

# ***RRS NEWS***

FOR THE ADVANCEMENT OF  
ROCKETRY AND ASTRONAUTICS



PUBLISHED BY THE

***Reaction Research Society***

POST OFFICE BOX 1101 — GLENDALE 5, CALIFORNIA



# REACTION RESEARCH SOCIETY

## NEWS

FOR THE ADVANCEMENT OF ROCKETRY AND ASTRONAUTICS

Published by the Executive Council

of the

REACTION RESEARCH SOCIETY, INCORPORATED

Box 1101 - Glendale 5, California

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R.R.S. NEWS NUMBER 93

April 1960

Meeting Notice, Ethylene Oxide Report

Successful 3rd R.R.S. Mail Rocket Flight

Hobby Show

A.R.S. Student Awards

Ardent Youth

Target: Tomorrow

May 21, 4th R.R.S. Rocket Mail Flight.  
Celebrating 17 years of Amateur  
Rocketry. 1943-1960

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## REACTION RESEARCH SOCIETY MEETING NOTICE

Headquarters Section Discussion Meeting. Monday May 9, 1960, at 7:30 p.m. at the Casa Verdugo Branch of the Glendale Public Library, 1151 North Brand Boulevard, Glendale. Movies and the Mail Rockets will be on display.

### PROGRESS REPORT OF THE ETHYLENE OXIDE MONOPROPELLANT RESEARCH ROCKET

The completed Ethylene Oxide Rocket went on display at the California State Polytechnic last month. This will be the last time the rocket will be on display before it undergoes an extensive series of tests prior to flight testing.

The first of these tests will be static pressure checks and dynamic flow measurements. These will be conducted in the Fluid Mechanics Lab. at Cal Poly. Upon completion of these tests the system will next be static tested at the R.R.S. Test Area. We hope to have all the "Bugs" out of the system in order that static firing can proceed as scheduled.

A series of nozzles and injectors have been made in order that a number of flow rates can be obtained, thereby producing various thrusts. This was necessary because of the lack of data available about the burning characteristics of ethylene oxide at high flow rates.

Upon completion of the project a report covering the building and testing of the rocket will be made available. We hope that the next progress report appearing in the R.R.S. News will state that preliminary tests have been successful.

Ron Nelson  
Ed Von Delden  
Cal Van Wagner  
Dave Thalimer

#### Membership Rocket Firing

Members planning to fire rockets on Sunday May 22, must have research contract with them for rocket inspection May 1, at 1 p.m., Dave Horines, 863 Omar Street, Glendale. The latest possible date to OK rockets will be May 9th at the Casa Verdugo Library meeting. If you need contract forms, send request to Ed Parker, 12703 Bart Ave, Hawthorne, Calif.

NEWS RELEASE

For Immediate Release

From: Reaction Research Society Inc.,  
P.O. Box 1101  
Glendale 5,  
California  
Dated January 8, 1960

3rd R.R.S. Rocket Mail Launching

The successful launching and recovery of 480 Rocket Mail Covers from across the Mojave Desert proved the practical use of rockets for mail delivery. On December 31, 1959, launching by the Reaction Research Society, many recovery devices were tried in the twenty rockets fired. The Rocket Mail Cachet was timed to be released from the spent rocket motor at a maximum range of 2 miles. The mail covers were removed from their compartments and taken to the Mojave Post Office, where Air Mail stamps were affixed, along with the special Rocket Mail Stamps, the covers speedily continued to the addressees.

The first R.R.S. Rocket Mail launching in 1947 was from Winterhaven California, across the Colorado River to Yuma, Arizona. Then again in 1948, 4000 covers were flown from Trona, Kern County, across Searles Dry Lake into Kern County, These covers are considered collectors items today and are valued at \$6.50, a piece.

Philatelists desiring information on the rocket Mail Covers and sheets of stamps should contact the R.R.S., P.O. Box 1101, Glendale 5, Calif.,

The sheets of stamps are printed 8 to a sheet and sell for \$4.00 per sheet there are only a limited number of sheets and there will not be any more of the stamps printed, to protect the collector. All stamp sheets will have a serial number on them and a record will be kept of the purchasers name.

There will be another Rocket mail flight held by the R.R.S about the middle of the year, a new design and cover will be flown, these covers will sell for \$1.00 each. If you desire covers for this flight peelable labels will be used if furnished by the collector, other wise the covers will be typed.

HOBBY SHOW—HOBBY SHOW—HOBBY SHOW—HOBBY SHOW

Help us make the Hobby Show, for the RRS, the best ever. We need your help in the form of well built material that our members have built as well as any help available during the Hobby Show. The Hobby show will be held June 3 to June 12, 1960.

So far we will have the Ethylene Oxide rocket in it's static test arrangement, several Mail Rockets, a tracking theodolite, electronic gear of many types, assorted small, well built parts.

There will be an examination meeting May second to check the equipment that will be in the show. This meeting will be held at Dave Horines home at 1:00 pm all interested members are expected to be there if they can make it.

Please bring any material you want in the hobby show to our meeting so we can select what we are going to use. Let's make a real good show for our members and guests.

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The RRS will hold another mail flight on May 21 at the Mojave test area. The Covers will sell for \$1.00 and will be recovered by parachute. These covers will be of a new design and will have a stamp of our own attached with the number of the mail flight indicated on the cover.

For more information Contact Myron Lieberman, 252 N. Cordove, Burbank Ed Parker 12703 Bart. Hawthorne, or Jim Humphreys P.O. Box 90391, Los Angeles

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AMERICAN ROCKET SOCIETY

1960 Student Awards Competitions

ARS Chrysler Corporation Award

For Undergraduate Students

\$1,000 ARS Chrysler Corporation Award to be presented to the undergraduate or team of undergraduates submitting the paper on any subject related to astronautics which is judged best by the ARS award Committee.

ARS Thiokol Chemical Award  
for Graduate Students

\$1,000 ARS Thiokol Chemical Corporation award to be presented to the graduate student or team submitting the paper on any subject relating to astronautics which is judged best by the ARS Award Committee.

Previous Recipients

1956--James B. Blackmon, Cal Tech  
1957--John Reece Roth, MIT  
1958--Thomas W. Godwin, Penn  
Carl F. Lorenzom Penn  
1959--Thomas Miles Conrad, Oberlin

Previous Recipients

1958--Frederick H. Reardon,  
Princeton  
1959--Gordon H. Miller, Michigan

Appropriate subjects include:

Astrodynamics  
Guidance and Navigation  
Human Factors  
Hypersonics  
Ion and Plasma Propulsion  
Instrumentation  
Liquid Rockets  
Logistics and Operations  
Magnetohydrodynamics  
Missiles and Space Vehicles

Non-propulsive Power  
Nuclear Propulsion  
Physics of the Atmosphere  
and Space  
Propellants and Combustion  
Ramjets  
Solid Rockets  
Space Law and Sociology  
Structures and Materials  
Test Facilities and Support  
Equipment

Deadline date for complete manuscripts: July 1, 1960

All contestants must submit entry forms along with Manuscripts. The forms contain complete details on eligibility and procedure for preparation of manuscript. They may be obtained by writing to the address below. Be sure to specify which of the two competitions you wish to enter.

American Rocket Society  
500 Fifth Avenue, New York 36, N.Y.

### Ardent Youth

The French have a proverb, "If the young only knew; if the old only could" which might well be applied to a challenge now facing the American Rocket Society. The challenge lies in the proper inspiration and guidance of the many teenagers interested in space and rockets, and in the much unsupervised and sometimes catastrophic amateur experiments which this interest has all too frequently produced.

The ARS Board and its Committees have listened to much evidence and deliberated at length in the need for a constructive youth program. One fact emerges clearly: Amateur testing with energetic chemicals is dangerous and all the more so because the experimenter (and, unfortunately, often his adult "supervisor" as well) is too young or too inexperienced to know all of the possible hazards.

The result of extensive Board and Committee study is a set of resolutions which leave the ARS firmly opposed to amateur rocket experimentation with hazardous materials, regardless of the supervision offered.

At the moment, there is no alternative public position ARS can take. This is true in spite of what appear to be some carefully supervised amateur firings in the U.S. (including Hawaii), and in spite of the fact that we all recognize a flat prohibition is never effective against strong human desires.

It is not necessarily true that ARS must maintain its firm opposition to all such experimentation indefinitely. It may be that a program can be arranged which will make it possible for certain amateurs to see their rockets loaded and fired by professionals on private and government ranges without hazard to themselves and without ARS legal involvement. There is, it must be admitted, skepticism that such a program can be developed. Amateur rockets are intrinsically unreliable; asking a professional to load and fire them does not alter that fact.

At any rate, the feasibility of such a program is being studied by the ARS education Committee. Until a satisfactory program can be set up and approved by the Board, the present ARS position must stand. It will take time, perhaps a year or two.

Meanwhile, the opportunity for proper inspiration and guidance of eager youngsters must be grasped. There is so much fascinating yet non-hazardous physics, chemistry, and biology involved in astronautics and rocketry that it is not necessary to risk life and limb by conducting the wrong kind of experiments. The ARS Education Committee has been called upon to prepare a detailed program including basic information and experiments, which will be available to schools, scout groups, and individuals who are trying to satisfy the youthful insistent "need to know" and "need to try" which are among the nation's most valuable assets.

Liaison has already been set up with youth groups, educational institutions, industry, and government agencies. Many dedicated people are already working hard on the ARS Youth Program; many more will be needed. I can think of few more rewarding ways to apply our time and talents.

Howard S. Seifert  
President, American Rocket Society

Editors note: As we receive new material the RRS News will make an effort to publish important information as room will allow. BJH

"TARGET : TOMORROW"

Target: Tomorrow. This is a new effort in space-science education by the American Rocket Society, to increase the interest and knowledge of the leaders of tomorrow through lectures, discussions, missile and satellite displays, and demonstrations.

The Education Committee of the ARS and the Explorers of the Los Angeles Area Council, Boy Scouts of America have embarked on this new space project.

As a first step in this direction, there will be an Explorer Science Exposition held on 7 May 1960 at the Los Angeles Institute of Aeronautical Sciences Building, 7600 Beverly Blvd, Los Angeles, Calif., which space has been donated by the IAS for this purpose. Invitations to attend have been sent to many Explorers.

"The Morning activity will consist of formal registration, a welcoming address by Howard Seifert, national ARS president, and a series of brief addresses intended to acquaint the Explorers with the history, significance, and scope of technology of astronautics."

There will be an Ethylene Oxide Rocket, built by some of the RRS members, on display at this Exposition. This rocket, which is prepared for static test, was built by Ed von Delden, Ron Nelson, Cal Van Wagner and Dave Thalmer.

There will be further symposiums presented on astronautics, in which the Explorer Scouts will participate under the direction of the American Rocket Society.

The information on "Target: Tomorrow" was taken from a paper by: Vincent S. Haneman, Jr. and Laurel van der Wal, of the ARS.

Jim Humphreys

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## Rules and Regulations for Solid

### Propellant Research

The trend of amateur rocketeers toward solid propellants has brought about reason for establishing a few rules. Due to the extreme high energy of solid propellants the consequent safety measures must become more rigid. There is bound to be accidents of some sort without these. If this occurs the State Laws will surely become very rigid. If we are to continue working on solid propellant research we are going to have to form our own safety regulations. If this is accomplished and abided by, we will eliminate the greatest amount of hazard working with experimental propellants. The Club feels that if a person is sincere, he will gladly abide by these rules and avoid danger to himself and to bystanders. Some of the rules may complicate your present method of research, on the other hand they may show you the way to a quicker and safer method. There may be a few among us that take a childish attitude toward these safety rules and consider themselves experienced solid propellant experts. These are the people that will not be allowed to work on the solid propellants in the Reaction Research Society.

#### I. Qualifications for Research.

- A. Know composition of oxidizer to be used.
  1. If you don't know, ask!
- B. Have references on research.
  1. Relative to known tables and texts.
- C. Know ignition temperatures of oxidizer.
  1. Same as above mentioned.
- D. Fuel and oxidizer must be stored separately.
  1. Old mixed fuel combust spontaneously.
- E. Propellant shall not be cured in a gas type oven.
  1. Electric type heat will be required for safety.
- F. No plastic mixing equipment shall be used. Static electricity could ignite the mix. Glass, wood, aluminum and non-ferrous metals are satisfactory.
- G. Electric mixers must not be used. There is a great chance that the blades can strike each other and ignite the propellant.

These rules were adapted by the R.R.S. Static Test Crew.

ROCKET MAIL FLIGHT ANNOUNCEMENT

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On the 17th Anniversary of Active Rocketry, the Reaction Research Society is celebrating with it's 4th Rocket Mail Launching. Only 2000 covers will be flown Saturday May 21, 1960. The special cover, rocket mail stamp and regular 7 cent airmail stamp will include the cachet of 500 covers in each of a set of four rockets. Each cachet will have a special cancel and flight number.

By maintaining this active Rocket Mail program, the development of a long range standard mail rocket can be made to carry regular airmail in the future. The Reaction Research Society firmly believes that inter city and inter country rocket mail is no further away than manned space travel.

The R.R.S., founded in 1943 as a non-profit society whose purpose is creating an environment for the young rocket student to become active in a supervised program of learning in Rocket Propulsion Systems.

Individual covers are \$1.00, a set of four being \$4.00. Perforated mint sheets of 8 stamps each sheet are \$4.00 per sheet. Send orders to R.R.S. P.O. Box 1101, Glendale 5, California.

Larry Larson

President: Reaction Research Society.

THE REACTION RESEARCH SOCIETY

The Reaction Research Society is a non-profit civilian organization whose purpose is to aid in the development of reaction propulsion and its applications, and to promote interest in this new science.

The Society was organized in January, 1943, and from that time to the present has static fired and flight tested several hundred rockets, using both liquid and solid propellants. They have held two rocket mail flights, carrying special philatelic mail in experiments designed to call attention to the use of rockets for practical, peaceful purposes, and have established several altitude and other records for non-professional rockets and missiles.

The Reaction Research Society publishes RRS NEWS & ROCKET DIGEST containing notices and information about both Society and national activities in the rocket field, which is sent to all members as a part of their membership.

There are opportunities for persons of widely diverse interests to take an active part in the Society's work. Technical skill is not necessary for participation in many projects.

Active membership in the Reaction Research Society is for the interested and qualified persons who by their membership indicate their willingness to engage in the activities of the Society. Active membership is \$5.00 per year.

Associate membership is for persons who cannot devote sufficient time to Society work to warrant an active membership. Associate membership is \$3.00 per year.

If you are interested in joining the Society, or desire more details, please write to:

Secretary  
Reaction Research Society  
Box 1101, Glendale 5, California

REACTION RESEARCH SOCIETY INC.  
BOX 1101  
GLENDALE 5, CALIFORNIA