

Special staff completes Shuttle report

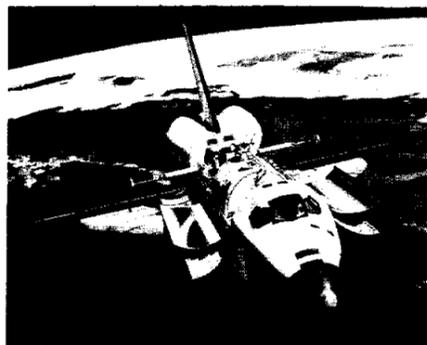
The special staff of individual consultants, asked last May to assess the adequacy of NASA Space Shuttle management, has submitted its report to Deputy Administrator Dr. Alan M. Lovelace. The report makes eight major conclusions which will be considered in the overall examination of Shuttle management:

1. *The original cost commitment for Shuttle development established an austere fiscal environment at the beginning of the program. This environment became more constraining under the annual budgets established in subsequent years.*

In the formative stages of the Shuttle program, NASA officials took an economical approach to space transportation. This commitment created a management challenge to bring in a difficult technical program within a limited budget. The resulting fiscal environment shaped the Shuttle management approach.

Commendable achievements

2. *The overall Shuttle management system has achieved a commendable level of accomplishment.*



This is particularly noteworthy considering fiscal constraints placed upon the program since its inception.

3. *In the effort to live with funding limitations while still progressing acceptably toward completion, Shuttle management has generally set up work schedules that demanded more performance than could be delivered.*

This approach resulted in a portion of the planned work being deferred each year as required funds exceeded funds available. When critical new work evolved, or technical problems developed, even more planned work had

to be deferred. As a result, major planning adjustments continually precluded the establishment of a stable baseline. Then, cost increases occurred associated with the deferred resolution of technical problems.

Need long-range planning

4. *There has been a lack of adequate long-range planning and timely status reporting. Emphasis has been on the current fiscal year, with only secondary attention given to succeeding years and estimates to completion.*

NASA has not performed long-range planning to the extent required for a program as complex as the Shuttle. A significant feature of the Shuttle program has been constant near-term planning without an adequate estimate of work to be done in the future, a consequence of issues involved in finding Number Three.

Responsible managers must make both near- and far-term estimates of work remaining, with appropriate guidelines and good cost estimating tools. Near-term replanning has absorbed so much

attention that long term impacts of deferred work have not been integrated into budgets.

Discipline needed

Discipline is needed now throughout the entire Shuttle program to identify the baseline and make quality projections of costs and realistic schedules. A "culture" which must be overcome exists now, due to the cumulative impact of the various constraints and pressures to date.

5. *The organization for the Shuttle program appears to be functioning well from a technical standpoint, but is not functioning acceptably in the areas of schedule and budget. Strengthening of the organization at all levels is needed.*

The original "lead center" concept at the beginning of the program envisioned a Program Director (Level 1), a Program Manager at JSC (Level 2), and separate project offices at JSC, Marshall, and Kennedy (Level 3). But with the passage of time, the STS Associate Administrator

Continued on Page 4

Thousands take grand tour 2 billion miles to Saturn

By Ron Weber

With the help of national television (PBS) thousands of pioneers arrived at the legendary world of Saturn on Saturday September 1, thereby fulfilling a dream of earliest mankind. We reached our destination after a two billion mile journey aboard the spacecraft Pioneer 11.

Even though the spacecraft reached speeds in excess of 100,000 miles per hour (55 times the speed of a rifle bullet), the journey lasted six years. Pioneer is an amazing machine whose total weight is less than 600 pounds. It is only nine feet long. Eleven onboard experiments consume only as much power as a 25-watt light bulb; total spacecraft power requires about 100 watts.

Using a gravitational assist from Jupiter in December of 1974, Pioneer was hurled one billion miles about the plane of the ecliptic and across the solar system, where it traversed the plane of Saturn's rings at an angle of about five degrees.

Remember when you were first told that starlight you were seeing came from a star that might not be there any more? For 86 minutes on Saturday, September 1, scientists monitored telemetry from a spacecraft that might already have been destroyed by debris that makes up the rings.

Mission controllers and observers breathed a sigh of relief; smiles and handclaps greeted the news that Pioneer 11 had survived that most dangerous moment of the mission. The way was now clear for the two Voyagers which will arrive at Saturn in November of 1980 and August of 1981.

In addition to providing photographs, the onboard experiments were studying solar winds, Saturn's ring structure, satellites, temperature, density, and magnetic fields.

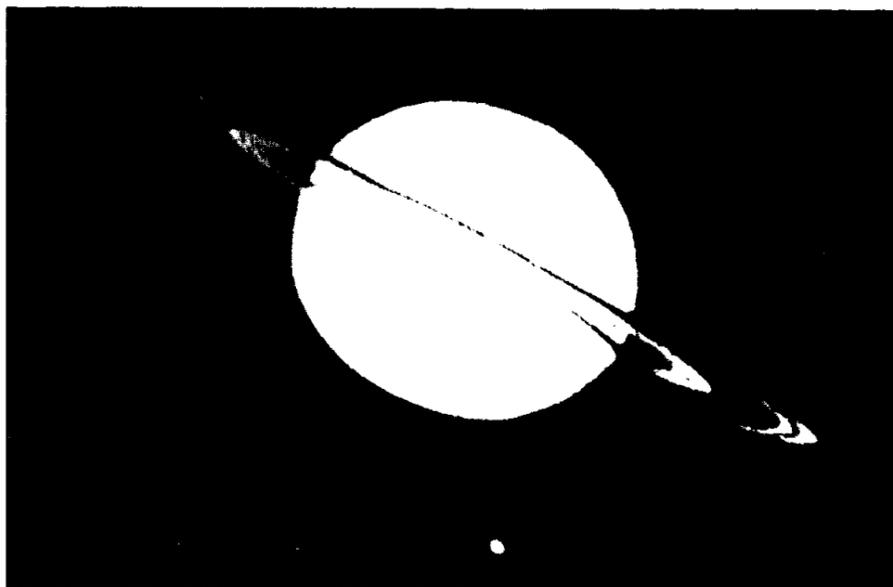
The only major disappointment of the mission so far has been the loss of data from the Infrared Radiometer during its scan of Titan. Valuable information regarding Titan's possible life supporting

environment will have to wait for the Voyager missions.

Pioneer has extended our senses for the first time to that point of light in the sky we call Saturn. It will continue talking to us through the late 1980s on its way out of the solar system.

Weber, photo-librarian at the Lunar Planetary Institute, was at Ames Research Center in California for the Saturn encounter. He filed this report for Roundup.

A recent survey taken by *Aerospace Daily* shows that roughly half the readers responding believe the U.S. space budget should be increased to give more emphasis to planetary exploration, while continuing the present and planned level of near-Earth activity.



Three days away from Saturn

This image was made by Pioneer on Wednesday, August 29, and received on Earth at 3:19 p.m. PDT. At that time Pioneer was 2,846,000 km (1,879,422 miles) from the planet. Polar and temperate belts are becoming visible. Computers at the University of Arizona produced the image which was sent to NASA Ames in California, manager of the project.

Chemists utilize JSC meteorite Ponnamperuma finds building blocks of life

Amino acids, the building blocks of life, have been found in an Antarctic meteorite, one of the collection maintained by JSC's Curators' Branch.

The amino acids were formed by inorganic processes which, according to a theory of chemical evolution, preceded the development of life. Dr. Cyril Ponnamperuma reported to a national meeting of the American Chemical Society this month.

The discovery reinforces the theory that life evolves from chemical processes, evolution that appears to be common throughout the solar system.

"We are very pleased to find this out," said John Annexstad who initiated the Antarctic expeditions to gather meteorites. "Ponnamperuma says that the sample was 'clean,' which states we

are doing our job correctly."

Ponnamperuma was working with a 4.6-billion-year-old meteorite sent to him by JSC a year ago. "We gave it to him specifically for that study," Annexstad said.

Meteorites that fall in the Antarctic move with ice flows, and tend to gather in "blue areas," such as foothills, where they remain preserved and uncontaminated.

A meteorite that may contain amino acids will be carbon-bearing—"very dark and with a broken surface, not smooth like many chondrites," Annexstad said.

He added that two other reports of the discovery of amino acids have come in from scientists working with the same meteorite.

Ponnamperuma was working with 400 mg. of the space debris. The University of

Maryland chemist first identified amino acids in 1970 in a carbonaceous meteorite that fell in Australia.

But that space rock was contaminated by Earth organisms, leaving doubt in Ponnamperuma's theory on the origin of life.

JSC handles the Antarctic meteorites with the same care given to Moon rocks, keeping them in their pristine condition—invaluable to the scientific community.

Ponnamperuma stressed the significance that this sample was clean, adding that organic analyses of the inside and outside of the meteorite were identical.

Annexstad is leaving in October for another expedition to the Antarctic. He will be joined there by Dr. Everett Gibson of JSC's Geochemistry Branch.

Bulletin Board

Please limit announcements to 10 lines, double-spaced copy

A Course Specially Designed For the Professional Secretary

The NASA Clear Lake Chapter of the National Secretaries Association is sponsoring a Certified Professional Secretary (CPS) Review Course each Thursday night from 6:15 to 9, in the Executive Development Suite, Room 2508, UH/CLC campus. The CPS rating can be attained only by passing the six-part CPS exam. Surveys show that CPS's average **15% more in salary earnings** than non-CPS's. The course includes Accounting, Business Law, Office Procedures, and Administration. Registration is \$60 for 15 classes and materials. Call Joye Osborn at 486-6457 for further information.

A Shuttle Spokesman Can Speak to Your Group

Rockwell Houston has kicked off its National Management Associations Speaker's Bureau for the forthcoming year. They provide speakers to inform the public on the Space Shuttle Program and resulting technology transfers. If your organization requires a guest speaker, contact Miriam Ridge at: 333-2030 to make arrangements.

Tired of Softball?

A group on site is organizing a **hardball baseball game**. Date for the game has not been set, but it will be sometime in early or middle **October**. If you're tired of softball and want to play good ole American hardball, call Danny at X4521.

On Sale at the JSC Exchange Store

(Store hours 10 am to 2 pm)
Dean Goss tickets - \$10 single
\$20 couple (Reg. \$14.50 each)
ABC Theatre tickets - \$2 each
General Cinema tickets - \$2.40 each
Six Flags Over Texas tickets
\$7.25 for one day (Reg. \$9.25)
\$9.25 for two days (Reg. \$13.95)
Astroworld tickets - \$7.25 (Reg. \$9.25)
Magic Kingdom Cards - Free
Sea-Arama Marineworld Fun-Time Card - Free

How to Defend Yourself Against Bad Drivers and High Rates

In conjunction with the Safety Council of Greater Houston, the EAA is sponsoring another **Defensive Driving Course** on October 16 and 18 from 6-10 p.m. at the



The EAA sponsored Radio Control Club entered a team in "Flying for Jerry and His Kids," a trans-American relay race to raise funds for children stricken with muscular dystrophy. The JSC team flew their planes Monday and Tuesday, September 17 and 18, on the leg from Shreveport to Fort Worth in the 12-leg race. Each team worked in two coordinated groups: The "pilot group" traveling in an open car flew the plane by radio control, and the "lead group" rode ahead advising on air course changes and landing strips. Pictured above are members of the JSC team, front row, left to right: Tom McPherson, Owen Morris, and John Kiker; back row: Ian (Scotty) Paton, Joe Martin, and Gil Symons.

JSC Rec Center. Cost for the course is \$12, including materials. Sign up before October 12 at the Building 11 Exchange

Store from 9-2, or at the Rec Center. A **10% insurance certificate** will be issued upon completion of the course. Any questions call X4921.



Employees of JSC's Resident Office at Downey, California, attended a special seminar last summer conducted by Virginia Hughes, JSC's Federal Women's Program Man-

ager. Hughes described the FWP's special programs: Upward Mobility, IQ, TOP, PRIDE, plus their goals and objectives. All the employees of the resident office took part.

A Call for Visual Arts Project Proposals

The **Houston Festival Foundation** is calling all artists living in the Houston area to submit proposals for projects created specially for The Festival to be held March 20-30, 1980. All forms of visual arts will be considered: in the air, on the walls, above the ground, underground. The only physical boundaries will be Buffalo Bayou, Congress Street, Travis Street, and Lamar Street. The Festival encourages **projects that are participatory**—stage sets, sculptural dance settings—using the components of the buildings downtown. **Entry forms are due September 30.** Call Rochella Cooper at 641-4111 for further information.

UN space treaty ready for signatures

This month, the Moon Treaty—"Agreement Governing the Activities of States on the Moon and Other Celestial Bodies"—comes up for a vote before the United Nations General Assembly. Text of the treaty was approved without a formal vote by the 47-member Committee on Outer Space last July.

The pact comes into force when five governments complete ratification.

Excerpts from the treaty follow:

Article I: Provisions of this Agreement also apply to other celestial bodies within the solar system, other than the Earth.

Article II: All activities on the Moon including its exploration and use, shall be carried out in accordance with international law, in the interest of maintaining international peace and security.

Article III: The Moon shall be used by all States Parties exclusively for peaceful purposes. Any threat or use of force is prohibited. States Parties shall not place in orbit around the Moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction. The establishment of military bases or conduct of military maneuvers on the Moon shall be forbidden.

Article IV: The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries. Due regard shall be paid to the need to promote higher standards of living conditions. International cooperation in pursuance of this Agreement should be as wide as possible.

Article V: States Parties shall inform the United Nations as well as the public to the greatest extent feasible of their activities concerned with exploration and use of the Moon.

Article VI: There shall be freedom of scientific investigation on the Moon by all States Parties. In carrying out scientific investigations, States Parties shall have the right to collect and remove from the Moon samples of its mineral and other substances. Such samples shall remain at the disposal of those States Parties which caused them to be collected.

Article VII: In exploring and using the Moon, States Parties shall take measures to prevent disruption of the existing balance of its environment.

Article VIII: Personnel, space vehicles, equipment, facilities, stations, and installations may move or be moved freely over or below the surface of the Moon (as long as they do not) interfere with the activities of other States Parties on the Moon.

Article IX: Parties may establish manned and unmanned stations on the Moon, and shall immediately inform the UN of the location and purposes of that station. Stations shall be installed in such a manner that they do not impede the free access to all areas of the Moon of personnel, vehicles, and equipment of other States Parties.

Article X: States Parties shall adopt all practicable measures to safeguard the life and health of persons on the Moon. They shall regard any person on the Moon as an astronaut. States Parties shall offer shelter in their stations and other facilities to persons in distress on the Moon.

Article XI: The Moon and its natural resources are the common heritage of mankind. The Moon is not subject to national appropri-

ation by any claim of sovereignty, by means of use or occupation, or by any other means. Neither the surface nor the subsurface of the Moon shall become property of any State or non-governmental entity. States Parties to this Agreement hereby undertake to establish an international regime to govern the exploitation of the Moon as such exploitation is about to become feasible.

The main purposes of the international regime include: (a) development of natural resources of the Moon; (b) rational management of those resources; (c) expansion of opportunities in the use of those resources; and (d) an equitable sharing by all States Parties in the benefits derived from those resources. The interests and needs of developing countries as well as the efforts of those countries which have contributed to the exploration of the Moon shall be given special consideration.

Article XII: States Parties shall retain jurisdiction and control over their personnel, vehicles, facilities, and installations on the Moon. In the event of an emergency involving a threat to human life, States Parties may use the equipment of other States Parties on the Moon, with prompt notification made to the Secretary-General of the State Party concerned.

Article XIII: A Party which learns of the crash landing or other unintended landing on the Moon of a space object or its component parts shall promptly inform the launching Party and the UN.

Article XIV: States Parties shall bear international responsibility for activities on the Moon whether such activities are carried on by governmental or by non-governmental entities. Detailed arrangements concerning liability for damage caused on the Moon may become necessary as a result of more extensive ac-

tivities on the Moon.

Article XV: Each State Party may assure that the activities of other States Parties are compatible with this Agreement. To this end, all space vehicles, equipment, and installations on the Moon shall be open to other States Parties. Consultations shall seek a mutually acceptable resolution of any controversy. Parties shall take all measures to settle a dispute by peaceful means of their choice.

Article XVI: With the exception of articles XVII to XXI, references in this Agreement shall be deemed to apply to any international inter-governmental organization which conducts space activities if the organization declares its acceptance of the rights and obligations provided for in this Agreement.

Article XVII: Any State Party may propose amendments to the Agreement.

Article XVIII: Ten years after the entry into force of this Agreement, the question of review shall be in the provisional agenda of the UN General Assembly. However, at any time after the Agreement has been in force for five years, the Secretary-General of the UN, as depositary, shall, at the request of one third of the States Parties to the Agreement and with the concurrence of the majority, convene a conference to review this Agreement.

Article XIX: This Agreement shall enter into force on the 30th day following the date of the fifth instrument of ratification.

Article XX: Any State Party to this Agreement may give notice of its withdrawal from the Agreement one year after its entry into force. Such withdrawal shall take effect one year from the date of receipt.

Article XXI: The original of this Agreement shall be deposited with the Secretary-General of the UN.

'Super Secretary' handles heavy loads at a fast pace

Camille Critelli has been given a desk nameplate inscribed "Super Secretary" which reflects the wide regard for her contributions to the SAIL (Shuttle Avionics Integration Lab) office.

Critelli acts as secretary to a base organization of 24 people which functions as the SAIL Project Office as well as the SAIL Test Operations Office.

During 1978 she typed over 400 memoranda, and so far in 1979 she is exceeding that pace. All aspects of her duties are complicated by the diverse operations and around-the-clock activity in SAIL. Even time and attendance card maintenance requires unusual effort because the majority of the organization is either on special tours of duty or irregular tours.

Critelli also issues, tracks, and retrieves SAIL badges for the SAIL community. To date, over 1000 badges have been processed.

She has managed an extraordinary workload cheerfully and with dispatch, her supervisors say. Without her special talents, dedication, and sheer productivity, they add, the SAIL organization could not function smoothly.



Camille Critelli
Outstanding Secretary

Camille Critelli is JSC's Outstanding Secretary for August.

R. J. McMurrey dies

Oct. 3, 1926 - Sept. 16, 1979

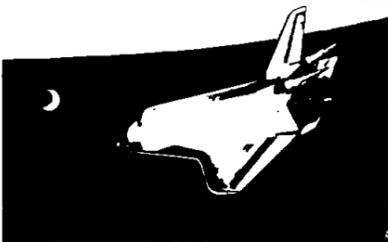
If you have had a friend or relative visit the center, in a way you knew Bob McMurrey. He left his career as a band director and came to NASA in 1966. He wanted to work with people, and no better way than managing the JSC Public Visitor Program.

In the 13 years Bob was in the Public Affairs Office, over 11 million men, women, boys, and girls came through the front gate to find out what NASA was all about.

I am sure the millions of visitors back through the years thank Bob for believing in what he did and I know all of us who knew him will miss him very much.

—Chuck Biggs

Roundup deadline is the first Wednesday after publication.



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

Writer/Editor: Kay Ebeling

What's cookin' in the JSC cafeteria

Week of September 24 - 28

Monday: Cream of Chicken Soup; Beef Burgundy over Noodles; Fried Chicken; BBQ Sausage Link; Hamburger Steak (Special); Buttered Corn; Carrots; Green Beans. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

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

Wednesday: Clam Chowder; Broiled Fish; Tamales w/Chili; 8 oz T-Bone Steak; 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 October 1 - 5

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: Mushroom Soup; 8 oz T-Bone Steak; 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; Whipped potatoes; Buttered Cabbage.

It was not an alien egg

Remember the purple blob? It was reported to have been quivering, to cause skin burns, and to have mysteriously landed in the yard of a couple in North Dallas last month. The blob caused widespread commotion among the media in the South and Midwest.

Well, NASA-JSC hates to be the one to end the fun, but it wasn't what it was rumored to be.

In fact, it was nothing but an ordinary industrial cleaning agent used to refurbish lead storage batteries. Burning associated with the material was the result of its caustic nature, and the suspended lead particles were from the batteries.

DO RISING COSTS GET YOU ALL FIRED UP?



THEN PUT YOUR COST REDUCTION IDEA ON A JSC FORM 1150 AND SEND IT TO . . . COST REDUCTION OFFICE BG-3 TODAY !!!

Cartoon by Russ Byther

Roundup Swap Shop

Property & Rentals

Sale: All electric 3-2-2 house, 16 x 20 storage building, 5 acres, 500 ft. on highway 39 west of Kerrville, \$76,000. X3125 or 512/367-2184 (call collect).

Lease: Sun Valley, 3-2-2, fenced, draped, PISD, \$375/mo + deposit, references. Lapko X3054.

VA equity assumption, 3 bdrm, 3 bath patio home in Forest Bend, pool and park facilities. 482-3546.

Lease/sell Friendswood/Wedgewood, 3-2-2, fireplace, fenced yard, near NASA, \$400/month. Jeff X7429 or 492-5393 after 5.

Rent: Lake Livingston, Cape Royale, compli furn home, 3-2-1. Fishing, hunting, tennis, golf, etc. 488-4487.

Galveston West End, 2-bdrm, By-the-Sea condo, furn, \$210/week off, \$280/week in season, Clements 474-2622.

Share: 2 bdrm, 2 bath apt. Ron 486-2172 or 333-3687.

Investment Property: 3 lots, 10 minutes from NASA (lots 12, 13, 14 - Block 2, Bay Oaks subdivision). \$6900. Horton 334-2360.

Rent Waterfront vacation retreat by marina at Cape Royale on Lake Livingston. New 3 bdrm, tennis, pool, golf, boat launch. 3 day min. 488-3746.

Wimberly Hill Country, 12-1/2 acres on Blanco, views, deer, \$5000 cash, take over 8% loan. 482-4866 after 5:30.

Household Articles

Bunn stainless steel, two pot drip coffee maker, good cond. \$75. Used unit from Bunn, \$115.54. Galloway X5451.

Rug, 9 x 12 brown and gold, \$10; basketball basket from mounting on garage roof, \$10. Darcy X3541 or 334-5647.

Gibson portable dishwasher like new, \$150. Sandborn X4721.

Used 26" GE oven, \$35. GE builtin cooking unit, \$15. Good cond. Remodeling kitchen. Jay x5853 or 481-2335.

Pets

Hamster Habitat accessories, \$5. David Pitts X6478 or 488-3276.

Kittens, not suitable for apartment. 649-7916.

Boats & Planes

Searay 22 foot, cudy cabin, head, swimming platform, 188 Mercury Cruiser, inboard-out-drive, tandem trailer, electric winch and surge brakes. 482-3255.

73 Larson 18 foot fiber glass boat and trailer, surge brakes, 302 V8, I/O, walk through windshield, \$2400. Cornwell 488-2018.

23-foot racing "star" exc shape, sails, trailer included, \$1200 firm. 538-1892 after 6.

Musical Instruments

Yamaha Coronet like new, used 1 yr. best offer. Billie X5111 or 538-1681.

Miscellaneous

36-inch vent-a-hood, avocado, like new, \$50. 69 Chevy shop manual, \$5. 331-0608.

Shotgun, 20 gauge bolt action with case, ideal for youngster or lady, \$40. George X2231 or 554-6057.

Handtools, used, 6' step ladder, 8' ext ladder, hammer, crow bar, hatchet, carpet shampooer. Boykin 334-1267 after 5.

Toolbox for Luv Pickup or other imported trucks. Corey 554-2901.

Pistol, 22, Ruger, single six, holster, shells, plus 22 mag cylinder, exc, \$125. Smith x4468.

Utility trailer, Sears one wheel trailer with cover, 4' x 4', \$100. Great for camping, carrying supplies, etc. 488-0266.

Montgomery Wards reel-type lawnmower, exc cond, \$55. Ed 333-4119.

3-24" doors, 6 panel colonials with frames, \$20 each. 334-3370.

Ads should be under 20 words, double spaced, typed or printed, one ad per person. Deadline for submitting or cancelling ads is 5:00 p.m. the first Wednesday after publication. Send ads to AP3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-ins, please. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads. Goods or services must be offered as advertised without regard to race, religion, sex, or national origin.

Cargo trailer, 6 x 12 5 foot high sides exc cond, heavy duty for loads, \$500. Booth X2901 or 334-4734.

4 used Goodyear P195-14 whitewall steel radials, approx 30,000 miles left. Griffith X3166 or 334-2089.

New G78-15 4 ply mud grip, \$30, used 7:75x14, H78-15, 14x6 GM wheels, \$5 each. Thompson 332-2229.

For free about 20 used, 7-inch reels for 1/4-inch tape with used tape. Mitch X3741.

Clarification

There is a 20-word limit per person on Swap Shop ads. If you have more than one ad, please limit the total words to 20. Longer ads will be cut down to the maximum. Please cooperate, as this keeps the Swap Shop from taking over the page. —Ed.

Cycles

76 Suzuki RE-5, \$800, like new, 2000 miles. Blucker X3533 or 488-4188.

79 Honda "Hawk," exc cond, take over payments. Sandborn X4721.

Wanted

Used or new loose brick free for my picking up. Ed 333-4119.

Ceiling fans. Jay Legendre X3254.

Adult babysitter to live-in and take care of two children 11 and 7 while parents are occasionally out of town. References 471-1914 eves.

Clear Lake City Volunteer Fire Department seeks men and women, 18 years and older, for community service. For info call 488-0023.

Books, old, new, any subject, any condition, will pick up. Gallagher X2657 or 947-1277.

Completely furnished apartment or house in the NASA area during the October-November timeframe. Giuli X6453 or 334-5360.

Anyone interested in playing hardball baseball! You don't have to be a pro, just have an interest. Danny X4521.

Cars & Trucks

77 Honda Civic, 4-speed, good cond, radio, air, \$3200. Meider X5384.

71 Ford Pickup, \$600, LWB, Auto, PS, PB, needs tags and inspection. 585-8162.

73 Marquis Brougham, 2 dr, fully equipped, luxury interior, exc cond, \$1000. C. Wells X3278 or 485-5051.

76 Pontiac Ventura, extra clean, 25,000 miles, \$3000. Corey 554-2901 after 4:30.

76 Toyota Celica GT liftback, shadow, American mags, air, stereo, 19000 miles, 30 + mpg, \$5000. X6376 or 482-5393.

77 Lincoln Continental Town Coupe, burnt orange, loaded, exc, \$7700. Mandell 334-1982.

70 Olds Vista Cruiser Sta Wagon, one owner, good cond, a/c, radio, good radials, \$625. X4546 or 488-8694.

69 Buick, \$400, runs good, low mileage, not flooded. 1-585-8162.

1978 Honda Accord, 5-seed, blue, loaded, 36 mpg, 17,000 miles. Daughter going to college—need money. \$6,000. 334-2381.

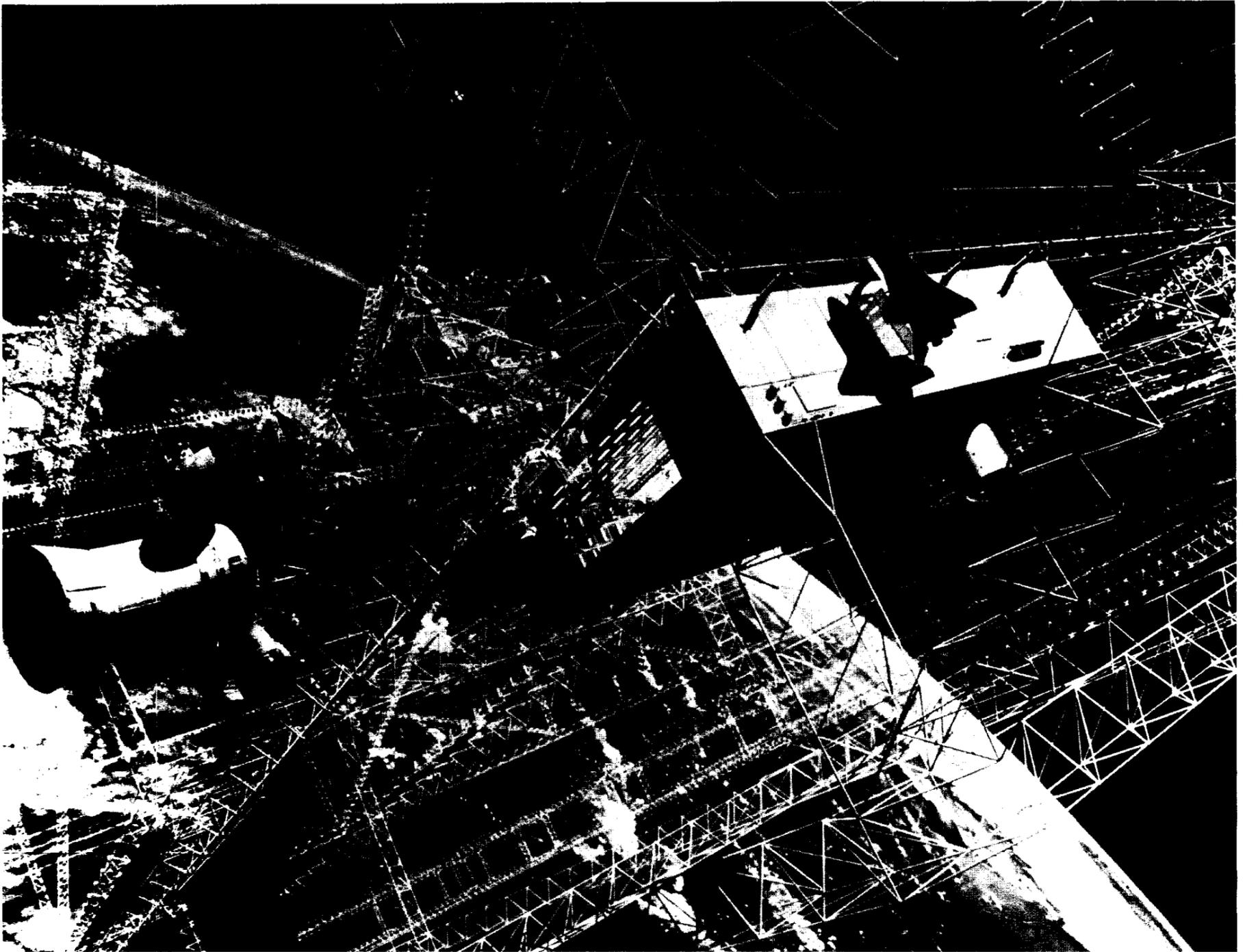
Carpools

Need riders or ride from Bellaire area (Houston). Contact D. Kelley on site X5975.

Non-smoking carpool from Bayshore Hospital area, 8-4:30 shift. Dale Fessenden X2809.

Need rider to join existing carpool from Texas City 7:30-4 shift. Young X4949 or 948-3804.

From space stations to manufacturing



First in a series on space industrialization

(The following are excerpts from a speech made by Dr. Maxime Faget to the AIAA last spring. Title of the speech: "The Next 20 Years in Space. What We Could Do, What We Should Do, and What We Might Do.")

We have now been operating in space a little over 20 years. The first drive in space was clearly an exploratory one. In many ways that was the most exciting thing—making new discoveries about the planets, the space environment, the solar winds, the magnetosphere, radiation belts.

For instance, we were warned

before we landed on the Moon that the dust might be 60 feet thick, and that when the guys stepped down into the dust we'd never find them again.

It didn't work out that way. . .

That phase is clearly over. With the inception of the Shuttle program we are looking at a new game, the era of space industrialization.

The connotation in that term is one of an intense effort, with a strong implication of man being part of a new industry, a new state, a new activity.

The Shuttle really represents this new era. It's going to be a building block—the first, so to speak. But it

alone will not bring in a new era of industrialization.

The second building block will be a permanent base, an operations center, a logistics base with the Shuttle used as a logistics vehicle running between Earth and the space station. This will create a place for sustained activity in low Earth orbit.

The third building block for the future is the capability to build things in space. During the past three or four years there has been an increasing awareness of the fact that many of the things that man wants to put in space are just too large and too awkward to be built on the ground and then

launched. They are going to have to be deployed in space.

Or we might go further than that: They could be assembled in space. The third step is fabrication in space. We have to have the full capability to fabricate structures in space in order to truly have an industrial era in space.

Record visitors

Maybe it's the gourmet food in the cafeteria.

Public Services reports that this fiscal year 40% more visitors came to JSC than in 1978. Nearly one and a half million persons walked through the Visitor Center, gazed at the Skylab mockup, and learned about Mission Control Center on scheduled tours.

Each of the past 24 months has seen a larger number of visitors than the previous year.

Special Shuttle report

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Level 1 on technical issues, with less attention given to cost and schedule. Two-way communications must be improved. (Level 1) has become a *de facto* Program Director, and as a result there has been broad and detailed involvement of

A new management approach

6. Fixed Shuttle delivery schedules and initial operations require a new management approach.

The importance of schedule must be recognized as well as technical aspects of the program. For example, the initial operational program will still contain developmental aspects.

7. The operational phase of the Shuttle program takes on added significance and importance as the

design, development, test, and engineering phase comes to an end.

There are several aspects of the transition to the operational phase which remain to be worked out. Top NASA management should assure that the current organization for Shuttle operations is appropriate.

8. The near-term potential for unanticipated technical problems, schedule slippage, and cost growth is high. Appropriate reserves should be included in all aspects of program planning.

Some aspects of total management control and an information system are in place and functioning well. However, a significant potential for additional problems remains until deficiencies cited in this report are corrected.

Amplification

The test subject in the Manned Maneuvering Unit pictures on Page 1 of the last *Roundup* was Dub Greer of Rockwell International's Avionics Lab at JSC. The photos were taken by Jack Jacob of the Photo Lab.

Energy tip

Are you thinking about putting central air-conditioning in your home this year? Consider the advantages of a heat pump system. This device uses outside air in both heating and cooling, and can cut annual heating and cooling energy costs by as much as 60%.

Astronaut Sally K. Ride will speak on training for the Space Shuttle at the next AIAA meeting Thursday, September 17, at Gilruth Center. Social hour starts at 6 p.m., dinner at 7, and the program begins at 8. Price is \$5.50 for members, \$6.50 for non-members, and \$2 for students, but there is no charge for attending the program only. Reservation deadline is 2 p.m. Monday, September 24. For dinner reservations call Edith Todd at 483-3918 on Paula Ashcraft at 488-5660 x-201.