

# MAXFAX 2023-2

It is with heavy hearts that we mark the passing of **Stefan Prosky**, who took wing on June 6th, 2023.

Stefan was a proud DC native and longtime Maxecuter who was our President from 2004-2008, and was one of the kindest and most intriguing people I have ever had the honor to call my friend. He was not a particularly prolific modeler, was more or less uninterested in collecting Kanones, and was drawn like a moth to the flame to aircraft with a certain *ie ne sais quoi* (which does not always translate into *easy to trim*). But once a model had been built, he was dogged in his pursuit of getting it to fly. It could take years, but he was a patient man. It was a great pleasure to watch his Bonanza win Simplified Scale at a Rose-James field contest a couple of years ago, an event captured on our cover photo. Stefan loved that plane, a marriage of kinetic sculpture and digital art—just two of his many passions-and you can see it in his face. He celebrated his win by serenading the cows late in the day as they retook the field, first with Duke Ellington's "Take The A Train" on the recorder and then "When The Saints Come Marching Home" on the harmonica. Yes, he was also a gifted musician. In truth, there wasn't much that didn't interest him, nor was there much on which he didn't possess at least an educated take, if not great skill. During our long drives to Raeford, Geneseo, Wawayanda, or Cape May, we covered a lot of ground. As we were both born without any sense of direction, and easily distracted by our conversation, we often got lost on the way in the pre-GPS days, but who cared? That just gave us **more** time to talk about art, music, modeling, acting, filmmaking, programming...and things biological. Stefan knew more about the workings of the human body than you might ever want to know. partially the result of his early career as a microbiologist, and partially the unfortunate consequence of a life spent learning how to manage his own, which seemed perpetually out to get him. That battle had its costs; we were the same age, and Stefan liked to joke that people were always mistaking him for my father. But for all the compromising conditions that he adapted to—his wry observation was always "it beats the alternative"-his good humor and spirit never left him. His wife Tati said that in the last days of his life, he was still making weird art out of the bits and pieces of medical jetsam that were left in his room, and blowing kisses to his family from his hospital bed. Rest in peace, my brother. You are missed.



-Dm

Stefan at his favorite trim field in NE DC, with his Bleriot 110 dimer; an aircraft which taunted, teased and occasionally delighted him for pretty much the entirety of the time I knew him.

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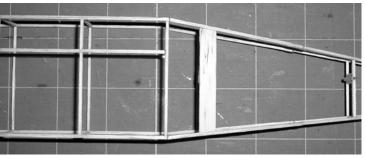
**PUBLISHING DATES** - Four issues of MaxFax are sent each year, one each quarter, but since this is a volunteer publication nothing is guaranteed except that four issues annually will be sent to all members.

In this issue, we go hard in the paint on indoor FF. I know, outdoor flying is in full swing, never mind thatindoor never sleeps. It's safe to say that hard-core indoor guys tend to be more *disciplined* in their approach to modeling, and these articles will certainly bear that out. Steve Fujikawa provides step-by-step instructions for making a model-saving rubber loading stick; Mike Coplan and Glen Simpers talk A6; and William **Skelley** gives us the skinny on Young's Modulus and its application to our pursuits. We'll have Will's follow-up article in the next MaxFax, so don't miss it! When you've absorbed all those formulas, why not try your hand at Abram Van Dover's A6 design; Billy Batkins' CAD draft of the plan is in this issue. Or maybe Clarence Mathers' original A6, which I took the liberty of redrafting in CAD. I thought to re-run my P80 NoCal for a whiff of scale—it's a good indoor flyer. And because it was one of Stefan's favorite torments, let's have Michael Heinrich's classic Bleriot 110 plan. Stef always wanted to bump that thing up to 24" ... A breathless Kudzu report from O.Leo Strutt finishes things out.

# LOADING STICKS FOR SCALE MODELS

#### Motor breakage accidents resulting in torn tissue and broken structure are commonplace when using a stooge to wind scale models. If your free time is as scarce as mine, you want to avoid making extra work for yourself when the motor inevitably breaks: creating shreds of tissue and balsa shards! Many fliers use blast tubes but I find them awkward with all the winder extensions and torque meter modifications necessary. A better (and more aesthetically appealing) method is to wind off the model on the comfortable environment of your winding stand and then transfer the motor to the plane using a Loading Stick. The stick holds the nose block, motor and peg securely as they are inserted in the plane. It's then easily removed prior to flight. This article describes a Loading Stick that's easily adapted to square or round section fuselages of any dimension including Bostonians and Manhattans. All of my enclosed fuselage models are built this way and I can't remember the last time I had to patch tissue. I hope that this technique saves you as much repair time as it has me!

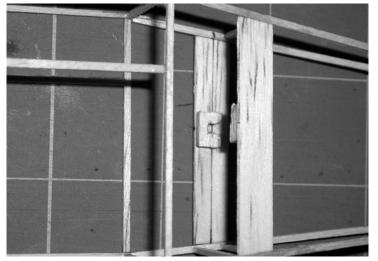
## A) PREPARING THE FUSELAGE



**1.** The Lacy fuselage shown has the usual sheet wood peg supports installed. However, they are not drilled through for the peg.

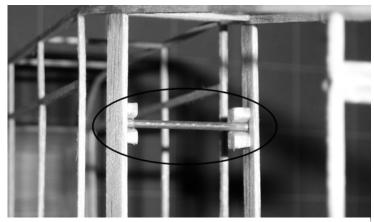


**2.** Instead, fabricate two "V" blocks as shown, from light 3/32" balsa.

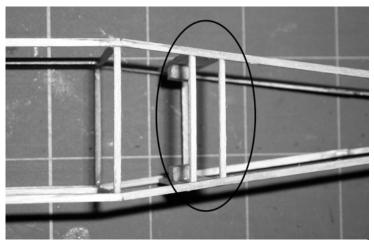


**3.** Install the "V" blocks at the locations as you would the peg. Harden the blocks with thin CA.

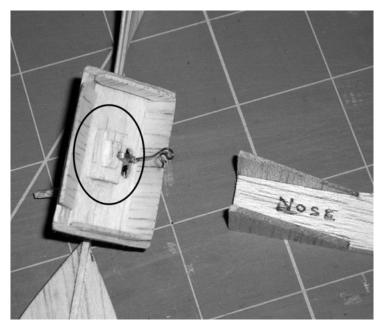
# by Steve Fujikawa



**4.** The peg will be a 1/16" diameter aluminum tube, which should fit squarely in the bottom of the "V". The fit should be slightly loose, but not sloppy.



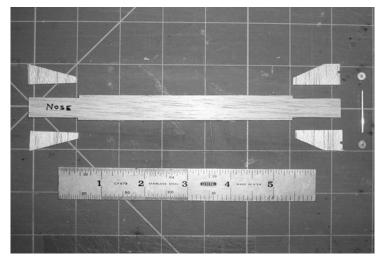
**5.** Frame a window in the bottom of the fuse to allow viewing of the the insertion of the peg.



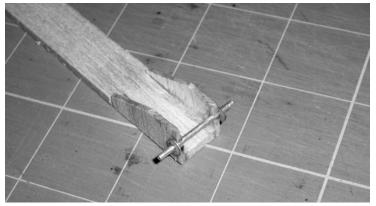
**6.** The loading stick will fit the nose block key. Since the Lacey has a large nose, I made a sub-key specifically for the the loading stick.

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## **B) MAKING THE LOADING STICK**



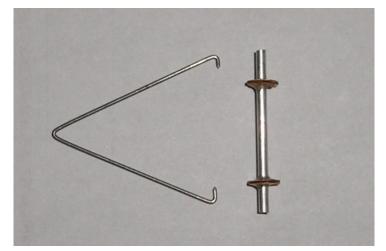
7. Components of the stick, about 1" longer than the hook-to-peg distance. The uprights support the nose block and the peg under tension of the wound motor. Glue the supports to the stick and harden everything with thin CA. Make two 1/64" ply washers with 1/16" holes to position the peg on the rear supports.



**8.** With the stick assembled, the peg seats in the rear upright notches with the 1/64" plywood discs set just outside the supports. Glue the discs to the tube with thick CA, making sure everything is a slightly loose fit, which facilitates removal during loading.

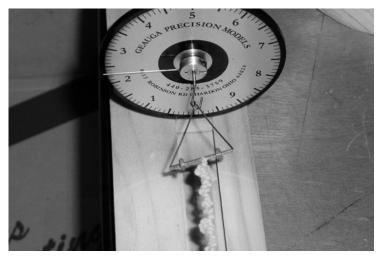


**9.** The front supports the nose block key. I prefer to have the stick fit upside down on the nose so that the motor and peg are both visible from the bottom of the plane during loading.



**10.** Make a yoke out of **0.025**" wire to attach the peg to the torque meter. The yoke is a spring fit on the peg; the bent ends fit into the open ends of the peg.

## **C) WINDING**



**11.** The yoke holds the peg on the torque meter during winding.



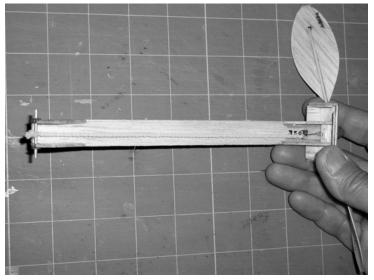
**12.** Begin transferring the motor to the model by putting the o-ring on the prop shaft hook.



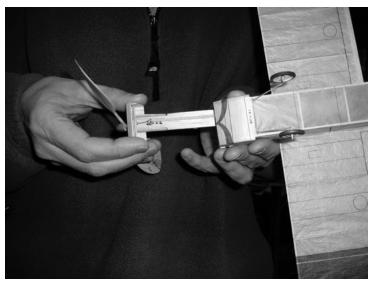
**13.** Insert the front supports in the motor block key.



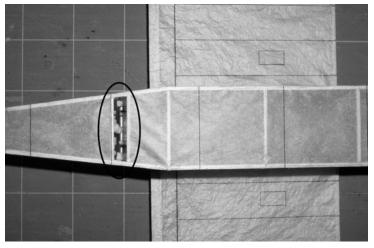
**14.** Hold the yoke and insert the peg in the rear notches of the loading stick. Remove the yoke.



**15.** Wound motor on the loading stick. The whole thing is held together by the motor tension.



**16.** Holding the model upside down, insert the loading stick in the fuse.



**17.** Looking through the window, position the peg in the "V" blocks. Be sure that it is seated squarely. The window can be covered with a bit of tissue and repositionable glue stick for scale judging.



**18.** Pull the nose block off the front of the stick, stretching the motor to disengage the key. Hold the model vertically, shake gently, and allow the stick to fall out. Seat the nose block and go fly!

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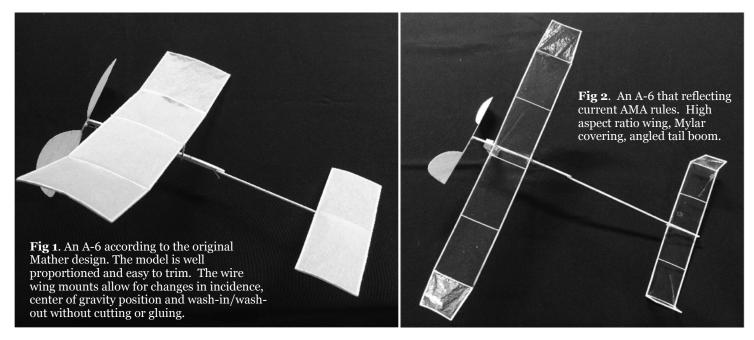
# A-6 FOR INDOOR FLYING

# by Mike Copland and Glen Simpers

# History

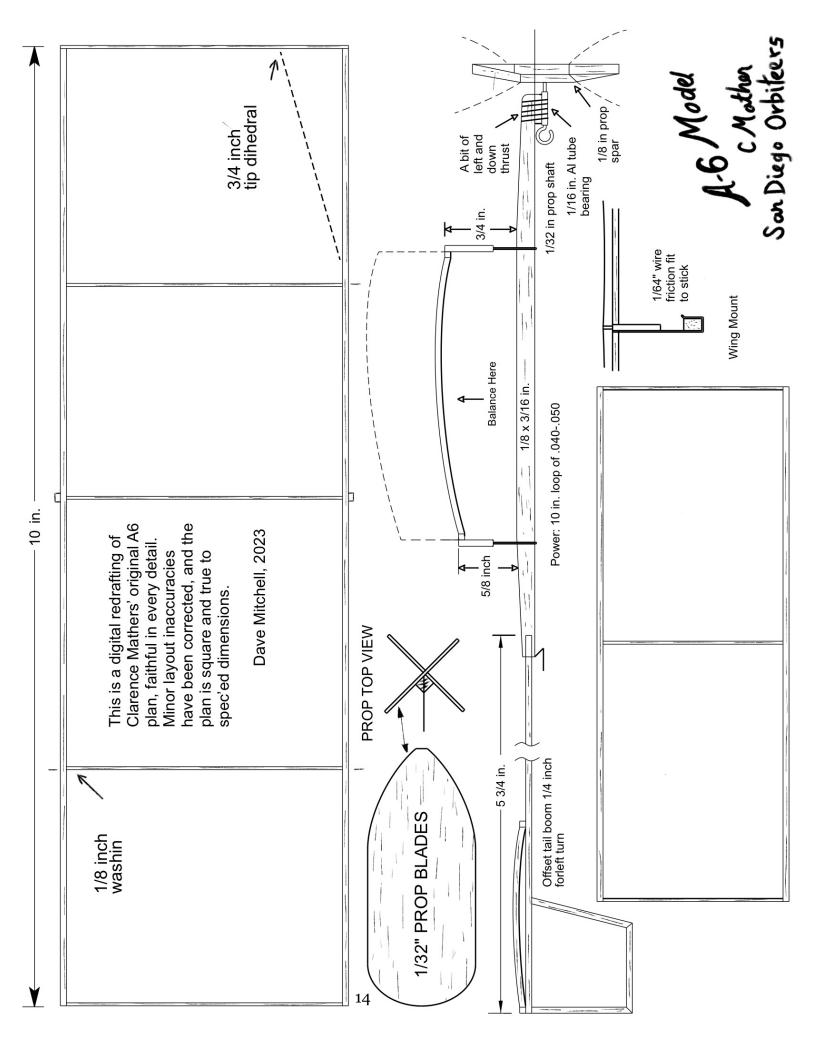
Clarence Mather of the San Diego Orbiteers flew nearly every type of Free Flight event, competing at all levels. Between 1970 and 1980, he held three national records. In the early 2000s he designed an indoor model, the A-6, that used conventional materials, was small, easy to build, and sturdy enough to survive the banging around in the small gym then available to the club. No special materials such as carbon fiber, rods, or tubes were allowed (Fig.1) A-6 models are easy to trim and fly. They are a great entry into building non-scale indoor models and training your modeling brain into think about weight during construction. An A-6 give fun flights even if warped a bit or overweight. The flat prop blades have a narrow "sweet spot" of prop and rubber combination for the best flight times. This challenges the modeler to employ patient experimentation to get the best out of the model for the indoor space. The original A-6 requirements are given in column one of the table at right.

Original A-6 Requirements	Current A-6 Requirements	
Maximum of 30 square inch projected wing area, no span limit	No change	
Maximum of 15 square inch projected stab area	Unlimited stab area	
Maximum 6 inch length from thrust bearing face to rear hook	No change	
1/16-inch x 1/16-inch minimum wing and tail spar dimensions	No change l	
1/16-inch x $1/32$ -inch minimum wing and tail rib dimensions	No change	
Maximum 6-inch prop diameter	No change	
1/32-inch minimum prop shaft diameter	No minimum prop shaft diameter	
Minimum 1/32-inch prop blades, flat	No change	
Minimum weight 1.2 gram without rubber	No change	
Unrestricted rubber weight	No change	
No special indoor materials	Mylar film allowed	



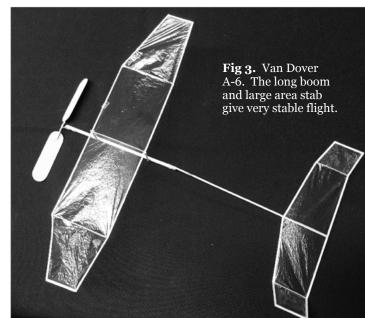
Over time, requirements were changed to allow unlimited stab area, covering with commercially available plastic, such as Mylar, and 1/16 inch x 1/16 inch mounting posts rounded only in the area of mounting tubes. The 1/32 inch minimum prop shaft diameter requirement was eliminated, and smaller diameter prop shafts can now be used with thrust bearings that allow for the easy exchange of props. See column two of the table.

The current requirements permit experimentation with wingspan, stab area, boom length, and prop planform. High aspect ratio wing and tandem designs have been flown with success. Figure 2 shows an A-6 with a high aspect ratio wing and long canted tail boom.



## Van Dover A-6

Abram Van Dover, a member of the Virginia Brainbusters, was a prolific builder and flyer of indoor and outdoor free flight planes. Plans of his original A-6 design accompany this article. The 1.2 gram minimum weight can be attained with 6 or 7 pound per cubic foot balsa for spars, ribs, motor stick, posts, and boom; 5 pound per cubic foot balsa for the prop blades; a 0.015 inch diameter music wire prop shaft and rear hook; a split aluminum thrust bearing; Mylar covering; and tissue tubes.



# A-6 Van Dover Construction

Acetate glue thinned 1:1 with acetone is used for assembly. Ribs for the wing and stab are sliced from 1/32-inch balsa using templates of hard balsa or 1/16-inch plywood with the edge hardened with a coating of cyanoacrylate glue. The wing and stab are covered flat with Mylar. Tip dihedral is added after covering is complete. A reference to Mylar covering methods is given in the **Techniques** section (see the chart below for a comparison of different Mylar weights to Esaki tissue). The thrust bearing and rear hook are glued in place on the motor stick and reinforced with tissue or thread wrapping. For the plane to circle to the left, the thrust bearing is offset 2° left and 0° down. The clearance between the thrust bearing and rear hook from the motor stick prevents knots in the wound rubber from interfering with the motor stick as the rubber motor unwinds. The boom should be sufficiently stiff to deflect less than 1/8 inch at the end when the stab is attached. The tissue tube on the motor stick to which the boom is attached allows for the left side of the stab to be tilted up to adjust the radius of the turning circle.

Covering	Areal Density (mg/in <sup>2</sup> )	Thickness (mm)
Esaki	8	
Ultra	2.0	2.2
Super Ultra	1.1	1.2
OS	.71	0.8

Prop blades are cut from 5 pound per cubic foot balsa using a template copied from the plan.

The prop should be statically balanced by adding weight to the light side and have the pitch angle (45°) of the two blades identical. This eliminates energy robbing vibration during flight. The center of gravity of the plane with rubber is at the trailing edge of the wing.

# Trimming

#### **Initial rubber selection:**

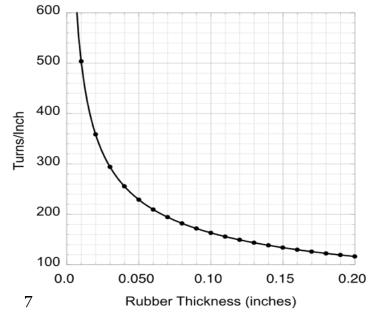
Weight: 60% to 70% of airframe Length: Two to three times bearing to hook distance (12 to 18 in.)

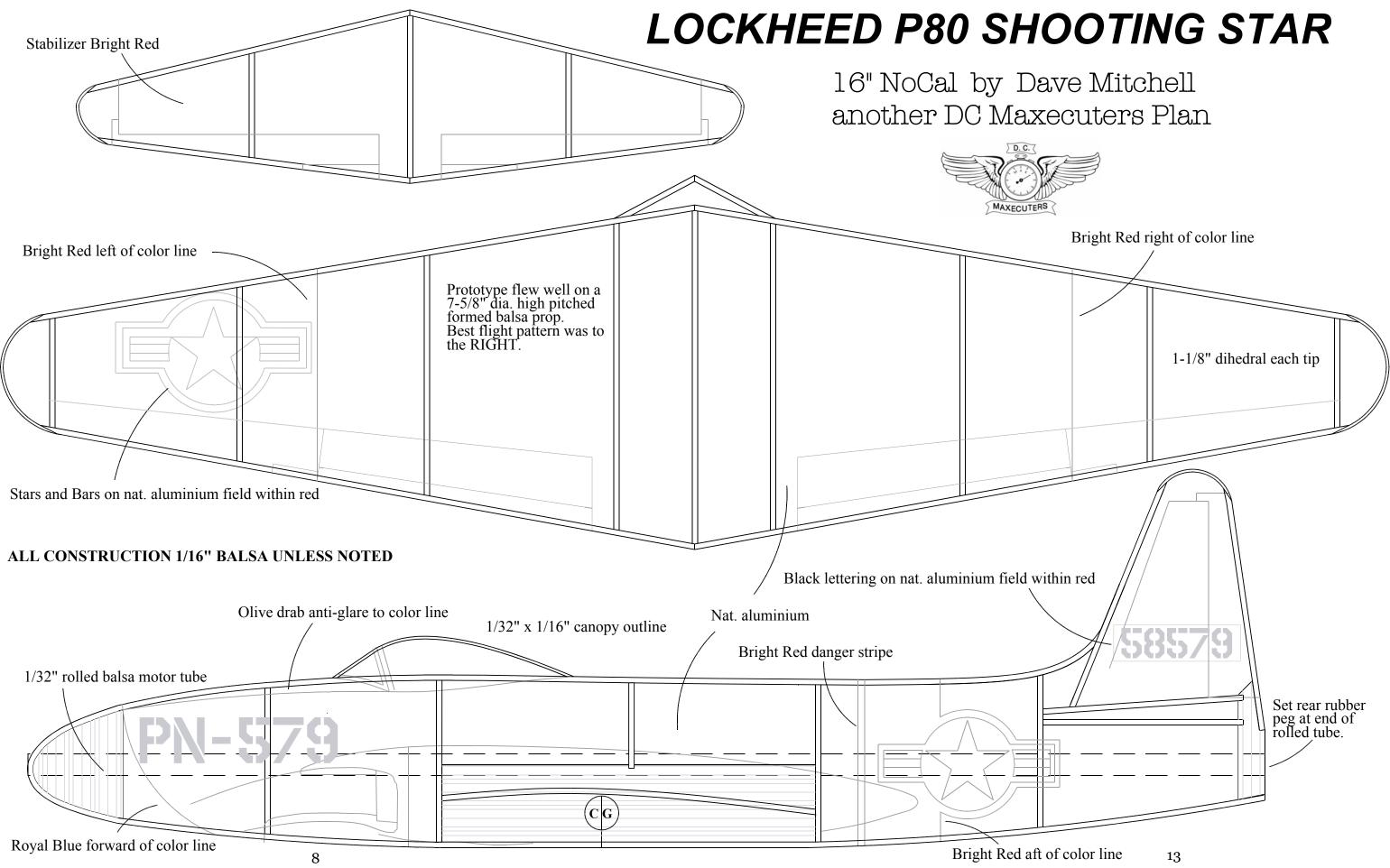
Weight (grams) = 0.67 x Length (in.) x Width (in.)

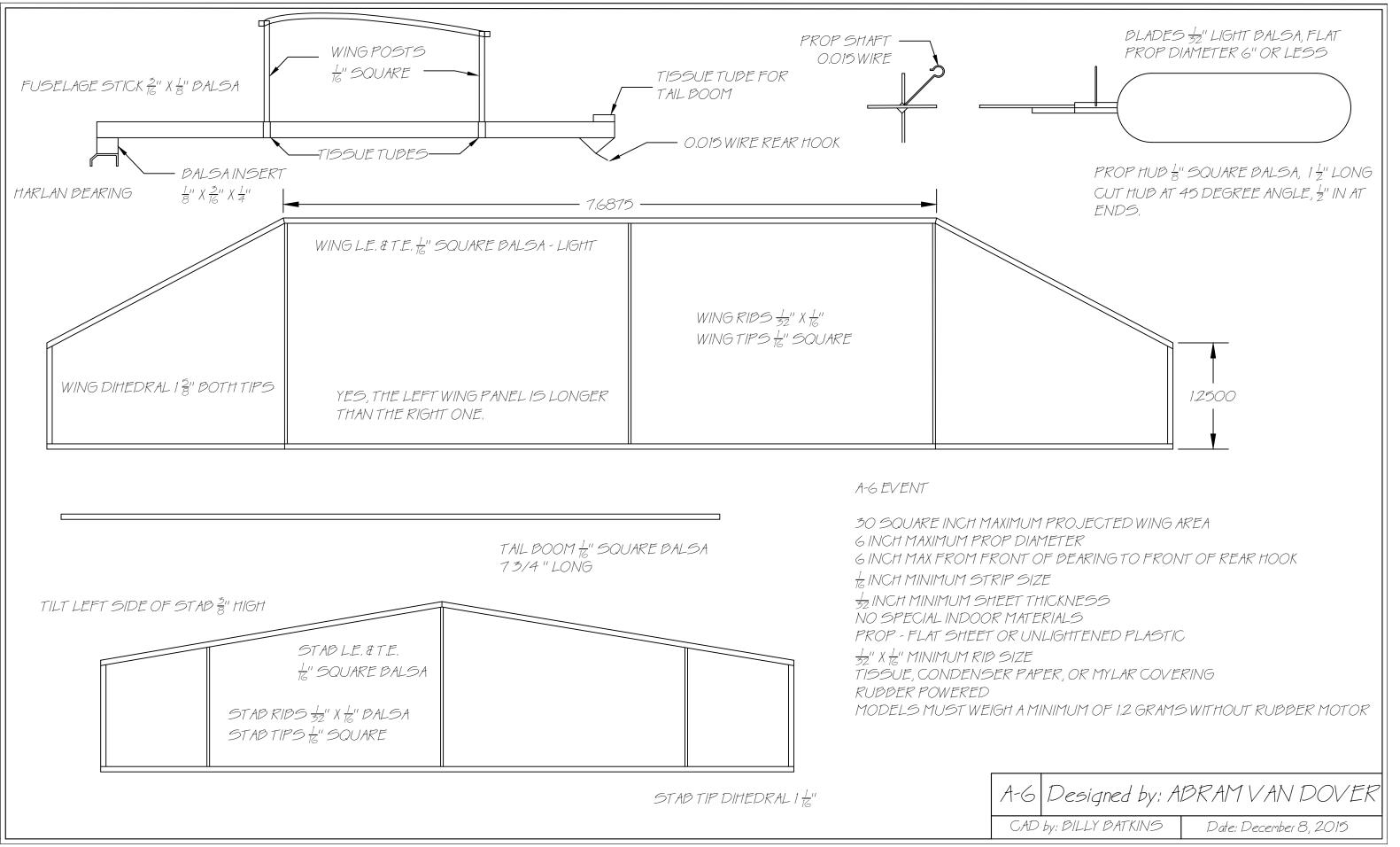
#### For the Van Dover A-6:

12 in. loop, 60% of airframe weight Weight =  $1.2 \times 0.6 = 0.72$  grams Length = 24 in. Width =  $(0.72/24) \times 12/8 = 0.045$  in.

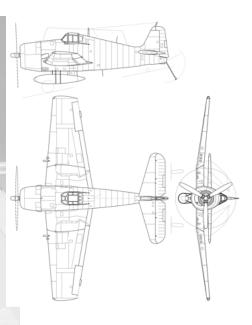
Rubber is wound off the plane using a stooge to anchor the end opposite the winder. A torque meter is useful, but not required. For maximum turns, the rubber is conditioned by lubricating and stretch winding to 80% to 90% of breaking. A conservative estimate of the turns-to-break for rubber loop of a given length and combined strand width is given in the graph below. For the 12-inch loop, in the example above, the total width of the two-strands is 0.090 inches. From the graph, the turns-to-break per inch for this loop is 180. The total number of turns-to-break for the 12 inches is 180 x 12, or 2160 turns. After conditioning, the rubber is stretch wound to 80% to 90% of breaking and then 30% to 40% of the original turns "backed off." The object is to initially have the plane fly level or climb slightly to assess turning radius and attitude. Stab tilt is used to change the turning radius and the wing angle of incidence adjusted to correct for stalling or diving. Flight altitude is changed by varying the number of backoff turns from the fully stretch-wound rubber. For low-ceiling sites, optimum performance is attained when the number of backoff turns is approximately equal to the turns remaining when the plane lands. For a given prop this often requires changing both the length and thickness of the rubber. Expect flights of two to four minutes in low ceiling sites.







John Murphy sent us this pic of his neat Hellcat. John writes, "The model is a modified version of Paul Bradley's 24" Comet kit revision. My changes include a single piece wing with thinner airfoil, planked nose, and depict an F6F-5 from the U.S.S. Independence, 1945. 66.2 g, prop is 8" Peck re-pitched to 1.4. Easy-built Krylon matt finish."

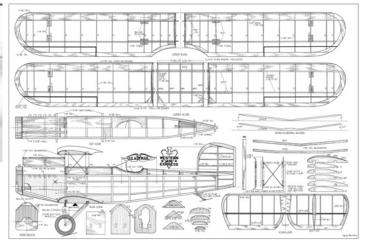




Fred Stagg has been working on this big Douglas M2 Mailplane for a while now, and boy is it ever a beauty! 33" wingspan, reduced from the 42" design by Gabriel Bedish. Flight tests have been promising, as Fred gradually works up the courage to stuff in the necessary rubber—he says it's a heavy bird— and wind it up to torque. He's considering an external winding setup—see the article on page 3-5...



Wally's Piper Clipper made a bid for freedom at the Kudzu meet, but got cold feet when it got a whiff of the wicked North Carolina brush. Wally and Julie found it at the end of the day, whimpering, perched at the very edge of oblivion. It promised never to do THAT again. We'll see.



Gabriel Bedish's Douglas M2 plan, designed for wet power. Available on Outerzone www.outerzone.co.uk/ plan\_details.asp?ID=6960

#### Material Properties of Balsa for FAC Modelers William Skelly 2022

"There are two types of model airplanes: those that have crashed, and those that will crash," but I have often wondered whether scientific principles can be used to design more damage resistant FAC ships. For instance, is it possible to calculate useful guidelines for leading edge dimensions and density?

A first step in the direction of answering that question is to obtain some of the material properties of balsa that can then be used in beam bending equations. The two most important properties for this endeavor are: the **Young's Modulus** and the **failure stress**. Since balsa material properties vary with density, I set out to figure out some relationships we modelers can use to figure these out.

Young's Modulus is the proportion between the stress (force per unit area) and strain (deformation per unit length) within a part. It's analogous to a spring constant. The failure stress is the force per unit area required to break a material.

The material scientists in the audience might point out that balsa's material properties aren't uniform in every direction because it has grain. For many situations, we can assume the balsa only experiences forces in the direction parallel to the grain (i.e. the axial direction), so all the material properties discussed from here on are axial.

These same material scientists might also point out that "failure" can be a subjective word and they would argue I need to specify whether failure is defined as yield, elastic limit, fracture, or a bunch of other things. Since balsa acts like a brittle material, it fractures shortly after yielding and many of these distinctions become less useful for practical purposes; therefore, I'll use the terms "strength," "failure stress," and "fracture stress" interchangeably in this article to refer to when the stick is going to break.

On to the experiments: I tested six 1/16" square sticks of different densities. My testing method was to use the stick as a cantilever beam with a known weight hanging off the end. By measuring the length of the beam, the weight hanging off



the end, and the vertical displacement of the end of the beam, I had enough information to work backwards to the Young's modulus using the equation for deflection of a cantilever beam with a fixed end.

$$\delta = \frac{PL^3}{3EI}$$

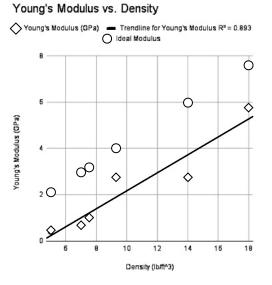
Equation for deflection of a cantilever beam, where  $\delta$  is the displacement of the end of the beam, P is the force, L is the length, E is the young's modulus, and I is the area moment of inertia

Instead of keeping the length constant and varying the weight, I determined it would be easier to vary the length. I started with the stick overhanging a little over an inch from the edge of the table, then slid the stick out in increments to increase the overhanging length. With a ruler taped to the end of a yardstick, I was able to measure both the length and vertical displacement. The test weight was an empty Solo cup hanging off a string cyanoed to the end of the stick.

To find the second material property, the failure stress, I recorded the length when the overhang was so much that the stick snapped, and using that information I was able to use the equation for maximum stress in a cantilever beam to work out the stress at failure. If I couldn't break the stick with an empty solo cup (which was the case for the denser wood) I added a few coins to the cup and repeated the test.

$$\sigma_{max} = \frac{PLy}{I}$$
Equation for maximum  
stress in the a  
cantilever beam, where  
 $\sigma_{max}$  is the max stress,  
P is the force, L is the  
length, y is half the  
thickness of the stick,  
and I is the area  
moment of inertia

Having run the experiments, we can now plot the results for Young's Modulus and the failure stress. First, here's the experimental results for Young's Modulus (triangles and solid line):



I averaged the Young's modulus over as many data points as I recorded before failure for each stick to get the graph shown. Looking at the graph, we see that the modulus increases linearly with density, and varies between 0.38GPa (for a 5 lb/ft^3 density stick) and 5.77GPa (for an 18 lb/ft^3 density stick).

After conducting these experiments, I found out some folks from MIT did some more scientific experiments looking into the material properties of balsa<sup>1</sup>, and they also found that the modulus increased linearly with density to a value "up to 6GPa" for high density balsa. So far so good!

1 Borrega, Marc, and Lorna J. Gibson. "Mechanics of Balsa (Ochroma Pyramidale) Wood." Mechanics of Materials 84 (May 2015): 75–90

The MIT folks also came up with a formula for the Young's Modulus of balsa based on density using an idealized model (circles on the graph). The short of it is that if you assume the balsa is an ideal honeycomb structure, the material properties are related to the material properties of the cell walls by the ratio of the densities of the balsa and cell wall. They also note that this formula overestimates the modulus compared to experimental data. My data also shows this formula (labeled on the graph as "ideal modulus") to be an overestimate, so our analyses are in agreement.

 $E_{balsa}[GPa] = E_{cell wall} \times \frac{balsa \, density}{cell wall \, density} = 41 \times \frac{balsa \, density \, [lb/ft^3]}{97.2}$ 

Where E is Young's Modulus

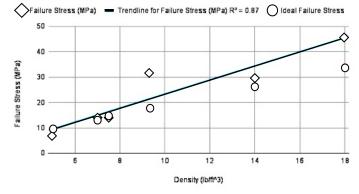
For a more accurate estimate of Young's Modulus for us model builders, here's the equation for the trend line Google Sheets fit through my experimental data:

$$modulus [GPa] = 0.388 \times density [lb/ft^3] - 1.71$$

Now, having seen the results for the Young's Modulus, let's take a look at the results for the failure stress:

Looking at the graph below, we can see that the fracture stress is also linearly related to density, and varies from 7.09 MPa (for a 5lb stick) to 45.92 MPa (for an 18lb stick). The MIT paper also found a linear relationship with dense balsa having a strength of 40 MPa. Yet another point of close agreement!

#### Failure Stress Vs Density



The idealized honeycomb model can also give a formula for the failure stress. The MIT paper says this formula is also an overestimate, but it seems to agree decently well with my data for low density, and then become a slight underestimate for high density.

 $\sigma_{balsa}[MPa] = \sigma_{cell \, wall} \times \frac{balsa \, density}{cell \, wall \, density} = 185 \times \frac{balsa \, density \, [lb/ft^3]}{97.2}$ 

## Where $\sigma$ is the failure stress

For the pragmatic among us, here's the equation for my linear fit for fracture stress:

Fracture Stress [MPa] =  $2.77 \times density [lb/ft^3] - 4.28$ 

Stay tuned for part 2 where I'll use these properties (Young's Modulus and failure stress) to analyze one of the most common structural problems faced by the indoor FACer: the showdown between the leading edge and the basketball hoop!

# A6 / Indoor Sources

•. <u>www.indoorffsupply.com</u> Thrust bearings, teflon washers, music wire, spray adhesive, rubber lube, rubber stripper, rubber winder

•. <u>www.faimodelsupply.com</u> Ultra film, Super Ultra film, Tan Super sport rubber in bulk

•. <u>www.freedomflightmodels.com</u> Winders, Torque meters, Ultra film

•. hobbyspecialties.com OS film

•. jhaerospace.com Tan Super Sport rubber, torque meters, O-rings, Ultra film

# Techniques

General indoor construction, materials, trimming. www.freeflight.org/docs-category/technical-library/

Film for indoor models. Selecting and applying. www.indoorspecialties.com/articles/Plastic Films and How to Cover With Them.pdf

Tissue tubes. <u>www.indoorspecialties.com/articles/</u> <u>Making Tissue Tubes.pdf</u>

Simple torque meter to measure important parameters for getting the most out of rubber motors. www.indoorspecialties.com/articles/Build a Simple Torque Meter.pdf

Partial motors can save time when trimming models and learning the best length and weight of motors for a model. <u>www.indoorspecialties.com/articles/Flying on Partial</u> <u>Motors.pdf</u>

# **UPCOMING EVENTS**

<u>Maxecuters ZOOM meetings</u> Every other Tuesday at 11:30am, hosted by Carl Hampton. Check your e-mail for notices. To receive an invitation, E-mail Carl at: <u>champton3@cox.net</u>

Brainbuster Van Dover Open July 14-16

East Tennessee State University

FAC Non Nats July 12-15 Geneseo, NY

AMA Outdoor Nats July 17-22 Muncie, IN

**Don Myers Memorial Aug 5-6** Tuckahoe Turf Farm, Hammonton, NJ

See the FAC Contest Calendar for more information on the above events!

www.flyingacesclub.com/wp/fac-contests/fac-contest-calendar/

# **KUDZU COMES ALIVE!**

Swirling Accusations Fly as Fishy Format Favors CD, GOAT Falters; Escalate Continues Strong Run, Martin Surges Special to the MaxFax by O. Leo Strutt, Boy Reporter

May 20-21 was the strongest showing at the Raeford meet in some time, with some new faces joining old hands to form a body of competitors that must have delighted the late greats **Don Srull** and **Dan Driscoll,** whose spirits were circling the field as surely as the models flown in their honor!

Saturday's weather was expected to be the best on offer, with strong winds and possible rain forecast Sunday; with that in mind, the decision was made to try and cram all eight of the scheduled Mass Launch events in on one day! Holy train wreck! Variable drift and a somewhat constricted field due to active agricultural operations meant that modelers had to put on their running shoes and stay on their toes if they wanted to be competitive!

FAC CD Dave Mitchell made the call to conduct most of the Mass Launches as two-heat affairs, he said to allow them all to be crammed into one day! Seasoned observers might have cried "FOUL!", given Mitchell's well-documented history of spanking everyone on the second round of Mass Launch events only to flame out in spectacular fashion in the third, and given arch-rival Wally Farrell's legendary skill at managing rubber, but no dissent was brooked! And sure enough, the CD took home the lion's share of the Kanones! Questionable? When asked at the end of the meet to comment on the unseemly and suspicious circumstances, Mitchell actually snorted! "Elections have consequences" he spat, before speeding away in a cloud of dust to the Sierra Hotel where he now has room 376 thanks to a 376-second Jet Cat flight that crushed the aspirations of both Wally and Glen Simpers who also had Sierra Hotel flights of 291 and 222 seconds respectively and vet Mitchell won that event too! Incredible!

**Mike Escalante** got the meet rolling with a shocking smackdown of Wally in WWI! It was no contest as Mike's immaculate Fokker DVII trounced Wally's Elephant in the room in both rounds! Wally felt much better after easily winning both WWII and Combined Racers later in the day, but that would be all the gold hardware collected by the GOAT for the meet! Unprecedented!

The marquee events were the **Miss Production** and **NIT** mass launches! No fewer than *eight* Miss Productions were entered, making it one of the most hotly contested events of the meet of all time recently! Mike's entry gave Dave's a run for the money, with Dave's managing to stay in unassisted sight for 679 seconds to Mike's 559! Holy floaters Batman, that was on 15% rubber! So much for keeping the models on the field, Dan Driscoll will like having those two birds in the house! The NIT Embryo ML had six contestants, with Dave squeaking past Mike by a mere *one* second and **Ray Bridges** coming in a very respectable third! In related news, Carl Dowdy won Embryo with his Matchbox, with **Dave Krammes'** Witchcraft hot on his heels! Dave K. also made a strong run in 2-bit +1, but got edged out by **James Martin's** pretty Flying Cloud! James rode his Chambermaid to victory in Dime Scale as well, and was in the running in several other events! We'll have to keep an eye on that guy, and they say he can write to!

Dave K's Zlin Z-24 was having teething problems and wasn't able to post an official flight in FAC Scale Glider, but that didn't stop it from getting top scale marks! What a looker! Dave M's less-well-appointed Z-24 edged out Duncan McBride's SG-19 for the win, despite Duncan having the top single flight time, a spectacular, wind-tossed 118-second thriller-on Sunday!!- that wound up lodged in a pine tree at the far edge of the field! An expedition was launched to retrieve it; two lashed-together 40' poles, some teamwork, a handful of strong oaths and an hour and a half later, most of the wayward bird was returned to earth! Not this time. Trixie! Duncan also had one of the most spectacular flights of the meet when his F7F Tigercat climbed out like a cat on fire and maxed to edge out an incredulous Wally's Pegna for First Place in FAC Peanut! What's a GOAT gotta do?!

The **Pat Daily** Navy Scale Memorial event went to Dave M., whose SBC-3 held off a pack of Wildcats and Hellcats for the win! Dave shamelessly used the handsome wood trophy tray to haul off his ill-gotten booty at the end of the meet Sunday, which was called early on account of the howling wind!

As usual, **Jimmy Jordan** and **John Diebolt** did a fantastic job of setting up the meet, from securing the field to providing all the awards, and *everything* inbetween! Thanks, guys!

Over and out!-O.L.S





Jame Martin with his neat Nesmith Cougar; third in FAC Peanut.



Mike, Wally and Ray prepare to go Nits; Dave's already there.



A Miss Production production—-what a great turnout for this event! Note the variety of wing placements.



Mike Escalante's very pretty Aeronca Champ poses in the grass.



Ray Bridges with his Nit; Doug Griggs in the background, retrieving his Miss Production



It took a village, but in the end Duncan McBride's wayward SG-19 was coaxed from the clutches of the pines, minus only a stabilizer.
 19 Glen, Duncan, Wally, Dave M. And Dave K. celebrate the win.

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1909 in Washington, DC. She was a prominent aviatrix in the early 1930s and a charter member of the Ninety Nines, the International Organization of Women Pilots. Hopkins flew a Viking Kitty Hawk B4 biplane in the 1930 Women's Dixie Derby from DC to Chicago, and later that same year, as the only female pilot, completed the 5000-mile Ford National Reliability Air Tour, flying a Kitty Hawk B8. She did her own maintenance during the tour, earning her the respect of her fellow tour pilots. Upon arrival in Dearborn MI, the last stop on the tour, Hopkins commented "I came piking in last every time, but I always got there, and that's what counts!" She served as the President of the International Women's Air and Space Museum from 1986-1994.

Nancy Hopkins (Tier) was born in