

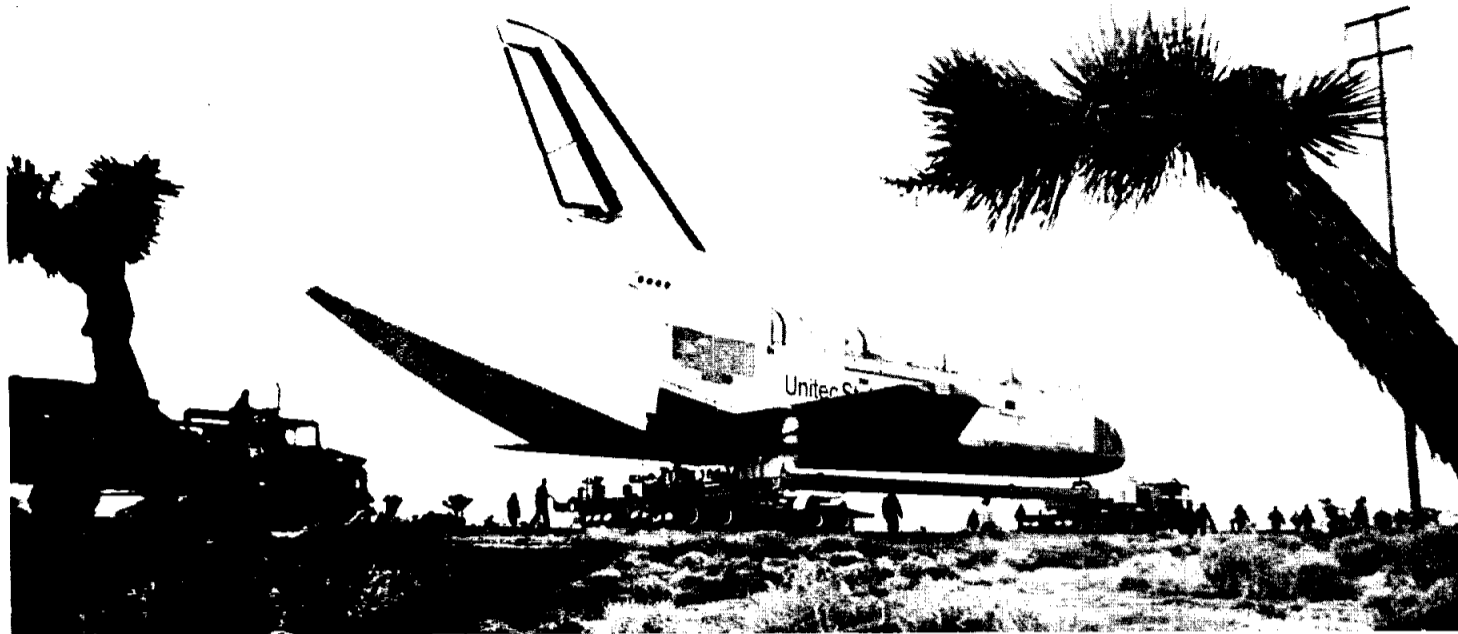
ROUNDUP

Lyndon B. Johnson
Space Center

NASA

March 23, 1979 Houston, Texas

Vol. 18, No. 6



Columbia at Palmdale on its 35-mile overland to Dryden

Columbia & 747 flying

*They wait only
on the weather*

At *Roundup* press time Wednesday morning, the orbiter Columbia is waiting at Biggs AFB, El Paso, for a break in the weather that will allow it to fly to San Antonio. There at Kelly AFB it will share a hangar with C5As and B52s until the March squall blows over, giving it free air space to Florida.

The Columbia successfully completed a test flight Tuesday morning, then was delayed from its ferry flight to Kennedy Space Center by rain in the California desert.

T-38s scouted out holes in the storms throughout the day Tuesday. They found a break and the orbiter took off on the back of its NASA 747 at 3:12 p.m. CST Tuesday, March 20.

Originally the ferry flight was scheduled for the weekend of March 10. During the test flight at Dryden Flight Research Center, temporary tiles and adhesive materials were damaged.

None of the orbiter's permanent tiles came loose. The temporary tiles had been applied to smooth air flow over permanent tiles at the edges where remaining tiles had not yet been bonded.

Workers at Kennedy Space Center are waiting for Columbia's arrival, to complete assembly of the spacecraft.

New tile adhesive methods and a dummy foam filler met criteria after T-38 aircraft flight tests on Sunday March 18. Columbia completed the 1st leg of its trip, and now awaits only on the weather.

Learn safety procedures KSC training courses in session

Red lights flash; an alarm goes off. The engineer heads directly for the loudspeaker mike: "Attention on the complex, there has been a major spill in the test cell." The scene cuts to workers applying gas masks and going through eyewash fountains and showers.

JSC employees who need to go to Cape Kennedy for "hands on" work before and during Shuttle missions must first take a 4-hour safety training course through the Employee Development Branch. The course takes 4 hours and contains slide shows and a 22-minute videotape with the scene described above.

At the Cape there are vats of hydraulic chemicals—hydrazine, nitrogen tetroxide. The safety course covers propellant loading procedures and questions like:

"What if a fuel leak occurs?"

"Learn the location of eyewash fountains and showers," the narrator explains. "Brightly striped lockers around the launch site contain gas masks."

"Eventually anybody who will need unescorted access to Kennedy facilities will need this course," John Rosales of Employee Development said.

After taking the training, employees go to the Cape to do a walkdown. They then qualify to apply for a badge.

The course was offered 6 times in March. The Branch will conduct the entire series again the second week in April and first week in May.

If anyone needs the course sooner on an emergency basis, he or she should contact John Rosales.

Cards and letters keep coming

Cards and letters of all kinds reach the JSC mailroom. Some are from school children wanting to learn about space, some are from adults who think they have made a break-through in some invention they want to share with NASA.

Then there are those citizens out there for whom reality and sci-fi have become intermixed.

A recent postcard asked, "Please, tell me the names of chemicals used in cloning (including controlled development, growth, etc.) and anything that would be of help in setting up an environmentally-safe cloning lab. HEW recommended that I contact NASA."

Thanks, HEW. We needed that!

Programs on Shuttle, payloads among plans for AIAA meet

Employees have an opportunity to go in-depth with their education on the Space Transportation System March 30 when the American Institute of Aeronautics and Astronautics presents its 4th Annual Technical Mini-Symposium.

There will be technical sessions, a banquet, and a featured speaker.

During the technical sessions, from 1:30 - 6 p.m., local aerospace workers will deliver papers with titles such as "Hybrid Electronics—In Pursuit of the State-of-the-Art"; "A Study of Final Rendezvous Trajectories as Applied to Shuttle Proximity Operations"; "Power Extension Package Solar Array Pointing Control System"; "The View Program"; "STS Payload Safety Program"; "Payloads of Opportunity." The list goes on.

A total of 45 papers will be delivered.

Featured speaker will be Professor Lewis Crabtree, President of the Royal Aeronautical Society in London. Professor Crabtree has been the Sir George White Professor of Aeronauti-

cal Engineering at University of Bristol since 1973.

The AIAA holds this symposium each year to let local aerospace professionals and associates report on their work to an audience of their peers. A major objective of the Mini-Symposium is to give young members of the AIAA a chance to present their work to a professional audience without the expense of travel, or the preparation required by meetings or other more formal settings.

Registration begins at the Gilruth Center Entrance Hall at 12:30: \$1 (Students free). The 9 technical sessions will last from 1:30 to 6. From 6 to 8 will be a social hour and banquet, followed by the banquet address by Crabtree.

For dinner reservations call Sadie Walker x-4788 or Paula Ashcraft 488-5660 x-201.

Reservation deadline is noon, March 27, and cancellations are required. All proceeds will go to "Project Enterprise," an AIAA special fund to be used primarily for getaway special Shuttle payloads.



IN THE HYPERBARIC TREATMENT FACILITY (recompression chamber) of Bldg. 32-A, 2 persons were treated for carbon monoxide poisoning in January. Manned Test Support workers pressurize the chamber to 3 atmospheres absolute, then using 100% oxygen, scrub the CO from the patients' blood cells and tissues. Above, Dr. C. K. LaPinta and Mike Fox care for patients; below, Bill Maas directs the operation from a recorder station

NEBA FACT

In 1759, the first life insurance company in the U.S., "The Corporation for Relief of Poor and Distressed Presbyterian Ministers and of the Poor and Distressed Widows

and Children of Presbyterian Ministers," was established in Philadelphia by the Synod of the Presbyterian Church. This company, now Presbyterian Minister's Fund, is the oldest life insurance company in the world.

Bulletin Board

Toastmasters Speech Contest

March 23 at the NASA 1 Holiday Inn there will be a Toastmasters Area Speech Contest. Cocktails at 6:30, dinner at 7, and the contest at 8. Tickets are \$8 advance, \$8.50 at the door. For more information, call Sharon Babb at 331-2431 or x-3287.

Be Your Own Boss

The Active Corps of Executives and the Small Business Administration will sponsor a workshop on the BASICS OF RUNNING A SMALL BUSINESS at North Harris County College, 2700 W. W. Thorne Dr., in the evening March 28 and 29. For further information, call 226-4945.



Saturday Afternoon Fever?

"The Big Night"

The EAA has arranged NASA night at Dean Goss Dinner Theatre, April 1. See *God Bless Mommie, Daddy, and Blue Cross*. Tickets go on sale March 21, and there are only 300. Doors open at 6, salad bar at 6:15, buffet at 7. The play begins at 8:30. Total price: \$8 per person.

Saturday Afternoon Fever

Adult Activities Head Ann Walker-Voss has been busy arranging adult events for the EAA picnic May 5. So far they include a 3-legged race, obstacle course, bingo, and a tennis tournament. In addition there will be equipment for softball, volleyball, horseshoes, etc. Adult tickets are \$3, and will be on sale at the Building 11 store starting April 2. All JSC and contractor employees are welcome.

On Sale at the JSC Exchange Store

Dean Goss tickets - \$10 single \$20 couple (Reg. \$14.50)
 ABC Theatre tickets - \$2 each
 General Cinema tickets - \$2.40 each
 Six Flags Over Texas tickets \$7.25 for one day (Reg. \$9.25) \$9.25 for two days (Reg. \$13.95)
 Magic Kingdom Cards - Free

Get Your Baskets Ready

The Easter Bunny and helpers are getting ready for the annual JSC-EAA Easter Egg Hunt, Saturday, March 31, at 10 a.m. at Gilruth Recreation Center. Tickets are now on sale at the Bldg. 11 Exchange store for \$1 each. The hunt is open to children of NASA and contractor personnel; ages for the hunt are two to eight years old. It won't take 300 kids long to find all the eggs, so be sure to arrive on time! In case of rain, eggs and goodies will be handed out from the Gilruth Center. Oh, yes it's BYOB (Bring Your Own Basket) again this year.

Kraft, Faget again honored for their work

The National Space Club will present its "premier aerospace award," the Dr. Robert H. Goddard Memorial Trophy, to **Christopher C. Kraft, Jr.**, Director of the Space Center.

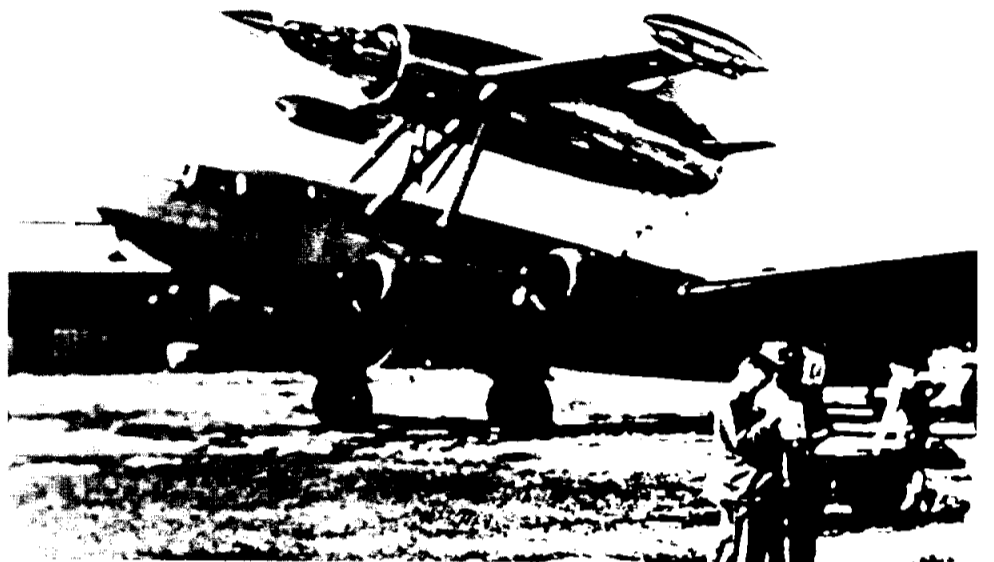
The citation reads: "For his outstanding role in manned space exploration and space transportation and especially for his critical role in every manned space flight mission from Mercury through Apollo-Soyuz and now on Space Shuttle."

The Center Director will receive the award March 30 at the Space Club's 22nd Annual Goddard Memorial Din-

ner in Washington, D.C.

Additional honors have gone to **Maxime A. Faget**, Director of Engineering and Development at the Space Center. Louisiana State University has elected Faget as a Charter Member of its Engineering Hall of Distinction.

The Dean of LSU's College of Engineering said, "Your outstanding professional record made you a unanimous choice of the Election Board," when notifying Faget of his election.



THE PIGGYBACK CONCEPT, used today to transport orbiters between Centers, was tried by the French in the years following WWII, to get their Leduc 010 up to the speed where its ram-jet engine would function. The first free flight was Oct. 12, 1947. Both prototypes were destroyed in the test program, and a follow-on Leduc 015 with 2 jet engines made 83 test flights. The program was abandoned in the 1950's because of lack of official support

Talk on how to talk with confidence to headline Women's Week May 1 - 4

Author-consultant Janet Stone will headline "a week of outstanding programs geared to both men and women" scheduled for Federal Women's Week, May 1-4.

Stone will speak on communications problems: self-defeating styles such as apologetic gestures, silence, and self-belittling language. In her presentation she demonstrates the subtle, often unconscious tactics that can lead to intimidated feelings and behavior.

Stone is director of Speaking Up, a consulting firm with offices in Boston and San Francisco, and co-author of *Speaking Up: A Book for Every Woman Who Wants to Speak Effectively*.

Programs planned for Federal Women's Week include workshops and other guest speakers, according to Sukie White of the JSC Federal Women's Pro-



ARISTOTLE
 ---ANCIENT GREEK---
 WOULD HAVE LEARNED A LOT FROM WOMEN'S WEEK

JSC - MAY 1-4 GILRUTH RECREATION CENTER

gram Committee. NASA, and contractor employees, their spouses, and members of the community can attend the sessions which will be at Gilruth Recreation Center.

Stone, who will speak on Wednesday May 2, has 7 years consulting experience specializing in 3 areas: fair employment, career development, and communications. She has co-produced prime-time TV specials, and was producer and moderator of a weekly talk show in Boston.

This year's theme for Women's Week is "Exploration," and the programs will cover "career decisions and the changing environment," White said. The week will kick-off with a luncheon at Gilruth Center May 1.

Keynote speaker and other details will be announced later.

Think Tank results are in

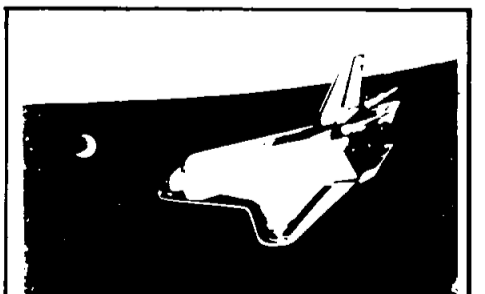
We sent you going in circles with the last Think Tank puzzle. 8 entrants sent complete answers: **Lee Norbraten, Lloyd Erickson, Ed Gibson, John W. Samouche, T. Moore & F. Elam, Don E. Rhoades, Andy Saulietis, and Frank Baiamonte.**

Honorable mention for the most imaginative location (on a drifting iceberg) goes to **Lee Norbraten.**

The obvious answer is the North Pole; however, consider the group of circles centered on the South Pole whose circumferences are 1 mile, 1/2 mile, 1/3 mile, etc. Point X could be located 1 mile north of any of these.

Going south from X, the man encounters the circle at Point Y, walks 1 mile east back to Y, then north along his initial path. If N in the number of times around the circle to make a mile, X must be $1 + \frac{1}{2\pi N}$ miles from the Pole.

Roundup deadline is the 1st Wednesday after publication.



The *Roundup* is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for JSC employees.

Writer/Editor: Kay Ebeling
 Photographer: A. "Pat" Patnesky

What's cookin' in the JSC cafeteria

Week of March 26 - 30

MONDAY: French Onion Soup; BBQ Sliced Beef; Parmesan Steak; Spare Rib w/kraut; Chili & Macaroni (Special); Ranch Style Beans; English Peas; Mustard Greens. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Split Pea Soup; Meatballs & Spaghetti; Liver & Onions; Baked Ham w/sauce; Corned Beef Hash (Special); Buttered Cabbage; Cream Style Corn; Whipped Potatoes.

WEDNESDAY: Cream of Tomato Soup; Cheese Enchiladas; Pork Steak w/dressing; Oven Crisp Flounder; BBQ Link (Special); Pinto Beans; Spanish Rice; Turnip Greens.

THURSDAY: Beef & Barley Soup; Roast Beef w/dressing; Fried Perch; Chopped Sirloin; Chicken Fried Steak (Special); Whipped Potatoes; Peas & Carrots; Buttered Squash.

FRIDAY: Seafood Gumbo; Fried Shrimp; Baked Fish; Beef Stroganoff; Fried Chicken (Special) Green Beans; Chopped Broccoli;

Week of April 2 - 6

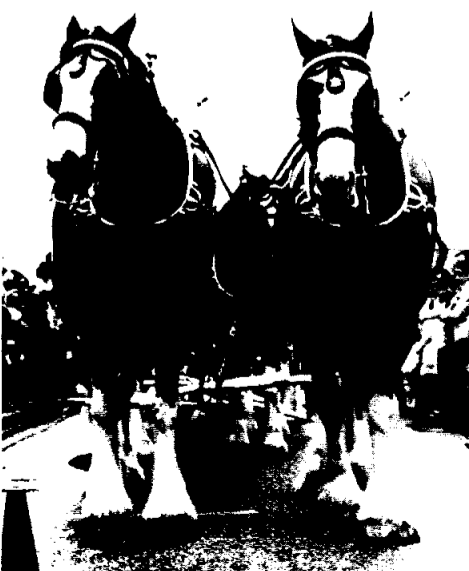
MONDAY: Cream of Potato Soup; Franks & Sauerkraut; Stuffed Pork Chop; Potato Baked Chicken; Meat Sauce & Spaghetti (Special); French Beans; Buttered Squash; Buttered Beans. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Navy Bean Soup; Beef Stew; Liver w/onions; Shrimp Creole; Smothered Steak w/dressing (Special); Corn; Cabbage; Peas.

WEDNESDAY: Clam Chowder; Roast Beef; Baked Perch; Chicken Pan Pie; Salmon Croquette (Special); Mustard Greens; Italian Beans; Sliced Beets.

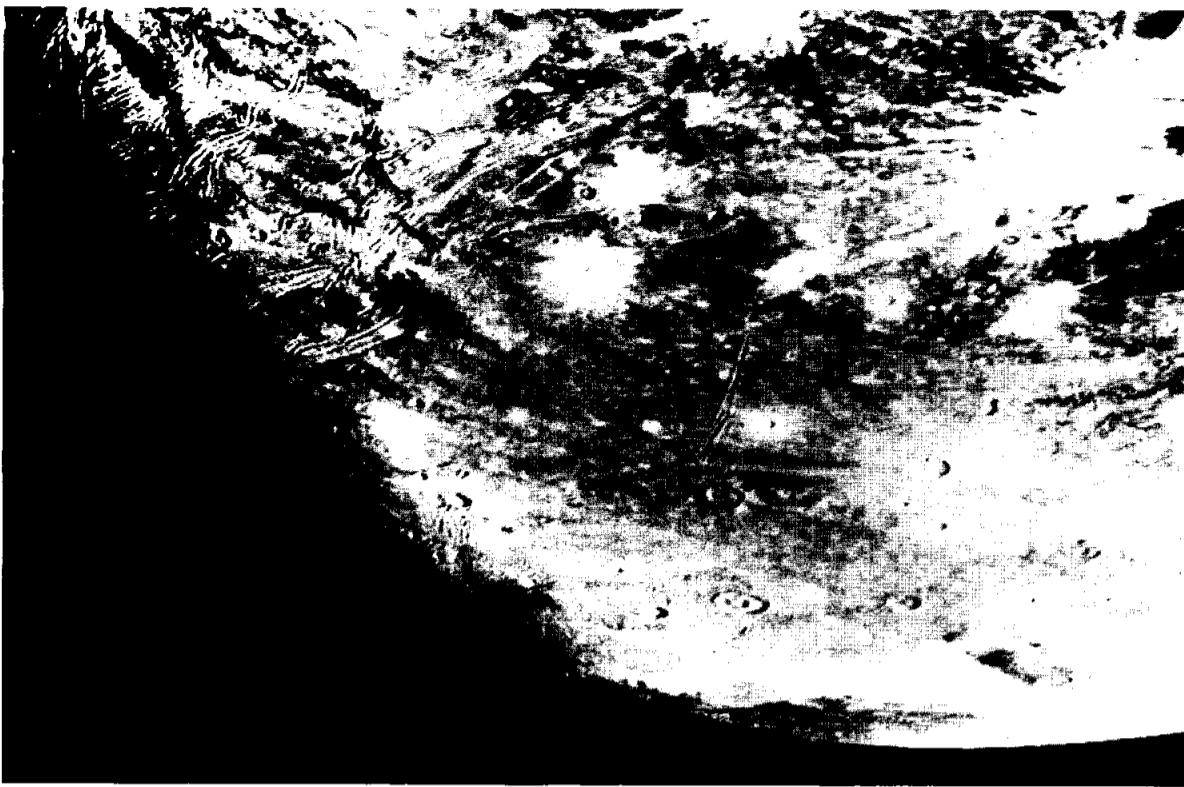
THURSDAY: Beef & Barley Soup; Beef Tacos; Pork Steak; Diced Ham w/lima beans; Stuffed Cabbage (Special); Ranch Style Beans; Brussels Sprouts; Lima Beans.

FRIDAY: Seafood Gumbo; Fried Shrimp; Deviled Crabs; Ham Steak; Salisbury Steak (Special); Carrots; Green Beans; June Peas.

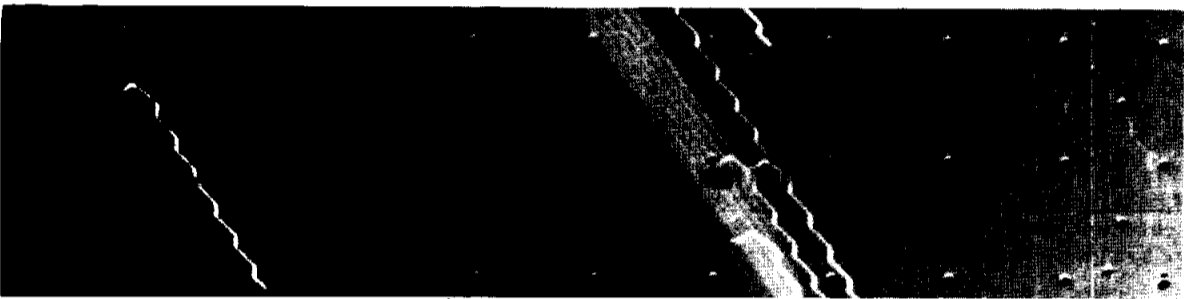


Clydesdale Team on site 3/22

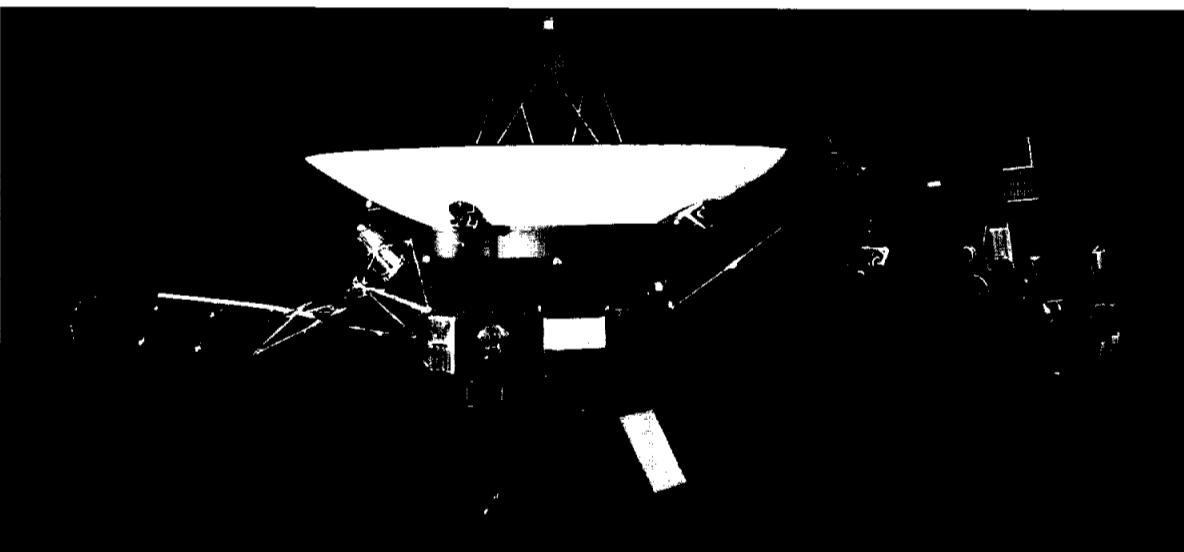
Voyager eyes new worlds



Callisto — complicated basins and ridges similar to Earth



1st evidence of a ring around Jupiter (multiple exposure)



Voyager — on its way now to Saturn



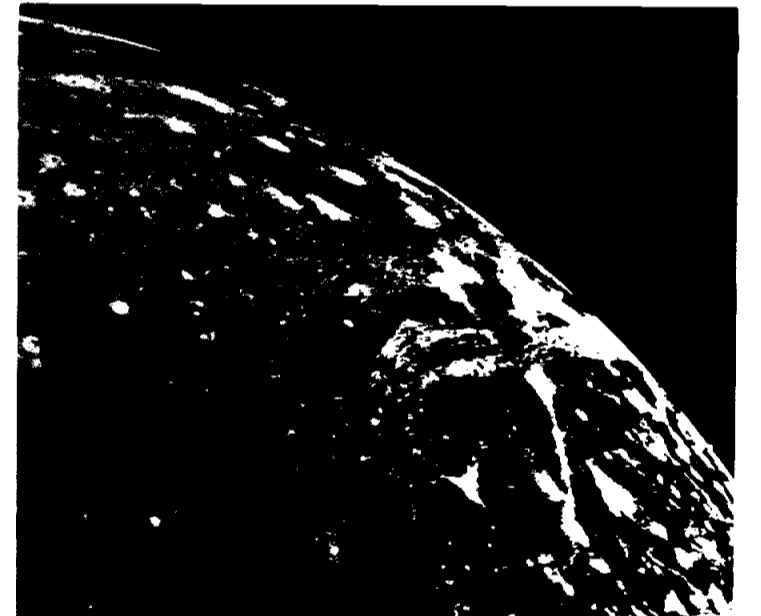
Jupiter from 52 million miles



Europa — bizarre bright and dark streaks



Amalthea on a 12-hour whizzing orbit



Ganymede impact craters and bright rays

—Exploring the Solar System—

Manned mission to Mars more feasible than it seems

(Editor's Note: Last fall the OMB projected "system definition" work for the next Mars mission as a new start for FY 1981 and 1982. Roundup asked astronaut Karl Henize to make a case for manned missions to Mars in the near future. His piece follows.)

The greatest mystery of Mars still remains: "Is there life there?" Viking was exciting. Even though it detected no organic molecules, it found large amounts of water, oxygen, and carbon dioxide—the prime requirements for life—and also a bizarre and puzzling oxidizing chemistry in the surface layers. If life exists on Mars, it seems not to be as widespread as on Earth; but if we look in the right places and in the right ways, life may still be found.

It may concentrate in small areas or be entirely underground. Dead organisms may be completely ingested by live ones greedy for scarce organic compounds. Or, possibly, UV radiation or the strange oxidizing process may destroy all easily recognizable organic residue.

Granted that life on Mars may be well concealed just as it is on Earth in hostile

environments, how, then, may life on Mars be sensed? As subtle color shadings in dusky crevices? As a pseudogeometric pattern in a fractured rock? As microscopic hairs in a core sample?

The ingenuity of life outstrips man's imagination. Thus life on Mars may indefinitely elude the limited tests and sensors that can be accommodated on unmanned probes.

If life is suspected, how do we get conclusive evidence? Must we split rocks? Or dig holes of indefinite depth? Or sense sticky spots? Remotely controlled probes may perform some or all of these functions but one apparatus that could do all would be incredibly large and expensive. And a command loop requiring an average of 25 minutes to close will cause all travel and action to be excruciatingly slow and inefficient.

On the other hand, human beings can accomplish all these functions and a wide variety of others at costs which are not impossibly expensive. In 1970, JSC carried out a study of an "austere"

manned mission to Mars in which 3 persons would reach the surface with a vehicle allowing them to range over a large surface area for several weeks. The cost was estimated to be \$10 billion in 1970—only 10 times the cost of Viking.

When the scientific objectives of a mission are complex and not easily preprogrammed, direct human exploration may, indeed, be the most cost-effective approach.

A full understanding of Mars' geological history and its relationship to the evolution of the Solar System is of equal interest to the search for life. It will probably require a semi-permanent research station on Mars.

The concept that a Mars research station might be established in our lifetime is not so fantastic as it may seem. The most basic elements for life support—oxygen and water—are available and require relatively simple mechanical systems to extract from the atmosphere.

The necessary energy for these and other station needs would almost certainly

come from a solar power station for which technology is now rapidly advancing.

Thus the total cost for a long-term research station on Mars is probably not vastly greater than the cost of a short term expedition.

Why should the U.S. taxpayer (or the world taxpayer) choose to finance such expeditions? Because we must eventually realize that expanding our intellectual and geographical frontiers is one of the best available investments (perhaps a fundamentally necessary one) in the well being of society. Not only does this sharpen our technology and benefit our economy but also it fulfills the basic human need to have something to be enthusiastic about. Human curiosity, the urge for adventure, the desire to explore and to discover the unknown must be satisfied.

We will eventually go to Mars simply because "it's there," and we desire the adventure and the glory of being there. That great adventure and its benefits, could still belong to our own generation!

Karl G. Henize