

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS

VOL. 17 NO. 1

Friday, January 20, 1978

1978: New 35 astronaut candidates join Shuttle era

NASA Administrator Robert A. Frosch announced Jan. 16 the selection of 35 new astronaut candidates for the Space Shuttle program.

This group of candidates will report to JSC on July 1, 1978. There they will join the astronauts currently on flight status.

In making the announcement, Dr. Frosch said: "The long and difficult task of selecting the most qualified candidates for the Space Shuttle program has been concluded and we are very pleased with the results. We have selected an outstanding group of women and men who represent the most competent, talented, and experienced people available to us today."

After two years of training and evaluation at the Johnson Space Center, successful candidates will become astronauts and enter the Shuttle training program leading to selection on a Space Shuttle flight crew.

The newly selected candidates include 14 civilians and 21 mili-

tary officers. Of the group, six are women, and four are minorities.



Margaret Seddon



Anna Fisher

There are currently 27 astronauts on active status (17 pilots and 10 scientist astronauts) and one on leave of absence.

A list of the new astronaut candidates is:

- Bluford, Guion S., USAF, Mission Specialist
- Brandenstein, Daniel C., USN, Pilot
- Buchli, James F., USMC, Mission Specialist
- Coats, Michael L., USN, Pilot
- Covey, Richard O., USAF, Pilot
- Creighton, John O., USN, Pilot
- Fabian, John M., USAF, Mission Specialist
- Fisher, Anna L., Civilian, Mission Specialist
- Gardner, Dale A., USN, Mission Specialist

- Gibson, Robert L., USN, Pilot
- Gregory, Frederick D., USAF, Pilot
- Griggs, Stanley D., Civilian, Pilot
- Hart, Terry J., Civilian, Mission Specialist
- Hauck, Frederick H., USN, Pilot
- Hawley, Steven A., Civilian, Mission Specialist
- Hoffman, Jeffrey A., Civilian, Mission Specialist
- Lucid, Shannon W., Civilian, Mission Specialist
- McBride, Jon A., USN, Pilot
- McNair, Ronald E., Civilian, Mission Specialist
- Mullane, Richard M., USAF, Mission Specialist
- Nagel, Steven R., USAF, Pilot
- Nelson, George D., Civilian, Mission Specialist

- Onizuka, Ellison S., USAF, Mission Specialist
- Resnik, Judith A., Civilian, Mission Specialist
- Ride, Sally K., Civilian, Mission Specialist
- Scobee, Francis R., USAF, Pilot
- Seddon, Margaret R., Civilian, Mission Specialist
- Shaw, Brawster H., Jr., USAF, Pilot
- Shriver, Loren J., USAF, Pilot
- Stewart, Robert L., USA, Mission Specialist
- Sullivan, Kathryn D., Civilian, Mission Specialist
- Thagard, Norman E., Civilian, Mission Specialist
- van Hoften, James D., Civilian, Mission Specialist
- Walker, David M., USN, Pilot
- Williams, Donald E., USN, Pilot

Spacelab finalists include one former JSC employee

Ten scientists, four Europeans, and six Americans, including former JSC physician Craig Fisher, were identified late last month as finalists for the position of payload specialists aboard the first flight of Spacelab in 1980.

The candidates were made known in a joint announcement by the European Space Agency (ESA) and NASA. The first Spacelab flight will be a joint undertaking of the two agencies with each providing scientific instruments and personnel.

Payload specialists differ from the NASA permanent astronaut pilots and mission specialists in that they are selected and trained specifically for a particular mission. The payload specialist positions provide an opportunity for the scientists responsible for mission investigations (called Principal Investigators) to concentrate on carrying out the investigations that make up the payload. The responsibility of flying and maintaining the Space Shuttle

vehicle will rest with the permanent astronaut crew.

On Spacelab 1, investigations will be conducted in stratospheric and upper atmosphere physics, materials processing, space plasma physics, biology, medicine, astronomy, solar physics, Earth observations, and in technology areas such as thermodynamics and lubrication.

The American finalists named for this first Spacelab flight are:

- Craig L. Fischer, MD (Palm Desert Medical Group, Inc., Palm Desert, Calif., formerly at JSC as crew quarantine physician, Apollo 11, 12, 14. He headed JSC clinical pathology specialty team.)
- Michael L. Lampton, Ph.D., Space Physicist (Univ. of Calif., Berkeley, Calif.)
- Byron K. Lichtenberg, Ph.D. candidate, Biomedical Engineer (MIT, Cambridge, Mass.)
- Robert T. Menzies, Ph.D., Physicist (JPL, Pasadena, Calif.)
- Richard J. Terrile, Ph.D., Planetary Scientist (Calif. Institute of Technology, Pasadena, Calif.)
- Ann F. Whitaker, Physicist (NASA/MSFC, Huntsville, Ala.)

Hector M. Rodriguez, an engineer in the Space Shuttle Program Resident Office, was presented an award from William Wilson, Resident Manager at Downey, California, for two very profitable suggestions he submitted under the JSC Suggestion Program. Both suggestions pertained to electrical wire harnesses used in the Shuttle Avionics Integration Laboratory at JSC. The total savings to the Government from these suggestions amounted to \$195,068, and Rodriguez received an award of \$2,577.00.



Hector Rodriguez

Phonille Devore of the Employee Development Branch received \$125 for suggesting that a film be obtained so that women at JSC might be instructed in self-examination for signs of breast cancer.

Charles J. Bauer's suggestion concerning mailing procedures for information documents was worth more than \$200 to him. Bauer works in the Public Affairs Office.

Sandra S. Burdsal of the Crew Systems Branch became \$35 richer

for taking the trouble to inform authorities about a dangerous intersection obstructed by high shrubbery while Edgar A. Dalke of the Data Systems Branch found himself with an extra \$100 by making note of the insignificant data contained in Form 1020, thus eliminating the need for costly regular updating of Form 1020M. Wilford P. Hilk, Security Branch, obtained \$50 for observing the need for steps at Building 17, and Bill J. Johnson, Maintenance and Operations Branch, was awarded \$25 for pointing out that electrical energy was being wasted in leaving the Status Board at Building 350 on continuously.

Harry L. Hawkins, Facilities Design Branch, saved JSC between \$5,000 and \$10,000 and earned \$550 for himself by proposing a different method of distributing deionized water to the necessary JSC facilities.

Stanley R. Spaeth, Facilities Planning Office, made \$35 with a smaller but relevant observation concerning unmarked intersections onsite.

E. Dee Sission and Donald O. Bray of the Engineering Division reduced storage space and increased their pocketbook by \$25 by suggesting the microfilming of facility documentation.

You, too, can help JSC and help yourself to some extra cash by making a helpful or cost-saving suggestion. The Personnel Manual, JSC M3000, explains the suggestion procedure.

Two inventors at JSC also started the New Year off with more cash in their pockets.

Larry P. Ratcliff, Mechanisms Branch, invented a novel capture latch mechanism for androgynous docking systems which was used successfully during the Apollo-Soyuz Test Project. He received \$750 for this invention.

William C. Huber, Equipment Engineering Branch, came up with a fluid valve assembly that earned him an extra \$100 for Christmas.

Tech Briefs earned six JSC employees \$50 each.

Robert G. Richmond, Space Environment Test Division, described a data processing system for analytical instrumentation that is the basis for improved optical display, recording, and analysis.

James O'Kane and Joseph Kosmo headed the list of five from the Crew Systems Division with their Tech Brief describing a vest-like garment that maintains body temperature at acceptable levels during emergency extravehicular rescue transfer when the personnel rescue enclosure is used to effect the transfer. Lawrence H. Kuznetz's topic was Control of Thermal Balance by a Liquid Circulating Garment Based on a Mathematical Representation of the Human Thermoregulatory System, and Shirley A. Chevalier and Aaron B. Olson wrote concerning the evaluation of a Hall effect solid-state toggle switch manufactured by the Honeywell Company.

Lawrence H. Kuznetz's topic was Control of Thermal Balance by a Liquid Circulating Garment Based on a Mathematical Representation of the Human Thermoregulatory System, and Shirley A. Chevalier and Aaron B. Olson wrote concerning the evaluation of a Hall effect solid-state toggle switch manufactured by the Honeywell Company.

OOPS! Sorry about that!

A paragraph was inadvertently dropped from the Skylab revisit story in the December 23 Roundup:

The Marshall Space Flight Center has been delegated the responsibility to develop the TRS, with the Martin Company, Denver, Colo. as the development contractor. Funding and program direction for the TRS development will come under Joseph B. Mahon, director, Expendable Launch Vehicles Office, NASA Headquarters.

Contracts are let for solar cell production

Contracts totaling approximately \$4 million have been negotiated with nine companies for development of low-cost, automated fabrication processes for solar cells.

One third of the contracts are with small businesses.

Contractors will develop a variety of processes and techniques

Continued on page 4

Omega joint is responsible for failed launch attempt

AC-43 failed on September 29, 1977, during an attempted launch of a Comsat-Intersat IV communication satellite. The Atlas vehicle destroyed itself after loss of control 55 seconds after launch.

The loss of control was caused by a fire which developed in the aft compartment 36 seconds after launch. The failure investigation revealed that a leak occurred in the booster engine hot gas manifold in the Omega joint. The Omega joint was improperly furnace brazed which caused the stainless steel part to be sensitive to corrosion. The failed part was among those recovered off shore from the launch site at the Kennedy Space Center.



OMEGA JOINT — Pictured above are James Patterson of Lewis Research Center and Milton Silveira of JSC holding the hot gas manifold of an Atlas launch vehicle. Patterson is assigned to the Atlas-Centaur Project Office at Lewis and headed the Lewis accident investigation team. The NASA AC-43 (Atlas Centaur) Investigation Board was chaired by Silveira and included members from the Air Force as well as other NASA Centers and Headquarters. Scott Simpkinson, JSC, served as a board member.

Evaluations simulator is shut down

The Crew Procedures Evaluation Simulator (CPES), operated by the Flight Simulation Division, is being shut down to concentrate resource allocations into new, more sophisticated simulations.

The CPES was used to perform Orbiter guidance and control evaluations, to conduct flight crew familiarization with piloting techniques, and to develop simulation techniques. It was made up of hardware principally from the Apollo Program. This hardware will be turned over to the JSC Redistribution and Utilization Officer.

Users of the simulator included the Flight Operations Directorate (FOD), which conducted flight crew guidance and control evaluations of approach and landing (ALT) and orbital flight test (OFT) designs; Engineering and Development (E&D), which evaluated the separation of the Orbiter from the carrier for ALT and performed the initial evaluation of the OFT Integrated Flight Control System; and the Data Systems and Analysis Directorate (DSAD), which evaluated entry guidance and ALT flight profiles.

LeRC cyclotron aids cancer therapy

"It is always gratifying to be able to transfer space technology to the health field," said Bernard Lubarsky, acting director of the Lewis Research Center, "and we at Lewis are particularly pleased in this case to be able to contribute to new studies of a public health problem of worldwide concern."

This case happens to be the adaptation of the Lewis cyclotron to its new role in treating tumors located in the thoracic or pelvic regions of the human body. The treatment is called neutron therapy. Neutron therapy is used only in

carefully selected patients, specifically those who have a tumor that has not spread and which cannot be effectively treated by conventional procedures such as surgery, cobalt, X-ray, or chemotherapy.

In the "fast neutron" procedure at Lewis, the physician will determine the amount of radiation the patient is to receive and enter this and other information on a keyboard terminal connected to a computer located in the cyclotron control room. The patient's exposure will be continuously monitored and automatically terminated by the

computer when the proper dosage has been given.

Dr. Antonio R. Antunez is the head of radiation therapy for the Cleveland Clinic, which is a member of the Cancer Center of Northeast Ohio, Inc., and medical director of the cyclotron program.

"Neutron therapy has shown beneficial results in the treatment of certain tumors," says Antunez, "but it is still largely an investigative technique. We view the program as a challenging opportunity to evaluate this relatively new approach to radiation treatment."



A REWARDING AND SUCCESSFUL FAMILY AFFAIR CHRISTMAS PROJECT — The project committee is shown here during the last-minute bustle to assemble the packages of toys, food, and other products collected through the generous donations of JSC employees and contractor personnel.



FAMILY AFFAIR PROJECT TEAMS PRESENT GIFTS — Rhonda Alcorn presents needy family, left, with one of the Christmas packages prepared for low-income families. Elmer Ferdia aids another family, right.

Credit Union issues call for Board member nominations

JSC Federal Credit Union members are reminded that they have until Tuesday, January 24, 1978, to get their nominations for Board of Directors or Credit Committee positions into the Nomination Committee Chairman, S. D. Lenett (EE3). The Annual Meeting will be held on Friday, February 24, 1978 at 7:30 p.m. in building 2 auditorium. Voting booths will be open at the Credit Union on that day from 9 a.m. — 3 p.m. and then in building 2 auditorium from 4 p.m. — 7:30 p.m.

Those persons not selected by the Nominating Committee will be

so notified and may submit petitions, signed by 100 members if they wish their name placed on the ballot. Anyone seeking nomination by petition should contact the Chairman, Stuart Lenett, X2128, for proper petition format. Signed petitions must be filed with the Secretary of the Board, J. Dallas (EE3) no later than Wednesday, February 1, 1978. No nominations will be accepted from the floor. Petitions must be accompanied by a certificate from the nominee stating that he or she is agreeable to nomination and will serve if elected.

Defibaugh is Jan. Co-op

Ann Defibaugh is a junior at Texas Womens' University, majoring in mathematical chemistry. While she has always been recognized as a very bright and willing employee, her work recently has been exceptional.

During her past co-op tours she had heard many discussions of the problems the organization was having with the historical cost data bank. These problems included the fact that the data bank contains hundreds of volumes of printed matter which had never been organized or cataloged to be consistent with the mechanized indexing system used by our organization, and the shelves were too crowded to accept any more material. In short, the data were in danger of falling into disuse.

Defibaugh recognized the problems and volunteered to do the te-

dious job of bringing the data system back into full usefulness, a task at which several other assignees had not been successful. She developed a detailed work plan and schedule, listed singlehandedly every piece of data (hundreds of references), and directed the review of each item. She is now far enough along in reorganizing the system that success is virtually assured.

This task has been incredibly tedious, and has required a significant amount of ingenuity and perseverance to accomplish it. It is safe to say that she has once again made this data base a useful tool for our analysis people to utilize in the future.

In addition, Defibaugh's attitude has always been outstanding and she is a pleasure to work with. It is with genuine admiration that she was recommended for recognition as Co-Op for this month.

EAA ATTRACTIONS

TICKETS

The following tickets are available at the Bldg. 11 Exchange Store from 10 a.m.—2 p.m. Monday — Friday. NO REFUNDS ON ANY TICKETS.

Dean Goss Dinner Theater — The comedy play "Marriage-go-round" is now featured at the Dean Goss Dinner Theater. Tickets are now being sold for \$16 per couple or \$8 person.

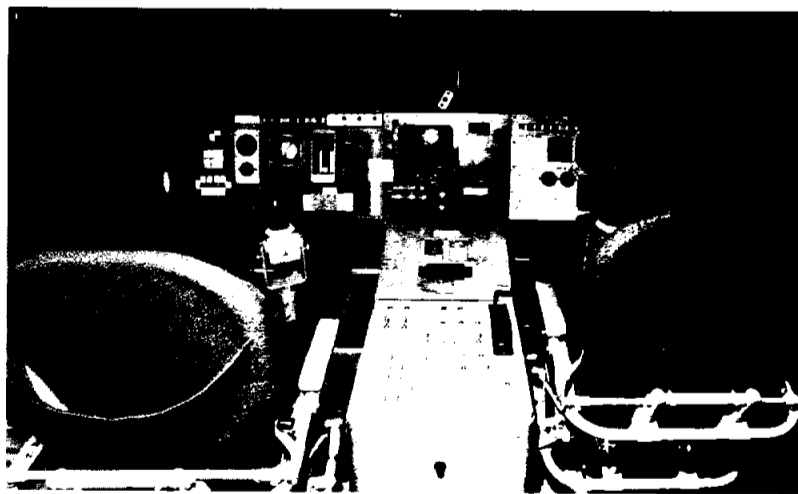
Disney Magic Kingdom Club — Free membership cards.

HOUSTON AERO HOCKEY

Houston Aero Hockey tickets are on sale at the special rates of \$6.50 and \$4.00 through EAA.

Houston Aeros gift cards will be sold in Bldg. 11 to EAA members, who in turn may exchange them at the Aero's Box Office.

Upcoming home games are with Cincinnati Jan. 21, Birmingham Jan. 22, New England Jan. 26, Winnipeg Jan. 28, and New England Jan. 29.



CREW PROCEDURES EVALUATION SIMULATOR (CPES) — Crew station showing displays and controls used for Orbiter piloting.

Roundup Swap Shop

CARS & TRUCKS

74 Ford Maverick. 4-dr., vinyl top, auto, pwr, A/C, new tires, xInt cond. 35K mi. \$2,400. 482-7029 after 5.

70 Continental. Red & white, all equipment, good cond. 334-2206.

74 Dodge Tradesman. B-200, Maxivan, A/C. \$3,700 or best offer. Anderson, X-2970 or 482-0096.

68 Dodge Dart. 2-dr sedan, 6 cyl, 225 cu in, radio, A/C. \$450. Wylie, X-4581 or 334-4175 after 5.

72 Porsche 914. 26K mi, xInt cond. \$3800. Blucker, X-3533 or 488-4188.

70 Olds Delta 88. 4-dr, auto, A/C, pwr steer & brakes, radio, 57K mi. \$800. Bell, X-4346 or 774-4122.

71 VW bus. 6-passenger, 4 new tires, very good cond, 60K mi. 488-1474.

72 Jaguar XJ6. Auto, loaded, xInt cond. 529-5497 or 445-2134.

73 Camero Lt. 350 4 BBL dual ex, auto, pwr steer & brakes, A/C, yellow w/ blk vinyl top & int, new raised letter tires, Rallye wheels, rear spoiler. Like new in & out. \$3,250. Lewis, 488-3265.

77 Grand Prix. Loaded, like new. Sacrifice f/ Credit Union balance, wholesale f/ quick takeover. 481-0066 after 5:30.

72 Ford Ranchero. A/C, auto, over-load springs, Gem top. Below blue book. Chappie, 482-7030 after 6.

71 Pontiac Catalina. 2-dr HT, all pwr, A/C, AM-FM stereo. \$795. Burton, X-5536 or 471-0778.

72 Pontiac LeMans Sport. 2-dr HT, V-8, auto, new tires, pwr, vinyl top, console, buckets, Rallye wheels w/ trim rings. Retail \$1,775. Sell \$1,395. Sam, X-2553 or 488-0125.

76 Honda Gold Wing. All accessories color matched, Lester mag wheels, fully loaded. \$3,200. Steve, 332-6620 after 5:30.

74 Malibu classic. Black, xInt cond, beautiful, 29K mi. \$2,800. 334-2760.

73 Camero. Green w/ white vinyl top, usual xtras. \$2000 or best reasonable offer. 482-1462 after 6.

67 Dodge Charger. Blue/white vinyl top, A/C, pwr steer, radio, one owner, good cond, 80K mi. \$500 firm. 333-2307.

77 Chevy C-10 Pickup. A/C, pwr steer & brakes, owner bought '78 pickup, 14K mi. \$4,995. 332-2291, 488-4920.

74 Karmann Ghia: Convertible, new top. \$2,200. Also 59 Mercedes: Desile, \$2,900. Finally, 69 Chry Newport: 2 new tires, runs well. \$475. Abby, X-3671.

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Wednesday of the week prior to publication.

PROPERTY & RENTALS

Lease: new color coordinated Middlebrook home now ready for occupancy. No houses in back, breakfast area, separate dining, pantry, fireplace, large master bdrm suite, covered patio, finished garage, enclosed utility area, unfurn, 3-2-2. \$475/mo. 488-7232 after 5:30 or weekends.

Rent: new 3-2-2 in Heritage Park. Large back yard, new appliances, including frost-free refrig, close to elem school and rec facilities. \$385/mo. 482-3824.

Rent: Duplex, Fairmont Park. 2bdrm, 2 bath, equipped kitchen, utility room, fenced yard, 2-car garage. Adults, no pets. 471-4419.

Sale: Lot at Lake Somerville (Birch Creek Forest), adjacent to fishing lake, rec facilities, boat ramp to Somerville. Also wooded one-acre lot at Beaver Creek development 9 mi from Lake Somerville. Schmidt, X-4063 or 333-4379.

Sale: 12, 25, or 75 acres; four hour drive. \$600/acre. Property uses: current income, investment, home site, limited recreation, Burton, 481-0780 after 5.

Rent: Lake Livingston, Cape Royale, compl furn home, 3-2-1. Fishing, hunting, tennis, golf, etc. Reserve early. Wk/mo/yr rates. 488-4487.

Rent: Galveston West End. 2 BR by-the-sea condo apt. full furn. \$180/wk off-season; \$260/wk in-season. Clements, 474-2622.

Rent: New Galveston Island Jamaica Beach cottage. \$175/wk or \$30/day for weekends. 334-1640 after 6 p.m.

Lease: New 4-2-2, Deer Park, 1 block from elem school, fenced yard, fireplace, carpets, central air, dishwasher, kitchen built-ins. \$475/mo plus deposit. 479-0551 or 471-4539.

New efficiency condo, Bay Area Blvd. Fireplace, refrig w/ icemaker, private patio. A doll house! Avail about Feb 1. Lockard, X-4501.

Rent: New 2-br Lakeview house on Lake Livingston. Reserve by wk/mo/yr now. Joan, 481-0245 after 6.

Trade: Large 4-2-2 house, separate formals & den. Want home like ones in northeast or northwest Houston. 481-0066 after 5:30.

CYCLES

Boy's 10-speed bicycle. 28" Huffly w/ accessories, xInt cond. Avail now, \$70. Olson, X-4226 or 333-2804.

Men's 10-speed w/ standard handle bars, new chain & tubes. \$50. Jones, X-3083 or 488-3976 after work.

71 Honda CT70 w/ rack, xInt cond, adult rider. \$225. Ferguson, 488-2329.

Exercise bike, xInt cond. \$40. Lockard, X-4501.

Man's & woman's 3-speed 28" bikes. \$35 each.

74 Kawasaki 500 motorcycle. Wind-jammer III & Michelin tires. \$750. Fite, 482-5441 after 5.

BOATS & PLANES

77 16-ft Invader w/ 115 HP Mercury mtr & McClain trailer. Tri hull. \$6,300 or \$1,550 equity & take up payments. 472-1082.

74 Columbia T-23 sailboat. Outboard, trailer, xtras. \$7,000. Fite, 482-5441 after 5.

MUSICAL INSTRUMENTS

Chickering baby grand piano. \$2,500. Also Martin rosewood classical guitar. Vintage 1960, mint cond w/ hardshell case. \$400. Gorman, X-4576.

Stereo corner table unit. AM-FM phono. \$50. Bliss, X-2491 or 925-5470.

PETS

Beautiful Alaskan Malamute. Female, xInt health, 13 mos. \$175. Fields, X-6133 or 422-7393 after 5:30.

Mare. Very gentle, 7 yrs, saddle & all tack included. \$500. Eggleston, 482-4239.

WANTED

Firefighters needed! Men and women adult residents of CLC needed to join CLC Volunteer Fire Dept. Rewarding community service. You will be trained and equipped. Call 488-0023 any time.

Need riders for carpool from W Loop, SW Fwy. Bellaire area, 8-4:30. McLaughlin, X-5536 or 661-2974.

One person to join carpool w/ 4 others. Carpool leaves Meyerland Shopping Center at 7:15 a.m. f/ the 8-4:30 shift. Call Carl, X-4871, Cathey, X-6387, or Russ, X-4871.

Need new members f/ Bacliff Bass Club. Singles-couples welcome. Meetings, tournaments, prizes. Parker, X-4241 or Mobley, X-4428.

MISCELLANEOUS

Nearly new CB. Antenna, 23-channel base, more. XInt cond. \$120. Whitecotton, X-4086 or 333-5204.

Three aluminum windows - 4' x 6', 3' x 5', and 3' x 5'. Exterior prehung door unit, painted outside w/ ash stain inside, all hardware included. Three sheets thermoply sheathing. Lacy, X-5176 or 488-6948.

Outboard motor. Evinrude 3 HP, good cond. Howard, X-2941 or 481-1348.

76 Shasta Mini Motor Home, 22.5 ft. Dash & top air, cruise, many other xtras. Schneider, 488-0350 after 6.

Heuer wrist timer. Paid \$70; will sell f/ \$50. Jones, X-3083 or 488-3976 after work.

Airboat (wrecked). Good 110 Corvair engine/prop/trailer. Spare engine & parts. \$700. Brzezinski, X-4468.

Five-foot Air Hockey. \$30. Ferguson, 488-2329.

Used slide projector, good cond, reasonable. Jeff, X-3856 or 482-5393.

Sears 1 hp radial armsaw w/ stand & castors, 2 mo old. Current Sears sale price \$254. Will sell \$220. Also steel locker cabinet w/ shelves. \$50. Avila, X-5807 or 481-4837.

New Penney's paint sprayer outfit w/ paint feed roller attachments. \$50. Also heavy duty Skil saw, almost new. \$35. Lockard, X-4501.

In-dash AM/FM stereo multiplex radio f/ auto. In box, like new. \$30. Lockard, X-4501.

Ten 1976 Bicentennial souvenir sheet sets in original USPS envelopes. \$169. Jeff, X-3856 or 482-5393 after 5.

Children's Christmas party is a roaring success

Samantha Skunk, Lester Lion, and Bill the Clown entertained youngsters at the Children's Christmas party Dec. 17.

The animals were arranged for by Rachel Windham through Jim Wright, Group Sales Representative for Astroworld. The EAA participants in the party were not charged because of the sales volume that JSC employees have added to Astroworld.

A large group of 350 children

attended the party. They enjoyed cartoons, Christmas music, and took home a picture taken with Santa and a bag of gifts.

Behind the scenes to help Santa were Jim McBride and Jack Boykin who took pictures of the group, Cyndi Martin, Helon Montgomery, Sandra Bursdal, Donna Tarpey, Deana Tarpey, Francis Barbee, Rich Campbell, Rowland Cour-Palais, Brian Cour-Palais, Susie Cour-Palais, Glenda



LESTER LION

Lancon, Grady Lancon, Harold Davis, Marion Worley, Jana Montgomery, Frank Mays, George Ishikawa, Tom Howe, Rachel Windham, and Chris Boykin.

More classes offered at Gilruth Center

AUTO MECHANICS

Basic: Three 2-hr lectures, one 2-hr lab. \$16.75 per person. Lecturers meet Thursday nights, 7:15-9:15 p.m. March 2, 9, 16. Labs meet Saturday, March 18, 8 or 10 a.m. Sign-up deadline is Thurs., Feb. 23, 1978.

PHOTO DARKROOM

Black and White: Eight 2-hr sessions. \$30; includes materials except negatives. Lectures meet Tuesdays, 7-9 p.m., Feb. 14, 21, 28, March 7, 14, 21, 28, April 4. Sign-up deadline is Feb. 7, 1978.

Color: Eight 2-hr sessions, \$30;

students supply paper and negatives. Classes meet Wednesdays, 7-9 p.m., Feb. 15, 22, March 1, 8, 15, 22, 29, April 5. Sign-up deadline is Feb. 7, 1978.

OIL PAINTING

First Session: Six 2-hr. sessions, \$37.50/person, materials not included. Meets, Thursdays, 6-8 p.m., Jan. 27, Feb. 2, 9, 23, March 2, and 9. Sign-up Deadline is Jan. 24, 1978.

CONVERSATIONAL SPANISH

Ten 2½-hr sessions, \$40.00 per person. Classes meet, Wednesdays

6:30-9 p.m., Feb. 8, 15, 22, March 1, 8, 15, 22, 29, April 5, and 12. Sign-up deadline is Feb. 6, 1978.

GROUP TENNIS

First Session: Eight 1-hr sessions, \$30 per person. Classes meet Mondays and Wednesdays, Feb. 27, March 1, 6, 8, 13, 15, 20, 22. Beginners: 7:30-8:30 p.m., Intermediates, 8:30-9:30 p.m. Sign-up deadline is Feb. 20, 1978.

Sign up in person at the Gilruth Recreation Facility. Fees due upon sign up. Refunds only in extreme cases. For further information call X-3594.



WEEK OF JAN. 23-27

MONDAY: French Onion Soup; Wieners & Baked Beans; Round Steak w/ Mushrooms; Meatballs & Spagetti (Special); Okra & Tomatoes, Carrots; Standard Daily Items: Roast Beef; Fried Fish; Baked Ham; Fried Chicken; Chopped Sirloin; Selection of Salads, Sandwiches and Pies.

TUESDAY: Beef & Barley Soup; Shrimp Creole; Grilled Pork Steak; Beef Stew; Fried Chicken (Special); Mixed Vegetables, Stewed Tomatoes, Buttered Rice.

WEDNESDAY: Seafood Gumbo; Fried Perch; New England Dinner; BBQ Plate; 8-oz. T-Bone Steak; Shrimp Salad; Swiss Style Steak (Special); Italian Green Beans, Beets, Lima Beans.

THURSDAY: Cream of Chicken Soup; Turkey & Dressing; Enchiladas w/Chili; Wieners & Macaroni; Stuffed Bell Pepper (Special); Green Peas, Zucchini Squash.

FRIDAY: Seafood Gumbo; Broiled Flounder; ¼ Chicken w/Peach half; Shrimp Salad; Fried Shrimp; Salisbury Steak (Special); Braided Okra, Cabbage, Mixed Vegetables.

WEEK OF JAN. 30-FEB. 3

MONDAY: Chicken & Rice Soup; Texas Hots w/Beans; BBQ Ham Steak; Veal Parmesan; Beef & Macaroni (Special); Spinach, Carrots, Au Gratin Potatoes; Standard Daily Items: Roast Beef; Fried Fish; Baked Ham; Fried Chicken; Chopped Sirloin; Selection of Salads, Sandwiches and Pies.

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

WEDNESDAY: Seafood Gumbo; Liver & Onions; Red Fish; BBQ Ham Steak; Shrimp Salad; Baked Meatloaf (Special); BBQ Plate; Brussel Sprouts, Green Beans, Whipped Potatoes.

THURSDAY: Beef & Barley; Chicken & Dumplings; Corned Beef w/Cabbage; Smothered Steak (Special); Cauliflower, Cabbage, Parsley Potatoes.

FRIDAY: Seafood Gumbo; Pork Chop; Creole Baked Cod; Ham Steak; Seafood Platter; Salmon & Tuna Croquette (Special); Shrimp Salad; Corn, Green Beans, Beets.



ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

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 JSC employees.

Editor: Beverly Eakman

Photographer: A. "Pat" Patnesky

"Veterinarians aren't 'hoss doctors' anymore," says Barnes

Ever since bookstore cash registers began clanging at a maddening pace due to the sale of books authored by Scottish veterinarian James Herriot, especially around Christmastime, a growing fascination with animals — and their doctors — has been sweeping the country.

Little do many people realize that right here at JSC is a version of the good Scottish doctor — one Dr. Charles M. Barnes who was raised on a farm in Rising Star, Texas.

"It was during the depression, I remember, and Father had died. We had an outbreak of hog cholera and they had called the state veterinarian. He drove up in a big black Buick wearing the shiniest boots I had ever seen. He gets out and puts on his coveralls and some rubber boots, gets himself a stainless steel bucket full of stuff and goes over to examine a couple of dead hogs. Not very many minutes passed and he gets up and calls out, "Yep! They got the hog cholera!" Then he goes back takes off his coveralls and rubber boots, washes up a little bit, gets back in his big car and drives away.

"Well, I thought, 'here's a guy living in Ft. Worth and driving back and forth. He must be pretty smart to do that. Why, he didn't have to work hard at all to make a living!' So, you know, you're impressed by that sort of thing at a tender age," Barnes laughs. "Actually, in a small country town it's a good life and a life of service, and I went into veterinary medicine from that point of view."

But lustrous boots, big fancy cars, and a life-of-Riley existence have never been goals for Barnes. Instead, he became completely engrossed in his veterinary studies which, in turn, opened up even more amazing challenges to him. He went from general veterinary practitioner to USDA livestock inspector to military public health work.

At the suggestion of an Air Force general, he went on to study radiobiology and to investigate the effects of various fission products on plants and animals. In his doctor's thesis for comparative pathology, which deals primarily with the relationship between animal and human diseases, Barnes used his experience in radiobiology to create a significant work in the basic understanding of the immunological function. He then combined his knowledge in both fields to begin a long career of studies that took him all over the world and linked veterinary science with public health. The marriage of these two disciplines is his major interest today.

He has authored or co-authored 54 technical and scientific reports; lectured on comparative pathology at the School of Public Health at Houston, University of Texas; directed a major program of information concerning migrating animals (which was found in some instances to be related to the spread of disease); and when he came to JSC in 1968, he was responsible for the radiation protection of astronauts and the establishment of radiation safety limits.

"One interesting thing we discovered after the Apollo missions to the Moon was that each one was

flown between solar flares. We can't predict solar flares and we really don't know what the effects would have been had things not just happened that way.

"On Shuttle, of course, the low-Earth orbit will minimize the exposure to radiation plus we will have an immediate return capability in case some major radiation-linked event were to take place in space. Nevertheless, we will probably want to continue some of the work we started during Apollo days, such as the total-body count technique of measuring body-penetrating radiation in space. An astronaut lies on a couch and we have devices above him which measure the radiation coming from his body before he goes into space. Everyone has some. Then, if there are heavy particles in space, they will cause a guy to become more radioactive for a very short time because these particles interact with the metals in our bodies (calcium, potassium, iron, and even the gold fillings in your teeth). So, we grab the astronaut as soon as we can when he returns to Earth before the radiation decays too much (loses its potency) and measure again. That way, we can estimate what dose of radiation the astronaut received in space."



Charles M. Barnes

Barnes may be seen driving about in his red pickup, the back of which is filled with veterinary supplies in case some animal needs treatment. Approaching the age of retirement, Barnes decided three years ago that one day he would return to the ranch and to a small veterinary practice, one thing he barely got a chance to do in his early career.

He's getting prepared now for a new routine. He isn't interested in making money now, he says he'll worry about that after he retires. At present he just takes calls after work hours and even makes a house call if someone's pet is too large or injured to be moved.

What strikes one most about Barnes besides his many accomplishments and varied experiences is his intense dedication combined with what seems to be a personal frustration that he has not lived up to his potential. And he is concerned about the future of veterinary science. He feels strongly that veterinary science and the remote sensing technology he worked with at JSC could lead to the eradication of many dreaded diseases throughout the world.

Barnes is the Chairman of the Board of a nonprofit Houston-

based organization called the International Veterinary Medical Foundation (IVMF), which is dedicated to promoting veterinary science for the betterment of mankind; in other words, using veterinary science in public health.

"Most people really don't understand veterinary medicine," he says somberly. "It's much broader than most people realize."

And once he begins to explain in patient detail just what he means and describes the contributions already made, the enthusiasm of his concern becomes contagious.

"For example, we did a study in the eradication of locusts in Northern Africa. These locusts were found through remote sensing techniques to be breeding along the Red Sea. Then, when the environment and the numbers of locusts were sufficient, they would just follow the breezes and make a sweep over Northern Africa, desolating the country and leaving the people without anything to eat. We can monitor the conditions that make them breed and fly, and health authorities could limit their eradication methods to one area."

Barnes explained that most insect carriers of disease and destruction have a "marker;" that is, a type of vegetation, a particular plant, or a favored environment which causes them to propagate. This marker can be sensed remotely by aircraft or from space, which is especially helpful in locations where the terrain is too rough, swampy, or disease-ridden for man to find these hideaways from the ground. Landsat alone has provided a tremendous inventory of data that Barnes says might help those who are responsible for public health.

Barnes describes his work in mosquito control in Harris County and other more local areas; his part in the eradication of screw worms in Mexico which would come into our borders every spring and sum-

mer and kill livestock; the location of breeding grounds of fire ants in the Houston vicinity; and a major scientific feat in locating the source of a disease in Puerto Rico, so horrible that the cure for it is worse than the kill: Schistosomiasis. The deadly organism is transmitted through waters where people bathe, but its host, a snail, breeds among the Caladium plant in Puerto Rico, which is a marker identifiable through remote sensing.

Barnes also brought out an interesting fact long recognized by world health authorities which only recently has been acted upon. "It is cited in many volumes," says Barnes, "that the single greatest deterrent to the development of Africa is the tsetse fly. It causes sleeping sickness and other debilitating illnesses that drain the body of all energy — not just in humans but in animals. It drains entire populations of the desire to do anything except die." Now a major \$1.4 billion project is underway to eradicate this insect sponsored by the World Health Organization, the Food and Agriculture Organization of the United Nations, the African nations, and the United States.

"If you could destroy the tsetse fly, you'd open up a vast continent to human, animal, and agricultural development," says Barnes.

"Oh, there are other awful disease carriers in Africa, don't get me wrong," he says. Barnes cites the black fly that causes blindness due to a parasite that destroys the optic nerve. "There are areas in Africa where 90 percent of the adult population is blind and little children lead their elders around by the hand." Then, of course, there are mosquitos again, of seemingly infinite varieties and disease potentials all over the tropical areas of the world.

Other veterinarians currently at JSC are Drs. Rudolph A. Hoffman and Malcom C. Smith. Hoffman is involved in biological research man-

agement while Smith is concerned almost exclusively with space crew nutrition and mineral metabolism.

"There are so many needs and so many concerns today," sighs Barnes. "But it seems to me that if the United States really wanted to make a technological contribution to the world, here is one thing that you can't say is controversial: health. Everybody can relate to that."

HEY WAS COST REDUCTION REPORTING ON YOUR LIST OF NEW YEAR'S RESOLUTIONS ?



All it takes is a JSC Form 1150. Mail it to BH-4, Cost Reduction Officer.

Solar cells...

Continued from page 1

that subsequently could be integrated into an automated assembly line for mass production of solar cells and modules. These efforts are part of the Low-Cost Silicon Solar Array Project, managed for the Department of Energy (DOE) by NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Companies selected for 12-month contracts are:

Lockheed Missiles and Space Co., Inc. Sunnyvale, Calif.	\$213,163
M. B. Associates, San Ramon, Calif.	\$230,000
Motorola, Inc., Phoenix, Ariz.	\$433,870
RCA, Princeton, N.J.	\$846,900
Sensor Technology, Chatsworth, Calif.	\$395,000
Solarex Corp., Rockville, Md.	\$392,000
Spectrolab, Inc., Sylmar, Calif.	\$706,000
Texas Instruments, Dallas, Texas	\$537,460
Westinghouse, Pittsburgh, Pa.	\$426,000
TOTAL	\$4,180,393

The DOE objectives are to reduce the costs of solar cell arrays to become competitive with other sources of electric power. Present average costs, as measured by government purchases in relatively large quantities, are about \$11 per peak watt.

The DOE goals are to reduce these costs to \$2 per peak watt in 1982 and to \$.50 in 1986.



TOTAL BODY RADIATION COUNTER AT JSC — Radiation detectors above the test subject monitor gamma rays inherent in his body. Potassium-40, a common radioisotope of nature, collects primarily in the tissue and permits observation of lean tissue body mass. Barnes monitors the count at right.