

# Space News Roundup

Vol. 22 No. 15

September 2, 1983

National Aeronautics and Space Administration

## Alicia

*Good fortune and strong buildings keep on-site damage to a minimum*

From the beginning, the Center was designed to withstand a direct hit by a hurricane, and Alicia provided the first test of that design since construction began some 20 years ago.

No major structural damage was inflicted on any building on site, but six buildings — 9, 9A, 31, 36, 44 and 49 — did have roof damage and some water inside. The Center lost around 150 trees, a number of light poles and signs, and all told the damage cost is expected to exceed \$250,000.

"In general, we came through rather fortunately," said Director of Center Operations Kenneth Gilbreath. "No one was hurt, there was no critical equipment damage and we do not foresee any mission impact."

"I thought the buildings weathered the storm very well," said Associate Director Henry Clements. "We were very fortunate, and Center Ops had a very good preparation plan in place which served us well."

In the aftermath of the storm, grounds crews did yeoman service repairing and cleaning up the damage. "I've lived in Texas all my life and have been through several storms," said Duane Marburger, Project Manager for Chemical and Vegetation Control (CVC), "and so I expected it to be bad out here. But when I came out here Thursday afternoon, I was shocked. It looked like we'd never get done."

Crews had to cut up and haul off some 150 trees, but Marburger said they are in the process of saving another 300, both large and small. "It will take the better part of the year to get the site back in shape," he said, "but as far as the initial cleanup goes, we've accomplished in about a week what I thought would take a month to do."

Especially hard hit was the Gilruth Recreation Center area and the area near the astronaut jogging track. The Rec Center was scheduled to resume softball games on fields one, three and four this week, but

play on field two will not be possible for some time, according to Exchange Operations Manager Wally Grimes. Since several light poles were either destroyed or damaged, there will be no night games for from three to six weeks, he said. The fence around the tennis courts was completely flattened, and some roof damage was done to the main Rec Center building and the picnic pavilion. Total damage at the Rec Center grounds is estimated to be around \$30,000, he said.

The astronaut jogging track, in that it is covered with several trees, will also be closed indefinitely, Marburger said.

During the storm, a Hurricane Rideout team kept tabs on the Center from a command post on the second floor of Bldg. 30, which is sometimes cited as one of the safest buildings in Harris County in terms of strength and ability to withstand severe weather. The Center was officially in Level II emergency preparations when the site was closed at noon Wednesday.

JSC goes to Level II preparations when an emergency situation is imminent. A command post is activated, general site cleanup is performed, standby generators are serviced and readied, emergency vehicles are fueled, loose material is removed from building roofs, all exterior water taps are turned off, bike racks and tour signs are removed and stored, and other general preparations of that type are begun. During Level III, the condition the Center was in when Alicia hit, final preparations are made, the rideout teams are on station and all the hatches generally are battened down for the big blow.

During the first hours of the storm, JSC became a haven for about 100 refugees from high water and wind and water damage. Most all of the people who came to JSC for shelter were housed in the auditorium of Bldg. 30 except for a few with animals who slept in Bldg. 420.

*With blow dryers in hand and the sky as a roof, Taft recovers*

Drawing any connections between Hurricane Alicia and the night landing of STS-8 might seem difficult at first, but for those who stood in the partially wrecked Taft Broadcasting building last week blow drying television equipment, the connections were all too clear.

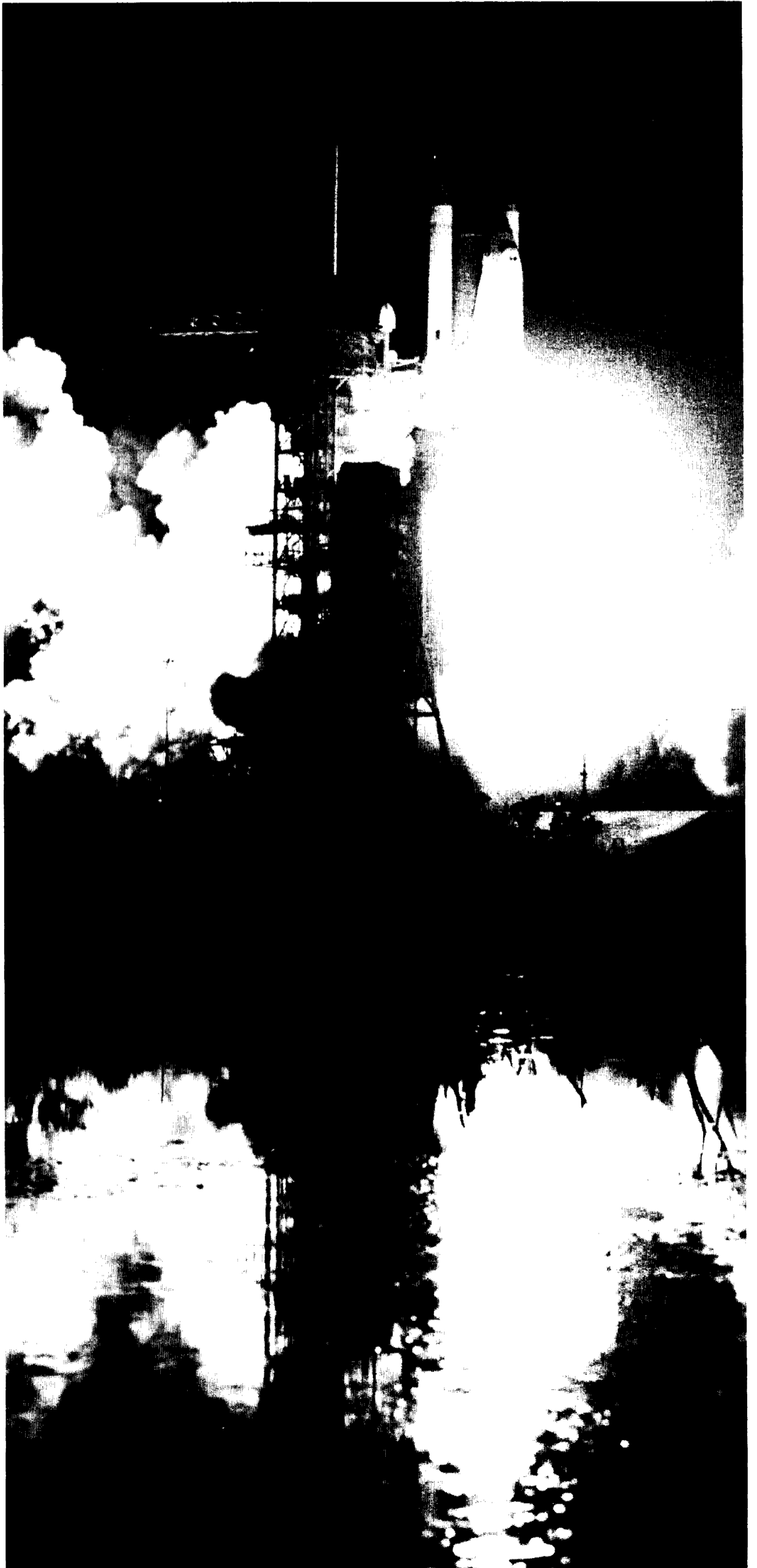
Taft has one of the most visible roles to play in Shuttle missions in that it provides all of the closed circuit television during flights, processes the television signals from space and maintains a large \$6.5 million inventory of video-related equipment. In the aftermath of Hurricane Alicia, a great deal of that equipment was surrounded by two inches of water.

In her own ineffable way, Alicia spared some buildings, merely chewed on others and in some cases very nearly totalled the rest. Taft had been in its new quarters at 912 and 914 Gemini for about one month (elements of Ford Aerospace having vacated to move into their

new building) when Alicia hit. A large portion of the roof was blown off during the storm, sub-ceilings collapsed into offices and work rooms, large quantities of paperwork were drenched, repair tools and spare parts were soaked and many expensive electronic items in that equipment inventory were rained on.

This was during the worst hours of the storm early Thursday. The next morning, Taft was scheduled to air freight some 1,300 pounds of critical equipment to the Dryden Flight Research Facility to support STS-8 landing video. This shipment comprised 41 pieces of equipment, including color television cameras, monitors, recorders, mixing boards and all of the miscellaneous items necessary for a large scale TV production. Luckily, it had been packed up for shipment before the storm hit.

(Continued on page 2)



**Early dawn**

For the first time since Apollo 17, Americans went to space at night when STS-8 left the pad at 1:32 a.m. CST Tuesday. Crew members Richard Truly, Dan Brandenstein, Guy Bluford, Dale Gardner and William Thornton will land early Monday, with a welcoming ceremony scheduled to follow here later that morning on the north side of Bldg. 1.

## Space News Briefs

### Galileo probe tests successful

After separating from the mother craft 150 days before arrival at Jupiter, the probe will eventually enter the gas giant's atmosphere at an initial speed of 115,000 mph and decelerate to 50 mph, encountering a maximum force of 400 G in an entry so severe that half of the probe will be a heat shield. Any way you look at it, that regime is difficult to withstand, but a recent test 19 miles above the White Sands Missile Range proved that the parachute system for the Galileo Jupiter Probe is up to the task. On July 25, a 5.1 million-cubic-foot plastic balloon 50 stories high released the probe at 98,000 feet above the desert floor in a test of the parachute system. The test was to make sure that the main parachute will be fully open at heat shield separation, abruptly slowing the instrument capsule so the burned-out heat shield will fall away rapidly, allowing instrument deployment and atmosphere measurements uncontaminated by gases from the shield itself. The successful July test followed several hours of wind tunnel tests at the Langley Research Center's Transonic Dynamics Tunnel. Similar drop tests last year were unsuccessful, but wind tunnel experiments showed successful deployments after adjustments were made in the length of the riser cable connecting parachute to probe, and all data show the new configuration worked well.

### TDRS transmits Landsat 4 images

The Tracking and Data Relay Satellite successfully transmitted several scenes relayed from the thematic mapper aboard Landsat 4 earlier this month, in a confirmation of both the thematic mapper (TM) itself and the tracking satellite's Ku band capability. Landsat 4 was selected as the test spacecraft because it uses the Ku band for transmission of the high-bit-rate TM data, and because it has been unable to transmit those scenes since its direct downlink X band system failed earlier this year. During portions of the data transmission Aug. 17, the bit error rate was zero. Overall, the system performance exceeded by a wide margin the specifications established for the data transmission from Landsat 4 through TDRS to the Goddard Landsat ground station. The performance is regarded as somewhat exceptional due to the multiple data paths used - from Landsat through TDRS to White Sands ground station to a domestic communications satellite and finally to Goddard, all at 85 million bits per second.

### New refrigeration method tested

Those among us who could have used some cooling off in the wake of Hurricane Alicia might be interested in a new refrigeration method tested recently at the Jet Propulsion Laboratory. The refrigerator can generate cryogenic temperatures, has virtually no moving parts and can operate solely on solar heat or low-temperature waste heat. The system contains no mechanical pumps, motors, friction seals or other similar wear-related components and may eventually be run for decades without maintenance. The key to this system lies in the use of hydrides, materials which interact with hydrogen. One in particular, lanthanum pentanickel (LaNi<sub>5</sub>), can absorb tremendous amounts of hydrogen gas at room temperature. In each of three compressor-like devices, LaNi<sub>5</sub> powder is heated to about 220 degrees F, which drives off the hydrogen that has been absorbed and generates high pressures of about 600 psi. The hydrogen then expands after it passes through a heat exchanger system, cooling and partially liquefying in the process. The resulting liquid hydrogen, now at minus 424 degrees F, can be used as a coolant for cryogenic equipment. In cooling the equipment, the hydrogen absorbs heat and is vaporized. Now a gas again, it is heated further and returns to another compressor in the sequence. It is then reabsorbed by the hydride powder, ready for the cycle to repeat. The 300-hour JPL test of this system is the longest known continuous operation since the idea was developed in the Netherlands in 1972.

## Bulletin Board

### Health courses offered at UHCLC

The Methodist Hospital's Institute for Preventive Medicine will offer two health-related courses at the University of Houston/Clear Lake beginning in September. The first course, "Introduction to a Healthy Lifestyle," begins Sept. 20 and is designed to encourage awareness of bodily systems and risk reduction. The course is taught by a registered dietician with expertise in exercise, physiology and behavioral change. The four-week course stresses eating, exercise, health habits and stress reduction. The second course, beginning Sept. 20, is "Weight Control," and teaches students to "think thin." Through behavioral modification techniques, a flexible low-fat diet and a controlled eating plan, students are taught how to keep the weight off permanently. The course is conducted by a dietician and lasts for eight weeks. In November, two more courses on stress management and stopping smoking will be offered at UHCLC. Registration is being done through the Hospital, and those wishing to enroll should call 790-6450 for more information.

### AIAA dinner meeting focuses on DoD

"Department of Defense Involvement in the National Space Transportation System" is the topic of a talk to be given by Brig. Gen. Donald J. Kutyna, Deputy Commander, Launch and Control System for the USAF Space Division, at an AIAA dinner meeting Sept. 22. The Houston Section of the American Institute of Aeronautics and Astronautics is sponsoring the dinner, which begins with a social hour at 6 p.m., dinner at 7 p.m. and the program at 8 p.m. at the Gilruth Recreation Center. The entree is roast turkey, and the price is \$6 for members and spouses, \$7 for non-members and a \$2 discount for students. The social hour service charge is \$1.50. The reservation deadline is noon Sept. 19. For reservations, call Pat at 333-4150; Joanne at 333-2030; Kathryn at 488-5660, x207; Annita at x3995 on-site; or Sylvia at 845-7541 (College Station).

### NARFE meeting set for Sept. 6

The Houston-NASA area Chapter 1321 of the National Association of Retired Federal Employees will meet at 6 p.m. Sept. 6 in the Clear Lake Park Bldg. on NASA Road One. The meeting will consist of a covered dish dinner and program. All federal employees with at least five years of service are eligible for membership in NARFE. The age limit of 50 years or over has been deleted from membership rules. For more information, call Chapter President Burney Goodwin at 334-2494 or Mary Olsen at 334-3270.

### Hispanic Heritage Day to be held

JSC will host Hispanic Heritage Day Sept. 10 beginning at 1 p.m. in the Visitor Center Auditorium. The theme of the program is "Hispanics: Discovering New Horizons." Participants will include Astronaut Dr. Franklin Chang-Diaz and Equal Opportunity Programs Office Chief Jose R. Perez. The program is designed to inform the public about NASA programs and is slated to initiate the observance of Hispanic Heritage Week in conjunction with the Fiestas Patrias activities.

# Out around Vega

## New solar system thought possible

NASA's Infrared Astronomical Satellite (IRAS) has discovered a shell or ring of large particles surrounding Vega, the third brightest star in the sky. The material could be a solar system at a different stage of development than our own.

Because of Vega's relative youth (it is less than a billion years old; the Sun is 4.6 billion years old), the material around it cannot have reached the same stage of evolution as our solar system. The discovery, however, does provide the first direct evidence that solid objects of substantial size exist around a star other than the Sun.

The orbiting telescope detected faint heat emissions from solid particles around the star. The particles are probably left over from Vega's formation, and may resemble objects found in our solar system such as asteroids, meteorites and other debris. They could range from the size of buckshot to the size of an asteroid.

The discovery offers the first scientific opportunity to study what may be an early solar system accreting from stellar debris - as our solar system is believed to have formed.

It is not possible to precisely determine the mass of material around Vega, but IRAS scientists estimate it could be comparable in mass to that of all the planets and other matter in our solar system, excluding the Sun.

Vega, also called Alpha Lyrae, is the brightest star in the constellation "The Lyre." It is located in our galaxy about 26 light years or

about 150 million million miles from Earth.

Vega is one of the most-studied stars in the sky, and is a standard against which other stars' brightness and spectra are measured by astronomers. Like the Sun, Vega is an ordinary, main sequence star. It is about twice the size of the Sun, and about 60 times more luminous.

Working with telescope data at the IRAS tracking and data acquisition center at the Rutherford Appleton Laboratory in Chilton, England, IRAS scientists Dr. H. H. Aumann of NASA's Jet Propulsion Laboratory and Dr. Fred Gillett of Kitt Peak National Observatory studied Vega as a source for calibrating the telescope. They discovered that Vega appeared very much brighter and larger in infrared light than expected from IRAS observations of other, similar stars. The two scientists soon determined that the radiation is coming from an extended region around the star stretching some 80 astronomical units (or approximately 7.4 billion miles) out from the star.

IRAS measured the material to be at a temperature of about 90 degrees Kelvin, or -300 degrees Fahrenheit, approximately the temperature of particles in the innermost rings of Saturn.

From theoretical considerations, the two scientists determined that the material must be much larger than cosmic dust grains, because such small particles would have already been gravitationally drawn back into the star, leaving intermediate- and large-scale debris in orbit around Vega. If the leftover

material is evolving like our solar system, it may have coalesced into planets or small bodies.

Composition of the particles is still an open question, though they presumably consist of cosmically abundant hydrogen-based molecules.

Our planetary system is thought to have developed about 4.5 billion years ago shortly after the Sun formed and rings of leftover material - lumps of solid material and gases - collected together into planets. The same events may be occurring or may have occurred around Vega.

The IRAS telescope is scheduled to operate through January 1984. Until then, IRAS scientists intend to use available telescope time to search for other stars like Vega that exhibit excess emissions of heat, to help determine how many stars are surrounded by similar systems.

While the ultrasensitive IRAS telescope is able to resolve the sphere or ring around Vega, it cannot determine the size of the individual particles within it. Follow-up studies from infrared, optical and other telescopes will gather information on the distribution and composition of the material, and determine whether it exists within a sphere or ringlike system.

IRAS' infrared telescope measures heat radiation emitted by celestial objects, and sees the universe differently than optical telescopes. Its year-long mission is to survey and map all infrared objects in the sky.

## Alicia

(Continued from page 1)

Under the cover of an angry blue gray sky - most of the roof being nonexistent - a number of Taft employees with their own serious problems at home were called in to begin the recovery. The Dryden shipment was unpacked, laid out and checked. Where necessary, Taft personnel stood over the equipment with blow dryers to get the moisture out of the delicate electronics. It was then packed up again and loaded into a van for safekeeping.

At the same time, those subceilings which looked threatening were pulled down, essential pieces of paper were laid out to dry, and pieces of equipment and work benches were moved into the few dry spots in the building.

At the same time, Taft had to send 17 people to Dryden to begin preparations for mission support. Thursday was also pay day.

On Friday, with two inches of water on the floor, payroll checks, per diem checks, credit cards and airline tickets were issued.

"A lot of our equipment was under a wooden sub ceiling that we put up ourselves," said Lawrence Henry, Taft's Deputy Project Manager. "It was more protected, and we were lucky in that respect. The biggest loss right now seems to be in paperwork, repair tools and small pieces of equipment. We were fortunate not to have any major equipment losses."

By Monday, Taft had split up and moved into tight quarters on site, in Buildings 8, 17, and 420. The organization will have to operate like that for several weeks at least, until the buildings on Gemini are repaired. "Thank goodness we had someplace to go," Henry said.

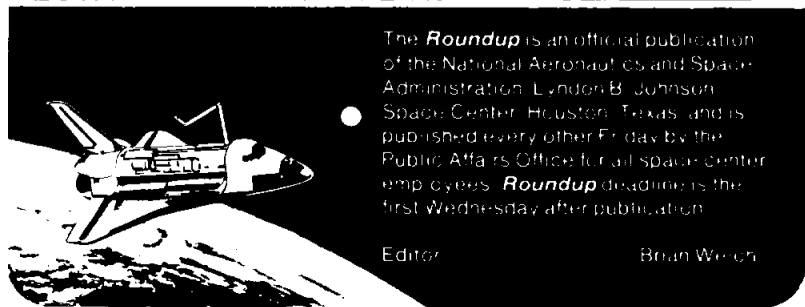
"Of course, everybody had their own problems at home, and that made it much more difficult. They all really pitched in and got the job done," he said.



Cleanup was underway last week in the Mission Evaluation Room in Bldg. 45 in the aftermath of Hurricane Alicia. A window blew out in the MER and some water and wind damage was sustained. The station closest to the damaged window was that for "Water and Waste Management."

NASA  
Lyndon B. Johnson Space Center

## Space News Roundup



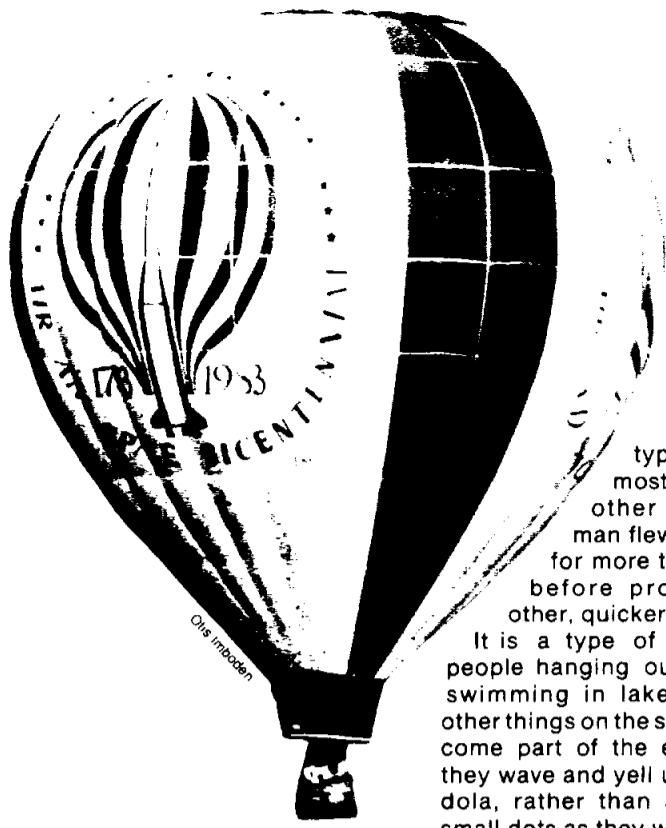
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Editor

Brian Weiler

# 'Like being a cloud'

## Riding the winds in a balloon meet



It is a singular type of flight, the most basic if for no other reason than man flew this way first for more than a century before progressing to other, quicker means.

It is a type of flight where people hanging out clothes and swimming in lakes and doing other things on the surface can become part of the experience as they wave and yell up to the gondola, rather than appearing as small dots as they whiz in and out of your view and are gone.

It is a type of flight where you watch the grass and the dust, the treetops and the clouds, to see how they interact with the wind, because they can give you clues as to what lies ahead. Ballooning is also a type of flight which has changed very little since it was first practiced exactly 200 years ago in France.

Celebrating that anniversary and NASA's own 25th anniversary was the impetus behind a weekend of ballooning at JSC, during a surprisingly clear two days shoehorned in between a week of heavy rains and Hurricane Alicia.

They came from all over the country, the drawing card a chance to fly out of a space center with a moon rocket as the backdrop. And fly they did. Some 47 balloons, pilots and crews began gathering at the Nassau Bay Hilton the Friday before the meet, while rain was still pounding the area and the launching field at JSC was a muddy lake. But that afternoon, an alternate plan — and a very unusual one for balloon meets — was put into effect by the meet organizers and Center Operations.

When Saturday morning dawned bright and clear, the balloon crews

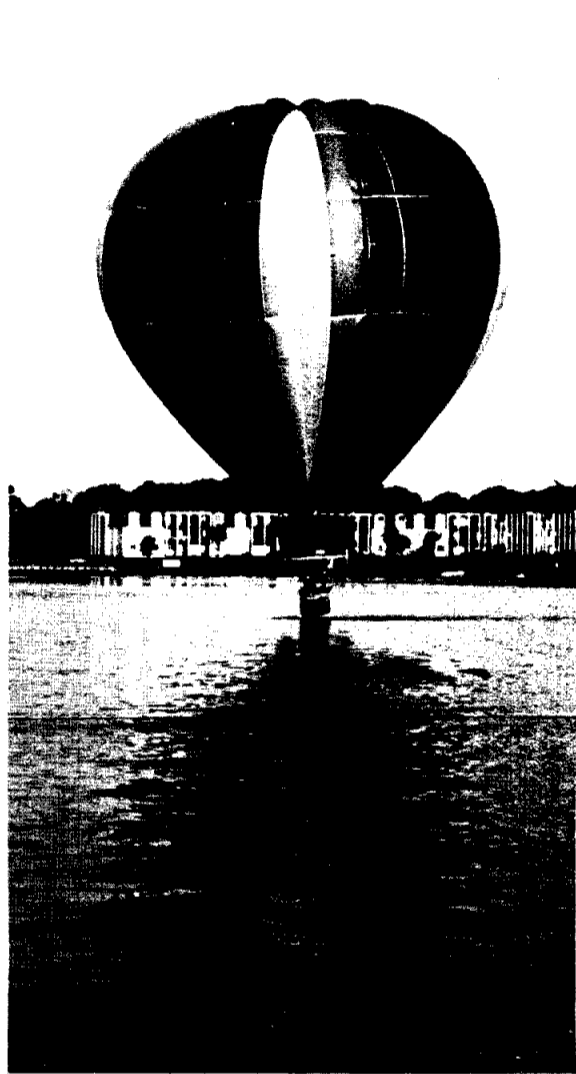
were already lined up along Avenue E, laying out the balloon envelopes in what space was available and inflating them for the 7 a.m. ascension. All but one of the balloons got off the ground during that first ascent with several thousand spectators watching, and the meet organizers heaved a collective sigh of relief as the pack quietly floated northward. Two more ascents followed during the weekend, and it was all very unusual because balloons almost never line up side by side for launch, and it is even rarer for  
**(Continued on page 4)**



Joe Allen



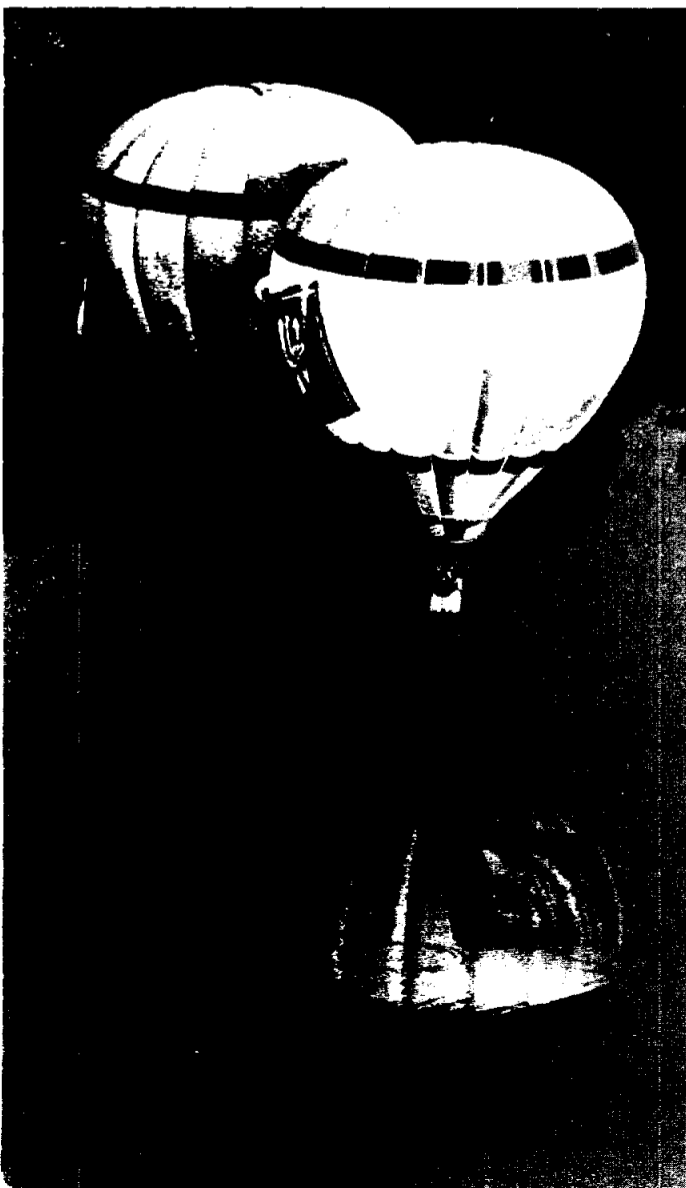
Joe Allen



Olis Imboden



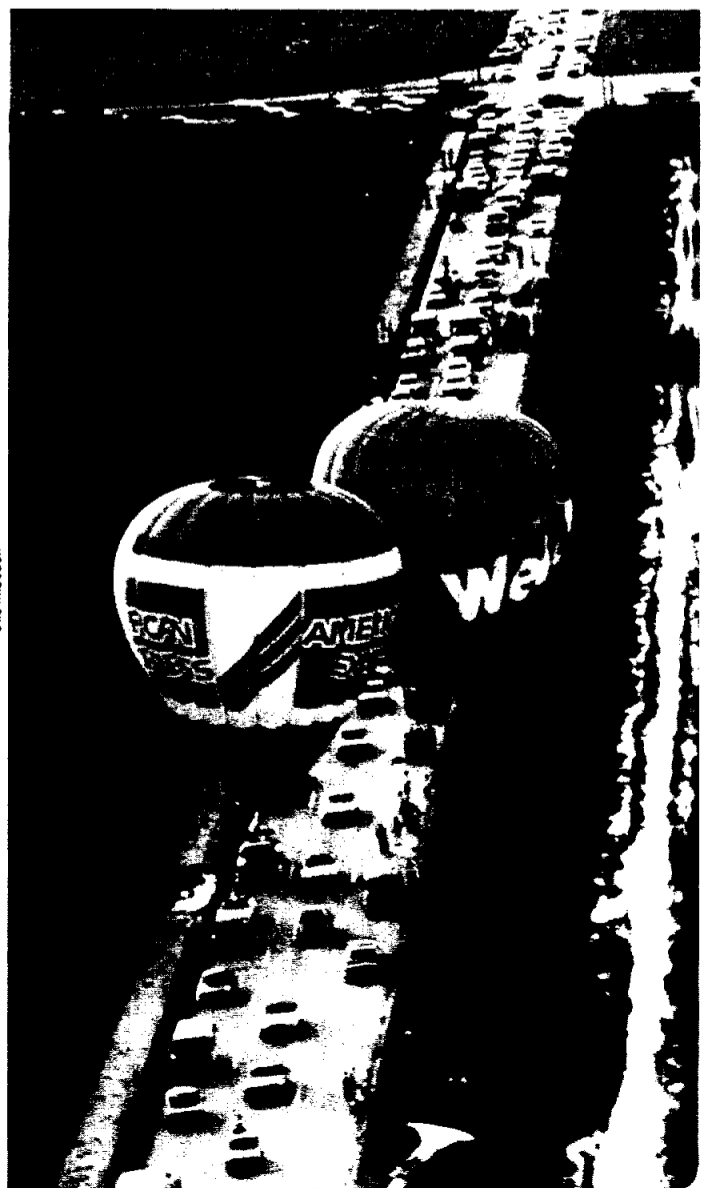
Joe Allen



Olis Imboden

*May the wind welcome you with softness,  
May the Sun bless you with his warm hands,  
May you fly so high and so well,  
God joins you in laughter.  
And may He set you gently back again,  
Into the loving arms of Mother Earth.*

—Traditional balloonist's prayer



Olis Imboden

Joe Allen



Leaving the Operations and Checkout Bldg. at the Kennedy Space Center for Launch Pad 39A, STS-8 crewmembers are shown here ready for the first night launch in the Shuttle program. Commander Dick Truly appears really ready as he embarks on his second voyage into space.

## Balloon meet

(Continued from page 3)

them to fly out of a federal reservation into heavily travelled skies with a military airfield and three commercial airports only a few miles away.

For John Bagwell, pilot of the American express balloon *Blue Chip I*, one of several balloons which carried members of JSC's astronaut corps along as passengers, it was a new experience, but with the added flavor of rockets, astronauts and the space program. "Everytime I fly it is a new experience," he said, "but this is something unique."

Balloon pilots are a careful but relaxed group. There are no checklists and detailed weather brief-

ings and countless hours of training learning exactly how a vehicle will respond. Flight instruction for balloons is about 10 hours for a private license and 35 hours for a commercial license.

Flying a balloon revolves largely around sensation and observation. "To know when to do something," Bagwell said, "you have to feel it. The balloon becomes a part of you and you talk to it. Each balloon feels different, and when you are flying you have to allow for events 10 or 15 seconds ahead, because that's how long it takes for heat to rise to the top of the envelope. "When you get into the clouds, it is very moist and wet and very quiet. You feel like you are part of it, and you move along with them. It's hard to describe, but it's very much like being a cloud."

## Roundup Swap Shop

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 AP 3 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.

### Property & Rentals

Galveston Gulf Front condo: treat yourself to a 2-day to 1-month vacation in this completely furnished condo, low rates. Call Nussman, 488-7762.

For rent: Two one-bedroom condos available during Christmas week, Beaver Creek close to Vail, each sleeps six. Call McCollum, 474-3839 after 5 p.m.

For sale: Wedgewood 3-2-2D, den/fireplace, oversized MBR, completely fenced, new paint, \$66,900, 10% down. Call Gaudin, x5961 or 488-5541 evenings.

For sale: Dickinson 3-2-2, custom built 1 1/2 story, pool, fenced, quiet area, trees, by owner. Call Caballero, x4913 or 534-6388 after 5:30 p.m.

For rent: Galveston By-The-Sea condo, 2 BR, furnished apartment for rent by day (2 minimum) weeks or month. Call Clements, 474-2622.

For lease: El Dorado Trace condo, 2 BR, 2B up, 1/2 B down, approx. 1,400 sq. ft., \$500/mo. Call 488-5967 after 5 p.m.

For sale/lease: El Dorado Trace condo, 2-2-2 split plan, fireplace, pool, tennis, W/D, ref., security system. WRAP or assume with \$2,500 down, or \$485/mo. plus 1st, last plus deposit, avail. immediately. Call 482-8457.

For sale/lease: El Dorado Way condo, 1-1, fireplace, pool, tennis, clubhouse, W/D connections, \$36,900 or \$360/mo. plus deposit. Call 488-2563.

For sale: El Dorado Trace condo, 2-2, all appliances, fireplace, earthenware, \$5,000 equity, owner willing to finance portion of equity. Call Glenn, 480-7211.

For sale: Mobile home, Friendswood, 1973 Redman, 12 X 70, 2 BR, 1 1/4 BA, completely furnished, excellent condition, many extras. Call Easley, x4311 or 482-7112 after 5 p.m.

For sale: Wedgewood 3-2-2, over 2,000 sq. ft. with 30 X 16 gameroom, landscaped, quiet, must see, reduced to \$70,900. Call 482-5393.

For rent: Mobile home space in Baciff, Baker and Kinne. Call 488-1758.

For sale: Mobile home, 3-2, 980 sq. ft., \$21,000. Call 688-7405.

For sale: El dorado Way condo, 2-2, wet bar, fireplace, all appliances, covered parking, security, \$46,500. Call Dianne, x4121 or 488-1897 evenings.

For rent: Two BR, two story house, six miles from NASA, newly painted, close to Bay, \$325 plus deposit. Call 481-2199.

For rent: Mobile home, 2-2-, private lot, six miles from NASA, close to Bay. Call 481-2199.

For sale: Baywind II condo, 2-2-2, split plan, fireplace, large living room, walk-in closets, W/D conn., patio, low 40's. Call Hiram, x2651 or 488-1683.

For sale: Heritage Park 3-2-2, H-plan, dining and breakfast, fireplace, fans, drapes, shades, fence, \$66K (\$33K equity, VA 8%, \$390/mo.). Call 482-5573 after 5 p.m.

For lease: Heritage Park 3-2-2, fireplace, ceiling fans, mini-blinds, garage door opener, appliances included, avail. Oct. 1, \$500/mo. Call 332-1165.

### Cars & Trucks

1967 Ford Fairlane 500, 390, 2 door, AM stereo, runs and looks good, \$1,200. Call John, 471-6576 after 5 p.m.

1976 Peugeot 504 diesel, four door, sunroof, AC, clean, 45 mpg, needs paint, \$2,800. Call 334-2310 after 5 p.m.

1973 VW Super Beetle, Lmted. Ed., runs well, AM/FM, 27 mpg, \$1,600. Call Jeff, x4231 or 480-4253.

1967 partially restored Mustang, V-8, 289, AC, PB, PS, clean, reduced to \$2,000. Call 486-7379 after 5 p.m.

1976 TR7 Victory Edition, 4 spd., sunroof, Michelin tires, new clutch, air,

\$1,800. Call 484-3396 or 436-1071 after 6 p.m.

1980 Datsun 210, 2 dr., auto, AC, power, AM/FM/8-track, good tires, excellent condition, \$3,500. Call 943-7619 after 5 p.m.

1979 Ford F150 pickup, 1/2 ton, LWB, 6 cyl., std. shift, 53K miles, light blue w/pin stripes, \$2,795. Call 481-3648 after 5 p.m.

1980 Jeep CJ-5, V-6, PS, PB, tilt wheel, AM/FM/cassette, 20K miles, excellent condition, \$5,900. Call Gerry, x2585 or 488-4836.

1981 Monte Carlo, PS, PB, AM/FM, AC, tilt/cruise, trailer package, 33K miles, exceptionally clean. Call Ray, x5250 or 554-2908 after 6 p.m.

1979 Honda Civic, new radial tires, great condition, must sell. Call 438-2885.

1971 Cadillac Coupe de Ville, excellent condition, no air, \$750. Call Lambert, x2781.

1979 Turbo Capri RS, AC, PB, PS, many extras, 54K miles, beautiful car, \$4,000. Call Lambert, x2781.

1967 Mustang convertible, V-8, new top and interior, excellent body. Call Haines, x3138.

1969 Pontiac Firebird, red with black interior, auto, AC, PS, AM/FM/tape, good tires, looks and runs great, \$2,350 neg. Call Bob, x3591 or 723-8126 after 6 p.m.

1982 Collector's Edition Corvette, perfect condition, under 8,000 miles, \$24,000. Call Mike, 474-5560.

1981 Fiat Brava, 4 dr., brown, sunroof, excellent. Call 534-6334.

1975 Plymouth Duster, well maintained, stick, AM. Call Ben, x4153 or Bill, 280-9794, 5-6-30 p.m.

1973 Volvo 144, excellent condition, low miles, AC, AM/FM/cassette, 4 spd., \$2,000. Call Williams, x3721 or 488-8048.

### Cycles

1980 Honda CX-500, water cooled, shaft drive, 6,800 miles, \$1,000 or best offer. Call 488-5734.

1978 Suzuki GS550E, good condition, rack, sissybar, cover, 21K miles, with 2 helmets, \$1,000. Call Mark Haynes, x3321 or 486-9035.

1982 Honda V-45 Sabre, shaft drive, water cooled, windshield, luggage rack, backrest, two helmets, cover, \$2,500. Call 487-3886.

1982 Honda Nighthawk, four months old, 500 miles, garaged, showroom condition, \$1,860. Call Dan, x5867 or 280-8212.

1978 Suzuki GS750, windshield, looks and runs good, carrying rack. Call Jim 332-9083 after 5 p.m.

### Boats & Planes

Guppy 13 foot fiberglass sailboat, with motor and paddles, 4 porthole cabin sleeps two tightly, \$1,914. Call Betty, x2811 or 538-1427.

Sunfish sailboat with trailer, new sail, \$775. Call Jack, x6301.

1978 Hydra Sport 17 foot, center console with 150 HP Merc., drive-on trailer, many extras. Call Holder, x2948 or 482-3214 after 5 p.m.

FAA instrument ground school, \$10 through Gulf Coast Aero Club. \$8 mo. dues, starts Sept. Call Mark, x4436 or 554-2538.

Custom windsurfer, foam/fiberglass, footstraps, 3 fin setup, 2 position mast step, excellent condition, \$625. Call Lee, x3175 or 554-4149.

1974 Catalina 22 foot sloop, three sails and usual standard equipment, EZ-loader trailer, 9.9 HP outboard. Call Larry, x6485 or 471-4489 after 5 p.m.

For rent: Piper Lance, 6-place, 160 knots, full IFR, club seating, \$85/hr. wet. Call L. Damewood, 471-1675.

Aqua Fin 14 foot sailboat, 1 year old, excellent condition with trailer. Call Nancy, 486-1743.

### Household

Dining room suite, table, six chairs, china. Call 474-3839 after 5 p.m.

Remarried; extra refrigerators, washer, dryer for sale. Call Lonnie, x2501 or 334-2305 for details.

New 9" color TV, \$150; massive pine book shelves, 6.5' X 3' X 1', new, \$50; set of four folding chairs, \$20. Call Lambert, x2781.

Folding louvered doors, 10 X 6.5, walnut stained, hardware included, \$150. Call Ken, x2613 or 482-1717.

King-sized waterbed frame and headboard only. All you need is mattress and particle board underlining — supports, screws, etc. come with the bed, \$55. Call Deborah, 996-9070 after 5 p.m.

1982 Gas range, Sears Kenmore, pilot, \$450. Call 534-6334.

Whirlpool refrigerator/freezer, almond color, textured surface, 20 cu. ft. side by side, practically new, \$700. Call Nina, x3551 or 480-6720.

Sears Kenmore refrigerator, F/F, avocado, 2 1/2 years old, \$255. Call Jan, 333-2030, x144 or 280-5425 after 5:30 p.m.

Mediterranean style stereo cabinet, walnut, beautiful wood, \$100. Call 474-2660.

### Wanted

Want to buy electric trains. Call Don, x2449 or 488-1208.

Want to join or form carpool from Pearland to NASA, 7:30 to 4 shift. Call Telaya Paulk, x4931, or 485-1312 after 5 p.m.

Need carpool partner between JSC West Gate and Pasadena via Red Bluff. Call Lois Gettler, x4360.

### Musical

Beginners reconditioned flute, ready to play, \$150. Call Ben, x3491 or 1-409/925-1512.

Upright piano, \$250. Call 474-2660. Baldwin spinet organ, double manual, walnut finish, great condition. Call Mark K., x3511 or 486-4373.

Conn Constellation cornet, excellent condition, 1st and 3rd valve triggers, leather hand grip, two mutes; new \$375, asking \$190. Call Mike, x5592.

### Pets

Boston terrier, 1 1/2 year old for stud service, good markings, has papers. Call Jerry, 280-4253.

Two male Doberman pups, championship stock, \$195 each. Call Jody, 538-3134 or Betty, x5111.

Free baby gerbils, ready to be given away now. Call Melanie, 538-3342.

FREE to good home. Guinea Pig, male, Abyssinian, white & tan. Rabbit, male, white. Both gentle good personalities. Call Hazel, x6186 or 554-2830.

### Sports Equipment

Snow Ski equip. & clothing for boys size 10. Men's ski boots, size 11, \$25. Bowling ball w/bag, \$15. Men's wet suit, size medium, \$50. Call Dave, x5365.

Treadmill, in good condition, \$50. Call Dick, x2441 or 331-3225.

### Miscellaneous

New KRACO AM/FM/cassette stereo car radio, model KHP-1085A, Dolby Sears 22" self-propelled lawnmower, needs work, best offer. Call Jerry, x2341.

Heathkit windshield wiper delay kit, CH-1068, never assembled, \$10. Call Ken Goodwin, x2881.

110 lb. weight set plus bench, fish tank, glass coffee table, brown vinyl recliner, 48" bumper pool game table. Call Linda, 337-6641

Royce model 606 23 channel mobile CB with turner power mike, slide mount & flip flop antenna, excel. cond., \$50. Call Frank, x3836.

Indonesian elephant tusk, solid ivory, collectors item or can be used for carving, 37 lbs, \$60 per lb. Call Frank x3836.

Mamiya syper press 23 camera w/100 mm lens, 2-120 roll film holders, focusing screen holder & rubber eye piece, \$350. Vivitar electronic flash model 273 w/hood converter, \$50 w/camera or \$75 alone. Call Frank, x3836.

New color TV, 9", \$170. 4 folding metal chairs, \$18 (set); folding crib and mattress (French), \$35; massive pine bookshelves, \$50. Call Lambert, x2781.

Warm Morning Broilmaster Grill w/new burner, grill & valve on propane tank. Two grill compartments, rotisserri, self, \$150. Call x4596 or 554-6006 after 6 p.m.

Above-ground swimming pool, 25' diam., 4' deep, new filter system, only \$300. 3' deep above ground swimming pool, hard walls w/liner, great for ages 3-8 yrs., \$40. Call Dave x5365.

FAA Instrument Ground School, \$10 through Gulf Coast Aero Club, \$8/mo. dues. Call Mark, x4436 or 554-2538. NR, 20 watts/ch., still in box, \$150. Call Tom Clark, x7445.

Mounted tire and rim, P195/75R14, Firestone steel belted radial 721, like new, less than 2K miles, \$50. Call Jim, x5017 or 481-3648 after 5 p.m.

Collector prints: set of 40 Richard Timm wildlife prints, 22" X 28", signed, with albums; also Guy Coheleach koala bear, initialed. Call 333-9234.

One pair Gloria Vanderbilt jeans, size 5, washed, never worn, too small. Cost \$35, sell for \$20. Call Donna, x4571.

Wood door, 36" X 80", 21 panels, good tabletop for patio or pool area. Call 554-2908 after 6 p.m.

Prince graphite tennis racquet, 4 1/2 inch grip, strung, includes leather cover with strap, \$210. Call Ken, x2613 or 482-1717.

Round bumper pool game table, 48" diameter; fish tank and stand; glass coffee table and end table; vinyl recliner; ultrasonic bug shield. Call Linda, 337-6641.

Baby carriage, very good condition, \$50. Call 488-6521.

Want a pleasant cruising vacation? Sailing to Florida Sept. 30, need crew one way, five-seven days. Write Box 57805, Webster, 77598.

## Gilruth Center News

Call x3594 for more information

**Ladies weight training** — Shape up your body in the right places through this basic course offered Mondays and Wednesdays from 7 to 8 p.m. The class begins Sept. 12 for six weeks and the cost is \$20 per person.

**Ladies self-defense** — Learn the basics of self-defense in this class which begins Sept. 6 and lasts for four weeks. The class meets Tuesdays and Thursdays from 5:15 to 6:15 p.m. and the cost is \$18 per person.

**Aerobics** — This fitness class will be held on Mondays and Wednesdays from 9 to 10 a.m. and on Tuesdays and Thursdays from 4:15 to 5:15 p.m. Cost for the 12-week course is \$60 per person. Starting dates are Sept. 6 and 12.

**Yoga** — This class, beginning Sept. 20, is designed for those who desire inner awareness and control of their bodies. The class meets Tuesdays from 7 to 8 p.m. and the cost is \$20 per person.

**Beginning auto mechanics** — Learn to diagnose minor problems with your car before they become major ones. The class features three Tuesday lectures from 7:15 to 9:15 p.m., beginning Sept 13, and one Saturday lab. The cost is \$20 per person.

**Weight control concepts** — This course is designed to help you change your eating and thinking habits if you have trouble losing and maintaining your weight. The course runs for six weeks on Mondays and Wednesdays from 6 to 7:30 p.m. and costs \$20 per person. Beginning date is Sept. 19.

## Cookin' in the Cafeteria

### Week of September 5-9, 1982

#### Monday: HOLIDAY

**Tuesday:** Tomato Soup; Potato Baked Chicken, BBQ Spare Ribs, Mexican Dinner (Special); Squash, Ranch Beans, Spanish Rice, Broccoli.

**Wednesday:** Seafood Gumbo; Liver & Onions, Baked Turbot, BBQ Ham Steak, Baked Meatloaf w/Creole Sauce (Special); Beets, Brussels Sprouts, Green Beans, Whipped Potatoes.

**Thursday:** Beef & Barley Soup; Chicken & Dumplings, Corned Beef w/Cabbage, Smothered Steak w/Cornbread Dressing (Special); Spinach, Cabbage Cauliflower au Gratin, Parsley Potatoes.

**Friday:** Seafood Gumbo; Pork Chop w/Yam Rosette, Creole Baked Cod, Tuna & Salmon Croquette (Special); Brussels Sprouts, Green Beans, Buttered Corn, Whipped Potatoes.

### Week of September 12-16, 1982

**Monday:** Cream of Celery Soup;

Braised Beef Ribs, Chicken a la King, Enchiladas w/Chili, Italian Outlet (Special); Navy Beans, Brussels Sprouts, 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; Turkey & Dressing, Country Style Steak, Stuffed Cabbage (Special); Corn Cob-bette, Okra & Tomatoes, French Beans.

**Wednesday:** Seafood Gumbo; Catfish w/Hush Puppies, Roast Pork w/Dressing, Chinese Pepper Steak (Special); Broccoli, Macaroni & Cheese, Stewed Tomatoes.

**Thursday:** Cream of Tomato Soup; Beef Tacos, BBQ Ham Slice, Hungarian Goulash, Chicken Fried Steak (Special); Spinach, Pinto Beans, Beets.

**Friday:** Seafood Gumbo; Liver & Onions, Deviled Crabs, Roast Beef w/Dressing, Tuna & Noodle Casserole (Special); Whipped Potatoes, Peas, Cauliflower.