NOVEMBER 1972

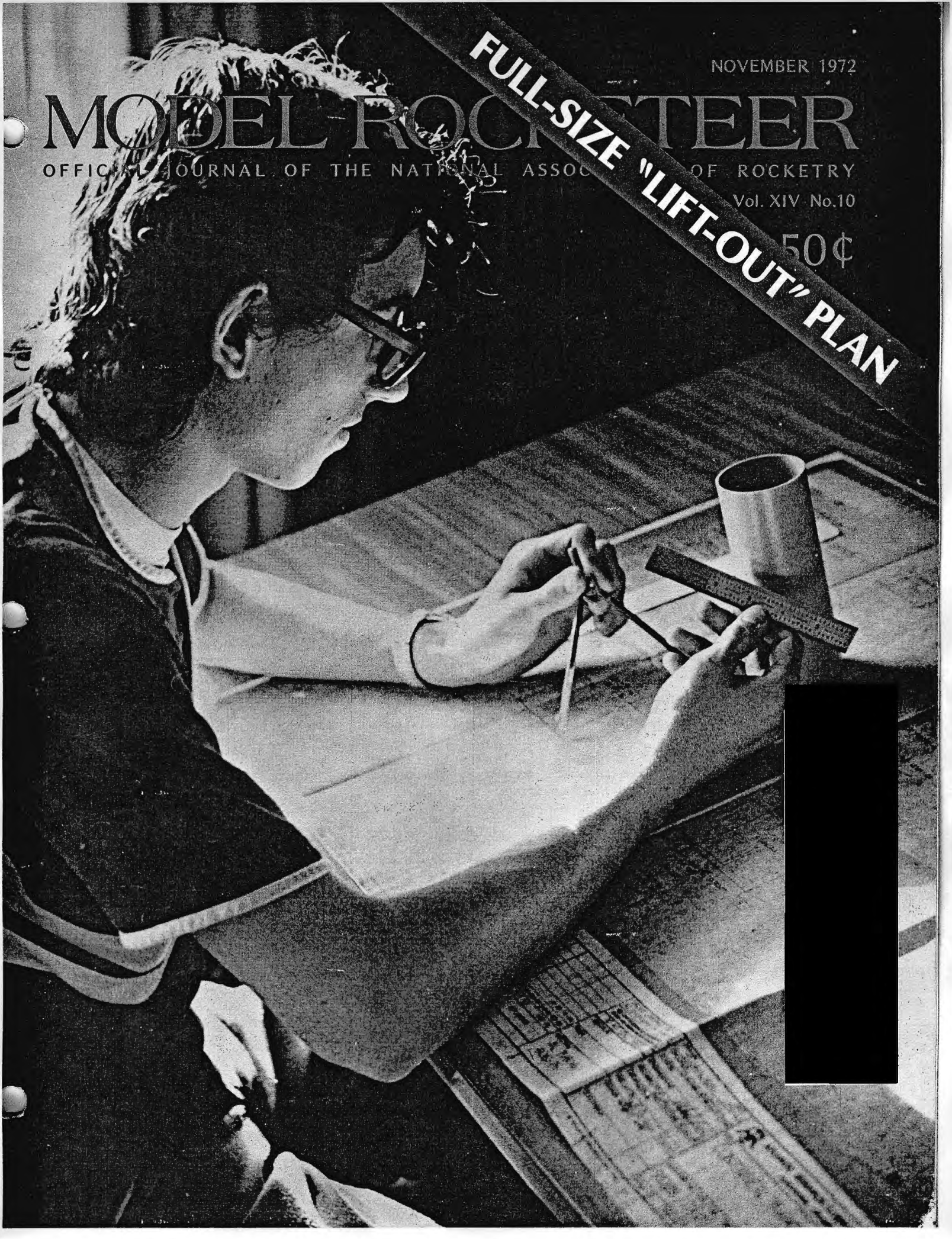
MODEL ROCKETEER

OFFICIAL JOURNAL OF THE NATIONAL ASSOC OF ROCKETRY

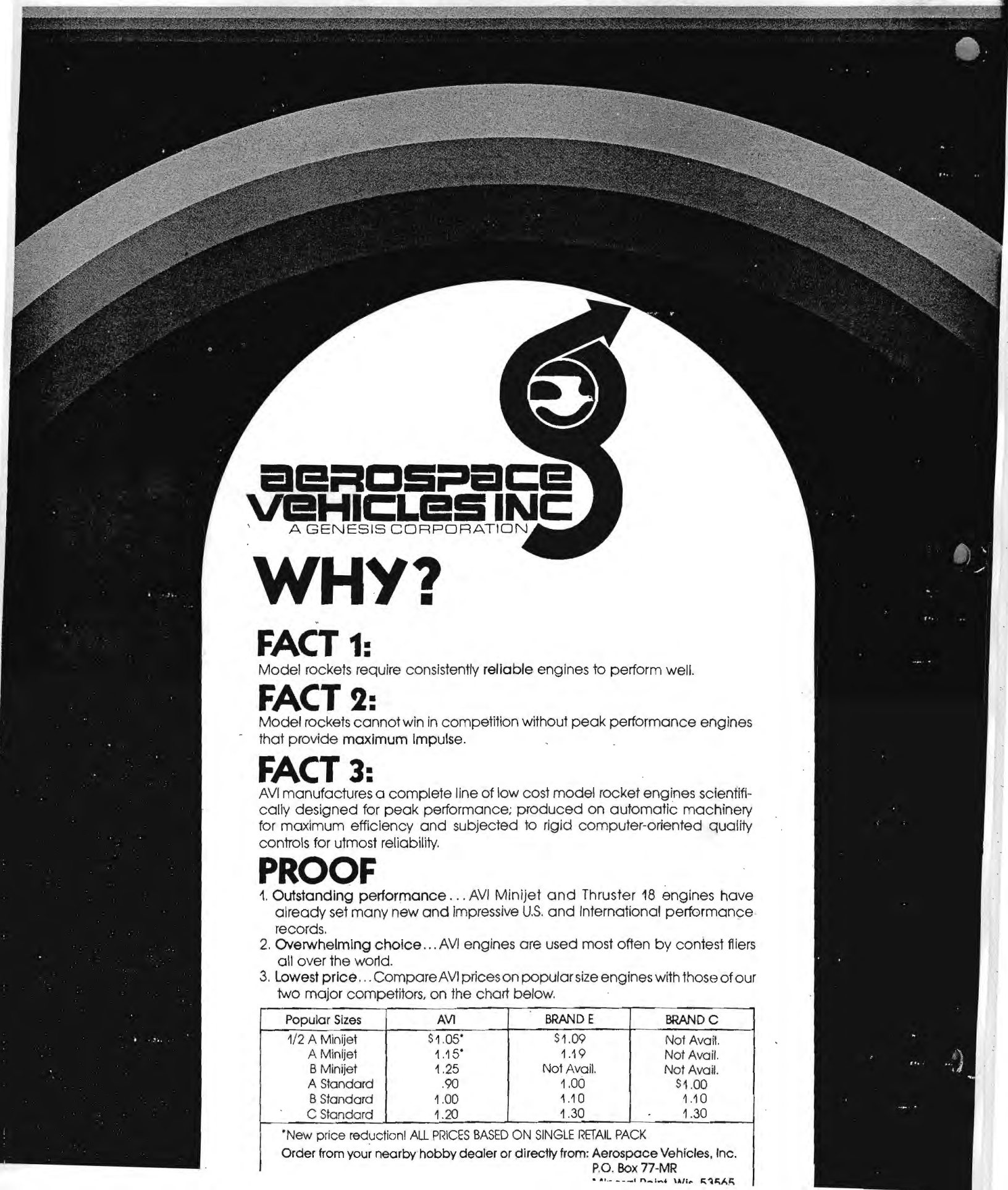
Vol. XIV No.10

50¢

FULL-SIZE "LIFT-OUT" PLAN



OVERWHELMING CHOICE OF THE U.S. TEAM IN VRŠAC, YUGOSLAVIA



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COVER PHOTO
Model rocketry is more than shooting 'em up. Here Paul Gross takes measurements from a blueprint so that he can build a scale model. (Photo by Alan Williams)

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EDITORIAL OFFICE
Elaine Sadowski
1824 Wharton Street
Pittsburgh, Pennsylvania 15203
Telephone (412) 431-5139

ADVERTISING OFFICE
Norman J. Ward
Post Office Box 178
McLean, Virginia 22101
Telephone (703) 356-8887

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EDITOR'S NOOK

Several months ago we asked for comments on women in the NAR. We did not get too many responses, but, interestingly enough, far more of them were from male rocketeers. Here are some of the comments we've received:

From one of the organizers and first president of a section in Indiana (female):

"So, I think model rocketeers are not prejudiced toward the opposite sex if we can hold our own amongst them. And sometimes they need a helping hand."

From a senior member in Massachusetts:

"My impression has been that (1) women are generally not as interested in model rocketry as men, and (2) their participation tends to show some trends which differentiates it from men's. The former is presumably a result of strong cultural conditioning—little girls are to play with dolls, not planes—and, intertwined to some unknown extent, biological factors (which can be modifiable). These same factors tend to appear when women do participate in the hobby-sport. Unfortunately, I have not been able to widely or systematically compare the activities of male and female modellers, so many of these observations are more in the nature of guesses: The girls who do participate tend to build nice models (perhaps due to superior patience and/or organization). Few of them become good competition modellers (out of the top 81 individuals listed on page fourteen of the May *Model Rocketeer* one is female, and provocatively, three out of the top 21 teams are competing under a woman's name. Women seldom, if ever, make incredible models or technical innovations—for example, the B/G area has been devoid of woman designers, although I understand that Gleda Estes was a good B/G flier. There is a tendency for women to end up with secretarial type positions in the NAR: look at the *Model Rocketeer* masthead—see that not one officer or Trustee is a woman, but that two Division Managers, the Contest Board Director, and the Editor are. It is unfair to say that the Editor and perhaps the other women are doing secretarial tasks, but it is significant (sad?) how well this notion hangs together. Let me add one more wild idea—that perhaps there is something intrinsically juvenile about model rocketry and that this may make it more attractive to men than to women."

We've heard about two more female section presidents, one of whom took charge of her section during a period of crisis, and is attempting to save it. We have also observed that there has never been an all-male LAC, there was a female LAC Chairman, and Barbara Stine served on the Board of Trustees some years ago.

It seems that there are two distinct groups of female NAR members: (1) those who were brought into the hobby by a brother, father, husband, boyfriend, etc. (We know of only one instance where this reversed—your editor's father was brought into the NAR by your editor); and (2) those who joined because they expressed a genuine interest in the hobby. The first group (which seems to be in the majority) did not join because of a spontaneous interest; they developed an interest through involvement with another person. We wonder if there is a difference in the involvement rate and type between the two groups. We also wonder what the differences are in the *percentages* of involvement in positions of authority, or in competition or technical work between male and female NAR members. This might give an indication of the actual *acceptance* of female NAR members.

It has been our experience that female NAR members can be accepted as equals, and usually are.

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" columns!) to:
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NAR in Action Editor
34 Sixth Street
Harrison, New Jersey 07029

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Patrick Stakem
Technical Editor
1001 Rockville Pike, Apt. 625
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District Heights, Maryland 20028

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

Southwest REGIONAL St II

By Mike Cruess and David Scott

It's finally over. The Southwest Regional II is now history. It took a lot of work by a lot of people, but it was well worth it.

The meet was held at the NASA Manned Spacecraft Center, site of NARAM-12 as well as TEXAREA II and TEXAREA III regionals. The Sheraton King Inn was once again used for contestant housing. Again as before, both the field and housing were excellent.

On Friday afternoon, June 23, a group of Apollo/NASA members drove down to the MSC to set up the range. A highlight of the setting up came when John Dressel, the Contest Director, was pounding a stake into the hard ground. He hit the top, the stake split, and the handle of his hammer promptly got stuck in the stake.

The contestants started to arrive on Friday as well. They found, to the dismay of some, that their rooms were spread all over the motel. A few people were not happy with the placement of their rooms. David Scott complained at first, but he soon stopped when he realized that the sliding glass doors faced the swimming pool and all its scenery.

A contestants' meeting was held at 7:30 that evening. Ground rules, the launch system, and data reduction were discussed. After the meeting, for those who wanted to stay, a NASA film on the Skylab Program was shown.

Another contestants' meeting was held at 7:30 on the beautiful Saturday morning. Launch procedure was reviewed and flight cards were handed out to those who were awake enough to know what was going on.

After the meeting, everyone proceeded to the launch site. HAL (Heck of A Launcher) was plugged in and announced that he was ready to go. Since Predicted Altitude and Robin Egg Loft were to be flown first, David Scott and Mike Cruess wandered out to the tracking scopes, where they stayed for most of the morning. As it turned out, 81% of their tracks closed.

Then came the first countdown of the meet. Misfire. The second bird made it off the pad, and competition was begun.

The Predicted Altitude flights went nicely. The next event, Egg Loft, was beset by tracking problems. The biggie in Egg Loft was David Scott's closed breech launcher and finless rocket. After spending some 30 minutes setting it up and two misfires, the thing got off the pad. It got about 25 feet into the air and started doing cartwheels, finally hitting the ground 20 feet downrange. David found that the rocket had not reached sufficient speed to become stable.

Parachute Spot was another fun event. Someone had the bright idea of putting the stake in line with the launch site and perpendicular to the wind, which was sometimes gusty. Needless to say, there were no pole hangers. The closest anybody came to the stake was Mark Wargo's 35 feet.

After Parachute Spot everyone broke for lunch. When the time rolled around, everyone assembled for Streamer Duration, which, for the most part, was uneventful. It was shown, however, that Mylar streamers have a distinct advantage over crepe paper. SD was followed by Hornet B/G and Swift RG. The wind, which was blowing quite briskly now, played havoc with the Hornets, but some RG's managed to get good times. There were a number of gliders that had quite a bit of trouble getting off the pad. At least one took four tries to get off.

Ben Russell was supposed to help reduce the data, but he was called away Saturday night by an emergency. Ben's wife, Cindy, had had a blow-out in their Volkswagen Bug and rolled the car over three times. Miraculously, Cindy, her sister, and her sister's friend, who were also in the car, were not seriously hurt, only shaken up. Needless to say, the car was totaled. Cindy said after the whole incident had passed, "That is the last time I go through that just to get a new car." Ben and Cindy are now the proud owners of a Pinto station wagon.

At 7:30 p.m. Saturday night there was another (yes another!) meeting. Places for the day's events were gone over, and a NASA film was shown. Scale models were turned in for Scale judging. A room was reserved, rented, and paid for by Apollo/NASA for Scale and Plastic Model judging so that the models would not be damaged. The judges for Scale, Super Scale, and Plastic Model were Mr. Charles Wargo, Mr. John Dressel, and Mr. Joe Hatfield.

Sunday morning the contestants went directly to the range. There, two tables were set up as windbreaks because the wind had not yet let up. Flights went quickly and without too much trouble. Mark Wargo's Scale entry created a bit of excitement, not only because it was good, but also because it must have set a duration record as it drifted two miles down range.

This year, due to a lack of contestants and money, awards could not be given away by NAR age divisions, and so the awards were given in special age groups. These groups were 15 and younger, and 16 and older. Only the awards were given out this way; NAR points were given in each NAR age division as in any sanctioned meet.

The ceremony went well. Mark Wargo and Mark Knox seemed to be having a battle over who would receive the most awards. Wargo won with seven trophies. David Scott walked away with his customary single third place award. John Dressel received a special award for the outstanding work he had put into the meet, only a token of our thanks for him. The award was presented by David Scott, Apollo/NASA President, on behalf of the contestants.

Apollo/NASA, the host section, would like to thank the Ark-La-Tex section, Southwest NARCAS, and individual NAR members for helping to make the meet a success. We would also like to extend our sincere appreciation to the Manned Spacecraft Center for the support they gave us in organizing and setting up the meet. We would like to thank the Sheraton King Inn for housing us at such low rates and putting up with thirty insane rocketeers. The Fishers receive our gratitude for the bit of shade that they provided over the Launch Command Area. We send our appreciation to Channels 2, 11, and 13, who cared enough about the good things that are happening in the area to come out and film us. Our most sincere thanks to John Dressel, Contest Director.

Mike Cruess and David Scott have been active members of the Apollo/NASA Section for three years. Mike is currently editor of Free Fall, *the section's newsletter. David is the section president and was recently elected to the Leader Administrative Council.*

First place winners were:

A-B DIVISION

PREDICTED ALTITUDE
D. White

ROBIN EGGLOFT
P. Fisher

PARACHUTE SPOT LANDING
J. Van Gaasbeck

SWIFT ROCKET GLIDE
G. Glenn

HORNET BOOST-GLIDE
J. Van Gaasbeck

STREAMER DURATION
M. Cruess

C DIVISION

PREDICTED ALTITUDE
K. Mosely

ROBIN EGGLOFT
M. Wargo

PARACHUTE SPOT LANDING
M. Wargo

SWIFT ROCKET GLIDE
C. Riddick

HORNET BOOST GLIDE
C. Riddick

CLASS III STREAMER DURATION
D. Montgomery

PLASTIC MODEL
M. Wargo

D DIVISION

PREDICTED ALTITUDE
M. Knox

EGGLOFT
M. Knox

PARACHUTE SPOT LANDING
J. Dressel

SWIFT ROCKET GLIDE
M. Knox

HORNET BOOST GLIDE
M. Knox

CLASS III STREAMER DURATION
M. Knox

PLASTIC MODEL
J. Dressel

COMBINED AGE DIVISIONS

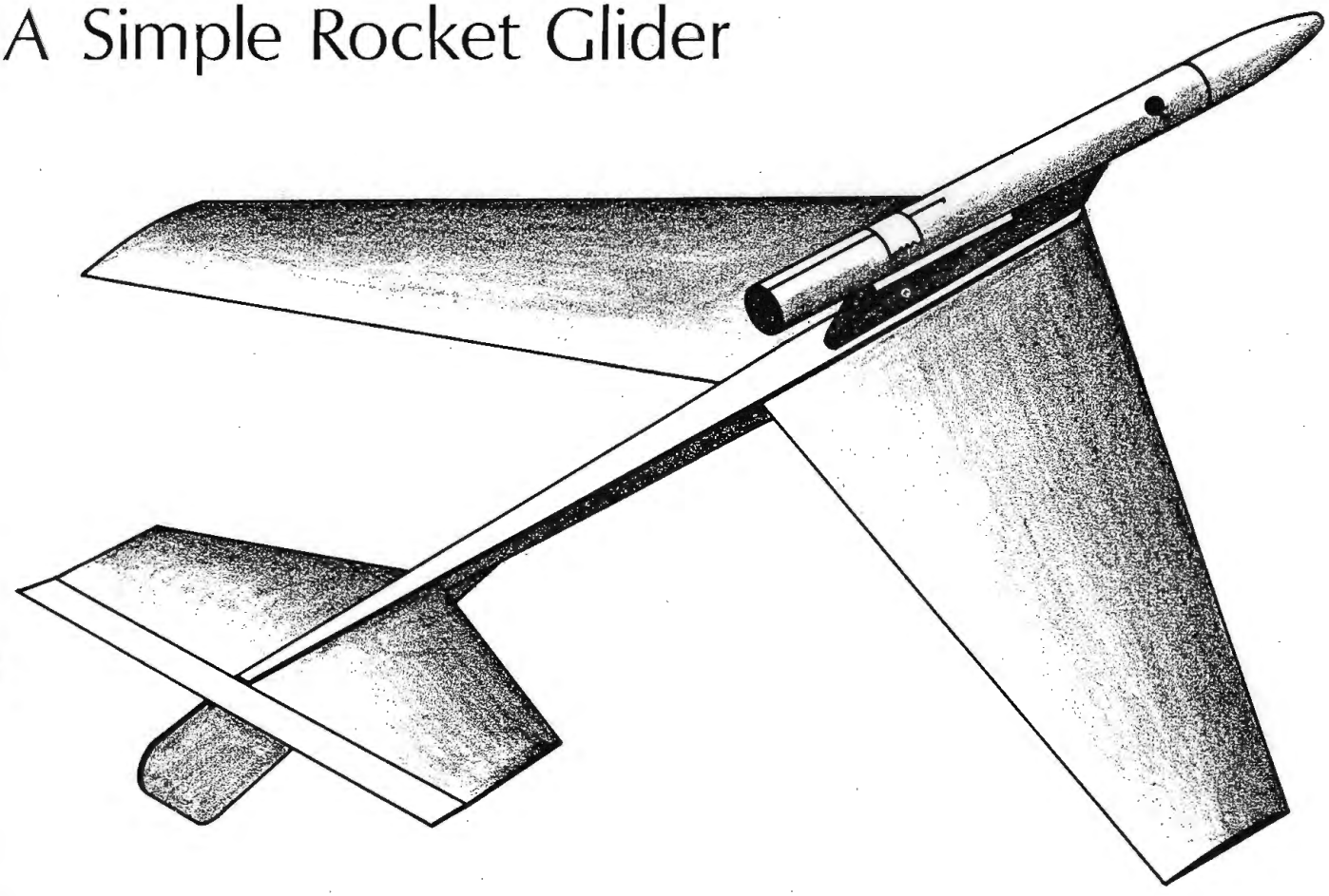
SCALE
M. Wargo

SUPER SCALE
M. Wargo

SECTION TOTALS

APOLLO/NASA	1284
ARK-LA-TEX	1083
INDIVIDUALS	483
GRAND TOTAL POINTS	2850

SARGE...
A Simple Rocket Glider



by Donald E. Larson NAR# 16306

BACKGROUND

This glider was designed so that young children would have a *simple*, but good performing rocket glider to build. Initial experimental models included a rear-engine swing-wing design and a Manta type with a movable pod. These, however, were heavy and too difficult for most children to build. The next attempts were modifications of the Estes Falcon boost/glider, all of which had problems. After experimenting with shifting the engine in the Falcon, and using two different engine retainers, another idea was tried.

Since the CG has to be in front of the CP at takeoff, and then either the CG or the CP has to move to the location of the other, why not let the burning of the engine move the CG to the CP? The weight difference between a full A engine and an empty A engine is about 5 grams. Using an Estes Falcon that I had trimmed with an empty A engine, I got a 15-second flight at a section meet. It was at about this time that the mini-engines came in. This made possible the design of a smaller diameter pod, with less drag and a lighter weight allowing the rocket glider to go higher.

Modifying the Estes Falcon design a little and adding about 50 percent more wing and tail area helped attain a better glide ratio with the added weight of the engine. I flew this one at NARAM-13, and also at a section meet, where I got 59.2 seconds with an A3-2T engine. One of the modifications that was made on the Falcon was the addition of elevons. Without elevons, there is a chance of the glider going into a death dive. So, by pointing the pod down 1/8" over the 3" pylon, and with the elevons pointing up 1/32", the glider would go straight up, but it would loop after engine burnout.

For a while I worked with the idea of using a string to tie down the elevons so that the pod would be straight. The string through the pod normally would burn through at ejection, allowing the elevons to come up. This was fine for ½A and A engines, but more power would burn through the string during thrust. During tests, the recorded times for a glider using this idea were 70 and 83 seconds with an A3-2T. However, I realized that the complexity involved in threading the tie-down string would probably be frustrating to a child. This prompted me to go back to a more simplified down thrust pod idea, SARGE. I built the down thrust pod and flew it five times in one day with recorded times of 45, 47, 44, 48, and 52 seconds. This is my simple rocket glider.

Wanting to test the validity of the above evaluation, I asked a seven-year-old boy to build this glider. He did so, without difficulty or assistance, and flew the model on his first attempt.

Complete, FULL-SCALE plans and instructions for building SARGE follow on the next three pages.

BUILDING SARGE

The pod is made of CMR RB-50 body tube with a CMR NC-50 lightweight plastic nose cone. Glue in an engine block so that an Estes mini-engine is flush with the end of the body tube. Cut two holes in the body tube as shown in the plans. Take a 2¼" piece of music wire and bend as shown in the plans. Put a small hole in the body tube 2" from the rear end, and tape the wire onto the body tube as shown in Figure 1. Glue on the nose cone. Cut the pylon P-1 out of 1/8" balsa wood; then glue P-1 onto the pod one inch from the rear end, so that the nose of the pod is pointing down, along with the launch lug (refer to Fig. 1). This finishes the pod assembly. Set aside to dry completely.

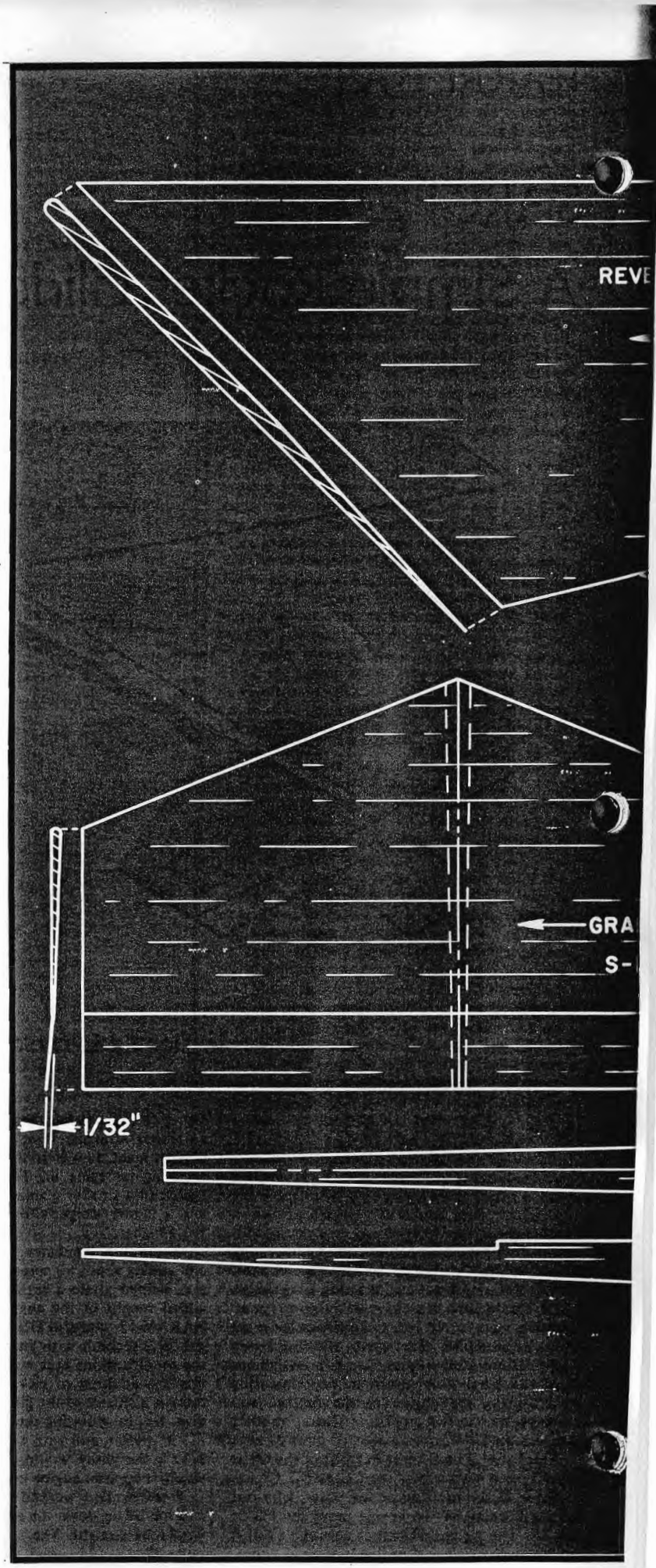
Carefully cut out the patterns for the wood parts. Put the wing pattern on a 3/32" sheet of balsa and cut out the wing twice. Next, cut the stabilizer, rudder, and body pieces (parts S-1, S-2, R-1, B-1, and B-2) out of a sheet of 1/16" balsa. Sand and shape wings W-1 and W-2 and the stabilizer as shown in the cross-section drawing of each on the plan. Put sanding sealer on the wood parts; after they dry, sand them. Repeat this step again. Be sure that when you glue the parts together you align each one very carefully. Glue S-1 and S-2 together as shown in the plan. Glue this assembly onto B-2 as shown in Figure 1. Now glue the pod assembly onto the centerline of B-2 as shown in Figures 1 and 2. Glue R-1 onto B-1 as in Figure 1. After all this dries, glue B-1 onto the centerline of B-2.

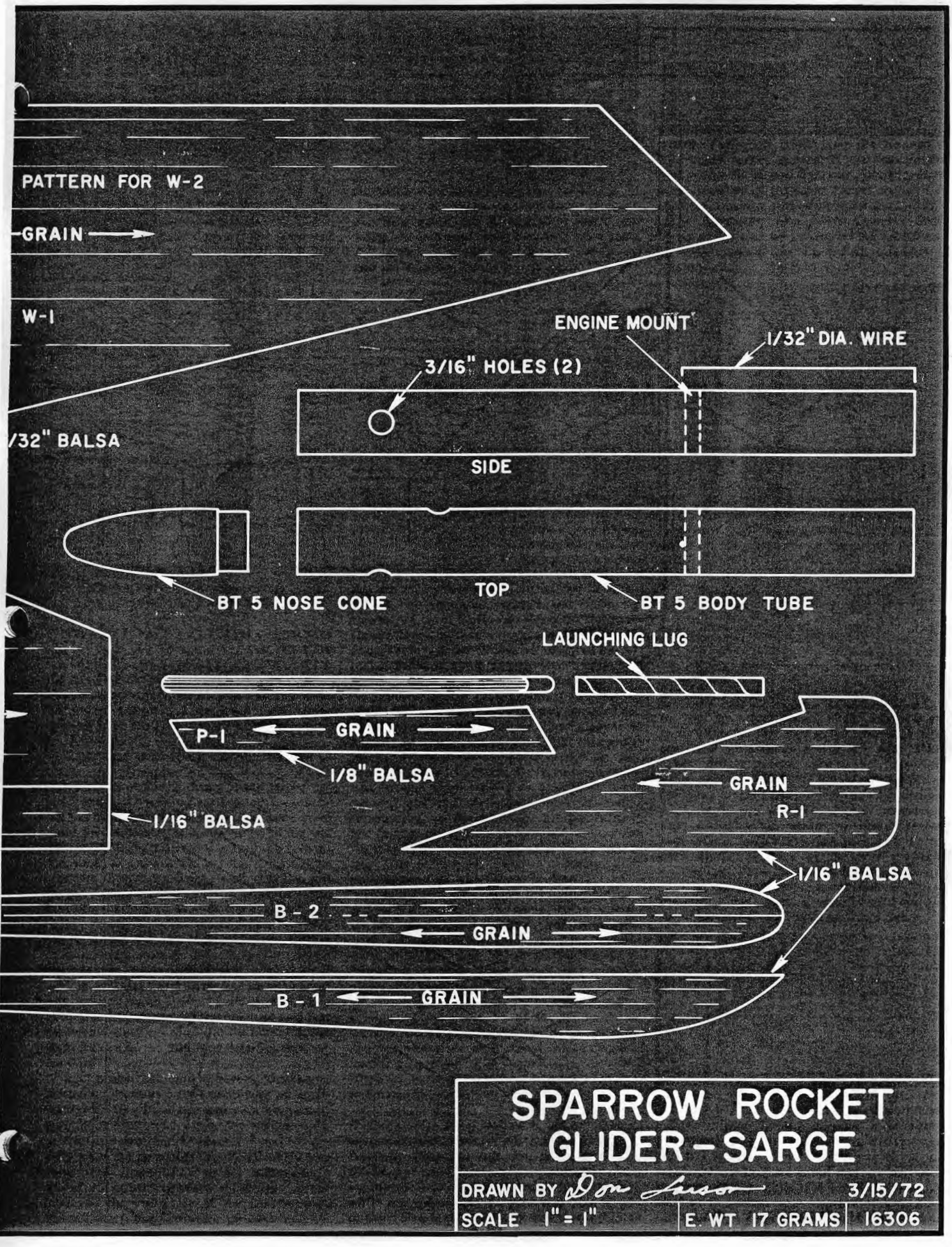
After the glue dries, set up your glider as shown in Figure 2. Looking at Figure 2, apply glue to W-1 and W-2. Place the wings against body piece B-1 so that the front of each wing is at the front of B-1 and the top of the wing rests on body piece B-2. Wing tips should rest flat on the table. After your rocket glider dries, apply glue around all the joints, and set it aside to dry again. For better visibility in the air and on the ground, spray paint your glider with a bright fluorescent color. Apply paint very lightly so as not to add weight or induce warping.

BALANCING SARGE

Put an empty A3-2T Estes mini-engine into the pod and toss the glider carefully when there is little or no wind. Add clay little by little until it glides properly. You should not have to add much weight to balance it. Take your glider to a large field and fly it, using A3-2T engines. It will do a loop, but it should go high enough to give you a good gliding time. Now that you have finished building your SARGE rocket glider, go fly it and WIN.

To remove the plans for SARGE carefully open the staples and lift out. Closing the staples of this section after removal will keep your Model Rocketeer intact.

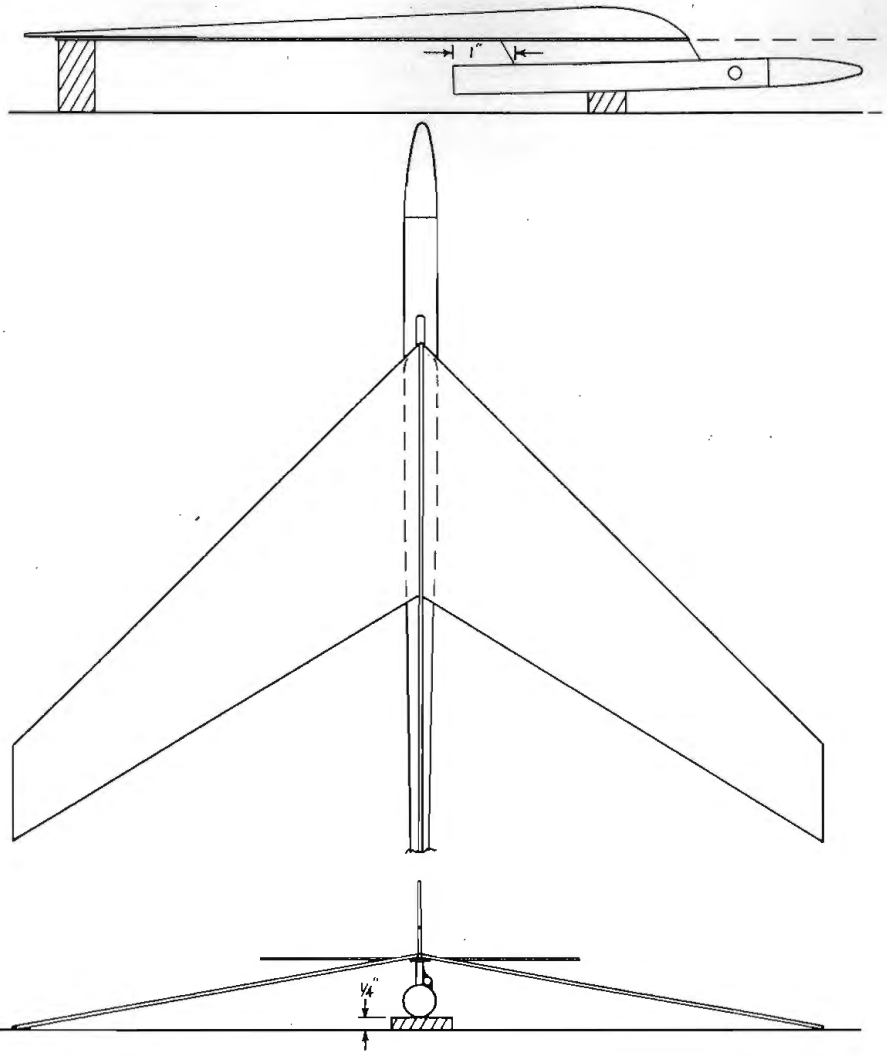




SPARROW ROCKET GLIDER - SARGE

DRAWN BY Don Sarson 3/15/72

SCALE 1" = 1" | E. WT 17 GRAMS | 16306



WING & POD ASSEMBLY

FIGURE 2

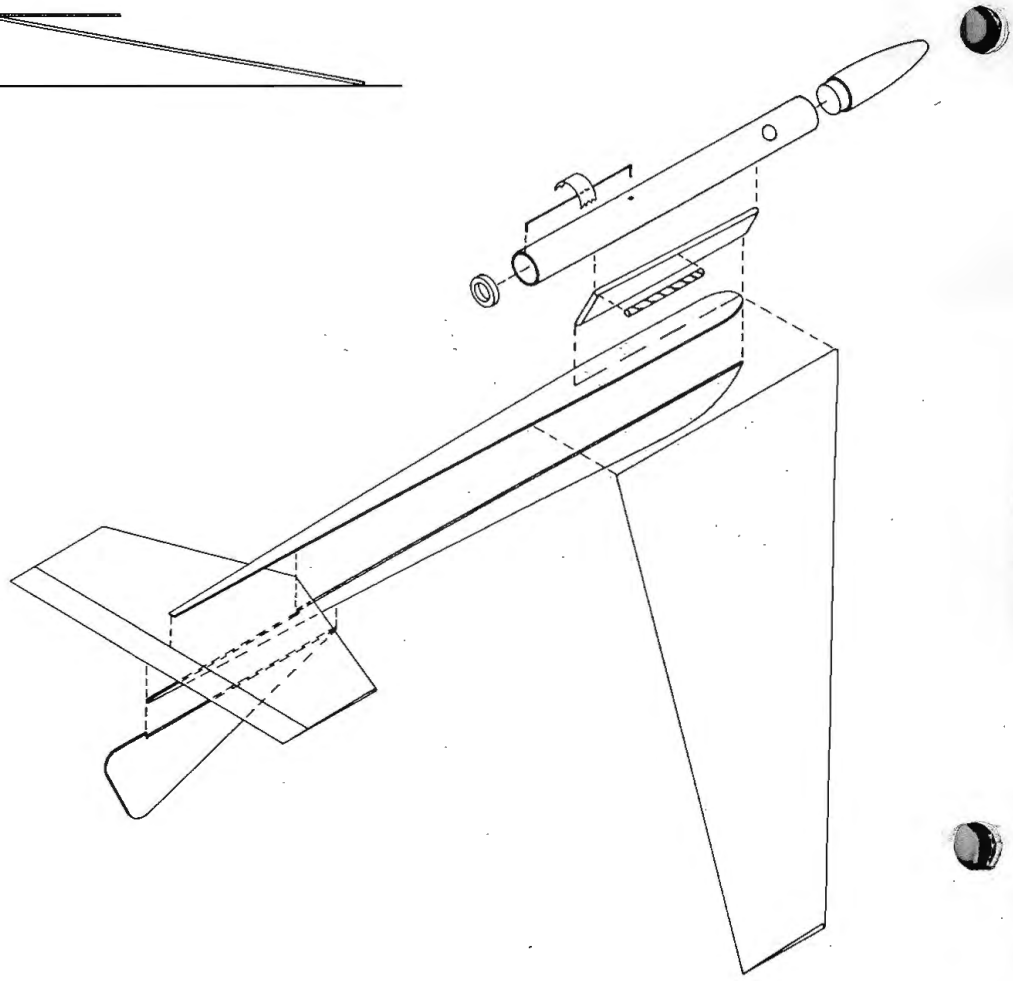


FIGURE 1

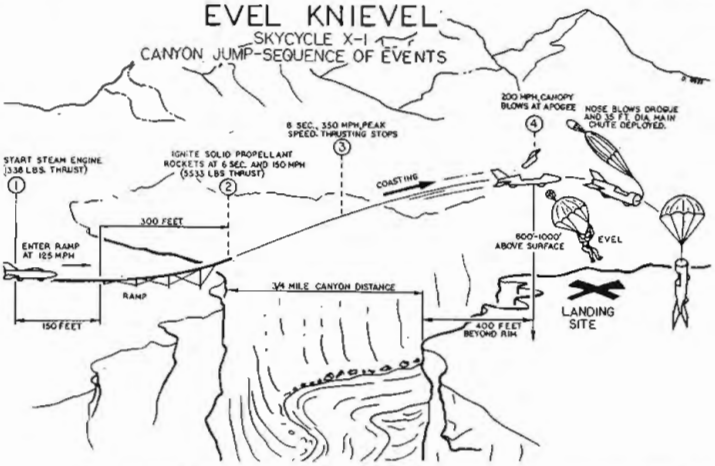
EXPLODED VIEW

Model Rocket Engines' Data Aids Evel Knievel's Canyon Jump

This is the Snake River Canyon. The jump will be going from the left side of the photo to the right.

This is a nose view of the Skycycle on its transportation dolly. The basic body is pearlescent white, the top band candy blue with silver stars, the bottom band and fin stripes are candy red, and the lettering is done in gold leaf.

At the Twin Falls, Idaho jump site the angle of the model rocket launcher is checked. Holding the protractor is Bob Traux of Potomac, Maryland, designer of the steam rocket engine; Evel Knievel wears a striped shirt; in the t-shirt is John Lancaster, who pilots Knievel's Beech Duke and is also his mechanic; the fourth man is Mike Grey of the Twin Falls Chamber of Commerce.



Photos and Information courtesy Doug Malewicki and Bruce Williams

Left – Evel Knievel launches a model of his Skycycle electrically. – Right – The rocket model fired from the optimum launch angle and containing a Cineroc crashed on the other side of the canyon because the parachute did not deploy.

On May 7, 1972, Evel Kneivel climbed into his Skycycle X-1 to static test fire the 1500 pound thrust steam rocket propulsion unit for the first time in public. He later demonstrated the stop-start safety features of the engine to the crowd gathered at the Twin Falls, Idaho take-off ramp site. The actual jump is scheduled for July 4, 1973.

Later that same afternoon, the designer of the X-1, NAR member and Cox employee Doug Malewicki, and Evel rode up to the top of the ramp and launched three scale model rockets of the Skycycle for test purposes. The same computer program used for optimization of the real Skycycle's flight trajectory across the canyon was used to analyze the models' flights. Programmer Bruce Williams (NAR #9996, and Pacific Regional CB Chairman) came up with a program that would analyze the flight of any rocket at any time during that flight. It is capable of handling thrust expressed in any system of units, and it analyzes the vehicle as it goes up the take-off ramp as well.

The first balsa and cardboard model rocket was powered by an F engine and launched at a 25 degree launch angle. The computer said that this would carry the model to the corner of the opposite rim of the 600 foot deep Snake River Canyon.

Evel pushed the launch button, the model blasted up its short 5 foot ramp with an acceleration of 40 g's (far too much for humans to withstand) and arced across the canyon in a perfectly stable flight. Several hundred observers saw the parachute deploy a mere 50 feet above the ground; the model subsequently landed 15 or 20 feet below the desired corner point on the sheer face of the canyon wall. Malewicki was elated with the plus or minus 1% accuracy achieved. (Bruce Williams claims that the inaccuracy was in the engine, *not* the program.) The computer program was based on Newton's laws of motion involving the forces of rocket thrust, vehicle weight, and aerodynamic drag. These laws are familiar to advanced model rocketeers, and apply equally well to models, Skycycles, and full size NASA Saturn V's.

Skycycle model rocket number two was to be launched at a better trajectory angle of 45 degrees and carried an Estes Cineroc super 8 high speed movie camera in the hope that some spectacular film of the jump would be obtained. If all worked well, the rearward looking lens would show the rocket engine flame pouring out and the crowd below gradually disappearing as the model rocket got further and further away from the take-off ramp. Post flight analysis of the film frame by frame would also provide valuable distance, velocity, and acceleration data with respect to time.

Countdown, Evel pushes the launch button, lift off, applause, going, going, going, going, impact! The chute never deployed! The crowd again applauded upon seeing how far beyond the rim it got—they didn't realize it was a failure.

Launch number three—no Cineroc this time. Countdown, lift off, plenty of altitude past the landing rim, starting to come down, *chute deploys*, people on the far side run towards it and just about snatch it out of the air. A perfect flight! Malewicki's comment to Knievel, "Too bad we don't have three tries when you're in the real Skycycle."

(Editor's note: Doug Malewicki will be making exact scale model rocket plans of the Skycycle available. They are full size, based on Estes BT-70, and will contain all the necessary painting details and an assortment of black and white printed photos. To get a set, mail $2.00 to Doug Malewicki, 1577 Skyline Drive, Laguna Beach, California 92651.)

Internal structural details of the Skycycle are pictured here. The high-speed 350 mph tires cost $80 each. They are 8 ply with .050" rubber on the outside only so that centrifugal forces will not throw the rubber off. The steam ball has fibreglass and aluminum foil insulation. The nozzles are sealed to prevent contamination. The "training wheel" pneumatic system runs off the small cylindrical tank lying almost horizontally in front of the rear tire. The normal cycle-type clutch handle allows Knievel to raise the "gear" into the streamlined shell of the body. This system is used for zero and low speed support only. (Photo by David Ross)

The steam rocket engine has a 28" diameter, ½" thick titanium pressure vessel—surplus from a Titan missile. There is only one moving part in the engine, the valve which opens on command. The total power of the engine can be varied by limiting the initial pressure and temperature. The thrust level is varied by inserting washers of various sizes into the valve to limit full opening. Pictured with the engine is Doug Malewicki.

SECTION NEWS

by
Charles Gordon

DISPLAY AT INDIANA FLY-IN

The Summit City Aerospace Modelers (Section 282), presently Indiana's only N.A.R. Section, presented a display of rockets during the World's Little Fly-In which was held on July 16th just outside of Fort Wayne at Smith Field. On display were rockets from various club members as well as a 1/5 scale Gemini capsule on loan from N.A.S.A. There was a crowd of over 5,000 there to see the displays of planes as well as rockets. Several new members were signed up as a result of this successful display.

The Summit City Aerospace Modelers displayed their rockets at the World's Little Fly-In.

SCIENCE SLEEP-IN

Mix model rocketry, bacteriology, a scuba diver, a geneticist, an astrophysicist, a few science teachers, sleeping bags, pizza and an astronomer—and you have seventy-six enthusiastic middle schoolers at a Science Sleep-In.

This unusual slumber party was planned recently by Waterloo (Maryland) Middle School teachers and students when eight scientists agreed to give up part of their weekend to join in the special science program.

It all began on a Friday afternoon this past June when the students, teachers, and scientists gathered at the county school at 4 p.m., bringing sleeping bags, blankets and pillows along so they could spend the night at school.

Shortly after a pizza supper in the school cafeteria, staff and students took part in four different lecture-demonstration-participation groups, led by the visiting scientists. Donating their time and knowledge to the young science enthusiasts were: Howard Galloway (Star Spangled Banner Section Advisor), aerospace physicist at NASA; Dr. Victor Laczo, chief of the Astronomy Club at Goddard Space Flight Center; William Shehan, bacteriologist and dairy expert; Dr. Richard Porter, ecologist for the Federal Wild Life Refuge Center of Anne Arundel and Howard counties (Maryland); Dr. George L. Carter, under-sea electromechanic expert; Eugene Nepa, engineer and scuba diver; R. William Smith, University of Maryland geneticist; and Bill Werre, engineer and model rocket expert (and a member of the S.S.B. Section). Later the participants broke up into smaller discussion groups and individual talks with the scientists.

The science weekend ended Saturday noon after a morning session on rocketry and an actual demonstration of rocket flight at the school's athletic field. Susan Zucchi of the Star Spangled Banner section was the launch officer.

Waterloo's principal E. Joseph Picek expresses satisfaction and appreciation to the experts and all those who helped make the school's first Science Sleep-In a success.

SUPER-ROC

The newly chartered HonoRocs Model Rocket Club (Section #302) of Honolulu, Hawaii, reports of a rather unusual event planned for their next contest.

SuperRoc would be open to birds weighing at least 10 oz. (but less than 16 oz., of course) powered by a "D" engine, with an overall length of at least 150 cm. The general idea of this event is to fly the biggest rocket to the highest altitude. The length in centimeters will be added to the altitude in meters and possibly the number of grams over 10 oz. It looks to be a rather spectacular (for want of a better word) event.

N.A.S.A. provided the 1/2 scale Gemini capsule at the left.

SECTION HISTORY: SOCIETY OF LODI AREA ROCKETEERS (Section #280)
By Arlie D. Preszler

The Society of Lodi Area Rocketeers (SOLAR #280) is a member club of a larger organization called the LODI MODEL ASSOCIATION out in Lodi, California. Their history and method of organization and operation is very interesting, as seen in the following article.

To tell how it happened and what it is about I shall have to digress a ways to a period before we had a rocket club in our community. It all started with the formation of a model airplane club in 1968. The Escadrille Model Aeroplane Club came into being when ten or fifteen of us got together and formed what was basically a control line club. As the club grew we discovered that radio control enthusiasm was running high and that, consequently, there were occasional conflicts at our meetings. It became increasingly difficult to select raffle prizes that would make everyone happy. We had seen cases where this conflict caused ill feelings and the dissolution of formerly active clubs, and we had a few warning grumblings of conflict that told us it was time to do something.

Much discussion, most of it informally done in or near the local hobby shop, resulted in the suggestion that we form a separate R/C club, but that we link the two through our newsletter. The thought was that a common newsletter would keep everyone informed and allow a transfer of interest from one type of flying to the other with a minimum of fuss — besides, yours truly has been the only available pigeon willing to publish the thing. Thought was given to the disadvantages of a division. Namely, a loss of numbers, an important factor when talking to public agencies, and conflicts, like our annual booth at the Lodi Grape Festival. This is when we decided to call the combination, The Lodi Model Association, so that some things could be done in common. The Lodi Model Association was formed in 1970. In 1971, the Society of Lodi Area Rocketeers was formed, was immediately invited to join the Lodi Model Association, and did so. Now, in 1972, the Rooster Tail Model Boat Club has been formed as the fourth member club of the Lodi Model Association.

The Lodi Model Association charges no dues to its member clubs, and, to date, has not had a formal meeting. The costs of publishing the newsletter "Headwind" are pro-rated among the clubs according to their membership. Currently (as of 6/1/72) the Escadrille Model Aeroplane Club has 49 members, the Tokay Radio Control Modelers have 21 members, the Society of Lodi Area Rocketeers has 19 members, and the infant Rooster Tail Model Boat Club has 4 members. That's 93 altogether — not bad for a town with only 30,000 population. Several, of course, are duplicates, but that is the beauty of the organization; it encourages one to step across the line and try something else.

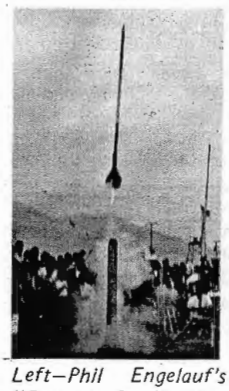
Last year for the Lodi Grape Festival, the three clubs in existence shared a booth that featured control line, free flight and radio control model airplanes, and a lot of model rockets. Each club had its name on a backdrop and suspended from the ceiling across the front of the booth were the words, "LODI MODEL ASSOCIATION."

My advice to modelers in other communities who might want to try a similar organization is threefold. First, you must have a common newsletter. No organization can survive for very long without open lines of communication. Second, the modelers in the organizations must respect each other's areas of interest. Belittling the other guy, other than in jest, will cause nothing but hard feelings. And last, but by no means least, the organization must be kept to a minimum. People only have so much time to spend at meetings before they tire and want to forget the whole thing.

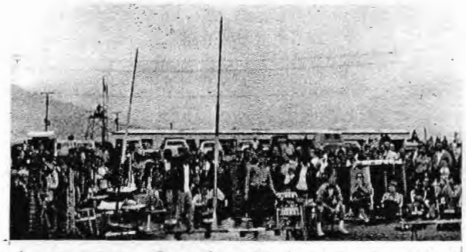
I do not know if the way we are doing things is adaptable to other communities or not. I do know that it works for us and that we are a very proud and gung-ho bunch—just stand back and watch us grow.

RIVERSIDE LAUNCHES AT SCOUT-O-RAMA

Each year the Riverside Area Boy Scout Council sponsors the "Scout-O-Rama," an



Left—Phil Engelauf's two—stage D-Engine, "Grumpy Dog" takes off. Mark Younglove's "Spirit of 76" is a full 10 feet long. (Right)



A two-stage D-engine bird built by Mark Hughes leaves the pad. (All photos are Riverside Rocket Center Photos)

event which dramatizes the activities of scouting. This year the Riverside Rocket Center (Section #277) of Riverside, California received a special invitation to demonstrate model rocketry at this event held on May 6, 1972 at the Riverside International Raceway.

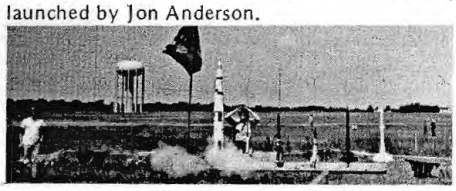
A special demonstration team was formed by the Section to plan for the event. Rockets of every type were gathered from club members for the display including the "Big Rockets". Mr. Hocking provided an excellent display background which contained Apollo posters along with rocket mock-ups.

Two demonstration launches were held during the day of approximately twenty firings each. Mark Younglove, Phil Engelauf, and Mark Hughes were on hand to launch their "long rockets." Dean Cox and Rick Moore displayed and launched their Saturns. The Club's new launch panel built by Ron Wright was used for the first time. Approximately 700 people viewed the launches, and many more passed by the display during the day.

UP, UP AND AWAY!!
By G. D. Hansen

Sunday afternoon (July 9, 1972) from 2:00 till 6:00 PM the Zenith Section (#167) and Don's Hobby Shop co-sponsored a model rocket demonstration at the old airport site in Mankato, Minnesota. The weather was perfect for the over 111 models launched during the afternoon.

The largest was a masterfully built 43" scale model of a Saturn 5 belonging to Mike Hodapp. Its entire flight was filmed by KEYC-TV, and the flight, as well as the events of the afternoon, received 7 minutes of film coverage on the evening TV news broadcast. The smallest was a 4 inch model called the Mosquito, launched by Jon Anderson.



Mike Hadapp's Saturn V lifted off beautifully.

Another spectacular flight was that of a "Cherokee D" by Lee Budde, which roared straight up to well over 1000 feet and returned safely for 2 more repeat performances during the afternoon. Rick Giroux got 3 excellent flights from his reproduction of the famous "Arcas" sounding rocket.

It was also a day for dads, as Mr. Jim Engelen and sons sent their Orbital Transport up several times with marvelous results. Their model was a showpiece on the ground, too.

Dave Hansen, the Zenith section president, launched his beautiful scale model of the Demon A-20, and Mark Simonson got 2 life-like flights from his well-constructed model of the Thor-Agena. Bruce Hoffman also had a very precise scale model of the Little Joe II which helped add to the realism of the afternoon's activities. Many other fine and detailed scale models, such as the V-2, WAC Corporal, etc. were launched.

For many youngsters it was the first launch with "big" equipment, but for one—Doug Anderson—it was the first launching of his first rocket, and he was probably as thrilled as anyone there.

During the afternoon's activities, which approximately 150 people witnessed, Don's Hobby Shop gave away $50 worth of model rocket kits, supplies, and engines free to those in attendance. It was really a tremendously exciting afternoon for everyone.

CONTEST calendar

SEND EARLY FOR CALENDAR!

Please submit all items for the *Model Rocketeer* "Contest Calendar" at least two months in advance! Contest Calendar items should be typed and sent directly to Elaine Sadowski, Editor, *Model Rocketeer* at 1824 Wharton Street, Pittsburgh, Pa. 15203.

The following are contests that have been *sanctioned* by the National Association of Rocketry. Points earned at these contests are credited toward national standings.

October 21, 1972—Oconomowoc, Wisconsin. Name: OMRS—3. Host: OMRS #294. Events: Gnat Boost/Glide, Hornet Boost/Glide, Sparrow Rocket Glider, Class 00 Parachute Duration, Class 0 Parachute Duration, Class 0 Streamer Duration. Contact: Tom Gressman, 1105 Lily Road, Oconomowoc, Wisconsin 53066. Telephone: (414) 567-6809.

October 28, 1972—Rosiclare, Illinois. Name: Shawnee Rocket Association Meet—1 (SRAM—1). Host: Shawnee Rocket Association. Events: Gnat Boost/Glide (¼ A'S), Sparrow Rocket Glider, Robin Egg Loft, Class 2 Streamer Duration, Class 1 Parachute Duration, Plastic Model. Contact: Joe Hamon, P.O. Box 548, Rosiclare, Illinois 62982. Telephone: 285-3520.

November 4-5, 1972—Camp A.P. Hill, Virginia (tentative site). Name: The First Annual Blue/Gray Regional. Host: Virginia NAR Sections. Events (Battles): Bull Run—Class II Streamer Duration, Cold Harbour—Class I Parachute Duration; Chancellorsville—Pee Wee Payload; Gettysburg—Robin Eggloft; Manassas—Predicted Altitude; Seven Days Battle—Swift Rocket Glider; Shiloh—Hawk Rocket Glider; Lookout Mountain—Sparrow Boost/Glide; Battle of Vicksburg—Hawk Boost/Glide. All sections will compete either for the North or South. An entry fee of $5.00 covers all events entered. A non-contestant fee of $1.00 is required for those who wish to be given contest packs, results, etc. The emphasis will be on fun as well as sport . . . So y'all come, ya hear??? Contact: Roland Gabeler, 5105 W. Franklin St., Richmond, Va. 23226, (703) 285-3511 (No collect calls . . . ya hear?) P.S. Y'all Yankees come on down and the Rebels gonna whup y'all soooooo bad! We dare you to show! Win trophies, ribbons, and a war—all in one weekend!

November 5, 1972--Bridgewater, Massachusetts. Name: MASSCONN-1. Host: MIT Model Rocket Society 134. Events: Scale, Robin Eggloft Eagle Boost Glide, Swift Rocket Glide, Sparrow Boost Glide. Contact: Trip Barber, Box 110, MIT Branch P.O., Cambridge, MA 02139.

December 29-31, 1972—Phillipsburg, New Jersey. Name: Tannenbaum-2. Events: Official: Condor Boost/Glide and Rocket Glider, Class I Parachute Duration and Streamer Duration, Hornet Boost/Glide and Rocket/Glider, Sparrow Boost/Glide and Rocket Glider, Class III Parachute and Streamer Duration, and Open Spot Landing. Unofficial: Scale Christmas Tree, Ornamental Ping Pong Spot Landing, Class II Garland Duration, Dragon Boost/Glide, Class VI Parachute Duration and Streamer Duration, and "C" Engine Feather Boost/Glide. For more information contact: David Klouser, 383 Warren St., Stewartsville, N.J. 08886.

Date To Be Announced—Highland Park, Illinois. Name: ERT2, Evanston Tiros Regional. Events: Hornet Boost/Glide, Condor Boost/Glide, Eagle Rocket Glider, Design Efficiency, Class II Streamer Duration, Class 0 Parachute Duration, Pee Wee Payload, Robin Eggloft, Research and Development. Contact: Bob Finch, 415 Lambert Tree, Highland Park, Illinois. Phone (312) 432-8986.

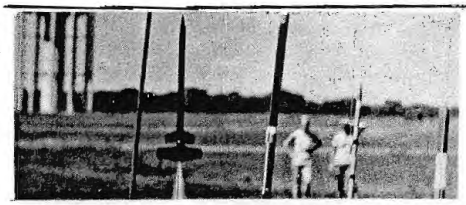
April 13, 14, 15, 1973—Camp A.P. Hill, Virginia. Name: East Coast Regional Meet VII (ECRM-VII). Host: NARHAMS 139. Events: Scale, Ostrich Egg Loft, Hawk Boost/Glide, Hawk Rocket Glider, Class 0 Parachute Duration, Class 0 Streamer Duration. Contact: Judith A. Barrowman, 6809 97th Place, Seabrook, Maryland 20801. Phone (301) 459-5261.

CONVENTIONS, SYMPOSIUMS, ETC.

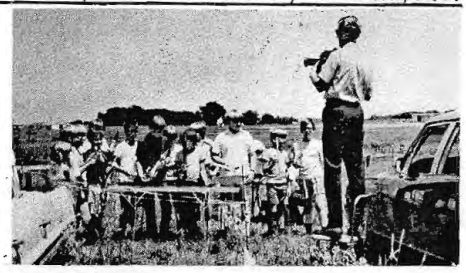
October 19-22, 1972—Detroit, Michigan. Detroit Hilton. International Star Trek Convention. Contact: Mr. Al Schuster, Box 95, Old Chelsea Station, New York, N.Y.

November 4, 1972—Brooklyn, N.Y. Name: NETS—3. Host: Pascack Valley Section. Events: Demonstration launch; R&D report presentations; discussion groups on scale, plastic modeling, rocket photography, building and finishing with uses of common and uncommon materials. Box lunch included. Contact: John Cope, 251 75th Street, Brooklyn, N.Y. 11209.

Washington's Birthday Weekend 1973—New York, N.Y. New York Star Trek Convention, Commodore Hotel. Contact: Mr. Al Schuster, Box 95, Old Chelsea Station, New York, N.Y.



Dave Hansen's 2-stage Arcon High left the pad propelled by two D engines. It was recovered, the bottom stage in pieces, the top stage intact. Next to it is Mike Hadapp's 5 foot rocket, which had a good flight. All photos by Gerald Hansen.



John Husak of KEYC-TV came out to film the launch. Here he focuses on the group of 9 to 12 year olds who launched their rockets that day.

FLASH!

U.S. Team scores one first, one third place in three events at the 1st World Championships in Vrsac, Yugoslavia. Following are the top three national team scores from the nine nations competing:

PARACHUTE DURATION

1.	U.S.A.	859 seconds
2.	Romania	826 seconds
3.	Yugoslavia	759 seconds

BOOST GLIDER

1.	Egypt	351 seconds
2.	Yugoslavia	264 seconds
3.	Czechoslovakia	146 seconds

SCALE

1.	Czechoslovakia	8295 points
2.	Bulgaria	6567 points
3.	U.S.A.	4889 points

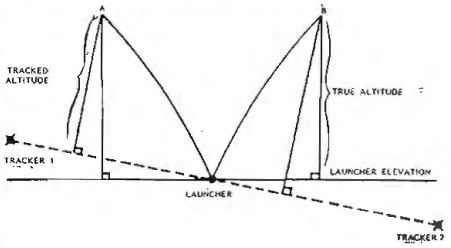
A complete report on the World Championships with plans for the award winning boost glider will appear in a forthcoming issue.

A Letter to the Technical Editor

Mr. Stakem:

Mr. Butterworth's analysis of tracking errors, in the March issue of *Model Rocketeer*,* was excellent. However, if I understand his instructions correctly, I cannot agree with his method of aligning trackers that are located at different levels. I agree that this method would establish the necessary "tracking geometry", but the reference plane formed by the trackers and the launcher, would not be horizontal, and any altitude calculated from this arrangement would not be a vertical altitude.

What I am trying to get at can probably be seen on the diagram below. The diagram is, of course, exaggerated, and to keep it simple I've only shown two dimensions.



You can see that rockets A and B have reached the same altitude above the launcher, but they are not the same altitude above the plane of the tracking system. In effect, rocket A is flying uphill, and B is flying downhill.

How about it? Am I right, did I misunderstand Mr. Butterworth's instructions, or am I so turned around that I don't know which way is up anyhow? For my own peace of mind, I've included a self-addressed envelope, and hope you will have the time to let me know what you think.

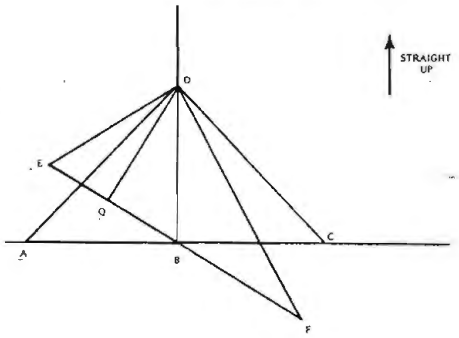
Yours truly,
Gary Crowell
Rapid City, South Dakota

Dear Gary:

It has taken me a while to find some time to delve into your question. Manning's point in the article on tracking is that *if you define the tracking triangle properly, you will be able to measure altitude.* Not really. If you define the tracking triangle, you measure the line B-rocket. On a hill, this isn't necessarily the altitude. If you can struggle through my exercise in geometry, I think you'll see this.

I hope to publish your letter soon—thanks.

Pat Stakem
Technical Editor
Model Rocketeer



1. Consider a straight line ABC. The tracking stations are at A and C, and the launcher is at B. The vehicle will fly straight up (are you kidding?) to point D. For convenience, AB=BC=BD. Note ∡ BAD = ∡ BCD.
2. Now, we'll launch on a hillside. The line of sight between the trackers is EBF. The trackers are at E and F, and the launcher is at B. The rocket flies straight up to D. For convenience, EB = BF = BD. Further, BD = BC = AB, as before.
3. It is clear from the figure that the rocket travels the same distance in both cases (BD, by definition). If we solve the tracking equation for the two sets of trackers (E and F, and A and C), do we get the same answer?
4. The answer is no! The tracking triangle for trackers E and F measures the line segment DQ (no pun intended) where DQ ⊥ EF. This is not the same as DB, and, in fact, is related by the expression DB = DQ/cos ∝ where ∝ is the angle of tilt of the trackers' line of sight.

*See "On Optical Tracking Systems," March, 1972 *Model Rocketeer.*

You really don't need a special form to renew—merely send your mailing label (or a photocopy if you don't want to damage your MODEL ROCKETEER) with your remittance and your membership will be extended for another year.

If your mailing label (and your Sporting License) looks like this:

98765 JOE BLOW
SR 1234 MAIN STREET
ANYWHERE, U.S.A. 99999

02
12/72

your NAR membership expires December 31, 1972 and your last issue of MODEL ROCKETEER will be the January 1973 issue.

So—why wait for your renewal notice? You *CAN* renew today and be sure of not missing any of your many membership benefits during the coming year!

(*Sorry, you won't be the first, Rich Kalich, .NAR 21652 of Willowick, Ohio has already renewed under this plan.*)

NAR IN ACTION

Dots Indicate Sections

The NARAM-14 Section Activities Meeting

By Ron Wright

This meeting was an open discussion with no set agenda. The meeting was open to all interested persons. Those present included: James Barrowman, NAR President; Manning Butterworth, Mid-America Regional Manager; Dr. Edna Hinman, Mountain Regional Manager; Norm Wood, Pacific Regional Manager; Cody Hinman; and Ronald Wright.

The following discussion involving regional boundaries was brought up by Norm Wood and Dr. Hinman. Wood pointed out that the present NAR regional boundaries in the West do not correspond with the current NAR section distribution (see map). Problems created:

1. The Mountain Manager has great difficulty in establishing close contact with the sections in Colorado because of the distances involved.

2. Sections in Western Nevada and Arizona are more closely associated with the activity on the West Coast than with sections in their own region which are farther away.

Suggestions proposed:

1. Nevada and Arizona be added to the Pacific Region.

2. New Mexico be added to the Mountain Region.

3. Montana and Idaho for the time being should be retained in the Mountain Region until sufficient activity develops there. At that time a new Northwestern Region could be formed which might include Alaska, Idaho, Montana, Oregon, and Washington.

Jim Barrowman said that this is the type of feedback he wants to hear. Since he is from the East Coast, he is unfamiliar with the problems of the Western United States.

Norm Wood asked Jim Barrowman just how much authority a Regional Manager has. Norm stated that he would like to experiment with regional projects and activities to stimulate interest, for example merit contests, patches, etc. Jim replied that the Regional Managers have a free hand in the operation of their regions with certain reservations: 1. Bob Atwood should be informed of the projects. 2. Expenditure of funds should be taken into consideration. 3. Projects should be aimed toward strengthening the NAR and not toward breaking it down into armed camps.

Jim mentioned that Washington's present coordinator system provides an excellent starting point for sections. However, the coordinators have never been contacted. Jim said that he was obtaining a list of these people and will send a copy to Norm Wood.

Norm mentioned that Space Clubs of America (S.C.A.) is currently distributing NAR brochures to those of their clubs which have shown an interest in model rocket competition, since they are not organized for this. Norm added that Bruce Williams, Western Head of S.C.A., is the new NAR Contest Board Chairman for California.

Manning Butterworth asked what S.C.A. is. Wood said that among its other activities, this organization has an interest in model rocketry. However, this is limited to educational assistance such as answering technical questions by mail. S.C.A. does not want to compete with the NAR but only wants to assist as a sister organization devoted to the educational aspects of the hobby.

Manning asked what the NAR Education Committee is doing and what material it has to pass out. Jim Barrowman replied that it has little other than what Chairman Ed Pearson writes and NARTS materials. It is currently developing a bibliography of reference material.

Norm Wood mentioned that he had obtained club information from the manufacturers. (People to contact for these materials: Dane Boles, Estes Industries, and Larry Brown of Centuri.)

The last comment was made by Manning Butterworth concerning the issues raised by Charlie Zettek's letter in the July *Model Rocketeer*. Manning said that he has developed a more lenient attitude toward non-NAR groups and individuals. The most common questions raised by these people are, "Why join the NAR? What can it do for me?" These people should not be shunned for not joining the NAR. Instead, they should be allowed to develop an interest in rocketry without immediately being pressured to join the NAR. As time passes, they will, hopefully, begin to recognize the benefits of being a member of a national organization.

All members of the NAR should realize that they are the NAR. The NAR at the national level can only provide the framework from which people at the local level must build the walls. What these people do is the NAR, good or bad, and, hopefully, the whole is more than the sum of the parts.

nar news

Turn In Questionnaires

There is still time to turn in the 1972 NAR Membership Evaluation Form which appeared in the August *Model Rocketeer*. Return your questionnaire to Wanda Boggs, 730 East Dartmouth Street, Gladstone, Oregon 97027, by December 25.

Slide Sets Available

The first of the LAC/Publications Committee Slide Sets will become available on November 1, 1972. This set, "Model Rocketry, the Space Age Hobby", consists of 36 color slides (35 mm size), and a cassette tape narrative about 20 minutes in length. It can be used by new sections to explain the NAR's services to members or by groups and individuals who wish to explain the NAR and model rocketry to the public. Rental fee for the sets is $2.00. They may be purchased for $10.00. A $10.00 deposit must be sent in if the slide set is being rented, $8.00 of which will be refunded upon the return of an undamaged set.

David Klouser, a member of the Publications Committee, has assumed responsibility for these slide sets, and he is working on several more sets, including "Basic Boost/Gliders", "Advanced Boost/Glide", "Scale Modeling", "R & D", "Section Organization and Activities", "Basic Construction", "Running Meets", and several other topics. Availability of these sets will be announced in the *Model Rocketeer*.

For full details on the first set and order forms, write:

NAR Technical Film Service
c/o David Klouser
383 Warren Street
Stewartsville, New Jersey 08886

Canadian Report

At an Advisory Council meeting of the Canadian Association of Rocketry in Ottawa on September 1, it was voted that CAR investigate what would be required to constitute a formal application to host the 1974 FAI World Championships. Burnaby, British Columbia is the site that will be named in the application.

Steven J. Kushneryk

(Mr. Kushneryk was present at the meeting as an observer.)

Attention Dallas NAR Members!

A new NAR section, the Dallas Area Rocketry Society, is being formed in Dallas, Texas. Interested NAR members in the area should contact Alan Hancock, 2112 Cedarcrest, Carrollton, Texas.

ARRA Has Moved

The Atmospheric Rocket Research Association (ARRA) in Montreal has a new address. Write the ARRA at P.O. Box 1455, Place Bonaventure, Montreal 114, Quebec, Canada.

By-Laws Available

A new edition of the NAR By-Laws incorporating the amendments made at NARAM-14 has been distributed to all Sections. Copies are also available through NARTS at 15¢ each.

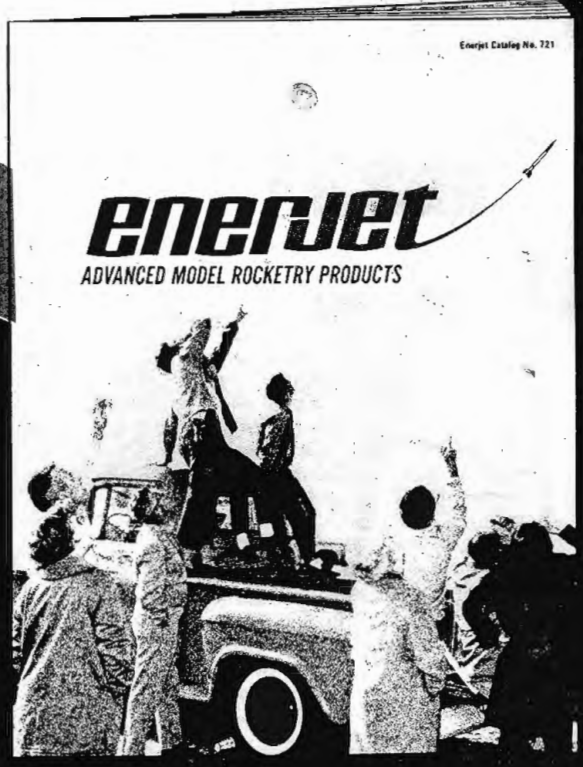
NEW FROM THE MANUFACTURERS

AVI has announced that it has a toll free "HOT LINE" for those modelers who need to know now. Call 800-356-8051

AVI Products and Programs Manager Named

G. Harry Stine has been appointed Manager, Products and Programs, for Aerospace Vehicles, Inc. In his new position, Mr. Stine will be responsible for the development and promotion of new products. He will coordinate the company's participation in special dealer programs and institute workshop type activities for dealers and customers.

Free



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