

Fall 2008

Thermal Journal

Dedicated to the never-ending battle against the law of gravity

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Submissions the Thermal Journal in the form of letters to the editor, articles or photos (please include good caption information) are always welcome. Use the editor's address provided above. Thanks to Lyle Whitford and Vic Nippert for submissions to this issue.

The Editor's Ramble:

Annual Meeting Announcement

Yet another flying season has come to an end. Thanks to Lyle & Priscilla Whitford along with Bob Rambo for running a great ESFFC this year. Not only does Lyle put on a great meet, he provides a nice summary of event results and a nice summary of the meet. All contributions the TJ are appreciated. That includes the very nice photos that Vic Nippert provided from this year's FAC Nationals in July. We would be remiss if we didn't also thank Bob Rambo for reviving and running the most excellent Hobo meet. The weather was only moderately cooperative this year but I had a great time anyway. If you missed the Hobo meet, you missed out. Don't do it again.

As has become our pattern, the end of the flying season means it is time for the annual meeting of the WNYFFS. Brad was clever enough to make this year's the arrangements pretty much the same as last year's. That way he saves ye olde editor some of the drudgery of modifying and checking the announcement. So here is the drill: We are eating early on November 15. That allows members to drive during daylight hours. The planning meeting will occur after the dinner and this will allow those members who do not wish to get involved in the planning to do as they please. The doors will be open at 11:00 and a really nice buffet will be served at 12:00 with the planning meeting beginning at about 1:30. We will have tables available for those who want to bring new models or sell or swap model stuff.

Our host will be:
Terry Hills Country Club
5122 Clinton Street Rd. (Route 33)
Batavia New York 14020
585-343-0642

Menu:

House salad w/rolls, specialty salad, potato, fresh vegetables, Chicken French and Shaved Prime Rib, Penne pasta marinara, brownies and cookies with coffee and tea

Price: \$17.50 per person -includes tax and tip

Everyone attending should contact Brad by November 7. It is important that you let Brad know you are coming so he can make reservations for the correct number.

Here are Brad's phone number and email address:

585-765-9363

windwhip47@aol.com

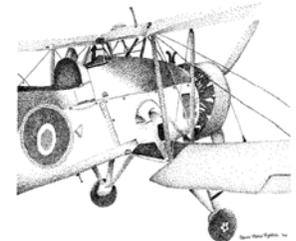
Since you are planning on coming anyway, go ahead and call Brad now. Directions can be found elsewhere in this issue.

Now, for one mundane topic. Note the subtle change in the side bar on this page. Your editor has gone and changed email service. The old frontiernet service is long gone so don't get annoyed that your submission to the TJ is not getting through, use the new email.

Till the next time, Mark C. Rzacca

Dates to keep in mind:

WNYFFS annual business meeting reservations are due by November 7.
WNYFFS annual business meeting will be held on November 15.



Also, don't forget to check out WNYFFS website: <http://www.amadistrictii.org/wnyffs/index.html>

Here is an interesting monograph on motor types that explains some of the characteristics of brushless motors and touches on the differences between so-called "in runner" and "out runner types". These more complicated and sophisticated types (compared to brushed motors) have not been much in evidence with WNYFFS free flight fliers yet but that is likely to change as the prices for the motors, controllers and batteries continue to plummet. Brushless types will be ideal for scale free flight and may be making their way into the high power AMA electric events already.

From the San Gabriel Valley Radio Control League, South El Monte, California
Electric Motors 101

by Vic Walton

If you're like me, you sometimes use technology that you just don't know that much about. Take electric motors—how do they work really? I knew it had to do with magnets and electromagnets, and something about brushes, but I hadn't taken the time to figure out how they all worked together.

And now we have "brushless" motors—how do they work? So I did a little reading and have shamelessly cobbled together this primer from various Internet sources.

In a typical "brushed" DC motor, there are permanent magnets on the outside and a spinning armature on the inside. The permanent magnets are stationary, so they are called the stator. The armature rotates, so it is called the rotor. Clever, eh? Picture a big horseshoe magnet. Now take a big nail and drill through the middle cross-wise, and put a wire through the hole; now the nail can spin head-over-heels. Wrap some wire around it, and then attach it to a battery. You have an electromagnet right?

Now this particular arrangement isn't that useful; the nail just sits there. Of course, if you were to reverse the current, it would flip around, right? And if you were really clever and fast, you could reverse the current again, just as the nail was flipping, and it would flip back. This is what the brushes in a brushed motor do. They make contact with terminals on the rotor (called the commutator) and as it spins, at just the right spot they break contact and reconnect on the other side, causing the electric field to reverse, spinning the motor around another half-turn (or one-third turn, since most electric motors have three coils for efficiency). The horseshoe magnet is your stator, the nail the rotor.

This setup works and is simple and cheap to manufacture, but it has limitations because of the need for the brushes to press against the commutator:

- *It creates friction.*
- *At higher speeds, brushes have increasing difficulty in maintaining contact. They may bounce off the irregularities in the commutator surface, creating sparks. This limits the maximum speed of the machine.*
- *The current density per unit area of the brushes limits the output of the motor.*
- *The imperfect electric contact also causes electrical noise. Brushes eventually wear out and require replacement, and the commutator itself is subject to wear and maintenance.*
- *Having the electromagnet in the center of the motor makes it harder to cool.*

So in comes the brushless DC motor. In this design, you put the permanent magnets on the rotor and you move the electromagnetic to the stator. Think about that. The electromagnets are on the stator—they are stationary. That's a problem because now you need something even more clever than a commutator and brushes to flip the polarity of the current at the right moment. This very clever thing is the microcontroller in your ESC.

What it does is sense the position of the rotor (utilizing something called the EMF feedback through the main phase connections, which I have decided I don't need to understand) to switch the field rapidly at just the right moment to pull the permanent magnets on the stator around at the RPM that you have requested. This system has all sorts of advantages:

- *There is no sparking and much less electrical noise. A happy situation for our radios, particularly as the motors get bigger.*
- *There are no brushes to wear out.*
- *With the electromagnets on the stator, they are easier to cool.*
- *You can have a lot of electromagnets on the stator for more precise control.*
- *The timing of the pulses sent to the electromagnets on the stator can very precisely adjust the speed of the motor.*

So that's how it works. But one more thing: what's an inrunner and what's an outrunner?

An inrunner is a brushless motor with the permanent magnets rotating inside the electromagnets; in an outrunner this situation is reversed, with the permanent magnets on the casing of the motor and the windings of the electromagnets inside. Outrunner motors generally have some torque, but spin somewhat slower. This makes them better for spinning large propellers, which our airplanes need. Inrunner motors spin a lot faster but with less torque; this means that in order to get the same torque, you have to put the inrunner in a gearbox, adding weight, complexity, and most importantly, cost. However, if you can afford it, this is the most efficient setup for any given size motor.

By the way, airplanes aren't the only things that use brushless motors. Computer hard drives, CD drives, and hybrid cars are some of the other uses. It's only a matter of time before someone takes the brushless motor out of a Pruis and uses it in an airplane. ➔

EMPIRE STATE FREE FLIGHT CHAMPIONSHIPS

August 15, 16 and 17, 2008

Geneseo, NY

COMPETITION RESULTS

Friday Aug. 15

A-B Classic Gas

Brad Bane	120, 120, 120, 120, 106	586
Simon Blake	120, 120, 85	325
Jean Paillet	108, 104, 104	319

Classic Towline

Brad Bane	120, 180, 208	508
Jean Paillet	81, 109, 226	416
Lee Campbell	120, 132, 41	293
Bob Clemens	93, 106, 93	292
Vic Nippert	106, 102, 54	262

Moffett

Les Sayer	120, 120, 106	346
Roy Smith	118, 106, 120	344
Vic Nippert	120, 88, 120	328
Ed Sneed	120, 120	240

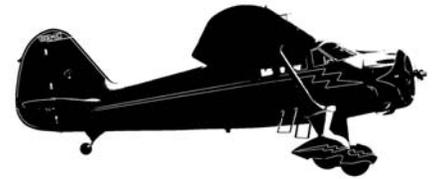
.020 Replica

Roy Smith	120, 119, 104	343
Brad Bane	120, 98, 120	338
Simon Blake	74, 120, 91	285
Jack Barker	33, 81	114

Old Time Rubber

Ed Sneed	120, 120, 120, 111	471
Mark Rzacca	120, 118, 106	344
Lee Campbell	98, 120, 109	327
Vic Nippert	83, 120, 120	323
Mike Burns	120	120
Les Sayer	24	24

B-C Nostalgia Gas No Entries



On the left is nice picture of WNYFFS member Jack Barker launching his full size Zipper at the ESFFC. Jack's ship is powered with a Forster 0.305. It is covered in silk and dope. Jack won class C event with his Zipper in the Sturgis MI SAM Champs in 2004. The picture above shows the zipper gliding overhead. Your TJ editor really enjoys seeing this ship every time Jack pulls it out. The Zipper's timeless lines are always attractive whatever the scale and this full size model at 54 inches is definitely easy on the eyes. Thanks Jack and thanks to Carl Goldberg for a classic design.



EMPIRE STATE FREE FLIGHT CHAMPIONSHIPS

August 15, 16 and 17, 2008

Geneseo, NY

COMPETITION RESULTS (continued)

Saturday Aug. 16

1/2A - D Gas

Ruth Bane	120, 120, 120, 120	480
Jean Paillet	54, 39, 26	119

Mulvihill

Les Sayer	120, 120, 120, 76	436
Ed Sneed	120, 120, 120	360

Nostalgia Rubber/Wakefield

Ed Sneed	120, 120, 120	360
Jack Barker	55, 119, 81	255
Bob Clemens	120, 120	240

1/2A Classic Gas

Joe Mollendorf	120, 120, 120, 120, 120, 149	749
Roy Smith	120, 120, 120, 120, 120,	600
Simon Blake	120, 120, 120	360
Jean Paillet	120	120

FAC Embryo Endurance

Vic Nippert	94, 53, 120	+bonus 9	269
Jim Detar	88, 109	+bonus 9	206

FAC 2 Bit Rubber

Mark Rzacca	83, 120, 120	323
Vic Nippert	110, 88, 120	318
Jim Detar	114, 83, 80	277

FAC Rubber Scale

	Flight Score	Scale Score	Bonus	
Vic Nippert	64.5	53.5	39	157
Jim Detar	82.5	58	10	150.5
Rich Miller	71.5	49	15	135.5
Jim Detar	72	58.5	15	145.5*
Bob Clemens	52	46.5	3	101.5

*an individual competitor may only place once per FAC rules .

FAC Golden Age Scale

Vic Nippert	110, 102, 86	298
Jim Detar	120	120

Open events

1/4A Nostalgia Gas	No Entries
A Nostalgia Gas	No Entries
Junior Events	
1/2 A AMA Power	No Entries
1/2 A Classic Gas	No Entries

CD's Comments ESFFC August, 2008

First the Thank-You's for those who made this happen. The Trophy Team of Joe and Heather Mollendorf and Brad and Ruth Ann Bane. As ever a great job with the trophies! Next, Bob Rambo for his willingness to fill the spot as Assistant CD. John and Sally Clapp who happily managed the FAI events. Thank-you also to Priscilla, my right hand behind the desk recording times and helping those interested make a selection for the Saturday Night dinner at the Yard of Ale; and a fine dinner it was with thirty hungry and social modelers and friends in attendance.

Also a Very Large Thank-You to Mark Rzacca for taking care of the FAC report and his guidance through the various FAC events . I may never quite understand those rules. A very large THANK-YOU to the Historical Aircraft Group Museum for the use of this excellent field for our events. We are forever grateful!

The comment was made that I had some influence with the weather since we had three days of excellent Free Flight weather. If necessary, I will accept the credit but we all know if I had that kind of influence I would probably win the LOTTO and live happily ever after. The wind changed direction which required the flight line to move around the field and lost models were kept to a minimum. I was told that we may have a new distance record for a Senator rubber ship. Last year Roy Smith flew his to Rte. 390. This year, Bob Clemens is unsure where his thermaled to.

(CD comments continue on the next page.)

EMPIRE STATE FREE FLIGHT CHAMPIONSHIPS

August 15, 16 and 17, 2008

Geneseo, NY

COMPETITION RESULTS (continued)

Sunday Aug. 17

Old Time Gas

Jack Barker	27, 49	76
Simon Blake	17	17

P - 30

Les Sayer	120, 118, 120	358
Roy Smith	81, 120	201
Bob Clemens	91	91

½ A Nostalgia Gas

Brad Bane	99, 120, 112	331
Joe Mollendorf	120, 120, 86	326
Ruth Bane	120, 64, 120	304
Lee Campbell	102, 77, 120	299

Catapult Glider

Les Sayer	84, 29, 48	161
John Caldwell	41, 51, 40	132
Vic Nippert	36, 37, 47	120
Lee Campbell	28, 27, 49	104

FAC No-Cal Profile Scale

Mark Rzdca	90 , 114 , 23	227
Jim Detar	54 , 20 , 84	158

FAC WWII Mass Launch (Three elimination rounds)

Vic Nippert	"Tony"	Last Down
Jim Detar	"Tony"	Third Down
Jack Barker	"Seversky"	Second Down
Gary Hunter	"Zero"	First Down

FAC Dime Scale

Jim Detar	86, 105, 94	285
Mike Burns	55, 120, 87	262
Bob Clemens	40	40

FAC OT Electric Gas Replica *

*flown to FAC provisional descending time target rules

Vic Nippert	7, 3, 4	14
Jerry Crawmer	8, 3, 6	17
Bob Clemens	18	18
Mark Rzdca	21, 14, 4	39

C-D Classic Gas (open) No Entries

P-30 (Junior) No Entries

Catapult Glider (Junior) No Entries

CD's Comments ESFFC (continued)

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As the results show, all of the Friday events had numerous entries and to my surprise "Old Time Rubber" and "Classic Towline" led the way in participation. Saturday's most popular events were FAC "Rubber Scale" and "½ A Classic Gas". Much to my surprise, Rich Miller stopped by to fly in the rubber scale event and walked away with third place. In the ½ A Classic Gas, Roy Smith pushed Joe Mollendorf just shy of SIX Maxes in order to win. Sunday, the wind picked up, I thought it was more but my meter showed about 5mph gusting to 10.

All in all, a very pleasant experience from my side of the desk. Thank-you again for all who assisted in making this the success that I perceive it to be, also to Brad who took time to radio flight times in when the flight line went north or east or wherever. Thank-you to all of the participants who venture to Geneseo in spite of the possibility of wind and rain that sometimes comes to HAG Airfield.

Lyle

EMPIRE STATE FREE FLIGHT CHAMPIONSHIPS

August 15, 16 and 17, 2008

Geneseo, NY

COMPETITION RESULTS (continued)

AMERICA'S CUP / FAI EVENTS

F1A-No Entries

F1B-Wakefield Rubber Max 120 seconds

Jerry McGlashan	120, 120, 120, 120, 120, 120, 120	840
John Clapp	91, 120, 120, 120, 120, 120, 120	811

F1C- No Entries

F1P- (Open) Max 120 seconds

Dave Rounsaville	120, 120, 120, 120, 120, 120, 120	840
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F1P-(Junior/Senior) No Entries

F1G- Coupd'Hiver Max 120 seconds

John Clapp	120, 120, 120, 120, 120	600
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F1H- A-1 Towline Max 120 seconds

Jean Paillet	90, 68, 120, 119, 57	454
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F1J-½ A Power Max-120, 180, 120, 120, 120 *

Dave Rounsaville	120, 180, 120, 120, 120	660
Joe Mollendorf	120, 180, 120, 92, 120	632
Jean Paillet	120, 104, 120, 29, 120	493

*Due to predicted high winds, all participants in this event agreed to second flight max of 180 seconds to eliminate the possibility of a fly-off.



Directions to WNYFFS Annual meeting:



Directions to Terry Hills:
 From Rochester: Take 490 to 33. Terry Hills will be on the south side of the road near Batavia city limits.
 From thruway: Take exit 48-Batavia go south on rt. 98 to Main St. (route 5) turn left (east) go through downtown and take route 33 on east side of city (a left turn at a light near a small plaza) Terry Hills will be one mile on the right.
 From anywhere else: call 585-765-9363 or e-mail me at windwhip47@aol.com OK you'll find it! Brad

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One on One

If you want to talk to a free flighter directly, the names listed here are people in the area who can offer advice on getting started or have a suggestion for a first kit or tips about what to ask for at the hobby store.

Auburn

Brooks Goodnow
22 Lakehurst Drive
Auburn, NY 13201
315-252-9170
tiqer33@thumpernet.com

Canandaigua

Jack Barker
2067 Route 65
Bloomfield, NY 14469
585-624-2844

Buffalo

Brad Bane
60 Lake Ave.
Lyndonville, NY 14098
585-765-9363
windwhip47@aol.com

Rochester

Bob Clemens
95 Shoreway Drive
Rochester, NY 14612
585-392-3346
rclemens2@rochester.rr.com

Brockport

Vet Thomas
970 Clarkson-Parma Road
Hilton, NY 13021
585-392-5164
vthomas1@rochester.rr.com

To Join the WNYFFS complete this form (or a facsimile) and send it along with a check for \$10 (annual dues) payable to:



Ruth Bane, Treasurer, WNYFFS
60 Lake Avenue
Lyndonville, NY 14098

Name _____
Street Address _____
City _____ State _____ Zip _____
Home Phone _____
Work Phone _____
Email _____
AMA/ MAAC # _____

Please consider membership in AMA/MAAC. While not required for membership in WNYFFS, AMA/MAAC provides supplemental liability insurance covering model flying activities and is required at most WNYFFS flying activities.

Contest CD's

Brooks Goodnow
22 Lakehurst Drive.
Auburn, NY 13021
315-252-9170

Vet Thomas
970 Clarkson-Parma Road
Hilton, NY 13021
585-392-5164
vthomas1@rochester.rr.com

John Carls
43 Murphy Road
Bradford, PA 16701
814-362-7789

Lyle Whitford
9003 Lake Rd, PO Box 72
Barker, NY 14012
716-795-3831

Application for Membership

Name _____ Phone _____
(For Family membership, please list all names.)
Address _____ e-Mail _____
City _____ State _____ Zip _____
Occupation _____
Hobbies _____

Membership entitles you to free admission to our air show and to the museum, a 10% discount in the HAG store, *Hangar Tales* for a year, a window sticker for your car, and membership card (which must be presented to obtain the perks). See Founders' Forum for club details.

Membership Type: _____ Top Gun Club \$500
_____ C-47 Club \$250
_____ Family (parents & children under 18) \$75
_____ Regular (18-59) \$35
_____ Senior Citizen (60 & up) \$30
_____ Junior (17 and under) \$15

NEW FEES & CLASSES EFFECTIVE MAY 1, 2005



All payments must be in US funds.

Mail this application (or a photocopy) with your check to:
1941 Historical Aircraft Group Museum, PO Box 185, Geneseo, NY 14454-0185

Background on the WNYFFS

The Western NY Free Flight Society began in the late 1960's with a few modelers. Today the Society now numbers nearly 100 members in 9 states and Canada. For over 30 years the club has hosted the Empire State Free Flight Championships in late summer, as well as a "fun fly", each spring, both are held in Geneseo, NY. Powered by rubber, gas, diesel, electric, CO₂, compressed air or that old standby- muscle, these events exact the best from the planes and presents the fascinating challenge of outdoor free flight to the folks attending. There is no "off season" in free flight. Once a year, the Empire State Indoor Championships are hosted in conjunction with the Flying Aces Club.



Here are two of WNYFFS's finest, competing at the FAC Nats held in Geneseo in July. Bob Clemens and your faithful editor have battled over the FAC Old Time Gas Replica event many times. Bob is flying his reliable Zipper (a classic in any scale indeed) while I am launching my new New Ruler. (Not coincidentally, my New Ruler was built specifically for the new trial event rules; shades of Henry Struck with the original New Ruler) Neither of us performed up to expectations but we sure looked good trying! Better Luck next year.



Last but certainly not least we have photo the WWII mass launch event, also taken at the FAC Nats. In this picture you can see WNYFFS member Jim DeTar (second from right) competing with his Curtiss SBC Helldiver (furthest right aircraft) from the Easybuilt kit. Jim was able to prevail in the very hotly contested event; managing to best a field of 39(!) flyers. Big time congratulations to Jim for achieving another victory in one of the most competitive of FAC events.

Thanks to Vic Nippert for all the photos on this page. Your contributions are MUCH appreciated.



Mark C. Rzdca
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