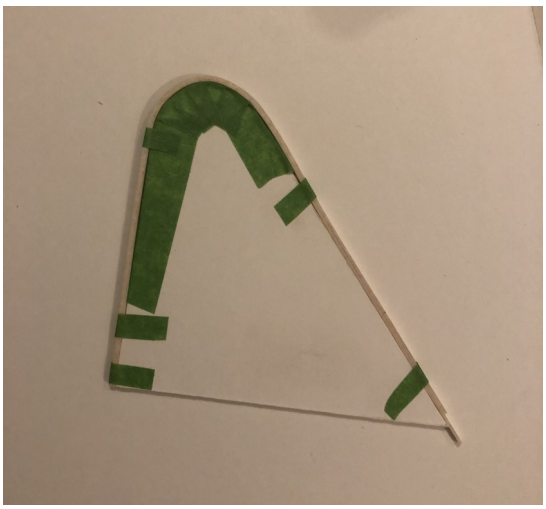
Ilyushin IL-2 (Sturmovik) – товарищ Питер Хейвуд



Ilyushin IL-2 Sturmovik design by товарищ Эндрю Блэкберн



Ready for covering.
Photo – Pete Heywood



One half of the tail-plane
Photo – Pete Heywood

I was chatting to Andy Blackburn about how much I had enjoyed building my No-Cal Hellcat and he asked whether there was anything I fancied building. I had been looking at a few others, but fancied something different and have always had a soft spot for the

Ilyushin-2, so he created a plan for it. It has been very interesting to see the evolution of the design and I'm pleased to have helped to make it a bit more idiot proof. I mean if I can build it, anyone can, until they invent a better idiot of course.

The appeal of the no-cal is that it is a quick build, so less likely to join the ranks of unfinished projects I have. During the week I have been working on it I have only printed out four other plans, and changed my mind on my next build three times. The airframe was completed by the 16th Nov and by the time you read this I hope it will have been flown at Trinity.

I am slowly getting better at basic skills like cutting things out, and drawing, and probably now have the skill of an 8 year old. I am learning not to be such a clumsy oaf, so have only broken things about half a dozen times. (*Only half a dozen? You're showing the rest of us up. Ed.*)

I tried a couple of approaches to the curved outline parts; the soldering iron approach, see http://parmodels.com/wet-forming-balsa-outlines.html, and laminations about a former. Of the two I prefer the lamination and former method, despite it taking longer.

There's more on Andy's design a bit later. Ed.

Micro-Courtesan – Lurk.

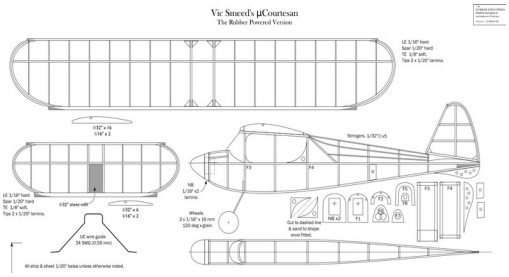
The free plan in the Nov. issue of Aero Modeller, David Deadman's CO_2 powered 12" span version of Vic Smeed's Courtesan, caught my eye and I thought, "I wonder if you could make a rubber powered version of one of those?" So, armed with the traditional back of the fag packet I did some sums.

If a Keil Kraft Elf weighing 15g or so inc. ballast with a wing area of ≈ 33 sq. in will fly for 40+ seconds ROG on a 16" loop of 3/32" (0.09"), what would be a target weight for a rubber powered µCourtesan at the same wing loading with wing area of about 26 sq. in? Hmm, 12g. Difficult, but not impossible with carefully chosen 1/20" stock and other weight reducing measures.

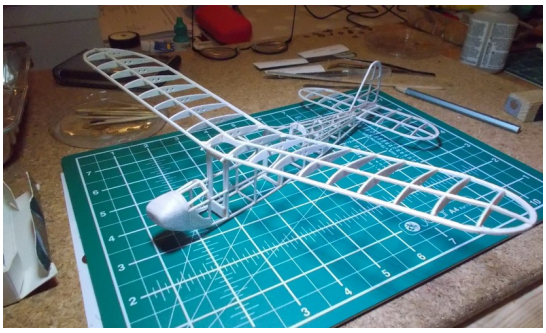
It looked as though it might be possible to cram a 15" (3 x peg to prop hook) motor in – although it is jolly tight fit and lack of space may yet scupper everything – so that would give a safe (Don Ross' 80% max TPI) limit of 1,300 turns. I'd hope that combination would give it an endurance of around 30s which I'd be quite happy with. Of course I'm stuck with a 4" prop which might not have enough bite, but we'll cross that bridge when we get to it.

I went away and worked up my version of David Deadman's version of Vic Smeed's original and started cutting wood in late October. By Bonfire night I had a wing, tail-plane and fin weighing 1.4g. A few

more sums showed that, excluding dope and glue, the remaining parts were likely take about 5 - 6g of the remaining 10.6g. All being well I hope to be able to start trimming it at the December meeting.



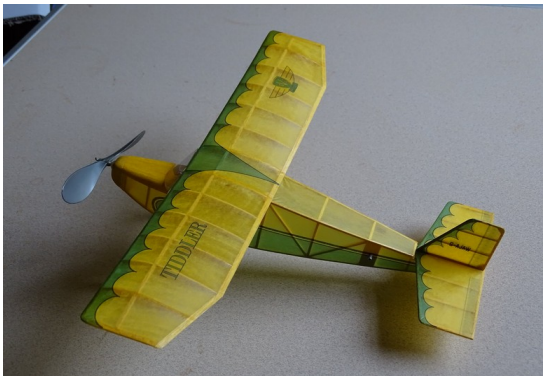
Plan. Initial draft.
It's changed a bit since.



State of play, 12th Nov.
As pictured 2.9g

Mick Flack's Tiddler – John Whatmore

Ready for crash testing at the Nov. meeting..



Photos – John Whatmore

The design dates from 1985 and is by Mick Flack of the Impington club and was, apparently, designed during one of Mick's lunch hours while he was at work. He only had a rough sketch of the design which he sent to me so I drew up a proper CAD plan in 2019.

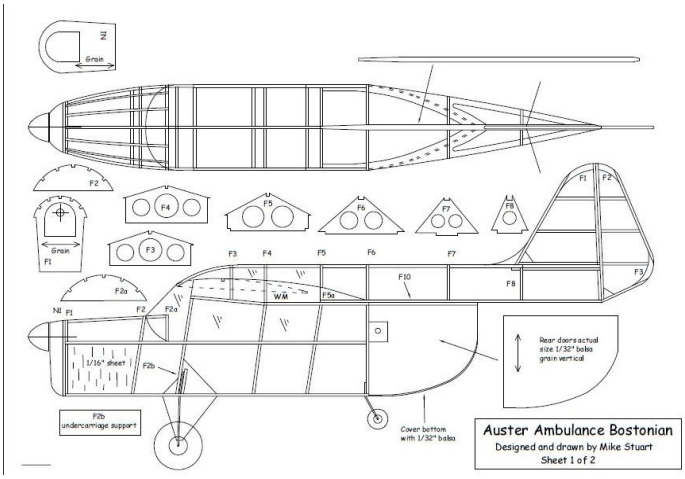
Span is 13 inches; the covering is inkjet printed yellow Esaki tissue and AUW is 8.47 grams.

Flight testing report below. Ed.

Auster B4 Ambulance – Mike Stuart

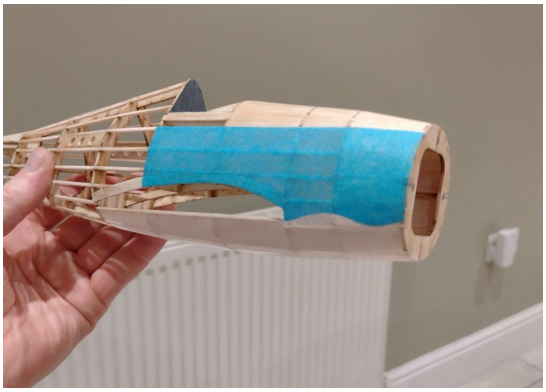
With a Bostonian competition scheduled for next year and no flyable examples left in my collection I hunted around for another scale subject to squeeze and deform into a suitable shape. I ended up with a choice of two utility aircraft, each with a pod and boom fuselage, namely the Percival EP.9 and Auster B4 Ambulance (both of which would make interesting scale subjects in their own right).

I went for the Auster in the end because it was chubbier, so the fuselage didn't need quite so much compressing to get under the specified maximum length of 14 inches. I am sure it will end up well over the 14 gram minimum weight figure, but should have plenty of character. If weight does become a concern then the rear clamshell doors could be omitted to save a bit of weight as some flights were made without them. Colour scheme of the full size prototype was light grey with red trim.



The Fuselage Sheet for Mike's B4

Grumman F6F Hellcat – Steve Haines



Hellcat progress
Photos – Steve Haines

My latest ship is an 18” span Grumman Hellcat built from a Dumas kit.

These Dumas kits have definitely improved over the last few years. The balsa and parts in the kit are of a good standard and the laser cutting was very good with the parts slotting together perfectly.

I've tried to lighten some of the structure where I can but also added some balsa infills around the nose for extra strength. I also used the tissue supplied in the kit which is the first time I've used Dumas tissue and even though it has no wet strength it went on fine using the glue stick method.

The decals came with the kit and were stick on, they can be peeled back to reposition if needed. I've fitted a Dave banks pilot which I

painted myself, these can be brought from Dave direct and are £2 each unpainted or £9 each painted + £3.75 p/p

I finished the build on the 23rd of Nov and it weighs in at 40g balanced, but without rubber.

Overall this has been an enjoyable and straightforward build and I am quietly confident it will fly, but the glides onto the bed suggest it will probably be pretty fast.

Ilyushin IL-2 (Штурмови́к, Sturmovik) No-Cal – Andy B

In late October, early November I was thinking of drawing up another No-Cal and Pete Heywood was talking about what to build next. When quizzed about his preferences I was surprised by both Pete's choice, the IL-2 *and* his general liking (I put it no higher, but it is troubling) for Soviet hardware. As No-Cals are very, very quick to design and build, I view it as a kind of occupational therapy, I offered to draw one and you can see a thumbnail view of the plan in Pete's WIP report, above.

Unsurprisingly (er… Soviet 'planes!? Who on earth models Soviet 'planes?), I had no scale references to hand but a quick Internet search turned up lots of variable-quality scale drawings and a web page on Soviet Warplanes produced by Massimo Tessitori – there's pages and pages of this stuff and there must be hundreds of colour scale drawings.

The earlier (1943) IL-2m with straight wings looked to be more attractive than the later IL-2m3 with slightly swept-back wings, so that's the version that I went with. I narrowed the colour scheme down to about a dozen candidates and eventually settled on "Double 29" which appears to have a small kill marking on the fin.

IL-2m "Double 29" of 74 ShAP (Ground Attack Regiment)
Image copyright Massimo Tessitori

Normally, drawing the plan would have been the work of only a few days except that it coincided with a forced change of computing platform which in turn required the reinstallation of TurboCAD which, although the whole process took a week or so, was quicker than trying to learn how to use a newer, free, tool like LibreCAD.

Three view
Image copyright Massimo Tessitori

The colour three-view of "Double 29" looked OK, so I imported it into TurboCAD and re-sized it to be a smidgen short of the No-Cal maximum span of 16". Then it was a matter of enlarging the tailplane to an acceptable degree and setting the CG. See above.

The airfoil is the usual 6% one that I've always used, it seems to work fine. The full-size IL-2 hasn't got much dihedral so the model's was set by surveying other designs then using the minimum that I thought I could get away with based on that survey.

The other design choice to make is what incidence to set the root rib at – the tailplane will still have to be trimmed to just about the same angle, but what it will affect is the "sit" of the model in the air; more root-rib incidence = more nose-down angle in normal flight. And of course, you have to make sure that the rubber motor will be well clear of the wing surface; I picked what I hope is a reasonable compromise.

Then it was a case of drawing some minimal structure over the top of the picture on a new layer, with the surface detail, colour and markings on separate layers (shown as orange & blue outlines on the plan). There are some structural simplifications around the tailwheel area, but nothing drastic.

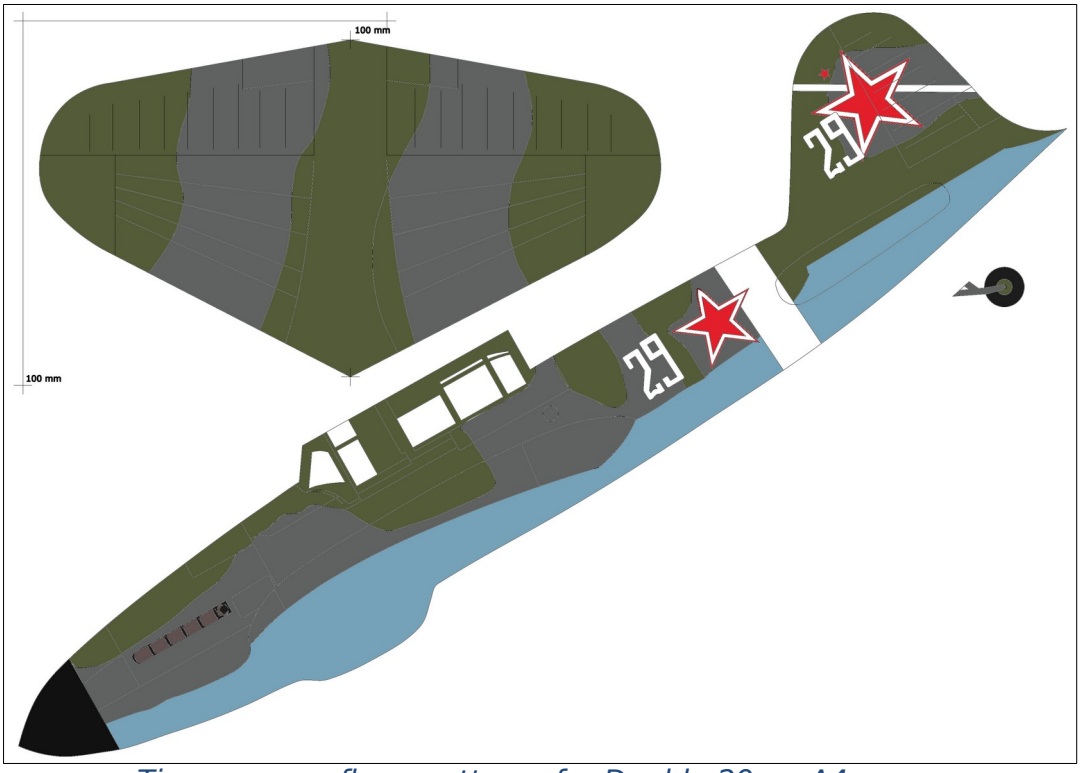
The plan was laid out an A3 sheet with some 100mm reference marks to make sure than any unintentional re-scaling can be detected. I recommend that you do this if you're drawing your own plan. I then sat back in smug mode with the knowledge of a job well done...

Of course, I had forgotten about the inevitable c*ck-ups; it transpired that because I had initially failed to include a front or rear view of the wing, there was some confusion about

a) Where the dihedral break was and

b) What I meant by a remark on the plan about washout.

Cue version 2 of the plan with the missing info – mea culpa.



Tissue camouflage patterns for Double 29 on A4 paper
Image – Andy Blackburn

I also produced some printed tissue patterns for “Double 29”. I didn’t use Inkscape because I find that Inkscape’s fill tool doesn’t really do the job properly.

The process was:

1. Make a copy of the plan with an additional outline 2-5 mm wider than each component, and a few very small reference marks.
2. Switch off all the layers except those containing the new outline, the panel line, colour and markings details, and extend all the hanging lines to the new outline.
3. Export it as a vector file (PDF works, any vector format that your paint program can read will probably also work), because a CAD file is a vector format rather than a bitmap and you don't want to convert to bitmap until you have to.
4. Import it into a normal (i.e. bitmap) drawing package at quite a high number of Dots Per Inch – 600+ DPI if you can manage it, 480 DPI will do. I used GIMP, Paint Shop Pro or similar should be fine. I haven’t tried Microsoft Paint.
5. Make any required changes (e.g. soft-spraying the camouflage boundaries with the airbrush tool, making the control surface

outlines more obvious, etc. and then export as a JPEG file. Don’t forget the 100mm reference lines.

6. When printing, always print on paper first to check that it’ll print at the right size.

If anyone wants a copy of the plan or the tissue patterns, please drop me a line.

Il-2 Штурмови́к (Sturmovik, Stormbird). A Potted Biography

The Il-2 was produced between 1941 & 1945 and nearly 36,200 were made. It remained in service with a number of Warsaw Pact countries until 1954 when the Yugoslav & Bulgarian Air Forces retired their units.

The aircraft is interesting in that the armour was made a load bearing part of the airframe and, like the later Fairchild Republic A-10, the pilot sat in what amounted to an armoured bath tub. This well thought out armour layout made the Il-2 very resistant to ground fire, but the rear gunner’s position was added after early in-service use showed it to be necessary and wasn’t as well protected. Many more rear gunners than pilots were killed because of this.

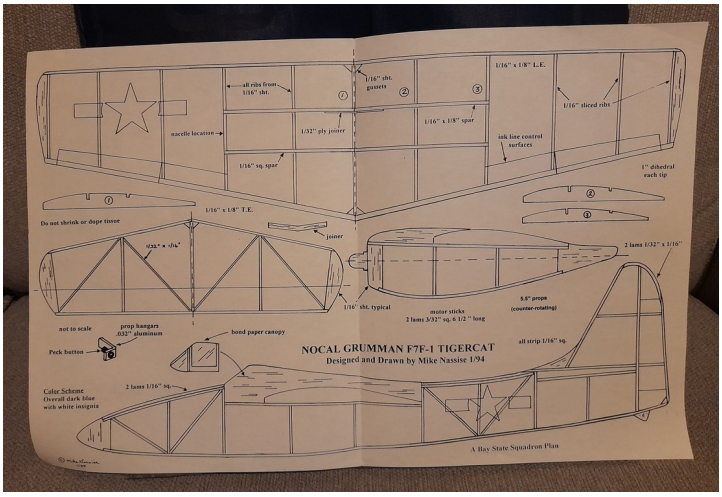
The designation, “Stormbird” was applied to any ground attack aircraft rather than any single type of aeroplane in the Soviet Air Force. Pilots simply called it, "Ilyusha" and it was known variously as "Hunchback", "Flying Tank" or "Flying Infantryman" by Soviet & German ground forces.

Trinity 20th November

Grumman F7F Tigercat – John Scates

Photos – John Scates

This is a Mike Nassise No-Cal plan from his Tailspin newsletter (Jan/Feb 1995), now no longer available. Construction is beefy, 1/16" strip and sheet as you can see below, and suits me, but I am sure an expert could shave off a bit of weight here and there. The printed tissue art work is John Whatmore's.



The flight pattern is pretty consistent and stable but will break no records duration wise. I haven't timed this new version as it's only at the trimming stage, but the original version flew for some 30 seconds plus.

Weight is 16g without motors which are 3/32"×12" rubber loops in each nacelle. The props are home made, counter rotating and turn inward over the top. The motor container is marked 1000 turns but I have never used more than 800.

Tiddler Trimming Update – John Whatmore

After two or three low turns tests and after adding a tab on the fin plus a small gurney strip under the left wing it was flying nicely around.

Gradually adding more turns I got it up to 1100 and it produced a modest climb to about 3/4 ceiling height then 4 circuits with a nice gentle wheeler to land.

I think I could go to about 1300 to get just under the rafters.

Il-2 Update

Pete was temporarily inconvenienced by Cv19 so trimming has been put back to December.

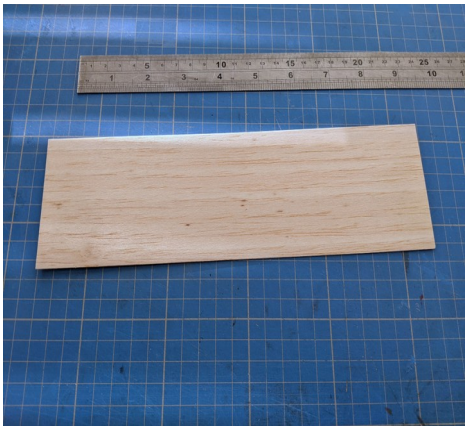
New Faces

We welcomed Mike Hadland in November and the poor chap had the great misfortune of falling in with the bad laddies on his very first visit.

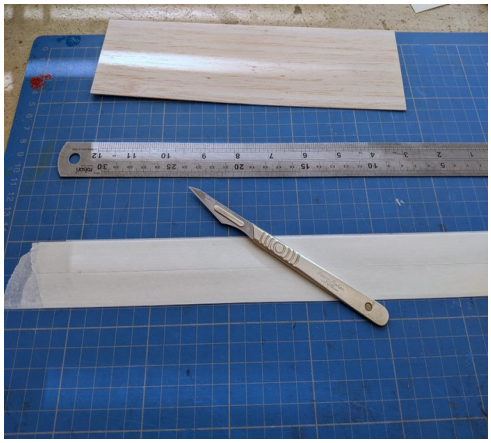
L-R Mike Stuart, Peter, "Who you lookin' at pal?", Smart, Mike Hadland
Photo – Paul Eggleton

1/64” Strip for Laminating Outlines – Andy B

I happened to be making some 1/64” x 1/16” strip (another NoCal[1]) and thought that one of my less-experienced flying friends might appreciate a step-by-step photo-description. Anyway, ~~Emperor Ming the Merciless~~ Lurk got to know about this through his extensive network of spies and informants and is now insisting that I write it up for the Parish Mag[2]



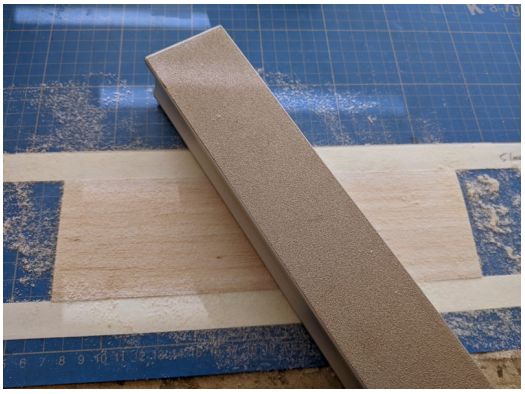
Step 1 : Find a suitable bit of 1/32" sheet that's the right density and is long enough



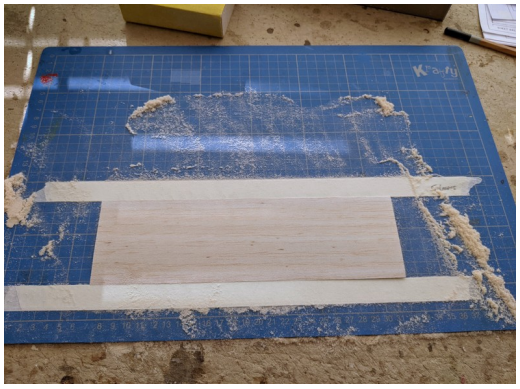
Step 2 : Tape several layers of masking tape onto a cutting mat until it's the thickness you want; 5 layers of Halfords cheapest 1 1/2" masking tape is 0.42 mm, which is close enough to 1/64" for Government work. Make a cut all the way through the tape, right down the middle as shown.

[1] I’ll do this one other NoCal and then I’ll build something “proper;” Dave King did recently ask (in a very concerned tone, so I knew that he must be up to something) whether I’d forgotten how to build a “proper” model with “two fuselage sides”...

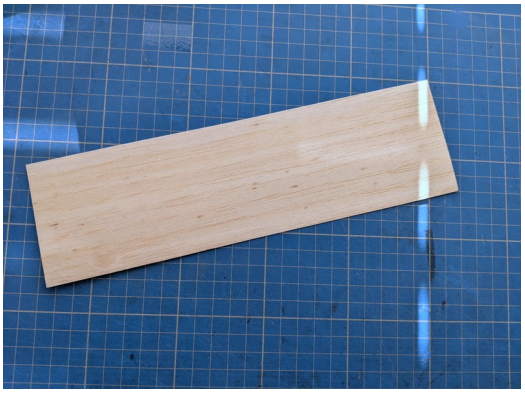
[2] It’s amazing how a little power can go to one’s head; and he’s normally such a mild-mannered chap. Just don’t get him started on his opinion of smashed avocado on sourdough toast...



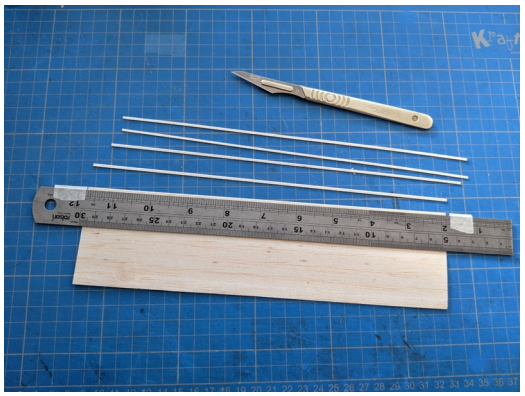
Step 3: Lift the bottom half of the tape, slide the 1/32" sheet into place next to the tape that's still on the board and then trap the balsa in place using the lifted bit of layered masking tape. Sand carefully across the grain, holding the balsa down with the fingers to reduce the chance of accidents



The process probably takes 5 minutes or so. I started with 80 grit, then went to 120 grit and finished off with 240 grit. This is the building board at the end of the procedure.



Step 5 : This is the finished product; looks almost professional...



Step 6 : After trying various methods, I think this is the best and quickest way to strip 1/64" sheet - couple of bits of folded masking tape attached to a steel rule, cut to the right depth (1/16" in this case) that act as guides. Using a balsa stripper is usually a bit of a disaster because the 1/64" sheet is too bendy.

Trinity Dates/Times and Events Calendar

For the moment, flying starts at 09:00 and finishes at 1:00 with the usual FF & RC half-hour slots. Flying at Trinity is essentially a sport-oriented pastime; just turn up, pay and fly. However, there will sometimes be some "just for fun" competitions of an informal nature which will be fitted-in around normal sport flying so that they won't disturb anyone who isn't taking part.

2021

Date	Event (if any)	Contest Director
December 18th	Christmas KK Elf	T Calvert / Lurk

2022

Date	Event (if any)	Contest Director
January 15th		
February 19th	Bostonian	T Calvert
March 19th		
April 16th		
May 14th	Beginners No-Cal	Dave King
June 18th		
July 16th		
August 20th		
September 17th	Golden Age Scale	Andy Blackburn / Lurk
October 15th		
November 19th		
December 17th	*Provisional* *Comet Nickel*	Mike Stuart

Any Other Business

Balsa Cabin 1/20" Sheet Order

Thanks to Dave King for, once again, going to the trouble of coordinating next year's bulk buy of 1/20" sheet from Balsa Cabin and also to John Price for staging a raid on Balsa Cabin's existing stock of 1/20" sheet.

Libre Office

Experiments continue with typefaces so that we can exchange newsletter documents between Windows, Linux & MacOs machines with no loss of formatting. This issue is using Bitstream Vera Sans as the main typeface because it is very like Verdana (Microsoft proprietary) and Verdana is widely accepted as being easy to read on screen and when printed. If you find this difficult to read, please shout.