NASA
Lyndon B. Johnson Space Center

Space News Roundup

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Crew discusses flight; Shuttle is at the pad

"What we're building here is a freeway to the future," the commander said during a news conference last week, and within five days of making that statement his vehicle was on the pad, ready to be gassed up and sent back out on the road again.

STS-4 Commander Ken Mattingly and Pilot Henry Hartsfield, in what will probably be their last public appearance before going into orbit next month, told media representatives that the mission will be a bridge between the first three orbital test flights and the swiftly approaching era of operations.

In the first three flights, Hartsfield said, the goal was getting the vehicle up and back and making a variety of measurements to validate models used to estimate performance and capabilities.

"Our preparation for STS-4 has been emphasizing perhaps a little different nature," he said. "That is, we're trying to prepare ourselves to move into the ops era. We've spent a great deal of our training in replanting our procedures, weeding out some of the contingency things that you worry about on early flights. We've been worrying more about how to adapt our procedures and streamlining them for operations."

Hartsfield said turnaround times for the orbiter have decreased between every mission, and as if to underscore that point, *Columbia* was rolled out of the Vehicle Assembly Building at the Kennedy Space Center five days later for the quickest turnaround yet: 42 days in the Orbiter Processing Facility and just seven days in the VAB.

The crew will journey to KSC this weekend for a countdown and liftoff simulation Saturday. Next week they will participate in the long-duration on-orbit simulation here.

Other milestones ahead in the countdown procedure include the "wet" countdown test—a trial loading of the external tank with cryogenic fuels—and the actual loading of hypergolic fuels a few days later.

No official launch date has been announced, but KSC officials said they are on schedule for their target date of June 27, with tentative plans for main engine start at 10 a.m. CDT that day. The countdown itself will be an 87-hour procedure.

In describing his outlook on the mission, Mattingly said he expects *Columbia* will perform with "all the handling you would expect of the most beautiful airplane you've ever designed."

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Long-duration sim begins June 1

A 57-hour simulation of the fourth flight of the Space Shuttle *Columbia* will be conducted at JSC beginning at 8 a.m. June 1.

The simulation will pick up the mission at one day, 18 hours and 30 minutes after launch. Since the activity involves some classified aspects pertaining to the Department of Defense, the simulation will be closed to the press, and public tours of the Mission Control Center will be suspended.

Astronauts and ground-based flight controllers gain realistic experience during these flight simulations. The time segment involved covers a major portion of critical tests scheduled for STS-4.

Crew members are Thomas K. Mattingly (Capt., U.S. Navy), commander, and Henry W. Hartsfield, pilot. For the exercise, they will be in a simulator which provides sensory and data feedback identical to that which they will experience in *Columbia* during flight. The simulator will be integrated with the Mission Operations Control Room, where three crews of flight controllers will alternate shifts.

Simulation hardware has the added feature of being able to introduce imaginary problems to the participants. Problems are scripted in advance but are unknown to the participants. Consequently, flight and ground crews receive realistic training in dealing with unexpected events like those which might occur during an actual mission.

In addition to this long-duration exercise, many shorter simulations are conducted which focus on other special segments of the STS-4 flight plan. Among these are various launch and landing situations, as well as critical on-orbit operations.

STS-4 is scheduled as a seven-day mission with launch planned no earlier than June 27. It is the final Space Shuttle orbital test flight.

Suspected pulsars observed by mirrored dishes at Edwards

An unusual star — a suspected pulsar — has been observed by astronomers who used two mirrored dishes, originally intended for solar energy research, as a high-energy observatory.

The star, Cygnus X-3, could have been created from a supernova that may have occurred within the last few centuries, but was not seen on Earth due to interstellar dust and gas obstructing the view, according to Dr. Richard C. Lamb of Iowa State University, who led the experiment.

The star, a peculiar X-ray source, is also the brightest high-energy gamma-ray source in the sky. It was observed to emit gamma rays in a manner suggestive of a pulsar or neutron star.

The mirrored, parabola-shaped dishes, located at a NASA/Cal Tech Jet Propulsion Laboratory site at Edwards Air Force Base, were recently used to observe Cygnus X-3 at ultra-high gamma ray energies above 100 billion electron volts — one of the highest energy astronomical observations ever made. The 33-foot mirrors are among the world's most sensitive detectors of high-energy gamma rays.

The observations were conducted by Lamb and graduate student Chris Godfrey of Iowa State University, Dr. William Wheaton of JPL's gamma ray astronomy group, and Dr. Tumay Tumer of the University of California at Riverside. The results of their observations are reported in the April 8, 1982 edition of the British science journal Nature.

Supernovae result in great outbursts of visible light. Four supernovae in our galaxy have been observed from Earth in recorded times; the last was Keppler's Supernova in 1604.

If Cygnus X-3 was a supernova in recent times, the explosion of visible light could have been curtained from Earth by dust and gas. But the remnants of the supernova could be visible in gamma ray energy.

Cygnus X-3 is an astronomical oddity among the hundreds of known X-ray sources in the Milky Way Galaxy.

Although it emits a relatively large fraction of its X-rays in the high energy region of the electromagnetic spectrum, it has never been observed to pulse on the few-second time scale characteristic of most of the other hard X-ray sources.

Cygnus X-3's X-ray output peaks every 4.8 hours, which is believed to indicate that it is a binary star with a 4.8 hour orbital period. Theorists have speculated that it may indeed be a pulsar, but one which pulses so fast, on the order of 100 pulses per second, that the pulsations have never been observed. By comparison, the fastest known pulsar, the Crab Nebula, pulses 30 times per second.

Astronomers using the JPL mirrors believe that with additional observations this summer, they may be able to detect high-speed pulsation from the star.

Gamma rays, from a pulsar or any other source, do not penetrate Earth's atmosphere, and are not normally observable by ground-based apparatus. However, the ultra-high energy gamma rays from Cygnus X-3 were rendered visible by a phenomenon known as the Cerenkov effect. A faint flash of light which lasts for just a few nanoseconds (billionths of a second), is created when ultra-high energy gamma rays hit the atmosphere.

Although the flash is too brief to be seen by the naked eye, it can be observed by a fast photomultiplier tube placed at the focal point of large, upward facing parabolic mirror, like the ones at JPL's desert test site.

Going, going, gone

Deputy Director of Flight Operations Eugene F. Kranz was harassing participants in the dunking booth activity at the Employees Activities Association picnic recently, and as these photos show, he paid the price. The T-shirt Kranz is wearing here was advertisement for his team in the celebrated Flight Operations Division Chili Cook-off, which was held May 15.

Space News Briefs

First wind turbine cluster in operation

Three of the world's largest wind turbines are now working together for the first time in the nation's only multi-megawatt wind turbine cluster. The Mod-2 wind turbines, located at Goodnoe Hills, Washington, are currently the most advanced in a series of experimental horizontal-axis machines, with each rated at 2,500 kW. Taken together, the turbines can produce enough electricity to serve approximately 2,000 average homes. Each wind turbine stands 200 feet above the ground with rotor blades measuring 300 feet from tip to tip. The Mod-2s are designed to begin producing power in winds of 14 miles per hour, and reach rated power output in winds of 28 mph. When winds exceed 45 mph, the blade tips automatically feather and shut down the system. Average winds at the Goodnoe Hills site are about 16 mph, and blow between 14 and 45 mph about 60 percent of the time.

Marshall issues RFP on space station study

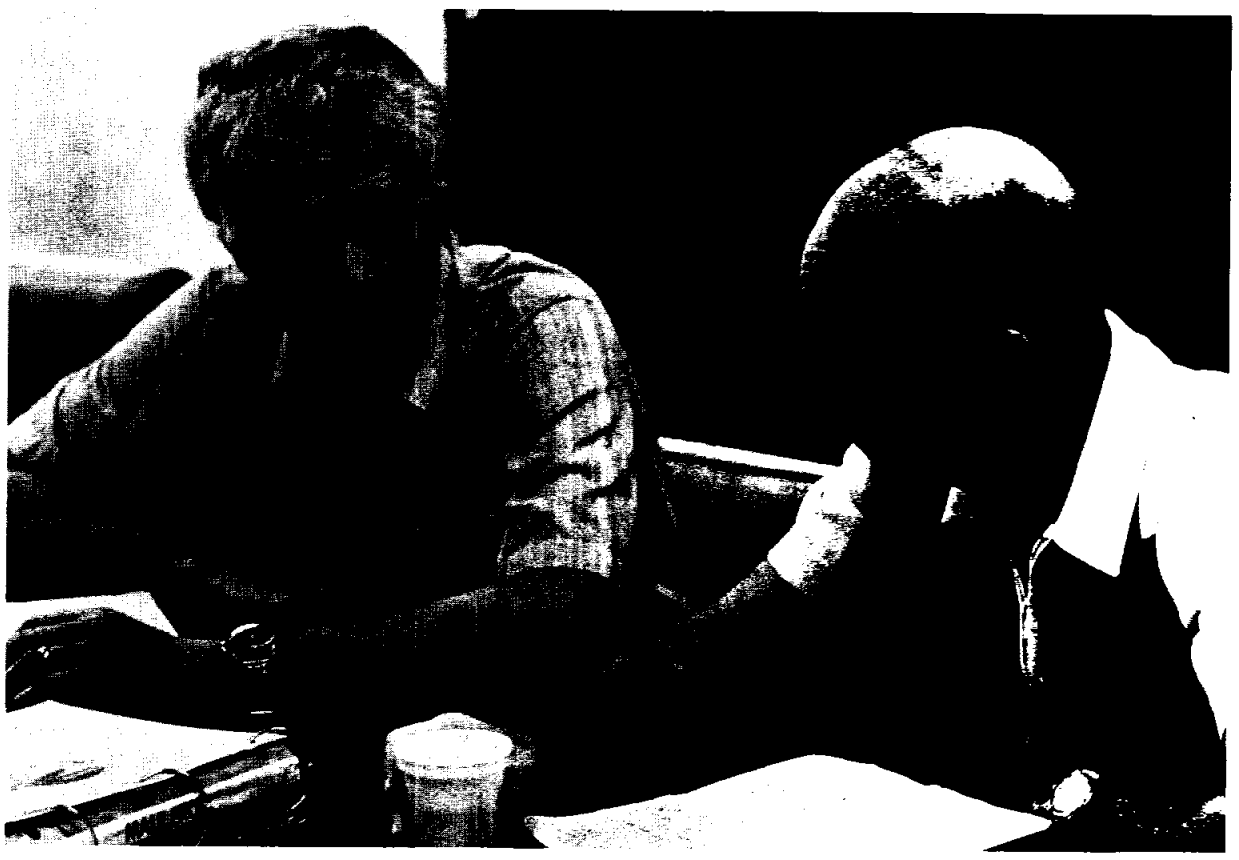
The Marshall Space Flight Center has issued a request for proposal inviting aerospace firms to describe how an early space station could be used as a test facility for developing future mission requirements for a later, operational space station in the late 1990s. "These studies assume that an early space station will be in orbit by 1990," said William G. Huber, manager of the Space Station Task Force at Marshall. "Given that premise, the studies will then suggest what kinds of experimental operations would be performed with such a station so that we could evolve to a fully operational space station by the late 1990s." Study areas would include a look at the role of a space station in building other large structures in orbit, servicing satellites, and the requirements for maintaining orbital transfer vehicles in space.

NASA awards SRB modification contract

The Marshall Space Flight Center has selected Hercules Inc. and Votaw Precision Tool Inc. for a joint venture to develop filament woven cases for use in Solid Rocket Booster flight cases. The filament case segments would be used with the solid rocket motors on the boosters, and is expected to save approximately 66,000 pounds on each flight set. They would replace steel case segments and would be used for high performance launches. First use of the new woven cases is expected in late 1985. The filament woven case subcontract will be a cost plus incentive/award fee for design, development, test and delivery of four flight sets for a proposed cost of approximately $33 million.

JSC awards OSTA-3 contract

Rockwell International's Space Operations/Integration and Satellite Systems Division of Downey, Calif. has been awarded a letter contract covering integration of the OSTA-3 payload into the Space Shuttle *Columbia*. Rockwell will assemble a Spacelab pallet or an orbital flight test pallet and integrate into the pallet the OSTA-3 scientific instruments and support subsystems. The contract also covers payload staging, preflight checkout and postflight operations at the Kennedy Space Center.



As their week in space draws near, the STS-4 prime crew, Commander Ken Mattingly, right, and Pilot Henry Hartsfield, left, are spending a lot of time going over mission rules and procedures. Theirs will be the last flight of *Columbia* in orbital test mode.

Crew

(Continued from page 1)

Mattingly, who was command module pilot on Apollo 16, compared the early days of manned space flight to the Shuttle era by emphasizing the routine nature of the Space Transportation System.

"The whole purpose for the Shuttle is that we're trying to build something which is going to make routine access to space a reality," he said. "We've talked about it, you watch it on TV, Buck Rogers does it, but the thing I'm not sure everybody appreciates is the idea that space is going to be routine in the very near future. Instead of people standing around in awe watching a rocket liftoff and drawing large crowds because its a unique event, I think people will always be interested, but it's going to become a commonplace thing. The kids growing up in this generation are going to take this as commonplace as climbing on an airplane."

Hartsfield said he has been primarily concentrating on his task of maneuvering the remote manipulator arm, which is scheduled to deploy the relatively large Induced Environment Contamination Monitor. "I look forward to that part of the flight," he said. "I work with the RMS quite a bit in training for STS-2 and 3, and the arm, according to Dick and Gordo, operates beautifully, and I'm looking forward to trying it myself."

People

Virginia B. Hughes, Federal Womens Program Manager at JSC, was recently honored with the Abbey Award presented by the Clear Lake Area Chapter of the American Business Women's Associaiton (ABWA). The award is designed to recognize an individual "who has done the most for the advancement of women in their careers, either through helping others or by setting a personal example." Hughes has served in a number of community service positions over the years. They include Chairwoman of the Greater Houston Area Federal Women's Program Manager's Council, 1979-81; member of the Directors of the Travelers Aid Society of Houston; member of the Advisory Board for the School of Business and Public Administration at the University of Houston at Clear Lake City and President of the ABWA Clear Lake Area Chapter in 1975. She is also celebrating the earning of her bachelor's degree in public management from UH/CLC this month.

Virginia B. Hughes

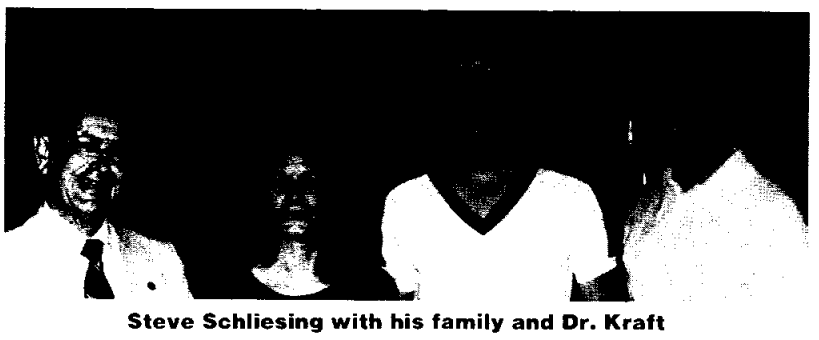
Connie Lucas and **Mel Grotberg** of the Institutional Procurement Division were recognized recently as JSC's Small Business Buyers of the Year for Fiscal 1981. The announcement was made during the observance of Small Business Week May 7-13. Lucas was honored as the JSC buyer whose cooperative efforts resulted in the largest number of small business set asides processed by a single buyer during the year. Grotberg received his award for having the largest dollar volume of small business set asides initiated during FY '81. During that fiscal year, JSC placed $40.7 million of purchases and contracts with small business firms, considerably exceeding the FY '80 figure of $33.4 million, and demonstrating an extraordinary effort by JSC in support of the small business community.

Connie Lucas

Mel Grotberg

The NASA Exchange-JSC Scholarship winners, who will receive $4,000 for study at any college or university of their choosing, were announced recently. Winners were **Karen Svejkovsky**, daughter of Mr. and Mrs. **Paul Svejkovsky**, and **Steve Schliesing**, son of Mr. and Mrs. **John Schliesing**. Karen, a May graduate of Friendswood High School and valedictorian of her class, plans to attend Baylor University where she will major in orthodontics. Her father works in the Power and Propulsion Division at JSC. Steve, a May graduate of Clear Lake High School and valedictorian of his class as well, plans to attend Texas A & M where he will major in mechanical engineering. His father works in the Structures and Mechanics Division. Both were chosen for their academic achievements and school and community activities. The scholarship provides for up to $1,000 per year for up to four years of study. There were a total of 55 applicants for the two scholarships. The application period for next year's scholarships will be announced in February 1983.

Karen Svejkovsky with her family and Dr. Kraft



Steve Schliesing with his family and Dr. Kraft

Aaron Cohen, Space Shuttle Orbiter Project Manager, was honored by the Stevens Institute of Technology, Hoboken, New Jersey May 27 when that institution conferred on him the honorary degree of Doctor of Engineering. Cohen, who received his master of science in mathematics from Stevens in 1958, was among six recipients of the honorary degrees. Cohen has been with NASA since 1962 and last year was the recipient of a Presidential rank award, the Presidential Rank of Meritorious Service for Senior Executive Service. He received his bachelor's degree in mechanical engineering from Texas A & M University in 1952.

Two JSC cooperative education students were among six selected nationwide to receive the 1982 Sigma Gamma Tau, National Honor Society in Aerospace Engineering, Honor Undergraduate Awards. The two co-ops were **Christopher John Cerimele** of the University of Cincinnati and **Louis Alphonse Pare II** of Texas A & M University. Cerimele earned a superior performance award as a co-op at JSC, and holds a grade point average of 3.82. He has also been awarded two engineering scholarships. He hopes to go on to earn his masters and eventually become an astronaut or mission specialist. Pare also has earned a superior performance award while a co-op at JSC and also hopes to become a mission specialist or astronaut in the future.

Safety advises coffee caution

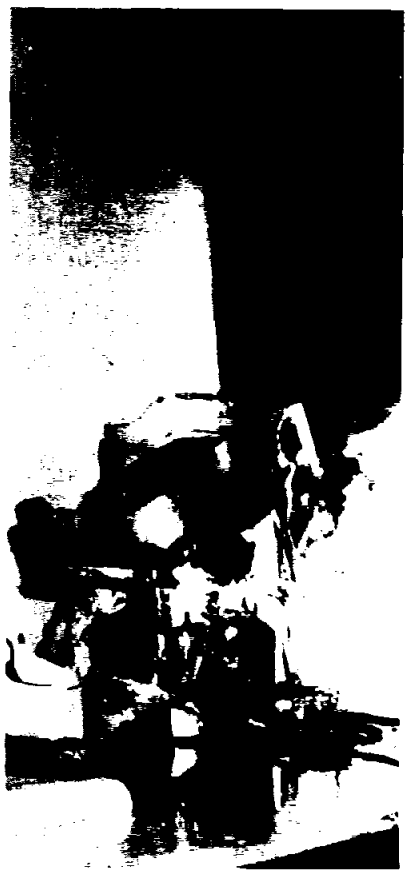
Few fluids are as important to American business as coffee, and as any regular drinker will tell you, there's nothing quite so bad as coffee which has been on the burner for too long.

There's also, according to the Operation Safety Branch, nothing quite so prevalant nor potentially dangerous as the coffee maker. They can be found in most offices at JSC, and in the past few years, coffee makers have been left unattended and caught fire on more than one occasion.

The Safety Branch advises that coffee makers have the approval of an independent testing laboratory, such as Underwriters Laboratory. Coffee makers should be placed on a sturdy table away from combustible items. Extension cords should be avoided, but if one must be used, make sure it can handle the required amperage.

Do not leave the coffee maker in the brew mode unless coffee is actually being brewed, the Safety Branch advises, and above all, make sure it is unplugged at the end of the day. These tips apply to all heat producing appliances, such as hot plates and heaters.

Contact the Operation Safety Branch at x2719 if you have any questions about the safe use of coffee makers.



This was the scene some months back when a coffee maker meltdown occurred in one of the offices at JSC.

Interview

David Attenborough

The British naturalist discusses the view from space and life on Earth

David Attenborough began making films exactly 30 years ago, but it wasn't until his series "Life on Earth" came to American television that U.S. audiences took notice of the articulate English naturalist.

He is a well known figure in Great Britain, however, having served for several years as head of BBC-2, one of the major networks in that country, as well as director of programming for the BBC.

He resigned in the 1970s, having decided he would rather go back and make films again, and went back under contract with the BBC to do just that. The most highly acclaimed result was the 12 hour "Life on Earth," a six-year project, and a sequel to that series is now in the making.

Attenborough plans to call it "Planet Earth," and is working towards a January 1984 release date. In Houston recently searching for appropriate NASA film footage, Attenborough took time out to answer some questions:

David Attenborough, right, and BBC producer Adrian Warren, left, reviewing NASA film footage of the Earth for use in the upcoming series, "Planet Earth." "I'm told we're going to have to put it out in January 1984," Attenborough said.

Roundup: How does film research at the Johnson Space Center tie in with your latest project?

Attenborough: Well, "Life on Earth," as you may recall, looked at groups of animals in a philogenetic sense, where you looked at all reptiles around the world, and then you looked at all amphibians around the world or looked at all birds around the world. The other obvious way of looking at the natural world, which is what we are doing now, is instead of looking at all groups of animals, you look at all groups of environments. So you do a program about deserts and you look at the Sahara and you look at the Central Australian Desert and you look at the Kalahari and you look at the Gobi. When you look at tropical rain forests, you look at Malaysia, you look in Brazil and Africa, and you look at what it is about the climatic and ecological conditions which produce similar adaptations in animals and plants. Sometimes quite differently related creatures have come to resemble one another because they are faced with the same problems, the same environmental problems. Well, in order to do that, one of the things we want to do all the time is to relate, as I said, the Sahara with the Australian desert, or to look at why it is that the tropical rain forests are in that particular band around the tropics stretching around the equator, and the view from space is a marvelous, marvelous exciting way of showing those things. So we're looking at that. But we've also been doing other things here, very exciting for me since I'm a layman, we've been for the past three days in the zero g aircraft because there's one program about animal adaptations to the air. And of course the problem about the air is how you overcome the gravity.

Roundup: How did your own physiology respond to overcoming gravity on the KC-135?

Attenborough: Oh great. I had a marvelous time.

Roundup: How did you combine segments on natural adaptations and scenes from the KC-135?

Attenborough: Well in fact it starts with me sitting cross-legged on the ground, and saying, you know, that all creatures on Earth are subject to gravity, and if gravity is suspended for a moment, the world becomes transformed. And with that I simply float into the air.

Roundup: That's going to be great.

Attenborough: Yes, I think it will be a very exciting sequence, thanks to NASA. And we are really terribly grateful to NASA. I mean, it's impossible to imagine how people could be more helpful, really.

Roundup: It's interesting to note your reaction. A great many people are struck by the fact that the U. S. has set up an agency whose charter requires that all of this information be made available, in many cases freely, to the public.

Attenborough: Is that written in the charter?

Roundup: Yes it is. The charter calls for the widest practical dissemination of information gained from NASA research and exploration.

Attenborough: Well, it's a wonderful service to the Earth. It is actually. I . . . we were talking about it last night. It's a truism, a cliche, I know, but I think that the whole world must be grateful, because NASA has actually transformed the world's view of the Earth, the human race's view of the Earth. Those shots when you see that blue planet spinning in space, I mean, has done more to convince people that it's time we actually sorted out our ecological attitudes than almost anything I can think of.

Roundup: Was that, do you think, an epochal new view for humankind, those color pictures of Earth?

Attenborough: Yes, yes I do. Even now, even now, people say, 'Why should we preserve wasps, or flys? If they're no good to us, why don't we just destroy them?' I mean, people actually think that still. They actually think that the Earth is simply a sort of larder, in which man goes and takes what he wants off the shelves. And the idea that the larder could run out never occurred to them. Or the idea that somehow any other organism had any right to it, to a part of that larder, didn't occur to them. And in some extraordinary way, a deeply powerful psychological way, that shot which came from NASA, that view of the Earth, of this sort of one tiny little globule of matter in space, I think affected people profoundly, in a way which is beyond words. And it's a *most* powerful image, most powerful.

Roundup: By the same token, do views from the surface of Mars or Venus set up any reflections in your mind about the nature of life on Earth?

Attenborough: Well it does in a sort of negative way. I'm a biologist, and what fascinates me is living creatures. And what your various probes have shown is that we are unique. I know the mathematicians say, 'Yes, well, you know the universe is infinite and therefore there are an infinite number of possibilities that there are two guys sitting around with exactly your name and my name saying the very same words.' Well, I don't actually believe it in my heart. That's what mathematicians might say but I don't actually believe it. And the fact is that Saturn and Mars and Venus and Jupiter do not sustain life in any way that we would regard as life. So this is a very precious oasis.

Roundup: Do you see military, political or ecological threats to this oasis as different slices of the same pie, or does any one suggest a more clear and present danger?

Attenborough: Well, I wouldn't like to say which is, as it were, worse. Particularly at this moment with what's going on in the Falkland Islands and so on. But it does seem absolutely lunatic that human beings should continue to quarrel in this extraordinary way. But even that, even that, is a small proposition compared with what is facing us in the next hundred years. One tends to say, 'Oh, it's all in the future.' It isn't in the future, it's happening absolutely right now. I am extraordinarily privileged in that I go around the world. Three weeks ago I was in the Himalayas, five weeks ago I was in the Sahara. And when you do that, you get some kind of feeling, you realize that what is happening is the people who suffer from disaster are the poor people of the world. People who live on the edge of the Sahara and the Sahel, for example, or the people who live in the Gangetic plain of India, subject to appalling floods because of what's happening with the forests up in the Himalayas. And thousands of people are dying from either starvation or flooding or eco-disaster of some kind of another *right now.* And what will happen, of course, is that it will get a higher and higher proportion of the human race. And countries like the United States and Britain in the first world will be the last to go, because we insulate ourselves from these other people. When you walk through the rain forests and you see what's happened to them, you realize how vulnerable they are, and you see the short term, the incredibly short term attitude of people. That they will destroy the richest biological environment on Earth and either leave it bare, which of course is disasterous, or replace it with a mono culture of some particular plant which has a short term value to human beings. That seems so lunatic, and yet of course, you see, we're all involved. I mean, I go home and I've got a nice wooden veneer on my television.

Roundup: And where does that veneer come from?

Attenborough: Well, it certainly comes from tropical hardwood. And so, by selecting that, I am contributing myself to the rain forest destruction. The only way you can stop it is to persuade the people concerned in the third world that they should only crop the rain forest at a renewable rate. And this is, I think, simply sensible management of what we have. The cropping of natural resources is absolutely acceptable in a moral sense, provided you do it so that you don't exterminate what you are cropping. And you would think, 'Well, any damn fool knows that, for God's sake,' but the fact is that we have been doing precisely that, we have been exterminating our crops, our natural resources, century after century. All of the wheat grown in North America, for instance, comes from about three or four strains. And they have to be rebred and replaced by new strains about every ten years because there are pests of one kind or another which become adapted to the new strain and destroy it, so you have to go to another. But where do you get new strains from? Answer: wild wheats, wild plants. And what are we doing? Exterminating them, because we think they are weeds. And this is the kind of attitude, a practical attitude toward the biological world, which we ought to be talking to the human race about. Human life depends on the natural world. You must protect it if you care for the human race.

Roundup: Is that message going to be the basic thrust of your new series?

Attenborough: I think broadcasters are in a very privileged position, particularly if you're going to take 12 hours of anyone's time, or 10 million people's time. You have a very privileged position, and you must be careful how you exploit that. And I see the job of "Planet Earth," as this new one's probably going to be called, as was the job of "Life on Earth," of making people aware of the facts. Making people aware of the planet on which they live. And you must not, I believe, you can't end every program saying, 'Now look, you're making a mess of this. You've got to do this, you've go to do that.' You must not propagandize, you must not preach all that much. At the end, undoubtedly I shall not be able to restrain myself from preaching for a bit, but I won't be preaching throughout 12 hours. It would be very easy to end every program by saying, 'And here's a tropical rain forest, look what you've done to it; here is the desert, look how you're letting it expand; here's the sea, look how you've polluted it.' But that would be counterproductive in my view because that would mean that every time someone tuned in, he turns on to look at beautiful creatures or because he's interested in geology or butterflys or whatever, and he ends up being lectured at, and told that he's a naughty boy.

Roundup: Do these concerns about the environment lead you to believe that some sort of global authority must be set up? Does it lead you into political thoughts?

Attenborough: Oh yes, it leads into political thoughts, of course it does. In the end, to get total action you will have to have governmental attitudes change. They are changing now. For one thing we have a Ministry of Environment in Britain now which we certainly didn't have 30 years ago. But in the end you see you have got to do it internationally. And there are some very good examples of it working. One of the best is in the Mediterranean. The Mediterranean 15 years ago was a sewer, but the countries with seaboard on the Mediterranean have gotten together and started a sensible clean up process.

Roundup: From our conversation, one suspects that action in the Mediterranean or the U.S. or the first world is not enough. The planet depends on those tropical rain forests.

Attenborough: Oh yes, absolutely. And the huge problem is that when people like me from the first world go talk to people in the third world and say, 'Don't cut your tropical rain forests,' they will say, 'Well great, thank you very much. This is the one product we have with which we can earn foreign currency, and you who destroyed your forests years ago, and have exploited your environment now come and tell us that we can't do it.' And that is the huge difficulty. It takes a lot of wisdom on the part of the third world leaders to avoid that kind of resentment, philosophic wisdom. And thank God many do. But it's tough, because, again, one of the things you can say is, 'Look, actually I know, we're very sorry that we have screwed things up, but quite honestly, if it goes on this way you will be the first people to suffer.' And that message, you see, it's all very well. I go to Africa fairly frequently. And you can say, 'Look,

(Continued on page 4)

Gilruth Center News

Call x3594 for more information

Ballroom dance—Learn the fine art of dance. Class will be held for intermediates from 7 to 8 p.m. and the introductory class from 8 to 9 p.m. beginning June 17. Class runs for eight weeks and the cost is $25 per person.

Defensive driving—Learn to drive safely and qualify for a 10% reduction in your insurance for the next three years. Class is held from 8 a.m. to 5 p.m. June 12 at the Rec Center. Cost is $18 per person.

Country western dance—Learn the latest in country and western dance steps as well as the old standbys. Class meets for intermediates from 7:05 to 9:05 p.m. and for beginners from 9:05 to 11:05 p.m. beginning June 7. This four-week class costs $20 per couple and is limited to 15 couples, first come first serve.

Dancercise—Part dance, part exercise, all fun. This class will gradually get you into shape. Class meets from 5:15 to 6:15 p.m. beginning June 1 for six weeks. Class meets on Tuesdays and Thursdays. Cost is $20 per person.

Children's movie—The next movie will be "Cinderella" and will include cartoons. The movie will be shown from 10 a.m. to noon June 12 at the Rec Center. Cost of $1 per person includes popcorn and drinks. Tickets are on sale at the Bldg. 11 Exchange Store.

June race—Entry blanks are available for our performance handicap 5 kilometer or 1 mile run to be held at 8 a.m. June 26 at the Rec Center. The cost is $1.

Softball tourney—Enter now for our mixed tourney, to be held July 11, 12 and 13 at the Rec Center. Cost is $65 per team and is limited to 24 teams.

SCUBA—Back by popular demand is our diving class. The class will be held from 6:30 to 9:30 p.m. on Tuesdays and 7 to 9:30 p.m. on Thursdays starting June 8 and running for six weeks. The cost is $70.

Square dance—This class is now available on Thursdays for beginners at 7:15 to 8:15 p.m. and intermediates from 8:15 to 9:45 p.m. beginning June 17 and running for 12 weeks. The cost is $25 per person.

Attenborough

(Continued from page 3)

don't kill your elephants, please don't kill your elephants!' And they will say, 'But they're knocking down our plantations!' Recently I was with gorillas. Those gorillas lived in a small tropical rain forest not far up on the side of a volcano in the Virunga Range on the border of Zaire and Rwanda. And the Africans who live in the shambas, the farms, are cutting down that forest because they've got kids to feed. And if they cut down the forest they can plant maize and feed them. But if they go on doing that, the rain forest will disappear and the gorillas will disappear. So I come along, or other Europeans come along and say, 'Look, you must stop this,' and they say, 'Well fine, but what about my kids?' Well, we have to put our money where our mouth is, or whatever the expression is, and if we think that is important, then we, the wealthy nations of the world, have to do something. We must subsidize those people. But there again, there are a lot of straightforward problems. For instance, it's no good sending them wheat. They don't eat it. And you say, 'Well they should eat wheat.' Well, they don't.

Roundup: Turning to your series, "Life on Earth," which was on PBS recently — there were some memorable scenes, such as the one where you summed up man's knowledge of reptiles while a rattlesnake lay coiled at your feet. That must have taken either a great deal of foolhardiness or courage.

Attenborough: Well, in a way. That was vainglory really. I think perhaps I shouldn't have done that, because it took people's attention off what I was actually saying. But in fact there's nothing to it. You don't have to be a naturalist of enormous perception to know that a snake doesn't have any legs, and if you haven't any legs, you can't jump. And so if you are two foot six inches long and you are coiled up, the only thing you can strike from a coiled position is something that is two foot six inches away. So if you sit three foot six away, there's no way that snake can strike you. What it can do is to slowly start unwinding and moving towards you, in which case you hop out of the way. But that's not in a flash, it's quite a slow movement.

Roundup: Did that happen during the filming of that particular sequence?

Attenborough: Yes. I mean, suddenly you think, 'Hello, he's getting a bit restive,' and you move away. But as I say, it was a slightly vainglorious thing.

Roundup: One last question. The things we've talked about have basically been rather scary. Do you have a sense of the ominous?

Attenborough: There are enormous hazards ahead. But I suppose in the end none of us are able to make that kind of ecological arithmetic. We don't have the data or the brains to know that we are winning or losing, or whether the chances for survival are great or small. But in the end you are left with your gut feeling, and the way you are, and I suppose I'm basically an optimist. If I wasn't, I wouldn't be pattering on about it. Might as well say, 'Okay, well, it's inevitable, let's make money, for tomorrow we die.' I don't think that.

Bulletin Board

Pressure Systems Week to be observed

The news stories are grim: six killed, 34 injured in a water heater explosion in January 1982 in Oklahoma; five killed, seven injured in a heating boiler explosion at a day care center in Atlanta in October 1980; one killed in a beer keg explosion in Maryland. These are examples of the sometimes fatal results of not properly maintaining pressurized devices. The week of May 30 to June 5 has been designated Pressure Systems Week in an effort to increase the awareness of JSC personnel about the hazards associated with pressurized vessels, piping and their components. Posters will be displayed in the lobbies of Bldg. 1 and Bldg. 45 illustrating some of the hazards pressure systems can create. For more information or advice, call Vincent Berend in Pressure Systems, x3194.

Offerings from the Exchange Store listed

The JSC Exchange Store, open from 10 a.m. to 2 p.m., has several offerings for the summer season. These include Plitt theatre tickets, $2.25 each; General Cinema tickets, $2.40 each; Astroworld tickets, $10 each; Six Flags tickets, $10 each; Astroworld season passes, $34.95 each; and postage stamp 20 cent books for $4 each. In addition, the Bldg. 11 store has for sale to NASA employees only a wooden model of the Space Shuttle Columbia, 1/200 scale, for $25 each.

EAA offering Astros tickets

The Employees Activities Association has obtained a group of tickets for the following Astros games: June 16, Atlanta Braves; July 15, Pittsburgh Pirates; Aug. 18, Philadelphia Phillies; Sept. 12, Los Angeles Dodgers. All tickets are in the Loge section and will be available three weeks before the game in the Bldg. 11 Exchange Store for $4.50 each.

Cookin' in the Cafeteria

Week of May 31 - June 4, 1982

Monday: Holiday

Tuesday: Beef Noodle Soup; Baked Meatloaf, Liver & Onions, BBQ Spare Ribs, Turkey & Dressing (Special); Spanish Rice, Broccoli, Buttered Squash.

Wednesday: Seafood Gumbo; Broiled Fish, Tamales w/Chili, Spanish Macaroni (Special); Ranch Beans, Beets, Parsley Potatoes.

Thursday: Navy Bean Soup; Beef Pot Roast, Shrimp Chop Suey, Pork Chops, Chicken Fried Steak (Special); Carrots, Cabbage, Green Beans.

Friday: Seafood Gumbo; Broiled Halibut, Fried Shrimp, Baked Ham, Tuna & Noodle Casserole (Special); Corn, Turnip Greens, Stewed Tomatoes.

Week of June 7 - 11, 1982

Monday: Chicken Noodle Soup; Weiners & Beans, Round Steak w/Hash Browns, Meatballs & Spaghetti (Special); Okra & Tomatoes, Carrots, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Beef & Barley Soup; Beef Stew, Shrimp Creole, Fried Chicken (Special); Stewed Tomatoes, Mixed Vegetables, Broccoli.

Wednesday: Seafood Gumbo; Fried Perch, New England Dinner, Swiss Steak (Special); Italian Green Beans, Cabbage, Carrots.

Thursday: Cream of Chicken Soup; Turkey & Dressing, Enchiladas w/Chili, Weiners & Macaroni, Stuffed Bell Pepper (Special); Zucchini Squash, English Peas, Rice.

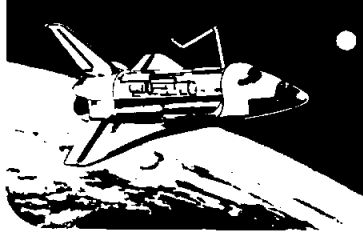
Friday: Seafood Gumbo; Baked Flounder, 1/4 Broiled Chicken w/Peach Half, Salisbury Steak (Special); Cauliflower au Gratin, Mixed Vegetables, Buttered Cabbage, Whipped Potatoes.

NASA
Lyndon B. Johnson Space Center

Space News Roundup

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 all space center employees. *Roundup* deadline is the first Wednesday after publication.

Editor Brian Welch



Roundup Swap Shop

Property & Rentals

For rent: Jamaica Beach cottage, $230/wk. or $35/day, make summer season reservations now. Call 480-0220 after 6 p.m.

For sale: 459 acres, 22 miles from Tyler, open pasture and timber, pond and branch, fenced, utilities, hunting cabin, $1,250/acre. Call D. T. Petty, (514) 592-2951.

For rent: lake house, lake living, all amenities, week or weekends. Call Jerry, x2576 or 554-6093.

For rent: lake house on LBJ, Kingsland, week/weekends, swim, fish or ski, boathouse w/lift, sleeps 6-8. Call Steve Hawkins, 482-1832, x2001.

For sale: Burnet County, 40 acres, beautifully treed property w/creek, good deer and turkey hunting, owner terms. Call Steve Hawkins, 482-1832, x2001.

For lease: Baywind I condo, 2 BR, 1 1/2 bath, downstairs, W/D, $450/mo. plus $450 deposit. Call Franklin, x3491 or 474-5267.

For rent: Galveston West Beach 3 BR, AC, Gulf side, $250/wk. Call 481-5943.

For rent: Hawaii 1 BR waterfront condo, Makaha area of Oahu, $175/wk. Call 481-5943.

For sale: water front lot, Lake Livingston, Point Lookout Estates, Point Blank, Texas, $5,000. Call 472-5667.

For rent: Rayburn Country lake front house, 3 BR, AC, fully equipped; sailboat, canoe, ski/bass boat, golf, tennis, horses available. Call Hayes, x7272 or 488-1446.

Cars & Trucks

1971 Chrysler Newport, very clean, power, auto, radio, 4 door. Call Crain, x5036 or 946-4458.

1976 El Camino classic, new paint, AC, V8, AM/FM stereo/8 track, blue metalflake, $2,200. Call Tim Pelischek, x3166 or 488-6167.

1972 Plymouth Fury III, V8, AC, PS, PB, AT, cruise, excellent condition, 82K miles, $850. Call Jon, x3381 or 554-6166 after 4 p.m.

1973 Mazda RX-3 wagon, 109,000 miles, 33,000 miles on engine, auto, air, needs engine work, make offer. Call Isaac Moore, x5348.

1974 Olds Cutlass S, 62,000 miles, V-8, 2 dr., auto, PS, PB, AC, AM/CB radio, 1 owner, runs well, $2,795/neg. Call 479-1197 evenings.

1978 Revcon motor home, low mileage, all options, front wheel drive, will take partial trade, $42,000. Call Douglas, (214) 332-5783.

1967 Chevy Chevelle Malibu 2 dr., excellent condition, 38,000 miles, original, $2,500. Call 488-2455.

1968 Rambler, fair condition, standard, 20 mpg, runs well, good beach car, $500. Call 559-2097 evenings, weekends.

Cycles

1981 Kawasaki 440 Ltd., 5,000 miles, excellent condition, belt or chain drive. Call 944-3847 after 5 p.m.

1974 Honda CB 360 with helmet, 7,500 miles, excellent condition, $575. Call Steve Williams, x4637 or 482-3696.

Three-speed girl's bicycle, handlebar grip gear shift, lights and generator, $20. Call x5561 or 481-1721.

1979 Honda XL-75, excellent condition, $400. Call McNeely, 482-1549.

1977 Suzuki RM-80, good condition, $300. Call McNeely, 482-1549.

1977 Honda 750-4, $1,200. Also wanted: late model van. Call Bret, 469-2808.

Raleigh "Rapide" 10-speed bicycle, like new, cost $185, will sell for $125. Call Horton, x4336 or 486-4880.

Schwinn tandem bike, as is, needs tires, $50. 488-1042.

Boats & Planes

Bass Hunter 1-person boat, swivel seat, trolling motor, battery, other extras, like new, $300. Call R. Sanders, x3458 or 481-6928.

Sunfish sailboat, $360. Call 559-2020.

Pets

Labrador pups, AKC, yellow whelped 3/9/82, parents on premises, both good hunters, hips guaranteed. Call 534-2488 after 6 p.m., anytime on weekends.

Free: mother cat and four kittens. Call 486-1058.

Free: kittens, mixed breed, hardy and cute, two 7-weeks available now, three 3-weeks available in June. Call Paul, x2449.

Siamese kittens, seal and blue point, male and female, 3 to 4 months old, shots and wormed, registration available, $50 w/o, $100 w/papers. Call 554-6895 evenings or weekends.

Affectionate dog, mostly Spitz, neutered, needs family with yard and children for romps. Call J. T. Darwin, x3551 or 484-1241.

Household

Black and white sofa and loveseat, $150; chrome/glass coffee table and end table, $50. Call Kandy, x7256.

Blue and red couch, $50; blue chairs, $50 each; twin bed with headboard, box spring and mattress, $65; baby bed, $45; Sears electric grass edger, $20. Call 488-1326 after 5 p.m.

G. E. dishwasher, 12 years old, works, $50. Call 488-2801 after 5:30 p.m.

Automatic adjustable bed with built-in massage, used only two months, $900 new, will sell for $600. Call x5561 or 481-1721.

Paul Bunyan king size bedroom set with linens, bedspreads, electric blanket and pillows, call any time, leave message, 482-2018.

Two skylights, 2 x 4 feet, self-flashing double-domed, everything you want in skylights, $120 each. Call George, x3849 or 488-4212/4236.

Metal desk, 5 drawer, 60 x 30 in., formica top, $100. Call Mike, x5280 or 486-7018.

Antique old pine storekeeper's desk, original, $250. Twin size bed, complete, excellent condition, $50. Call 474-2981.

Musical Instruments

Fender precision bass, $475; Peavey "TNT 100" amp, $275. Call 488-1689 after 4 p.m.

Wanted

Want a dependable carpooler from Texas City to NASA for 8 a.m. to 4:30 p.m. shift. Call Linda, x4171.

Want nonsmoker to join carpool, meet at Target at S. Loop at S. Wayside, 8 a.m. to 4:30 p.m. shift. Call Helen, x5447.

French-Canadian high school student, female, 16, wants live-in baby sitting job during summer vacation, very responsible. Call Mrs. Aline Meek, 334-3092.

Want to join or form carpool from NW Houston (290 or 610) to NASA. Call Pat, x2213 or 937-7298 evenings.

Want captain-style bunk beds, preferably with bookcase headboards, white or natural wood okay. Call 554-6317.

Want Craftsman tools, router, inexpensive electric dryer, stand for 23" TV. Call 332-0187.

Want pieces, especially forks, to Community Silverplate "Coronation" pattern. Call x2517 or 480-0139 after 5 p.m.

Photography

For sale: Mimiya super press 23 camera with 100mm 3.5 lens, 2-120 roll film holders and focusing screen, $400. Call Frank, x3836.

Computers

New 280A 4m/c computer with 192K core, 2 discs, 3 terminal and 2 printer outputs. Call 338-1055.

TI 99/4 computer users group being formed in JSC area, discount prices available, free software exchange and technical advice. Call J. Owen or R. Savely, 554-2844 or 488-5590 after 5 p.m.

If you witnessed an on-site accident involving an open bed truck and a white sports car on May 13 at 1:15 p.m., please call Mike, x4402. Need a witness for insurance.

Miscellaneous

Recreational vehicle type oven/range combination, Coleman brand, LP or natural gas, clean, works well, $50. Call Bob, x5316 or 559-2325 after 7 p.m.

Nine years of Playboy magazine less six issues, $50. 185 issues of National Geographic magazine, $50. Call 474-2981.

Horse trailer, single, good condition, $500. Call McNeely, 482-1549.

Pool table, 40 x 80 in. playing surface, table cover, phenolic ball set, five cue sticks, powder dispenser, $350. Call 474-4202 evenings.

HO trains, 10 inch turning plow, apartment gas stove, king size bedspread, 10 foot round rug. Call 482-7073.

Sacrifice. Woman's Seiko date watch, stainless case/band, automatic, water/shock resistant, purchased early '82 locally, new $110, will sell for $30. Call Nancy, x4918 or 333-5204.

Will sell old Rice Hotel menu with autographs of John Glenn, Scott Carpenter and Deke Slayton from early 1960s. Call Ruth Smith, 524-7002 or 529-0010.