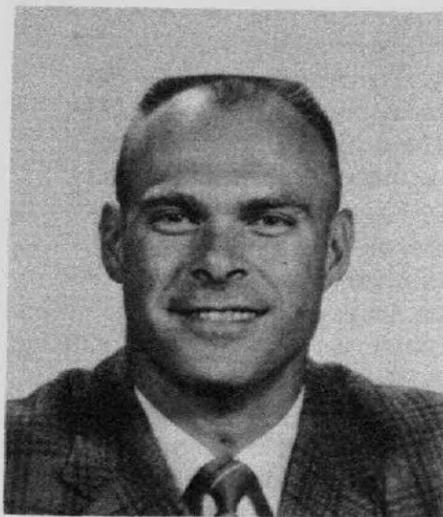




National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

Thomas Snyder Receives 1972 Drydan Fellowship

Ames research engineer C. Thomas Snyder, Flight and Systems Research Branch, has been selected to participate in the Hugh L. Dryden Memorial Fellowship Program sponsored by the National Space Club.



C. THOMAS SNYDER

space treaties, government, Congressional and industrial leaders.

Mr. Snyder is a team leader in his branch and is responsible for conducting experimental and analytical research investigations in the areas of flight dynamics and aircraft performance and handling qualities. At present he is responsible for cooperative interagency and international research investigations using advanced piloted flight simulators to define and improve airworthiness standards for new types of airplanes.

In these investigations, which to date have been largely devoted to SST, participants include pilot-engineer teams representing the airworthiness authorities of France, the United Kingdom, and the U.S. (FAA) and European and U.S. airframe manufacturers.

Mr. Snyder was graduated from the University of Wichita with a BSAE degree in 1962, after five years of undergraduate study while working at Beech Aircraft Corp. During this time he received 11 awards and honors including Senior Honor Man, "Mr. Engineering" of Ten Top Senior Men, and the Dean's Honor list. He is a member of Tau Beta Pi and Pi Mu Epsilon.

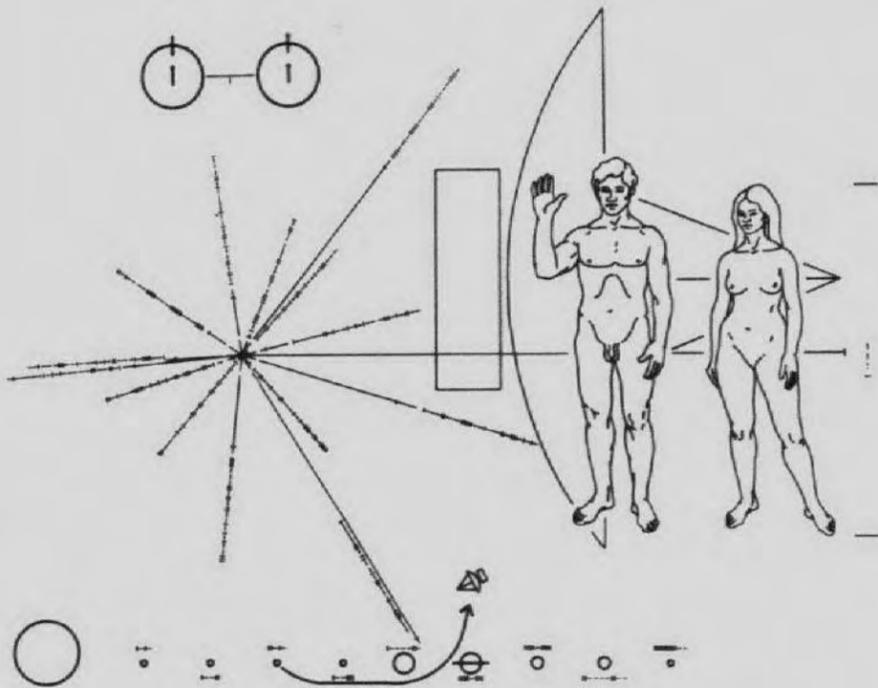
Following graduation Mr. Snyder joined the Ames staff in June 1962. Throughout his career at the Center he has continued postgraduate study in formal and informal courses which emphasized aircraft stability and control. Formal graduate study was pursued under the Honors Cooperative Program between Stanford and Ames and in 1969 he was granted a master of science degree from the Department of Aeronautics and Astronautics.

While at Ames Mr. Snyder has conducted or participated in a wide range of research investigations and authored or co-authored 11 technical reports or papers on advanced aircraft flight dynamics, performance, and handling characteristics. He was awarded a NASA Special Achievement Award in 1970 and was the Ames nominee for the Arthur S. Flemming Award in 1971.

Mr. Snyder will use the \$2000 stipend which accompanies the fellowship for study at Stanford University during the academic year 1972-73. His course work will be aimed at developing and improving his planning, decision-making and data interpretation skills which are so necessary in the management of complex research programs.

The fellowship honors the late Dr. Hugh Dryden, Deputy Administrator of NASA. It was established in 1966 to provide the opportunity for one NASA employee annually to undertake a year of graduate study in the areas of engineering, science, or administration.

Sponsor of the fellowship, the National Space Club, is located in Washington, D.C. and is a prestigious organization whose membership is made up of leaders in the space field. The Club hosts the Annual Goddard Memorial Dinner at which Mr. and Mrs. Snyder will be Honored Guests. The Dryden Fellowship will be awarded at that time. Other invited honor guests at the event on March 14 include Ambassadors of foreign countries with whom the United States has



Pictorial Plaque on Pioneer F

The Ames-managed Pioneer F spacecraft, destined to be the first manmade object to escape from the solar system into interstellar space will carry a pictorial plaque designed to show scientifically educated inhabitants of some other star system -- who might intercept it millions of years from now -- when Pioneer was launched, from where, and by what kind of beings.

The plaque design was etched into a gold-anodized aluminum plate 6 by 9 inches and 0.050 inch thick, attached to the spacecraft's antenna support struts in a position to help shield it from erosion by interstellar dust.

The radiating lines on the left of the plaque represent the positions of 14 pulsars -- cosmic sources of radio energy -- arranged to indicate our Sun as the home star of the launching civilization. The "1-" symbols at the ends of the lines are binary numbers that represent the frequencies of these pulsars at the time of launch of Pioneer F relative to that of the hydrogen atom shown at the upper left with a "1" unity symbol. The hydrogen atom is thus used as a "universal clock" and the regular decrease in the frequencies of the pulsars will enable another civilization to deter-

mine the time that has elapsed since Pioneer F was launched.

The hydrogen atom is also used as a "universal yardstick" for sizing the human figures and outline of the spacecraft on the right of the plaque. The hydrogen wavelength -- about 8 inches -- multiplied by the binary number representing "8" shown next to the woman gives her height -- 64 inches. The figures represent the type of creature that created Pioneer. The man's hand is raised in a gesture of good will.

Across the bottom of the plaque are the planets, ranging outward from the Sun, with the spacecraft's trajectory arcing away from Earth, passing Mars, and swinging by Jupiter.

DR. SAGAN

That Pioneer carry an identifying plaque, was suggested by a number of people. The one chosen was designed by Dr. Carl Sagan, Director of the Laboratory for Planetary Studies, Cornell University; his wife Linda Salzman Sagan, a painter and film maker; and Dr. Frank Drake, Director of the National Astronomy and Ionosphere Center, Cornell.

A more detailed description of the plaque appears in the February 25 issue of Science journal.

DIRECTOR'S ANNUAL REPORT TO THE CENTER

Ed. Note:

The following is the annual report to the Center in its entirety as presented by the Director, Dr. Hans Mark, on Friday, February 18.

"At the end of my third year with you, it is a pleasure for me to meet with you and to discuss the future of our Center. I am particularly interested in sharing with you some thoughts about the changes that might be ahead of us and to discuss with you some of the problems that will inevitably follow. Unfortunately, we still seem to be in a situation where, at least to the public at large, technology is something of a whipping boy. However, there is some evidence that discernable changes for the better have occurred in recent months. It is too early to say at this point whether the slope of what might be called a public acceptance curve has changed but I think it is possible that we have at least reached a point of inflection. I can cite two specific examples that seem to argue in favor of this viewpoint. One is President Nixon's recent State of the Union message. In his address to Congress last month, the President stressed the necessity for the nation to develop and exploit technological opportunities in order to redress an increasingly adverse balance of trade and to stimulate a lagging economy. The development of civil aviation is a prominent part of the President's program and I am proud to say that we at Ames, through the work of Sy Syvertson on the CARD study and later, the efforts of Sy, Len Roberts and Dick Peterson, on the so-called "Presidential Initiatives" programs, contributed in a very real and remarkable way to the President's proposals. I am not certain about the public reaction to the President's speech. Obviously, we will have to wait and see whether his words can be translated into action, and the forthcoming debate in Congress over the Fy 1973 budget may once again reflect the adverse public attitude toward technology that I have mentioned. Nevertheless, the President's concern about the state of the nation's technology is very clearly a step in the right direction. Another factor that seems to point to a somewhat broader support for our work is that for the second year in a row NASA's budget is roughly the same as it was in the previous year. We still have a long way to go but there is some reason to hope that the absolute downward trend in the agency's appropriations has been arrested. I am particularly encouraged to see that certain very vital portions of the agency's budget have actually increased substantially in the President's budget request for Fiscal Year 1973. I am specifically referring to the aeronautics budget which in the last three years has increased from slightly over a hundred million dollars to a currently proposed 161 million dollars in research and development funds. In addition, the President's approval of the space shuttle program means that we now have a clear charter to develop the aerospace vehicle on which this nation's future in space exploration will depend. In view of these new circumstances I think there is at least some ground for cautious optimism about our future.

IMPORTANT MILESTONES

"For our Center I think that the coming year will see some very important milestones. To illustrate these let me list some of the things that are due to happen shortly: First, Pioneer F will be launched at the end of February. Second, the modified C-8 Buffalo aircraft will make its first test flight sometime in March. Third, the Illiac IV computer system will be installed at Ames sometime in the course of the summer. And fourth, the 36-inch reflecting telescope will be installed in the recently arrived Lockheed C-141 aircraft towards the end of the year. These things will happen. They are programs on which we have been hard at work and they are coming to fruition. The same will be true next year with Pioneer G being launched in the spring and the QUESTOL program well on the way. What is important about these facts is that we will be judged henceforth more on the basis of performance rather than on promises. A failure in any one of these programs could seriously damage the Center's reputation. One might ask, what is new? We have always been judged on performance and I am very proud to

say we have always done very well. I think the difference is that the programs I have mentioned have all attracted considerable national attention. Pioneer F is mankind's first attempt to seek direct information about planets beyond the orbit of Mars. The Buffalo C-8 aircraft is the nation's first experimental jet STOL vehicle and is the forerunner of the larger QUESTOL vehicles that are part of NASA's newly expanded program in aeronautics. The Illiac IV, when completed and installed at the Center, will be the world's largest and most powerful computer system, and the Airborne telescope on the C-141 represents a significant new departure in observational astronomy. As you have done in the past, I know that you will give your best efforts to see to it that the very excellent reputation we enjoy will be preserved and enhanced by the success of these programs.

LOOKING TO THE FUTURE

"Looking to the future, some very conflicting forces will create difficult problems for us. First, all Federal agencies are in the process of conducting further personnel reductions and NASA must bear its share. Second, because of the Fiscal Year 1973 budget decisions and the new technological initiative I mentioned, we have increased responsibilities in both aeronautics and space that offer great opportunities if they can be met. Third, although public antagonism toward technology may be easing, it is not gone and we have the difficult task of maintaining our national technological strength.

"Let me amplify each of these points to understand how we may try to resolve some of these problems and conflicts. Even though the agency's budget has remained approximately constant over the past two fiscal years, I regret to say that we will have to carry out our responsibilities once again in the face of further personnel reductions. By the end of the 1973 Fiscal Year, that is in July 1973, the agency's manpower will have to be decreased once again by approximately five percent. Our estimated share of this decrease is a total of 97 civil service positions. By the end of the fiscal year in July 1973 we will have a total civil service strength of 1727 as compared to our October 1971 ceiling of 1824. This reduction in our civil service strength is approximately equal to the previous reduction of 98 positions required in our last reduction-in-force. To implement this reduction, we separated 52 employees by involuntary reduction-in-force actions last October. Due to a favorable combination of circumstances I believe that we will be able to meet our new personnel ceilings with fewer involuntary separations should another reduction-in-force be conducted. Some policy decisions must still be made in Washington before I can give you more specific details. You will be informed about the requirements placed on us as soon as possible.

"Within reasonable limits, we will continue our present policy of making programmatic decisions rather than across-the-board personnel reductions in all directorates to meet future personnel ceilings. These decisions will be reached after thorough consultations with the leadership of the various organizations involved in the cutbacks. It is clear that we will suffer further losses but our best judgment is that it is better to eliminate certain functions than to chop piecemeal at everyone regardless of the mission and function of the organization. This is perhaps a good time for me to remind you of some of these losses. We no longer have an extensive capability to conduct biological space flight experiments. We have eliminated most of our work in structural mechanics, and we have seriously reduced our basic research in instrumentation. Some of these decisions have been extremely difficult for us to make since they have resulted in the irretrievable loss of some of the Center's capabilities. On the other hand, it is clear that such decisions must be made if we are to be able to concentrate our efforts in those areas that will enjoy continuing support and national interest.

CHANGES AHEAD

"At the beginning of my talk, I mentioned that some changes lie ahead of us if we are to concentrate effectively on our newly acquired

Director's Annual Report

(CONTINUED from Page 2)

projects. In the face of a further decline in personnel we must make absolutely certain that people are working on those things that permit them to contribute most effectively and this will require a number of personnel transfers to new fields of activity. I need not repeat here a complete list of these fields. In the many program reviews we have conducted together we have hammered out a good understanding of where we're going. We will continue to stress the development of civil and military aircraft with particular emphasis on short and vertical takeoff and landing vehicles. As you all know, we have met with considerable success in this area and we have been selected as the lead Center for the development of a new quiet experimental STOL research aircraft (QUESTOL). In the vertical takeoff and landing area we will shortly start the development of a tilt rotor research vehicle in collaboration with the U.S. Army. In space projects the Pioneer program has been expanded to include other kinds of planetary exploration projects. As you know, we have recently received the management responsibility for the Venus Pioneer Phase B study which will hopefully lead to an Ames managed Venus planetary entry mission to be launched late in 1976 and then a number of follow-on spacecraft missions to Venus. In the next few years, we expect that, with the exception of the Shuttle, NASA will tend to concentrate its resources on projects that have a relatively near term objective. Our heavy new involvement in project efforts is a reflection of this trend.

RESEARCH AND DEVELOPMENT

"The projects I have just mentioned are well defined and easy to categorize. I would be remiss if I did not also say a word about the future of basic research and technology development at the Center. I know that many of you are engaged in work of this kind and I also know that you are quite legitimately concerned about our future in the less directed and well defined areas of scientific endeavor. It is a fact that fundamental research and research and development not directly tied to specific near term goals suffer whenever funds become limited. I am acutely aware of this situation and I assure you that in spite of the cutbacks we will continue to perform fundamental research and basic technology development although it will be conducted at a reduced level consistent with the financial support that we expect to be available for such work. In my report to you last year I mentioned the criteria we would try to apply in judging whether or not to continue the support of a certain line of fundamental research and they are worth repeating here. There are two: First, the work must be excellent as judged by our friends and colleagues in the scientific community. Second, we must seek to address questions that have a genuine scientific importance. I believe that we have some really excellent opportunities here to conduct basic research that is completely consistent with these criteria. We have the opportunity to become one of the leading institutions in the world in the field of theoretical and experimental fluid mechanics. We are already very strong in this area, and with the advent of our large new computing facilities we can become even stronger. Fluid mechanics is the area of science on which almost all of NASA's activities are based and consequently we have a clear charter in this important area. Furthermore, some of the most challenging and difficult questions in modern theoretical physics deal with the field of fluid mechanics. I am speaking here of things such as the origin of turbulence and the understanding of non-equilibrium thermodynamics. It is also possible that the Illiac computer will find important uses in astrophysics and the study of stellar evolution. These are clearly questions of fundamental scientific importance and we have the opportunity to do high quality research in seeking the answers. There is good reason to believe that the development of infrared astronomy will lead to the solution of some of the puzzles that now confront us when we ask questions regarding the origin of the galaxy and the structure of the universe. The new observational tools at our command give us good reason to expect that in the next few years we will be able to make some fundamental contributions to a better understanding of the structure of the cosmos. Finally, Ames is already one of the leading centers

Bray Named To AGARD Work Group

Ames research engineer Richard S. Bray, Flight and Systems Research Branch, has been named the NASA member of the Working Group on Approach and Landing Simulation of the AGARD (Advisory Group for Aeronautical Research and Development) Flight Mechanics Panel. Chairman of this important activity is Dr. O.H. Gerlach of the Netherlands.

The objectives of the new Working Group are to collect data, relevant to the simulation of the approach and landing flight phase of various categories of aircraft, on several subjects. These include models of

atmospheric disturbances as well as windshear; models of ILS disturbance characteristics; maneuvers for simulation checkout and handling qualities evaluations for different types of aircraft (transports, VTOL aircraft, and the like); aerodynamic and other data for the simulation of a few reference aircraft, belonging to different categories; and bibliographical data on simulator validation studies.

Mr. Bray was named to the AGARD Working Group because of his research in landing simulation at Ames for which he has lead responsibility.

in the world on research dealing with the origin of life. This is clearly a fundamental question that even today excites considerable public interest. For example, a few months ago the cover story of a prominent national magazine was devoted to this topic. There is no question in my mind that we must endeavor to continue our leading position in this field. I have every reason to believe that we will be able to continue high quality programs in basic research consistent with these criteria. We have a great many excellent scientists on our research staff. Evidence of this is that two of our staff members, Dr. John Wolfe and Dr. Stan Ellis, were selected as recipients of NASA's Distinguished Scientific Achievement Medal for 1971. There is no reason, then, in my view, to be unduly pessimistic about the future of fundamental research work at Ames.

JOINT EFFORTS

"In past discussions with you I have stressed the importance of supporting the work of other Federal agencies with interests in aviation. During the past year, we have reached an agreement with the Federal Aviation Agency to collaborate on a program dealing with research in flight simulation as it relates to the establishment of certification criteria for new STOL aircraft. Our hope is that this initial step will, in due time, lead to more extensive joint efforts. We will also continue to establish closer relationships with local educational institutions in an effort to demonstrate the value of a technological education to our young people. In the long term, our only real hope of creating a new public attitude toward technology is to reach this new young constituency and to put our case before them as eloquently as we can. The chance to deal with young people on a daily basis will give us the opportunity to do this, both in word and in deed.

"I have now come to the end of the substance of my report to you and I must admit that I am left with the uncomfortable feeling that I have not really contributed very much to resolving our basic dilemma. On the one hand, Ames has some excellent and highly important programs that clearly have long term futures. On the other, we are forced to do these with fewer people. Furthermore, I would be dishonest with you if I held out any real hope that the decline in NASA's personnel ceilings can be halted after 1973. In view of these circumstances, I can only promise that those of us charged with fighting for the resources necessary to perform our work will make the strongest possible case to assure that we receive our share.

"Let me close by repeating once again that I am very pleased to have the opportunity to work with all of you. Among the nation's research centers there is no question in my mind that we are and that we shall remain at the very top.



A FAREWELL TO AMES . . . The Center recently acquired a new set of mailmen. The old ones, part of Massey Services, were wished a fond farewell at a luncheon in the Country Store by the girls in Central Files. When he learned of the luncheon Mr. Massey joined the group and then paid for the party, as a gesture of gratitude for a job well-done. (That's a lot of gratitude) Pictured above in the Country Store are: (back row, 1 to r) David Luna, Tom Veteran, Freddie Hansen; (front row, 1 to r) Warren Jenkins, Clay Hart, Douglas White, Rocci Trillo, Don Zirilli, June Wallace, Eddie Saunders and Darryl Wallace. Mr. Massey is seated in the foreground.

Jean North-Ames' Animal Lover

A larger-than-life size photograph of a lioness and a kitten greet you as you walk into the Reports Section of the Ames library. On the opposite wall is as large a picture of a chipmunk.

These posters are big clues to the first love of the lady at the desk. Mrs. Jean North, Reference Librarian in charge of the Reports Section, became fond of animals when she was a young farm girl in North Dakota.

Mrs. North demonstrates her interest in animals in several ways. "I have two Siamese cats and every-one and everything that comes over the fence gets fed" she says.

Also, she is a member of several Humane Societies, the National Wildlife Federation, the Morris Animal Foundation, and the Zoological Society of San Jose.

She has been a member of the Zoological Society for three years, and a member of the Board of Trustees for the past year. Recently she was elected secretary of the Board.

During a recent interview she talked about the zoo and its beginnings. "It's pretty," she said, "more like a garden than a zoo."

"Only certain exhibits are caged, and they are for the protection of the occupants."

Most of the animals were raised as pets by the curator, including a tiger named Tigerlily. Also, wild-life refugees often find a home at the zoo. Many of these have needed extensive veterinary care before making their public appearance.

Mrs. North said, "I invite everyone to visit the zoo. Our animals like to see people." She added that membership in the Society is open to the public.

The Ladies Auxiliary sponsors a champagne party, called Art and Animals, each May, which is open to the public and a popular event. The zoo is located off Senter Road in Kelly Park and financed by the city of San Jose. Information is available at 287-1637.

WANT ADS

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

AUTOMOBILES

For Sale-1970 Ford Camper Spec. plus 9' Vacationer Cab over camper. Truck has P.S., P.B., A/C hookerheaders, A.T. Full utility bed, extra gas tank. 4 cu. ft. But. Elec. refrigerator, many extras, only 8,500 miles. Five year warranty, \$5,500. Call after 5 p.m. or weekends. 377-0512.

For Sale-1964 Mercury Comet. V-8 automatic \$450. Call R. Accola, 263-5214.

For Sale-Mustang, 65 H.T., 289 V8, AT, R&H, PS, console, 67,000 miles, new shocks and brakes, needs paint. \$750. 948-5968.

HOUSING

For Rent-Extra large 3-bedroom, 2-bath unit in 4-plex. WW carpets, drapes, all electric kitchen, family room, sunken living room with cathedral beam ceilings, fireplace, swimming pool plus many extra's. Only 5 miles from Moffett Field in Sunnyvale. For further information please phone 245-2796 or 739-8539.

For Sale-4-bedroom modern house in Sunnyvale near Vallecito Centers and all levels of grade schools. Five years old. \$39,500. Call 736-3198.

For Sale-Beautiful 1.6 acre view lot in Murphy's Calif. Many trees, sewer and utilities to lot. Walk to town. Only 38 miles from Moffett Field in Sunnyvale. \$6,800. Dot Evans, 948-2084.

MISCELLANEOUS

For Sale-Membership in American Sportsmen's Club. Private hunting, fishing, boating, and camping areas throughout California and western states. Call after 5 p.m., 738-3689.

Wanted-Incinerator, will disassemble and haul away your old backyard eyesore whose use is prohibited. Free to both of us. For Sale-Club chair, large and comfortable with 2 layers of coil springs, gold custom knit stretch nylon cover, \$6. Contact Shapero at 10825 Alderbrook, Cupertino.

For Sale-Vincent Bach trombone \$350. 854-5768.

For Sale-Golf clubs and bag, Spalding tournament 3, 5, 7, 9 irons; 1, 3 woods; and putter. Call 296-6741.

URGENTLY NEEDED-Ride from Belmont at Raiston and El Camino. 8 to 4:30 shift. Call Ray at 2141.

For Sale-Cigarettes. Kicked the habit. 1 carton Chesterfieldking size for 1/2 price. 257-0583.

Pioneer F Is Theme of Planetarium Show

The Ames-managed Pioneer missions to Jupiter will be the theme of public programs in De Anza College's Minolta planetarium starting Thursday, March 2.

Pioneer's path through our solar system will be graphically followed. Audiences will accompany the spacecraft beyond Mars, through the asteroid belt, and on past the giant planet Jupiter.

Called "The Jupiter Pioneers", the shows will be given March 2 through May at 4 and 8 p.m. on Thursdays, at 3 and 8 p.m. on Saturdays, and at 3 p.m. on Sundays.

Discount tickets, admitting children free when accompanied by an adult will be available at MacDon-ald's Restaurants during March.

Admission charges will be; adult, \$1; students, and senior citizens 65 and over, 75¢; youths under 12, 50¢. Tickets will be available at the door.

SOFTBALL

Anyone interested in managing the Ames Fastpitch Softball Team please contact Bob Randle, ext. 2529.

BASKETBALL

. . . by Phil Wilcox

The Jets won the playoff championship of the All Ames Basketball League by turning back the previously unbeaten Beer Barrels by a score of 41 to 40. Some clutch foul shooting in the last quarter enabled the Jets to come out on top. The consolation game was won by the Fighting Pumas who beat CSC by a score of 45 to 39.

BOX SCORES

Player	JETS			Total Points
	Field Goals	Free Throws	Fouls	
Ganzler	1	6	3	8
Martell	4	1	5	9
Holmes	2	3	4	7
Wilcox	3	7	2	13
Christensen	0	0	2	0
White	2	0	1	4
	12	17	17	41

BEER BARRELS

Soderman	3	2	2	8
Green	0	2	5	2
Peterson	2	1	5	5
Myers	4	0	4	8
Orloff	0	0	1	0
Olson	2	0	4	4
Chargin	3	7	3	13
Steinle	0	0	3	0
	14	12	27	40

Ski Club Meeting

The Ames Ski Club will meet in the cafeteria Thursday, March 9, at 4:30 p.m.

A movie entitled, "Ski The Outer Limits", will be shown. Filmed in America and Europe, it describes pictorially how involved people become in skiing.

Beer will be sold for 25¢ per glass and popcorn will be free.

CHECK YOUR DECAL!

Ames employees with vehicles registered with a NAS Moffett Field identification sticker are reminded that it is their responsibility to ensure that the decal does not expire.

The date tab is issued for a period of up to three years, depending on the expiration date of the driver's license.

Be a Good Egg...

GIVE BLOOD FOR GOOD-NESS SAKE. RED CROSS BLOOD PROGRAM. +

FRIDAY, MARCH 10
AMES AUDITORIUM

C-141 Arrives at Ames

Ames has a new addition. It arrived on Feb. 4 weighing 325,000 pounds, and it is 140 feet long and 160 feet wide (wing span). Its name is C-141 StarLifter. Proud manufacturer is Lockheed Co., Marietta, Georgia.

Like most new additions it is not thought ordinary by those who conceived it. And, it does have some exceptional qualities.

For instance, it has been modified to accept a 36" diameter infrared telescope and three computers. When the telescope is installed later this year, the observatory will be the only one of its kind in the world. It will be used as an international facility, primarily for infrared astronomy and it will enable scientists to conduct astronomical research never before possible.

The computers will be used to calculate the adjustments needed to keep the telescope focused on an object as the airplane's position constantly changes and to enable the astronomers to reduce their data in real time.

"Star Trackers" and "Finder Telescopes" will also be aboard the airplane. These can remain fixed on a known celestial object while

Seiff on Venus-Pioneer Team

Alvin Seiff, Chief of the Ames Vehicle Environment Division, has been named to a team of 13 scientists, including two from Europe, selected by NASA to participate in the definition phase of a series of missions to Venus with Pioneer-class spacecraft planned to begin in late 1976.

The group was selected from 109 scientists who submitted proposals in response to a NASA invitation last July.

The Venus Pioneer missions will include both orbiter and atmospheric probes, beginning with multiple probe missions at the Dec. 1976-Jan. 1977 Venus opportunity.

the infrared telescope explores the unknown.

Other of the airplane's exceptional traits include its ability to fly continuously for over 11 hours and its ability to fly above 43,000 feet. It is the largest airplane NASA owns. Its tail stands four stories (40 feet) off the ground.

The Research Facilities and Instrumentation Division is leading the development of this Airborne Infrared Observatory. Once operational the Observatory will be managed by the Ames Airborne Science Office.

Pioneer on Jupiter Trajectory

The Ames-managed Pioneer 10 spacecraft was launched successfully from Cape Kennedy at 5:49 PST March 2. A three stage Atlas-Centaur TEM-364-4 launch vehicle put the spacecraft on a near perfect Jupiter-bound trajectory.

As a result of the March 2 launch date the spacecraft will have the shortest possible trip time to Jupiter. That date also gave the spacecraft its absolute communications limit near the orbit of Uranus at about 1.8 billion miles from the Sun. It will reach this point in 7.5 years.

The first midcourse correction maneuver was performed early on Wednesday, March 7. Two brief firings of the spacecraft's thrusters -- 8 minutes 7 seconds and 4 minutes 16 seconds -- increased Pioneer's velocity by about 46 feet per second, adjusted its trajectory and shortened its flight to Jupiter by nine hours.

The arrival point will allow several looks at Jupiter's Great Red Spot, as the planet rotates once every ten hours, and at various parts of Jupiter's blue and orange belts and zones.

Not a primary objective of the flight, but a desired goal, is passage behind the orange moon, Io. This occultation by Io, a Jovian satellite as large as Earth's moon, would allow scientists to look for the atmosphere believed to surround it. Scientists would measure changes in the spacecraft radio signal caused by its passage through Io's atmosphere.

Arrival at a point where Io passes between the Pioneer 10 and Earth will require very precise targeting, and whether this exact point in time and space can be reached will not be known for many months. Limits on arrival time, for example are less than eight minutes.

The unmanned 570-pound spacecraft will enter the Asteroid Belt next July.

Projectile-like asteroidal material and Jupiter's radiation belts are the two possible hazards to the mission. Jupiter's radiation belts are an estimated one million times as intense as those of the Earth.

at 12 noon P.S.T. Wednesday, March 8, Pioneer 10 was 2,840,000

miles from Earth traveling at 20,400 miles per hour, about 6 miles every second. Time for round trip radio communication had already lengthened to 31 seconds and will be 90 minutes when the spacecraft reaches the giant planet Jupiter.



LAUNCH OF PIONEER 10 . . . from Cape Kennedy, March 2.

Pioneer 10 is the first spacecraft to be placed on a trajectory to escape from a solar system into interstellar space. It will be the first craft to fly beyond Mars, first to enter the Asteroid Belt, and first to fly to Jupiter. If the spacecraft continues to function well, it may be the first to sense the interstellar gas beyond the Sun's atmosphere.

All systems on Pioneer 10 currently are functioning well. The Atlas-Centaur TEM-364-4 trajectory was so close to optimum that about 160 meters per second of corrective thrust remain, enough to allow several more course changes if they are needed. This was the first use of Atlas-Centaur as a three-stage launch vehicle.

Five of the 11 experiments on board have been turned on and all are returning good data. Those scientific instruments are: three high-energy particle counters, magnetometer, and meteoroid detector. The imaging photo polarimeter (which will return images of the planet), infrared radiometer, asteroid-meteoroid telescope, another high-energy particle counter, ultraviolet photometer, and solar wind instrument remain to be turned on.



AMES' NEW ADDITION . . . the C-141 StarLifter arrived Feb. 4, weighing 325,000 pounds. It is 140 feet long, 160 feet wide (wing span), and its tail is four stories off the ground. It is the largest NASA-owned aircraft and the biggest thing to come into Ames' hangar in a long time.



EQUAL EMPLOYMENT OPPORTUNITY . . . was the subject discussed by Roscoe Monroe (seated second from right), new Assistant Director for EEO at NASA Headquarters, when he met with this group from Ames. Pictured are (l to r) Mrs. Dorothy M. Evans, Federal Women's Program Coordinator; W.L. Williams, Personnel Officer; Robert L. Pike, EEO Officer; John E. Leveen, and Willie L. White, Jr., EEO Coordinator. Mr. Monroe is one of three new Assistant Directors named by Mrs. Ruth Bates Harris, NASA Director of EEO, to help implement EEO programs. He will be responsible for Research and Minority Community Relations. His experience includes thirteen years as a science teacher, three years as a space science lecturer with the NASA Spacemobile program, and for the past five years he has been a NASA public affairs representative.

First NASA-Wide EEO Conference

The first NASA Conference on Equal Employment Opportunity (EEO) was held at the John F. Kennedy Space Center March 1 through 3.

Entitled "Human Understanding Through Space" the major emphasis was on NASA's leadership and commitment to insure equal opportunity for all persons. Attention was also focused on Contract Compliance and Minority Business Enterprise.

Chairman of the Conference was Dr. George M. Low, NASA Deputy Administrator. Mrs. Ruth Bates Harris, the new Director of NASA Equal Employment Opportunity served as vice chairman.

Dr. Low addressed the assembled group of top NASA managers at the opening session and pledged continued support in attaining the goals and objectives of the NASA EEO Program.

Irving Kator, Assistant Executive Director of the U.S. Civil Service Commission, gave the Keynote Address at the opening session.

Affirmative action for NASA employees was discussed by Bernard Moritz, NASA Deputy Associate Administrator for Organization and Management. Among those serving as resource personnel at this session and a later session on selected Center EEO highlights were Robert L. Pike, Staff Assistant to the Ames EEO Officer, and Willie L. White, Jr., Ames EEO Coordinator.

The first day's activities ended with a reception and dinner for all participants. Guest speaker for this affair was Robert J. Brown, Special Assistant to the President. He was introduced by the dinner chairman, Dr. Dudley G. McConnell, Director of Scientific and Technical Information, NASA Headquarters.

Keynote speaker for the Thursday session was Dr. Hans Mark,

Ames Director. Quoting from the second paragraph of the Declaration of Independence he used this as the theme of his talk. Following Dr. Mark's address participants discussed EEO topics, including affirmative action plans as well as contract compliance.

At the luncheon on the second day Dr. James C. Fletcher, NASA Administrator, was the speaker. He admitted that problems of equal opportunity for minority groups and women in NASA exist, but that steps are being taken to correct "serious" discrimination.

Included in his plan, which he termed "small steps," is the assignment of black or other minority group astronauts to the space shuttle program; annual awards for employees and center for EEO performance and activities; elimination of discrimination in NASA publications, including housing; efforts to see that NASA contractors meet the requirements of the federal regulation on EEO.

The Thursday program also included a series of EEO workshops and a NASA Human Right Training Seminar conducted by Roscoe Monroe, NASA Assistant Director for EEO.

The conference closed with discussions of the highlights from the two previous days including reports from the workshops.

Other participants at the conference from Ames were W.L. Williams, Personnel Officer, Mrs. Dorothy M. Evans, Federal Women's Program Coordinator; Joseph M. Camp, Chief, Procurement Operations Branch, and Marcial T. Simpson, Contract Compliance Officer.

Welfare Club Seeks New Officers

New officers are needed to administer the activities of the Ames Welfare Club.

The club, begun in 1948, is an employee organization with no connection to the administration.

Immediately following the death of a club member the deceased's survivors receive a cash sum equal to the total number of members of the club at that time. This cash is presented within 48 hours of the death of the individual. The present membership is 735.

The cost to the individual member is two dollars to join and one dollar each time a payment is made.

Any Ames employee who is interested in serving in this worthwhile function should contact Armando Lopez at extension 5568.

Ames Employee is Scholarship Judge

Conrad W. McCloskey, Electro-Systems Engineering, was recently asked to act as judge for the Pacific Gas and Electric Company's College Scholarship Program.

As one of three local judges he will help select three finalists and one alternate who will compete for 16 \$4000 scholarships. Five of the scholarships will be awarded to minority students.

McCloskey will spend March 29 and 30 interviewing high school seniors competing for the scholarships.

Schedule of ACE Television Classes

The Association for Continuing Education (ACE) has announced the schedule of classes for the spring quarter. All classes will be held in the television classrooms at Ames, Bldg. 241.

COURSE	DAY	TIME (p.m.)	START
Counseling by Objectives	T	5 - 7	April 11
PL/I Programming Languages	MWF	12:20-1:10	April 10
Schedule and Control Systems (C/SCSC)	M	5 - 7	April 10
Technical Writing and Publication	MWF	12:10-1:00	April 10
Effective Reading	TTh	12:00-1:00	April 11
Personal Financial Development	MWF	12:00-1:00	April 17
Introduction to Supervisory Management	W	5 - 7	April 12
Finance for Non-Finance Managers	Th	5 - 7	April 13
Organization and Management	Enroll in Intro. to Sup. Man.		
Modern Accounting Principles II	Enroll in Finance for Non-Man.		

NASA Stamp Club Offer

The NASA Manned Spacecraft Center Stamp Club will issue a set of three covers commemorating the flight of Apollo 16 (scheduled for launch April 16) and carrying the Houston postmark on dates of launch, moonlanding and splashdown. Each cover will be cacheted with the official mission insignia in full color. Collectors may order by sending \$1 for each set desired, together with a stamped self-addressed #10 envelope, to MSC Stamp Club, Box 58328, Houston, Texas 77058.

The Astrogram Room 134
Admin. Mgt. Building
Phone 2385

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 Dot Evans
Reporters NASA Employees

Deadline for contributions:
Thursday between publication dates

USCS Policies on Political Activity

(PART ONE OF TWO PART SERIES)

The U.S. Civil Service Commission is emphasizing again that Federal employees and members of their families have the right and obligation to register and vote. There are however, political activity restrictions for employees, whether excepted, career, part time or temporary.

In general the restrictions state that an employee covered by the Hatch Act cannot run for any office as a partisan candidate or campaign for any partisan candidate or engage in any partisan political management. Partisan candidate means one representing a National or State political party such as Democratic or Republican.

There are some permissible activities with regard to politics as well as restrictions. In a series of articles beginning in this issue of "The Astrogram," both areas will be explained for the information of AMES employees.

WHAT EMPLOYEES MAY DO:

You have the right to vote as you choose. Political-activity restrictions do not relieve a Federal employee of his obligation as a citizen to inform himself of the issues and to register and vote.

You may make a voluntary campaign contribution to any regularly constituted political organization. (Note restrictions in the next issue.)

You may display a political sticker on your private automobile, but you should not do so while on duty conducting the public business.

You may wear a political badge or button, but here again you should not do so while on duty performing the public business.

You may accept appointment to such positions as members of boards of education or public libraries if your agency decides the holding of these local offices will not conflict or interfere with the efficient discharge of your Federal duties. If these offices are elective, you may not participate in a partisan local election in which party designation, nomination, and sponsorship are completely absent. You may be a candidate for office in such an election and you may hold the office after the election if your particular agency decides that your holding it will not interfere with your Federal employment.

You may petition Congress or any Member of Congress. For

AIAA Meeting

The Honorable Isabel A. Burgess of Arizona, a member of the National Transportation Safety Board, will be guest speaker at a dinner meeting of the San Francisco Section of the AIAA on March 23 at Michaels Restaurant in Sunnyvale. Her subject will be "Aircraft Safety and Accident Investigations." Mrs. Burgess will address the group at 8:30 p.m. following a no-host social hour at 6 p.m. and dinner at 7.

Mrs. Burgess, the first woman member of the Safety Board, was appointed to her position by President Nixon in September 1969 with the advice and consent of the Senate, and was reappointed for a full five year term beginning January 1, 1970. She was elected to five successive two-year terms in the Arizona House of Representatives, and in 1966 she was elected to the Arizona State Senate where she served for three years prior to her appointment to the Safety Board.

Credit Union

The Board of Directors of the Moffett Field Employees' Credit Union voted recently to create a Loan Supervisor position for the organization.

Duties of the position are to supervise the loan and collection sector of the credit union. To qualify for the position a candidate is required to have a background in consumer lending, consumer regulations, collections and business practice.

Top candidates will be interviewed by Fred G. Mayer, General Manager of the Credit Union, and the treasurer, John D. Davison, Deputy Comptroller, NAS Moffett Field.

To arrange for an interview or to make a written application call Mr. Mayer, 966-5454.

example, you may write to your Congressman and tell him how you think he should vote on any issue.

You may sign petitions, including nominating petitions, but may not initiate them or canvass for the signature of others if they are identified with partisan political management or campaigns.

You may attend political rallies and join political clubs, but you cannot take an active part in the conduct of the rally or in the operation of the club or act as chairman, officer, committee member, or delegate. You may vote on issues, but you may not speak for or against them.



MEET ME AT THE FAIR . . . Dr. S.N. Stein (left), former Chief of Ames' Medical Office, and Dr. Paul Callahan, Biomedical Endocrinology, are pictured above urging Ames employees to attend the Santa Clara Valley Science Fair, March 20 to 25, at the County Fairgrounds in San Jose. Dr. Stein, active in Science Fairs for 10 years, is president of the Valley Science Fair, and Dr. Callahan joined the board of directors this year.

The fair, which is open to the public without charge, features the science exhibits of students from sixth grade through senior high. The exhibits will be judged by 100 scientists, educators, engineers and industry representatives. NASA is awarding two \$600 work-fellowships to winning science students.

"Thank You" Note

"To My Many Friends and Well-Wishers:

I am taking this means to thank all of you for the splendid response to my retirement luncheon - to thank each of you in person would be very difficult.

It was a heart-warming occasion with some humor and some sadness, too. After so many years of association with you, it is almost traumatic to suddenly realize that it will be different from now on.

And, I do not want to overlook my appreciation to all of you for the beautiful and useful gift given me. I'm sure of putting it to use if I can get it away from my wife.

Again, I'd like to thank those people who directly organized and put the whole package together. Wonderful!

It's been great to know all of you and I'm sure we will meet again at similar occasions for other retirees.

Sincerely, Herb Aronson"

CHECK YOUR DECAL!

Ames employees with vehicles registered with a NAS Moffett Field identification sticker are reminded that it is their responsibility to ensure that the decal does not expire.

The date tab is issued for a period of up to three years, depending on the expiration date of the driver's license.

"U.S. Open" Ticket Offer to Employees

Tickets to the U.S. Open Golf Tournament, to be held at Pebble Beach June 12 through 18 are available to Ames employees at a group rate.

Cost is \$31.50, which includes eight individual string tags - one for each day of the week, plus a possible play-off.

Send ticket orders to the U.S. Open, P.O. Box 72, Pebble Beach, CA. 93953, or request a ticket application from the Admissions Committee at 247-0690.

GOLF

by Kay Bruck

The Point-Par Tournament at Las Positas in Livermore turned out a record group for the second game of the year. The co-chairmen, Yvonne Sheaffer and Bob Carlson, reported players who went home with a smile on their faces were:

First Flight-Tied for 1st, 2nd and 3rd place were Debby DeBevoise, John Hawkins and Frank Lazzeroni. Dave Banducci came in 4th.

Second Flight-1st place went to Clark White; tied for 2nd, 3rd, and 4th were Paul Kutler, Bill Page and Jim Silver.

The next monthly tournament will be at Santa Teresa on April Fool's Day.



INTERNATIONAL CULINARY CONFLICT...
Five of Ames' culinary artists debate the superiority of the hors d'oeuvres of their heritage just prior to Ames' International Night. Presenting arguments are: (l to r) John E. Leveen, Employee Development Branch, who presented Swedish Meatballs; Betty Michaelis, wife of Roland, Photographic Technology Branch, who served Petit Chaussons au Roquefort; Sal Tardio, Electronic Instrument Development Branch, who provided sausages and pizza; and Guy Wong, Research Facilities Engineering, and his wife Ruth, who presented a united culinary effort with Curry Corners.



A TASTEFUL EXCHANGE OF IDEAS...
took place at the Feb. 25 ARA sponsored International Night in the Ames cafeteria. The ladies pictured above made delicious contributions to the evening with their favorite hors d'oeuvres recipes. They are (l to r) Mary McCrea, Massey Services, who served Yabrak (stuffed grape leaves); Ruthie White, Records Management, who provided Louisiana Hot Links in Barbeque Sauce and Head Cheese; Sheila Aggarwal, wife of Hans, Planetology, who offered Indian Samosa; and Allison Ybarra, Classification and Organization, who served Tortilla Chips and Frijoles.

Ames Airings

... by Jeanne Richardson

HAVE YOU EVER HAD A BAD TIME IN THE CAFETERIA? . . . International Night was one of the ARA's best social efforts yet. If you missed it, you missed great food from eight different cultures and drinks mixed by HANS MARK among other biggies.

The hors d'oeuvres were enough to make an epicure ecstatic. Flavors ran from Soul Food to Petit Chaussons au Roquefort.

And the drinks! The six directors, Hans Mark and CLARENCE SYVERTSON, bartended with a flair that implied fond memories of fraternity days. I guess, however, one would expect a science teacher to know how to mix liquids.

And, after a couple of Hans' specialities there was DON FROLICH with his band to dance to.

Then there were those exotic gowns worn by MARY MC CREA, Massey Services, and SHEILA AGGARWAL, whose husband is HANS AGGARWAL in Planetology. Mary was lovely in a blue chiffon Lebanese caftan with gold trim, and Sheila wore a beautiful cream-colored silk sari with brown accents.

The evening was the result of an innovative idea by JEANETTE REMINGTON, Board of Examiners, as were other great Happy Hours this

Ski Club

Twenty-four members of the Ames Ski Club left San Francisco Feb. 26 on a chartered United Air Lines flight for Grand Junction, Colorado. From there they were bused to Aspen for seven days of Rocky Mountain skiing. The group, including George Edwards, Flight Programs Support Office; Maury White, Flight and Systems Research; Don Reynolds, Electro-Systems Engineering; Frank Pyle, Aerodynamics; Earl Watson, Aerodynamics; Les Briggs, Personnel; and Lou Mazer, Computer Systems, skied Ajax and Bell Mountains Sunday and Monday.

Tuesday they took off for Vail where they were met by Emmett Mossman, an old friend of many Ames people. Emmett is retired now and living in Denver, but has a home at Vail and knows the mountain like the back of his hand.

Great skiing was intermingled with fondue parties; Vicki Deiwert's delicious popcorn; hot wine, and gourmet dinners at Aspen's famed Copper Kettle restaurant.

last year (i.e. Wine Tasting Party). We'll miss having her on the ARA Board this year.

SOFTBALL

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

For Sale-Intercontinental radio, 17 transistors, 6 bands. With many special features, very little used. \$65. Recording tape (never used) - scotchdynamarange series #203, 1/4 x 1800 inch reel, 1 mil., polyester backing, \$4. Baby goods, hi chair, Bathenette, seat, potty, tricycle, all for \$15. Call 321-1858 after 5:30 p.m.

For Sale-B/W mod/cont. TV & stereo console, \$175 or best offer. Orange leather swivel rocker \$50. Marble top dinette table 42", two leaves 10" each and six chairs \$75 or best offer. All in excellent condition. 657-2017.

For Sale-Good used VHF portable radio pilot II asking \$75. 227-5307.

For Sale-Irish Setter puppies. AKC registered and graded parents international champions, 8-weeks old, from \$100 to \$250, day 255-0500, nights 244-3253.

For Sale-Gibson Les Paul (custom) guitar. 1-year old, black w/ gold tuning pegs and pickups. \$475 or best offer, call 968-1081.

For Sale-Do you like sport flying? Would you believe \$2.50 per hour flight costs? Join the Moffett Aero Club. (All Ames employees, not part of Navy group). Fly beautifully restored 1940 Interstate Cadet S-1A. Share \$240; \$10 per month Hangered at Reid Hillview airport. Call R. Kurkowski, 736-8497.

Service-Rototilling service, reasonable rates, free estimates, evenings and weekends. Call 378-5173 after 5 p.m.

Needed-Ride or carpool from vicinity of Hidden Glen development (Maybury Road between Capitol Avenue and White Road, San Jose. Days. Call Jerry at 6144.

Wanted-To join a carpool. 7:30 a.m. to 4 p.m. shift, live near O'Connor Hospital, call 293-7201 or ext. 5842.

WANT ADS

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N241-4, by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

AUTOMOBILES

For Sale-1967 Dodge Monaco station wagon, R & H. PS, PB, AT, 383, 4-Bbl., roof rack, wood panels, power tail gate window, outside adj. mirror, 2 new tires, extra clean. \$1200, Bob Johnson, 356-5648.

For Sale-1970 Ford 3/4 ton V8 camper special PS, PB, AT, air cond., with 1970 weekender camper lift, 9 in. long with carpeting, boot, porta potty, hvd. jacks. Call 227-4083.

For Sale-1969 Buick electra 225 limited 4-door, PS, PB, AT, aircond. in excel. cond. 39,000 miles, call 227-4083.

For Sale-1967 Pontiac Tempest Custom 2-door hardtop Sprint standard transmission, 2 new Goodrich Radial tires, new shocks, in excellent clean condition. \$895. G. Lenehan, 964-2474.

For Sale-1967 Ford Ranchero, 289 engine, 56k miles, \$850. Skrettingland, 246-8708.

HOUSING

For Lease-Cabrian Park area, 3-bdrm. 2-bath, \$230 per month, \$150 cleaning deposit, washer and refrigerator included, 6 months lease, renewable. Call 287-8824 after 5 p.m.

For Rent-Deluxe 2-bedroom triplex like a small house with own backyard. Fireplace, laundry and storage space. Choicest area in Cupertino off Foothill Blvd. Easy access to Rt. 280 and 85. Rent \$215 per month. Phone 257-8202.

For Rent-Extra large 3-bdrm. 2-bath unit in 4-plex. WW carpets, drapes, all electric kitchen family room, sunken living room with cathedral beam ceilings, fireplace, swimming pool plus many extra's. Only 5 miles from Moffett Field in Sunnyvale. For further information please phone 245-2796 or 739-8539.

Wanted-2 or 3 bedroom furnished home or apartment convenient to ARC for any four week period commencing July 1, 1972 to August 31, 1972, George T. Lenehan, 964-2474.

MISCELLANEOUS

For Sale-Nikkormat FTN camera with 1.4 lens, filters, flash shoe. Excellent condition, \$250, call 441-8654.

For Sale-Maple bunk beds with new mattresses-\$45; aluminum camp ice chest, \$5; skis, 205 cm. metal. 195 cm. wood; 165 cm. wood, and 210 cm. wood; ski boots, size 9 men's buckle, size 11 men's lace (new), and size 7 women's lace. 326-1851.

For Sale-Complete Camera Outfit. Konica 35 mm SLR camera with f 1.8 Hexanon lens. Coupled light meter. 1 sec. to 1/1000 sec shutter speeds. New case. 135 mm telephoto lens. 35 mm wide angle lens. Filters. Gadget bag. Other items too numerous to mention. Like new. New 366.36. Sell everything \$180. Jerry Barrack, 263-2195.

For Sale-Doggie Doolie, pet waste disposal unit with chemicals, immaculate. \$10. G.E. Electric skillet, never used, \$12. .32 S&W special with new holster \$38.50. Leica M-3 camera, excellent shape. 35 mm, 1.4 summilux super sharp, \$300. Crown movie camera, 8 mm, automatic eye, zoom, pistol grip, only \$20. Call Edward Gan 252-9406.

Free-Needs good home, will give away (too large for my yard) Male Doberman-Weimaraner, mix. grand half, obedience school, excellent children. Call 246-6478.

For Rent-2-bdrm duplex, all-electric kitchen, crpts. drapes, fireplace, Westgate area, call 377-0427 after 5 p.m.. \$185 pm, available April 1.

For Sale-GE stereo console with turntable and Porta-Fi. Excellent condition, Walnut contemporary design, \$250. Call 287-8824 after 5 p.m. RCA color TV, 1-year old, \$350 in cabinet.

For Sale-Rolux Submariner diver's watch \$140; Minox model B camera \$75. 493-1638.

For Sale-1971 Aristocrat camper. 8 1/2 ft. cabover. Sleeps 5 with refrigerator, furnace and range \$1575 or best offer. Easter bunnies \$2 each. 736-4717.

For Sale-Four all-day lift tickets, 1971-72 season, good any day at Alpine Meadows, \$6 each. Ed Gabris, 252-3463.

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March 30, 1972

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

Ames 990 on Arctic Study

The Ames Convair 990 aircraft will depart for Fairbanks, Alaska on April 3 to participate in the Arctic Ice Dynamic Joint Experiment (AIDJEX). This is an international cooperative research program to obtain quantitative data for the study of interactions between the atmosphere, the pack ice, and the liquid ocean.

LEAD AGENCY

With the National Science Foundation as the lead agency for the United States, the AIDJEX project hopes to advance solutions of problems which range from the extent of the Arctic ice cover and its influence on global ocean circulation to the passage of ships through ice-covered seas. Scientists from the United States, Canada, and Japan form the AIDJEX team.

The AIDJEX test site, located

in the Beaufort Sea about 250 to 300 nautical miles north of Point Barrow, Alaska, will consist of an array of manned and unmanned stations on the ice.

Several dozen experimenters will be housed in the base camp which will form a 60-mile triangle with two smaller manned stations. The 990 aircraft will overfly the camp site in a precise pattern to obtain remotely sensed data for correlation with the many measurements being taken in the ice and in the ocean below. The aircraft measurements will include a wide range of microwave, infrared, and photographic images.

Dr. Per Gloersen of Goddard is the expedition scientist and the expedition manager is Earl Petersen of the Ames Airborne Sciences Office.



ELECTRON MICROSCOPY . . . is three times better because two physicists at Ames altered the structure of the illuminating and image-producing electron beam in their microscope. Doctors Helmut Poppa (left) of the Materials Research Branch, and Klaus Heinemann (right) of Stanford University working at Ames under a NASA grant, are pictured as they study the new annular aperture system they devised for their electron microscope.

Electron Microscopy Far Better

Microscopic details of truly atomic dimensions are now clearly visible under a transmission electron microscope because of an innovation developed in aeronautics and space research.

Two physicists at Ames, Doctors Helmut Poppa and Klaus Heinemann, who are trying to determine how free atoms and molecules interact with surfaces of various materials, found they could see more -- in fact, about three times better -- because of the highly improved resolution and contrast they obtained by altering the structure of the illuminating and image-producing electron beam in their microscope.

Through a simple aperture method they devised the two research scientists can now distinguish distances of about one Angstrom as compared to resolutions of about three Angstroms which normally can

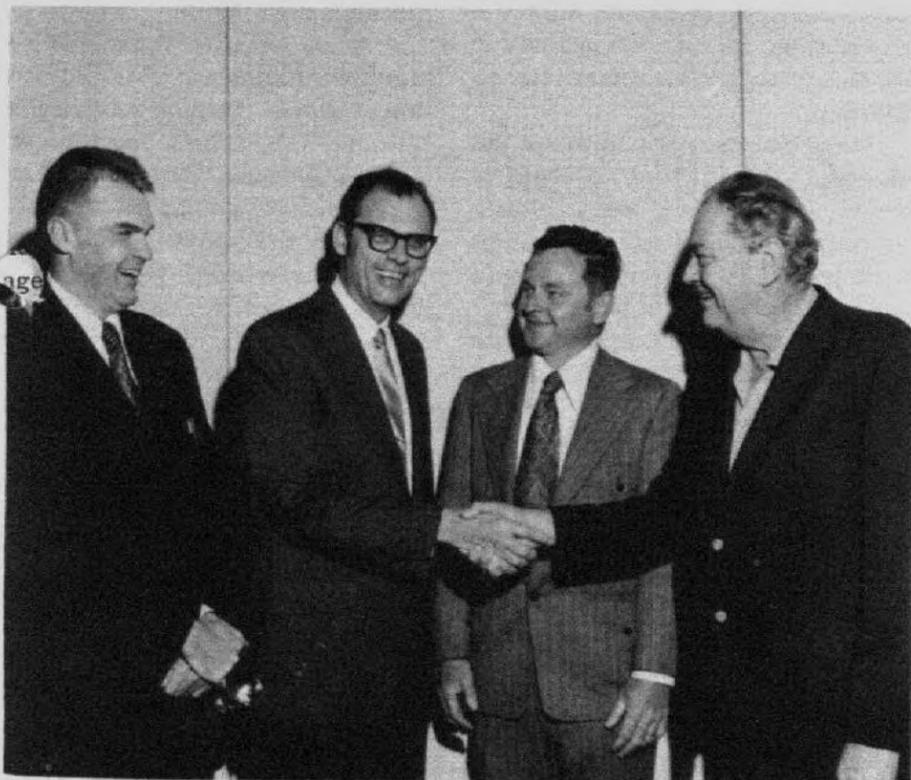
be obtained with the better, present day, standard electron microscopes.

To give the layman some idea of how truly microscopic this is, conversion tables give the length unit Angstrom as .00000004 of an inch (.00000001 Centimeter), dimensions inconceivably small to the non-scientist.

Because this breakthrough gives scientists much better resolution of microscopic details than the best present standard electron microscopes, it is expected to be an extremely significant and helpful development to researchers who use electron microscopy in such fields as biology, medicine, biophysics, metallurgy, geophysics, and electronics.

It is expected to be especially effective in medical research where the electron microscope is widely

(Continued on Page 4)



ALLEN AWARD . . . The third annual H. Julian Allen Award was presented recently to Dr. Dean R. Chapman (second from left), Chief of the Thermo and Gas-Dynamics Division, for his paper entitled "Australasian Tektite Geographic Pattern, Crater, and Ray of Origin, and Theory of Tektite Events". The award includes a certificate and honorarium of up to \$1000, and was named for retired Ames Director, H. Julian Allen (far right), shown congratulating this year's recipient, George A. Rathert (second from right), Chief of the Simulation Sciences Division, serves as chairman of the Allen Award Committee and made the award presentation with the Director, Dr. Hans Mark, at the ceremony which preceded a talk by Dr. Chapman on his paper.

Pioneer-Venus Studies Proposed

Ames has asked industry for proposals for studies on four proposed Pioneer missions to carry out scientific investigations of the planet Venus and its environment. The spacecraft would be launched by the Delta vehicle in the late 1970's.

Venus is the Earth's closest neighbor in the solar system. Although it is similar to Earth in size, and possibly in origin, its low rotation rate, apparently complete cloud cover, extremely dense atmosphere, and high surface temperature make Venus the object of intense scientific interest.

The Venus Pioneer missions would include entry-probes and orbiting spacecraft and would study in detail the nature and composition of Venus' atmosphere from the surface to high altitudes. By comparing the planet's atmosphere with that of Earth and Mars, NASA believes it would be able to make better predictions of atmospheric changes on Earth.

The proposals are to cover design studies for the entry probes and orbiting spacecraft. NASA expects to select two contractors to perform parallel \$500,000 design studies, to be completed by June 30, 1973.

Subject to Congressional approval of the planned missions, NASA expects to select one of the two study contractors to build the spacecraft and entry probes.

The initial flight would be launched in the period of December 1976 to January 1977.

Mars-Mariner 9 Completes Objective

Despite the giant dust storm which obscured its pictures of Mars for about six weeks, NASA's Mariner 9 has completed its primary objective of photographing the planet from the South Pole to the northern hood.

Nearly 7,000 pictures of Mars have been recorded by Mariner and played back to Earth stations as well as several dozen photographs of the Martian moons Phobos and Deimos.

With Mariner pictures of Mars now in hand, scientists at JPL are preparing to assemble a map of a large part of the planet. More than 1,000 overlapping pictures will make up the Martian map.

Ames A Leader In Tech Briefs

Ames and its contractors surpassed all NASA Centers in the publication of Tech Briefs on a Center per capita basis during the last calendar year (1971), according to Bradford A. Evans, Ames Technology Utilization Officer.

With the close of the 1971 Tech Brief publication year, NASA has produced over 5,000 Briefs since the program began in 1963. Tech Briefs, one-page announcements of NASA-originated innovations, concepts, devices, and techniques, are published with the purpose of providing the public and private sector with useful aerospace technology.

Ames has 5 1/2 percent of the total NASA personnel complement including JPL. Last year the Ames Tech Brief publication reached 11 percent of the total NASA publication, or 57 Briefs out of a total of 519.

And, if a backlog had not occurred after the Center had submitted an additional 90 Tech Briefs for publication in late 1971, the total would have been 147. However, most of the Briefs caught in the backlog are now being published, getting the 1972 publication year off to a good start. "Adding the 106 Briefs that are now being processed here", Mr. Evans said, "we can forecast a publication of over 200 Tech Briefs for 1972."

A recent survey by the Denver Research Institute showed that approximately 10 percent of all NASA Tech Briefs have resulted in an identifiable technology transfer, but the findings also indicated additional value of the Tech Brief program. Based on a survey of business, industry, engineers and scientists, and the like, who have requested Technical Support Packages (TSP's are the technical backup to each Tech Brief and are sent out by the originating Center to requesting Brief readers), the following was determined:

- Two-thirds of all TSP requesters reported using the support package material to keep up-to-date with developments in their technical field;
- Only one out of eight TSP requesters reported no benefits from the material;
- One-quarter of all TSP requesters reported using the TSP's to help solve specific technical problems.

The Ames Technology Utilization Office answered an average of 500 requests per month in 1971 for TSP's



BEST BOSS IN TOWN . . . Remus N. Bertoi (right), Chief of the Avionics Research Branch, is pictured above with his secretary, Grace Webster, after he was chosen "boss of the year" by the Palo Alto charter chapter of the American Business Women's Association. Mrs. Webster, a member of the Association, nominated Bertoi for the honor.

Bertoi-"Boss of the Year" Space Pamphlets Available to Ames

Remus N. Bertoi, Chief of the Avionics Research Branch, was recently named "boss of the year" by the Palo Alto charter chapter of the American Business Women's Association. He was nominated for the honor by his secretary, Grace Webster.

Mrs. Webster, a member of the chapter, cited a "terrific sense of humor, calm nature, and an ability to organize and utilize team work with his staff" as among Bertoi's qualifications.

She included his achievements as an Aeronautical Engineer, and "outside interests" in the nomination.

Among his professional achievements mentioned were several publications, three patents, and a recent letter of commendation from the White House. The letter, from William M. Magruder, Special Consultant to the President, thanked Bertoi for his participation in the new Technology Opportunities project.

Bertoi is a member of the American Institute of Aeronautics and Astronautics and the National Society of Professional Engineers.

Cooking Romanian foods, tennis, golf, and the Palo Alto Newcomers Club were cited among Bertoi's outside interests.

which support Ames in-house and contract-originated Tech Briefs. Last month some 1300 requests were received.

Two informative pamphlets entitled "Space Benefits Today and Tomorrow" and "Space Shuttle" were recently made available to Ames employees.

"Space Benefits Today and Tomorrow" simply and concisely answers several common questions about the U.S. space program. As the title indicates, the pamphlet emphasizes the ways the program has benefitted the world in the areas of communications, weather, navigation, agriculture, astronomy and oceanography.

"Space Shuttle" describes the space transportation system which will carry astronauts and scientists between earth and orbiting laboratories during space missions of the future.

The pamphlets are available by writing a note to the Audio-Visual Facility, c/o mail stop 201-6. Indicate the desired number of copies, and include the requester's name and mail stop, or name and address.

Phone requests will not be honored for these publications.

Room 134
Admin. Mgt. Building
Phone 965-5422

The Astrogram

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 Dorothy M. Evans
Editorial Assistant Jeanne Richardson
Reporters NASA Employees

Deadline for contributions:
Thursday between publication dates

USCS Policies on Political Activity

(PART TWO OF TWO PART SERIES)

The general prohibition on Federal employees is that they may not take an active part in political management or in political campaigns of a partisan character. These are some of the prohibited activities:

WHAT EMPLOYEES ARE PROHIBITED FROM DOING:

You may not be a candidate for nomination or for election to a National or State office. You may run for a community office only as described in the sections, "What Employees May Do and Exemptions for Certain Communities."

You may not solicit others to become candidates for nomination or election to partisan offices.

You may not campaign for or against a political party or candidate.

You may not use your automobile to transport voters, except members of your immediate family, to the polls. However, riders in regularly scheduled carpools can stop at the polls on the way to or from work.

You may not distribute campaign material.

You may not march in a political parade.

You may not sell tickets for or otherwise actively promote such activities as political dinners.

You may not write for publication or publish any article or letter soliciting votes for or against any political party or candidate.

You may not solicit or receive any assessment or contribution for any political purpose.

You may not make a political contribution in a Federal building or to some other employee.

WHAT PENALTIES FOR VIOLATION ARE:

The Civil Service Commission enforces political-activity restrictions for employees in competitive positions. The Commission makes investigations and holds hearings in cases involving violations. The most severe penalty for violation is removal and the minimum penalty is suspension without pay for 30 days.

In cases where removal is ordered by the Commission, the employees may not be re-employed in any position the salary of which is paid from the same appropriation as the job from which he was removed.

Employees in excepted positions come under the jurisdiction of their agency head in political - activity matters.

FPC Scholarship Ames Business Cards Available

April 3 is the deadline for submitting applications for Federal Personnel Council of Northern California Scholarship Awards.

Children of Federal civilian employees and youths employed under the Youth Opportunity Programs (President's Stay-In-School Campaign and the Summer Youth Opportunity Campaign) are eligible for the seven or more \$350 scholarships.

The scholarships will be paid to the winners upon their enrollment in a recognized junior college or accredited college or university.

Selections will be announced at a luncheon in May.

The awards will be based on scholastic ability (from high school records and results of scholastic aptitude tests of the College Entrance Examination Board); leadership potential (from autobiography and letters of recommendation); and an essay entitled "The Role of Youth in Meeting the Challenge of Today."

Application forms are now available in the Ames Training Office, Room 140, Bldg. 241, ext. 5622.

Ames Paper Is In AIAA Journal

Ames research scientists Homer Q. Lee and John D. McLean of the Systems Analysis Branch have co-authored a paper entitled, "Guidance Techniques for Automated Air Traffic Control," which has been accepted for publication in the AIAA Journal of Aircraft.

The subject discussed is a guidance technique which has been developed for flying an aircraft automatically along curved trajectories. In their paper the authors present the flight profile synthesis algorithms, describe the control law, and analyze this performance under initial condition errors and error in steady wind estimates.

The paper was first presented by Mr. Lee at the AIAA 10th Aerospace Sciences Meeting held last January in San Diego. Since then he has been invited to give the paper at an Information Systems seminar of some 40 graduate students at Stanford University.

NASA business cards for Ames employees are available through the Ames Services and Supply Division.

The cards are of two-ply bristol stock with the NASA insignia in blue and red. Copy is dull black with any desired imprint. Cost of the cards is \$.65 for 250. This includes sales tax, postage, and cardette case.

Call Vicki Deiwert, ext. 5671 for order forms. Delivery is approximately four weeks after receipt of order.

ATC Will Hold 30th Anniversary Reunion

Former members of the Air Force Air Transport Command will observe the 30th anniversary of its founding in Las Vegas during the weekend of May 19-21.

Highlight of the three-day event at the Frontier Hotel will be the informal reunion dinner on Saturday night, May 20. Lieutenant General Harold L. George, USAF (Ret.), ATC's wartime commander, is honorary anniversary chairman.

Interested individuals should write to James W. Austin, care of Hughes Tool Company, 250 Park Avenue, New York, N.Y. 10017.

Within Grades to be Retroactive

A recent Comptroller General decision has ruled that those GS employees who were denied their regular within-grade increase during the wage/price freeze must now be paid retroactively. Fiscal Division indicates that this payment will be reflected in a normal pay check issued during April for those employees involved.

Purchasing is Subject of Course

A course entitled "Problems in Purchasing", structured primarily for technical and scientific personnel, will be presented at Ames by Joseph M. Camp, Chief of the Procurement Operation Branch, beginning April 3 and continuing through June 21.

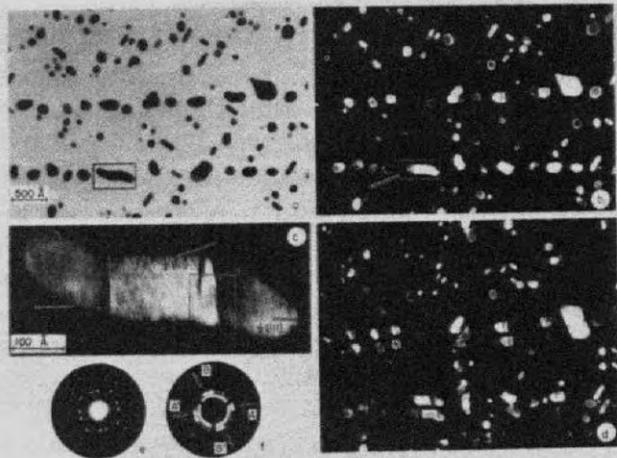
The course will cover such subjects as types of contracts, methods of procurement, competitive versus non-competitive requirements, technical evaluations, price analyses and source evaluation board procedures.

Classes will be held on Monday evenings from 5 to 8 p.m. in the Ames Training Room 147, Bldg. 241.

The course may be taken for credit or non-credit. For further details call the Employee Development Office, ext. 5623.



RETIREMENTS -- A PAIR . . . La Vita and Jack Bonnell, long-time Ames employees, are pictured at a pre-retirement luncheon held recently in their honor at the Bold Knight in Sunnyvale. More than 200 friends and business associates were on hand to extend best wishes and to help celebrate the couple's combined Federal service of over 49 years -- all spent at Ames. For the past few years Jack has been head of the Storage and Shipping Section of the Supply Branch, and La Vita worked as a Contract Administrator in the Contract Management Branch.



MICROSCOPIC DETAIL . . . Gold particle in Fig. 1 (c) above (left), illustrates the magnification achieved by the electron microscope using the new annular system devised by Ames physicists Drs. Helmut Poppa and Klaus Heinemann.

MICROSCOPY

(Continued from Page 1)

used and where researchers are particularly interested in obtaining better contrast as well as increased resolution. Cancer researchers, comparing the Ames-developed technique with several standard methods, found they obtained the best results with the Ames techniques.

Drs. Poppa and Heinemann have been able to observe important structural details in electronic and metallurgical materials which had never been seen before. They did their work in the Ames Materials Research Branch, where Poppa is employed. Heinemann is an employee of Stanford University working under a NASA grant at Ames.

NASA is seeking a patent for the innovation which its inventors call an "Annular Aperture System." The patent will be available for commercial licensing. The special aperture can be installed in any reasonably good electron microscope.

Present microscopes illuminate the specimen being examined with a normal beam of electrons. The microscopes equipped with the new annular aperture system use an illuminating beam that is "shaped" so that it hits the specimen obliquely (surrounding the specimen from 360 degrees in a cone-like formation) and limits the imaging part of the electron beam to an annular zone in the objective lens of the microscope. Hence, Poppa and Heinemann refer to their technique as "Conical Specimen Illumination" and "Selected Zone Dark Field Microscopy", respectively.

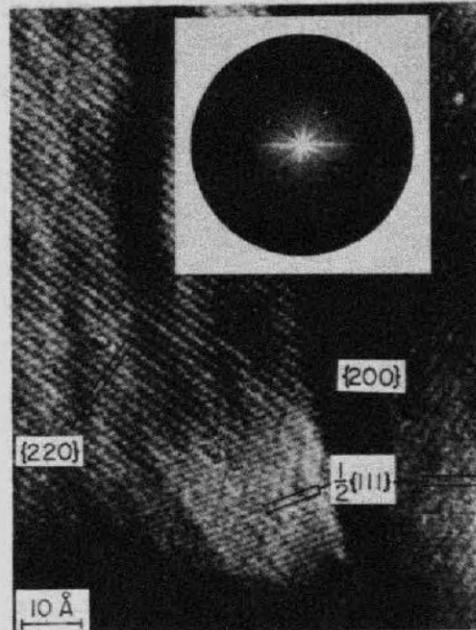


Fig. 2 is an enlargement of the outlined section of the gold particle in Fig. 1 (c), and the insert in the photo is a light-optical diffraction pattern of the composite particle of Fig. 1 (c).

Ames Airings

. . . by Jeanne Richardson

The ARA-sponsored Reno trip made March a memorable month for 38 Amers.

With the glow of St. Patrick's Day still on their cheeks, they boarded a train March 18 in Oakland for the "Biggest Little City in the World."

Some say the ride to Reno was the most memorable part of the trip. And, some say it's the last part of the trip they remember.

But, with Mapes Hotel as the group's rest area, a day and a half was spent in the intense pursuit of making fortunes and fun.

Course Correction for Pioneer

Flight directors completed the second planned mid-course correction in the flight path of the Pioneer Jupiter spacecraft last Thursday, March 23.

The firings of the spacecraft thrusters were made in two parts to avoid turning spacecraft antennas too far away from their continuous point at the Earth.

The first brief burn was at noon P.S.T. on Thursday, March 23. Spacecraft thrusters were fired briefly again at about 3 a.m., Friday, March 24.

The course change was made in an attempt to fly Pioneer 10 behind Jupiter's orange moon, Io, the most reflective object in the solar system.

Voters Registered at Ames April 3

The Santa Clara League of Women's Voters will register voters in the Ames Cafeteria April 3 from 11:30 to 1 p.m. The League is a non-partisan organization and will be registering all parties as a public service.

SOFTBALL

Anyone interested in playing on the Ames Fastpitch Softball Team, please call Bruce Ganzler, ext. 5169.

For Sale-Hi Fi components \$20. Dynakit Mk II and PAM-1, almost perfect. Bob Jackson 327-6317.

For Sale-Sears full size foam mattress and matching box springs. Delux model. Like new \$35. J. Barrack, 263-2195.

For Sale-Camera outfit. Konica 35mm SLR camera with f/8 Hexanon normal lens, 135 mm telephoto lens, and 35 mm wide angle lens. 1 sec to 1/1000 sec exposure speeds, coupled light meter, filters, close-up lens. Leather gadget bag among other extras. Cost \$366.36 like new, sell for \$180. J. Barrack, 263-2195.

Wanted-Color TV to buy, working or not, \$50 max. 257-0583.

Needed-Ride from W. California and Mathilda, 8 to 4:30 shift. Call 735-9223 or ext. 5310.

Ride Needed-Would appreciate a ride commencing April 3 from vicinity of California St. near Rengstorff, 8 to 4:30 shift. Will share gas. Dr. P. Raina, ext. 5754.

Wanted-Sierra Club needs a vacuum cleaner and a few office chairs for their new Palo Alto office. Must be free, call 327-8111.

LOST BUT NOT FORGOTTEN-100 copies of NASA-TM X-62, 107, "Data Acquisition Systems for Operational Earth Observation Missions," by Jerry M. Deerwester, et al. These reports last seen at Repro. Delivery/Pick-up Point. Please call Sandi, ext. 5900, if you have any info.

Wanted-A good home for beautiful, lovable, 5-yr. old Dachsund. AKC registered. FREE. Irene Tharpe, 408-779-3022.

WANT ADS

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N341-4, by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

AUTOMOBILES

For Sale-1964 Cad. Fleetwood, new brakes, mufflers, air cond., compressor, rebuilt trans., all power and many extras. 248-6009.

For Sale-1970 Plymouth Duster, \$1950, like new. Moulin Rouge with white vinyl top and white bucket seats. Air conditioning, power steering, automatic trans., radio, 318 CID engine, new smog certificate, Moffett Credit Union will loan 80% of blue book or \$1800. John Weyers, 377-1010.

For Sale-1970 Ford Camper Special, with 9-foot Vacationer Camper, full utility box, air conditioner automatic transmission, power steering and power brakes, refrigerator and jacks, many extras. 50,000 - 5 year warranty. Only 8,500 miles. 377-0512.

For Sale-1935 Dodge coupe, excellent condition, \$600. Call 374-7379.

For Sale-1968 Fiat 850 Sport Coupe. Economical, fine mechanical cond., good tires. \$850. Please ask for Laurel at 736-7154.

For Sale-1965 Ford Galaxie 500, V8, 352cc, clean, excellent cond., 4-door hard top, new tires, am-fm radio, 54,000 miles, \$675. Tel. 246-359.

HOUSING

For Rent-3-bedroom house, 1/4 acre lot, loads of fruit trees, Saratoga. \$215 per mo., available May 1. Call 374-7379.

For Sale-5 acres in Silversprings, Nev. 1 mile from large rec. area. Water and elec. available. \$3000, liberal terms. Call 374-7379.

Wanted-Apt. Manager for 5 units near Valley Fair, S.J., no exp. reg. Rent reduction on spacious 2-bedrm. unit. 867-3335.

For Rent-Small 2-bedroom house in Sunnyvale. Available 4-15-72. \$75 a month. Call 732-4689.

For Sale-4-plex, excellent Sunnyvale location. Always rented, \$750/mo. gross, \$70,500. 248-6009.

MISCELLANEOUS

For Sale-Dinettes, 4 chairs, excellent cond. \$35. 246-3590.

For Sale-Portable sewing machine by Signature. Makes buttonholes, zig-zags, heavy weight sewing. Very good cond., four years old. \$50. Call 266-0251 after 5 p.m.

For Sale-Armchair w/ Ottoman on casters, comfortable, yellow naugahyde, cost \$160 six months ago, sacrifice at \$70. Edison baby crib, std. 6 yr. like new, paid \$85, sell for \$30. Coleman insulated ice chest \$6. Danish Modern sofa, 3-seater, new foam cushions and avocado covers \$50. B & W Slimline 23" TV, Sears Silvertone, VHF channels \$25. Call 328-8756. 2420 Bryant St. Palo Alto.

Lost-Polaroid Camera Kit, Model 850 with Wink lite and carrying case. Inv. No. 22792 - Removed from tool crib in Bldg. 231. Please return to Experimental Fluid Dynamics Branch, Bldg. 229.

Wanted-Ride, April 4 from Milpitas, N.W. corner and freeway 680, Valley north, call 8674.

Wanted-Ride. 17th and Washington area of S.J. Beginning April 3, 8 to 4:30 shift. Bldg. 203. Call ext. 5291, Pat Long.

For Sale-Antique serving bowls with lids. Imported from England. Make beautiful gifts. Choice of 6 from \$12.50. 736-6999.

Wanted-Old or used umbrellas in any condition for Rainbow Assembly installation. Will pick up, 739-2306.

For Sale-RCA 21-inch color TV; auto tune, tint, color, dark oak, rebuilt pix. tube, excellent pix. and cabinet. 397-3843.

For Sale-Complete set of Wilson staff registered golf irons 2-9. Approx 4-5 years old. Light weight steel shaft, rubber grips, D-3 weight and in excellent shape. Price \$60. Call 948-5250 to inspect.

Wanted-girls bike in good condition. Call 964-4446 after 5 p.m.

For Sale-Evinrude, 3 1/2 h.p. outboard motor, good condition. \$85. Piazza 365-0578.

Wanted-Extra large steamer trunks for travel. Please call Linda Marienthal, 251-2060 after 5:30 p.m.