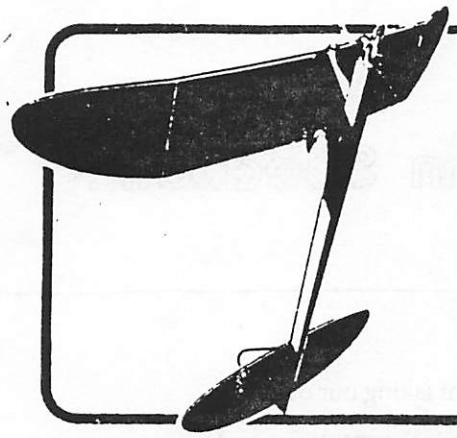


MINNEAPOLIS MODELER

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Secretary.....	**Don Berggren**	**459-6140**
Treasurer.....	**Gary Fessler**	**422-0593**
Editor.....	**Dave Braun**	**457-2264**

Number 239 **July - August 1994**

• FUTURE CONTESTS •

Site: Hentges Sod Farm

Northeast quadrant of 109th and Hwy 65 - Blaine, Mn.

JULY 17, 1994 SUMMER MEET -AA- HANK LILJEQUIST, C.D. 545-8178

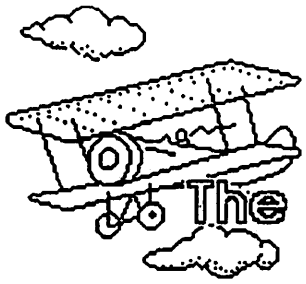
½ A Gas	Mulvihill	A/2 Nordic
A Gas	Coupe d'Hiver	Hand-Launch Glider
BCD Gas	P-30	Junior Event
Pee Wee 30	Embryo Endurance	
CO_2 - Mini 6	Old Timer Rubber (<'46)	

AUG. 7, 1994 ALMOST SILENT MEET -AA- GARY OAKINS, C.D. 429-3150

Open Power	Coupe d'Hiver	Catapult Glider
Nostalgia Gas (9 Sec.)	P-30	Hand-Launch Glider
.020 Replica (12 Sec.)	Embryo Endurance	Junior Event
Jetex 50	MMAC Scale	
Mulvihill	A/1 - A/2 Nordic	

Regional Contest Calendar

July 5-9	**Muncie, IN**	**USOC**
~~**July 11-12**~~	**Blaine, MN**	**MMAC**
July 8-17	**Brandon, MAN.**	**Can. NATS***
July 17	**Blaine, MN**	**MMAC**
July 16-24	**Lubbock, TX**	**AMA NATS**



The Prez Says or Spehn Speaketh:

A!@#$%^&*X! means the prez is upset. Here we are, two contests into the flying season and the prez has lost his .020 replica Strato-Streak. This was the one he just finished to replace one he lost at the last contest he attended last year. The prez also built a new P-30 to replace one he lost at the last contest he attended last year, but at this point he is in no danger of losing it as he can hardly get the dumb thing to fly.

Perhaps lost is the wrong term to describe the .020 rep. I know where it is, I just can't find it. For sure it's in the **big** woods east of our flying site enjoying the flora and fauna along with several of its own kind after our gala two-day contest. What a treat it is to plod through briars and brambles, branches slapping your face, grass and underbrush up to your waist, sweat streaming down your body, and ticks and mosquitoes having a feast at your expense. I did find two other models in this lush retreat and returned them to their owners, one of whom promptly used his to end up in first place. As an added benefit I got to pick ticks even after I returned home including one who found a cozy nest in my navel!

A!@#$%^&*+X! means the prez is still upset. I guess some of us need to be reminded again that we all have to pitch in and help time at our contests. I see flyers who do not time at all. I see others who do none until they are all done flying their own events. I see some who consistently refuse when asked. At our first contest I arrived a little later than usual and a lot of flying was already in progress. After 1 1/2 hours I finally got a flight in. The rest of the time was primarily spent timing flights. At our second contest it was not much better. Del and I teamed up and timed each other and also still timed others. This means some are not sharing the load. I also realize we have members who do not fly and come to the contests to help time and to socialize and just enjoy. Their efforts are appreciated, but I think we are placing an undue burden on them by not taking our own turn.

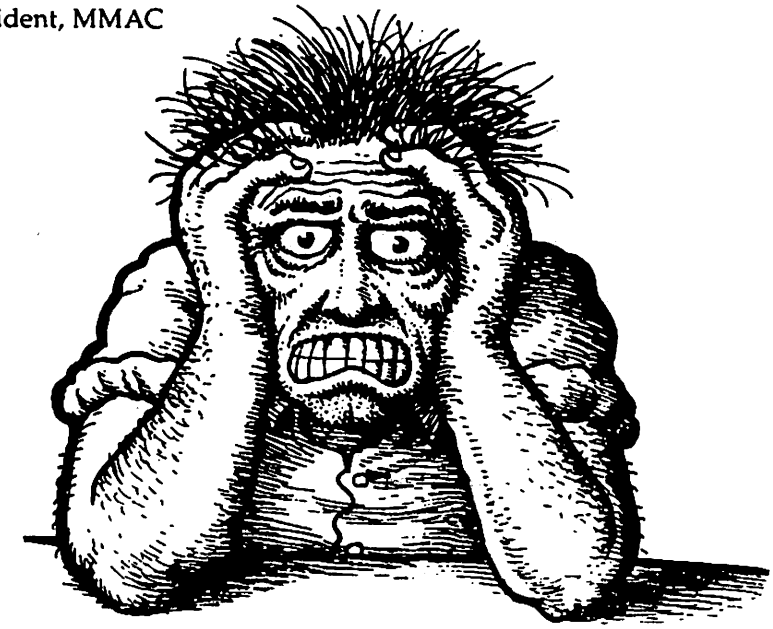
Another lousy note. At the last contest we had what appeared to be young thieves trying to make off with a model that was lying in plain sight down wind on the sod. When they realized they had been seen and were being approached, they threw the model down and started running, but not before the model was broken. It's a real sad society we live in nowadays. For what its worth, use this as a warning to retrieve as soon as possible and not leave an opportunity for some skunk.

Now, on a lighter or brighter side. The club raffle experiment has been going real well and will continue. Some real great prizes are offered thanks to donations and to our treasurer who is responsible for operating and stocking the prize pool. For those of you who haven't been coming to meetings (shame), there is a first prize and a consolation prize at every drawing. We are not going to tell what kind of things are offered here, you're just going to have to show up to find out.

Based on the chatter going on at club meetings, the breakfast bunch, and the gourmet hors d'oeuvre spread after contests, it is hereby recommended a name change may be in order for the club. How about "*The Minneapolis Area Model and Social Club.*" Ha! That could have several connotations.

Don Spehn

President, MMAC



Meeting Minutes May 6, 1994

Place: Donaldson Co.

Time: 8:00 p.m.

Present: 27 members

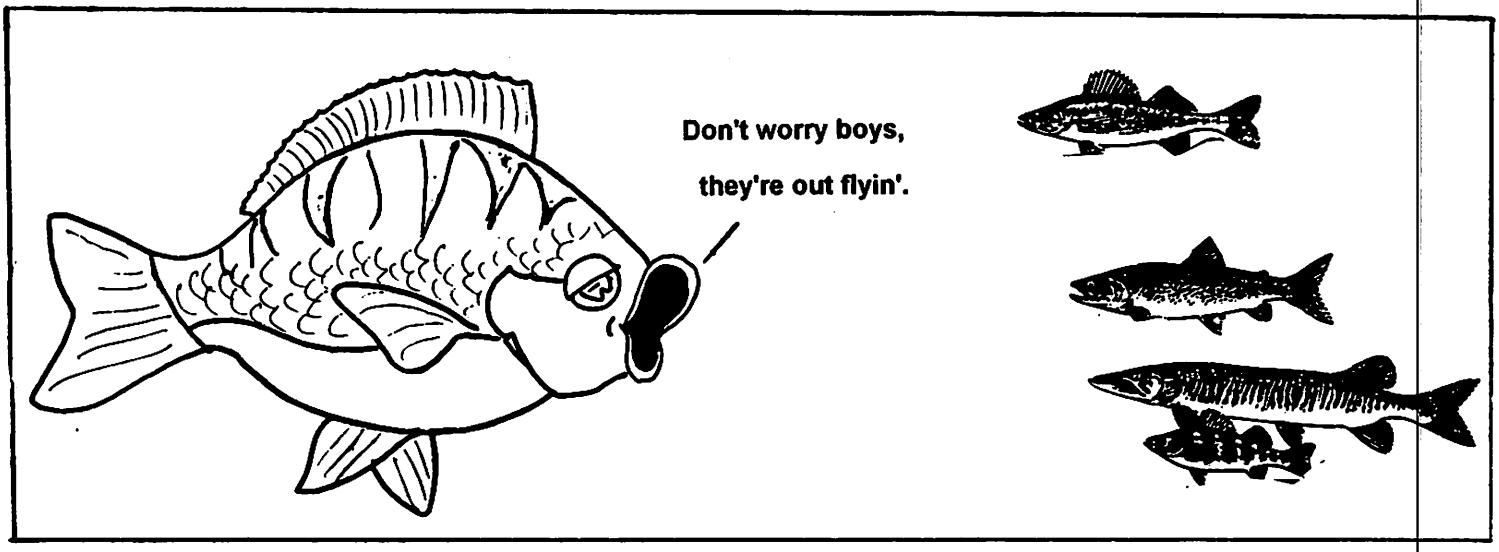
Treasure's Report: Couldn't find the Treasure.

Correspondence: Denny received several donations and a letter from Sig asking us to send any pictures of their kits, they could use for publicity. Letter from a Texas modeler, recommending our members buy a book titled "Making Scale Models Fly". Note from Barry Taylor indicating places to stay For the Canadian Nats and a Letter of appreciation and thanks from Jim Jorgenson.

Old Business: Al Muller suggested we forget about the rules vote on NOSGAS at the last meeting, no one cared. Saints tickets are gone, Aaron said he would try to pick up some at the window. Jim Ludwig asked for volunteers to help May 21st at the Anoka County Airport for Free Flight Demo. Gary Oakins reminded everyone of the Boy Scout get together June 4th at Camp Ripley. Gary also needs volunteers May 10th to help set up bridges.

New Business Bob Biesborn donated several kits to be used for the raffle. Introduced a new member Lou Horner. Aaron asked for an ok to buy more MMAC fliers. Don Spehn told of experiences with the VA engine. Aaron related a story of Dave Platt wanting everyone to build a rubber scale plane at the Top Gun meet. A local modeler by the name of Wayne Siewart contact Aaron to help build a Found Centennial and won the meet with it.

Show and Tell Keith Billet showed some antique props. Aaron showed a new fuse lighter and a gram scale. Ted Wlazlo showed his new mulvihill. Winners of the raffle: Gary Oakins a P30 and Fred Switzer a tool.



Meeting Minutes June 3, 1994

Place: Donaldson Co.

Time: 8:20 p.m.

Present: 19 members

Correspondence: Letter of thank you for the classes put on at North View Junior High and a subscription this school year. Garry Fessler had called AMA to find out if there is a subscription for ten months to match the school year, this is being done for the three schools we are active with. Letter from Bill Thomas announcing the MECA collecto June 11th at Madison and Sept 17th in Milwaukee. Handouts were available for Tower Hobby catalogs and a tools flyer.

Old Business: Boy Scout Jamboree at Camp Ripley June 4th discussion as who was going. Saints game is off, we couldn't get a block of tickets. Anoka county airport was a success, thanks to Don Spehn, Jim Ludwig and Hank Liljequist. A lot of people showed up, and it was suggested that we start earlier to plan for next years open house. Bridges are in and repaired, we have been requested to anchor them.

New Business Mini FAI picnic list was passed around and Denny Sussman is in charge of getting the brats. Jim Ludwig wants volunteers to help sell Starbirds at Flying Cloud, call Jim if you can help. To clarify the prizes awarded when two people enter and fly. The 2nd and 3rd place prizes will be awarded. Same with 1 person entering and flying, 3rd place prize will be awarded. NEED TRADE/SWAP/SELL items to list in the newsletter, send info to Dave Braun. New guest was introduced Joe Weber. Meeting adjourned at 8:58.

Show and Tell Don Spehn showed a ok cub he got from toy meet. Check out garage sale, swapmeets and anywhere toys are sold.

Last minute item Terry Taylor went in for bypass surgery June 16th, he's doing fine, but I suspect he would like to hear from everyone. Terry Taylor 6308 Lombardy Lane, Crystal MN 55428.

A Call From the Doctor.....



Well Mr. Taylor, I have some good news and some bad news.



Ahh, what's the bad news?



You're going to need a triple bypass operation.



Well, what's the good news?



Now I can afford that Ferrarri!

One last bit of indoor business to finish up. We flew Mini-Stick at one of our last indoor sessions and I sent off the results to an international postal contest. Ceiling height was factored in by way of a simple formula so all contestants had roughly an equal shot. A total of 85 entrants from 10 countries competed. Multiple flights were encouraged, so exact placing was difficult to determine. (For example, Walt VanGorder finished first, second, fourth, and sixth, with each placing flown under different ceiling heights) So, without getting too exact, I subtracted out the multiple entries and came up with the following . . .

Name	Ceiling Hgt	Time in Sec.	Corrected Time	Place
Walt VanGorder	22.25	552	901.36	1
Jim Clem	23.00	455	736.01	15
Dan Belieff	18.60	381	653.79	29
Jorge Triana	21.00	270	448.10	58
Dave Braun	8.33	181	378.59	71
Pete Owen	21.00	168	278.82	78
Aaron Petersen	21.00	138	229.03	84

These postal events can be a lot of fun and I plan on taking part next year. I suggest we add Mini-Stick to at least another contest or fly Parlor-Mite and Mini-Stick as a combined event.

MMAC Outdoor Point Totals Through June 12 *(Season totals in parentheses)*

Aaron Petersen	**77 (268)**	**Gary Fessler**	**13**
Herman Fessler	**71**	**Gary Crawford**	**13 (62)**
Jorge Triana	**56 (203)**	**John O'Leary**	**13 (52)**
Dave Braun	**47 (153)**	**Pete Wilczek**	**13**
Hank Liljequist	**47 (129)**	**Don Berggren**	**9 (38)**
Al Muller	**41**	**Terry Taylor**	**9 (34)**
Don Spehn	**38 (114)**	**Bill Roush**	**9**
Bill Rogers	**37**	**Jim Jorgensen**	**9 (18)**
Joe Huettl	**33**	**Harry Atkinson**	**3**
Gary Oakins	**31 (35)**	**Fred Switzer**	**2**
Dell Marchant	**29 (53)**		
Dick Diers	**26**		
Mike Spiess	**22 (47)**	***Juniors***	
Dennis Sussman	**22**		
Dick Zabelka	**18**	**? Spiess**	**4**
Clyde White	**14**	**Jason Fessler**	**1**
		Herb Fischer	**1**

While calculating the point total from the score sheets, I've come across a number of errors. If I discover these errors after I've figured up the points, it requires a good bit of head scratching and time to go back and recalculate. If I might offer a **mild admonition** to the Cds, I'd ask that you double check your totals and/or bring a small calculator to the contests. As a CD myself, I know that by the end of a long day in the sun, rain, wind, etc., that even simple addition becomes tricky.

MMAC Spring Meet - May 22, 1994

1/2 A gas (13)

1. Jorge Triana	120	120	120 + 54	414
2. Don Spehn	120	120	120 + 43	403
3. Dennis Sussman	109	88	120	317
4. Dell Marchant	92	104	120	316
5. Dick Bloomquist	71	120	120	311
6. Herman Fessler	120	60	120	300
7. Terry Taylor	71	100	100	271
8. Gary Oakins	64	120	70	254
9. Gary Fessler	33	120	86	239
10. Gary Crawford	87	49		136

Nostalgia Gas (9)

1. Al Muller	120	120	120	360
2. Dick Bloomquist	92	113	120	325
3. Norm Janzen	120	79	110	317
4. Hank Liljequist	120	104	59	283
5. Dennis Sussman	62	120	55	237
6. Dell Marchant	120	70	42	232

.020 Replica (7)

1. Jorge Triana	105	120	120	345
2. Don Spehn	120	71	90	281

A Gas (11)

1. Jorge Triana	120	120	120	360
2. Clyde White	93	108	120	321
3. Don Spehn	109	84	120	313
4. Al Muller	120	66	114	300
5. Dell Marchant	113	56	120	288
6. Gary Fessler	120	50	99	269
7. Gary Oakins	106	67	80	253
8. Herman Fessler	120			120
9. Terry Taylor	89			89

(BCD) Gas (8)

1. Gary Oakins	120	120	120	120	120	600
2. Dick Bloomquist	120	120	120	05		365
3. Al Muller	120	101				221

PeeWee 30 (8)

1. Jorge Triana	800	520	625	1945
2. Bob Kumferman	493	705	373	1571
3. Hank Liljequist	800			800
4. Jason Fessler	266	205	185	656

Embryo Endurance (10)

1. Aaron Petersen	120	120	77	+5	322
2. Herman Fessler	67	120	120	+9	316
3. Bill Rogers	65	84	82	+9	240
4. Dave Braun	66	54	52	+6	176
5. Mike Spiess	4	58		+8	70
6. Hank Liljequist	21	38		+9	68
7. Joe Huettl	48			+5	53
8. Don Berggren	16			+?	16

A/1 - A/2 (2)

1. Jorge Triana	120	84	120	324
2. Hank Liljequist	45	103		148

Jr. Event (2)

1. Jason Fessler — 320 (PeeWee 30)

P-30 (17)

1. Aaron Petersen	120	120	120	360
2. Dave Braun	114	120	120	354
3. Hank Liljequist	79	120	114	313
4. Bill Rogers	57	116	120	293
5. Herman Fessler	52	120	74	246
6. Ted Wlazlo	49	49	120	218
7. Don Berggren	49	60	99	208
8. Ross Jorgenson	77	39	87	203
9. Mike Spiess	49	72	76	197
10. Gary Oakins	41	93	51	185
11. Terry Taylor	106	59		165
12. Joe Huettl	25	63	52	140
13. Bob Kumferman	80	58		138
14. Don Spehn	34			34

HLG (9)

1. Bill Rogers	59	25	21	105
2. Dave Braun	29	28	38	95
3. Gary Crawford	32	29	26	87
4. Garrett Crawford	25	26	28	79
5. Dick Diers	20	16	20	56
6. Don Spehn	17	18	19	54
7. Aaron Petersen	13	13	21	47
8. Mike Spiess	19	18	5	42

Mulvihill (6)

1. Aaron Petersen	120	120	120	360
2. John O'Leary	119	120	120	359
3. Dick Diers	110	120	120	350
3. Dave Braun	110	120	120	350
5. Herman Fessler	93	120	117	330
6. Bob Kumferman	120	72	58	250

A real ***FREE FLIGHT DAY!*** Winds were light and somewhat variable all day, temps in the low 80s, and mucho lift, although light; not quite enough to suck up a HLG. We are cursed with this type of day once in a great while. It is Hung the thermal god's way of vexing us as it makes the crappy (normal) days seem that much worse. Daily high points to Jorge Triana with 45.

DB

Mini FAI Contest Results - June 11, 1994

P-30 (11)

						Total
1. Herman Fessler	90	87	57	90	90	414
2. Joe Huettl	66	48	90	78	90	372
3. Jim Jorgensen	82	54	46	60	90	332
4. Dave Braun	82	90	48	90		310
5. Gary Oakins	30	63	80			173
6. Dick Zabelka	77	90				167
7. Hank Liljequist	73	47				120
8. Aaron Petersen	69	50				119
9. Bill Rogers	23	90				113
10. Pete Wilczek	56	27				83

1/2 A Gas (8)

1. Denny Sussman	90	63	90	90	70	403
2. Dick Bloomquist	55	59	90	90		294
3. Al Muller	90	90				180
3. Gary Oakins	90	90				180
5. Jorge Triana	87					87

A/1 Nordic (2)

1. Herman Fessler	87	87	90	90		354
2. Hank Liljequist	18	36				54

HLG (6)

1. Dave Braun	49	19	13	58	15	154
2. Aaron Petersen	13	12	41	52	34	152
3. Fred Switzer	31	23	24	32	32	142
4. Bill Rogers	25	18	31		46	120

The *MMAC* Mini FAI is flown in five rounds of one hour each, and has over the years become one of our favorite contests, unless of course if it's windy which it was on this day. We were also hampered by wind direction ; a 90 sec. max pretty much put you into the woods and several planes were lost, including my own beloved P-30. (Gamera come home; all is forgiven. -Ed.) DRAT! I shouldn't complain too much though as there are several very expensive models being used for tick food including Al Muller's Shuriken equipped 1/2 A. I hope some (all) of these find their way back. Entries were also down, again a direct result of the wind.

DB

TIMES ARE TOUGH, HUH, BUD?

Caught in the grips of DESPAIR!?

Spring Meet - June 12, 1994

Mulvihill (10)

1. Herman Fessler	120	114	120	354
1. Joe Huettl	120	120	114	354
3. Dick Diers	120	110	120	350
4. John O'Leary	120	108	120	348
5. Dick Zabelka	120	120	107	347
6. Aaron Petersen	62	120	120	302
7. Harry Atkinson	93	107		200

Coupe (9)

1. Pete Wilczek	120	120	102	342
2. Aaron Petersen	97	120	120	337
3. Dick Zabelka	120	78	86	284
4. Hank Liljequist	43	54	116	213
5. Herman Fessler	95	69	47	211
6. Dick Diers	67	68		135
7. Bill Rogers	28	38	50	116
8. Joe Huettl	33	02	78	113

Embryo Endurance (9)

1. Aaron Petersen	120	120	66	+5	311
2. Joe Huettl	62	114	78	+9	263
3. Herm Fessler	63	64	70	+9	206
4. Bill Rogers	74	61	62		197
5. Harry Atkinson	33	36	30	+9	108
6. Hank Liljequist	21				21

MMAC Scale (2)

1. Aaron Petersen	55	91	115	261

A/2 Nordic (2)

1. Jorge Triana	120	120	120	360
2. Hank Liljequist	82	93	120	295

Junior Event (2)

1. — Spiess	58	82	120	258
2. Herb Fischer	23	45	40	108

A Gas (13)

1. Dick Bloomquist	120	120	120	360
2. Don Spehn	57	120	120	277
3. Gary Fessler	68	62	120	250
4. Dell Marchant	77	108	48	233
4. Clyde White	51	120	62	233
6. Henry Liljequist	30	119	45	194

(BCD) Gas (6)

1. Dick Bloomquist	120	120	120	120	64	544
2. Gary Oakins	120	120	120	119		479
3. Al Muller	120	120	120			360
4. Clyde White	95	80	96			271
5. Don Spehn	41	44	66			151

Nostalgia Gas (8)

1. Al Muller	120	120	120	120	480
2. Hank Liljequist	120	120	120		360
3. Dick Bloomquist	62				62
4. Del Marchant	46				46

.020 Replica (7)

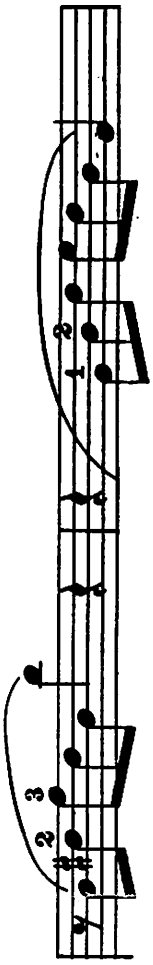
1. Bill Roush	120	120	120	360
2. Jorge Triana	114	120	104	338
3. Del Marchant	101	114	120	335
4. Don Spehn	40	78	120	238

Catapult Glider (10)

1. Mike Spiess	120	38	26	184
2. Herm Fessler	65	57	48	170
3. Dick Diers	32	34	29	95
4. Gary Crawford	29	28	22	79
5. Dell Marchant	26	25	26	76
6. Ted Wlazlo	34	32	05	71
7. Aaron Petersen	21	23	15	59
8. Hank Liljequist	15	18	16	49
9. Don Spehn	15	07	06	28

This was day two of our two-day contest and remarkably it was a repeat of the previous day's conditions. Drift was again strong and into the woods. Read the president's column if you haven't already as he sums it up rather well. We also learned at this contest that Terry Taylor was going to have some tests done on his ticker, and have since learned , (having been out of town for a week or so) that Terry had triple bypass surgery and is doing well. Our best wishes go out to him. I understand that the entire operation was done with a single #11 blade and that they sewed him up with 1/8" Tan II. See ya at the field soon Terry!

DB



Whoa, Dad! I think that's about enough negativism for one issue. What say we break out the good ol' MMAC Free Flight Songbook and sing some of these blues and windy days right out of the picture with a rousing rendition of **"Whose Plane is that A-Job in the Thermal?"**, sung to the tune of "How much is that Doggie in the Window?" Piano, Maestro . . . .

A one anna two....

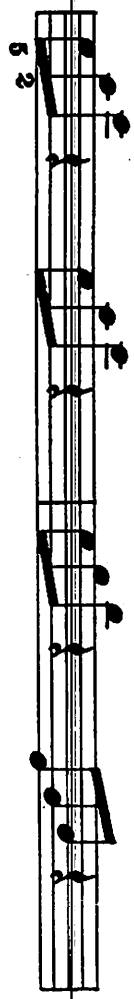
Whose plane is that A-Job in the thermal?
The one with the frozen DT.
It's too bad that he didn't max out.
Oh No! I think that it's me!

Look there, it's just a speck up in the sky now.
This sport can sometimes be so mean.
The plane's just some wood and glue and silkspan,
but I'll sure miss that Rossi .15

It's found! I got a call the other morning
From a guy who was totally floored
When my A-job flew through his picture window
My next call will be from Miles Lord.*

- O'Leary & Braun -

***Famous regional ambulance chaser**



SLICED RIBS (without BBQ sauce)
--John Laycock

I've used a modification of the famous sliced rib method that gives a bit more scale appearance to the leading edge but still keeps the ease of sliced rib construction. It goes like this:

1. Build the wing over the plans in the usual way--but extend the lower portion of the ribs past this leading edge, see Fig. 1.
2. Locate the leading edge on top of the lower portion of the ribs and add a short section of balsa to the back of the leading edge as shown.
3. Add the top portion of the sliced rib. Remove from the plans and trim and sand the leading edge and lower portion of the ribs as shown in Fig. 2.

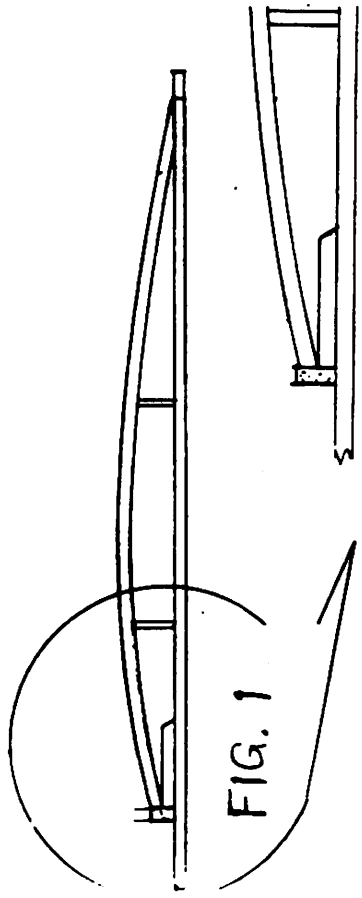


FIG. 1



From the Wole Sketch Mouse Keller -

FIG 2

The "One-Third Bird"

A Basic Design Concept for Bostonians

By Clive Wienker

In recent years, I've gotten a lot of enjoyment out of Bostonian class models, mostly designed sturdily for outdoor flying, but flown indoors at the club members' request when they wanted a few bricks knocked out of the Naval Armory walls for better ventilation.

Idly reviewing these designs a few weeks ago I noticed that, with a little leeway, they generally fit within certain relationships in terms of areas, moments and structural features. The design concept that evolves from this study could grace the pages of "Unscientific American" magazine.

Naturally, it leads to yet another in the string of "Observation" planes which, because of the basic premise of what is to follow, shall be know as the One-Third Bird!!

One-Third Bird To get under way in this design process you should acquaint yourself with the "Bostonian" class parameters. These can be gleaned from fellow modelers and magazine articles.

Keeping in mind the Bostonian span and chord maximums of 16 and three inches, respectively, let's apply this One-Third business to the areas of the wing and tail group components.

The wing area maximum is 48 square inches. This we will call Three-Thirds. The horizontal tail area is one-third of the wing area; 16 square inches. The vertical tail area is one-third of the horizontal tail area; 5 1/3 square inches. These areas should be encompassed in conventionally proportioned components when you later get to the drawing stage.

Fuselage Moving now to the fuselage, the maximum overall length from the front of the thrust button to the extremity of the tail, is 14 inches. On your fresh plan paper, draw a horizontal line of that length with the thrust button included at one end.

The nose moment is (are you ready for this?) one-third of that length, about 4-11/16 inches, so mark a balance point reference by means of a vertical line at that distance back from the thrust button. Now draw a cabin top reference line about 1 1/8 to 1 1/4 inches above and, for the moment, parallel to the long main reference line.

Assuming a flat stabilizer section, the plane should balance at a point one third of the wing chord back from the leading edge. So place that one-third chord point up on the fuselage balance reference line.

You don't have to fuss with figuring the tail moment because, when you put any sort of a normal tail surface configuration just within the bounds of the overall length limit, the situation takes care of itself. We're talking simplicity here!

Next, establish the point of the wing trailing edge on the cabin top reference line two inches to the rear of the balance point. From this trailing edge point, draw a permanent line forward with a three degree upward rise from the cabin top reference line. This will be your actual cabin top line with wing incidence built in.

The above approach is suitable when a relatively light propellor such as a Peck Silver, a Howard Cottage Cheese Carton or balsa propellor is used.

If you contemplate using a heavier propellor, such as the six inch black High Flier, then move the fuselage balance point about one third inch forward by making the nose moment about 4 3/8 inches on your basic drawing.

Nose Moments About this time your "Observe and Think" cells should be warmed up or even running amok, and you may be wondering if it is not false or misleading accuracy to give different nose moments to compensate for various propellor weights when the normal idiosyncrasies of each modeler's approach to structural design can appreciably throw off the designated balance point.

Your skepticism is well founded. So it follows that the salient design and structural features of the models from which these design proportions were derived should be pointed out. Then you can either adhere to them or make your own deviations with proper compensations to keep the whole system in balance. In either case the goal is to have the model balance with little or no ballast.

If there is any intended balance bias in these design figures, it's toward nose-heaviness because a tad of clay on the leveraged tail can be effective and light while, in the reverse situation, a big glob of clay is required at the nose and it can be hard to affix it extremely forward.

Enough payload of this type can turn your creation into a Bostonian-shaped Road Runner.

Therefore, in my models, intended to survive the bumps and bashes of outdoor sport flying, the nose block and its rear plug are both of medium 3/16 or 1/4 inch sheet balsa.

Wheels The wheels are of 1 3/4" or 1 1/8 inch diameter, are laminated to a 1/8 inch thickness and often have small thrust buttons inserted as hubs. The sides, top and bottom of the first fuselage section back of the nose is filled with 1/16 inch sheet balsa so that there is a sturdy nose for field handling.

The landing gear is well forward with the wheel centers being about 1 1/4 inches behind a vertical line down from the thrust button.

With the exception of the wing leading edge (3/32 square) and the trailing edge (1/16x1/8) the structure is build of 1/16 square or its equivalent in the case of laminated outlines.

With this in mind, and after once again refreshing yourself on all the fine points of Bostonian rules, you may go ahead and lay out the contours of that snazzy fuselage and equally beautiful wing and tail surfaces. Pertinent points not given in the above text are as follows:

1) Dihedral (simple V) is 3/4 inches at each tip based on the wing bottom extension line.

2) Down thrust is 4 degrees and it is best built into the fuselage sides right on your drawing.

(We amateurs seem to benefit from this stated degree of downthrust probably because of the reaming or flaring out of the back of the thrust button and wear-induced sloppiness of the nose block fit tends to diminish the effective angle of downthrust when the rubber motor is in tension.

If the designed in amount seems a bit much after test flights, it is a very simple matter to put in a probably discreetly small shim at the bottom of the nose block.

This is much better than having no designed provision for down thrust and, after fighting powered phugoid oscillations, having to put in a virtual 2x4 chunk shim in an ugly gap at the top of the nose.)

Onward----:

3) Stabilizer incidence is zero degrees.

4) What we will call wing incidence is three degrees as delineated by the top of the cabin line.

5) Hook-to-peg distance is 9 3/4 to 10 inches.

Let me finish off with a low-key tidbit of knowledge that you drawing board devotees can use when the urge to draw a design hits you when you are far away from your drafting room equipment.

--For practical purposes one degree of angle is a rise of one 16th inch in a run of 3 1/2 inches. Check it out, and Best Regards

....Clive Wienker

Clive's address is: 5139 East Harbor Dr., Friday Harbor, Wa., 98250, (206) 378-5139

The most interesting thing I saw at the 12 June meet was Pete Wilczek's Coupe. He won with a ship that uses a large Larrabee-type prop that churns away, holding about 30' of altitude for 1 minute and 30 seconds! Like an indoor model. He got 2 maxes plus a good 3rd flight. There's always something new in FF. Way to go, Pete! M.P.

Some time back this fine article was printed in the NFFS Digest, and in a recent phone conversation I asked Clive's permission to run it in our newsletter. I have shortened it a bit. Clive is the designer of the very fine Island Flyer kit, which I rate about on a par with the Peck Flying Aces Moth kit. I've handed out two of each to 4 young modelers to build for our July 24 Fun Fly Beginners day at the sod farm. If built anywhere near well, they will fly quite nicely.

TAN II -- Well, the question is, how does the stuff do outdoors? We already know it is terrific indoors -- note that Bob Randolph used it for all those FAI indoor category records he recently set. So far I can say this: on a nice low-drift thermally day, it's swell stuff. I had very good results with it on that dream day we had for the May contest. In windy weather, as you might expect, it does not do as well. But I can't say for sure that it did any worse for me than TAN I did on similar lousydays in the past. In fact, on windy 12 June I had 6 of 9 flights go max, which is about the norm for me (or better!) on such nasty days. Many many times I've done worse with TAN I. So...need more experience to know for sure. It certainly does not have the initial punch of TAN I, Unless you thicken and shorten motors, which I haven't tried outdoors yet.

Jorge Triana's 100.8 sec. (14 gm.) Bostonian hop under our 21' ceiling on 17 Apr 94 was the best FF contest flight I've ever seen. And then this hombre goes outdoors on 22 May 94 and wins 5 events!! Fantastico.

-- A. Petersen

AV-8B Harrier II Statistics

The United States Marine Corps AV-8B Harrier II V/STOL Light Attack aircraft built by the McDonnell Douglas Corporation is a vastly improved derivative of the British Aerospace AV-8A Harrier currently in service with the USMC. The Marines have, with ten years of operational experience in the AV-8A, proven the effectiveness advantages of V/STOL for the close air support mission. With the AV-8B Harrier II, the Marines will have a V/STOL aircraft with payload/radius capability comparable to any modern, conventional, light attack aircraft.

The AV-8B will provide:

- Double the payload/radius,
- Accurate, first pass weapon delivery,
- Improved VTO and STO capability,
- Greatly reduced pilot workload,

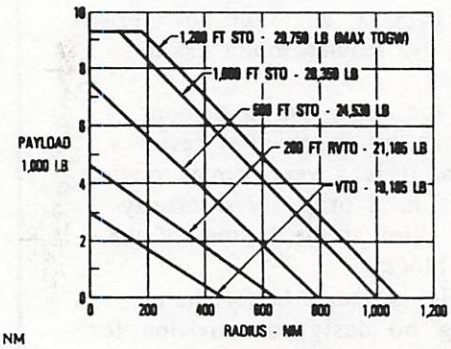
  and will be
- More reliable and more maintainable.

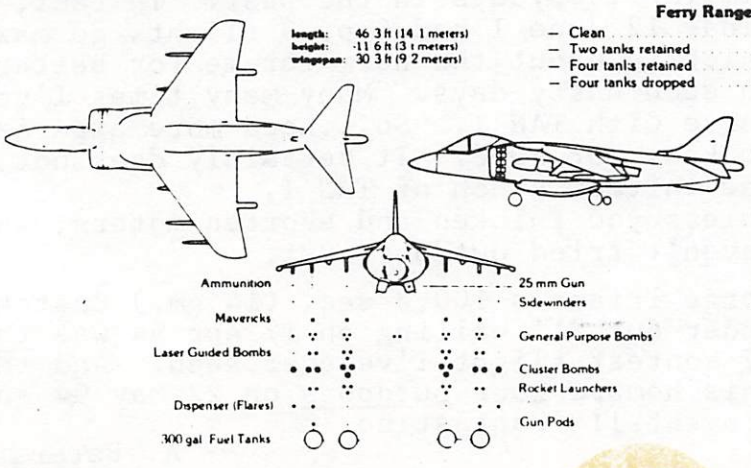
The key to the V/STOL capability of the AV-8B is found in the vectored, 21,180 lb thrust Rolls-Royce Pegasus 11 engine. The pilot can control the direction of engine thrust by positioning the four exhaust nozzles; aft for wingborne flight, down for vertical flight and at intermediate positions for short takeoff and short landing. Aircraft attitude control during V/STOL and hover is accomplished through the reaction control system which directs engine bleed air through reaction nozzles located at the wing tips, the nose and the tail.

Performance Tropical Day (90°F)

– STO distance at max TOGW	1,200 ft
– VTO Weight	19,185 lb
– VL Weight	17,500 lb
– Vmax at altitude	0.91 M
– Vmax at sea level	585 Kts
– Load factor	+7 g, −3 g

Interdiction Mission Hi-Lo-Hi





Ferry Ranges

– Clean	1500 + NM
– Two tanks retained	1800 + NM
– Four tanks retained	2000 + NM
– Four tanks dropped	2400 + NM

Weights

– Max design TOGW	29,750 lb
– Operating weight empty	12,750 lb
– Internal fuel	7,500 lb
– Internal and external fuel	15,829 lb
– Max external load	9,200 lb

Major AV-8B Changes from the AV-8A

- Supercritical/composite material wing
- Lift improvement devices
- Large, positive circulation flaps
- Narrowed outrigger tread
- High recovery engine inlets
- Raised, high visibility cockpit
- Stability augmentation and attitude hold system
- Angle rate bombing set
- Inertial navigation set
- Integrated crew station
- Onboard oxygen generation system
- Zero scarf front engine nozzles
- Lengthened aft fuselage