COUNTDOWN

OFFICIAL NEWSLETTER OF
THE SOUTHERN PENNSYLVANIA AREA ASSOCIATION OF ROCKETRY

"YOU WANT ME TO FLY THIS

ON A G-WHAT?!?"

Vol 3 No 2

MAR/APR 1990

The SPAAR COUNTDOWN

Vol. 3, No. 2

March/April, 1990

The Countdown is the newsletter of the Southern Pennsylvania Area Association of Rocketry, NAR Section #503, PO Box 127, Reamstown, PA, 17567. It is intended for the use and enjoyment of it's members and subscribers. Non-member subscription rate: $5 per year, six issues. Use of material is permitted with proper credit. Editor: George Beever. Cover art: Bob Stott. Jacket: Bruce Canino. Thanks this time to: Ed Miller, Bob Sanford, Ken Brown, and Glenn Feveryear.

CONTENTS

On the cover: Yes, thats my son Mark on the cover this month. How does he rate? I'm the editor. I can do that.

SCHEDULE

April 1: SPAAR Sport Launch, 1PM to 5PM, Cocalico High School. Practice Event: A SuperRoc Duration.

April 16: Section Meeting, 7PM to 9PM, Lancaster Library.

April 22: Section Sport Launch, 1PM to 5PM, Cocalico High School. Practice Event: C Helicopter Duration.

April 29: NICE-10 Open Meet, 9AM to 6PM, Manassas, VA. Host Section: NOVAAR Events: B Payload, ½A Helicopter, B Rocket/Glide, B Boost/Glide, B SuperRoc Altitude, C Altitude.

May 20: SPAARSEC-2 Section Meet, 9AM to 5PM, Cocalico High School. Events: C Helicopter, B Eggloft, B Rocket/Glide, A SuperRoc, Steamer Spot Landing.

May 21: Section Meeting, 7PM to 9PM, Lancaster Library.

June 10: SPAAR Sport Launch, Cocalico High School. NOTE TIME CHANGE: 3PM to 7PM. Practice Event: B Streamer Duration.

June 18: Section Meeting, 7PM to 9PM, Lancaster Library.

June 30: LMR-1 (Last Minute Regional), 9AM to 6PM, Manassas, VA., Host Section: NOVAAR.Events: D Boost/Glide, B Flex-Wing Multi, B Rocket/Glide, B Streamer, C Helicopter, C Eggloft Duration.

July 1: SPAAR Sport Launch, 3PM to 7PM, Cocalico High School. Practice Event: ½A Parachute Duration.

SECTION MEETING MINUTES

February 19, 1990

Present: E. Miller, R. Feveryear, G. Feveryear, G. Beever, F. Hoke, D. Greene, R. Hackman.

Reports:

1. Treasurer's Report: Ed Miller reported that there are 29 active members, and a General Fund balance of $269.30.

2. Newsletter: George Beever stated that 45 copies of the Jan/Feb newsletter were distributed as follows: 29 to members, 10 to other clubs on an exchange basis, 1 to AmSpam, 7 to subscribers, and 3 sent to prospective members.

3. Competition: Glenn Feveryear reported that sanctions have been received for the SPAARSEC-2 Section Meet and the SPARROW-1 Open; a paperwork problem has held up the sanction for the Record Trial; and we are still waiting on word from Hershey Park about the use of their facilities for the Open Meet in September.

4. Education: George Beever reported that all of the SPAAR Winter Workshops from this year and 1989 are on video, if anyone wishes to borrow them.

5. Section Advisor: George Beever reported for SA John Yost, who advised that he has not received the Section Charter renewal info from the NAR yet.

Old Business:

1. The club patches were duscussed at length; it was decided to order 60 patches in the initial order, for sale at $3.00. Dale Greene volunteered to handle the ordering.

2. Glenn Feveryear suggested that a workshop be held to finish the repair and maintanance of the launch system.

3. The proposed amendments to the club by-laws were accepted by voice vote.

SECTION NEWS NOTES

NEW MEMBERS: We welcome two new members, both from the Harrisburg area. They are Kenn Pattison, 4905 Bretney Dr., and Fred Hanawalt, 3230 North 4th Street. They have both been flying model rockets for over 20 years. We're very glad to have you with us!

HERSHEY BARRED?: Despite the intensive efforts of Section president Glenn Feveryear, we will not be able to use the Hersheypark facilities for our Open Meet, scheduled for Sept. 15. Ken Peiffer, Booking & Events Manager, writes: "Thank you for taking the time to assemble and mail me answers to all of the questions that I raised... Unfortunately, [my superiors] have decided that, however safe and worthwhile the hobby, the utilization of our property for model rocketry events is not possible at this time."

This means, of course that we must find an alternate site, as Cocalico High School is not suited for an Open Meet. Any and all suggestions are welcome.

YES VIRGINIA, THERE WILL BE A WUBBA: Word has been received from Art Rose that there will be a WUBBA, but it will be in Center Valley of course, not Virginia. The dates for this annual Regional will be the weekend of July 21 & 22. This poses a bit of a problem for SPAAR, as our Record Trial is also scheduled for 22 **July.**

NICE-10: As stated before, SPAAR wil attend the NICE-10 Open Meet in Manassas, VA. on April 29. We hope to make a good showing, so all members are urged to attend. Car pooling is suggested, but be sure to make your arrangements early. The events once again are: B Payload, B Rocket/Glide, B Boost/Glide, ½A Helicopter, B Superroc Altitude, and C Altitude.

The WARP DRIVE

by Ed Miller

The Warp Drive is a high performance, maximum acceleration model. This model will literally "Warp" right out of the launch area.

About a year ago I received my first Flight Systems, Inc. order. I bought a few packs of motors, some kits, and a few parts to exerperiment with. After receiving the order, I decided to build a minimum diameter model for the FSI F100 motors. The Warp Drive I was the result.

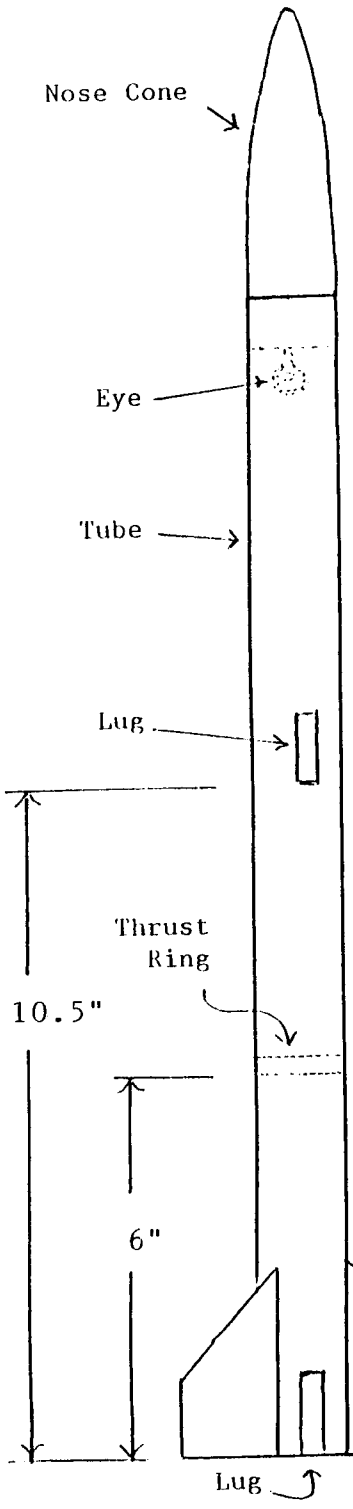
The first time that I flew the Warp Drive, I still had my launch system set up for Estes type models, with A through D motors. My control box was 15 feet away from the launcher. Prior to launch, I checked for aircraft, as I expected to get some good altitude from the model; I wasn't, however, ready for what was to come. When I pressed the firing button, there was a short delay, and then a WHOOOSH! All we could see was a flash of fire and we were instantly enveloped in a cloud of smoke.One of my friends thought that the model had exploded and ran back a few steps. Then we looked up, and be darned, there she was, about 1500 feet up! Then came the ejection, and the beautiful mylar streamer that I had packed into the Warp Drive started to shred. There were silver sparkles all over the sky! The end result, of course, was that the Warp Drive fell out of the sky very fast, impacting on a blacktop driveway. The model all but disintegrated, losing all three fins and suffering a kinked body tube. After a similar experience with Warp Drive #2, I built one out of North Coast Rocketry parts, which are a bit more heavy-duty. This model has flown well, and will stand up to the F100.

Now that you know the history of the Warp Drive, you may want to build one yourself.

Begin construction by cutting an 18" section of the NCR BT-11. Using epoxy, install the thrust ring 6" from one end. Epoxy the screw eye into the nose cone. Trace three fins onto the fiberglass fin materiel; using a razor saw, cut out three fins. You'll need more than one blade for this, as the glass is very tough. Square the root and outer edges with 220 grit paper; round the leading edge and slightly taper the trailing edge. Drill a 3/32 hole in one fin as shown. Mark the tube for fin and lug locations. At each fin location, lightly cut through the shiny coating on the tube, and peel away. Using 5 minute epoxy, tack each fin in place. Once these have cured, add epoxy fillets to all fins. Attach launch lugs and fillet in the same manner. Cut a small "V" notch in the forward end of the body tube, in line with the fin with a hole in it. Cut a small grrove in the nose cone shoulder. Paint your model with flourescent colors, so you can see it easily. Cut a 4 foot peice of the Kevlar cord, and attach to the screw eye and hole in the one fin, secure both knots with epoxy. Attach the remaining Kevlar to the Mica Film with Monokote, and tie the other to the screw eye. Glue the knot.

WARP DRIVE PLANS BY Ed Miller

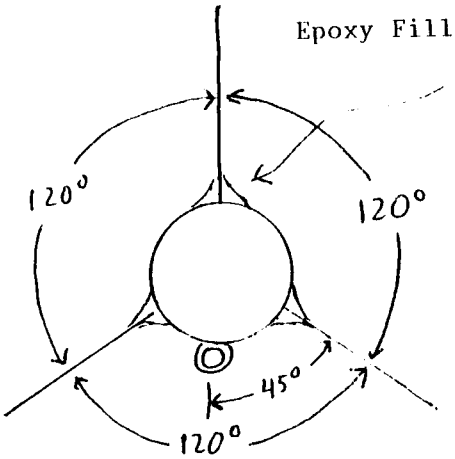
Approx. 1/3 scale

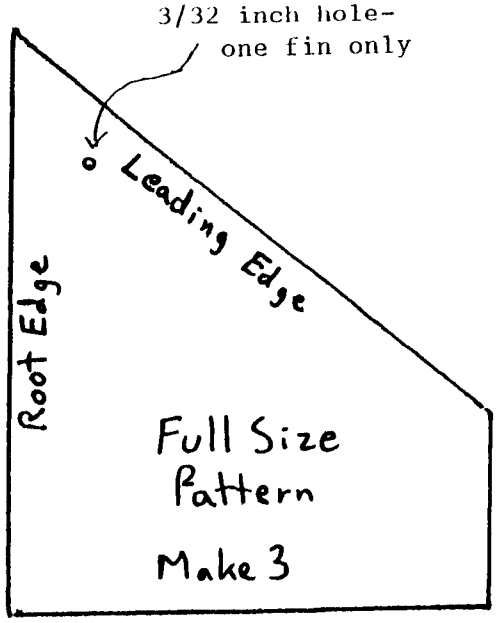


Parts List

Name	Qunatity/Size	Part No.	Source
Tube	1 18 inch	BT-11	North Coast
Nose Cone	1	NC-11	North Coast
Thrust Ring	1	TR-11	North Coast
Lug	2	LL-1/4-1	North Coast
Fin Stock	1	GBS-47	Apogee
Kevlar	6 ft.	KSL-100	Apogee
Eye	1	SE-1	North Coast
Epoxy	1 set	PIC-975	North Coast
Mica Film	1 6 X 60 inch	MF-2	Apogee
Monokote	1 2 X 6 inch		Hobby Shop

Fin Spacing Diagram





Flight prepping of the Warp Drive is easy: Wrap ½" masking tape around the nozzle end of the FSI motor tightly. Build it up until the tape ring is the same diameter as the body tube. Now, tape two rings around the motor for a tight friction fit. Place about 6 squares of Estes-type recovery wadding in the tube, one piece at a time. Fan-fold the streamer and wrap it's shroud line around it. Push the Kevlar shock line into the body tube, followed by the streamer. Put the nose cone in place, making sure that the shock line enters the tube at the little "V" notch, and runs down the groove in the nose cone base.

You can use a standard FSI ignitor, but your best option is an electric match, also available from FSI. Push the match in to the top of the core, and bend the wires over the nozzle tape ring. Secure with a piece of tape. DO NOT cover the nozzle!

Use a heavy-duty launcher with a low center of gravity. The use of a ¼" X 6' launch rod is all but mandatory for this bird, and be at least 50' away from the pad when you launch.

A wide variety of 29mm motors can be used in this model:

FSI: E60-8, F7-6, F100-10.

Aerotech: F10-8, F25WL-9, F50-12, F80-10, G25WL-10, G40WL-13, and G80-13.

A scaled-down version of the Warp Drive can be built, to take advantage of the 24mm composite or black powder motors. Use the the NCR BT-9 and NC-9. Keep the tube length and fin size the same.

Since this is a super high-performance rocket, use common sense and caution in construction and flying.

I hope someone else tries a Warp Drive; it's cheap, fast, and lots of fun!

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Ed "Throw that white glue away" Miller's

Manufacturer Index

As part of his High Power Rocketry workshop, Ed Miller came up with this index of suppliers of rocketry related items:

Below is a list of differant products that are used for model rocketry. They are listed by letter code. On the following pages the manufacturers are listed, with the appropriate letter codes of the products they carry or produce. -Ed Miller

A Low Power kits and parts
B High Power kits and parts
C Low power black powder motors
D High power " " "
E Composite Motors (NAR legal)
F Composite Motors (not legal)
G Phenolic Body Tubes
H Fiberglass Tubes & Kits
I Bass- and Plywood
J Composite Fins
K Fiberglass Fin Material
L Nylon Parachutes
M Adhesives
N Coatings
O Launch Equipment
P Electronics
Q Ignitions Materials
R High Tech Materials-Carbon Fiber and Kevlar
S Paint and Finishing Supplies
T Painting Equipment

Manufacturer and Supplier List

AAA Model Aviation Fuels Large Scale Rocketry Div. RD6 Box 172 Edwards Ave. Clarks Summit, PA 18411	A B C D E F H L M Q Catalog $2.00	
ACME Rocket Co. P.O. Box 28283 Tempe, AZ 85282	A Catalog $2.00	
Advanced Rocketry Components P.O. Box 97904 Pittsburgh, PA 15227	H Catalog $2.00	
Advanced Rocketry Group 4269 Torino Crescent Mississauga, Ontario CANADA L4W 3T4	A Catalog $1.00	
Aerotech Consumer Aerospace 1955 South Palm St. Suite 15 Las Vegas, Nevada 89104	B E F O Q Catalog $2.00	
Apogee Components 11111 Greenbriar Rd. Minnetonka, MN 55343	A K R Catalog $2.00	
Auto Parts Store	M S T	
Badger Air Brush Co. 9128 W. Lelmont Ave. Franklin Park, IL 60131	T Catalog Price unknown	
Belleville Wholesale Hobby 1827 North Charles St. Belleville, IL 62221	A C E Catalog $1.50	30% off Estes, COX, MRC, and FSI- minimum order $30.00 Aerotech 30% off on $350.00 minimum order
Commonwealth Displays Inc. 12649 Dix Toledo Southgate, MI 48195	A B C D E Catalog $2.00	
Competition Specialties P.O. Box 452 Vine Grove, KY 40175-0452	R Catalog $3.00	
Cox Hobbies Inc. 1525 E. Warner Ave. Santa Ana, CA 92705	A C Catalog Price unknown	See Belleville Catalog

Castolite Inc P.O. Box 391 Woodstock, IL 60098	N Catalog $2.00	
D.A.R.E. Rockets 747 Parkway Elgin, IL 60120	B P Catalog $2.00	
Department Stores	A C M S T	
DuPont go to Auto Parts Store	S	
East Coast Rockets 408 Lark Drive Mt. Laurel, NJ 08054	A B C O P Catalog $2.00	
Esets Industries P.O. Box 227 1295 H St. Penrose, CO 81240	A C O Catalog $1.50	
Flight Systems Inc. 9300 East 68th St. Raytown, MO 64133	A B C D L O Q Catalog $2.00	
Hobby Shop	A B C D E I M N S	
House of Kolor 2521 27th Avenue South Minneapolis, MN 55406	S Catalog $2.00	
High Sierra Rocketry P. O. Box 5127 Reno NV 89513	B E F P Q Catalog $1.00	
LOC/Precision 1042 Iroqupis Macedonia, OH 44056	B L M O P Q S Catalog $2.00	
3M go to Auto Parts Store	M S	
Model Aerospace Research Systems 2240 9th St. National City, CA 92050	A K Catalog $1.00	
Moose Engineering P.O. Box 540968 Merritt Island, FL 32954	O P Catalog $1.00	
Model Rectifier Corp. 200 Carter Drive Edison, NJ 08817	A C Catalog price unknown	See Belleville Catalog

North Coast Rocketry P.O. Box 24468 Mayfeild Heights, OH 44124	A B E F L M N O P Q S	Catalog $2.00	
Public Missiles Ltd. 38300 Long Mt. Clemens, MI 48045	G J	Catalog $2.00	
Ravena Rocket Research P.O. Box 294 Ravena, OH 44266	F	Catalog $1.00	
Reaction Labs RT 4 Box 274 Markwell Ln Taylorsville, KY 40071	F	Catalog price unknown	
Rocket Research 2303 S. Newton Circle Richmond VA 23231	B E F L M O Q	Catalog $1.00	20% off on Aerotech products; no minimum order.
Sentell Enterprises 104 Linden Drive Hendersonville, TN 37075	L	Catalog send SASE	
Space Dynamics 1491 Bibiana Way Upland, CA 91786	L P	Catalog $2.00	
U.S. Rockets Box 1242 Claremont, CA 91711	B E F	Catalog $2.00	
Vertical Advanced Rocketry 909 Ave. H South Houston, TX 77587	O	Catalog send SASE	
Vulcan Systems Inc P.O. Box 6099 Colorado Springs, CO 80934	E F K M Q	Catalog $2.00	
West Coast Rocketry P.O. Box 2863 Rancho Cordova, CA 95741	B E F H L M O P Q S	Catalog $2.00	
Tiffany Hobbies of Ypsilanti P.O. Box 467 Ypsilanti, MI 48197	A B O	Catalog $1.00	
Ken Brown Kits send to- Kenneth Brown 7021 Forest View Drive Springfeild, VA 22150	A	Catalog send SASE	

Qualified Competition Rockets

APRIL NEWS

Former Panamanian leader Manuel NORIEGA is reportedly ready to take a shot at becoming NAR president. He states that he is not unhappy with current president J. Pat MILLER, but he thinks that the title "Maximum Rocketeer" sounds pretty neat. Said the former Maximum Leader of Panama, "My number one goal is to find the secret of the 100% 'chute deployment rate attained by the 82nd Airborne last December.I couldn't believe it!" Lots of powder, Manny, lots of powder.

Techno-thriller writer Tom CLANCY is back at work. After a string of best selling books such as Red Storm Rising, Patriot Games, and Cardinal of the Kremlin, Clancy is working on something he says is a bit different. His hero, CIA analyst Jack Ryan, returns in the new book, as a Born Again Rocketeer searching the world over for out-of-production Estes kits. The title of the new work, expected this summer, is The Hunt for Der Red Max.

Negotiations have already begun on the movie rights, with Bob STOTT in the running for the role of Ryan.

A number of NAR Sections, including SPAAR, received a letter over this past winter, which contained complaints about many things, including the selection process of the US Internats Team, Art Rose's sales of the old Estes A3-2 amd A3-6 motors, etc. However, the letter was unsigned, and the charges made in the letter were unsubstantiated.

It has been learned that a secret probe launched by NAR higher-ups to find the author of the letter has centered on two suspects: The NOID on the Domino Pizza commercials, and JOE ISUZU.

With the prospect of a baseball-less spring and summer, ESPN is reportedly close to signing a TV deal with the NAR for the television rights to NAR events. The package calls for Open Meets to be broadcast on Monday nights, with a Sunday afternoon Regional televised on a weekly basis. NBC won the bidding for NARAM, however, and will provide 6 hours of live coverage per day, with a one hour wrap-up of the days' events at 11:30 PM. Chris BERMAN and Curt GOWDY will have the call on ESPN, with Bob COSTAS doing the launch-by-launch for NBC, with analysis by G. Harry STINE and Ahmad RASHAD. NAR president J. Pat MILLER responded to the signing of the $3 million deal by saying, "Maybe now we can stop subsidizing American Spacemodeling altogether!"

(April Fools!)

AEROTECH™ CONSUMER AEROSPACE

IT'S THAT TIME OF THE YEAR!

NEW PRODUCTS!

This is the time of the year that many rocketeers eagerly await-when the manufacturers introduce new products for sale. This year is no differant.

Some of the biggest news comes from Aerotech Consumer Aerospace, of Las Vegas, NV. Aerotech has been producing composite propellant rocket motors since the late 70's, and was a pioneer in their introduction into the feild of model rocketry.

In 1987, Aerotech was contracted by a new firm, Enertek, to produce a line of composite motors for that company. Enertek's goal was to cater to the growing number of BAR's: Born Again Rocketeers. These were (and are) modelers who became involved in model rocketry in the 60's, but drifted away when their interest waned. BAR's started to return to the hobby in the 80's, but were looking for something a bit more complex or exciting than your standard Estes Alpha. Enertek had many good ideas, but the company folded in 1988 without ever having produced a single product. However, the interest in the marketplace was there; thus, Aerotech's new line.

For 1990, Aerotech has introduced a number of products that were in the original Enertek line, including the Initiator kit, the Mantis Launch Pad, and the Interlock Launch Controller. Aerotech is also introducing a line of high-tech, state-of-the-art scale models, such as the IQSY Tomahawk (41"tall), the HV ARCAS (56"tall), and the Astrobee-D (68"tall). Sport models include the Mustang and the Arreaux. These models feature molded fins, nylon chutes, and thru-the-wall fin mounts.

All of these kits are powered by Aerotech composite E, F, and G class motors, which come in a variety of sizes. The prices range from $33.95 for the Mustang, to $51.95 for the Astrobee-D.

The Mantis Launch Pad is a four legged affair, and can be fully adjusted to meet wind conditions. It comes standard with a 1/4" rod, and is priced at $89.95.

The suggested contoller for this set-up is the Interlock, which features an audible warning tone when the model is about to be launched. It comes with an ignitor clip, battery clips, and 40' of power cord.

Even the Aerotech ignitors are a new feature. Called the Copperhead, these ignitors feature a single lead, and made to be compatible with the Interlock's single clip.

The Interlock is priced at $37.95, and the Copperheads range from $1.75 for 6 (for use in ½A-D black powder motors) to $3.39 for 6, for use with Aerotech F and G motors.

While it must be admitted that the prices of the Aerotech products are more than the average beginner can afford, it must also be stated that they are affordable for those who are in the market that Aerotech is going after.

If the look of the products shown in Aertech's classy brochures is anything equal to their performance, than Aerotech has taken a huge step to becoming one of the hobbies' big players. Look for more from this company.

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MRC is advertising a new line of model rocketry products, which they call "Concept II". These include

MRC™

new, revised motor series, which they call the "Tracker"; they are of the standard types (A8-3, B6-4, etc), but supposidly feature a dense smoke trail; they also have what appears to be some sort of external nozzle, although this may be simply a way of holding the ignitor in place.

Another new item is something called the "FX" engine, which really isn't a thrust-producing engine at all, but actually a smoke-generator; they are ignited with the standard motor, and produce more "realistic" smoke.

MRC is also introducing 6 new kits, one of which is a boost/glider, and all of which are rather large; they also come with interchangeable motor mounts, so that they can be flown with a variety of motor sizes.

Rounding out the Concept II line is a new "Sounding Rocket" launch pad and controller. MRC hired the services of Bill Stine, late of Enertek and son of G. Harry, to develope these new products, again with the BAR in mind as the target market group. At the present time, MRC is reportedly looking into mail-order catalog sales, although nothing has come of this yet.

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ESTES®

The big news at Estes, of course, was the long-awaited sale of the company by Damon to Chicago and Los Angeles-based investment firms. Even with an uncertain future, Estes managed to come out with a number of new kits for 1990. These include the Optima, 47.5" tall and 2.6" in diameter; the Deep Space Transport, which looks suspiciously like the old Centuri USS America of the late 70's; and two updates of old Estes kits, the Trident II and the Super Vega. On the negative side, Estes discontinued one of their nicer kits, the Jupiter-C, which was not replaced with another sport-scale kit. Although it's good to see some stability at Estes, and the future there looks good, none of the new products exhibit any new technology; it's the same old stuff, repackaged and reshaped. Maybe next year.

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QUALIFIED COMPETITION ROCKETS

QCR

Competition and Sport Rocket Kits

A brand-new, but really not-so-new company on the scene is Qualified Competition Rockets, or QCR. QCR is Ken Brown, of Springfield, VA., and NOVAAR Section Advisor (and all around nice guy). Ken has been producing kits for a number of years, which were sold to freinds and NOVAAR members, especially the A and B Divisioners. They are aimed at teaching a flyer about competition rocketry; to that end, they are very succesful. The kits feature simple construction and design concepts, and low cost.

Ken produces kits for just about every class of NAR competition, including Plastic Model Conversion! Many parts or components are preassembled; to keep costs down, the nose cones are hand-made, and do require some extra finishing work.

Ken decided to go mail-order hence the establishment of QCR. Ken does not claim his kits to be world-beaters, but a well constructed kit will be very competitive, and will give you a good chance at placing or even winning the event. Your editor has built and flown a number of these kits, and for the modeler getting started in contest rocketry, it would be hard to find a better place to start.

AEROTECH™
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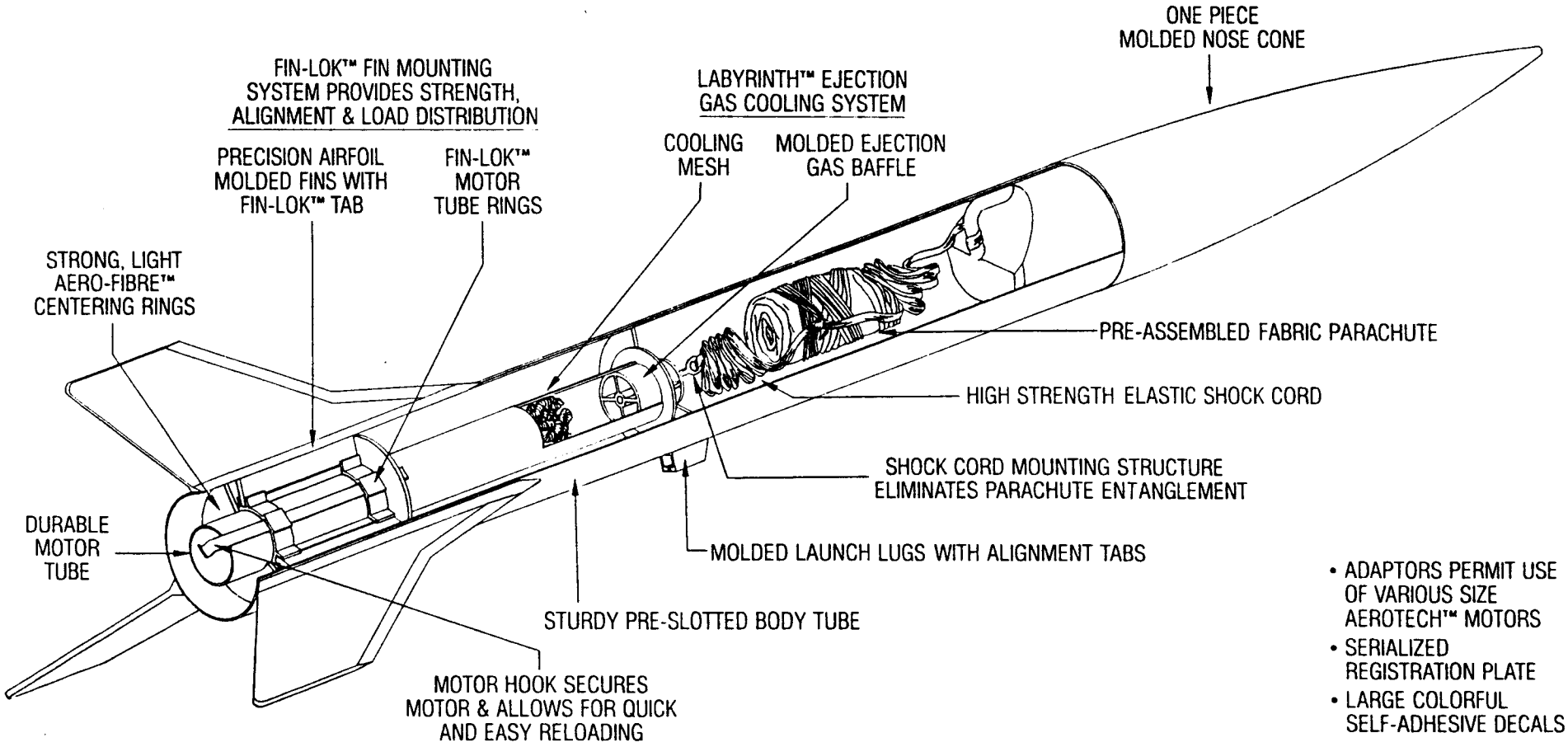
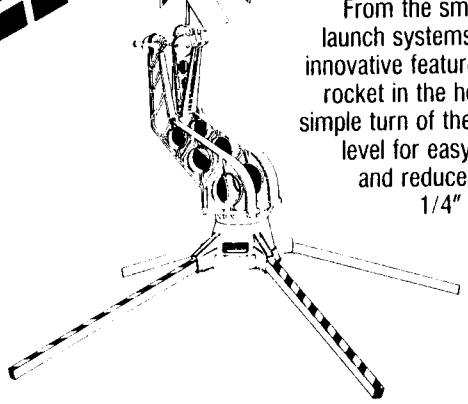
INITIATOR™

ADVANCED MODEL ROCKET



- ADAPTORS PERMIT USE OF VARIOUS SIZE AEROTECH™ MOTORS
- SERIALIZED REGISTRATION PLATE
- LARGE COLORFUL SELF-ADHESIVE DECALS

HERE THEY COME!



MANTIS™...THE LAUNCH PAD FOR ALL MODEL ROCKETS

From the smallest to the largest model rockets, MANTIS™ can handle them all. Inspired by the launch systems used by aerospace professionals, MANTIS offers the model rocketeer a range of innovative features such as easy "Swing-Arm Loading" and "Launch Angle Control." Just load the rocket in the horizontal position and then swing it up to launch position. Launch angle is set by a simple turn of the control wheel. The base of each rocket is held more than two feet above ground level for easy igniter hook-up. Special mountings keep the igniter clip handy and out of the dirt and reduce the pull on the motor igniter. Each launch pad kit comes with a two piece 4.75' x 1/4" threaded launch rod and a special adaptor that permits the use of 1/8" and 3/16" diameter rods (not included). MANTIS is molded in durable "Aerospace White" polymer and comes with removable aluminum legs, angled metal blast deflector, plated hardware, and serialized registration plate. Complete illustrated instructions make MANTIS easy to assemble. Each MANTIS kit box displays all the features of the launch pad. MANTIS... the finest model rocket launch pad available.

WHITE LIGHTNING™...

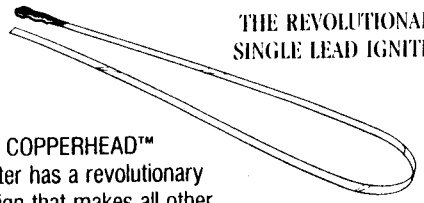
THE PROPELLANT WITH BRIGHT WHITE EXHAUST

AEROTECH™ Composite Model Rocket Motor™ packages marked with the WHITE LIGHTNING™ symbol are something special. WHITE LIGHTNING is an exclusive AEROTECH propellant formulation that produces a dense, bright white exhaust that is easy to track. Model rockets powered by WHITE LIGHTNING look and sound like actual sounding rockets. This sense of realism is one reason why motion picture special effects professionals increasingly specify the AEROTECH WHITE LIGHTNING motor. WHITE LIGHTNING... adds realism to scale models and enjoyment to sport models.

EASIER TRACKING ▲ GREATER REALISM

COPPERHEAD™...

THE REVOLUTIONARY SINGLE LEAD IGNITER

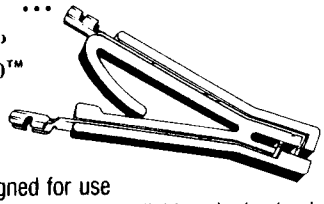


The COPPERHEAD™ Igniter has a revolutionary design that makes all other model rocket motor igniters obsolete. COPPERHEAD is easy to use and extremely reliable. The flexible and strong single lead design comes in three lengths, and can be used with all model rocket motors, composite or black powder. Each igniter package contains six COPPERHEAD Igniters and instructions for proper use. COPPERHEAD... the new standard in model rocket motor igniters.

A NEW STANDARD IN IGNITERS
INEXPENSIVE ▲ RELIABLE AND EASY TO USE

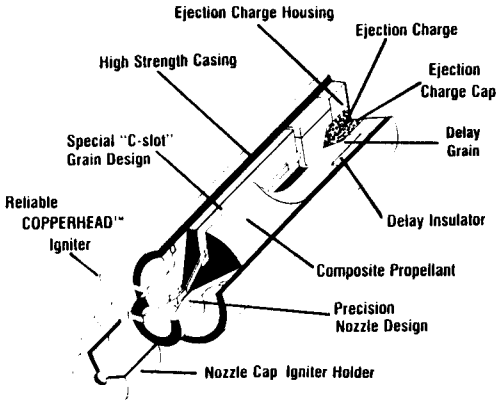
INTERLOCK™...

THE IGNITER CLIP FOR COPPERHEAD™



The INTERLOCK™ Igniter Clip is designed for use with the revolutionary and reliable single lead COPPERHEAD™ Model Rocket Motor Igniter. The uniquely designed INTERLOCK Igniter Clip firmly grips the igniter and provides excellent electrical contact. With offset and shielded contact points and a plastic body, the INTERLOCK Igniter Clip dramatically reduces the possibility of an electrical short that would prevent rocket motor ignition. The clip is designed so that it and the COPPERHEAD Igniter can be used with older design two clip launch controllers.

SINGLE CLIP "NO-SHORT" DESIGN
EASY AND SECURE HOOK-UP



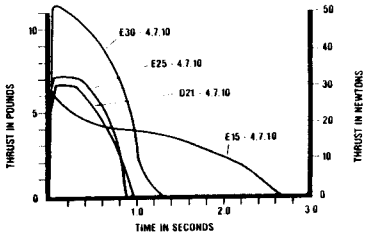
MOTOR TYPE	TOTAL IMPULSE		AVERAGE THRUST		DIAMETER		LENGTH	
	lbs.-sec	N-sec	lbs.	N	in	mm	in	mm
D21	4.5	20.0	4.7	21.0	0.70	18	2.75	70
E25	4.9	22.0	5.6	25.0	0.70	18	2.75	70
E15*	9.0	40.0	3.4	15.0	0.94	24	2.75	70
E30	9.0	40.0	6.7	30.0	0.94	24	2.75	70
F25*	18.0	80.0	5.6	25.0	1.13	29	3.88	98
F50	18.0	80.0	11.2	50.0	1.13	29	3.88	98
G40*	27.0	120.0	9.0	40.0	1.13	29	4.88	124
G80	27.0	120.0	18.0	80.0	1.13	29	4.88	124

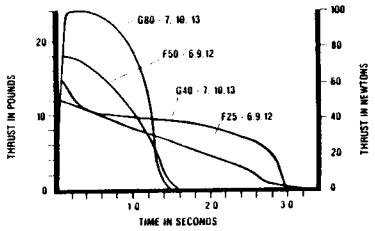
*WHITE LIGHTNING

COMPOSITE MODEL ROCKET MOTORS™..."D" THROUGH "G" POWER

AEROTECH™ Composite Model Rocket Motors are the most technically advanced model rocket motors in the world. AEROTECH™ motors use the same solid propellant as America's space boosters. Pound for Pound, this propellant delivers nearly 3 times the power of black powder used in other model rocket motors. Quite simply, AEROTECH Composite Model Rocket Motors allow you to fly larger rockets, heavier payloads, and achieve higher altitudes than ever before! Each motor is individually blister packed on a card that displays the data necessary to make the proper choice of motor. AEROTECH Composite Model Rocket Motors... the best.

FLY LARGER MODEL ROCKETS ▲ LOFT HEAVIER PAYLOADS ▲ ACHIEVE HIGHER ALTITUDES





E25 and D21 Fit Standard Black Powder 'A' through 'C' Motor Mounts
E15 and E30 Fit Standard Black Powder 'D' Motor Mounts

"High Power" Closes Out Winter Workshop Season

On March 10, Ed Miller closed out the 1989-90 SPAAR Winter Workshop program, with a presentation on one of his favorite topics, High Power Rocketry.

Previous Workshops had dealt with Helicopter Recovery (George Beever, January), and Boost/ & Rocket/ Gliders (Glenn Feveryear, February).

It was obvious from the start that Ed had put a great deal of thought and work into the preparation and presentation of this workshop.

On display were some of Ed's more familiar models, including the Warp Drive, his FSI Hercules, and his NCR ASAT-21X. Also on display were examples of various motors, including black-powder D's, both Estes and FSI, as well as composite E, F, G, H, and I class motors from Aerotech and Vulcan. The ignitors used for these different motors were seen also.

Another display, built by Ed just for this workshop, was one which showed the various types of fin mounting methods used in the construction of High Power rockets. Along with this display were examples of the different kinds of adhesives used the the construction of the big ones.

If all of that wasn't enough, also on display were the kinds of recovery systems used on High Power rockets, as well as their attachment methods.

Along with all of the visual aids was Ed's lecture portion of the workshop, which centered around his actual construction of a North Coast Rocketry "Eliminator" kit, which allowed Ed to explain the differences in the construction techniques used in building High Power birds.

Lest we forget, there was also a display of the types of heavy-duty body tubes, including some phenolic and fiberglass tubes on loan from a high power manufacturer.

Ed even brought a "guest speaker" to help out. John Balmer, a local NAR and Tripoli member, was on hand to add some of his experience and knowledge on the subject of High Power rocketry.

John brought along one of his "friends", a LOC/Precision Magnum which has named "Cyclops". "Cyclops" has been modified to carry an 8mm movie camera. John also brought along a video of some of his camera flights. A typical sequence showed the launch of a particular vehicle as seen from the ground; the second part shows the on-board footage, with the sound of the previous sequence dubbed in. This made for some very interesting viewing! Combined with John's narration, this video was an excellent way to wind up a very impressive and informative workshop.

The only negative to the whole day was the small turn-out. It appears that attendance decreased with each workshop. This pattern has put the future of the workshop program in doubt.

For those who are interested, a video is available on loan, which contains this and other workshops.

Thanks again to Ed Miller and John Balmer for a job well done.

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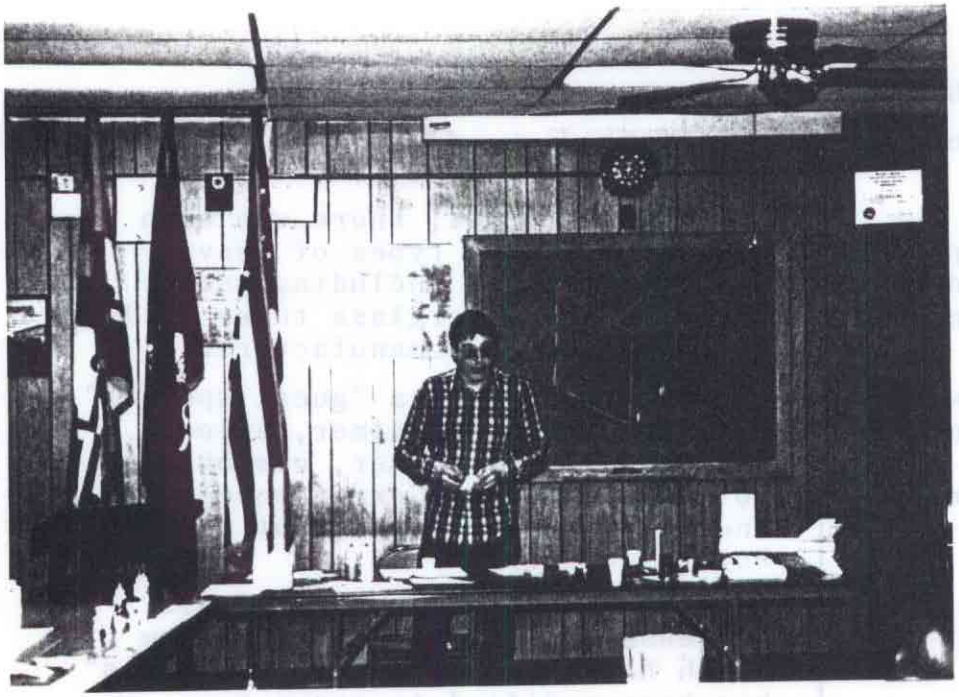
IN THE NEXT ISSUE:

FLIGHT LOG.

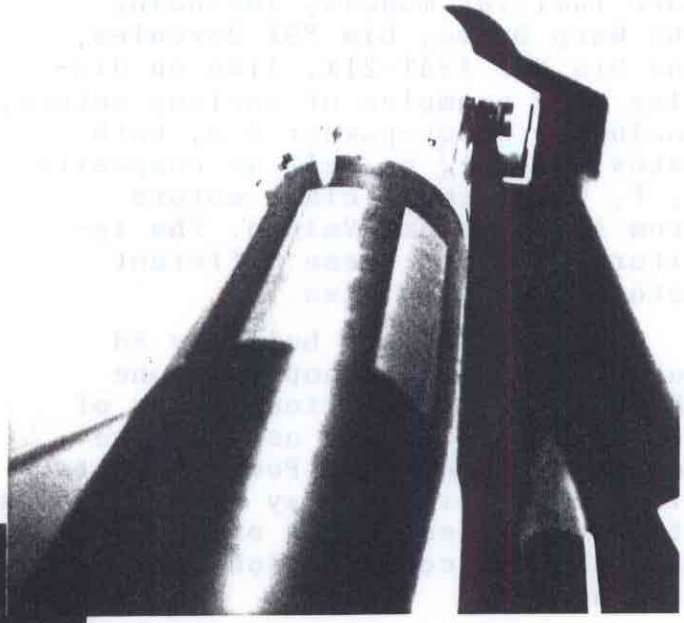
KEN BROWN'S BI- AND TRI-WING GLIDERS.

AND WHATEVER ELSE YOU GUYS SEND IN!!!



LEFT: Ed Miller answers a question during his March 10 High Power Rocketry Workshop

RIGHT: John Balmer's "Cyclops"



LEFT: John shows the motor mount portion of "Cyclops"

Hey, guys, April 1st is coming, and we all know what that means, right? Not only is it April Fools' Day, but it's the first SPAAR Sport Launch of the season. Is there any relationship? Stay tuned and find out!

Anyway, a goal that we've set for the coming year is more help at the launch site. Please remember to sign up for a stint or two as a timer or as LCO/RSO. Remember, in order to serve as the Launch Control Officer/Range Safety Officer, you must be 18 years of age or older, and be an NAR member. Please help out! Thanks.

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LATE NEWS & SCHEDULE CHANGE: As this newsletter "goes to print", it has been learned that the annual WUBBA Regional Meet, held in Centre Valley, PA., will be held this year, over the weekend of July 21-22. As a result, SPAAR will move it's Record Trial, from July 22 to JULY 29, 1990, with a Rain Date of August 5. Please change you club calendars.

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CAPTIONS WE DIDN'T USE FOR THE COVER PHOTO:

1. " Hey Mom, just what is this thing Dad put in my hand, and why is he taking my picture again?"
2. "Ed Miller really wants to put an I65 in here?"
3. "Mom, I think I CATO'd in my diaper again!"
4. "Could've used another coat of sealer on the fins, Dad".
5. "Hmmmm, mind if I chew on the nose cone?"
6. "Hey, which end of this things does the nipple go on?"
7. "Whadya mean Fisher-Price doesn't make these things?"

TO:

SPAAR
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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

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