



**FREE
PRESS**



NORTHERN VIRGINIA ASSOCIATION OF ROCKETRY

NOVEMBER 198

NOVAAR ON THE MOVE

MARS-17: The 17th Mid Atlantic Rocketry Shoot held October 5 & 6 brought 13 rocketeers and 3 teams from as far as Pennsylvania and New York. Spectators and sport launchers came as far as Richmond and Maryland to attend as well. Half the events were won by the New York contestants who were also the B and C division champions (full results elsewhere in this issue). 5,175 points were captured by the NOVAAR members in attendance. The range and trackers were run with the usual high NOVAAR quality, with help from kind volunteers. Look for MARS-17 article by Trip Barber in a future American Space Modeler.

Building Session: At the Kings Park building session NOVAAR members built models in preperation for the then upcoming MARS regional. Plans were made for teaching fellow members how to track rockects and ideas were also discussed on how to increase NOVAAR awareness in Northern Virginia.

Speaking of on the move... Trip Barber will be the second big member to leave NOVAAR this year. Trip and company who just joined NOVAAR 2 years ago will be moving Nov. 8th to VA. Beach where his family will live while he starts a new job as second in command on board the USS Stomp for the next 2 years. Trip expects to return to NOVAAR perhaps in September of 1987. He will be working 12 hours a day and so doesn't expect to be doing much in the way of rocketry; except for an occasional article and attending 1 regional a year. Perhaps he will return a spot landing wiz! Good luck Trip!

FINAL RESULTS - MARS-17 REGIONAL MEET
October 5-6, 1985

A DIVISION	C Streamer (sec)	1/2A Int'l PD (sec)	B Helo (sec)	D B/G (sec)	B R/G (sec)	D Altitude (meters)	A Superroc Altitude (points)	C Eggloft Altitude (meters)	Total Points
Elizabeth Barber	81/121 = 202 (1)	32/15/28 = 75 (2)	--	--	--	386 = 386 (1)	--	78 = 78 (2)	570 (2)
Sammy Wood	103 = 103 (3)	DQ/23/DQ = 23 (3)	--	--	63 = 63 (1)	--	--	70/68 = 70 (3)	642 (1)
Stephen Wood	120 = 120 (2)	31/36/18 = 85 (1)	--	--	--	379/NC = 379 (2)	99cm-63m = 423 (2)	--	546 (3)
Eric Gann	--	--	--	--	--	--	--	196 = 196 (1)	210 (4)
B DIVISION									
Dan Mulholland	245 = NR	43/DQ/MAX = 163 (2)	62 = 62 (1)	--	--	710 = 710 (1)	188cm-86m = 736 (1)	TL	744 (2)
Adam Nowotarski	184/114 = 295 (1)	MAX/92 = 212 (1)	--	--	--	--	--	--	420 (3)
Harry Rose	70 = 70 (3)	MAX = 120 (3)	21 = 21 (2)	--	23 = 23 (2)	570 = 570 (2)	--	227 = 227 (1)	846 (1)
Kirk Davis	123/DQ = 123 (2)	DQ/DQ	--	--	--	--	--	--	108 (4)
C DIVISION									
Brown/Brown Team	77/DQ = 77 (4)	70/93/35 = 198 (3)	61/DQ = NR	DQ/DQ	43/99 = 142 (1)	NC	158cm-66m = 606 (2)	128 = 128	669 (2)
Odd Couple Team	147/191 = NR	77/DQ/DQ = 77 (4)	87/73 = 160 (1)	189/19 = 208 (1)	46/51 = 97 (3)	TL/NC	187cm-70m = 701 (1)	DQ/183 = 183 (1)	1254 (1)
Ken&Charlie Team	165/30 = 195 (3)	81/46/MAX = 247 (2)	39/68 = 107 (2)	DQ/DQ	50/DQ = 50 (4)	672/NC = 672 (2)	323cm-10m = DQ	164 = 164 (3)	612 (4)
Trip Barber	155/218 = 373 (1)	--	--	--	--	DQ/NC	132cm-50m = 496 (4)	173/170 = 173 (2)	348
Dan Winings	--	MAX/MAX/65 = 305 (1)	--	DQ/DQ	49/61 = 110 (2)	754/NC = 754 (1)	79cm-126m = 489	161/108 = 161 (4)	657 (3)
Steve McCain	124/219 = 343 (2)	--	--	--	--	--	--	--	108
Greg Maguire	--	--	--	--	--	456/NC = 456 (3)	--	128 = 128	69
John Yost	DQ	--	DQ/DQ	--	--	CATO	--	--	0
Quang Pho	--	--	--	--	--	--	87cm-154m = 569 (3)	--	84

DQ = Flight disqualified.

NR = Return rule requirements not met.

NC = Track did not close.

TL = Track lost.

NORTHERN VIRGINIA ASSOCIATION OF ROCKETRY
MEMBERSHIP ROSTER

2 NOVEMBER 1985

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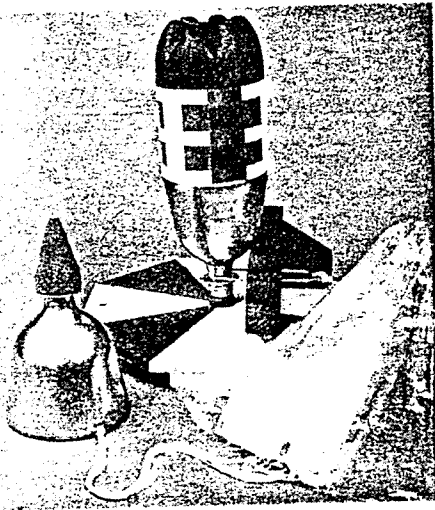
Vulcan Systems Inc.

PO 6099

Colorado Springs, CO

80934

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If you're looking for a way to perk up a pack of children afflicted with the midsummer blahs, our backyard space shuttle may be just the answer. Using nothing more than water and compressed air for propulsion, the rocket will shoot well over 100 feet into the air . . . separate its first stage from its nose cone . . . and deploy a parachute to lower the cargo safely back to earth. A typical launch is thrilling enough to catch the full attention of everyone around (including folks who can only claim to be young at heart).

Putting together your own Cape Canaveral shot shouldn't take more than an hour or two of tinkering with parts that, in the main, can be recycled. The basis of the rocket is a pair of two-liter plastic soda bottles . . . one to serve as the propulsion stage and one to form the nose cone. These and many of the other pieces needed to assemble this toy are common to the garden sprayer that was detailed on this same page in MOTHER NO. 80. (In fact, the thought of what might happen if one of that sprayer's bottles broke loose from its mounts is actually what inspired this latest use for the stout plastic containers.)

The rocket's first stage contains all the pressure, and it requires no more preparation than a bit of decoration. As you're adorning the bottle, be sure to leave a clear stripe up the side of the container so you can see whether or not the appropriate amount of H₂O "fuel" has been added. The nose cone consists of the snout-and-cone portion of the second bottle, which is cut off at the ridge where the funnel joins the cylinder. We spruced up our "orbiter" a bit by sticking a cone-shaped piece of foam rubber over the neck and by adding a parachute made from eight 18" lengths of string and a 2" diameter circle of thin plastic (dry cleaners' or light garbage bags work fine for this).

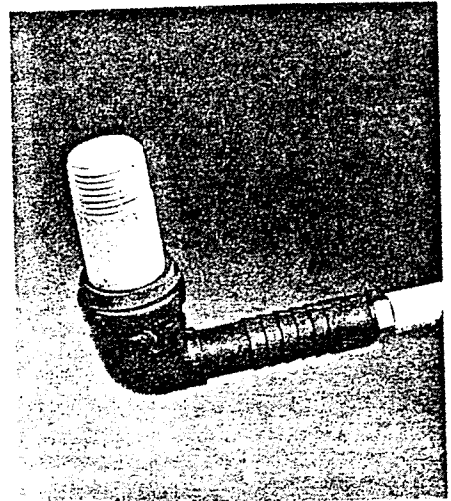
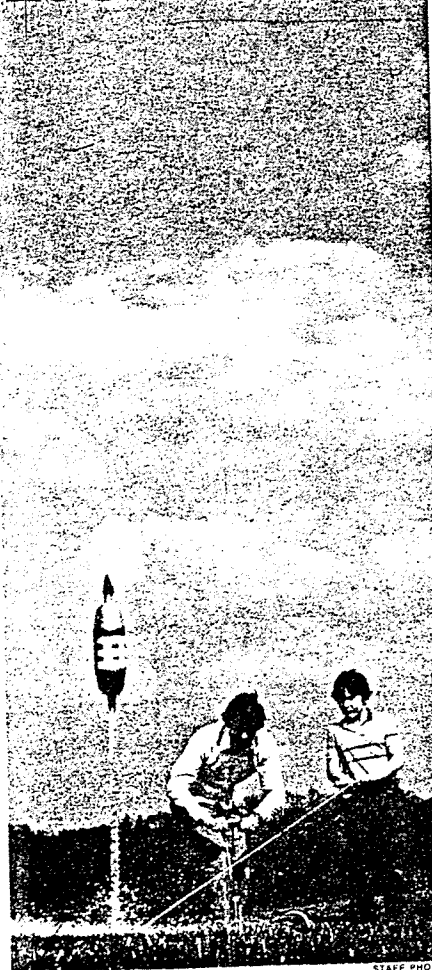
We used an octagonal piece of 1/2" plywood a foot across to form the launching pad (the particular material you use for the base isn't important . . . a piece of 1 X 12 would work as well). The "blockhouse", though, needs to be substantial to prevent energetic youngsters from ripping the assembly apart when they jerk the release cord. We built ours from a 6" section of 2 X 4, with a perpendicular brace made from a 4" piece of the same material. These blocks were then securely fastened to the pad with No. 8 X 1-1/2"

wood screws. In the same operation, we also attached legs, which consisted of three 6" lengths of 1"-square stock, to the underside of the base by screwing their long dimension even with the outside of the plywood. As a final security measure, we drilled a 3/8" hole near the edge of the pad opposite the blockhouse . . . so the "launchers" could drive a gutter spike into the ground to prevent the assembly from moving.

The trigger mechanism was made by bending a 10" length of 1/8" welding rod into a "U" shape, the width of which was equal to the outside diameter of the soda bottle's neck (about an inch). The two arms of the "U" passed through the 2 X 4 X 6" block at a height that allowed them to fit snugly above the flange on the jug's neck when the rocket

This easy project will thrill young and old alike . . . and recycle trash at the same time!

MOM'S TWO-LITER BOTTLE ROCKET



was in launch position. (The exact location for these holes should be determined after the rest of the assembly is complete.)

We chose 1/2" Schedule 40 PVC pipe as the launching post, since that material happened to slide tightly into the neck of our first stage. We threaded a 2" nipple of the pipe into a 1/2" ABS female pipe-to-barb 90° elbow . . . bored a 1-1/8" hole in the center of the plywood base . . . slipped the PVC end of the assembly up through the hole . . . and attached the elbow to the underside of the pad with two 1/2" copper pipe clamps. A little bit of plumber's grease and a garden hose washer formed such a tight seal between the bottle-neck and the 1/2" pipe that we were able to pump air into the rocket to a pressure of 50 pounds per square inch without any leakage.

To deliver that much pressure from a safe distance—and make no mistake, this rocket is powerful!—we threaded the inside of the ABS hose barb with a 3/8" pipe tap, twisted in a 3/8" brass hose barb, and connected 12 feet of 3/8" plastic tubing (you might use a hose clamp to hold the line on really tight). At the tubing's other end, we clamped in a regular automotive tire valve (Schrader type) to allow a standard bicycle pump to be connected easily. The trigger mechanism was also extended out 12 feet with a piece of cord that has a dowel handle.

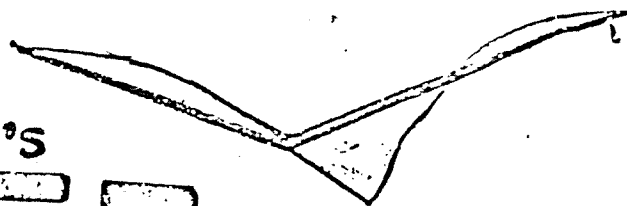
Once you've assembled your own soda-bottle shuttle, you'll be ready to begin a backyard space mission. Prelaunch procedure consists of filling the first stage with water to a point about three-fifths of the way up . . . slipping this "booster" down over the PVC nozzle (while spilling as little fuel as possible) . . . holding the rocket fast by sliding the trigger arms over the neck . . . and setting the nose cone lightly atop the first stage. Finally, firing the missile—after a suspenseful countdown, of course—is a two-person job. Indeed, with one youngster pumping and another handling the release cord, something a shade short of NASA-style teamwork is needed for a successful mission.

Be sure to stand back when you reach "T minus zero"! The bottle rocket packs a considerable amount of power . . . and sprays roughly a liter of water about as it lifts off!

EDITOR'S NOTE: If you'd rather build a "milder" flying toy, see page 123. ☛

STAFF PHOTOS

THE "ULTIMATE" BOOST/GLIDER!
 $\frac{1}{2}$ A4A B/G
 GEORGE GASSAWAY'S
WINDRIFT



drawings by Tony Williams

$\frac{1}{2}$ A4A B/G

PARTS LIST (for the glider only)

- 3 1/16" x 1/8" x 12" spruce beams
or 3/32" x 1/8" x 12" balsa
- 1 Windrift spring
- 1 12" sheet of ultra-thin plastic

VIRTUALLY UNDEFEATABLE IN
 GNAT & HORNET B/G:

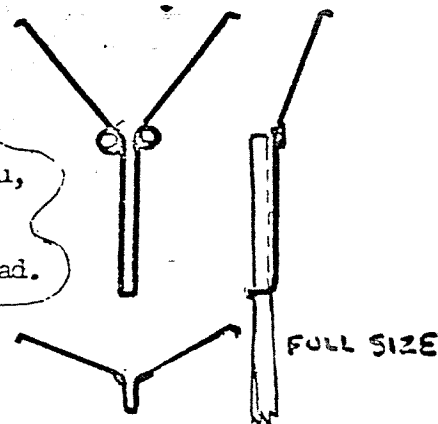
($\frac{1}{4}$) - ($\frac{1}{2}$)

Attach plastic wing material to beams with cyanocrylates (Krazy-Glu, Hot Stuff, etc.) and sew in place with strong cotton thread.

SMALL MYLAR STREAMER

EXTERNAL SHOCK CORD ANCHORED TO FIN

12" Bt-5 or RB50



WINDRIFT SPRING: Made of .015 music wire, about 6" long. Coils are wrapped once around a 1/16" dia. dowel. If you are unable (or too lazy) to make your own springs, they are available in small quantity from MARCS HQ for 13¢ (a stamp) each.

HELPFUL FLYING HINTS

- (1) Use LOTS of recovery wadding.
- (2) Tape engine securely in place.
- (3) Launch from a ZVPL.

FULL SIZE
 FIN PATTERN
 (Make 4)
 1/20" BALSA



COUNTDOWN CALENDAR

NOVAAR meetings are held on the first and third Tuesdays of each month, from 7:00 PM to 8:30 PM, at the Dolley Madison Branch Public Library in McLean.

For information call Kenneth Brown (703-451-2808).

SAT, Nov 9	NICE-6 Open Meet. Manassas Battlefield, VA. 9AM-5PM. 1/2A International Parachute Duration, A Int. Streamer Duration, B Int. Boost Glide, C Eggloft Duration, 1/2A Helo Duration, A Superroc Curation, Predicted Duration, Open Spot Landing.
TUES, Nov 5 & 19	NOVAAR Meetings..
SAT, Dec 7	Public Demonstration Launch for American Hobbies. Burke Center, VA.
SAT, FEB & MAR 1	(Tentative, awaiting final approval) Building session with pot luck lunch. 10 a.m. - 2 p.m.
SAT/SUN May 10 & 11	ECRM-15 Regional Meet. Manassas Battlefield, VA. 1/2A International Parachute Duration, A Int. Streamer Duration, C Helo Duration, A Rocket Glide, B Int. Boost Glide, A Altitude, D Eggloft Altitude