WHAM

NEWS VIEWS AND REVIEWS

Official Publication of the Wichita Historical Aircraft Modelers, SAM 56,
and the Kansas Sunflower Squadron, FAC Squadron #23

Issue JE-75
Date: 7/13/08

Notes on Symmetric Airfoils—Clarence Mather

Tom Arnold's Flightline Musings, July 2004 (Scale Staffel) issue, brought back memories of that occasion. We were at a Cactus Squadron's contest some years ago and rain began to fall. Three of us dived into my mini camper. A couple of my models were out and Tom looked them over closely and asked a lot of questions. We were parked on a dirt road used by farm equipment, a half mile from the hard road. Time flew by and finally Tim reminded us that water changes dirt into mud! Yikes! I fired up the Nissan's mighty four cylinders and we slithered our way to the hard road. There was an incline up to it and the truck spun its wheels and stopped. Lucky for me some of the saner fliers saw us dallying out there and waited for us. It took the muscle power of several to get that clunker up to solid ground! True friends!

The models that Tom inspected were a Folkerts SK-3 and a Tipsy Junior. Tom has an excellent memory but the models were about 22" in span and so not Jumbos as reported. The airfoils had bottom recurves about two thirds that of the top. So they were semi-symmetrical. I'm not trained in engineering so my comments will be mainly uneducated guesses from eye ball engineering. Somewhere I read that symmetrical airfoils have a fixed center of pressure rather than one that moves forward with the angle of attack. This effect was nicely explained and illustrated by Tom. Most of my scale models are of low wing design and have their pitch stability strongly affected by that motion. We have to add nose weight or move the rear peg forward farther than a mid or high wing design. -Some full size aircraft have symmetrical airfoils including the B-17, the Hughes Racer and the Taylorcraft lightplane. I wondered how a model would perform with them. The bottom of the wing of an old low-wing was remodeled by adding recurves to the ribs and recovering.

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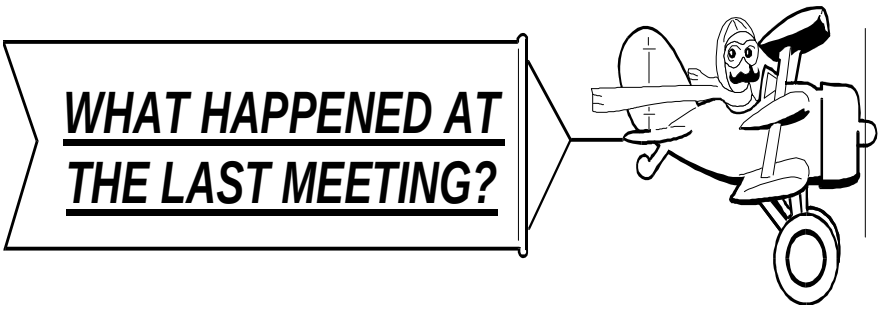
The top was not changed. No precise measurements were made, but the model flew well with good stability. It seemed as good or better than before.

There are other features of recurved airfoils. Many of the aircraft that we model have some recurve. Models that include it are more realistic. They have less drag than other foils and so the models fly faster thus producing more momentum. They will penetrate rough air better. With the recurve, the rib is deeper. If surface spars are used the wing can be made lighter. I find surface spars much better than the single deep spar often used. Air forces acting on the wing tend to bend the spars. One side is compressed and the other stretched. The wood in the middle holds the edges apart.



May 17, 2008 Meeting Minutes

ATTENDEES:

Mary Kay & George Avila, Debbie & Tom Derber, Paula & Jeff Englert, Jane & Earl Griffith, Danese & Bill Lindsay, Eleanor & Jack Phelps, Ed Ross, Charleen & Ed Salguero, Marilyn & Bill Schmidt, Dan Walton.

Guest: Mark Wood

President Ed Ross called the meeting to order.

The previous meeting minutes were approved as published.

Bill Schmidt presented the treasurer's report in the absence of the treasurer.

OLD BUSINESS:

The proposed change to the constitution (five members constitute a voting quorum) was passed.
The club charter and insurance papers were received.

NEW BUSINESS:

A motion was passed to forward the flying field landowner the usual stipend as an acknowledgment for their allowing our use.

SHOW AND TELL:

Tom Derber brought a 24" Heath mid-wing rubber scale model in Orange and Black. The model was built from the Peerless plan from the Scale Flight Kit (Penn Valley Hobby Shop).

Jeff Englert brought a commercially available small coil spring winding tool. Works well!

Earl Griffith showed off two P-300 fuselages, one conventional stick construction @ 7.5 grams, the other a rolled tube weighing 12.6 grams.

Bill Schmidt displayed a rare 1955 Cox Strato-Bug .049 engine and a F&B Vampire McCoy .29 powered control-line model in Boston maroon and yellow silk.

Dan Walton displayed a commentary on where the RC hobby appears to be going. He acquired a new ARF RC model kit for a song (from the supplier) because it was built for an engine and since everyone is moving to electrics, he is having problems purchasing a correct size engine for it.

May Fun Fly Results

May 17, 2008

Those showing at the flying field Bill Schmidt, Jeff Englert, Jack Phelps, Mark Wood, Ed Salguero, Jim Lehrman and Jim O'Reilly.

WHAM Flying results as recorded.

Flyer	Model	1st	2nd	3rd flight	
FAC Jimmy Allen					
Ed Salguero		56			(56)
FAC Small Rubber					
Bill Schmidt	Thermalier	94	120	107	(321)
Jack Phelps	Gollywock	120	100	97	(317)
Jim O'Reilly	Wren	120	91	120	(331)
OT Cat Glider					
Jack Phelps	Zoomer	26	19	21	(66)
Jeff Englert	Zoomer	57	120	27	(204)

2008 Club Standings

Points awarded based on event participation and place finished.

	SAM Events		**FAC Events**				
	1/2A Texaco 4/17/2008	Cat Glider 5/17/2008	Jimmy Allen 4/17/2008	Dime Scale 4/17/2008	Small Rubber 5/17/2008	FAC Moth 5/17/2008	**Total**
Bill S				3	2	3	**8**
Jack P		1		4	1	1	**7**
Jeff E	1	2				4	**7**
Ed S			1	1		2	**4**
Jim O					3		**3**
Jim L				2			**2**

This is a leverage action throughout the wing where the forces are inversely proportional to the spacing. If the recurve rib holds the two spars fifty percent farther apart, the forces on the spars are reduced by one third! So the spars can be considerably lighter. On the models that Tom studied, the wing panels were about 1111 long. Two spars were on top and two on the bottom directly below.

I use very hard balsa for spars and edges as it is less likely to be brittle. I strip all spars and edges with a razor blade, metal straight edge, and eye ball micrometer. So the dimensions are approximate. The spars were about 1/16" X 1/32" at the centers and tapered towards the tips as the forces are usually less there. I have built two jumbo sized models with these airfoils. Those spars are about 1/16" X 3/32" at the centers. If a frame seems too flexible, small pieces of balsa can be placed between the spars halfway between the ribs. That step will stiffen it considerably. I place ribs quite close together and so haven't used the spacers much. The ribs are made of softer balsa and sometimes lightening holes are cut in the wider areas. Do not remove wood from between the spars though, as it is needed to hold the spars apart.

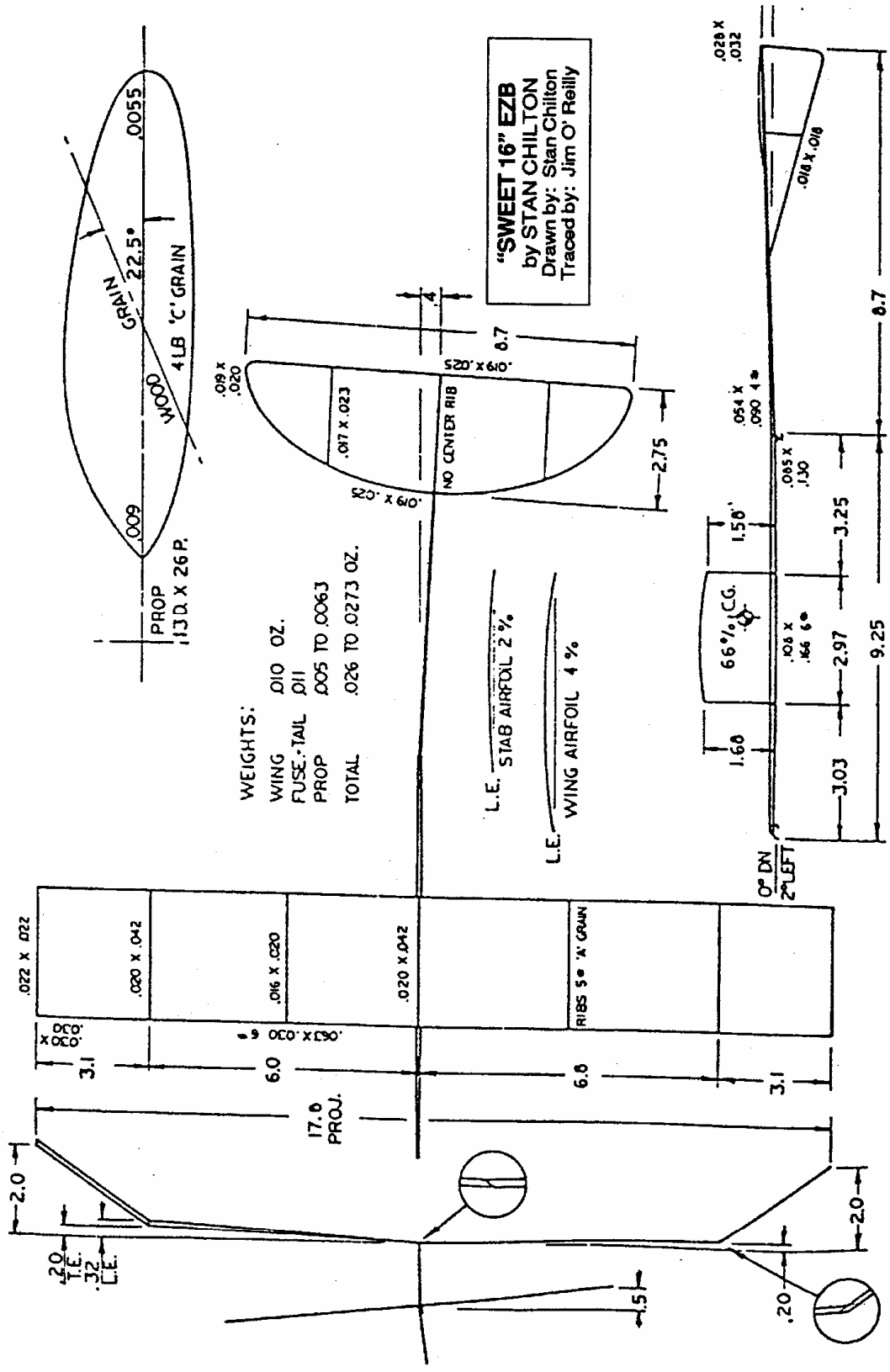
Building the recurved wing& is more work than other types. I measure how deep the recurve is and theft cut small balsa blocks to that thickness. The blocks are pinned to the building board and the edges of the wing are pinned to them. Making the block higher can produce washin or washout, if desired. Tapered wings require blocks of different sizes at three or four stations.

I have built ten or so wings of this type. They are strong and perform well.

Hints & Tips

Biplane Decalage—Dave Reese (via FAC Cactus Sqdrn News)

Dave plans show the top wing set without any positive incidence to the thrust line, 0 degrees and the lower wing set at 1.5 degrees positive, relative to the thrust line. The stab was usually set at 0 or slightly negative (trailing edge up). The reason given was that: A biplane is mostly flying on the bottom wing and the top wing is only causing drag. The lower angle of the top wing results in less drag. If the plane stalls, the lower wing will stall first and the top wing will not. This way it maintains lift, this will have the effect of bringing the nose back up helping it recover. He feels that it helps his planes penetrate into the wind better, keeping it from ballooning. The article goes on to say Dave Stout sets them up differently



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This would be a simple model to start with, ignore the fancy wood sizes and beef it up for a rugged first effort. You can taper the wing spars, cut a few until you get an even set, you won't waste much wood with these things. If you get the final weight below 3 gm I guarantee the performance will surprise you. Have a go. Any queries e-mail me.

WHAM – News, Views and Reviews
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SAM 56 — Wichita Historical Aircraft Modelers

FLYING ACES

Sunflower Squadron
Wichita, KS

Date: 7/13/08 **ISSUE JE-75**

✈ The next SAM 56 Dinner Meeting will be at:

Mediterranean Grill
335 South Armour, 651-5599
Saturday, July 19, 2008
Social Hour @ 6:00 PM, Dinner @ 7:00 PM.

Upcoming Events:

July 19-20,	**Meeting, fly SAM 1/2A Scale R/C, FAC Golden Age Civil Scale, FAC WWII Mass Launch, FAC/SAM .020 Replica**
August 9-10,	**fly FAC Old Time Gas Replica, SAM LER R/C, FAC and SAM Small Rubber Combined, WHAM Post 1940 Civilian**
August 23-24,	**Tulsa Gluedobbers Annual, Perry OK contact Bob Hanford CD, BHANTULSA@aol.com for details**

✈ **Membership Information:**

Open to all interested AMA members, founded to encourage and promote the model airplane building hobby.
Member dues $20 annually, Subscription only; $12 annually, $18 foreign.
Send checks to Jim O'Reilly, 4760 Battin, Wichita, KS 67220.
All memberships and subscription renewals are due January 1st of the new year.

Club Officers:				
	President:	Ed Ross, 682-9692	Vice-President:	Bill Lindsay, 689-8491
	Treasurer:	Jim O'Reilly, 744-0856	Secretary:	Bill Schmidt, 744-0378