

National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California



FIRST AMERICAN TO JOURNEY INTO SPACE . . . Alan B. Shepard, Jr., is pictured as he was recovered following his suborbital flight, the first in the Project Mercury program, on May 5, 1961. February 7, 1971, slightly less than ten years later, Apollo 14 Spacecraft Commander Shepard will be recovered from the South central Pacific following America's third lunar landing.

## Apollo 14 Lunar Landing Feb. 5

The Apollo 14 lunar module at press time, was scheduled to land in the Fra Mauro crater region for a stay of about 33 hours, during which the landing crew will leave the spacecraft twice to set up scientific experiments on the lunar surface and to continue geological explorations. The two earlier Apollo lunar landings were Apollo 11 at Tranquillity Base and Apollo 12 at Surveyor 3 crater in the Ocean of Storms.

Apollo 14 prime crewmen are Spacecraft Commander Alan B. Shepard, Jr., Command Module Pilot Stuart A. Roosa, and Lunar Module Pilot Edgar D. Mitchell. Shepard is a Navy captain, Roosa an Air Force major and Mitchell a Navy commander.

Lunar materials brought back from the Fra Mauro formation are expected to yield information on the early history of the Moon, the Earth and the solar system - perhaps as long ago as five billion years.

During their two Moonwalks, Shepard and Mitchell will set up a series of experiments, the Apollo Lunar Surface Experiments Package (ALSEP) and will conduct extensive geological surveys of the area around the landing site. The crew will be aided by a two-wheeled

pull-cart carrying experiments and geology tools during their lengthy field geology trek.

Experiments in the ALSEP are: Passive Seismic for long-term measurement of lunar seismic events; Active Seismic for relaying to Earth data on the lunar crust; the Suprathermal Ion Detector and Cold Cathode Ion Gauge for measuring ion flux, density and energy in the lunar environment; and a Charged Particle Lunar Environment Experiment for measuring energy of solar protons and electrons reaching the Moon and a Portable Magnetometer for measuring variations in the lunar magnetic field in the geology traverse will be carried on the lunar cart. The crew will set up a laser beam reflector, similar to the one left by the Apollo 11 crew, for long-term observatory measurements of Earth-Moon distance and motion relationships.

While the commander and lunar module pilot are exploring the Fra Mauro area, the command module pilot will be carrying out several orbital science tasks in lunar orbit above, including photography of dim-light phenomena and candidate landing sites.

(Continued on Page 2)

## Ames Magnetometer on Apollo 14

The Apollo 14 astronauts will chart local magnetic fields on the surface of the moon, in the hilly upland region of the Fra Mauro landing site, using a highly specialized, Ames designed and built, portable magnetometer.

The astronauts will transport the lightweight magnetometer on the two-wheeled push cart which carries all the mission's portable experiments.

Ames' Dr. Palmer Dyal, Special Projects Office, proposed the portable magnetometer experiment and is the principal investigator for the Apollo 14 experiment. Co-investigators on the experiment are Dr. Charles Sonett of Ames, Dr. Gene Simmons of M.S.C. and Dr. Robert DuBois of the University of Oklahoma.

The magnetometer consists of: a cube-shaped sensor head which measures about three inches on a side, an electronics package 7 1/2 by 5 by 4 inches, containing three indicator dials, a tripod, and a cable reel with 50 feet of ribbon-like electrical cable. The instrument is powered by 42 tiny batteries similar to those for pacemaker devices used in the treatment of certain types of heart defects. Enough power is available for 66

hours of operation.

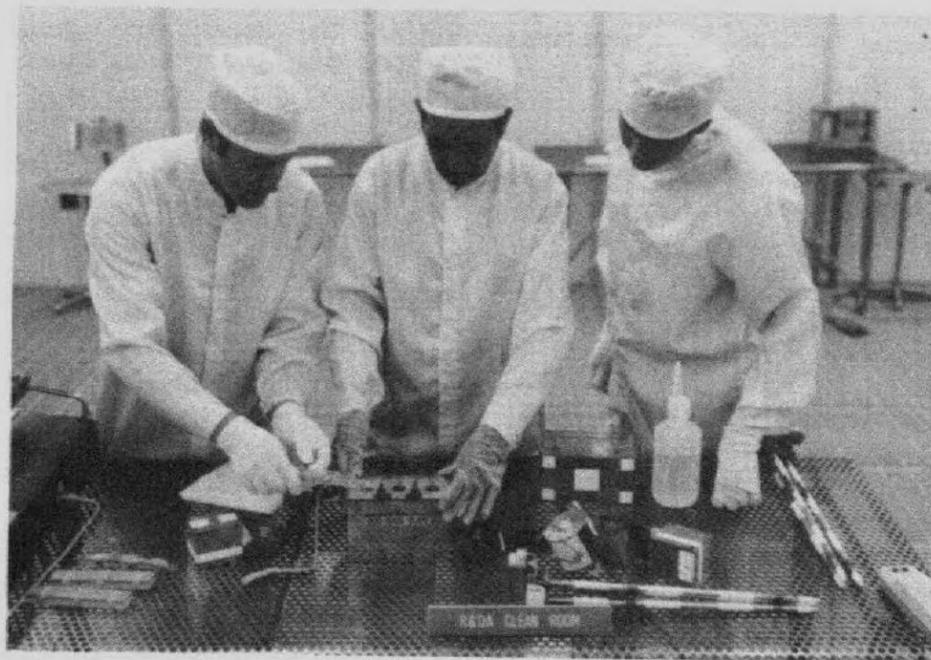
The device will be carried on the outside of the Lunar Module near one of the landing legs. It will be transferred to the Mobile Equipment Transporter (MET) for moving on the surface of the moon.

To use the instrument, one of the astronauts will set up the sensor head on the tripod and deploy it about 40 feet from the electronics package and indicators, which are left on the MET. He then calls out readings from three meters on the electronics package over the voice communication link to Mission Control Center at Houston. Then he rotates the cubical sensor head on the tripod to an opposite position to fine tune the sensor and its electronics. He then calls out the new indicated readings.

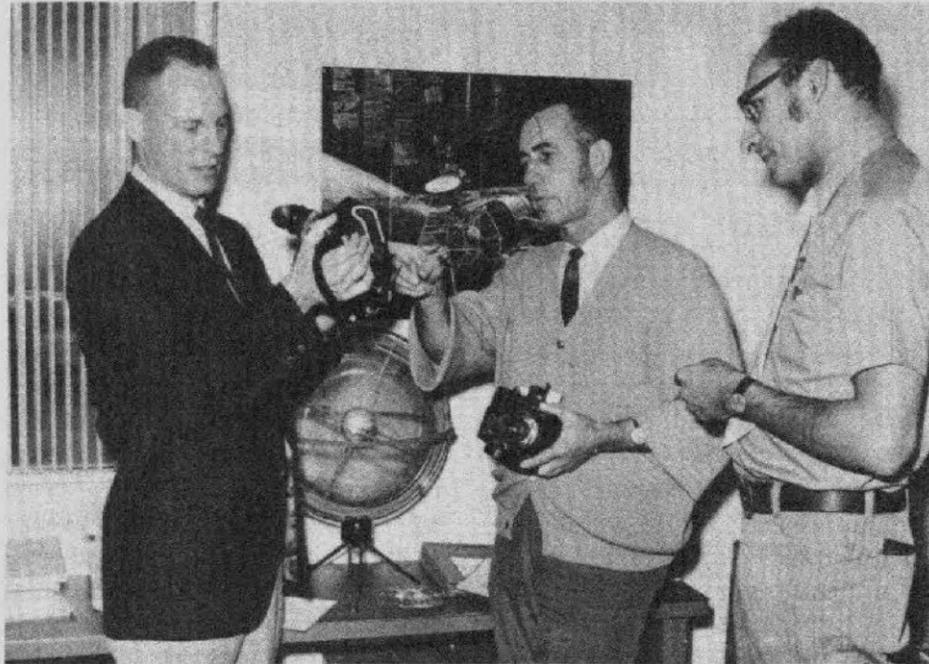
After repeating the process a second time to fully calibrate the instrument in the lunar environment, he moves the tripod with the sensor to other locations. There he makes new observations as he progresses on his lunar surface excursion.

During the Apollo 14 moonwalk, astronauts Alan Shepard and Edgar Mitchell will cover about 1.8 miles, and be a little less than .9 miles away from the lunar module at their

(Continued on Page 3)



AMES-DESIGNED AND BUILT . . . flight model of the Lunar Portable Magnetometer (LPM) is assembled in the Ames clean room by (l to r) Principal Investigator, Dr. Palmer Dyle and Joe F. DeRose of the Special Projects Office, Space Science Division, and Darrain L. Waters, Reliability and Quality Assurance Branch. The LPM is being flown on Apollo 14 launched from Cape Kennedy, Sunday, Jan. 31.



ASTRONAUT JACK R. LOUSMA . . . (left) conferred with Robert J. Randle (center), Manned Machine Integration Branch and Emmett Lampkin (right), Human Performance Branch at Ames recently. They discussed the Ames-Kollsman Space Sextant, which will be tested in NASA's TOO-2 Sky Lab A Experiment.

## Astronaut Lousma Visits Ames

Astronaut Jack R. Lousma visited Ames, January 21, to confer with Robert J. Randle, Man-Machine Integration Branch, and Emmett Lampkin, Human Performance Branch. The three spent the day discussing the Ames - Kollsman Space Sextant, which will be tested in NASA's TOO-2 Sky Lab A Experiment. Major Lousma is presently acting as coordinator for the experiment, between Manned Spacecraft Center and Ames.

The sextant was first developed by Don Smith, Guidance and Navigation, and first tested aboard the Gemini 12 with Astronaut Edwin Aldren as Navigator. Mr. Smith also did the initial work on the sextant for the TOO-2 Sky Lab Experiment. Mr. Randle and Mr. Lampkin are now responsible for the experiment here at Ames.

The TOO-2 Experiment is a joint manual navigation study involving the Air Force and NASA. The Air Force will use the ARC space sextant and their own space stadiometer, which measures the range from earth, in testing a low earth orbit manual navigation scheme, in its entirety, from celestial observations to position fixing. NASA, interested in mid-course guidance and navigation, is developing a rigorous error model for the man-sextant-environment combination. The Skylab-A sightings will primarily furnish error information which may be dependent upon relatively long term weightlessness. Both agencies are exploring the

feasibility of a light-weight, autonomous, manual navigation system which is independent of spacecraft power and ground tracking systems. A simple on-board system would be useful for increased mission reliability, for back up in primary system malfunction, and in space abort where an emergency return vehicle may be weight limited.

### Film Library Moves

The Ames Film Library was consolidated recently with the NASA Pasadena Office and has moved from its former location in Building 241. The office is now located at 2902 Scott Blvd., Santa Clara. Films, now on loan, should be returned to the Public Affairs Office in Building 201, Room 17. For future bookings, call ext. 3308.

### History of Ames

A limited number of a paperback edition of the "History of Ames" by Edwin P. Hartman has been obtained and will be offered for sale to Ames and contractor employees at the Center. Price of the edition is \$4 and may be purchased from "The Astrogram" Office, Room 134, Admin. Mgt. Bldg.

### Material Delivery Info

For pick up and delivery of packages, boxes, equipment and items of similar nature, call ext. 3210. This service is listed as Material Delivery in the telephone book.

## Apollo 14

(Continued from Page 1)

While Shepard and Mitchell are exploring the Fra Mauro area, the command module pilot will be carrying out orbital science tasks, including photography of dim-light phenomena and candidate landing sites.

Also, photos of earlier Apollo landing sites will be aboard for correlation with previous tracking data to improve tracking accuracy techniques.

The Apollo 14 flight profile in general follows those flown by Apollos 11 and 12 with two major exceptions: Lunar orbit insertion burn No.2 has been combined with descent orbit insertion and the docked spacecraft will be placed into a 10 by 58-nautical mile lunar orbit by the service propulsion system.

Lunar module propellant is conserved by combining these maneuvers and by using the service module engine to provide 15 seconds of additional hover time during the landing.

Also, additional tracking time in the descent orbit provides more accurate position and velocity data for use in the landing. The other change is in the lunar orbit rendezvous. Many of the intermediate maneuvers leading up to rendezvous and docking after LM ascent stage liftoff have been omitted, and rendezvous will take place shortly before the end of the first revolution after ascent.

### Ames Public Affairs Staff Aids Apollo 14

Three of the Ames Public Affairs staff are working "behind the scenes" on the Apollo 14 mission. Larry D. King is acting senior NASA Public Affairs Officer aboard the U.S.S. New Orleans; Cathy G. Stimson is a Protocol Representative at Manned Spacecraft Center and Stanley A. Miller Ames Public Affairs Officer, assisted in public affairs operations at the Cape.

Mr. King's duties as Senior Public Affairs Officer will include arranging the welcoming ceremonies for the Apollo crew after recovery and accompanying them to Samoa, Hawaii and Houston. He will travel with the Mobile Quarantine Facility and act as spokesman for the astronauts during their confinement to that facility.

Cathy Stimson, as Protocol Representative, is acting as hostess to a number of distinguished guests at the Manned Spacecraft News Center throughout the mission.

## Ames Hosts Plastics Education Conference

Ames hosted the Plastic Education Conference January 28 and 29. The conference was co-sponsored by the Northern California Industry-Education Council and Ames. High school administrators, principals and instructors from forty-five counties attended.

The two-day conference purposed to demonstrate to Bay Area educators the type of trained personnel needed in the plastics industry.

Lloyd Jones, Office of the Director, opened the conference with an introductory welcome. He was followed by Garth A. Hull, Public Affairs Office, who explained the background of the conference, and Andre Bogart, Materials Research, Conference Coordinator, who defined the procedure of the conference.

### TOURS

To demonstrate the equipment now in use, and the types of skills needed in the plastics industry, tours were conducted through Ames, Hewlett-Packard and Arrow Development. These were followed by tours of classes in Plastic Techniques at Sequoia High School.

It was pointed out during the conference, that most schools, both high schools and colleges, lack the necessary equipment and programs to prepare students for careers in plastics.

### GROUP SESSIONS

Small group sessions were held at Ames on the second day of the conference. The sessions covered a full range of topics dealing with educational preparation for the plastic industry. Each was presided over by one or two secondary school plastics instructors and one representative of the industry. The session speakers included Robert Krock, Instructor of Plastic Techniques, San Francisco State College; Harold Hefferon, President, San Francisco Plastics; and John Culler, Senior Instructor, Plastics Program, Thiokol Chemical Corporation, Ogden Utah.

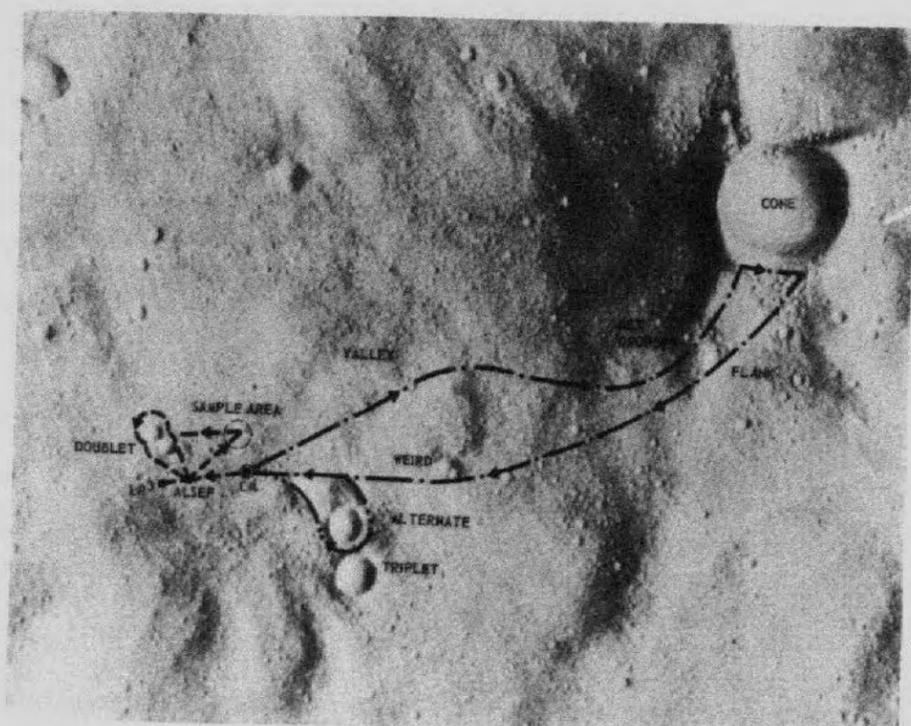
As a result of the conference, several educators have expressed plans to initiate or expand plastics education programs in their schools.

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Editor . . . . . Dot Evans  
Reporters . . . . . NASA Employees

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**EVA PLAN . . .** Alan B. Shepard and Edgar D. Mitchell plan two periods of extra vehicular activity (EVA) on the lunar surface after landing in the Apollo 14 lunar module. The targeted landing point is in the Fra Mauro area. The first traverse consists of setting up the Apollo lunar surface experiment package (ALSEP), the lunar surface ranging retro-reflector (LR3) the solar wind composition experiment, collecting moon rocks, traveling around Doublet Crater and returning to the lunar module. (This traverse is shown by dashes. After a rest period, the second EVA will begin (shown by dots and dashes) and will go to Cone Crater, about 3/4-mile away. If time permits they will swing through the Triplet Craters on the way back.

## Magnetometer—Ames Team Effort

The lunar magnetometer program at Ames has been an extensive team effort under the general direction of Dr. Sonett, Deputy Director of Astronautics, and has been implemented by the Special Projects Office headed by Donald R. Mulholland of the Space Science Division.

After the surprising results from the Apollo 12 Lunar Surface Magnetometer experiment a decision was made to undertake development and construction of a portable magnetometer for the Apollo 14 mission as an Ames in-house effort. Charles A. Privette was assigned as Project Manager for this bold undertaking. Schedules were very short, a low-cost program had to be maintained, and the extremely tight quality requirements of the Apollo program had to be met throughout the construction, testing, and delivery phases of the program. The entire project was handled at Ames including design, parts screening, construction and qualification and acceptance testing.

The flight instrument, together with a flight spare, was integrated with a Grumman-made pallet on the Apollo Lunar Excursion Module and is now at Cape Kennedy awaiting launch of Apollo 14. The project manager was assisted by Thomas R. Pochari, Charles E. Duller,

Michael G. Dix, who was responsible for the electronic design; John Prucha, Joe F. DeRose, Ralph Decker, and Emma Thiemann, all of the Special Projects Office, Space Science Division. Thermal design was provided by John Arvesen of the Thermal Protection Branch, and Dave Englebert, Robert Davidson and Earl Menefee of the Research Equipment Engineering Branch supported the mechanical design.

Calibration was handled at the Ames Magnetic facility under Ernest J. Iufer, Robert R. Murphy and Ronald J. Sauro. Environmental testing was done in the Systems Engineering Building working with Howard F. Menche, Howard C. Garrison and Robert M. Kerr. Electronic fabrication was accomplished by Robert A. Steinhauer and Charles E. De Marco of the Electronic Instrument Branch. Mechanical fabrication was supported by a number of people in the Technical Services Division model and metals shops, as well as the much needed help furnished by the Photo Technology and Graphics and Exhibits Branches. Quality control was maintained throughout the project to the demanding requirements of Apollo by George E. De Young and Darrain L. Waters under Fred De Muth of the Reliability and Quality Assurance Branch.

## Ames Magnetometer

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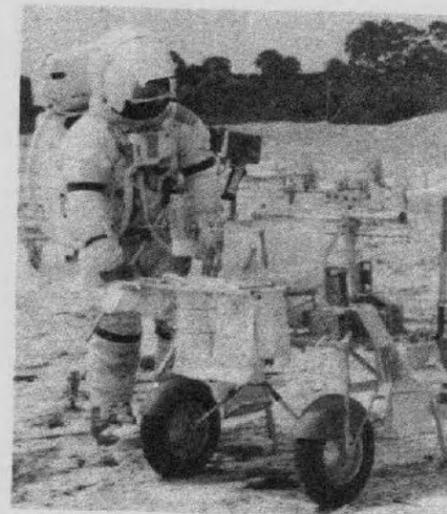
farthest point.

Thus, the Lunar Portable Magnetometer will be used to make a rough map of the magnetic field over an extended area of the lunar surface. It will triangulate the locations of any local magnetic fields.

Ames' studies of the moon's magnetic fields have been going on since 1967 when NASA launched the Explorer 35 spacecraft, containing an Ames magnetometer, into orbit around the moon. It indicated that the moon's main magnetic field was so small as to be virtually unmeasurable from orbital heights.

Then in 1969, the Ames researchers came up with a very sophisticated, strange-looking, three-armed magnetometer instrument. The Apollo 12 astronauts deployed this one on the lunar surface. They expected to measure the weak generalized lunar field induced in the moon by the solar wind. But, when the first magnetic measurements came back from the surface of the moon, they showed a strong local field. This field apparently represented some kind of local extreme variation in the lunar magnetic characteristics relatively near the Apollo 12 magnetometer.

The portable magnetometer will permit magnetic measurements at a number of locations on a single Apollo mission. Data from this experiment, when combined with data from the Lunar Surface Magnetometer at the Apollo 12 site, and from the magnetometer on Explorer 35 circling the moon, are expected to substantially broaden our knowledge base of information about the moon.



**"SHEPARD'S RICKSHAW" . . .** Astronaut Alan B. Shepard, Jr., takes part in lunar surface simulation training wearing an extra-vehicular mobility unit, the backpack providing oxygen and thermal protection during Moon walks. He is standing by the modularized equipment transporter (MET), dubbed "Shepard's rickshaw" by the astronauts.

### YEAR OF THE BOAR

## New Year's Celebration

To celebrate the Year of the Boar, a new Chinese zodiac cycle which will last 12 years, a Chinese banquet is planned. It will take place at the Golden Pavilion, 4320 El Camino Real, Los Altos on Sat., Feb. 13. No host cocktails begin at 6:30 p.m. and dinner will be served at 7:30 p.m. The price is \$5.50 per person, including tax and tip.

The seven course dinner includes such delicacies as Kwor Ba Sizzling Rice Soup, Peking Duck, Lichee Tenderloin Pork Cubes and 1000 year eggs with pickled ginger.

Reservations must be made by Feb. 11. For information contact Guy Wong, ext. 2479.



**APOLLO 14 EMBLEM . . .** Crew patch designed by astronauts Alan B. Shepard, Jr., commander; Stuart A. Roosa, command module pilot; and Edgar D. Mitchell, lunar module pilot. It features the astronaut lapel pin approaching the Moon and leaving a cosmic trail from the liftoff point on Earth.

# Ames Airings

Several people from the Ski Club spent a great week in Sun Valley not long ago. Reports have it that the trip was a big success, with lessons everyday, swimming, (yep, swimming) and sleighing out to dinner. Among those enjoying the slopes of Idaho were RALPH MAINES, Security, and his wife DELLORA, formerly of the Structural Dynamics Branch; GEORGE DEIWERT, Fluid Mechanics, and his wife VICKI, Services and Supplies; MAURICE WHITE, Flight and Systems Research; and PHILLIPS J. TUNNELL, Auto Data Processing Management Office.

There was only one casualty, Lou Mazer, Research Instrumentation, wrenched his knee the third day, and was taking his Jacuzzi's in the hospital instead of the pool. The group is to be congratulated, however, on making it home without a cast, which is a crack above RALPH E. IGLER, Research Facilities Engineering.

Ralph was chasing his nine-year-old son down a slope at Home-wood Ski Area, when he fell and broke his arm. It was a minor break and Ralph seems to have pulled through just fine. He went to Kaiser Hospital for treatment and was taken care of by a lovely lady M.D.

GARY BOWMAN, formerly of Biosatellite, came to the Center last week for a visit. He has spent the past two years at the University of Frankfurt. After living Amelessly for two years, Gary and his wife Yvonne, were just a little homesick, but had to return to Germany. They are presently living at Frankfurt A.M. MAIN, Bonstadter Strasse, #5, and would like to hear from their old friends.

FRANK M. HAMAKER, Materials Research, was wearing a big smile of parental pride recently, and with good reason. His son Chris has been chosen as one of the country's forty most talented young scientists, in the 30th annual Westinghouse Science Talent Search.

Chris was awarded an expense-paid trip to Washington to compete for \$67,500 in Westinghouse scholarships and awards during a five-day Science Talent Institute program in February. He hopes to attend Harvey Mudd College, Claremont, with a major in physics.

### CONGRATULATIONS

JOHN LONGABAUGH, Personnel, and his wife, April, became parents on Jan. 20, for the first time. John David was born at 3:29

... by Jeanne Richardson

a.m. and was 7 lbs., 21 inches. John is one of the proudest fathers around, and recommends being present for the delivery, to any prospective new fathers.

## BASKETBALL

... by Phil Wilcox

The All-Ames Basketball season is drawing to a close with only one game left to play for each team. These games will be played on Thursday, Feb. 4. The first game will see CSC (8-1) versus ARO (2-7), the second game puts Jets (3-6) against Madmen (2-7) and in the final game the Beer Barrels (7-2) play the Fighting Pumas (5-4). The results of the last games were:

ARO	32	Jets	31
CSC	47	F. Pumas	42
B. Barrels	36	Madmen	34

## BOWLING

... by Dennis Riddle

The second half of our season has begun and after two weeks of play the "10 Pins" and "Huffers" lead Division I and the "Alley Katz" lead Division II.

Congratulations to Charlie Hall for his beautiful 252/590. Charlie has a 144 average! We have had many great games and series so far this half. To mention only a few: Cal Eddleman 213/587, Lester Buettner 211/575, Bernie Somer 575, Norm Barsi 222/569, Bob Mer-

## JOGGERNEWS

... by Jim Woodruff

The Joggnernauts will meet at noon on Friday, Feb. 12, in the Conference Room in the Instrument Research Lab, Building 213. Anyone interested can learn how he can help with the race, sponsored by the Joggnernauts April 18. People are needed to mark the trail, help with the registration, direct runners on the trail, check at various points, hand out refreshments, and record the finish times and places of 100 to 200 runners. We could have a picnic afterward.

The race, open to any amateur athlete registered with the AAU, will start at 10 a.m. The course is just under ten miles. It starts at De Anza College, goes over some hills, loops around Stevens Creek Reservoir, and ends in the stadium at De Anza. The runners will have showers and a dressing room available. We plan to hold this race annually and hope to organize it so that the runners will decide that the race sponsored by the Joggnernauts at Ames is a good one to come back to each year.

Three Joggnernauts ran in the 20 kilometer race at Woodside Jan. 17; Vito D'Aloia, 1:25:25, Paul Sebesta, 1:25:26, and Ted Passeau, whose time was not available.

rick 212/568, Bill Kohl 220/566, plus many more. Two of the women deserve note also: Jan Konrath 525, and Jeanne Clemson 523. Keep it up!



NEW ARA BOARD MEMBER . . . Roger Hedlund (center), Electronics Research, looks a bit bewildered after learning that he was the only male elected as a new ARA Board Member. Other new members are (l to r.) Peggy Larson, Materials Research; Jeanette Remington, Employment, and Jessie Gaspar, Programming. They assume their duties with re-elected board member, Janet Konrath (right), Data Management Analysis and veteran board members Andy Bogart, Materials Research, Armando Lopez, Full-Scale and Systems Research; Al Puccinelli, Simulator Systems Operations, Emerson Shaw, Photographic Technology, in March.

## WANT ADS

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N-241-4, by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

### AUTOMOBILES

For Sale-1968 Ford Mustang, auto, trans., V-8, power steering and power brakes, excellent condition. \$1700. Call 656-4863.

For Sale-1960 Corvette, red, mint condition, call 265-3456.

### HOUSING

For Rent-Ski Cabin, west Tahoe, Chamberlands, sleeps 9, 3 bedrooms, 2 baths. Fireplace, wood furnished. Washer and Dryer. Carpets, wall to wall. Weekend rates - \$75, call 258-1882.

Wanted-3 or 4 bedroom house or duplex in Stanford-Ames area for rent by Ames post-Doc. fellow from Feb. 1971 to June 1972. Please call Chambers at 941-5287.

For Rent-3-bedroom condominium, Kings Beach North Lake Tahoe, Gary W. Thorley - 227-8738.

For Rent-Winterized cottage near Rte. 89 and N. Tahoe ski areas. Sleeps 6 - \$90/wk or \$40 wknd - 325-4642.

### MISCELLANEOUS

For Sale-Rotary Power Mower, \$27.50, 21" blade. Briggs and Stratton engine, T/S planning, Herb Pankratz - 243-2813.

For Sale - 8 foot camper, sleeps 4, has icebox, stainless steel sink and ten gallon water tanks, \$265, call Eugene Bekstrom at 278-9660.

For Sale-Juicer attachment for osterizer. Excellent condition. Cost \$26.95; will sell for \$10. Russ Barton, 323-0890.

Found-Sweater, give description, phone ext. 2337.

For Sale-5 x 7 Elwood enlarger, \$100, call Joe March after 5 p.m. at 296-3728.

For Sale-Kenmore sewing machine with buttonhole attachment, solid mahogany cabinet with drawers. \$35, call H.L. Seegmiller, 356-2082.

Wanted-Take over payments on 1970 Wurlitzer spinet organ, 22 instruments, hawaiian slide bar, and rhythm box accessories. Fruitwood cabinet perfect condition, phone 255-1423 after 6 p.m.

For Sale- Barbeque pit on wheels, electric motor spit, chicken basket and rib basket \$15, maple Hutch \$70, ceramic kiln and molds \$150, phone 255-1423 after 6 p.m.

For Sale-Old assorted issues of IRE/IEEE. Proceedings and transactions for sale. Phone 243-8963, Hank.

For Sale-Stroll-O-Chair, like new \$150, net play with pad, \$15; never-used Cosco potty chair, \$5 walnut crib and mattress which converts to youth bed, \$45; and bathinette, \$10. Call Marilyn Garis at 243-8597.

For Sale-Siamese kittens, registered, pedigreed blood lines. Chocolate point, male only \$20, call 253-4475.

## VACANCY NOTICES

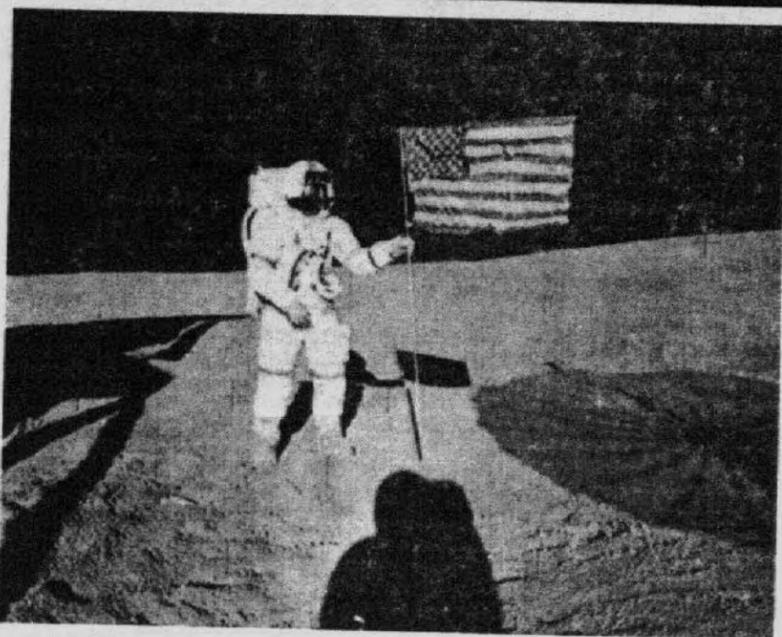
### Merit Promotion

Secretary (Stenographer), GS-318-6, Space Science Division. Closing date is February 10, 1971. Call the Employment Branch, ext. 2021, before closing date.

## SOFTBALL

Anyone interested in playing on the Ames Fastpitch Softball Team please contact Bruce Ganzler, ext. 2747.

National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California



**MOONWALKERS . . .** Apollo 14 Moon Mission Commander Alan B. Shepard Jr. stands beside the American flag after it was deployed on the moon during the first extravehicular activity on the lunar surface. Photo shows shadows of fellow astronaut Edgar D. Mitchell, the lunar module and the erectable S-band antenna.

## Apollo 14 Crew Brings Back New Data on Moon's Magnetic Fields

Apollo 14 Astronaut Ed Mitchell discovered an unexpected bulge in the Moon's magnetic profile when he performed a scientific measurement on Fra Mauro early on Saturday morning, February 6.

Using an Ames designed and built portable magnetometer, Mitchell radioed back data which indicates that the lunar magnetic field at a point about 325 yards northeast of Antares was three times higher than similar fields revealed by instruments at the Apollo 12 landing site. Another reading made 500 yards further away, near the edge of Cone Crater where Astronauts Mitchell and Alan Shepard terminated their efforts to reach the top, shows the magnetic field there to be about half of the first reading.

### PRELIMINARY DATA

The preliminary data, disclosed last week by Dr. Palmer Dyal of Ames, principal investigator for the magnetometer experiment, indicates the strength of the magnetic field in the first location was about 100 gammas and about 40 gammas in the second. Gammas are a measurement of magnetic field intensity like candlepower is a measurement of light intensity.

The intensity of the lunar magnetic field is slight compared to Earth's 50,000 gamma average, but this new data is significant because scientists previously had no reason to believe the Moon had a field of this intensity. It wasn't until 1967 that the Explorer 35 lunar satellite indicated it could have a very weak field, no greater than about eight gammas. Then in 1969, another Ames magnetometer placed 105 miles west of Cone Crater by Apollo 12 astro-

nauts encountered a field of 38 gammas.

The Apollo 14 portable magnetometer, built by a team at Ames, was designed to be set up and operated by astronauts at various locations on the Moon. After successful completion of this experiment, the magnetometer had done its job and was left behind on the slopes of Cone Crater. It will produce no additional measurements.

The new Apollo 14 magnetic field information will be refined over the next few weeks and used as evidence to further document the Moon's origin and geologic history.

### CO-INVESTIGATORS

Co-investigators on the experiment were Dr. Charles Sonett, Assistant Director for Astronautics at Ames; Dr. Gene Simmons of the Manned Spacecraft Center, and Dr. Robert DuBois of the University of Oklahoma. The lunar magnetometer program at Ames was implemented by the Special Projects Office headed by Donald R. Mulholland of the Space Sciences Division. Charles A. Privette was Project Manager.

## Highly Successful Apollo 14 Mission

From flawless launch at Cape Kennedy on Sunday, January 31, to splashdown in the Pacific Ocean some 900 miles south of Samoa on Tuesday, Feb. 9, the Apollo 14 lunar mission has been termed a great success.

The pinpoint landing on the lunar surface in the hilly upland region north of Fra Mauro crater was right on schedule and the astronauts went on to accomplish all phases of the highly scientific and technical mission.

At press time the Apollo 14 crew -- Commander Alan Shepard, Command Module Pilot Stuart Roosa and Lunar Module Pilot Edgar Mitchell--was in quarantine and enroute back to the Manned Spacecraft Center. The crew is to remain in quarantine up to 21 days from the completion of the second Moonwalk, or about Feb. 26.

## NASA Proposed STOL Quiet-Engine

NASA is exploring a government industry cooperative program for developing the technology for a short take off and landing (STOL) quiet-engine jet aircraft, applicable to a future air transportation system.

NASA and Department of Transportation officials proposed recently at a meeting of the Aeronautics and Space Board of the National Academy of Engineering, which includes members of the aircraft, engine and airline industries, that government and industry form a multi-lateral cooperative program or joint enterprise in which government and industry funds would be pooled on a partnership basis to develop an experimental jet STOL aircraft.

NASA and DOT consider the development of such an experimental aircraft necessary to complete the foundation of technology and proof of concept work on which the development of an effective, economical and environmentally acceptable STOL air transportation system might be based.

The proposed cooperative program would relate only to the development of low noise level, jet STOL technology which, like all technology developed by NASA, would be available to industry generally. Development of prototype and operational aircraft for commercial use would remain a matter for

decision and financing by industry with the companies involved free to compete as usual in seeking market opportunities.

NASA has an appropriation request of \$15 million for initiating detailed design and fabrication of an experimental STOL aircraft in the President's FY 1972 budget. Under the cooperative program, funds provided by industry through a joint venture or other arrangement would complement the government funds. Representatives of the companies involved would participate in the direction of the program.

Roy P. Jackson, NASA Associate Administrator for Advanced Research; and Technology, estimates that a research aircraft would be ready for flight testing in about two years from the time the parties agree to a cooperative program.

Message from

*Art Freeman*

"So many of you have expressed to me such heart warming messages at the loss of my wife Patricia--by card, by letter, by phone, by handclasp and embrace--I just cannot acknowledge each one individually--so I turn to the Astrogram to say "thank you so much"--hoping that it will reach you whether you are active or retired. Each such expression--and particularly your own--makes it just a little bit easier to bear."

# Tau Beta Pi to Meet Feb. 23

The San Francisco Peninsula Alumnus Chapter of Tau Beta Pi, National Engineering Honor Society will be chartered at a dinner meeting to be held at Sakura Gardens in Mt. View on Tuesday, Feb. 23. A social hour at 6 p.m. will be followed by dinner at 7 p.m.

The meeting will include the charter presentation by Robert Nagel, Secretary-Treasurer of the national Association, election of officers, and a discussion of Chapter goals. One of the goals of the newly formed group is to stimulate creative engineering professionals to work on environmental and societal problems so that jobs will be generated for the unemployed.

All alumni of Tau Beta Pi, their wives and guests are invited. Dinner reservations are \$5 per person and may be made by calling Dale Martin, Ames ext. 2502. Deadline is Feb. 19.

# FPC Scholarship

The Federal Personnel Council of Northern California has announced the establishment of the tenth annual college level scholarship fund.

Deadline for making application



WINNERS . . . . of the Santa Clara Valley Science Contest held at Ames Feb. 6, Ed Weller (center), Mango School, and Scott Matthews (right), Los Altos High School, are pictured above with James L. Harvey of Varian Associates as he presented each of them with a trophy for their school. Ed Weller received a \$50 savings bond as the first place winner in the Junior Division and Scott Matthews received a \$100 savings bond as top competitor in the Senior Division. The participants were judged for their performance on a 150-question science examination.

for the scholarship is April 1. Application forms may be obtained by contacting Mrs. Evans or Miss Richardson, Room 134, Admin. Mgt. Bldg. ext. 2385.

### “THANK YOU” NOTE

## Tomacci Retires

Peter Tomacci, formerly of the Procurement Division, retired recently and wishes to thank those who attended his retirement luncheon.

“Dear Friends at Ames, Words cannot begin to express my gratitude to all of you for a memorable retirement luncheon. It was all so very elegant. Rose and I were overwhelmed with the turnout and it was indeed a pleasure to see Dr. De France and many other retired friends again.

“Thank you for the wonderful gifts of golf equipment. All I have to do now is learn to hit the ball!

Sincerely,  
Peter Tomacci”

## Certified Engineer Technicians Meet

The first scheduled meeting of the American Society of Certified Engineering Technicians, California Chapter, Santa Clara Section, was held this week in the former Supervisors’ Chamber in San Jose.

All Certified Engineering Technicians or those interested in becoming certified are invited to attend the meetings. For further information contact Don Gotimer at 263-4867 or 966-5002.

# Santa Clara Science Contest at Ames

The Third Annual Santa Clara Valley Science Contests were held at Ames February 6. The contests are sponsored by the Santa Clara Valley Science Teachers Association, the Joint Council of Science and Mathematics and the American Institute of Aeronautics and Astronautics (AIAA, San Francisco Section). They are designed to encourage exceptional science students from the Santa Clara Valley.

Eighty-one Junior and Senior high school students, representing forty-seven schools competed by taking a 150-question examination. The tests covered three major areas; biology, chemistry and physics, and were divided into Junior and Senior Divisions. They were specially designed for the contest by participating science teachers.

Several members of the AIAA from Ames’ Hypersonic Free-Flight Branch served as proctors; Dale Compton, William Davey, Jack Stephenson, Michael Tauber, and Max Wilkins. Kenneth McAlister, Army Air Mobility Research and Development Lab was also a proctor. Garth Hull, Ames Educational Services Officer, and Robert Sammonds, Flow Fields and Stability, and Assistant Educational Director for the AIAA, were chairmen for the local arrangements of the Contests.

### AWARDS

The AIAA also donated book prizes for the top twelve winners in the Senior Division. Gift Certificates and savings bonds, ranging in value from \$10 to \$100, were donated as awards by the Joint Council on Science and Mathematics Education. Trophies and plaques were provided by the Santa Clara Valley Science Teachers Association.

As part of the program, contestants and their sponsoring teachers and parents were given guided tours through several of the facilities here at Ames. Also, the film “A New Look at an Old Planet”, which views the Earth’s atmosphere from outer space, was shown.



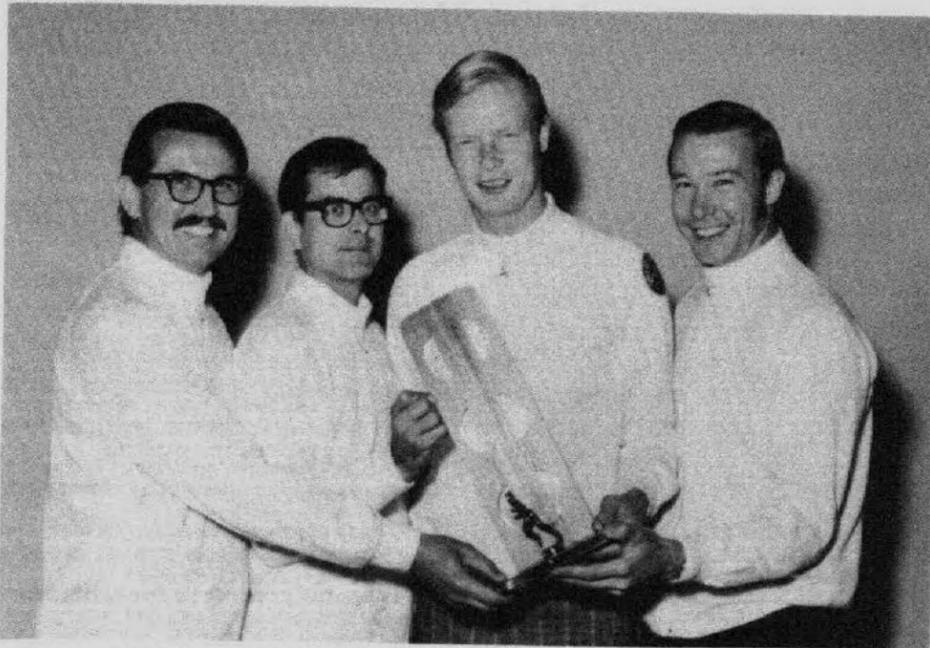
NACA REMEMBERED . . . but not for long as Esta Bakas of Travel Reservations prepares to erase the last of the NACA wing insignias found over the entrance to the Engineering Services Building (203). She was one step ahead of the cement contractor who was preparing to refinish the building facade and discovered the long-forgotten insignia of the “Science Laboratory” under a temporary NASA building sign. Thanks to an observant Adene Scarbrough, Pay and Travel, who quickly called a photographer, this reminder of the past was captured on film.

**ASTROGRAM** Room 134  
Admin. Mgt. Building  
Phone 2385

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Editor . . . . . Dot Evans  
Reporters . . . . . NASA Employees

Deadline for contributions:  
Thursday between publication dates



**JOGGERNAUTS FLY TO THIRD PLACE VICTORY . . . .**  
 in the Woodside Cross Country Race. A four - man team from the Ames jogging club, the Joggeronauts, pounded their way up and down 20 miles of mountain trail to take third place from a field of 137 runners. The winning team members are (l to r) Vito D'Aloia, Paul Sebesta, John Arvesen and Jerry Barrack with their trophy.

18 YEARS OF LOW-COST LIFE INSURANCE

# NEBA Drive Planned Next Month

Eighteen years ago, a group of NACA (National Advisory Committee for Aeronautics—predecessor to NASA) Lewis Laboratory employees felt the need for low-cost life insurance coverage. At that time, there was no Federal Employees Group Life Insurance. They found that the law permitted the head of an agency to enter into a policy for agency employees on a voluntary basis. They then solicited bids from various companies, and the Home Life Insurance Company of New York was the low bidder offering the best benefits.

ployees. The Association shall be conducted for the mutual benefit of its members and their beneficiaries and not for profit."

The first schedule of coverage provided for seven classes, ranging in coverage from \$1,000 to \$10,000. Today there are 12 classes, ranging in coverage from \$8,000 to \$35,000.

The next milestone was in Oct. 1961 when double indemnity for accidental death was added to the plan. This was first initiated on an optional basis, and later made mandatory.

On Nov. 1, 1963, NEBA furthered their protection services by offering a separate Travel Accident Policy. The first policy covered only "official business" travel, and provided for only two classes - one for the principal sum of \$50,000 and the other for \$100,000. There is now a plan to fit almost everyone's needs.

On May 15, 1968, dependent life insurance coverage was added to the life insurance plan on an optional basis. The original plan provided for three classes. All classes also provided \$1,000 for each child. In Oct. 1970 the classes were reduced to two. For those members earning less than \$12,000 the coverage for the spouse is \$2,500 and for those above \$12,000 spouse coverage is \$5,000. The quarterly flat rate for the \$2,500 coverage was \$3.75 when the provision was added--it has been reduced to \$2.65.

It did not take too long for Ames, Langely and Headquarters employees to learn of this excellent low-cost insurance and in 1953 they asked for the opportunity to join the plan. Initial implementation, by insurance laws, requires 75% participation. An intensive campaign brought about this percentage of voluntary applications and our local chapters of the NACA Employees Benefit Association (NEBA) were established. The quarterly rate per thousand of coverage at that time was \$2.40. Currently, the rate is \$1.30 per thousand, which has been constant for the past six years.

With the organization of NASA, all new Centers joined the plan.

DR. DRYDEN

NACA Director Dr. Hugh L. Dryden established the NEBA. The charter read: "The sole purpose of the Association shall be to provide low-cost group insurance to NACA em-

## JOGGERNEWS

. . . by Jim Woodruff

On January 30 a four-man Ames team pounded their way up and down 20 miles of mountain trail in the Woodside Cross Country Race to win the third place team trophy. This race, advertized as the toughest this side of the Pike's Peak Marathon, drew 137 runners this year. Jerry Barrack and John Arvesen lost their way and spent thirty minutes or so finding the trail again. Now that they know the way, the Joggeronauts might score first or second next year. Ames runners and their places: Paul Sebesta, 23; Vic D'Aloia 26, Jerry Barrack, 45, and John Arvesen, 47.

Vic D'Aloia ran the Chanel-to-Lake 10-Mile Run at Vallejo, on February 6, in about 65 minutes, finishing 79 in a field of about 160. Vic reports that it was a beautiful day. The race was well managed and the police did an excellent job in controlling the vehicular traffic.

I would like to report the jogging activity of those who have not been running in the races. Please send a note about your jogging program and adventures to Jim Woodruff, N 213-2.

\$100 in the Credit Union shares are \$5.

The Credit Union offers three distinct savings methods. Regular share accounts pay 5 1/4%, compounded semi-annually. One year certificates pay 5 1/2% annually, and "Magic Sixes" are certificates paying 6 % when held two years based on at least \$2000.

## Credit Union

The annual meeting of the Moffett Field Employees Credit Union was held January 29 and attendees heard President John Pogue report that the assets of the Credit Union reached \$2,880,516 and membership reached 5,854 during 1970.

Four new members were elected to the Board of Directors: Captain F.T. Stephens, Vice President; Eugene P. Long, Edward Seward and Colonel George T. James, Jr., as members. John F. Pogue was re-elected President; Jack L. Davidson, Treasurer; Ramsey K. Melugin, Secretary; and Rena A. Estes and Gertrude V. O'Maley, Directors. Stephens, Davidson, Estes and O'Maley are from the Moffett Naval Air Station. Pogue, Melugin and Long are employed at Ames. James is stationed at the Sunnyvale Air Force Station, and Seward is with the Navy Plant Representative Office at Lockheed. The Board of Directors is the policy-making body of the Credit Union. They also appoint the Credit Committee, which reviews applications for loans.

Membership in the Credit Union is open to all Federal Civil Service employees in the counties of Santa Clara and San Mateo, as well as all active and retired military servicemen and their dependants in those counties.

In a drive to increase membership, outgoing Educational Chairman John W. Weyers, also of Ames, announced that one share in the Credit Union will be given to any current member who brings in a new member depositing at least

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## Ames Theatre Offer NOW SHOWING



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Please send me \_\_\_\_\_ tickets at \$ 2.40  
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Please enclose remittance and a stamped self-addressed envelope.  
 ALL TICKET REQUESTS MUST REACH THEATRE SEVEN DAYS PRIOR TO SHOW DATE, and tickets will be mailed soon after.

NOTE DEADLINE DATE FOR SUBMISSION OF COUPON

# Ames Airing

... by Jeanne Richardson

JANET KONRATH, Data Management Analysis; HELEN BOLT, Pay and Travel; and JEANNETTE REMINGTON, Employment Branch spent one full day of their Washington's Birthday holiday hiking seven (7!) miles to Half Moon Bay with the Sierra Club. The hike was along the beach, so they were entertained occasionally by the carryings-on of the sea elephants.

They spotted one poor fellow sprawled out looking as though he was about to depart for the big beach in the sky. Naturally concerned, the girls asked the Marine Biologist who accompanied the group, if there were something they could do to help the animal. He said, "No," being a young bull, the elephant had evidently been in a fight over a wife or two and simply needed some peace and quiet to regain courage and strength. The group trekked on.

BARBARA GERMAN, Employment Branch, and her husband Richard spent a lovely two days - of the three-day holiday - driving through the Sierras. They skied Mt. Shasta one day, then went off in search of new slopes. Unfortunately, due to lack of accommodations, what began as a ski-weekend, ended as a sightseeing trip.

Back to the slopes; the Ski Club did it again over the big weekend. Thirty-six skiers braved the wilds of Squaw Valley for three days of shushing and sitzmarking on hard-packed slopes. All came back sunburned, but happy. NOEL DELANY Computer Operations, was so enthusiastic Sat., that his skis literally split apart. Not to be stopped, Noel simply bought a new pair - Head 660's - Sat. night and was back on the slopes Sunday morning. Now that's a skier!

## CONGRATULATIONS

ROBERT GRIFFIN, STOL Experiments Office, and his wife Nadine were pretty excited Feb. 8. They became the parents of Janet Audrey Griffin, 7 lbs. 13 oz., and 21" long, at El Camino Hospital.

## AMES ADVENTURERS

About 50 members of the Ames Adventurers attended a no-host cocktail party meeting at Chez Yvonne January 28.

TWA was featured and they provided film of Europe, literature on travel plans available, and a drawing of door prizes.

The next scheduled event is a



AMES GOLF CLUB PRESENTS . . . silver cups to Handicap Match Play Champs; (l to r) Flight One, Howard Matthews, Systems Engineering; runner-up, Yukio Asato, Biological Adaptation; Al Petretti, Planning Office; runner-up, John Rakich, Hypersonic Aerodynamics; Flight Three, Dave Sinnot (not pictured), Experiments; runner-up Paul Kutler, Computational Fluid Dynamics; and Flight Four, Bert Nevotti, General Accounting; and Tom Polek (not pictured) Hypersonic Aerodynamics.

## GOLF

... by Kay Bruck

The "inaugural" tournament for 1971, played at the Skywest Golf Course was arranged by those two fun-loving chairmen, Fred Carpenter and Jim Nelan. And guess what? NO RAIN! as is our usual complaint at the beginning of each new golf season. This best-ball twosome resulted in the usual long tirade of excuses why everyone played so badly, but the following managed to walk away with prizes anyway: First Flight-two-way tie for first place went to teams John Hawkins, Bill Fietzer; and Bill Gideon, John Muldern.

A three-way tie for second place went to teams Don Dust, Owen Koontz; Jim Nelan, Ruben Ramos; and Yukio Asato, Paul Barasich. Second Flight-first place went to team Herb Ginoza, Ken Souza; second place to team Russ Cravens, Edie Watson; third place to team Vance Oyama, Ed Tischler; and fourth place to team Fred Wirth, Bill Page.

Low gross score went to Ruben Ramos and low net was taken by Don Dust.

chartered bus trip to San Simeon-Hearst Castle on April 17 and 18. The total price is \$26.50 per person and includes transportation, tours of upper and lower levels of the castle and motel accommodations at the Green Tree, with indoor swimming pool. Contact Helen Arhart, ext. 3175 or Barbara Allen at ext. 2381.

## BOWLING

... by Dennis Riddle

At the end of four weeks of the 2nd half, the Rikkety Wrecks are chasing the Comets for first place in Division I. In Division II, the Eight Balls and the Crazy Eights trail the Alley Katz by two wins.

Arlene Robinson bowled a nice 219/516 and Jeanette Remington had a 210 game. Good show, girls.

Some of the higher men's scores were: Frank Lazzeroni 243/591, Norm Barsi 220/586, Joe Marvin 213/579, and Norm McFadden 224.

We need volunteers for a banquet committee and for a trophy committee. Please call Dennis at 2196 if interested. Plans are underway, in conjunction with the Thursday night league, for entries to represent Ames in the local tournaments this spring. Six men and six women will be chosen for singles, doubles, and team events.

## Camera Missing

MISSING from the Safety Office, Nikkormat 35 mm, single-lens reflex camera and carrying case with picture 24x 36 mm/50, mm F 2.0 lens. The decal number is 34472. If found, please contact the Safety Office, extension 2988, N-241-8.

## SOFTBALL

Anyone interested in playing on the Ames Fastpitch Softball Team please contact Bruce Ganzler, ext. 2747.

## WANT ADS

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N-241-4, by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

### AUTOMOBILES

For Sale - 1968 GMC 1/2 ton pick-up, 4 speed transmission, short wide bed, 283 rebuilt engine-\$1400. Call 297-1983 or 338-6662.

For Sale - 1964 Pontiac Catalina Stationwagon, 4-door, R&H, carrier. \$650. F. Grevas, 846-3708.

For Sale - 1966 Ford Conv., \$500, good condition will trade for economy car. Call Ray Ellis, 253-4309.

For Sale-1949 Nash Ambassador, one owner, low mileage, excellent condition. \$550/offer, 948-4678.

For Sale-1960 Conv., new top, new radials, rebuilt engine, 1963 trans. \$575. 1968 BOG, Radials, electronic ignition, good condition, \$1150, call 948-4678.

### HOUSING

For Rent-Sunnyvale, 2-bdrm, 1-bath apartment. A/EK carpets, drapes, swimming pool. Paneling in living room and kitchen. No lease required. \$175/month. Call 245-2796 after 5 p.m.

For Rent-2-year old house, 4-bedrooms, 2-baths, family room, A/EK for \$350/month. No pets. Azalea Drive, Sunnyvale. Call 732-1300.

For Sale-House in Santa Clara, by owner. 4-bdrm, 12 years old, 2-bath. Two-car garage, fully insulated. Enclosed patio, could be used as family room, fenced. Call 739-2685, after 5 p.m.

For Rent-Winterized cottage near Rte. 89 and N. Tahoe ski areas. Sleeps 6 - \$90/wk or \$40/wknd, 328-4642.

### MISCELLANEOUS

For Sale-Siamese kittens, registered, pedigreed blood lines. Chocolate point, male only \$20, call 253-4475.

For Sale-Two studded snow tires for VW, \$15. 493-1638.

For Sale-4-new tires and battery, with 1957 Buick, P.S., P.B., AT., stationwagon, 4-dr. HT., 71,000 miles - \$250. 35mm. slide projector, 300 watts, case, like new, \$25, call J. Lioursi at 335-4878.

For Sale-Living room and bedroom furniture. Most is of very good quality and all in very good condition. Also house hold items. Call 961-2752 after 6 p.m.

For Sale-New home bar . . . three stools/shelf w/mirror, 41 pc. glass set and all acc. \$300, call Clay Hart, 262-5891 after 5 p.m.

For Sale-Boys leather fringed jacket, size 12, like new \$20. Ladies black leather boots, size 6, worn once \$15, call F. Thompson at 379-2385.

For Sale-Coins, Indian Head pennies, and Lincoln Head pennies at low prices, call Dave Mendenhall 257-2738.

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