Skylab 3 Crew Observes Large Solar Flares

Being at the right place at the right time paid off for the Skylab 3 crew September 6 when from their vantage point in Earth orbit 270 miles above the distorting effects of the atmosphere they observed a major flare burst out from the surface of the sun.

The flare, estimated to be about 8 times the size of the Earth, was described by Skylab solar physics investigators as the brightest and largest to have been thrown out by the Sun this year. "It's a big daddy," said Skylab 3 commander Alan Bean as he manned the Apollo Telescope Mount (ATM) console to record the flare's growth and movement on film in several spectral wavelengths. Television cameras boresighted to the Skylab's observatory telescopes allow the man on ATM duty to move the instruments to look at regions of the Sun known or predicted to be "active."

Joseph Hirman, National Oceanic and Atmospheric Administration chief solar forecaster, said, "This is the largest flare we've gotten during the Skylab mission, both in optical and in X-Rays. It produced an event of energetic particles that will produce aurorae and geomagnetic storms on Earth."

Hirman's prediction of increased aurorae was borne out later when Bean reported seeing spectacular Aurora Borealis and Aurora Australis—northern and southern lights—over the Earth's polar regions. "We saw in one day two auroras, which must be a record for anybody, I guess," said Bean.

Skylab 3 science pilot Owen Garriott waxed somewhat unscientific as he observed the flare activity under way on the seething face of the Sun. "When you look at the Sun now," said Garriott, "it looks like someone kicked the heck out of it. I can't believe it."

Solar physicist Garriott's enthusiasm for the events taking place 93 million miles across space on our star was shared by fellow scientists. Dr. Robert MacQueen of the High-Altitude Observatory, Boulder, Colo., and principal investigator for the ATM SO52 White Light Coronagraph experiment was especially complimentary about the way the Skylab 3 crew conducted observations of the solar flares. "I am impressed as always with the intelligence with which they went about making both the visual and photographic observations," said MacQueen. "They made a number of observations and pictures with the coronagraph and with the X-Ray Telescope to run in, then halted the observations, examined the corona again in detail using their TV monitors, and reacted to begin yet another mode."

Another ATM principal investigator, James Milligan of NASA Marshall Space Flight Center, PI for the SO56 Dual X-Ray Telescope, commented on the way the Skylab 3 crew reacted to the sudden activity on the sun with a minimum of instruction from Mission Control Center. "The report on the flare came in to us from NOAA while station at Guam, but we did not get the message in time to uplink anything to the crew about this event," said Milligan.

"We were faced with the situation where the crew was going to arrive at the ATM panel and we had no way of giving them any instructions. Everybody was pretty excited. We had a communications problem at the tracking ship Vanguard and could not have any voice uplinked to the crew," continued Milligan. "So there was a lot of hair-pulling on the ground hoping that the crew got to the panel and did the right thing.

"They were on the flare just at the moment they got to the panel. I think it really demonstrated the capability of a man being close to the instrumentation and being able to react in real-time. The crew really did a beautiful job and observed the flare just exactly the way everybody wanted them to do it," said Milligan.

Assessment of the significance of the large flares observed by the Skylab 3 crew likely will span several months, according to Milligan. "We're getting such a load of data back that we're really going to have a problem analyzing it and getting the information out to the scientific community. We're really going to have a data management problem on our hands," he said.

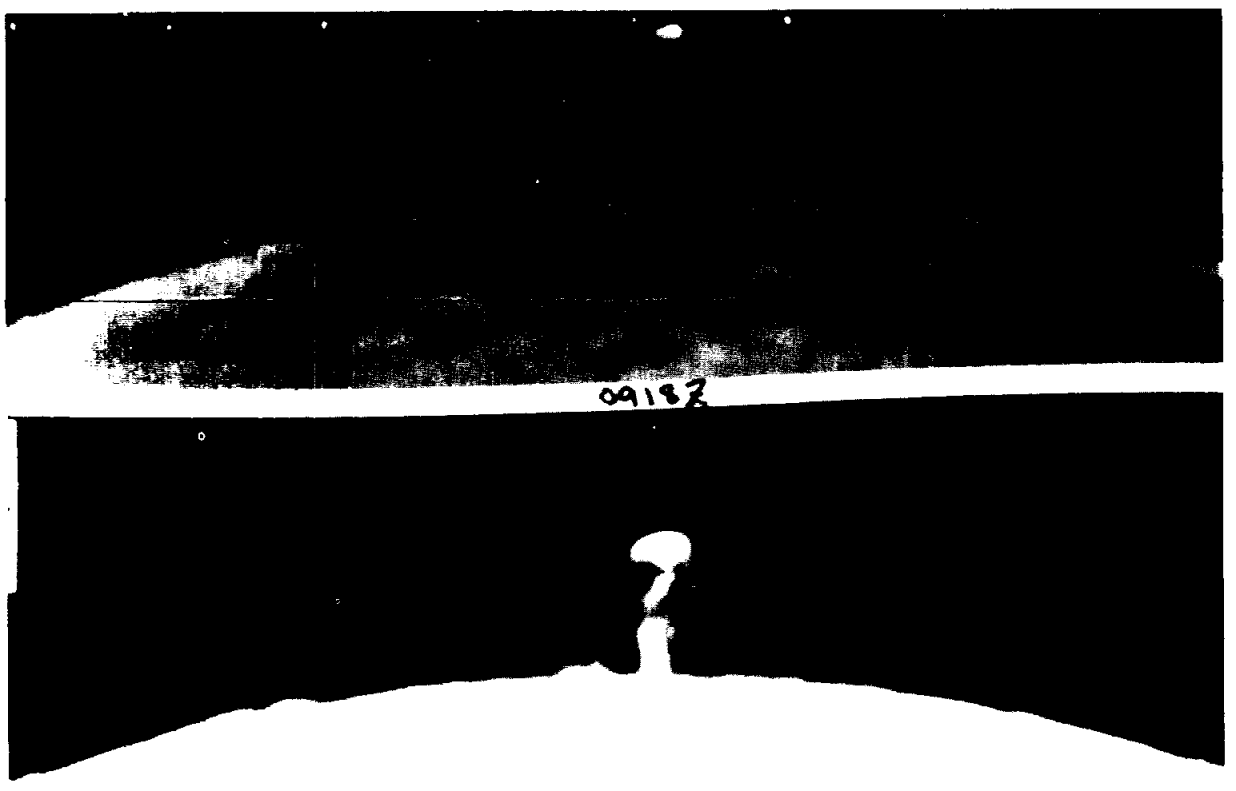
The Sun supposedly is in the quiet part of its 11-year cycle, but the two large flares observed last week fit more into the type of activity seen at the cyclic peak. One solar physicist estimated that the second of the two flares emitted some 500,000 times more electrical energy than is consumed by all power users on Earth.

Another estimate on the energy output of the flares was that each flare produced more power than has been used by man since he first appeared on Earth—and far more than has been generated since Ben Franklin flew his kite and made the first step toward harnessing electrical power.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

Vol. 12 No. 21 September 14, 1972



SOLAR FLARE—Photos taken at Canary Islands observation site show, at two-minute intervals, the strong solar flare of September 6, 1973 also observed and monitored by the Skylab Astronauts. Scientists described the flare as "the largest X-Ray event so far observed" during the Skylab manned mission.

NASA Selects 18 Experiments

NASA has selected 18 scientific and space applications experiments to be conducted on the joint U.S.—USSR manned space mision planned for 1975.

Four experiments are in astronomy and space physics and five are in the life sciences. There are eight space applications experiments. Six of these will be conducted in a small electric furnace similar to one used aboard the Skylab space station.

The experiments selected were among 145 proposals received by NASA in response to invitations issued to scientists in the U.S. and foreign countries. All results will be available to the world scientific community.

Experiments which could include participation by the Soviets are contingent upon agreement with the Academy of Sciences of the USSR.

The Apollo-Soyuz Test Project (ASTP) will be the first international manned space flight. It will test a docking and rendezvous system important to the development of an international space rescue capability and to future cooperation in manned space missions. Target date for launch is July 15, 1975.

JSC Employees Receive Length of Service Awards

JSC director Christopher C. Kraft recently presented Length of Service Awards to a number of Center employees.

Joe W. Schmitt of Engineering and Development received an award for 35 years of government service.

Honored for 30 years of federal employment were Clifton A. Rogillio, Flight Crew Operations; Edward E. Quin, Flight Operations; Lloyd G. Cox, Marquis G. Powell, Orrin A. Wobig, Center Operations; and Chester J. Meyers, Program Operations.

Thirteen JSC employees received 25-year awards. They are Porter H. Gilbert, Legal Office; Glory L. Allahaverani, Henry P. Yschek, Robert K. Peck, Charles W. Bird, Administration and Program Support; William C. Long, Ralph S. Sawyer, Engineering and Development; Richard A. Moke, Earth Resources Program; Charley F. Brown, John W. Holland, Jr., Everett D. Shafer, Center Operations; Robert J. Thoben, Sciences and Applications; and Chester H. Jenkins, Sr., Program Operations.

John W. King of the Publics Affairs Office received a 15-year Length of Service Award.

Apollo Astronauts Get FAI Awards

Astronauts Eugene A. Cernan and John W. Young have received the two highest awards of the Federation Aeronautique Internationale. The Apollo 16 crew also was honored.

The FAI Gold Space Medal for 1972 was presented to Cernan for "outstanding performance as commander of Apollo 17." It is the Federation's highest award for space flight.

Young, Apollo 16 commander, received the Yuri Gagarin Gold Medal for 1972, the second highest award. In addition, he represented fellow crewmen Charles M. Duke, Jr., and Thomas K. Mattingly II, in accepting the V. M. Komarov Diploma, the only FAI space award which recognizes achievement by a crew rather than an individual.

The FAI is a worldwide federation dedicated to progress in aviation and space flight and is the official keeper of records in those fields. The awards were announced September 3 at FAI's 66th annual general conference in Dublin, Ireland.

NASA Supports Studies By Grambling College

Work is nearing completion in two of four studies awarded to Grambling College, Grambling, Louisiana, for research in chemistry and physics. The four grants totaling more than $94,000 were awarded by NASA Headquarters in conjunction with JSC under provisions of the agency's Minority Institutions Program.

Scheduled for completion this month is a "Study of Coronal Structures in a Non-magnetic Star." Principal Investigator Mark A. Cross is exploring the possibility that observed coronal structures can be explained without assuming the presence of a magnetic field.

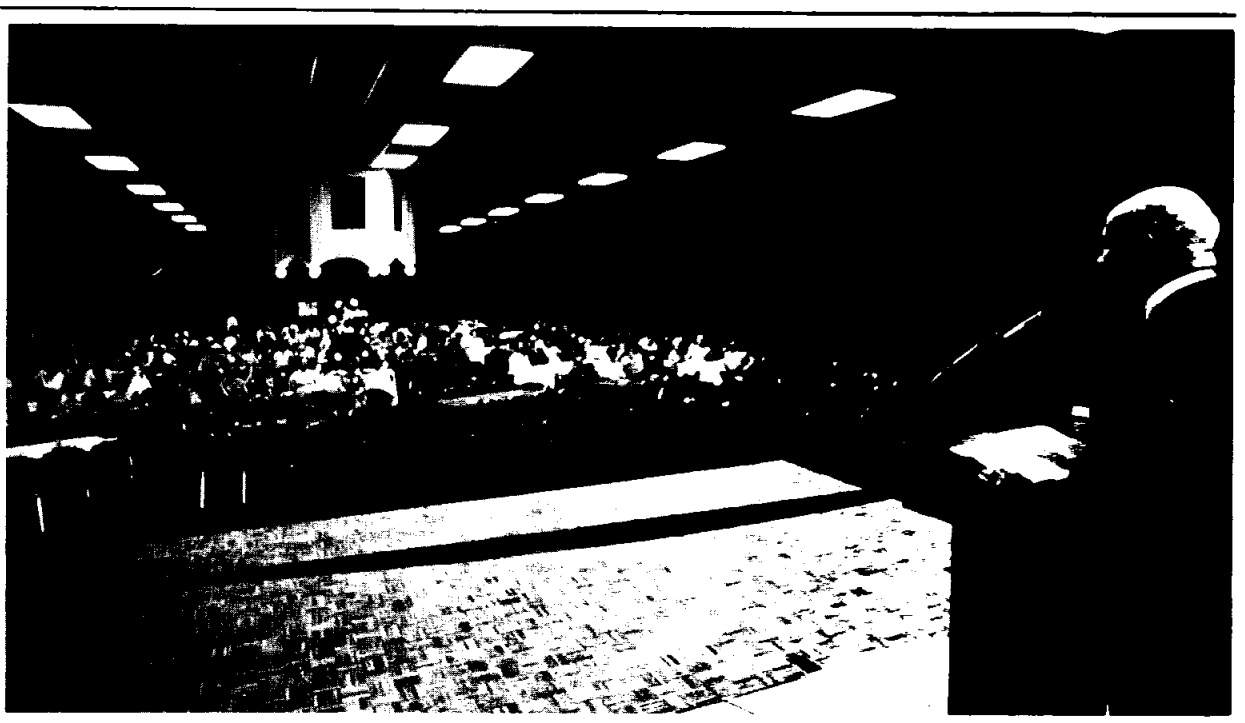
Another Grambling scientist, Dr. N. Gajendar, is analyzing a theoretical model for low frequency oscillations observed by NASA's ATS-1 satellite during periods of low magnetic activity. Dr. Gajendar's work is titled "A Study of Polarizations for Hydromatic Waves Observed at ATS-1."

Reactions of mice to gamma radiation are being studied in a Grambling laboratory by Dr. Bessie Foster. The research involves a comparative study of the lymphoid component of the mouse spleen to determine whether or not its response to continuous irradiation is similiar to that observed in the human thymus. Dr. Foster's project , titled "The effect of Continuous Low Dose-Rate Gamma Irradiation on Cell Population Kinetics of Lymphoid Tissues," is scheduled for completion in August 1974.

Also scheduled for completion in late summer 1974, is research toward finding a satisfactory explanation for the isotopic anomaly of xenon in carbonaceous chondrites. "We hope our investigation will ultimately lead to a better understanding of the early history of our solar system," Dr. D. D. Sabu, Principal Investigator, said. "This problem is being studied in several other laboratories besides ours, and Grambling hopes to contribute its share in its ultimate solution."

NASA's Minority Institutions Program was established to provide new avenues through which the space agency can cooperate with colleges and universities having predominantly minority enrollments.

Proposals for grant awards must be relevant to NASA's mission, contribute to the solution of problems of concern to the agency, and be of clearly discernible merit.



RECREATION CENTER DEDICATION—Dr. Robert Gilruth, former director of JSC (then MSC) speaks to a crowd at the dedication of JSC's Recreation Center named in his honor. Dr. Gilruth, below, mingles with the crowd during open house. The dedication was held August 4.

Special seating arrangements for the 6:00 p.m. performance of the October 7 Shrine Circus are available to JSC employees—at half-price!

Tickets, which are $2.50 each must be purchased through EAA representatives before September 28.

The circus will be held at Sam Houston Colliseum. Prior to the circus performance, a carnival will be held. Don't miss the excitement! Get your tickets today!

Shuttle Test Article Nearly Complete

The first major development test article in support of building the Space Shuttle Orbiter is in the final stages of assembly at Rockwell International Corporation's Space Division.

The test assembly will simulate the orbiter's mid-fuselage section, which houses the spaceplane's huge 60-feet diameter cargo bay. It will be used to verify, in advance of final design, analyses of such vital areas as mid-fuselage internal stress distribution and heat transfer, and the capabilities of the fuselage to accept moderately elevated temperatures.

Scheduled for completion in October, the U-shaped test article is 17½ feet wide and 20 feet long. It is made up of seven 17-feet-wide by 12-feet-high frame stations, which are enclosed by three major skin sections and supported by 175 hat-shaped cross section stiffeners.

The full-scale test unit is being assembled in a new modular tool designed expressly for the orbiter program. Built primarily for assembly of the orbiter's aft fuselage, the tool's modular concept enables it to be easily configured for other components.

Space Shuttle is the first reusable space transportation system. About the size of a medium-range jetliner, the shuttle orbiter will be able to transport as much as 65,000 pounds of payload to Earth orbit.

The shuttle will liftoff from Earth like a rocket, fly in orbit as spacecraft, and return to land on a runway similar to a jetliner.

Employees, Contractors Go to KSC

In recognition of their contributions in producing the sunshade hardware and tools for the repair of Skylab 1, forty-six JSC and contractor employees were flown to Kennedy Space Center as special guests at the launch of Skylab 3.

The group included Newton T. Buras, Wallace N. Teague, George A. Post, Melvin A. Tays, James H. O'Kane, Thomas O. Ross, Jack Naimer, William W. Lofland, Paul F. Kiehl, Robert L. Flaherty, O. Scholsser, Phillip M. Cannon, Robert Epperson, Lois Mabrey, David W. Owens, Ray R. Lachney, Jervey J. Conwell, George Mulcahy, James D. Williams, Charlie E. Rogers, William C. Huber, John H. Allen, Thomas Grubbs.

Also included were Norman N. Gabbard, Bruce W. Sprague, Eugene C. Hajdik, Jessie T. Adkins, Jr., Patricia J. Schmitt, Lamar D. Beatty, C. Jack Bird, Alfred J. Lancki, Robert R. Allmond, Kenneth F. Thoma, Leon W. Galler, Jerrye O. McKown, Rudolph Marent, Charles J. Gardner, Jerry H. Fleming, Gilbert Cisneros, David B. Mullins, Coy D. Martin, Robert R. Allison, Donna Nelson, James E. Hebert, James Armentrout and Jerry Elmore.

Forty-five employees from Marshall Space Flight Center were also special guests at the Skylab 3 liftoff.

Attention Divers!

The JSC Lunarfins this fall will sponsor a course designed to teach basic skin and scuba diving techniques.

Upon successfully completing the diving course which will last about six weeks, the students will be certified by the National Association of Underwater Instructors (NAUI) and will be qualified for open water ocean diving.

The class is limited to 20 students. To register, contact Fred Toole at Ext. 2733 or Bill Moran at Ext. 5988.

Table Tennis Club Holds Tourney

The JSC Table Tennis Club will hold a tournament Saturday, September 29 from 10:00 a.m. to 5:00 p.m. at JSC's Recreation Center.

Depending on the number of entries, the tourmament will be either a single or double elimination. Trophies will be awarded for first, second and third place.

JSC employees and on-site contractors are invited to attend the Table Tennis Club meetings (last issue printed as JSC Tennis Club) which are held at the Recreation Center each Thursday from 5:00 p.m. to 10:00 p.m.

For additional information about the club or tournament, contact club president, Stephen Jacobs, Ext. 3561 or Stuart Grissom, tournament director Ext. 2429.

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: Janet Wrather Photographer: A. "Pat" Patnesky

ERTS-1 Data May Be Used In Texas Water Study

The Texas Water Rights Commission is evaluating the possibility of using data from NASA's Earth Resources Technology Satellite (ERTS-1) to detect and locate surface water bodies in the state.

The Earth Observations Division at JSC has developed a specialized computer-aided procedure to use ERTS-1 digital tapes in this program.

A preliminary run, indicated all areas of surface water 10 acres or greater were correctly identified by the ERTS-1 data, to a positional accuracy of about 500 feet.

Study area for this preliminary run covered parts of Austin, Brazos, Burleson, Colorado and Washington Counties in Texas.

The Water Rights Commission and U. S. Army Corps of Engineers are making the water impoundments inventory as required by the National Program of Inspection of Dams.

The three inventory techniques being evaluated by the Commission for relative costs and accuracy of identification are: searching state, federal, and local organization's records; using conventional image interpretation techniques; and using the JSC Computer-aided techniques.

Watkins Assigned To New Post

Allen H. Watkins, who resigned last month as Assistant Manager for Planning, Earth Resources Program Office at JSC, has been named Chief of the Department of Interior's Earth Resources Observation Systems (EROS) Data Center in Sioux Falls, South Dakota.

A native of Charlottesville, Virginia, Watkins joined NASA in 1962 and had previously been Chief, Thermochemical Test Branch, Engineering and Development Directorate; Manager, Earth Orbital Missions Office, Science and Applications Directorate; and Manager, Earth Observations Aircraft Program Office.

In his new post, Watkins will direct activities at the Eros Data Center which is the national repository for the processing and dissemination of thousands of images obtained each year from space-borne television, aerial cameras and other remote-sensing-equipment.

The main source of data handled at the center is from the Earth Resources Technology Satellite (ERTS-1), launched by NASA on July 23, 1972. Photography from the current Skylab missions is also available.

OUTSTANDING SECRETARY AWARD—JSC director Christopher Kraft presented Lois Ransdell with a plaque and a check for $100 on August 31. Lois, secretary to Eugene Kranz, Chief of the Flight Control Division, was selected the outstanding secretary for September.

Lois Ransdell Receives Secretary's Award

The first "Outstanding Secretary Award" was recently presented to Lois Ransdell, secretary to Eugene Kranz, Chief of the Flight Control Division.

Because of her efficiency and knowledge of her supervisor's training and mission schedules, Lois has assisted Kranz in effectively acomplishing both his mission duties and his administrative reponsibilities.

Since Kranz is required to spend a major part of his time in Mission Control, Lois has been responsible for scheduling his limited office hours. She also determines work priorities, provides written summaries, recommends various actions, schedules brief telephone calls and arranges meetings for Kranz at the Control Center.

Lois also coordinates the 24-hour-a-day secretarial support in Mission Control. In addition, she has been able to factually answer some of the numerous letters Kranz receives from the United States and abroad.

Dr. Christopher Kraft, JSC director, presented Lois with an engraved desk plaque and a check for $100.

"I was speechless when I received the award," Lois said, "I haven't been so surprised since the day I was chosen to go to Russia."

Lois accompanied NASA's ASTP Working Group to the USSR last October to assist with the secretarial work.

Originally from Bloomington, Illinois, Lois lives in Clear Lake City with her daughter Carolyn, 13. She has been employed at JSC since 1964.

Each month an award will be presented to a secretary who has made an exceptional contribution to the effective operation of JSC through professional competence and personal dedication. Mrs. Ransdell's award is for September.

Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

MISCELLANEOUS

Clarinet, b flat, Selmer Signet model 110, was $200 new, now $100, 2 yrs old, 333-2185 aft 4:30.

59 VW pan transavle ECT, $50 or trade for motor cycle engine and trans, 482-3100 aft 4.

23" color tv Heathkit mode. GR 295, unassembled kit, $325, Overton TF4 home 534-2476, office 6478.

35mm camera, Konica ART-2, 5 mos old, prfct cndn, w F/1.8 lens, case, shoe, pad, $200 firm, real bargain, Handley, 482-7041.

Gulf clubs, left handed, Wilson staff, matched set of irons, 11 clubs, 1 thru PW and SW, L.T. Spence, 488-2814.

Baby Grand piano, Fischer, $600, Voigt, 488-1931.

3000 lb galv winch wi cable, hook, support arms, $12; winch assemb only, $10; 30 lb mushroom anchor, $2; homemade anchor, $2, 13" 4 lug, galv, trailer rim, $9; 2" trailer coupling for 3"x3" sq tongue, $4; 2" new chrome hitch ball, $2.50, Mike x 6493 or 528-1047.

Easy-Go electric golf cart, 1-yr-old, Baywood Country club family membership (pool, club, greens,) Deaton, 481-1876.

Custom made youth show saddle 11 inch seat, rawhide tree leather, covered stirrups, li new, $75, 482-7160.

Parking places for sailboats on trailers on Galveston Bay, $13/mo wi electricity, water, launching ramp, Modisette, 333-3217.

Calculator Heathkit wi operating and repair manual, desk top size, floating or selectable decimal position and constant storage key, model IC-2008, $80, John Horner, 3417 or 334-2937.

Reloading press wi 30-06 dies, gd cndn, 10, Handley, 482-7041.

B flat clarinet, used 1 year, orig $275, now $65, 488-6828.

Transceiver, 75 meter. 175 watt swan, wi power supply, speaker, spare parts, instruction manual, 45 foot antenna mast and antenna wire, $125 Morris, 481-3900.

Bell & Howell 8mm Reel type movie camera wi zoom lens, $25, B & H 8mm movie projector $20, Size 11 maternity clothes, Doherty, 488-0182.

Canon 35mm SLR camera model FT quick load, f 1.8 lens, blt-in light meter, carrying case, electronic flash, Armstrong, 332-2381.

Whites Supreme Lawnmover, Briggs and Stratton engine, $20, 554-7243.

Polaroid camera, model 360 plus strobe, charger, portrait kit close-up lens attachments case, barely used, A-1 cndn, paid $395, best ofr, Sandy, 483-3525 aft 3 pm Th-Mon, or 538-1027 mornings.

Three (3) carat Diamondette ring, Tiffany setting on white brushed gold wide band, will sacrifice for $125, Jan, 5111.

HOUSEHOLD ARTICLES

Hide-a-Bed, contemp style, blue-green upholstery, gd cndn, Shinpaugh, 481-4297.

Contemp bar wi stools black leather lining li, nw, $75, 488-2364.

Spanish Oak labor chair, gold velvet cushion never used, $1795, tool cabinet, Craftsman, nine drawer, roller mounted,, xlnt cndn, $80, 482-1179 aft 6 p.m.

3/4 size roll-a-way bed, li nw cndn, $20 479-7292.

VEHICLES

Kawasaki Trail Boss, 100 cc, Dual Range, 2100 mi, clean, gd on or off road bike, $250 cash, 482-2100 aft 5.

53 Chevrolet 2-dr, super cndn, 75 k mi, original , 2nd owner, $850 cash,, 482-3100 aft 5.

Home-blt go-cart, suitable for 8-12 year old, has 2 hp Briggs & Stratton 4 cycle engine and reverse, $50. 644-0315.

66 Font. Station Wagon, $575, clean, air, Herget, 333-3716.

70 Pontiac Lemans, 2-dr, vinyl top, air, magic 50 trires, pwr, radio, $1500, 483-3205 wk days, 986-5394 wkends.

67 Chevelle ht air, auto, ps, runs well, $450, Bill, 471-5369.

71 Holiday mobile home, 12x65 2 br, lb, shag carpet, king size bed, central air/heat, will sell furnished or unfurnished, reasonable 339-1809, Lola aft 5.

72 Toyota, 4 dr Carolla, auto, air, radio, ww tires, etc, 20,000 mi, $2,000 333-2869 aft 5 p.m.

67 Volkswagon aug, mags, headers, shag carpet, sunroof, pin-stripped, adio, heater, hi-back seats, gd cndn, $850, Mark, 488-5037.

64 Dodge Dart stnd, radio, heater, driven to work daily, $180, 488-1042.

71 Olds, 98 Luxury Sedan, air, pwr/str, pwr/brks, seats windows, stereo radio, low mi. $2,950, 482-7029 aft 5 p.m.

72 BSA motorcycle model B-25T, dirt or street, xtra finders, sprocket, muffler for dirt, lw mi, xlnt cndn, $550, 554-3884.

Rent, 72 Jayco ht foldown camper, kitchen, ice box, sleeps 8, $10/day, 57-wk, min $25, Kilbourne, 482-7879.

68 Dodge ½ ton p-u, trailer towing pack air, auto, easy lift hitch, brake centrl, $1495, 487-0371.

72 Yamaha DTIF, 250 cc, lw mi, 1 owner, will negotiate, Lynch, 473-2720 aft 6 pm.

62 Mercury Meteor, 6 cyl, std, 1 owner, 2 nw tires, gd transportation, $150 483-5551 or 534-4452 aft 5.

26" bike ft brks, gd cndn, $15, 649-2874 aft 6.

64 Ford, Galaxie 500, 2 dr, ht, gd engine, air, radio, nw tires, $325, 479-7292.

69 Pontiac 9 pass sta wgn, pwr, air, xlnt cndn, $1975, Vineze, 334-1110.

PROPERTY AND RENTALS

Point Lookout-wooded waterview lot on Lake Livingston, 75x137, utilities and restrictions, below market at $3295, 946-7587.

Leave or sale, Sagemont Park, 3-2-2 sp detached garage, by owner, EQ or refinance, 7.55, $244/mo, 1½ years only, big lot, nice living, sch, shopping, 481-2477.

CL city, 3-2-2, large covered patio, fnced, by owner, $23,500, 488-3635.

Rent, Dickinson executive home, 4 bdrms, 5th bdrm or study, drapes, central air, electric kitchen, $350/mo, appt, 337-3352.

Deer lease Junction Texas ovr 1200 acres heavy brush, blinds, feeders, cats, doe permits, camphouse wi electricity/water, 4 openings, $200-$266/gun, 474-4661, 334-1481.

PETS

Free, well marked, male tabby kitten, 8 weeks old, 474-3319.

AKC highly pedigread Yorkshire Terrier, male, 6 mos, 2½ lb, must sell, 479-2190 or 488-0192.

Cute kittens nd home, 534-2756, Latteir.

AKC male Yorkshire Terrier puppy, 5 mos, $150, 554-3473.

BOATS

Boat "REDFISH" carpeted, trailer wi nw tires, 75 hp Evenrude, two 6-gal tanks, $700, 333-2869 aft 5 pm.

70 Ormond 13'9" riberglass tri hull 62" wi, 2 blt-in bait boxes, storage area in front str wh, paddle, seat cushions (2) 73 Little Dude trailer 70 Mercury, Bean, 483-7266 or 471-6837 aft 6:30 p.m.

14' plywood, gd cndn, nds dressing up, 35 hp Merc, elect start, motor, gd sm wh trlr, sacrifice $250, 479-7292.

64 Chris Craft, 26' cabin cruiser, 283 Chev engine, sleeps 4, head, galley, dock side, air, $3500, 482-1817.

WANTED

Old Mustang motor cycles for parts, title preferred but not necessary, 482-3100 aft 4, Guy.

Carpool from Tomball area, will work out hours, Morris, 483-2961 or 356-2332.

Good used Dobro guitar, Bates, 944-4687.

Stereo equipment, building first system, car FM cassette, recorders. 8 track, speakers, etc, Becker, 643-4151 aft 4:40 p.m.

Prepare for holiday festivities, forming group of EAA members for ballroom dancing lessons, tentatively planned for Wedn nites, 7:30 to 9:30, contact Roy Parker at 4535 or 333-2253.

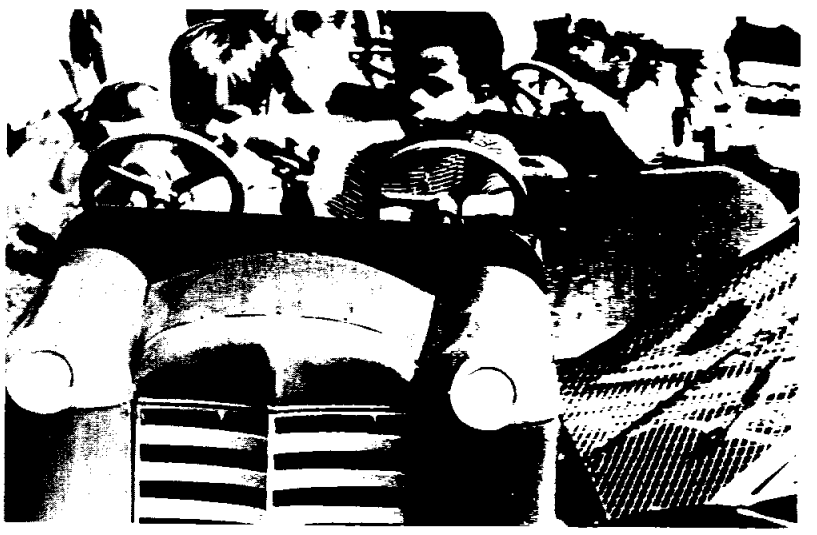
Utility trailer wi approx 1500 lb load capacity, capable of being towed at highway speeds, Muhly, 471-3762 or 483-6361.

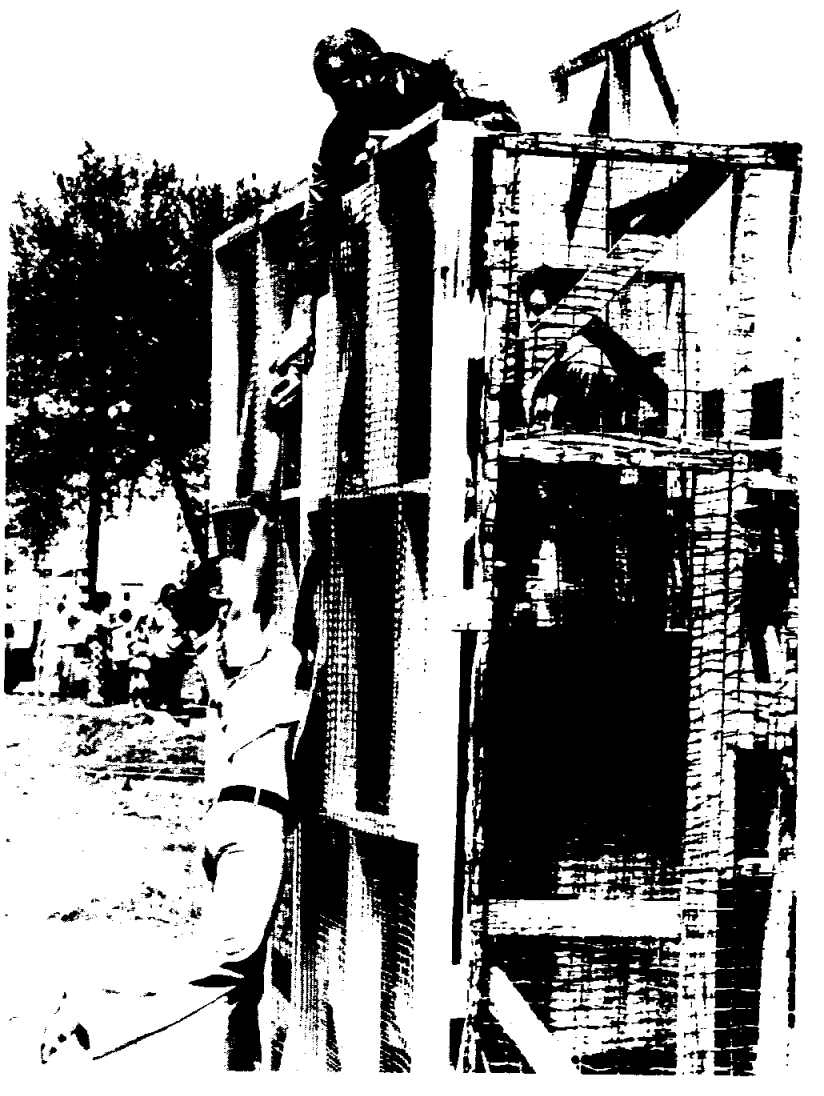
Bedroom, furnished, in JSC area, male, Heitmamm, HU-35341.

Used adult bikes, 1 man's 1 woman's standard drive (not 10 spd) Haines, 941-2495.

STUDENT SPIDER EXPERT—Judith Miles, a high school student from Lexington, Mass., discusses her experiment, "Web Formation in Zero Gravity," with Henry Floyd of Marshall Space Flight Center. Her experiment led to the carrying of two lady spiders—Arabella and Anita—on Skylab 3. Miss Miles was one of 25 high school students who were winners in a contest in which some 3,500 high school students submitted proposed experiments.

Fun Scenes From the 1973 JSC All-Star Picnic





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