

# THE LEADING EDGE

Newsletter of the Northern Illinois Rocketry Association,  
NAR Section #117, TRA #36

Volume 19, Number 2  
March /April 1996

## Really Important Stuff That You Need To Know!

nbnnOk, stop looking at the picture of Tom The Magnificent Pastrick and his Amazing Bowling Ball Lifting Parachute. And yes, he really did lift the ball.

Now for some serious stuff. The April Meeting is on April 12th, not on the 5th which is Good Friday. Two years ago the Civic Center was closed on Good Friday, so this year we've moved the meeting to the 12th to avoid another conflict. Please mark the new date on your calendar!

There will be some very important club business at the April meeting that concerns all NIRAs members, and we encourage you to attend. Please make every effort to be there, and don't forget to bring a model for the Model of the Month Contest!

The May club launch will be held at Community Park in Lisle. We tried to get Pratt's Wayne Woods for this day, but it was already booked. Last year we had some difficulty with the park being so crowded, but the Park District is giving us a permit this year, so we should have a reserved area. The Park District has opened up the new ball field at the east side of the park, so that's one game that will be out of the way.

We've received the permit for Pratt's Wayne Woods for MRFF! Start getting those rockets ready! [good advice for me, I still haven't started rebuilding my staged Saturn V - Editor] As always, we will be needing NIRAs members to volunteer to help out with preparations and with running the range. Some of the things we need help with now are:

- Mailing out registration forms.
- Distributing flyers to hobby shops/libraries/where ever we can.
- Volunteers to run the Fun Events:
  - Kitbash (Saturday night/Sunday afternoon - need to get kits)
  - Contest (Saturday afternoon, need idea!)
  - People's Choice (Saturday night)
- Volunteers to give a rocketry talk on Saturday if it rains.

There are other duties that we'll need help with as we get closer to June, please call Bob Wiersbe at (708) 690-5442 if you can help.



(J. Charbonneau photo)

### NIRAs Members to Go! Get 'em while they're hot!



Yes, we are bored. We've been waiting here for an hour and just been told it will be another 45 minutes before we get a table. I'm so glad Ric took this picture....see page 9 for details.

# T MINUS 1 - NIRA'S CALENDAR OF UPCOMING EVENTS

## MONTHLY MEETINGS

All meetings start at 7:30 PM, and include refreshments, entertainment and a brief business meeting. Don't forget a model for "Model of the Month" voting. We need volunteer speakers to entertain the troops after the business meeting, so call Bob Wiersbe at (708) 690-5442 if you can help with ideas or can speak yourself.

### April 12: Irregular Monthly Meeting. Note the date change!

May 3: Regular Monthly Meeting

June 7: Regular Monthly Meeting. Preparations for MRFF.

## STAFF

Bob Wiersbe - You write 'em, I put 'em in the newsletter (that goes for pictures too!)

Ric Gaff - I give him the master, he does all the rest.

## CONTRIBUTORS

Mark Bundick, Jonathan Charbonneau, Adam Elliott,  
Ric Gaff, Tom Hulina, Bob Kaplow, Mark Kotolski,  
Jeff Pleimling, Bob Wiersbe

**THE LEADING EDGE**, published bimonthly by and for members of the Northern Illinois Rocketry Association, NIRA, NAR Section #117, is dedicated to the idea that Sport Rocketry is FUN! Articles, plans, photos, other newsletters, and news items of interest should be sent to Bob Wiersbe, 1835 Shetland Drive, Wheaton, IL 60187 (or electronically via Internet to hrbob@ixstar.ih.att.com.) Photos will be returned, other material returned if requested. Send membership applications (dues: \$3/year, including a six issue subscription to the Leading Edge) and nonmember subscriptions (\$5 per six issues) to Ken Hutchinson, 84 Jefferson Lane, Cary, IL 60013. Any item appearing in the Leading Edge may be reprinted by Sport Rocketry with proper credit given; all other uses require written permission of the Northern Illinois Rocketry Association. The Leading Edge is produced by Bob Pretty and Rick Messy. It's a Pretty Messy Production.

## 1996 CLUB LAUNCH DATES

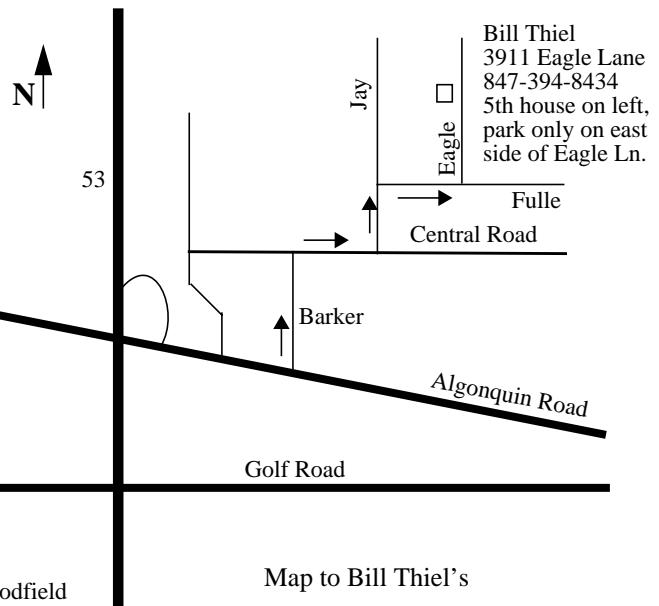
Launches start at 2:00 PM. BYOL (bring your own launcher). Location for our 1996 launches is Community Park in Lisle. Get off Route 53 at Short St. and head west. If you have questions prior to any launch, call either Bob Wiersbe at 708-690-5442, or Mike Jungclas at 708-910-1267.

March 17 - Building Session at Bill Thiel's. See map below.

**March 24** - Club Launch at Community Park, Lisle. Note: this is a newly scheduled launch, only known to NIRA members.

April 21 - Club Launch at Community Park, Lisle.

**May 19** - Club Launch at Community Park, Lisle.

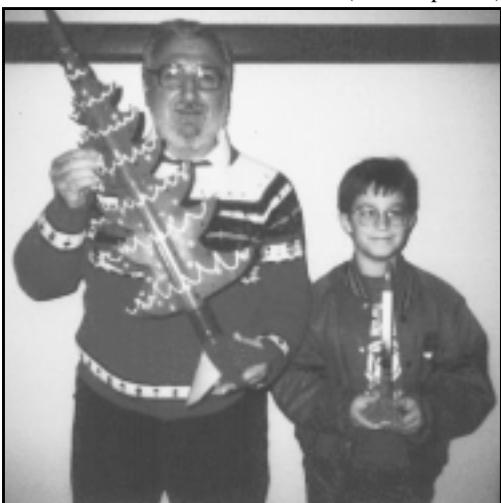


Map to Bill Thiel's

## Model of the Month Winners

Well, we seem to have gotten way behind on our Model of the Month pictures. The November winners were Mark Soppet in Youth with his America at RCHTA, and Jeff Pleimling in Adult with his Intruder Plus. The December winners (left) were Mark Soppet with his Antares in Youth and Tom Pastrick with his Christmas Tree (with blinking lights, no less!). The January winners (center) were Mark Soppet in Youth with his Space Racer, and Jeremy Peterson in Adult with his Powertech Sky Dart. Last, but not least is February (right)! Mark Soppet's "Ground Zero Alabama" took Youth (see the Nov/Dec 1995 Leading Edge, page 11), and Adam Elliott took Adult with his Monolith (Hey Adam! How about a 1:1 Scale?).

(R. Gaff photos)



(J. Charbonneau photo)



## Kit Review - Binder Design Thug

by Jeff Pleimling

I was just about done trying to decided which kit I should build to try the lower end of high power rocketry when I received a Binder Design Thug from my wife for Christmas. She got the idea when I showed her a magazine ad for the Thug and commented on how it looked like a nice little stubby rocket.

The Thug is a nice little stubby rocket that measures 33" tall(?) by 4" wide. It's designed around a 17" long piece of thick-walled body tube with a standard 16" long Ace nose cone to give it a total length of 33". The kit also contained a 29mm motor mount (with 2 centering rings), 4 pre-cut fins from 1/8" hobby plywood, a 24" parachute from Top Flight Recovery, and a shock cord and mounting system that consists of an eye hook, a quick link, a 12' elastic shock cord and a nylon strap To this I added a third centering ring (homemade) and 2 blind nuts for motor retention.

### Construction

The construction went very smoothly, in part due to the very well written instructions and some excellent advice from several people in NIRA. I first attached the front 2 centering rings to the motor tube (one 1/2" from the top, the other where the top of the fins would be). The partially completed motor-mount was then epoxied into the body tube before cutting the slots for the fins. Unlike some kits, the body tube didn't come with fin slots pre-cut, but it was easy enough to cut them. Binder Design does pre-mark (with marker) lines on the tube for the fins and the launch lug, but unfortunately the lines weren't totally straight according to the piece of aluminum angle I used to verify the lines and to mark new ones.

After I cut the slots, I put a simple airfoil on the fins. Luckily this was at the January building session and Bob Kaplow showed me how to use a bench sander to save quite a bit of time. The fin tabs reach all the way to the motor-mount, a nice feature even though it probably isn't necessary since the maximum recommended engine is an H. I tacked the fins on with thick CA to get the alignment right and then applied epoxy fillets to all of the joints. With all of the internal fillets done, the last centering ring was attached to the bottom of the rocket and the launch lug was epoxied to the body tube.

### Finishing

Although computer cut black vinyl lettering and a metallic label strip were included in the kit, the color scheme and any other graphics are left up to the individual builder. I decided to do mine as a mock sounding rocket by following the Nike-Smoke paint pattern with the main body gloss white with three fluorescent red and one fluorescent yellow fins. The lettering runs vertically up the side and the metallic strip is just below the

nose cone.

### Conclusion

Besides the crooked fin lines there were only 2 other problems with the kit - one of the fins had a fold in the top layer of wood, and both the body and motor mount tubes weren't cut as cleanly as I would expect from a kit. Both these problems were easily fixed and the rest of the kit was of excellent quality. As I mentioned before, the instructions were superior to most of the kit instructions I've seen. I really like that they write "If at any time you are in doubt, please STOP and call [us]. The cost of the phone call could save you the cost of the kit in helping you avoid a major mistake."

I've talked to a couple of other people (via e-mail) and they had some of the same problems I did with their various Binder Design kits - the crooked lines and the sloppy cut on the tubes. None of us found them to be major problems and hopefully their recent move into better facilities will mean better quality control. Overall it is a nice looking rocket that seems rugged enough to take the abuse most rockets receive.

Binder Design  
Route 1, Box 34  
Lowden, WA 99360  
(509) 527-1089



Jeff's Thug lives up to it's name by intimidating his daughter Beth.

## Sport Rocketry Magazine Plans from Mark Bundick

As promised after my recent NAR Board meeting report, I have a major announcement to make regarding the status and planning for Sport Rocketry Magazine.

The NAR's contract with SHARCO Communications, Steve Weaver's company, has been terminated. That termination resulted from Steve's inability to raise a specified amount of start up capital. The amount was based on a business plan submitted by Steve and reviewed by NAR Comptroller Stu McNabb (a CPA) and Vern

Estes. The Board inserted this termination clause in the contract because we felt, without this amount of funding, we could not insure regular and timely delivery of Sport Rocketry to the NAR membership without undue risk of bankruptcy.

Many of you may well greet this cancellation with joy, but I personally do not.

Steve has indicated to me his desire to leave the operations of Sport Rocketry given our contract cancellation. While Steve's magazine efforts have, at times, been a management challenge to me, no NAR volunteer has put in more time, effort and energy into the NAR's business over the three years than Steve Weaver. The NAR has benefited from that effort, and frankly NAR members owe Steve a lot. We've learned many positive things from his work, and his energy and contributions will be missed.

The contract cancellation also nullifies a tremendous amount of work I put into the contract and leaves me with a continued problem with Sport Rocketry's production and distribution.

Since the cancellation, I have worked with a variety of NAR volunteers to set up a new Sport Rocketry operation and management team. I'd like to outline our plans for NAR members here. These changes are effective immediately.

### 1. Business Management

NAR Comptroller Stu McNabb has been appointed Sport Rocketry's Business Manager. Stu will be responsible for reviewing all contracts, business arrangements, financial plans and management going forward. Stu, with HQ Manager Marie Stumpe's able assistance, has already simplified Sport Rocketry's billing and receivable practices to provide Stu and the Board with better financial monitoring and control.

### 2. Content and Editing

Tom Beach will assume full responsibility for Sport Rocketry's content as Sport Rocketry's new editor. While Tom was previously the "NAR Editor" per our SHARCO contract, Steve had retained the final content control and responsibility. Now, this effort falls completely to Tom. I personally can think of few individuals who span the full hobby, sport, HPR and competition, with creativity and energy, as well as Tom.

Tom has already contacted a number of NAR members for assistance in gathering material for future issues, but could certainly use more help going forward. I realize many of you found it difficult to contribute to Sport Rocketry given our erratic publication schedule. However, I'd like to ask NAR members and other authors to dig deep, and please assist Tom.

In particular, if you have recently delivered material to Sport Rocketry, please let Tom know about that submission, and to the extent possi-

ble, redeliver your submission directly to him. Tom can be reached at:

432 Pruitt Avenue  
White Rock, NM 87544  
505-672-0249  
CIS:71540.722@compuserve.com

Tom is also very interested in obtaining photos suitable for publication. I believe he will soon have details of a new photo contest to post here.

Steve Weaver has also indicated he will forward materials to Tom, but I ask NAR members to still consider resubmitting directly to Tom as this transition and delivery may take some time.

Other members of the editorial staff will be asked to help Tom, and I've asked Tom to consider staff additions as he sees fit.

### 3. Advertising

Triad Advertising, Sport Rocketry's current ad agency, will continue to service the needs of sport rocket manufacturers, dealers and suppliers. Advertisers are asked to please forward payments for their insertions directly to HAR HQ, and look for a mailing from NAR Comptroller Stu McNabb outlining full details of Sport Rocketry's operational changes.

Advertisers with complaints, suggestions and comments can contact me directly. I would be quite interested in your suggestions, and observations about how our publication can be improved.

### 4. Production and Distribution

T&D Type and Design, a publishing and printing firm in Minneapolis, MN, about 90 miles from NAR HQ, will assume responsibility for printing and mailing Sport Rocketry. Production will be fixed at a 44 page issue, with 8 pages of color, and a review of the production and financial status at the NARAM NAR Board of Trustees meeting. If circumstances permit, Sport Rocketry would be expanded in increments of 8 pages starting at that time.

T&D's current lead publication is "The Viking Report", a fan newspaper for followers of the NFL's Minnesota Vikings. Publication is 24 times per year via second class mailing permit. According to my correspondence with the owner, EVERY mail deadline over the past seven years has been hit. Most of those deadlines have been Monday afternoon mailings after a Sunday game.

T&D is owned and operated by long time NAR member Todd Schweim.

### 5. Retail Distribution

The NAR Board is fully committed to Sport Rocketry's retail distribution. T&D has agreed to assume temporary responsibility for that distribution, but this arrangement is subject to change. NAR members with suggestions, including possible commercial arrangements to handle this distribution, currently done to

approximately 200 hobby shops and retail outlets, and two different distributors, can contact me directly to begin conversations about this topic.

### 6. Schedule and Catch-Up.

NAR members are still due a magazine from 1995. We will honor that commitment and print seven (7) issues in 1996. If any NAR members believes they have not received a magazine due them as our publication moves forward in 1996, simply call the NAR Member Service Line at 800-262-4872 and request a copy after the publication is out. We'll send you a copy via first class mail right away

However, to accommodate our retailers, we will shift the cover dates of the magazine. Our first 1996 issue will be March-April 1996, with a return to regular cover dates going forward. The seventh issue of 1996 will be labeled "Summer 1996" with a final 1996 issue labeled as "Holiday 1996". Starting in 1997, regular, bi-monthly cover dates will resume.

The Sport Rocketry team has committed to the following production schedule, based on extensive analysis of the production capabilities, the editorial process and the NAR's financial needs:

Cover Month	Mailed	Ads Due	Content Due
Mar/Apr	3/15/96	2/14/96	1/30/96
May/Jun	4/26/96	3/27/96	3/12/96
Jul/Aug	6/07/96	5/08/96	4/23/96
Summer	7/19/96	6/19/96	6/04/96
Sep/Oct	8/30/96	7/31/96	7/16/96
Nov/Dec	10/11/96	9/11/96	8/27/96
Holiday	11/15/96	10/01/96	10/01/96

### 7. Summary

I have repeatedly emphasized to all the staff, to Todd, to Stu and to Triad Advertising, that nothing less than full achievement of this schedule is satisfactory to service NAR members. We can do this job within the budget and delivery a quality publication to our members. I will be continuing to oversee Sport Rocketry's operations very closely over the next six months to assure we return Sport Rocketry to a regular schedule that NAR members can count on.

In the meantime, I certainly encourage you to send articles, photos, and plans to Tom. Please feel free to forward your questions, comments and suggestions to me. I appreciate your patience and support of the NAR's publications.

**A Cheap RC Simulator  
Downloaded from [rec.models.rc.air](http://rec.models.rc.air)  
by Bunny**

The 1996 flying season shows promise for some budding RCRG pilots in the club. The toughest hurdle to overcome is learning how to fly! Using a computer based simulator can help a lot. At least you learn about control reversal,

and it's a LOT easier to get back in the air after a crash. Commercial simulators cost between \$100 and \$200, depending on the brand. People hesitate to spend that kind of money before trying out a product.

While reading the Internet newsgroup [rec.models.rc.air](http://rec.models.rc.air), I found one person's innovative solution to getting a cheaper simulator. I'd love to give credit for this concept, but the posting was unsigned. If you think you're interested in flying RC, and have this common piece of software lying around, you might want to try this as a way to learn RC without a big monetary investment. Try it and let us know how it works for you.

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I have a nomination for the cheap sim award. This isn't my idea, and may not be new, but I've had fun with it. I'd like to hear what you think. I wrote this for a beginner, so please take no offense at the simple language.

Get any old (or new) version of Microsoft's Flight Simulator and a working joystick. My Quickshot joystick has trim-tabs for centering, which is nice for this usage. Anyone who has FS will probably sell it to you for cheap. With the manuals, it's fairly easy to learn.

Once you know how to run it somewhat, re-start the program. Select the Sopwith Camel, select VIEW OPTIONS: View 1 (black dot -on), -From- TOWER, Instrument panel (off-unchecked), view ZOOM X 10, and Maximize window. Set half or full flaps (F8). Then do a SAVE SITUATION, for convenience. Name it Camel. Now when you start the program, select Situation, Load, and Camel. When this is running, it gives you a rather challenging, somewhat underpowered R/C, and hey, it looks great... <G>

The W key gets you the FULL SCREEN view; just grab the joystick, release the brakes, add full power, and let it fly - You're R/Cing! If you're over- (or under-) controlling, set the PREFERENCES - JOYSTICK to lower (or higher) numbers and re-SAVE SITUATION before you take off again.

And just like R/Cing, when the plane is doing the right things, keep your hands off the stick... If it won't fly "hands off", then trim the plane until it does. See the manual for this. Under JOYSTICK, hit CALIBRATE to re-center trims.

Ground references are hard to judge in FS, except over the runway, so stay above the horizon or you'll probably "crash" a lot. This can be true in real R/Cing, too. Forget landing on the runway at first, you can land anywhere. Just cut power and settle into a glide. Judge the plane's altitude by the shadow under the plane as you glide in. Level off about a wingspan above the ground and let the speed bleed off a bit, then

continue to glide in. If you bounce more than twice, you came in too fast.

You can't see straight overhead in FS, because of the black "tower" ceiling, but this actually helps, because you won't get so disoriented. You'll also learn (cheaply, in FS) that the easiest way to lose a plane is to let it get too far away from you. Once it's a dot, you might as well say good-bye. In real life R/Cing, if you fly with the wind in your face, you could just fly in big circles until the plane drifts back into sight range. If you fly with the wind at your back, and you let it get too far away, you might not see the plane again.

You might "crash" a lot in FS at first - I'm a fair R/Cer and this is a challenge even for my skills, but "computer airplanes" are cheap enough, so give it a try.

### January Building Session by Richard Gaff

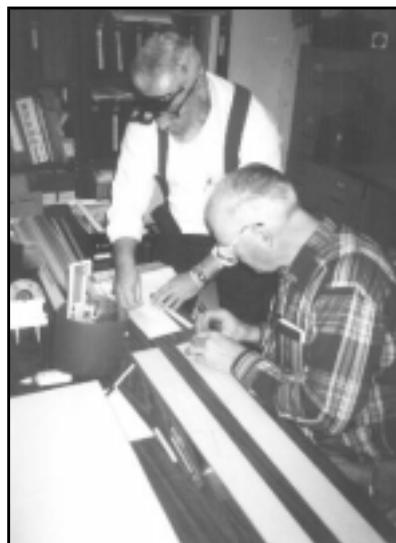
Once again "Bob's Hobby Shop"<sup>1</sup> was the site for NIRA's annual winter building session. Bob's collection of tools, considerable floor and table space as well as a large collection of rocket memorabilia make his basement a truly enjoyable place for these session's. A very nice turn out of NIRA "old timers" and new faces were on hand to build and kibitzes.

Tom Pastrick had volunteered to help people build their first glider, the venerable Flat Cat. Taking him up on the offer were Cheri Chaney and Bill Thiel. The Flat Cat was designed by G. Harry Stine as an easy to build glider using a front engine pop pod. One of the biggest problem people have with building their first glider is shaping the wing's airfoil. The Flat Cat solves this problem by eliminating the airfoil! Except for edge rounding the wing is a flat slab of balsa hence the name Flat Cat. Unfortunately there wasn't enough time to finish, so construction will continue at the next building session. Ed Thiel was also building a glider, the Estes flop wing glider. Looks like the club is rediscovering the boost glider!

Ray and Brian Chesi were on hand to pick the brains of Bob Wiersbe and Rick Gaff for launch controller information. Ray wants to build a 5 position launcher for use at non-NIRA rocket demos.

Adam Elliott came prepared with several sheets of heavy poster to build a several times larger version of his 2001 - A Space Odyssey Monolith. The smaller version had catoed last summer, hopefully his new one will have better luck! This is the model that won Model of the Month.

Rick Kramer had recently discovered that a certain size mailing tube was nearly a dead ringer for the LOC 3 inch tube. The mailing tube has the same ID but with a thicker tube wall. He's



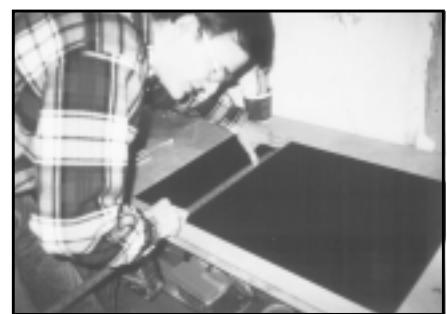
Tom Pastrick helps Bill Thiel and Cheri Chaney work on their Flat Cat boost gliders.



Jeff Pleimling works on his Thug.

using them to build a giant size G-powered "infinite loop" type model that he named the "Ultimate Loop". Should be pretty neat at MRFF!

Jeff Pleimling brought his Binder Rockets model the "Thug" to work on. The Thug is a



Adam Elliott scales his new Monolith.

thick squat little HPR lite model similar to NCR's "Big Brute". Jeff got most of the model built despite volunteering to help Rick Gaff finish the newsletter mailing. Thanks Jeff!

Jerome Mrozak was on hand to work on his latest version of his side ejecting recovery system. Unfortunately I failed to take a closer look at what he is working on, something I plan to rectify at the our first club launch. Hopefully Jerome will be giving us an update in a future issue of the Leading Edge.



Rick "Ring Man" Kramer with his 3" Ultimate Loop.

Mike Ugorek, Bob Wiersbe, Leo Ringwald and Ken Hutchinson were also on hand to visit, kibitzes, gawk at Bob's collection of old rocket stuff and just have a good time. But then I think we were all there for those reasons! I think this was one of our best building sessions ever!

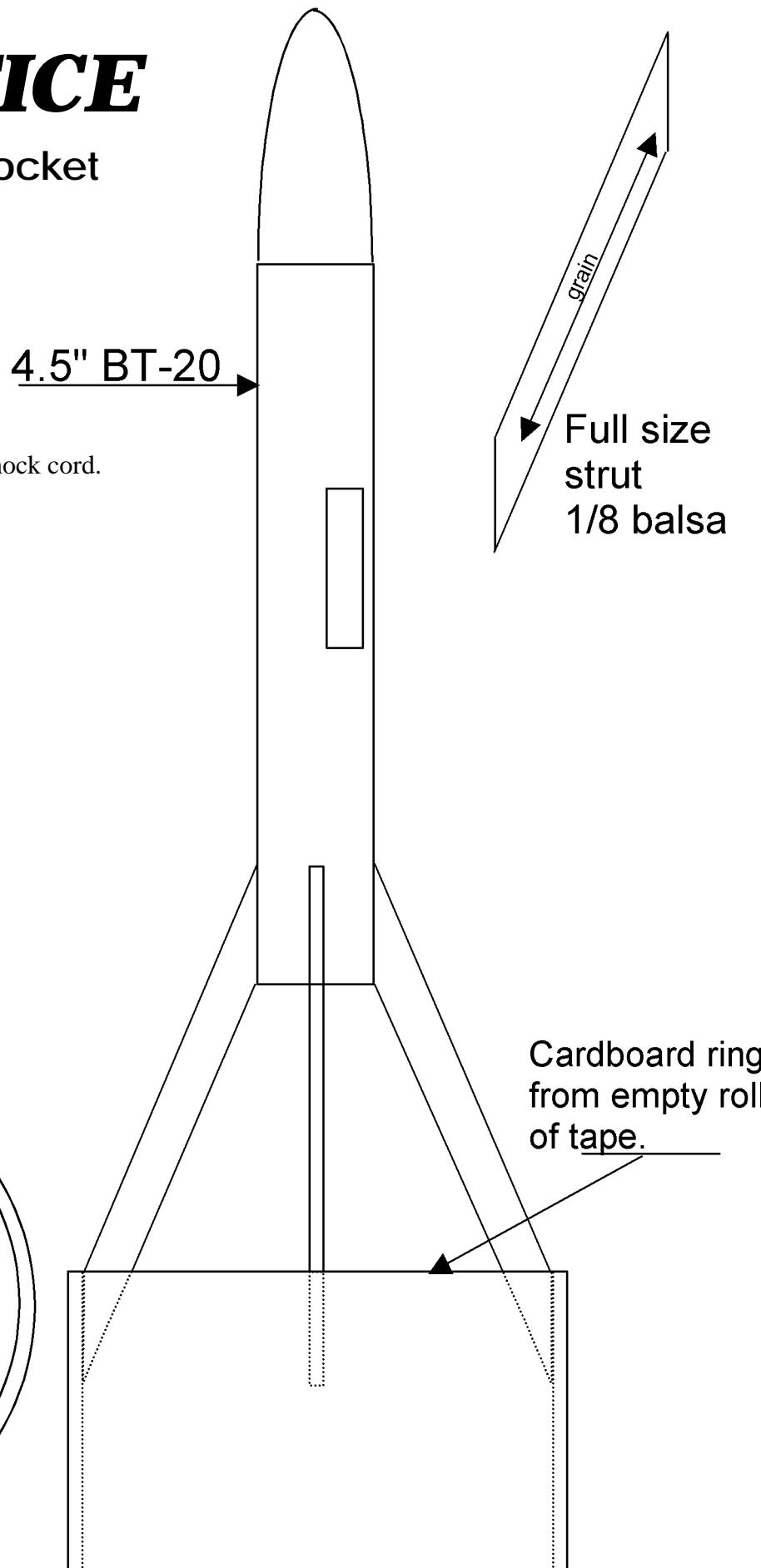
1 - Or, Bob Kaplow's Basement. [You have to see the stuff down there to appreciate it. However, Bob was not willing to part with any of his motor collection, though he was willing to part my hair with an axe when I tried to walk out with a box full - Editor]

# **The SOLSTICE**

A dirt cheap ring tail rocket

By Richard Gaff

Use a 12" long piece of 1/8" elastic for the shock cord.  
An 8-12" chute is needed for recovery.  
Use A8-3, B4-4, B6-4 motors, friction fit.



## Mother

by Bob Wiersbe

I'd like to take the credit for the idea behind "Mother", but I can't. I saw someone fly a rocket like this at the National Sport Launch in Dallas (don't remember his name), and it went over pretty well. My "Mother" was built specifically for a demo launch that got rained out, so the first time I flew "her" was at a NIRA launch. It got the reaction I'd hoped for, and several folks wanted to know how it was done.

What is "Mother"? It's a rocket inside the shell a rocket, where the shell stays on the pad, the nose blows off, and the rocket inside streaks out. The fun part is that you don't let folks know what's going to happen. When the nose blows off everyone is thinking the motor failed, and starts to laugh at the sight of the nose drifting down on its own chute. Then the rocket inside is ignited, shoots out the open tube, and surprises the crowd. It's always good for a laugh.

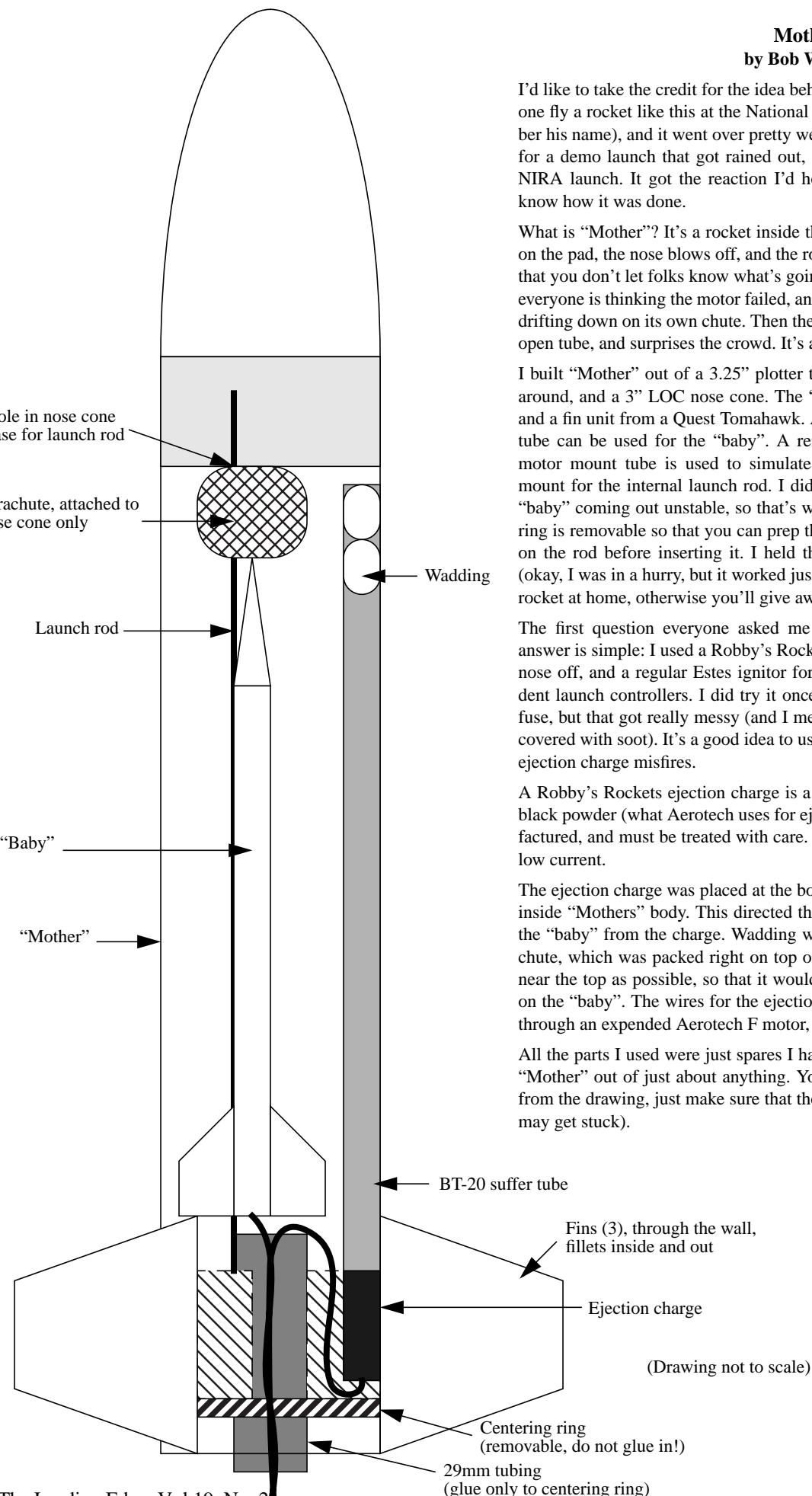
I built "Mother" out of a 3.25" plotter tube, some spare Nike fins I had lying around, and a 3" LOC nose cone. The "baby" was made out of 18" of BT-20 and a fin unit from a Quest Tomahawk. Any rocket that will fit inside of the 3" tube can be used for the "baby". A removable centering ring with a 29mm motor mount tube is used to simulate the engine mount, and provides the mount for the internal launch rod. I didn't want to take any chances with the "baby" coming out unstable, so that's why I used the internal launch rod. The ring is removable so that you can prep the ejection charge and load the "baby" on the rod before inserting it. I held the launch rod in place with duct tape (okay, I was in a hurry, but it worked just fine!). Note that you need to prep this rocket at home, otherwise you'll give away the joke.

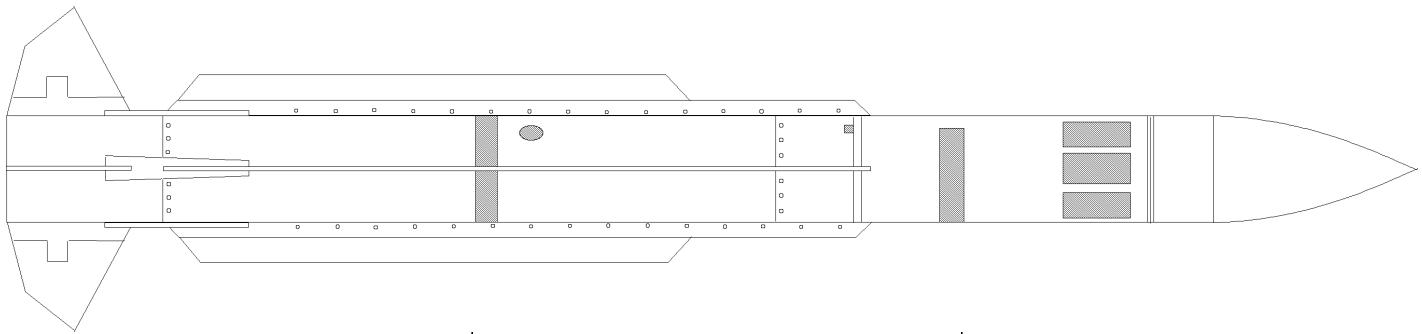
The first question everyone asked me was: "How did you do that?!" The answer is simple: I used a Robby's Rockets ejection charge (1.25g) to blow the nose off, and a regular Estes ignitor for the "baby". This required 2 independent launch controllers. I did try it once with flashbulbs and timed thermalite fuse, but that got really messy (and I mean that literally - the "baby" came out covered with soot). It's a good idea to use 2 controllers anyway, just in case the ejection charge misfires.

A Robby's Rockets ejection charge is a tube containing a flashbulb and FFFF black powder (what Aerotech uses for ejection charges). They come pre-manufactured, and must be treated with care. A flashbulb can be triggered by a very low current.

The ejection charge was placed at the bottom a 34" length of BT-20 tube glued inside "Mothers" body. This directed the gases towards the nose, and protects the "baby" from the charge. Wadding was pushed into this tube to protect the chute, which was packed right on top of the tube. I wanted the chute to be as near the top as possible, so that it would pop out quickly and not get hung up on the "baby". The wires for the ejection charge and "baby's" motor were fed through an expended Aerotech F motor, so it looked like a real prepped rocket.

All the parts I used were just spares I had on hand, so you can build your own "Mother" out of just about anything. You should be able to get the basic idea from the drawing, just make sure that the "baby" fits easily inside (otherwise it may get stuck).





## Kit Review

### The Launch Pad - Standard AGM-78

by Richard Gaff

It seems almost impossible for me to go to a NARAM<sup>1</sup> without buying some kind of rocket kit or other. There are always manufacturers selling neat stuff and NARAM last year was no exception! One company I particularly liked was the Launch Pad. The Launch pad started several years ago selling plans for building a variety of military rockets and later starting supplying kits. Their models are all in the "mid-power" range i.e. D-E motors and tend to be fairly large by model rocket standards. The biggest problem I had was deciding which one to buy, they all looked so good! I finely decided to get a model of the Standard AGM-78, an air launched Anti-radar missile.

The model is scaled around a BT-80 body tube and is over 24 inches long. The body tube appears to be your basic Estes tube and certainly the plastic nose cone is. The engine mount centering rings and ejection baffle are laser cut parts from something called presentation board. The laser cut parts are a new feature for The Launch Pad kits and are a welcome change from cutting the parts out manually, which is what the instructions still call for. The instructions consists of four pages of text and drawings. The instructions are adequate for assembly but some model building experience is assumed. This is not a problem since the model is clearly not for beginners!

The nose cone for the model is one of those really nice blow molded ones that Estes uses for some of their BT80 models (i.e. the maxi Big Bertha). Unfortunately the use of this nose cone leads to the most unusual part of this kit - the Sno Cone. The real AGM missile has a pointed nose cone not a parabolic one. To fix this problem, a small paper cone is made and then glued to the front of the nose cone to give it the proper shape (figure 1). This is certainly different! This part is a bit tricky to do (it's one of the reasons this kit is not for beginners) and it is pretty much impossible to blend it seamlessly onto the nose cone. I can only assume the manufacturer considered a custom balsa nose cone to be too expensive. Fortunately you can blend it in enough to satisfy most modelers.

The aforementioned centering rings are very

well made. The engine tube fits into the rings with the best fit I've ever seen, not too tight or too loose, just right! The engine mount slips into the BT-80 like the custom fit that it is. I did not have to sand the rings at all. Who ever is doing their laser cutting is doing a great job. The presentation board material the rings are made of is pretty nice stuff as well. It is a hard, stiff high density paper fiber material, basically high density cardboard, which works quite well with yellow glue.

The fin patterns are supplied separate from the instruction sheets. A small detail, but I appreciate not having to cut up the instructions. Fin details printed on card stock are included. These are cut out and glued to the fins. The one unfortunate thing is that there is no scale substantiation included. A scale drawing or photo of the real missile would have been appreciated.

#### Flight testing

No matter how enjoyable a model is to build,

the real pleasure comes from flying it. I managed to get one flight on my AGM last November. The model was flight ready but not completely painted, it was missing it's markings. I wanted to get it flown at least once before the end of the flying season, as it was already my intention to write this article.

The last launch of season had pretty much the kind of weather you expect in November- nippy cold and rather windy. But the sky was clear and the park was empty. The model flew quite nicely on the recommended D12-3, with some weathercocking due to the wind. A very nice flight and unfortunately it's only one. The model landed behind the fence of the Lisle swimming pool and could not be immediately retrieved. One of our younger members offered to climb the fence, but I declined the generous offer. It was several days before I found someone who could take a look for it but, of course, it was already gone. (sigh!)

The Launch Pad AGM -78 missile is a great kit.

I thoroughly enjoyed building it and I know I would have enjoyed flying it. The parts are first rate and the instruction clear and concise. Am I going to replace the lost model? No, at least not right away. But only because I want to build some of their other models first!

I highly recommend this kit.

The Launch Pad  
8470-E Misty Blue Ct.  
Springfield, VA 22153

1. NARAM is an acronym for National Association of Rocketry Annual Meet.....

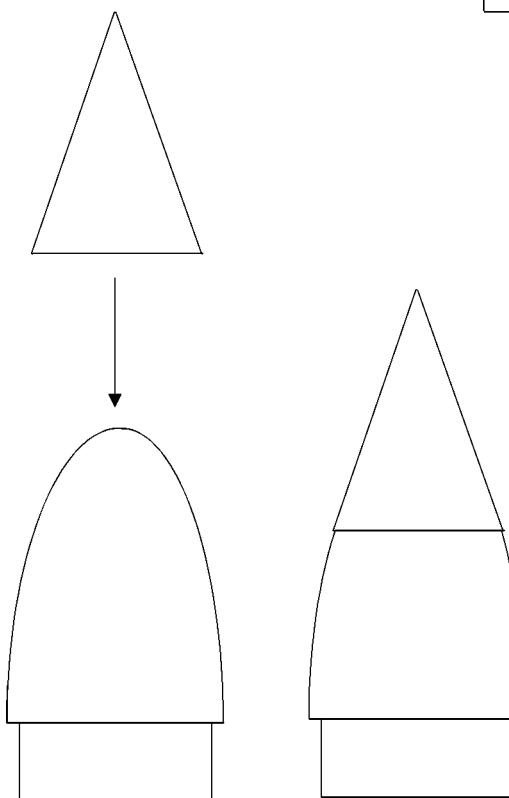


Figure 1.

## Kane County 4-H Rocketry

by Tom Hulina

On Saturday Feb. 17th, three groups of young 4-H enthusiasts participated in a rocket building session and learned about the theory and practice of model rocketry. The Kane County 4-H club had Project Day for its young members to allow them to learn various crafts and hobby assembly. Subjects ranged from Singapore cooking, large kite-building and, of course, model rocketry.

Dave Auer, a 4-H leader has hosted an area

devoted to model rocketry for the last three years. Each year has seen a marked increase in attendance. This year three sessions were held, two introductory and one advanced levels.

The display area which was a crowd attractor, held a number of rockets, range boxes and material to show the kids the different engines and types of models that could be built. Dave had his latest Hi-Powered Rocket, an Aerotech Astro B on display with its launcher. This eight foot end-cap display definitely attracted enough interested viewers to insure that next year's sessions are already filled with 4-H'ers.

The two introductory sessions featured Dave, with assistant Tom Hulina, describing the basics of Model Rocketry. Dave discussed the varied components of a rocket and then described the engine mechanics and rating system. Additionally, the differences between High-Powered and Model Rocketry design, building and propulsion were conveyed. Tom then mentioned the safety aspects to be concerned with when launching any size rocket.

After the initial orientation to rocketry, the kids started to build the supplied Este's 'Gnome' rocket. The participants all worked diligently in following the directions, and helping their friends to assemble, cut, glue and finish the project.

The advanced session had attendees that had previously built at least one rocket, though many were seasoned veterans. Dave explained tools necessary for recording altitude and building larger class rockets. The 4-H'ers were then set free to build their Este's "Viking" kit. Its multiple fin design allowed each builder to customize each kit to their own tastes. There were three prizes that were awarded based on fit and finish for their project. This kit definitely was a stretch objective for the time available. But all participants finished their kits and were judged on the quality of their work. It was a close decision and only 2 and a half points separated the entries. All the models from both groups will be allowed to be entered in a 4-H contest this summer. This allows more time for painting and customizing each model.

### NIRA Winter Outing by Adam Elliott

The weather wasn't too bad. Cold but not freezing. Only the wind on Michigan Avenue would have kept the true die-hard rocketeer indoors. Not that it is advisable to launch from there. But what has that locale got to do with us?

Answer: the Hubble Show at the Adler Planetarium; the chosen site for this year's NIRA Winter Outing.

Some nineteen NIRA members and their hang-ers-on courageously drove downtown surrounded by masses of crazed Sunday drivers

and raced for parking.

Greeting us in the building was the gallant Tom Pastrick handing out discount coupons for the theatre (but not everything else like food, gifts, etc.) Touring the museum is always fun. They've all kinds of historic displays and neat gadgets you can play with. You may have seen the orbital demonstrator which is a big funnel in which you roll big steel balls. You can have several going at once. When

this author was in eighth grade, or on some other school trip, he and others did their best to make the balls collide by dropping them at what we guessed to be the right time. Some times we succeeded. This time, as adults, we were really going at it by trying to tilt the machine.

They had telescopes, mars rock samples, satellites, planets, and space capsules. On this trip I solved some of the mystery of where everything was in the Apollo module. But NOT the Lunar Module. I didn't see one.

The static models on display were noticeable to us by their lack of intricate detail. My guess is, had Peter Alway been there, he would have marched right up to the director and said "you didn't buy my books!"

The Hubble show itself was cool. The repair mission really did seem to be a smashing success. Scientists can now probe deeper into the universe with unsurpassed clarity. It is shedding new light on the theory or model of the universe, which may or may not be entirely correct. This author has always believed the latter, but for lack of a better one.... We saw lots of neat pictures from interesting places in and out of our galaxy.

The one thing that really caught my eye in the show was a radical stroke-writer in color. This made its images appear like neon signs. I wonder how it works.

More displays followed including the old 18 1/2" telescope which at one time was the largest in the world. There was also what appeared to be the world's largest collection of antique astrolabes. But the real plus was the hands-on center with its dif-



Ed Thiel (left) and Adam Elliott (right) are either a) admiring the Apollo capsule model or b) wondering how they filmed Apollo 13 with such small figures. (R. Gaff photo)

fraction grating for various gasses, false color imaging, color and refraction display, as well as a big solar cooker demonstrating the focus of a parabolic mirror.

In the gift shop we wandered around, admiring all the stellar stuff.

Thus satisfied, pizza seemed to be the item of choice to replenish the brain fuel expended during the day. Pizzerias Uno and Due are known the world over for their famous Chicago style pizza. If you've ever been there you know it is a sure bet you will have to wait in line. We were told that it would be an hour to seat our little party of thirteen. We agreed and waited around in the breezeway chewing the fat. Unfortunately some couldn't wait any longer and debarked before anything happened. Memo to selves: make this kind of arrangement beforehand; like with a reservation. The remainder of the troop marched over to Portillo's a few blocks away to have burgers and pasta and to admire the scenery.



Ric(k) Gaff took this really great aerial photo with his Astrocams then had it enlarged. He's pointing to the launch site, which just happened to be the Adler Planetarium. Bet the NASA boys wish they could get pictures like this with their satellites! (R. Wiersbe photo)

## New NIRa Reprint Series booklets. by Richard Gaff

Six new booklets have been added to the reprint series this issue bringing the count to 26 available booklets.

11.5) **The Lawrence Bercini collection of rocket plans Vol. 5.** Even more of Lawrence "Mr. Strato" Bercini's favorite plans! 11 plans.

11.6) **The Lawrence Bercini collection of rocket plans Vol. 6.** The Jarvis Still, the Flying Coolie Hat, Rubix Cube and 8 other neat plans from Mr. Strato.

15.1) **Plans from the Leading Edge, Vol. 1.** 8 plans including the Flying Coffee Pot, Pregnant Whale and X-15 Rocket Plane.

15.2) **Plans from the Leading Edge, Vol. 2.** 8 plans including Star Tanker, Pumpkin Man, Done More 2, 2 simple gliders and 6 other great plans.

16.2) **Ancient Estes plans from the '60s. Vol. 2.** The Whee II, Air Force 260, cobra and 9 other great plans from the "old days".

17.1) **Technical articles from American Spacemodeling et. al. Vol. 1.** Articles about design efficiency, elliptical fins, boat-tailing, CP calculations and 7 others. Most of these articles are concerned with building more efficient rockets.

The Reprint Editor Recommends:

### - for beginners -

10) **LIFTOFF - For Beginners Only (not).** A collection of articles on beginning rocketry by Lawrence "Mr. Strato" Bercini and Mark "Bunny" Bundick that were published in Sport Rocketry. 20 pages

8) **The NIRa Big Book-o-tips!** 22 pages of tips, hints, suggestions and ideas that will help you with everything from building to flying!

7) **Rec.Model.Rockets Glossary of Rocket Terms.** What is a "worm burner" or the NAR? What is a "BAR" or a Bernoulli lock? Numerous rocket terms, slang and abbreviations are defined. Don't be left in the dark!

The reprint series is an effort to get interesting useful information out of the collections of "old timers" and into the hands of people who don't have access to the original material.

Sources for the reprint series include back issues of Model Rocketeer, American Spacemodeling, Sport Rocketry, Model Rocketry Mag. main stream magazines, rocket manufacturers and the Internet's Usenet rocket group Rec.Models.Rockets (R.M.R) just to name a few.

Reprint booklets are FREE to members at club functions. If you want them by mail simply send 32 cents in stamps or cash for EACH booklet you order. Or a large 9x12 self addressed stamped envelope (the SASE can be

used for several at once, be sure to include the proper postage) to:

Richard Gaff  
3175 Norwood Ct.  
Streamwood, IL 60107

A complete up to date list is also available in person or by mail.

## Micro Space Craft

by Rick Fleeter

A Book Review by Jeff Pleimling



Although the name Micro Space Craft suggests that this book might be about model rockets (and really small ones at that), it is actually about small satellites. Although NIRa hasn't launched its own satellite (yet), I'm sure this book will be of interest to many members. I'm also sure that this book will probably inspire several groups to start building their own satellite.

The first thing to know about this book is that it is FUN to read. Rick Fleeter is one of those rare technical people who can write for all audiences. This book is aimed at both the knowledgeable layman and at the space professional; any deeply technical material is presented in an easily understandable manner.

As Rick Fleeter discusses in the book, there isn't a firm definition for what is and what is not a small satellite. Small satellites are more of a mind-set - from using non-space rated hardware to just doing it faster (and cheaper) than before. Most satellite developers try to build in reliability, small satellite builders try to build them cheap enough that they can be easily replaced if they fail.

Micro Space Craft covers all of the basic technology needed to build & fly a small satellite. Rick starts at the basics with propulsion (both to orbit and in orbit) and orbital mechanics. Then operational considerations like communications, thermal dynamics and attitude control are covered. The actual hardware is covered with topics on memory systems, mechanical parts and batteries. He wraps up the book with a discussion of clean rooms ('are they necessary'),

satellite clusters, a bit of history and a bit of the future.

The book was an excellent refresher for the topics I already knew (and added information about most of them). It also covered many topics I didn't know anything about (did you know that space-rated NiCads cost about \$2000 per cell), but that are necessary for satellite operations.

Most of the chapters started out as essays in the International Small Space Organizations' newsletter. Collected together they make for a great book that Luther Briggs (USAF Space Warfare Command) says "This could be the 'Zen and the Art of Motorcycle Maintenance' of our generation." I highly recommend it.

Micro Space Craft  
by Rick Fleeter  
1995, Edge City Press  
ISBN 1563471299  
(Paperback) 239 pages

## CIA 1996 Launch Schedule

Unlimited rocket mass, 6500' MSL (~ 5750' AGL) FAA waiver. "K" motor impulse limit. For more information call Greg Smith, (217) 352-9655.

March 23 - High power rocket launch at Rantoul Aviation Center, 10 AM.

April 27 - High power rocket launch at Rantoul Aviation Center, 10 AM.

May 25 - High power rocket launch at Rantoul Aviation Center, 10 AM.

June 8 - Model rocket launch at Dodds Park, 1 PM. Also an NAR Local Meet (Chris Deem, Contest Director) with events:

C Boost Glider

Plastic Model Conversion

A Streamer Duration

Random Duration

June 22 - High power rocket launch at Rantoul Aviation Center, 10 AM.

July 13 - High power rocket launch at Rantoul Aviation Center, 10 AM.

August 31 - High power rocket launch at Rantoul Aviation Center, 10 AM.

September 28 - High power rocket launch at Rantoul Aviation Center, 10 AM.

October 26 - High power rocket launch at Rantoul Aviation Center, 10 AM.

November 23 - High power rocket launch at Rantoul Aviation Center, 10 AM.

### Heard on the Street

(Rumors and such, with apologies to the Wall Street Journal)

**Crushing Cold** - The MRED factory roof collapsed under the unusual snowfall of the northeast. Most of Mike and Emily's personal belongings were destroyed by water damage. No insurance. :-(

**Light My Fire** - Rumor has it the super reliable Magnalite ignitors are coming back soon.

**Out Shopping** - R/C REPORT, in the January issue, told of Estes Industries buying Sterling Models. Estes has been out hunting again, this time bagging the biggest little engine manufacturer in the world, Cox Hobbies. At this time no other details have been released, but the news has been confirmed by both Cox Hobbies and Estes Industries. Gordon Banks, R.C REPORT Magazine.

**Know the Code** - Many NIRA members will be receiving new Area Codes sometime this year, and some will even get a new number. To help us keep our records straight, please send a postcard to Ken Hutchinson with your new Area Code and/or new phone number.

**Mistakes, Mine and Mine** - The August club launch date is the 18th, not the 19th as listed in the last newsletter. Also, the schedule is for 1996, not 1995 as listed.

**Gone but not Forgotten** - Rumor has it that the Estes E15 motors will not be coming back. No word on if they'll be replaced with a composite.

**Stepping Out** - Dan Meyer has left ISP, resigning over a month ago as President. Terms, reasons, etc. unknown.

**The Art of Rocketry** - The Arts & Entertainment cable television network's "Biography" series will present a documentary on the life and accomplishments of the late Dr. Wernher von Braun, the rocket pioneer and former director of NASA's Marshall Space Flight Center. Scheduled to air in March 1996, the hour long program is based on the last major interview that Hugh Downs conducted and is narrated by William Shatner. A home video version of the A&E documentary entitled "Threshold of the Stars" is available from Bro-Gun Productions for \$19.95 at 1-800-684-4005.

**Final Flight** - Trip Barber's dad died February 26 after a brief struggle against cancer. I'm certain the Barber's will be in all our thoughts and prayers during this difficult period.

**Chinese Fireworks** - The Intelsat 708 satellite was launched by the first CZ-3B (Chang Zheng/ Long March 3B) on Feb 14. The launch vehicle went off course shortly after leaving the pad and was destroyed about 20s after liftoff. This is the third failure in recent years for the Long March rocket (the other failures used the older CZ-2E variant).

### Tips for the Taking

by Mark Kotolski

#### Motor Hooks

Don't like the price of manufactured motor hooks? Do you need a motor hook for an FSI motor? Does the town you live in have a street cleaning machine? If so, you have a free supply of material! When I walk the family dog, I walk at the curb and pick up the metal stays that come out of the brushes. These can be bent carefully to the size you need and trimmed with a cut-off wheel. I use them mostly for retaining FSI motors, but have also made sizes for A, B, C, and D motors as well. It is much safer, stronger and reliable, not to mention easier to hold the motor this way. Tape just isn't as reliable.

#### Balsa Filler Coat

Butyrate dope sanding sealer and fillercoat is great for finishing wood fins and nose cones. Its drawbacks are that it stinks up the house, is fairly expensive for the quantity purchased, and requires many coats to get a filled surface.

Stop at your local hardware store and get some ZINSSER B I N White Pigmented Sealer, Product #908. It costs about \$5.00 per pint and will do dozens of rockets. I've done over 20 rockets so far and have only used about 1/2" from the top of the can. It dries in about 1/2 hour, needs only about 2 coats to fill, doesn't smell up the house (I can use it while watching TV and it doesn't bother my wife's allergies). It gives you a nice flat white primed surface ready to take any type of paint. Clean-up is with denatured alcohol.

#### Tube Couplers

Save those yellow dummy motors from Estes kits. If you need a tube couple for BT5, BT20 or BT50 tubes, you have a source for many CHEAP couplers. Cut the tube to the length you need, build it up with 1 or 2 wraps of typing paper or masking tape, and you're done. The reason for adding tape or paper is that the tubes are motor size, thus, slightly undersized for the tube. A little work, but 98.5% cheaper than ready made couplers.

### New film and display at the Museum of Science and Industry. by Richard Gaff

I recently had an opportunity to see the new Omnimax film at the Museum of Science and Industry (MSI); "Destiny in Space" and it was fantastic! This movie has some of the most breathtaking shuttle photography I have ever seen. For some of the shots a remote controlled IMAX camera on a satellite temporarily released from the shuttle was used. The exterior shots of the shuttle taken by this camera are just fantastic. I strongly recommend you make the time to see this film!

There is a new display that may be of interest to NIRA members - a 1/10 scale model of the Saturn V. Located in the central rotunda just inside the main entrance (the old main entrance see below) the 36 foot tall model dominates the room. While the model is not as highly detailed as it could have been (the lack of corrugations is the most obvious) it is still a beautiful model.

If you have not been to the museum recently you will be amazed at some of the changes that have occurred. The parking lot and main entrance on 57th have been closed off, the only entrance is through the Henry Crown wing. The grounds are still entered on 57th street, just a little farther east. The entrance is not well marked and you have to watch for it.

### National Sport Launch - Announcement from Mark Johnson

As most everyone already knows, the 1996 NSL will be held in Argonia, Kansas March 22-24. The waiver ceiling will be 10,000 feet on 3/22 and 3/23, with 20,000 on 3/24. We have a telephone on site if you need higher altitudes than our planned ceiling each day.

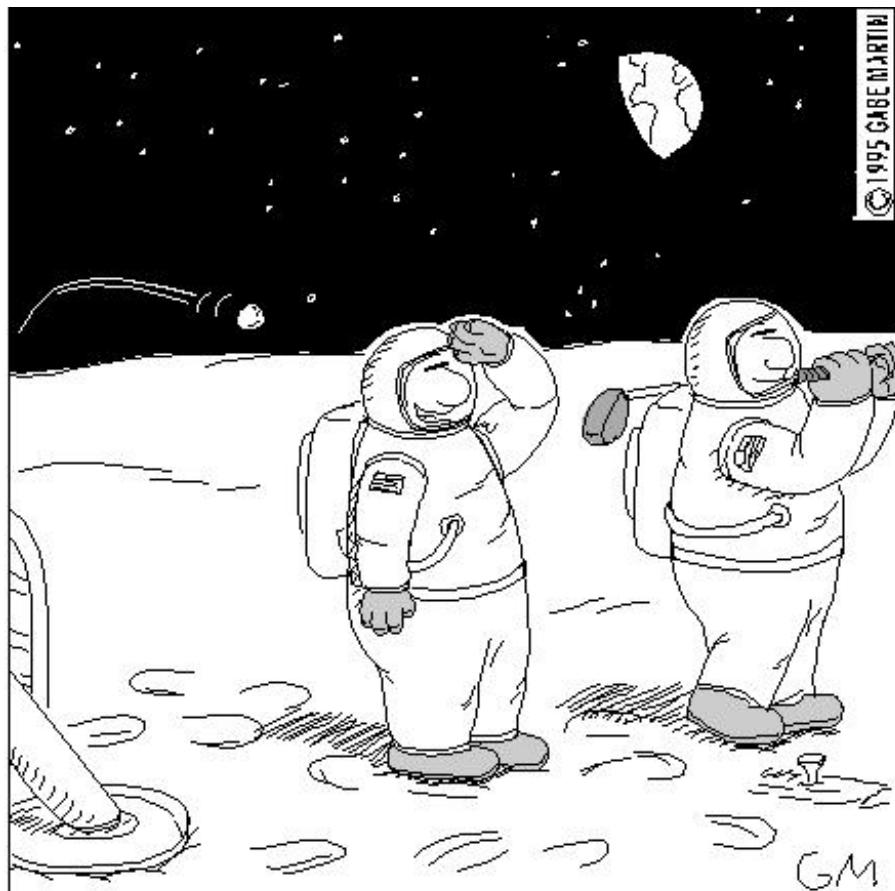
**Safety Advisory Notices:** Use of fiberglass wadding or other non-biodegradable material is prohibited at the Argonia flying site, by request of the site owner. Flameproofed cellulose insulation will be available at the RSO station. Igniters for all motors H and above may not be inserted in the parking area, but must be installed at the pad or safety table. The NAR Safety Codes (per NFPA 1122 and 1127) will be strictly enforced. NAR insurance regulations do not allow consumption of alcoholic beverages anywhere on the field at any time the flying field is open.

Range hours will be 8 - 5 daily. There will be an NAR "town meeting" Saturday night, at a location to be determined, and the first written exams for the new NAR HPR certification program will be administered either before, during, or after this meeting. [Consult the December and February Model Rocketeer newsletters for the question pool. If you haven't received the Feb. issue, you should be getting it shortly.]

**Registration fees:** Before March 10: \$15 individual, \$20 family. After March 10 or on site: \$20 individual, \$25 family.

**Official motel:** Ramada Inn Airport, 5805 W. Kellogg, Wichita. Call (316) 942-7911 for reservations and mention the National Sport Launch to get the special motel rate. The motel is about 1 hour to 1 hour and 15 minutes driving time from the field.

For additional info: Mark Johnson, CIS 76670,1775 or (316) 733-4804 evenings.



**“Oooo! You really whacked that one good, Henderson!”**