

ROUNDUP

Lyndon B. Johnson
Space Center

NASA

February 22, 1980 Houston, Texas

Vol. 19, No. 4

The selection begins

First 20 astronaut applicants begin screening at JSC Monday

The first 20 applicants to be interviewed for possible selection in 1980 as Space Shuttle astronaut candidates will report to Johnson Space Center February 25 for a week of interviews and physical examinations. All are mission specialist applicants, of which four are women.

A total of 3122 men and women applied for the 10 to 20 open astronaut positions. Applicants selected for screening will spend a week at the Space Center in groups of 20.

NASA will select candidates in both

the pilot and mission specialist categories. Candidates will begin a year of training at JSC in July 1980.

Among the first 20 are the following JSC employees: Stuart Bergman, MD, of Medical Operations; James Korkowski of Flight Operations; John Lounge of Payload Operations; and Tracey Sauerland, MD, of Medical Research.

Also in the group is Byron Lichtenberg who is a payload specialist for Spacelab One, and Capt. William W. Crimmel who is currently detailed to the Space Center with the U.S. Air Force.

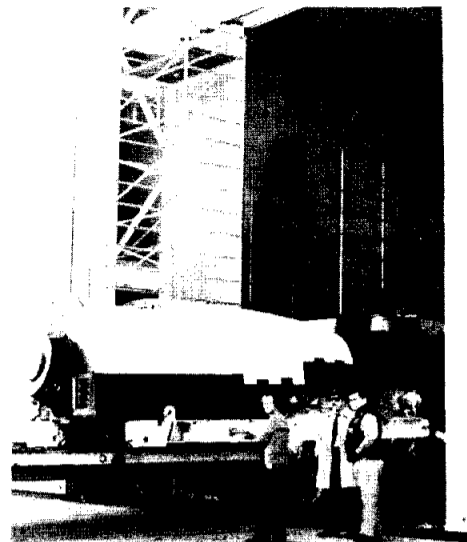


Photo by Karen Johnson

OMS Pod arrives last October for acoustics testing in Bldg. 49. (Story in next Roundup)

NASA earns Civil Service reform award

NASA received the first annual Udall/Derwinski Award for Excellence in Civil Service Reform Implementation in a ceremony in Washington January 24.

The citation reads, "For initiative, excellence, and leadership in conversion to the Senior Executive Service. A hallmark of their approach was the maximum involvement of NASA senior executives from installations nationwide.

"These officials gave their total support and dedication to task forces charged with designing the component SES systems and became fully informed advisors to their peers during the crucial conversion decision period.

"The reward for this outstanding effort was evident within NASA and the Government as a whole. Their work in such areas as performance appraisal was showcased and emulated by many other agencies. They also developed superb training packages and expertise which they freely shared.

"The contributions of NASA in this important aspect of civil service reform testify to its high professionalism. They richly merit commendation and praise."

A principal reason the Space Agency received the award was signal work that the Agency Task Force on Performance Appraisal and Merit Pay had performed.

STS Update: tests, tiles, & contracts

SRB motor fires final static test, ready for flight

The Space Shuttle's Solid Rocket Booster Motor successfully completed its final test firing February 13 in the Utah desert. The motor should be pronounced ready for spaceflight as soon as data from the static firing test can be analyzed.

Two of the large Solid Rocket Boosters, of which the motor is the major component, will provide the bulk of the Shuttle's power for lift-off from the pad, and during the first two minutes of flight. After their propellant has burned out, the boosters will separate from the Shuttle and parachute into the ocean where they will be recovered and returned to Kennedy Space Center to be refurbished and re-used on subsequent missions.

The two Solid Rocket Boosters for the first Shuttle flight, now set for late this year, have already been assembled on the launcher at Kennedy. They will soon be joined by the External Tank, which will hold liquid propellant for the Orbiter's main engines, and by the Orbiter Columbia, for integration and final launch preparations.

The assembled motor is more than 35 meters long and 3.5 meters in diameter, and it reaches a peak of about 3 million pounds of thrust. It is the largest rocket motor of its type ever developed for spaceflight, and the first built to be used on manned spacecraft.

NASA buys 2nd Spacelab

NASA has signed a \$183,960,000 contract calling for manufacture and delivery in 1984 of a second Spacelab by the European Space Agency.

The second Spacelab, like the first, will be built by the ERNO industrial facility in Bremen, Germany, prime contractor to the European Space Agency.



Why is this man so happy? (See Page 4.)



Above is tile installation in process at the Cape. The heat protective tiles are a major factor pacing the Shuttle schedule.

We are not limited to one planet

Fifth in a series on Space Industrialization

Excerpted from a Space Foundation publication

In these times it is very popular to claim there are no permanent solutions, no answers to the steady dwindling of energy and resources for Earth's growing billions. The declines in capital investment, growth opportunities, and standard of living seem inevitable; the chance for healthy national economies uncertain — unless we change one simple notion which dominates how we plan for the future.

We are not limited to one planet.

In space there is a limitless treasure trove ideally suited for an expanding technological civilization. No scientific questions of any significance presently limit our exploitation of this realm beyond the atmosphere. Limitations are of our own making, not nature's.

Our prospecting on the surface of the Moon has uncovered vast resources of titanium, aluminum, silicon, and oxygen. These materials could be processed

into final form, either on the Moon or in space at the site of a construction station. Some lunar materials — such as titanium, glass fiber, and bulk materials — might subsequently be sold in Earth markets.

The Moon is not the only place where we might go for new material resources in the Solar System. It is merely the closest and the easiest to exploit. But 100,000 or more asteroids cross the orbit of Earth. These asteroids are flying mountains, some of them more than a mile in diameter.

Scientists know that these bodies are composed of industrially valuable materials which might be used in space—such as carbon, water, oxygen, and metals. A percentage of these asteroids are composed of nearly pure steel, with trace quantities of cobalt and rare strategic metals.

A single 100-yard body of this type, small enough to fit within the Houston Astrodome, represents an economic resource worth more than \$5 billion. It contains one year's supply of nickel, and three years' supply of cobalt at the current U.S. rate of consumption.

Farther out, resources contained in the atmospheres of the giant planets Jupiter and Saturn might become valuable as hydro-carbon feedstocks for space industries of the future.

One of the advantages of going to the planets and asteroids rather than continuing to mine some minerals on Earth is that there will be far less environmental impact—an important consideration in the near future.

Finally, sometime in the next century, we might even change or "terraform" planets to suit our needs. But all of these are opportunities for the future.

The opportunity now is to use a nearby, well known resource—the Moon—and the abundant solar energy available in space, to fill the need for energy and resources on Earth—Now.

The Space Foundation is a non-profit organization formed by members of the Texas business community to inform the public as to the industrial possibilities of space. Their address: P. O. Box 4, Houston, TX 77001.

Women in Aerospace

NASA-JSC is hosting a symposium March 12 and 13 on the progress women are making building careers in the aerospace industry. Female pilots, managers, astronauts, and engineers will participate. See the next issue of Roundup for further information.

Bulletin Board

Put on Your Kicker Boots And Be a Spaceland Cowboy

Hey y'all. It's Country and Western Dance Time again. So come on down to JSC's "back 40" (Gilruth Rec Center) and let's wind up the Houston Rodeo Season in style. This here March 8 hoe-down starts with "Texas Tea" and the like being served at 7 p.m., then some good ole Texas Bar-3-Que. At 9 p.m. there'll be stompin' to the sounds of J.C. and the Moonshine Band (complete with fiddler formerly with Bob Wills). Tickets are only \$9 per person and can be purchased at the Building 11 Exchange Store through March 4.

Rocket Tickets On Sale At the JSC Exchange Store

Your Employee Activities Association

has made available to you, at the JSC Exchange Store, Rocket tickets at half price (\$3 each). They're available for the Feb. 27 game against Washington, the March 5 game vs. Boston, and the March 19 match with New York. Tickets are limited.

6-Week Scuba Course Starts March 11

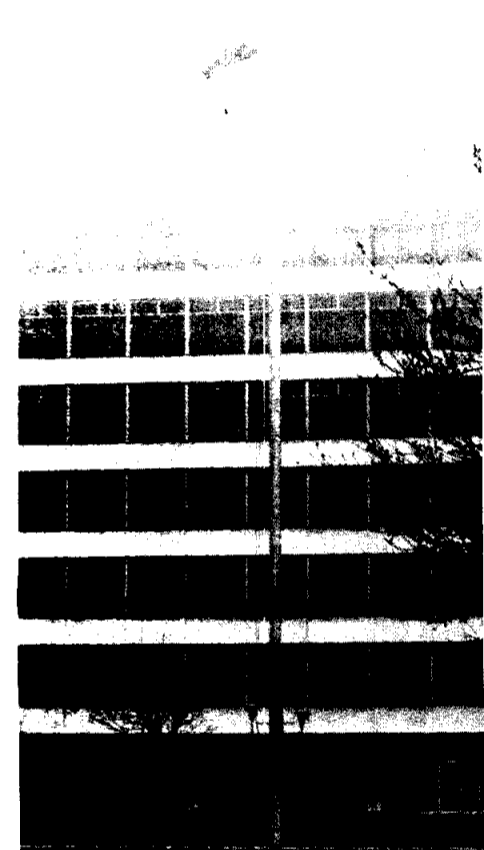
The JSC Scuba Diving Club, Lunarfin, will offer a six-week basic scuba course beginning March 11. The course will include classroom lectures at the Gilruth Center and supervised practical experience in the use of SCUBA at a local indoor pool. Students who successfully complete the course will be certified by NAUI. Enrollment is limited. The club schedules regular boat trips to coral reefs, sunken wrecks, and platforms in the gulf—plus favorite diving locations in the Caribbean. Contact Brad Hillaker, 481-0935 or Fred Toole, 334-1881 for information about the course or club.

Now that You've Early-Outted What Do You Do Next? Join NARFE.

All Federal Retirees are invited to join the National Association of Retired Federal Employees. NARFE has worked for more than 50 years protecting and securing the retirement benefits for our future. Retired Federal Employees, spouses, survivors of annuitants, AND active Federal Employees are eligible to join NARFE. The Houston-NASA Chapter 1321 will meet at the Clear Lake Park Building, NASA Rd. One, on March 7 at 6 p.m. for a covered dish dinner. Visitors are welcome. For information, call A. B. Olsen: 334-3270, or Jack Kinzler: 334-2449.

Learn the Basics Of Running a Small Business

The Active Corps of Executives and the Small Business Administration will sponsor a workshop on the *Basics of Running a Small Business* at the Houston Baptist University, 7502 Fondren, Houston, on February 27 and 28, from 6 to 9:30 p.m. For information call 226-4945.



March 2: Texas Independence Day

Spaceweek '80 Kickoff

Man's first step on the Moon was probably the most significant event of the 20th Century, and July 20 should be recognized nationwide. The Moonwalk changed Man's relationship with the Solar System, it was a technological triumph, and it told us Man could operate in the territory of space.

An organization in the Bay Area has formed to set aside Spaceweek '80 as a time of year to celebrate the anniversary of the first Moonwalk. During the week of July 20, aerospace enthusiasts will devote time to demonstrating the benefits of space and the potential uses of space in the future.

Some possible events: a computer music concert, a model rocketry show,

an aerobatics demonstration at a local airport, special films and slide presentations, special exhibits, a splash-down party—at this point the group is in brainstorming sessions.

There is a call out now for ideas. Any club or organization that would like to participate by conducting an event during Spaceweek '80 should contact Gene Read at 621-1681 or Kay Ebeling at 483-5111. NASA and the Spaceweek '80 group will support and organize your event into the Spaceweek '80 program.

The group hopes to make Spaceweek into an annual, nationwide event.

CSC Holding Essay Contest For Local High School Students

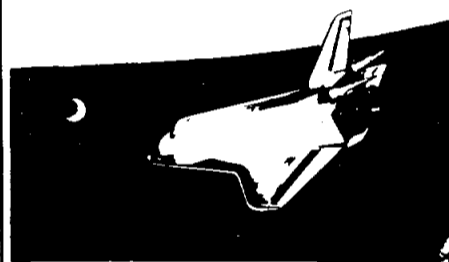
Computer Sciences Corporation's chapter of the National Management Association is sponsoring an essay contest for area high school students on the topic, "The Role of the Computer in the 1980s." Prizes are savings bonds. The contest is open to students of Clear Creek, Clear Lake, and Friendswood High Schools. Essays should be no longer than six typed, double-spaced pages and must be received by March 15. A panel will judge the essays for originality, com-

prehension of subject, technical accuracy, and literary merit. Submit entries to Russ Mertens, CSC, Mail Code M40, 1300 Bay Area Blvd., Houston, Texas, 77058.

JSC Bike Club Meets With Senior Assistant to Congressman

At the February meeting Nadia Hayes of Congressman Ron Paul's office detailed the problems of traffic in the Bay area. Ms. Hayes emphasized that *no funds for major local road improvements will be available for the next 20 years*. To combat this the Bicycle Club recommended action to repair shoulders and alter dividers. County funds are available to repair shoulders, and State funds are available for striping—which would create bike lanes. The JSCBC will move on distributing circulars, promoting local bike events, and approaching the Chamber of Commerce on cycling.

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.

Editor Kay Ebeling

First Bicycle Ride is scheduled for Sunday March 9 (rain date March 16). The Club will meet at JK's Cycle Shop on Bay Area Blvd. and Space Center at 10 a.m. for a ride to Morgan's Point and return. There will be food and fun for all—and safe cycling too. For information on any club activity call Brian Morris at x5293 or Sheldon Tucker at x4107.

Continued on Page 3

Exercise adds to job security, productivity

Last year Dr. Eugene Coleman of UHCLC delivered a symposium on *Fitness and Nutrition* at Gilruth Center through the Employee Development Branch. His comments on nutrition were covered in the January 11 issue of *Roundup* (Vol. 19, No. 1). Following is a report on the portion of his lecture that covered exercise and physical fitness.

Foley's Arm: A condition seen on blue-haired ladies around the perfume counter at any major department store. Ask them for directions and they lift their arm and point, loose fat jiggling from the triceps. Overweight, along with cardiovascular disease, is a major result of lack of exercise.

And backache: A person can get abnormal curvature in the lower spine from having to hold his head up to counter the weight up front in the stomach. "If you want to alleviate backache, remove your stomach," says Dr. Eugene Coleman.

He then cites statistics: Backache accounts for \$1 billion a year in lost work output in this country. Backache accounts for one-quarter billion dollars of payments in workmen's compensation plans. Six million Americans seek treatment for unnecessary backpain every day.

And it all could be alleviated with a little exercise.

Employees' poor health costs you money. "General Motors paid more last year for employee insurance payments than they spent buying steel," Dr. Coleman says. "That means that every time they raise the price of a GM car or truck, you are paying for their employees' poor health."

A recent NASA Headquarters study

"Those with high aerobic endurance can deal with emotional stress, sleep more soundly, and are absent from work less often. Absenteeism cost \$1.4 billion last year—just in the Executive Branch. You didn't get out of shape in 15 minutes, and you won't get back in shape in 15 minutes. But you can look and feel better in two to three weeks, all with a little exercise."

showed that a number of Headquarters employees felt they gave 100% of their energy at work, then went home and collapsed. This caused family friction, so the employees started giving 60% at work, then coasting the rest of the day so they'd have time for outside interests.

"With each year of inactivity, you lose more vitality until you get to the point where you have to coast by mid-morning," Dr. Coleman says.

Absenteeism cost \$1.4 billion last year—just in the Executive Branch.

"A person who neglects exercise jeopardizes his productivity, job security, and personal pride," says Dr. Coleman.

Endurance as defined by fitness experts is the ability of the heart and circulatory system to provide oxygen and blood to the working muscles. "Oxygen is

have weight problems, and are absent from work less often.

All it takes is 30 minutes three times a week to alleviate the problem, says Dr. Coleman. "For the average middle aged adult walking, jogging, swimming, or cycling three times a week as little as 30 minutes will make all the difference."

Within a few weeks a person's aerobic capacity will increase 30% and weight will go down 10-20%, following this program.

"Americans have come to believe that it's normal to be on a diet all the time; it's normal to need special mattresses for aching backs.

"The more inactive we become, the more we find ways to avoid exercise: We seldom leave our cars, and when we do we use elevators to ride to our offices and then fall down in our chairs for the day's work."

Being physically fit does not mean running marathons or winning Olympic medals. It means being able to meet emergencies such as gas lines and hurricanes—it means having the energy to work and still engage in outside activities.

"Walking 30 to 40 minutes, or jogging one and a half to two miles will do it," says Dr. Coleman.

"But don't overdo it. You didn't get out of shape in 15 minutes and you won't get back in shape in 15 minutes.

"But you can begin to look and feel better in two to three weeks."

What's cookin' in the cafeteria

Week of February 24 - 15

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

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

Wednesday: Cream of Tomato Soup; Cheese Enchiladas; Roast Pork w/Dressing; BBQ Link (Special); Pinto Beans; Spanish Rice; Turnip Greens.

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

Friday: Seafood Gumbo; Fried Shrimp; Baked Fish; Beef Stroganoff; Fried Chicken (Special); Okra

& Tomatoes; Buttered Broccoli; Carrots in Cream

Week of March 3 - 7

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

Tuesday: Navy Bean Soup; Beef Stew; Liver w/ Onions; Shrimp Creole; Smothered Steak w/ Dressing (Special) Corn; Cabbage; Rice; Peas.

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

Thursday: Beef & Barley Soup; Beef Tacos; Diced Ham w/Lima Beans; Stuffed Cabbage (Special); Ranch Style Beans; Brussels Sprouts; Cream Style Corn.

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

Brewers breeze B League

The Brewers, a perennial power in NASA B-League Basketball for several years, won another title this season.

The gold and green were led by rookie sensation **Terry Burleson** who played his basketball last year at Purdue. The Brewers also displayed several outstanding weapons in the pinpoint outside shooting of Coach **Larry Davis, J. J.**

Conwell, and the tough defense of **Heibert Epps**, and **Denny Holt**; a skillful fast break, led by Center **Ken Young** and speedy **Rich Holtje**; and a reliable bench of veterans, **Sid Novosad** and **Gary Renick**.

In an undefeated season, the team averaged 47 points per game, with a 17 point victory margin over the opponents.

Bulletin Board Cont'd

Next AIAA Program Designed To Bring in New Members

With "A Tour of Jupiter and Its Satellites," the American Institute of Aeronautics and Astronautics' next meeting should be a real "rouser," says Norm Chaffee. Dr. Jeffrey L. Warner of NASA's Planetary and Earth Sciences Division will give a program including recent results from the Voyager spacecraft. The meeting will be Tuesday, February 26, at Gilruth Center, and reservation deadline is Friday the 22nd (today). (Call Carolyn at x3918.)

CU elections March 7

The event: Annual Meeting of the JSC Federal Credit Union
Place: Gilruth Rec Center
Time: 7 p.m.
Date: March 7, 1980
Purpose: Annual business and election of officials

It will be the AIAA's annual Membership Night, and National President Dr. George Mueller will give a short talk. Mark your calendars—the meeting starts at 6:15 for cocktails and dinner, 8 for the program only. For more info call Mr. Chaffee at x4121.



Photos by Terry Slezak

Karate Class New at the Gilruth Center

Calendars filled at Rec Center

The **FEBRUARY FUN RUN** will be Saturday the 23rd at 9 a.m. at Gilruth Center. Distances will be 10 km. or one mile and cost is 50 cents per person. Bring the whole family.

Mark the date March 8 on your calendar to take part in Gilruth Center's **FIRST ANNUAL FREE-THROW CONTEST**. Participants shoot 50 shots with awards going to the first and second

place shooters. Cost is \$1 per person and all money will go to awards. Competition starts at 9 a.m.; you must register by March 5.

There are still vacancies in the following Leisure Time Classes: Country-Western Dance, Better Picture Taking, Defensive Driving, and Basic Auto Mechanics. Call x3594 for further information.

Roundup Swap Shop

Property & Rentals

Sale: 3-2-2 contemporary 15 min south of NASA 1 off I-45. 4-1/2 yr old, priced \$9K less than comparable home in CLC area. 1-935-5220 after 5.

Lease: 3-2-2, Friendswood, huge living room, fenced yard, no flooding, \$475/mo + deposit. x5303 or 482-6609.

Sale: Lot at Waterwood on Lake Livingston, Golf, tennis, water sports, etc. Owner will finance. Must sell. 488-1410.

Sale: 1.2 acres in Polly ranch Estates. Wooded. 488-6433 after 5.

Lease: Duplex, 2-2 1/2-1g-1cp, 1/p, 1569', neutral colors, 10 mos. old, immediate occupancy. \$495/mo. No pets 488-2716 or 333-2636 after 5.

Lease: CLC condo, 2 br, 1 bth, exc location, \$375/mo + deposit 488-0521 or 486-0409.

Cars & Trucks

79 Ford Fairmont 4dr, 6 cyl, 4 spd, sunroof, A/C, pwr windows, ES package, loaded, \$5600. R. Sugsbey x4236 or 488-2250.

72 Chevrolet station wagon 400 V-8 engine rebuilt. Best offer. Jean 482-5432.

70 Pont wagon, 9 psgr, AC-PB-PS, automatic, AM/FM stereo, cruise contl, uses reg gas, HD suspension, hitch, good cond, good tires, \$550. D. Haines x5451 or 941-2495.

70 Pontiac LeMans, p/s, p/b, auto transmission, 350, 2 bbl, a/c and heater. 554-2073 after 5.

78 Camero LT, maroon, one owner, power brakes, steering, a/c, auto, good cond. bargain at \$4700. Peacock x2208 or 486-0159.

74 Chevy 1/2 ton PU, auto transmission, power steering, R/H, V-8 350, good cond, a/c needs some repair, \$1975. 331-5826.

77 Dodge van, customized, captain's chairs, lo-boys, nauthahyde interior, loaded, 37,000 miles. See to appreciate, \$5100. Jay x5853 or 481-2335.

67 Mustang fastback, rebuilt 289 CID + 3 spd runs good. needs front end and body work. 334-2339.

74 VW beetle, \$1800. 334-2028.

1940 Ford 2dr sedan engine overhauled, runs, needs some body and interior work, best

offer. Puffer 488-4466.

1979 Monza, air, AM radio, 13,000 mi. Mark x5578.

Household Articles

Sofa, \$50. Single bed with headboard, \$40. Refrigerator, \$220. 482-6609 after 5.

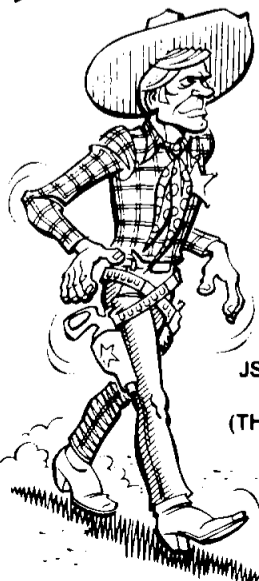
19" Portable RCA. \$30. Fireplace screen, tools, andirons, \$30. 2 white side walls, steel belt radials, G78-15, \$40. Shore 488-4343.

Maple dining room table, 6 chairs, \$225. Wing-back living room chair, \$50. 2 end tables, \$40/pr. Desk light, \$10. 488-5564.

Early American sofa, \$50, Rocker, \$50. 488-6433 after 5.

Built-in electric appliances: range top and oven unit, coppertone \$35 each. E. Rubenstein x3116 or 334-2354.

LET'S ALL GET IN THE BIG SHOWDOWN



TO FIGHT RISING COSTS...

SHOOT A JSC FORM 1150 TO BE-3 (THE CR-CORRAL)

Cartoon by Russ Byther

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads.

Lost & Found

Found: Gold bracelet in Bldg. 1. See Emmie Lamb, room 241, Bldg 1, x3325. Be able to identify.

Lost: N89OL One 1974 Cessna Skyhawk II (172). Red & white. If seen, call J. Poindexter, 474-2203. Reward.

Wanted

Boat trailer for 14' Sunfish sailboat. Steve Van Horn x5128

Boats & Planes

Tri Pacer, PA-22, like brand new, N2936Z, \$11,000. x2817, x2168 or 471-7967

70 19ft. Mako, 115 hp Johnson, and Sportsman trailer. Smith 334-3429 after 5.

Sailboat, 14' Sr. Dolphin, exc. Rubenstein x3116 or 334-2354

Miscellaneous

Firewood for sale - Oak \$120, Pine \$85. Jean before 4:30, John (Firewood) after 6. 1 + 588-2811.

18" rotary lawnmower, Black & Decker no. 8000, standard, \$50 with grass catcher. Bauch 333-3382.

Lawnmower, self-propelled, Sears, 22 inch cut, needs tuneup, \$40. Paul x4926.

TI programmable 58, over 100 functions up to 60 registers or 480 program steps, \$75. Jackie Bohannon x4161 or 486-8276.

2 steel clothesline poles, \$25. Nering x7204 or 481-0608.

Antique book collection (114), includes Elsie Dinsmore, Mildred Keith, other juveniles, first editions, 1940's Amer/Artist, other collectibles, all \$85. Dorothy x4381

Ford 8N tractor, needs work, 16-ft. trailer, 5-ft. brush hog, 12-in plows, \$1400. Warden 944-2026

Carpools

Want carpool member, Hitchcock to NASA, 7:30-4. Diana x2113.

Carpool members wanted from Fairmont Park to JSC, 8-4:30, flexible 7:30-4. Ideal for Bldgs. 12, 30, & 45. x5217.

Want to form or join a carpool from S. Main at 610 loop, in Houston, to NASA, 8-5. Margaret Hastings x4231.

Stereos & Cameras

Pentax telephoto lens 1:35/135 screw on lens hood UV filter and case \$75. Joe x2817 or x2168

Stereo, 9,600 Kenwood receiver and two Cannon speakers and earphone, \$1,000. Rick x5341.

Fisher, stereo console, beautiful cabinet. 488-6433 after 5.

Slow scan TV converter, Rober 400, less than 6 months old, perfect condition, \$600 each or two for \$1000. Vincent x4188 nite or 488-2148 day.

Musical Instruments

Cut-down upright piano with mirror and bench seat, exc for student, beautiful cond. 946-1869

Personals

Want a ride to New York. Leaving end of February. Share driving, some expenses. Paul x5457.

The Clear Creek Bass Club has openings for new members. If you enjoy bass fishing call 334-2003 after 6.

Adversaries for historical, futuristic, and/or fantasy games. Object: Conflict. Contact Paul Bailey x6226.

Basketball player looking for winter league team. Can play guard or forward, High school varsity, college intermural experience. Kevin x2941 or 2942

Cycles

76 Kawasaki KH500, 3200 miles, runs great, extras. 332-8219.

79 Yamaha YZ125 dirt bike, low hours, almost new, \$1200, also other equipment. Pat 482-5432 between 7 p.m. and 9:30 p.m.

77 Bultaco Frontera 370 dirt play/competition bike in exc cond, \$650. Asher x2386 or 481-4581

3-rail motor cycle trailer, Little Dude make, \$75. Glenn x2386.

NASA Advances in Astronomy

Strange things found in the sky

Gigantic Halo of Gas Implies Series of Supernovae Over Past 3 Million Years

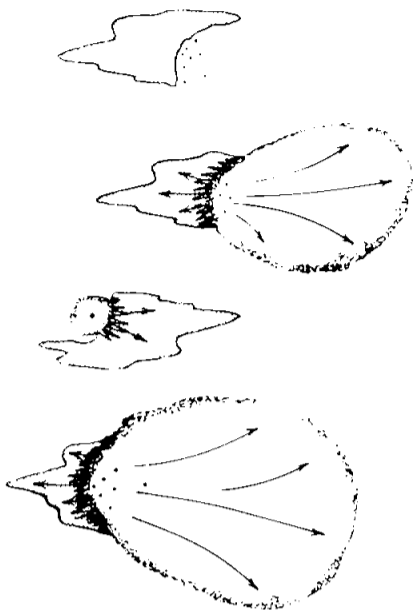
A superhot, "supperbubble" of gas, apparently confined to a gigantic, glowing ring or shell 6000 light years from Earth and 1200 light years in diameter, has been discovered, centered in the summer constellation Cygnus, the Northern Cross.

The discovery was made using satellite x-ray data from NASA's High Energy Astronomy Observatory-1.

The sphere contains enough gas at 2 million degrees Celsius to create 10,000 new stars like our Sun. Its energy output is equal to 10 times the amount of the entire energy emitted by our Sun since its formation 5 billion years ago.

What puzzles scientists is how such a huge amount of energy became locked into a gigantic halo. One investigator at the University of Colorado thinks there may have been a series of explosions of supernovae in the region over the past 3 million years—anywhere from 30 to 100—which, in sequence, created the superheated bubble.

Astronomers had not spotted the huge halo before because it cools through emission of x-rays instead of more normal emissions that can be seen in the optical or infrared regions of the spectrum.



Schematic above shows four steps: Star becomes supernova and shock wave strikes cloud; new stars are formed; new stars become supernovae and form halo of gas which starts to inflate; and as more stars are formed, the "superbubble" grows larger.

The mass was not seen in its entirety until it could be picked up in the x-ray sweep provided first by the HEAO-1 launched in August 1977. The spacecraft burned up as it reentered the Earth's atmosphere last March.

U-2 Experiments Suggest Huge Cluster of Galaxies, Challenge Big Bang Theory

Scientists may have discovered evidence for the largest cluster of galaxies—groups of hundreds of millions of stars—ever known.

If the indirect evidence is correct, there is a huge irregularity in the distribution of matter in the universe, which affects the Big Bang theory on the origin of the universe.

Scientists caution that a supercluster of galaxies is only one possible explanation. They emphasize that the findings are preliminary, and there are other possible explanations.

Evidence for the supercluster comes from analysis of measurements from NASA U-2 aircraft of cosmic microwave background radiation.

NASA Ames scientists have been surveying the Southern Hemisphere with U-2 data since 1978, in conjunction with the University of California at Berkeley.

The possibility of such a supercluster implies that at the time of its formation, the universe was not extremely smooth as research had previously suggested. The finding could disrupt the pattern needed for a completely uniform Big Bang.



Above is the Solar Maximum spacecraft in vibration tests at Goddard. The mission, launched Feb. 14, will study solar flares during their peak in the 11-year solar cycle, 1980-81.



Observers at Marshall Center's Vector Magnetograph facility caught this series of pictures of an eruptive prominence on the edge of the Sun December 20. At top left is the Sun in its normal state. The second photo was taken 15 minutes later at 11:24 a.m. CST. It shows the "spray" darting out at 200 km/sec (over 400,000 mph). The third photo shows the prominence two minutes later, reaching an altitude of 210,000 km. The last photo was taken five minutes later, and the event ended about 12:30 p.m., after the prominence had reached an altitude of 287,000 km. The event was monitored through the H-Alpha telescope at Marshall Center.

Solar Max launched

Mission to study solar effects is 1st satellite retrieved by Shuttle

A major step toward understanding the violent nature of the Sun and its possible effects on Earth is the promise of NASA's Solar Maximum Mission, launched February 14.

Solar flares are expected to occur most frequently near the maximum of the Sun's 11-year cycle expected in 1980-81. The flares are a complex phenomenon and no two are exactly alike.

The Solar Maximum Mission will use a variety of observation methods, including satellites, sounding rockets, and ground-based instruments, to study solar flares through their individual life histories.

The mission's satellite will provide scientists with observations of solar flares (violent eruptions on the Sun's surface) over a wide band of wavelengths in the ultraviolet, x-ray, and gamma ray regions

of the electromagnetic spectrum.

Although the spacecraft will concentrate on solar flare activity, instruments are expected to also measure the Sun's radiation to within one-tenth of one percent of the total output over a period of one year. Such precise measurement should be sufficient to definitely establish whether changes in total solar heat output affect climate and weather.

The satellite will operate in a 574 km-high circular orbit. The planned orbit is inclined 28.6 degrees to the equator with the satellite taking 96 minutes to complete one orbit.

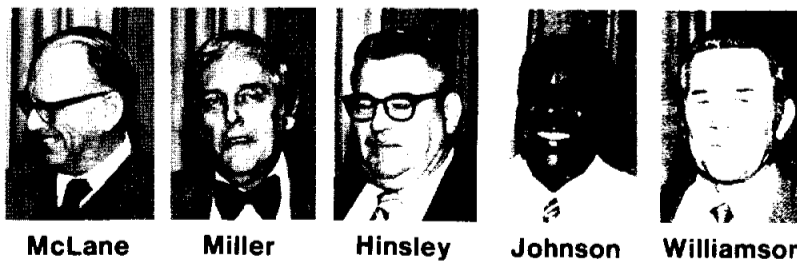
Solar Max is to be the first satellite retrieved by the Space Shuttle, on mission 15 in four years. Solar Max is also the last science spacecraft to be launched from an expendable launch vehicle.

Length of Service Awards



Christopher Kraft receives 35-year service award from Alan Lovelace

35 Years



McLane Miller Hinsley Johnson Williamson



Bowles Collins Brenton Scott Weinert Palazzola

30 Years: J. F. Moody; S. L. Bachman; W. C. Moseley; R. L. Brazil; W. C. Hanor; D. B. Sullivan; D. H. Cordiner; L. T. Crowson; R. W. Underwood; N. S. Jakir; H. F. Erickson; W. H. Smith; J. D. Jenkins; and F. B. Hopson.

25 Years: C. W. Watkins; F. U. Williams; J. B. Rodman; B. M. Jernigan; J. H. Berg; T. A. Fletcher; P. R. Maloney; F. Kolb; C. J. Andrews; B. J. McCarty; G. R. Gaffney; and W. A. Stransky.