

COUNTDOWN

VOL 1, ISSUE 4

SEPT., 1988

THIS MONTH:

ADVANCED
FINISHING
TECHNIQUES

BY-LAWS

BUILD THE
"GRUMPY
DOG"

DEMO BIRD

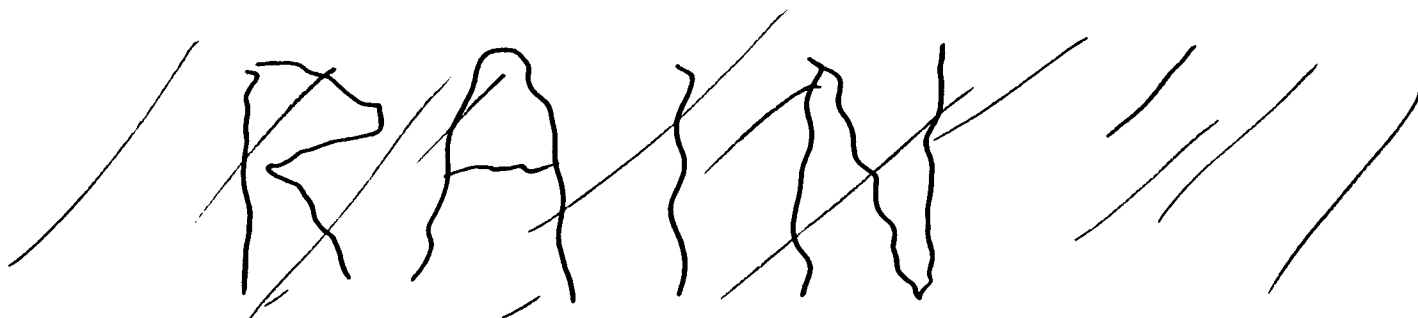


THE COUNTDOWN

"The Countdown", Volume 1, Issue 4, is the semi-official newsletter of the Southern Pennsylvania Area Association of Rocketry, S.P.A.A.R., and is published monthly, or whenever I get around to it.

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After three launches in which the weather cooperated, the odds finally caught up with us, washing out our monthly launch and contest on Sunday, September 25. The launch and the contest, "U.N.C.L.E.-1" will be held on Sunday, October 9, at Cocalico High School in Denver. The launch is to start at 2 PM, be please try to be there between 1:15 and 1:30 for set up. And don't do any rain dances.

You may notice a slightly differant look to this issue of "The Countdown". No mailing envelope, single space type, third class mail. Why? To hold down mailing costs. Sorry!

CLUB CALENDER

- Sunday, October 9: September monthly launch and contest, Cocalico Sr. High, 2 PM.
- Monday, October 17: Montly club meeting, Lancaster Library, 7 PM.
- Sunday, October 30: Monthly club launch and fun-fly, Cocalico Sr. High, 2 PM.

MEETING MINUTES

The monthly meeting was held on Tuesday, September 20, 1988, at the Lancaster Library. Members attending: John Yost, Rickie Hackman, George Beever, Jess Wenrich, Dave Wenrich, Ed Miller, Glenn Feveryear.

The meeting began at 7:00 PM.

John Yost thanked those who had submitted ideas for the "Name the Club" contest, and announced the winner. The club name is officially the SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY, or S.P.A.A.R. This entry had been submitted by George Beever. The Estes "Phaser" kit was donated as a prize for the upcoming club contest.

The proposed club By-Laws were introduced and discussed. These By-Laws will be sent to the NAR as part of the Section application. After discussion, the By-Laws were accepted as amended, by voice vote.

The Treasurer's report was given, outlining all income and expenditures for the past month.

As part of the discussion on finances, the proposed club launch system was discussed. John Yost was requested to make a list of the parts and items he will need to construct the system. This will be presented at the October meeting. At that time, any member who has any of the needed items, and wishes to donate them, may inform John. Any items or parts then still required will be purchased by the club out of the General Fund. The launch system, as discussed, will be built "out to the micro clips". This means that individual launch pads or stands will still be used. In the future, the club hopes to construct launch stands from fence posts, as outlined by John. Anyone wishing to assist in construction of the launch system, contact John.

A checking account will be opened in the Club's name, for the deposit of the General Fund money. Also, a Post Office box will be opened in the Club's name.

A discussion was held on the rules for the upcoming club contest. Dave Wenrich will be the Contest Director, and the Contest Jury will consist of Dave, Ed Miller, and Rickie Hackman. Flight cards were passed out to those attending.

The Club's application to the NAR for acceptance as a Section was discussed. This will be forwarded to the NAR during the last week of September.

John Yost then gave a presentation on the information he has received that NARAM-31 will be held in Virginia, with NOVAAR being the host section.

Due to a large number of scheduling conflicts, the membership present agreed to move the October monthly launch to Sunday, October 30, instead of October 23, as originally scheduled.

General discussion followed. Meeting adjourned at 9:00 PM.

The following are the Section By-Laws adopted at the meeting, and forwarded to the NAR for acceptance.

ARTICLE 1, Name: The name of this organization shall be The Southern Pennsylvania Area Assoc. of Rocketry, (S.P.A.A.R.), a section of the National Assoc. of Rocketry.

ARTICLE 2, Purpose: It shall be the purpose of this Section to:

- A. Aid and abet the aims and purposes of the NAR in South Central Pa., and North Eastern Md;
- B. Operate a model rocket range, and conduct model rocket launch activities in accordance with NAR standards and regulations;
- C. To hold meetings for the purpose of aiding and encouraging all those interested in rocketry;
- D. To engage in other scientific, educational, or related activities as the NAR, the Section, or the Section Board of Directors may from time to time deem necessary or desirable in the connection with the foregoing.

ARTICLE 3, Membership: The membership of this organization shall consist of all interested persons, regardless of age, race, or creed, who express the desire to join, pledge to follow the NAR/HIA Model Rocket Safety Code, and who pay promptly all dues monies as assessed by the Section. All members or prospective members are encouraged to join the NAR.

ARTICLE 4, Meetings: Meetings of the Section shall be held at least 12 times a year, on the third Monday of every month, at times and places designated by the Section Board of Direstors. Club launch activities, workshops, etc., shall not be considered a meeting. A quorum of 50% of the embership shall be necessary for the transaction of new business. Meetings shall be conducted and governed by Roberts Rules of Order, revised. Members are encouraged to attend all monthly meetings.

ARTICLE 5, Dues: Dues shall be according to the following schedule:

Division A: 14 years old and younger, \$5 per year;

Division B: 15,16, and 17 years old, \$7 per year;

Division C: 18 years old and older, \$10 per year.

Dues are payable in January of each year, or, in the case of new members, prior to the end of the first month of embership. These section dues are seperate and distinct from any National dues paid to the NAR. All dues monies shall be kept in a General Fund by the Secratry-Treasurer and shall be paid out by him only in order of the Section Board of Directors. Special assessments may be levied by a majority vote of mambers present and voting at any meeting of the Section, provided notice of such intent is given in writing to each member at least 10 days preceeding such meeting.

ARTICLE 6, Officers and their duties: The officers of this Section shall consist of a president, vice-president, and a secretary-treasurer, all of whom shall be members of the Section and of the NAR. The president is charged with overseeing the activities of the Section, in regards to meetings, events, and whatever other duty assigned to him by the membership, through the Board of Directors. The vice-president shallassist the officers and Board of Directors in the operation of the Section, and shall be the president's appointee to oversee the operation of the club mmetings or events in his absence. In addition, if the president for any reason cannot complete his term, the vice-president shall fill the unexpired balance of that term. The secretary-treasurer shall collect all dues monies and make disbursements from the General Fund at the direction of the Board of Directors. In addition, he shall make a treasurer's report at every Section meeting, outlining all income, expenditures, and the balance of the General Fund. In addition, the secretary-treasurer shall take minutes of each meeting, and make them available to the membership.

ARTICLE 7, Board of Directors: The Board of Directors of this Section shall consist of the three officers, one member-at-large, and a Senior member of the NAR (Division C), who shall be designated by the NAR as Section Advisor.

ARTICLE 8, Elections: The nomination of officers and Board of Directors members shall be taken from the floor at the monthly meeting held in December of each calender year. The election of officers and Board Members shall take place by means of secret ballot at the meeting held in January; the results will be announced and the duties of the new officers and Board members shall begin immediatly. All officers and members of the Board shall serve a term of one year. Exept for the office of president, vacancies in offices and on the Board shall be filled by nomination and election of a section member to fill the unexpired term of office, and shall teke place at the section meeting at which the vacancy is announced.

ARTICLE 9, Ammendments: These by-laws may be amended by a two-thirds vote of those Section members present and voting at any meeting of the Section, providing written notice of the pending amendment has been sent to the membership of the Section at least ten days in advance of such meeting. No amemdment of these by-laws shall be in effect until approved by NAR Headquarters.

ADVANCED MODEL ROCKET FINISHING TECHNIQUES

by Ed Miller

(ED. note - anyone who was at the August club launch and saw Ed's work in the area of finishing had to be impressed. Ed was asked to write an article on his work for the newsletter, which will be printed in three installments.)

At the August 14 launch many of you asked me how I achieved the smooth and glossy finish on my models. To tell you the truth, it is a very time consuming process. First, I will list the Pros and Cons of my paint system:

Pro: Smooth aerodynamic surface

Scratch resistant

Very easy to clean

High strength fins

Thousands of possible colors-using automotive lacquers, including candies, pearls, and metal flakes

Con: Expensive materials

Excess weight

Time consuming application

Lacquer and Urethane paints are considered hazardous materials

Expensive equipment needed.

PART 1: WOOD PARTS PREPARATION

Materials needed:

Tooth picks

220 grit sand paper

400 grit sand paper

Disposable paint brushes

5 minute epoxy

Carpenters wood glue

CASTOGLAS - SLR

Graduated mixing cups

Stirring sticks

Materials Description:

5 minute epoxy - I use the type that comes in a twin syringe. These units are very easy to use. I normally use the Super Glue brand of epoxy. SIG epoxy is also very good, but I don't believe it comes in the syringe unit.

Carpenter's wood glue - This product is very similar to white glue. It is usually pale yellow in color. It dries quicker and makes a stronger bond than white glue.

CASTOGLAS-SLR - This is a polyester resin that can be cast or brushed. It is similar to the clear resin used to imbed small objects for display. Hardener is included with resin.

Graduated mixing cups - These are small waxed paper cups that are printed with measurement lines on the side. These are necessary for accurate measurement of resin and hardener.

Resin and cups can be obtained from:

The Castolite Co.

P O Box 391

Woodstock, IL 60098 catalog \$2.00

Before we begin, let's discuss body tubes. Fortunately, Estes body tubes have a glassine coating on the outside. This surface needs very little preparation for paint. If you are using body tubes without a coating, follow the fin coating directions for the tube also.

STEP 1- Cut fins from balsa sheet supplied with kit. Sand sides smooth. Shape leading and trailing edges as desired. If fins are built up from multiple pieces, assemble as per kit instructions with wood glue or epoxy. Be careful not to get any glue on exterior surfaces. Sand balsa nose cone and other wood parts at this time.

STEP 2- Run a very small bead of wood glue along root edges of fins. Attach to tube.

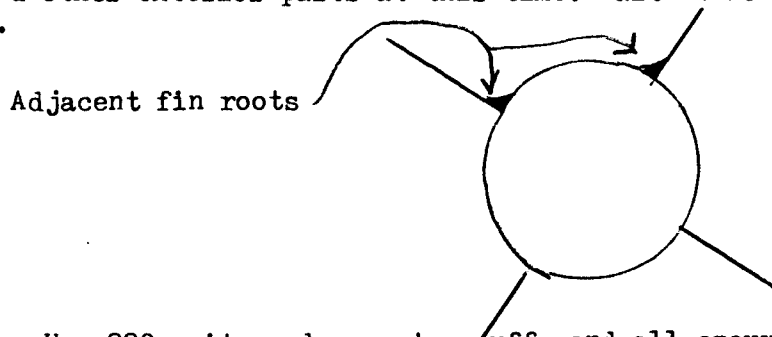
Hold until glue sets or use an Estes Fin Alignment Guide. Don't worry if there are gaps under the root edge of fins, it will give the epoxy more place to hold. Attach launch lugs and other parts at this time using the same method. Epoxy can also be used to attach fins but you will have less time to work.

STEP 3 - Pour $\frac{1}{4}$ oz. of resin into a mixing cup. This should be enough for one coat on an average model and fins. Add 3 drops of hardener per $\frac{1}{4}$ oz. of resin.

Stir thoroughly. Now you must work quickly. Brush a coat over entire exposed area of fins and other wood parts. Make sure you get all of the edges. Do not get any on base of nose cone or the body tube, unless it is uncoated. You will notice that the resin soaks right into the balsa. Let resin cure for 24 hours before proceeding to Step 4.

STEP 4 - Use 220 grit sandpaper and sand fins and other coated parts smooth. Don't forget the edges. Be very careful - the fins are not yet solidly attached.

STEP 5 - Mix a small amount of epoxy. $\frac{1}{8}$ teaspoon should be enough. Make sure you have equal parts and mix thoroughly. Using a tooth pick apply into adjacent fin roots as shown below. Work quickly. Now spread with your fingertip to make a smooth fillet. Make sure that you taper edges of fillet so that it smoothly blends into fin and body tube. Wait 10 minutes. Mix more epoxy, and apply to next pair of fin roots as before. Repeat until all fin roots are finished. Also fillet launch lugs and other exterior parts at this time. Wait 24 hours before proceeding to Step 6.



STEP 6 - Use 220 grit sandpaper to scuff-sand all epoxy surfaces. Don't sand into body tube.

STEP 7 - Repeat Step 3; but this time paint resin over epoxy fillets and onto body tube. Let resin cure for 24 hours.

STEP 8 - Sand all resin coated areas with 220 sandpaper.

STEP 9 - Repeat Steps 7 & 8; but finish sand with 400 grit sandpaper.

Your rocket is now ready for paint.

(Part 2 of Ed's article will be published next month.)

CLUB NEWS NOTES

As previously mentioned, NARAM/NARCON - 31 will be held in Manassas, Va., August 7 - 12, 1989. For those of you who aren't familiar with this, NARAM/NARCON is the NAR's annual meet and convention. To put it mildly, this is the biggie, folks. Events to be held include: "B" Altitude, Plastic Model Conversion, "B" B/G, "C" Streamer Duration, "C" Payload, "C" Scale Altitude, "A" Rocket Glide, " $\frac{1}{2}$ " Parachute Duration, "D" Eggloft Altitude, and "B" Helicopter Duration. I'm sure that more information is forthcoming in future issues of American Spacemodeling.

It has come to our attention that there is already a publication using the name "Countdown", which apparently has to do with the U.S. space program. Oh, well. If they don't complain, we won't either.

The application for Section membership is being prepared to be sent to the NAR. Hopefully, we will have a reply by the October meeting. (Oct. 17)

Also as previously mentioned, the launch originally scheduled for Sept. 25, which was rained out, will be held on Oct. 9. The October launch which was scheduled for Oct. 23, is being put back 1 week, to Oct. 30. Both will start at 2 PM, at Cocalico Senior High in Denver.

If you're looking for a good rocket to impress your friends with, you'll find it in the Grumpy Dog II. If the RSO gets over his initial shock and tries weighing it, he will find that it comes to a fearful thirteen ounces, with engines and before painting. It flies beautifully and is sure to be the hottest thing out at your next launch.

I first designed the Grumpy Dog I as a demonstration rocket to be used at our club's recent membership drive. Two test flights showed that it had excellent flight characteristics. I launched it successfully three more times at demonstration launches, then BANG, it turned grumpy (hence the name). I just couldn't get the second stage to ignite. Two consecutive mishaps convinced me that I had to make a few changes. Adding the gas channel to the booster and making a few other modifications made all the difference in the world. Staging on the Grumpy Dog II has been one hundred percent reliable.

The Grumpy Dog II will serve as an excellent demonstration rocket with a D12-0 - D12-5 engine combination. The best ejection delay varies with the particular rocket, but the three or five second delays work just about the same if the rocket weighs in at about fifteen ounces (with engines and paint).

CONSTRUCTION

Start off by joining the four pieces of BT-60 with the JT-60C tube couplers. To ensure accurate alignment, roll the completed assembly on a flat surface. Remember, this rocket is eight feet long and any misalignment will cause flexing, which will have a dynamic effect on the flight performance.

Next, cut one of the BT-70's so that you have a 4-1/2 inch booster body, a 2 inch ring, and 11 inches of tube left over. Cut a 1/8 inch strip out of the 2-inch ring and glue it into the booster tube so that one inch of tubing protrudes from the booster tube, acting as a tube coupler.

Next assemble the engine mount as shown in the drawing. The centering rings and slats should be firmly filleted to ensure strength. Cut a BT-20 1-1/2 inches long, and glue the AR-2050 rings flush with each of its ends. Again, fillet heavily. When dry, insert this into the engine mount, recessed 1/2 inch, and glue into position. Then glue this whole assembly into the booster tube, gas tube forward, so that the rear of the engine tube is recessed 1/4 inch into the body. Fillet and allow to dry.

Assemble a second mount but leave out the gas channel. In its place glue the third AR-2050 2-1/4 inches into the engine tube. Glue this assembly into the other (17-1/2 inch) BT-70 with the engine tube flush with the end of the outer tube.

Now glue the balsa adapter (1A-6070) and nose cone (BNC-60L) into the BT-60s. You may want to hollow the nose cone before you glue it in place since it comprises nearly one tenth of the total weight of the empty rocket.

Cut the eight fins from 1/8 inch balsa stock. Round the leading edges of the upper stage fins and trailing edges of the booster fins and the tips of both. Attach the fins to their respective body tubes, giving extra attention to strong joints.

BUILD THE "GRUMPY DOG"

This month's plan is for the "Grumpy Dog", a two stage demonstration rocket flown by Glenn Feveryear at the August launch. The design first appeared in the Nov. '73 issue of The Model Rocketeer. Glenn also includes some tips and design updates -ED

1. Use plastic nose cone PNC-60MS (Estes), instead of BNC-60L
2. Recommended launcher is a "C" rail. If unavailable, use no less than 5' of 1/4" rod. Replace 1/8" launch lug with 1/4" lug and 1/8" balsa standoffs with 3/16" balsa.
3. Use extra heavy shock cord and mount. FSI has a perfect cord for this, # PN 7011. An Estes type shock cord mount can be used, but install it using epoxy. Make the mount from an index card.
4. For recovery, a good strong 36" nylon chute is best, but a large diameter reinforced plastic chute will also work.
5. The Grumpy Dog can be painted any color pattern, but don't use too much. As stated in the article, the rocket will weigh in at about 15oz with paint and engines.

I've flown the same Grumpy Dog about 25 times, only having to replace the booster after about 15 flights.

Glenn

Since the Grumpy Dog II is too heavy to be launched from anything but a "C" rail, make the launch lugs accordingly. You can use the 1/8th inch balsa standoffs as I did, or the "T" guide, but make them strong. You can put any type of recovery system you want into the Grumpy Dog, and you might want to rig a sling for the BT-60s.

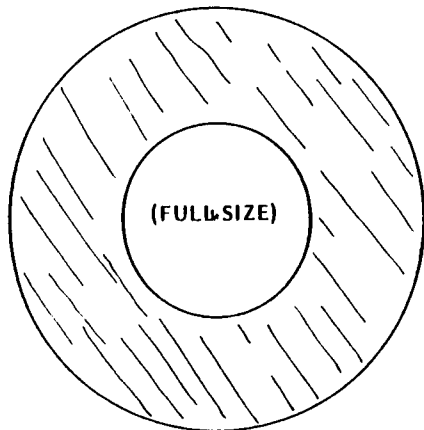
Go lightly with the paint, for the rocket already weighs thirteen ounces.

To set the Dog up for launch, wrap the D12-5 with tape until it fits snugly into the upper stage, protruding 1/2 inch. Do the same with the booster engine. When the upper and lower stages are mated, the upper stage engine fits into the booster engine tube. If you do not fly in a heavy wind, you will find that the Grumpy Dog II has a surprising amount of stability for its size. It's a definite crowd pleaser, and you'll get a real kick out of it. A

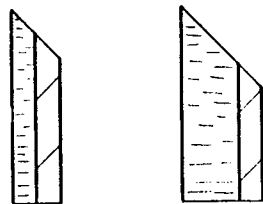
BNC-60L

CAUTION!!
TOTAL WEIGHT WITH ENGINES
MUST NOT EXCEED 1 POUND.

4BT-60'S JOINED
WITH TUBE
COUPLERS
(JT-60C)



CENTERING RINGS
(MAKE 4 FROM 1/8" BALSAs)

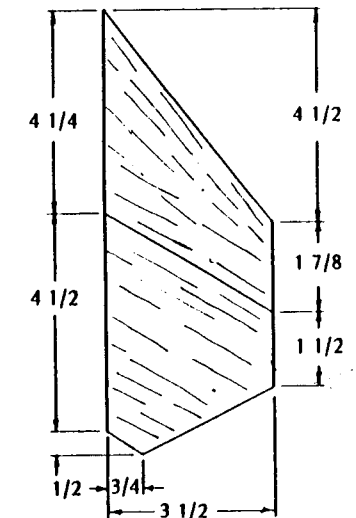
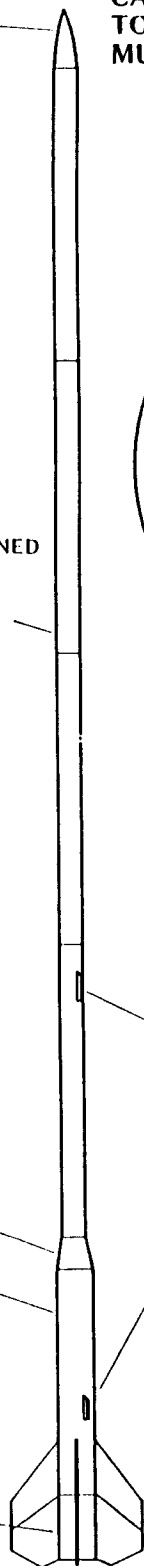


LAUNCH LUGS & STAND OFFS

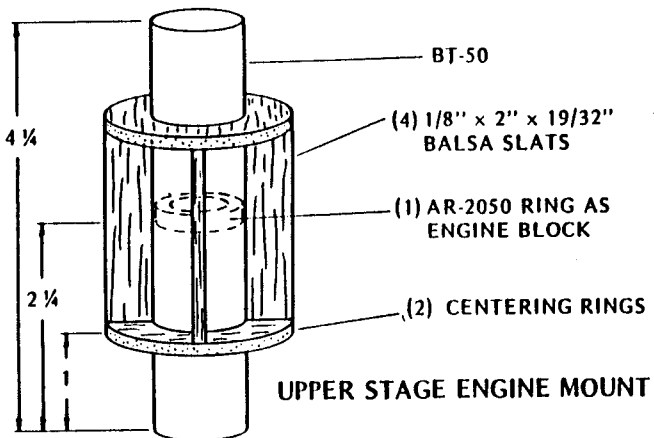
TA-6070

BT-70
(17 1/2")

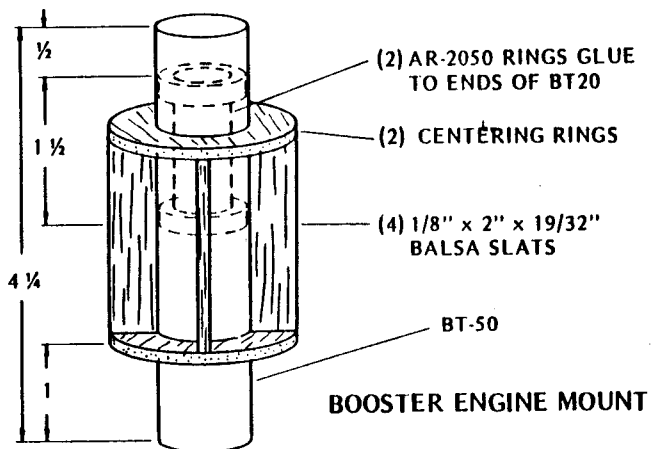
BT-70
(17 1/2")



FINS
(MAKE 4 FROM 1/8" BALSAs)



UPPER STAGE ENGINE MOUNT



BOOSTER ENGINE MOUNT

RECOMMENDED ENGINES
BOOSTER - D-12-0
UPPER STAGE - D-12-3 or 5

the GRUMPY DOG II

BY PAUL ENGELAUF
DRAWN BY PAUL C. CONNER II



CLUB NEWS NOTES

Not only do we have a name, but we also have an address. The mailing address for S.P.A.A.R. is: P.O. Box 127, Reamstown, Pa., 17567.

Glenn Feveryear returned on Sunday night, September 25, from a meet in New Jersey. Apparently, he did very well, placing first, second or third in every event he entered. Congratulations, Glenn! But tell us, how did you get good flying weather that day in New Jersey, when all we had around here was rain, which canceled our launch?

Speaking of the rain, apologies go out to those who were only given last minute notice of Sunday's cancelation. Actually, it only started raining in the Denver area around 11:50 AM, and noon was the pre-designated decision time. If anyone wants to know what really happened, the weather was fine until Mark Snyder and clan arrived from Baltimore at 11:45; I still think he brought the rain with him. Only kidding, Mark.

At about 9 PM on Wednesday, September 28, I spoke with John Yost by phone. At that time, John was in the last stages of packing up for his trip to the USA/USSR model rocket meet at Wallops Island, Virginia. He will be helping to set up the range and carrying out various other duties until Monday, October 3. John hopes to have a report on the meet for us in a future issue of The Countdown.

It appears that we may have to move the sight of our monthly meetings. The October 17 meeting will be held there, but scheduling problems with the Lancaster Library may force to look for another location. It might be a good idea for the members to start looking around for an alternate sight for meetings.

The NAR recently sent me an updated list of NAR members in our area, including two people from Glenn's area of Delta, Pa. As a matter of fact, one lives across the street from him! We will make the effort to contact these folks, either by mail or phone, and invite them to join us. We need the members!

As you can see from this issue, we have some contributions from members. Ed Miller's Advanced Finishing Techniques article, and the plans for The Grumpy Dog, by way of Glenn Feveryear. We need more! If you have an idea for an article or story, write it! If you have a plan or design of a rocket that you've flown, send it in! They don't have to be Saturn V type things; sometimes the simplest sport model is the most fun to build and fly, so what the heck, send it in.

The idea has been brought up to organize a "feild trip" to one of the model rocket meets held in New Jersey or Virginia, just to familerize ourselves with the procedures of holding one of these meets. Also, it just sounds like fun to me. More on this at the next meeting.
