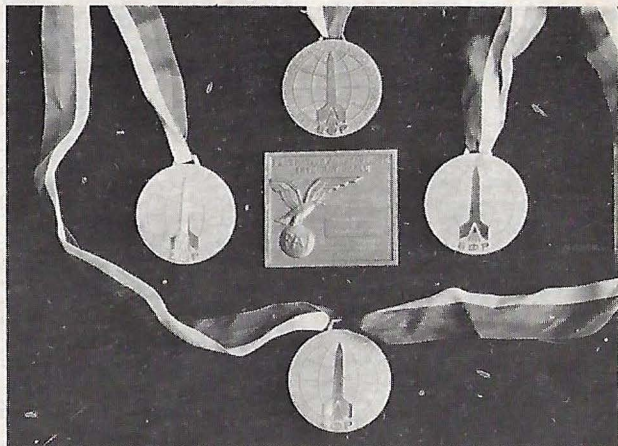


AMERICAN WINS BOOST-GLIDE EVENT

Reported by John Langford

Although model rocketry was developed in the United States during the mid-1950's, no American had ever won the title of World Champion. Thus when Guppy Youngren of MIT Rocket Society flew his radio-controlled boost glider "Dark Star IV" to victory in Yambol, Bulgaria this September, he did more than collect another medal for the U.S. Team: He wrote a new chapter in model rocket history.

Guppy was one of thirteen American rocketeers comprising the 1978 United States Space Model Team at the Third World Championships for Space Models, held September 1-6, 1978 at Bulgaria. Eleven nations participated in the contest, which was



Above is the Gold Medal presented by the Bulgarian Rocket Federation. To the left is the Silver Medal signifying Second place in the Eagle B/G Team standings for the USA. To the right and bottom are Silver Individual and Team Medals won in the unofficial (non-FAI sanctioned) Swift B/G event flown the day before the World Championships. Guppy Youngren is thus America's first Gold Medalist, and also the most decorated model rocket flyer ever from the USA. MIT Rocket Society Photo by John Langford.



Guppy Youngren (left) makes a final adjustment to his radio-controlled Dark Star IV moments before its winning flight. MIT Rocket Society Photo by John Langford.

sanctioned by the Federation Aeronautique Internationale (FAI—the Paris-based organization coordinating all aeronautical events). US team members were competitively selected by the National Association of Rocketry (NAR), and were managed by Howard Kuhn of Alexandria, Virginia.

Although the NAR has over thirty different model rocket events in its Sporting Code, only four were flown at this year's Championship: Class 1 Parachute Duration (A engines); Class 1 Streamer Duration (A engines); Eagle Boost Glide (40 newton-seconds of

power--D or E engines); and Scale (no engine limit).

The World Championship opened Olympic-style with a parade through downtown Yambol. Each national team followed a placard carrier and brass band to the opening ceremonies in the town square. Before the official FAI-sanctioned competition started, a warm-up event was held in Swift Boost Glide (B engines). Czechoslovakian George Tabor-sky took first in this unofficial world event, Guppy Youngren was second, and Chris Flanigan, also from the USA, took third. Awards were presented just



Randy Ringner checks his parachute duration model before launch at the World Championships.

MIT Rocket Society Photo by John Langford.

as in the Olympics: Gold, silver, and bronze medals hung around the winners' necks, then flowers and a kiss from girls in native Bulgarian costume, and then the national anthem of the winning country was played as the flag of the winner was raised. Following the awards for individual performance, the team awards were given: Here again the Czechs won and the US finished second.

The first official event was Parachute Duration, which under international rules requires three flights using two models from each competitor. A max-

imum score of 240 seconds is allowed on each flight, and the times are summed to determine a winner. In the event of a tie, a fly-off is held, and this year's World Championship required three such fly-off rounds before the eventual Champion was determined. Each nation was allowed three competitors. Representing the U.S. were Randy Ringner of Pearl River, New York; Steve Honecker of Wheaton, Maryland; and Andy Mitchell of New Castle, Delaware. While Randy missed making the fly-offs by only seconds, the Bulgarian team won the event and the U.S. finished fifth.

The Streamer Duration event is similar, except that a 10:1 aspect ratio streamer is used instead of a parachute. The United States was represented by Trip Barber of Seaside, California; Phil Barnes of Vienna, Virginia; and Chris Flanigan of San Diego, California. Both Trip and Phil maxed twice but missed a third max which would have placed them into the fly-off's, and the United States finished third.

Eagle Boost Glide was the best event for the American team. Guppy Youngren, Bernard Biales, and Geoff Landis, all of the MIT Rocket Society of



John Langford and his Athena H Scale model, the best US Scale entry.

MIT Rocket Society Photo by Chris Flanigan.



Bob Parks' radio-controlled X-2 Scale model lifts off at the World Championships.

MIT Rocket Society Photo by John Langford.

Cambridge, Massachusetts, had spent years developing a series of radio-controlled gliders powered by E5-3 engines. The maximum time was 300 seconds, and the flying weather was good, so it was a battle between the Americans flying radio control and the Bulgarians flying ejectable flexwings. Guppy maxed into a head-to-head flyoff with Bulgarian Nicolai Nikolov, which the American won by less than a minute. Bernard Biales finished



Bernard Biales (left) of the Eagle Boost Glide team and Randy Ringner of the Parachute Team follow an Eagle in flight.

MIT Rocket Society Photo by John Langford.



The Bulgarian team hooks up the World Champion Scale Model Soyez.

MIT Rocket Society Photo by John Langford.

fourth and Geoff Landis sixth, and the US narrowly lost the team championship to the Bulgarians who finished second, third, and fifth.

The final event was Scale, where models were built from plans of real rockets. It was judged on workmanship, accuracy, and degree of difficulty. The U.S. had some of the best model rockets ever built in this country. There were over 600 hours of work invested in John Langford's 1:15 scale Athena H, an Air Force Reentry Test Vehicle. Bob Parks had a radio-controlled model of the X-2, a 1950's rocket powered research aircraft. Tom Hoelle had a detailed model of the Air Force Genie Missile, with every bolt, scratch,



Swift Boost/Glide winners Chris Flanigan (third place, USA), George Taborsky (first place, Czch.) and Guppy Youngren (second place, USA) stand for the national anthem during awards presentation at Third World Championships.

MIT Rocket Society photo by John Langford.

and paint flake in place. Unfortunately for the American scale team, the European judges considered only models of the Soyez, Saturn V, or Saturn 1B to be "true space models worthy of world titles", and the US entries finished 8th (Langford), 11th (Parks), and 16th (Hoelle). The Czechs are traditional champions in the Scale event, but the best they did this time was fourth through sixth places while the home-town Bulgarians, flying identical Soyez models, swept first through third.

Most of the participating nations were from Eastern Europe, where governments support the hobby as a tool in teaching science and engineering. With the state support, European modelers tend to be much older, and the college-age Americans were by far the youngest team at the meet. Since American

members paid their own way, participation of American non-competitors was limited: only Mike Wade of Alexandria, Virginia and Dr. Gerald Gregorek of Ohio State University (a member of the International Contest Jury) traveled to Europe with the American team. But the 1980 World Championships are scheduled to be held in the United States, offering many opportunities for those interested to become involved. World Championships are major enterprises, and everyone interested in the hobby will be needed to support the effort.

For those interested in supporting, donating to, or assisting with the 1980 World Model Rocketry Championships, please contact: NAR International Fund, c/o National Association of Rocketry, Dept. E-80, P.O. Box 725, New Providence, NJ 07974

ESTES PRODUCTS SUPPORT U.S. TEAM

By John Langford

When the 1978 U.S. Space Model Team traveled to Yambol, Bulgaria for the Third World Championships, Estes products were there. In both Parachute and Streamer duration, Estes A3-4T and A3-6T engines powered a majority of the American flights. The Eagle Boost Glide team trained all summer on C6 and D12 engines. Bob Park's X-2 scale model was powered by the two up-rated C6 engines, and Tom Hoelle used a D12-3 to get his Genie under the 500 gram weight limit. And what did the Europeans want most in the many post-competition trading sessions? Estes engines, patches, and iron-ons!

Estes parts saw great use as well: Phil Barnes of the Streamer Duration team used BT-5 in his models; Tom Hoelle's Genie used BT-101 for the main tube and John Langford's Athena H scale model was built around the same BT-80 used in Maxi-Brutes.

Finally, almost without exception, the members of the US Team started out flying Estes models. Bernard Biales cut his teeth on Estes models in 1962. John Langford's first model, an Alpha built in 1968, is still flyable, and World Champion Guppy Youngren remembers starting years ago with an Astron Scout.

The road from an Astron Scout to the World Championship is long and difficult and filled with distractions. The rewards, however, can be immense. The thrill and prestige of world class competition defies words, and many careers in aerospace grow out of early model rocket interests. Future international competitors are flying Alphas, Honest Johns, and X-Wings today. If the idea of world competition interests you, the first step is to join the National Association of Rocketry (NAR) and fly in its contest system. With hard work and persistence, the dream may come true sooner than you think.

AN-B SPIDER

WINNER MARCH 1978
 DESIGN OF THE MONTH CONTEST
 BY BOB DINSMORE Wilberforce, OHIO

SKILL LEVEL 2

PARTS LIST

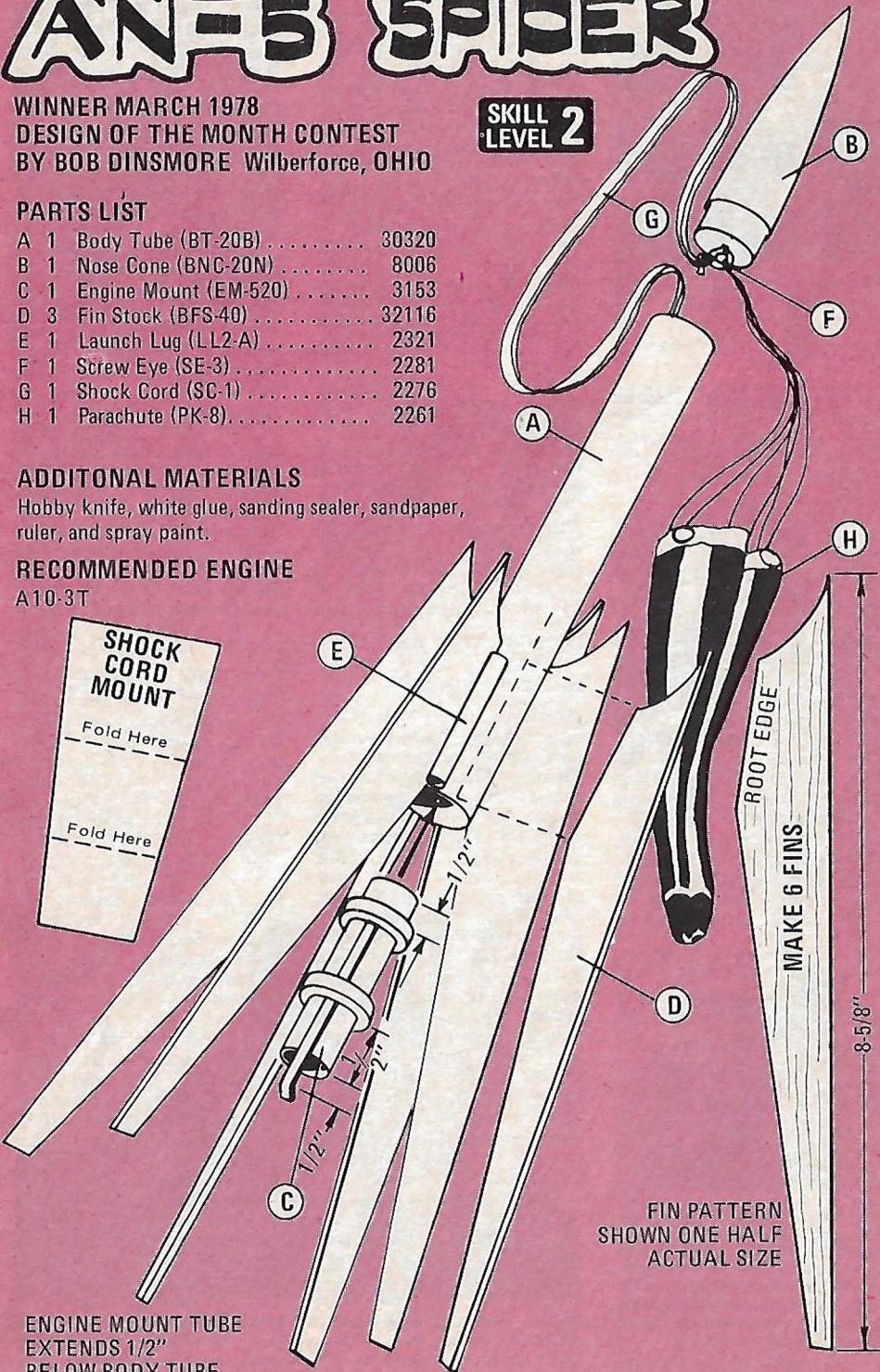
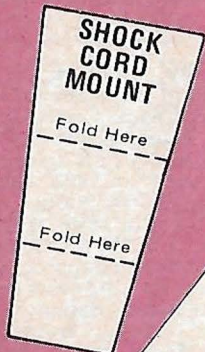
A	1	Body Tube (BT-20B)	30320
B	1	Nose Cone (BNC-20N)	8006
C	1	Engine Mount (EM-520)	3153
D	3	Fin Stock (BFS-40)	32116
E	1	Launch Lug (LL2-A)	2321
F	1	Screw Eye (SE-3)	2281
G	1	Shock Cord (SC-1)	2276
H	1	Parachute (PK-8)	2261

ADDITIONAL MATERIALS

Hobby knife, white glue, sanding sealer, sandpaper, ruler, and spray paint.

RECOMMENDED ENGINE

A10-3T



ENGINE MOUNT TUBE
 EXTENDS 1/2"
 BELOW BODY TUBE

MRN TO BE PUBLISHED QUARTERLY

Model Rocket News will now be published four times a year—Winter, Spring, Summer and Fall. This will be the last MRN published on an every other month basis. Due to a terrific production schedule over the past several years, which has included the development of Star Wars, Star Trek, and Space Shuttle flying models, it has been impossible for us to maintain a consistently on-time publishing schedule for the MRN. Hopefully by publishing an "even better" MRN quarterly, we will be able to provide your copy on time. Additionally, we will, whenever possible, mail your MRN to you with our seasonal mailings in addition to including it with return mail orders.

To receive our seasonal mailings you must be an active Estes mail-order customer which requires you to have placed an order for Estes merchandise within the past four months. Thank you for your understanding.

MRN Editor

"FREE" PLANS NOW AVAILABLE

All orders received on even numbered months will be returned with a new "Free" rocket plan to help increase your Estes fleet. These new plans will feature a variety of designs from single-stage sport models to far-out exotic rockets you will be proud to display. All "free" plans can be constructed from the Estes hi-performance parts and accessories listed in our catalog. Orders placed on even numbered months will be the only ones to receive these great new plans. Remember: December. . . February. . . April. . . etc.



IRON-ON DECALS

For Your T-Shirts, Range Jackets and Windbreakers

All orders received on odd numbered months are returned with a "FREE" iron-on decal for your t-shirt, windbreaker, or range jacket. These new Estes iron-ons feature a variety of super-neat designs. You iron it on right at home to

any surface containing 50% or more polyester. Remember these great new iron-ons are available only with your return mail orders on the odd numbered months (July, September, November, January, etc.)

DESIGN OF THE MONTH WINNERS

Congratulations to another fine group of Estes Rocketeers for their outstanding DOM entries. First place winners will receive \$75.00 merchandise certificates and honorable mentions will be awarded \$10.00 certificates. Keep those entries coming, may be you'll be our next winner!

JULY 1978 Winners

Robert Mitaliski
Newfane, NY
(Angle Estimator)

Todd Lucas
Cola, SC
(Mercury Explorer)

Karl H. Russell
North Pembroke, MA
(F-309 Spacefighter)

Honorable Mentions

Chuck Collins
Orlando, FL
(Arrow)

David Franklin
New York, NY
(Sagittarius)

David Mars
Lincoln, CA
(Martian Invader)

Jim Park
Dublin, GA
(Nova 9)

Kevin Bruer
Appleton, MN
(Black Panther)

Chris Economy
Murrysville, PA
(Bomarc II)

Bob Hunt
Chesterland, OH
(No Name)

Bruce Henson
Burkesville, KY
(Warrior 2000)

Lowell Carhart
Boca Raton, FL
(Gemini Probe)

Bill Engar
Salt Lake City, UT
(Hyper 7 Spy Missile)

Carl Ruby
Westminster, CO
(Sky Scrapper)

Garnet Karvonen
Wembley, Alberta, Canada
(Nova)

AUGUST 1978 Winners

Sean Allen
Palo Alto, CA
(Screaming Eagle)

Bryan Hallberg
St. Paul, MN
(Aqua Pad)

Torsten Duffy
Renton, WA
(Sabre Aquila)

Richard Osedocz
Cumberland, RI
(Gemini II)

Phillip Thompson
Oak Ridge, TN
(F-160 Moon Raider)

Honorable Mentions

Ray Colbert, Jr.
Omaha, NE
(Skylab II)

Alan Silver
Pensacola, FL
(Excelsior)

Eddie Walton
Hialeah, FL
(Vega)

David Chaskin
Purchase, NY
(Torpedo)

Ward Evans
Cheshire, CT
(Explorer)

Bart Follis
Houston, TX
(Cobra)

James C. Roger
Ashburnham, MA
(Ram Charger)

Steve Sanvito
Joe Hill
Florissant, MO
(Star Fighter)

Steve Specker
Fridley, MN
(Icon-80)

Gene Strasser
Lake Orion, MI
(Titan)

Bill Pierce
Albany, OR
(Scorpion)

Terry Leahy
Joe Tortora
Setauket, NY
(Checker 78)

William Hughes
Redford, MI
(Ar 20 Regulas)

Scott Parsons
Lakewood, CO
(Tethys)

Nelson Martinez
APO NY
(Electra I)

John O'Neil
Norfolk, VA
(Space Freighter)

Robert Cooksey
Colorado Springs, CO
(Epsilon Twin)

Keith Looney
Meriden, CT
(Tumble Recovery Rocket)

Mark McFerron
Mount Vernon, KY
(Cygnus 37)

John Keller
Bloomfield Hills, MI
(Eros)

Steve Simkins
Huron, OH
(Photolysis Falcon)

John Trepatschko
Iilon, NY
(Silver Streak)

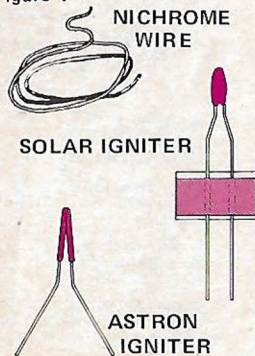
Igniters and Their Use

by Michael Del Vecchio, NAR #18815

Introduction

An igniter is a device used to ignite a rocket engine. In model rocketry an igniter element is a strip of resistance wire with or without a coating of a pyrotechnic material on it. In the system it performs like a resistor in an electrical circuit. As power passes through micro-clips connected to the igniter, the igniter begins to glow and give off heat. If there is a pyrotechnic material coating the wire, it is ignited, and is the last step in the ignition train.

Figure 1



The igniters

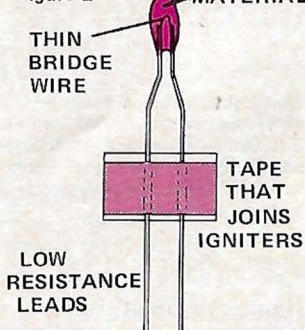
There are three types of igniters available from Estes Industries. (See figure 1.) The Solar igniter consists of two special wires bridged by a different wire, which is covered by a pyrotechnic material. The Solar igniter will fire with very little current. (See figure 2.) Standard igniters are nichrome wire covered with a pyrotechnic coating. (See figure 3.) There is also plain nichrome wire. All three of these igniters are very reliable if used properly.

Installation

Igniters must be installed so that the coatings or wire itself is touching the dark-colored propellant grain. If the igniter is not

touching the grain this could cause a misfire. Heat created by the igniter is not great enough to cross a gap between the igniter and propellant grain -- there must be direct contact between the igniter and the propellant.

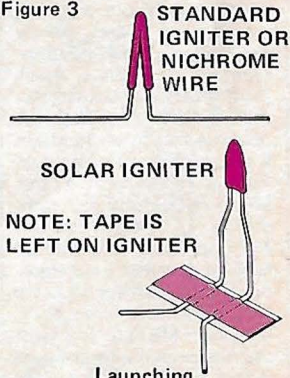
Figure 2



First separate the igniter you are going to use from the other igniters. With Solar igniters just tear or cut the paper between any two igniters. Do not try and remove the paper from the igniter as this may result in cracking the pyrotechnic coating. Standard igniters and nichrome wire may be separated by cutting the strip to be used from the rest of the wire. Then take this cut strip and bend it in half. (See figure 3.) Now take the igniter and push it all the way into the nozzle of the engine, making sure that the igniter is touching the propellant grain. For some engines you may have to push the igniter a long way down, as when using a B-14 type engine, so push gently down until the igniter will go no further. Make certain that the igniter's leads are not crossed. If the leads are crossed this can cause a "short" in your launch system and thus, a misfire, next take a 3/4 by 3/4 section of wadding and roll it in a

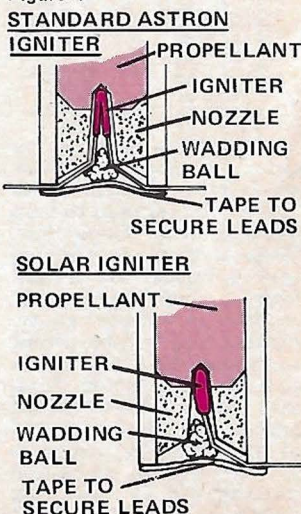
ball. Place this ball in the nozzle of the engine and press it in with a pen cap. Place a small piece of masking tape over the end of the engine. (See figure 4.)

Figure 3



Now comes the climax of all your work—the launch. Three very important factors come into play here: 1) Make sure the wire connections between your micro-clips and launch system are not frayed. There should be no broken strands of wire. If there are broken strands of wire, cut off the micro-

Figure 4

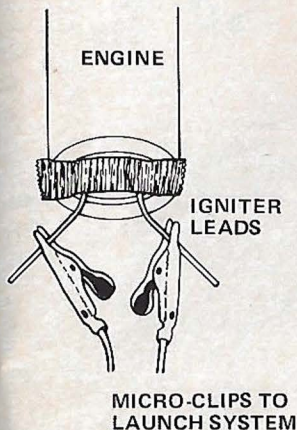


clips and reinstall by re-stripping the wire and attaching the micro-clips a-

gain. Use needle-nose pliers for this. Solder the wires in place if possible. 2) Clips should be clean and shiny. If they are not, then clean them by sanding the dirt off them with a small section of sandpaper or an emery board. 3) Place your clips as far up on the igniter (close to the nozzle) as possible. This is to make maximum use of your battery power. (See figure 5.)

If after all this you still cannot get your rocket off the ground, then check your batteries and launch system. For added information on this refer to your launcher's instructions or Model Rocket Launch Systems, #2811, an Estes publication.

Figure 5



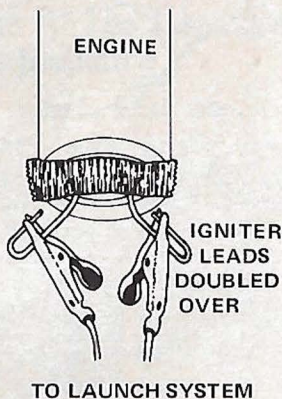
What to do in case of a misfire

If you have a misfire the following procedures should be followed:

- 1) Remove the continuity key and count off ten seconds after releasing the launch switch.
- 2) Take the rocket off the launch pad and inspect the igniter.
- 3) If it is broken, replace it with a fresh one.
- 4) If it has fired, clean the nozzle of any debris with a pen cap or toothpick and replace with a fresh one.
- 5) If it has not fired, then read the Launching section of this report again.

tion of this report again.
6) Begin count down again.

Figure 6

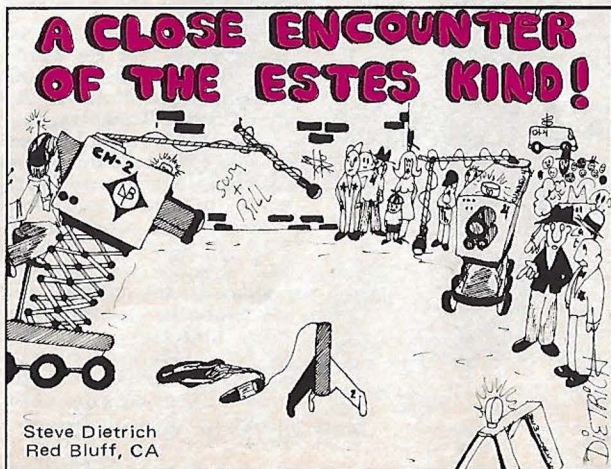


Tips on ignition and launch systems

- 1) When launcher is not in use, store its batteries in a refrigerator to conserve their power. Before use take them out and warm them in the palms of your hands.
- 2) Make certain all connections in your launch system are good without frayed wires. Frayed wires cause a loss in power.
- 3) Use good batteries. Cheap batteries many times are not cheap in that their shelf life is

short and thus you may go through many batteries in a flying season. It pays to spend a little more at first and save in the long run.

- 4) If your continuity light flickers on and off, this means one of the clips is probably loose. Remove both clips and double the igniter wire leads over, then replace the clips. (See figure 6.)
- 5) If you have no light, try the procedure outlined in Step 4. If this fails, check your launch system and batteries.
- 6) If the continuity light is on before you press the launch switch, but your rocket does not lift off, and when you release the launch switch there is no longer a light, then the igniter probably fired. Follow the misfire procedures.
- 7) If the light is on before you press the launch switch, but your rocket does not lift off and when you release the launch switch the light is still on, then there is probably a short, (possibly your igniter wires are crossed.)
- 8) Be neat, clean, and careful. Remember--safety first!
- 9) Be sure to follow the NAR-HIAA Model Rocketry Safety Code at all times.



Help Us Publish The Model Rocket News

Got any good ideas for MODEL ROCKET NEWS articles, technical information, cartoons, anecdotes, club news of unusual interest, etc? Then why not submit them to us for possible publication? Our constant aim is to make MRN a better, more interesting magazine, and you might be just the type of contributor we need.

If you send us photos, please make sure that you pack them between cardboard sheets so that they won't get creased in the mail. All contributions become the property of Estes Industries and cannot be returned. Address all material to: MRN Editor Estes Industries, Penrose, Colorado 81240.

Should your article or photos be used in MRN, we'll reward your efforts and talent with an Estes merchandise certificate, the amount of which will be determined by the MRN editorial staff.

Hope to hear from you soon!



Naram 20, 1978, Anaheim, CA. Sam Wu's Super Scale Sounding Projectile, and Launcher. Photo by Alan Williams.

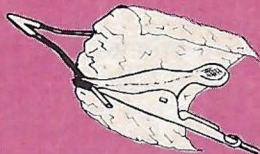


THE IDEA BOX

IGNITER CLIP PROTECTOR

A small piece of aluminum foil wrapped around each igniter clip will protect them from rocket blast residue left after lift-off.

James McGuire
Birmingham, Alabama



TAPE DISC DECALS

If you have extra tape discs, paint them while still on backing paper. When paint is dry, peel discs off and decorate your rockets with them for tube roll patterns or fin decor.

Chris Richardson
Covington, Louisiana



TAPE

GLUING HINT

It's much easier, when gluing in thrust and centering rings in hard to reach places, if a small straw or tube is attached to the glue bottle. This makes it much easier and neater to get the glue where you want it.

Bryan Cadwell
Manilla, Iowa

Attention Rocketeers: "Have You Joined The NAR?"

Now that you are an active rocketeer we would like to recommend membership in the National Association of Rocketry.

As an NAR member you will be able to compete in officially sanctioned local, state, national, and even international model rocketry meets. Your rockets and designs will become eligible to set national and international records and most important, you will be kept informed of happenings in model rocketry around the world. Flight insurance is available now too!

Also as a NAR member

you will receive a monthly copy of Model Rocketeer, a magazine published as a service by the NAR for its members. It contains news of upcoming model rocketry and space events, manufacturers news, modroc tips, designs and plans, news of the NAR, its members, and other people in the aerospace field. Also, it contains editorials, humor, and rocketry history.

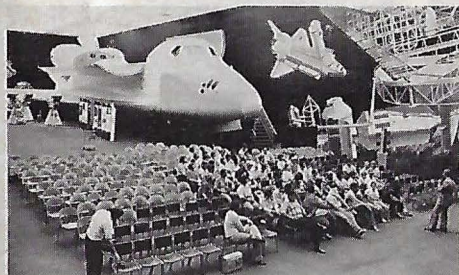
For more information and a membership application write: NAR Headquarters, Dept. E-8, P.O. Box 725, New Providence, NJ 07974.

JOIN TODAY!

NARAM~20

(National Association of Rocketry Annual Meet)

"A Photographer's Look At The Twentieth Annual National Model Rocketry Championships" By Alan Williams, Bowie, Maryland



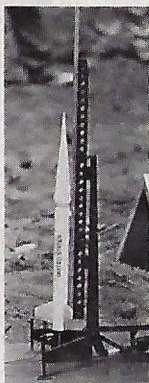
Naram competitors were treated to a discussion of the Space Shuttle program while the full scale Shuttle engineering mock-up loomed in the background.



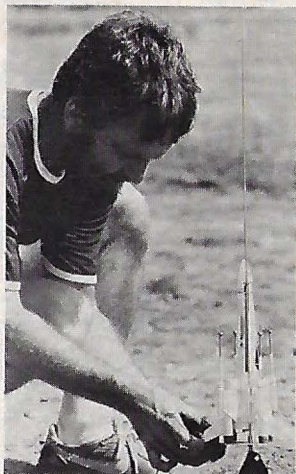
Naram 20 Dinosaur Super Roc models.



George Gassaway watches his Hawk Boost Glider as it climbs aloft.



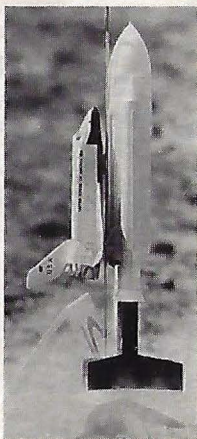
Bill Stine's Scale Space Systems Nike Smoke at ignition.



Dane Boles of Estes Industries prepares Star Wars X-Wing Fighter during Naram 20 Manufacturers' Demo.



Chris Tavares and Howard Kuhn teamed up to produce this magnificent Super Scale Nike Tomahawk and working scale launcher.



Estes Space Shuttle during Manufacturers' Demo at Naram 20.

"A complete cover story of NARAM-20 by G. Harry Stine, N.A.R. #2, will be the feature article in our Winter edition of Model Rocket News Don't Miss It!"