Bit Market Augusta Augusta Augusta Augusta October 17, 1980 Houston, Texas Vol. 19, No. 21

Frosch to step down

January 20 to be last day

Dr. Robert A. Frosch has informed President Carter that he plans to leave his post as Administrator of NASA on January 20. He is the fifth man to head the nation's civilian space agency.

Frosch will be taking over as the first president of the American Association of Engineering Societies (AAES) a federation, created in January 1980 of the major engineering societies in the United States.

The association covers 39 professional societies representing more than 1 million engineers. It includes such organizations as the National Society of Professional Engineers, the American Society of Civil Engineering, the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, the Institute of Electronic and Electrical Engineers, and the American Institute of Mining, Metallurgical, and Petroleum Engineers.

Frosch was nominated by the President to become Administrator of NASA on May 23, 1977, and he took his oath of office on June 21, 1977. Previously, he had been Associate Director for Applied Oceanography at Woods Hole Oceanographic Institution from 1975 until mid-1977.

Earlier posts included: Assistant Secretary of the Navy for research and development; Assistant Executive Director of the United Nations Environment Program; and deputy director of the Defense Department's Advanced Research Projects Agency.

A native of New York City, Frosch earned a bachelor's degree in 1947, a master's degree in 1949, and a doctorate in 1952 in theoretical physics, all from Columbia University, New York.



Administrator Frosch at 1977 JSC press conference

He received the Arthur S. Flemming Award in 1966, the Navy Distinguished Public Service Award in 1969, the Defense Meritorious Civilian Service Medal in 1973, and the Neptune Award of the American Oceanic Organization in 1973.

STS status Breakthroughs in test engine burns

Progress was made the week of October 6 in preparation for the eleventh static firing of the main propulsion test cluster now set for November 4. The week saw six successful firings of test engines at the National Space Technology Labs in Mississippi and two at the Rocketdyne facility in California.

On October 7 test engine 0009 completed a 520-second burn as programmed, and it repeated the performance October 10. Test engine 0006 completed two firings October 11 and 13. The engines are now cleared for use in the November 4 cluster firing.

At Rocketdyne test engine 0007 completed two tests on October 7 and 11 proving new procedures and engine modifications in support of the November 4 cluster firing.

At the Cape, the engines have been removed from the orbiter for minor modifications and they should be reinstalled in mid-November. There are very few tests remaining, and work continues on schedule for a November 23 rollout from the Orbiter Processing Facility to the Vehicle Assembly Building.

At JSC the Shuttle Avionics Integration

NASA offers book of Mars photographs

All but one of the four Viking spacecraft sent to explore Mars are silent now, but they have left a legacy of hundreds of remarkable photographs of the Red Planet.

Some of the best of these photographs are included in a new NASA paperback publication entitled "Images of Mars: The Viking Extended Mission." Collected by Nancy Evans of the Jet Propulsion Laboratory, Pasadena, California, and Michael H. Carr of the U.S. Geological Survey, the pictures illustrate the varied landscape of one of the Earth's closest planetary neighbors.

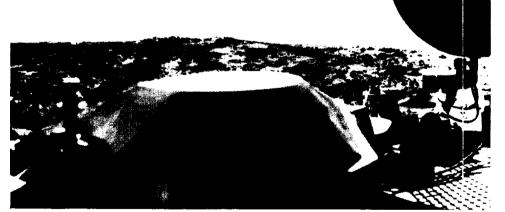
The Viking spacecraft, launched in 1975, reached Mars in 1976 and transmitted back to Earth hundreds of photos of the Martian surface from orbit as well as from the surface itself.

The 30 black and white photographs in "Images,"some as recent as 1979,

pact, but for what they tell the viewer about the terrain they depict.

Soaring volcanos, mysterious channels, tremendous chasms that could swallow the Grand Canyon, rocks, boulders and sand—all are shown in vivid clarity. The notes accompanying each photograph explain, in layman's terms, what each image shows.

This armchair guide to another world was produced by NASA's Scientific and Technical Branch. NASA SP-444 is available for \$2.25 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.



Space Shuttle student project kicks off

One teenager from the East Coast wanted to see if a spider could spin a web in zero gravity. A New Jersey day school class wanted to study libration clouds and a junior high school boy from Oklahoma wanted bacteria and spores to be photographed at different times during the mission.

The students' experiments flew on Skylab, and now a similar project is underway for the Space Transportation System.

The Shuttle Student Involvement Project kicked off this summer when NASA with the National Science Teachers Association sent out 130,000 packages announcing a nationwide competition for secondary students to devise scientific experiments to be flown on operational Shuttle missions.

As of October 1 over 50,000 teachers have returned the accompanying

postcard requesting further information, and requests are coming in to Headquarters at a rate of 2000 a day.

And that's just for this year. The project will be an annual competition opening up in September with 10 winners being selected each May.

The experiments will fly on orbiters on a "space available" basis.

JSC will have the task of finding space for the experiments in the crew compartment. "When we have Cargo Integration Reviews 18 months before each mission, we will propose as many of these experiments to fly as there is space for," said Chris Perner of the Integration Section of the Spacecraft Design Division.

"We will look at the concept and objective and make the experiment compatible with the mid-deck."

The NSTA has divided the country into 10 regions from which 20 semi-finalists will be chosen. Those 20 will come to NASA centers for briefings, and be narrowed down to 10. The 10 final nationwide winners will be chosen from the pool of approximately 100 regional choices.

NASA retains final decision on whether it is possible to fly a particular experiment.

The plan is to minimize crew participation. The astronauts should not have to do more than turn a switch, hook up a piece of equipment, or at the most take a few pictures; and it is crucial that the crew's involvement come during a slow period in the flight timeline.

Winning proposals will be selected based on engineering or scientific merit and originality. They will be incorporated into Shuttle flights in a number of ways. If a student's project closely parallels See Student Project Page 4 Lab (Building 16) is continuing verification of the Kennedy Space Center launch processing system software in preparation for the Shuttle Interface Test now scheduled for November 30 through December 16.

During this test the crew will be in the orbiter throughout the period running procedures for each configuration of a Space Shuttle mission — such as ascent, abort

See Shuttle Page 4

Saturn

encounter update

Voyager 1 begins its Saturn encounter November 6. The "Far Encounter One" phase began October 24 and runs through November 2. The start of this phase corresponds to the beginning of four-frame narrow-angle mosaics of the full Saturn disk. The phase ends when the full disk cannot be assured in those narrow-angle mosaics.

Bulletin Board

Your Christmas Card Purchase Could Help **Pediatrics Clinic**

children with cancer. They have x5285. become a festive Houston tradition at Christmas time. Sales have increased from 9000 cards sold the Dinner Meeting on first year to more than 400,000 in Economics 1979.

Each fall many young patients participate in a card-drawing contest. Five or six designs are selected in January for printing that year.

go into a special fund used throughout the year to benefit the pediatric unit.

In Clear Lake City the cards will be available at United Methodist Church through November. Stella Kiefer at 488-4080 is selling the cards, and she can always use more volunteers.

Toastmaster Has Answers To Many Questions

As your career grows with your organization, do you have a need to develop your communications program only skills? Have you ever had specific opportunities during your formal education to learn communications skills? Have you thought of communication as speaking, listening, and leadership?

Toastmasters can offer you an excellent opportunity to learn what communications is all about and how you can effectively apply it to your home, organization, or work. Why don't you visit with the meeting?

Toastmasters meets every first and third Wednesday at Franco's (Flying Pizza), 1100 NASA Road Fisher, x-3278.

Fall Is Fun Flying

Come join the Aero Club and fly M. D. Anderson's pediatric at very advantageous rates. Con-Christmas cards are designed by tact Jerry Haptonstall for details at

Call Today for Next AIAA

'Economic Values of Space Activities" is the topic of the next dinner meeting of the American Institute of Aeronautics and Astronautics, Tuesday, October 21.

Klaus P. Heiss, will speak at 8 p.m.; social hour starts at 6, and Proceeds from the card sales dinner is at 7. Heiss is President of ECON, Inc., an economic consulting group. He specializes in applying economic principles to social and technological issues.

> Innovative analyses of such programs as the Space Transportation system, remote sensing of agricultural crops, and projects of the U.S. aerospace and defense industries have resulted from economic studies Heiss has directed.

> Dinner reservations can be made by calling Francie at 483-4121 by noon October 17.

Get Some Christmas Shopping Done Early

The Bay Area Military Officers' Wives Club is holding a bazaar Thursday and Friday October 23 and 24 from 10 a.m. to 6 p.m. at the Armand Shopping Center at Bay Area and Space Center Boulevards (next to Minimax). There will be arts and crafts, a Christmas booth, a country store, a plant booth, and a flea market boutique. Proceeds ao into the Club's general fund, a portion of which is used on local welfare projects.

Shows on PBS of Interest **To Space Program Workers**

Sunday October 19 Astronaut Frank Borman narrates a "nervetingling" account of persons through history who have risked death to further human knowledge, at 7 p.m. on "The Ultimate Risk.'

Carl Sagan's "Cosmos" follows at 8 p.m. comparing Earth to other planets.

On Saturday October 25 "Connections" Faith in Numbers covers the intricate connection between the invention of the modern computer and the There is no charge to attend the Medieval waterwheel, hosted by techno-sleuth James Burke.



The Space and Life Sciences Directorate's Rita Rapp received the Distinguished Alumnus Award from the University of Dayton October 3. Rapp specializes in the engineering of nutritious meals for astronauts during space missions, working in the Shuttle Support Branch food lab.

CORRECTION

Richard P. Parten's job title was printed incorrectly in the last issue of Roundup. He is now Deputy Director of Data Systems and Analysis, no longer Chief, Spacecraft Software Division, as identified. Roundup apologizes and regrets the error.

Cookin'

Week of October 20 - 24

Monday: French Onion Soup; Beef Chop Suey; Polish Sausage w/German Potato Salad; Breaded Veal Cutlet (Special) Okra & Tomatoes; Green Peas. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies

Tuesday: Split Pea Soup; Shrimp Creole; Salisbury Steak; Fried Chicken (Special): Mixed Vegetables: Beets: Whipped Potatoes.

Wednesday: Seafood Gumbo; Fried Catfish w/Hush Puppies; Braised Beef Ribs; BBQ Plate; Weiners & Beans; Shrimp Salad; Stuffed Bell Pepper (Special); Corn O'Brian; Rice; Italian Green Beans.

Thursday: Chicken Noodle Soup; Beef Stroganoff; Turkey & Dressing; BBQ Smoked Link (Special); Lima Beans; Buttered Squash; Spanish Rice.. Friday: Seafood Gumbo; Broiled Turbot; Liver w/Onions; Seafood Platter; Fried Shrimp; Meat Sauce & Spaghetti (Special); Green Beans; Buttered Broccoli; Whipped Potatoes.

Week of October 27 - 31

Monday: Beef & Barley Soup; Beef Chop Suey; Breaded Veal Cutlet w/Cream Gravy; Grilled Ham Steak; Weiners w/Baked Beans (Special); Whipped Potatoes; Brussels Sprouts; Buttered Rice. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish: Chopped Sirloin, Selection of Salads, Sandwiches and Pies.

Tuesday: Celery Soup; Fried Shrimp; Turkey a la King; Pork Chop w/ Applesauce; Chinese Pepper Steak (Special); Au Gratin Potatoes; Breaded Squash; Buttered Spinach.

Wednesday: Seafood Gumbo; Fried Catfish; w/Hush Puppies; Braised Beef Ribs; Mexican Dinner (Special); Spanish Rice; Ranch Beans; Buttered Peas.

Thursday: Green Split Pea Soup; Corned Beef w/Cabbage & New Potatoes; Chicken & Dumplings; Tamales w/Chili; Hamburger Steak w/Onion Gravy (Special); Navy Beans; Buttered Cabbage; Green Beans.

Friday: Seafood Gumbo; Deviled Crabs: Broiled Halibut; Liver & Onions; BBO Link (Special): Buttered Corn; Green Beans: New Potatoes.

A ROCKWELL International artist recently accomplished this rendering of Space Shuttle support facilities presently under construction at Vandenberg Air Force Base north of Los Angeles. In the near future Vandenberg will

Rec Center offering more programs

Basketball Officials Needed - if you are interested in Mechanics - this course officiating Men's or Women's emphasizes how to perform a Basketball this fall and winter tune-up, carburetor overhaul please contact Carl McCollum or and/or a brake job, as well as other Ken Keller at 483-3594.

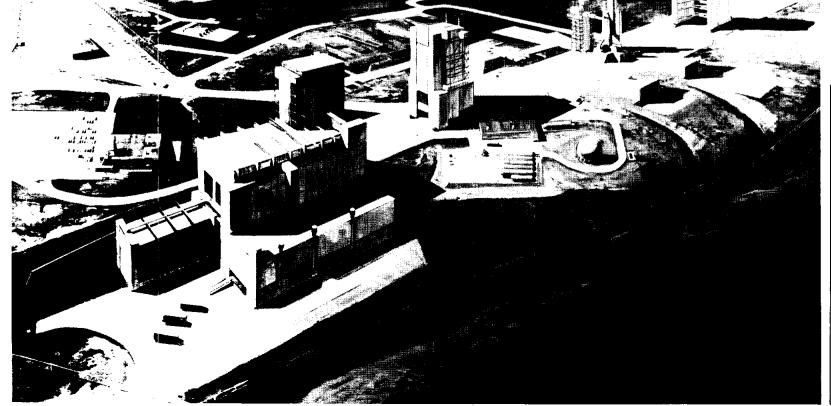
Spaceland TM Club at the next tion to Hatha Yoga will be held October 23 7:15 - 9:15 p.m. Tuesday, October 21 5:15 - 6:45 Course also includes two Saturday p.m. This class is designed to in- labs November 1 and 8. Cost is troduce you to the basic concepts \$33.50 per person. of Hatha Yoga including stress One. For more information call reduction and weight control. If in-Steve Jacobs, x-3561, or Emmit terest is sufficient, a class will form from this group.

repairs. Course meets on four con-Hatha Yoga - a free introduc- secutive Thursday's beginning

> Halloween Party - A Halloween party will be held for children October 31 - 6:30 - 9:30

Intermediate Auto p.m. at the Gilruth Recreation Facility Assembly Hall (Room 104). Festivities include a costume contest with prizes in various categories. The movie shown will be "THE CAT FROM OUTER SPACE." There will be Halloween treats, popcorn, and cokes. Cost for this FUN & SAFE Halloween in only \$1 per person.

> **NOTE** - for any information regarding sports or leisure time classes please contact Carl Mc-Collum or Ken Keeler at x3594.



be used for the launch of south-north, or polar orbit, Space Shuttle flights.

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
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Dead battery?

Don't jump before taking 5 steps

Jump starting a battery seems a simple enough process. Yet with air conditioners and other powerusing accessories demanding higher capacity batteries, an individual needs to exercise caution in applying the jumper cables to both the discharged and the booster battery

Hydrogen is present, so make certain no sparks are caused. Equally important, never lean over the battery itself while fixing cables to the terminals.

Improper use of jumper cables can result in:

- · Bodily injury from a gush of electrolyte through the battery vents.
- Bodily injury or damage to the vehicles or property nearby

tery.

· Damage to the electrical system of either vehicle.

A correct procedure for safely installing jumper cables is a fivestep routine which should be followed in sequence:

First: Be certain the two vehicles do not touch. If they are in contact, it could establish a ground connection which would promote sparking during attachment of the jumper cable to the positive terminal.

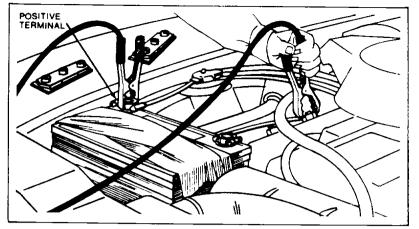
Second: Be sure all batteryoperated items-lights, radio, heater-are OFF. Set the parking brake. If automatic transmission,

due to explosion of the bat- transmission should be in 'Neutral.'')

> Third: Take off all vent caps from both the booster and discharged batteries and cover the vents with a porous cloth. This diminishes the danger of either battery exploding, which can result when a fully charged battery is connected to a dead one.

Fourth: Connect one end of e ther of the two jumper cables to the POSITIVE terminal of the booster battery and the other end of the same jumper cable to the POSITIVE terminal of the dead battery.

Fifth: Now connect one end of the second jumper cable to the shift to PARK position. (Manual NEGATIVE terminal of the booster



battery and the other end of this cable to a GROUND CONNECTION such as the frame of the car or any bare metal part no less than 12 inches from the filler openings to the discharged (dead) battery.

DO NOT ATTACH THIS NEGA-TIVE CABLE DIRECTLY TO THE NEGATIVE TERMINAL OF THE DEAD BATTERY, as this could cause sparking and in turn a hydrogen explosion.

abled vehicle starts, simply reverse the five-step procedure in the exact order of the actions taken to remove the jumper cables. Begin with the final action of Step Five, removing the ground connection, then move backwards through Step Three, finally removing the cloth and replacing all the vent filler caps.

Page 3

Following this course of action may well prevent tragic and costly Once the engine of the dis- problems.

Tips on 'smart driving' should bring down your gasoline bill

The following is first in a fivepart series on smart driving to save gas, offered by the U.S. Department of Energy. Roundup will feature the series in this and the next four issues.

The family automobile is about to become a first line of defense in the battle against oil imports.

About one-third of all the petroleum used in the U.S. is burned as gasoline in passenger cars. Nearly half of it is imported oil, at a cost to the nation of \$10 million an hour or \$90 billion a year. President Carter has "Our consumption of said: gasoline can be reduced with less serious consequences to our economy than if similar action were taken with respect to other



petroleum products, such as home heating oil."

The President set a goal of reducing gasoline consumption by 400,000 barrels a day, or 16,800,000 gallons a day by the end of 1980. He asked civic organizations, trade associations, unions, local governments, and as four-tenths of a mile per gallon.

employers to take the lead in encouraging people to drive less and to drive smarter-that is, to get more miles to the gallon.

Some of the ways to drive smarter are obvious-such as observing the 55 miles-per-hour speed limit. Most cars use 20% less gas at 55 than at 70. That's like saving 25 cents a gallon on the gas you buy.

Other gas-savers may surprise some drivers. For example, each two pounds of pressure that you add to your non-radial tires (up to the maximum stated on the tire) will increase gas mileage about 1%. And removing 100 pounds of excess weight can add as much

The average car in the U.S. gets 14 to 15 miles per gallon, based on a mix of city and highway driving, and it travels about 11,000 miles a year.

This means it uses about 800 gallons of gasoline, at a cost of nearly \$1,000 (\$1.20 per gallon, and rising all the time).

That cost suggests a big opportunity for the smart driver who wants to save money.

There are two good ways to save gasoline. Both are easy, with a little planning and record-keeping

One: Calculate how many miles you drove in the past 12 months. Set a goal of reducing that mileage, say by 20%. If you cannot

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.

estimate how many milés you drove, set your goal at some point below the 11,000 mile national average, and try to improve on it each month.

Two: Set a goal of increasing your miles-per-gallon every three months, and promise yourself a dinner out or another reward every time you meet your mpg goal.

A 10% improvement should be attainable the first three months. This would be one-and-a-half miles per gallon if you now average 15. Five percent more, about seven-tenths of a mile per gallon, is reasonable for the next three months, because the first improvements are the easiest.

See Driving page 4

Roundup Swap Shop

PROPERTY & RENTALS

FOR SALE: 38 acres, all utilities, neat 5 room frame house, 2 barns, ponds, Houston County, \$2,000 acre 554-6004. Haptonstall after 5 P.M.

HOUSE FOR LEASE/SALE: Sagemont, 4-2-2, drapes, fenced, formals, never flooded, \$485/mon., 331-9855 after 2

FOR SALE: Enjoy golf, tennis, boating and fishing now! Lot at Highland Lake Estates on Lake Travis near Austin. Class A resort sacrifice, Steve, x3561

SALE: Spacious bay home on bay side of Todville Road, Seabrook. Beautiful water view. Many extras. 8 474-4892

HOUSEHOLD ARTICLES

Console am/fm/record changer. make offer; stratolounger recliner, exc cond. X4549, 488-4487

Tappan Microwave oven \$200. X5951 or 480-3356 after 5 p.m. Susan Den furniture includes sofa, iove seat, and chair w/ottoman, \$300. Also green sofa. \$50. Kitty x5827 or 331-3718 after 5.

Pair lovely wing chairs \$400. Blue velvet covered rocker \$55. National Geographic (100) \$30 for all. Green table and chairs \$75, 488-5564

Double-bed, Simmons mattress springs, \$150., Corner group 2 single beds corner table \$100. Dining table 4 chairs \$35., Desk \$10. Tony x2241

TRICYCLE. Jean 4017 or 4763 or 941-5563.

One step-down transformer (220 to 110 volts). To utilize electric shaver, hair dryer, etc. in Europe, Call Jim Poindexter 474-2203

BOATS AND PLANES

Bronze Chris Craft 717LH boat propeller 13 inch diameter. \$50. John 488-0559 or x4393.

FOR RENT: 26' boat slip in protected marina. \$65/mo. Call: Shirley x3141

FOR SALE: Aluminum 14 ft boat and trailer perfect for bass fishing or duck hunting; carpeted; removeable swivel

1974 Ford Galaxiw, 4 dr. auto, a/c, ps, pb, very good cond. \$1050. Call Wissinger 333-4210, x384 days or 482-0966 after 6.

1977 Corvette, It metallic blue, exc cond, one owner, well maintained, \$8500 or close offer. 981-0670 anytime

1974 Cadillac, \$500 as is. Needs engine work and body work. Runs but should not be driven far. Ashley after 1715. 322-2080.

77 Camaro. Tan LT series, ps, ac, pb, tilt steering, AM-FM stereo cassette, cruise, \$5000, 15,000 miles. 472-6002

cuesticks. Taylor, x4303 or 487-3253 after 5 p.m. CB with converter and antenna.

After 4:30 p.m. 339-1793.

Sony 19" Triniton Color TV, Model KV-1910, 3 1/2 years old, used less than 80 hours for school, \$400. John 488-0559 or x4393

1/3 carat diamond ring, near shaped, 1 stone, originally \$775, for sale \$450, x6158.

Atlanta Gas Heater. 40,000 BTU. \$75. x5971.

1978 Custom Truck Camper Delux Compact for 8' bed. Stove, 3-way refrigerator, sink, overhead bunk, Best offer, TJ, x4065

VA non-escalating. after 5.

LEASE: League City, countryside s/d, sparkling 3-2-2, like new, fence, drapes, \$440/mo. 482-3011

SALE: League City, countryside s/d, sparkling 3-2-2, like new, fence, drapes, \$440/mo. 482-3011.

SALE: League City, countryside s/d, beautiful 3-2-2, \$11,600. Assumes VA loan, \$551/mo., 1 yr old, big kit., drapes, fence, gar dr opener, owner/agent. 482-3011

WANTED TO RENT: Condominimum near Breckinridge Colorado week of March 16-21. Lynn x5045 Swing Shifts. Days 331-1892

RENT: Livingston retreat 3 b/r. waterfront under the trees. All amenities by week or wk/nd. Jerry x4207 or 554-6093

SALE OR LEASE: EI Dorado Way Condo, 1br. 1b, w/d, fireplace, all appliances, 1 covered parking. \$300/mo. available "now" Renea Moore x3183.

LEASE: Scarsdale, 3-1 1/2-2, covered patio, storage, ideal for small family, near I-45 at Choate Road exit. 425/mo + deposit 481-8787.

RENT/SALE: League City 6219 Brookdale, Countryside, 3-1 3/4-2, fireplace, near pool, park & courts, \$475/ mo or \$62,000, 8 1/2° VA inquire 554-6200, 212 Pecan.

Sealy Posturepedic gueen size mattress and box spring with frame. (Never used). \$300. Jerry x3912 or 488-5446 after 5

Large decorative wrought iron gate. CARPOOLS 5 ft by 7 ft. \$15. x4891, Gormon.

PETS

championship pedigree, loving, "chocolate" cats, 488-3708 or Nancy x5224

"AKC German Shepherd Puppies" white and sable/wormed and shots. Male \$150, female \$100. Call 489-0006 after 6 p.m.

FREE KITTENS—Watkins 337-1160 after 5:30.

LOST & FOUND

LOST: Softball glove, Gilruth 18 Sept 80. Has my name on thumb. J. Scott Burd x2611.

WANTED

Used 10 speed bike. Girls or boys needed. Will pay up to \$50. John Erickson 488-1901 or x3431.

Shotgun, 20 gage pump or double barrel, full or modified choke. Ken 488-7647 after 5 p.m. 944-6450

Drop leaf typewriter table, metal tubular legs and rollers. After 5:30 p.m. 643-5333. C. Jay.

seats; \$950., Parker 4241 or 481-4372 aft 5:30.

1963 Outboard Evinrude, 65 HP exc cond, \$450 (includes many extras), x5* 86 or 946-4075 after 5:30

Ride to bldg. 15 and return 7:30 to 4:00 from League City F.M. #1266 Burmese kittens, CFA registered, Near Houston Gulf airport. T. J. x4065

CYCLES

TM400 dirt bike 1973. New frame. new forks, carb needs work, \$100. 333-3544

CARS AND TRUCKS

66 Chev Impala, 283 eng. Not running. Newly rebuilt heads; good tires. Make offer. Parts or whole. 474-3281

1977 Camaro, 305 V-8, Auto, A/C, ps/pb, radio, gold. Exc cond, \$3900. Call Ron at 4794 or 488-5732 after 5 p.m.

71 Ford Galaxie 500. Auto a/c, ps, pb, in good cond inside and out. \$500. Nordheim, x2693, 482-1782 (nights)

'77 Datsun 280Z, 2+2, excellent condition, \$6500 or best offer, 337-3973 after 6 p.m., Adams.

1977 Prosche 924, 4 speed, a/c, AM-FM-Cassette, Great Shape. 522-8040 or 538-1361 after 5.

78 LTD II, runs good. AM/FM Radio and tape. ac/heat. Call Nilda Garza 483-4776

1980 Z-28, less than 10,000 miles, auto, ps. pb, ac AM/FM cassette stereo. Must sell, \$ave. Call Manoch. Work 483-3417, Home 538-1669.

WANTED: 1972 or newer Chevrolet Vega "GT" Station Wagon, Prefer without engine and transmission. Dan at x7465 or 554-2731.

STEREOS AND CAMERAS

FOR SALE: Kindermann 35mm enlarger with f3.5 Steinhell lens. Enlarging frame, satelight, developing tanks. All in fitted carrying case \$80. Dennett 334-2798.

FOR SALE: Two video recorder movies BETA. Superman and Ten (10). \$60.00 each, ext 5971.

MUSICAL INSTRUMENTS

Spinet piano, tuned, exc cond. \$450, Samouce 482-0702.

6 string Epiphone Guitar, good condition \$100. Haines 941-2495 or 5451

MISCELLANEOUS

AM/FM 8-Track Car Stereo, \$30. Parker, 4241

24" whip antenna: center loaded, gutter mounted, \$15. Hardee x6316.

Pool Table, 4' x 8', Slate top, like new cond, \$375, Includes balls, racks,

Bikes, girls 20" Schwinn \$20. Boys Sears Spider \$15. Tony x2241.

Christmas Tree 8' Mr. Christmas, Insta-shape 488-5079

Camper, pop-up sleeps 4, ready to roll, very good cond, 944-5478 ar Mansfield x6441

Ladies diamond ring, beautiful 0.8 ct, solitaire. Also girl's promise ring. Call Paul Richardson, x4205 or 337-4748.

New! 2 Polyester 4-ply G78x15 tires, used 2 weeks only, \$45 each, x3031 or x2358 after 6:30 p.m. call 332-2279.

On Sale at the **JSC Exchange Store**

(Store hours 10 a.m. to 2 p.m.) ABC Theatre tickets: \$2 General Cinema tickets: \$2.40 Six Flags Over Texas discount tickets

Postage stamps: 20 for \$3 Sea-Arama Marineworld Fun-Time Cards: free

Entertainment '81 is on the way, bigger and better than ever at a cost of \$16, available around the first of November.

Driving Smarter

From Page 3

To monitor your miles-per-gallon, you must keep a record of the exact mileage and gallons each time you add gas. Then do your figuring over three fill-ups to allow for variations in criving patterns and different levels of "ful." One tankful will not give an accurate measurement.

Use the first month's average as your baseline, and try to improve it.

In the next article we'll suggest ways to reduce the miles that you drive. Later articles will explain how you can improve your miles-per-gallon rating. In the meantime, you should start your recordkeeping.

Shuttle Status

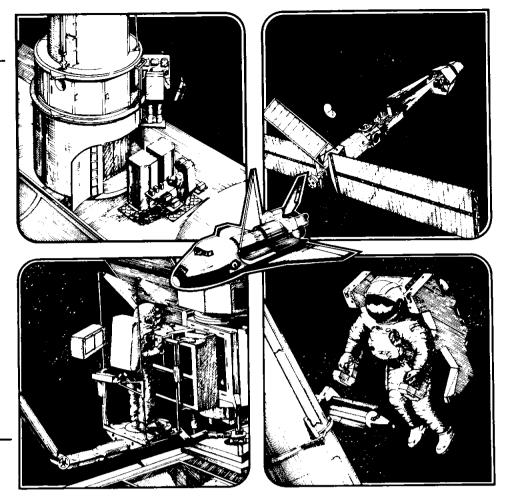
From Page 1

once-around, backup descent, and return to launch site.

The tests will be run on a complete Shuttle stacked vehicle—with the solid rocket boosters and external tank attached — in the Vehicle Assembly Building.

Other news: the SRB recovery vehicle *Liberty* is scheduled for delivery to the Cape November 17.

UNDER THE AUSPICES of JSC. Lockheed Missiles and Space Company, Inc., along with Grumman Aerospace, are studying service requirements of current and future spacecraft, and defining ways the Space Shuttle can be used to perform these services in orbit. This artist's concept from Lockheed depicts various outer space satellite servicing operations. Initially, the Shuttle-mounted Remote Manipulator System will provide some initial satellite maintenance, placement, and retrieval capabilities. However, projects such as the Space Telescope will require more diverse services and equipment.



3-2-1 Contact—a child discovers science

It's five o'clock, Mom. Forget about talking to your children. They are probably concentrating on a science lesson coming over the television screen.

3-2-1 CONTACT on PBS has swept the under 12 age bracket Neilsen ratings, and, now in its second year, the show seems to have accomplished its objective: "To use the power and impact of television to help make science and technology more understanding and inviting to children."

A surprising picture emerged when the Nielsen ratings came in. The Childrens Television Workshop created the show for 8 to 12 year olds, but a large number of adults are tuning in.

"Apparently we not only succeeded with our target audience, but with many adults," said Joan Ganz Cooney, president of CTW. "While nearly 17 million households with children under 17 reported watching the show in its first season, so did 6.3 million households with no children present."

So, mom, put the dinner on simmer and sit down with the children. You may learn something, too.

"When we first began developing the concept of 3-2-1 CONTACT, we did it with the belief that if, instead of making science into a remote and academic subject, we could translate it into terms that related to children's everyday experience, we could make science excit-

week, where the show has covered navigation, tracking patterns, and optical illusions.

The show is unique in its method of demonstrating concepts in science. Mark, for example, rides a roller coaster that hurtles through vertical loops. He wonders why people don't fall out and visits the designer in his shop to learn about the forces involved. science careers in many children, as evidenced by excerpts from letters CTW has received: "I would like to be a scientist because they are open-minded. They find out stuff that we could not."

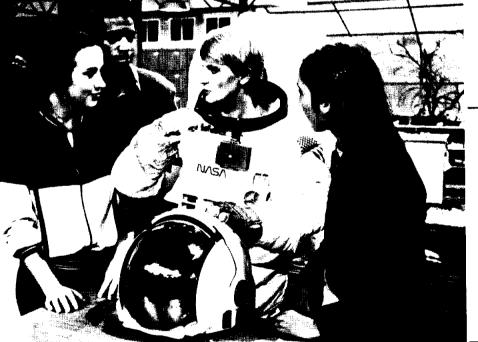
Or: "I would like to be a scientist who tries to cure diseases. I know it would be very hard and take a lot of work, but I am willing to do it."

Or: "I would like to be a scientist

because I like inventions and nature. I would invent a lot of things, like a dish wiper so I wouldn't have to wipe dishes after my mom washed them. I would like to invent a homework machine so I wouldn't have to do all my homework."

Not every child is a potential scientist. And not every children's TV program is healthy for a child to watch. But the Childrens Television Workshop has hit the target with 3-2-1 CONTACT. A discerning parent who limits his child's TV viewing time has no need to worry if the child wants to watch 3-2-1 CONTACT.

And if you are a scientist or engineer yourself, you can add to the child's learning by sitting down and watching with him.



HIGHS AND LOWS of temperature was the theme for the show September 22-26, and Vicki Johnson explained how astronauts are protected from temperature extremes in space. Johnson is an engineer at Hamilton Standard headquarters in Windsor-Locks, Connecticut. The episode will air again the week of January 19 next year.

ing and interesting for all children.' Cooney said.

"Apparently there are many adults whose own scientific education may have missed that meaningful connection with real life."

3-2-1 CONTACT whets scientific appetites by letting the viewers share the adventures of three youthful co-hosts— Mark, Lisa, and Trini—whose curiosity about the world around them takes them on excursions to more than 70 locations ranging throughout the U.S. and Puerto Rico.

Each week's programs center on a specific theme—focusing on opposites in nature, communication, surfaces, or natural forces. Mark, Lisa, and Trini experience the effects of scientific principles in action, become interested, and seek out explanations.

The week of November 3-7 NASA will be featured as part of the show's theme: "Near/Far: Navigation and perception the ways we find our way."

Thursday's show that week is titled "Space Shuttling," and it includes interviews with Astronauls Kathy Sullivan and Ron McNair. Friday s show recaps the Trini feels the effect of natural forces through a ride in a blimp, a snorkeling lesson, and a brush with a hurricane. Lisa finds out about sound waves by watching dolphins communicate silently, visiting a school for the deaf, and sitting in on a music session with trumpeter Dizzy Gillespie.

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Along the way the trio and their viewers gain a new understanding of how science affects everyday living and meet many kinds of scientists at work, broadening their view of potential careers in the field.

The location segments are presented as mini-documentaries in a magazine format that also includes animation and guest stars. Then at the end of each program comes the adventures of "The Bloodhound Gang," a fictional mini-mystery in which three young detectives demonstrate that powers of observation and logic can unravel baffling clues.

The show has stimulated interest in

Student Project

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an experiment already planned for Shuttle, NASA may arrange for the student to receive data from the professional experiment. For experiments that require new hardware, a sponsor will be sought out from industry or universities to develop and construct the machinery.

"NASA will make every effort to see that the student receives enough information to write a final report," said Glen Wilson, special assistant for student activities at Headquarters.

Because of weight limitations, only the mid-deck crew compartment will be available for early student experiments. However, in the future, the students will be able to make use of the crew compartment, Spacelab, the orbiter cargo bay, and eventually even the Long Duration Exposure Facility.

Ed Gibson to leave NASA

Scientist-astronaut Dr. Edward G. Gibson will leave the NASA Johnson Space Center effective October 31 to join TRW Defense and Space Systems Group, Redondo Beach, California, as advanced systems manager.

Gibson was selected as an astronaut in June 1965 and was science pilot on the 84-day Skylab 4 mission in 1973-1974.

An eminent scientist in the field of solar physics, Gibson is author of the textbook, *The Quiet Sun.*

He left NASA in 1974 to join Aerospace Corporation as senior staff scientist, and later was consultant to the West German aerospace firm of ERNO Raumfahrttechnik GmbH in Bremen. Gibson rejoined NASA in March 1977.