COUNTDOWN

OFFICIAL NEWSLETTER OF
THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY

VOLUME 3, ISSUE 6 NOV./DEC. 1990

A Special Holiday Greeting

The COUNTDOWN

Volume 3, Issue 6

November/December 1990

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, $5.00 per year, six issues. Material may be used with proper credit. Cover Design: Bob Stott. Jacket: Bruce Canino. Editor: George Beever
THANKS THIS TIME TO: Ed Miller, Glenn Feveryear, Bob Stott, Dale Greene & Bruce Canino

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SCHEDULE

December 17, 1990, 7PM-9PM:
Section Meeting, Lancaster County Library.

January 12, 1991, 7PM-10PM:
SPAAR Family Dinner, Quality Inn, Centerville Rd., Lancaster.

January 19, 1991, 9AM-Noon:
Winter Workshop, Delta Fire Co.
Topic: Finishing Techniques.

January 21, 1991, 7PM-9PM:
Section Meeting, Lancaster County Library.

February 3, 1991, 1PM-3PM:
Ground Hog Day Plus One Sport Launch, Cocalico High School.

February 9, 1991, 9AM-Noon:
Winter Workshop, Delta Fire Co.
Topic: Model Rocket History.

February 17, 1991, 7PM-9PM:
Section Meeting, Lancaster County Library.

March 9, 1991, 9AM-Noon:
Winter Workshop, Delta Fire Co.
Topic: Scale Modeling Techniques

ON THE COVER:

Glenn Feveryear (left) and John Yost (right) display the club flag at the October 14 Sport Launch. The flag was made by Rita Feveryear. (Thanks, Rita!)

M E E T I N G S

SECTION MEETING

October 15, 1990

Present: T. Smedley, A. Wingenroth, D. Rhoat, E. Miller, G. Beever, D. Greene, J. Yost, Gary Feveryear, Glenn Feveryear, Rita Feveryear

1.TREASURER: Ed Miller reported that there were 35 paid members; the balance at the end of the last meeting was $299.03. Since then, there were the following incomes: $23.50 in dues; $20 in newsletter subscriptions; $10 in SPAARSEC-3 fees; $1.50 in soda sales; & $13.75 in launch rod sales. Disbursements were: $3.25 in post office box rent, and $20 for material to make the club flag. This leaves a current balance of $344.78.

2.NEWSLETTER: George Beever reported that 49 copies of the Sept/Oct issue of the Countdown were distributed as follows: 26 to members and families, 7 to subscribers, 14 exchanges, and 2 freebies. He then introduced our newest member, Allen Wingenroth.

3.COMPETITION: Glenn Feveryear discussed the reasons for the delay in our obtaining the contest supplies for SPAARSEC-3 from NARTS.

Announced the events for SPAARSEC-4, to be held May 26, 1991: B Eggloft Duration, B Helicopter Duration, ½A Rocket Glider, and Sport Scale. The last listed event may become Giant Sport Scale.

The events for the planned Open Meet (April '91) were announced: ½A RG, B ELD, B SuperRoc Duration, ½A Streamer Multi, C Helicopter, & A Boost/Glide.

4.EDUCATION: George Beever announced the proposed dates for this winter's workshops: Jan. 19, Feb. 9, & March 9. All of these are Saturdays, and the workshops are planned to last from 9AM to Noon. In addition, there will be two small workshops or presentations, during the second hour ofthe Jan. and Feb. meetings.

5.SECTION ADVISOR: John Yost read and discussed the Needs Fixin' report for 1991. He asked that all responses be submitted to him in writing no later than the next meeting, Nov. 19.

OLD BUSINESS:

John Yost discussed the acquisition of the long-planned PA system. A possible noise problem was brought up, but the volume of the PA system would of course be controled.
The members present then voted to allocate $100 for the purchase of the components for the PA system. John will purchase the items when they go on sale.

NEW BUSINESS:

George Beever discussed the plans for the SPAAR Family Dinner. It was decided to have this at the Quality Inn off of Rt. 30 & Centerville Rd., Lancaster, on Saturday, Jan. 12, from 7PM to 10PM. This is a change from what was listed in the last newsletter, which listed a date of Jan.6. A flyer will be mailed to all members concerning this in late November or early December.

Ed Miller announced that he might have a number of models available by next spring for members to use in Sport Scale events. Contact Ed for details.
Ed then proposed a number of themes for some 1991 Sport Launches. These included a "Space Day", in which models of manned launch vehicles would be featured; "Military Day", "Sounding Rocket Day", and "Futuristic Day". The members present all liked the idea, and they will be incorporated into next year's Sport Launches.

The schedule for 1991 in general was discussed, and adopted in principle.

Plans for SPAARSPAM-2 (Nov. 4) were discussed.

Glenn Feveryear requested and was granted funding for a flag pole for the club's flag.

Glenn proposed establishing an award, preferably a trophy, that would be awarded to the overall points winner for each Section Meet; the trophy would have the winner's name and point total inscribed, as well as the name of the contest and the date. No decision was made on this idea prior to the end of the meeting.

The members present were reminded that nominations for section offices would be taken at the November meeting, with the election results announced at the December meeting.
The Meeting adjourned at 9PM.

SECTION MEETING

November 19, 1990

Present: G. Feveryear, R. Feveryear, J. Yost, A. Babiarz, D. Greene, D. Rhoat, E. Miller, G. Beever.

TREASURER: Ed Miller reported that there are 37 paid members, and that the balance at the end of the last meeting was $344.78, Since then, there has been the following disbursements: $25.70 for postage, and $5.00 in sanction fees. Incomes were: $7.50 in dues, $1.50 in launch rod sales, and $6.00 in patch sales. This leaves a current balance of $329.08.

NEWSLETTER: George Beever reported that the Nov/Dec issue of the Countdown should be finished and mailed by the end of the month.

COMPETITION: Glenn Feveryear discussed the results from NICE-11 (10/20/90); he has submitted sanction requests for an Open Meet in the spring of '91, and for SPAAR-SEC-4 in May '91.

EDUCATION: George Beever reported that Ed Miller will do the Jan. workshop, with the topic being finishing techniques; George will do the Feb. workshop on Model Rocket history, and Art Babiarz will do the March workshop, on scale modeling techniques. John Yost will do a short presentation on Flex-wing gliders on Jan. 21, after the business portion of that night's meeting.

SECTION ADVISOR: John Yost asked if there were any more responses to the 1991 Needs Fixin' Report.

OLD BUSINESS:

Ed Miller reported that all of the launch rods have been sold. In addition, he reported that we have recovered the initial outlay for the club patches.

NEW BUSINESS:

George Beever proposed a program in which the club would offer to pick up half of any A or B Division SPAAR member's first year NAR membership dues. In return, the member would agree to fly in the club's two yearly Section Meets. The goal in to increase the level of participation of the younger club members, by exposing them to the benefits of NAR membership, competition rocketry, and other aspects of model rocketry in general. After discussion, a provision was discussed whereby the offer would be made to all current A and B Division members, and to any future A and B Division members after they have been with the club for one year. The proposal was then accepted by voice vote, and George was directed to put the offer on paper and extend it to those affected.

The times of the clubs launches was discussed, and it was decided to stay with the 3-7PM times for launches between Memorial Day and Labor Day.

The January dinner was discussed, and the members requested more information on the price of the meals for children.

A proposal made by Glenn Feveryear for an on-going contest within the club. This would take the place of the Practice Events that were flown in 1989 and 90. After discussion, it was decided to adopt the idea, with the events being flown as the ones for NARAM-33. More on this elsewhere in this issue.

NOMINATIONS:

Nominations were then taken from the floor for club offices for 1991; they were as follows:

Section Advisor: John Yost, Dale Greene.
President: Glenn Feveryear, Dale Greene.
Vice-President: Dale Greene, John Yost.
Sec./Tres.: Ed Miller.
Member-at-Large: Dale Greene, Art Babiarz, Gary Feveryear, Dick Rhoat, Dan Weinhold.

SPAAR members will find a mail-in ballot attached to this issue. Please fill it in and return it no later than December 17, 1990.

General discussion followed, and the meeting adjourned at 8:50PM.

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A special mailing is being prepared for all SPAAR members, which concerns itself with the dinner on January 12, as well as the 1991 elections. Please fill both out and return as soon as possible.

THE

M A G N U M W I Z A R D

by Ed Miller

THE CONCEPT

The idea of a scaled-up Estes kit was taken from an issue of the Tripolitan, the journal of the Tripoli Rocketry Association, the high-power rocketry group. I took notice of a photo of a scaled-up Estes Bull Pup 12-D. The big Bull Pup was four inches in diameter and about 45 inches long. At the time, I did not want another large model. The next size of tubing down from the 4 inch was the 2.6 inch or the Estes BT-80. I had a good supply of BT-80 tube, and a few nose cones to fit. I then looked through the Estes catalog to find something I liked. It was a toss-up between the Yankee and the Wizard. I liked both, but available nose cones did not match the Yankee nose cone. So, it was the Wizard. Scaling up the Wizard required a multiplication factor of 3.53:1. I did some rough estimating and decided that the Magnum Wizard would weigh about one pound. Much too heavy for one D motor, and one E motor probably would not lift it more than 400 feet. I decided to do a cluster model using 3 D12-5 motors. Three E15-7 motors were an evil thought in the back of my mind.

How does it fly? Great! With three D motors it has a slow lift-off but rapidly picks up speed. It apogees out at about 800 feet. The 24 inch parachute brings it down slowly, but is small enough to prevent excessive drift. How does it fly with the three E15-7 motors? Awesome. Plenty of fire, smoke and noise. I guarantee that three E15 motors in this model will wake up every dog in your neighborhood. The E motors will make this model apogee at over 1500 feet.

CONSTRUCTION

Begin by cutting the motor tubes and the body tubes. Cut three nine inch peices of BT-50 for the motor tubes. Leave two of the BT-80s uncut. Cut a four inch section from the third BT-80. This 4" section will make the center section of the body. The two full length tubes and the short section will make a body tube that is 32½" long. Do not glue the body tubes together yet. Epoxy an AR2050 centering ring 2½" into one end of each BT-50 motor tube. Epoxy the three motor tubes into a three-sided group. Make sure that the thrust rings (AR2050) are at the same end. The next step is optional, but it will make your model last longer. Mix some coating epoxy and use a long paint brush to coat the inside area of the motor tubes above the thrust rings. DO NOT get any coating epoxy in the motor areas.

Cut three centering rings from 1/16" plywood. Sand the edges of the rings for a smooth fit into the body tubes and over the motor tube assembly. Cut three hook notches into one of the rings. Mark the motor tube assembly at 1 1/8", 5", and 8 3/4" from the motor end. (SEE DIAGRAM 1) Cut a slit for an engine hook in each motor tube. The slits should be immediately below each thrust ring. The three slits should also be at the area of each motor tube that will come closest to the main body tube (SEE DIAGRAM 2). Curve the engine hooks slightly as you would in an Estes kit. Install the hooks. Hold them in place with one hand while you slide the ring with the notches in to the other end of the motor tubes. Slide the ring down the tubes and capture the rings with it. Install the two other rings. Line up all rings with the marks as shown in Diagram 1. Tack each ring in place with one or two spots of thin cyano. When the cyano is dry, fillet the rings with epoxy, as shown in Diagram 1. You must also fill the hole between the motor tubes. Do this by making a small ball of Estes recovery wadding and pushing it into the center hole at the upper end of the motor mount assembly. Push it in about ¼" and fill the area above it with epoxy.

Place one of the uncut BT-80 tubes over Diagram 3. Mark the three fin lines and the launch lug line on one end of the tube. Draw lines from each mark down the side of the tube. Make sure that they are parallel with the center axis of the tube. Mark each fin line in three places, as shown in Diagram 7.

Now it is time to install the motor mount. Test fit the motor mount into the body that you just marked. Sand as needed. Take a ¼" diameter dowel and make a mark 7" from one end.

Mix about one tablespoon of five minute epoxy. Mix it thoroughly. Use the marked dowel to apply the epoxy into the marked body tube. Put the dowel into the tube to the seven inch mark and spread the epoxy around the inside. Quickly insert the motor mount into the body tube from the end that was originally marked for fins. The motor tubes must be even with the end of the tube. The engine hooks will protrude about ¼". Rotate the engine mount in the body tube until the fin lines fall exactly between the motor tubes. (SEE DIAGRAM 4) Turn the tube upright, being sure the mount does not move, and use the dowel to shape the epoxy into a fillet. When the epoxy fillet has set, mix some more epoxy and use a tooth pick to make an epoxy fillet at the other end of the assembly.

Next, make the ejection baffles. Locate the two JT-80 coupler tubes and the 1/16" plywood. Place one of the coupler tubes on the plywood and hold it firmly in place. Be careful not to distort it. Trace around the inside with a ball point pen. Repeat to make a second circle. Cut the circles from the plywood and sand them for a perfect fit in the coupler tubes. Use a frill with a ¼" bit and drill holes in them as shown in Figure 5. Sand all the burrs from the holes. Insert a baffle disc into each coupler tube and fillet them with epoxy as shown in Diagram 6. Set aside to cure.

While the baffles are curing, you can cut the fin slots in the body tube. On each fin line, make three marks, measured from the motor end. (SEE DIAGRAM 7) Next, draw two lines parallel to the fin line between the 1 1/8" and 5" marks. These lines should be 3/32" away from the fin lines. (SEE DIAGRAM 7) Use an Exacto knife with a new #11 blade and cut away the area between the lines and the 1 1/8" and 5" marks. You will notice that your knife will come against two of the centering rings at the end of each line. The centering rings will be exactly under each 1 1/8" and 5" mark.

It is now time to finish the body tube. Test fit one of the baffles into the upper end of the motor tube assembly. Remove it, and mix some 5-Minute epoxy. Spread the epoxy around the inside end of the tube, and insert the baffle unit about half way. Hold the unit horizontally and rotate it about it's axis. By rotating it you will prevent the epoxy from running to one side. When this joint is cured, mix some more epoxy and coat the inside end of the 4 inch body tube. Install it in the previously installed baffle. Lay this assembly on a flat surface or on a peice of straight angle iron. Rotate until the epoxy sets. Next, install the second baffle into the 4" section as described above. Then install the second full length body tube.

Cut out the fin pattern and trace three fins on to the 3/16" fin stock. Cut them out with a sharp Exacto knife. Round the leading edge and square all of the other edges.Surface sand them with 320-grit sandpaper until smooth. Number the fins 1, 2, and 3. Number the fin slots in the same manner. The numbers are used because each fin must be fitted into it's own slot to make up for any construction variations. Test fit the number 1 fin in slot number 1. You will find that it will not go into the slot completely. This is because the fin tab is too wide to fit the motor tubes. Carefully bevel the fin tab on both sides so that it will fit between the motor tubes. The area to be beveled is marked on the fin pattern. Bevel both sides equally. Keep test fitting and beveling until a perfect fit is achieved. You might find that the front and rear of the tab must be sanded to make the fin fit between the centering rings. Now that you have the fin fitted, install the fin and look at the tube from the rear. Does the fin stand straight away from the tube? If not, bevel the fin more on one side. Repeat for the other fins. Attach the fins one at a time. Mix some 5-Minute epoxy and apply it through the number one slot. Set the number one fin in place and line it up. Hold the fin in place until the epoxy sets. Repeat for the other fins. Next, fillet the area where the fin enters the body tube.

Mark the launch lug line at 1" and 16" from the rear of the body tube. Tack glue a ¼" diameter lug in front of each mark. Make sure they line up properly. After the glue has dried slide a ¼" diameter launch rod through them. If the rod binds, adjust the lugs for proper fit. When the rod fits properly, fillet the lugs with epoxy.

The next step is the shock cord mount. Locate the JT-70 coupler. Cut three peices from it as shown in DIAGRAM 8. Use epoxy and attach the two small peices to the convex side as shown in DIAGRAM 9. Next, epoxy the shock cord to the mount as shown in DIAGRAM 10. When the epoxy sets, fold the shock cord around

the end and epoxy it to the back between the two small peices. (SEE DIAGRAM 10A) Do not install the shock cord mount until after the model is finished.

Seal and prime the model with your choice of material. Paint it black from the leading edges of the fins to a point about 6" from the fins. When the black is thoroughly dry, mask the areas that will remain black. Paint the white areas. When the white is dry, mask it and paint the fin areas purple. See DIAGRAM 11 for dimensions. Use the supplied pattern and cut the stars from white Monokote and place them randomly in the black area. Use the lettering pattern and cut the letters from black Monokote. Place them as shown in DIAGRAM 11.

Install the shock cord mount by coating the convex side with epoxy. Place it in the upper body tube at least 2" from the end. When the epoxy has cured, mix some more and cover the mount with it. Fillet the edges heavily.

Attach the split ring to the nose cone eye. Tie the shock cord to the ring, and cyano the knot. Also attach the parachute to the split ring.

FLIGHT PREP

Install three D12-5 motors and rig them with flash bulb ignitors. Put two sheets of wadding into the upper tube. Put the shock cord in first, followed by the parachute.

This model must be flown from a ¼" diameter rod, at least 5' long. Before hooking up the ignitor wires, make sure that your launch system is flashbulb safe. Check for aircraft and spectators that are too close. Then, 5-4-3-2-1-Launch!

PARTS LIST

Quan.	Desc.	Source
3	BT-80	Estes
2	BT-50	Estes
1	PNC-80K	Estes
2	JT-80C	Estes
1	JT-70A	Estes
3	AR-2050	Estes
3	Engine Hooks	Estes
1	½" X 4' Shock Cord	North Coast
1	24" nylon chute	North Coast
2	¼" X 1" Launch Lugs	North Coast
1	3/4" Split Ring	Hardware Store
1	3/16" X 4" X 36" Bass wood	Hobby Shop
1	1/16" X 12" X 12" Plywood	Hobby Shop
	Thin cyano	Hobby Shop
	5-Minute Epoxy	Hobby Shop
	Paint and sealer	Hobby Shop
1	White Monokote	Hobby Shop
1	Black Monokote	Hobby Shop

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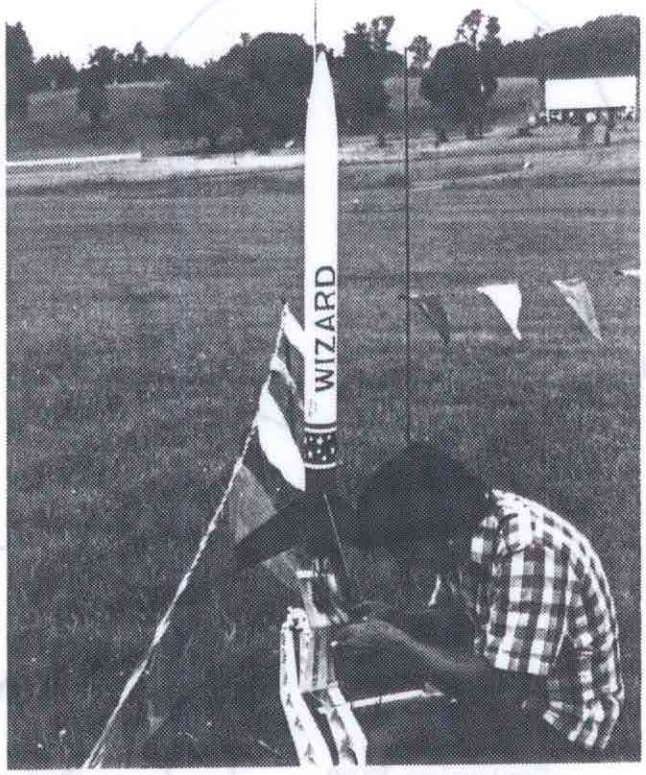
BELOW: The author and his creation. Ed preps his Magnum Wizard for a demo launch at WUBBA-13, July, 1990.



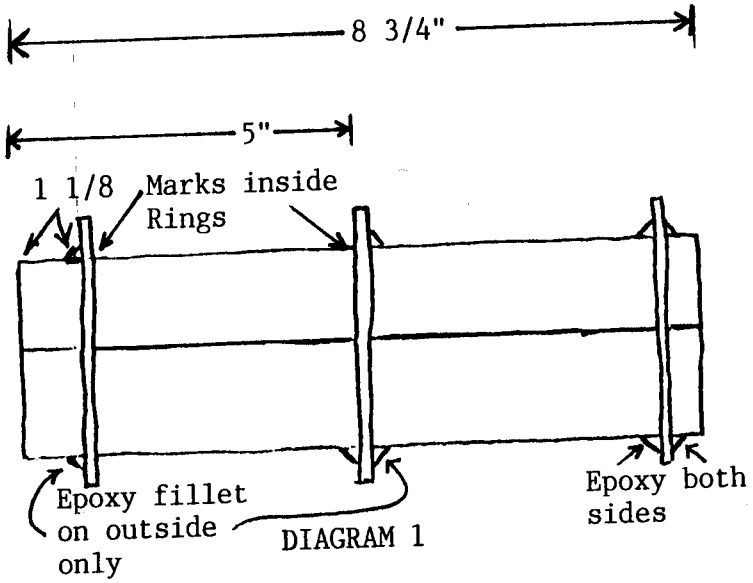


DIAGRAM 1

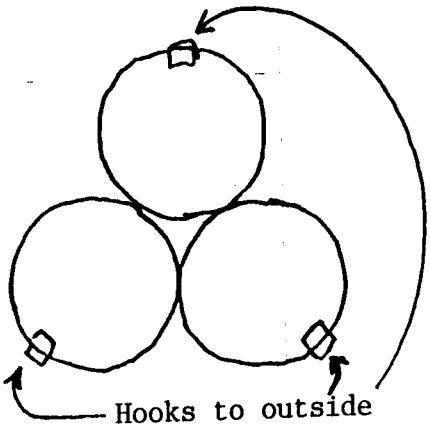


DIAGRAM 2

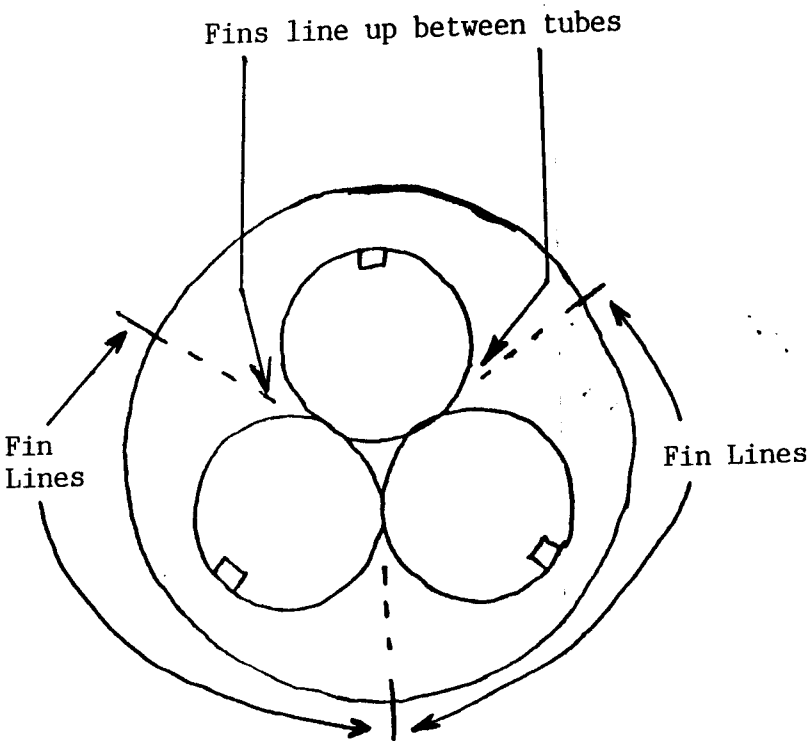
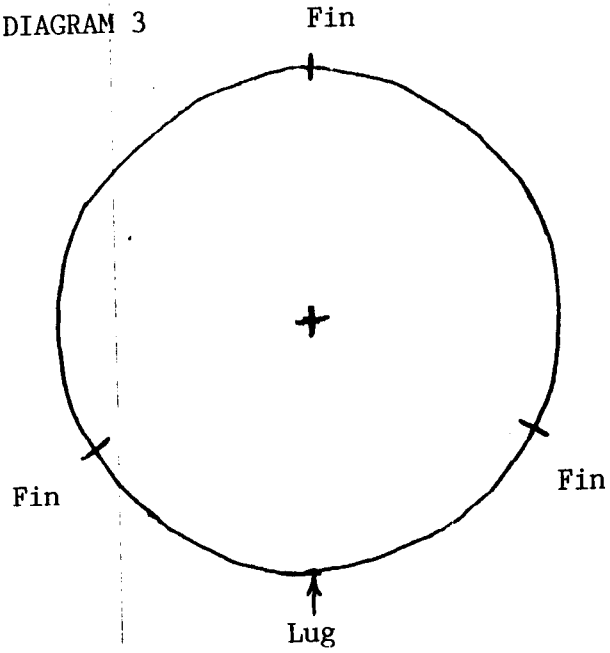
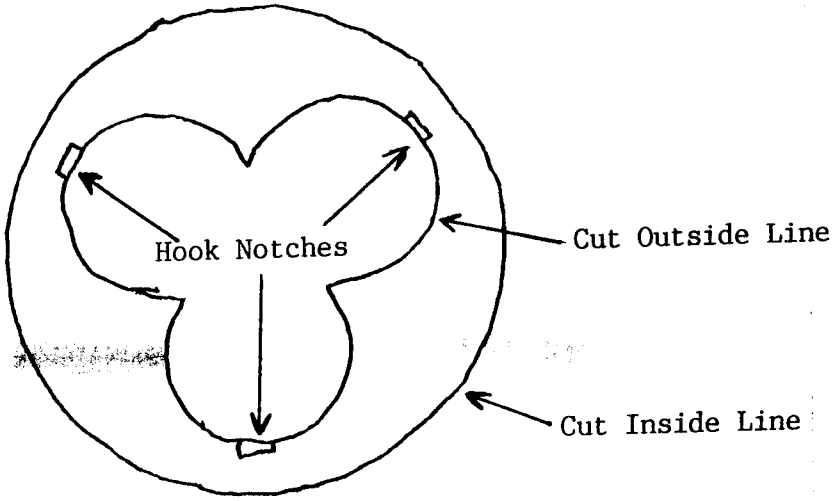


DIAGRAM 4

DIAGRAM 3





Centering Ring
Make 3
Cut Hook Notches
in only one.

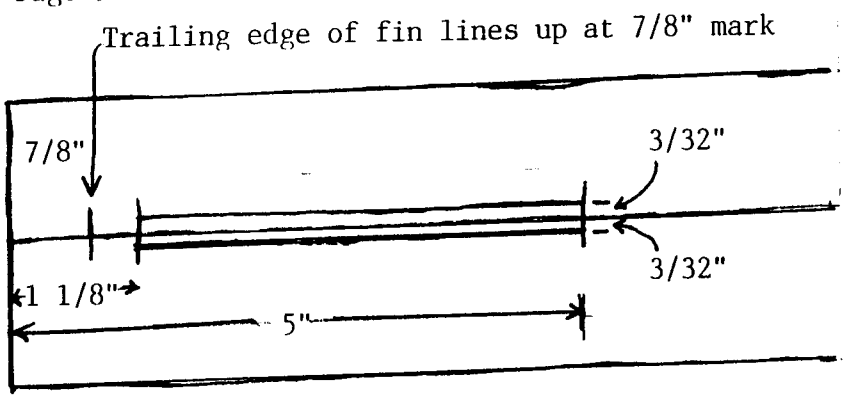


DIAGRAM 7

Motor End

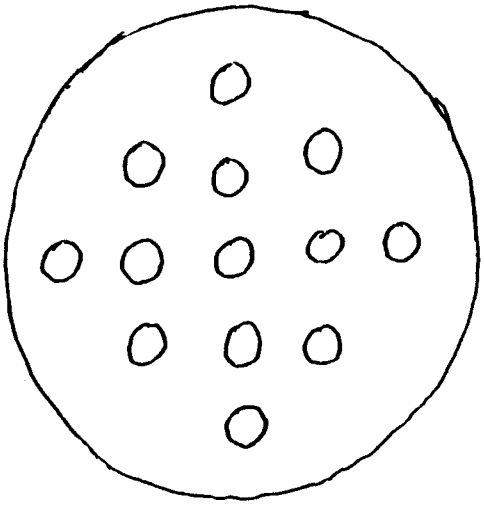


DIAGRAM 5 - Baffle Disc;
Make 2

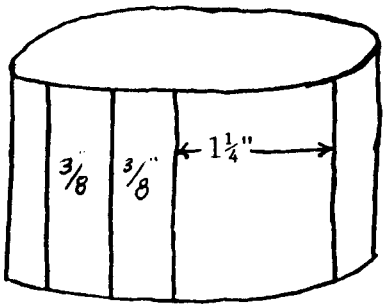
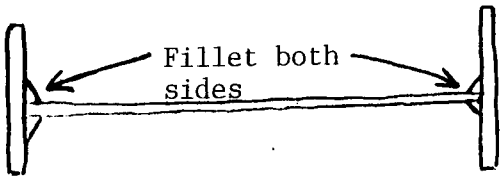


Diagram 8

DIAGRAM 6



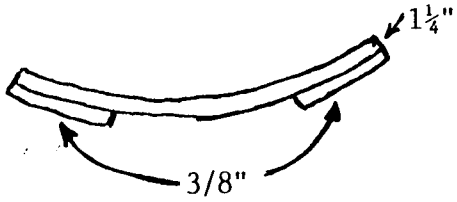


Diagram 9

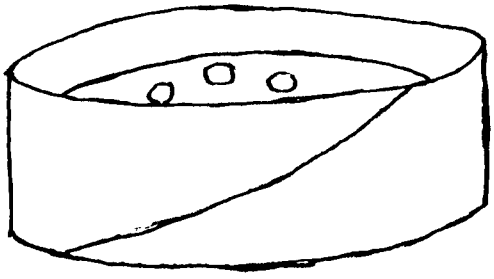


DIAGRAM 10

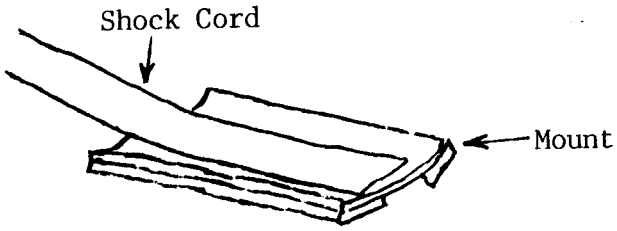


DIAGRAM 10A

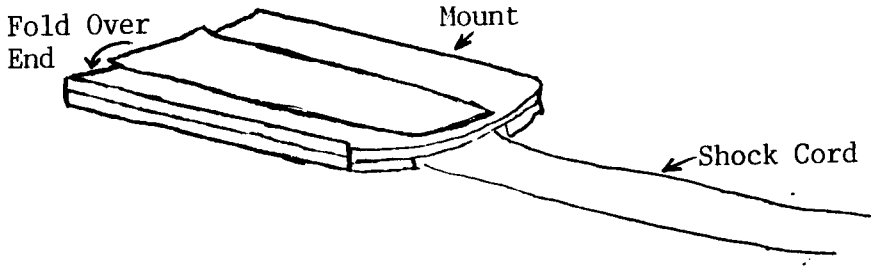
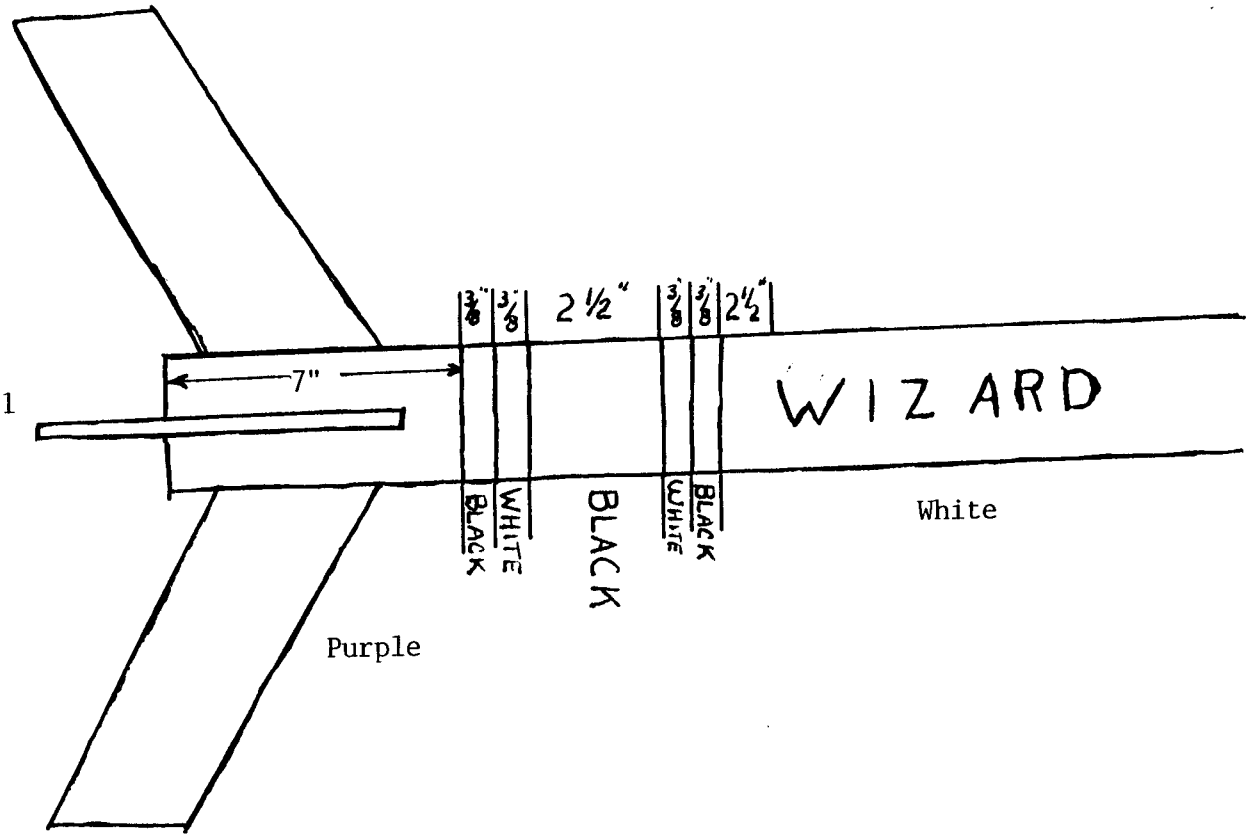
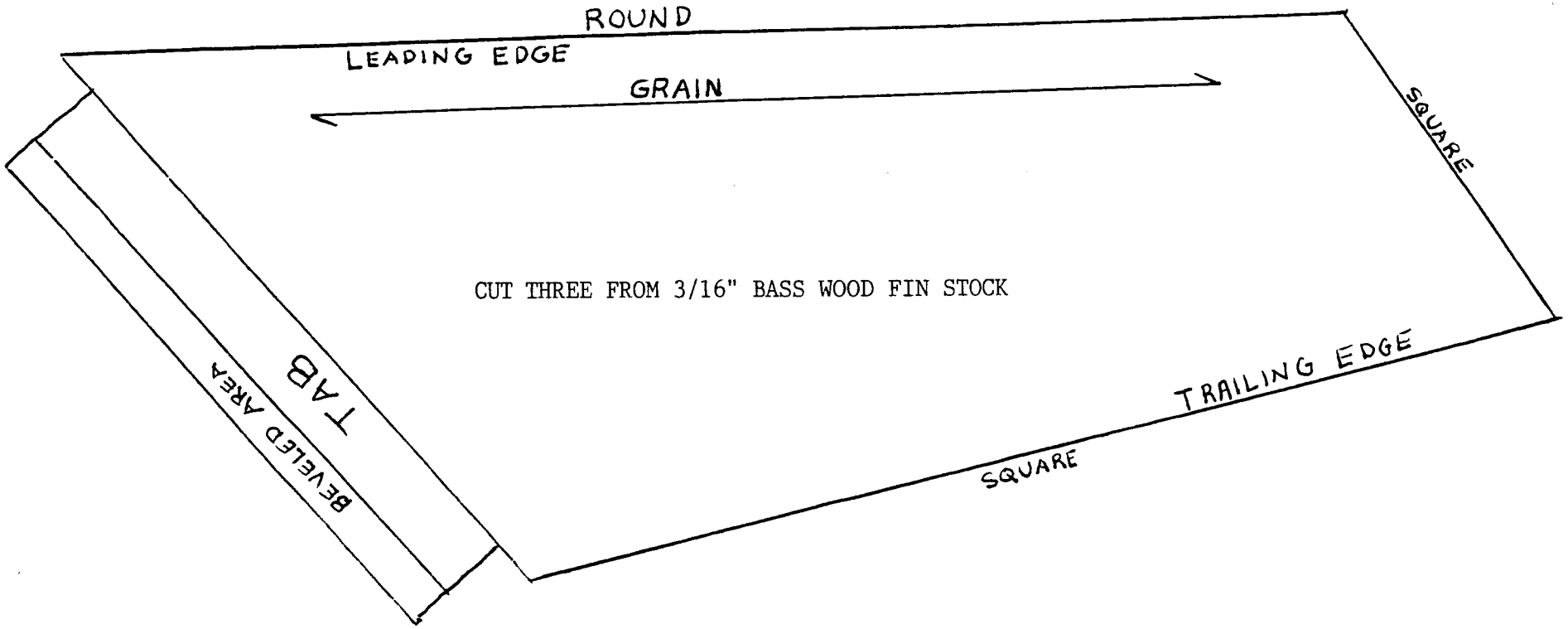


DIAGRAM 11





CUT THREE FROM 3/16" BASS WOOD FIN STOCK

WIZARD

FULL SIZE LETTERING AND STAR PATTERNS

S P A A R S P O R T L A U N C H E S

September 23, 1990

Fall appeared to have arrived early for the third SPAAR launch of the month of September. Fall heck, it was as cold as winter! Not only were the temperatures in the forties or fifties, but the winds were in the 20mph range. Considering how nice the previous weekend was for SPAARSEC-3, it just wasn't fair.

The good news was that we had a new member flying that day, Jason Wingenroth. He braved the winds and flew his Estes Athena a couple of times. One flight landed on the roof of the school, but it did eventually blow off. Eric Marcella was there, and the winds didn't seem to bother him, either. He got in five good glights.

After a whopping 23 flights had been made, everybody packed it in for the day. Sometimes common sense prevails, even at SPAAR launches.....

October 14, 1990

October 14 was as nice as September 23 was nasty. A large crowd was on hand to put up a total of 104 flights. The weather was so nice that it was one of the few times in recent memory in which your choice of motor selection was not dictated by wind or corn concerns.

The younger members were all very active, with Jason Wingenroth, Dave Bender, Aaron Newman, and Art Babiarz III launching well over 35 flights between them.

Ed Miller put on quite a show, flying all kinds of high powered models, the most impressive of which were the ever-popular Mini Katana with an air-started E15 White Lightning, and the trusty ol' Spoilsport with four D12-5's. Jim Lytle flew a very nice Sabre SR with an Aerotech F25, complemented with a couple of MRC FX motors for good measure.

Don't it just figure department: Mike Angell was able to make it to one launch this year, on Oct. 14, and guess what happens? His car gets kabonged by your editor by way of an unstable Trash-Roc. Sorry Mike!!

We also cannot leave out any mention of the great job Trevor Smedley and Art Babiarz did as RSO/LCO for a good portion of the day. Thanks guys, ya done good!

SPAARSPAM-2

November 4, 1990

SPAAR's second Annual Picnic And Meet was held on November 4 and was once again a great success and loads of fun. Or should we say loads of food? Hot Dogs, chili, pasta salad, chips, dip, every kind of dessert imaginable and the biggest soft pretzels on earth were all there. There were members and guests from Pennsylvania, Maryland, Delaware, and New Jersey in attendance. And in spite of it all, we even found time to fly some rockets.

The "event" for the day was Open Eggloft Streamer Spot Landing. This required the contestant to fly an egg, land nearest to a pre-determined spot, and use only a streamer for a recovery device. And by the way, the egg had to remain unbroken, of course! The winner was Glenn Feveryear, who won the title of Head OESSL with 107.3 points. Derek Yost, Dale Greene, and Garden State's Bruce Canino finished second through third, respectively. The most creative entry in this event was as funny as a rubber chicken. In fact, it was a rubber chicken! Trevor Smedley stole the show with an egglofter fashioned out of an actual rubber chicken. Unfortunately, it didn't fly as well as it looked ("Eat dirt, clucker"), but a slightly modified version flew well later in the day.

How about a chicken lofting event for SPAARSPAM-3?

F L I G H T L O G S

FLIGHT LOG

September 23, 1990

Flight #	Name	Model	Motor	Misc.
1	R. Falcone	Space Shuttle	C6-3	
2	" "	Space Shuttle	C6-3	
3	" "	Space Shuttle	C6-3	
4	" "	Space Shuttle	C6-3	GF
5	E. Marcella	X-15	A8-3	GF
6	" "	Viking	A8-3	GF
7	" "	X-10	A10-3	GF
8	" "	X-14	A10-3	GF
9	" "	Hawkeye	½A3-4	GF
10	A. Newman	Stealth	B6-4	GF
11	" "	HASTE	B4-4	GF
12	E. Miller	UFO-C	C6-0	GF
13	" "	Gyroc	B6-4	GF
14	A. Babiarz Jr.	Talos	A8-3	GF
15	J. Wingenroth	Athena	A8-3	GF
16	" "	Athena	B4-4	GF
17	T. Smedley	MegaSizz	D12-7	GF
18	" "	MegaSizz	D12-7	GF
19	" "	Space Shuttle	B6-4	GF
20	G. Feveryear	D HD	D12-5	ND
21	D. Greene	Honest John	B4-4	GF
22	" "	Scout	A8-3	GF
23	G. Beever	FSI Orbit	B6-4	GF

FLIGHT LOG

October 14, 1990

1	J. Wingenroth	Viking	A8-3	GF
2	" "	Viking	B6-4	40.0s GF
3	" "	Viking	C6-5	55.6s GF
4	" "	Vagabond	A8-3	GF
5	" "	Vagabond	B6-4	GF
6	" "	Athena	B6-4	GF
7	" "	Athena	C6-5	GF
8	D. Bender	Ramjet	B4-4	28.1 GF
9	" "	Rocket Golf	A3-4	10.0 GF
10	" "	Astro	C6-7	ND
11	" "	Sky Demon	B6-0/A8-5	GF
12	" "	Sky Demon	C6-0/C6-7	52.4 GF
13	" "	Gone	D12-7	94.8 GF
14	" "	Thunderhawk	B8-5	GF
15	" "	Liberty	B6-4	GF
16	A. Newman	Mach Rider	C6-3	19.1 GF
17	" "	Nike-Hercules	4 A10-3	UNS
18	" "	Soviet Shuttle	B6-0/A8-5	Drag Race
19	" "	Soviet Shuttle	C6-3	ND
20	" "	Fork Tail Devil	2 C6-5	GF
21	" "	Titan IIIE	D12-3	41.2 GF
22	" "	Titan IIIE	D12-3	GF
23	" "	Aerotech	B4-2	GF
24	" "	Explorer Aquarius	D12-3	49.2 GF
25	" "	Maruader	C6-3	93.2 GF
26	S. Hernendez	Birdie	½A3-2	GF
27	" "	Birdie	½A3-2	GF
28	" "	Birdie	½A3-2	5.6GF
29	A. Babiarz	Saturn 1B	D12-3	GF
30	" "	Saturn 1B	D12-3	GF
31	" "	Saturn 1B	D12-3	GF
32	" "	Honest John	B6-4	GF
33	" "	Centuri SR-71	D12-3	GF
34	" "	Saturn V	D12-3	GF
35	" "	Titan	C6-5	GF
36	" "	Vector	A10-3	GF
37	" "	Sentinel	C6-5	GF
38	" "	Shrike	C6-0/C6-5	36.7GF
39	" "	Shrike	C6-0/C6-5	50.2GF
40	" "	Mercury-Redstone	C6-5	GF
41	" "	Flying Jenny	A8-3	GF
42	" "	Flying Jenny	A8-3	HNG
43	" "	Flying Jenny	A8-3	GF
44	Jim Babiarz	F-104	B6-2	37.6 GF
45	Steven & Art	Junk	C6-5	60.0 GF
46	Mike Angell	Mean Machine	D12-5	GF
47	" "	Mean Machine	D12-5	GF
48	" "	Mean Machine	D12-5	46.0 GF
49	R. Balogh	Uprated Phoenix	E15-4WL	GF
50	John Babiarz	Name Too Long	C5-3	GF
51	" "	Shuttle	C5-3	GF
52	" "	Shuttle	C5-3	GF
53	" "	½A BG	½A3-2	11.5GF
54	" "	½A BG	½A3-2	GF
55	" "	½A BG	½A3-2	GF
56	" "	Swift	A8-3	GF
57	" "	Big Bertha	C6-7	GF
58	G. Beever	Trash-Roc	C5-3	UNS
59	" "	Warp Drive 21	E5-6	25.7 GF
60	" "	Warp Drive 29	F100-8	51.5 GF
61	" "	Voyager II	C6-7	45.5 GF
62	" "	Aerobee-Hi	A8-3	33.0 GF
63	" "	FSI Sprint	C6-7	ND
64	" "	Bull Pup 12D	C6-5	GF
65	" "	Calypso	A8-5	GF
66	" "	½A RG	½A3-2	36.4 GF
67	" "	Gemini-Titan	C6-5	GF
68	" "	½A HD	½A3-2	18.0 GF
69	Gary Feveryear	Scrambler	D12-5	GF
70	" "	Nike-Apache	C6-5	GF
71	" "	GEO SAT LV	C5-3	GF
72	" "	CMR Rear Ejection	C6-5	GF
73	Glenn Feveryear	A HD	A3-4	26.0 GF
74	" "	Grumpy Dog	D12-0/D12-3	GF
75	" "	Grumpy Dog	D12-0/D12-3	GF
76	" "	Ranger	C6-5 (3)	GF
77	" "	Honest John	B4-2	GF
78	D. Greene	Big Brute	F25-6WL	GF
79	" "	Big Brute	G80-7	GF
80	" "	Big Brute	G40-7	79.8 GF
81	" "	Not An Egglofter	C6-5	GF
82	" "	Gemini-Titan	B6-4	GF
83	" "	E SD	E15-7WL	SEP
84	J. Lytle	Sabre SR	F25-6WL	GF
85	E. Miller	Eliminator	F25-6WL	GF
86	" "	Phantom 2600	G42-8	76.2 GF
87	" "	The Real Thing	C5-3	UNS
88	" "	Mini-Katana	1-E15-7,6-C5-3	GF
89	" "	Spoilsport	4-D12-5	GF
90	" "	Hercules	F100-6	37.0GF
91	" "	Black Thing	E60-6	75.0 GF
92	" "	VR-24	D12-3	GF
93	" "	VR-18	C5-3	GF
94	T. Smedley	MegaSizz	D12-7	70.0 GF
95	" "	MegaSizz	D12-7	53.0 GF
96	" "	Tornado	C6-7	54.3 NR
97	" "	Saturn V	D12-3	GF
98	" "	Shuttle	C6-5	GF
99	" "	Nomad B/C RG	B6-2	22.4 GF
100	" "	Nomad B/C RG	B6-2	18.3 GF
101	B. Sonnefeld	Big Bertha	C6-5	51.2 GF
102	" "	Strike FTR	C6-5	GF
103	" "	Strike FTR	C6-5	GF

FLIGHT LOG

SPAARSPAM-2

November 4, 1990

1	J. Lytle	Wizard	A8-3	GF
2	" "	Mini Mars Lander	½A3-2	GF
3	" "	Viking	A8-3	GF
4	" "	Strike FTR	B4-4	GF
5	" "	SR-71	B4-2	GF
6	" "	Ironman	C6-3	GF
7	" "	2 Stage	B6-0/A8-3	GF
8	" "	Mercury Redstone	C6-3	GF
9	S. Selig	Ironman	D12-5	CATO
10	" "	Photon Disruptor	A8-3	GF
11	" "	HelioCopter	C6-3	33.94GF
12	" "	GEO SAT LV	B6-4	GF
13	" "	Colonial Viper	B6-4	GF
14	D. Greene	Flare Patriot	D12-5	GF
15	" "	Flare Patriot	E6-4	GF

F L I G H T L O G S

16	B. Canino	PA Crude	F14-6BJ		GF
17	" "	Tri-Wing B/G	D12-3	23.81	GF
18	R. Hackman	XR-52	A3-4		GF
19	" "	Birdie	A3-4		GF
20	" "	Patriot	B4-2		GF
21	" "	XR-78	B6-4	28.5	GF
22	K. Fehrenbach	Viper-4	4-D12-7		GF
23	" "	Viper-4	4-D12-7	52.0	GF
24	" "	Starburst	2-D12-3		GF
25	" "	Viper-3	3-D12-5		GF
26	T. Smedley	Saturn V	D12-3		GF
27	" "	Nomad RG	B6-2		GF
28	" "	MegaSizz	D12-7		GF
29	R. Balogh	Nike-Ram 2B	G25-5	136.4	GF
30	" "	Arreaux	F25-9WL		GF
31	" "	Arreaux	F25-9WL		GF
32	W. Rhoat	Birdie	½A3-2		GF
33	Glenn Feveryear	Gumpy Dog	D12-0/D12-3	52.5	GF
34	" "	Black Brant II	E15-4WL		GF
35	E. Miller	Warp II	C6-0/B8-5	49.4	GF
36	" "	Cloud Buster	E60-6	85.1	GF
37	" "	The Real Thing	C6-3		GF
38	" "	UFO-E18	E??		GF
39	" "	UFO-E18	D12-0		GF
40	" "	Micro Spoil Sport	4-A10-3		GF
41	" "	Trailblazer	D12-5		GF
42	" "	Super Big Bertha	F100-6		GF
43	" "	Magnum Wizard	3-D12-5		GF
44	" "	Phantom 2600	F41-9		GF
45	F. Hoke	R/G	½A3-2		NG
46	" "	R/G	A10-3	12.8	GF
47	Jason Wingenroth	Viking	B4-4		GF
48	Allen Wingenroth	Skinny Mini	½A3-2		GF
49	" "	Vagabond	C6-5	83.7	GF
50	" "	Vagabond	C6-5		GF
51	M. Snyder	Pathfinder II	D12-5	58.0	GF
52	" "	Honest John	C6-5		GF
53	" "	Sentinel	C6-5		GF
54	A. Babiarz	Gyroc	A8-3	25.0	GF
55	" "	Saturn V	D12-3		GF
56	" "	Birdie	A10-3		GF
57	" "	Sentinel	C6-5		GF
58	" "	SR-71	D12-3		GF
59	" "	Shrike	C6-0/C6-7		GF
60	" "	Saturn 1B	D12-3		GF
61	" "	Saturn 1B	D12-3		GF
62	" "	Crusader S/W	B6-2		GF
63	" "	Crusader S/W	C6-3		ND
64	" "	Gemini-Titan	C6-5		GF
65	A. Babiarz Jr.	Mercury Redstone	C6-5		GF
66	John Babiarz	Gnome	A10-3		GF
67	" "	Camroc	C6-7		GF
68	" "	Bandit	C6-7		GF
69	" "	Dragonfly	½A3-2		GF
70	" "	B B/G	B4-2		GF
71	" "	Big Bertha	C6-7		GF
72	G. Beever	A HD	A3-2	40.6	GF
73	" "	C SD	C6-7	101.0	NR
74	" "	D B/G	D12-3		SHRED
75	" "	D B/G	D12-3		RB
76	" "	Saturn V	D12-3		YUK
77	" "	C R/G	C6-3		SHRED
78	" "	A R/G	A3-2	28.0	GF
79	Glenn Feveryear	OESSL	B6-2	107.3pts	
80	Derek Yost	"	B4-2	92.4pts	
81	D. Greene	"	B4-2	79.9pts	
82	Bruce Canino	"	C6-3	40.1pts	
83	John Yost	"	B4-2	14.1pts	
84	G. Beever	"	B6-2	DQ-Splat	
85	D. Rhoat	"	C6-3		UNK
86	Dan Yost	"	B4-2		UNK
87	T. Smedley	"	C5-3		UNS
88	" "	"	C5-3	8.8pts	
89	A. Babiraz	Excalibur	C5-3		GF

PRODUCT REVIEW

SCALE MODEL ROCKETRY

A Guide for the
Historian-Craftsman

by

Peter Alway

Among the many new products and items showcased at NARAM-32 last August was a new book, Scale Model Rocketry, by Peter Alway. Pre-production copies were available in small numbers, and met with very positive comment.

Shipment of the new books was promised for the beginning of November, and I received my copy on November 19. I immediately discovered that this was one book, once I got my hands on it, that I could not put down.

The book is 160 pages full of information on the topic of scale modeling. I think it is safe to say that the topic has never been dealt with in such detail prior to now.

Alway has taken the time to take some of the "mystery" out of building scale model rockets, by giving the novice scale modeler a quick but complete rundown on construction techniques, finishing,and flying scale models. He also devotes part of the book to researching scale data, one of the more complexing portions of scale modeling.

The largest part of the book is devoted to what is termed " Histories, Drawings, and Photographs of Selected Rockets". This covers a total of 42 rockets, all of which were manufactured and used in the United States. They cover the period directly following World War II through the present day. Many well known rockets such as the Saturn 1B, Saturn V, Little Joe I & II, Titan III, V-2, WAC Corporal and the numerous Aerobee models are covered, as are a number of lesser known rockets as the Terrapin, RAM B, Juno 2, Trailblazer 1, and Nike-ASP.

As a bonus, Alway includes plans for three models, all made of easy to acquire Estes parts: D-Region Tomahawk, V-2, and Aerobee 150A.

Alway also makes a point to emphasize what

S E C T I O N N E W S N O T E S

what he refers to as "fun scale" modeling. A fun scale model is one that is not intended for NAR competition, but rather is built simply for the builder's enjoyment.

I highly recommend this book to anyone who is interested in building flying scale model rockets, or to those who are simply interested in the history of some of America's most interesting and important launch vehicles. I also do not think it is an exaggeration to claim that Scale Model Rocketry may very well be the most important book about the hobby since G. Harry Stine's original Handbook of Model Rocketry itself.

To order by mail, send a check for $19.95, plus $2.50 for postage and handling to:

Peter Alway
2830 Pittsfield
Ann Arbor, MI 48104

-GB

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SECTION NEWS NOTES

FROM THE COMPUTERS THAT TALK TO EACH OTHER DEPT: Our Dr. Bob? Balogh asked us to list the following information:

PEGASUS BULLETIN BOARD SYSTEM
Robert and Karla Balogh SYSOPS call (717) 273-1622.
Use 8N1 at 300/1200/2400/4800/9600 Band;
Sections on rocketry, amateur radio, & horses.
Computer specific sections: AMIGA, C64/128, IBM.
The board just went on line recently. Please call and leave a message, download or upload a file.
The system is located in Lebanon, PA. It runs on an AMIGA 2000 computer. The system is multitasking on amateur radio packet BBS, connect to N3CIP on 145.09 mhz.

****

WINTER WORKSHOPS FOR 1991: The club's Winter Workshop schedule is taking shape.
Ed Miller will make a presentation on model rocket finishing techniques, Jan. 19; George Beever will present a workshop on model rocket history on Feb. 9; and Art Babiarz will cover some of his scale modeling techniques on March 9.
The February 9 workshop will definitely not be a one-man show. All those attending are asked to bring with them some of their old rocketry memorabilia, to show and share with the others attending.
As a bonus, John Yost will do a short presentation on flex-wing gliders during the second half of the Jan. 21 club meeting.
We would like to schedule another short seminar for the second half of the Feb. 17 meeting. Anyone who is interested in giving this talk, please contact George Beever at (717) 733-4170.

****

A NARAM AT COCALICO?

Uh, well....not exactly.
During 1989 and 1990, we flew a "practice event" at our sport launches, for fun and to gain experience with NAR-type contest events.
In 1991, a new twist will be added. The events that are going to be flown are the same ones that will be flown at NARAM-33 next summer, with the exception of Research & Development and Peanut Sport Scale. The events to be flown are: ½A Parachute Duration; A Streamer Duration; A Rocket/Glide; C Helicopter; B Boost/Glide; 120 sec. Precision Duration; Open Spot Landing; A Payload; and B Eggloft Altitude.

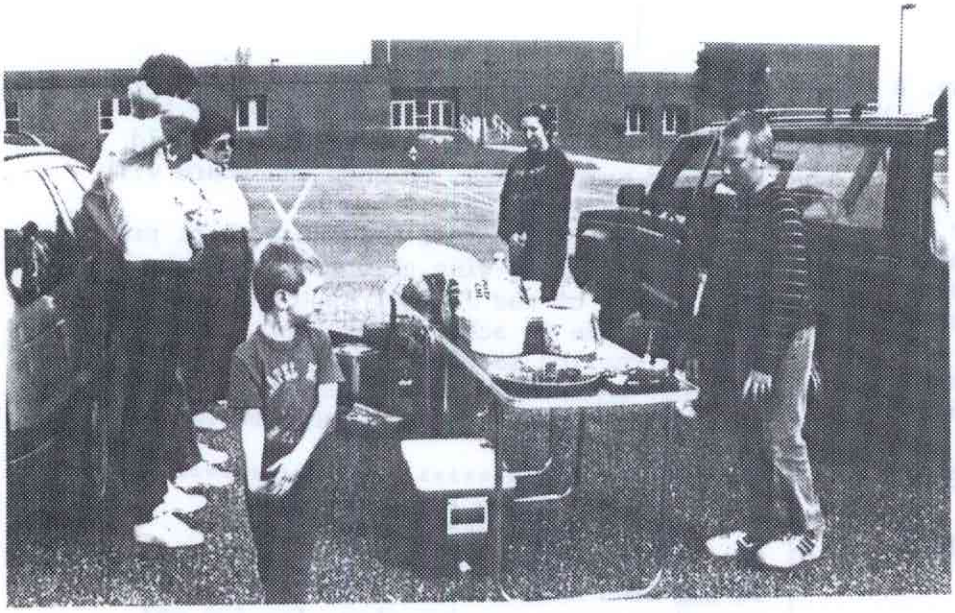
The contestant can fly these events during the sport launches next summer; which ones he or she flys, or when they are flown is totaly up to the individual. Now, for every rule there is an exception, right? Right. Since it would be impossible to fly the altitude events during all sport launches, they can only be flown, along with Spot Landing, during an extended sport launch on July 21.

The entry fee for C Division flyers (18 & older) will be a rocketry-related item valued at at least $5; these will also be the prize(s). A and B Division members will not have a fee, and the prizes for that group are still being worked on. You DO NOT have to be an NAR member to participate!!!

Information on these events is being prepared in the form of a mailing for distribution this winter.

SPAARphotos

Scenes from SPAARSPAM-2



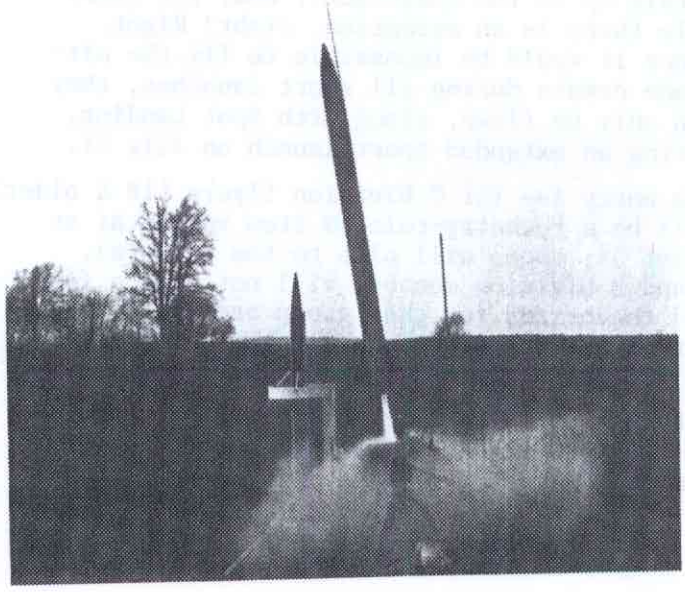
Top Left: Chow Time!!

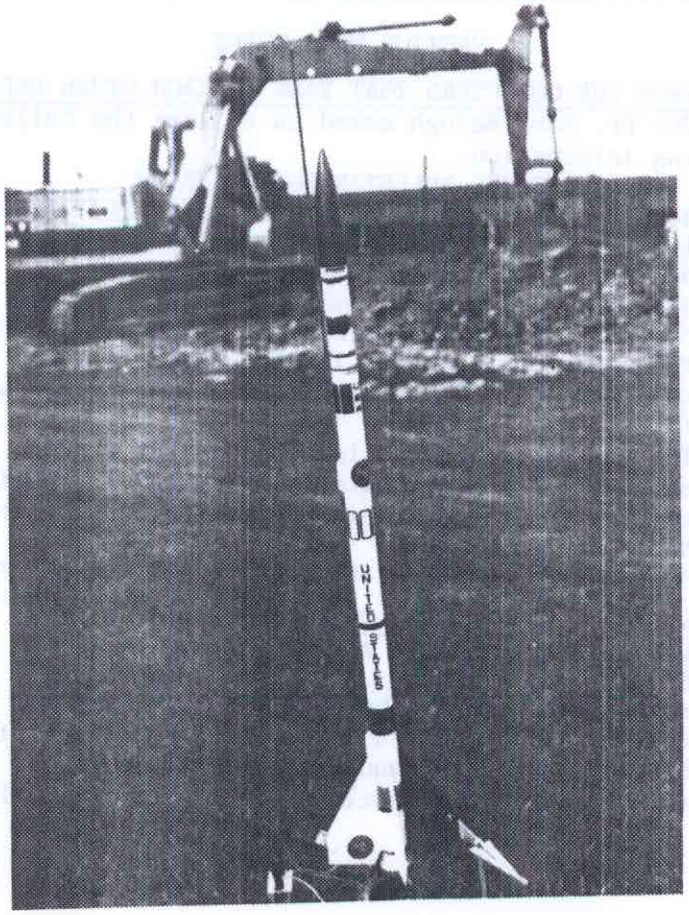
Below Left: Karl Fehrenbach's LOC Starburst lifts off with two Estes D12's. In the tower beyond is Dr. Bob's Arreaux, ready to fly with an Aerotech F25-9WL.

Below Right: Art Babiarz' Estes Astron Shrike, one of his many Estes classics.

Next Page: Left Side, Top & Bottom: Ed's big Wiz' again, just before ignition, and then with all three D12's running.

Right Side, Top & Bottom: Glenn Feveryear preps his Black Brant II, with help from Ed Miller and Rick Hackman, and (below) the Brant takes to the air powered by an Aerotech E15-4WL.





WIZARD

WIZARD

S E C T I O N N E W S N O T E S

NICE-11: On October 20, SPAAR members Glenn Feveryear, Dale Greene, and George Beever went down to Manassas, VA., to compete in NOVAAR's NICE-11 Open Meet. There were a good number of contestants there, representing three NAR sections: NOVAAR, SPAAR, and NARHAMS. The weather was the best that many people had ever seen for a contest, with thermals "booming" all over the place.

SPAAR flyers ended up with 918 points, second only to NOVAAR's 1098. Glenn took first place in B Rocket/Glide with 196 seconds, and second in Sport Scale with his Black Brant II, scoring 900 points in the event. These two gave him a second place overall in the meet in C Division with 372 points.

Dale Greene took third in C Eggloft with 66 seconds, second in B Rocket/Glide with 73 seconds, fourth in A Helicopter at 42 seconds, and a heart-breaking third in A Parachute Duration with 717 seconds. The first and second place finishers, NOVAAR's Jankov-Pavlov-Kovelov Team and NARHAMS' William Whitman, had 1230 and 732 seconds, respectively! Dale wound up fifth overall, at 250 points.

George Beever took third in ½A Boost/Glide with 114 seconds, and first in A Helicopter with 175 seconds. This gave him a total of 296 points, good for third overall in the Meet.

As always, the Sport Scale event attracted everyone's attention, not to mention their cameras. J-P-K entered a Nike-Tomahawk, good for first place; the Trash Always Wins Team (also known as Ken Brown) entered an Argo D4 Javelin, the one seen on the cover of the November, 1989 issue of American Spacemodeling; William Whitman entered a 4" diameter Thor-Delta; and Robert Austin of NARHAMS entered a Trail-blazer, built from the MRC kit.

****

POINT TOTALS: According to Glenn Feveryear, who keeps track of these things, here is a list of contest points for the 1990-91 Contest Year:

NAME	NAR#	POINTS	POINTS TO SECTION
G. Beever	44391	489	489
G. Feveryear	24391	1295	674
D. Greene	12464	349	349
E. Miller	45776	300	300
J. Yost	31472	180	180
TOTALS		2613	1992

MARK YOUR CALENDERS: The schedule for 1991 is in it's final form, so here is an idea of what's ahead for next year:

January
12 Family Dinner
19 Workshop
21 Meeting

February
3 Post-Groundhog Day Sport Launch, 1-3PM
9 Workshop
17 Meeting

March
9 Workshop
18 Meeting

April
14 Sport Launch, 1-5PM "Futuristic Day"
15 Meeting
28 Open Meet

May
5 Sport Launch, 1-5PM
20 Meeting
26 SPAARSEC-4 Section Meet

June
9 Sport Launch, 3-7PM "Military Rocket Day"
15/16 WUBBA-14 Regional (tentative)
17 Meeting
30 Sport Launch, 3-7PM

July
15 Meeting
21 Sport Launch, 9AM-5PM (tentative)

August
11 Sport Launch, 3-7PM "Manned Launch Veh. Day"
19 Meeting

September
1 Sport Launch, 3-7PM "Sounding Rocket Day"
16 Meeting
22 SPAARSEC-5 Section Meet

October
13 Sport Launch (SPAARSPAM-3?)
21 Meeting

November
3 Sport Launch (SPAARSPAM-3?)
18 Meeting

December
16 Meeting

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 $1..$_____
- ☐ **FAMILY PLAN** (Details below); Deduct $8.....$_____

Amount Enclosed.....$_____

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PROMOTING SAFE MODEL ROCKETRY
IN SOUTHERN PENNSYLVANIA
AND NORTHERN MARYLAND

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The Southern Pennsylvania Area Association of Rocketry

COUNTDOWN

Volume 3 **No.** 6
NOVEMBER/DECEMBER **1990**