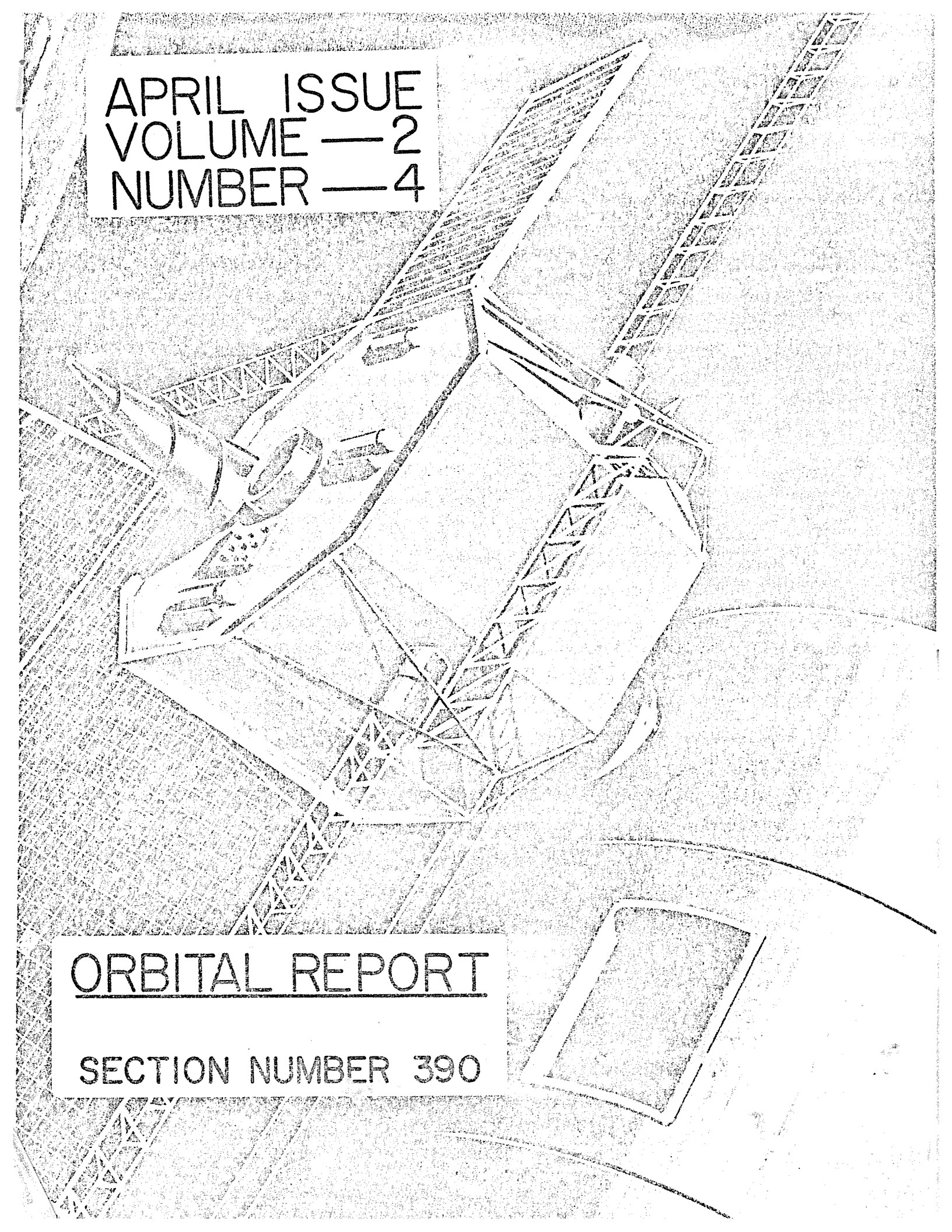

APRIL ISSUE
VOLUME — 2
NUMBER — 4

ORBITAL REPORT

SECTION NUMBER 390

NARTREK

ONE SMALL STEP FOR NAR-

ONE GIANT STEP FOR YOU.

From the Launch Pad of NAR Headquarters NAR # _____

This Month We Have One Of The Most Important Persons In The NAR On Profile And We Are Pleased To Have Her Featured. Thanks Doris For The Profile And Thanks For The Great Job You Are Doing For The NAR. Keep Up The Great Work, And We The Members Will Try To Write Legibly.....Notice - I Type My Letters - Ed.

PROFILE——DORIS MAYER

PROFILE: By Doris Mayer, NAR HEADQUARTERS SECRETARY

I communicate with many people in the NAR so I thought you might like to know something about me. I was born in Baltimore, Maryland and was raised in Elsmere, Delaware, attending Oak Grove grade school and two years at Alexis I duPont High School, graduating from Shenandoah Valley Academy, New Market, Virginia. After graduation we moved to the Philadelphia area where I attended the Philadelphia College of Pharmacy and Science. Then down to Washington Missionary College, Washington, DC, and graduating from Secretarial Exchange, Philadelphia, PA.

Four weeks after Pearl Harbor I was married working, at the time, for the E. I. duPont Company, Philadelphia, PA. The next few years were spent as a wife and mother to three boys, who through the course of years has presented me with five grandchildren.

I resumed work in Piscataway, New Jersey, as secretary at the Lake Nelson School. My next job was in the office of O. K. Kimmel Company which delt with industrial and factory supplies. In 1974 I took over the job of NAR secretary at headquarters. I enjoy making contact, by letter and by phone, with the young people of NAR. Two rooms in my home are devoted to the NAR office. My job is a source of pleasure to me. My only problem is with those members who do not write their name and address legibly. My working days are long answering the large volume of mail coming into this office. In this vain I might also suggest that it is unwise wo send cash through the mail.

I have always been an active church worker. My other interests are music and needlework. I also belong to the National Wildlife Organization.

I lead an interesting life and am enjoying every minute.

Doris Mayer

MODEL ROCKETRY IS FUN!

BOOK BEAT—TAKE A LOOK

vour book store there is something that some of you might like to own....15 plans
the movie "STAR WARS", included is Luke's Landspeeder, R2D2, Luke's Skyhopper
Scene, etc. The cost is $6.95 and is a must for all "Star Wars" fans.....

by the U.S. Printing Office, Washington, D.C.

the 1960's in Retrospect: Man's G Plunge Into Space; Apollo: Man on the Moon
1970's; Skylab: A House in Orbit; T huttle: Spaceliner of Tomorrow; Space
/Space Base: A city in orbit; and A Ahead: From the 1970's Into the 1980's
Publication - 1971 Number - EP-8

SPACE STATION: KEY TO THE FUTURE Published by e U.S. Printing Office, Washington, D.C.
20402 - Price 45¢ Date of Publication - 0 Number EP-75

This booklet describes the Space Station and s f its future returns. In non-technical
manner, it seeks to convey information that ha presented at technical conferences
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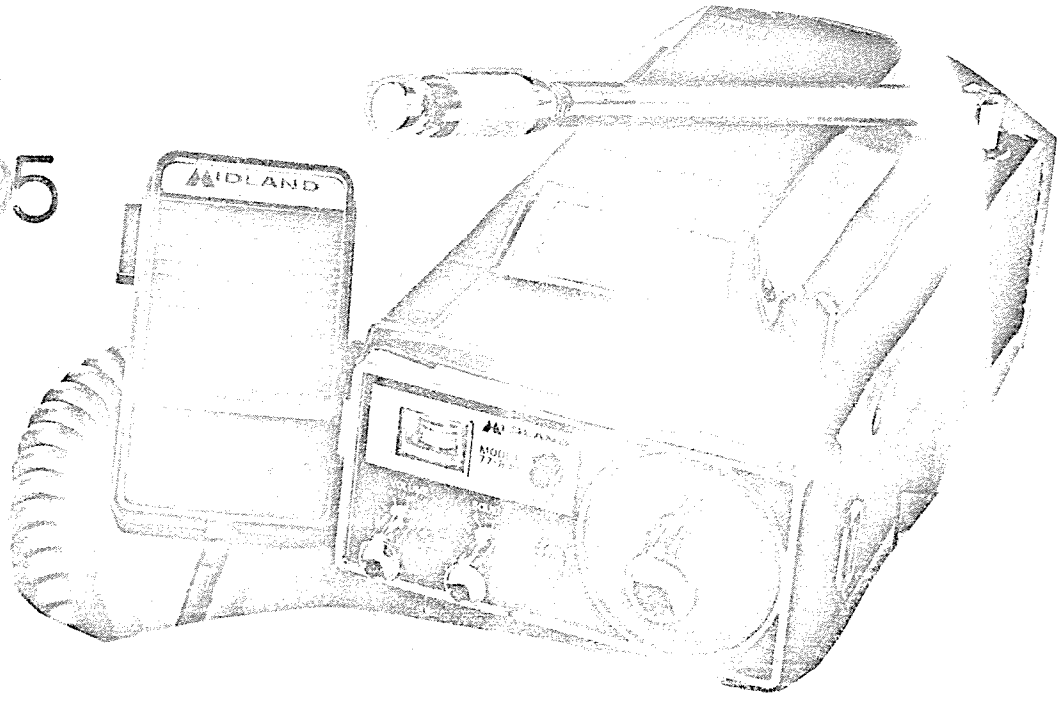
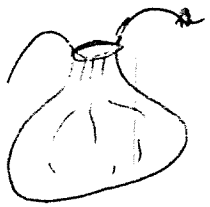


Mailbag



Dear Claud,

Thanks much for your February issue of the Orbital Report Review . I enjoyed reading it, and am always glad to find that a new group is publishing a newletter. I edited and published ECHOES for the Eau Claire High Orbiters #367 when I was in Eau Claire, Wi., and know how much work and effort goes into putting a good newsletter together on a regular basis, Keep up the good work!

I'm the NARs Membership Committee Chairman, and therefore always anxious to hear any new ideas about how we can boost NAR membership. If your group comes up with any ideas please pass them on to me.

I especially enjoyed your article on the Rocket Computer. Will you be running more articles on electronic projects for model rocketry? I hope so, as there has been a decided lack of electronic and other technical topic discussions amoung Modroc publication for some time now.

I hope to publish a new newsletter here in Oregon when I get a section started out here, so I'd like to keep receiving yours until we start publishing. Hope you like my Tips and Techniques Articles in Model Rocketeer. If your people have any requests or comments on these articles please let me know. I'm always auxious to do a better job.

Note new address:
Bruce Carey
29950 SW Montebello Dr (apt 3)
Wilsonville, OR 97070

(Ed Note: Bruce, glad to hear from you about the Orbital Report. As I am sure you know it helps to know how others feel about a project that you do. Yes there will be more articles about electronic projects. In fact I am working on one now, but it has been delayed since I am getting ready to go to WIScon-2 and have just taken over NARTREK BASE. I am also working on getting rocketry in the 4-H program here, I will be glad when summer gets here as I can then get on with some of the rocketry projects, since school will be out - my students will be glad too! .... I think that the articles that you are writing in the MR are great and needed. Many times we forget about the new member and don't give him enough information on how to do things...We forget about how it was when we started and the problems that we had, and assume that they may already know. New members don't always ask. Keep those article coming in the Model Rocketeer Bruce...It also helps those of us that have been at this for a time. Thanks)

THE FOLLOWING IS TAKEN FROM THE NEWSLETTER OF THE STARHAWKS MODROC CLUB, TARENTUM, PA

EDITOR'S DESK

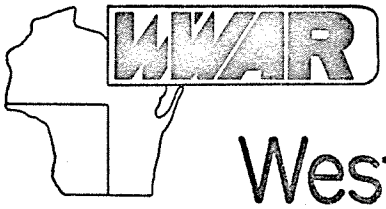
By: Frank Yenca, Jr.

I'm going to use this space this month to feature another excellent newsletter. We have been exchanging with The Orbital Report since January, 1979. First of all: Thanks to the editor, Claud Greenlee for the advertisement of this newsletter. The Orbital Report contains many well written, very good, variated, and informative articles. For instance, in the February issue, this very fine newsletter included Profiles of Kevin G. Barkes and Tom Hoelle, some letters, an NAR insurance comment, a part list for a rocket computer, "Lunar Sample Education Project", and many other articles. The most interesting fact is that this newsletter comes from a club younger than the Starhawks.

(Ed Note: Thanks Frank for the kind words about the Orbital Report. We try to use different articles and subjects, to keep our members up on whats going on. Glad you enjoy the newsletter. We here have enjoyed your newsletter and Frank it always happen, speaking of POSTMARK on page 2.....They get you every time! For those that want to know what I am talkin about..you'll have to get the Feb issue. See the ad's for their address.)

NARTREK IS FOR YOU - ARE YOU PART OF THE PROGRAM

The ORBITAL REPORT Entered in the Newsletter Contest at WIScon-2, Tomah, WI-March 31-April 1



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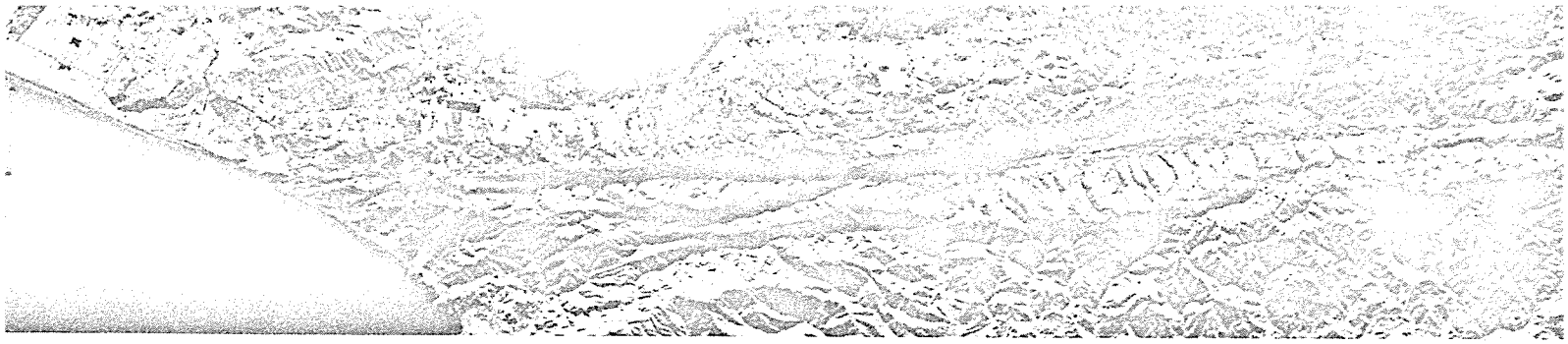


Airborne radar produces vivid images of Earth, as in this view of the San Francisco peninsula showing San Andreas Fault.

R/S Opens New Era of Information

R/S—a common abbreviation of Remote Sensing—is the technique of using instruments which can secure information about physical phenomena from a distance, with permanent records.

For decades, cameras have been flown in aircraft. Now, electronic sensors "see" more than the human eye and return new information; those in spacecraft "see" on a new global scale. Electronic sensors work like TV; signals can be processed into a picture which resembles a photograph but is called an image.

Electronic eyes have two advantages: (1) They can be designed to respond to any of the wavelengths in the electromagnetic spectrum. Earth is reflecting or radiating many more wavelengths than those called light. Vegetation, for instance, reflects strongly and characteristically in the infrared. The satellites designed to survey Earth resources, the Landsats, carry Multispectral Scanners for four of the most informative reflected wavelengths and two of them are in the infrared. Others are for red and green light. Landsat 3 also senses heat radiated from the ground. (2) Electronic sensors telemeter data to Earth in a form which can be stored on computer-compatible tape. And that is the secret of their success. "Data as it comes down is pretty useless," said one Landsat expert. It's what a computer can do with the data that produces such a range of useful information.

A computer can make light features lighter and dark ones darker, to enhance an image and sharpen detail. A computer can work out ratios among the sensed wavelengths and so tell an interpreter of an image which little streaks are roads, garbage dumps or strip mines. Images may be printed in an arbitrary choice of colors which act as a visual code to different elements.

Substitute ears overhead include receivers on many satellites which pick up beeps from instruments set out in wild and dangerous places to monitor environmental conditions. For instance, when tiltmeters in the throat of a volcano react to movement of the surface, their message is flashed via satellite to agencies which can issue warnings if necessary.

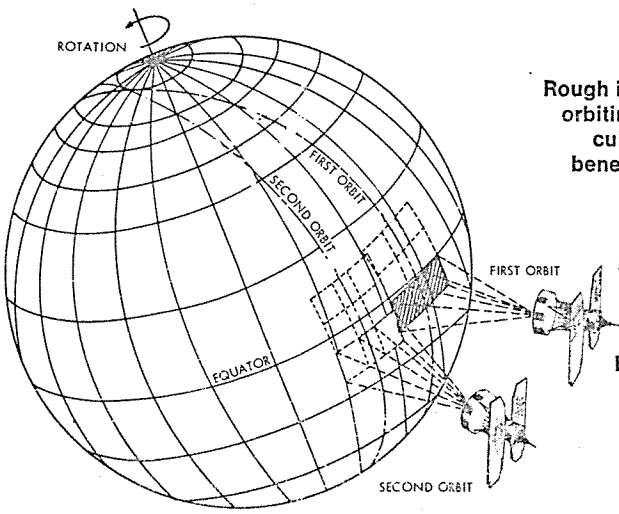
Radar is an electronic ear, in the sense that the system broadcasts microwaves and registers the pattern of the echo. Radar measures distance accurately, with the additional advantage of being able to work at night and through clouds.

The value of high altitude, undistorted images of Earth for map making is obvious, because inaccessible regions are as easily imaged as one's hometown. Brazil recently secured the first maps of the Amazon basin, made through jungle foliage by Side-Looking Airborne Radar (SLAR).

But even more valuable is the fact that dynamic processes on Earth's surface can now be followed as they develop. Each Landsat at 910 kilometers altitude returns an image of the same place every 18 days. The geosynchronous weather satellites at 35,000 kilometers altitude can be asked to send down their views of an entire hemisphere as often as every three minutes (as for tornado tracking).

Usually it's the geography teacher who arranges field trips for a class, comparing reality with maps, photographs and images. But many other studies make use of remotely sensed images, notably agriculture, forestry, pollution control, water resource management and economics. The World Bank routinely uses Landsat images in evalutions of proposals that concern land. Geologists scanning Earth for clues to untapped deposits of oil and gas find Landsat of significant value even though the sensors were planned primarily for agricultural work. Nearly 100 energy-related corporations recently formed The Geosat Committee. It has become an effective lobby urging that future spacecraft carry sensors of different wavelengths ideal for discriminating rock types.

Nearly 100 nations have cooperated with NASA on Landsat alone. Stations to receive, process and sell Landsat images are operating in other nations. Many developing countries learn about their natural resources for the first time from remotely sensed images, and see their place in larger ecological regions. Images from satellites are providing an objective basis for setting global priorities in matters of global environment and resources.



Rough indication of the way polar-orbiting satellites maintain a circular path while Earth rotates beneath, and the sensors "see" a different swath, to the west, on each revolution. Landsat's daily longitude shift at the equator is 1.43° or 159 km. Landsats circle Earth about 14 times daily and get global coverage between 81° latitude N and 81° S, in 251 revolutions (18 days). Then they start repeating the process.

GLOSSARY

SHUTTLE ERA TERMS

Airlock—Area that can be depressurized without affecting pressure in the crew compartment; used for transferring crew/equipment from cabin to cargo bay or space.

Atlas-Centaur class—Payloads weighing 1,800-2,000 kilograms, launched now on Atlas-Centaur boosters.

Azimuth—True launch heading measured clockwise from 0° N.

Barbecue mode—Orbiter in a slow roll for thermal conditioning (temperature control).

Dedicated flight—All orbiter facilities reserved for one purpose.

Delta class—Payloads weighing 900-1,100 kg, launched now on Delta boosters.

"Delta V"—Δ V, change of velocity: "The orbital maneuvering system (OMS) delta-V reserves are 6.7 m/sec and 12.8 m/sec for no-rendezvous and rendezvous, respectively."

External tank (ET)—Large tank for liquid propellants fed to an orbiter's three main engines during launch; it is to separate near orbital entry, fall, and disintegrate over a remote area of the Indian or South Pacific Ocean. There are proposals to load extra propellant necessary to carry it on up to orbit as a unit for a space station.

Extravehicular activity (EVA)—Work by space-suited crew members in the open cargo bay or in space.

Free-drift—Orbiting without powered control. Sketches at right show three attitudes relative to Earth.

Free-flying system—Any unit detached from the orbiter for independent operation in space. Examples: the Large Space Telescope, and the Long Duration Exposure Facility (LDEF); more on these in *Air & Space* later.

Gravity—The attraction exerted by masses on each other. An orbiter is not beyond the Earth's gravitational field, and so is not literally in zero-gravity (0-g). To orbit, a body requires sufficient velocity so that centrifugal force exactly balances the force of gravity. Any satellite is in a state of free-fall around its parent body. An orbiter, crew and payload experience *weightlessness*, not 0-g, from their free-fall.

Gravity gradient stabilized—An orbiter is most stable when always aligned with Earth's gravity.

Inclination—The angle between the plane of the orbit and the equatorial plane.

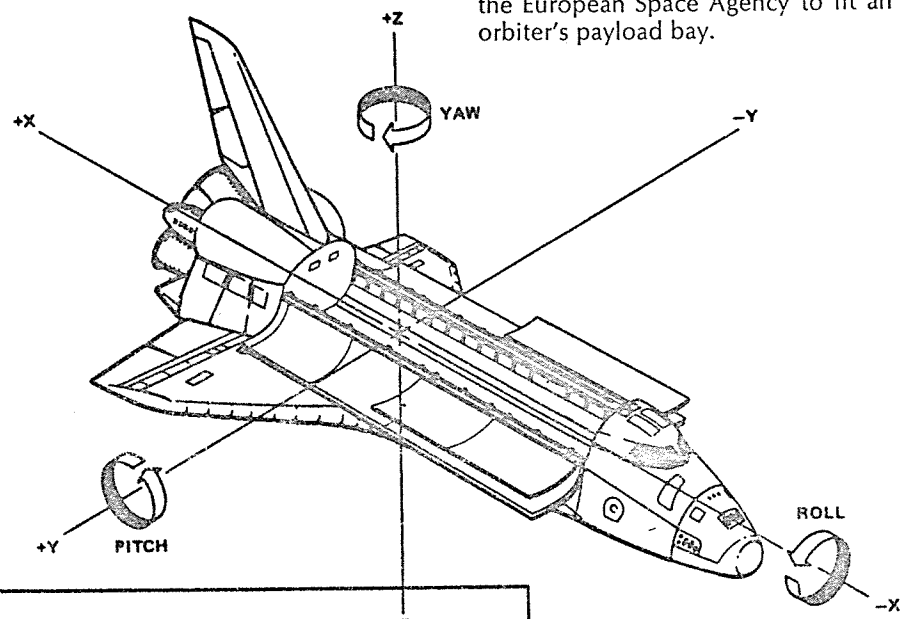
Ionosphere—The region of Earth's upper atmosphere where most orbiter flights will operate. Orbits may be in the E-region, the Heaviside-Kennelly layer (to 150 km); or in the F-region, the Appleton layer, at 150-400 km, the top of the ionosphere. With extra propellant and low-weight payloads, an orbiter can work in the Exosphere to altitudes of 1,200 km.

Inertial Upper Stage (IUS)—A solid propellant engine carried to low-Earth-orbit with a satellite which it then drives to higher orbits than the Shuttle system can reach.

Remote manipulator system (RMS)—Mechanical arm mounted on one side of the cargo bay, controlled from the orbiter aft flight deck, to deploy, retrieve or move payloads (pictures in *Air & Space* for March).

Solid rocket boosters (SRB)—The two solid-propellant rocket motors used during launch to augment thrust from the Space Shuttle Main Engines. These drop off at about 50 km altitude, parachute into the ocean, are recovered by ship and reused up to 10 times.

Spacelab—A general-purpose, variable-format orbiting laboratory built by the European Space Agency to fit an orbiter's payload bay.



Flight mode		
Gravity gradient stabilized	Y-POP, X-nadir	
	Z-POP, X-nadir	
Quasi-inertial (selected inertial attitude/attitude rate	Y-POP	
	Z-POP	

X, Y and Z mark Orbiter axes. Sketches at left show which axis is perpendicular-to-the-orbit-plane (POP, the circles) in orientations toward Earth. When gravity-stabilized, an orbiter's nose always faces Earth. When drifting quasi-inertial, the same surface always faces the Sun, useful to keep heat radiators on top out of direct sunlight.

Mission—A coherent set of investigations or operations in space. A single mission might require more than one flight, or several missions may be accomplished on one flight.

Orbital maneuvering system (OMS)—38 main thrusters and 6 small vernier thrusters used to maneuver an orbiter into different orbits; to rendezvous with a satellite, as for repair or to bring it back to Earth; to maintain a certain attitude; and to deorbit for return to Earth.

Space Shuttle Main Engine (SSME)—A cluster of three built into an orbiter will burn liquid hydrogen and liquid oxygen from the external tank for the main thrust of launch.

Spinning Solid Upper Stage (SSUS)—See IUS; another type of engine to propel satellites into orbits higher than that of an orbiter.

Vernier thruster—Small rocket motor for fine adjustment of velocity or trajectory of an orbiter and other spacecraft.

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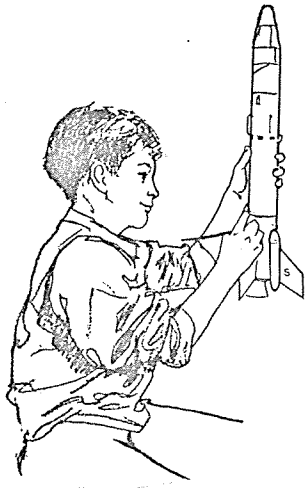

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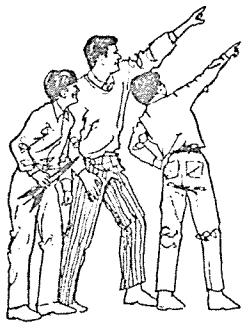

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Remote Sensing: New Colorful Textbooks and Aids

Introduction to the Remote Sensing of the Environment, chapters by college professors of geography, edited by Benjamin F. Richason, Jr., chairman, Department of Geography, Carroll College. Hard cover, 7½ by 9½ in., 496 pp., illus., index, 1978. Kendall/Hunt Publishing Co., 2460 Kerper Blvd., Dubuque, Iowa 52001, $27.50. Laboratory Manual, $10.95.

Remote Sensing and the Earth, Craig A. Brosius, science teacher; Janette C. Gervin, physicist, and James M. Ragusa, chief, Earth Resources Operations and Analysis, NASA Kennedy Space Center. Paperback, 8½ by 11 in., 472 pp., illus., 1977. Teaching guides after each chapter for secondary school usage. Published by the School Board of Brevard County, Instructional Services Division, Project Remote Sensing, 1274 S. Florida Ave., Rockledge, Florida 32955, $9.74.

Everyone's Space Handbook, A Photo/Imagery Source Manual by Dick Kroeck, an engineer managing the data operations of the Airborne Instrumentation Research Project, NASA Ames Research Center. Paperback, 5½ by 8½ in., 175 pp., illus., 1976. Nearly half the book is given to data on 118 sources of aerial and spacecraft images, usually low priced. Also, he notes that some 3,000 county offices of the U.S. Department of Agriculture have access to aerial photos of their counties. Published by Pilot Rock, Inc., Box ZZ, Arcata, California 95521. $6 to December 1, 1978, $9.95 thereafter.

RSEMS (Remote Sensing of the Electro-Magnetic Spectrum), a monthly. Articles on interpretation instruction can be modified for elementary and secondary levels. From Donald Rundquist, Department of Geography-Geology University of Nebraska, Omaha, Nebraska 68101, $3 yearly to individuals.

Journal of Geography, eight/year. Articles frequently describe field trips. Subscribers automatically become members of the National Council for Geographic Education, University of Houston, Houston, Texas 77004. Inquire about schedule of dues.

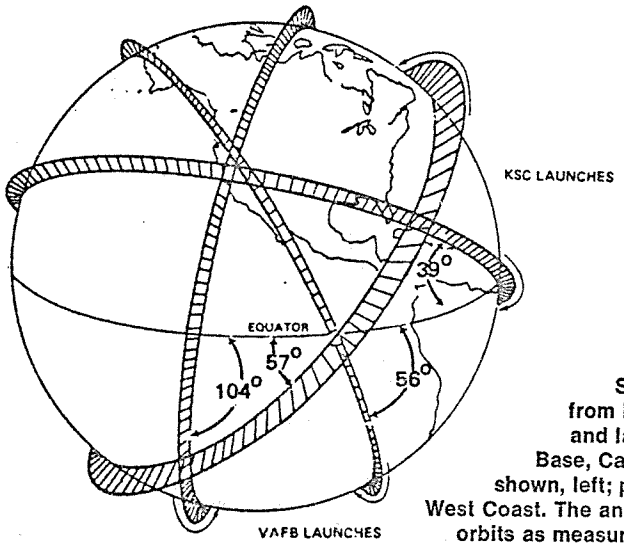
A Practical Guide to the Use of Space and Aerial Photography in the Elementary and Secondary Classroom, Donna B. Hankins. Paperback, 8½ by 11 in., 19 pp. of text, 18 slides and pockets for two local views to be secured independently. 1976. Pilot Rock, Inc., Box ZZ, Arcata, California 95521, $13.00.

Geological Remote Sensing from Space, F. B. Henderson III, G. A. Swann, Eds. Paperback, 8½ by 11 in., 60 pp., diagrams. Technical. Limited number of copies free from The Geosat Committee, Inc., 690 Market St., San Francisco, California 94104.

Mission to Earth: Landsat Views the World, by Nicholas M. Short, Paul D. Lowman, Jr., Stanley C. Freden, William A. Finch, Jr. Hard cover, 10½ by 14 in., 459 pp., glossary, index. An atlas of 400 spectacular color views of worldwide sites, with geologic, geographical, environmental data in captions; description of Landsat operation. NASA SP-360, 1976, Government Printing Office, Washington, DC 20402, Stock No. 033-000-00659-4, $14.

The Expanding Domain of Human Occupation

Until the Wright brothers showed how to sustain controlled flight, in 1903, people's work had always been limited to Earth's surface. Now, aircraft swarm through the atmosphere above that surface, adding a useful shell 10 to 15 kilometers wide all around this world. Next, as Edwards Park of the *Smithsonian* magazine noted, the Space Transportation System (STS) will suddenly enlarge the shell to a width of 260 km. In the STS operation, Shuttle orbiters will be launched on regular schedule into space. Sometimes, orbiters may circle Earth just outside the atmosphere (which begins to offer serious drag at about 122 km) or swing far out on elliptical paths, according to the work to be done. But typically, orbiters will carry astronauts and experimenters around in a circle at about 260 km altitude. Among the jobs will be unloading permanent satellites, usually with their own rocket motors to push them to higher altitudes. Already, space between Earth and geosynchronous altitude (35,700 km) is populated with dozens of working satellites from many nations, actually extending Earth's presently unmanned but constantly used shell to a width of 35,700 km.



Shuttle orbiters will be launched from Kennedy Space Center, Florida, and later from Vandenberg Air Force Base, California. The resulting paths are shown, left; polar orbits will originate on the West Coast. The angle-degrees show inclination of orbits as measured clockwise from the equator.

Below, astronaut John W. Young, commander of the first Space Shuttle flight, tries a new type pressure garment designed for both men and women of future Shuttle crews.

Will life adapt

to the high frontier? The orbiters' living quarters will have a breathable atmosphere, familiar pressure and temperatures. When astronauts work outside on Extravehicular Activity (EVA), they go encased in life-supporting suits (photo at right). But weightlessness always prevails. "Is it a nice, dreamy feeling?" a student asked this publication.

Maybe dreamy with disorientation, but not always nice. So far, astronauts have been intensively trained men of strong discipline and pride, not readily admitting that any of them may have been sick and nauseated. (Soviet literature about cosmonauts is much more vivid.) With ingenious instruments, physicians carefully monitored astronauts in space and learned a great deal about calcium drain, redistribution of blood, deterioration of muscle, and such. After all, through the eons, Earth life has never experienced anything but the downward pull of gravity which for Earth is termed "1 g." In space, suddenly all systems are adrift. Astronauts have shown some signs of beginning to adapt to weightlessness; the longer they stay in space, the longer it takes to readapt to Earth's 1-g.

What will change

when the Shuttle system begins providing regular service to space?

The costs of getting there will drop. The costs of building a satellite will drop. Now, satellites are often multi-million-dollar investments, with redundant systems and extraordinary technology because a failure in space is an irrevocable loss. Of the few lost so far, most could be termed cases of "infant mortality"—failures during launch or soon after reaching orbit. When put up in the cargo bay of a Shuttle orbiter, however, the unit can be checked by astronauts before it is unloaded into space. If some element should fail later, another orbiter can rendezvous; astronauts can make repairs or stow the thing in the cargo bay for return to Earth.

At last, scientists will be able simply to pick up their regular laboratory equipment and carry it along to space. No longer will instruments need to be redesigned in miniature, provided with recorders or transmitters, and cushioned against the drastic vibrations typical of launches so far. (Shuttle launch is gentle.)

TIPS FOR YOU :

Parachute Storage can be handled in many ways, One way that I have done, which keeps the chute in great shape is to use the coin wappers from the bank. Most banks will give them to you at no charge.
Another way to store parachutes is with body tubes that may be to short for other use.
And then there is the plastic coin tubes. These give you something that can be used if you need greater protection for the chute. They come in all sizes and can be gotten at most coin dealers.

....

Need some Micro-clips - get them from Radio Shack for 12 for 99¢. They are made of copper and work really great.

....

Need balsa, but it cost more than you really want to pay...Some hobby shops have a scrap bag of balsa wood of different sizes. The Railfun Hobby of Covington, In. has these bags and sales them for just $1.85 plus tax. It is a good buy and gives you a good assortment of different sizes.....see them if you need balsa.

....
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
....

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Persons under 14 years can not participate in FAI World Championships but are eligible to set FAI Records.

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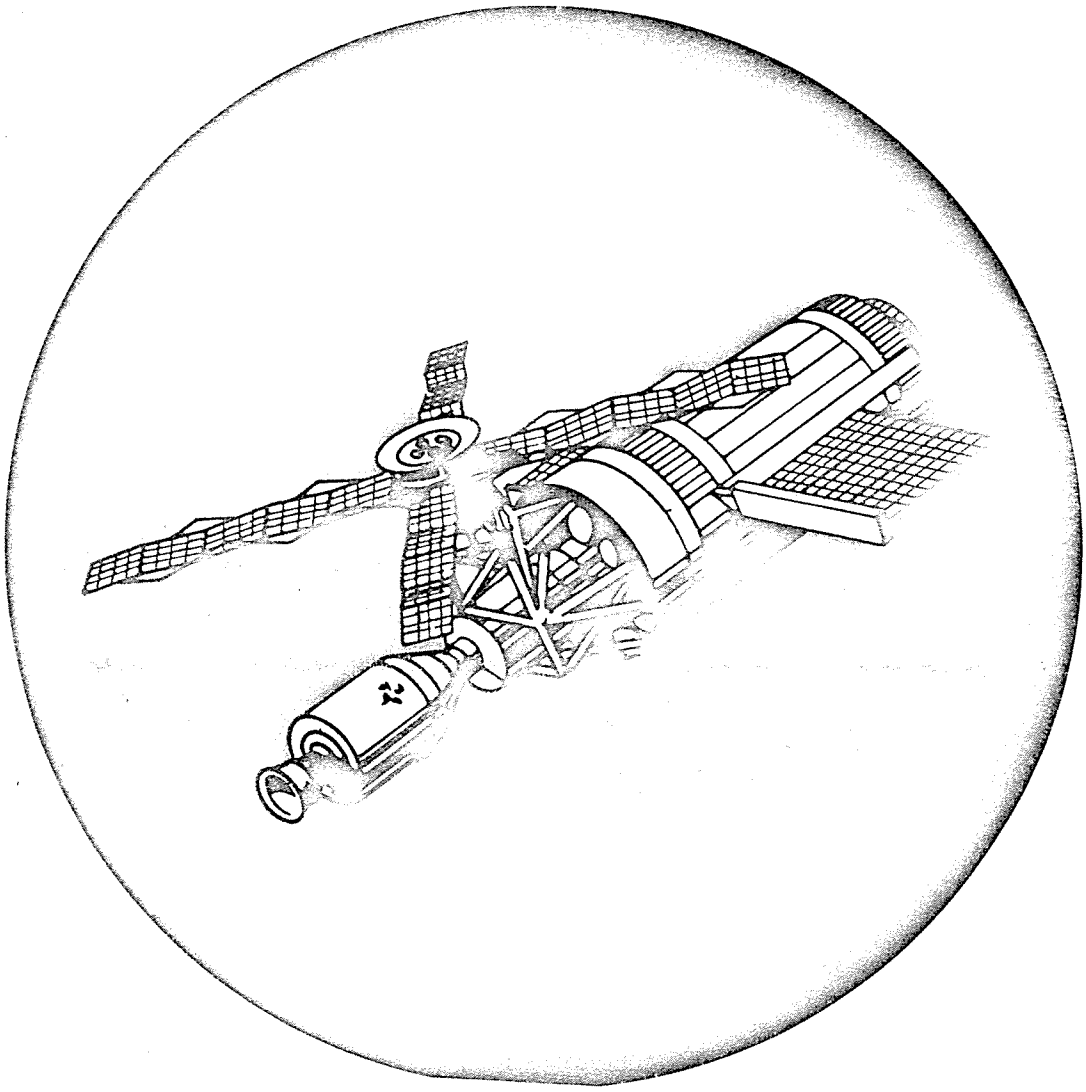
Sky Lab to Die - by Mr "G"



The death of the Sky Lab Craft is one of the things that I feel should not happen, but nothing can be done as of now because the plans for the Space Shuttle to carry a single stage engine to the craft has been Cancelled.

It was a simple idea, put the engine on the Sky Lab and then boost it to a higher orbit. At a meeting that I was at, with NASA personnel, it was told to us of just how they would do it and thus save the Sky Lab for future use in studying space.

The Space Shuttle was designed for missions like this, and the amount of money that would have been saved, would more than pay for the mission. As to why it is not going to be done, it was simply stated that there was not enough time. I can't see that, mainly because at that meeting, they talked about how it was already planned for the flight and even gave the flight number. There must be more than just time - Could it be money ? But how much could be saved by saving Sky Lab ? I get tired of seeing things that can still be used, placed on the dump and then replaced with a new one which cost twice as much or even more... But within the year Sky Lab will be History as it will Go Out Blazing Towards The Planet Earth From Which It Came... Goodby and Thanks for Your Part in the Exploration of Space... May You Rest In Peace.

MODEL ROCKET KITS FOR SALE

For those of you who like to shop for rocket kits, well here is your chance to get some kits at a lower cost.

If you are interested, see Jeff Clark or write to him at P.O. Box 206 RR 1, Covington, Indiana 47932. If you write for any of these models, send a check for the amount of the kits plus $1.00 for postage and handling charge. Since there is a limited number of models, be sure to put your second or third choice. If the models are sold, Jeff will of course refund your check by return mail.

Number	Name of Kit	Manufacture	Price
1	QUASAR	CENTURI	$4.50
1	A-20 DEMON	ESTES	$6.00
1	BANDIT	ESTES	$5.00
1	MICRO PROBE (2-stage)	CENTURI	$3.00
1	CENTAUR (2-stage)	CENTURI	$3.50
2	CHUTER 2	CENTURI	$3.00 ea.
1	VISIBLE ASTRO	CENTURI	$3.50
1	MARAUDER (2-stage)	CENTURI	$3.50
1	MERCURY REDSTONE	ESTES	$5.00
1	TAURUS	CENTURI	$5.50
1	FARSIDE - X (3-stage)	ESTES	$4.50
1	ARCON	CENTURI	$3.00
1	SHRIKE (2-stage)	ESTES	$6.00
10	9in Nichrome Wire	CENTURI	.10 ea.

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GODDARD CONTEST

ROBERT H. (HUTCHINGS) GODDARD: "The Moon Man" as he was called most of his life, was indeed a man who brought us into the modern world of rockets. He saw the rocket as a means of getting to the moon and to other planets. He foresaw many of the space flights that have become a common idea, but in 1919, this would not have been true.

Goddard had a special tree, which was a cherry tree, in his back yard. Do any of you know why the cherry tree was an important part of his life? What part did Charles A. Lindbergh play in Goddards life? What did the Smithsonian Institution and the Daniel and Florence Guggenheim Foundation do for this man? What part did H.G. Wells play in this man's life? (see Ed's Note at bottom of page, there is a contest concerning these questions).

It is indeed a very interesting life, and one in which you can see just how hard it is for a man of vision to be a part of this world. After reading about him, I can see some of the same quailities in many of the NAR members that I have met. Maybe that is one of the reasons that YOU are in model rocketry, without knowing it, but I think that, if you have not already, should read the book about Goddard. After all he started this thing we call model rocketry. He also made it possible for you to have the knowledge of rocket flight.

The book is "THIS HIGH MAN"by Milton Lehman. It is the biography of Robert H. Goddard, and I believe that it is worth you time to read. It goes into the man, makes him flesh and blood, not just someone out there with a bunch of words about him, and not able to understand the man, himself.

If you have not read this book yet, than I would recommend that you do. I believe that you will find a part of yourself in it and maybe a better understanding of yourself and the man Goddard.

(Ed Note: In the above there are four questions that were asked. Can you answer them? The first person who send to the editor, at his address, all four answers, answered correctly will receive as a prize the rocket kit **centurion by centuri**

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

enter me in the GODDARD CONTEST

NAME ______________________ NAR NO. ________

ADDRESS ______________________________________

CITY ____________________ STATE _____ ZIP ________

answers

1) ______________________________________

2) ______________________________________

3) ______________________________________

4) ______________________________________

UP COMING EVENTS

March 31–April 1 WIScon-2, TOMAH, WISCONSIN

April 1 Need to register by this date for the 4-H rocket event

April 2 ALL PATCH DESIGNS ARE DUE ON THIS DAY_BE SURE MR G HAS YOURS

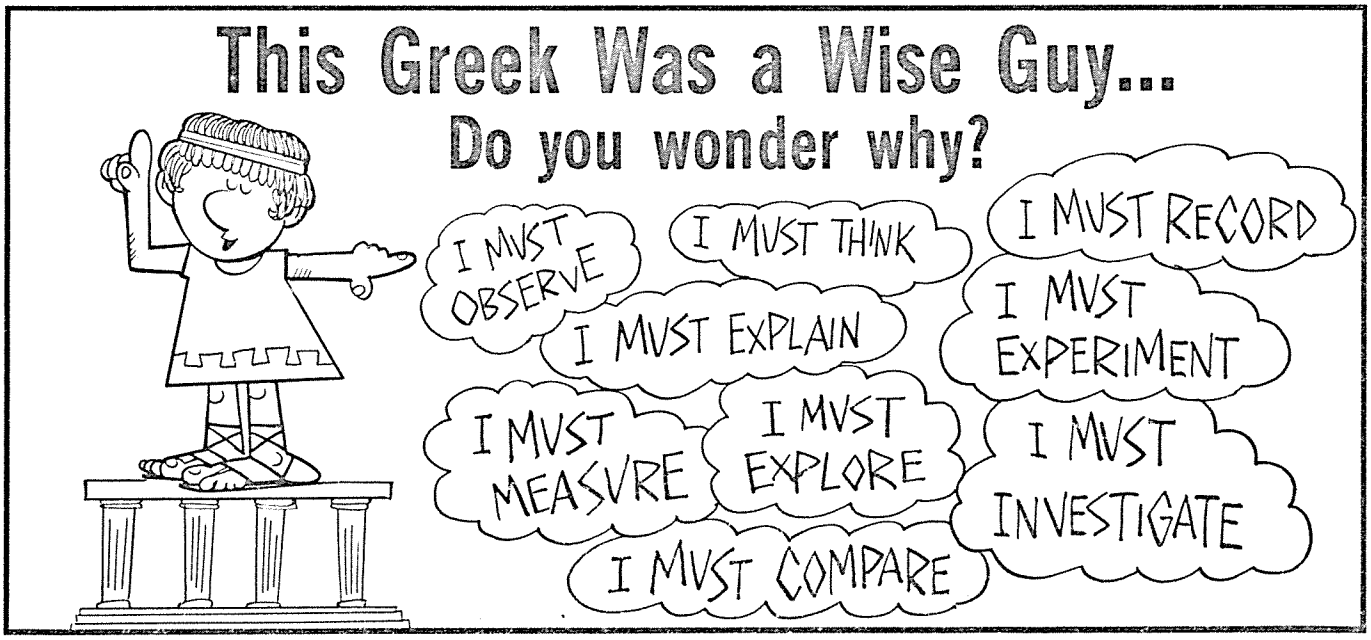
April 21 SECTION MEET - starting time 10am

May 25 YOU NAME THE EVENTS–CONTEST

June 5 SELF-DESIGN CONTEST and FLIGHT

July 4-H CONTEST

ALL MEETINGS DURING ACTIVITY PERIOD



Earth Watch

Seasat. After nearly a month of attempts to reestablish contact with Seasat, NASA's experimental oceanographic satellite, the mission was terminated in November 1978.

Seasat was launched on June 26 and contact with it was lost on its 1,502nd orbit of Earth on October 9th, when an unexplained short circuit drained all power from the batteries. Data collected during the spacecraft's 106-day lifetime will be processed, a task expected to take a year and a half.

Objectives of the Seasat program, a proof-of-concept mission, were threefold: To demonstrate techniques to monitor the Earth's oceanographic phenomena and features from space on a global scale; to provide oceanographic data in a timely fashion to scientists who study marine phenomena and those who use the oceans as a resource; and to determine the key features of an operational ocean monitoring system. A quick analysis of the Seasat-collected data indicates the first of the objectives will be largely met and the major part of each of the others.

Landsat. The Appalachian Regional Commission (ARC), a consortium of 13 states with the objective of building a better economy in the Appalachian Region, and NASA are cooperating in a project for the Landsat spacecraft to test and evaluate the use of Landsat data to identify high potential gas shale exploration areas in Appalachia's eastern Devonian Shale region. The NASA–ARC project is one of a series under NASA's Landsat Application Systems Verification and Transfer (ASVT) program.

Landsat spacecraft orbit at an altitude of about 917 km (560 mi), surveying the Earth's surface to obtain remotely-sensed data in various bands of the energy spectrum (visible and near infrared). The data is proving useful to a wide range of interests—agriculture, geology, forestry, mapping and charting, land use management. For the NASA–ARC project the Landsat data will detect and measure linear traces on Earth's surface that would denote possible underlying faults and fractures containing the natural gas.

TIROS N. The TIROS N third generation weather satellite was launched from the Western Test Range, CA, on October 13. From a near-perfect circular polar orbit 870 km (543 mi) by 860 km (537 mi) the newest weather satellite returned excellent quality data and pictures. The Advanced Very High Resolution Radiometer, Automatic Picture Transmission system, and the High Resolution Picture Transmission system were designed to provide local area coverage to hundreds of weather forecasters around the world.

After being checked out by NASA, TIROS N will be operated by the National Oceanic and Atmospheric Administration (NOAA). Potential benefits of this new environmental spacecraft are: improved weather analysis resulting in more accurate forecasts; more specific location of ocean currents and areas of upwelling, important to fishing and shipping interests; and more precise snowcover, snowmelt, and rainfall data, essential to water resource management and flood forecasting.

Nimbus 7. Eleven days later the seventh Nimbus spacecraft was successfully launched by a Delta rocket, also from the Western Test Range. This Nimbus is the first satellite to monitor the Earth's atmosphere for pollutants. Designed to provide continuous environmental data, it will help scientists determine the physical characteristics of the global atmosphere, the oceans, the atmosphere-ocean interface, and the Earth's heat balance, information vital to our understanding of climate, oceanography, atmospheric pollution, and regional and global weather patterns.

Where to Write for Services

NASA publications should be ordered from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. Publication lists, film lists, and information about other services are available from the Educational Office at the NASA center serving your state. See the list below.

NASA Ames Research Center
Moffet Field, California 94035
Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming

NASA Goddard Space Flight Center
Greenbelt, Maryland 20771
Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

NASA Lyndon B. Johnson Space Center
Houston, Texas 77058
Colorado, Kansas, Nebraska, New Mexico, N. Dakota, Oklahoma, S. Dakota, Texas

NASA John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
Florida, Georgia, Puerto Rico, Virgin Islands

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Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

NASA George C. Marshall Space Flight Center
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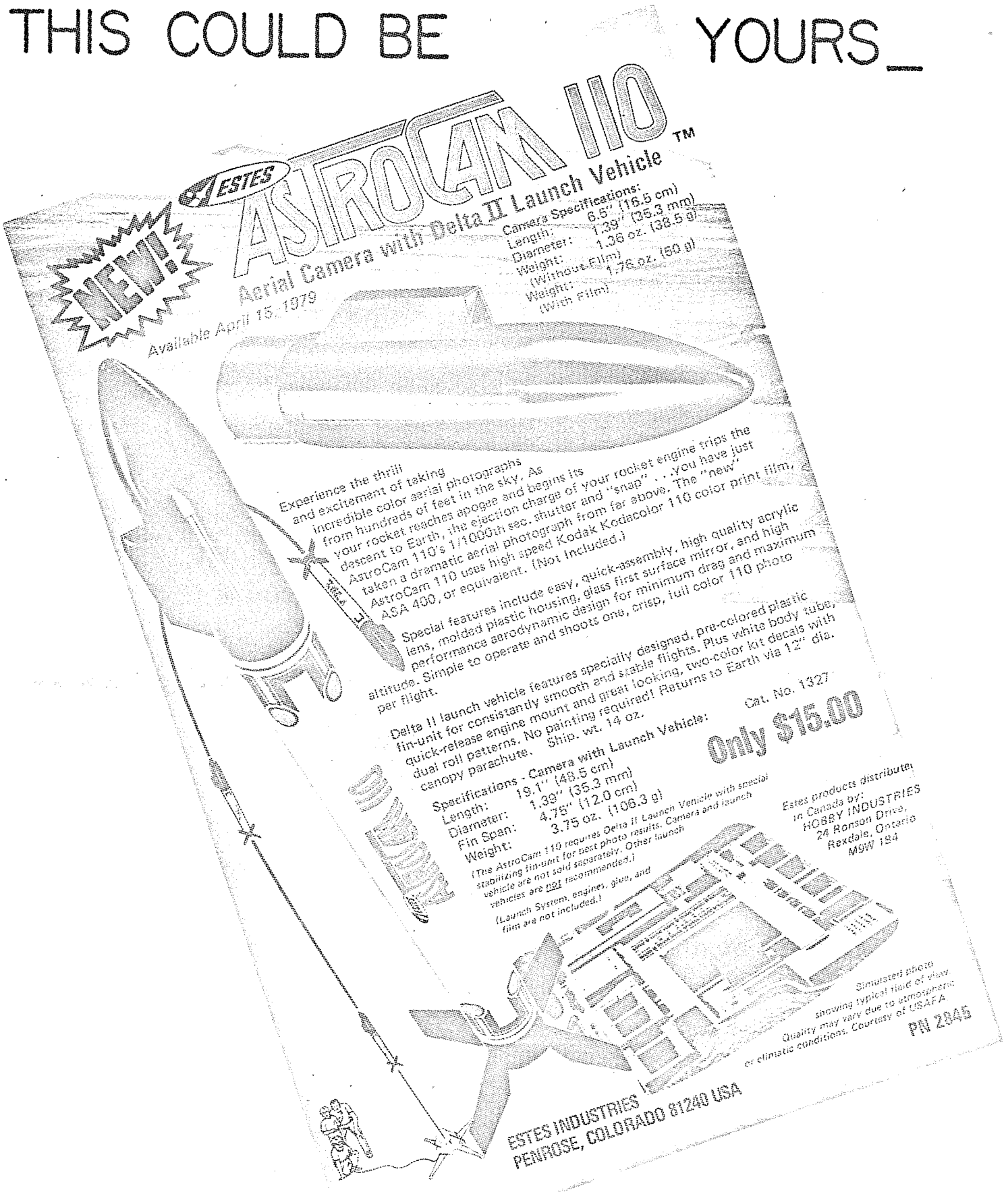
THIS COULD BE YOURS_



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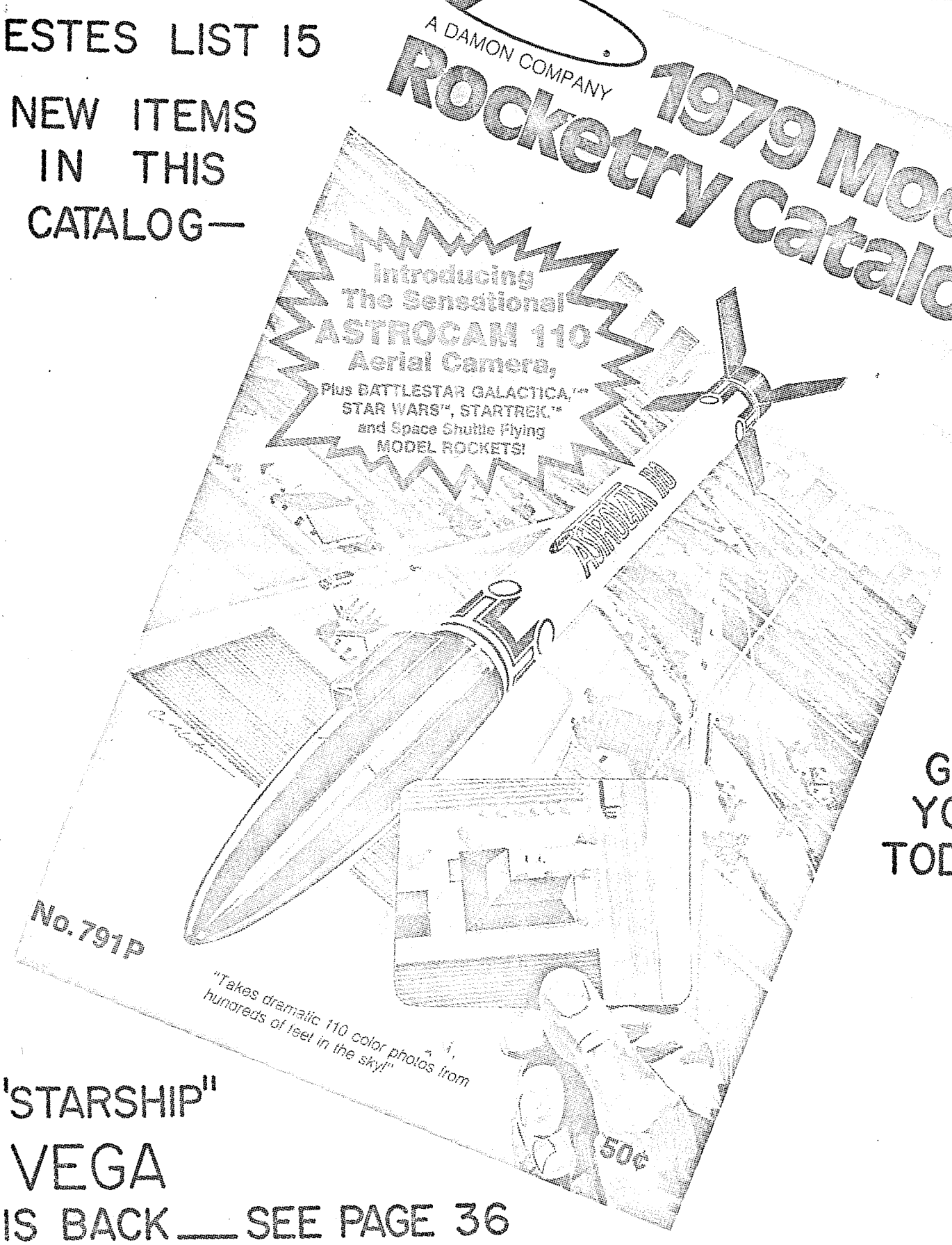

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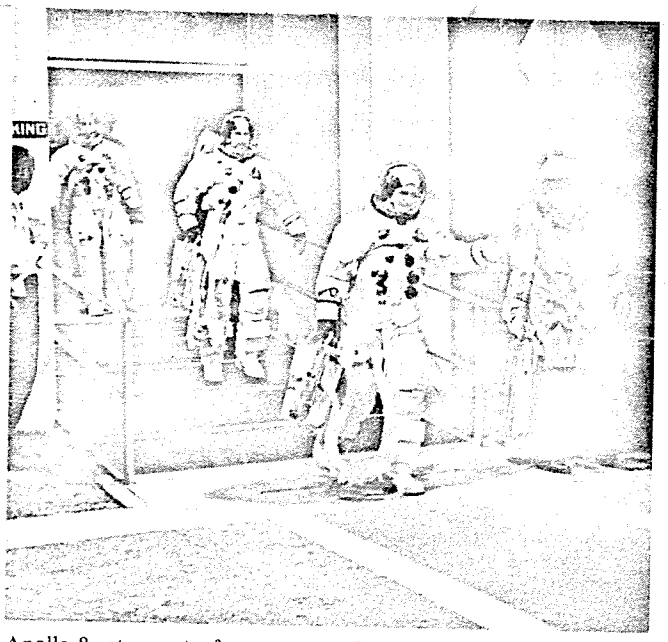
TAKING WORDS LITERALLY

"BOY...HE REALLY EATS MODEL ROCKETS UP!"

10th Anniversary of Apollo 8–Man Around the Moon

December 21–27, 1968. At 7:51 a.m. on December 21, the Apollo 8 voyage to the Moon began on schedule when the Saturn V launch vehicle lifted off from the Kennedy Space Center, Florida. Three astronauts—Spacecraft Commander Frank Borman, Command Module Pilot James A. Lovell, Jr., and Lunar Module Pilot William A. Anders—left Earth's environment and journeyed over 370,000 km (230,000 mi) out into space. Televised, spotlighted, acclaimed, from the familiar space center, Apollo 8 fulfilled yet another dream.

But this flight, the first voyage to another celestial body, was the accomplishment of many—the combined talents of scientists, engineers, and technicians. The first Saturn V to carry a manned spacecraft, Apollo 8's powerful engines burned for 11½ minutes to put the Command Service Module (CSM) into an Earth orbit 189 km high (118 mi); after all systems were checked, a five-minute burn of the Saturn's third stage motor sent the spacecraft toward the Moon at nearly 40,000 kmh (24,000 mph); near their destination, the crew braked the CSM into lunar orbit. Apollo 8 circled the Moon ten times. The crew photographed the Moon's surface, the Earth from a distance. At 1:10 a.m. Christmas Day the Service Module engine was fired again, boosting Apollo 8 out of lunar orbit and on its return journey. Just before reentering Earth's atmosphere, the Service Module was cast off, and the Command Module turned blunt end forward. This small remaining part of the large vehicle that left Earth six days before, landed safely in the Pacific Ocean on December 27, 147 hours and 11 seconds after lifting off.



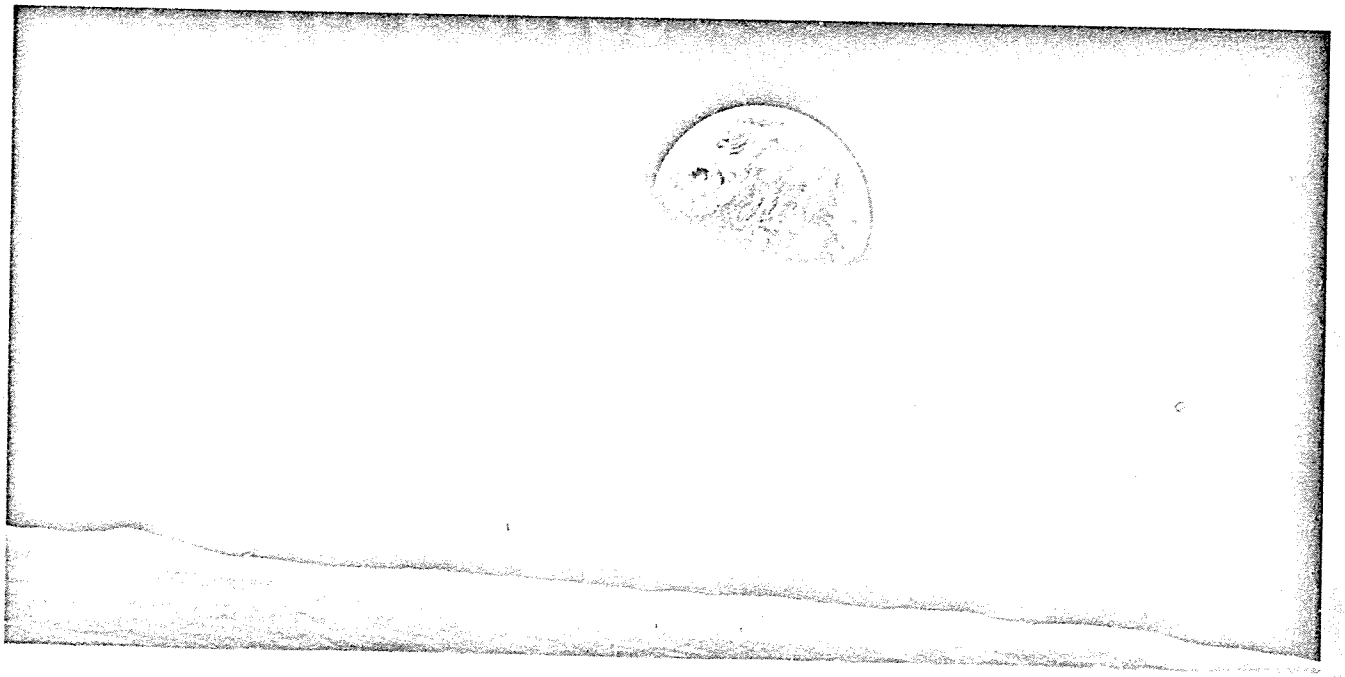
Apollo 8 astronauts, front-to-rear: Frank Borman, James Lovell, and William Anders, departing for the launch pad.

From launch to splashdown, the Apollo 8 mission proceeded with precision in its timing, planned flight path, and operational procedures—a cool description that belies the drama, the excitement, the awesomeness of the achievement.

Christmas 1968 brought the world a reading of the first verses of Genesis by the Apollo 8 crew in lunar orbit during a telecast December 24th, and an exquisite description of Earth by Astronaut Anders who likened our blue-green planet to "a fragile Christmas-tree ball which should be handled with care."

Poet Archibald MacLeish voiced another thought: ". . . To see the earth as it truly is, small and blue and beautiful in that eternal silence where it floats, is to see ourselves as riders on the earth together, brothers on that bright loveliness in the eternal cold—brothers who know they are truly brothers."

Apollo 8 view of Earth.



REMEMBERING "JEFF TANNER"

by GLENN GIBBS

a case of an unstable Rocket-

Jeff readying Mr G's ICARUS

To some of the new members, I write this article, because I am sure you will feel like I did about the safety rules that Mr G will harpson....

The rule that I am speaking about is not the Model Rocket Code. It is something that has been added for launching at the launch area. That is - To be standing, if you are within 100 feet of the launch and facing the launch. The rest of this story explains why this is important. And why we who have been in the club for awhile - remember Jeff Tanner.

Jeff really like to fly rockets and was one who also like to design his own. While he did well in both, there were times in which one wondered if Jeff knew how to build rockets. He had his problems, such as fins coming off, motor mount coming apart, etc. But the one time that a problem occured and I was goofing off, was when Jeff and Mr G were readying one of Jeff's self-design rockets and that is my story :

Unstable rockets will get people hurt and does not do to much for the rocket when it hit you or something else. When designing rockets, one should be sure that they know where the Center of Pressure and Center of Gravity is on the rocket, and if the rocket will "fly" right on paper. But even if it looks great on paper, it still may not fly correctly, always assume that it may not. Play it safe.

I remember a time that Jeff built a self-design rocket and brought it out to launch it for the first time. The rocket was checked and a launch was approved. The call went out that an untested rocket was being readied - everyone move back and face the launch pad. Well a couple of us decide to do some talking and moved back and sit down, not really worrying about the launch. Between us and the launch pad were several guys —— standing and facing toward the launch pad. Mr G again gave the warning about a self-design being launch and than came the count down. Well the rocket rose off, went about 14 or 15 feet in the air, a fin came off and the next thing, the rocket flip over and went wild. All of the people that were standing between me and the launch pad...Ran...right over me. I tried to get up, but kept getting knocked down. Just as I got up, the rocket landed in the ground right next to me. The engine was still going and than the parachute charge went off, while the rocket was stuck in the ground. No one was hurt, butit was shocking to me, because of the fact that we were not prepared for a rocket to go unstable. The moral to this story is: ALWAYS BE FACING THE LAUNCH, AND ASSUME THAT THE ROCKET MAY GO UNSTABLE, EVEN IF YOU HAVE FLOWN IT BEFORE.....PLAY SAFE ALWAYS WHEN LAUNCHING YOUR ROCKETS.

BUCK ROGERS NOT TO BE ON TV

BUCK ROGERS will not be on NBC-Tv as planned earlier. As usual, the network has decided to change its mind again. The mini-series, which was to air on TV has been changes to be released to the local theatrically in the spring by Universal Pictures. All other episodes have been put back in a file somewhere, maybe for use later. If the picture plays well than you might see it in a year or two on your local TV station, and than too, it might become a TV series....So for now, you "Buck Roger" fans, it is just not the time for your man of space on TV. Check with your local drive-in or sit-in theatrically building for the date and time it will play near you. Good Luck!

GOOD NEWS FOR NIMOY FANS

Leonard Nimoy (alas: Mr Spock of Star Trek) will be in the new remake of the "Invasion of the Body Snatchers" which was a classic science-fiction film of 50's. It is being released by United Artists and should be out before long. Look for it, you may enjoy it as much as the first. One thing for sure, Nimoy will be an added benifit to the movie.

Question: Do you know who wrote the novel "Invasion of the Body Snatchers" ?

Answer: Jack Finney

Question: Who played Clark Kent in the movie Superman? Who played Lois Lane and Perry White in the same movie?

Answer: Clark Kent-Chris Reeve; Lois Lane- Margot Kidder; and Perry White was Jackie Cooper.

DO YOU KNOW OF SOMEONE WHO LIKES MODEL ROCKETS AND IS NOT A MEMBER OF THE NAR, THAN HAVE HIM/HER TO FILL OUT THE FORM BELOW AND BRING THEM TO THE MEETINGS. ROCKETRY IS A FUN WAY TO MEET PEOPLE. HELP YOUR SECTION GROW.....

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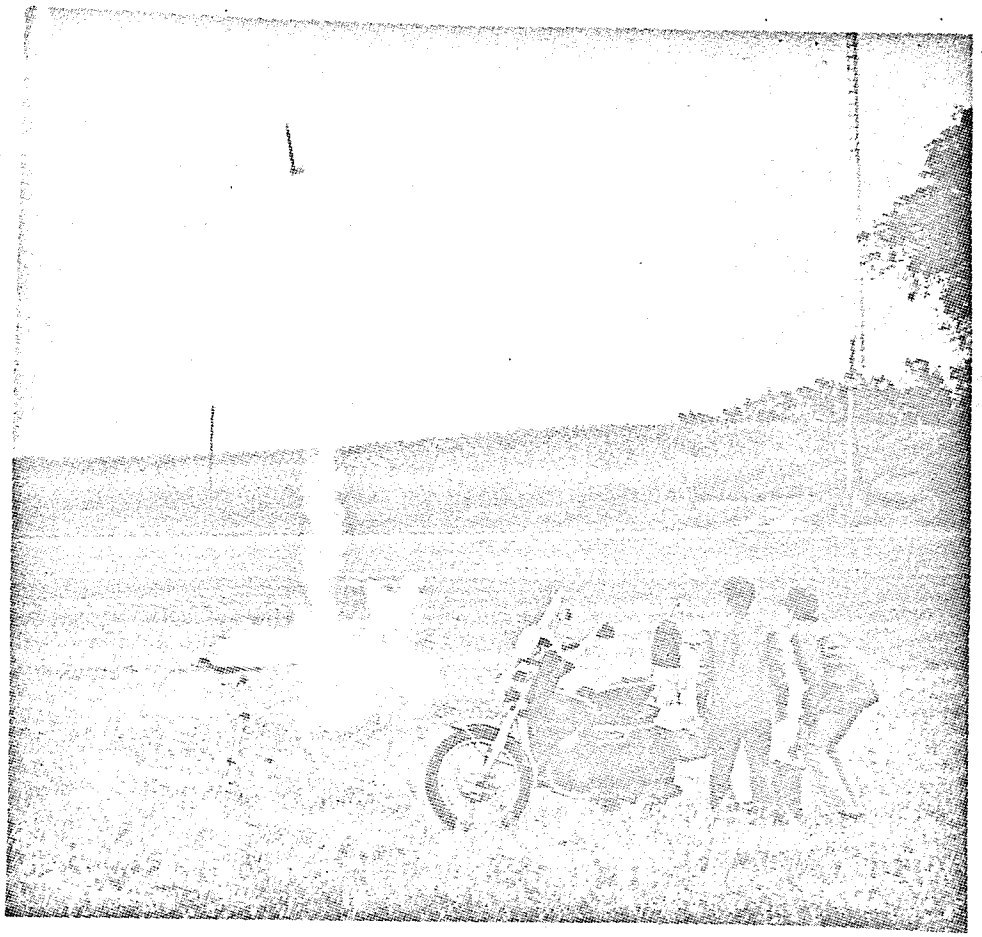
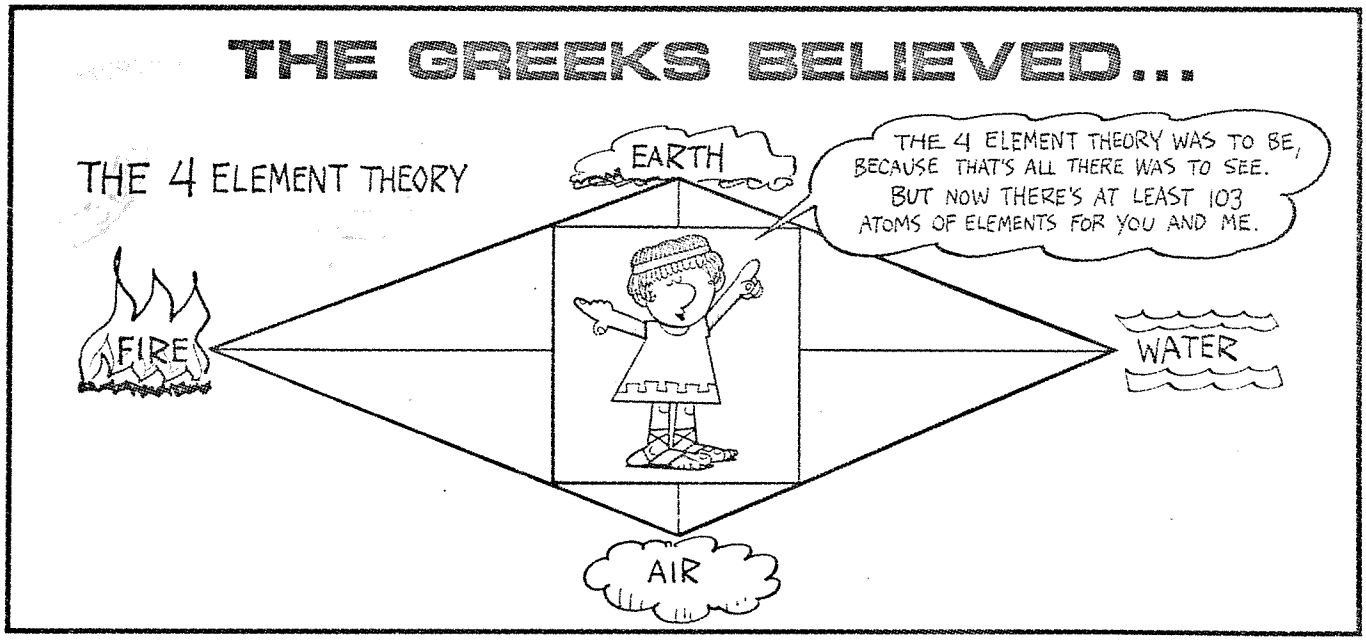
THOSE THAT ARE NOT ATTENDING WIScon-2, WE WILL SEND YOU A COPY, OR YOU CAN GET ONE FROM THE BRANCH OF DISTRIBUTION, U.S. GEOLOGICAL SURVEY OFFICE THAT SERVES YOUR AREA. IF YOU WANT US TO SEND YOU A COPY, SEND 50¢ in stamps to pay for the postage and envelope, to Mr G



SPRING IS AT—HAND ARE YOUR ROCKETS READY TO FLY ?

DEAN PERKINS AND ROGER SHAFFER LAUNCHING ONE OF THEIR ROCKETS INTO SPACE. SPRING IS ALMOST HERE....ARE YOU READY TO LAUNCH YOUR ROCKETS...APRIL CONTEST IS JUST AROUND THE CORNER.



Who Told Me Ptolemy Was Right?

ORBITAL REPORT STAFF

EDITOR: C.T. GREENLEE

WRITTERS: GLENN GIBBS, C.T. GREENLEE, MATT SWINGLE, & JEFF CLARK

PROFILE WRITTER: DORIS MAYER, NAR SECRETARY

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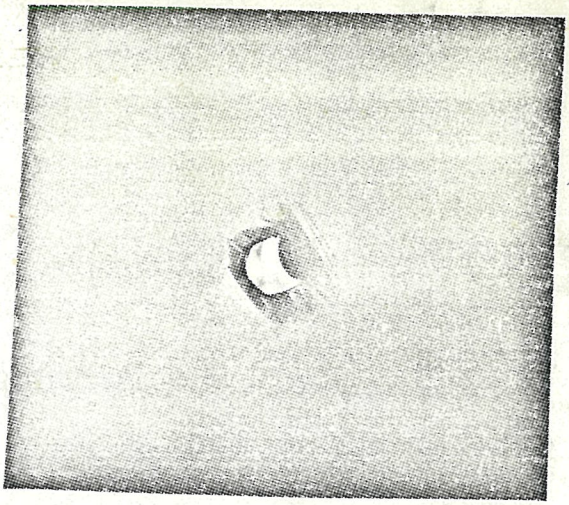
Page 12 taken from Air & Space, Jan-Feb 1979
Page 22 taken from NASA Report to Educators Vol. 6, No 4 Winter 1978



...AND SET DARKNESS UPON THY LAND, SAITH THE LORD GOD" (EZEKIEL 32:8)

PHOTO TAKEN BY JOHN GREEN

THIS IS HOW THE SUN LOOKED AS THE ECLIPSE STARTED. AT THE SCHOOL WE HAD SEVERAL STATIONS SET UP SO THAT STUDENTS COULD SEE THE PROGRESS AS PART OF THE SUN SLOWLY BECAME MORE LIKE A QUARTER MOON.

COVINGTON ORBITAL MOD ROC CLUB SECTION NO. 390

ORBITAL REPORT
30 LAKE TERRACE DR
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47933

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