

The Astrogram

VOLUME XXI NUMBER 6

January 11, 1979

GE to build Landsat

The General Electric Company's Space Division, Philadelphia, has signed a \$77 million contract with NASA to build Landsat-D, the most advanced Earth resources monitoring satellite system to date.

The incentive contract cost includes a \$5 million fee with additional earnings of up to \$4.3 million depending upon how well the system performs once the satellite is in orbit.

Scheduled for launch in the fall of 1981, Landsat-D is the fourth in a series of experimental satellites designed to explore the Earth from more than 640 kilometers (400 miles).

In addition to the multi-spectral scanner (MSS) carried by the first three Landsats, Landsat-D will carry a sensor known as the thematic mapper (TM) which will provide a spatial resolution approximately three times as detailed as its predecessor multi-spectral scanners (MSS).

The new sensor will be able to discriminate area features as small as 0.2 acres IFOV as compared to the 1.2 acre IFOV resolution of present systems. IFOV is a technical designation for instantaneous field of view. Improved spatial resolution, along with the narrower, task-oriented spectral bands, will enable the users to extract much more detailed and timely information.

The contract also calls for a backup spacecraft; a data management system; an operations control center to be located at the NASA Goddard Space Flight Center (GSFC), Greenbelt, Md.; a transportable ground station; and a Landsat assessment system to quantify and demonstrate the advantages of the thematic mapper over the MSS.

Landsat data is primarily used for the monitoring and management of food and fiber resources, water resources, mineral and petroleum explorations and land cover and land use mapping.

Christmas Party recap

The annual Ames Children's Christmas Party held on December 16th in the hangar was a huge success. Over 1,200 children received free gifts, balloons and great entertainment. Mr. and Mrs. Santa Claus (Bob Gaines and Barbara Fuller) did their part great as well as the clowns (Judy Long, Joaquin Barrios, Doug Doane and Guy Ferry). Ed Kelley and his helpers again did a fantastic job with his family of marionettes. The troupe of Mary Lou dancers put on two marvelous shows. A large crowd of people watched them. It was interesting to watch the real young dancers doing their thing so well while they were watching their instructor so closely for further instructions.

Then there was the new booth this year, the Face Makeup Booth, which turned out to be a real pleaser to the children. Bonnie Dalton originated the idea of having the booth. She and her helpers did beautiful paint jobs on the faces. The Ames carolers again gave the party that extra Christmas spirit with their

(Continued on Page 3)

Portable fire fighting unit developed by NASA

Space technology has resulted in development of a lightweight, portable and highly efficient fire-fighting unit for use by the U.S. Coast Guard and other shipboard or harbor firefighters.

The Coast Guard called on NASA for help because engineers at Marshall Space Flight Center have developed a high degree of technology in designing efficient, lightweight pumps for rocket engines.

What NASA has developed and turned over to the Coast Guard is a unit 1.2 meters (4 ft) wide, 1.5 m (5 ft) high and 1.8 m (6 ft) long, weighing 1,134 kg (2,500 lb). This weight includes fuel for three hours of operation and all other equipment, stored internally. The unit can draw water from the sea or other source through a lift hose up to 6 m (20 ft) long and pump at least 4,732 liters (1,250 gallons) per minute — about one half the capacity of an average fireboat — through each of the unit's two water cannons, called monitors. Each monitor is made of lightweight fiberglass, weighing only 18 kg (40 lb) — half as much as a standard monitor.

Some commercial applications include the module's use on light trucks by local fire depart-

ments, use on docks and ships for harbor fires, for forest fires, offshore oil rigs and high-rise apartment buildings. It can also be used as an emergency booster pump for municipal water supplies, in flood control and in military operations.

The small size and weight of the unit will permit it to be transported by helicopter sling, pickup truck or dolly. It can also be carried on boat decks.

The module can be set up rapidly by two persons without special tools and deliver a full output flow within 10 minutes.

One lever controls all functions, including engine start, pump prime, normal flow, maximum flow and shutoff. The self-priming pump delivers full output flow within one minute of starting. No external power source for priming is needed.

A two-wheel trailer is also available to give the module road mobility. On this trailer it can be moved at road speeds by an automobile or light truck.

The project was directed by Marshall's Technology Utilization Office as an engineering applications program. The unit was manufactured for NASA by the Northern Research and Engineering Corp., Cambridge, Mass.

Aerospace officials from China visit Ames

A78-1088-15



On December 6, 1978, a delegation of aerospace officials of the Peoples Republic of China visited Ames. Front row (L to R) are: Mr. Chen Chieh, Secretary-General, China Space Flight Society and Deputy General Manager of the Great Wall Industrial Corporation; Mr. Ma Chieh, Deputy Council Director China Space Flight Society; Dr. Jen Hsin-Min, Director of the China Space Technology Research Institute and leader of the delegation; Mr. C. A. Syvertson, Director of NASA Ames Research Center.

Civil Service Reform Act

The Civil Service Reform Act, signed by President Carter on October 13, 1978, constitutes the first major revision of the Federal Civil Service System since the passage of the Pendleton Act in 1883. During these 95 years, personnel regulations and mandatory procedures have steadily increased. Since 1937, numerous studies have been conducted and task forces have been formed to determine the causes of the growing problems of the federal civil service system. President Carter developed his proposed civil service reform measures from the recommendations of the most recent task force.

How and when the Civil Service Reform Act will be fully implemented is unclear; we anticipate it will take some time. NASA has formed a steering committee to begin implementation procedures within the Agency. As soon as we receive more detailed information, we will arrange for briefings within ARC organizations. Subsequent articles in the Newsletter will discuss additional provisions of the Reform Act.

Some of the Reform Act provisions which may be of the most interest to you are:

Employee Performance

The current government-wide performance appraisal system will be abolished. Agencies will be required to develop their own appraisal systems which must provide for identification of the critical elements of jobs and establish performance standards. Employees will be given periodic performance appraisals and the appraisals results will be used for personnel actions affecting them.

Employees may be demoted or dismissed based on unacceptable performance, i.e., failure to meet established performance standards in one or more critical elements of their job. They will be given at least 30 days written notice, during which they will have an opportunity to improve their performance. Demotions and removals may be appealed to the newly established Merit Systems Protection Board.

Veterans Preference

Veterans preference provisions will remain basically the same.

Merit Pay For Managers

A new pay system, which eliminates automatic within-grade step increases for satisfactory performance, will be established for managers and supervisors at grades GS-13 through GS-15. The new system will clearly relate pay to performance by recognizing and rewarding distinctions in the performance of managers and supervisors with merit pay adjustments in varying amounts. Based on their performance, managers' pay will be set anywhere between the minimum and maximum rate for their grade. Also, they will not necessarily get the same annual comparability raise as other employees, but must be given at least 50% of any such raise.

New Probationary Period For Managers and Supervisors

Another provision affecting managers and supervisors is the establishment of a probationary period upon their first assignment to these positions. New supervisors and managers who do not succeed, or who do not desire to remain in that capacity, can be returned during the probationary period without disciplinary action to a position of no lower pay or grade than their previous position.

The Senior Executive Service

The Reform Act establishes a Senior Executive Service (SES) which will provide greater flexibility for managing the Government's executive workforce. Membership in the SES (e.g., at ARC some GS-16's and all Excepteds) will be voluntary and compensation for members will be based on both

individual and organizational performance. In addition, high levels of performance may be rewarded with one-time cash bonuses and/or with granting honorary rank with accompanying stipends.

Federal Labor-Management Relations

The federal Labor-Management Relations Program, previously instituted through Executive Order, will now be cast into law. Collective bargaining will remain essentially the same under the new law as it was previously under Executive Order 11491. However, it will permit the establishment, through collective bargaining, of grievance and arbitration procedures which could be used in place of most statutory appeal procedures available to Federal employees in exclusive bargaining units.

Christmas Carolers

The Ames Christmas Carolers visited a number of buildings on December 14, to provide their traditional Christmas musical serenade of old and new songs for the holiday season. Because of the Pioneer-Venus press activities being shown on TV monitors in the Ames Cafeteria, a noon-time concert could not be provided this year. The Carolers also sang at the Children's Christmas Party on Saturday, December 16.

Vocalists and instrumentalists this year included: Keith Brendley (Simulation Systems Branch); Barbara Busch (Educational Programs Office - organist); Mary Ellen Casady (Electronic Instrument Development Branch - bell ringer); Wayne Clark (Electronic Instrument Development Branch); Frank Cota (Model and Instrument Machining Branch); Diane Cusano (Missions Operations Systems Branch); Bob Eglinton (Electro-System Engineering Branch - horn player); Jim Forsythe (Northrop contractor); Edward Gan (Model and Instrument Machining Branch); Fred Hansen (Thermo- and Gas-Dynamics Division); Jerry Hirata (Electro-System Engineering Branch); Carol Kuschill (Computer Information Systems contractor); Mary Lingel (Aircraft Guidance and Navigation Branch); Judy Markert (40 X 80-Foot Wind Tunnel Project Office); Jerry Mitvalsky (Therm-Physics Facilities Branch); Jack Osorno (Planning Office of Technical Services Division); Richard Pea (Electro-System Engineering Branch); Susan Schram (Research Facilities Engineering Branch); Sara Shelly (Electro-System Engineering Branch); Stan Steck (Aircraft Guidance and Navigation Branch); Anne Thornton (Electro-System Engineering Branch); Floyd Weins (Northrop contractor).

The carolers were again joined by Freddie Silva (Moffett Naval Air Station - saxophone player) and Margaret Wimsett (also now employed at the Moffett Naval Air Station). Special thanks go to Frank Cota and Richard Pea for organizing the caroling activity.

PEI counseling available

Counseling toward registration as a Professional Engineer will be available from the Professional Engineering Institute at the 1979 Advanced Semiconductor Equipment Exposition to be held at the San Jose Convention Center on January 16, 17, and 18. Attendees at the PEI booth may discuss the desirability of registration, their eligibility, and examination preparation methods. PEI is a non-profit organization dedicated to engineering education. A free counseling questionnaire and complimentary tickets to the exposition are also available by writing: Professional Engineering Institute, Post Office Box 911, San Carlos, CA 94070.

m m m m... Good

If all goes as expected with the research now in advanced stages, the crew aboard the Space Shuttle orbiter will not suffer from malnutrition; nor will mealtimes be monotonous - instead, they should be pleasurable interruptions of the daily chores.

The dining table aboard the Space Shuttle orbiter may not be set with silver, candles and snowy linens, but it will offer tasty and nutritious meals served in an attractive manner. Menus will be well balanced (3,000 calories a day), with piping hot entrees, reasonably cold fruit beverages or dessert, and plenty of condiments.

Crew members who like to put catsup on everything may do so; those who can't get to sleep without cookies and a drink may choose from a fairly wide selection.

A typical daily menu aboard Shuttle may be: breakfast - orange drink, peaches, scrambled eggs, sausage, sweet roll, cocoa; lunch - cream of mushroom soup, ham and cheese sandwich, stewed tomatoes, banana, cookies and tea; dinner - shrimp cocktail with sauce, beefsteak, broccoli au gratin, strawberries, pudding, cookie and cocoa. Many of the foods - breakfast bars, for instance - come right off supermarket shelves.

All meals will be prepared with variety in mind, so that a space traveler may have a different menu for six successive days. On the seventh day the cycle begins again. Dining can be at a table in the galley from a food tray, or the tray held in the lap or affixed to the wall. (Zero gravity requires special fastenings on trays.) Ordinary eating utensils will be used.

Types of foods planned for the Space Shuttle include:

Thermostabilized - thermal/heat processed foods canned or packaged in laminated foil pouches such as cheese spread, tuna, beef with barbecue sauce.

Intermediate moisture - foods preserved by controlling the available moisture, such as dried apricots, peaches, breakfast bars.

Rehydratable - dehydrated foods reconstituted with water, such as scrambled eggs (do not taste like C-rations), beef patty, chicken and noodles; all beverages.

Irradiated - foods exposed to ionizing radiation to effect preservation, such as bread, rolls and beef steak.

Freeze-dried - foods with all water removed (to be rehydrated or eaten as is with saliva acting as the moistening agent), such as strawberries, shrimp, bananas.

Natural form - foods such as nuts and cookies.

All this is a far cry from the space meals of an earlier era when Mercury and Gemini astronauts had to squeeze various kinds of food into their mouths in a style that might be called *entree a la toothpaste tube*; or when crumbs floating around in a zero-gravity cabin had to be recaptured before they got into the instruments.

Understanding the amounts of food a person needs during a space flight, then providing the required rations in such a way that he or she actually consumes them in a systematic way are vital, not only for the maintenance of individual good health and high energy levels but for the efficient conduct of the mission itself. But even when all practicalities are met, there remains the gastronomic factor - if meals are unattractive aesthetically, stale, too bland or served too often, the physical and mental well-being of the consumer can be affected adversely.

Space Shuttle seminar

Christopher Perner, Chief of the Shuttle Crew Compartment Division at the Johnson Space Center will speak to all interested Ames employees on the crew compartment of the space shuttle. The seminar will take place on Wednesday, January 17 at 9 a.m. in Bldg. 229, Room 215.

NASA SPECIAL PUBLICATIONS

National
Aeronautics and
Space
Administration

The following NASA Special Publications are now on display in the Ames Main Library and the ARA Store. Following your review of these new releases, if you would like a retention copy for your files, return a completed NASA Special Publication Request Form, ARC 303, for each publication you desire to the Main Library, M/S 202-3, and a copy will be mailed to you. Please allow 2 weeks for processing and distribution of your request. Because the number of copies of NASA Special Publications available to the Center is limited, requests will be processed as they are received until the supply is exhausted and distribution will be limited to Ames Research Center Civil Service employees.

NASA SP-7601 OGO PROGRAM SUMMARY – Supplement 1

By John E. Jackson, NASA Goddard Space Flight Center

The original program summary of the Orbiting Geophysics Observatories (OGO) program, which comprised summary data for OGO missions 1 through 4, is completed with the publication of this supplement in which similar program data for the final two OGO missions, OGO 5 and OGO 6, are presented. The idea of the program summary, a joint effort by the NASA Scientific and Technical Information Facility and the National Space Sciences Data Center, is to make available a concise compilation of program data that (1) describe program objectives, spacecraft, experiments, and flight performance; (2) provide a complete experiment-related bibliography; and (3) present a comprehensive assessment of technological and scientific accomplishments. In addition, abstracts and author, subject, corporate-source indexes are provided. Overviews of OGO 5 and OGO 6, missions concerned with magnetic and electric field phenomena, complete a similar overview section in the original publication. The supplement does not repeat spacecraft and experiment descriptions or bibliographic code information.

NASA SP-424 THE VOYAGE OF MARINER 10

By James A. Dunne and Eric Burgess, Jet Propulsion Laboratory,
California Institute of Technology

The historic flight of Mariner 10 – from mission concept to launch in November 1973, to Venus encounter in February 1974, to the third and final flyby of Mercury in March of 1975 – is described. Mariner 10 achieved a series of "firsts": the first photographs of Venus; the first multiple-planet mission, borrowing gravity from Venus for an otherwise impossible flight to Mercury; the first practical use of solar sailing; the first exploration of Mercury; and a precision of space navigation never before attempted. On its 500-day, billion-kilometer voyage, Mariner 10 visited Venus once and Mercury three times. This hardbound, oversize-format account of the Mariner 10 mission encompasses discussions of Venus and Mercury; the Mariner 10 mission, spacecraft, payloads, and schedules; and interesting insights into some of the near failures and the overall remarkable success of the project. An extensive selection of images obtained at Venus and Mercury is included. (A detailed atlas of Mercury images is presented in SP-423.)

NASA SP 423 ATLAS OF MERCURY

By Merton E. Davies, Donald E. Gault, Stephen E. Dwornik, and Robert G. Strom

High-resolution photographs of a large portion of the surface of Mercury are contained in this systematic presentation of pictures taken by cameras aboard Mariner 10 during its three encounters with the planet in 1974 and 1975. Mariner 10, launched in November 1973, received a gravity assist from Venus and entered an orbit around Mercury that provided two subsequent flybys. The spacecraft took pictures of parts of the planet's surface that correspond to 9 of the 15 geographical regions into which Mercury is divided. Correspondingly, the atlas is divided into nine sections, each representing one of the cartographic regions. A shaded relief map and a computer-generated mosaic of each region are provided for reference purposes. Stereo-pairs are included in the collection of surface photographs. Introductory text provides background information about Mercury, describes the mission and the spacecraft, and discusses topographic features and surface mapping. Hardbound, oversize format.

NASA SP-430 PHYSIOLOGICAL RESPONSES OF WOMEN TO SIMULATED WEIGHTLESSNESS

By Harold Sandler and David L. Winter, NASA Ames Research Center

Procedures, methods, and results of the first study – conducted in 1973 by the Biomedical Division of Ames Research Center – of the physiological and psychological responses of women to simulated space flight conditions, particularly in terms of centrifuge tolerance and responses to lower body negative pressures, are presented. Twelve volunteers, Air Force nurses and reservists, participated in this 37-day test that comprised a 14-day control period, 17 days of absolute bed rest, and 6 days of recovery. Four of the subjects served as ambulatory controls. Other findings – related to fluid electrolytes and hematology; physical working capacity; biochemistry; blood fibrinolytic activity; hormonal and metabolic responses; and biorhythms – are also included. Data for individual subjects are presented in extensive tables and charts.

NASA SP-425 THE MARTIAN LANDSCAPE

By The Viking Lander Imaging Team

A pictorial history of the Viking Mission – from concept to the successful landings of Viking 1 and Viking 2 on Mars – is presented in this hardbound, oversized volume. More than 200 fully-captioned photographs of the Martian surface, many in color, are supplemented by a first-hand account of the mission, 10 years in planning and development, that put the two Viking spacecraft on Mars in 1976. The text chronicles mission objectives, problems, and achievements, with special emphasis on camera characteristics, design, and manufacturing. Essential camera data are listed for each photograph. Nineteen photographic stereopairs, for which a special viewer is provided (enclosed in an envelope attached to the back cover), are included.

Christmas Party

(Continued from Page 1)

Christmas songs. Bobbi Pittman playing her guitar did a nice job leading a sing-along and getting the children involved. Some of the little ones had the time of their life when they got on the stage with Patti and sang a song. The moonwalk seemed to be a favorite place. The "kids" got a chance to work off some of their rambunctiousness. The balloon booth and gift houses were up to their usual standards. The people blowing up the helium balloons did a whale of a job keeping ahead with filled balloons. There were a few sore fingers at the end of the day from tying, tying, tying, tying balloons.

Many volunteers offered to help at the party this year which is really fantastic. Clara Johnson, volunteer coordinator, said we had more people volunteering this year than we have had in a long time. It makes it a lot more fun (and easier) when so many people are around helping. Both young people and old were there doing their part in making the party a real fun occasion for the children and also for the adults.

The chairpersons for the various party activities did a great job and a big thanks go to them for their efforts so well done.

Stan Benbow, ARA Board member,
Party Coordinator

Judy Long, ARA Board President,
Associate Party Coordinator

Clara Johnson, Volunteer Coordinator

Betty Hemphill, Ticket Sales

Ray Sargis, Balloon Booth

Joanne MacArthur, Refreshments

Bonnie Dalton, Face Make-up Booth

Irv Israel and Nancy Lopez, Ticket Table

Ed Kelley, Marionettes

Fred Baker and Bobbi Pitman, ARA Board
members, Entertainment

Sal Tardio, Set-up

Armando Lopez, ARA Member, Advisor

Dick Kurkowski, Moonwalk

A special thanks to Sal Tardio for all the work he did in setting up all of the props and equipment and getting everything back and forth from the storage area at Parks. Each year this is such an important and hard job, so much time and effort is needed to do the job right and get it done on time. Sal was this year and has been for many years the responsible, dedicated hard worker who gets the job done. Even under hectic circumstances this year he was able to make everything go together in that usual great fashion.

Another group who earns a lot of thanks is the contingent of people from the Aircraft Services Branch who each year have to move aircraft in and out of the hangar and move others around within the hangar to make room for the party. On Saturday they have people working all day watching the aircraft, helping out at the party anytime they are needed, and helping clean up after the party.

We would like to mention everyone's name who helped out but that would not be possible in the space we have. We do thank each and everyone of you for your help. Hope to see you all again next year.

The lucky winners of the prizes were:

- Polaroid Polavision Land Camera – Del Duke
- Propane barbeque grill – Rita Waterfall
- Schwinn Varsity 10-speed bicycle –
Dave Wimsett
- Digital Watches – Bill Snyder
- AM/FM clock radio – Dean Dolkas

Calif Casualty notice

A California Casualty representative will be in room 147, bldg. 241 on Jan. 18 and Feb. 1st from 10 a.m. to 12 noon.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
79-40	Secretary (Typing)	GS 4/5	FVR	Centerwide and Outside	01/26/79
79-41	Modelmaker Foreman (Metal)	WS-14	RSS	Centerwide and Ames-Army	01/26/79 02/02/79
79-42	Supervisory Personnel Management Specialist	GS-13/14	AP	Division-wide	01/31/79
79-43	Aerospace Engineer	GS-7/9/11	FSA	Centerwide and Outside	02/02/79
--	Clerk-Typist (Part-time) 20 hrs/wk	GS-3/4	RSP	For additional information call Cindy Simmons 5603	

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-167	Res. Inst. Maker	RSM	Gary Parola Mark Rossi Jim Scott
79-12	Personnel Clerk (Typing)	APM	Mary Mendoza (Outside applicant)
79-23	Supervisory Contract Specialist	ASP	Doris Grimes
79-27	Supervisory Operating Accountant	AFG	Pablo Pichardo
79-20	Secretary (Typing)	DP	Susan Schram

Want ads Transportation

'73 Honda 500 Four, w/Windjammer II Fairing. 16K, excellent condition. Asking \$950. Call 323-0161 after 6 p.m.

CAR for Sale: 1968 Ford Custom 500, automatic, power steering, 4-dr., new tires. \$300 or best offer. Call Ext. 6304.

1967 Chevrolet: \$395. Good motor, good tires, good brakes. Call 965-5152, Sunnyvale.

FOR SALE: '69 Dodge Dart. 6 cyl. 225 cu. in. Phone (408) 257-7358 or Ext. 5438.

1972 Ford Custom, 31,000 actual. A/C, stereo, camper shell, 3 gas tanks. \$3850. Call 967-9395.

Country Squire Station Wagon, 1966. Excellent mechanically; body good; 90,000 miles. \$600. Call 494-1338.

Immaculate 1967½ Jaguar XK-E. This extraordinarily well maintained red coupe is the fastest E-type ever produced. It is offered by an owner possessing meticulous concern for his vehicles. Pristine black leather interior and AM/FM 8-track stereo lend elegance to power. \$8346. Call Ext. 5021.

FOR SALE: Jeep, '76 CJ7, 4 spd., hardtop, low miles, carpet, off-road lights, more extras, \$5500. Call 793-1538.

Housing

SQUAW VALLEY RENTAL - Skiing with no traffic headaches. Fully furnished Condo. Sleeps 5. Adjacent to lifts. Call Ray Savin, 964-2170.

FOR SALE: Ditz Crane Tri-level, 5 yrs. old, 4 bdr/2½ ba, large family room, cabana, near elementary school. Almaden Valley. 268-2015.

SQUAW VALLEY CONDO - Completely furnished, 2½ br/2 ba, private entrance, carport, fireplace, mudroom, w/w carpet, walk to tram. 968-4155.

Miscellaneous

FOUND - Friday Dec. 22, 1978, next to big doors of 40x80 tunnel - keys on a ring. Call D. Wesley, Ext. 5034.

LOST: John Fluke, Frequency Synthesizer, Model 303A, Ames decal 33806. Last known location N213A. Call Ext. 6135 if located.

STAMP CLUB: The next meeting of the ARC Stamp Club will be on Wednesday January 17th at 11:30 a.m. in Building 241, room 113. Coffee will be available. An evening meeting has been scheduled for February 7th at 7:30 p.m. in the Ames Cafeteria.

FOR SALE: Sherwood S 8900 Stereo Receiver (45 watts RMS/Channel) and 2 Fisher XP7 3-way speaker systems. All in A-1 condition. \$300. Call 227-2480.

Black vinyl sofa and matching chair, wood coffee and end tables, lamp. All for \$200. Call 255-6585.

Sheltie puppy, born 11-6-78. Excellent health, temperament and pedigree; AKC registered. Love of the litter, \$150. Call 996-7009.

For Sale: School desk, large formica writing surface, large storage area, adjustable height, swivel seat, very sturdy and durable, ages 6-15. Excellent condition, \$25. 257-0583.

FOR SALE: Sailboat, Coronado 25. A partnership in this rugged, popular class boat is available. An excellent boat for families with 5 berths, galley and head. This is an inexpensive way to gain sailing experience. \$1,950/offer. Call 738-2948.

19" black/white, GE portable TV: \$35. Tire chains, lug reinforced, new: \$12.50. Campbell brand, fits tire sizes G78-14, H78-14, G78-15, H78-15, 8:55-14, 215R-14, 8.55-15, 215R-15, 6.50-16. Call (408) 356-2693 or 965-6509.

Men's 10-speed bike, Ventura Malibu. Silver frame, 27" wheels. \$100. 244-9732.

For Sale: 10.00 x 16.5 truck tire, never been run: \$35. Axle, wheels, tires, springs, hitch, channel for trailer: \$45. Call 244-7310.

PIANO WANTED: Prefer baby grand but will consider upright with good action and reasonable tone. Cabinet condition not terribly important. Will pay up to \$1500. Call Ext. 5152 or 964-2268.

REFRIGERATOR: 17 cu.ft. yellow Gibson. Only 18 mos. old. Frost-free. \$350. POWER PLANT: 7 h.p. Craftsman engine, 3000 watt alternator with electric start unit and dual-voltage (never used). \$450. Call 737-2810.

RACKETBALL - The Supreme Court Racketball & Fitness Clubs of Palo Alto and San Carlos are offering a 50% discount on initiation fee and first 6 mos. of dues. Full details can be obtained at the right side of the ARA store or by calling Herb Finger, Ext. 6598.

For Sale: Panasonic AM/FM car radio (in-dash type) with adjustable shafts and pushbutton tuning. Ideal for small car. \$50. Call Ext. 5220 or 961-0211 (evenings).

NOTICE: The Presentation for the Bermuda Trip will be presented Jan. 19, 1979 instead of Jan. 12, 1979 at the Ames Cafeteria, starting at 16:00 hrs.

Ride needed to Middlefield and Loma Verde in Palo Alto. Am blind and cannot drive but will pay expenses. Hours flexible. Call Ext. 5720.

FOR SALE: Harris Sr. Statesman Stamp Album, new - slightly used \$12.00, Scott 1977 stamp catalogues Vol. I, II, III and IV, set \$16.00. Contact Ext. 5465 or 248-1281 after 4:30.

Notice

WANTED - Used furniture for coop students. Call M. Moore, ext. 5624.

The Astrogram

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

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Deadline for contributions: Thursday between publication dates

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, California 94035

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NASA-451



NASA/Ames Research Center CALENDAR OF EVENTS

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

<p>JAN 22 - Joint NASA/FAA Digital Avionics Validation Workshop Dates: January 22-26 Location: N-245, Auditorium Reservations: Kay Lemon, Ext. 5051 8:00 a.m. Registration 8:45 a.m. Introduction to Workshop 9:00 a.m. Sikorsky/Bendix Introduction to Basic Digital Avionics 11:00 a.m. Digital Hardware</p>	<p>JAN 23 - S.F. Bay Area Chapter/AHS Lichten Award Candidate Technical Presentation Time: 3:15 p.m. Location: N-247, 2nd floor, 40x80 Conference Room Refreshments provided Joint NASA/FAA Workshop continued Location: N-245, Auditorium 8:00 a.m. Lockheed/Collins Software of a Digital System 1:00 p.m. Douglas - Configuration of a Digital System 4:00 p.m. Sikorsky/Bendix - Human Factors Discussion</p>	<p>JAN 24 - Joint NASA/FAA Digital Avionics Validation Workshop continued Location: N-245, Auditorium 8:00 a.m. Sikorsky/Bendix - Selection of a Systems Configuration 9:30 a.m. The Validation Process 3:00 p.m. The Post-Validation Phase 4:00 p.m. CTOL/VTOL Discussion</p>	<p>JAN 25 - Joint NASA/FAA Digital Avionics Validation Workshop continued Location: N-245, Auditorium 8:00 a.m. Lockheed/Collins - Selection of a Systems Configuration 9:30 a.m. The Validation Process 3:00 p.m. The Post-Validation Phase 4:00 p.m. Government only session</p>	<p>JAN 26 - Joint NASA/FAA Digital Avionics Validation Workshop continued 8:00 a.m. Douglas - Selection of a Systems Configuration 9:30 a.m. The Validation Process 3:00 p.m. The Post-Validation Phase</p>
<p>JAN 29 -</p>	<p>JAN 30 -</p>	<p>JAN 31 -</p>	<p>FEB 1 - San Francisco Bay Area Chapter - American Helicopter Society February Dinner Meeting Speaker: Tom Stuelpnagel, Hughes Helicopters Topic: Future R&D and Market Trends for Light Helicopters For details contact John Bull, Ext. 5425</p>	<p>FEB 2 -</p>
<p>FEB 5 -</p>	<p>FEB 6 - Unified Equations for Rotorcraft Systems Modeling Workshop Time: 8:15 a.m. to 4:30 p.m. Location: N-201, Main Auditorium For further information contact: A. Kerr, Ext. 5578, or, W. Stephens, Ext. 6568</p>	<p>FEB 7 - Unified Equations for Rotorcraft Systems Modeling Workshop continued Time: 8:30 a.m. to 4:30 p.m. Location: N-201, Auditorium ARA Stamp Club meeting Time: 7:30 p.m. Location: N-235, Cafeteria</p>	<p>FEB 8 - Unified Equations for Rotorcraft Systems Modeling Workshop continued Time: 8:30 a.m. to 4:30 p.m. Location: N-201, Auditorium</p>	<p>FEB 9 - The next calendar will cover the period Feb. 5 through Feb. 23. The deadline is January 16. If you wish to have an event announced on this calendar please notify Linda Mackey, Visits Coordinator, Ext. 5546, M/S 253-1.</p>

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

January 16, 1979 thru January 22, 1979

A LA CARTE MENU

January 23, 1979 thru January 29, 1979

A LA CARTE MENU

TUESDAY Veal Cordon Bleu.....
Baked Stuffed Knackwurt with Cheese.....
Choice of One: Mashed Potatoes, Rice Pilaf,
Green Peas, Carrot Vichy or Salad
Soup - Chile Macaroni.....

TUESDAY Veal Steak Florentine.....
Ham Fried Rice.....
Choice of One: Whipped Potatoes, Mashed Yams
Green Beans, Corn or Salad
Soup - Tomato, Onion & Macaroni.....

WEDNESDAY Boiled Beef over Noodles.....
Pork Fried Rice.....
Choice of One: Whipped, Ideal Potatoes,
Baby Limas, Buttered Broccoli or Salad
Soup - Ames Bean Special.....

WEDNESDAY Turkey Cornettes & Sauce.....
Boston Baked Beans & Polish Sausage.....
Choice of One: Snowflaked or Ideal Potatoes,
Zucchini & Tomatoes, Beets or Salad
Soup - Corn Chowder

THURSDAY Liver Smothered with Onions.....
Baked Tamale & Chile Beans.....
Choice of One: Snowflaked, Au Gratin Potatoes
Brussel Sprouts, Beets, or Salad
Soup - Cream of Spinach

THURSDAY BBQ Pork over Rice.....
Curried Seafood on Biscuits.....
Choice of One: Mashed, Au Gratin Potatoes,
Buttered Spinach, Hominy or Salad
Soup - Cream of Chicken.....

FRIDAY Braised Sirloin Tips over Noodles.....
Seafood Crepes.....
Choice of One: Mashed, Parslied Potatoes,
Buttered Spinach, Corn or Salad
Soup - Clam Chowder.....

FRIDAY Teriyaki Steak over Rice.....
Tuna Noodle Casserole.....
Choice of One: Whipped, O'Brien Potatoes,
French Peas, Cauliflower or Salad

MONDAY Roast Pork with Dressing, Glazed Apple.....
Turkey Pot Pie Biscuit Topping.....
Choice of One: Snowflaked, Candied Yams,
Baby Limas, Green Peas or Salad
Soup - Navy Bean.....

MONDAY Potted Swiss Steak over Rice.....
Ground Beef Macaroni Casserole.....
Choice of One: Savory Green Beans, Harvard Beets,
or Salad
Soup - Cream of Potato.....

DAILY SPECIALS INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD
ROLL & BUTTER, AND A 25¢ BEVERAGE.....

(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, California 94035

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The Astrogram

VOLUME XXI NUMBER 8

February 8, 1979

R. T. Jones honored by AIAA

Dr. Robert T. Jones, Senior Scientist here at Ames, has been elected by the Fellows of the American Institute of Aeronautics and Astronautics to the eminent status of Honorary Fellow. He will be honored at the Institute's Fellows Dinner in Washington, D.C. on February 7, 1979.

Co-honorees this year are Simon Ramo, former vice-chairman of the board of TRW, Inc., and Alexander H. Flax, president of the Institute for Defense Analyses.

Other Ames scientists previously named as Honorary Fellows included former Center Directors Smith J. DeFrance and Dr. H. Julian Allen.

Dr. Jones' citation notes his "many contributions, both theoretical and practical, to the design of high-speed aircraft." Among his many accomplishments is the development in 1945 of the swept wing, now common on most commercial and military high-speed aircraft.

Dr. Jones began his career in 1921 when he joined the Nicholas-Beasley Airplane Company and participated in the design and development of a three-passenger aircraft. A small 200-mph racing plane of his design competed in the 1930 National Air Races. He subsequently pursued studies of mathematics and fluid mechanics under Dr. Max M. Munk, taking graduate evening courses at the Catholic University of America. In 1934 he joined the National Advisory Committee for Aeronautics. Three years later he became head of the Stability Analysis Section at NACA's Langley Field Laboratory.

Another of his well-known contributions is the theory of slender airfoils which is applicable at both subsonic and supersonic speeds. He has published some 64 papers and one book; taught supersonic aerodynamics at Stanford University (1946-55); and has been an invited lecturer on more than 30 occasions. A Fellow of the American Institute of Aeronautics and Astronautics, he also is a member of the American Physical Society and has served on the NASA subcommittees on fluid mechanics and astronomy. In 1973 he was elected to the American Academy of Arts and Sciences and to the National Academy of Engineering.

Art exhibit at the Main Library

Spacecraft leaving Ames Library daily, February 9-23! Etchings by Judith Wasserman showing Constellations seen from the Portholes on her voyage to Antares! See the Serpent of Spica, the Horned Cats of Hadar, Meteor Man, and a dozen other Fabulous Creatures of Interstellar Space! Spacecraft simulation by HP 9830 computer, pilot-programmer, Robert Burt.

L. Roberts elected AIAA Fellow

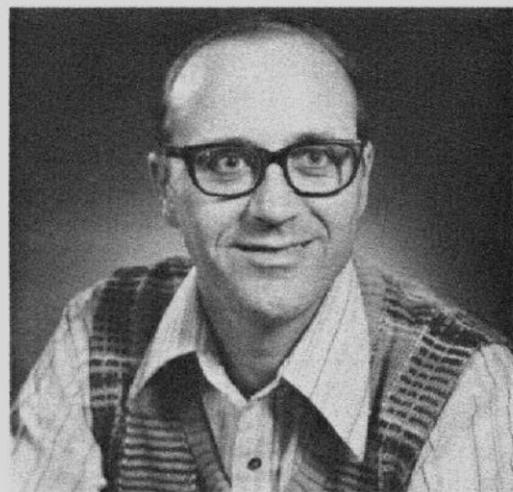
Dr. Leonard Roberts, Director of Aeronautics and Flight Systems, has been elected a Fellow of the American Institute of Aeronautics and Astronautics during its 15th Annual Meeting in Washington, D.C. this week.

The rank of "Fellow" is a mark of recognition given to Dr. Roberts for "the wide range and high quality of his contributions in guiding aeronautical research for the advancement of civil and military aircraft in aerodynamics, guidance, stability and control, simulator technology, and for contributions to national policy through his leadership of the "Outlook for Aeronautics" study."

Ames scientists and engineers presently holding the rank include Dr. D. R. Chapman, Dr. R. T. Jones (recently elevated to the rank of Honorary Fellow), Harvard Lomax, and C. A. Syvertson. Russell G. Robinson, now retired from Ames, is also a Fellow. Former Ames employees who have been named Fellows are Dr. Hans Mark, Dr. A. J. Eggers, Dr. Harry J. Goett, Dr. J. R. Spreiter, Dr. W. G. Vincenti, W. E. Gasich, and J. N. Nielsen.

After receiving a Ph.D. from the University of Manchester in 1955, Dr. Roberts joined NASA's Langley Research Center in 1957 as a researcher in aerodynamics and atmospheric entry and came to Ames Research Center in 1966.

Heinz Erzberger receives IEEE Award



Dr. Heinz Erzberger, of Ames' Aircraft Guidance and Navigation Branch, has been named recipient of the award for Outstanding Achievement in Control Engineering for 1979.

The award is sponsored by the Bay Area Chapter of the Control Systems Society of the IEEE. The citation will read, "For the development of optimal trajectories for commercial jet aircraft which minimize direct operating costs of fuel and time." The award to Dr. Erzberger is specifically based on his application of advanced optimal control theory to development of an analytical technique and user program for aircraft trajectory optimization.

H. Julian Allen Award competition announced

Ames Director C. A. Syvertson has announced that it is time to nominate papers for the 1979 H. Julian Allen Award to be given early in March, 1979. Each division chief is asked to submit a maximum of one paper in a given field of research. Each paper must be accompanied by a nominating memorandum which explains the impact of the paper in its field of research, cites supporting background material, and addresses the criteria to be used by the judges. Based on our experience in previous years, this task should be given careful attention by the best qualified persons. Nominations should be submitted to the Chairman of the Selection Committee, George A. Rathert, Jr., by February 15, 1979. Please enclose twelve copies of the paper.

The competition is for the best paper written by an Ames researcher. The senior author must be from Ames and the competition is open to National Research Council Postdoctoral Associates, members of the staffs of Army Research and Technology Laboratories, the FAA Flight Simulation Office, and other resident Government researchers. It is also asked that the major part of the work has been done at Ames and that the significance or major impact of the paper has been realized within the last 2 years. A winning paper authored or co-authored by a non-federal employee will be forwarded with the favorable endorsement of the NASA-Ames Director to the NASA Inventions and Contributions Board in Washington, D.C. The Board, in its discretion and under its statutory mandate, will evaluate the paper and make whatever recommendations it considers as suitable to the Administrator of NASA as to the terms of any award deemed appropriate for the non-federal author or co-author. Do not resubmit papers which have already been considered twice unless there are exceptional circumstances concerning the paper's impact. The Selection Committee reserves the right to ask division chiefs for a list of all the papers considered.

Papers will again be judged by the following criteria:

1. Importance of problem
2. Degree of contribution to the solution of the problem
3. Element of creative innovation
4. Impact on general field of research
5. Degree of contribution by the individual(s)

An honorarium of \$1,000 will be shared by the authors.

COM – The latest in Ames computer services

The phenomenal growth of computer services spawned by modern technology provides a continuing challenge to the Computation Center at Ames. A recent innovation designed to provide the latest in service and technology is an in-house COM system. COM is an acronym for Computer Output on Microfilm.

COM is one of the most efficient techniques for transmission and storage of computer output. Instead of being printed on computer paper, listings and computer-generated plots are written onto photographic film. When developed and cut into microfiche or strips, this film provides a permanent storage media which can be compactly stored and quickly retrieved.

The process uses a CRT to display the data and is faster and more economical than computer output to paper. Each microfiche can store up to 270 computer pages on one 4- by 6-in. card. Thus, an entire box of computer paper can be stored on 10 microfiche, a packet small enough to easily slip into your shirt pocket.

The Ames Computation Division is now leasing a Beta COM 700H, made by the 3-M Company. It produces black and white film in a number of programmable formats from magnetic tape data input. The system is located in the Central Facility adjacent to the large central computers which produce the COM input data.

The output from the COM unit is organized in pages or frames as it would be for printer or plotter output on paper. The frames are stored consecutively on one of several types of photographic film. This film is developed on a new automatic processor by our Ames Phototechnology Branch laboratory. The film is then cut into strips or microfiche or slides, depending on the use to be made of the film. Retrieval of the information is by inexpensive microfiche readers, reader-printer devices which make hardcopy, high-speed hardcopy units such as Xerox pages or Copyflo, slide projectors, or movie projectors.



Bill Crawford explains to Sam Thomas where the eye-readable headers will be on the microfiche with transmittal data from the 40x80 ft wind tunnel.

TYPICAL OUTPUT

Typical computer output are program listings, tabular data, and data plots and other graphics. The microfiche format provides a very compact storage medium for program and data listings. The segmented format gives fast random access, and the card-sized shape makes for efficient storage and retrieval. The eye-readable headers allow easy searching and positive identification. Microfiche is also an effective way to store large amounts of graphical information, as long as it consists of only

page-size pieces. Hardcopy can easily be made from the fiche at any later time. The format can be either 24X microfiche at 62 pages per@ fiche or 48X microfiche at 270 pages per fiche. Graphic data with special formats such as strip-charts or 35-mm slides can be put on 35-mm film. Computer-generated movies are made on 16-mm sprocketed movie film.

In cooperation with the Ames Central Computational Facility Advisory Committee and our procurement personnel, a set of microfiche viewers and reader-printers have been selected which allow viewing and local selected hardcopy, making the storage of data on microfiche even more attractive. There are sample units in the Computation Division consulting area for you to drop in to see and use.

The Ames Phototechnology Branch has been instrumental in assuring the quality of film processing and has provided expert advice in the areas of animation and film quality.

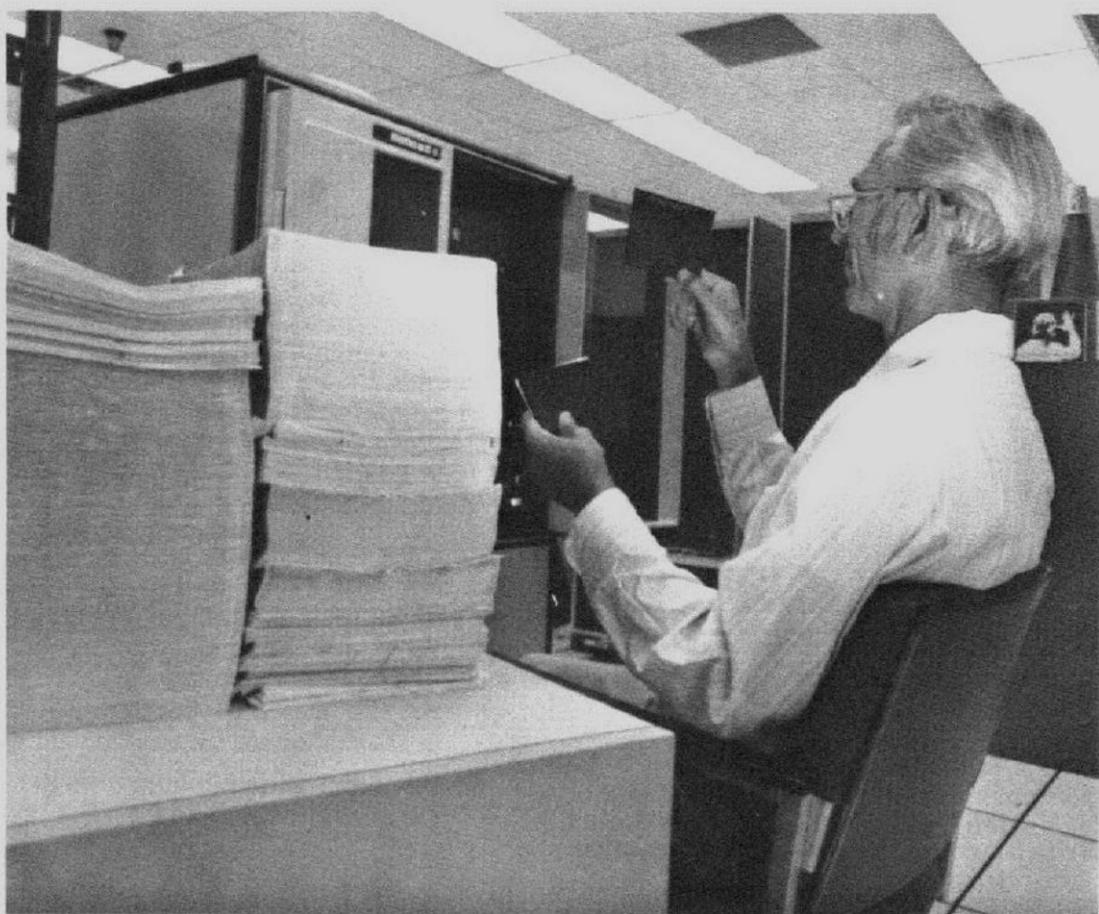
CURRENT OPERATIONS

So far, the system has been able to produce two cycles of output per day of microfiche, and one cycle of 35-mm strips or 16-mm movies. Unusual jobs such as long movies may have to be run in segments, increasing the turnaround time to 1 or 2 days. The Copyflo hardcopy, which is sent out, can take additional time.

Documentation for all phases of the system is available from the Programming Technology Branch's (RKG) Computation Division Documentation Center (CDDC) in bldg 233, room 128, X6035. Personal assistance is available from the new RKS Branch's user consulting room, bldg 233, room 130, X6008.

FUTURE EXPANSIONS

A major future enhancement to the COM service will be the addition of a color COM system for graphics users. The purchase of the additional hardware is now in process with delivery scheduled in the spring. The continuing efforts to extend the scope of graphics services available to the user community (including color COM) are being led by the new Systems Development Branch (RKD). Any comments on future developments should be directed to Bill Crawford (X5234).



The few microfiche in Bill Crawford's left hand contain the same management reports as are printed on the two stacks of computer paper shown.

H. G. Dick to speak at AIAA meeting

Harold G. Dick, President of Wichita Ponca Canvas Products, Inc. will speak on the subject of "The Gold Age of the Great Rigid Airships" on Friday evening, February 23, at the Bold Knight for the AIAA meeting.

Cocktails begin at 6:30 and steak dinner at 7:30 (\$12.50 per person). Reservations may be made with A. "Yulu" Krothapalli at (office) 497-3607 or (home) 321-6652.

Mr. Dick's presentation outlines the relationship between the Goodyear Zeppelin Corporation and the German Luftschiffbau Zeppelin. The talk is based on personal experiences of flying with the Germans in the Graf Zeppelin (12 transatlantic crossings) and in the Hindenburg (all test flights starting with its first flight and 10 transatlantic crossings). Mr. Dick was stationed in Friedrichshafen, Germany, for 5 years handling engineering liaison between Goodyear and Luftschiffbau. Mr. Dick presents an outline of the performance of the Hindenburg and a verbal picture of its accommodations, structure and design, and some of the interesting situations that the ships encountered.

STS shuttle seminar

The second topic of a series on the Space Transportation System (STS - Shuttle) Familiarization Sessions will be presented at Ames on Friday, February 16 in Building 244, room 103 at 9 a.m. The topic is the "European Space Agency Instrument Pointing System" and will be chaired by Lou Young of the Space Projects Division.

All interested Ames and contractor personnel are encouraged to attend.

Want ads

Miscellaneous

(Continued from Page 4)

WANTED: Afternoon ride to Middlefield and Loma Verde, Palo Alto. Am blind and cannot drive - will pay expenses. Call Ext. 5720.

RECORDACALL ANSWER-PHONE WITH VOX. All cassettes. \$125. Call Ext. 5720.

FOR SALE: EASTON Super Giant heavy duty reloading tool for rifle and pistol cartridges, 5 shell holders, 2 primer rods, \$25. VERSAMEC 700 shot-shell reloading tool, 20 ga, 3 charge bars, \$50. OHAUS Model 1010 powder and bullet scale, \$20. Assorted bullets and cases. Call Ext. 6443 or 967-6188 eves.

FOR SALE: Truck tires (used) and wheels, size 800 X16.5 (for Ford truck 8 lug) - 2 ea. @ \$20 each. Traverse curtain rods, one each, left & right pull, 9-ft. maximum width. \$10 each. Call Ext. 5465 or 248-1281.

NOTICE: Will the person who mistakenly took the World Aviation Directory from the Main Library please return it to the Library 202-3.

WANTED: Ride from Stanford University to Ames Research Center and Back. Arrive ARC 8 a.m., leave ARC 4:30 p.m. Call Ext. 5907.

NASA SPECIAL PUBLICATIONS

National
Aeronautics and
Space
Administration

The following NASA Special Publications are now on display in the Ames Main Library and the ARA Store. Following your review of these new releases, if you would like a retention copy for your files, return a completed NASA Special Publication Request Form, ARC 303, for each publication you desire to the Main Library, M/S 202-3, and a copy will be mailed to you. Please allow 2 weeks for processing and distribution of your request. Because the number of copies of NASA Special Publications available to the Center is limited, requests will be processed as they are received until the supply is exhausted and distribution will be limited to Ames Research Center Civil Service employees.

SF-4204 MOONPORT - A History of Apollo Launch Facilities and Operations By Charles D. Benson and William Barnaby Faherty

A comprehensive and detailed history of Apollo launch facilities and operations at Cape Canaveral - spanning the time period from America's first step toward the Moon in 1957 through the dedication of launch complex 39 as a national historical site in 1974 - is presented. The history is a three-faceted one, concerned with the official, contemporary, and technological accounts of the Cape Canaveral facilities. It is devoted to (1) the construction of launch complexes 34 and 37, Saturn tests, planning of the Moonport on Merritt Island, and buildup of the launch teams; (2) the design, construction, and activation of launch complex 39 (from which astronauts were launched to the Moon); and (3) a description of Apollo launch operations from early 1966 through the Apollo 17 launch in December 1972. An extensive bibliography comprises related books, journal articles, Congressional documents, conference papers, and technical reports. Appendixes present - in tabular form - substantial data about various launches, the principal physical characteristics of launch complex 39, the Apollo 4 countdown from T-22 through T-0 hours, the processing of Apollo 11 through complex 39, and the Apollo 14 countdown. Hardbound, profusely illustrated, 636 pp.

NASA SP-4209 THE PARTNERSHIP By Edward Clinton Ezell and Linda Neuman Ezell

The U.S.-U.S.S.R. cooperative space venture that succeeded in a 1975 rendezvousing and docking of an American and a Soviet spacecraft is described in this comprehensive and detailed history of the Apollo-Soyuz Test Project (ASTP). An official NASA project history (the Soviets produce no known historical studies of their space programs), the story is one of a space achievement whose principal value lies in its demonstration that future U.S. and U.S.S.R. spaceflights - whether routine flights or rescue missions - can share common hardware concepts and mission procedures. The book covers early American and Soviet competition for space-capability supremacy; traces the course of ASTP from initial visits of American technicians to Moscow in 1971 through the project's emergence as a full-scale endeavor following the Nixon-Kosygin summit agreement in 1972; and reviews the problems encountered in establishing an international space partnership and in planning and executing the Apollo-Soyuz mission. Source notes, research materials, the chronological development of American and Soviet spaceflight programs, various project charts and tabulations, descriptions of ASTP experiments and launch vehicles, and a summary of U.S.-U.S.S.R. meetings are included. Illustrated, with many mission photographs in color; hardbound.

NASA CP-005 THE USE OF NONHUMAN PRIMATES IN SPACE Richard C. Simmonds, Ames Research Center, Moffett Field, Calif., and Geoffrey H. Bourne, Emory University, Atlanta, Ga., Editors

A compilation of 17 papers presented at the Conference on the Use of Nonhuman Primates in Space, held at Ames Research Center on December 2-4, 1974, is provided in these conference proceedings. Principal purposes of the conference were: (1) to summarize the status of NASA-sponsored nonhuman primate research; (2) to define the need for such research in space-related biomedical experimentation; (3) to evaluate and characterize candidate primate species for space research; (4) to define maintenance requirements in terms of flying primates on the Space Shuttle; and (5) to consider scientific objectives and experiments for Shuttle primate experiments. The conference minutes are provided in an appendix.

NASA SP-4019 ASTRONAUTICS AND AERONAUTICS, 1974 Nancy L. Brun, The NASA History Series

A chronological listing of the day-by-day aeronautical and space events of 1974 is presented in this 14th volume of NASA's record of man's air and space activities. This volume is characterized by its emphasis on the practical use of the air and space environments, fewer examples of public comment, and less technical detail in more condensed summaries. Sources of the listed commentaries are identified in an appendix. Other appendixes provide separate listings of lifting body flights (X-24B); sounding rocket launches; satellites, space probes, and manned space flights; major NASA launches; and a separate listing of manned space flights. A detailed index includes definitions of acronyms and abbreviations. As in previous volumes in this series, NASA's activities, plans, and achievements are emphasized, but some events of other agencies and countries are included.

FEW meeting Feb 14

The South Bay Chapter of Federally Employed Women (FEW) invites all federal (military and civilian) employees (women and men) to their next meeting on Wednesday, February 14 from 5:30 to 7:30 p.m. at Mercury Savings and Loan in the San Antonio Shopping Center in Mountain View. The program will be on "EFFECTIVE COMMUNICATION". The speaker will be Jill Berman, Vice President of Communi-Speak in Palo Alto.

FEW was founded in 1968 by a group of federally employed women in Washington, D.C. interested in

carrying out the intent of a Presidential Executive Order which added "sex" to the other forms of discrimination prohibited in the federal service and by government contractors.

The South Bay Chapter, active since 1975, is one of hundreds of FEW chapters throughout the United States and overseas. Membership includes employees of many federal agencies in this area (NASA/Ames, U.S. Geological Survey, V.A. Hospital, Navy Department, etc.) interested in promoting equality and equal opportunity for women in government.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-152	Secretary (Typing)	GS-5/6	LX	Centerwide and Outside	03-02-79
79-51	AST, Technical Management	GS-12/13	FH	NASA-Wide	03-01-79
79-52	Aerospace Engineer AST, Flight Systems	GS-11/12/13	FSV	NASA-Wide, Outside, and Ames-Army	03-01-79
79-53	Voucher Examiner	GS-4/5	AFP	Centerwide, Ames-Army, and Outside	02-21-79
79-54	Secretary (Typing)	GS-4/5	DOS	Centerwide and Army	03-02-79
79-55	Secretary (Typing)	GS-4/5	RKO/RKG RKG	Centerwide and Army	02-23-79

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
79-8	Supv. Aerospace Engineer (Branch Chief)	FVT	Louis Williams
79-15	AST, Experimental Facilities and Equipment	FAX	Daniel Petroff
79-17	Electrician	RSTS	Ronald Airing
79-18	Assistant Planner and Estimator (Electrician) Temporary	RSTC	Sebastian Sandoval
79-21	Secretary (Typing)	FOI	Lois Foss
79-24	Lead Voucher Examiner	AFG	Nancy Lowe
79-26	Voucher Examiner	AFG	Christina Wintrooth
79-30	Electrical Engineer	RFS	Earl Farabaugh
79-37	Contract Specialist	ASF	Carolyn La Follette

Want ads Transportation

FOR SALE: '76 Corvette, 4-spd, 30 K miles, green with gold racing stripes, 350 cu. in. \$8,000. or best offer. MUST SELL!!! Call 968-4898 or 965-5741.

FORD Country Squire Station Wagon, 1966, 90,000 miles. Excellent running condition, clean inside and out. \$600. Call 494-1338.

FOR SALE: 1961 Dodge 1/2-ton pickup with a 1975 motor. Only 5,000 miles. Call 262-3594.

'65 FORD Galaxy. PS-PB, good condition. Excellent work car. \$575 firm. Call 968-4155 after 6 p.m.

1964 FORD VAN: 6 cylinder, stick shift, good condition. Call 493-1936.

FOR SALE: 1976 Chevette Scooter, 28K miles, excellent condition. \$1900 or best offer. Call (408) 292-1171 after 6 p.m.

BMW 1970 2002. Automatic, air conditioning, very clean. Asking \$3100. Call 253-7230.

Housing

HOUSE FOR SALE: 1338 Aberford Dr., San Jose, 95131. 3 br/2 ba, den, living room with fireplace, dining room, separate kitchen. 25 min. drive from Moffett Field. VA assumption or conventional. Listing price \$83,900 or best offer. Call 259-4105 after 6 p.m.

SQUAW VALLEY RENTAL - Skiing with no traffic headaches. Fully furnished condo. Sleeps 5, adjacent to lifts. Call 964-2170.

FOR RENT: 3 br. home in Sunnyvale. Convenient location to Ames. \$425 per mo. Call Ext. 6586 or 253-2687 after 6 p.m.

FOR RENT: Beach house at Pajaro Dunes (near Watsonville). Completely furnished, including linens; cleaning included in the rent; beautiful views of Monterey Bay, 100 feet from the beach; tennis courts. Reserve now for Winter and Spring. Call 252-7260.

HOUSE TO SHARE: Milpitas, \$180 mo. + 1/3 utilities. 1st, last mo, + Sec. Deposit. References, non-smoker, no pets. Call 262-1069 or 733-0242.

HOUSE RENTAL: Available Feb to May. Ideal Location in Palo Alto, 12 blocks from freeway and Stanford, 8 blocks from tennis courts, pool and park, 6 blocks from downtown P.A. Seven rooms including den-office and huge, fully equipped kitchen (w/dishwasher & 2nd oven, microwave). Lovely patio with furniture. \$585 mo. fully furnished with extras including linens, house cleaning service 2X week, and local spa privileges (pool, jacuzzi, sauna and exercise rooms). Available w/or w/out '78 car. Call 326-8665 or 325-7338.

FOR RENT: Beautiful 2-br semi-furnished condominium on San Jose-Milpitas line. Available until June 1, 1979. \$235 per month. Call eves. at 866-8895.

Miscellaneous

SHARE (with 3 others) a subscription to Granville and/or other stock market timing/charting services. Call 248-4690 after 7 p.m. for information.

YOUTH BED including mattress, \$25. Crib mattress, excellent condition, \$10. Scott's Silent Guard push mower, \$20. Call 257-9440.

WANTED: Useable engine for 1972 Toyota Corona. Please call 968-1144.

1969 Aladdin 15'x8' trailer. New water tank, sleeps 6. Very clean. \$1600 or best offer. Call 867-5635 or 867-9395.

RIDES: Bus pool available from Berkeley/Oakland/San Leandro/Newark to Ames. Ride in the safety and comfort of a hiway-type bus without traffic strain. Weekly and daily rates. Call Ext. 6060 or 525-1050.

YOUNG, QUIET COUPLE will house sit. Experienced w/house and yard maintenance, painting, animal care. Call 243-2266.

ROOMMATE WANTED: Female, non-smoker to share condo. 2 br, 2-car garage, electric kitchen w/dishwasher, washer & dryer, and access to rec. room and pool. Near corner of San Tomas Expressway/Payne. Rent \$200 mo. Available now. Call Robert, 996-7442 or Candy, 378-5197 eves.

Raleigh 10-spd. bicycle. Very good condition. Man/boy style frame 21 1/2" size. Ideal for small adult or young teenager. \$75 firm. Call 356-7388.

FOR SALE: AMANA RR4 (convertible to 220 V), 5 yrs. old, excellent condition. Asking \$180. Includes cookbook and accessories. Call (408) 988-4831.

STEREO RECEIVER - Sherwood S 8900: 48 watts per channel. Consumer Report top receiver when new, and still excellent. \$175. Call 227-2480.

(Continued on Page 3)

The Astrogram

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor Meredith Moore
Associate Editor Marcia Kadota
Reporters NASA Employees

Deadline for contributions: Thursday between publication dates

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, California 94035

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NASA-451



NASA/Ames Research Center CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

<p>FEB 19 - Washington's Birthday</p>	<p>FEB 20 - Materials and Physical Sciences Branch Seminar Speaker: Dr. Brett I. Dunlap, National Bureau of Standards, Washington, D.C. 20234 Topic: "A Variational LCAO-Xa Method" Method" Time: 10:30 a.m. Location: N-229 Room 215</p>	<p>FEB 21 - Materials and Physical Sciences Branch Seminar Speaker: Professor Kent R. Wilson, Department of Chemistry, University of California, San Diego Topic: Molecular Dynamics of Water and IR Transmission through the Atmosphere Time: 10:30 a.m. Location: N-245, Auditorium</p>	<p>FEB 22 -</p>	<p>FEB 23 -</p>
<p>FEB 26 -</p>	<p>FEB 27 - Space Science Division, Atmospheric Science Seminar Series Speaker: Steven Massie, Dept. of Astrogeophysics, University of Colorado Topic: NO in the Upper Mesosphere-Chemistry and Dynamics Time: 2:30 p.m. Location: N-245 Auditorium</p>	<p>FEB 28 - Ames Photo Club Meeting Time: 4:45 p.m. Location: N-245, Auditorium</p>	<p>MAR 1 -</p>	<p>MAR 2 -</p>
<p>MAR 5 -</p>	<p>MAR 6 -</p>	<p>MAR 7 -</p>	<p>MAR 8 -</p>	<p>MAR 9 - If you wish to have an event announced on this calendar please notify Linda Mackey, Visits Coordinator, Ext. 5546, M/S 253-1. The next calendar will cover the period March 5-March 23. The deadline is February 13.</p>

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

February 20, 1979 thru February 26, 1979

A LA CARTE MENU

February 27, 1979 thru March 5, 1979

A LA CARTE MENU

TUESDAY	Veal Parmesan with Spaghetti.....	1.45
	Beef Croquettes and Creamed Peas or Omelette.....	1.30
	Choice of One: Whipped Potatoes, Buttered Spaghetti, Green Beans, Glazed Carrots or Salad	
	Soup - Cream of Potato.....	.30 & .45
WEDNESDAY	Roast Tom Turkey with Dressing and Cranberry Sauce.....	1.45
	Pork Fried Rice.....	1.30
	Choice of One: Mashed Potatoes, Candied Yams, Buttered Spinach, Cauliflower or Salad	
	Soup - Green Split Pea.....	.30 & .45
THURSDAY	Turkey Fricasse over Corn Bread.....	1.45
	Cream Chipped Beef on English Muffin.....	1.30
	Choice of One: Whipped Potatoes, Candied Yams, Brussel Sprouts, Beets or Salad	
	Soup - Minestrone.....	.30 & .45
FRIDAY	Shrimp Chow Mein and Rice.....	1.45
	Chicken Tetra zini or Omelette.....	1.30
	Choice of One: Whipped Potatoes, Rice Pilaf, Zucchini and Tomatoes, Hominy or Salad	
	Soup - Seafood Gumbo or Borscht.....	.30 & .45
MONDAY	Beef Steak Creole Style with Rice.....	1.45
	Baked Tuna and Noodle Casserole or Omelette.....	1.30
	Choice of One: Whipped Potatoes, Au Gratin Spinach, Buttered Beets or Salad	
	Soup - Cream of Chicken.....	.30 & .45
DAILY SPECIALS	INCLUDES: A \$1.30 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP...	1.10
DAILY DIET SPECIAL		
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

Chicken Fricasse over Noodles.....	1.45
Spanish Rice and Bacon.....	1.30
Choice of One: Whipped or Hashed O'Brien Potatoes, Peas, Buttered Corn or Salad	
Soup - Cream of Fresh Mushrooms.....	.30 & .45
Ham Steak Hawaiian Style.....	1.45
Tamale Pie Casserole.....	1.30
Choice of One: Au Gratin or Whipped Potatoes, Buttered Spinach, Glazed Carrots or Salad	
Soup - Old Fashioned Navy Bean.....	.30 & .45
Smothered Liver with Onions.....	1.45
Pork Fried Rice.....	1.30
Choice of One: Mashed or Lyonnaise Potatoes, Green Beans, Cauliflower or Salad	
Soup - Fresh Vegetable and Beef.....	.30 & .45
Roast X-Rib of Choice Beef.....	1.45
Seafood Curry over Biscuit.....	1.30
Creole or Cheddar Cheese Omelette.....	1.30
Choice of One: Snowflaked or Country Fried Potatoes, Cut Buttered Broccoli, Stewed Tomatoes or Salad	
Soup - Boston Clam Chowder.....	.30 & .45
Pork Chop Creole Style with Rice.....	1.45
Turkey, Macaroni and Creamed Cheese Casserole.....	1.30
Choice of One: Whipped or Hashed Brown Potatoes, Harvard Beets, Green Peas or Salad	
Soup - Cream of Potato.....	.30 & .45
INCLUDES: A \$1.30 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP...	1.10
DAILY DIET SPECIAL	
(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

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VOLUME XXI NUMBER 10

March 8, 1979

Three Ames aircraft participate in solar eclipse

Three Ames aircraft participated in scientific activities associated with the solar eclipse on Monday, February 26.

Two of the aircraft, the Ames Convair 990 "Galileo II" and a U-2 Earth Resources Survey Aircraft investigated chemical changes in the upper atmosphere as the level of solar ultraviolet radiation decreases as the Moon moves in front of the Sun.

The two aircraft rendezvoused near Helena, Montana, to study the effect of the eclipse shadow on chemical species in a stratospheric air mass approximately 100 miles across. The U-2 flew at 65,000 feet gathering air samples for later chemical analysis. At the same time, the Galileo II, flying beneath the U-2 at about 37,000 feet, trained remote sensing instruments upward.

An understanding of the cause and effect of the relationship between solar UV and the Earth's atmosphere is important to overall understanding of the dynamics of our atmosphere. Although these changes occur every day at sunrise and sunset, the exact phenomena is masked to some extent by changes in temperature, by low Sun angles, and by the relatively slow rate of change at sunrise or sunset.

The eclipse provided a rare opportunity to investigate the effects of UV radiation with the Moon acting as a "switch" to interrupt the Sun's energy, as well as the opportunity to study the effect on a stable daytime atmosphere.

The Ames Lear Jet attempted to observe a phenomena first detected from a British-French Concorde aircraft during a solar eclipse in 1973, when Canadian scientists reported that solar infrared radiation at the edge of the solar disc, or limb, was dramatically higher than from the rest of the Sun.

A photometer instrument installed in the Lear Jet made measurements at four different infrared wavelengths as the Moon moves in front of the Sun. The experiment was under the direction of Dr. Alan Clark of the University of Calgary in Alberta, Canada. Dr. Clark and a graduate student, Rita Boreiko, operated the instrument.

The Lear Jet flew at an altitude of 40,000 feet over Southern Canada in the Winnipeg area. The aircraft will make refueling stops at Minot, North Dakota, and at Winnipeg.

The February 26 eclipse was the last total eclipse over North America until the year 2017.

FEW meeting

The South Bay Chapter of Federally Employed Women (FEW) invites all federal (military and civilian) employees (women and men) to its next meeting on Wednesday, March 14, from 5:30 to 7:30 p.m. at Mercury Savings and Loan in the San Antonio Shopping Center in Mountain View. The program will be on "Financial Defense." The speaker will be Judith Briles, of Judith Briles and

(Continued on Page 3)

RSRA — a unique research vehicle

The two Rotor Systems Research Aircraft (RSRA) are unique research vehicles designed to provide a national facility for in-flight investigation and verification of promising new helicopter rotor system concepts and supporting technology.

Jointly funded by NASA and the United States Army, the RSRA aircraft are used in a program of helicopter technology research to increase rotor aircraft speed, performance, reliability and safety, and to reduce helicopter noise, vibration and maintenance.

The RSRA can be configured to fly as a helicopter or as a compound helicopter (helicopter with fixed wings and auxiliary jet engines). The vehicle can be fitted with a variety of experimental and developmental rotor systems for research purposes. In the compound configuration with the wings providing a portion of the needed lift, rotor systems too small to support the aircraft can be accommodated.

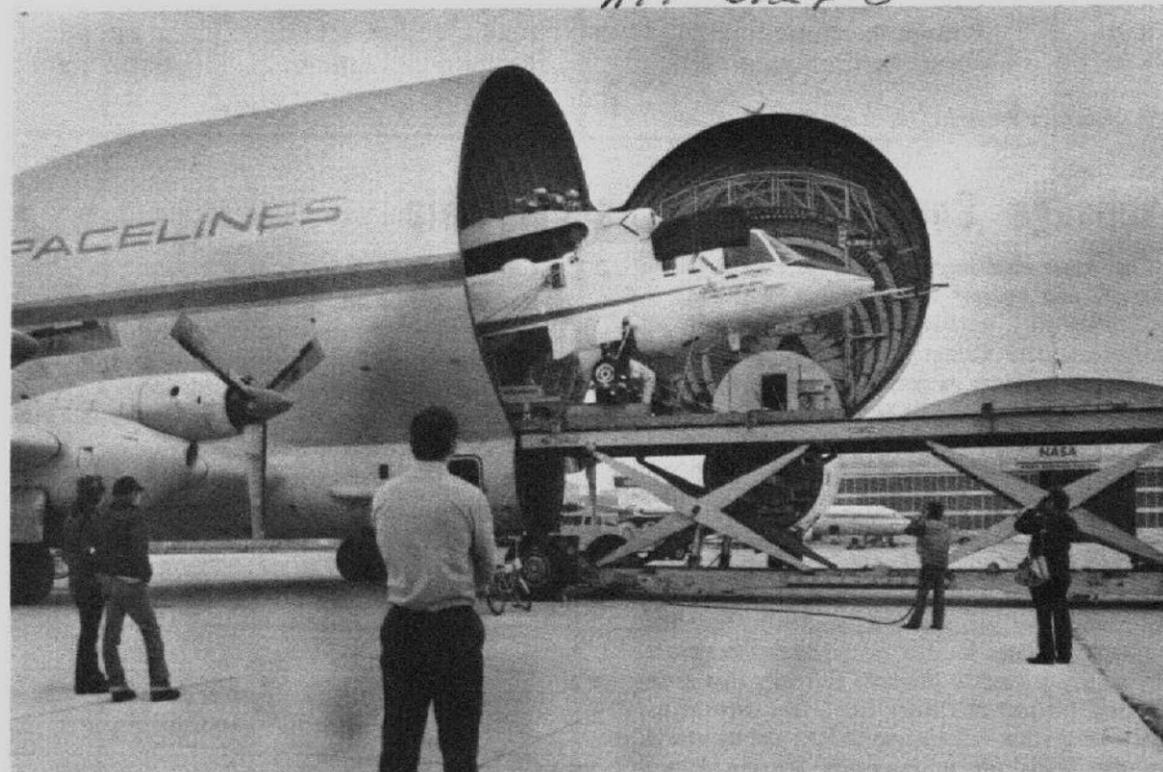
A unique rotor vibration isolation system is available which prevents transmission of main rotor vibrations to the fuselage structure. This allows installation of various Rotor Systems having a wide range of vibration characteristics on the RSRA without fuselage modifications. At the same time, the system provides precise measurements and

control of rotor forces and of aircraft maneuvering flight parameters over a wide range of operating conditions.

In the helicopter configuration, the RSRA has a design gross weight of 18,400 pounds. It is powered by a Sikorsky S-61 rotor and drive system, which consists of two T-58-GE-5 turboshaft engines driving the S-61 main transmission, the 62-foot diameter main rotor, tail takeoff drive shaft, intermediate gear box, tail gear box, and the 11-foot diameter tail rotor. The horizontal stabilizer is a "T" tail with a 13 1/4 foot span and an area of 35.4 square feet.

In the compound configuration, the RSRA has a design gross weight of 26,200 pounds. Wing and auxiliary thrust jet engines are added to the helicopter and the tail is modified with the addition of a 22 1/2 foot span stabilator (stabilizer-elevator) and a rudder and associated controls. The wing has a 45-foot span and includes both aileron and flap surfaces. The wing incidence is variable in flight from -9 degrees to +15 degrees. The two auxiliary jet engines are TF-34-GE-400A high-bypass-ratio turbofans with maximum rated static thrust of 9,275 pounds each.

(Continued on Page 3)



NASA's newest research airplane the Rotor Systems Research Aircraft (RSRA), is shown being unloaded from the Aero Spacelines Super Guppy here at Ames Research Center.

The RSRA was flown to Ames from Wallops Island, Virginia, after completion of initial flight testing there. At Ames, the RSRA joins a fleet of aircraft in a research program to develop technology for safer, quieter and more efficient aircraft and helicopters of the future.

The RSRA was built under contract by Sikorsky Aircraft Division of United Technologies for a joint program of NASA and the United States Army Research and Technology Laboratories (AVRADCOM) for in-flight research of new helicopter rotor system concepts. It can fly as a pure helicopter or, with the addition of wings and auxiliary jet engines, as a compound helicopter.

The Super Guppy was built in 1965 and has been used to haul a variety of outsized cargos including massive rocket stages for the Saturn launch vehicles used in the Apollo program.

ACE spring television courses

ASSOCIATION FOR CONTINUING EDUCATION
Spring Quarter 1979

Course number	Course title	Instructor	Start and end dates	Day	Time
GOLDEN GATE UNIVERSITY MBA PROGRAM All courses in progress					
COLLEGE OF NOTRE DAME FOUNDATION COURSES (Management Development courses denoted by †)					
BA C131	Financial Analysis for Managers	Rose	4/3-6/12	T	5-6:45 pm
BA C153	Planning & Operations Management †	Keats	4/4-6/13	W	5-6:45 pm
BA C195	Principles of Organizational Behavior †	Jarrett	4/2-6/11	M	5-6:45 pm
SUPERVISORY SKILLS PROGRAM					
BA C135.01	Elements of Supervision	Flint	4/2-6/13	MW	12-1 pm
BA C113D	Principles of Effective Business Writing	Jensen/Moss	4/2-6/13	MW	12-1 pm
PROFESSIONAL DEVELOPMENT COURSES FOR ENGINEERS & TECHNICIANS					
ET 200A	Basic Electronics: A Crash Course in the Fundamentals	Wojslaw & Staff	4/4-6/13	W	5-6:45 pm
ET 300A	Integrated Circuits: Theory and Application*	Wojslaw	4/5-6/7	Th	5-6:45 pm
ET 400A	How to Use Microprocessors in Hardware Design*	Lee & Staff	4/4-5/9	W	4:15-6:15 pm
ET 400C	Microprocessor Serviceability: What the Designer Can Do*	Rothmuller	4/2-5/9	MW	12-1 pm
MATH C105A	Advanced FORTRAN Programming Techniques for Engineers & Scientists	Buder	4/2-6/11	M	5-6:45 pm
PERSONAL DEVELOPMENT COURSES					
MATH C102C	Beginning Business Math	Hepworth	4/3-6/14	TTh	12-1 pm
PR 820	Administrative Skills for Secretaries*	Lubben	4/2-5/2	MW	12-1 pm
PR 820A	Advanced Administrative Skills for Secretaries*	Lubben	5/14-6/11	MW	12-1 pm
PR 843	How to Spend & Invest the Money You Own, Earn, or Borrow	Turner	4/3-6/14	TTh	12-1 pm
Short Courses in Personal Skills					
PR 814	Effective Reading*	Steen	4/3-5/3	TTh	12:30-1 pm
PR 816	Personal Shorthand*	Piper	4/3-5/15	TTh	12-1 pm
PR 824	Communicating Successfully*	Robinson	4/6-4/27	F	12-1 pm

(*) Videotape Program

Exchange Council proposes scholarship

The Ames Exchange Council was established to promote and operate activities that contribute to the efficiency, welfare, and morale of Ames employees. The Center Director appoints Ames employees to serve as members on the Exchange Council. Current members are: Roy Presley - President, George Callas, Olive Cooper, Steve Deiwert, C. J. Fenrick, and Marcia Kadota. Details concerning Exchange Council responsibilities may be found in the Ames Management Manual (AMM) 3712-1.

The Exchange Council operates on funds from the profits that are received, primarily, from the vending machines located throughout the Center. The money is used to promote activities that are in the best interest of Center employees such as the Ames Recreation Association (ARA) and by providing the funds for refreshments for the Annual Length-of-Service Ceremony. The Exchange Council has proposed to use some of this money for the establishment of a scholarship for the children of Ames employees. The scholarship, as proposed, would honor students in both the academic and vocational areas and is outlined below:

ELIGIBILITY: Applicant must be the son or daughter of a Federal career employee or retiree or military detailee who is stationed at Ames Research Center.

BASIS OF AWARDS:

Academic Scholarship:

Scholastic Ability - Based on high school records and results of scholastic aptitude tests of the College Entrance Examination Board.

Leadership potential - Based on application and letters of recommendation

Essay - Short synopsis of career goals

Interview - By selection committee

Extracurricular activities - Application and interview

Vocational Scholarship:

Skills - Based on sample of work

Skills potential - Letters of recommendation

Essay - Short synopsis of career goals

Extracurricular activities - Application and interview

Interview - By selection committee

It is proposed that the Exchange Council award 2 scholarships the first year - one in each category and eventually work up to a total number of six scholarships. The scholarship would be renewable each year.

The breakdown of scholarship monies is as follows:

4 year college or university - up to \$500 per year

2 year community college - up to \$250 per year

Vocational school - up to \$500 per year

(Continued on Page 3)

Five professional development courses for engineers and technicians will be offered by ACE via the Stanford Television Network during Spring Quarter.

ET 200A - Basic Electronics: A Crash Course in the Fundamentals (Topics include basic concepts, device and circuit theory, and laboratory skills)

ET 300A - Integrated Circuits: Theory and Application (Will cover integrated circuits from how they are manufactured to how they are applied)

ET 400A - How to Use Microprocessors in Hardware Design (Features 8085, Z-80, and 8080)

ET 400C - Microprocessor Serviceability: What the Designer Can Do (Special emphasis on component level repair)

MATH C105A - Advanced FORTRAN Programming Techniques for Engineers and Scientists (Will show how to write simple and efficient programs)

Those wishing to enroll should complete an ARC Training form 301 and route it to Training via the appropriate Branch, Division and Directorate offices for approval. Additional forms and training information may be obtained from the Training Branch, Building 241, Room 138.

Bloodmobile to visit ARC March 14

Consider yourself invited to donate blood March 14, 1979 (Room B-39 (Basement), Building N-239) during the Red Cross Bloodmobile visit, between 8:30 a.m. and 1:45 p.m.

A donor should be in good health . . . weigh at least 110 pounds . . . be between 18 and 65 years old (17 with signed parental consent) . . . follow their usual eating habits - a meal 3-4 hours before donation is sufficient.

If you are taking medications now, call 493-1363, x30 (Nursing) to be certain of your eligibility to donate. A donor is permanently ineligible to donate if she/he has: history of hepatitis, diabetes that requires medication for control, heart disease, history of narcotic use, jaundice or epilepsy.

P.S.: If you have Kaiser Health Plan . . . Kaiser of Santa Clara, Redwood City . . . everywhere . . . requires that you make one (1) donation each year to the subscriber's Kaiser number to cover your blood needs and those of your immediate family (spouse and children). Donations for any Kaiser patient may be made at a Red Cross Bloodmobile or Center. At registration, *show your Kaiser I.D. Number* and have it *typed* on your registration form. Red Cross sends this information on to Kaiser in Oakland. Red Cross does not require this credit donation - Kaiser Foundation does.

ARA ACTIVITIES

There will be a Director's Happy Hour in the cafeteria on March 16 from 4:30 p.m. to 6:30 p.m. Stop by and meet our new Deputy Director, Thomas Young.

The ARA store has reduced the price of the 1979 space calendars to \$1.75. If you haven't seen the calendars, drop by on either Tuesdays or Thursdays at noon when the store is open and take a look. They are very nice. Also, there is now another item at the store which might interest you. It's a "Bulb Miser" which can be inserted into the bulb socket and it magically increases the life of your light bulb. The cost is \$3.50 for a package of six.

RIDES provides vanpools for Bay Area commuters

At least 29 groups in 9 Bay Area counties are praising vanpools to be the answer to commuter headaches.

In an effort to lower commute costs, reduce congestion, conserve fuel, and reduce parking needs, Ames is joining industry and is offering a commuter vanpooling and carpooling program for employees. The "risk free" vanpools and carpooling matching services are being offered through RIDES for Bay Area Commuters, Inc., a local nonprofit organization established to promote ridesharing throughout the Bay Area.

RIDES will lease 10 to 15 passenger deluxe vans and make them available to interested employees who will pay monthly fares calculated to cover the cost of the vans and their operation. Drivers ride

free and will have personal use of the vehicle on evenings and weekends for a nominal charge per mile. Some of the advantages of riding in a van include lower cost, reduced wear and tear on your own automobile, and a more pleasant commuting trip with time to socialize, read, or just relax in your guaranteed seat.

RIDES' staff will be on hand at Ames with a van for you to see on March 15 at the cafeteria from 11:30 a.m. to 1:30 p.m. Please drop by and take a look.

For those interested in carpooling, RIDES will provide each person with a list of other individuals who have similar commute and work hours who would like to carpool. RIDES will also provide information and help in setting up carpools.



AIAA/USHGA joint meeting

The San Francisco Section of the American Institute of Aeronautics and Astronautics (AIAA) will hold a joint meeting with the Region 2 Section of the United States Hang Gliding Association (USHGA) on March 22, 1979. This will be a dinner meeting followed by an illustrated presentation entitled "A (Re)Introduction of Hang Gliding to the Technical Community." Speakers will be Don Ciffone (AIAA Associate Fellow and USHGA Member) and Jan Case (USHGA Region 2 Director). The meeting will focus on (1) familiarizing the professional aeronautical community with the sport of hang gliding, and hopefully (2) stimulating interest and mutual cooperation in improving the performance and safety of the gliders. Visual aids and static displays will be utilized to make this important meeting both informative and interesting.

The meeting will be held at the Holiday Inn in downtown San Jose, Calif. For details and reservations, contact Jean Oton (408) 742-8380 or (408) 742-5993 or Pete Reding (408) 742-1944, no later than March 19, 1979. A fee of \$7.75 for the beef dinner will be collected at the door.

Exchange Council

(Continued from Page 2)

The Council has proposed to establish the name, "Ames Employees Scholarship." Each scholarship will be, in turn, named to honor an Ames employee who has made a significant contribution to Ames.

Since Center employees contribute to Council funds via the vending machines and the money is to be used in the best interest of the Ames employees, the Council would like your feelings on using this money for the scholarship. If you have any comments, pro or con about the scholarship, please send your *written* comments to Marcia Kadota, Mail Stop 241-3 by March 23, 1979.

STS shuttle seminar

The third topic of a series on the Space Transportation System (STS - Shuttle) Familiarization sessions will be presented at Ames on Thursday, March 22, in Building 244, room 103 at 9 a.m.

The topic is "Payload Operations Control Center for the Shuttle" and will be chaired by Michael Kiya.

All interested Ames and contractor personnel are encouraged to attend.

RSRA

(Continued from Page 1)

An emergency escape system is provided for the crew. When the full egress mode is actuated, an all-pyrotechnic system severs the main rotor blades, jettisons and fractures the canopies, and initiates the crew extraction system. Tractor rockets connected to torso harnesses extract crewmembers and initiate parachute deployment. When in the compound helicopter configuration, an alternative "blades only" mode may be selected. This mode provides for jettisoning the blades in the event of rotor problems that threaten the aircraft and permits flight as a fixed-wing aircraft.

The crew consists of a safety pilot (aircraft commander) in the right seat, an evaluation pilot (co-pilot) in the left seat, and an aft-facing flight engineer seated behind the evaluation pilot.

The two RSRA vehicles were built by Sikorsky Aircraft Division, United Technologies Corporation, for NASA's Langley Research Center, Hampton, VA, and the United States Army Research and Technology Laboratories (AVRADCOM), with headquarters at Moffett Field, CA. Following initial flight testing in Virginia, the two aircraft are being transferred to NASA's Ames Research Center, Moffett Field, CA, for an extensive flight research program by Ames and the Army.

The RSRA joins NASA's growing stable of research aircraft based at Ames, including: The X-14 jet-powered Vertical Takeoff and Landing (VTOL) research aircraft, the Augmentor Wing Jet STOL (Short Takeoff and Landing) Research Aircraft, the Tilt-Rotor Research Aircraft (also a joint research program with the US Army), and the Quiet Short-haul Research Aircraft (QSRA). These research aircraft are used in a broad research program at Ames to develop technology for safer, quieter and more efficient VTOL and STOL aircraft of the future.

Product display van

The Sunnyvale Valve and Fitting Company will bring its Product Display Van to Ames beginning Tuesday, March 27. The Van will display various types of Swagelok fittings which are recommended by the Ames High Pressure Safety Committee. The Van will also display valves and fittings which can be used in high-vacuum technology and life sciences experiments. The Van will be on display at the following locations and times:

Date	Location	Time
Tues., March 27	Bldg. 244 (back)	8:30-10:00 am
Tues., March 27	Bldg. 245 (front)	10:00-12:00
Wed., March 28	Bldg. 213 (front)	8:30-3:00
Thurs., March 29	Bldg. 230 (front)	8:30-3:00

FEW

(Continued from Page 1)

Company, Palo Alto. Ms. Briles is a Financial Planner and is involved in financial awareness programs for women. She is listed in "Who's Who" of American Women.

The South Bay Chapter, active since 1975, is one of hundreds of FEW chapters throughout the United States and overseas. Membership includes employees of many federal agencies in this area (NASA/Ames, U.S. Geological Survey, VA Hospital, Navy Department, etc.) interested in promoting equality and equal opportunity for women in government.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
79-60	Personnel Clerk (Typing) or Clerk-Typist or Clerk Typist	GS-4/5 GS-3/4	APM	Centerwide, Ames-Army and outside	3-16-79
79-61	Secretary (Typing) or Secretary (Steno)	GS-4/5	SEH	Centerwide, Ames-Army and outside	3-25-79
79-62	Procurement Clerk (Typing) or Clerk-Typist	GS-4/5 GS-3/4	ASF	Centerwide, Ames-Army and outside	3-16-79
Y3-79	Voucher Examiner Clerk Typist Secretary Typist Clerk (DMT)	GS-4 GS-3/4 GS-4/5 GS-4	HQS R&T Lab	Army, Centerwide, Ames, and outside	3-20-79

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
79-5	Procurement Clerk (Typing) or Clerk-Typist	ASF	Cancelled
79-7	Aerospace Engineer, AST Fluid & Flight Mechanics	FVT	Cancelled
79-32	Modelmaker/Foreman	RSM	Mario Juliani
79-38	Aerospace Laboratory Mechanic Leader WL-11	STF (N-234)	Fred Bear
79-39	Aerospace Laboratory Mechanic Leader WL-11	STF (N-238)	Wayne Harry
79-40	Secretary (Typing)	FVR	Mary Sanders (outside candidate)
79-42	Supervisory Personnel Management Specialist	APM	Dennis Cunningham

Want ads Transportation

1973 911-T Targa, silver with clean black interior, 70,000 miles, body excellent shape, recent engine work, \$10,750/best offer. Call after 5:00 p.m., (415)568-2142, or 286-2565.

FOR SALE: 1974 Audi LS100 4-dr, A/T, A/C, SBR, Sun Roof, low mi., prime cond., \$4500. Call 867-1373 eves.

'70 BMW 2002 automatic, airconditioning, very good condition, like new radials, good MPG. Price low for quick sale at \$2795. Call 253-7230.

FOR SALE: 1976 Chevrolet Chevette, 4 sp., 28K miles, excellent condition. \$1900 firm. Call after 6 pm, (408)292-1171.

For sale: 1977 Kawasaki KZ 650. Mint condition, headers, S&W shocks, many more extras. \$2000 firm. Call Anita Neuman 998-1899 or 255-0222, ext. 280.

'69 Chrysler, Newport Custom, PS, PB, AC, 83K miles, one owner, \$950, 967-7343.

FOR SALE: 1975 Plymouth Gran Fury, custom interior, AM/FM, air, automatic w/cruise control, power steering and brakes, 32K miles, excellent condition, \$3000 or best offer. Call ext. 5884.

'75 Honda CB 360 motorcycle, 360 cc, 6000 miles, runs and looks great! \$550 or best offer. Call 965-0761 or 965-6255.

'79 Mazda RX7 GS Model compl. loaded. Must sell, \$9675. Call 996-2707 days, 265-7911 after 10 p.m.

Housing

Mobile Park West. Adult 24x64 2-bdrm, 2-bth, step-down livingroom, separate dining room, family room, 12 wet bar, enclosed sunroom, airconditioning. Corner lot, near club house. 5 min from Ames, by owner, 263-7407.

HOUSE FOR SALE: 2354 Arguello Pl., Santa Clara, 3 br/1 ba, living room and fireplace, family room, dinette, kitchen, laundry room. Shopping, schools, parks, and swimming pools within walking distance. 15 min drive to Ames. FHA assumption or conventional. Listing price \$74,500 or best offer. Call (408)241-8770 after 6:30 p.m.

SQUAW VALLEY RENTAL: Skiing with no traffic headaches. Fully furnished Condo. Sleeps 5. Adjacent to lifts. Call Ray Savin, 964-2170.

Recreational property: Tahoe-Donner lots, 1/3 acre, \$20,000. 20-30% down, 7.5% loans. Ski runs, golf, etc. 948-7009.

Own room in beautiful 3-brm apt! Fireplace, pool, jacuzzi, sauna, woodsy area, friendly folds. 5 min from Ames. In Sunnyvale. Call Jeff, 968-7470.

FOR RENT: Beach house at Pajaro Dunes (near Watsonville). Completely furnished, including linens; cleaning included in the rent; beautiful views of Monterey Bay, 100 feet from the beach; tennis courts. Reserve now for Winter and Spring. Call 252-7260.

HOUSING NEEDED for 2 Boston University students who will be working at Ames April 7 - May 7. Call D. Des Marais, ext. 6110.

ROOMMATE WANTED: Female, non-smoker to share condo. 2 br, 2-car garage, electric kitchen w/dishwasher, washer & dryer, and access to rec. room and pool. Near corner of San Tomas Expressway/Payne. Rent \$200 mo. Available now. Call 996-7442 or Candy, 378-5197 eves.

Miscellaneous

FOR SALE: Oster hood-type hair dryer. \$5. 732-7919

FOR SALE: One ladies navy blue leather jacket, size 5, hardly worn. Asking \$50.00 or best offer. Please call (408) 733-0168 after 5.

Pool tender for above-ground pools with over-wall plumbing, \$20; Lady Schick Time Machine Hair Dryer, \$20; Boy's bike, 20 inches, \$15; Cake server, high-dome chrome cover, glass plate, \$10. Call 296-8207 after 5 p.m.

FOR SALE: Candle making supplies. Approx. 30 lb colored wax, red, yellow, blue, and turquoise. 10-cup double boiler, 3 wooden spoons and 53 inch wick. \$10 for all. Call (408)356-2693. Ask for Bud.

Litton Micromatic Microwave Range, Corning Ware cook top, continuous cleaning oven, Model 975, \$500. 733-9708

FOR SALE: Whirlpool dryer, 23-channel Cobra CB, 100-watt linear amplifier, 8-track tape player. Call Cathy at 793-1538.

FOR SALE: 9'x12' green carpet, bound, with pad, \$75 or best offer. Call 969-8254, 6-9 p.m.

Typewriter, full size office manual, Underwood 5, Pica type, \$70. Bicycle, 20" single speed, spyder style, \$15. Both girls and boys available. 735-0056 after 5 p.m.

FOR SALE: Video color recorder (Cartrivision) with Interface unit, extra tank and some tapes, needs servicing, all for \$50. 378-5741.

FOR SALE: HPE pool pump/filter and ladder. Ideal for 18-ft Doughboy pool and in very good working condition. All for \$50. 378-5741.

Easter bunnies will be ready for new homes the week of April 8. Please call Anita Borger at (408)255-6585.

2 tires, Sears dynaply A78-13 inch worn only 300 miles. New \$60, sell \$30/offer. Sally, 964-2268.

FOR SALE: Yashica MAT-124 camera with solid state strobe. \$100. Call 657-4247 after 6 p.m. and weekends.

THANK YOU. On behalf of the ARC Stamp Club members, I would like to extend thanks for all the donations of stamps to the club. We greatly appreciate each and every one we receive. Thank you again. Joan Nelson, Secretary/Treasurer, ARC Stamp Club.

Elec. hosp. bed for sale, twin size. Good condition, \$250. Call Ralene at 365-8577.

FOR SALE: White Baby Line dressing table, \$40; white 5-drawer chest of drawers, \$40; red child's rocker and table, \$10; evaporative cooler, \$50. Call 263-3942 after 4:00 p.m.

FOR SALE: Drafting board (20x21"), \$5; drafting board with T-square (31x21½"), \$10. Call after 4:00 p.m., 263-3942.

The Astrogram

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor Meredith Moore
Associate Editor Marcia Kadota
Reporters NASA Employees

Deadline for contributions: Thursday between publication dates

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, California 94035

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Space Administration
NASA-451



NASA/Ames Research Center CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

MAR 19 - National Federation of Federal Employees (NFFE) monthly meeting Time: 12:00-12:30 p.m. Location: N-213, Room 261	MAR 20 -	MAR 21 - Ames Stamp Club Meeting Time: 11:30 a.m. Location: N-241, Room 113	MAR 22 - Bible Study for Ames and Navy People Coordinator: Dr. Dewey Hodges, Ext. 5835 Time: 12:00 Noon Location: Bldg. 48, Navy side (Sunday School building)	MAR 23 - Computational Fluid Dynamics Branch Seminar Speaker: Dr. Takeshi Adachi, Mitsubishi Heavy Industries, Ltd., Nagasaki, Japan Topic: On the Numerical Analysis of Compressible Flow Problems by the Modified Fric Method Time: 2:00 p.m. Location: N-233, Room 227
MAR 26 -	MAR 27 -	MAR 28 - Ames Photo Club Monthly Meeting Time: 4:45 p.m. Location: N-245, Auditorium	MAR 29 - Bible Study for Ames and Navy People Coordinator: Dr. Dewey Hodges, Ext. 5835 Time: 12:00 Noon Location: Bldg. 48, Navy side (Sunday School building)	MAR 30 -
MAR 26 -	MAR 27 -	MAR 28 -	MAR 29 -	MAR 30 -
APR 2 -	APR 3 - Ames Scuba Club Monthly Meeting Time: 11:30-1:00 p.m. Location: N-235, Ames Cafeteria Private dining room Dues are \$5.00 per year and payable to Ames Scuba Club, c/o C. S. Yem, 213-8. Equipment loan to pay up 1979 members will be through Jim Ladner, Ext. 5210.	APR 4 - Ames Stamp Club Meeting Time: 7:30 p.m. Location: N-241, Room 237	APR 5 - Bible Study for Ames and Navy People Coordinator: Dr. Dewey Hodges, Ext. 5835 Time: 12:00 Noon Location: Bldg. 48, Navy side (Sunday School building)	APR 6 - If you wish to have an event announced on this Calendar please notify Linda Mackey, Visits Coordinator, Ext. 5546, M/S 253-1. The next Calendar will cover the period April 2-April 20. The deadline is March 13.

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

AMES RESEARCH CENTER
MARCH 13, THRU MARCH 19, 1979
A LA CARTE MENU

TUESDAY	Italian Pot Roast with Spaghetti.....	1.45
	Turkey Ala King on Biscuit.....	1.30
	Choice of One: Snowflaked, Hashed O'Brien Potatoes, Green Beans Savory Style, Buttered Corn or Salad	
	Soup - Tomato and Rice.....	.30 & .45
WEDNESDAY	Chicken Legs Bar-B-Que	1.45
	Sweet and Sour Meat Balls.....	1.30
	Choice of One: Mashed Potatoes, Buttered Rice, Zucchini & Tomatoes, Lima Beans or Salad	
	Soup - Beef & Noodle.....	.30 & .45
THURSDAY	SPECIAL HOLIDAY MENU (SAINT PATRICK'S DAY)	
FRIDAY	Smoked Ox Tongue over Spinach with Raisin Sauce.....	1.45
	Seafood Crepes and Newburg Sauce.....	1.30
	Choice of One: Snowflaked, Hashed O'Brien Potatoes Peas & Corn, Italian Beans or Salad	
	Soup - Borscht or Cony Island Clam Chowder.....	.30 & .45
MONDAY	Roast Cross Rib of U. S. Choice Beef Au La Natural.....	1.45
	Spaghetti Tetrizzini.....	1.30
	Choice of One: Whipped, Creamed Potatoes, Stewed Tomatoes, Peas & Mushrooms or Salad	
	Soup - Cream of Onion.....	.30 & .45
DAILY SPECIALS	INCLUDES: A \$1.30 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP...	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

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NASA

The Astrogram

VOLUME XXI NUMBER 11

March 22, 1979

ARC aircraft to scan Peruvian skies

An Ames high-altitude, scientific research aircraft will fly several astronomy missions out of Lima, Peru, in March.

Four evening scientific flights will be made by the U-2 aircraft from Jorge Chavez Airport, Lima. The flights will all be over international waters and Peruvian air space.

The aircraft will carry as its only payload an upward-looking differential microwave radiometer. The radiometer is a device for measuring tiny differences in the sky's universal background microwave radiation at extremely low temperatures. The device gathers its data in two different parts of the sky (60 degrees apart).

The measurements obtained will be used to determine the movement and speed of the Earth and our Galaxy, the Milky Way, with respect to far distant matter of the universe. These measurements are based on the theory that microwave radiation emanated from the creation of the universe some 15 billion years ago in a "big bang" explosion and that all the matter in the universe has been and still is expanding.

Similar measurements made by the same aircraft in the Northern Hemisphere in 1976-77 support this theory and the belief that our Milky Way and Earth

are traveling through space at 1.6 million kilometers per hour (1 million miles per hour). Earth seems to be moving in the direction of the constellation Leo and its star Regulus.

The scientific experiment team will be represented in Peru by Dr. George Smoot and Phil Lubin of Lawrence Berkeley Laboratory of the University of California. Dr. Luis W. Alvarez, Nobel prize-winning physicist of the University of California at Berkeley, was an early sponsor and enthusiastic proponent of these experiments. These scientists need this expedition to Lima to obtain coverage of the Southern Hemispheric celestial areas.

The results of the Lima night flights will be compared with the previous experiments conducted in the Northern Hemisphere, with the goal of further substantiating evidence that the big bang theory is correct. Simultaneous measurements will be made by a ground-based instrument which measures the polarization (direction of vibration) of the cosmic radiation — the remnants of the microwave radiation that emanated from the big bang — as a further test of this theory.

The NASA team in Peru, headed by James Charbonneau, Chief of the High Altitude Missions Branch here at Ames, will consist of about 18 NASA and Lockheed Aircraft Co. personnel.

The scientific payload, including support equipment and the radiometer, weighs about 135 kilograms (300 pounds). The aircraft will fly 160-km (100-mi.) legs at right angles to each other at a latitude of about 16 to 17 degrees south. The radiometer will collect data at two different points in the sky during each four-hour mission. With four missions planned, the radiometer will cover eight different celestial areas and the total coverage could be as much as two-thirds of the sky's Southern Hemisphere.

The U-2 was chosen for the experiments because it can fly at altitudes as high as 19,500 meters (65,000 ft) where the extremely low atmospheric water vapor will not significantly affect the measurements.

Lima was chosen by the scientific and operational team members because from there the aircraft can reach the southern latitudes necessary to obtain the required data.

Scientific results and conclusions of the 1976-77 flights over the United States were published in the May 1978 issue of *Scientific American* and in *Physical Review Letters*, October 1977. Results from the Peru-based expedition will be published in similar scientific journals when analysis is complete.

FPC Scholarship Awards program announced

This year, as in the past, the Federal Personnel Council, the San Francisco Bay Area Federal Executive Board, and other cooperating groups are offering Scholarships for children of Federal Civilian employees or for youths employed under the Youth Opportunity Programs (the President's Stay-in-School Campaign or the Summer Youth Opportunity Campaign). Ten \$500 awards will be granted, more than 10 depending upon the generosity of sponsors, professional associations, and others interested in this deserving project.

To be eligible, a student (1) must be the son or daughter of a career civilian employee presently employed in a Federal agency in Northern California; or (2) the son or daughter of a retired or deceased career civilian who was employed by a Federal agency in Northern California at the time of retirement or death; or (3) currently employed in a Federal agency in Northern California under the President's Stay-in-School campaign; or (4) have been employed during the summer of 1978 under the Summer Youth Opportunity Program; and (5) a high school senior graduating in January or June 1979 (or between those dates). Northern California includes Monterey, Kings, Tulare, Inyo and all areas in California north of these counties.

Bases of Awards:

Scholastic ability — based on high school record and results of scholastic aptitude tests of the College Entrance Examination Board.

Leadership potential — based on application and letters of recommendation.

Essay — based on submission of a 1200 word essay entitled "What I Would Do As A Public Service Manager Or Employee In A Proposition 13 Era."

Economic need — based on income and family size.

Application Procedures:

1. Obtain application from agency (Ames Training Branch, Bldg. 241, Rm. 138) or from address below.
2. Send application to the address below post-marked no later than *April 6, 1979*, with:
 - a. A copy or photostat of your high school transcript(s) as of December 1978 showing hours of credit for each course, grade, date of completion and results of your CEEB test. This may be shown on transcript.
 - b. Two letters of recommendation from Teachers, Counselors or Principals.
 - c. An essay of approximately 1200 words on "What I Would Do As A Public Service Manager Or Employee In A Proposition 13 Era."

Send application to:

Brenda Hyson
Personnel Officer
United States Assay Office
155 Herman Street
San Francisco, California 94102

Hawaii Golf trip

In response to many requests, the Ames Jetsetters and the Ames Golf Club are cosponsoring a golf trip to Hawaii. The plans are completed now for 4 days at Maui and 4 days at Kauai from May 29 to June 6, 1979. Included in the price are first-class accommodations, 3 "hosted" cocktail parties, green fees for 4 rounds of golf, golf carts, tournament awards, and a professional host and guide throughout the trip. Also included is a car rental with unlimited mileage (4 persons per car). The price is \$717 for golfers and \$618 for nongolfers. Get your reservations in as soon as possible to Bill Hughes, Group Sports Service, 604 Mission Street, Suite 202, San Francisco, CA 94105 (tel. no. (415)981-2021).

Scuba Club

Life has started again in the "Ames Scuba Club" and your new president-elect, Ernie Iufer, has proposed the following:

1. CPR/First Aid demonstration at the April meeting
 2. Boat dives in the future
 3. Design of special weight release and audio signal system
 4. Special training using "Harvard Step System"
 5. Refresher training — pool dive
 6. Equipment repair and up-date
- Come to our next monthly meeting, April 3, 1979, 11:30-1:00, at the private dining room of Ames Cafeteria — you are invited.

For equipment loan to paid-up members, contact Jim Ladner at extension 5210 or pager 26-154.

Test engines promise less noise from small aircraft

Two experimental engines designed to significantly reduce the noise and pollutant emissions of general aviation aircraft are being developed by NASA.

Flyover noise levels, compared to the quietest current business jets, are predicted to be about 10 decibels lower for one research engine and about 14 decibels lower for the other engine. These correspond to 50 to 60% reductions in perceived noisiness.

The program objective of QCGAT, standing for Quiet Clean General Aviation Turbofan, is to demonstrate applicability of large turbofan engine technology to smaller general aviation turbofan engines to achieve major noise and pollution reductions while cutting back or maintaining current fuel consumption levels.

One QCGAT engine was developed and tested by the Garrett AiResearch Manufacturing Co. of Phoenix, Ariz. The other is being developed and tested by the AVCO Lycoming Division of Stratford, Conn. Both engine programs are managed by Lewis Research Center, Cleveland, Ohio.

Another way of indicating quietness of an aircraft is the size of its noise "footprint." This is the ground area below the aircraft's path subject to noise during takeoff and landing. The noise footprint for an aircraft using a QCGAT engine is predicted to be one tenth that of the quietest current business jets.

"Thus, the QCGAT program should clearly demonstrate that noise need not be a major constraint on the future growth of turbofan-powered aircraft in general aviation," said G. Keith Sievers, NASA Lewis QCGAT Project Manager.

NASA-wide jogging competition

NASA's 7th Intercenter Running Competition will be held April 9-13. Distances are 2 miles and 10 km. Those eligible are NASA employees (including retirees), regular contractors, co-op students at work, and university affiliates. Ames won both events last fall and we can repeat these victories if enough participate. It is free and fun and everyone receives an award. For information, send your name and mailstop to Joggers, N234-1.



Jeanette Remington, Bob Pike (both of Personnel Division) and Genelle Deverall (Simulation Sciences Division) jog vigorously to the finish line during last year's NASA-wide competition.

Golf is back

Chairmen Mitch Radovich and Al Llamas provided shirtsleeve weather for 42 Ames golfers and guests at the kickoff tournament for 1979 at the Sunol Palm Course on Saturday, February 10.

The enthusiasm ran high, and so did some of the scores. But, rightfully so, because Palm's easy going features are deceptive and normally play tough.

All things considered, two fine scratch scores were short by father and son, Frank and Gary Lazzeroni (79 and 80). Good thing! Edith doesn't play golf!

There were many other champions for the day, notably:

1st Flight winners:

1. F. Lazzeroni
2. G. Lazzeroni
3. O. Koontz and M. Orozco (tie)
4. R. Ramos
5. J. Lee and H. Matthews (tie)

2nd Flight:

1. P. Quattrone
2. M. Radovich
3. D. Peeler
4. J. Cayot and M. Rozewicz (tie)
5. G. Falkenthal

3rd Flight:

1. N. McFadden
2. M. Weyers
3. E. Rozewicz, C. McCloskey and D. Van Sickle (tie)
4. S. Brovarney, A. Joly and A. Llamas (tie)

4th Flight:

1. C. Banducci and B. Page (tie)
2. G. Rathert and I. Rathert (tie)
3. B. Barrow
4. B. Quattrone

Annual Bonsai exhibit

The Kusamura Bonsai Club is sponsoring a Bonsai Exhibit on Saturday, April 21st (12 noon to 6 p.m.) and Sunday, April 22nd (11 a.m. to 4:30 p.m.). The exhibit will be held at the Los Altos Civic Center, 1 North San Antonio Road in Los Altos.

Study to determine private sector

NASA and the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce are jointly undertaking a study to determine the extent to which private industry can participate more directly in the nation's civil remote sensing program.

The study is one of several actions directed by President Carter in his civil space policy statement.

Remote sensing involves obtaining information about the Earth from space using various advanced sensing instruments.

The private sector is being asked to submit views regarding increased participation in remote sensing in the near term.

Suggestions are being considered on any and all aspects of remote sensing, including:

- Capital investment
- System ownership
- Systems concepts
- Commercial product development
- Market assessments
- Incentives needed to participate
- The roles of government and the private sector

Suggestions and opinions received will be considered in the development of plans and policies for private investment and participation in every aspect of remote sensing.

The study is being directed by Arnold Frutkin, NASA Associate Administrator for External Relations and Wilbur H. Eskite, Jr., NOAA Special Assistant for Studies and Analysis.

Annual AIAA Model Airplane contest

This year, the contest will be held at the Sunnyvale Community Center Indoor Sports Building on Sunday, May 20, 1979, from 9:00 a.m. to 3:00 p.m. The Delta Dart duration event will be flown in two age classes, 11 and under and 12 through 14. The Pennyplane duration event and the Original Design event will each have two divisions, 14 and under and 15 through 19.

The Originality Judges will be: Benjamin Beam, President, Beam Engineering, Inc.; William Lockman, Experimental Fluid Dynamics Branch; David Hickey, Asst. Chief Large Scale Aerodynamics Branch; John Sorenson, Analytical Mechanics Associates, Inc.

Delta Dart kits may be purchased for 35¢ each from the following people:

Bob Ormiston, bldg. 215, room 202, ext. 5835
 Bryan Doolin, bldg. 211, room 110, ext. 5449
 Lou Young, bldg. 244, room 135, ext. 6546
 Fred Styles, bldg. 239, room 163, ext. 5728
 Terry Feistel, bldg. 247, room 208, ext. 6677
 Clara Johnson, bldg. 233, room 130, ext. 6035
 Bob Carros, bldg. 227, room 212, ext. 5876
 Dave Jones, bldg. 243, room 037, ext. 5169
 Ron Smith, bldg. 227, room 211, ext. 6133
 George Xenakis, bldg. 210, room 241, ext. 5430

The contest is free to all entrants.



CONTESTANTS FROM PREVIOUS CONTESTS

Golf awards banquet

The lovely and spacious home of Jim and Jean Martin (we thank them again) provided the setting for the 1978 Golf Awards, February 23. A handsome selection of international cuisine and refreshments got the awards banquet off to a spirited start. And President Reuben Ramos handled the M.C. honors expertly and with wit, with able assistance from Treasurer, Dave Banducci.

Reuben announced that the club officers for the coming year will be: President—Reuben Ramos, Vice-President—Earl Menefee, Treasurer—Dave Banducci, Secretary—Mike Orozco, and Handicap Chairman—Frank Lazzeroni. After the dust had settled for the 1978 season, the scoreboard read like this:

Match winner, first flight:

Tex Ritter — too much determination and momentum and a dash of brashness.

Runner-up: Owen Koontz

Match winner, second flight:

Ed Tischler — methodical, cool, and daring.

Runner up: Phil Quattrone

Match winner, third flight:

Hazel Mulkern — stylistic, steady, and difficult to beat.

Runner-up: B. B. Gray

Most improved golfer:

Ed Tischler hurdled from a 24 to a 17 handicap in one season. Excellent!

Directors cup:

Ina Rathert shot the low net round of the year, 62, and was always in the battle.

Sandbagger of the year:

This award is the least coveted but very "prestigious" and is the most fun. And following in the footsteps of the previous winners, Mike Orozco and Jim Martin is — yes? — Owen Koontz!

Vardon Trophy and Best Scratch Trophy:

The low net and low gross honors rarely go to the same person, of course, unless that person is as gifted and as relentless in pursuit as is the guy that shot a scratch 75 in a driving rainstorm at the very difficult Pasatiempo. Very professional! A low net of 70.38 and a low gross of 77.5 states the qualifications of a real champ, Fred "Pete" Johnson.

Want ads

Miscellaneous

(Continued from Page 4)

Roommate wanted: To share 2 br apartment 3 miles from Moffett. \$130 + one-half utilities. Call Ext. 6235.

BIKE: 10-speed, Schwinn Varsity, 24" frame, excellent condition. \$75. Ski boots: ladies' size 6, \$5. Stereo with stand: \$20. Call 493-8203.

Our beautiful 1½-yr-old spayed female dobie Shepherd needs a good home with a fence. Call 867-0972.

Civil servants' banking at Pacific Valley Bank interested in starting Automatic Payroll deposit please contact Ext. 5877.

Moving Sale: Hibatchi (1), curtain rods (3 — different sizes), plants, potting soil, televisions (2 B&W, one works, one needs help), and misc. other valuables. Call 961-0211.

FOR SALE: Schwinn, 10-sp, men's 21½" frame, gold color, VARSITY with chrome fenders, good tires and brakes, excellent mechanical condition. \$75. Phone 245-6411.

FOR SALE: 16' trailer. 1970 Cardinal. Sleeps 6. Has extras including a Porta-Potti, jacks, battery, electric water pump and brake control. Very good condition. \$1500. Call 263-0292.

Stanford Instructional TV network - Spring courses

Course No.	Title	Units	Days	Time	Channel	Room	Professor
AERO-ASTRO							
AA 244C	Aeroelasticity	3	MWF	1:15-2:05	3	SK 191	Ashley
AA 278B	Optimal Control of Dynamic Systems	3	TTh	8:00-9:15	10	T 156	Bryson
AA 297	Seminar in Flight Mechanics and Control	1	W	4:15-5:30	8	SK 193	Powell
CIVIL ENGINEERING							
CE 282B	Earthquake Engineering II	3	MWF	9:00-9:50	3	SK 191	Shah
COMPUTER SCIENCE							
CS 107	Systematic Programming	3	MWF	2:15-3:05	10	T 156	Brown
CS 154	Formal Languages	3	MWF	10:00-10:50	8	SK 193	Yao
CS 224	Models of Thought Processes	2	TTh	1:15-2:30	12	ERL 320	Lenat
ELECTRICAL ENGINEERING							
EE 113	Electronics	3	TTh	8:00-9:15	8	SK 193	Gibbons
EE 181	Introduction to Computer Organization, Machine and Assembly Language	3	MWF	10:00-10:50	10	T 156	Williams
EE 201C	Seminar	1	Th	11:00-11:50	10	T 153	Manning
EE 208	Biological Information Processing	3	TTh	9:30-10:45	10	T 156	White
EE 211	Principles of Pulse and Timing Circuits	3	MWF	11:00-11:50	12	ERL 320	Kincheloe
EE 221B	Linear Active Networks	3	MWF	10:00-10:50	12	ERL 320	McWhorter
EE 261	The Fourier Transform and Its Applications	3	MWF	2:15-3:05	3	SK 191	Rosenfeld
EE 292W	Special Seminars	1	TTh	4:15-5:30	10	T 156	Streifer
EE 312A	Integrated Circuit Fabrication Processes	2	TTh	9:30-10:30	8	SK 193	Plummer
EE 314	Linear Integrated Circuits	3	TTh	8:00-9:15	12	ERL 320	Angell
EE 326C	Microwave Electronics	3	MWF	1:15-2:05	10	T 156	Chodorow
EE 328B	Physics of Semiconductor Devices	3	MWF	11:00-11:50	8	SK 193	Swanson
EE 363	Introduction to Linear System Theory	4	TTh	9:30-11:00	12	ERL 320	Friedlander
EE 373	Adaptive Systems	3	MWF	3:15-4:05	3	SK 193	Widrow
EE 370	Information Systems Seminar	1	M	4:15-5:30	8	SK 193	Gill
EE 377	Pattern Recognition and Robustness	3	TTh	2:45-4:00	12	ERL 320	Cover
EE 379	Communication Channels	3	TTh	1:15-2:30	8	SK 193	Gray
EE 380	Seminar on Digital Systems	1	W	4:15-5:30	10	T 153	Flynn
EE 381B	Design of Digital Circuits and Systems	3	MWF	11:00-11:50	3	SK 191	McCluskey
EE 387	Error-Correcting Codes	3	MWF	2:15-3:05	8	SK 193	Gill
EE 392G	Digital Image Processing	3	MWF	9:00-9:50	8	SK 193	Goodman
EE 392J	Introduction to Digital Telecommunications	3	MWF	8:00-8:50	8	SK 193	Narasimha
EE 449	Medical Imaging Systems	3	TTh	1:15-2:30	3	SK 191	Macovski
EE 481	Computer-Aided Design of Digital Systems	3	TTh	2:45-4:00	10	T 156	Van Cleemput
EE 484	Computer Communication Networks	3	TTh	11:00-12:15	8	SK 193	Tobaji
ENGINEERING							
E 161	Engineering Economy	3	MWF	9:00-9:50	12	T 153	Ireson
E 209	On-Off Control Logic	3	MWF	8:00-8:50	12	ERL 320	De Bra
INDUSTRIAL ENGINEERING							
IE 133	Industrial Accounting	4	MWF	11:00-11:50	10	T 153	Riggs
MATERIAL SCIENCE							
MATS 249	Time-Dependent Plasticity	3	TTh	1:15-2:30	10	T 156	Sherby
MECHANICAL ENGINEERING							
ME 231C	Dynamics	3	T	10:00-10:50	3	SK 191	Kane
ME 261	Turbulence	3	Th	9:00-10:50	10	T 156	Reynolds
STATISTICS							
STAT 116	Theory of Probability	4	MWF	10:00-10:50	3	SK 191	Mittal

Those wishing to enroll should complete an ARC Training form 301 and route it to Training via the appropriate Branch, Division and Directorate offices for approval. Additional forms and training information may be obtained from the Training Branch, Building 241, Room 138.

Library surplus books available

The Main Library Bldg. 202 is preparing to surplus books no longer needed in the library or branch library collections.

Before instituting formal surplus procedures, the staff wants to be certain that all local needs are being met; therefore, the items being surplus will be available for examination by NASA-Ames Civil Service employees. They may select any titles pertinent to their work for retention in offices or laboratories.

Stop by the library during the period March 23 — April 6, 1979, and the staff will be happy to show employees where the material is on display.

Persons selecting books are reminded that the material remains government property and may not be appropriated for addition to private libraries or collections.

Coming event - April 25th!

Save the date of April 25 to take your office worker to lunch. Plans are underway for the Secretaries Week Luncheon. Watch for more information soon.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
79-49	Aerospace Engineer	GS-12/13	FVQ	NASA-wide, Ames/Army and Outside	Extended to 04-06-79
79-59 (Amended)	Secretary (Stenography) and Secretary (typing)	GS-8/9	D	Centerwide Army and Outside	04-13-79
79-63	Wind Tunnel Mechanic Foreman	WG-11 or 12	FAO	Centerwide, Ames/Army	04-06-79
79-64	Secretary (Typing)	GS-4/5	RFS	Centerwide, Outside/Army	04-06-79
79-65	Model Maker	WG-14	RSC	Centerwide, Ames/Army	04-06-79
79-66	Research Aircraft Inspector	WG-14/15	FOI	NASA-wide, Ames/Army and Outside	04-13-79
79-67	Wind Tunnel Mechanic	WG-8/10	FAO	NASA-wide, Ames/Army and Outside	04-13-79

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
79-33	Library Technician (GO)	ATL	Evelyn Lachica
79-41	Model Maker Foreman	RSS	Albert Perkins
79-44	Secretary (Typing)	FDS	Rebecca Snow
79-46	Supervisory Contract Specialist	ASR	Jana Coleman
79-47	Supv. Electronics Technician	FDS	Robert Hinds
79-62	Procurement Clerk (Typing)	ASF	Cancelled

Want ads Transportation

FOR SALE: '76 Plymouth Sport Fury - Dark w/vinyl top, AM-FM, AC, PS, PB, 52K miles. Top condition. \$3300. Call days 988-7373, evenings 969-7737.

FOR SALE: '77 Kawasaki KZ400. Needs little work. \$700 or best offer. Call evenings 734-2604.

1973 Honda CB 350. Low miles, new battery, front tire, tune-up. Good condition. \$375/offer. Call 948-5968.

For Sale: 1974 Austin Marina GT, 4-speed, 70,000 miles. \$800 or best offer. Call Ext. 5220.

1973 Datsun 240Z, yellow w/black interior; 64,000 miles. Michelins, mag wheels, new brakes, air cond., sun shade, one owner, good condition. \$4900 or best offer. Call 965-6012.

'77 DATSUN - Sporty F10, Hatchback, 5-spd, front wheel drive, AM/FM, sunroof, 30 mpg, \$3200. Call 854-0729 eves. and weekends.

The Astrogram

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor Meredith Moore
Associate Editor Marcia Kadota
Reporters NASA Employees

Deadline for contributions: Thursday between publication dates

'71 Dodge Colt, 4 dr, A/C, needs head gasket, \$450. Call 259-7607.

'24' by 65' Brentwood Viking mobile home. 2 bdrm, 2 bth, enclosed screen porch, 2 sheds, grape arbor, brick patio. Plaza Del Rey. 744-0554.

Housing

FOR RENT: 4 br/2½ ba, large LR, DR, FR. Prime location in north valley. Close to everything. \$525/mo. Available April 10. Call 923-8241 after 6 p.m.

FOR RENT: Condominium: \$430/mo. + deposit. 3 br/1½ bath. Pool, cabana, recreation facilities. Water/garbage paid; new carpet, newly painted, excellent condition and location: Moorpark/Lawrence/Mitty/Saratoga. Ideal for 2 or 3 single persons. Call evenings: 241-0693 or 243-9692.

WANTED: 2 female roommates to share a 3-br, 2½ ba house in Sunnyvale, 6 miles from Ames. No pets. \$180/mo + one-third utilities. Call 732-9491 evenings.

HOUSE FOR RENT: 4 br/2 ba, covered patio. 10 min. from Ames. Off LaFayette St. in Santa Clara. \$525/mo. No lease. Call 988-4853.

HOUSE FOR SALE: By owner, Santa Clara, 4 br/2 ba, fireplace. Easy walking distance to schools, stores, restaurants, etc. Close to Kaiser Hospital. Quiet street with back fence bordering Saratoga Creek. Lots of panelling and fruit trees. \$82,950, conventional financing. Call (408) 243-3716 after 6 p.m. and weekends.

FOR RENT: Beach house at Pajaro Dunes (near Watsonville). Completely furnished, including linens; cleaning included in the rent; beautiful views of Monterey Bay, 100 ft. from the beach; tennis courts. Reserve now for spring and summer. Call 252-7260.

SQUAW VALLEY RENTAL: Skiing with no traffic headaches. Fully furnished condo. Sleeps 5. Adjacent to lifts. Call 964-2170.

PALO ALTO CONDO FOR RENT: 2 br/2 ba, pool, in Greenhouse complex near Ames. Children OK. Available May 1st. Sublet for 2 mos. and/or negotiate new 1-yr lease. \$420/mo. Call 493-2747 after 2:30 or leave message at 964-9900.

HOUSING NEEDED for 2 Boston University students who will be working at Ames April 7-May 7. Call Ext. 6110.

FOR RENT: Duplex, 3 br/2 ba, FR, DR, FP, quiet cul-de-sac. Adults preferred, no pets. \$525 per mo. Call 738-4849.

Miscellaneous

Can you really drive your car to Ames from the Westgate/Cupertino/De Anza areas for 50¢? Why not save both money and energy by riding the Ames-Westgate commute bus? For route and time information, call Ext. 6213.

9-piece dining set, French provincial, solid French walnut, \$1,000 or offer. Call 251-8854.

WANTED: Lens for Konica AutoReflex T. Call 248-5546 evenings.

FREE: Puppy, Shepard mix, female, 3 mos. old. Free to good home. Call 739-5105.

CARPPOOL: We like more people to join our carpool. From Saratoga (Cox Ave.) to NASA-Ames. Working hours 8:00-4:30. If interested please call Ext. 5431 or Ext. 5048.

SAILING? Be safe and take a Coast Guard sailing and seamanship course. Starts April 10, 7 p.m., 921 Charleston Rd., Palo Alto. For information call 736-2056.

FOR SALE: Male Siamese kittens, 7 wks. old. \$25 each. Call 651-8036.

FOR SALE: 3 pr. lined drapes, 72x54; queen-sized bedframe on sheppard casters; queen-sized, rose-beige, vinyl-covered headboard. Phone 967-2939.

SUMMER BOWLING: Anyone interested in bowling this summer, Moonlite Lanes, Tuesday nights, 6:30 p.m., 15 weeks starting May 8, contact Ext. 6024.

(Continued on Page 3)

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CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

<p>Apr 2 - Flight Systems Research Division Seminar Speaker: Dr. Christopher Byrnes, Division of Applied Science, Harvard University Topic: Pole Placement by Output Feedback for Multivariable Systems Time: 10:00 a.m. Location: N-210, room 205</p>	<p>Apr 3 - Ames Scuba Club monthly meeting Time: 11:30-1:00 p.m. Location: N-235, Ames Cafeteria Private Dining Room Dues are \$5.00 per year and payable to Ames Scuba Club, c/o C. S. Yem, 213-8. Equipment loan to paid up 1979 members will be through Jim Ladner, ext. 5210.</p>	<p>Apr 4 - Ames Stamp Club meeting Time: 7:30 p.m. Location: N-241, room 237</p>	<p>Apr 5 - Bible study for Ames and Navy people Coordinator: Dr. Dewey Hodges, ext. 5835 Time: 12:00 noon Location: Bldg. 48, Navy side (Sunday School Building)</p>	<p>Apr 6 -</p>
<p>Apr 9 -</p>	<p>Apr 10 -</p>	<p>Apr 11 -</p>	<p>Apr 12 - Bible study for Ames and Navy people Coordinator: Dr. Dewey Hodges, ext. 5835 Time: 12:00 noon Location: Bldg. 48, Navy side (Sunday School Building)</p>	<p>Apr 13 -</p>
<p>Apr 16 - National Federation of Federal Employees (NFFE) monthly meeting Time: 12:00-12:30 p.m. Location: N-213, room 261</p>	<p>Apr 17 -</p>	<p>Apr 18 - Ames Stamp Club meeting Time: 11:30 a.m. Location: N-241, room 113</p>	<p>Apr 19 - Bible Study for Ames and Navy people Coordinator: Dr. Dewey Hodges, ext. 5835 Time: 12:00 noon Location: Bldg. 48, Navy side (Sunday School Building)</p>	<p>Apr 20 - If you wish to have an event announced on this calendar please notify Linda Mackey, Visits Coordinator, ext. 5546, M/S 253-1. The next calendar will cover the period April 16 - May 4. The deadline is March 27.</p>

WEEKEND ACTIVITIES:

March 31st - ARC Tournament
Pasatiempo Golf Course
Call John Pogue, ext. 5710, or
Don Davis, ext. 5702
by March 23rd.

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

AMES RESEARCH CENTER

MARCH 27, THRU APRIL 2, 1979

A LA CARTE MENU

TUESDAY Pork Chop Creole Style and Rice.....
 Spicy Joe on Toast.....
 Choice of One: Snowflaked, Scalloped Potatoes,
 Buttered Turnips, Peas & Pimentoes or Salad
 Soup - Split Green Pea and Sliced Franks.....

WEDNESDAY Lamb Curry over Rice.....
 Steamed Knackwurst and Red Cabbage.....
 Choice of One: Mashed, Anna Potatoes, Brussel Sprouts,
 Harvard Beets or Salad
 Soup - Beef Barley.....

THURSDAY Boiled Corned Beef and Cabbage.....
 Baked Sweet and Sour Stuffed Cabbage.....
 Choice of One: Whipped, Boiled Potatoes,
 Celery & Spinach, Carrot Vichy or Sala
 Soup - Fresh Vegetable and Spaghetti.....

FRIDAY Fish Tempura and Tartar Sauce.....
 Turkey Pie with Corn Bread Crust.....
 Choice of One: Snowflaked, Cottage Fried Potatoes,
 Corn & Lima Beans, Peas & Celery or Salad
 Soup - Corn and Clam Chowder

MONDAY Ham Steak Hawaiian Style.....
 Shrimp Chow Mein.....
 Choice of One: Mashed Potatoes, Candied Yams,
 Hominy, Buttered Zucchini or Salad
 Soup - Lentil and Diced Ham.....

DAILY SPECIALS INCLUDES: A \$1.30 ENTREE, VEGETABLE OR POTATO, SALAD
 ROLL & BUTTER, AND A 25¢ BEVERAGE.....

(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP...

APRIL 3, THRU APRIL 9, 1979

A LA CARTE MENU

TUESDAY Chicken Cacciatore.....
 Baked Corned Beef Hash and Poached Egg.....
 Choice of One: Whipped, Parmesan Potatoes,
 Steamed Cabbage, Corn O'Brien or Salad
 Soup - Cream of Spinach or French Onion.....

WEDNESDAY Meat Loaf Home Style and Sauce.....
 Sausage and Rice Casserole.....
 Choice of One: Snowflaked, Lyonnaise Potatoes,
 Bean Sprouts & Vegetables, Buttered Spinach
 or Salad
 Soup - Old Fashion Navy Bean.....

THURSDAY Baked Ham and Raisin Sauce.....
 Turkey A La King on Biscuit.....
 Choice of One: Mashed Potatoes, Candied Yams,
 Buttered Corn, Green Beans or Salad
 Soup - Philadelphia Pepper Pot.....

Friday English Fried Sole Almondine
 Turkey Cream Cheese & Macaroni Casserole.....
 Choice of One: Whipped, German Fried Potatoes, Buttered
 Celery, Cauliflower Au Gratin or Salad
 Soup - Seafood Gumbo.....

MONDAY Sauerbraten and Potato Pancake.....
 Boiled Beans and Diced Ham.....
 Choice of One: Snowflaked, Hot Potato Salad, Buttered
 Carrots, Beans Almondine or Salad
 Soup - Chicken Broth & Rice.....

DAILY SPECIALS INCLUDES: A \$1.30 ENTREE, VEGETABLE OR POTATO, SALAD
 ROLL & BUTTER, AND A 25¢ BEVERAGE.....

(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP...

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