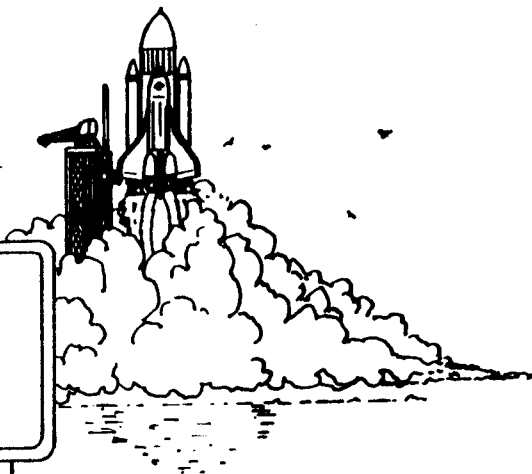


# COUNTDOWN



OFFICIAL NEWSLETTER OF  
THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY

Volume 5, Issue 5

September/October 1992

## IN THIS ISSUE:

### THE ESTES LITTLE JOE II:

- \* A KIT REVIEW

plus:

- \* HOW TO UPGRADE YOUR  
MODEL

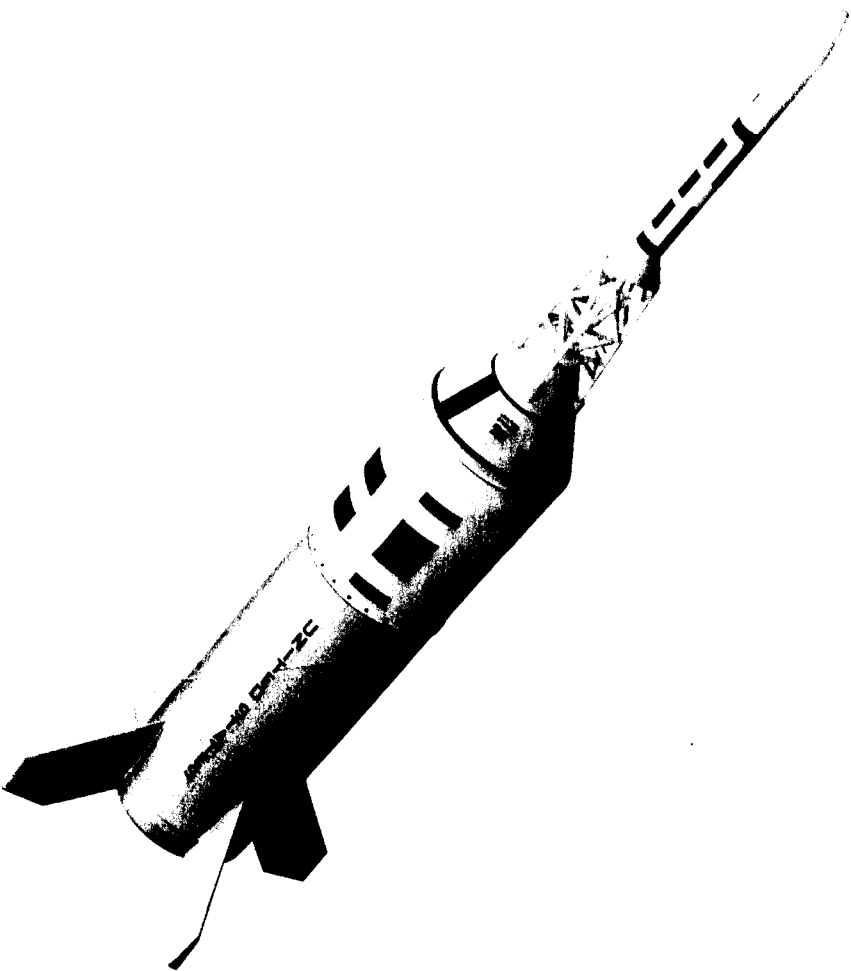
### A BLAST FROM THE PAST:

- \* BIG BERTHA PLANS

### THE FSI INTREPID:

- \* A LOOK AT FLIGHT  
SYSTEMS' BULLET

PLUS THE USUAL STUFF!



We ask the question: What really happened to Dale's Big Brute ??

The Countdown

Volume 5, Issue 5

September/October 1992

The Countdown is the newsletter of SPAAR, the Southern Pennsylvania Area Association Of Rocketry, NAR Section #503, PO Box 127, Reamstown, PA 17567. Non-member subscription rate, \$6 per year, six issues. Please make all submissions to address above. Material may be used with proper credit.

Cover Logo: **Bob Stott** Jacket Design: **Bruce Canino** Editor: **George Beever**

Contributors: **Glenn Feveryear, Ed Miller, Bill Rhoat, Dale Greene, John Yost, Bob Sanford, Mike Hellmund.** [Thanks, guys!]

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**SECTION CALENDAR**

**Monday, October 19:** Section Meeting, Lancaster Co. Library, 7-9PM.

**Sunday, November 8:** SPAARSPAM-IV Picnic & Sport Launch, 1-5PM; the SPAARSEC-VII Section Meet may be flown from 9AM to 1PM; this will be decided at the Oct. 19 meeting.

**Monday, November 16:** Section Meeting, Lancaster Co. Library, 7-9PM.

**Monday, December 21:** Section Meeting, Lancaster Co. Library, 7-9PM.

**Sunday, December 27:** Sport Launch, 1-5PM, Cocalico High School. Bring your mukluks!

**SECTION MEETINGS**

**Date:** August 17, 1992  
**Present:** Glenn, Gary, & Rita Feveryear, J. Yost, A. Babiarz, R. Dwyer, D. Rhoat, B. Rhoat, E. Miller, G. Beever.

**Treasurer:** Ed Miller reported 44 current members; the balance at the end of the last meeting was \$280.21. Incomes: \$12.50 in dues, \$5 for a video tape. Outlays: \$32.22 for postage, \$100 towards the new launch system; current balance: \$165.49.

**Newsletter:** G. Beever reported that 60 copies of the July/August newsletter were made; 55 were sent to members, subscribers and other clubs as exchanges, 5 were freebies.

**Education:** No report.

**High Power:** No report.

**Competition:** Due to a scheduling conflict, it was decided to move SPAARSEC-VII to Sept. 27; Glenn F. announced scheduling changes for some GSSS meets.

**Section Advisor:** G. Beever discussed the Class B & C RMS shipment problems; NARAM-35 will be hosted by NARHAMS; discussed proposed construction at Cocalico High School.

**Old Business:** Ed Miller reported that we are out of membership cards; stopwatches were again discussed.

**New Business:** The 92/93 contest plans were discussed.

**Date:** September 19, 1992  
**Present:** Gary, Glenn & Rita Feveryear, R. Dwyer, D. Rhoat, B. Rhoat, E. Miller, P. Boyle, R. Hackman, G. Beever.

**Treasurer:** Ed Miller reported 42 current members; the balance at the end of the last meeting was \$165.49. Incomes: \$6 for a newsletter subscription, \$5 for a videotape, and \$17 in dues; current balance: \$193.49.

**Newsletter:** G. Beever asked for help with copying; asked for submissions; discussed new exchanges.

**Section Advisor:** G. Beever passed out registration forms for the PARA-Shoot 1 regional; discussed CAPCON-92; passed around the NOVAAR contest calendar.

**Competition:** Glenn Feveryear passed out the tracking results from 9/17/92.

**High Power:** E. Miller stated that there may be a Tripoli HPR launch in Virginia this fall.

**Old Business:** Membership cards were ordered; a stopwatch was purchased as agreed to in July.

**New Business:** G. Beever asked for input into a new Sport Flight Card; Glenn F. discussed alterations to the new launch rack; discussed the proposed 1993 schedule.

The meeting adjourned at 9PM.

EVENTS CALENDAR

**CAPCON-92** will be held over the weekend of October 17-18, 1992, in Greenbelt, MD. Host Section: **NARHAMS**. Seminars include: Clustering Techniques, Designing Model Rockets, Fiberglass Workshop, Finishing Techniques, International Competition, Intro to NAR Competition, Launch Vehicles, Payloads and I.S.Y Flights, Plastic Model Conversion, Range Safety Officer's Perspective, and the Young Rocket Scientist Program. In addition, there will be a well-stocked Range Store open on the 17th from 8AM to 6PM. Door Prizes will be given.

There will be a Sport Launch on Sunday the 18th at the Goddard Space Flight Center in Greenbelt, as well as a tour of GSFC. For more info, contact: **CAPCON-92, C/O NARHAMS, PO Box 1746, Fredrick, MD 20678**, or call **Bob Austin at 301-843-2445**.

\*\*\*\*\*  
**PARASHOOT-1 Regional:** October 10 & 11, 1992, Hatfield, PA. Host Section: **PARA**. Events: C ELD, B HD, 1/4A PD, A SD, D SD, B SRD, 1/2A BG, A RG, OSL. For more info, contact: **PARA, PO Box 206, Richboro, PA 18954-0206**.

\*\*\*\*\*  
**CHOP'EM OPEN AGAIN Open Meet:** October 11, 1992, Dorbrook Park, NJ. Host Section: **GSSS**. Events: 1/4A (M), 1/2A HD(M), A HD(M), D HD(M). For more info, contact: **Tom Whymark, 709 Pahaquarry St., Belvidere, NJ 07823 908-475-8833**

**SPAARSPAM-IV & SPAARSEC-VII:** (Say that 10 times fast!) The time is fast approaching for SPAAR's annual tailgate picnic! **SPAARSPAM-IV** will be held on Sunday, November 8, at Cocalico High School, from 1 to 5PM. Everyone is invited to attend! Please bring a goodie to share with everyone, and remember to bring your own drinks and eating utensils.

As has been the tradition, there will be an "oddball event" flown; Section Pres Glenn has suggested "**B Big Bertha Duration**" for this year. [ED. note: see related story elsewhere in this issue] Ribbons will be awarded, and if there are two or more contestants in combined A and B Divisions, kits will also be awarded as prizes. You can't lose!

In addition, Glenn has suggested that the often-postponed **SPAARSEC-VII** Section Meet be flown that same day, from **9AM to 1PM**. [Makes sense to me] This meet, originally scheduled for August 30, was moved to September 27 due to a scheduling conflict; of course, it rained on the 27th! [So, what else is new?] The events: D Helicopter, 1/4A Parachute, Multi, B Eggloft Altitude, and Sport Scale.

We also need a C Division NAR member to judge the Sport Scale entries. See Glenn.

Come out and fly! It's fun!

## SPORT LAUNCHES

Anyone who lives on the east coast of the United States does not have to be told that the weather during the summer of '92 was forgettable, to say the least. The entire summer seemed to be cool, wet, and cloudy. Oh well, no use complaining; there's nothing you can do about it, right? The adverse weather conditions did affect SPAAR's flying activities to some degree, but we still got in some good flying, just the same.

### July 17, 1992

The weather on July 17 was warm and muggy, just the way it should be for July in Pennsylvania. Twelve flyers took advantage of these conditions to make 60 flights. It was also Manned Launch Vehicle Day, and 11 flights were made of scale or semi-scale launch vehicles. Almost every US manned vehicle, with the exception of the Mercury-Atlas, was represented, as well as a Soviet Vostock semi-scale model. There were two Mercury-Redstones, 3 Gemini-Titans (including 2 twin-engine versions), 3 Saturn 1Bs, and a Saturn V. John Balmer brought out a 1976-vintage Estes Vostock, which despite it's age made a very nice flight.

There were a number of very impressive flights that day, including Roger Dwyer's THOY Sparrowhawk on an F50; Glenn

Feveryear's Arreaux on a single-use F25-9WL, as well as an E16-4RMS. Lee Dwyer flew his Estes Mean Machine, a model which always is impressive in flight. Quite possibly the two most impressive flights were North Coast Patriots, flown by Ed Miller and Roger Dwyer. Roger flew his on a single-use G80-7 Blue Thunder motor, and Ed flew his on a G64-4WL RMS. The White Lightning G really turned in a nice flight with the Patriot.

Dave Bender (otherwise known as "BenderTech Enterprises") branched out into a new field, literally. Not only was Dave busy cleaning RMS casings, but he also ventured into one of the nearby cornfields, knee deep in mud (at least we think it was mud) to retrieve some models. One of these was your editor's NCR Big Brute. I'm glad Dave spotted it, because I really didn't want to lose that 29mm RMS casing!

### August 30, 1992

The August Sport Launch was originally scheduled for the 16th, but the aforementioned weather caught up with us. In other words, it rained. SPAARSEC-VII had been slated for the 30th, but due to some scheduling conflicts, the Sport launch was flown instead. Again, the weather did not cooperate. The 30th was very and cool, so only 12 flights

were made by the real die-hards who showed up.

This day was set aside as Multi-stage Day, and despite the stiff breeze, 4 two-stage flights were made. Ed Miller and Bill Rhoat made the only 2 successful two-stage flights, however, with Ed's Estes Super Nova and Bill's Mini-Cobra.

The evil "Corn Field of No Return" swallowed up Ed's Armacron III 3-engine cluster model, as well as your editor's multi-stage model (serves ya right, dummy...a C6-0 and a C6-7. Yeeesh!)

### September 13, 1992

The best flying weather of the year by far was on Scale Day, September 13. The temperatures were in the high 70's, and no wind; perfect rocket weather! In all, 64 flights were made by 16 flyers, and all but 2 were successful.

One of the first flights off of the pads was John Balmer's Estes Astron Farside, modified to fly with a D12-0 in the first stage. John loaded the second and third stages with C6's. All 3 stages fired, and even though the model did shed a fin or two, the flight was impressive, as well as returned. Gary Feveryear also did the 3-stage thing, with an Estes Comanche powered by a D12/B6/A8 combination. Gary's flight, too, was successful, landing only about 100' from the launch area. Alan Rubright flew one of the new Estes Delta Clipper models, a 2-stage job

with 2 D12's. This flight was a real neck-snapper, and I don't know if he got the model back. Gary Feveryear's FSI Megatron two-stage model didn't do so well, however. The second-stage D18 split right down the middle, causing major damage.

Ed Miller once again flew his NCR Patriot with an Aerotech G64-4WL RMS. This is a real pretty rocket, and the G64 really works well in it.

Seventeen of the 64 total flights were Scale Day flights. These flights included Ed's Nike-Tomahawk, Patriot, HV ARCAS and Nike-Smoke, Bruce Canino's Cox Saturn 1B, Gary's IRIS, your editor's Little Joe II, D-Region Tomahawk, Trailblazer, Titan IIIIE and Phoenix. Just about every model that Aaron "Remember Me?" Newman flew was a scratchbuilt scale model, his specialty. These included his SNARK, Delta V and F/A-18 Hornet, which is powered by a twin-engine cluster. Glenn Feveryear flew his Saturn 1B two-stage conversion, however the second stage B4-6 failed to ignite. It looks as though the damage is repairable, however.

Patrick Boyle flew his Aerotech Cheetah model twice, after some help from Ed Miller. (Thanks Ed) The Tabutt kids were there with Uncle Alan Rubright, and they looked like they had a good time, too.

A big thanks to Dale Greene and Dick Rhoat, who served as RSO all day. Thanks guys!

FLIGHT LOG

JULY 17, 1992

<u>FL#</u>	<u>NAME</u>	<u>MODEL</u>	<u>MANUF.</u>	<u>MOTOR(S)</u>	<u>RESULTS</u>
1	L. Dwyer	Mean Machine	E	E D12-5	Good Flight
2	L. Dwyer	GEO SAT LV	E	E B6-6	No chute
3	L. Dwyer	Meteor	E	E B6-2	Good Flight
4	L. Dwyer	Mini-Patriot	E	E A3-4	Good Flight
5	L. Dwyer	Pink Thing	SB	E A10-3	No Glide
6	L. Dwyer	Black Hawk	E	E C6-7	Separation
7	L. Dwyer	Thunderhawk	E	E B6-4	Good Flight
8	L. Dwyer	Menace	E	E B8-5	Good Flight
9	L. Dwyer	Delta Clipper	E	E D12-5	No chute
10	L. Dwyer	Yankee Clipper	E	E B8-5	Good Flight
11	W. Rhoat	Phoenix	E	E D12-3	Good Flight
12	W. Rhoat	Wildfire	MRC	E B6-4	Good Flight
13	W. Rhoat	Little Joe II	E	E A3-4	Good Flight
14	F. Hoke	Columbia	E	MRC C6-5	GF MLV Day
15	F. Hoke	Crusader S/W	E	MRC C6-3	<b>Good Flight</b>
16	F. Hoke	SR-71	E	MRC C6-5	Good Flight
17	D. Bender	Sky Demon	SB	E C6-0/B8-5	Good Flight
18	Glenn F.	Little Joe II	E	E A8-3	Good Flight
19	Glenn F.	Little Joe II	E	E B4-4	Good Flight
20	Glenn F.	B ELA	SB	E B6-2	Good Flight
21	Glenn F.	B ELA	SB	E B6-4	Good Flight
22	Glenn F.	B ELA Aero-Owl	SB	E B6-2	Good Flight
23	Glenn F.	Arreaux	AT	AT E16-4RMS	Good Flight
24	Glenn F.	Arreaux	AT	AT F25-9WL	Good Flight
25	Glenn F.	D Helicopter	SB	E D12-3	Good Flight
26	E. Miller	Saturn 1B	E	AT D13-4RMS	GF MLV Day
27	E. Miller	Patriot	NCR	AT G64-4RMS	<b>Good Flight</b>
28	E. Miller	Merc-Redstone	E	E C5-3	GF MLV Day
29	E. Miller	Echo	FSI	FSI D20-0/D20-7	Good Flight
30	E. Miller	Magnum	E	E D12-0/B8-5	Good Flight
31	E. Miller	Azinon	SB	AT F40-4RMS	Good Flight
32	E. Miller	Cloudbuster	SB	FSI E60-6	Good Flight
33	E. Miller	Rainmaker	E	E B4-4	Good Flight
34	Gary F.	IRIS	E	E C6-5	Good Flight
35	Gary F.	Nike-Apache	E	E B6-4	Good Flight
36	Gary F.	Megatron	FSI	FSI D18-0/D18-6	CHU
37	Gary F.	GEO SAT LV	E	E C5-3	Good Flight
38	A. Rubright	Magnum	E	E D12-0/A8-5	Good Flight
39	A. Rubright	?	E	E C6-5	Good Flight
40	R. Dwyer	Ace B/G	SB	E 1/2A3-2	33.2s
41	R. Dwyer	Sparrowhawk	THOY	AT F50-4	Good Flight
42	R. Dwyer	Patriot	NCR	AT G80-7T	Good Flight
43	R. Dwyer	Streak	E	E A8-5	Rocketlok!
44	R. Dwyer	Hotshot B/G	SB	E A3-4	Prang
45	R. Dwyer	Ace B/G	SB	E 1/2A3-2	Good Flight

46	R. Dwyer	Streak	E	A B6-4	Gone
47	D. Greene	Gemini-Titan	E	E B6-6	CHU MLV Day
48	D. Greene	Saturn 1B	Cox	E D12-5	UNS MLV Day
49	J. Balmer	Gemini-Titan	E	E B6-4 (2)	GF MLV Day
50	J. Balmer	Vostock	E	E B6-4	GF MLV Day
51	J. Balmer	The Point	Centuri	E B4-2	Good Flight
52	J. Balmer	The Point	Centuri	E B4-2	Good Flight
53	G. Beever	Merc-Redstone	E	E C5-3	GF MLV Day
54	G. Beever	Gemini-Titan	SB	E C6-3 (2)	GF MLV Day
55	G. Beever	Saturn 1B	E	E D12-5	GF MLV Day
56	G. Beever	Saturn V	E	AT E15-4WL	GF MLV Day
57	G. Beever	Magnum Alpha	SB	AT E18-7RMS	Good Flight
58	G. Beever	Cobra	SB	E B6-4 (3)	Good Flight
59	G. Beever	Pathfinder	E	AT D13-7RMS	Good Flight
60	G. Beever	Big Brute	NCR	AT F40-4RMS	Good Flight

\*\*\*\*\*

Number of kits flown: 43      Scratchbuilt: 12

Estes - 33      Cox - 1      MRC - 1  
 North Coast Rocketry - 3      Centuri - 1  
 Aerotech - 1      Flight Systems, Inc - 2      THOY - 1

Motor Usage

Black Powder - 58      Composite - 11 (RMS 7, Single Use, 4)  
 Estes - 51      FSI - 5  
 Aerotech 11      MRC - 3

\*\*\*\*\*

AUGUST 30, 1992

1	J. Balmer	Point	Centuri	E B4-2	Good Flight
2	W. Rhoat	Mini-Cobra	E	E A10-3/1/2A3-4	Good Flight
3	W. Rhoat	Nova Payloader	E	E A8-3	Good Flight
4	E. Miller	Armacron III	SB	E B8-5 (3)	GF/Lost
5	E. Miller	Super Nova	E	E B6-0/A8-5	GF/MSD
6	E. Miller	UFO 29	SB	AT G80-4	Good Flight
7	A. Rubright	Rainmaker	E	E B4-4	Good Flight
8	J. Yost	Mustang	AT	E D12-3	Good Flight
9	J. Yost	Mustang	AT	AT E30-7	Good Flight
10	G. Beever	Magnum	E	E C6-5	Good Flight
11	G. Beever	Navaho AGM	Q	E B6-0/Q A6-4	Prang/ MSD
12	G. Beever	2-Stager	QCR	E C6-0/C6-7	GF/MSD/Lost

Number of kits flown: 9      Scratchbuilt: 2

Estes: 5      Quest: 1      QCR: 1



Aerotech: 1      Centuri: 1

## Motor Usage

Black Powder: 16      Composite: 2

Estes: 15      Quest:1      Aerotech: 2

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## SEPTEMBER 13, 1992

1	P. Boyle	Cheetah	AT	AT E15-7WL	Good Flight
2	P. Boyle	Cheetah	AT	AT E15-7WL	Good Flight
3	P. Boyle	Lancer	E	E A8-3	Good Flight
4	K. Tabbutt	Tomahawk	?	E A3-4	Good Flight
5	K. Tabutt	Yellow Jacket	E	E B4-4	Good Flight
6	B. Tabutt	Dark Star	E	E C6-5	Good Flight
7	B. Tabutt	Big Bertha	E	E B4-4	Good Flight
8	B. Tabutt	Big Bertha	E	E C6-5	Good Flight
9	B. Tabutt	Dark Star	E	E C6-5	Good Flight
10	D. Tabutt	Corsair	E	E B4-4	Good Flight
11	W. Rhoat	Stealth	E	E B6-4	Good Flight
12	W. Rhoat	Sentinel	E	E C6-5	Good Flight
13	D. Greene	Big Brute	NCR	AT F40-4RMS	CATO
14	A. Newman	SNARK	SB	E A8-3	GF/Scale Day
15	A. Newman	Delta V	SB	E B4-4	GF/Scale Day
16	A. Newman	Titan IIIE	E	E D12-3	GF/Scale Day
17	A. Newman	F/A-18	SB	E B6-4 (2)	GF/Scale Day
18	A. Newman	AGM-78	MRC	E C6-5	GF/Scale Day
19	A. Newman	SLAM	SB	E A10-0 (3)/C6-5	Good Flight
20	Glenn F.	A HD	SB	E A3-4	Good Flight
21	Glenn F.	1/4A PD	SB	A 1/4A3-4	73 seconds
22	Glenn F.	D HD	SB	E D12-5	43 seconds
23	Glenn F.	Little Joe II	E	E B4-4	GF/Scale Day
24	Glenn F.	Saturn 1B	E	E D12-0/B4-6	PRG/Scale
25	Glenn F.	C ELA	SB	E C6-5	Good Flight
26	G. Beever	Little Joe II	E	E A3-4	GF/Scale Day
27	G. Beever	D-Region TH	SB	E B4-6	GF/Scale Day
28	G. Beever	Titan IIIE	E	E D12-3	GF/Scale Day
29	G. Beever	Trailblazer	MRC	E C6-3	GF/Scale Day
30	G. Beever	Phoenix	E	AT D13-4RMS	GF/Scale Day
31	G. Beever	AeroRoc 3	USR	E D12-7 (3)	Good Flight
32	J. Balmer	Farside	E	E D12-0/C6-0/C6-7	<b>GOOD FLIGHT</b>
33	J. Balmer	Rotaroc	NCR	E B6-4	Oooooopss!
34	J. Balmer	PA Crude	AAA	AT E15-4WL	Good Flight
35	J. Balmer	Renegade/Glider	E	E D12-3	Good Flight
36	S. Selig	Exp. Aquarius	E	E D12-5	Good Flight
37	S. Selig	Voyager II Mod	E	E A8-3	Good Flight

38	B. Canino Streamliner	Ap	AT C10-4	Good Flight
39	B. Canino Saturn 1B	Cox	AT D21-4	GF/Scale Day
40	B. Canino Saturn 1B	Cox	AT E25-7	CHU/Scale
41	Gary F. Bullpup 12D	E	E B6-4	GF/Scale Day
42	Gary F. IRIS	E	E C6-3	GF/Scale Day
43	Gary F. Megatron	FSI	FSI D18-0/D18-6	2nd st. CATO
44	Gary F. Big Brute	NCR	AT G40-10WL	<b>GOOD FLIGHT</b>
45	Gary F. Comanche	E	E D12-0/B6-0/A8-5	<b>GOOD FLIGHT</b>
46	A. Rubright Alpha	E	E B4-4	Good Flight
47	A. Rubright Rascal	E	E B4-4	Good Flight
48	A. Rubright Delta Clipper	E	E D12-0/D12-7	In orbit
49	A. Rubright Mega Sizz	E	E D12-5	Good Flight
50	A. Rubright Mega Sizz	E	E D12-5	Good Flight
51	R. Hackman Startrooper 1	SB	A 1/4A3-4	unknown
52	R. Hackman Startrooper	SB	A 1/4A3-4	Good Flight
53	R. Hackman XR-21A	SB	A 1/4A3-4	Unstable
54	R. Hackman Aerobee 300	E	E B4-2	GF/Scale Day
55	R. Hackman USS Enterprise	E	E B4-2	Beam me up!
56	R. Hackman Astro 1	C	E A8-3	Good Flight
57	R. Hackman Ramjet Int.	SB	E D12-5	Good Flight
58	R. Hackman XR-61	SB	FSI E5-4	Good Flight
59	R. Hackman Excalibur	C	E B4-2	Good Flight
60	E. Miller Patriot	NCR	AT G64-4RMS	<b>GOOD FLIGHT</b>
61	E. Miller ARCAS HV	AT	AT F40-4RMS	Good Flight
62	E. Miller Patriot	E	AT D13-7RMS	Good Flight
63	E. Miller Nike-Smoke	C	AT C12-4RMS	Good Flight
64	E. Miller Nike-Tomahawk	FSI	AT E18-4RMS	Good Flight

Number of kits flown: 50      Scratchbuilt: 14

Estes: 29      FSI: 2      MRC: 2      Cox: 1  
 Apogee: 1      Aerotech: 1      AAA: 1  
 North Coast: 4      US Rockets: 1      Centuri: 3

#### Motor Usage

Total Number of Motors Fired: 77  
 Black Powder: 63      Composite: 14  
 Estes: 57      FSI: 3      Apogee: 3  
 Apogee/Aerotech: 1      Aerotech Single Use: 6  
 Aerotech RMS: 7

Motor Failures: 2

### Estes Little Joe II/Centuri Upgrade

When Estes introduced the Little Joe II a couple of years ago, my memory was taken back to when I had one of the Centuri versions. How neat I thought it was to have such a nice, small scale model, that was so simple to build. I proceeded to purchase one of Estes models and quickly found out that it was designed to fly on mini motors. Not that I have anything against mini motors, they do have a very useful place, but I had remembered the Centuri Little Joe flying on standard motors. I dug through my box of kit instructions that I have saved over the years and found a copy of the Centuri instructions. Sure enough Centuri used standard motors and it didn't appear that too much modification would have to be done to upgrade this kit. You may ask why would you want to modify a perfectly good kit to fly with engines that cost more? Well, I always have been partial to Centuri kits and if Estes was going to produce something so close the original, why not bring back the memories of Centuri. Secondly, Estes seems to have a way of introducing mini motor kits then stopping production of the motors used to fly them. I hate being at the mercy of anyone. The likelihood of standard motors being removed from production is remote and with standard motors there are more choices. If you would like to improve your Little Joe II, below is a list of parts and the instructions to do so.

#### Parts list:

- 1 - 2.75" long BT-20 engine tube
- 1 - Engine hook for 18mm motors
- 1 - EB-20 engine block or equivalent
- 24" of 3/16" wide flat elastic or equivalent
- Clay to be used for nose weight.

The following instructions are to be used in place of the Estes motor mount instructions:

1. Place the engine block against the engine tube and draw a line on the tube at the top of the engine block.
2. Glue the engine block into the engine tube with the ends flush. Cut a 1/8" slit in the engine tube on the pencil mark.
3. Insert one end of the engine hook into the slit.
4. Apply two raps of masking tape around the engine tube and hook at the location where the mylar retainer ring is shown in the illustration.
5. Take the two bulkhead disks supplied with the kit and enlarge the holes to allow the engine tube to slip through. If you wish to use a shock cord attachment method like that shown in the illustration, cut two slits in one ring that will allow the shock cord to pass through.
6. Glue the forward bulkhead in place flush with the top end of the engine tube. When glue has set, attach the shock cord, tying in a firm triple knot. Use the full 24" length of 3/16" flat elastic. This will keep to top of the body tube from being damaged by a hit from the Apollo capsule during ejection. Don't use the Estes shock cord it is too short.
7. Glue the rear bulkhead to the engine tube at a distance of 1/2" from the end of the tube.
8. After the glue joints are thoroughly dry, place the engine mount assembly against the end of the body tube. If the engine mount will not slip into the tube, lightly sand the edges of the bulkheads until a slip fit is obtained. Do not force the mount into the body tube. Slip the mount into the body tube and position so the rear bulkhead is 1-1/2" from the bottom of the tube. Run

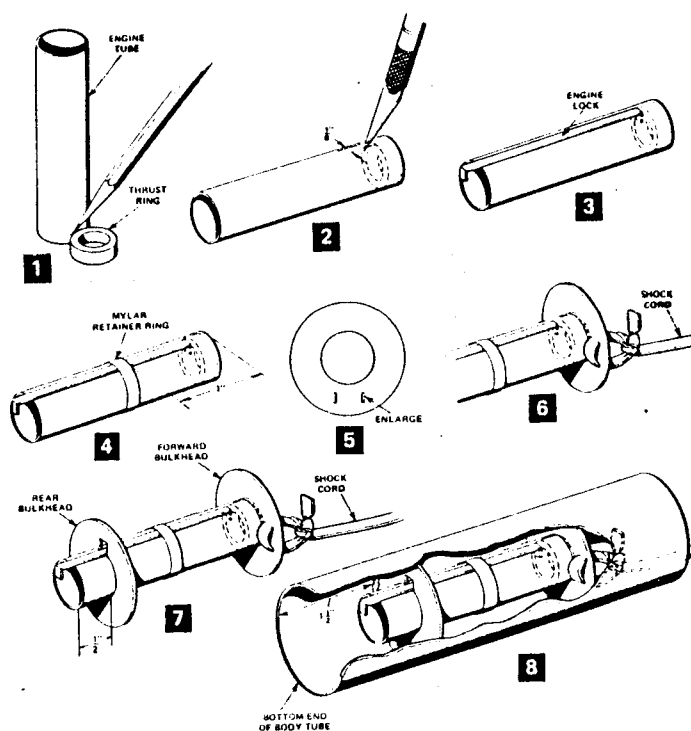
a fillet of glue around the forward and rear bulkhead-body tube joints. Set aside to dry.

Prior to cementing the capsule bulkhead onto the bottom of the Apollo capsule, clay must be added to correct the CG which is changed by the installation of the larger 18mm motor mount and engine.

1. Roll a piece of clay about the size and shape of the launch escape tower. Making this piece of clay slightly larger will not hurt and is better than it being too small. This duplicates a procedure that was required with the Centuri version.
2. Pack this piece of clay into the top of the Apollo capsule. Apply a bead of epoxy around the joint between the capsule and the clay to secure the clay in place.
3. Continue with the Estes instructions by Cementing the capsule bulkhead in place.

When you are ready to fly the Little Joe II, prep it in the same manner as the instruction suggest. The parachute compartment has been reduced in size because of the new mount, but the wadding and parachute will fit in with room to spare if you take your time.

The Little Joe II can be flown on a 1/2A6-2, A8-3 or B4-4. Do not try anything bigger as the model may become unstable. Past experience shows that with an A8-3 you will get the same flight characteristics as with the Estes A3 or A10 engines. On the B4-4 you will get a beautiful flight with a much higher apogee and parachute deployment right at the top.



Kit Review:

## ESTES LITTLE JOE II

by William Rhoat

Last year, I ordered the Estes Little Joe II kit as a warm-up to the Saturn V. After assembling the engine mount and cutting the body wrap, I discovered that the body wrap was too short. So, I put the kit in a box until recently. Not long ago, I found it and decided to put it together.

Assembly was relatively smooth, and the body wrap seam is covered by a "tunnel". This model uses the same Apollo capsule as the Saturn kits, but the raised details are removed. The most tedious step is the pasting the "tunnels" and "bands" onto the body wrap.

The roll pattern is a printed sticker that is wrapped onto the body tube. The model flies on either an A3-4T or an A10-3T. Stability is probably the reason mini-engines are used, as the engine mount is recessed  $\frac{3}{4}$  of an inch.

The model was flown at a 4-H launch on July 13. It turned in a fairly impressive flight using an A3-4T, however it landed in a tree. Fortunately, the 4-H'ers were able to convince the tree to relinquish the model. The roll pattern was slightly browned, and the escape rocket was loose on two corners at the tower support.

In all, this model is recommended as a very nice

scale model, and as practice for building one of the Estes Saturn models.

**LIKES:** Flight characteristics, printed roll pattern.

**DISLIKES:** Body wrap, really thin paper bands.

\*\*\*\*\*  
In the words of Bullwinkle J. Moose, "Hello again, poetry lovers...."

### The Rocket

I went into the store today to buy/ Something that I could build and I could fly/ After looking through their nice selection, I found the rocket that was perfection/ Now I had something that I could make fly.

It began as plastic, paper and wood/ I really hoped that I could make it good/ With careful work and fin alignment tool, it looked good enough to make NASA drool/ If it did not fly, I would not feel good.

I tried it today, and I don't know why/ My buddies said to really make it fly/ with an F100, like it should/ It flew real nice, and I sure felt good!

-William Rhoat

Kit Review:

### **The FSI Intrepid**

by

Ed Miller

The Intrepid is one of Flight Systems' largest and most powerful kits. It is 49.5" tall and 1.7" in diameter, with a 2.25" diameter payload section. It can be flown with an E60 or an F100. If you are looking for some real excitement, buy one of the cluster packs for this kit. Each cluster pack, made especially for the Intrepid, has one F100 and two D20 motors, and three electric matches. This bird becomes a bullet when flown with the cluster pack. If you are not careful, you will injure your neck turning your head fast enough to follow the flight.

The kit goes together easily. Use epoxy instead of the white glue specified in the directions. The parts in my kit fit extremely well. The retail price of the kit is \$35.90, and the cluster pack of engines is \$12.95. For a catalog, send \$2.50 to:

**Flight Systems, Inc.  
9300 East 68th St.,  
Raytown, MO 64133**

\*\*\*\*\*  
Requiem for a rocket.....

### **BIG BRUTE BLASTS BALLISTIC, BECOMES BOMB**

It is with great sorrow that we must report here the passing of one of SPAAR's great favorites, Dale Greene's NCR Big Brute. The Brute become a bucket of spare parts on Sept. 20 at North Lebanon High School.

The Brute, known at times as the Big Bruté, Bigger Brute, and Et Tu, Bruté, had flown countless times on various motors, including F25's, F50's, F44's, G40's, G80's, G42's, F40's, or whatever else Dale could make fit with wads of masking tape. The big guy had survived at least two CATO's, and most recently a separation. After each mishap, Dale was always heard to bravely say, "....ah, no problem. A little masking tape, and he'll be as good as new. He'll fly again."

Alas, the ever-popular, always taped-up Brute will fly no more. The details of how the Brute met it's end cannot be printed here, but Dale may be able to relate the tragic events of the Brute's last dive. Contributions to the "Let's Help Dale Replace The Big Brute" Fund can be made at the next Sport Launch.

**NEWS AROUND THE HOBBY**

**Estes Industries:** Mike Hellmund tells us that Estes demo'd a 1/5-scale model of the **Jayhawk** target drone missile at NARAM-34 this past August. He states that the model is based on the old Centuri kit of the same name, with various improvements. Look for kit introduction soon.....The next kit to be released in the Estes "Classics" series will be the **Maxi Honest John** kit of the 1970's. Mike related only 3500 kits will be produced, retailing for \$40 each....another kit on the way is the "**ARV Condor**". ARV stands for "Atmospheric Research Vehicle", and features two parasite gliders....the Estes Skill Level 1 kits are getting a facelift. The **Big Bertha**, for example, will have an all-black color scheme with futuristic looking decals....Unfortunately, the **1/45-scale Saturn 1B** project has been "put on the back burner". The problem? Cost. At this point, a price of \$150 per kit makes it too expensive to produce as a kit....Estes is waiting on production of the ground support equipment for the **Pro Series** kits, but it expected to be in hobby shops in time for Christmas.

\*\*\*\*\*  
**Aerotech:** Bob Sanford announced that Aerotech will be marketing a version of the **Phoenix** R/C RG that makes use of single-use composite motors. This step is being taken due to RMS shipping problem. On that subject, Sanford stated that Aerotech has voluntarily ceased shipment of **Class C reload kits**, pending resolution of the NTSB issue. Aerotech expects the situation to be resolved in the near future....the long-awaited **Astrobee-D** kit will be available by December.... there is apparently some re-organizing going on in Las Vegas. In the future, the Class B motors and reloadable systems now marketed as "ISP" products (Industrial Solid Propulsion is Aerotech's parent company) will be marketed under the name **Aerotech High Power**.... Bob and the rest of **SPECTRE** are to be congratulated on what was reported to have been a great **NARAM**.

\*\*\*\*\*  
**Apogee:** is reported to be working on a series of **glider kits** for NAR competition. No word yet on a release date.  
 \*\*\*\*\*

**Quest:** has apparently introduced a number of new kits in their retail line. **Hobby World R/C** in Shillington says that Quest's distributor, Great Planes, sent them notification of this in August.

\*\*\*\*\*  
**North Coast Rocketry:** has consolidated all operations at: 4848 South Highland Drive, Suite 424, Salt Lake City, UT 84417, or 1-800-877-6032.

Words Of Wisdom From Our Prez.....

**SECTION NEWS NOTES**

by

Glenn Feveryear

**BYLAWS CHANGE NOTICE**

A change in the Section bylaws will be voted on at the next meeting on October 19, 1992. The change will be to Article 4, and will allow the Section to conduct meetings at times other than the third Monday of the month. This has been necessitated by the loss of our regular meeting place at the end of the year.

Article 4 currently reads:

ARTICLE 4, MEETINGS: Meetings of the Section shall be held at least 12 times per year, on the third Monday of every month, at times and places designated by the Section Board of Directors. Club launch activities, workshops, etc, shall not be considered a meeting. Members are encouraged to attend all monthly meetings.

Article 4 as revised will read:

ARTICLE 4, MEETINGS: Meetings of the Section shall be held at times and places designated by the Section Board of Directors. Club launch activities, workshops etc, shall not be considered a meeting however, meetings may be held before or after these activities. Members are encouraged to attend all meetings.

This revision may be amended during the meeting in order to arrive at a mutually agreed upon version. So, if you wish to have input on this revision and the subsequent vote, please attend the October meeting and let your voice be heard.

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**SPAARSPAM ALERT !!**

SPAARSPAM is quickly approaching, November 8, 1992. As in past years, we will have an informal contest that everyone is invited to participate in regardless of age or membership status. This years' event will be "**B**" **ENGINE BIG BERTHA PARACHUTE DURATION**. The rules are simple. Use a "B" engine to launch a Big Bertha model or a model constructed of a BT-60 body tube and recover it with a parachute. The parachute need not be the one supplied with the kit. The entry with the longest time is the winner. There will be no entry fee and ribbons will be awarded for 1st thru 4th place. [Editor's Note: As mentioned, kits will be awarded if there are more than 2 A & B Divisioners flying. We will have to decide at the Oct. meeting if there will be one or two flights per person. Also, check out the timely plan on the next page.....pretty good, eh?]



# BIG BERTHA

ESTES INDUSTRIES ROCKET PLAN NO. 13

Assemble the engine mount and glue it in place in the rocket body. Be sure the engine block end of the mount is inserted into the tube first, with the clear end of the mount projecting out of the end of the rocket as shown.

Cut out the fins. Sand the sides of the fins until smooth and sand all edges except the edge that is attached to the body until smooth and round. Mark the tube and glue the fins in place. Glue the launching lug to the body tube.

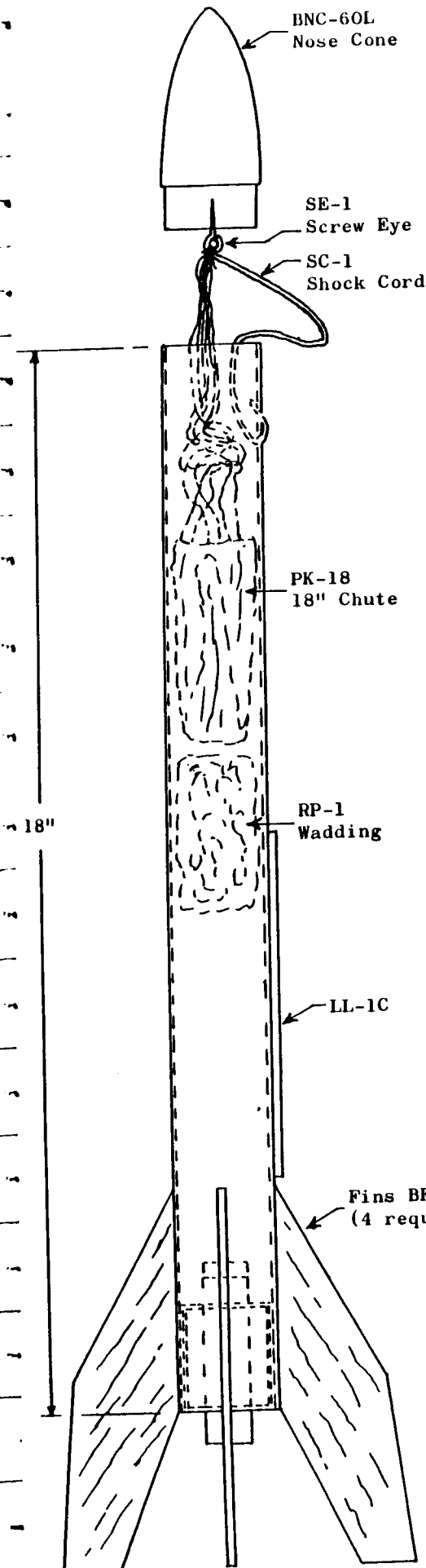
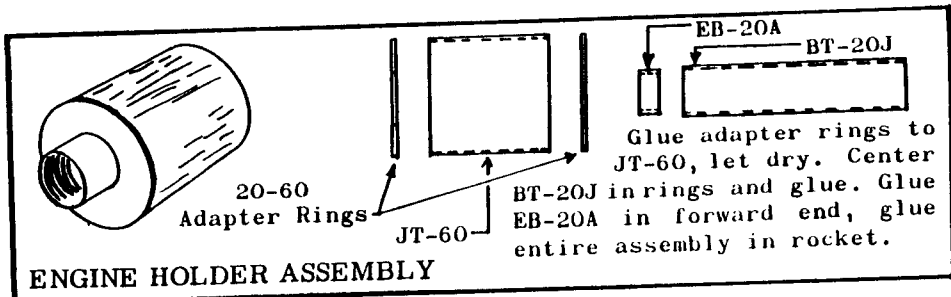
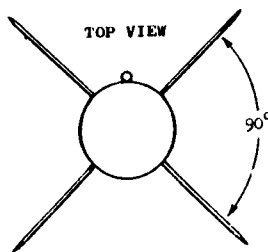
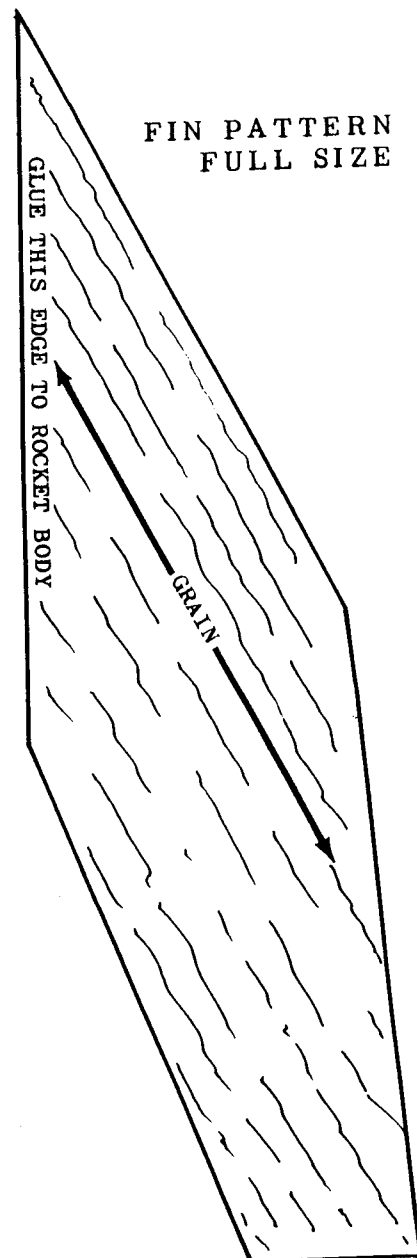
Cut two slits in the forward end of the body, 1" and 1-1/4" from the front. Pass one end of the shock cord through the slits and glue in place.

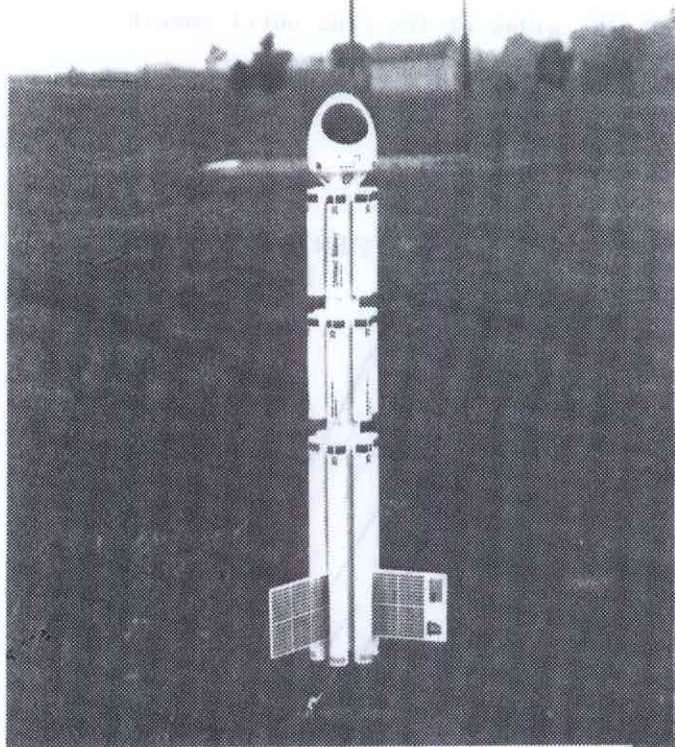
Attach the screw eye to the nose cone. Assemble the parachute and tie it and the free end of the shock cord to the screw eye.

When flying Big Bertha pack a large piece of wadding into the body, then pack the parachute and shroud lines in loosely over the wadding. Secure the engine in place by wrapping tape tightly all the way around the outside of the engine holder tube, overlapping from the tube to the exposed part of the engine. Use only B4-2 and B6-4 engines.

## PARTS LIST

- 1 Nose Cone ..... #BNC-60L
- 1 Body Tube ..... #BT-60
- 1 Screw Eye ..... #SE-1
- 1 Shock Cord ..... #SC-1
- 1 Parachute ..... #PK-18
- 1 Launching Lug ..... #LL-1C
- 2 Sheets Balsa Stock ... #BFS-30
- 1 Engine Mount Kit .... #EH-2060
- Flameproof Wadding ..... #RP-1

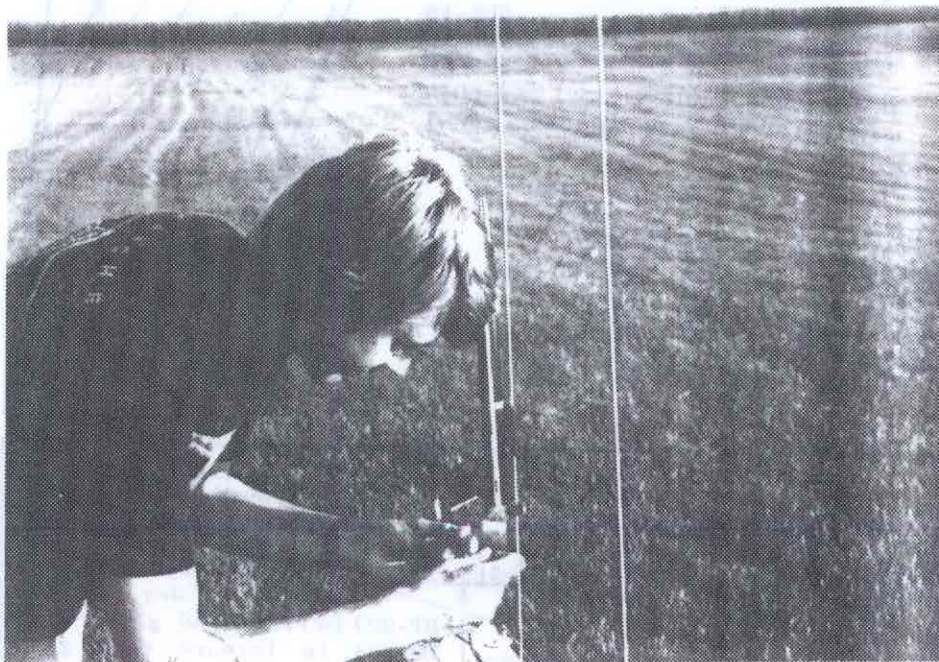
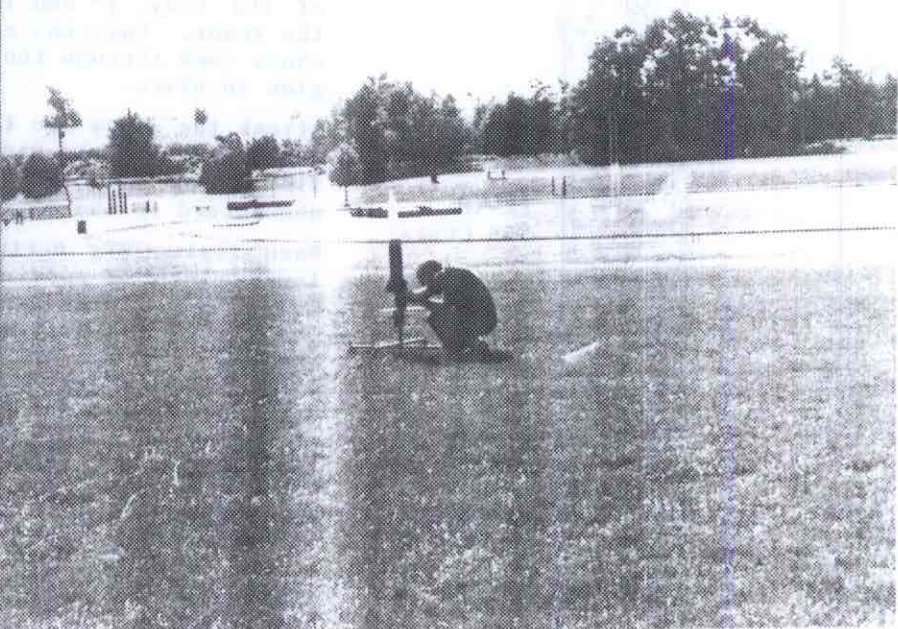




Left: Ed Miller's Explorer Aquarius.

Below left: Aaron Newman readies his SNARK.

Below: In what is the last known photo of Dale's Big Brute, he preps it for it's last flight.....



Below: Dale's Big Brute.

**SOUTHERN PENNSYLVANIA AREA  
ASSOCIATION OF ROCKETRY**  
NATIONAL ASSOCIATION OF ROCKETRY, SECTION 503  
PO BOX 127, REAMSTOWN, PENNSYLVANIA 17567

\_\_\_\_\_ YES, I WANT TO JOIN SPAAR! HERE ARE MY DUES

\_\_\_\_\_ PLEASE CONTACT ME WITH MORE INFORMATION

NAME \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE: AREA CODE ( ) \_\_\_\_\_ AGE \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_

\_\_\_\_\_ I HAVE NEVER FLOWN ROCKETS. \_\_\_\_\_ I HAVE BEEN FLYING  
MODEL ROCKETS FOR \_\_\_\_\_ MONTHS/YEARS.

\_\_\_\_\_ I AM A MEMBER OF THE NAR. MY NAR NUMBER IS \_\_\_\_\_  
\_\_\_\_\_ I AM NOT YET AN NAR MEMBER.

- DUES: \_\_\_\_\_ 14 YEARS OF AGE OR YOUNGER, \$5.00  
 \_\_\_\_\_ 15, 16 OR 17 YEARS OF AGE, \$7.00  
 \_\_\_\_\_ 18 YEARS OF AGE OR OLDER, \$10.00  
 \_\_\_\_\_ FAMILY PLAN: OLDER MEMBER JOINS AT THE FULL RATE  
 THEN ALL YOUNGER MEMBERS JOIN AT HALF PRICE.  
 (FAMILY PLAN PROVIDES ONLY ONE COPY OF THE  
 NEWSLETTER PER FAMILY.)

DUES ARE PAYABLE FOR 12 MONTHS. RETURN THIS FORM TO:  
 SPAAR, PO BOX 127, REAMSTOWN, PENNSYLVANIA 17567

# Membership Application

NATIONAL ASSOCIATION OF ROCKETRY  
 1311 EDGEWOOD DRIVE, DEPT M  
 ALTOONA, WI 54720

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

DATE OF BIRTH: Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_

I pledge to conduct all my model rocket activities in compliance with the NAR/HIA  
 Safety Code. I will never fly model rockets at the same time or in the same vicinity  
 as other types of rockets.

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

- MEMBERSHIP CATEGORY (Check one only):  
 JUNIOR MEMBERSHIP (Under 16 as of January 1)..... \$15.00  
 LEADER MEMBERSHIP (Under 21 as of January 1)..... \$15.00  
 SENIOR MEMBERSHIP (21 or over as of January 1)..... \$25.00

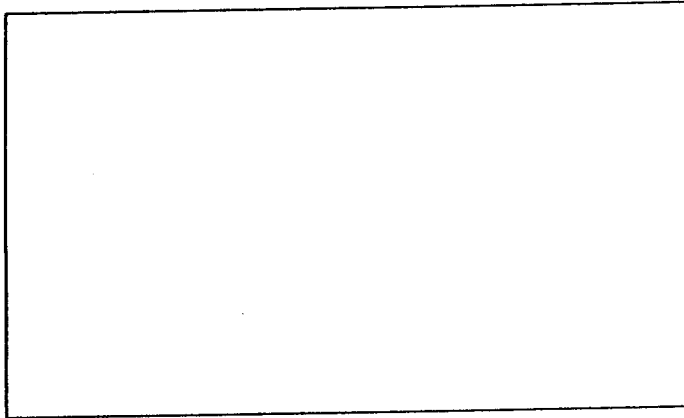
- FOR OVERSEAS MEMBERS ONLY  
 SURFACE POSTAGE (Required)..... \$ 6.75  
 OPTIONAL AIRMAIL POSTAGE (Replaces surface)..... \$33.00

- OPTIONAL MEMBERSHIP SERVICES  
 FAI STAMP for US Team eligibility and world records \$10.00  
 FIRST-CLASS POSTAGE (U.S. & Canada only)..... \$10.50

- DISCOUNTS (Select only one)  
 RENEWAL (NAR # \_\_\_\_\_ Section # \_\_\_\_\_); Deduct \$1.00 \$ \_\_\_\_\_  
 FAMILY PLAN (Details below); Deduct \$8.00 \$ \_\_\_\_\_  
 Amount Enclosed..... \$ \_\_\_\_\_

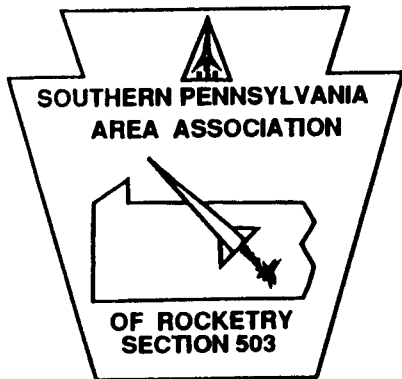
Family Plan: Full rate for one family member, others at \$8 discount — one American Spacemodelling per family.  
 NAR Membership dues include \$8.88 for a subscription to American Spacemodelling.

Canadian Modelers: Write to the Canadian Association of Rocketry, P.O. Box 1031, Postal Station B, Mississauga, Ontario, Canada L4Y 3W3  
 Rights, privileges, and responsibilities of membership begin upon acceptance of this application by the NAR. All memberships are for twelve months  
 from the date of acceptance. Rates and services subject to change without notice. Please allow 6-8 weeks for delivery of American Spacemodelling



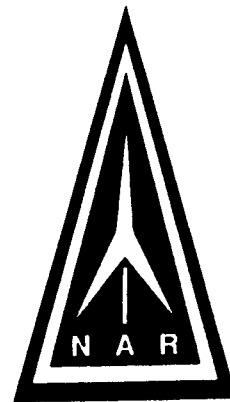
**TO:**

SPAR  
P.O. Box 127  
Reamstown, PA. 17567



**SOUTHERN PENNSYLVANIA  
AREA ASSOCIATION  
OF ROCKETRY**

PROMOTING SAFE MODEL ROCKETRY  
IN SOUTHERN PENNSYLVANIA  
AND NORTHERN MARYLAND



*The Southern Pennsylvania Area  
Association of Rocketry*

# COUNTDOWN

**Volume 5 No. 5**

SEPT/OCT 1992