



WINTER  
1988

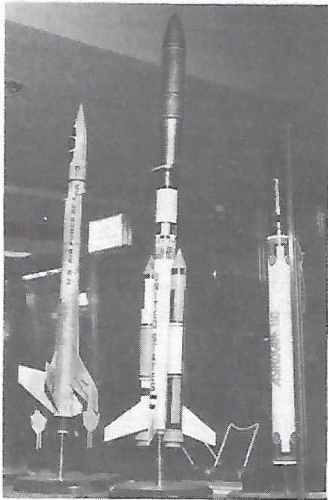
# MODEL ROCKET NEWS

## M A G A Z I N E

DEDICATED TO AND PUBLISHED FOR ESTES ROCKETEERS, AMERICA'S FUTURE IN SPACE

### MODEL ROCKETRY AT THE SMITHSONIAN

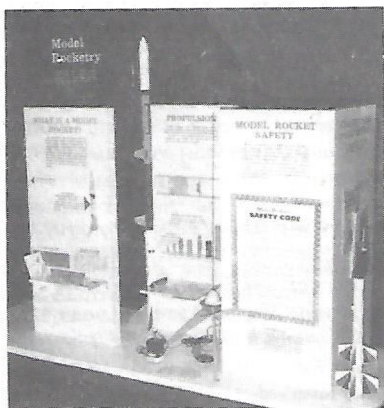
The Gift Shop at the National Air and Space Museum of the Smithsonian Institution carries many Estes model rocket kits and other products. There are several good-looking built-ups on display above the shelves in the MR area.



Some of the Estes built-ups on display in the Gift Shop of the Smithsonian's National Air & Space Museum

There is also a nice display about model rocketry in the main hall outside the Gift Shop. This exhibit was developed by Greg Kennedy while he was a curator at the Smithsonian. (Greg is now Executive Director of the Space Center in Alamogordo, NM.) The exhibit portrays several aspects of model rocketry, including scale models, educational aspects of model rocketry, AstroCam™ 110, R2D2, etc.

Next time you visit the National Air and Space Museum, go by the exhibit, then go buy one of the Estes kits on sale in the Gift Shop!



### STARTING YOUR OWN CLUB

It is easy to start your own model rocket club. The first thing you need is a number of model rocketeers. A club can consist of only three or four individuals. However, with fewer than ten people a lot of good ideas simply can't be accomplished. Fifteen active members is a good number. A club with more than 30 members is hard to work with--too many people wanting too many different things.

While it may not seem important at first, having an adult to act as sponsor for the club can be very important later. Also, if you can get a recognized "group" (a school, a church, a civic club, etc.) to "sponsor" your club, it can make such things as getting free publicity a lot easier. So try to find an interested adult to act as sponsor. And if you are an adult, why not act as sponsor for a club and let the members benefit from your experience. Many clubs today are composed nearly entirely of adults.

There are many things which a club can make easy which are beyond the hopes of an individual. Securing a guest speaker or a film is usually easy for clubs. Having a contest is a lot of fun, especially if you can talk local merchants into donating some prizes. Organizing a field trip to a museum or planetarium or area aerospace industry is not too difficult for a club activity. Some clubs even manage to have a special area set aside, at least periodically, for meetings and use as a workroom.

Want to learn how to set up and operate a successful club? Read the Estes publication Guide For Aerospace Clubs written by Dane Boles, one of the most successful club leaders in model rocket history. This publication is Estes product #2817 and retails for \$1.10.

### SPECIAL FOR ESTES SPACE PROGRAM MEMBERS

Want to receive a free copy of Guide for Aerospace Clubs? Mail a 9x12 inch SASE (self-addressed, stamped (65 cents) envelope) to: **ESP Free Club Guide Offer, Estes Industries, 1295 H Street, Penrose, CO 81240** and enclose one of the Estes Space Program™ Official Validation Seals from the Official Validation Seals from the Official Information sheet you received in your ESP membership packet. This saves you the \$1.10 cost of the booklet and \$1.50 handling charge for an order. This offer ends 12/31/88. Orders received without the ESP Official Validation Seal and the postage will not be filled or returned.

### WARNING!

This may be the last issue of Model Rocket News Magazine that you will receive! If you have not placed an order for \$10 or more by mail to us in calendar 1988, the computer which maintains our mailing list will "zap" your name before it prints the labels for our next mailing. The next mailing will be the new 1989 Estes catalog.

If you buy your Estes model rocketry supplies at local stores or from someone else by mail, that's fine. But if you want to receive Model Rocket News Magazine and the catalog by mail, the computer must recognize sales activity.

If you send us receipts or photocopies of receipts proving purchases of \$50 or more worth of Estes products during 1988, we will override the computer's cull process and keep your name on the mailing list for the 1989 catalog and at least one 1989 issue of MRNM. We must receive your proofs of purchase of Estes products by December 16, 1988 if you are to be retained on our mailing list for this mailing list cull. Act now if you want to receive the 1989 Estes catalog by mail as soon as it is available!



### WHITE SANDS ROCKET CLUB CELEBRATES FIRST BIRTHDAY

By Jim Basler, Las Cruces, NM

A major milestone for a fledgling model rocket club is the observation of its first anniversary. For the White Sands Model Rocket Club of Las Cruces, NM, that milestone was reached in July 1987. It was a long road to that point!

The events which led to founding the club were two exhibition launches at New Mexico State University on June 14 and 28, 1986. The demos were by the El Paso, TX rocket club, Magic II. It was then and there that the founding members of our club decided to form a rocket club in Las Cruces.

On July 3 we met at Thomas Branigan Memorial Library and organized the club. We decided to meet the first Thursday of each month at 7:30 PM for the meetings and the first and third Saturdays at 9:00 AM for launches. We chose an approximately 35 acre gravel lot east of NMSU's Pan Am Center for our launch site.

(continued on page 4)



## CHALLENGER MEMORIAL LAUNCH

### NORTHWOOD ROCKET LAUNCHED

This article is reprinted with permission from the Bowling Green, OH Sentinel-Tribune, January 30, 1988. Photo by Jeff Hall.

NORTHWOOD--Model rocketry enrichment students taught by Ralph Schade, Northwood Middle School, launched a rocket Thursday.

Each class member builds and launches a rocket during the nine-week enrichment program for all seventh grade students. This particular rocket was a commemorative one to honor and remember the pioneers of the Challenger Space Shuttle who lost their lives on January 28, 1986.

Students observed 74 seconds of silence, the amount of time the shuttle was airborne before the explosion.

The rocket students built and launched a single stage, 2-foot high rocket whose payload then descended by parachute following the fuel burnout.

Schade said he planned the event "to honor the pioneers and to focus attention on our renewed efforts to reach the start".

Principal Ken Porter said he believes this enrichment curriculum at Northwood is unique in the state.

"Students enjoy this kind of hands-on learning. It is a unique way to teach many science concepts while permitting students to take part in the building process.

"It is one of several enrichment classes required for all our students in grades 6, 7, and 8," Porter explained.



Students honor fallen Challenger astronauts

Why don't you and your group hold a Challenger Memorial Launch on January 28, 1989?

May You  
Have A  
Safe And  
Joyous  
Holiday  
Season

## SAFETY CHECKS

By Martin D. Teachworth, Science Teacher,  
Gompers Secondary School, La Mesa, CA

As I think of the comments written in books and brochures about the safety of model rocketry, I think of all the things I have learned through trial and error. Having taught model rocketry to students ranging from ages eight to sixteen (grades three to eleven) in the last seven years, I have seen many things done wrong. Now I consciously check each and every rocket and make my students extremely safety conscious.

I have seen many students who have a "crash" or "explosion" wish. After seeing so many movies and TV shows with explosions and crashes, they have no real concept of the dangers of explosions, crashes, or fast moving objects. Whenever I hear a student make comments about how to make it crash or explode, I talk with the students. I tell my "horror stories" gathered over the years from news reports, personal experiences, and other persons' experiences. Homemade propellants can claim eyes, fingers, and sometimes lives. Unintelligent use of even common fireworks can result in scars and blindness. Students can relate to such stores.

Even when not trying to cause a malfunction, things can go wrong. The checks I have developed over the years to avoid accidents do not make all the students happy, but do increase safety when launching.

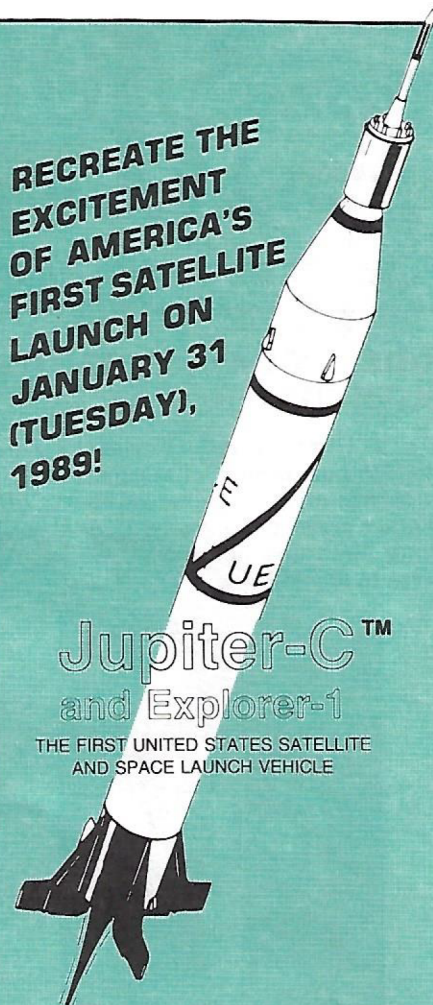
When introducing the unit, I stress the importance of safety. Only safety-checked model rockets will be launched. A safety check is done BEFORE EVERY FLIGHT. Even if the rocket has been flown before, it receives a safety check before each new flight. If any element of doubt exists, it does not get launched. It is better to be safe than sorry. This pays off when students tell other students not to do something or explain why certain acts are not allowed. (I have found that students are tougher on each other about following safety rules than teachers are on students.--Editor)

Each stage of construction has safety explanations. Often adults, as well as children, are not aware of why instructions are given as they are. They do not know WHY the instructions must be followed. If the "why" is explained and understood, everyone will do much safer work. Understanding the principles of rocketry will help individuals appreciate the importance of following directions.

Specific things to explain include fins, engine mounts, launch lugs, tying shock cords to nose cones, and gluing shock cord mounts. Fins should be mounted straight and evenly spaced about the body tube. Fillets should always be used and properly applied. If white glue is used, the rocket should not be spray painted until the glue is dry and clear. When checking fins, I hold the fin tip and gently wiggle the fin. A securely attached fin will not wiggle. Every fin is checked before each launch.

(continued on page 5)

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- ★ Let your students do a little research on the history of space exploration and then recreate that magic moment when the first U.S. satellite was launched. This will be great for your classes, and it might be excellent for the whole school to witness.

JUPITER-C™ #1976 . . \$13.69

## ESTES MODEL ROCKET NEWS MAGAZINE

Bob Cannon ..... Editor  
Mary Roberts ..... Asst. Editor  
Charles Webb ..... Photographer  
Bob Pacheco ..... Graphic Design  
Margaret Swope ..... Typesetter

Unless otherwise stated, all the model rocketry kits advertised in this magazine are hobby kits requiring assembly. Launch system, engines, glue, and finishing supplies are not included. Recommended for ages 10 through adult. Adult supervision suggested for those under 12 years of age. Prices subject to change without notice.

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## MESSAGES FROM LAUNCH CONTROL

### “Warm Fuzzies”

We like to hear from you--especially when you have something nice to say about us. George Beever of Ephrata, PA included a note with his returned survey from the September 1987 MRNM. “Again, my compliments to Estes for providing me with 19 years of top notch products and services. Keep up the good work.” We’ll do our best, George.

Looking back at the comments made on that survey from the vantage point of nearly a year later, it is pleasing to see how many of the things you requested we have already done or will be doing in the next year or two. Quite a few of you requested a Saturn V model. The new Saturn V #2001 has been available since January. A number of rocketeers requested a helicopter recovery rocket. The HelioCopter #1995 was also released in January.

### A monthly MRNM?

Roby Mills II of Chapmanville, WV asked why we don’t publish this magazine monthly. I wish we could, Roby. We do publish it three or four times per year. Those of you who order regularly by mail order receive it, free. But most of our rockets are now sold at retail and discount stores all over the country. Mail order is not our chief method of distribution as it was 25 years ago. Encourage your friends to order by mail order regularly, and maybe we can publish this magazine more frequently. See page 1 for an announcement about our mailing list.

### EAC Members

I hope that all of you Estes Aerospace Club members have joined the Estes Space Program. There are now eight Achievement Awards which you can earn, and more will be announced later.

We give preference to ESP members when selecting articles for Model Rocket News Magazine. From time to time there will be special offers for ESP members only announced. See page 1 for the special offer in this issue.

### Estes Space Program

Please see pages 7, 9, and 1 for news. Then join now if you are not already a member.

### Career Choice

Vincent Jovero of Norco, CA wrote to us last summer. The following is from his letter:

“I am 18, and I have been in rockets over 5 years now. I still enjoy building and flying them. I think your rockets are the best tool for education and learning skills for young and old. It gives them the opportunity to construct a rocket with which they comprehend the principles of rocketry and in return their rocket soars through the air with beauty and grace...”

“The rockets that I have purchased and launch helped me to fulfill my goal of becoming an aeronautics drafter for NASA...”

“Thank you for helping me choose my career.”

Vincent then collected information on colleges. It is extremely gratifying to learn that model rocketry has helped someone to learn, and make a career choice. Good luck on reaching your goals, Vincent!

### Free plan contest

Don’t forget to send in your entry in our Free Plan Contest. See the wrapper in which your 1988 Estes catalog was mailed for more details. If you can not find that, send a SASE (self-addressed, stamped envelope) to:

**Free Plan Contest Rules, Estes Industries, 1295 H Street, Penrose, CO 81240.**

### Goddard Day Launch

Why don’t you and your club put on a ceremony in honor of Robert H. Goddard, the rocket pioneer? For some good suggestions, send a SASE (self-addressed, stamped envelope) to: **Goddard Day Activity, Estes Industries, 1295 H Street, Penrose, CO 81240.**

### The Franklin Institute, Philadelphia

The Franklin Institute of Philadelphia held several model-rocketry-related activities this summer. In the Model Rocket Construction program youngsters 10-13 years of age explored the history of rocketry, learned about rocket design, saw NASA films, and built and launched a multi-stage model rocket.

In their Space Explorers Camp Young Astronauts from 10 to 14 years old used computers and games to explore space. Included in the software they used were some of the Estes software products.

Paul Shaffer, Manager of their Computer Activities Center, reported “I launched my first rocket, an Estes Alpha, way back in 1969, and over the next few years built and flew dozens of rockets. My favorite was the Big Bertha. Now my son and I build and fly rockets all summer. With your new programs, we’ll be able to design even better rockets!”

See page 16 for new about one of our computer software products being selected \* by InCider for a special honor!

### Daedalus Project

The Daedalus project had a successful 74 mile flight across the Aegean Sea powered by Kanellos Kenellopoulos. Unfortunately, the craft was caught by a gust of wind which broke its tail boom just yards from its destination. He swam and then waded ashore.

The craft averaged 18.5 miles per hour in its 3 hours 54 minute flight 15 feet above the water. The 70 pound, 112-foot wingspan craft set human-powered aircraft records for the longest straight line flight and for duration aloft.

### Want an old Estes catalog?

Interested in securing an old Estes or Centuri catalog? We have received a letter from Andy Gnidziejko, president of **Custom Rocket Company, Box 115, Alna, ME 04535** announcing that he has many older catalogs and is willing to sell them. Write to him to see what is available and how much it costs.

### School rocket club raises own funds

The third graders at Lincoln Memorial School, Caney, KS, has a very active rocketry program. The club members collect and sell aluminum cans for recycling. The club leader, teacher Joe Warnock, provides a computer-generated newsletter every two weeks for all participants. This keeps the rocketeers and their parents informed on what is happening and also includes interesting facts about rockets. The money raised from selling the aluminum cans helps pay for their rockets.

If you sponsor a rocket club at a local school or youth group, you might try adding these programs to your activities. They work!

### Oops!

Apologies to Shikhor Mukerji of Newark, DE. He created the fine Rocket Word Search which appeared on page 14 of the Fall 1988 Model Rocket News Magazine. We accidentally left his name off of it. Sorry about that, Shikhor!

### Cleaning your blast deflector plate.

Always thoroughly dry your blast deflector plate after cleaning it. If you used a flammable liquid to remove the residue, wash the plate, then dry it thoroughly. Rubbing a few drops of oil completely over each side after drying can help prevent rust.

Bob Cannon



# THROUGH RAIN, SLEET, AND SNOW?!

By Roy Houchin, Academy Rocket Club,  
US Air Force Academy, CO

As a light snow drifted whimsically down across the Air Force Academy's practice fields on this 12 of December (1987) Saturday, the Academy Rocket Club (ARC) went ahead with their annual Fall semester Fun Fly for the cadet wing. As the crowd began to gather around the launcher (mostly to keep warm!) we began to place our rockets on the pads for launch. The first to separate the falling snowflakes were the club's "demonstration" rockets. Most of these were beautiful no-longer-available Estes kits. As everyone shouted "zero!" the Starship Vega™ streaked skyward. The Soaring Eagle™ and Crusader™ quickly followed, with a Rigel 3™ (two-stage) close on its heels! While recovery of the upper stage of the Rigel 3™ proved a challenge (We found it in the thorn bushes along the slopes several hundred feet away.), ultimately we brought all of them back to the launch pads.

We placed the second round of rockets on the launchers as the sun began to peek through the overcast. Time for the AstroCam™!! Hoping to capture a few aerial photographs of the day's activities, we checked the continuity of all four pads and pressed the firing button! Although each AstroCam™ had a different booster (We modified several Estes kits to enhance our boosting capabilities.), we hoped to get a panorama of the Academy area. As our recovery crew of spectators brought our birds back to the "blockhouse", the sun went back behind the clouds. So much for AstroCam™ shots!

To keep in the "spirit of the season", and since finals were underway, we launched a "holiday rocket" painted red, white, and green. Maybe some of the instructors would see it and feel like Santa Claus when they graded the club member's finals! HO HO HO! As the rocket reached apogee the ejection charge sent dozens of round candy cane mints down on the crowd! As everyone slipped and slid to catch them, we all got a great laugh!

Next came the club's pride and joy, the scale rockets! Two Space Shuttles™ were placed on the launch pads while two other club members set their Nike-Asp™ and Nike-Cajun™ on the two remaining launch pads. As the crowd counted down to zero, the launch control officer pressed the firing button to send the two shuttles. What a sight! Both birds seemed to be moving at the same speed, but as the parachutes began to open we could tell one of them started a half-second before the other since its parachute deployed first. To see if our member's modifications of the original Estes Nike-Cajun™ would make a difference in flight performance, we launched the two Nike-boosted birds simultaneously. The Nike-Asp™ proved to be the highest flier, but the Nike-Cajun™ had the longest duration. As a last blast for scale, C1C Dave San Clemante launched his Maxi-Brute, the

Pershing 1™. Unfortunately the wind began to pick up a little. Seconds after launch, Dave's Pershing™ was in kit form again! Sorry, Dave.

As the final portion of the demonstration, the club members helped the spectators prepare their rockets for launch and placed them on the pads. As each spectator launched his rocket, it was easy to see we may have made a mistake, at least academically. With all of these cadets so eager to build and fly more rockets, how were they going to keep studying for the remaining finals?! Oh well, there is always next semester!



From page 1

We discussed the club's name quite a bit before deciding. Three reasons for our final selection were that Las Cruces is the nearest city to the main base at White Sands Missile Range. The second was because White Sands is where the third Space Shuttle mission ended. The final reason was the snazzy acronym "WiSMaRC".

By December we were starting to become known. We advertised the club with posters in local hobby stores and around NMSU. We had a picture of one of our launches in Round Up, NMSU's student newspaper. The Las Cruces Sun-News had an article about us.

Our membership in September 1987 was about 15. Our membership is pretty mixed, ranging in age from about 10 to about 32. Some of these members are adults who have been in the hobby since childhood. Others are kids shooting off their first rockets. We all have in common an interest in models and in space. Over the course of our first year we lost several of our younger members who lost interest and left, but we continually pick up new members. There were times when only a handful of die-hard members showed up.

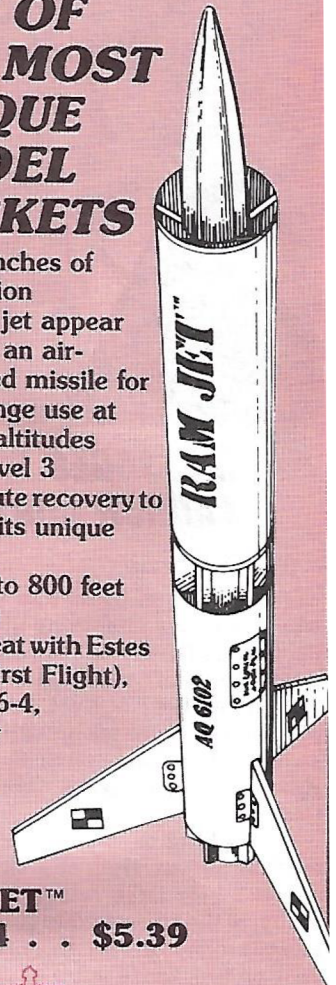
Several things have helped to keep us going. One has been a friendly rivalry with Magic II in small contests and at Alamogordo's Flight Fest competition. Meetings and launches make good opportunities for us to discuss better construction, design, or recovery ideas. Launches have been good for showing and testing new models. Our beginners are learning "tricks" most beginners have to figure out for themselves. These are just a few of the advantages of group rocketry.

((Editor--This is a typical success story for a new rocket club. If you don't have a good local club to join, why don't you copy some of these ideas and start your own club? Clubs make it possible to have fun doing a lot of things you can't do as an individual. The Estes Guide for Aerospace Clubs #2817 provides many additional ideas to "get your club off the ground".))

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- ★ Flights to 800 feet possible
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Merry  
Christmas to all!

### SECOND STAGE: Advanced Model Rocketry

WANT A CHALLENGING MODEL  
ROCKETRY PROJECT?

This book contains:

- ★ Aerial photography
- ★ Scale modeling
- ★ Do-it-yourself launch control systems
- ★ Telemetry
- ★ Atmospheric sampling
- ★ Do-it-yourself static thrust test stand
- ★ Compiled by Mike Banks, co-author of The Rocket Book

SECOND STAGE: Advanced  
Model Rocketry  
#2861 . . . . . \$10.00

(continued from page 2)

Engine mounts have caused many a trembling lip in my classes. Make sure the glue has completely dried on the engine mount before it is glued inside the body tube. Sand or peel layers of paper to ensure ease of sliding before gluing. Glue the engine mount in the same end of the body tube as the fins. When getting ready to glue the engine mount in place, practice pushing the engine mount with a steady force. Once the glue is put in the body tube, the instant the engine mount being slid into place stops the mount appears to be "glued in place" and cannot be moved, even though the glue is not dry. Place fillets of glue around the mounting rings after the engine mount is secured in place. After once watching a rocket loop around and hearing an amazing deep roar, the problem was found to be an engine mount which had slid forward with the thrust of the engine. The center of gravity was radically moved forward as soon as the engine was fired. The kids thought it was great, but I was very worried. Now I check by pulling AND pushing on the engine mount with a bit more force than I used in the past. If the engine mount moves, it can be repositioned and reglued in the proper place.

Innocent launch lugs. They jump off tables and hide while students are building. They grab hold of launch rods and don't let go when launching. When classes start building model rockets, I tell the story of the suicidal launch lug. Launch lugs wait till no one is looking. They suddenly grow tiny legs and run for the edge of the table to jump to their death on the floor. Tell the story with a solemn face and low voice. When you get to the part about jumping to the floor give a scream. Students will better remember to watch for "running" launch lugs.

Use a launch pad inside to test the rockets before taking the rockets outside for launch. Place the launch pad on top of a desk. This places the tip of the launch rod well above eye level. Place the fully prepped rocket's launch lug on the launch rod and let go of the rocket. The rocket should slide down the launch rod without binding or catching. Glue or paint inside the launch lug can cause binding or dragging. Remove the rocket carefully from the launch rod and gently clean out the material from the launch lug. Failure to have a clean launch lug can cause the launch rod to vibrate at take-off, possibly causing the rocket's flight path to be not that planned or even dragging the launch rod or launch pad with it--not a safe launch!

It is easy to have the nose cone attached too tightly. Having a bit of paint or glue inside the body tube can cause the nose cone to "hang" when it should eject. This causes the rocket to crash on landing. Having paint on the shoulder of the nose cone, or even just having a nose cone shoulder too large or a body tube slightly too small can cause the same problem. Test the fully-prepped rocket by holding it by the nose cone,

then making a quick jerking motion with the hand holding the rocket. The nose cone should come off and the recovery system deploy. If not, then sand the shoulder of the nose cone or the inside of the body tube to correct the problem, then retest.

A concealed problem can be having the recovery wadding jammed in too tight or just plain too much wadding. Insist that your students fold it, then gently push the wadding into the body tube with a pen or pencil. One way to check for a problem is to remove the engine from the engine holder, then try to blow the wadding out by puffing air through the engine holder from the rear. If the wadding won't easily eject, it could jam in an actual flight and cause a crash.

Shock cords can be a special problem. Check carefully to be certain that the knot attaching the shock cord to the base of the nose cone is strong and neat. A poorly tied knot can allow the nose cone and parachute to detach at apogee. A knot that is too big or in the wrong place can jam between the nose cone and the body tube and prevent proper ejection of the nose cone and hence the recovery system. Bad news!

Shock cord mounts can also be bad news. Not following directions and having the shock cord mount too close to end of the body tube can produce consistent binding preventing proper nose cone insertion and nose cone ejection. I have my students smear the shock cord mounts and the ends of their fingers with glue. Then they place the shock cord inside the body tube as far in as they can reach. Then the shock cord mount is smoothed down tightly against the body tube and coated with glue. Rub it again before the glue is fully dried to be sure it is in the right place, lies flat against the body tube, and is coated with glue to be tightly attached when the glue has dried.

Don't make a launch more exciting than necessary. Err on the side of safety. Keep our hobby and learning tool famous for its safety record. This list of things to check for safety is by no means complete. As smart and clever as students are, many more things to watch for will be found. Learn from me, and from your students, for many more safe launches.



### MRNM CONTRIBUTIONS NEEDED

Send us YOUR news. Write a letter with suggestions and ideas. Tell us what you want to see in Model Rocket News Magazine. We can't answer all of them, but we will read them. We will use some of them in MRNM.

We like your Idea Box tips. Share that great idea!

Articles--technical, humorous or simply reports on your model rocketry activities--are welcome.

Cartoons are always welcome. If you can, please draw them in ink or soft pencil on plain white paper. Your cartoon stands a much better chance of use if we don't have to redraw it before we can print it.

We give preference to contributions by ESP™ members. But we won't exclude your contribution if you are not yet an ESP™ member.

Put each separate contribution on a separate sheet of paper. Please put your name and complete address on each thing you send in.

Thanks!



### ESTES THIRTIETH ANNIVERSARY PATCH

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**BUY NOW!** This patch will not be available once the current supply is gone!

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## A Tattered Old Rocket

By Samuel J. Croft, Bessemer City, NC

I know it has happened to every model rocketeer, no matter how large or small in your fleet. You have one rocket that stands out from all the rest. Your favorite! Your Pride and Joy. The one you are going to lose to the tallest tree in the neighborhood. My all time favorite model rocket has to be, without a doubt, the Estes Red Max™

My Red Max™ had its humble beginnings in May 1986. After bulding and painting came the crowning touch, the Red Max™ decals. These decals are what make the Red Max™ a cut above the rest.

My first flight was made May 6, 1986 using a B4-4 engine. Needless to say, everything went as it should. On my third launch we had to go fishing! That is, my recovery crew had to use a tall cane pole to get my rocket out of a tree. After 9 flights of the Red Max™ and only two R.F.T.s (Recovered From Tree), the 10th flight would be the big disaster!

Using a B4-6 and knowing all along the chances I was taking with the longer ejection delay (Editor--He was aware that this was not one of the recommended engines.), I went and launched the rocket anyway. As the Max cleared the launch rod I felt like it would make it because I had already had one successful launch with a B4-6. This time fate was not on my side. As the Max started its descent and as we counted down, by the time I reached one thousand and six, so did the nose cone of my Max, right into the ground! When we got to it, it was a mess. The body tube was crushed, the nose cone was broken into three pieces (But the pieces were still attached.), and the engine mount had broken loose and was about 1/2 inch forward. Only one fin had broken off, but the other two were nicked.

The rocket looked like it would be impossible to fix and appeared to be a good candidate for the trash can. But since it was my favorite, I decided to give repairs a shot. I ordered a new engine mount from Estes. I glued the fin back on and straightened the body tube. I used Testors model car glue on the nose cone and was able to glue the parts back into place. I then used the glue as filler on the seams. Then I repainted the nose cone and left the body tube as it was. After installing the engine mount, we were back into business.

The big day was May 24, 1986. My launch crew and I sent the regenerated Red Max™ on its way into the big blue Carolina sky with B6-4 power. What a sight to see! My favorite rocket that was ready for the trash can flew once again.

We made many more flights with the Red Max™ with a few problems. All were minor when compared with THE crash. Every fin has been glued on at least once, and some several times. The launch lug has been reglued, and the shock cord has been replaced three times. Nicks and chunks have been the life of the fins of this model, but it keeps on going.



The crowning day was on September 9, 1987 when we celebrated our 500th launch by electing the Red Max to be the rocket that would mark this event. This launch also marked the 46th launch of the Red Max. On October 22, 1987 we made the 50th launch of the Red Max! We used a B6-4. Just as the ejection charge went a strong northern wind carried the Red Max into a popular tree. I tell you I'm thinking of retirement for this one after its 50 flights. Naw, just one more flight! After all, it's my favorite!

*Jonathan Truchan and Jennifer L. Thompson, West Middlesex High School students, stand beside rocket and Space Shuttle models in the school's science room. They spent a week at U.S. Space Academy I studying space.*

## THE FINAL FRONTIER... Students reach for stars at Space Camp

Reprinted with permission from the *Sharon Herald* (PA) of April 26, 1988. Article by Judy Swogger. Photo by Anne Redfield.

Space, the final frontier. That was the opening line for the television series "Star Trek" when it premiered in 1966. Yet, for many people at that time, the idea of life in space was still just a concept to be realized in the distant future. Now, some 20 years later, that dream has become more of a reality, especially for five local students...

The students' day at space camp began at 7 a.m. with astronaut conditioning exercises and ended at 10 p.m. Crammed in the 15 hours in between were lectures, films, model rocket building, space shuttle and flight study, tours, and simulator training.

Now, students toss around terms like MMU (manned maneuvering unit--used by astronauts to maneuver in space), GMMU (ground-mounted MMU--craft used to hover a few inches above ground), and EVA (extra-vehicular activity--such as space walking)...

(continued on page 8)



## BIG, BLACK, AND BEAUTIFUL!

- ★ One of the most beautiful rockets!
- ★ Over 1½ foot long
- ★ The wings won't quite let it glide back (The wings on the full-sized version don't provide much of a glide either!), so it uses a parachute for gentle recovery.
- ★ One of the most popular models with the thousands of teachers who see the models on display at the conventions of the National Science Teachers Association which the editor attends.
- ★ Impressive scale model of the superior high altitude reconnaissance air craft. The original can cruise at over 2,000 miles per hour at an altitude of 80,000 feet.
- ★ Impressive flights with Estes B4-2 (First Flight), B6-2, B6-4, B8-5, or C6-5 engines.

SR-71 BLACKBIRD™ #1942 . . . . . \$12.89

# ESTES SPACE PROGRAM™ CORNER

Congratulations to all of you who have joined the Estes Space Program™. You are involved in a program which offers unique opportunities for learning about model rocketry as you build and fly.

We do not know who all of you are. Our computer only picks up those of you who identify yourself when you place an order by mail. There is no way to track the many members who joined through purchase of the membership packet at a local store or from mail order company and who do not indicate on the order blank that you are a member.

Many of you are progressing well in earning the Achievement Awards offered by the program. Later in this article are listed those who earned their achievement awards late last summer. Sorry that the list is not more up to date, but the lead time necessary to produce this magazine forces us to complete the list months before the magazine is actually mailed.

The **eight** Achievement Awards now available are illustrated here. More awards will be announced later. How many of these awards have you earned?



If you haven't yet joined, send in your membership **today!** Working on the awards during the long evenings and nights this winter is an excellent way to progress.

I hope all of you members noticed the **special free offer** on page 1. There are many ways you can have more fun if you and your friends organize into a club. Having a club is not necessary to have fun in model rocketry, but having an organized club with a sponsor makes possible so many more activities which an individual cannot tackle on his/her own.

One Achievement Award which is especially pertinent at this time is the Science Fair award. Now is the perfect time to start on your Science Fair project. Judges usually give special preference to rocket projects. And it is a perfect excuse to do that special project in model rocketry that you have been wanting to do. Estes Industries has a publication which is great for providing help in planning, completing, and presenting your Science Fair project. This publication is Project in Model Rocketry #2831 and sells for \$0.90.

Here is the continuation of the list of ESP™ members, by state, who had joined the program by the end of May. The list will be continued in the next issue.

## PENNSYLVANIA

David Podnar, Pittsburgh; Virginia Kuhn, Pittsburgh; I. Z. Sibolbord Jr., Indiana; Scott Holman, Cabot; Arthur Nestor, Zelienople; Brian Donnelly, Erie; Matthew Bergeron, Manheim; Adam Boynton, Winfield; David Cheung, Bethlehem; Vincent Carroll, Orefield; Alex Solimine, Stroudsburg; Don Singleton, Perkaspie; Brad Owens, Coatesville.

## DELAWARE

Joe May, Wilmington; Steve Cawby, Frederica.

## MARYLAND

Cliff Li, Bethesda; Brad Frisby, Rockville; Tommy Pallas, Rockville; Danny Gould, Potomac; Lawrence Musgrove, Silver Spring; Jeff Gardenhour, Hagerstown.

## VIRGINIA

Matt Weed, Reston; Billy Detty, McLean; Kenneth Brown, Springfield; Christopher Kidwell, Bowling Green; Robert Sciegaj, Winchester; Robert Martino, Gum Spring; Alton Boshier, Richmond; Chad Belote, Harborton; Keith Clements, Staunton; Richard Gill, Verona.

## WEST VIRGINIA

Steve Kirwan, Barboursville; Nathan Cummings, Vienna; Anthony Bonner, Bowden; Jim Crayton, Grafton.

## NORTH CAROLINA

Jason Casiday, Elon College; Jeremy Madrazo, Elon College; Mark Kennedy, Star; John Foushee, Clayton; Tony Brechi, Garner; Johnnie Chambers, Roxboro; David Rector, Salisbury; G. Huff, Dunn.

## SOUTH CAROLINA

Chris Giguere, Charleston.

## GEORGIA

Jeff Underwood, Lilburn; Dr. Vincent Murray, Atlanta; Jay Corey Schiffer, Carnesville; Tommy Murrell, Statham.

## FLORIDA

Clayton Williams, Callahan; Jason Lenentine, Ft. Walton Beach, Michael Wells, Sanford; Doug Wogan, Orlando; Than Meyer, Cocoa Beach; Gerd Zeiler, Merritt Island; Daniel Lanes, Hialeah; Mike Williams, Lake Worth; Donald Renner, Lutz; Robert Ballard, Winter Haven; John Collins, Fort Myers; Thomas Cash, Fort Myers.

## ALABAMA

Jason Haynes, Scottsboro; Lee Olyniec, Scottsboro; Craig Cole, Prattville; Christopher Guisinger, Hatchechubbe.

## MISSISSIPPI

Richard Covington, Batesville.

## KENTUCKY

Ed Muccio, Lawrenceburg; Gregory Good, Lakeside park; Kerin Austin, Paducah.

## OHIO

Ty Puskarich, Smithfield; C. M. Fernando, South Euclid; John Grimm, Parma Heights; Michael Pobiega, Solon; Patrick Truesdell, Norton; Steve Rogers, Ashland; Eric Bagdonas, Fairborn; Marco Cruz, Fairborn; Bob Hegwood, Germantown; Matt Willoughby, Tipp City; Greg Lawhun, Dayton; Michael Marks Sr., Jackson; Mark Ohnewehr, Winchester; Terry Holdheide, Maria Stein.

## INDIANA

Joseph Mitchell, Anderson; B. J. Gustin, Pendleton; Robbie Richardson, Marion; Brad Needham, New Albany; Sam Shirk, Greensburg; James Newman, Newburgh; Joshua Brown, Evansville.

## MICHIGAN

Roger Wilfong, Novi; Dean Pilato, Warren; Rocket Club, Wixom; Natalie Jayne, Troy; Mark O'Brien, Ann Arbor; Richard Jungclas, Ann Arbor; James Gray, Woodhaven; Darren Virgo, Bad Axe; Darrell King, Flint; David Bassett, Kalamazoo; Nick Tedrow, Jackson; William Eback, Belmont; David Huang, Grand Rapids.

## IOWA

Douglas Crouch, Pilot Mound; Erik Nielsen, Harlan; Phil McFarland, Lowden; Jeff Lake, Fort Madison; Mark Gannon, Davenport.

## WISCONSIN

Brent Blanke, Watertown; Andrew Greenlees, East Troy; Zachary Lozoff, Glendale; Brad Tollakson, South Wayne; Gary Gralapp, Lancaster; Jeff Hartkopf, Sciotofield; Kent Schroeder, Wisconsin Rapids; Sam Rondea, Viroqua; Aaron Gulcynski, Thorp; Richard Luedke, Weyauwega.

## MINNESOTA

Eric Belmont, Faribault; John Ruths, Faribault; Robert Rech, West St. Paul; James Hedlund, Minnetonka; Matthew Keilen, Hutchinson; Brian Short, Minneapolis; Richie Puhek, Chisholm; Jeff Graff, Springfield; Jerry Pldehn, Alpha; Michael Koenig, Jackson; Dan Sunvold, Sacred Heart; Damon Engelking, Cold Spring; Brian Uhlenkamp, Sauk Centre; Derek Rotz, Clitherall.

## NORTH DAKOTA

Jeff Piehl, Langdon.

## ILLINOIS

Donald Linder, Palatine; James Spice, Woodstock; Tim Marcy, Wheaton; Brian Horstman, Evanston; Kurt Kiefhaber, Chicago; Jamie Quigley, Manteno; Kirk Boelens, Moline; K. Cranford, Peoria; Jim Zimmerman, Urbana; Nathan White, Charleston; John Bennett, Lovington; Robert Brouse III, Springfield; Louis Jiardina, Marion.

## KANSAS

Danny Woodhead, Shawnee; James Wilson, Topeka; Nathan Fink, New Cambria; Duane Lanterman, Great Bend.

## NEBRASKA

Matt Beckler, Friend; Mike Oswald, Aurora; Clint Shaw, Lakeside.

## LOUISIANA

Toby Holley, Harahan; Mark Lamkiv, Jonesboro; Lucas Adams, Many.

## ARKANSAS

Jimmy Bates, Pochahontas.

## TEXAS

Roger Asbury, Duncanville; Mike Griffin, Dallas; Kerry Kaszak, Arlington; Keith White, Mansfield; Ari Bond, Fort Worth; Chris Bauch, Nassau Bay; Luis De Santos, Houston; Michael Koshken, Stafford; Doug Zupan, Deer Park; Mark Jacobsen, Lake Jackson; Lynn Bruntington, Seguin; Ed Minar, San Antonio; Kevin Gillespie, Rio Grande City; William Wright, Luling; Tal Henard, Wellington; Hollis Browne, Colorado City.

## ROCKET WINNERS!

Reprinted with permission from the Purcell, OK Register, May 26, 1988. Photo by Henry Ketchum.



These three youngsters from the Purcell 4th grade were judged winners in a recent rocket contest. Front row, left to right: Troy Ware, Mackenzie Frankenberg, and Dwayne Huddleston. Instructors in the back row are Jeana Newville, Earla Tate, and Jim Willis.

## BOOST GLIDER VISIBILITY

Paint the bottom of your "boost" and "rocket" gliders bright fluorescent orange or yellow for better visibility from the ground.

Submitted by Scotty Hamilton, Box 467, Mannford, OK 74044

(continued from page 6)

Teams were organized the first day. Teamwork "was the most important thing" for the success of the mission, Kelly said. As Jonathan put it, "many of the missions blew up because of lack of teamwork and cooperation."

Working closely together helped the five develop close relationships with their fellow team members. The local students expressed an interest in keeping in touch with their new friends who hail from all over the country.

Nicki said she became good friends with someone from Colorado and they would like to return to camp together next year. Returning to Space Camp is something all five plan to do.

In addition the Space Camp and Space Academy I, there is Space Academy II for high school juniors and seniors and college freshmen, Adult Space Academy, and a program for teachers. Although not affiliated with NASA, the program is strongly supported by the organization.

In addition to the Space Camp in Huntsville, a new training center has been built in Florida near the John F. Kennedy Space Center at Cape Canaveral...

For more information about any of these programs, write to Space Camp, The Space and Rocket Center, One Tranquility Base, Huntsville, AL 35807-0287.

## IDEAS FOR GREAT CHRISTMAS PRESENTS



*For your friends, relatives, teachers, or rocketeer parents-- And perhaps for a treat for yourself\*!*

*These are just a few ideas for great presents for your rocketeer friends and relatives*

*Perhaps you could plant the seed of an idea with your own favorite present-giver about what you would like. Suggest to several. And if that doesn't work, you can always use some of the money you receive to buy it for yourself!*

### EGGSPRESS™

#1996 . . . . . \$9.29  
Know someone who thinks he or she is a really hot rocketeer? Give that individual a real challenge!

A unique thrill...whether the egg makes it or not!  
Useful for launching other small payloads, too.

### HELIO COPTER™

#1995 . . . . . \$9.29  
Treat someone to a "spin" the next time they go to the range.

### ESTES SPACE PROGRAM™

#1443 . . . . . \$8.69  
The start of lots of fun with model rocketry!  
Give someone you care about a membership in this great program. It is a present that is fun for a long time.

### NASA X-15™ #0889 . . . \$6.49

A fine present for the scale model buff.  
Impressive appearance, and good performance with mini-engines.

### A nice show model CRUSADER SWING-WING™

#1961 . . . . . \$9.29  
A BIG glider  
Capable of 800 feet flights. Glide times of 45 seconds or more possible.

### BLAST-OFF™ FLIGHT PAK

#1672 . . . . . \$23.89  
For the person who has everything...and likes to fly them!

### DESIGNER'S SPECIAL™

#1463 . . . . . \$29.39  
Want to encourage someone to really let loose and make a great bird? Give him/her the Designer's Special!!

\* After all, you have earned a treat for this year, haven't you?

## SCOUT FAIR

By Martin J. Green, Committee Chairman, Troop 314, Orange County, CA

Troop 314, Westminster, CA had Space Exploration as the theme of their booth for the November 21, 1987 Explorer and Scout Fair of the Orange County Council, BSA. The Space Exploration merit badge includes building and launching a model rocket among the requirements. The booth made by this troop was very successful. It involved the entire troop and their leaders. The booth won Second Best Prepared Booth ribbon among all the troops competing in addition to winning over 400 plus units.

The troop believes in practicing what it preaches. Over 30 boys in the troop have earned the Space Exploration merit badge and over 20 more have earned partial credit for the badge.

## I-CON VIII

Stefan Jones, Committee Member for I-CON VIII, invites all interested model rocketeers to the State University of New York at Stony Brook on March 31 to April 2, 1989. This convention is billed as New York's largest convention of science fiction, science fact, and fantasy. As compared to most such conventions, this convention puts lots of emphasis on educational and scientific content.

In addition to movies, TV stars, and other media-related events, I-CON invites scientists, writers, and engineers to attend panel discussions and provides space for displays from local science museums, aerospace firms, and private exhibitors.

Stefan and the convention chairman are both rocketeers from the late sixties. The 1988 show drew 3,000 attendees.



## FLIGHT SUPPLIES

- #1598 A8-3 engines . . . \$3.45/pkg
- #1601 B4-2 engines . . . 3.45/pkg
- #1617 C5-3 engines . . . 3.70/pkg
- #1613 C6-3 engines . . . 3.95/pkg
- #1614 C6-5 engines . . . 3.95/pkg
- #1511 A10-3T engines . . 3.60/pkg
- #1666 D12-3 engines . . . 6.30/pkg
- #1672 Blast-Off™ Flight Pak . 23.89
- #2301 Model Rocket Igniters . 1.89/pkg
- #2232 AltiTrak™ . . . . . 11.79
- #2231 Fin Alignment Guide™ . 13.99
- #1443 Estes Space Program™ . . 8.69
- #2274 Recovery Wadding . . 1.89
- #2233 Repair Kit . . . . . 4.69

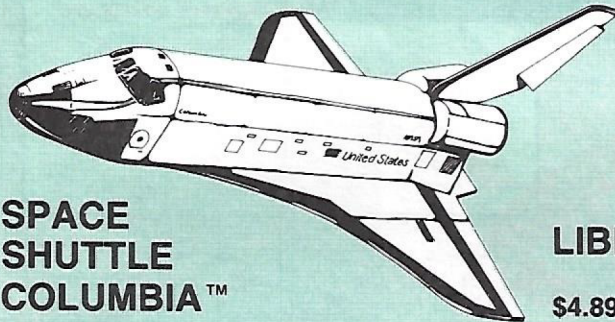


# FREE ROCKET CHOOSE ONE OF THESE GREAT ROCKET KITS FREE!



## DESIGNER'S SPECIAL™ \$29.39 Value #7595

Send in your order for merchandise totaling \$100 or more and receive a FREE Designer's Special™.



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\$11.79 Value #7594

Send in your order for merchandise totaling \$50 or more and receive a FREE Space Shuttle Columbia™



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\$4.89 Value #7592

Send in your order for merchandise totaling \$20 or more and receive a FREE Liberty™ Kit



## ESTES SPACE PROGRAM™

\$8.69 Value #7593

Send in your order for merchandise totaling \$30 or more and receive a FREE Estes Space Program™ Membership

*Important: If you do not list your free kit, you will not receive it.*

## LIMIT-ONE FREE ROCKET KIT PER ORDER

These special free offers are available only for orders received by August 31, 1989. Orders must be accompanied by full payment (check, money order, Master Card, or Visa charge). Order qualification for a free kit is based on amount of merchandise ordered. If you qualify for one of these free rocket kits, just list the name and special kit number from this page as the last item on your order. List "Free" in the column for total price. These special offers may not be used with other special offers, bonus coupons, or discount.

## DESIGNER'S SPECIAL

*Perfect for designing your own rockets!  
Great for spare or replacement parts for almost any need.*

- ★ Over 75 parts to use to create your own original designs
- ★ Design and build your special rockets now while you have more time in the long evenings and you are trapped indoors. Launch them when the weather warms up.
- ★ Enough supplies to build at least eight different rockets
- ★ Dream up your own special rocket, build it, and fly it. Then draw up the plans and submit it for the Design of the Month contest. You might win a \$75 merchandise certificate! Or submit the design in our Free Plan Contest. You might win a \$100 merchandise certificate!
- ★ And you will have some fun, too!

**DESIGNER'S SPECIAL**  
#1463 . . . . . \$29.39

## ESTES SPACE PROGRAM™

The most fun way to become expert in model rocketry

- ★ As a member you will receive
  - (1) an official membership card,
  - (2) membership certificate,
  - (3) cloth ESP™ patch,
  - (4) lots of decals,
  - (5) a special full-color issue of Model Rocket News Magazine, and
  - (6) official club stationery.
- ★ Plus the (7) special ESP™ **Yankee Clipper** model rocket available exclusively to Estes Space Program™ members
- ★ (8) Special ESP Official Validation Seals which you will need to qualify for special offers available only to ESP™ members
- ★ And the opportunity to earn eight special Achievement Awards as your model rocketry skills increase.



**ESTES SPACE PROGRAM™**  
#1443 . . . . . \$8.69

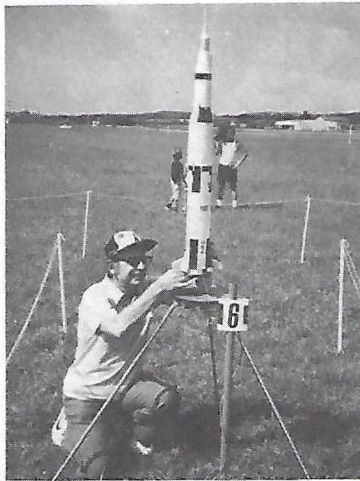


Mary Beth Lemon with her First Place Trophy and Mary Roberts of Estes Industries pose in front of Space Shuttle trainers at the Space and Rocket Center in Huntsville. As winner of the Estes/NAR/Space Camp Contest, Mary Beth will be returning to the Space Center for a fun and work filled week of "Astronaut training".

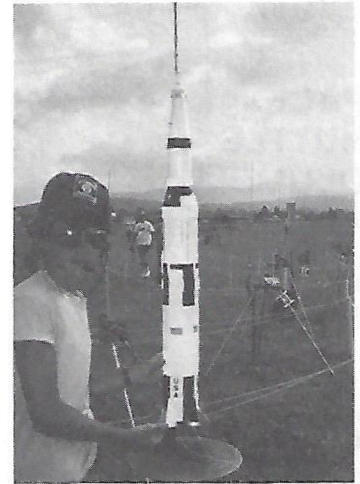
Photo by John Pursley



Mark Mayfield, Atlanta Bureau Chief, USA Today, interviewing Vern Estes, while covering the National Association of Rocketry's Annual meet and Convention. A photo and short article about the event were published in the August 8, 1988 issue of the prominent national newspaper.



Vern Estes of Canon City, CO, founder of Estes Industries, preps the new Estes Saturn V for launch at NARAM-30 held the first week in August 1988 at Huntsville, AL. He helped with the Estes manufacturer's demonstration.



Marty Williams of HARA (Huntsville Area Rocketry Association), the host section, and his Saturn V entered in the scale competition.



Creative uses for the front cover of the Fall 1987 Model Rocket News Magazine. Randall Redd of the WARP section (UT) of the NAR went to extremes in dreaming up ways to fly Pat Miller, NAR president, in effigy at NARAM-30. Meet "Mahatmi Maghandi" Miller, "Mickey" Miller, "Coolie" Miller, "Conehead" Miller, "Whirling Dervish" Miller, and "Crazyhorse" Miller. All six of these "odd-rocs" "flew"!?



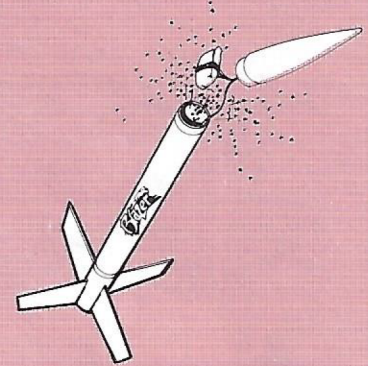
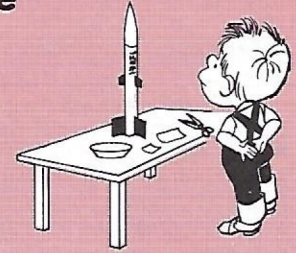
Novice Rocketeer Contestants. Frederick Bryant of Centerville, GA; Chris Shobe of Clarkston, MI; Richard Covington of Baresville, MS; Mary Beth Lemon (Winner!) of Miami, FL; and Decia Swenson of Huntsville, AL.

# IDEA BOX

## Patience--Patience-- Patience

Decals are much less apt to be damaged if you put on just two at a time, one at each end of the rocket, and then let them dry completely--four hours or more--before working near them. The decal process may take several days with a complex model such as the Orbital Transport™, but the reduction in the "Frustration Factor" more than compensates for the time.

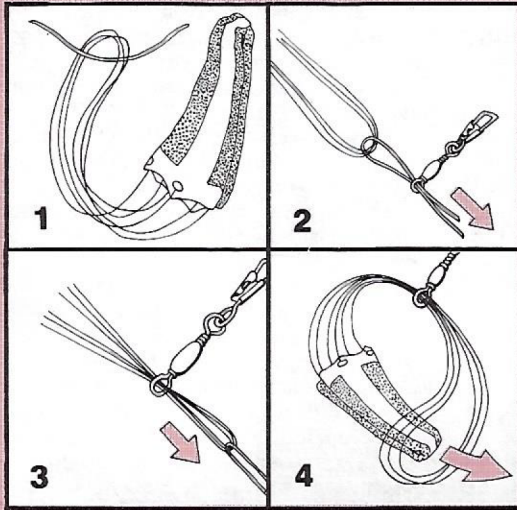
By Dwight Scott Miller, College Station, TX



## SPOTTING YOUR ROCKET AT APOGEE

Ever have trouble spotting your rocket at apogee? Try adding 1½ tablespoons of dark-colored "glitter" that you can buy at most arts and crafts stores. It works about as well as colored chalk, but it is a lot less messy.

Submitted by Scotty Hamilton, Mannford, OH



## STRINGING A SNAP SWIVEL THE EASY WAY

Submitted by Dean Pilato, Warren, MI

1. Loop a short piece of string through the gathered lines.
2. Thread the string through the snap swivel.
3. Pull the shroud lines through.
4. Loop and pull through.

## MAKING SANDING SEALER APPLICATION EASIER

The instructions on most kits say to glue the balsa fins on the rocket, let the glue dry, and then apply sanding sealer. I do it a little differently because it is easier for me. I apply the sanding sealer before gluing the fins on the rocket. I do the sanding and resealing and sanding, then I attach the fins. This makes it a lot easier to do a good job of sealing and sanding the fins, and it avoids the chance of scratching the body tube with the sand paper.

Contributed by Robbie Richardson, Marion, IN

## FOR RELIABLE LAUNCHES

Keep your launch control key clean and shiny. The launch key must make good electrical connections within the launch controller.

Submitted by Scotty Hamilton, Mannford, OK

## BE PREPARED

Before heading out to the range, make a list of the rockets you will fly, which engines you will need, how much recovery wadding you will need, and how many igniters you will need. Then pack your range box accordingly. This can save much frustration, lost temper, and lost opportunities to launch.

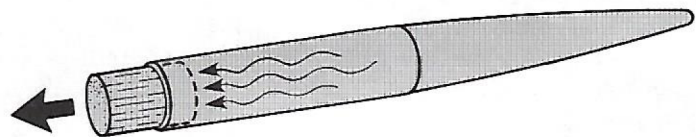
Submitted by Scotty Hamilton, Mannford, OH

## SLICK TRICK

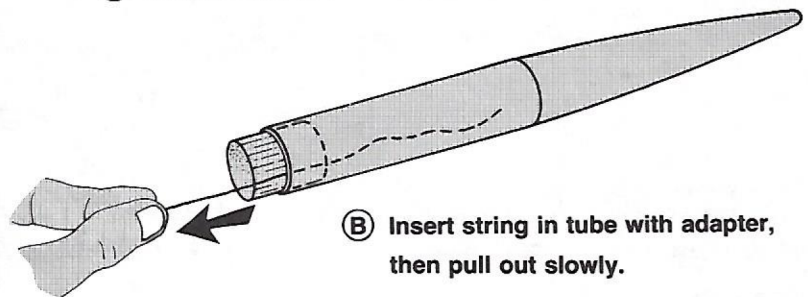
When gluing an adapter into a body tube that already has a nose cone inserted, air pressure tends to force the adapter out of the body tube while the plastic glue is not yet set. Use an old winemaker's trick to release the pressure in the tube. Place a piece of string in the body tube, and slowly pull it out once the adapter has been seated. The air follows the string as it is pulled out relieving the pressure in the tube. Reseat the adapter for a perfect fit.

Submitted by Lawrence J. Weber, Littleton, CO

## Ol' Winemaker's Trick



(A) Air pressure pushes adapter back out.



(B) Insert string in tube with adapter, then pull out slowly.

## MODEL ROCKET PIONEER DIES

Orville Henry Carlisle, 71, died on August 1, 1988 in Norfolk, NE of a heart attack.

Carlisle was a native of Norfolk, NE. He owned and operated Carlisle's Correct Shoes for 42 years. His hobby was pyrotechnics. For more than 40 years he was involved in putting on public fireworks displays in and around Norfolk. He developed the world's only fireworks museum which was housed next to his shoe store.

Photo courtesy of Sally Simon Stitch



Orville Henry Carlisle

Orville Carlisle and G. Harry Stine are considered the fathers of model rocketry. Carlisle of Norfolk, NE built some small rockets of the type which were later to be called model rockets. Stine was an engineer at the White Sands Proving Grounds, NM when he received some samples of the rockets. Stine had been contributing a monthly column on rocketry and space travel to Mechanix Illustrated.

Carlisle read one of the articles and sent some samples of the small rocket engines and rocket which he had developed to Stine. Stine tested them in an open field near his home in Alamogordo, NM. He liked them. He wrote an article about them which appeared in the October 1957 issue of Mechanix Illustrated. He later improved them and began marketing them through a company which he founded called Model Missiles, Incorporated. This company was headquartered in Denver, CO.

Your editor read the article while attending a National Science Foundation sponsored workshop for science teachers at Baylor University, Waco, Tx. He was involved in doing a report for one of the classes on the use of rockets in teaching. He ordered an Aerobee Hi kit and some engines through a local hobby shop. That was the start of his 31 year involvement with model rockets as teaching aids.

Orville Carlisle led several teacher training workshops for Estes Industries for science teachers in his area of Nebraska.

The following excerpts are from an article by Sally Simon Stitch of Denver, CO. The photograph was provided by her. Both are reprinted with permission from an article which appeared in the July 4, 1988 Chicago, IL Tribune.

"...He traces his interest to the days when his father, a traveling candy salesman, would bring firecrackers back to his three sons from his journeys across Nebraska and South Dakota. ...

"Carlisle never formally studied pyrotechnics, but he credits much of his knowledge to a good high school chemistry teacher, who gave him carte blanche after school hours, and to chemistry sets he received for Christmas...

"Here was this article about safety rules that amateurs should follow when setting off rocket models,' he recalls, 'and this was during a time when rocketeers routinely lost fingers and hands due to crude rocket construction.

"Carlisle wrote in response to the article about a model rocket he and his brother Robert had developed...

"Warily, Stine accepted, but he was soon to see a sight that has been repeated millions of times since: a rocket fueled by a single propellant rising 300 feet, then gently descending, carried by a bright red parachute...

"In August, 1976, he received a letter from Stine telling him that his Mark 1 and Mark 2 Rock-a-Chute model rockets were on display in the National Air and Space Museum of the Smithsonian Institution with Orville Carlisle's name on them."

The Smithsonian called Carlisle to make sure that the fireworks plan for the inauguration of President Reagan was safe. He was consulted about the fireworks display held when Queen Elizabeth of England observed her 25th anniversary as Queen.

### THE ROCKET BOOK

Your best reference for model rocketry. Gives you the facts, the techniques, and the methods necessary to help you become an expert rocketeer

- \* Introduction
- \* Construction techniques
- \* Flying model rockets
- \* Altitude tracking
- \* Basic physics of model rockets
- \* Aerodynamics
- \* Model rocket design
- \* Advanced techniques
- \* Model rocket engines
- \* Classroom activities
- \* This book helps you understand.
- \* 224 pages of useful information

**THE ROCKET BOOK**  
#2859 . . . . . \$16.30

### BLAST-OFF™ FLIGHT PAK

Treat someone you love to 24 great flights!

- \* A perfect gift for the rocketeer who has everything...and likes to fly them!
- \* SIX EACH of these great Estes Engines:  
A8-3, B6-4, C6-5, C6-7
- \* PLUS 30 igniters (six extras, just in case)
- \* PLUS recovery wadding
- \* Why not get one for yourself, also? After all, haven't you earned a treat for yourself this year?



Another successful launch at future astronaut training camp  
For more information contact Kansas Cosmosphere, 1100 N. Plum, Hutchinson, KS 67501.

# FREE PLAN

# NEWFOUNDLAND SPACE TANKER

DEAN PILATO

Warren, Michigan

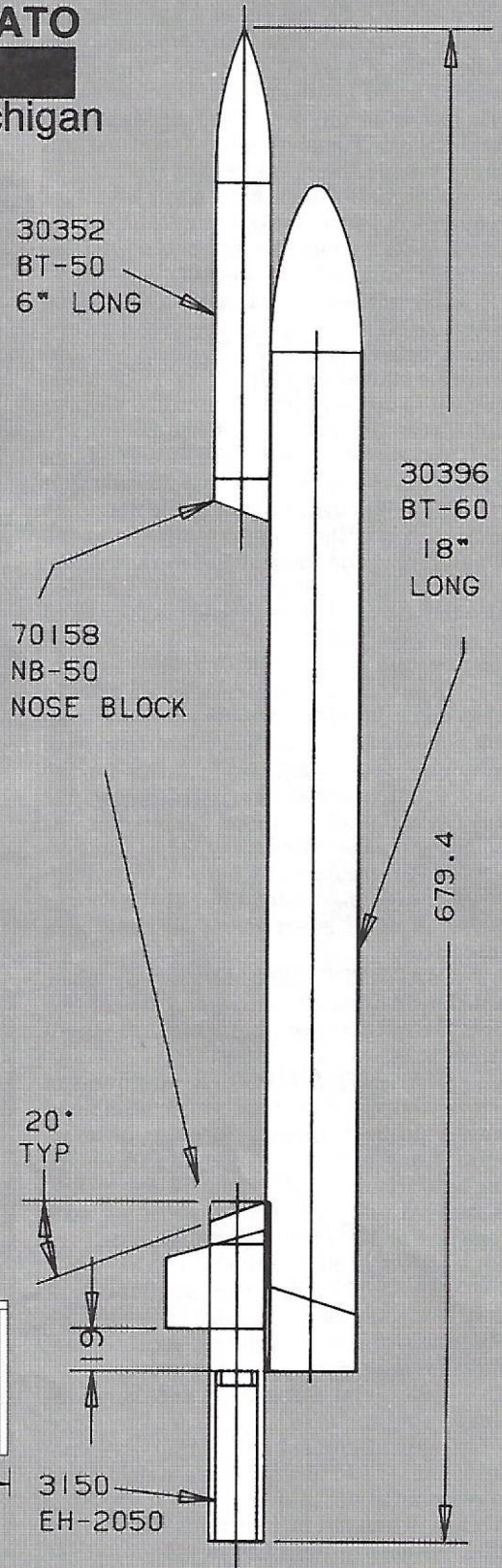
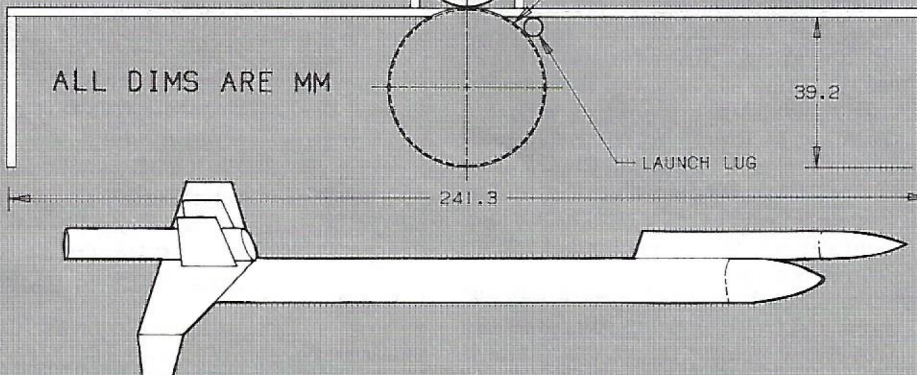
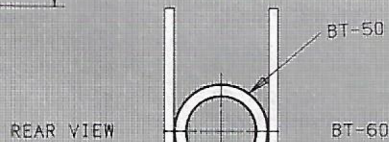
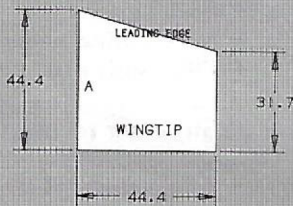
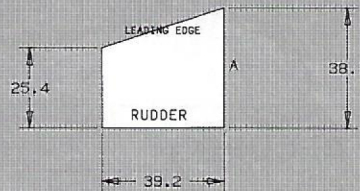
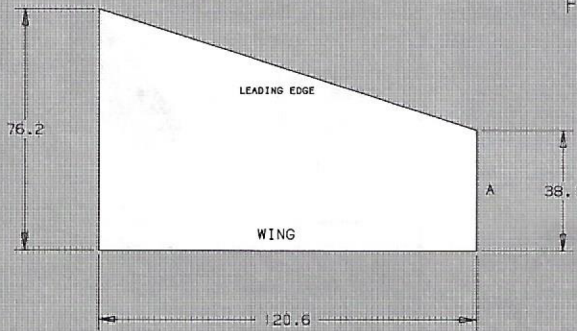
QUAN	PARTS LIST		
1	71020	PNC-60MS	NOSE CONE
1	71028	PNC-50KA	NOSE CONE
1	30396	BT-60 BODY TUBE 18" LONG	
2	30352	BT-50 BODY TUBES 6" LONG	
1	3150	EH-2050	ENGINE MOUNT
1	3140	ENGINE HOLDER	
	32110	BALSA FIN STOCK	3/32 STOCK
2	70158	NB-50 NOSE BLOCKS (MODIFIED) CUT @ 20°	
1	2267	PK-18 PARACHUTE	
1	2321	LAUNCH LUG	
1	2276	SHOCK CORD	

FLIGHT	DATE	ENGINE	
1	4-9-88	B6-4	DELAY TOO LONG
2	4-10-88	C6-5	
3	4-17-88	C6-5	
4	4-22-88	B6-2	
5	*	B6-2	
6	*	B6-2	
7	4-23-88	C5-3	MAX ALTITUDE
8	4-30-88	C5-3	
9	*	C5-3	
10	*	C5-3	

NOTE: AN EJECTION DUCT MUST BE CUT BETWEEN THE BT-60 PARACHUTE COMPARTMENT TUBE AND THE BT-50 ENGINE COMPARTMENT TUBE.

## FIN PATTERNS

ALL DIMS MM



## BIG ROCKETS FOR LITTLE PEOPLE

By Dwight Scott Miller, College Station, TX

"Papa, This won't do!" For the fourth or fifth time in one evening, my 8 year old son let out a wail of anguish as an intricate piece of a tail fin fell off, or a hair-fine line of paint wandered into some previously detailed area of a BT-5 "strap-on". With great care to avoid belittling his modeling skills (He has, after all, done Der Red Max™ and a D-Region Tomahawk™.), I pointed out that perhaps the parts he was working on were too small and that the paint job might require the assistance of Boris Vallejo if the scene of interstellar swashbuckling he envisioned were to be attempted.

We settled on my finishing the 8" long Kohoupa Warrior (15 pieces and 8 colors, name copyright 1987, Kenneth Miller) while he started on a MegaSizz™. The Mega made it to the launch pad before the Warrior did. Except for one decal, I had no hand in it. It occurred to me that the basic problem wasn't his eyesight or his imagination, but rather the lack of fine motor skills that come only with adulthood and practice, if at all. Small pieces and intricate artwork are simply beyond the average "under 10". I noticed also that he was trying to hold parts by hand in most cases, and he just couldn't keep still long enough for the glue to grab.

Knowing that Kenneth would want to keep on building rockets, we set about finding out how he could have a lot of fun with minimum frustration. Several tips for the very young modeler are listed below. We have tried most of them out on various neighbors and victims of my eldest son's attempts to raise funds by baby-sitting. With a few exceptions, which I put at the door lapses in adult supervision, all have been successful.

**MAKE IT BIG!** The larger body tubes, pre-shaped or molded parts, and die-cut fins from heavy balsa are simply easier for small hands to grasp.

**MAKE IT SIMPLE!** A minimum of colors and decals or drawings, combined with a sleek, clean shape prevent interference of one area with another and reduce the total time needed to complete the rocket. A sprayed paint job, with contrasting nose cone and body, is usually enough. Don't try for a perfect airfoil on the fins.

**MAKE IT GREAT!** Praise all the work that is done enthusiastically. The old Cub Scout motto, "Do Your Best," applies here, and should be thoroughly rewarded.

Additional techniques and items include:

Use a fin alignment jig. Either buy one, build one, or use heavy blocks to hold parts in place until the glue is dry. And speaking of glue, when the instructions say "Allow glue to dry.", REALLY do just that! It doesn't hurt a bit to let each joint dry overnight before proceeding. In fact, short sessions are generally better for a child anyway. Pre-gluing of the root edge of the fins makes for a fast "grab" when the fin is glued

to the body. Point out to the child that a small amount of glue is plenty. You can always add reinforcing fillets later.

In place of decals, you might try a picture from a magazine, glued flat to the surface.

If a third color is really wanted, use masking tape and newspaper or thin plastic to protect the first colors. Keep the nose cone out of the way after it is painted.

Encourage the use of fine or extra fine sandpaper only. It is a lot easier to take balsa off than it is to try to put it back on. Adult checking of each sealing/sanding cycle is a good move. (In fact, it might be a good idea for an adult to do the sealing, considering the potential for chemical risks to both the child and the furniture.)

On launch day, after the child has packed the wadding and parachute, helped if necessary, the fine work of installing the engine and igniter should be done by an adult or responsible older child. After that, the young modeler should do the range clearance check, the countdown, and the actual launch. Unless launching very small rockets in a very large, flat, clear area, the older rocketeers and adults should do the recovery trek.

**Summary:** Very young modelers can have a lot of fun, and achieve a lot of self satisfaction, if you help them work on projects within their physical limits.



## RECORDS

By Tom Lyon Sr., Dunkirk, MD

Thanks for the approximately 25 years that I've been enjoying model rocketry.

My two children (Tommy, Jr. and Jenny) have set three U. S. records using Estes kits in NAR competition. The records are in "A" age division. A Star Dart™ modified to employ three fins was tracked to 295 meters in ECRM-15. A Mini-Mean Machine™ using 18mm engines won B Super Roc Altitude and a new record with 611 points at ECRM-15. At NICE-7 they set a new B Eggloft Duration Record using a Sprint™, a PK-24 parachute, and an egg capsule. (There's a local hobby shop that still has a few of your out of production kits available.)

They have won quite a few ribbons and trophies using your products. We thank you for the pleasure and to share the excitement from winning as well as flying for fun.

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## THE WORLD'S MOST POPULAR MODEL ROCKET!

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- ★ A great sport flier!
- ★ A tough performer under all flying conditions!
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- ★ Parachute recovery
- ★ Reliable flights everytime with a wide variety of Estes engines: 1/2A6-2, A8-3 (First Flight), A8-5, B4-4, B4-6, B6-6, B8-5, C6-5, or C6-7 engines

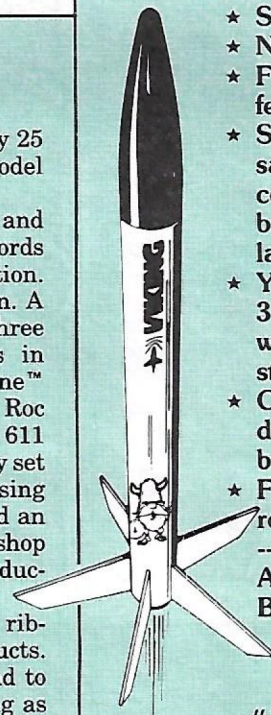
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# VIKING™

## The rocket that lets you do it your way!

- ★ Skill Level 1
- ★ No painting needed!
- ★ Flights of up to 1,000 feet
- ★ Streamer recovery to save your feet when it comes time to bring it back for the next launch
- ★ You can build it with 3 fins, with 4 fins, or with 5 fins--and it is stable every time!
- ★ Clever decals decorate this fast-to-build model
- ★ Fly it with a variety of reliable Estes engines --A8-3 (First Flight), A8-5, B4-4, B6-4, B8-5, C6-5, or C6-7



**VIKING™**  
#1949 . \$2.99

## UNDERWATER LAUNCH

By George Howe, New Orleans, LA

I decided to try an underwater launch of a model rocket. Information secured from *The Rocket Book* (Estes #2859), pages 169-170, was very helpful. The underwater launch proved relatively easy to do with consistent success.

Instead of using a small water container such as a half-gallon milk carton, I secured a five gallon water container from a local spring water dealer. He sold the empty bottle to me for \$6.00. I cut the top off it where it began to curve inward near the mouth. The top piece was saved for the next time I need a really large funnel.

Next I carefully drilled a hole in center of the container bottom for the regular 1/8 inch launch rod. Then I drilled a hole in a small piece of wood (1/8" thick and 4" square). This small piece of wood fits under the container and still allows the container to sit flat on the ground.

Fixture cement or wood putty can be put around the hole in the wood. Then press the standard launch rod into the hole in the container and into the hole in the wood. Press the wood flat against the bottom of the container. This forces the putty or other adhesive to spread around the rod, sealing the hole and cementing the rod and piece of wood firmly in place. Rub some extra adhesive around the rod and the hole from inside the container. Allow this assembly to dry thoroughly.

Build a short rocket, preferably one with tumble recovery so that the nose cone does not have to separate. Do the construction as usual. After the rocket is finished and the paint and decals are dry (ditto for the finish coat if you protect your rockets with Dull-Kote or Clear-Kote), put an igniter in an appropriate engine. Place this engine with igniter into the rocket as usual. Now comes the special preparation part.

Carefully melt candle wax in a saucepan on the stove until it is smoothly liquid. Use care to prevent its getting hot enough to catch fire. (Wax is flammable.) Perhaps a double-broiler is available to make this procedure safer. Place the rocket on a good paper plate. Pour the melted wax carefully over the rocket. Do this slowly so the wax does not splash. Be sure to cover all parts with a thin, reasonably even coat of wax, including the fins. If you are using a parachute recovery rocket, make sure to avoid getting too much wax over the nose cone/body tube seam as the ejection charge has to push the nose cone off easily. Too much wax could seal the nose cone into place. Let the wax coating cool, then turn the rocket over and carefully pour wax over the rear of the rocket engine to waterproof it, also. Do not get wax over the ends of the igniter leads. Wax there could prevent making adequate electrical contact with the micro-clips at launch time.

Pre-launch procedures are standard with a couple of exceptions. Place a lump of clay in the bottom of the container near the launch rod. After the container is filled with water, lower the rocket on the launch rod. Push the rocket down gently so that one fin is gently secured by the clay. If you don't do this, the rocket tends to float up to the top-of the water!

Attach the micro-clips as usual. Go back to the launch controller, insert the safety key, check for continuity, and proceed with the Countdown as usual. Follow the standard safety rules. Minimize wasted time after the rocket is in place to reduce the chance of an undetected small leak producing flooding inside the rocket's body tube. 5...4...3...2...1...Blast-off! The results should be interesting!



The author and his marine Scout II.



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*An easy rocket for beginners  
And a fast, good-looking  
rocket for anyone who needs  
a rocket in a hurry!*

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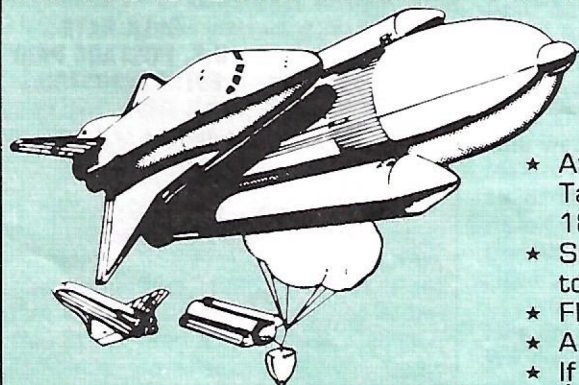


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- ★ Flies magnificently!
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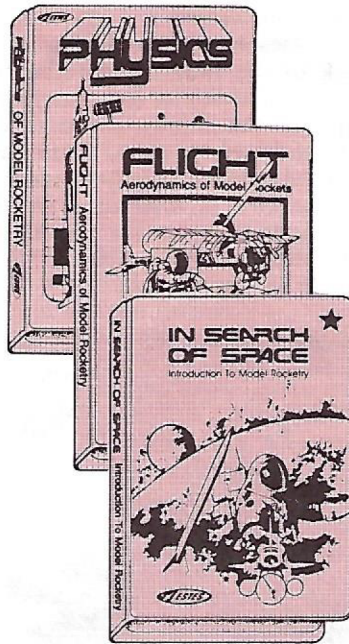
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# ESTES SOFTWARE HONORED!

*Our **IN SEARCH OF SPACE** was selected as one of "Top 40 HITS! For Home Education" by InCider magazine in its September 1988 issue.*

- \* That is the only review of one of our software products which has appeared so far in a national computer magazine. However, I am happy to report that all three of our tutorial products have received good reviews in the magazines published by the National Science Teachers Association. In its August 1988 issue *InCider* included favorable mention of one of our performance analysis programs, **ASTROCAD** in an article on CAD programs.
- \* The most recent review of one of our tutorials in a magazine of the NSTA was the review of **PHYSICS of Model Rocketry** in the April 1988 issue of *The Science Teacher*. The reviewer found that "Physics of Model Rocketry offers a very good introduction, as well as some advanced material, on model rocketry...The content of Estes's program is excellent, with good examples and easily understood explanations...Overall, this is a very good program, easily adaptable to a general science curriculum."
- \* The review of **FLIGHT** in the September 1987 issue of *The Science Teacher* included "These two disks provide a good introduction to aerodynamics and model rockets...I found the content of the programs excellent and the examples and visuals outstanding..."
- \* We feel that our computer software products are excellent. It is gratifying that others are agreeing.
- \* So get a lot smarter about model rocketry--buy and use our software to learn how to make and fly better model rockets!
- \* Please see page 65 of the 1988 Estes catalog for a complete listing of the programs in each of the three tutorials and in **ASTROCAD: Performance Analysis for Model Rocketry**.
- \* Our newest software product is **AEROTREK: Model Rocket Altitude Prediction Toolkit**. This product was written by our own model rocket expert and computer shark, Mike Dorffler. He has had programs published in *Nibble*, the magazine for Apple programmers. The programs included in this easy-to-use, menu-driven product include: Single Stage, Two Stage, Three Stage, Single Stage Cluster, Single Stage Incremented Weight, Designer's Scratchpad, and Lunar Launch.
- \* Now is the perfect time of year to use these products. The nights are long, it is often too cold to do much in the way of outdoor activities, and you can have fun while learning more about model rockets and how they and their big cousins operate. You will understand rockets much better.



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**ASTROCAD: Performance Analysis for Model Rocketry** #9028 . . . 19.95

**AEROTREK: Model Rocket Altitude Prediction Toolkit** #9033 . . . . 19.95

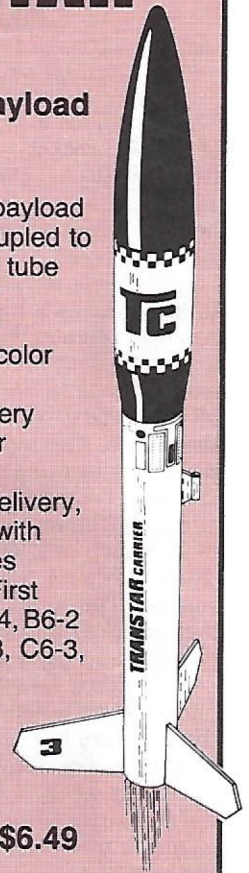
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