

Orbiter getting ready for launch

Orbiter *Columbia* Monday was rolled the 300 yards from the Orbiter Processing Facility (OPF) to the Vehicle Assembly Building (VAB) at Kennedy Space Center. Rollout began at 5:01 CST and ended a half hour later.

Mating operations began Tuesday morning when *Columbia* was hoisted in a handling sling to six inches above the floor of the VAB transfer aisle and the landing gear retracted. Later the spacecraft was rotated to the vertical position for the move into high bay three for mechanical mating with the external tank on the mobile launcher platform. The mating operation was expected to take 12 hours.

Rollout from the VAB to Launch Complex 39 is planned for December 26

when the crawler-transporter moves the orbiter stack and launcher platform the three and a half miles to the pad at one mile an hour.

At a post-rollout press conference, Ken Kleinknecht said, "Thanksgiving has come three days early for the space program.

"Every tile is now bonded on the vehicle," he said. "The only work we are transferring to the VAB is the installation of around 1500 gap fillers.

"John Young and Bob Crippen are satisfied with the status of the vehicle and are ready to go."

Kleinknecht is Assistant Manager in the Orbiter Project Office representing JSC at the Cape.

At JSC Crew Systems was scheduled

to install the Extravehicular Mobility Unit spacesuit in Chamber B of Building 32 for unmanned thermal testing the week of November 24.

During these tests engineers were to subject the EMU to worst case cold and hot environmental extremes and nominal tile repair thermal conditions projected for the first Shuttle mission.

Two major test sequences were planned—the first with the EMU facing away from the solar simulator ("sun"), and the second with the EMU directly facing the sun.

Crew Systems engineers were to monitor critical component temperatures and the overall EMU thermal performance.

A manned tile repair test sequence is scheduled for early December.

Christmas fund drive kicks off

JSC Family Affair Christmas Project officials have announced that their annual fund-raising campaign to assist needy families will begin December 1, 1980. This year's goal is \$3500. If this year's goal is met, they expect to reach about 135 families.

Since 1971 center and contractor employees motivated by the theme, "It's a Family Affair," have committed themselves to making Christmas more cheerful for needy families. Hard work, dedication, and generous donations from the JSC community have each year contributed to the success of the fund-raising campaign.

Everyone cannot devote time to the physical aspects of the project, but contributions from employees are equally important and are deeply appreciated. After all, these donations enable the group to accomplish its major goal—assisting those persons who are less fortunate.

Although the group's primary objective is to assist low-income families during the Christmas season, they also spread "good-will" at other times of the year. For example, they have purchased shoes for needy children and have contributed to other projects in low-income areas.

Employees who have not been contacted by project area coordinators and would like to make contributions should contact Rhonda Alcorn, x4521 or Doris Roberts, x2671.

The fund drive will end December 16.

NASA/ESA reach Spacelab milestone

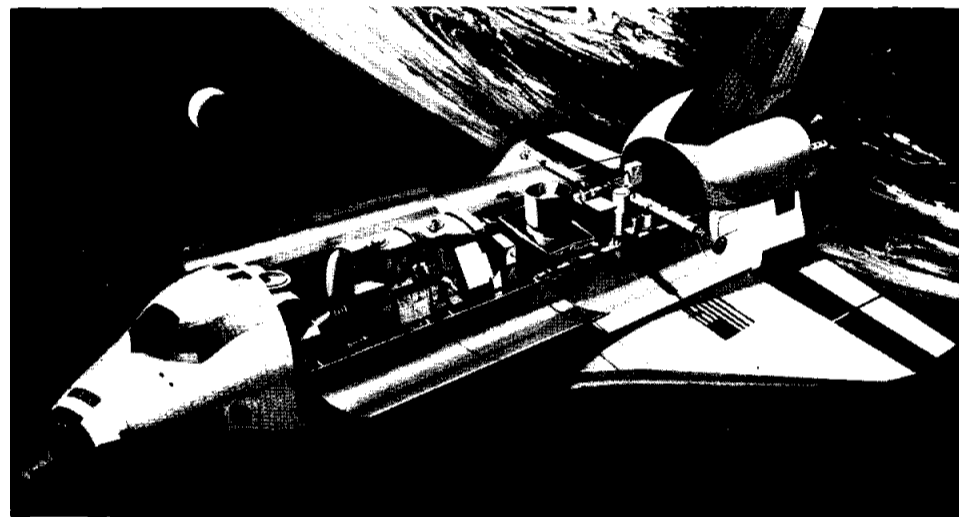
A milestone in European/U.S. space cooperation was celebrated November 28 at Bremen, Germany, when the engineering model of Spacelab was delivered to NASA.

Acceptance of the Spacelab engineering model was carried out jointly by the European Space Agency, NASA, and the prime contractor Entwicklungs Ring Nord Organization (ERNO), and after six and a half years of development and manufacture, the model is ready for shipment.

In early December this model will be transported in wide-bodied planes to Kennedy Space Center. In 1978 and 1979 two Spacelab pallets were delivered to NASA for Shuttle test flights which are due to start in March 1981.

The engineering model is a prototype of the Spacelab flight unit and not intended for flight. NASA will use the model to prepare for the Spacelab flight unit, including training and verification of the interface of Spacelab with ground equipment at the Shuttle launch site.

Delivery of the engineering model



constitutes the first major transfer of Spacelab hardware to NASA under the ESA/NASA Memorandum of Understanding signed in 1973. It will be followed by delivery of the first Spacelab flight unit during 1981. NASA has ordered a second Spacelab flight unit for delivery in 1982-83.

The first two Spacelab flights are cur-

rently scheduled for June and November 1983. The first Spacelab flight will be a joint ESA/NASA mission and will carry scientific experiments presently under development in Europe and the United States.

ESA, NASA, and ERNO completed acceptance of the Spacelab engineering model November 25.

Columbia: the name symbolized the nation

By LAURA PUSCH

The name "Columbia," now a household word because of NASA's Space Shuttle, actually has its origin in the earliest annals of our nation's history. A sloop which sailed out of Boston Harbor in 1792 was so christened; as was the U.S. Naval vessel by the same name which has the distinction of being the first such U.S. Naval ship to sail around the world. At the suggestion of the Apollo astronauts, the Command Module flown on Apollo 11 was the next recipient of the name. But where, one might ask, did the name *originally* come from?

When America first became independent from Great Britain, there were many Americans who felt that the new nation should have a name commemorating Christopher Columbus. Phillis Wheatley, a Negro slave and poetess of 18th century New England, is believed by most historians to have been the first to use the symbol "Columbia" as an actual personification of the United States.

Wheatley was an artistic young woman whose literary talents were recognized and encouraged by the family to whom she was in service. In 1775, during the American Revolution, Wheatley wrote a poem to General Washington in which she referred to the new nation, which she pictured as a young woman, as "Columbia," and glorified this "lady's"

Through history she has been a "goddess" who represented the antion, a strong woman who represented "A Perfect Union," and now the first vehicle for man's next step in space.

martial feats.

Wheatley was fond of personification and she employed the technique passionately in her poem. She even went so far as to describe Columbia physically as a golden-haired "goddess" in gleaming armor who "moves divinely fair." General Washington was so impressed that he had the poem published.

Wheatley continued to use Columbia as a national symbol in later poems and consistently portrayed her as a formidable-looking but beautiful woman who possessed the capability to inspire awe.

Other names for Columbia include: Miss Columbia, Mistress Columbia, Miss Liberty, The Gem of the Ocean, and The Goddess of Liberty. Although she is not nearly as well known today as she was in the 18th and 19th centuries, she was as popular a national symbol during that era as Uncle Sam is today.

During the American Civil War, Columbia was a favorite national symbol of Thomas Nast, the artist and political cartoonist known to posterity as "The President Maker." Whenever Columbia was

drawn by Nast in his regular contribution to *Harper's Weekly*, she usually dominated the entire cartoon in which she was represented.

Nast's most important work began during that period in American history when the divisive elements of North and South threatened the very existence of the nation, a peril to which Nast reacted with great emotional intensity. He used the figure of Columbia in his cartoons to represent his concept of "The Perfect Union." As such, she was often portrayed by him as a great moral teacher who was interested in the welfare of "her pupils" above all else.

Nast's Columbia was strong, yet graceful and tender-hearted — usually dramatic — always determined to have her own way. She wore a white Roman toga and a coronet bearing the insignia of a "U" enclosing an "S." Her hair was shown as being long and cascading about her shoulders, often in disarray. She wore sandals and generally gave the impression of total freedom.

She was adored by the 19th century

American public, and it is generally believed that Nast's famous editorial cartoon, showing her being mauled by the Tammany Tiger under Boss Tweed's approving eye, was the literal sling-stone which felled the infamous Tweed ring.

The Columbia of Thomas Nast carried a shield emblazoned with stars and stripes (similar to the one on the chest of the American Eagle) and an elaborately decorated sword. These two items were occasionally laid aside whenever it was necessary for our heroine to collapse in prostrate grief beside the tomb of a fallen president or to kneel before an altar of thanks following a Union victory over Confederate forces.

Several artists other than Nast also drew Columbia, but few did so with as much loving detail. One problem which apparently beset some of these early artists was that of drawing women in such a way as to make them appear both beautiful and strong at the same time. Nast handled this problem in an impressive manner.

A point of confusion is that while Columbia was in her hey-day as a national symbol, "Uncle Sam" was also on the scene (sometimes under the name of "Brother Jonathon"). In fact, the two symbols were frequently used together in cartoons — sometimes being pictured as a married couple.

See COLUMBIA, page 3

Driving Smart

Inflation fights inflation

(Fourth in a series on "Smart Driving" courtesy of the U.S. Department of Energy.)

Remember way back, years ago, when the neighborhood service station filled your tires while filling your tank with 30-cents-a-gallon gas?

In those good old days passenger car tires were mostly one size, and many service station attendants recommended inflating them to their 32-pound maximum. The tires would last longer, they'd say.

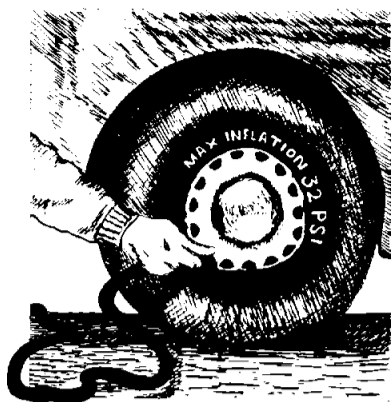
Later, owner's manuals became the authoritative guide, and tire pressures dropped to 24 or 26 pounds to yield a softer ride.

Well, with gas at over \$1 a

gallon it's time to go back to 32 pounds, or whatever is the maximum pressure marked on the tire itself. This may be eight more pounds pressure than the manual or the sticker on the door of your car recommends.

The more pressure you put in your tires, up to the stated maximum, the less gas it takes to drive a mile. That's because harder tires have less resistance to rolling.

To realize these savings, you have to keep your tires fully inflated all the time. This means checking them about once a week, when the tires are cold (when the car has been sitting for three hours, or before driving more than one mile).



One last word: Full inflation undeniably produces a harder ride over bumps. But it does not damage the suspension system (as some people believe), and it does not shorten tire life. In some cases it will increase tire life.

The next article will cover gauges and other modifications to a car that may increase mileage.

You could see launch

Selected Space Shuttle personnel who have done outstanding work on the Space Shuttle program may be taking a trip to Florida this spring under the newly announced Space Shuttle Launch Honoree Program.

Honorees will arrive at the Cape three days before launch and take part in special events planned for them. They will attend an astronaut reception, tour the Kennedy Space Center, and have the opportunity to view the first Space Shuttle launch.

The award, patterned after the Apollo-Saturn Manned Flight Awareness Honoree Program, will go to only 200 of the over 100,000 persons involved with the Space Shuttle program. JSC's allocation

is approximately 60 which will be divided among federal employees, prime contractors, subcontractors, suppliers, and other agencies supporting JSC Shuttle program activities.

The award will be given annually, starting with the first Space Shuttle flight now scheduled for March 1981.

Supervisors should begin now considering candidates for the honoree position as directors have been asked to submit names prior to mid-December.

A committee made up of the JSC Deputy Director, the Space Shuttle Program Manager, the Technical Assistant to the Director, and the Personnel Director will select the honorees from this center.

Selection of candidates will not be limited to position or job title. Anyone who has performed in an exemplary manner in work related to the Space Shuttle will be considered.

Selection for the Space Shuttle Launch Honoree Program is one of the highest and most prestigious awards available to workers in the Shuttle's NASA-industrial complex. The Space Shuttle Program Office, Johnson Space Center, Marshall Space Flight Center, Kennedy Space Center, and Goddard Space Flight Center are taking part in the program.



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Editor..... Kay Ebeling

Next meeting will be Monday December 1 at 5 p.m. in the Building 350 Conference Room.

Bulletin Board

Lions Selling Turkeys

The League City Evening Lions annual smoked turkey sale is now underway. These cooked, frozen, ready-to-eat upon thawing turkeys are from the Sunday House, Fredericksburg, Texas. The profits from this project go to Lion's-supported charities. Turkeys are \$1.50 per pound and can be ordered by calling Ed Dupnick, 333-4119, or Jerry Maruska, 554-6350.

Alcoholism is Topic of Next Health Program

The December medical education program will be presented on Thursday, December 11 at 10 a.m. and at 2 p.m. in Building 30 Auditorium. The topic this month is Alcoholism. This presentation will address such questions as: "What is a problem drinker?" "How does one identify a problem drinker?" "What can one do about a problem drinker—about problem drinking" a short film by Father Martin will be shown and answers to the above questions and many more will be given. Questions from the audience will be encouraged.

NARFE Dinner Meeting Set for December 5

The Houston-NASA Area Chapter 1321 of the NATIONAL ASSOCIATION OF RETIRED FEDERAL EMPLOYEES will meet

on Friday, December 5, at 6 p.m. in the Clear Lake Park Building on NASA Road One. A covered dish dinner will be served and Meredith's Malahinis Hawaiian Group will entertain. Members and visitors are invited to attend and bring a covered dish. For additional information, call Mary Olsen at 334-3270.

Dance in the Holidays At Gilruth Rec Center

Christmas is a festive time. The tree is trimmed, the wreaths are hung. The holidays mean getting together with friends for a special celebration at the Gilruth Rec Center. This year's Dinner/Dance will be held on Friday, Dec. 12, and Saturday, Dec. 13. Tickets are \$13.50 per person for Friday & \$17.50 per person for Saturday which includes everything. Tickets can be purchased at the Bldg. 11 cafeteria between Dec. 1 and Dec. 8. The menu will be roast beef Friday night and prime rib on Saturday, and will be served between 8 and 9 p.m. Doors will open at 6:30 p.m. The bands will be Jerry Vann's Orchestra on the assembly room side & the Bill Nash Show on the Gym side. Ticket sales will be limited to 600 per night and seating will again be reserved.

On Sale at the JSC Exchange Store

(Store Hours 10 a.m. to 2 p.m.)
ABC Theatre tickets - \$2 each
General Cinema tickets - \$2.40 each
Postage Stamps (20-15 cent stamps) - \$3
Sea-Arama Marineworld Fun-Time Cards - Free
Entertainment '81 Coupon Books - \$16 each
Gold C Values 80-81 Coupon Book - \$5 each

Schmitt Reschedules AIAA Appearance for Dec. 17, Bldg. 2 Aud.

Because of marathon sessions in Congress, Senator Harrison "Jack" Schmitt had to cancel his November 18 talk at JSC, but the American Institute of Aeronautics and Astronautics has rescheduled the speech, "Today's Outlook for Space," for Wednesday December 17 at noon in the Building Two Auditorium. All employees are invited.

A recap: Schmitt joined the Apollo program as an astronaut in 1965 and as the Lunar Module pilot and geologist of Apollo 17, he landed on the Moon in the Valley of Taurus-Littrow in 1972. Today as a senator from New Mexico, he serves on the Appropriations Committee; the Commerce, Science,

and Transportation Committee; and the Select Committee on Small Business.

Lunney to Speak At Dec. 9 AIAA Meet

Glynn Lunney, Manager of the STS Operations Program will be the speaker at the AIAA monthly meeting at Gilruth Center December 9. Topic of the speech will be STS Operations, and Lunney "has something to say that everybody ought to hear," said an AIAA spokesman. The talk, at 8 p.m. is open to the public, and there is no charge to attend the program only. Dinner reservations should be made by noon December 5 by calling Sandra at x3995.

Bike Club Rides High and Far

Next club bicycle ride will be Sunday December 7—a ride through beautiful pine forests and rolling hills. It starts at the Magnolia School, a few blocks south of the Hwy 1774 and Hwy 1488 intersection in Magnolia at 10 a.m. Carpools can be coordinated through George Blanford, ride leader at x9284. All rides have a "sweep" rider at the rear to assure no one is left behind with a breakdown. The Magnolia Ride will cover 12, 33, or 45 mile loops.

And now on to Venus—'VOIR' to see it

The Office of Management and Budget informed the Administrator of NASA early this month that President Carter has concurred with the space agency's request for start-up funds for a 1986 mission to map the surface of Venus.

Dr. Robert A. Frosch said OMB has assured him that the necessary funding will be requested by the President in his fiscal 1982 budget.

Launched by the Space Shuttle, the Venus Orbiting Imaging Radar (VOIR) spacecraft would circle the planet for at least seven months, taking radar pictures and making measurements of the atmosphere as well as the surface.

It would be the most detailed scientific examination ever made of the surface of Venus which is perpetually covered by clouds.

Dr. Frosch said: "I am gratified that President Carter has concurred on the request for funding for VOIR. This important scientific project will reveal the true nature and geological history of our sister



planet in the same way that Mariner 9 enabled us to see Mars. With VOIR, we will be able to see the surface of Venus for the first time almost in its entirety."

According to plans, NASA would launch one VOIR spacecraft from the the Shuttle to Venus in 1986. A typical trajectory would

begin in May or August 1986 and provide for arrival at Venus in December 1986, where the spacecraft would be inserted into a near-polar orbit at an altitude of 300 kilometers (180 miles).

Radar mapping and other science gathering would continue for five months or more.

The mapping activity would result in near-global coverage of the planet in moderate resolution imagery (about 600 meters — 2,000 feet), and coverage of a small percentage of the planet's surface in higher (about 150 m — 500 ft.) resolution pictures.

Venus has yielded her secrets with great reluctance, principally because of the obscuring clouds, crushing atmospheric pressure (100 times that of Earth), and searing temperatures (480 degrees Celsius or 900 degrees Fahrenheit).

Several probes, both American and Soviet, have penetrated the planet's atmosphere and transmitted important data for periods ranging from minutes to hours. Pioneer Venus has provided considerable knowledge of Venus' atmospheric properties. But none has provided a satisfactory picture of the Venusian surface.

The VOIR imagery is expected to disclose the presence of continents, ocean basins, mountain belts, rift valleys, fault belts, or

volcanoes. The nature and time sequence of plate tectonic activity (continental drift) may also be revealed, as well as any relationship between this and volcanic episodes in the history of the planet.

If impact craters are present, as suggested by Earth-based radar observations, their size and frequency can be determined.

Other science investigations will be conducted which relate to the planet's fundamental geophysical and atmospheric problems.

The VOIR orbiter — weighing approximately 5,000 kilograms (11,000 pounds) at launch — will consist of a structure with a Synthetic Aperture Radar (SAR) and other science instruments.

Estimated cost of the project is \$500 million to \$600 million.

The project will be managed by the Jet Propulsion Laboratory, Pasadena, Calif., a government-owned facility operated for NASA by the California Institute of Technology.

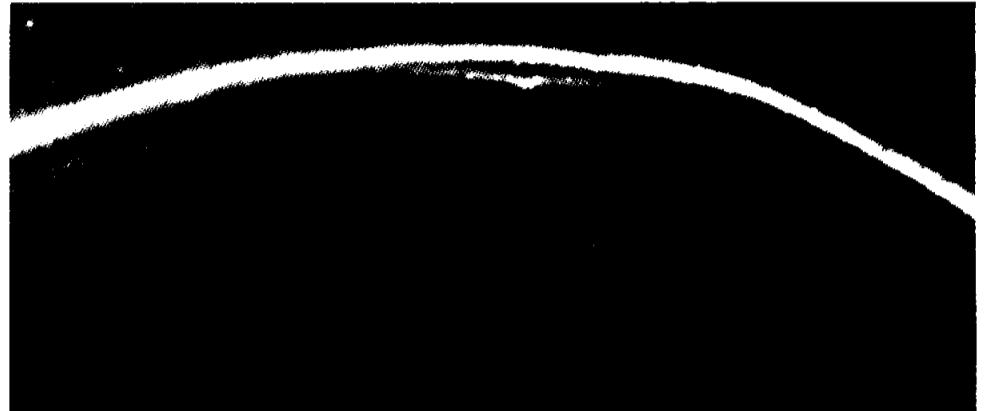
A One Week Tour of Saturn

"The bizarre has become commonplace," said one Voyager project scientist after a 24-hour period of viewing Saturn from within the ring system. What was once thought to be six symmetrical forms around the planet now proved to be hundreds of dynamic and changing forms, pulled to new shapes by nearby moons, with the outer ring a dynamic braided form that some said defied all known laws of physics. Saturn's moons opened up new questions as well. The surface of Titan continues to evade Voyager's instruments. A crater on Mimas covers more than one quarter the diameter of the disc, sug-

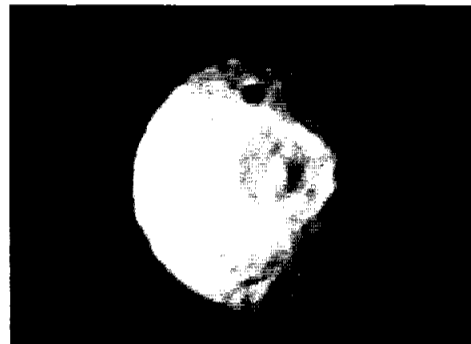
gesting an impact that should have splattered the moon to pieces, and two newly discovered moons, S-10 and S-11, orbit in the area that scientists thought was occupied by Janus, now said not to exist. It is too early to draw conclusions from Voyager One data. NASA and Jet Propulsion Lab scientists in the next year will send commands to Voyager Two, maneuvering it closer to the mysteries found by Voyager One, so next August's encounter with Saturn will be even more spectacular, and will uncover even more mysteries.



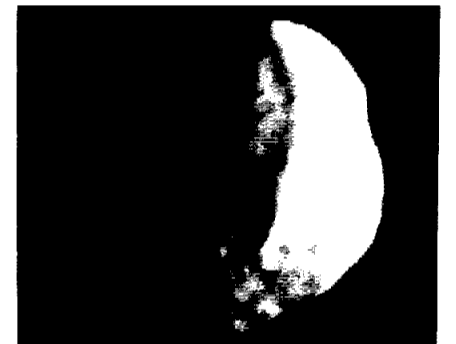
DARK SPOTLIKE FEATURES in Saturn's rings revolve around the planet with the rings' orbital motion as seen in these six photos taken Oct. 25. As the outer part of the rings revolve more slowly than the inner rings, the features are regenerated by some strange mechanism.



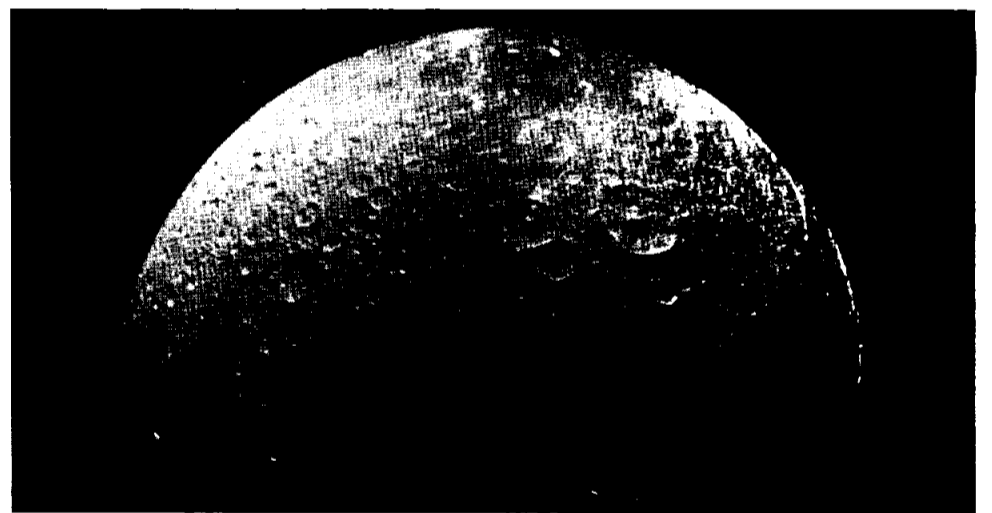
THE OUTERMOST RING shows complex structure—two narrow, braided rings that trace distinct orbits and "knots" which probably are local clumps of ring material, but may be small moons orbiting erratically.



A large impact on Mimas

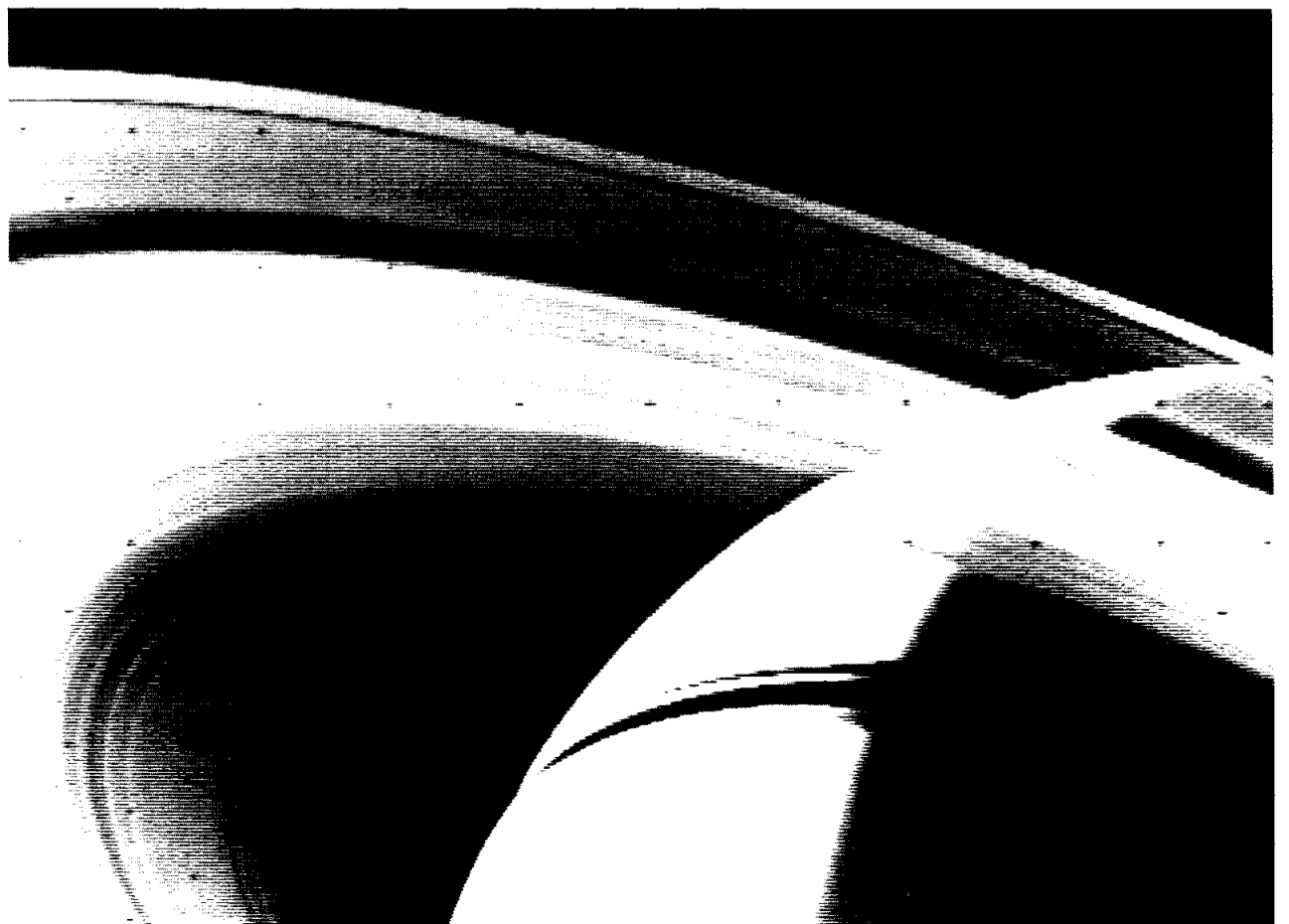


A trailing co-orbital S-11



Large impact craters on the icy Dione

What to Voyager One spacecraft controllers was "an incredibly smooth operation" was to project scientists and principal investigators a never-ending chain of surprises and paradoxes as they tried to decode strange, unexpected revelations about Saturn, its rings, its satellites, and their combined interactions. The week of November 12 was loaded with dramatic new scientific revelations as Voyager first homed in on the giant planet, its rings and moons, and then, after closest encounter at mid-week, swiveled its television eyes and its instruments for backward looks. Voyager flew within 124,240 km of Saturn's banded cloud tops, showing a tempest-swept upper atmosphere. The number of Saturn's satellites or moons grew to 15 during Voyager's closest approach. Chunks of ice and rocks perhaps dating back to the birth of the solar system 4.6 billion years ago, these moons emerged as distinctive and different, showing scars of the millennial pounding of meteorites, and possibly comets, as well as cracks from their own earthquakes. All this is only cursory examination of data. In-depth research into the cold, hard facts will be a project of years. If past history is any indication, there will be still more startling evidence from Saturn.



One look back, as Voyager heads out of solar system