MAY 1972

MODEL ROCKETEER

OFFICIAL JOURNAL OF THE NATIONAL ASSOCIATION OF ROCKETRY

Vol. XIV No. 4

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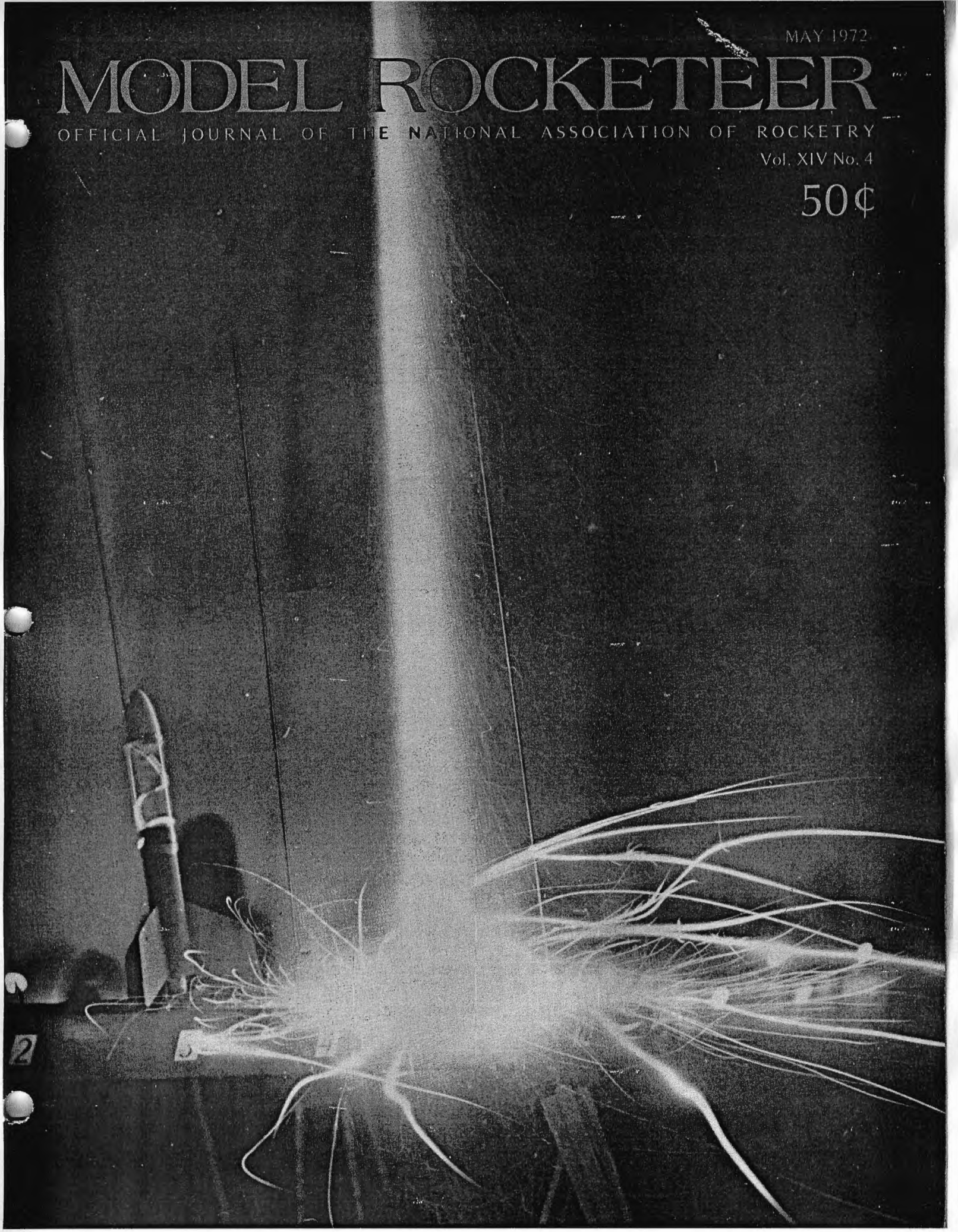

MALFUNCTIONING ENGINE STATISTICAL SURVEY

Return to: STANDARDS AND TESTING COMMITTEE
c/o Mike Wolfe
2798 Woodcroft Road
Columbus, Ohio 43204

ENGINE DATA

Manufacturer ______________________ NAR Engine Type ____________

Date of Manufacture ______________________ Manufacturer's Engine Code ____________

Date Flown ______________________

Location (Site or Meet) ______________________

TYPE OF MALFUNCTION

Nozzle Blow-out ________ Blow Through ________ Detonation (Split Casing) ________

Other Type Failure ______________________

Delay Malfunction. Delay was: Too short ________ Too long ________

No delay ________

No Ejection Charge (end cap retained) ________

COMMENTS ______________________

____

____

REPORTED BY

Name ______________________ NAR No. ____________

Address ______________________

____

Signature ______________________ Date Filed ____________

INSTRUCTIONS FOR FILING A MESS REPORT. File a report whenever an engine malfunction occurs. Examine the engine casing to determine the type of malfunction, the date of manufacture, and the manufacturer's engine code (numbers and letter stamped on the case giving additional information on the engine production process). Complete the form accurately and mail to the above address.

+ +

DO NOT WRITE IN THIS SPACE. FOR OFFICE USE ONLY.

Date Received ____________ Date Filed ____________ File No. ________

Engine Certification. Safety: Yes ________ No ________ Rem. ____________
Contest: Yes ________ No ________ Rem. ____________

Comments ______________________

____

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National Association of Rocketry
Post Office Box 178
McLean, Virginia 22101

COVER PHOTO–

A rocket takes off at a night launch in Marine Park in Brooklyn, N.Y. The rocket at the left contains glow-in-the-dark "Coolite" liquid in its clear plastic payload section. (Photo by Bob Mullane)

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Six weeks are required for change of address. In ordering a change, write *Model Rocketeer*, P.O. Box 178, McLean, Virginia 22101. Give both new and old address as printed on last label.

We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage. When writing the editor, address letter: ELAINE SADOWSKI, 1824 Wharton Street, Pittsburgh, Pa. 15203.

Application to mail at second-class postage rates is pending at McLean, Virginia 22101.

Postmaster: Send Form 3579 to Model Rocketeer, P.O. Box 178, McLean, Va. 22101.

EDITOR'S NOOK

This month's column is a potpourri, so read on; you may find something to interest you.

First, we'd like to thank all those people who've written or called us with their comment on the new *ROCKETEER*. We appreciate your enthusiastic support. Special thanks to the person in Richmond, Virginia who sent us the Robert Goddard commemorative envelope. We'd also like to thank all those who have been contributing to the *ROCKETEER*. Please, keep it up. We *can* make a go of it if we all work together.

We'd like to remind sections sponsoring area and regional meets, conventions, symposiums, etc. to write reports on their activities and send them (along with photographs, if possible) to us.

Bob Atwood has informed us that Sky Lab will be flying experiments devised by high school students along with its other experiments. The National Science Teachers Association is coordinating this project, so interested high school students should ask their science teachers for more information.

We would like to encourage NAR members to support TRANSPO 72. Those not in the WAMARVA area who would like to help out should get in touch with Joe Cimmino, 4018 Ferrara Drive, Wheaton, Maryland 20906. For more information on TRANSPO, see the article of page 5 of this issue.

Sometime in the future we would like to devote this column to an examination of the status of women in the NAR. We would like to hear from all our female members on this topic. Do you feel that you have as much chance to hold an office in your section or the NAR as your male friends? We've already mentioned this subject to a few of our friends; they seem interested, and we hope many of the rest of you will be also. *Any* comments on female NAR members would be appreciated. (But, please, don't address them to Ms. Elaine Sadowski!)

Elaine Sadowski

Send questions, ideas and gripes about NAR (don't forget about the "Loudly from a Broken Soapbox" and If I Wrote the Pink Book"

Send questions, ideas and gripes about NAR (don't forget about the "Loudly from a Broken Soapbox" and "If I Wrote the Pink Book" columns!) to:

Robert Mullane
NAR in Action Editor
34 Sixth Street
Harrison, New Jersey 07029

Send technical articles and plans to:
Patrick Stakem
Technical Editor
1001 Rockville Pike, Apt. 625
Rockville, Maryland 20852

Any other articles, photographs, cartoons, ideas, etc. go to:
Elaine Sadowski
Model Rocketeer Editor
1824 Wharton Street
Pittsburgh, Pennsylvania 15203

Section news goes, of course, to:
Charles M. Gordon
NAR Section News
192 Charolette Drive, Apt. 2
Laurel, Maryland 20810

A Message from the President:

NAR this year is fielding what appears to be the best model rocketry team ever to appear on the International scene. YOUR team is a team that will proudly represent You.

Your team is supporting you—they ask your support. The cost to get the team to Yugoslavia and back exceeds both the individual's and NAR's financial means—we need your support!

NAR is offering to anyone who supports his International Team a commemorative felt International Team patch for any contribution of $1.00 or more.

Help us help you support OUR team. Send your contribution to:

The International Model Rocketry Team
511 South Century
Rantoul, Illinois 61866

The Team and I thank you.

Sincerely,
James S. Barrowman
President

NAR in ACTION!

WHAT IS THE SECTION ACTIVITIES COMMITTEE?

by Bob Atwood

Bob Atwood is a graduate of Harvard College and Harvard Graduate School of Business Administration. He retired as an Air Force officer in 1961. He is a member of the NASA Tiros satellite team. Atwood has been a NAR Trustee and Section Committee Chairman since 1967. He is founder and former Senior Advisor of the Annapolis Section. His other interests include sailing, water skiing, and SCUBA diving.

All of my records are not at hand but I think it was at NARAM-8, 1966, that Harry Stine appointed me the director of the Section Activities Committee. Up until that time, he was handling that job along with the multitude of other activities that he took care of as NAR President. Our membership, if I recall, was up around 5,000 (*Ed. note: according to the records it was actually under 2,000*) but the number of sections was 26! The instructions I received were a "good luck" accompanied by a hearty handshake.

By 1969, the work load had become heavy enough that I made a written proposal to President Beetch on 3 March which went into effect 30 days later, setting up our present section activities regions and organization. Proposed were six regions (as we now call them). They seem to work pretty well and we have been working with them long enough to know. I appointed Regional Managers and gave them the twofold mandate to strengthen sections and grow new ones.

As the need has arisen, these Regional Managers have appointed assistants and State Heads. We also have Urban Area Coordinators in places like Los Angeles and Washington, D.C. All these people act under instructions originating with me which spell out policies and goals set by the NAR Board of Trustees. Each month, I send a long letter to the Regional Managers. This is a wrap up of data which each of them has fed me in his mid-monthly letter plus NAR official data which I have to pass along and incidental items of information, inspiration, humor and so on. Procedures call for a NAR Liaison Officer in every section and he or she is expected to exchange at least monthly letters with his State Department Head or whoever is next in the pecking order. The Section Liaison Officers may be juniors, other section activities personnel must be over 21. A number of Regional Managers put out regional newsletters.

Some specific examples of the activities of Regional Managers are given below:

study their membership tapes and contact seniors about sponsoring sections in areas where there are ten or more unaffiliated members (this activity is an outgrowth of a Leader Administrative Council project of several years ago);

coordinate competitions to prevent conflicts of dates, facilities and so on;

provide promotional material and know-how for NAR information booths at competitions and other public events;

coordinate with regional contest directors in an effort to maximize each other's efforts;

be an extension of NAR itself—i.e., be a listening post and our mouthpiece at grass roots levels. They also provide information and advice on all aspects of running a club to local sections. Hundreds of hours a year are required to be a good section activities worker.

I hire, and fire if necessary, the Regional Managers. They in turn have the last word in the selection of their personnel and they also are responsible for the performance throughout their areas.

As of today (8 February 1972), our membership stands at 2140 and the number of sections at 52. Referring to my charts of the buildup of growth in previous years, this doesn't look good for membership growth in '72. Normally, by this time, we have more than passed the halfway mark for members. By the first of March, we pass the halfway mark on sections, so we are really going to have to beat the bushes if we are to meet our goal of over 150 sections by NARAM-14. All NAR members are encouraged to promote the growth of NAR.

My heartfelt thanks goes to the more than two dozen workers who are cooperating with me in our section activities efforts. Long may they serve!

NAR NEWS TRANSPO '72

Transportation City, USA. This architect's model of the 300-acre site of the U.S. International Transportation Exposition—TRANSPO 72—at Dulles International Airport, Washington, D.C., is in scale with the airport terminal and tower at upper right, suggesting magnitude of the Exposition. Four large steel exhibition halls (center), each 200 feet by 400 feet (1-1/2 times the size of a football field), afford 320,000 feet of indoor space. Outdoor displays, featuring all modes of transportation equipment—land, water, air and space, will be ranged over 1 million square feet. Elevated oval at lower left is one of four "people mover" systems to be displayed—innovative concepts for mass transit in urban areas designed to provide relief from inner-city traffic congestion. Watercraft exhibits will be displayed on and around the 28-acre lake at top center. Parking areas, partially shown center and right, will accommodate 50,000 cars and 600 charter buses. Daily surface and air demonstrations will be conducted from airport runway, lower right. (Department of Transportation Official Photograph).

From Saturday, May 27 through Sunday, June 4 the United States International Transportation Exposition (TRANSPO 72) will be held at Dulles International Airport. The NAR will, through its affiliation with the NAA, be involved in this event. Sections in the WAMARVA area (Belair, Harford Area, MARS, NARHAMS, Star Spangled Banner, Wheaton, Northern Virginia, Vikings, Randallstown, and probably Annapolis) will man a booth and conduct demonstration flights. The NAR effort is being coordinated by Joe Cimmino, the NAR TRANSPO 72 Committee Chairman.

The NAR booth, to be located in Exposition Hall C, will be in the NAA area, along with other NAA affiliates' booths (National Pilots Association, Antique Aircraft Association, Professional Race Pilots Association, Experimental Aircraft Association, Academy of Model Aeronautics, Aerobatic Club of America, United States Parachute Association and Soaring Society of America). A rear-view movie screen in the NAA area will be continuously showing sound motion pictures of the various sporting disciplines, and among these will be the NAR film. Models, technical literature and NAR membership information are among the things that will be on display at the booth. People will be on hand to answer questions and provide technical information to interested visitors. Each model rocket manufacturer will have a compartment for literature that visitors may take.

(Continued on page 6)

A rocket launch will be held daily at TRANSPO 72. The NAR has been asked to open TRANSPO 72 on both May 26 (VIP and press day) and May 27, when the Exposition officially opens to the public. The President, Congress, other government officials, foreign dignitaries, etc. are expected on the 26th. Present plans call for the NAR opening ceremony to consist of a review of the United States space story, with model rockets being fired at intervals, moving in chronological order from the V-2 to the Saturn V Apollo Moon Launch Vehicle. The Saturn Vs will be launched and recovered as a mass parachute jump takes place in front of the grandstands.

Other launch periods, stressing all aspects of model rocketry, will be held at least once a day. Jim Kukowski has agreed to help with the narration and scripts. All the launches will be held in front of a 2000 foot grandstand, so five multiple launch systems will be used. Five identical models will be launched simultaneously, one from each launch position, so that all the spectators will be able to get a good view. About twenty-five or thirty models will be flown in each show. Mini-contests are also being planned, among them an Egg-Lofting event and a Spot Landing event.

NASA is providing a large trailer van that will serve as NAR headquarters in the field. Inside, work space for prepping models and repairing them will be provided, along with storage space for launch systems, models, and engines.

TRANSPO 72 is a big event, and it can be a very important one for NAR. Thousands of people will see the NAR in action every day, and maybe some of them will discover the hobby of model rocketry.

For those interested in coming to TRANSPO 72, the Exposition will be open from 9 a.m. to 6 p.m. daily, with the exception of May 30 and 31, June 1 and 2 when it will be closed to the public from 9 a.m. till noon. Daily surface and air shows will be held; all types of transportation will be included. Major shows are scheduled for May 27, 28, and 29, and June 3 and 4. These will be more extensive than the daily shows.

NARAM-14 CHARTERED FLIGHT—EAST COAST TO SEATTLE

by Howard Galloway

The NAR is investigating the feasibility of chartering a flight from the East Coast to Seattle for NARAM-14. As of this writing, the following rules apply:

1) Plane will leave from Friendship Airport, Baltimore, Maryland;

2) We will probably leave Baltimore on Saturday, August 5, 1972, and return on Saturday, August 12;

3) We must have at least 98 people in the group;

4) The round trip NAR cost will be about $180.00 per person;

5) This special group price may be discontinued or modified at the end of May, 1972.

6) There is a possibility of a touchdown in Chicago.

You will be notified as soon as the FAA/Airline decision has been made.

Please do the following now:

If you are interested in joining this NAR group flight, send a postcard to:

Howard L. Galloway, Jr.
428 Ben Oaks Drive West
Severna Park, Maryland 21146

Include your name, address (don't forget zip code) and phone number on the card. Sending in the postcard does not commit you—we are trying to get an honest interest survey.

YOUNG ROCKET BUFFS DISCUSS SPACE EVENTS WITH ASTRONAUTS

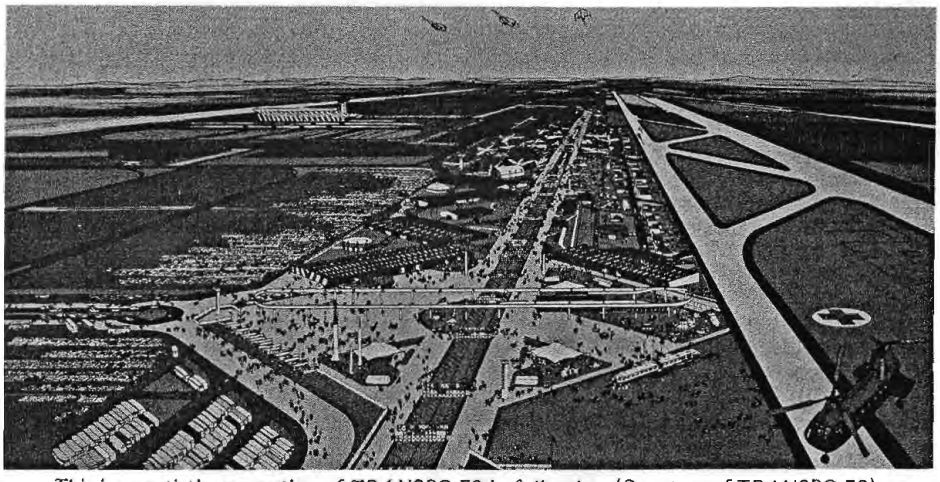
by W. G. Moon

Mr. Moon is the founder and senior advisor of the Randallstown Rocket Society. He is an engineer who has been involved in rockets and missile systems for many years. He worked on logistics support operations for the Navy's Polaris program for the Vitro Laboratory. He has also served as vehicle coordinator for Aerobee sounding rocket launchings at White Sands, New Mexico, Wallops Island, Virginia, and Fort Churchill, Canada, while working for the Fairchild-Hiller Corporation and stationed at Goddard Space Flight Center. He is currently involved in systems contingency planning for major programs at the Social Security Administration headquarters.

Eager young hands pressed skyward in an enthusiastic expression of inquisitiveness. An astronaut answered patiently, remembering his own boyhood dream.

That was the scene at an exciting encounter which occurred recently at the national convention of the American Institute of Aeronautics and Astronautics in Washington, D.C. Thirty-five members of the Randallstown Rocket Society attended.

Speaking to the young people in an informal style were astronaut Colonel David Scott, Commander of Apollo 15; Dr. Arthur C. Clarke, author of the book *2001: A Space Odyssey*;



This is an artist's conception of TRANSPO 72 in full swing. (Courtesy of TRANSPO 72)

Jay Moon (left) and David Rovner (right) from the Randallstown Rocket Society examine the NASA Mariner exhibit at the AIAA convention.

and acter Hugh O'Brien, star of a recent NASA film. Following the showing of films of the Apollo 15 moon walk, the experts opened the discussion to questions and answers.

Scott explained that Apollo 16 and 17, scheduled for March and December, 1972 (Apollo 16 has been re-scheduled for April.—Ed.), are the last two currently planned moon flights. Both will involve approximately the same instrumentation and spacecraft as Apollo 15, but they will explore different areas of the moon. When completed, the science stations left behind will provide reference points for pinpointing moon activity. Colonel Scott explained the significance of moon travel by saying, "We are learning about the history of the moon so that we will have a better understanding of the history of the earth—not just history—but the potentials of the earth and what the future has in store for us."

On the Apollo 15 mission, the astronauts took several deep core samples and obtained fifty-eight layers of moon soil. This is significant, according to Scott, because "the moon, as an ever-changing body in the universe unaffected by wind or man's influence closely reflects the results of sun activity."

Prior Apollo missions were considered to be stepping-stones in man's search for knowledge. When questioned about this, Colonel Scott stated that the information obtained on the Apollo 12 mission is now being used to explain the presence of atomic data and the recent discovery of moisture on the moon.

The possibility of a colony on the moon is increased by the presence of moisture. Dr. Clarke said, "Corn seeds planted in moon dust recovered on Apollo 11 have grown five times faster than similar seeds grown in earth soil." Thus, according to Dr. Clarke, the moon could potentially have a great corn crop if the other atmospheric conditions could be satisfied—say, in a bubble.

Barry Yatt, a high school age rocket buff from the Randallstown Rocket Society, asked how young people can get into the space field. Dr. Clarke assured him that there were many disciplines involved in the space program, among them astronomy, geology, and chemistry; all scientific areas, in fact. He went on to forecast that in ten to fifteen years our country will need such skills in space station work. So, not everyone has to become an astronaut in order to get involved in the space program.

Another eager rocketeer asked if Colonel Scott preferred zero gravity (as in space) to one-sixth gravity (such as on the moon) or one gravity (as on the earth). In answering, Colonel Scott acknowledged this as a good question that he had not considered before, and said that he probably preferred the moon's gravity, "even though this is confusing at first." ". . . one sixth gravity has the advantage of ease of moving things as compared to earth gravity, while over-

coming the problem of having things floating away as in a zero-gravity environment."

Hugh O'Brien asked Colonel Scott if he was concerned when the astronauts tripped and fell on the moon. Colonel Scott said, "Of course, we are always concerned; however, it is important to remember that, because of the one-sixth gravity environment, the fall is at one-sixth the force it would be on earth, and at a much slower rate--thus not nearly as dangerous even though life is dependent upon an undamaged suit."

Another boy asked if Colonel Scott and Dr. Clarke thought we would be going back to the moon again. Colonel Scott stated unequivocally that he believes we will be going back to the moon many, many times. He compared moon travel to the exploration of Antarctica, where exploration started, then died, and was not revived until 1957. "I also expect we will see colonies on the moon in your lifetime," Scott told the audience. Dr. Clarke added, "In Antarctic exploration we originally counted on the dog sled, a very primitive means of travel for exploration. We had to wait for the airplane and radio before going forward. The comparison continues today where the space shuttle may be the next step to renewed interest in moon exploration." O'Brien added that one of the greatest aspects of the program is that "virtually all mankind is participating in moon exploration, not just the Americans; in fact, everyone owns the moon."

When asked if there was any chance of going faster than the speed of light, Dr. Clarke answered that "although the possibility certainly exists in the future, we can safely and comfortably do all the exploring we will accomplish below this speed."

My son, Jeffrey Moon, asked Colonel Scott when we might travel to Mars. Colonel Scott said that at present a U.S. unmanned spacecraft is scheduled to land on Mars in 1976. He added that he suspected that a manned landing might possibly be accomplished before 1980.

Hugh O'Brien summed up the tremendous progress made since May 6, 1961, when Commander Alan Shepard's first suborbital manned flight took place. We've been through the programs encompassing Thor, Redstone, Jupiter, Vanguard, Mercury, and Gemini, and all this has been done in the lifetimes of those under college age. "The space age has a short memory. The young have little interest in man's past. Yet in looking over the vast amount of obsolete hardware at the Kennedy Space Flight Center, though sad in that these great milestones of the past are already enshrined as museum pieces, we have a clear indication of how fast we are progressing."

As time ran out, eager young spacemen reached out and touched the sleeves of the men they so much admired. Then, just as swiftly as the experience was created, their heros vanished into the crowd, and their searching minds were left with the challenge of Dr. Robert Goddard: "...Aiming at the start...is an activity to occupy generations."

INTERNATIONAL TEAM SELECTION

George Pantalos, chairman of the International Team Selection Committee announced the election of the following people to the International Team. Official verification is anticipated. Parachute Duration, Ellie Stine; Boost/Glide, Howard Kuhn, Jim Worthen; Scale, Jon Randolph, Howard Kuhn, Scott Layne.

The rest of the team members will be selected after another round of balloting.

(Continued on page 13)

speak out on the by-laws!

by Manning Butterworth

ARTICLE VII, Officers

Section 1: The officers of the Association shall consist of a President, a Vice-President, a Secretary, a Treasurer and such other officers as from time to time shall be appointed by the Board of Trustees.

Section 2: The officers of the Association shall be elected from the members of the Board of Trustees by the Board of Trustees at the triennial meeting following the triennial meeting of the Association.

Section 3: Every officer shall serve for three years or until his successor is elected and qualified. Every officer shall be subject to removal at any time by a two-thirds vote of those Trustees present and voting, provided the officer be given written notice of the charges against him and an opportunity to be heard in his own defense.

Section 4: If there be a vacancy in the office of President, the Vice-President shall exercise his duties until the next meeting of the Board of Trustees, at which time the Board will elect a member of itself to serve out the unexpired term of office. If there are vacancies in other offices, the President, subject to ratification action of the Board of Trustees, shall appoint a member of the Board of Trustees in good standing to fill the unexpired term of office.

ARTICLE VIII, Duties of Officers

Section 1: It shall be the duties of the President to preside at all principal functions of the Association, including meetings of the Board of Trustees; to represent the Association in dealings with other organizations and outside agencies; and to transact business in the name of the Association as directed by the Board of Trustees and in accordance with these By-Laws.

Section 2: It shall be the duties of the Vice-President to act in the place of the President in the case of his failure or inability to act; at the direction of the President, to transact any business that would be in the power of the President to transact; and, in the case of death or disability of the President, for any reason, to serve in his stead until his successor is elected or appointed.

Section 3: It shall be the duty of the Secretary to keep a correct and accurate account of the minutes of all meetings of the Association or the Board of Trustees; to receive, file, prepare and answer the correspondence of the Association such as the President or the Board of Trustees may request, to maintain a record of all material, photographs, drawings, publications or archive material of a historical nature and provide an accessible file of same for use and inspection of the Association; to keep a correct and accurate list of the membership with the class of membership and the last known mailing address of each member; to prepare and mail all notices of meetings of the Association or the Board of Trustees; to prepare, distribute, collect and record the results of ballots; to perform other such clerical and administrative work as may be deemed necessary by the President for the conduct of the affairs of the Association.

Section 4: It shall be the duties of the Treasurer to collect all dues and assessments; to care for the funds of the Association; to make all financial reports as required by these By-Laws; and to make such expenditures as are authorized by the Board of Trustees.

ARTICLE IX, Executive Committee

The Board of Trustees may appoint an Executive Committee of no less than three (3) Officers or Trustees to act in the stead of the Board between meetings of the Board. The Executive Committee shall be able to exercise any power granted to the Board under these By-Laws, but a full and complete report of the actions of the Committee shall be presented to the Board at each Board meeting, and no action of the Executive Committee shall be binding unless ratified by a two-thirds vote of the Board members present and voting.

ARTICLE X, Nominating Committee

Section 1: The Nominating Committee shall consist of three (3) Senior Members in good standing who are appointed by the President. It shall be the duties of this Committee to prepare and submit a slate of candidates for members of the Board of Trustees triennially. There shall be at least six (6) nominees for the Board of Trustees. The Committee shall be appointed at least sixty (60) days prior to the triennial meeting of the Association, and shall submit its slate of candidates to the Board of Trustees for notification of the membership at least thirty (30) days prior to the triennial meeting.

Section 2: Nominations may be made independently from the floor by voting members in good standing at the triennial meeting.

The By-Laws Revision Committee is proposing that Section 4 of Article VIII be amended to read: "It shall be the duties of the Treasurer to collect all dues and assessments; to care for the funds of the Association, and to make all financial reports as required by these By-Laws. Any disbursement of the funds of the Association shall be made by the Treasurer, and all checks, drafts, notes, and orders for payment of the funds of the Association shall be signed by the Treasurer." Presently, Article XII permits "checks, drafts, notes, and orders for payment of the funds of the Association" to be signed by other persons as well. The committee feels and the NAR's experience suggests that it is desirable to have a single person control the NAR funds.

The Committee is presently discussing a number of questions about nomination and election procedures. One change being considered would provide for elections by mail ballot by adding a new section to Article X: "The Secretary shall cause to be sent to each voting member at least fourteen (14) days prior to the election a ballot comprising all nominations for members of the Board of Trustees."

Also, the Committee would very much like to hear your comments on the following items:

1) Should a nominating committee be made up of members from each of the Regions;

2) Should nominations be accepted by mail or from the floor at meetings of the Association or both or neither;

3) Should nominations by voting members require petitions containing a specified number of signatures of voting members?

Send *your* comments to any member of the By-Laws Revision Committee or to the Committee's Chairman, Manning Butterworth (Room 315, 5540 Hyde Park Boulevard, Chicago, Illinois 60637).

FEATURE PLAN

Tri Stiga Rogo

Rogallo Wing

Competition

Eagle Boost/Glider

By Russell G. Rasmussen

Russell G. Rasmussen of West Covina, California, is a sophomore at Edgewood High School. He has been in the NAR for three years, and he is a member of the Titan Section. Russ attended NARAM-12, where he took first place in Junior division Egg Loft, and NARAM-13 where he took first place in C division Eagle Boost/Glide.

If you read *Model Rocketry* magazine regularly, you will have read about some work done with para-wings, para-gliders, or, the correct name, Rogallo Wing gliders. About a year and a half ago I saw the Rogallo Wing glider in several books on the Gemini space program. It had been considered as a recovery system for the Gemini capsule. I also saw that Harry Stine had discussed the Rogallo in his book. From these readings, I worked on perfecting the Rogallo Wing for use in Eagle Boost/Glide competition.

My early designs were too nose heavy. After many months of work, I found a way to balance the wing and to get it to fold in half so that it could be enlarged but would still fit into an 18-inch body tube. I tried piano wire, but that bent when it was put into a body tube. A hinge and elastic cord didn't work either because there was too much wobbling and building a glider using this method was far too time-consuming. Finally, I discovered that small coil springs have all of the properties that I needed. They can be bent easily, but they return to their original shape and hold that shape when released. I also found that with the added wing size, and the weight of the springs toward the back, the glider trimmed out almost perfectly.

I began building the Rogallo Wing for events requiring larger gliders, such as Eagle and Condor B/G, but I found that the design also works efficiently with very small engines. In the Eagle class, using a D.18-6, I got a time of 279 seconds at NARAM-13, and in the Sparrow class I timed a smaller version at 163 seconds. I have built six gliders of the type shown ranging in size from four inches to four feet.

I hope that this discussion will encourage some of you to build something that is different from all other gliders—the Rogallo Wing.

PARTS

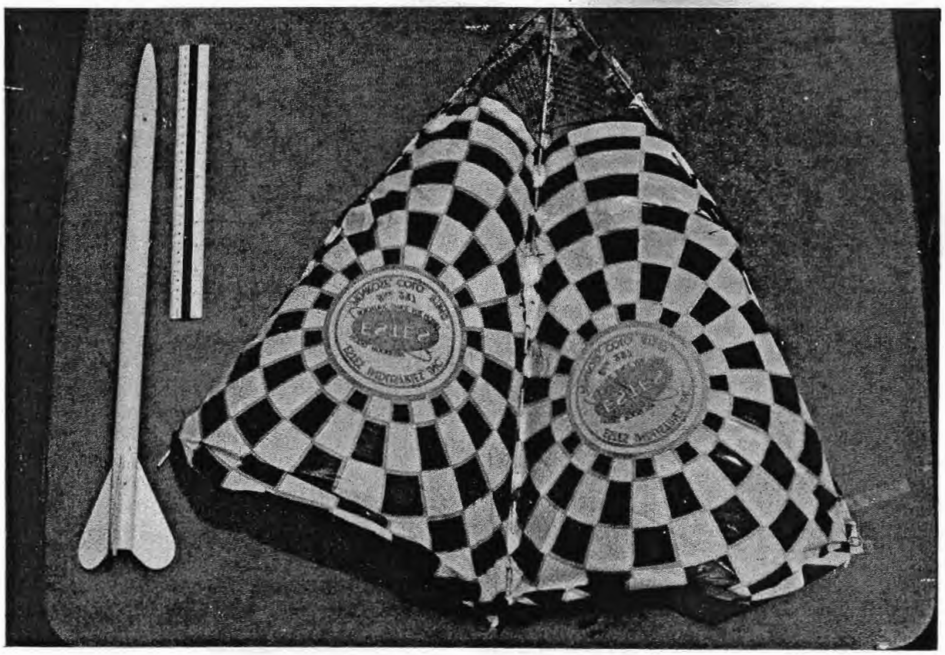
If you wish to build the glider, read carefully. You will need the following parts: 2 3-ft. pieces of 1/8 inch hardwood dowel, or 2 3-ft. pieces of 1/8x1/8 in. spruce; 2 size 2 safety pins (these can be bought at a department store or sewing shop); 6 coil springs (they have no set size, but the dimensions are 1-1/2 x 3/16 in.); 1 16-inch shroud line; 2 24-inch parachutes (drop cloth plastic or some other type of plastic can be used; do not use cleaner bags—they are too thin and will stretch and rip while being packed into the body tube); 1 Series 8 body tube 18-inches long; 1 Series 8 centering ring; 1 BC-83 nose cone; a launch lug; one 1/8-inch elastic shock cord; and 1 sheet of 1/16-inch basswood. Last but not least is the engine clip, which is made from a piece of 1/32-inch rod about 5 inches long. (All parts are from Centuri.)

CONSTRUCTION

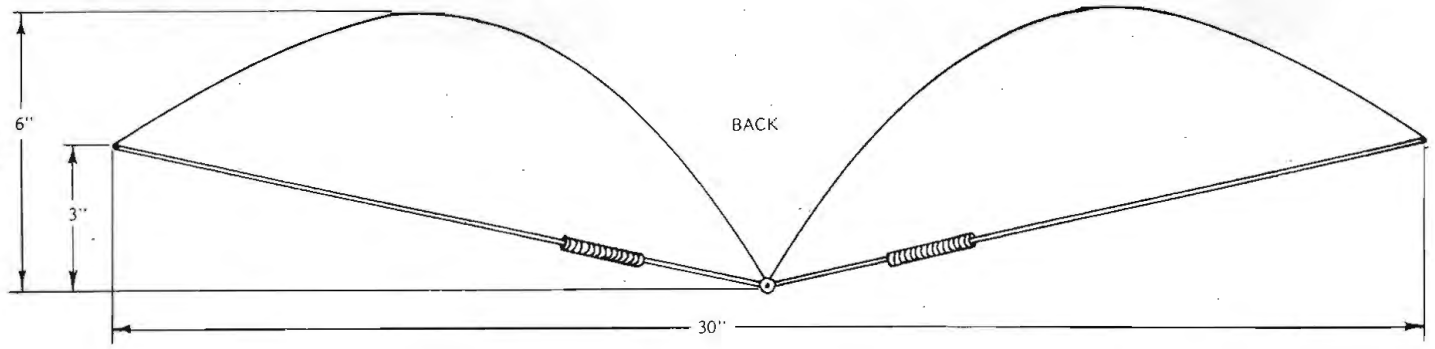
To build the glider, cut the dowels or the spruce into six 1-foot lengths, snip off the clip part of the safety pins and bend the two ends of the pins to right angles. Using pliers, push one side of each pin into opposite sides of one dowel and the other side into the other two dowels as shown in the drawing. Epoxy the pins securely to the dowels. Weave the springs together in pairs so that three springs are made out of the six. Insert the free ends of the connected dowels into the springs. Push the three remaining dowels into the other half of the springs in such a way that they will fold freely. Now tie the shroud lines from spring to spring so that the wing can expand only 8 inches. The frame is now finished!

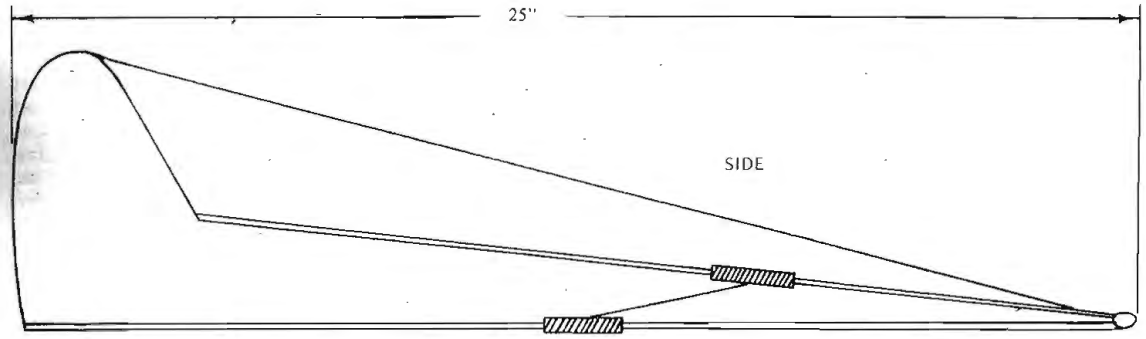
Now for the plastic covering. Cut your plastic into two triangular pieces each having one 20-inch side and two 25-inch sides. Make 1/8-inch cuts 1 inch apart along the two longer sides. To put the plastic on the frame, weave each stick in and out of the cuts in the plastic. The middle stick will have one side of each piece on it. (The two pieces should be woven together.) Epoxy the three front points and the three back points to the frame. Trim the glider by putting clay on the middle stick only.

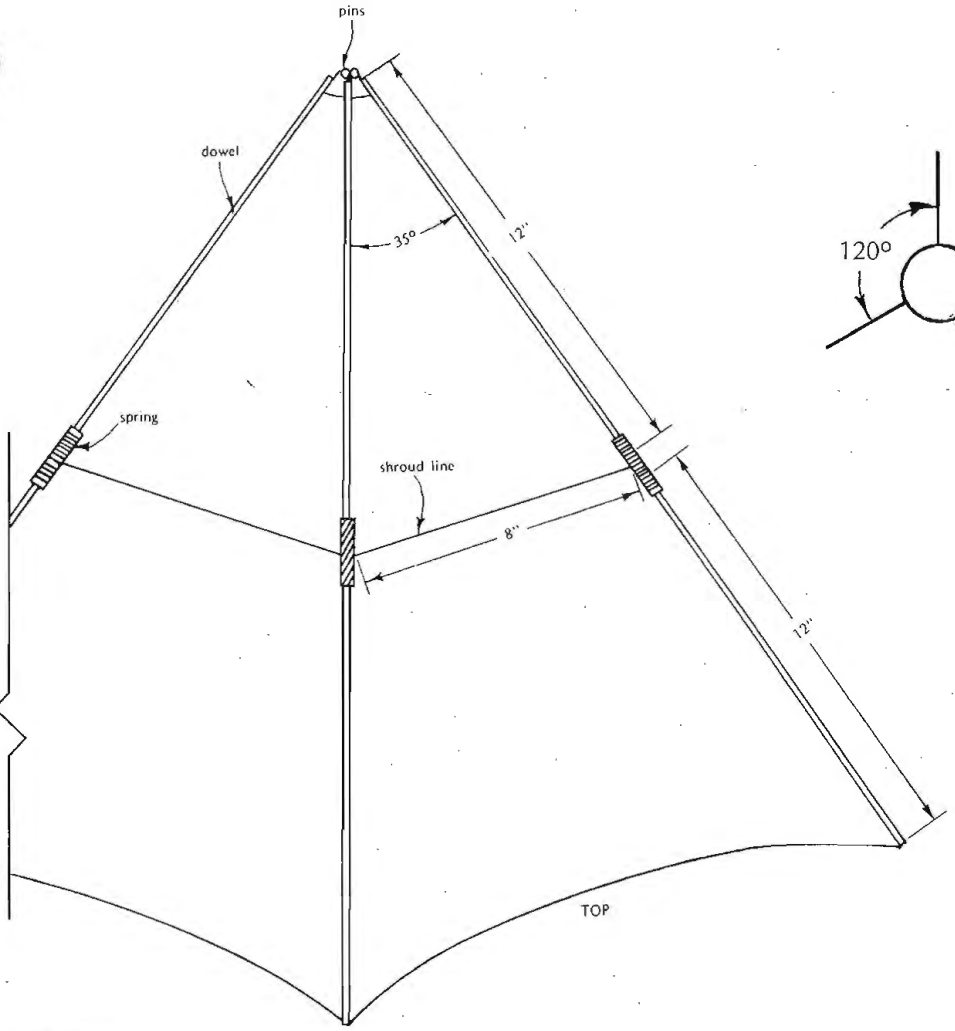
The rocket is built in the usual manner. I do, however, have a few hints. When you hollow out the nose cone, make a cap over the opening so that the Rogollo Wing will not get caught while ejecting. The thrust ring is made out of the centering ring, and the shock cord is connected to this ring. Using the 1/32-inch rod, make an engine clip for a D.18 engine and mount it on the outside of the tube, covering it with epoxy. Without this clip, the engine will eject, for the Rogallo is packed tightly into the tube. Powder the wing heavily to insure ejection. Good flying!

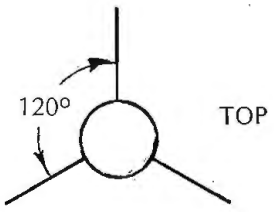


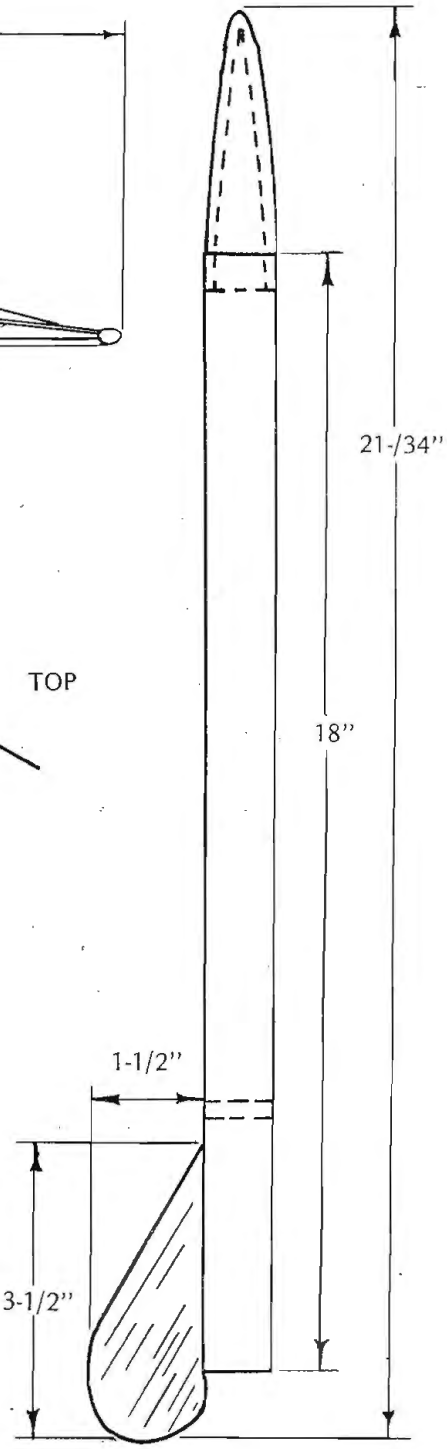
Russell Rasmussen's Rogallo Wing Eagle Boost/Glider has set a pending record in C Division Eagle B/G and took first place in that event at NARAM-13.


6"
3"
BACK
30"


25"
SIDE


pins
dowel
35°
12"
spring
shroud line
8"
12"
TOP


120°
TOP


21-/34"
18"
1-1/2"
3-1/2"

CONTEST calendar

April 16, 1972—Concord, Massachusetts. Name: NERF Sec III. Host: NERF 236. Events: Scale, Swift Rocket Glider, Eagle Boost Glide, Plastic Model, Gnat (Hornet) Boost Glide. Contact: Patrick M. Griffith, Legion Street, Milford, Massachusetts 01757.

April 16, 1972—Bethlehem, Pennsylvania. Name: God Awful Rocket Meet-1 (GARM-1). Host: Lehigh Valley Section 293. Events: Eagle Boost/Glide, Swift Rocket Glider, Drag Race, Hornet Rocket Glider, Scale, Class 3 Streamer Duration. Contact: David J. Hendricks, 1086 East Gordon Street., Allentown, Pennsylvania 18103. Telephone: (215) 434-7305.

April 22, 1972—Huntington, New York. Name: EAR-72-3. Host: Elwood Association of Rocketry 254. Events: Eagle Boost/Glide, Roc Eggloft, Design Efficiency, Sparrow Boost/Glide, Class 1 Parachute Duration, Class 2 Parachute Duration, Class 1 Streamer Duration, Class 2 Streamer Duration, Open Spot Landing. Contact: Tom Whymark, 17 Eltona Place, East Northport, New York 11731. Telephone: (515) 864-4943.

April 23, 1972—Piscataway, New Jersey. Name: FARAM-II, Invitational Meet. Host: Fanwood Association of Rocketry 265. Events: Scale, Robin Eggloft, Hornet Rocket Glider, Class 2 Streamer Duration, Peewee Payload, Sparrow Boost/Glide, Predicted Altitude. Contact: A. L. Lindgren, 15 Hunter Avenue, Fanwood, New Jersey 07023. Telephone: 322-2248.

April 23, 1972—Manassas, Virginia. Name: NOVAAR-4. Host: Northern Virginia Association of Rocketry 205. Events: Hornet Boost/Glide, Hornet Rocket/Glider, Sparrow Rocket/Glider, Swift Boost/Glider, Class O Parachute Duration, and Design Efficiency. Contact: Randy Thompson, 10814 First Street, Fairfax, Virginia 22030.

April 30, 1972—Brooklyn, New York. Name: PASVAL-14. Host: Pascack Valley Section 143. Events: Hornet Boost/Glide, Sparrow Boost/Glide, Class 0 Parachute Duration, Class 1 Parachute Duration, Class 0 Streamer Duration, Landing, Plastic Model. Contact: Stuart R. Zaharek, 606 North 6th Street, Newark, N.J. 07107. Telephone: (201) 481-3237.

May 6-7, 1972—Otis Air Force Base, Massachusetts. Name: NERM I. Hosts: MITMRS 134 and NERF 236. Events: Scale, Sparrow Boost Glide, Pigeon Egg Lofting, Hawk Boost Glide, Class O Drag Efficiency, Eagle Rocket Glider, Class 2 Streamer Duration, Swift Rocket Glider. Contact: Trip Barber, Box 121 MIT Branch P.O., Cambridge, Massachusetts 02139.

May 7, 1972—Houston, Texas. Name: 72-AP-5. Host: Apollo/NASA 103. Events: Robin Eggloft, Predicted Altitude, Class 1 Streamer Duration, Hawk Boost Glide, Dual Payload, Parachute Spot, Scale. Contact: Ben Russell, 14155 Labrador Avenue, Apartment 96, Houston, Texas 77047 or David Scott, 12111 Broken Arrow, Houston, Texas 77024.

May 7, 1972—New Canaan, Connecticut. Name: SP-30. Host: YMCA Space Pioneers 166. Events: Class 0 Streamer Duration, Sparrow Boost/Glide, Hornet Boost/Glide, Robin Eggloft, Predicted Altitude. Contact: A.A. Jacobsen, 351 Springwater Lane, New Canaan, Connecticut 06840. Telephone: (203) 966-0870.

May 7, 1972—Pottstown, Pennsylvania—SPEAR SEC I. Host: S.P.E.A.R. 286. Events: Class 00 Altitude, Hornet Boost/Glide, Quadrathon, Sparrow Boost/Glide, Class O Chute Duration, Plastic Model, Class 0 Streamer Duration. Contact: Carl J. Warner, 665 Woodland Avenue, Pottstown, Pennsylvania 19464. Telephone (215) 323-4296.

May 13, 1972—Valley Forge, Pennsylvania. Name: THORAM-1 (Turk's Head Organization of Rocketry Area Meet-1). Host: THOR (Turk's Head Organization of Rocketry) 251. Events: Class 2 Parachute Duration, Class 1 Streamer Duration; Hornet Boost/Glide, Eagle Boost/Glide, Class 1 Altitude, Dual Payload, Pigeon Eggloft, Plastic Model. Contact: Andrew Bennett, P.O. Box 135, Exton, Pennsylvania 19341. Telephone: (215) 644-8777.

May 14, 1972—Fairfax, Virginia. Name: Washington Area Record Trials (WART-1). Host: Northern Virginia Association of Rocketry 205. Events: Records in any timing class may be attempted. Competition events: Condor B/G, Swift R/G, Class O P.D., Class 2 S.D. Trophies and ribbons will be awarded to winners. Meet fee (to cover cost of trophies and ribbons) is $2.50. Contact: Randy Thompson, 10814 First Street, Fairfax, Virginia 22030.

May 27-28, 1972—Pittsburgh, Pennsylvania. Name: PghRANG III Regional Meet. Hosts: Three Rivers and Steel City Sections. Events: Class III Scale Altitude, Plastic Model, Hawk Boost Glide, Roc Eggloft, Spot Landing, Eagle Rocket Glider, Hornet Boost/Glide, Class III Streamer Duration. Contact: David Crafton, 5307 Westminster Place, Pittsburgh, Pennsylvania 15232.

May 27-28, 1972—Pottstown, Pennsylvania. Name: AARDVARK-I. Host: S.P.E.A.R. 286. Events: Predicted Altitude, Dual Payload, Class 00 Altitude, Hawk Boost/Glide, Class 3 Parachute Duration, Robin Eggloft, R & D, Peewee Payload, Condor Boost/Glide, Class 3 Streamer Duration, Class 0 Streamer Duration. Contact: Carl J. Warner, 665 Woodland Avenue, Pottstown, Pennsylvania 19464. Telephone: (215) 323-4296.

June 17-18, 1972—Davenport, Iowa. Name: MAR '72 (Mid-America Regional '72). Host: Hawkeye Section 178. Events: Predicted Altitude, Pee Wee Payload, Robin Eggloft, Scale, R&D, Hornet Boost/Glide, Swift Boost/Glider, Class O Parachute Duration, and Open Spot Landing. Contact: Dan Leckington, 2018 Marquette Street, Davenport, Iowa 52804.

June 23, 24, 25, 1972—Houston, Texas. Name: Second Annual Southwest Regional Model Rocket Meet. Host: Apollo/NASA Section 103. Events: June 23—Discussion day. Super Scale, Scale, Robin Eggloft, Hornet Boost/Glide, Swift Rocket/Glide, Plastic Model, Class 3 Streamer Duration, Predicted Altitude, and Parachute Spot Landing. Contact: John Dressel, 8608 Robindell, Houston, Texas 77036.

June 24, 1972—Pottstown, Pennsylvania. Name: Last Chance I. Host: S.P.E.A.R. 286. Events: Sparrow Boost/Glide, Swift Boost Glide, Sparrow Rocket Glider, Class 00 Altitude, Design Efficiency, Class 4 Altitude, Class 3 Parachute Duration, Class 3 Streamer Duration, Single Payload, Class 0 Streamer Duration. Contact: Carl J. Warner, 665 Woodland Avenue, Pottstown, Pennsylvania 19464.

July 8-9, 1972—Shawnee, Kansas. Name: Heart of America Regional Meet II. Host: Midwest Rocket Research Association 168. Events: Roc Eggloft, Robin Eggloft, Pee Wee Payload, Class 0 Parachute Duration, Hawk Boost/Glide, Sparrow Boost/Glide, Sparrow Rocket Glider, and Scale. Contact: Mark Pemberton, 10911 West 70th Terrace, Shawnee, Kansas 66203.

Conventions, Exhibitions, Seminars

May 27-June 4, 1972—Dulles Airport, Washington, D.C. Name: Transpo '72. Transportation exhibition including the latest technological advancements in equipment and systems in the entire transportation field. Rocketry will open the show!

June 30-July 2—Easton, Pennsylvania. Name: Second Annual Phillipsburg Convention and Trial (PACT-2). Host: PARC Section 258. Events: Class 00 Parachute Duration and Streamer Duration, Class 1 Parachute Duration and Streamer Duration, Gnat Boost/Glide and Rocket Glider, Sparrow Boost/Glide and Rocket Glider, Swift Boost/Glide and Rocket Glider, Hawk and Eagle Boost/Glide, A Engine Heli. Duration, D Engine RC Boost/Glide, Night A Engine Boost/Glide and Rocket Glider. Also: Discussion groups, demonstrations, manufacturer's displays, and banquet. Contact: David Klouser, 383 Warren Street, Stewartsville, New Jersey 08886. Telephone: (201) 859-3092.

June 17-18, 1972—Toronto, Canada. Name: Toronto Regional—TRRM-2. Host: The Canadian Rocket Society. Theme: Space Exploration via Model Rocketry. Presentation: Diamond Rocketry Trophy. Events: Class 1(A) Parachute Duration, Class 2(B) Streamer Duration, Swift Boost/Glide, Hawk Rocket Glide, Class 4 Eggloft, C/S Landing, R & D, Scale. Contact: Canadian Rocket Society, Adelaide Street P.O. Box 396, Toronto 1, Ontario, Canada.

June 25, 26, 27, 28, 1972—Albuquerque, New Mexico. Name: 1972 Southwestern Model Rocketry Conference. Events: Lectures, discussion groups, flight competition, night launch, R & D competition, and manufacturers displays. All activities, housing and meals will be on the University of New Mexico campus. Contact: SWMRC 72, Physics Department, University of New Mexico, Albuquerque, New Mexico 87106.

July 7-9, 1972—Montreal Canada. Third National Canadian Model Rocket Conference. Convention and competition open to all model rocketeers from Canada and the United States. Events: Discussion Groups, contests in Scale, Condor B/G, Sparrow B/G, Hawk R/G, Open Spot Landing, and Class O PD. Contact: Canadian Conference 1972, c/o Steven J. Kushneryk, 7800 des Erables Ave., Montreal 329, Quebec, Canada.

MODEL AERONAUTICS SCHOLARSHIP TO BE AWARDED

The third annual $1500 Model Aeronautics Scholarship sponsored by the Boeing Management Association will be held June 24th and 25th, 1972, at the Boeing Space Center in Kent, Washington. The contest is open to any boy or girl 18 years of age or younger, and the $1500 first prize scholarship is good in any accredited colleges in the United States or Canada.

The following events are scheduled:

Free Flight
- ½A Gas
- Unlimited Rubber
- Hand Launch Glider
- Cargo
- Towline Glider
- Helicopter

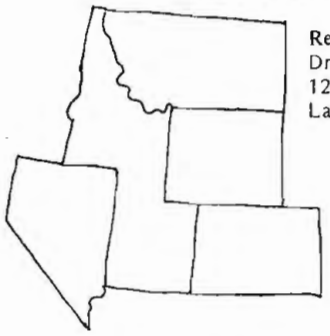
Control Line
- Combined Speed (Record Ratio)
- Control Line Scale Racing
- Stunt (Precision Aerobatics)
- Combined Navy Carrier (Record Ratio)
- Combat
- Dive Bombing and Strafing

Specialty
- Indoor Hand Launch Glider
- Indoor Easy "B"
- Rocket Class "C" Altitude
- Rocket Swift Boost/Glide
- Radio Control Aerobatics
- Design Craftsmanship

The Contest is sanctioned by the AMA, and participation is restricted to members of the AMA, MAAC, or NAR. For more information write to The Boeing Management Association, P.O. Box 3707, Seattle, Washington 98124. Attention: Ted Johnston, Organization 4-1830, Mail Stop 79-44.

Section Directory

MOUNTAIN—Colorado, Idaho, Montana, Nevada, Utah, Wyoming



Regional Manager
Dr. Edna Hinman
1241 South Seventh Street
Las Vegas, Nevada 89100

Contest Board Chairman
William S. Roe
1225 North Weber
Colorado Springs, Colorado 80903

Colorado

255 Air Force Academy (AFA)
Brian B. Beard
Box 4385
USAFB, Colorado 80840

Idaho
None

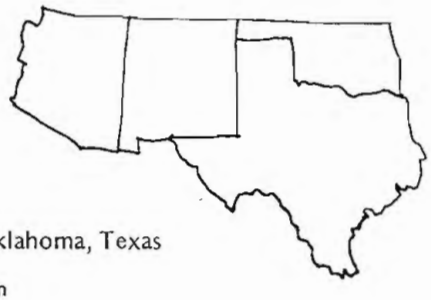
Montana
None

Nevada

288 Silver State Section
Donald A. Milhollan
1845 Prater Way
Sparks, Nevada 89431

Utah
None

Wyoming
None



SOUTHWEST—Arizona, New Mexico, Oklahoma, Texas

Regional Manager
Joe Hatfield
4115 Drew
Houston, Texas 77004

Contest Board Chairman
Bernard S. Russell
14155 Labrador
Houston, Texas 77047

Arizona
None

New Mexico
None

Oklahoma
None

Texas

103 Apollo/NASA
Gary King
13902 Barryknoll Lane
Houston, Texas 77024

206 Sulphur River Section
Danny Miller
804 Gilmer Street
Sulphur Springs, Texas 75482

CONTEST BOARD

From the Contest Board . . .

The Contest Board would like to remind all sections that members whose NAR numbers are pending *cannot* act as contest directors or sign the results sheets as judges.

There continues to be confusion about the basis for contest age division assignment. A contestant must fly in the *same* contest age division *for the entire contest year*. Your contest age division is based on your age as of *January 1* in the *middle* of the contest year. The following table gives the exact breakdown for the current 1971-72 contest year:

If your were born—	Then your contest age division is:
Jan. 1, 1959 or after	A
From Jan. 1, 1957 thru Dec. 31, 1958	B
From Jan. 1, 1954 thru Dec. 31, 1956	C
On or before December 31, 1953	D

CONTEST!

We have been informed by a usually reliable source that the *Newton Observer*, an underground newsletter emanating from the Fairfax, Virginia area, is sponsoring a contest. The editors of this milestone in modroc journalism will award $10.00 to the first person to present them with the sword used by Bruce Blackistone at NARAM-13. Send the sword, if you manage to get your hands on it, to:

NFP, Inc.
Garbage Division
3617 Colony Road
Fairfax, Virginia 22030

Any other contributions of a dubious nature may be sent to the above address also; the *NTO* is not a section newsletter, so NAR members across the country are welcome to contribute.

by
Charles Gordon

NAR SECTION NEWS appears each month as a regular feature in the *Model Rocketeer*. Those sections wishing to have news and/or information of their activities printed in this column should submit such material to:

NAR SECTION NEWS EDITOR
Charles M. Gordon
192 Charolette Drive
Laurel, Maryland 20810

As of April 8, 1972 there are 75 new and/or rechartered sections in the National Association of Rocketry.

Congratulations to the Out'a Sight Section (179) on the publication of Vol. 1 No. 1 of their newsletter, "2001: a NAR ODDITY".

The Kenmore-Tonawanda Rocket Society (241) has changed it's name. The new name is the Buffalo Aerospace Team (BAT) Section.

(from "EMANON", Vol. III, No. 3, February 1972)

At the annual banquet of the New Canaan Y.M.C.A., Mr. G. Harry Stine, (YMCA Space Pioneers, Section 166) section advisor and training course instructor, received his 500-hour pin from the Y.M.C.A. This gold pin set with a small ruby was given in recognition for his many hours of volunteer service to the YMCA through the rocket club. It is through Mr. Stine's leadership and volunteer time that the Space Pioneers have been Section Champions twice, have produced six National Champions, hold three FAI records, and have helped pioneer such developments as the misfire alley system, the Tomahawk and Flat Cat Kits, and the new mini-roc engines.

SECTION NEWS PUZZLE!
(from "ZOG 43", March 1972
NARHAMS, Section 139)

WHO OWNS YE MINI-MAX?

1. There are five hovels, each of a different color, each inhabited by a different section, with different personality traits, engines and boost/gliders.

2. The NARHAMS live in a fluorescent red hovel.

3. The S.S.B. members use Mini Brutes.

4. The section in the fluorescent green house is blatent.

5. Members of NOVAAR are aggressive.

6. The fluorescent green hovel is to the right (your right) of the puce hovel.

7. The Manta flyers use mini-jets.

8. The section in the middle house is greedy.

9. Night Hawks are flown by the section in the fluorescent orange hovel.

10. A.A.R. stays in the first hovel on the left.

11. The section that flies groundhogs stays in the hovel next to the hovel of the section that uses enerjets.

12. Night Hawks are flown by the section in the hovel next to the hovel where the D-13's are used.

13. The Flat Cat flyers are lustful.

14. The Y.M.C.A. Space Pioneers fly Disaster/Valkeries.

15. The A.A.R. lives next to the brushed aluminum hovel.

Now, good people.

WHICH SECTION IS DEVIOUS? and WHO FLIES THE MINI-MAX ENGINES???????

The answers to this puzzle will appear next month.

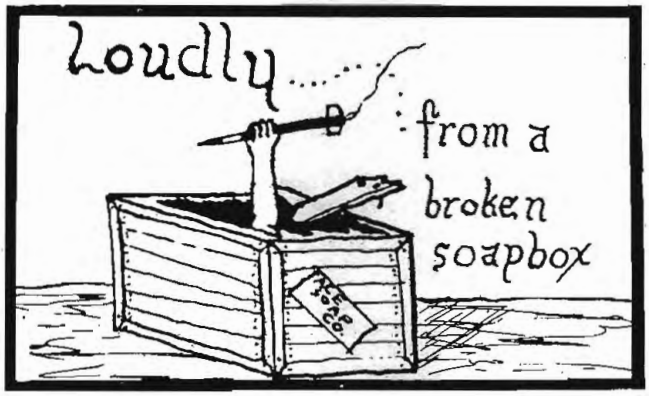
Northeast Regional Manager, Shirley Lindgren, has announced the appointment of Ralph Schiano, Jr. as the New York State Department Head for Section Activities. Mr. Schiano's address is 261 76th Street, Brooklyn, New York 11209. The *Model Rocketeer* wishes him good luck with his new job.

The NAR would like to welcome the following newly chartered sections to the Association: (284) Ark-La-Tex Section, Bossier City, Louisiana; (285) Shawnee Section, Rosiclare, Illinois; (286) Southeastern Pennsylvania Establishment for the Advancement of Rocketry (SPEAR), Pottstown, Pennsylvania; (287) Atomic Model Rocket Society of Washington, Pasco, Washington; (288) Silver State Section, Sparks, Nevada; (289) Monrocs Section, Monrovia, California; (290) Star Rovers Section, Fresno, California; (291) Manhattan Association of Model Rocketry, Manhattan, Illinois; (292) Hagerstown Area Rocket Research Society, Clear Spring, Maryland; (293) Lehigh Valley Section, Allentown, Pennsylvania 18103; (294) Omega Model Rocket Society (OMRS), Oconomowoc, Wisconsin.

FROM NASA, WITH LOVE

At NAR's request, NASA is sending each section two copies of "NASA Sounding Rockets, 1958-1968 A Historical Summary". These historical documents contain a great deal of information on the origins and activities of NASA's sounding rocket program. Included is a complete listing by flight number of all NASA sounding rockets flown before 1968.

NASA regrets that sufficient copies of this publication are not available to permit sending it to each individual member.



The opinions expressed in this column are those of the author alone, and they do not necessarily reflect those of the MODEL ROCKETEER or the NAR.

Model Rocketeer vs. MRm
by Kenneth Gracen
NAR No. 20406, Jr.

Because of many difficulties, NAR members will no longer receive *Model Rocketry* magazine as one of their membership privileges. This unfortunate turn of events will cause the membership level to drop far below the present and recent levels. This decrease will be due to a drop in new memberships and a corresponding drop in Junior member renewals.

The reason for this is simple. The included subscription to *MRm* was a considerable inducement to those considering joining the NAR. Most of these past year, a subscription to *MRm* cost $6; membership in the NAR cost from $6 to $8. So, by simple subtraction the cost of all the various NAR services and benefits was only $0 to $2. For the many younger members of the nation, the NAR was free!

Now, these same services and benefits plus the *Model Rocketeer* will cost these younger rocketeers $6 more. (Assuming they want to subscribe to *MRm*.) Jim Barrowman's statement, in the renewal letter, that NAR hasn't raised its dues is only half true. Most Seniors and Leaders will be able to absorb this expense, but a large number of Junior members will not. So, the NAR stands to lose a good number of these Junior members.

What can be done about this situation? One solution is to make the *Model Rocketeer* comparable as an inducement to members (as *MRm* was). This requires the effort and support of a large number of members. I think the NAR members have the ability to put out a high quality 20-page magazine if they are willing to try.

THE EDITOR ANSWERS THIS MONTH'S SOAPBOX

The entire *Model Rocketeer* staff, and almost certainly the entire NAR, would like to see a magazine of twenty pages or more. We must, however, take the limitations of our budget into consideration. The present size of the *Model Rocketeer* is the most economical from the cost-per-page standpoint. It would cost about $250.00 per issue to add 4 pages, and about $700.00 to add 16. Right now, we just can't afford that much money. More advertising or more NAR members would enable us to expand (the cost per copy is decreased as the number of copies increases). If we work to increase our membership, we can help the *Model Rocketeer* to become a bigger and better publication.

YOUR PRESIDENT'S ANSWER TO LAST MONTH'S SOAPBOX LETTER

Last month, an article appeared in the "Loudly from a Broken Soapbox" column in the Model Rocketeer *by Pat Griffith, President of the New England Rocketry Federation. In that article, Pat spoke out against the selection of Seattle, Washington as the site for NARAM-14. Pat suggested that the membership be given a voice in the selection of the site by putting the question to a vote. Here, NAR President Jim Barrowman replies to Pat.*

* * * *

Dear Pat:

Please understand that NARAM site selection is not just a matter of pointing a finger at a map and dictating the location by executive order. Neither is it as simple as putting it to a vote. There are four things that must all be present in the same place before a NARAM can be held there:

* A willing and capable host section
* An adequate flying field
* Reasonably convenient and adequate housing
* A willing sponsor facility such as NASA, U.S. Army, Air Force, or a large company.

It's also best if a major city is within 50 miles for ease of transportation.

This year is the first time we have had more than one location that could possibly meet all these requirements. Sections in Kansas City, Columbus, Los Angeles, and Seattle were all interested in holding this year's NARAM. The only place that could provide the other three for this year was Seattle. The other sections had problems finding an adequate flying field and an associated sponsoring facility. We are fortunate to have a capable, high-spirited section in the Seattle area. Jess Medina, the NARAM-14 contest director, is already organizing what promises to be a great meet.

Pat, I wish that some of the major decisions I've had to make could have been determined simply by putting it to a vote. Unfortunately, things are not that easy.

Cordially,
James S. Barrowman

NAR NEWS *(Continued from page 7)*

A CLOSER LOOK AT THE NARAM-14 SITE

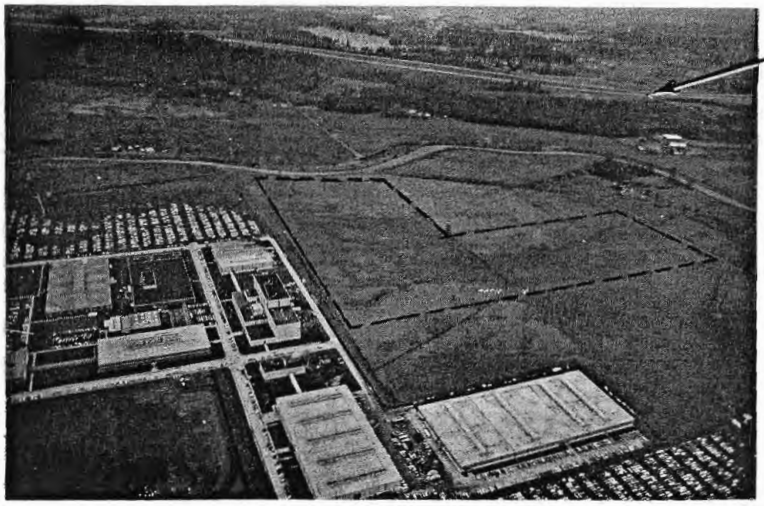
by Tony Medina

Bordered on the south by the Boeing Space Center Complex, the site for the 14th National Meet is well suited for all kinds of model aerospace activities, with a minimum of 40 acres for recovery purposes. The entire field is mowed periodically, so the grass is rarely over knee level.

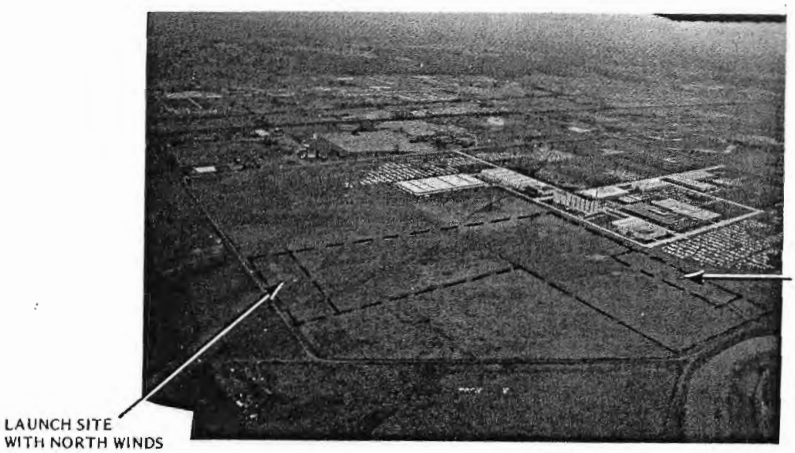
Although the complex looks like it would be the prime reason for lost models, this is rarely the case. The center guards are usually most cooperative in retrieving any models landing within the complex. With a north wind, the downdraft over the complex buildings causes most of the models to land inside the complex boundaries. South winds cause the models to drift in the opposite direction and give them a chance to land within the two-mile recovery range. (Quarter hour flights have not been infrequent in Seattle.)

Even though Seattle's weather is notoriously inclement, it is a bit more comfortable than that of previous NARAM sites. If it does rain in August, it is usually a drizzle at most. The temperature has never gone above 100 degrees F., and the humidity almost always remains at very comfortable levels. (The *Farmer's Almanac* for 1972 gives an average temperature of 68 degrees (+1.4°) with the average precipitation at a trace (0.7"). The forecast is for clear and pleasant weather for NARAM week, August 6-11 1972.)

The NARAM site is also no more than 15 minutes from the hotels in the airport area, and the hotels are no more than 5 minutes from the airport terminal.



VIEW LOOKING TO N.W.



VIEW LOOKING TO S.E.

TOP TWENTY

As of March 15, 1972

Individuals

Division A

	Name	NAR	Sec	Pts	WF
1.	Wayne Gerhart	19894	176	311	5
2.	Mark Medina	13538	176	258	5
3.	Chris Clemens	12749	136	184	4
4.	Anthony Porzio	19941	165	171	2
5.	Paul Chilcoat	20713	130	163	4
6.	Arthur Peters	19764	221	162	2
7.	Brian Clouse	11563	221	120	2
8.	Tim Began	17931	169	120	3
9.	Nick Stepanovsky	20143	221	110	2
10.	Mike Turtora	20655	205	108	4
11.	James Diamond	20221	215	110	2
12.	Charles Miranda	21200	254	98	4
13.	George Stine	24	166	96	2
14.	Frank Mendyk	16322	142	92	2
15.	Gordon Clouse	20811	221	88	2
16.	Laura Penn	20047	102	75	3
17.	Roy Jacobsen	21560	166	66	2
18.	Warren Branch	12777	136	64	4
19.	Joseph Pingre	17331	142	62	2
20.	John Erickson	20112	193	60	1

Division B

1.	Jeremy Raw	20092	238	239	6
2.	Dave Insinga	19138	116	219	7
3.	James Gazur	19366	180	212	2
4.	Mark Hopkins	15577	138	210	6
5.	Kerry Mechtly	16799	113	190	2
6.	Edward Jestes	15444	109	176	3
7.	Glenn Koelher	20012	254	175	4
8.	Timothy Kent	18084	205	168	4
9.	Paul Day	12090	130	142	4
10.	Mike Osness	20492	267	138	2
11.	Randolph Barnhart	19450	248	129	3
	Steve Bryson	16489	240	129	3
12.	John Langford	13672	128	122	1
13.	James Starks	17691	180	120	2
14.	Jeffry Nelson	16336	205	120	3
15.	Bernard Penney	20164	130	118	4
16.	Anthony George	20016	254	117	4
17.	Larry Rollins	18181	0	108	2
18.	Ben Raskin	17765	168	108	6
19.	Robert Biedron	16085	265	105	1
20.	James Needham	20563	103	104	3

Division C

1.	Gary Raley	14803	238	507	5
2.	Robert Thompson	16310	205	424	4
3.	George Purcell	19598	203	396	6
4.	Frank Osborn	14406	108	344	5
5.	Mike Medina	14148	176	304	5
6.	Alan Dayton	17367	176	276	4
7.	Michael Micci	14613	113	264	3
8.	Paul Porzio	15837	165	220	2
9.	Bruce Kimball	19388	176	216	4
10.	Gary Cole	18962	168	214	6
11.	Mark Wargo	10371	103	212	2
12.	Walter Raudonis	12361	236	212	6
13.	David O'Neal	16856	176	211	5
14.	David Shucavage	16208	133	202	5
15.	Steve Setzer	16903	130	186	4
16.	James Waurishuk	13706	115	179	2
17	Philip Sheppard	21440	0	177	3
18.	Bill Kenney	20235	168	176	5
19.	Randy Picolet	13100	238	169	6
20.	Mike McMasters	20826	215	164	2

Division D

	Name	NAR	Sec	Pts	WF
1.	Jon Robbins	16092	276	826	8
2.	James Pommert	16908	176	486	5
3.	Thomas Spilker	16003	168	346	6
4.	Terry Lee	9020	203	288	8
5.	Douglas Frost	3446	176	262	5
6.	Thomas Ackerman	15910	108	240	4
7.	Donald Larson	16306	205	229	4
8.	George Meese, Sr.	12973	102	228	3
9.	Thomas Milkie	11351	134	203	4
10.	Harold Mayes	15754	168	202	6
11.	Joseph Ewing	20003	109	190	3
12.	Howard Kuhn	11628	205	189	4
13.	Chris Williams	13101	236	184	4
14.	Guppy	13005	134	180	5
15.	Thomas Hills	1724	109	177	3
16.	Penn Goggin	17337	203	176	2
17.	Jess Medina	14147	176	175	5
18.	Trip Barber	4322	134	165	7
19.	Tom Whymark	9220	254	155	4
20	David Hendricks	17743	0	146	2

Teams

1.	Greg Kennedy	23	139	309	6
2.	Robert Thoelen	91	165	243	2
3.	Jimmy Johnson	131	0	186	3
4.	Allen Gardenghi	84	156	186	6
5.	Richard Sipes	3	130	159	4
6.	Robert Thompson	123	0	126	3
7.	Gary Lindgren	121	0	118	1
8.	William Miller	103	169	117	3
9.	Doug Ball	122	113	108	2
	Glen Scherer, Jr.	85	110	108	2
10.	B. Scott Paniccia	133	221	100	2
11.	Leslie Butterworth	41	167	96	3
12.	Ralph Schiano	140	165	89	1
13.	Connie Stine	14	166	83	2
14.	Tom Lyon	100	139	78	4
15.	James Barrowman	13	139	72	1
16.	Irvin Philmon	80	150	69	6
17.	William Arthur	114	136	65	3
18.	Jonathan Rains	98	0	60	2
19.	Laura Englund	22	166	59	2
20.	Ronald Boggs	7	114	48	2
	Albert Bany	88	114	48	2

1.	South Seattle Roc. Soc.	176	3169	5
2.	Vikings	203	2225	8
3.	NOVAAR	205	2124	4
4.	Midwestern Roc. Res.	168	2107	6
5.	Brooklyn Roc. Soc.	165	1781	2
6.	Gateway Arch Section	238	1587	6
7.	Kent Kondors	267	1414	10
8.	YMCA Space Pioneers	166	1266	2
9.	Monroe Astro. Roc. Soc.	136	1258	4
10.	Elwood Assoc. of Roc.	254	1240	4
11.	Apollo-NASA	103	1191	3
12.	Birch Lane Roc. Soc.	109	1186	3
13.	Metro. Area Roc. Soc.	130	1155	4
14.	CSAR	113	1070	5
15.	North Shore Section	142	1028	2
16.	NARHAMS	139	897	4
17.	Upper Arlington Roc.	221	808	2
18.	Bethlehem Section	108	766	7
19.	M.I.T.	134	692	9
20.	New England Roc. Fed.	236	622	6

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