

President Nixon Says: "Look to the Unknown, Go There!"

During his visit to JSC March 20, President Richard M. Nixon praised Center employees for their contributions to the space program.

"Every Astronaut I have ever talked to says it is because of those men and women on the ground that we were able to do what we did in the air and I applaud those on the ground, all of you," President Nixon stated.

"... You have contributed to a great technological breakthrough, but most important, when history is written in perspective 20 years from now, you have contributed to what is far more important: The spirit of a great country, which means always look out toward the unknown, go there, take any risk, make any sacrifice, and never be discouraged because sometimes you may fail," the President added.

Last Wednesday's appearance marked the President's third visit to JSC. He visited the Center in 1968 as a presidential candidate and again on April 18, 1970, when he presented the Presidential Medal of Freedom to the JSC Mission Operations Team for its role in successfully bringing the crippled Apollo 13 spacecraft back to Earth.

"I was here when the Apollo 13 crew came back. They didn't

make it, but they got back," the President reflected, "There are some who said they were failures. They didn't fail. The men and women on the ground didn't fail, because you are only a failure when you give up and they didn't give up."

"And to me, those men with their courage, with their ingenuity, even though they didn't make it, told us something about

the spirit of America, a spirit that keeps us moving forward as the greatest Nation, we believe, in the world today."

Before speaking to the JSC crowd, President Nixon was greeted in the Building I Visitor Orientation Center by NASA Administrator Dr. James C. Fletcher and JSC Director Dr. Christopher C. Kraft, Jr.

JSC Space Shuttle Program

Manager Robert F. Thompson, briefed the President on the status of the Nation's next generation manned spacecraft. The President was also briefed on the Apollo-Soyuz Test Project (ASTP) by the ASTP technical Director for the United States Dr. Glynn S. Lunney and by the U.S. crewmen, Brig. General Thomas P. Stafford, Donald K. "Deke" Slayton and Vance D.

Brand.

During his speech, President Nixon discussed the significance of ASTP.

"The Russian people want peace and we want peace. The Russian people want progress and we want progress. The Russian people want to cooperate with the United States and we want to cooperate with the Russian people and all people on Earth in anything that will advance the cause of science, the cause of health, the cause of a better life for all of our children as well, of course, as the cause of peace."

The President greeted the visiting Soviet Engineers in the audience with "Very happy to meet all of you"—in Russian.

President Nixon, along with NASA Administrator Dr. Fletcher, presented the Distinguished Service Medal—NASA's highest award—to the Skylab 4 crew.

Gerald Carr, Skylab 4 commander, presented the President with a pen and pencil set that was used aboard Skylab. The President said the memento would be placed in the Presidential Library along with other items brought back from various space ventures.

President Nixon ended his visit by shaking hands with the crowd while the Clear Lake High School band played "Hail The Chief."



MINGLES WITH CROWD—During his visit to JSC March 20, President Nixon shook hands with the crowd of JSC employees who had gathered to hear his speech. The attendance was estimated at 5,000, including tourists.

Lunar Scientists Conclude Active Week at JSC

The fifth Annual Lunar Science Conference was held at JSC during the week of March 18. More than 550 lunar scientists were on hand for the week's worth of debate, discussion and discovery.

As a result of the proceedings of the previous four lunar meetings, this year's conference was tailored more to discussing overall trends rather than the previous tactic of describing the individual rocks or fragments. In that regard, this conference was broken down into six main topic areas covering the lunar regolith, interior, crust, mare basins and the interchange of materials between the moon and its environment.

Dr. A. Albee of the California Institute of Technology (Cal-Tech) presented several papers which he and his colleagues worked on suggesting that an early lunar rock-type has been identified and dated. Using a sample from Boulder#2 at station#2 from the Apollo 17 mission, Dr. Albee's group came up with an age of 4.60 billion years for the rock. According to Dr. Albee, this rock was tentatively concluded to represent an example of a very early differentiate. Dating and analysis of the rock sample, according to the Albee group, suggest that the lunar crust formed very early in the evolution of the moon by extensive melting associated

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ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



Vol. 13 No. 9

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Europeans To Fly Aboard Shuttle

A representative of Europe's Space Research Organization (ESRO), at a recent press conference at JSC, stressed the importance to Europe and the U.S. of the international cooperation in the Space Shuttle Program.

Heinz Stoewer told a group of Houston newsmen on March 22 that "For Europe this is a historical first in that this is the first program of manned space flight we're entering and we're involved in a very intense cooperation

with our friends here in the States in making this program come true."

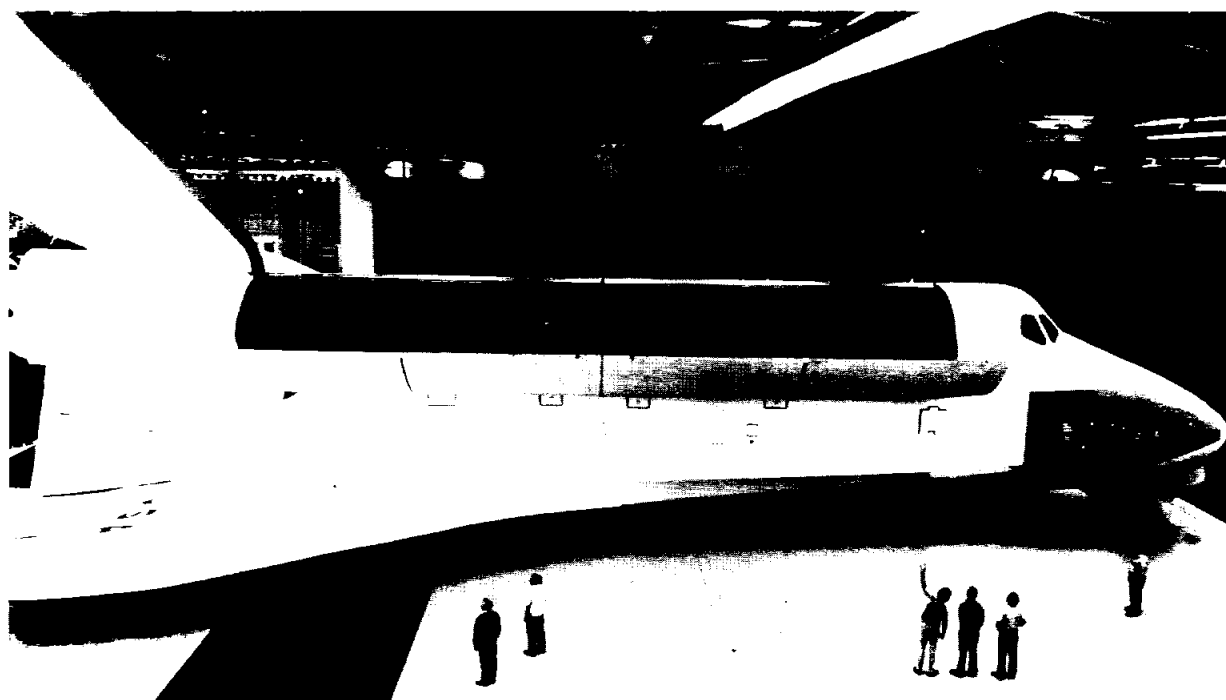
Stoewer, who is Spacelab Project Manager for the European Space Research and Technology Center, The Netherlands, headed a group of European scientists who were at JSC to brief Shuttle Program personnel on the status of Spacelab.

The Spacelab Program is a cooperative venture between NASA and the European Re-

search Organization and will provide a self-contained laboratory unit that will fit into the cargo bay of the Space Shuttle Orbiter. Spacelab is being funded by nine countries which comprise ESRO-Belgium, Denmark, France, Italy, The Netherlands, Spain, Switzerland, The United Kingdom and West Germany.

Spacelab can carry a crew of four, will have a pressurized shirtsleeve environment, and

(Continued on Page 3)



TAKING FORM—Full-scale Space Shuttle orbiter mockup is shown, with aid of artist's airbrush, much as completed craft will look. Vehicle stabilizer, not put on mockup because of ceiling height limitations, has been added and framework supporting mockup has been deleted. This mockup was unveiled to the press at Rockwell International Corporation's Space Division, Downey, California on March 14, 1974.

NASA Gets Award For TV Program

NASA has received a gold plaque from the Principality of Monaco for its contribution to worldwide television.

The award was presented to NASA Administrator Dr. James C. Fletcher by Eugene P. Kopp, Deputy Director of the U.S. Information Agency, on behalf of Prince Rainier III of Monaco. The presentation was made at the Annual Luncheon of the American Astronautics Society on March 8.

The special "Silver Jubilee" award was made to NASA by the Prince for providing "Television From The Moon"—the live telecasts made by American Astronauts as they conducted moon explorations during the Apollo program.

(Continued on Page 3)

Hudson to Head New JSC Office

Dr. Robert D. Hudson has been appointed Project Manager of the recently established Environment Effects Project Office at JSC. This office will report to the Director of Science and Applications and will be responsible for planning and management of Agency Programs to assess the environment impact of Shuttle Operations.

Dr. Hudson previously served as Chief of Physics, Planetary and Earth Sciences Division.

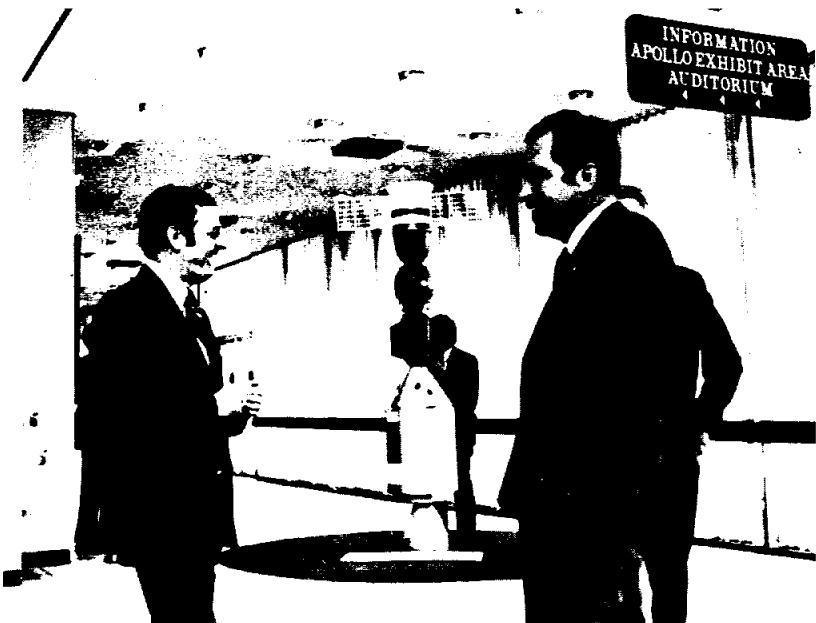
President Nixon Receives Briefing; Speaks to Crowd at JSC



NASA Administrator Dr. James C. Fletcher and JSC Director Dr. Christopher C. Kraft brief President Nixon on current space projects underway at the Center.



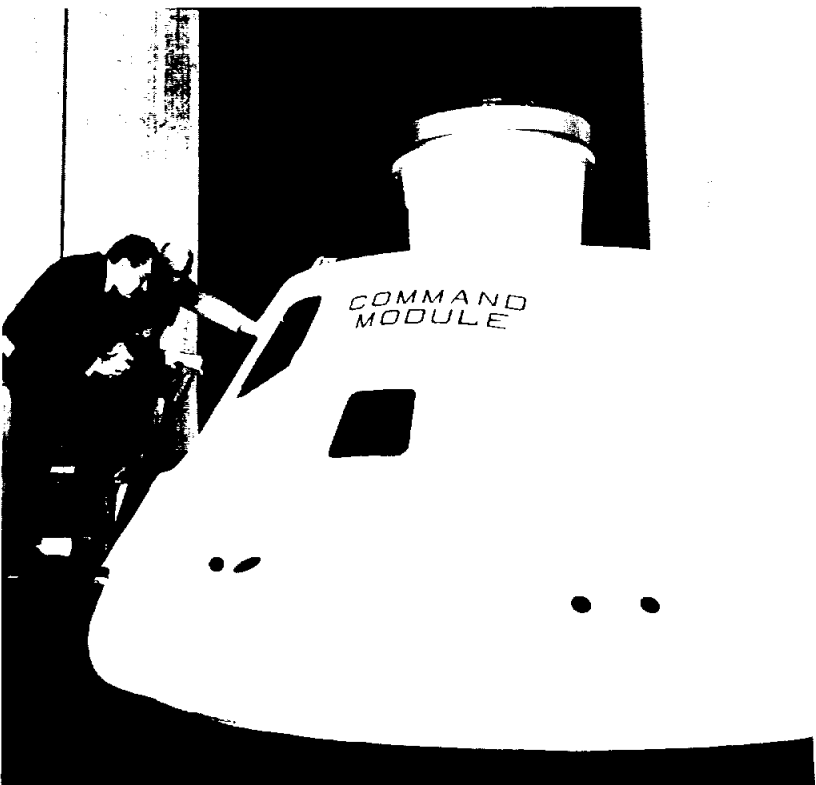
Crowd of approximately 5,000 listen attentively as President delivers his speech.



Using a 1/20th -scale engineering model of the complete Apollo-Soyuz combination, Dr. Glynn S. Lunney, ASTP Technical Director for the U. S. briefs the President on ASTP.



President Nixon recognizes Soviet Engineers in the crowd and pauses to chat with them.



Brig. General Thomas P. Stafford, Commander of the U.S. Crew for ASTP, briefs the President on the Apollo Soyuz Test Project (ASTP) using a full-scale Apollo command module and docking module.



Dr. Fletcher and Dr. Kraft say good-bye to the President as he prepares to leave the Center.

ROUNDUP
NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON TEXAS

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Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

MISCELLANEOUS

Franklin mint medals, complete 36 medal Presidentials, complete 40 medal First Ladies, office, 483-5067, home 488-1307.
 Polaroid SX-70 new camera, leather gadget case, complete set of accessories, 5 film packs, retail \$260, sell for \$175, 488-2619.
 Eldorado De'Jur 2888 dual eight movie projector, used for 3 months, \$75, 488-2619.
 U. S. mint plate blocks, and sheets, buy sell trade, 488-0317.
 Baby carriage (Pram), large wheeled, \$15, baby play pen, \$5, 554-3866.
 U.S. Army carbine, 30 cal with extra clips, ammo, NRA good, \$100, Kilpatrick, 534-4603.
 Long red wig with case, nvr worn, \$50, 471-4351 aft 5.
 Would like to trade 30 books (or less) of Big Bonus stamps for Top Value stamps, Jacobs, 3561, 774-9924.
 Memberships available in Hobby based flying club, by Cessna 150, 172, Cardinal, Piper Arrow and Mooney, Dorrin, 483-4393, Nieder, 483-4391, Ward 483-3711.
 Chrysler Air Temp ac, \$25, Whirlpool refig, 17 cu-ft \$35, Cosco hi chair, \$6, 946-4311.
 R/C system, Heathkit, GD-19, 5 CHNL proportional, 4 sub-miniature servos, xint cndn, 2 planes, scooter II w/ 36 eng, flown twice, scale P51 for 40 in box, \$250, Wells, x3431.
 Queen saddle, \$175 nvr used, 2 barrel racing saddles, used once \$150 ea, Kay, 748-4500, x 348.
 Encyclopedia Britannica, 73 edition, xint cndn, \$300, 487-1247.
 Lawn mower, self propelled, 488-3188.
 Minolta SRT 101 35 mm camera w/ Fl. 4 lens and case, \$190, Whittle, 554-7098.
 Garage sale, lots of goodies, 1803 Saxony Ln, (1 blk behind Nassau Bay motel-Queens crt), March 30-31, Billie 6233.
 Good set of Wilson staff woods, 1-4, \$20,

Siler, 333-2787.
 Baywood C.C. membership, 534-4986 or x-2905, Jerry.

HOUSEHOLD ARTICLES

Patio chairs: 2 rockers, 1 chaise lounge, heavy alum, frames w/ large new custom cushions, for the cost of the cushions, \$75, 333-2509.
 Electric washer, gas dryer, refrigerator, \$90, for all or \$35 each, Apt. size gas range, \$25, 473-0979.
 Two gas dryers, 1 counter mount dishwasher, all need control system trouble shooting, otherwise work well \$40 each Peacock, x4601 or 332-2292.
 Barrel table, solid oak, \$20, 333-2509.
 Rollaway bed, qd cndn, \$10, 487-1247.
 G.E. Mobilemaid dishwasher, portable, white sink connector, xint, hcly used, new \$185, now \$90 or bst ofr, 333-3754 aft 7.

VEHICLES

72 Camaro, air, auto, dvr str, discs, Vinyl top, AM-FM 8tk stereo, 17 MPG, xint, Morrison, 333-2754 aft 7pm.
 71 Mazda, sta wgn 4 spd trans, piston eng, gd shape, \$1200, Bowdre, x 3746 or 481-5330.
 72 Honda 750, K-Z, lug rck, back rest, windshield, \$1150, 481-5330.
 Jayco hdtv floddown camper for rent, kitch en, ice box, sleep 81 cow profie, pulls easily, \$10/day, \$57/wk (\$25 min) Kilbourn, 482-7879 or 483-4801.
 VW Dunebuggy, 12 VElectrical System, 58 hp eng perfct cndn, str and off-rd use, \$750, Peacock, x4601 or 332-2292.
 71 Chev 1/2 ton picup, 32000 mi, ac, ps, at, 6 ply tires, xint cndn, \$2200, Statz, 482-7607.
 Camper cover, custom bit, wb, insulated, paneled, vry gd cndn, \$150, 482-7607.
 71 Champion Mobile home, 14x70, 3br, 2 bh, cntrl air/heat, \$400 equity, assume notes of \$113.75 mo, xint cndn, 471-4351.

67 Camaro, 6 cyl, xint cndn, gd gas mi, manual x-miss, \$700, Smith 488-3238.
 69 Pontiac Custom s 2-dr ht, air, pwr brks, str, turbohydramatic, vinyl top, bargain at \$650, DeAtkins, 482-1949 Or x 4801.
 71 Toyota Corolla, 2-dr, air, auto, am/fm stereo, Falbo, 5371 or 645-7093.
 Girls 26 in. bike, gd cnd, Thiel, 946-6814, or 5018.
 62 Chry, 4-dr, ps, air, radio, auto trans, gd mi, xint tires, xint mechanical \$150, 333-2990.
 70 Olds 88 Custom, 48,000 mi, nw tires, cruise control, nice car, \$1500 or bst ofr, Newman, x 7447 or 488-4370.
 Alfa Romeo, convertible, 59 Giulietta Velore, ail original and ail working, xint cndn, \$1500, 554-2187.
 69 Corvette 350 cnvrt, orig owner, pwr, air, 4-spd, clean, xint cndn, \$3300, 487-1247.
 72 Gremlin x, air, auto trans, am/fm, v-8 engn, clean, \$2200, Jay, 481-2335 aft 5:30 p.m.
 Dunebuggy, Corvair, Calif Custom, 30 mpg, Bullock, 488-6095.
 67 Ford Ranch wgn, air, ps, Moran, x-2406, 333-2847.
 71 Mazda RX-2, 2-dr, cpe, air, 4 spd, lw mi, xint cndn, \$2250, 946-0317.
 53 Chevy 210 2d, xint body, nd upholstery, nw w/ tires, runs well, std trans, orig thru-out, bst ofr over \$625, 482-3100, aft 4:30.
 70 mini-trail 50 basket case, \$35, Italian minicycle basket case, no title, \$35, go-cart frame w/ whs, tires, 2 engines, not running, \$40, or \$100 for all, Guy, 482-3100 aft 3:30.
 71 Mustang, 302V8, auto, air, ps, radio, \$2195, x4651, 991-2041.

PROPERTY AND RENTALS

Lake Livingston resort/retirement home 3-2-1, attractively furnished, Cape Royale area, week, monthly and yearly rates, 488-4487.
 Lot in Nassau Bay, trees, high and dry, 333-2509.
 Furnished house for rent, Bayview, 203 Miles Road, 7 mi from NASA, 1 bdrm, \$75, 771-5229 or 923-7027 aft 6 pm.
 Furnished house for rent, Bayview 207 Miles Road, 7 mi from NASA, 2 bdrm, \$85, 771-5229 or 923-7027 aft 6.
 League City New port, by owner, 3-2-2 home 1600 sq ft, bit-ins, large den, cntrl air, fnced, xtras, 6% loan (assumable/equity), 554-3866.
 For sale, beautiful 1 acre lot, Friendswood Forest subdivision xint site for Executive home, Thiel, 946-6814 or 5018.
 Dickinson/Bayou Chantilly-modern 3-2-2, lg den, firepl, lease, \$235/mo, 337-2638.
 Sagmont 4-2-2, 1947 sq ft, \$30,500 or \$5500 equity, Snyder, x5482 or 481-1670.
 Wooded waterview lot on Lake Livingston, 75x137, utilities and restrictions, 946-7587.
 Deer Park, 3-2-2, cntrl air/heat, den formal dining rm/living rm, bit-ins, 479-1408.

PETS

2 month old puppies, 1 male, 1 female, white, toy AKC French poodle for sale, 471-5757.
 Male Pomeranian, rare, blk, reg, 2 mon, sacrifice, \$100, 472-4588.
 Dog, free, no shots, 6106 or 477-8339 aft 6.
 Boxer puppier for sale, AKC, good pedigree Erb, 334-3319.
 Five-week-old male puppy, mixed parent-hood, wh German Shepard/Collie, free, 333-2587.

BOATS

Dry boat and camper storage, 3 sizes, \$15 to \$210 off Gulf Freeway at League City, 332-2291 or 332-2292.
 16 ft fiberglass boat trailer, 28 hp motor, bail, 2 gas tanks, \$400, 471-4351.
 70 Glastron v-177 swinger w/ sportsman trailer, Volvo 170, loaded, xint cndn, McCreary, 946-5285.

Attention

There will be a meeting at the Gilruth Recreation Center on April 13 at 3:00 p.m. for parents interested in a summer camp for children 6-16. The camp is sponsored by the Texas State Teachers Association at King's Ranch in Bandera, Texas.

The ranch has complete camp facilities on 120 acres of land with a mile of frontage on the Medina River. Activities include archery, arts and crafts, dramatics, water skiing, horseback riding and hiking.

Also remember:— JSC Easter Egg Hunt, Saturday, April 6 at the Recreation Center, 1:00 p. m.; tickets are 50 cents; children 2-8 may participate.

—JSC Casino Night at the Recreation Center May 25; watch for details.



DEDICATION CEREMONIES—The 5th Annual Lunar Science Conference held recently at JSC, was dedicated to the late Dr. Paul W. Gast, one of the Nation's leading experts in the field of lunar geochemistry. Mrs. Joyce Gast, right, wife of the late Dr. Gast, attended the ceremonies and was presented a photo album of her husband's activities at JSC by Anthony Calio, left, Director of Science and Applications at the Center.

Lunar Science (Continued From Page 1)

with differential, gravitational separation of various other rock types.

In four years the major thrust of the papers presented at these meetings has slowly shifted from the initial "gee whiz" dating and chemical analyses of the rock to cross-discipline studies of the possible implications of the lunar samples on our understanding of the chronology of the solar system.

Dr. John Wood of the Smithsonian Astrophysical Observatory, one of the Pl's, indicated that in recent meetings the trend has been to modify earlier models of the moon.

"Even the second generation of models are now undergoing really intensive examination with construction of new models which I think most people feel are moving a lot closer", Dr. Wood said. The new models he was referring to include a modified capture theory for explaining the accretion (or creation) of the moon which differentiated into the various rock-types during later settling and cooling.

One of the overall feelings expressed by a large majority of the scientists in attendance was that next year's Sixth Annual Lunar Science Conference would see many more of the scientists in basic agreement with each other's theories. However, most of them cautioned that a thorough understanding of the moon is still many years, possibly decades away.

One researcher commented that it was "Simply amazing that in only five years we know more about the moon than we were able to learn about the earth in over a million years of

NASA Gets Award

(Continued From Page 1)
 Prince Rainier said that NASA deserved special recognition for "one of the most dramatic television events of the past quarter century."

living on it."

On Thursday, with most of the conference matters tucked neatly away, Dr. Noel W. Hinners, Deputy Director and Chief Scientist, Lunar Programs Office at NASA Headquarters, Dr. Robert Pepin, Lunar Science Director-Designate and Anthony Calio, Director of the Science and Applications Directorate at JSC joined Dr. Christopher C. Kraft, JSC Director in dedicating the 5th Annual Lunar Science Conference to the late Dr. Paul W. Gast. Prior to his death in May of 1973, Dr. Gast was chief of the Planetary and Earth Sciences Division here and had been for many years a premier lunar scientist.

Calio described Dr. Gast as "One of the moulders of our lunar research program".

Someone who would not give up and someone who was entirely thorough and demanding" was the epitaph which Dr. Kraft used.

Both Hinners and Pepin described the late lunar scientist as one to whom they looked up and from whom they sought guidance and inspiration.

Dr. Gast's wife, Joyce, was at the dedication and expressed her gratitude to members of the scientific community for their kind words.

I'm sure Paul would have appreciated the exchange of ideas and thoughts which is occurring here, it's just as he would have had it", she said.

The general session was held Thursday afternoon and a summary session recanting the results from the preceding four days was held Friday morning.

As a special program for the conferees, Dr. Owen Garriot, Skylab 3 Science-Pilot and Bill Lenoir, scientist astronaut visual observations specialist, presented a two hour show detailing some medical, earth resources, solar and visual observations results from Skylab.

Buy U. S. Savings Bonds

Space Shuttle (Continued From Page 1)

will be capable of accomodating typical laboratory and observatory equipment.

Stower told newsmen that two teams composed of European aerospace firms are vying for the prime construction of Spacelab. ESRO is scheduled to select the successful team early in June, Stower said.

Total cost of Spacelab, which will be shared by the nine countries, is expected to be about \$350 million, Stower told newsmen.

"We will have European as-

tronauts' who will be trained probably right here in Houston and they will fly together with American 'astronauts', or I should say payload specialists because we are not thinking of them as professional astronauts but as scientists," the ESTEC official said.

Spacelab is scheduled to fly aboard the first operational mission of the Space Shuttle Orbiter sometime in 1980. Marshall Space Flight Center, Huntsville, Alabama, is the lead Center for the Spacelab Program.



SHUTTLE ORBITER UNVEILED—Representatives of the news were given the opportunity to walk through the full scale mockup of the Shuttle Orbiter at the Space Division of Rockwell International, Downey, California. The tour of the orbiter followed a Shuttle status review on March 14, presented by Dr. Myron Malkin, Director of the NASA Shuttle Orbiter Program Office, JSC (shown standing in front of screen), and George Jeff, newly appointed president of RI's Space Division.

NASA Remote Sensing to Assist In Eradicating Screwworm

Officials from NASA's Johnson Space Center and representatives of the Mexican National Commission for Outer Space (Comision Nacional del Espacio Exterior) have completed plans for a remote sensing test project to assist in eradicating the screwworm from Mexico.

The eradication program itself is being conducted by The Mexican American Commission for the eradication of the screwworm, established last year by the Secretaries of Agriculture in the two countries.

The screwworm is a grub or larva which destroys cattle, poultry, and wildlife in the warm regions of the Americas. It develops from screwworm fly eggs laid in open sores and in the navels of newborn animals.

The grub grows to a length of about a half-inch by eating living flesh, frequently crippling or killing large numbers of domestic animals. Actual loss to the livestock industry has frequently exceeded \$200 million annually.

At one time, screwworms infested the United States from Florida to California and as far north as Nebraska. During the past two decades, they have been kept in check in the U.S. by dropping billions of sterile flies to mate with females in the infested areas.

An active program by the U.S. Department of Agriculture succeeded in pushing the screwwormfly out of the United States; for several years, a 300-mile-deep buffer zone has been established along the northern border of Mexico from the Pacific Ocean to the Gulf of Mexico.

Due to mild winter conditions, the screwworm fly managed to reinfest parts of Texas in 1972, causing an estimated \$100 million in damage to livestock.

Beginning in 1975, a joint effort by the American and Mexican governments will attempt to eradicate the insect throughout Mexico, maintaining a new buffer zone across the narrow Isthmus of Tehuantepec.

This new corridor will reduce the cost of maintaining the cleared zone to a fraction of present levels. Beginning in 1975, a joint effort by the American and Mexican governments will attempt to eradicate the insect throughout Mexico, maintaining a new buffer zone across the narrow Isthmus of Tehuantepec.

To bring about the eradication of screwwormflies in Mexico, agriculturists must have accurate reports on environmental conditions that affect the breeding habits of the flies. In the United States, information was communicated quickly through an extensive network of weather stations.

In Mexico, an estimated 260

additional weather communications links would have to be constructed to provide similar data. However, scientists in the Life Sciences Directorate's Health Applications Office of JSC believe that sensor data provided by the Earth Resources Technology Satellite (ERTS) the ITOS experimental weather satellite and similar space vehicles can be combined with information returned by a Mexican remote sensing aircraft to provide detailed reports on soil temperature, moisture, and vegetative cover—all of which affect the breeding patterns of the screwwormfly.

If satellite data can accurately pinpoint potentially favorable conditions for screwworm infestation, this will aid flight planners immensely in selecting areas for distribution of the sterile flies.

The test site selected for the project by a joint team from Mexico and the United States is an area 50 miles wide by 100 miles long, with its center at Cordoba, a city midway between Mexico City and the Gulf Coast port of Veracruz.

At the remote sensing test site, measurements from equipment on the ground will be collected to be compared with the results of analyzed data provided by the Mexican aircraft and the



twice-daily overflights of the weather satellites. The region around Cordoba contains both lowland and highland plains, major breeding areas for the screwwormfly.

Although screwworms do not pose a serious threat to human health, Dr. Charles M. Barnes, Manager of the Health Applications Office at JSC, says that remote sensing techniques tested in Mexico may play an important role in understanding insect ecology.

Barnes points particularly to the possibility that remote sensing technology may help extend

the sterile fly eradication technique to other insects, including the disease-carrying tsetse fly. The tsetse fly is so great a danger to the health of humans and animals that thousands of square miles of Africa are made virtually unfit for habitation.

The experimental phase of the remote sensing project in Mexico is expected to begin in late February and continue for approximately a year. If the techniques being developed are successful, they may be integrated into the operational screwworm eradication program being conducted by the two nations.

Re-Fanned Jet Engine Successfully Tested at LRC

A major milestone in NASA's efforts to provide technology to quiet present day jet aircraft has been passed with a successful test of a modified (refanned) JT8D jet engine.

During the initial test, the re-fanned engine was run through its complete operating speed range, and achieved a thrust value above takeoff thrust.

The JT8D, built by Pratt and Whitney Aircraft Division of United Aircraft Corp., East Hartford, Conn., powers a major portion of the nation's narrow body commercial air fleet. It is used in the Douglas DC-9, Boeing 727 and Boeing 737 aircraft. The modified JT8D engine could reduce the noise footprint areas

of these aircraft by 75 percent or more.

Managed by NASA Lewis Research Center, Cleveland, Ohio, the "Refan" program involves work with both engine and airframe manufacturers to develop modifications for engines on existing aircraft which could make them significantly quieter.

The program is called "Refan" because the engine is being modified by replacing the present two stage fans with a larger single stage fan.

The new fan will increase the amount of air bypassing the "hot section" of the engine by 100 percent and reduce the velocity of the engine jet by nearly 20 percent. Because the mixing

of the engine jet with the outside air is a prime noise source of the JT8D, reducing the jet velocity reduces the noise significantly. Even with the reduced jet velocity, the takeoff thrust will increase about 15 percent because of the larger amount of total air flowing through the engine.

The engine modification work is being performed under contract by Pratt and Whitney. Initial engine tests are being run at the East Hartford plant, with altitude tests to be conducted in Lewis' Propulsion Systems Laboratory beginning this summer.

Station Initiates Astronomy Show

A weekly astronomy talk show has been initiated by KWBA radio in Baytown, Texas. The program is aired every Tuesday from 8:35 to 9:00 p.m.

The host for the program is Robert C. Everoski, Astronomer and Mathematician.

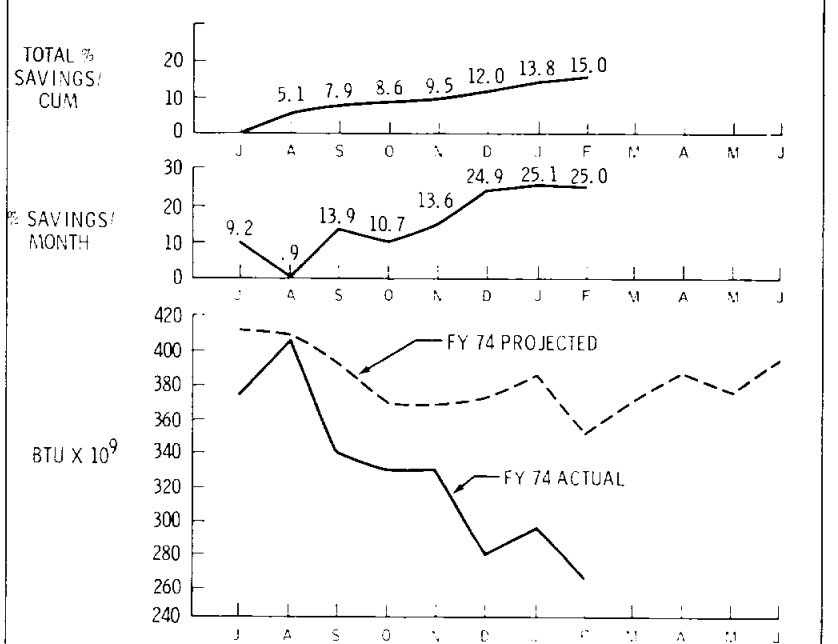
The format of the program alternates from an observing session one week to a special guest the following week. Many JSC employees, Everoski says, will be guests on the program.

Items of interest on the program include learning what planets are visible in the morning and evening skies; determining what phase the Moon is in; and similar topics.

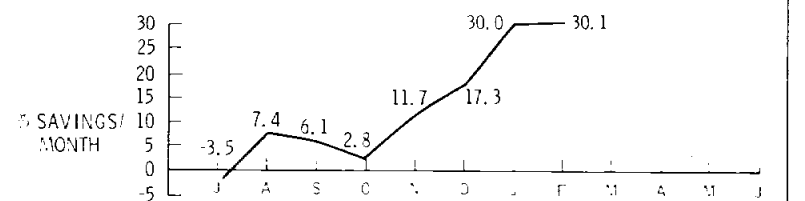


ASTROWORLD CHARACTERS—Characters from Astroworld were on hand at the Center recently to tell JSC employees all about their "land of magic". With the characters are Mary Ann Thompson (left) and Mary Yarbrough (right). JSC night at Astroworld is April 19, 7:30 to midnight. Tickets are \$3 (children under 3 admitted free). If rained out, the tickets will be good for any day during the 1974 season.

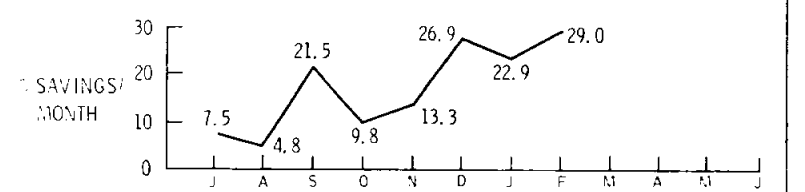
JSC FY 74 TOTAL ENERGY CONSERVATION



JSC FY 1974 NATURAL GAS CONSERVATION (HEATING AND COOLING)



JSC FY 74 ELECTRICAL CONSERVATION



Earth Resources Contract Negotiated

JSC has selected Lockheed Electronics Company's Aerospace Systems Division of Houston for negotiation and award of a cost-plus award-fee contract for technical and scientific support services at the NASA Earth Resources Laboratory, Bay St.

Louis, Mississippi.

The total estimated cost for a two-year period of performance is approximately \$2.8 million. Ocean Data Systems, Inc. of Rockville, Maryland also submitted a proposal for the contract.